Mobility and Transport Connectivity Series

Unleashing Rail Station Potential through Station Redevelopment

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Acknowledgments

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Abbreviations and Acronyms

APTA	American Public Transportation Association
ARRA	American Reinvestment and Recovery Act
BaIDS	Al-Bai Bithaman Ajil Islamic Debt Securities
BART	Bay Area Rapid Transit
BOT	Build-Operate-Transfer
CAC	Citizens Advisory Committee
CAGR	Compound Annual Growth Rate
CBD	Central Business District
CCD	City and Council of Denver
CDOT	Colorado Department of Transportation
CdS	Conferenza dei Servizi
CMS	Cash Management System
COPLACO	Comisión de Planeamiento y Coordinación del Área Metropolitana de Madrid
CRT	Commuter Rail Transit
CRTM	Consorcio Regional de Transportes de Madrid
CS	Centostazioni S.p.A.
CSP	Core Service Payment
DC	District of Columbia
DDA	Denver Downtown Development Authority
DRCOG	Denver Regional Council of Governments
DTC	Denver Tech Center
DUS	Denver Union Station
DUSPA	Denver Union Station Project Authority
DUSRT	Denver Union Station Redevelopment Team
EOC	Executive Oversight Committee
ERL	Express Rail Link
FAR	Floor Area Ratio
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
FS	Ferrovie dello Stato Italiane S.p.A.
FSI n.d.	Azienda Unitaria della Ferrovie dello Stato
GDV	Gross Development Value
GLC	Government-Linked Company
GLIC	Government-Linked Investment Company
GS	Grandi Stazioni S.p.A.
IFC	International Finance Corporation
JEMS	JR East Japan Management Services
JNR	Japanese National Railways

JR East	Japan Railways East
KLCC	Kuala Lumpur City Centre
KLIA	Kuala Lumpur International Airport
KLSSB	KL Sentral Sdn. Bhd.
KM	Kilometer
km²	Square Kilometer
KPI	Key Performance Indicator
KTMB	Keretapi Tanah Melayu Barhad
LRT	Light Rail Transit
MRCB	Malaysian Resources Corporation Berhad
MRT	Mass Rapid Transit
MTC	Metropolitan Transportation Commission
NEGA	National Express Group Australia
O&M	Operations & Maintenance
PDA	Priority Development Area
PPP	Public-Private-Partnership
PTV	Public Transport Victoria
PUTRA	Projek Usahasama Transit Ringan Automatic Sdn. Bhd.
RFEI	Request for Expressions of Interest
RFI	Rete Ferroviaria Italiana
RFP	Request for Proposal
RFQ	Request for Qualifications
RRIF	Railroad Rehabilitation and Improvement Financing
RTD	Regional Transport District
SCSA	Southern Cross Station Authority
SDA	Services and Development Agreement
SPNB	Sharikat Prasarana Negara Bhd.
SPV	Special Purpose Vehicle
STAR-LRT	Sistem Transit Aliran Ringan-Light Rail Tram
TIF	Tax Increment Financing
TIFIA	Transportation Infrastructure Finance and Innovation Act
TMG	Tokyo Metropolitan Government
TOD	Transit-Oriented Development
UKAS	Unit Kerjasama Awam Swasta
USNC	Union Station Neighborhood Company
USRC	Union Station Redevelopment Corporation
VFM	Value for Money
WMATA	Washington Metropolitan Area Transportation Authority

Executive Summary

Many railways have outdated stations that need updating to improve their functionality. Redevelopment of these stations creates opportunities to improve the customer's rail travel experience with added amenities and improved intermodal connections. It can also create opportunities to realize profits from railway land, which may fund the redevelopment or support services. More broadly, when combined with transit-oriented development (TOD) around the station, station redevelopment can anchor broader redevelopment that benefits the community and leverages additional real estate value.

This report describes seven station redevelopment projects, examining the implementation process, the use of governance and coordination mechanisms, the development of public-private partnership (PPP) structures, and the funding and financing approaches. It explains local circumstances, how they shaped the choices made, the outcomes of the redevelopment, and lessons that can be drawn from each case. The purpose is to provide railway authorities and policy makers with guidance and knowledge to help in the design and implementation of railway station redevelopment projects, leading to more viable and successful projects. The cases illustrate the range of tools that can be employed to gain the benefits of station redevelopment.

A tailored coordination mechanism is needed to manage stakeholders. Station redevelopment projects typically affect multiple stakeholders, whose interests and actions must be coordinated to achieve a successful outcome. The cases demonstrate a range of approaches to this challenge. For example, the State of Victoria in Australia created the Southern Cross Station Authority (SCSA) to coordinate among the State of Victoria, Department of Transport, Department of Treasury and Finance, Partnerships Victoria, the owner of the station (National Express Group Australia), the owner of the tracks (Victoria Rail Track Corporation), and the multiple train operators using the station. In Denver, the four partner public agencies established an Executive Oversight Committee (EOC) to coordinate the project management and appointed a master developer to manage all the other developers and construction firms working on the project. In Italy, an institution called the Conferenza dei Servizi (CdS) gathers all the entities– both public authorities and private companies – from whom permissions are needed to coordinate decision-making.

Project delivery structure can be adapted to the scope of the project and capacity of the project sponsor. Most of the station redevelopment projects covered in this report were structured as ring fenced, stand-alone projects into which the private sector could be engaged in various capacities. However, in Italy, where a whole program of station redevelopment projects was envisioned, Italian Railway created two joint venture companies with experienced property developers as equity partners. This structure separated station redevelopment from day-to-day railway operations, aligned the interest of the private sector in terms managing risks and use of station property, while allowing the railway to retain control over key decisions. In Tokyo, where the railway developed strong internal skills in the management of real estate and retail properties, it managed station redevelopment with its own subsidiary companies.

Land development can be a source of funding and induce the private sector to finance the station redevelopment. The cases illustrate a range of PPP structures that leveraged unrealized land value for at least a part of the project funding. In Kuala Lumpur Sentral Station, the private sector redeveloped the station in exchange for rights to develop the land surrounding the station. In San Francisco, the transit agency redeveloped parking lots adjacent to the stations to higher density use, with housing and commercial development revenues supporting the financing of the redevelopment.

In more urban stations such as Tokyo, much of the value came from higher-density use of the station property with expanded retail and commercial space. In Denver and San Francisco, the increased real estate value of surrounding properties, captured through real estate taxes, is a further source of funding. While leveraging land value takes a long time to realize and can be complex, it is a source of value available to many railways and communities in developing countries.

Station redevelopment projects require capacity development. Station redevelopment, especially when involving PPPs for real estate development or management of retail and commercial space, requires specialized knowledge and skills that railways often do not have. The cases illustrate a variety of approaches to obtaining the skills needed. In Kuala Lumpur, existing government capacity in privatization was tapped. In San Francisco, the transit agency created a real estate unit and hired qualified staff. In Italy, the railway brought in experienced developers as shareholders in development projects.

Station redevelopment projects can provide substantial benefits. These include improving the rail passenger experience, connecting rail to other modes of transit, connecting the railway to the community, and anchoring development in the community. These projects can often release unrealized land value for the railway and the community. While the projects are complex and time consuming, railways in developing countries can realize substantial benefits from undertaking them.

CHAPTER 1

Introduction

Railways play an important role in the transportation systems of many developing countries. Railway stations are a key, but often neglected part of this railway service. A railway cannot function well if its stations—the entry and exit points for passengers—are outdated and ineffective. People's desire to travel by rail are affected by station characteristics including:

> *Station redevelopment projects can benefit the railway, passengers, other residents, and the city itself. Depending on a project's scope and objective, redevelopment benefits can include improvements to transport services, enhancements to services and facilities, and development of surrounding areas and districts.*

- the ease of transfers between trains
- the safety of the station premises
- the cleanliness and attractiveness of the space
- the level of congestion

Many countries are considering railway station redevelopment to improve their rail service. They include developing countries such as Argentina, Brazil, Bangladesh, India, Kenya, Myanmar, Nigeria, Pakistan, Sri Lanka, and Russia.

In this report, the term 'redevelopment' refers to changes to existing stations, as opposed to new development. It encompasses refurbishment, renovation, or improvement to station buildings, platforms, and operational rail infrastructure, as well as to the land in its surrounding areas. Much of this report will focus on the redevelopment of the railway station building itself, as this is often the first level of station redevelopment.

While station redevelopment projects provide many benefits, they are complex to deliver and require a unique set of knowledge, skills, and know-how. This is particularly true when the railway intends to deliver a project through a public-private partnership (PPP) scheme. PPPs require appropriate institutional arrangements with financial and legal expertise to structure, procure, and implement transactions successfully (World Bank Group, 2022).

Report Objective and Target Audience

Despite the growing interest in station redevelopment, global knowledge on the subject is limited, at best. While numerous countries have successfully redeveloped rail stations, information on their experiences have not been collected in a systematic manner. This report aims to fill that gap. **The objective is to provide railway authorities and policy makers with guidance and knowledge to help in the design and implementation of railway station redevelopment projects, leading to more viable and successful projects.**

Structure of the Report

The report is a comprehensive resource for those involved in railway station redevelopment.

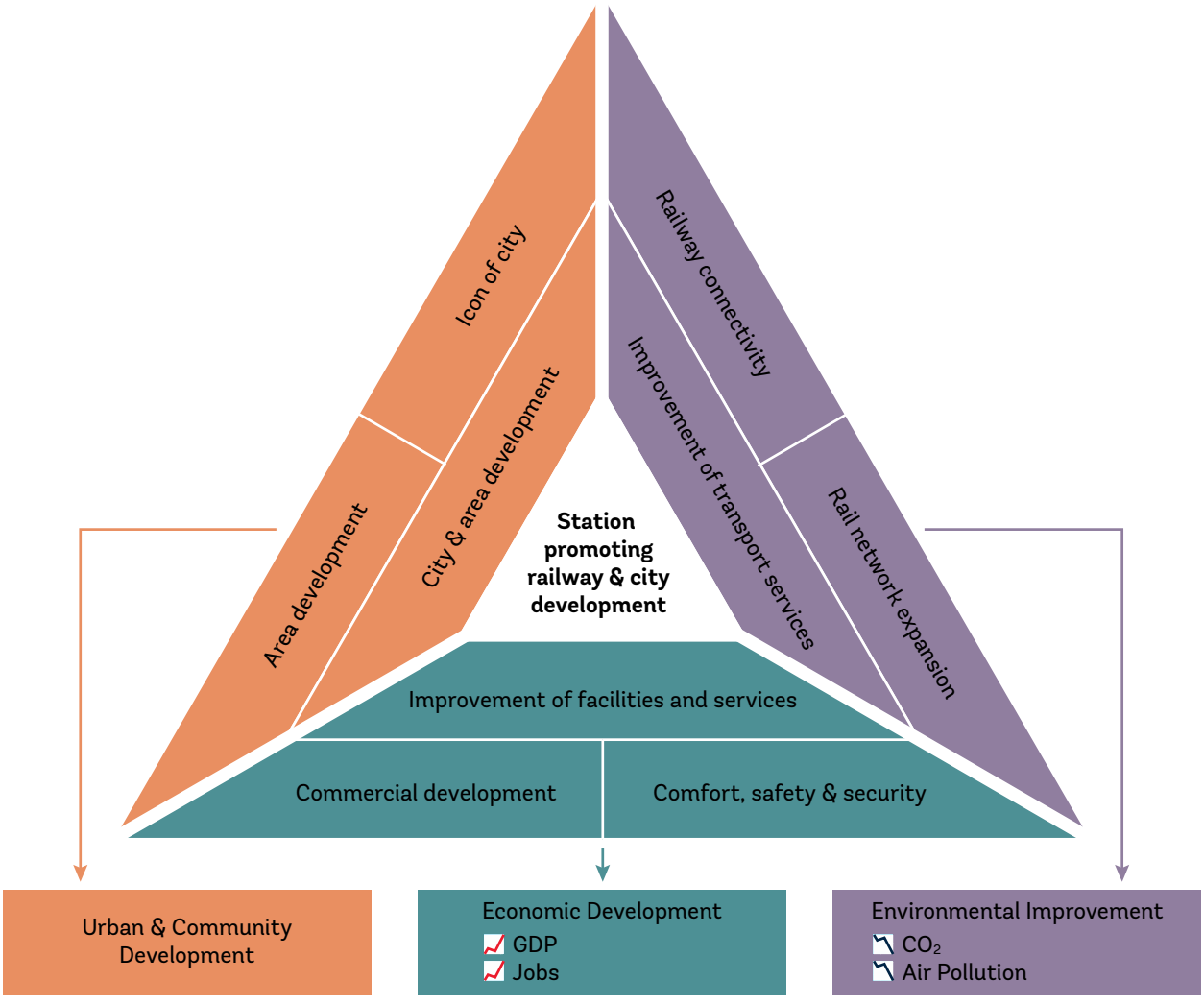
- Chapter 1 introduces station development projects, including project benefits, project types, and typical challenges. It also provides an overview of station redevelopment and the case covered in the report.

- Chapter 2 outlines the stages of the redevelopment project, from institutional-level preparedness, system-level planning, station-specific planning, and implementation to operation and maintenance (O&M).
- Chapter 3 discusses issues that cut across project stages, including structuring PPPs, communication, historic preservation, and the value of small places.
- Chapters 4-10 contain the detailed case studies. While Chapters 2 and 3 reference examples from these case studies and other station redevelopment projects around the world, Chapters 4-10 provide a deep dive for readers who wish to understand a particular redevelopment project in greater detail.

Benefits of Station Redevelopment

Station redevelopment projects can benefit the railway, passengers, other residents, and the city itself. Depending on a project's scope and objective, redevelopment benefits can include improvements to transport services, enhancements to services and facilities, and development of surrounding areas and districts (Figure 1.1).

Figure 1.1. Benefits of Station Redevelopment



Source: World Bank.

Improvement of Transport Services

- *Intermodal connectivity.* People use multiple modes of transport to travel to their destinations, and the station is the hub where these modes connect. Improving the pedestrian flow and the layout of platforms and terminals within a station allows for better transfers and connectivity among modes, thus improving the customer experience and potentially increasing the use of railways and other transit modes and encouraging a modal shift to public transport.
- *Rail network expansion.* Station redevelopment allows the station to adapt to changing operational needs, provide increased capacity[1], and subsequently, allow expansion of the rail network.

Improvement of Facilities and Services

- *Comfort, safety, and security.* Some stations may have been designed and constructed at a time when the types of facilities and services expected and passenger mix were different, and safety and security standards were lower. Redevelopment can make the station a more comfortable and safe space for all[2], thus attracting more passengers.
- *Commercial development*[3]. The number of people using a station creates a high potential customer base for retail and commercial businesses. Although many existing stations do not include retail spaces, if designed well, these spaces can become a good alternate revenue source for railway companies. The community also benefits from the availability of retail and commercial businesses that may make the station a "destination" even for those not traveling by rail.

Box 1.1. Estação da Luz, Sao Paulo

Photo Source: Wikimedia, Thipotato. Own work, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=51966953

The Estação da Luz is an iconic railway station in the district of Luz in Sao Paulo, Brazil. Historically, the station played a significant role in the transportation of coffee and served as one of the primary gateways for immigrants arriving in Brazil. Currently, the station is a transportation hub that links to Sao Paulo's extensive commuter train network and two metro lines. However, as the station's function evolved, many parts of the historical main station building were no longer needed for railway operations. These sections of the historic station building were converted into the Museum of the Portuguese Language. This move transformed the station from solely being a transportation hub to becoming a prominent tourist destination (Museu da Língua Portuguesa 2023; Lonely Planet).

[1] A better-designed station may be able to provide more capacity in less space; for example, by providing more through platforms instead of terminal platforms, or by using multiple levels for facilities and/or platforms.
[2] Including elderly people, people with strollers, pregnant women, and children, in addition to people with disabilities.
[3] Some state-owned rail agencies may not be permitted by their governments to carry out "non-rail" investments and activities such as retail and real estate. In those cases, the government needs to revise the regulation and statute of the railway agency.

City and Area Development

- *Area development.* A station redevelopment project can become the anchor and driver of urban development in the surrounding neighborhood. With an improved station and transit network, real estate developers see value in building residential, retail, and office spaces, as it will offer residents and employees a more convenient means of travel.
- *Icon of a city.* Often, a station can be the face, symbol, and identity of the city. The design of the station can express the character and personality of a city, attracting visitors and becoming a landmark building.

Station redevelopment projects may have further impacts such as increasing the use of public transport; improving accessibility to jobs, education, and public services; and urban and community development in the station precinct. All these external benefits can lead to economic growth and job creation through enhanced economic activities, such that station redevelopment can ultimately benefit the railway, users, and the city.

Railways that have not yet implemented redevelopment projects are encouraged to carry out studies of their railway networks and identify stations that have redevelopment potential.

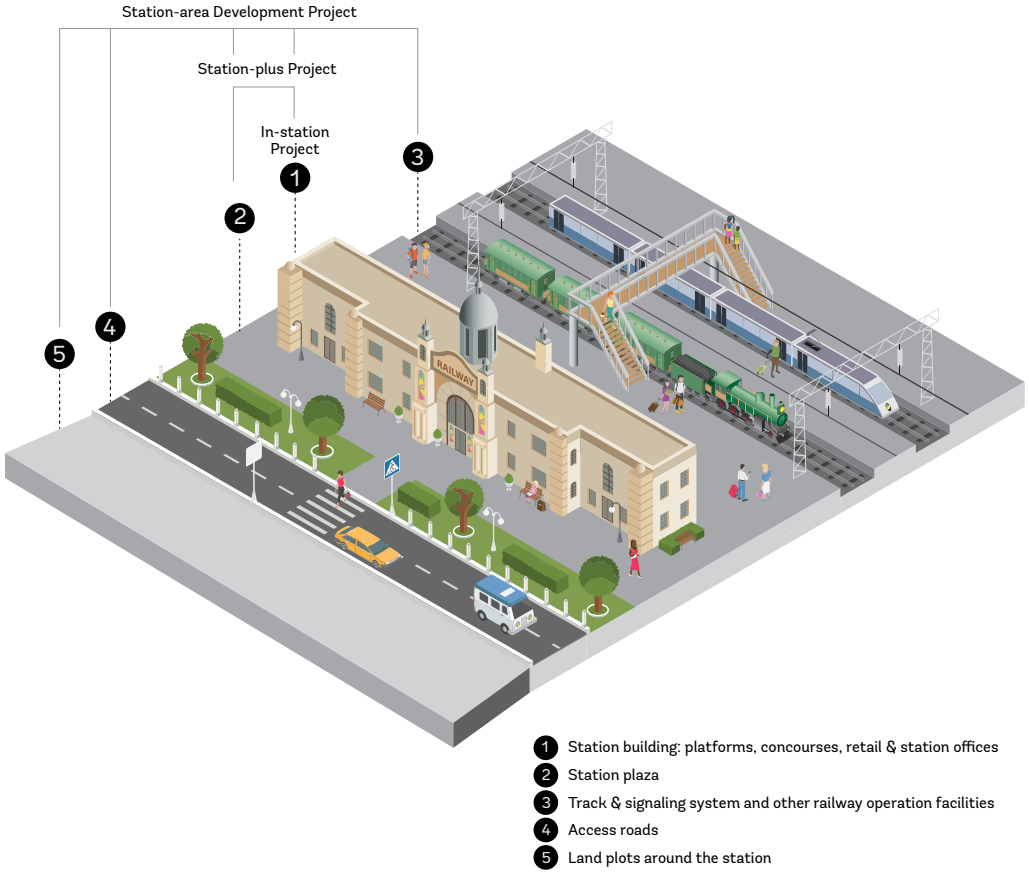
Station Redevelopment Project Types

Station redevelopment projects can be broadly categorized into the following three types according to their scope:

- *In-station projects:* These involve redevelopment that takes place within the existing station land, and often, to or within the existing railway station building. They increase the physical capacity and operational efficiency of the station[4]. In-station redevelopment can also upgrade facilities to be more secure and comfortable for travelers and add retail and commercial space. Examples include Antwerp Central Station, Gare du Nord in Paris, and Roma Termini in Rome.
- *Station-plus projects:* These involve renovation work on the station land plot (including the station building), and on the land surrounding the railway station for the purpose of incorporating more non-rail space and improving transport infrastructure and railway station access. An example is Avenida de América in Madrid.
- *Station-area development projects:* These involve the comprehensive redevelopment of both the station land plot and its surrounding area/neighborhood. These projects are often carried out to revitalize the neighborhood surrounding the railway station. An example is Kuala Lumpur Sentral Station, Malaysia.

[4] There are two elements of capacity: (i) capacity for train operation to be determined by the train frequency and the length of train; and (ii) capacity for passengers' movement/flows/circulation within the station.

Figure 1.2. Station Redevelopment Project Types



Source: World Bank.

Challenges Facing Station Redevelopment Projects

Like any large-scale complex infrastructure project, station redevelopment comes with a variety of challenges. These include railway-specific issues such as conflicts between rail and non-rail operations during and after the construction period, and the problem of relocating existing rail facilities. PPPs are often selected as the delivery mode, which introduces additional complexity. Challenges that typically arise in station redevelopment projects include:

- *Optimizing scope.* Choosing an in-station, station-plus, or station-area development project involves complex trade-offs among objectives.
- *High cost.* Redevelopment projects require substantial amounts of funding, often more than public funds alone can provide.
- *Long timeframe.* The long time from station project conception to completion poses a serious challenge for sustaining political commitment over a long period, securing long-term financing (for example, equity and debt), and adjusting to changes in the project environment. While construction typically spans four to six years, projects with a significant real estate development component may take much longer. For example, 10 years passed between the start of planning and start of construction in Denver.
- *Diverse expertise.* Station redevelopment projects may require technical expertise in many different fields, from engineering a rail interchange facility to commercial real estate development.

- *Operating conflicts.* Conflicts arise between railway and non-railway operations that need to be resolved or at least minimized. This is particularly challenging during the redevelopment phase when the station's activities are reconciled with construction.
- *Facility relocations.* Railway operators may consider relocating some functions and facilities (for example, marshalling yards, rolling stock maintenance) to maximize the use of land suitable for commercial/retail activities[5].
- *Complex institutional arrangements.* Station development projects involve multiple stakeholders. The railway needs to establish an organization to manage its station redevelopment business line. Arrangements must be made with local governments and agencies responsible for urban development and land use, non-rail transport operators and road agencies, and civil society organizations. Decision-makers must determine who will operate and maintain the redeveloped facilities, which consists not only of the station building but may also include railway facilities, retail areas and related amenities, and station offices.

While these challenges are present in both developed and developing countries, they may be particularly complicated in developing countries. First, developing countries often have difficulty raising funds; governments and railways are constrained by tight fiscal conditions, and the availability of equity and long-term debt are typically limited. Second, relevant expertise may be scarce, especially for structuring PPP transactions because of inadequate experience in both the public and private sectors. For this reason, railways in developing countries with limited experiences could start with a relatively simple station redevelopment project in terms of scope, transaction structure, and the number of stakeholders involved. International Development Finance Institutions (IDFIs) such as the World Bank and the International Finance Corporation (IFC) can play important roles as providers of long-term funds, knowledge, and technical assistance on PPPs.

In addition, informality in many developing countries is a key challenge in carrying out a large-scale infrastructure project like station redevelopment. Among others, informal use of railway properties can become a major problem, which should be resolved before construction starts. Unclear land ownership in the absence of a well-functioning cadaster and vague regulations on land transactions and disputes are major obstacles for securing the plots required for the project. Furthermore, a significant share of feeder transport services are provided by small-scale, informal operators in developing countries. In the absence of a well-integrated station plaza accommodating their services, they often park on busy streets, causing congestion and traffic accidents. Rearranging these informal transport operators adds another layer of challenge since they are often connected to influential people.

Case Studies Selected

The findings and recommendations of this report are prepared based on the analysis of several station redevelopment projects worldwide, including some projects known as global best practices. The reviewed cases primarily analyze secondary information and data collected through literature review and internet search. Interviews with project owners and their stakeholders were conducted virtually and/or face–to-face to deepen the understanding on each case. Field visits and interviews

[5] In determining whether or not to transfer railway facilities, railway operators need to carefully consider the cost-benefit analysis of such a transfer, comparing the revenues to be generated from the planned retail activities to the incremental operational costs, such as the expense incurred by increased empty stock movements to the stabling siding.

were conducted for all cases. These findings were analyzed to create the typical project development cycle for the station redevelopment project from preparation, planning, implementation to O&M. The study assessed critical issues that may arise at each stage, focusing on the PPP process at the project preparation and implementation stages.

The cases were selected to encompass a variety of project types and circumstances, considering their objectives and benefits, scopes, delivery methods (such as concession, joint venture, in-house), geographical location, and information availability. Except for KL Sentral Station in Kuala Lumpur, the stations reviewed are in developed countries, which have longer experience with station redevelopment. The selected cases give a comprehensive picture of the preparation and planning needed before undertaking a station redevelopment project. Relevant insights from other station redevelopment projects are incorporated as well. Key features of the cases are summarized in table 1.1.

Southern Cross Station redevelopment in Melbourne, Australia, is an example of a station-area project where the station redevelopment served as a gateway to and anchor for the revitalization of neighboring distressed industrial areas. The institutional arrangement was deliberately designed to implement this complex project effectively. A dedicated public authority was established for the oversight and management of the private concessionaire's work to redevelop the station, while policy and programmatic work remained under the jurisdiction of the state Government. The case also highlights challenges such as allowing for probable future expansion, ensuring that redevelopment work did not interfere with ongoing railway operations, and working within a tight construction schedule to complete the project before the upcoming Commonwealth Games. The private developer's inability to meet the original completion deadline and the station apparently already reaching the 2050 projected demand levels - almost 30 years early - illustrate the challenges of station redevelopment projects. The case study also details the establishment of the Southern Cross Station Authority (SCSA) to oversee the redevelopment of the station, and the structure of the PPP that was established.

Avenida de América, Madrid, Spain, is an example of how station redevelopment can improve regional intermodality and transit use, while decreasing congestion and pollution in the city center. Although Avenida de América is more of a transport interchange station, it was included in this report to highlight that when redeveloping railway stations, authorities can also use the opportunity to encourage intermodality. This approach can ultimately increase the overall use of public transit, including railways in the area. This case also dives into the details of the concession contract and bidding process used to involve the private sector in the redevelopment of the station.

Italy's program of railway station redevelopment is notable for its model of PPPs. The case study focuses on its unique joint venture structure for implementing the projects. The study also outlines measures taken for historic preservation, and how these were balanced with changes to increase the commercial value of the building space.

KL Sentral Station in Kuala Lumpur, Malaysia, showcases another model in which a fiscally constrained railway operator can redevelop its stations with available assets while allowing private entities to take risks and develop commercial and residential properties to become an urban core. Real estate development, however, is a risky business, and the redevelopment's history with challenging market conditions and success to date highlights the importance of using appropriate mechanisms to ensure project success and to share fairly the benefits across parties.

Figure 1.3. JR Osaki Station Shonan-Shinjuku Line Platform

Source: Adobe Stock.

Tokyo Station in Tokyo, Japan, has long been considered the international gateway to Japan. By viewing railway terminals as a destination rather than merely an intermodal transfer facility, Japan Railways East (JR East) profits from the extensive consumer services provided within the station building. Furthermore, the historic station façade was renovated through a funding scheme where the unused floor area ratio (FAR)[6], as set forth by the local planning regulations, was sold and transferred to developers, enabling them to construct larger buildings in the station's surrounding areas. Implemented in close coordination with other public and private infrastructure investments, this case demonstrates the potential value that can be derived from railway stations.

The redevelopment of **Denver Union Station (DUS)** and its associated facilities highlights the importance of having a master station developer that oversees the entire development, as it enables communication with all the different public and private stakeholders involved in the project. This project is another example of renovating a historic building.

The **San Francisco BART** case illustrates the urban development aspect of station redevelopment. This case highlights how land parcels surrounding the railway stations can be redeveloped to generate funds for station redevelopment and enhancement, increase overall real estate value, and spur urban development. It also underlines the importance of having relevant institutional expertise, including in real estate development and stakeholder consultations.

[6] In local planning, the zoning code of a specific site defines, among others, its land use and FAR. FAR (also referred to as floor space ratio or floor space index) is the ratio of a building's total area to the size of the land on which it built. The greater the FAR, the higher the density. JR East raised funds for the station renovation by selling the unused FAR of Tokyo Station to developers that wished to construct buildings surrounding the station, enabling them to construct buildings with higher FAR than otherwise would have been allowed.

Table 1.1. Case Study Features

	Station	Activities			
		Capacity increase & connectivity	Commercial Development	Preserve historic assets	Urban real estate development
Italy	Multiple		✓	✓	
Madrid	Avenida de Americas[4]	✓	✓		
Denver	Denver Union Station	✓	✓	✓	✓
San Francisco	Multiple	✓			✓
Melbourne	Southern Cross Station	✓	✓		✓
Kuala Lumpur	Kuala Lumpur Sentral	✓	✓		✓
Tokyo	Tokyo	✓	✓	✓	✓

Table 1.1. Case Study Features (Cont.)

	Project type & Components				Construction	
	Type	Station Building	Station Plaza & Other Components	Area Development	Cost (USD millions)	Institutional Arrangement
Italy	Station	✓			1,206[2]	Joint venture (60% FS, 40% private)
Madrid	Station+		✓		29.4	Government joint contract with a private consortium
Denver	Station Area	✓	✓	✓	480	Non-profit special purpose vehicle (SPV) established for station redevelopment; private consortium for real estate development
San Francisco	Station Area	✓	✓	✓	Not available	Land lease to private developers
Melbourne	Station Area	✓	✓	✓	309[7]	Development contract between the railway and private consortium
Kuala Lumpur	Station Area	✓	✓	✓	632	Consortium of public railway companies, public-linked, and private companies
Tokyo	Station Area	✓	✓	✓	1,652[8]	Carried out by the railway and its subsidiaries

Source: World Bank.

Notes:
[1] Grandi Stazioni for the 13 largest stations and Centrostazioni for 105 mid-sized and small stations.
[2] Total amount of Grandi Stazioni's equity, debt, and government budget allocation for the redevelopment of the 13 largest stations.
[3] For the 13 largest stations.
[4] Bus terminal project.
[5] Responsible for real estate development.
[6] For the MacArthur Area Development Project.
[7] Project value of the PPP project.
[8] Construction cost of Tokyo station excluding cost of expanding concourses and corridors plus cost of redeveloping the Yaesu entrance plaza.

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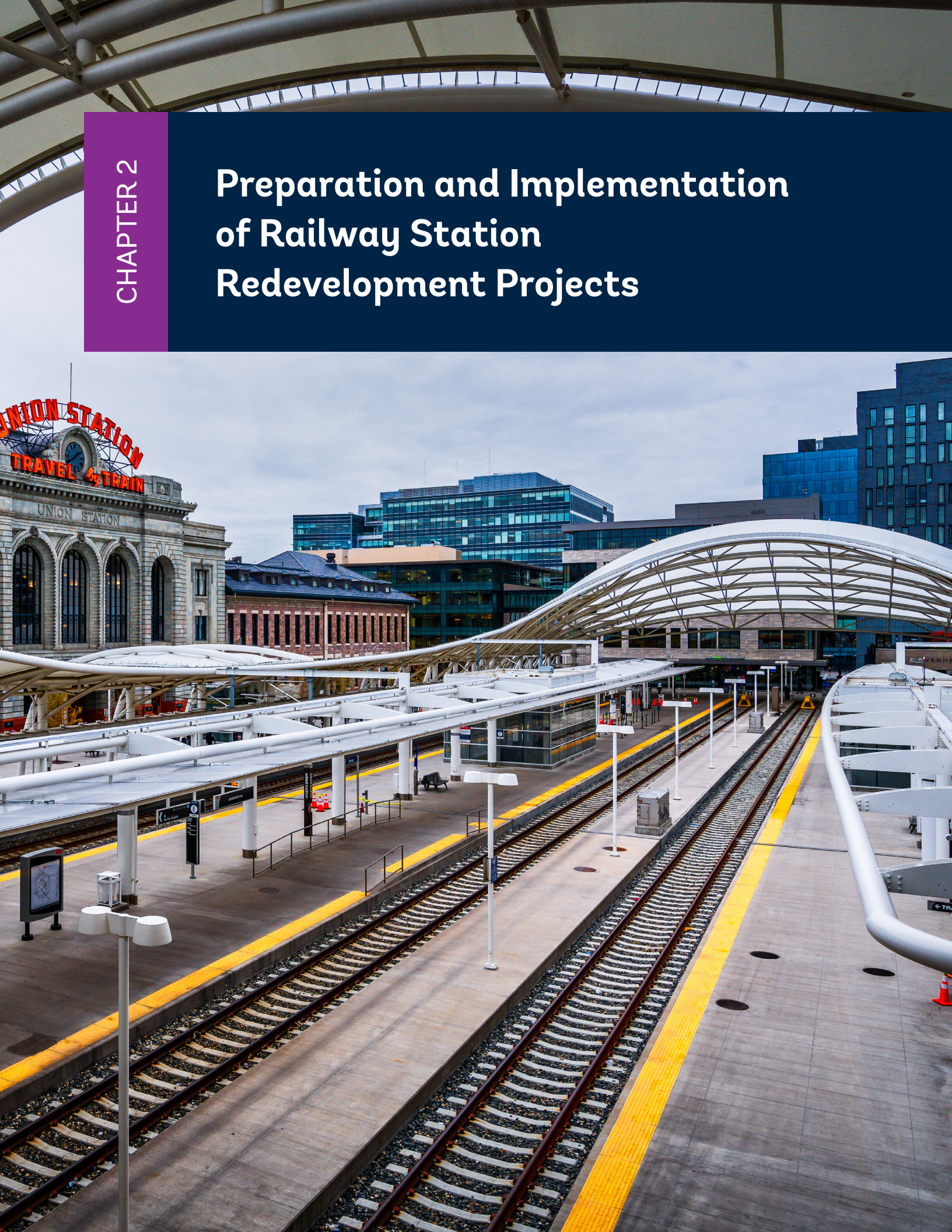
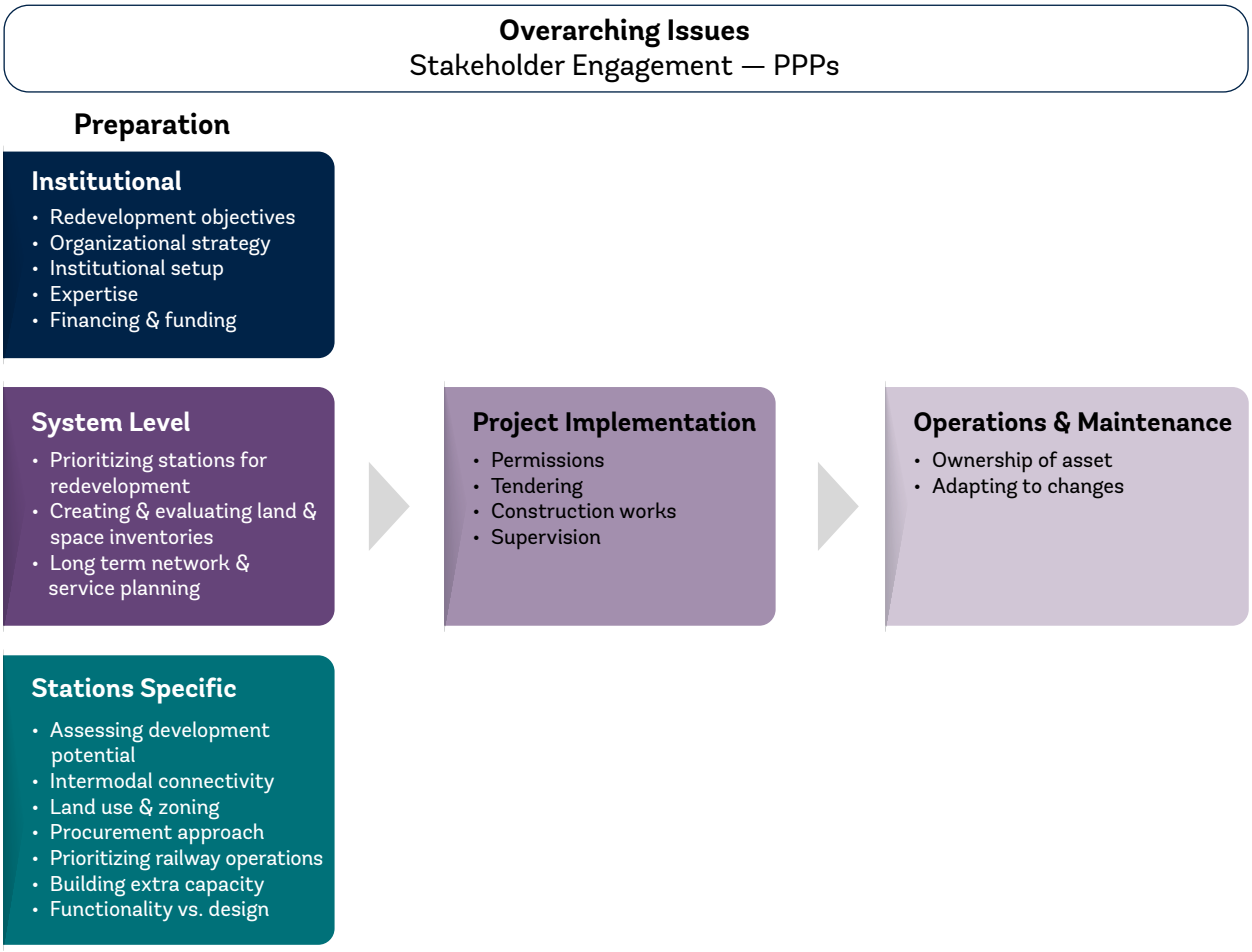
CHAPTER 2

Preparation and Implementation of Railway Station Redevelopment Projects



This chapter examines the issues the railway must take note of before implementing a station redevelopment project. These issues are organized under five topics and correspond to the project phases of preparation (institutional, system-level, and station-specific), project implementation, and project operations & maintenance (O&M) (Figure 2.1). Although this report presents the issues in a sequential fashion, they do not always occur sequentially. Some "later" topics may need to be implemented at an early stage and revisited later in greater detail and analysis. Ideally, the planning and analysis for all project phases should be considered before starting implementation, as a comprehensive understanding of all steps is crucial for a positive project outcome. The overarching issues—stakeholder engagement and public-private partnerships (PPP)—arise in all phases of the project. PPPs are addressed in Chapter 3.

Figure 2.1. Key Elements of Station Redevelopment Projects



Source: World Bank.

Institutional Preparation

Institutional preparation is vital before starting any station redevelopment project. This requires establishing the institution's objectives for station redevelopment and positioning it in the organization's organizational vision. The railway must consider how it wants to carry out the station redevelopment and the organizational structure needed to accomplish it. From that exercise, the railway can determine what skills it needs to develop and/or buy. It must also consider the financing and project implementation structure for carrying out the project. This institutional preparation should be done before considering the finer details of the actual redevelopment work.

Redevelopment Objectives

What is the purpose of station redevelopment? As the goals of the redevelopment affect the type of work required, railways need to decide on their objectives before plans are made. Redevelopment goals can range from simply wanting to address extra rail traffic and passenger demand to promoting development surrounding the station.

Railways may wish to use space in the redeveloped station to increase non-farebox revenue, which can be used to recover the costs of redevelopment as well as reduce the operating deficit of railway operations. This can, in turn, increase the railway's sustainability and lower the need for government subsidies. Commercial space can be added in the station redevelopment design. Most of the redeveloped stations studied in this report have added retail areas to varying degrees. The large Italian railway stations included retail spaces. Part of the revenue from these spaces go to the railway agencies and can be used for operating the railways. In Subcentro Las Condes, a metro station in Chile, the space between mezzanines is being repurposed for an additional 830 m^2 of retail space. In Avenida de América, the private consortium in charge of managing the transport interchange earns profits from the retail spaces, which can be used for the operation of the interchange.

> *Railways may wish to use space in the redeveloped station to increase non-farebox revenue, which can be used to recover the costs of redevelopment as well as reduce the operating deficit of railway operations.*

Improving intermodal connectivity is often an objective in station redevelopment. For example, at the Denver Union Station (DUS), in addition to redeveloping the station, the public transit infrastructure connecting to the station was also constructed. These include an underground bus terminal, and commuter and light rail facilities.

Often, commercial and office buildings are built around the redeveloped railway station to capitalize on the improved transit network. With Southern Cross Station, the redevelopment was seen as an anchor for the revitalization of the neighboring distressed industrial area. In KL Sentral, the parcels of land surrounding the Station (formerly a marshalling yard of a commuter line) were developed as a new Central Business District (CBD), with a mix of office, residential, and commercial buildings. This area, known as the KL Sentral CBD, has attracted many multinational corporations, and created substantial new value.

While railways require a corporate-level objective and goal for carrying out a redevelopment project or program, there might also be a need for separate station-specific redevelopment objectives. For example, the redevelopment of many of the larger stations in Italy, such as Roma Termini and Milano Centrale, was also meant to spur development and improve services in the entire neighborhood. In contrast, the smaller stations, such as in Bologna, serve the more "traditional" purpose of being a location where passengers board and exit trains.

Organizational Vision

Railways need to position the station redevelopment work within their organization's overall vision and strategy. This goes beyond simply asking whether the redevelopment is a "good idea." Rather it explains how the redevelopment projects are central to reaching the organization's goals. A good organizational vision will define this new business line, outline the objectives and approaches, and set up the necessary internal governance to oversee the project. This positioning ensures that projects

get the attention and resources needed and effectively guides downstream plans and actions. Corporate-level strategies also help to sort out conflicts and coordination issues between station and rail operation business lines.

A prime example is Japan Railways East's Station Renaissance program, started in 2000. The aim of the program was to redevelop stations "fit for the 21st century." In effect, JR East wanted to not only upgrade the functions of the stations as transport nodes, but also enhance their appeal and revenue through improved comfort and strengthen their function as service centers that address increasingly diverse customer expectations. This program was woven into JR East's corporate strategy, ensuring that the railway was committed to managing and resourcing the program to completion.

Another example is Amtrak's launch of the Terminal Development Initiative in 2014. Rather than simply undertaking redevelopment projects, the organization first identified and analyzed innovative concepts to use existing assets more effectively and drive core businesses. This included efforts to realize substantial infusions of private equity, identify new sources of revenue that could be reinvested into the system, demonstrate a more sophisticated acumen for business operations, and maximize the value of Amtrak's assets. By carrying out these studies at the organizational level, Amtrak ensured that its redevelopment works were not simply ad-hoc projects, but unified in purpose and with associated strategies to support them.

Institutional Set-up

A railway that is contemplating a station redevelopment project or program faces a classic "make or buy" decision (Figure 2.2). Should it develop an internal unit to carry out the work, go to the market and buy what it wants, or structure a joint venture to deliver the redevelopment? Some key considerations in determining the institutional arrangements are:

- *Project scope.* Does the project primarily involve rail facilities, or does it include a substantial amount of retail and/or real estate development/management?
- *Core competencies and business.* How does the project scope align with the railway's competencies and its business focus?
- *Program scope.* Is the redevelopment for one station or is it a program for all the stations in the railway's network?
- *Key stakeholders.* Does the project need the active participation of other key stakeholders to be successful?
- *Funding and financing.* Is the project manageable within the railway's existing financial structure or is alternative financing and funding required?
- *Control.* What decisions is the railway comfortable relinquishing to a partner or concessionaire and what does it need to retain?

These considerations may be balanced in different ways (Box 2.1). JR East decided to develop stations in-house, establishing over 100 subsidiaries in various sectors, including retail, hotels, and real estate. The strategy was adopted to increase the share of non-transportation revenue, thereby significantly reducing the dependence on farebox revenue. Italian Railways (Ferrovie dello Stato Italiane S.p.A. [FS]), embarking on a program to redevelop stations across its network, created two joint venture companies - Grandi Stazioni S.p.A. (GS) to redevelop large stations, and Centostazioni S.p.A. (CS) to redevelop smaller stations. It sold 40 percent of the equity shares of each company to private sector

companies. This allowed FS to maintain control of the managerial decisions of the special purpose vehicle (SPV) and bring its railway operations-related expertise to the redevelopment project, while benefiting from the private sector's knowledge, skills, and capital. In Denver, the responsibility for the redevelopment of the DUS was shared through a public sector partnership comprising several public authorities and a private-sector master developer. The public partnership focused on the financing and redevelopment of the immediate station area and transport infrastructure, while the private partner handled the development of the surrounding area.

Figure 2.2. Institutional Structure

Source: World Bank.

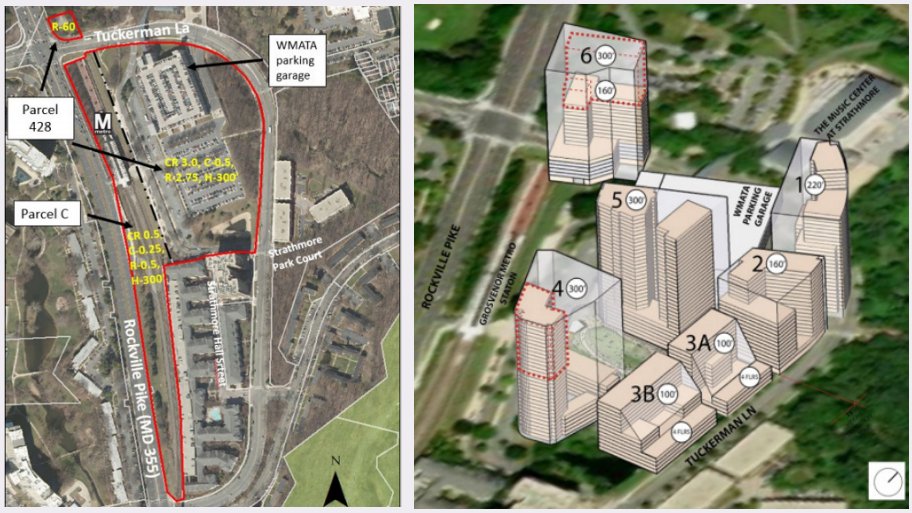
> *Railways should consider their development strategy before starting out on any station redevelopment project. Should they plan for redeveloping several railway stations simultaneously, or carry out on one project at a time?*

Once the institutional structure is decided, the railway needs to organize itself to manage its part of the redevelopment. For example, the Bay Area Rapid Transit (BART) agency in San Francisco has had the long-term goal of carrying out transit-oriented development[7] (TOD) on railway-owned land parcels surrounding the stations. BART realized that without in-house real estate knowledge, they could be exploited by savvy for-profit developers. Therefore, it developed an in-house professional planning and real estate development team, hiring planners and real estate experts from the public and private sectors, to benefit from their valuable expertise and industry knowledge.

[7] TOD is a type of urban design and development that maximizes the usage of residential, commercial, and public land spaces adjacent to a transit station. TOD typically consists of a transit station and a high-density mixed-use real estate development in the area surrounding it. The mixed-use development is located within walking distance of the station to promote accessibility to public transit and thus, increase its ridership.

Box 2.1. Joint Development Partnership for the Grosvenor-Strathmore Station

Figure B2.1.1. Grosvenor-Strathmore Square, Washington DC



Source: (Tettelbaum, et al., 2018), used with permission.

The Grosvenor-Strathmore station of the Washington (DC) Metro is an early suburban station that opened in 1984. The 14.7-acre (six-hectare) station site included extensive parking. The redevelopment project plans to convert six acres (2.4 hectares) of land used primarily for parking into a new mixed-use development that includes retail, more than 2000 residential units, and a park (Figure B2.1.1).

In 2012, the Washington Metropolitan Area Transportation Authority (WMATA) solicited proposals for a joint development partnership and selected Fivesquares Development in 2013. Project development proceeded for the next six years through various permitting and procurement stages. In June 2019, the local planning board approved the preliminary plan for the project. Development is expected to occur over a period of up to 15 years, though the exact timing and mix will depend on market factors. The expected capital investment over the 15-year period is USD 15 billion.

Strathmore Square illustrates the need to have an internal structure that supports timely and accurate decision-making. WMATA's structure made it extremely hard for its managers to respond promptly to requests. For example, the developer proposed creating a "pop up" market in the fall of 2017 to support a farmers' market and local vendors. Obtaining approval for the proposal was time consuming and many minor decisions, such as the right to move newspaper distribution boxes, required approval by the WMATA Board of Directors.

WMATA also encountered some challenges in determining what was possible without compromising current and future railroad operations. For example, its first solicitation outlined two development scenarios. However, a few weeks later, those were withdrawn as being infeasible because they would compromise railroad operations.

The length of project approval has also been an issue. The developer was chosen in 2013 and six years later, the project cleared approval for the preliminary plan. The pool of developers able to sustain a team and financial interest over such a long period is very small. The result is a discount on the value that WMATA can capture from its properties.

Source: (Tettelbaum, et al., 2018)

Expertise

The expertise needed for station redevelopment is tied to the objectives and type of station redevelopment. While a redevelopment project might simply involve expanding the capacity of the station, often commercial and retail, even office or residential areas are added either directly to the station or the surrounding area. A simple redevelopment might primarily need skills in railway engineering and operations, architecture and design, and construction procurement and management. A more complex project may also involve retail and/or real estate development and property management. All will require financial skills. The railway needs to ensure that it has the expertise needed to carry out the project, either with its own staff or through partners in the station redevelopment.

For example, when JR East created a long-term business strategy that called for developing and managing retail, real estate, and hotel business in its properties, it set up more than 100 subsidiaries specializing in these non-transport businesses. It recruited both recent graduates and experienced mid-career professionals to develop in-house capacity to manage these businesses. Now "retail and services" and "real-estate and hotel" constitute important business lines of JR East, together generating about 30 percent of its total revenues.

Often, railway do not have skills in retail property management or real estate development. Adding commercial spaces to a railway station requires planning rental space, developing branding strategies, acquiring the right tenant mix, negotiating transactions, and managing tenants. Developing real estate in or around the railway station requires: (i) knowledge of the local real estate market, planning regulations, and approval processes; (ii) ability to structure complex, multiparty transactions; (iii) experience in constructing complex buildings and infrastructure; and (iv) capacity to market and manage non-rail property.

Railways often obtain the required expertise by involving private sector players with retail or real estate development expertise. This type of experience and skillset can formally be a part of the PPP solicitation. For example, in the redevelopment projects in Madrid, Spain, the *Consorcio Regional de Transportes de Madrid's* (CRTM's) bidding documents stipulated that bidders had to include at least one regular passenger transport operator and one financial company, and these companies had to be reliable and in good standing. Contracts were awarded by giving more points to bids that contained these companies. Similarly, when selling shares of the GS, FS sought private shareholders that would bring the expertise and know-how of commercial operations and real estate to the project.

Railways also needs to develop enough in-house expertise to understand their PPP transactions. For example, as mentioned above, BART formed its own Real Estate department to ensure that the agency could negotiate with for-profit private developers. In contrast, CRTM, the regional transport authority of Madrid, does not have an internal department dedicated to overseeing the redevelopment of the interchange stations. Instead, it offered a tender for each redevelopment project, receiving proposals from interested private concessionaires. As such, CRTM specified its requirements and wrote a clear tender document, and the private concessionaires chosen brought their expertise and skills to design and construct the station.

Financing & Funding Scheme

Preparing for a station redevelopment project includes planning how to pay for the project. Based on the beneficiary-pays principle, railways should first recoup its investment, operation, and maintenance costs from user fares. However, as fares are usually regulated due to their

public nature (usually set lower than their full cost recovery to encourage public use and reduce environmental impact due to personal automobile use), they rarely allow railways to fully recover the capital investment and O&M costs. To address this deficit, governments typically provide capital and/or operational subsidies from their budget, based on the justification that railways provide broad economic and social benefits. However, tight fiscal conditions have caused governments/railways to look for alternative sources of financing and funding, such as adopting various PPP schemes and exploring diverse non-farebox revenue such as retail and real-estate development (Suzuki et al., 2015).

Railways needs to consider both how the project will earn money over time (funding) and how the earnings over time will leverage money up front to pay for the project (Box 2.2). Many projects involve some form of government grants. However, because adding retail spaces in stations and developing commercial real estate are usually profitable activities, the future revenue can be used to raise financing for the project. This may come in the form of private debt raised by the public railway, private debt and equity raised by a public-private joint venture company carrying out the project/program, or private debt and equity raised by a private partner in the redevelopment project. Some examples from the case studies, illustrate how governments/railways have mobilized financing and funding for their station redevelopment projects.

Box 2.2. Financing and Funding for Infrastructure Projects

"Financing" is defined as the source of money required up front to meet the costs of constructing infrastructure, such as a station building. Financing is usually sourced by:

- the government and/or implementing agency (for example, a railway agency) through surpluses
- the government and/or implementing agency borrowing
- the private sector mobilizing debts and equity finance from various lenders and investors (PPPs or other forms of private financing)

Sometimes, the government and/or implementing agency and private parties co-finance the project investment costs. Public financing sources include government-secured debts, railway debts, public or municipal debts, multinational development banks (MDBs), bilateral development institutions, and
tax-exemption.

"Funding" refers to the source of money required to meet payment obligations. In a PPP context, it refers to the source of money over the long term to pay the private partner for the investments, operating, and maintenance costs of the project. Regardless of the type of financing (public or private), the sources of funding are always the same. In the context of station redevelopment projects, the major sources of funding are government revenue (general taxes, intra-governmental transfers), user revenue (farebox revenue, parking revenue), commercial revenues (leasing of retail spaces, advertising, merchandising), and real estate development revenue (land sale and lease, property lease).

Source: Pulido et al., 2018.

JR East was able to raise 100 percent of funds for the **Tokyo Station** redevelopment by issuing debt instruments secured by its balance sheet and by selling unused FAR from Tokyo Station to private developers. It recovered its investment costs from a variety of funding sources including non-farebox revenue. Note that JR East generated JPY 515 billion (USD 4.7 billion) from retail services and JPY 340 billion (USD 3.1 billion) from real estate and hotel businesses, together accounting for over 30 percent of its total revenues in 2018.

The redevelopment of **Southern Cross Station** in Melbourne was financed entirely by equity and debt mobilized by a private concessionaire and under a PPP framework of design and build-operate-transfer (BOT) over a 30-year concession period. The state of Victoria made availability payments[8] to the concessionaire and gave it the rights to develop the land parcels surrounding the station in exchange for the lease fee payment.

The development of the land parcels surrounding **San Francisco BART** stations were undertaken by private developers that signed land lease contracts with BART. In general, the projects are financed by a complex mix of state incentive grants and developer private financing. BART provided the land parcels it owned, including large parking lots close to the stations. When possible, developers also acquired adjacent land from other public and private owners. State incentive grants were provided on the condition that the developers construct affordable housing and public amenities in the project area. The developers recovered their investment costs from the lease or sale of the developed properties. Lease fees paid by the developers provided BART with funds for the redevelopment and enhancement of its stations and station plazas. The projects were developed as a TOD project, called a "transit village," which capitalized on the land price premium of the parcels surrounding the stations.

For the **KL Sentral Station** redevelopment project, a land-swap deal was employed, wherein the ownership of the surrounding land was offered in exchange for the designing and building of the KL Sentral Station. An SPV, jointly owned by a private developer and a government-owned railway company, was set up to implement the project. The SPV mobilized the equity and the public loan from another state-owned railway company. It recovered its investment costs for both the station construction and the real estate development from the sale of the developed plots, which had been offered as part of the concession contract. Thanks to the large land value appreciation in the project area, the SPV not only fully recovered the investment costs but also earned a large profit. Although data are not available, the local government is likely to collect higher property tax revenues.

In **Madrid**, the private concessionaire was able to pay upfront for the redevelopment of the interchange stations by mobilizing equity and commercial bank loans. Now that the stations are operational, the CRTM gives a guaranteed minimum payment to the concessionaires based on the forecasted number of bus passengers. In addition, the concessionaires receive the interchange use fees paid by long-distance bus operators not managed by CRTM, lease fees of retail spaces, parking fees, and advertisement fees.

The national railway agency of **Italy** set up two joint venture companies, partly owned by private investors. The station redevelopment projects were financed by a mix of the equity of joint ventures' shareholders (national railway agency and private investors), a 15-year loan from the European Investment Bank, and the Government budget earmarked for large-scale infrastructure. Funding

[8] Availability payments are a payment mechanism in which the project owner pays a concessionaire for making a service available. In the case of a station redevelopment project, this means that the railway agency is paying the concessionaire for specific facilities such as station building and interchange being open to the passengers (Reddel, 2004).

sources for SPVs were the lease revenue from the retail spaces in the redeveloped station buildings and advertisement revenue. Besides delivering the station redevelopment construction, the SPVs were required to manage the station and pay 40 percent of the lease revenue of the retail space to the national agency.

The **DUS** redevelopment was entirely financed by public sources, and the real estate development surrounding the station was financed by a private master developer. The project owner, the City of Denver and the Regional Transport District (RTD), originally planned to float bonds secured by the city's various revenue sources. However, this plan was scrapped due to the effects of the financial crisis of 2008, but the project owner managed to secure a few federal economic stimulus loans and grants in addition to the State and Metropolitan District budget allocations. Future tax increment financing (TIF)[9] and Metropolitan District property tax revenue were pledged by the city to repay part of the federal loans. The private master developer completed the real estate development more than 10 years ahead of schedule, recouped investment, and earned significant profits.

System-level Planning

Long-term Network and Service Planning

As railway stations are not singular entities but part of an entire railway network, redeveloping a station will affect the network and service capacities of the railway system as whole. Network developments outside the station may also affect the station itself in terms of demand and centrality. Planning should be closely coordinated: station planning needs to be informed by the facilities' projected demand levels, and regional multimodal transport planning should, in turn, account for facilities' expected levels of service due to future capacity expansion.

Creating and Evaluating a Land and Space Inventory

National railways are often one of the largest landowners in a country, yet do not necessarily know what land or space they own. It will be helpful for railways to create a comprehensive inventory of land and space of not only unused land but also land that is currently used for rail or other purposes. Railways can then evaluate their inventory to: (i) investigate whether existing facilities are still useful or necessary, and (ii) consider options for shifting certain facilities in areas of high commercial potential to areas with less commercial potential. This can help identify land that can be better used through station redevelopment projects.

For example, to get the necessary prime space for passenger services and retail, JR East reallocated railway operation-related facilities in several railway stations. They also creatively made space by installing additional floors above railway tracks to be used for passenger services and retail activities. The Brickfields site in Kuala Lumpur, Malaysia, previously contained a railyard and other facilities owned by the national railways, and was considered a dirty and crime-infested place. With plans to develop a new railway station in the area, the Government also realized that it could relocate its facilities, and through station-plus redevelopment, transform Brickfields into a

[9] TIF is a public financing tool by which the local authorities issue bonds to finance major infrastructure development projects. The bonds are repaid using increased business and/or property tax revenues generated by the new or improved infrastructure services. TIF is a common public financing tool in the USA.

much more desirable commercial and residential district. BART made good use of the land assets surrounding its stations, monetizing them to generate funds for further station enhancement and redevelopment.

Prioritizing Stations for Redevelopment

If several stations across the railway network need redevelopment, railways must decide which stations should be redeveloped first. They should consider the following factors when making their decision:

i. *Urgency.* Station needs such as operational requirements, extra capacity to meet passenger volume demand, and general passenger and safety concerns, all call for urgent redevelopment.

ii. *Upcoming external projects or events.* External commitments can either increase redevelopment priority (for example, Melbourne's Southern Cross Station and the surrounding Docklands were redeveloped as part of the preparations for the 2006 Commonwealth Games, which also served as the deadline for station redevelopment work) or put it on hold to coordinate with other projects (for instance, a new rail line being added to the station or urban development).

iii. *Space or land availability.* If underutilized space or land is readily available, or space can be easily and quickly created, the station might be prioritized for redevelopment as the project can begin more quickly.

iv. *Linkage with railway modernization investments.* Station redevelopment can become more beneficial when carried out in combination with other railway modernization investments such as electrification, introduction of new rolling stock, and changes to track layouts.

v. *Cost and resource requirements.* Stations might be prioritized if cost and resource requirements, such as the necessary staff, institutional set up, permissions, and permits, can be quickly and easily addressed.

vi. *Historical or geographical value*[10]. Stations that hold more historical or geographical importance might be prioritized for redevelopment. For example, Roma Termini, Rome, was prioritized as it is one of the largest and most important stations in the entire network, situated in the center of the capital city of Italy.

The above factors and other characteristics can be used to categorically rank stations in terms of priority for redevelopment. For example, stations in Italy were given *platinum, gold, silver,* and *bronze* status based on an index calculated from the:

- number of passengers and visitors in the station per day
- number of trains serving the station per day
- size of the railway station
- the connectivity of the station in terms of the number of different modes in or near the station

[10] As the city and/or the national government benefits from the preservation and integration of historical buildings and sites in a station redevelopment project, railway agencies could negotiate cost sharing with them.

The resulting status dictated which station received both priority and money in the redevelopment process. The 3V framework (Salat and Ollivier, 2017) is a tool that can be used to analyze the TOD potential of stations by determining their node, place, and market value. The City of Denver has also performed a similar analysis in its TOD Strategic Plan of 2014 (Denver City Government, 2014).

Railway agencies might think that some stations are not worth redeveloping due to the lack of space to include anything extra, such as retail or commercial spaces. However, it is important to see the value in small spaces and make use of whatever space is available, whether within the station or in the surrounding area. This is especially important in countries where land is difficult to obtain, or for stations located in a crowded urban setting. The redevelopment of Roma Termini did not involve any space surrounding the station, but the railway agency was able to analyze the station itself and find spaces within the building that had been underutilized. Other operations could be moved around within the station to create larger pockets of continuous space for retail and commercial purposes. For example, the land used for railyards and rolling stock storage can be repurposed and added to the redevelopment work. A process known as "land readjustment" in Japan allows for land ownership to be reconfigured among current owners to make the parcels of land more useful (Minoru n.d.). This concept can be adopted by railway agencies to make better use of the land available for redevelopment.

Development Strategy

Railways should consider their development strategy before starting out on any station redevelopment project. Should they plan for redeveloping several railway stations simultaneously, or carry out one project at a time? There are many factors that contribute to this decision, including the redevelopment objective, resource availability, size of the network, regional coverage[11], and even who is taking charge of the redevelopment project. In Italy, the national railway set up two SPVs to redevelop portfolios of stations, and multiple stations were redeveloped simultaneously. In many other places, the cities were interested in redeveloping just one major station, such as the KL Sentral and the DUS.

Station-specific Planning

Weighing Development Potential

What type of redevelopment should be done for the station and the area surrounding the station? Spending money to create space for development pays off if the land or space has high development potential. The station itself can be redeveloped to include a large retail[12] area or improved as a transport node, as redevelopment offers a rare opportunity to improve the station's intermodal connectivity. However, this should only be done if the location and surrounding area support such development. Examples of stations with development potential:

[11] Regional coverage of the project may affect the station redevelopment strategies, as various levels of governments involved (regions/states/cities) have their respective governance regimes and funding sources.

[12] There are two types of retail: (i) that which is useful to rail passengers (food shops, pharmacy, travel goods shop, and rental car desks) and potentially increases travel demand by offering better services; and (ii) that which is intended to attract both rail and non-rail users (apparel shops and luxury goods shops). The railway agency should agree with private partners on the right balance of these two types, depending on the objectives of the station redevelopment project and available space. If the retail space is limited, the first type should be prioritized.

- JR East, Tokyo: The station plans to invest JPY 500 billion (USD 4.4 billion) in a new town of 13 hectares around the new Takanawa Gateway Station.
- KL Sentral Station, Kuala Lumpur: The 62 hectares around the station have, after economic challenges, been developed with commercial, retail, residential, and office spaces, creating a KL Sentral CBD that has led to increased traffic demand through the station and a thriving urban environment.

Real estate market conditions need to be considered. Not all land has high development potential, with some stations located in already congested areas where it is not feasible to clear land for new development. For example, the redevelopment of Roma Termini included adding many retail spaces to the station itself, but not to the surrounding area, as it was in an already congested city center. Other smaller stations in Italy, such as the Bologna station, did not include large retail developments within the station, as the redevelopers did not think it would be commercially viable based on the number of people using the station and the presence of many shops nearby.

Intermodal Connectivity

Improving the intermodal connectivity of a station can also be undertaken as part of a redevelopment project and provides many benefits. The overall public transport usage can rise due to better connections and services among the different modes of transportation. Increased passenger usage at stations raises the commercial potential of the station due to the higher station footfall. Railways should consider enhancing intermodal connectivity by adding features such as bus bays, bicycle stands, sidewalks, car sharing, or kiss-and-ride drop-off areas. Recognizing that much of the public transit in developing countries is informal, the design should accommodate these operators. The station access policy should prioritize pedestrian access and road safety around stations.

Ensuring that the station has good intermodal connectivity requires significant coordination with the local government, police, public transport operators, and community groups. In addition, the location of the station plays a key role in determining whether adding intermodal connectivity makes sense[13]. For example, the interchange stations in Madrid are located at the intersections of major highways and the entrance to the city center, where many buses and metro lines already intersect. The transport interchange stations were redeveloped to ensure that passengers could have easy, connected transfers between buses and metro lines.

Land Use and Zoning

When redeveloping a station, changes may need to be made to the location's zoning, depending on the localities' land use regulations. This factor comes into play even more if the redevelopment includes the surrounding land areas. Approvals for zoning changes can take time, and railways should initiate the approval process early to avoid delays. In addition, by involving the local authorities early in the planning process, there is a greater likelihood of successfully exploring other options such as getting bonus FAR or relaxing other regulations (such as the height or design of the redeveloped station) in exchange for the provision of open space or any other facilities that provide public benefits.

[13] In deciding whether to include intramodality improvements, considerations should include existing and future potential origin and destination flows in connection with railways and other modes, and access time and distance between rail and connecting modes.

For example, in Italy, zoning issues came into play as many of the original railway stations did not include retail shops, and adding these spaces technically changed the purpose of the station. Thus, the concessionaires needed to seek approval from the local government to change the zoning before they could continue with their redevelopment. Another approach includes negotiating with local governments to adapt a blanket land use regulation change, allowing all stations in a city to have at least a certain amount of retail. For the zoning of Milano Centrale, the city Government was concerned that adding retail space to the station would create competition with the existing retail surrounding the station, and thus negotiations between the concessionaire and the Government were necessary before zoning changes were approved.

Prioritizing Railway Operations

Station redevelopment projects often involve long-term concession contracts with private developers. The contract with Southern Cross Station was for 30 years from the commencement of operation, and 25 years for the station of Avenida de América. Contracts with private developers in Italy are for 40 years, and the management contract for KL Sentral Station, while signed separately from the original construction contract, was for 15 years. Air rights above the tracks of the Union Station in Washington DC are leased for 99 years. Railways will typically need to plan for future railway operations while these concession contracts are ongoing. Given these long-term commitments, it is important to ensure that the concession of land, floor, or air space does not inadvertently erect barriers to future railway operations.

Figure 2.3. Empty Floating Pods in Roma Tiburtina Station

Source: Alotemi, Wikimedia Commons.

It is also important to balance redevelopment construction with ongoing railway operations, as most stations will ideally remain operational during redevelopment. As such, railways need to evaluate operational disruptions based on the financial and economic impact (such as the financial effect of stopping some train services or of passengers spending more time traveling due to service disruptions) and determine how much disruption can occur. This should be communicated to the concessionaires to ensure the construction schedule is based on realistic estimates of its impact on railway operations. To minimize impacts, it is recommended that railway agencies develop contingency plans in case of substantial delays caused by unforeseen incidents. Some examples of how railways handled this issue include:

- In KL Sentral Station, developers carried out most of the construction work in the late evenings and early mornings (when the trains were not operating) and diverted the rail tracks one by one to their final locations so that operational interruptions were minimized.
- In Italy, before any redevelopment occurred, certain areas of a station were marked as vital to railway operations and could not be converted into another use. Developers could move operational infrastructure or offices out of other non-vital areas to make room for commercial activity.

In contrast, the combination of a tight deadline for station completion and the expectation that railway operations remain undisrupted during the Southern Cross Station redevelopment proved unreasonable for the contractor, resulting in delayed works and the contractor bringing its complaints to the media. The PPP terms had to be renegotiated due to these issues.

The allocation of station space between railway operations and non-rail space such as for retail shops should be balanced so that the railway can operate efficiently (including passenger movement) and the potential for commercial development can be maximized. When designing a station redevelopment plan, basic amenities such as waiting areas should be prioritized. Necessary facilities should be upgraded in size and quality to elevate the traveling experience, and similar considerations should be extended to commercial spaces as that can help attract more passengers and motivate them to spend more time inside the station.

Building in Extra Capacity

A station redevelopment project might result in potential demand increases over the entire railway network, or an increase in usage at the station itself. To ensure that the redevelopment will adequately address capacity, studies should address projected future demand. Railways can incorporate clauses in concession contracts to deal with future demand caused by changes in operating practices and future service requirements. For example, the contract for the redevelopment of the Southern Cross Station allowed for future capacity expansion due to planned network improvements, recognizing the need for contract renegotiation should exceed expectations.

Functionality versus Design

Iconic buildings can improve a city's image and become a public gathering spot where cultural and educational activities can enhance the city's vibrancy. Redeveloping stations provides the opportunity for the station building to be made beautiful and unique. However, railways should be careful to balance the desire for iconic design with station functionality. In deciding the scope and design of the iconic building, railways should decide on an acceptable cost for both the construction and the maintenance, based on the expected benefit of the project. The station is for passenger and consumer use, and railways must ensure that the station remains functional and that passengers are not inconvenienced by poor design.

An example of an attempt at this balancing act is the new Roma Tiburtina Station, Rome's second largest railway station after Roma Termini. It serves as a hub for high-speed rail, regional trains, metros, and buses. The new Roma Tiburtina station, completed in 2011, is a beautiful building with many new features and services for travelers. The architect designed "floating pods" suspended above the ground floor, which were supposed to be used as retail spaces (Figure 2.3). However, many have remained vacant since construction was completed in 2011 because retailers do not benefit from foot traffic, as travelers need to use an elevator or escalator to an upper level to access these areas. Instead, additional structures had to be built on the main floor to create retail space.

The World Trade Center station in New York City, designed by Santiago Calatrava, is another famous example. Costing USD 4.4 billion, it has become an iconic and easily recognizable building. However, although it was designed as a transit hub to connect the New York subway and PATH commuter rail, it is difficult to navigate, forcing passengers to walk through mazes of passages (Kimmelman, 2017). The large shopping mall contains many high-end and luxury shops and brands, leading some to critique that the space, while built with public money, is in fact not for the public and targets a specific group of wealthy customers. (Brake, 2016).

Ensuring Accessibility for All

Accessibility considerations are key to ensuring that railways provide a safe and welcoming environment for all customers. Poor design limits access for people with disabilities, the elderly, and many other groups, including foreigners, to employment, education, training, health, or social services (Snider and Takeda, 2008). Universal design is defined as "the design of products and environments to be usable by all people, to the greatest extent possible, without need for adaptation or specialized design. While the concept emerged primarily regarding disability issues, universal design strives to be a broad-spectrum solution that helps everyone, including elderly people, people with strollers, pregnant women, and children, in addition to people with disabilities. Its goal is to remove physical barriers and create a more inclusive environment" (Snider and Takeda, 2008). Railways need to adopt universal design in their infrastructure and rolling stock, including stations, station plazas, and railway cars, to ensure accessibility for all (Figure 2.4).

Figure 2.4. Examples of Universal Design in Rail Stations

Barrier Free Access to Tokaido Shinkansen at Tokyo Station
Photo Source: 電車(新幹線)でゴー, 2021, CC 4.0 license

A transit station design that reflects the seven principles of universal design in Ikebukuro Station, Japan
Photo Source: Dick Thomas Johnson, under CC 2.0

The American Public Transportation Association's (APTA's) Transit Universal Design Guidelines (APTA, 2020) introduces the seven most recognized universal design principles for transit:

i. equitable use

ii. flexibility in use

iii. simple and intuitive use

iv. perceptible information

v. tolerance for error

vi. low physical effort

vii. size and space for approach and use

When these principles are applied to transit stations, they extend and enhance the travel experience, making it more enjoyable, convenient, and accessible for all users. Railway stations and stops come in many shapes and sizes, depending on the mode, level of ridership, context, and age of the system. APTA's guidance lays out specific applications of universal design to different station types, including light rail transit (LRT), heavy rail, commuter rail, and bus transit centers (American Public Transportation Association, 2020).

Historic Preservation

Historic preservation of station buildings is an important issue that railways should consider when planning their station redevelopment work, and/or decide (often with the government) who oversees these decisions, especially in countries where railways have had a long-standing history and many of the buildings are historic. Keeping the original appearance and identity of the station can help passengers and local communities feel a sense of ownership or attachment to the station, which builds support for both the railways and the redevelopment of the station. However, improvements or additions may need to be made, such as streamlining passenger flow or increasing capacity, and adding safety features or commercial spaces.

Italy has clear laws concerning what buildings are considered historic and need to be preserved. Not only are certain buildings explicitly listed as being heritage sites, but all public buildings older than 70 years are automatically considered historic. As such, the Superintendencies for Historical Heritage, which are local or municipal government bodies, must be consulted before any redevelopment work can be carried out on historic buildings. The role of these Superintendencies is to ensure that the historic purpose and appearance of the station is preserved. Negotiations between the concessionaire and the Superintendencies can be a long process but having an open channel by which these discussions can take place is important for both the preservation and redevelopment of the station.

Historic preservation can occur in simple ways. In Milano Centrale Railway Station, the intent to preserve the original artwork and the need to improve passenger flow through the installation of an escalator were both met by moving some of the artwork onto a new glass panel of the escalator. This way, the art was preserved while still allowing for the floor to be cut so that an escalator could be built. While concessionaires might consider historic preservation to be an additional constraint, examples like these showcase how workable solutions can be found to retain the historic integrity and value of the stations for future generations.

Implementation

The implementation stage involves the entire process of physical redevelopment, including obtaining the necessary permits from relevant agencies, carrying out the tendering process, and overseeing and supervising the construction work of the station and related facilities (if applicable). Throughout this process, open communication between the railways and all parties involved, including governmental agencies, the concessionaire, and contractors, is key to successful project completion. For example, railway operators, concessionaires, and contractors need to agree on how to carry out construction on a working railway at a busy station. As this will affect the duration of the project and the construction costs, the agreement needs to be defined in the terms of the concessionary and construction contracts. Railways should also realize that although they made their plans before the implementation stage, they need to remain flexible to deal with any unforeseen circumstances. For example, the contractor in charge of the construction of the Southern Cross Station was unable to meet the original deadline for completion, resulting in the PPP contract terms being renegotiated during the construction process.

Operations and Maintenance

Station redevelopment does not end with a constructed building. Railways must develop post-completion O&M plans, including who owns the assets, responsibilities for operating and managing the station, and the rights and obligations related to any commercial activities engaged in relevant

facilities. Most of the case studies in this report involve contracts where the O&M of the redeveloped station is carried out by a concessionaire and agreed upon in a concession contract. The operations and maintenance issues of these contracts will be addressed in Chapter 3.

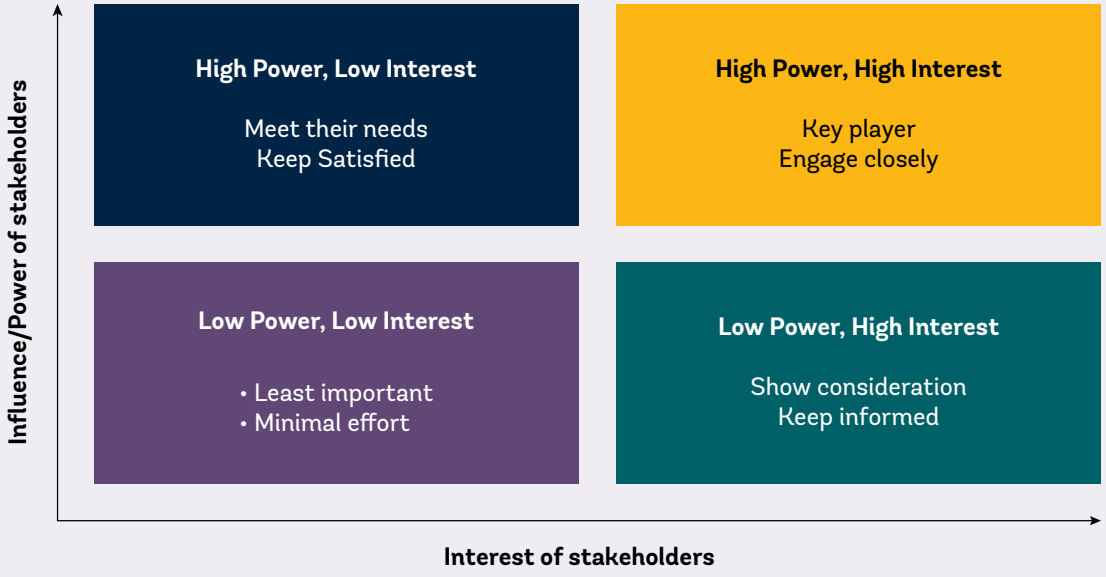
Stakeholder Engagement

Railway station redevelopments are large projects involving many different parties. On the government side alone, these can include agencies overseeing railways; other public transport; land use and zoning; historic preservation; and the local, city, and regional governments, among others. The concessionaire can consist of several different public and private parties, and during any construction project, there are many other contractors, workers, financiers, and groups that might need to be consulted. The current and future clients of railways, including rail and non-rail users, are important stakeholders as the project needs to be designed in response to their demands and needs. In addition, depending on the type of project and its diverse objectives, railways need to deal with a much wider range of stakeholders such as residents, businesses, and operators of other transport modes. It is recommended that the railway agency conduct a stakeholder mapping exercise early to identify important parties (Box 2.3). Citizen engagement through consultations and participatory design processes are key elements of an effective stakeholder engagement strategy.

Box 2.3. Stakeholder Mapping

Stakeholder mapping is a popular method of stakeholder analysis. In this exercise, the project owner, such as the railway, identifies project stakeholders (individuals or organizations) and then categorizes them to help guide the project owner's engagement strategy. For example, the project owner should typically put more effort into engaging with stakeholders in its high-interest/high-influence group than it with those in its low-interest/low-influence group. A power-interest matrix (Figure B2.3.1) can help project owners categorize project stakeholders based upon their levels of interest and influence (high/low), and then identify appropriate engagement strategies and tactics for each stakeholder.

Figure B2.3.1. Power-Interest Matrix of Stakeholders



Source: Adapted from Blomquist, Britney, 2020 and Serra, Carlos.

It is important to have a person or a group responsible for coordinating with project stakeholders. This might be the railway agency, a ministry in the government, or a group dedicated to the station redevelopment project. For example, the redevelopment of the DUS was overseen by the Union Station Neighborhood Company (USNC), a consortium of Continuum Partners and East-West Partners that acted as the master developer and had control over the real estate development project. The Southern Cross Station Authority (SCSA) was also a dedicated authority set up to oversee the redevelopment of the Southern Cross Station. In Madrid, the CRTM was created by the Madrid Regional Government as the public transport authority for the region of Madrid. It managed the entire public transport system, and together with the Government, initiated the interchange redevelopment work.

> *Accessibility considerations are key to ensuring that railways provide a safe and welcoming environment for all customers.*

Stakeholders can take actions to ensure that communication occurs in a timely manner. To coordinate discussions most effectively among multiple parties, Italy uses an institution called the Conferenza dei Servizi (CdS). Rather than talking to parties individually, and possibly having to renegotiate agreements between the parties one by one, all entities are convened simultaneously, allowing for multiple discussions to occur at the same time. This includes every party, both public authorities and private companies, from whom permissions are needed before the entire redevelopment project can be fully authorized. The Italian Government has found that the CdS reduces the time between the submission of the project and its final authorization, since all discussions can happen at once.

Summary

The key issues to be considered in station redevelopment projects include:

- *Institutional-level preparation.* Railways must first define the objectives of their station redevelopment project. Then they need to assess their state of preparedness to identify and develop implementation strategies. Steps include projecting future demand and operational requirements[14], understanding available resources and expertise, formulating financing strategies, and framing all considerations into an organizational strategy.
- *System-level planning.* Railways need to view their redevelopment project in the context of the entire railway system. Steps include understanding the network-level travel demand and how expanding the capacity of a station would impact the performance of the relevant public transport network. This allows railways to develop strategies to prioritize redeveloping certain stations over others to achieve corporate-wide and program-specific objectives. At this stage, railways need to also develop inventories of land and station spaces available for redevelopment.
- *Station-specific planning.* Every railway station is different, and railways need to plan for the redevelopment of the particular station. Steps include addressing station-specific issues such as the type of redevelopment (redevelopment of just the station building or the surrounding area

[14] Operational requirements are associated with many changes: demand changes; modernization of technology; and modernization of operations (including electrification, new rolling stock)

as well), understanding applicable land use and zoning regulations, and identifying available planning and financial policy instruments, procurement strategy, and any constraints and parameters for engaging in contractual relationships with third parties.

- *Implementation.* The implementation stage involves the entire redevelopment process, including obtaining the necessary project permissions, carrying out the tendering process, and overseeing and supervising construction work. Railways must bear in mind that though they have already made their plans, they need to remain flexible to deal with any unforeseen circumstances and have to revisit the planning stages or revise their previous decisions during implementation.
- *O&M.* Railways must consider and develop post-completion O&M plans, including the ownership of assets, responsibilities pertaining to operating and managing the station, and the rights and obligations (if any) of any commercial activities engaged in relevant facilities.

In addition to these plans and preparations, there are also broader issues that should be considered throughout the process. These include methods of communication, especially with key stakeholders, as they are vital for a project to run smoothly, historic preservation, and values of small places.

As mentioned earlier, it is important to remember that even though the steps are listed here in a sequential manner, redevelopment projects do not always occur linearly. There are times when later steps or actions taken will feed back to earlier steps, and thus earlier decisions might need to be reworked or renegotiated. While agencies are working on the redevelopment timeline, they must also be willing to be flexible with the actions that have been taken and the work being done. This is especially true when the parties must work together on a tight timeline.

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CHAPTER 3

Public Private Partnerships

Introduction

Railways in developing countries have traditionally provided their own rail stations, relying on the railway's revenues to fund redevelopment, operations, and maintenance. In recent decades, however, many railway ministries and railway agencies facing tight fiscal conditions have begun to explore new solutions.

The high footfall/traffic density in large stations is beginning to be recognized not only as a facility capacity challenge, but also a commercial opportunity to sell goods and services to rail passengers. This model has proven successful in airports, which have increasingly recognized passengers as sources of revenue beyond fees paid by airlines and have expanded food service and shopping opportunities. Such goods and services not only enhance the traveler's experience but also become a source of revenue for the terminal. They can be leveraged through lease revenue from retail tenants or wholesale tendering of the terminal floorspace not required for transport operations. In some cases, the transportation operator may be able to use the revenue from lease and concessions to fund station renewal and redevelopment.

> *When structuring a PPP, the railway needs to consider the length of time of the concession, the timeframe for completion, who oversees O&M after redevelopment, subsidies, availability payments or other incentives, and a clear delineation of the roles and responsibilities of each party.*

Similarly, proximity to rail transport brings value to the land surrounding rail stations. Railways and communities are increasingly seeking ways to capture that value and channel it to aid in the redevelopment of stations and community infrastructure as well as support the provision of rail and other public services. Sometimes, the railway can capture this value by developing its own land in the station area and leasing or selling it. Larger and more complex schemes that require agreement among the railway, local government, and community groups may involve the consolidation of land around stations for larger development. Other approaches leave the consolidation of property to private sector developers and capture the increase in land value from rail service proximity in the form of real estate taxes, which the local government can share with the railway to pay for redeveloped stations and rail services.

The skillset required for the successful management of retail space and other real estate development is different from running a rail operation. Thus, railways may want to consider new and different types of partnerships to maximize the value created by their stations and accelerate enhancements in the quality of goods and services available to their passengers and station users. These can be achieved through public-private partnerships (PPPs).

Beyond skills, access to capital may also be an issue. While PPPs are primarily project delivery mechanisms, they also leverage private capital. Station redevelopment projects are typically capital intensive but have the potential to obtain new sources of funding. Structuring them as PPPs helps harness that funding potential to gain financing for the project.

Implementing station redevelopment projects as PPPs bring additional challenges beyond the general challenges of station redevelopment projects discussed in Chapter 1. These include:

- The likely need for additional institutional arrangements such as setting up a new grantor institution and sorting out relationships among the railways, regulatory agencies, and other stakeholders.

- The determination of concession terms, not only in terms of duration but also the actions and responsibilities of the different parties involved. Time frames may be different for railway station operation/management and the leasing of commercial space. Concession terms also need to account for the life of commercial building/space as well as the major investment cycle of railway.
- The need for financial and legal skills to structure station development PPP transactions. The railway must determine the right balance between recruiting professionals with these skills in-house and hiring them externally. Railways should have competent advisors when designing and entering any complex transaction.[15]

Railways need to conduct thorough studies to determine many of these key details and should include industry consultations to gather feedback on these issues before finalizing the contract.

There is growing interest in PPPs for railway station redevelopment projects in developing countries. Some examples are listed below.

- Indian Railways recently launched its station redevelopment PPP program via a model commercial development concession contract of 45-year leases for station land and air space, and with a requirement to rebuild and maintain the station for 15 years.
- Sri Lanka Railways has engaged IFC in preparing a feasibility study for PPP redevelopment projects in a few main stations in Colombo, its capital city.
- Pakistan Railways has appointed a consultant to prepare a master plan that extracts value out of the available land adjacent to railway stations to renovate station buildings across the country.
- Nigerian Railway Corporation has engaged transaction advisers for its railway station, remodeling PPP projects for nine stations.
- Myanmar Railways has invited an expression of interest (EOI) twice for a comprehensive redevelopment of the Yangon Central Railways Station and its surroundings.
- Russian Rail has a project for the development of 600+ stations, exploring their commercial potential where appropriate.
- Kenya Railway Corporation is developing the Railway City project in Nairobi.
- The World Bank has supported urban rail PPPs in Brazil that included station redevelopment.

The case studies in the report are a rich resource of information about such PPPs. They examine a range of PPP structures (joint ventures, concession contract) and funding sources (commercial retail, real estate development, tax increment financing [TIF]). Table 3.1 summarizes the key PPP features of these case studies.

[15] For a broader discussion of these issues, see Rubin, 1990.

Table 3.1. Key Features of Case Study PPP Arrangements

	Station	Project Owner	Implementing Agency (if different than project owner)	Concessionaire	Institutional Arrangement
Italy	Multiple	Ferrovie dello Stato Italiane S.p.A.		Grandi Stazioni,[1] Centostazioni,	Joint venture (60% FS, 40% private)
Madrid	Avenida de Americas[4]	Madrid Regional Transport Authority		Private consortium	Government joint contract with private consortium
Denver	Denver Union Station	City of Denver, Regional Transport District	Denver Union Station Project Authority	Union Station Neighborhood Company	Non-profit SPV established for station redevelopment; private consortium for real estate development
San Francisco	Multiple	Bay Area Transit District		Private Developers	Land lease to private developers
Melbourne	Southern Cross Station	State of Victoria & City of Melbourne	Southern Cross Station Authority	Civic Nexus	Development contract between railway & private consortium
Kuala Lumpur	Kuala Lumpur Sentral	Government of Malaysia & Railway Companies		Kuala Lumpur Sentral Sdn Bhd	Consortium of public railway companies, public linked & private companies
Tokyo	Tokyo	JR East	JR East subsidiaries	None	Carried out by railway & its subsidiaries

Table 3.1. Key Features of Case Study PPP Arrangements (Cont.)

	Construction		PPP Arrangements		
	Cost (USD millions)	**Period**	**Contract Structure**	**Financing Source**	**Funding Sources**
Italy	1,206[2]	1999-2009[3]	Joint Venture	Mix of public & private	Commercial revenues & government budget
Madrid	29.4	1998-1999 (17 months)	Build-operate-transfer with minimum revenue guarantee	Private	Passenger/bus operator fees & commercial revenues
Denver	480	2011-2015	Design-build contract for construction; O&M contract with non-profit SPV	Mix of public & private	Real estate tax increment
San Francisco	Not Available	2011-2020[6]	Land lease	Mix of public & private	Lease fees & transit benefit fees from development
Melbourne	309[7]	2002-2006	Design-Build-Finance-Operate-Maintain concession with availability payment	Private	Government budget
Kuala Lumpur	632	1996-2000	National Government contract with project consortium	Mix of public & private: land swap, public loan, public & private equity	Lease & sale of developed real estate
Tokyo	1,652[8]	2004-2021[9]	NA	Mostly private; station plaza financed by JR East & MMG	Farebox revenue; commercial revenue

Source: World Bank.

Notes:
[1] Grandi Stazioni for the 13 largest stations and Centrostazioni for 105 mid-size and small stations
[2] Responsible for real estate development

Structuring Station Redevelopment PPPs

Fair Terms

Railways that choose to use PPPs to deliver their station redevelopment projects need to offer business terms that will attract competent concessionaire partners. These terms, including any risks taken on by either the public or private parties, should be laid out clearly in the contract. The transaction must contain acceptable levels of cost, revenue, and risk for private parties, including the ability for the private parties to earn returns commensurate with the risks they will take. Among other things, the railway needs to consider the length of time of the concession, the timeframe for completion[16], who oversees operations and maintenance (O&M) after redevelopment, subsidies, availability payments or other incentives, and a clear delineation of the roles and responsibilities of each party. A good contract is both clear in expectations, yet flexible enough to allow for unpredictable future changes (including those related to railway operations), especially if the risks of parameters assumed for the contract are considerable.

To attract responsible partners, railways must also create conditions where partners are confident of the railway's commitment to fulfilling their contractual responsibilities. The partners will question if the railway can make "credible commitments" on matters ranging from prompt institutional decision-making and bill payment to contributing funds and physical assets to a project. The already discussed case of the Strathmore Square Development by the Washington Metropolitan Area Transportation Authority (WMATA) in Washington D.C., illustrates the need for an internal structure that supports timely and accurate decision-making.

Aligning Interests

Station redevelopment projects are typically complex and involve a wide number of interests and stakeholders. Anticipating all the challenges and opportunities that arise in carrying out such a project is practically impossible, and the railway will want to avoid situations in which the private partner takes advantage of loopholes in the agreement or hold up the railway if unanticipated conditions arise. For example, if a railway's operational needs change in a way that alters its service to a station, will the partner attempt to exact penalties or will it cooperate with the railway to align station services and facilities with the altered service?

Where possible, railways should seek self-enforcing agreements, so the interests of both parties are aligned. For example, a railway might agree to share any net revenue from retail operations from a station redevelopment with its redevelopment partner. A shared stake in ongoing revenue or profit is a powerful incentive for both the railway and the station development partner to abide by their commitments. The case studies contain many examples of the ways such interests were aligned.

- Italian Railways created joint ventures between FS and external firms to develop the stations. This structure gave FS the ability to check any opportunistic behavior as well as a financial interest in the commercial success of the venture through shared profits.
- In the Southern Cross Station redevelopment project, the Government used availability payments to complete the project quickly and operate it to standard. The concessionaire

[16] Project completion time is one of the most important concessionary contract terms as it has a direct impact on fare-box revenue.

received no upfront payment; instead, it was paid quarterly availability payments upon commencement of station operation for capital investment, operation, and insurance. These payments are subject to abatement calculated based on key performance indicators (KPIs), which cover a range of performance categories. Thus, not maintaining the standards set by the railways could result in reduced revenue for the private concessionaire.

- Similarly, in the Avenida de América case, the redeveloper would not receive availability payments from the CRTM until the station was fully operational. It completed the construction ahead of schedule.
- In Denver, land rights were designed to align incentives between the railway's interest in a good station and the developer's interest in real estate development. At the start of the redevelopment project, the master developer only owned one piece of land, but had the option to acquire additional pieces for future developments at a fixed price. This gave the master developer an incentive to design a good railway station to raise the land value, so it could execute the option of buying higher value land at a lower price.
- In Kuala Lumpur, the land around the KL Sentral station was given to the developer for real estate development in exchange for redeveloping the railway station. This incentivized the developer to create a superior railway station to increase the land value surrounding the station, which it now owned. In addition, after construction, a lease for O&M of railways, as well as retail and commercial areas, was signed. One of the parties involved with the original developer, Malaysian Resources Corporation Berhad (MRCB), proposed overseeing the operation and management of the station. MRCB had strategic interests in the station, in terms of infrastructure and service quality as well as safety and security, to ensure the success of the development of the parcels of land surrounding the station, which they owned.

Often PPPs are structured to require the concessionaires to be responsible for O&M at least several years after reconstruction of the station. Not only does the concessionaire need a working knowledge and understanding of the redeveloped facility, but this also creates an incentive for quality construction (they are not allowed to quickly sell equity shares and exit before problems arise due to poor construction quality).

> *The railway must make sure that the rail service's operational needs are balanced with construction needs during the construction phase and with retail/commercial interests during the operational phase.*

Providing for Rail Operations

When structuring the PPP, the railway must make sure that the rail service's operational needs are balanced with construction needs during the construction phase and with retail/commercial interests during the operational phase[17]. Ideally, a redeveloped railway station would be designed, constructed, and operated with commuters' (present and future) needs in mind. Plans for network expansion should also be reflected in the PPP structure.

[17] Two different railway-specific needs should be considered: (i) operational needs from the perspective of railway operators, and (ii) needs from a railway customer perspective (facilities, passenger flow, ease of orientation, access time between platforms and station entrance) that can impact the generalized cost of travel and hence, demand. This is especially relevant for shorter distance rail trips, where station time can represent a high percentage of door-to-door travel time.

Even if a private party manages the retail operations, the government or railways might still want to have a say in the retail mix or advertising posted in the station, as this can reflect on the public transit agency and can help or hinder their efforts to attract passengers to the station. For example, the interchange stations in Madrid, the retail mix, and types of advertising must be approved by CRTM. A disadvantage of doing this is that it requires extra time and coordination. In contrast, the Italian system gives full management of the commercial strategy to Grandi Stazioni S.p.A. and Centostazioni S.p.A., and these strategies do not need to be submitted to the railway agency for approval before they are implemented.

Allocating Risk

The idea behind PPPs is that a government owner, like a railway[18], signs a long-term contract with a private concessionaire to deliver a facility and/or service at a fixed price. The PPP grants substantial autonomy to the concessionaire to manage delivery within performance standards specified in the contract. The concessionaire typically takes on several risks such as design, construction cost and schedule, financing, and operations and/or maintenance, while the government owner typically retains risks such as force majeure, changes in exchange rates, and changes in law, which are beyond the control of the concessionaire. By allocating risk to the party most capable of managing it, the PPP structure will produce the best value for the stakeholders.

> *The railway will want to avoid situations in which the private partner takes advantage of loopholes in the agreement or holds up the railway if unanticipated conditions arise. For example, if a railway's operational needs change in a way that alters its service to a station, will the partner attempt to exact penalties or will it cooperate with the railway to align station services and facilities with the altered service?*

Many resources are available on risks to assess in various types of PPP. For example, the Global Infrastructure Hub provides risk matrices for various kinds of rail and transport PPPs (Global Infrastructure Hub n.d.). Table 3.2 describes risks that are particular to station redevelopment projects.

Figure 3.1. People Waiting to Board the Train on the main Platform of the Retiro station in Buenos Aires

Source: Adobe Stock.

[18] In most cases, railway agencies sign the PPP contract as a project owner. However, the national government may sign the contact if non-rail objectives are a major part of it and the government provides funds for initiatives such as redeveloping the station as an "Icon of a City."

Table 3.2. Risks Particular to Station Redevelopment Projects

Risk Description	Public	Private	Shared
Heritage Buildings The historical nature of many station buildings means that renovations must preserve the historic purpose and façade of the building and local historical review boards must be consulted and approval obtained before construction. The public party should reflect the historical nature of the station in the tender documents. However, the responsibility of consulting with the historical review board and addressing their concerns is typically the private sector's.		✓	
Providing for Rail Operations during Construction Most stations to be redeveloped are operating stations. While reconstruction is occurring, passengers must either: (i) be able to use the station; or (ii) have access to an alternative service. If an alternative service is provided, the risk of managing the service and of loss of passenger patronage is usually borne by the public sector. If the station continues to operate, the risk is shared. The public sector must provide transport services in physically-constrained circumstances. The private party must manage construction with limited access to the site and ensure the safety of passengers moving through the site.	✓		
Coordination among Many Stakeholders Station redevelopment projects—especially those that involve real estate development outside the station precinct—require coordination with multiple stakeholders, including urban planning authorities, land use authorities, and authorities in charge of transport funding and regulation (often at multiple jurisdictional levels) plus rail users and neighbors. At the project concept stage, consultations may be handled by the public authority. At the implementation stage, this may be handed off to a station development authority (as in the cases of Denver and Melbourne) or to the private developer.			✓
Change of Rail Operation Needs during the Concession Occasionally, with station redevelopment projects, the space needed for railway operations changes (for example, to expand service or add a connection). The private party has no control over these changes and cannot be expected to bear this risk. If changes are anticipated, such as a potential new airport link, providing for these changes (Melbourne) can be structured into the tender and managed as a design risk.	✓		

Source: World Bank.

Scoring to Balance Criteria

The points awarded for each bid can also play a part in ensuring that the project meets railway agencies' requirements. Preference should be given to bids that tie into the needs of the railway agency. For example, CRTM in Madrid wanted the redevelopment of Avenida de América to be completed and the station fully operational within two years of signing the contract. Thus, it gave preference to bids that included construction terms of less than 22 months. Another typical evaluation criterion is the amount of available payment or subsidies given by the government. The government would want to award more points to a lower payment; however, this needs to be evaluated together with other aspects of the bid. Paying less in subsidies in exchange for a poorly designed or constructed station will not further the goals of the railway agency.

Return Conditions

Railway agencies also need to ensure that the station is properly maintained and returned in good condition. This is especially important as the concession is ending, as there is less incentive for redevelopers to manage the station well. The Comprehensive Development Agreement of the Southern Cross Station project sets forth a series of KPIs that are used to monitor the performance of the O&M. Not meeting the requirements would result in abatement of the availability payments. However, rigor of the KPI requirements for this project has been debated since some of the critical components are qualitative, making it difficult to enforce service quality standards on the concessionaire. With Avenida de América and the other interchange stations in Madrid, the contract explicitly states that the terminal must be returned in good condition at the end of the concession period. In addition, the concessionaire is required to carry out technological improvements[19] (such as adding Wi-Fi) to the terminal, thus ensuring that it is modern and up to date.

Additional Resources

While potentially advantageous, PPPs are often quite complex legally and institutionally. The government may need to take particular care to offer business terms that will attract competent concessionaire partners. The World Bank has devoted considerable resources to the development of toolkits for PPPs designed to assist client countries (PPP Knowledge Lab, Transportation PPP Toolkits).

The financing and funding schemes introduced through these case studies represent only a small part of a variety of PPP funding and financing schemes available. Railways interested in learning more about these schemes can refer various sources including:

- "Railway Reform: Toolkit for Improving Rail Sector Performance (English)." World Bank Group, 2017
- "The PPP Certification Program Guide." APMG International, 2016
- "The Urban Rail Development Handbook" Pulido et al., 2010
- "Financing Transit-Oriented Development with Land Values: Adapting Land Value Capture in Developing Countries." Suzuki et al., 2015

[19] Predicting all technical improvement over the 20 to 30-year span of the concession period is not possible. For this reason, higher-level performance metrics such as customer satisfaction (perhaps relative to other stations) and demand (also perhaps relative to other stations) may be better than trying to come up with an extremely detailed set of KPIs, which may still have gaps (especially years ahead) and be costly to monitor.

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CHAPTER 4

Southern Cross Station Redevelopment: Anchoring Urban Regeneration in Melbourne *by Nobuhiko Daito*

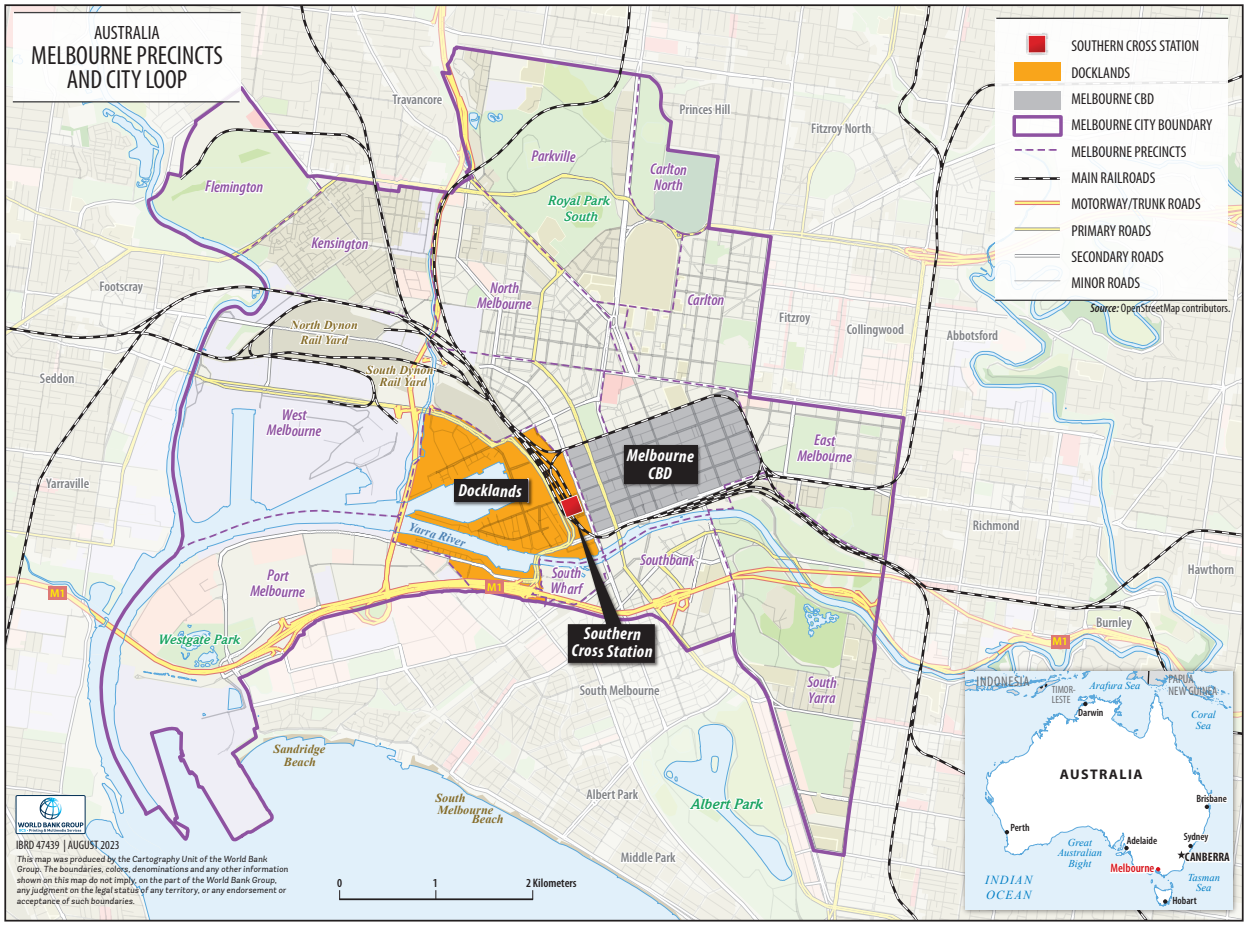
The State of Victoria and City of Melbourne used a PPP to redevelop the Southern Cross Station and the neighboring Docklands area. The PPP was used to finance the design, construction, operation, and maintenance of the station and retail areas. The redeveloped station became the gateway to a revitalized Docklands and anchored urban regeneration in the surrounding neighborhoods, while also serving as an icon of Melbourne during the 2006 Commonwealth Games. The station's unique architecture won many international awards. The redeveloped station's usage has grown significantly and spurred growth in Docklands, with a significant amount of private investment entering the region.

Introduction

Melbourne, the capital of the Australian State of Victoria, is the second largest city in the country. Being a financial center of the Oceania region, the city of Melbourne is rapidly growing, especially as its former inner-city port precinct of Docklands is emerging as a new business and residential center.

Melbourne has an extensive public transport system. Its tram network connects neighborhoods within the Central Business District (CBD) and with suburban communities, and the commuter rail connects suburban residents to the city. The city is connected to the rest of Victoria and Australia via intercity and interstate railways through its terminal, Southern Cross Station, a public transport hub where passengers can transfer between railways, trams, and buses.

Figure 4.1. Melbourne Precincts and City Loop



Source: World Bank.

Southern Cross Station is located at the west end of Melbourne's refer CBD (refer to Figure 4.1). Called Spencer Street Station until 2005, it long served as the gateway of the regional and interstate railway network of the city. In 2000, the State of Victoria projected that by 2050, the station would reach peak-hour passenger flow of 30,000. With the anticipated improvements to the region's public transport network, including the airport transit link and high-speed rail, the state had to begin planning for capacity expansion.

In addition to the station capacity expansion, there was also a desire to develop Docklands, the area west of the station. Located next to the city's CBD, Docklands was a thriving port until the early 20th century, when the predominance of containerization shifted the focus of industrial activities to the Port of Melbourne. The desire to regenerate the distressed Docklands evolved into a concrete vision when Melbourne submitted a bid for the 2006 Commonwealth Games. Victoria's Premier, Jeff Jennet, publicized a vision to revitalize Docklands, along with a proposal to redevelop Spencer Street Station as Southern Cross Station to anchor Docklands' redevelopment.

The entire vision was underpinned by private investments. For Docklands, the State would lay out a master plan to guide private investments, and the Spencer Street Station would be privately financed and operated. The project would employ innovative solutions to complete the complex project within a limited timeline. Today, Docklands is thriving as a new urban center.

The experience of the Southern Cross Station redevelopment presents a number of valuable insights to railways considering the redevelopment of stations, terminals, and intermodal transfer hubs. In particular, this redevelopment project is unique in its institutional set-up, as it established the Southern Cross Station Authority (SCSA) to oversee an extremely complex project. Its effective management of the private concessionaire through a key performance indicator (KPI) regime ensured the delivery of quality service to citizens. This case also highlights the importance of planning for unforeseen challenges such as substantial construction delays and finding the right solution from options that range from negotiated solutions to arbitration or termination.

Background

Spencer Street Station

Melbourne's CBD is characterized by its grid-like street network, with Spencer Street serving as its western end. Sitting across from the CBD, Spencer Street Station opened in 1859 to serve as a transition into the Docklands, which was part of the Port of Melbourne. The station initially only served freight trains.

Through the late 19th and into the 20th century, changes were made to the station to include operations of intercity rail, suburban services, and commuter rail, through the City Loop (Figures 4.1 and 4.2). Commuter rail services from the suburbs first enter the City Loop, make a stop at Spencer Street, and then terminate at Flinder Street (Holmes, 2016). By 2000, the Spencer Street Station had become a major hub connecting interstate, regional, and suburban railways, tramways, coach and bus services, and taxis. It was the gateway of Melbourne for interstate travelers as well as a transfer point for suburban commuters into the CBD, serving over 1,000 commuter and intercity trains per day. However, the State of Victoria projected that by 2050, the station would reach peak-hour passenger flow of 30,000, and with other upcoming planned public transport system improvements, the need to expand the station capacity was evident.

Redevelopment of Docklands

By the mid-19th century, Docklands had become an industrial neighborhood with the establishment of gas and railways facilities, and other small industries such as pottery and tanneries. The construction of the Victoria Dock completed in 1892, and until the late 1950s, it was a busy port handling around 90 percent of imports into Victoria. The emergence of containerized cargo, which requires very different infrastructure, shifted the center of activities as new docks and transporting facilities were built west of Victoria Dock in the 1970s. By the end of the 1970s, these new docks were handling over two-thirds of the port's cargo, and Docklands fell into disrepair and disuse through the 1980s.

In 1989, the Victoria Government proposed a strategic framework to revitalize Docklands and established the Docklands Task Force to develop a plan. In 1991, The Docklands Authority, which later became Development Victoria, was set up to oversee the initiative. The projects included waterfront development to extend the western edge of the Melbourne CBD and enhancing the connectivity of waterfront areas. The approach to the Docklands redevelopment project was for private developers to purchase development rights from Development Victoria, after which the State and the City of Melbourne would review and approve development applications according to the master plan. The 25-year plan was to respond to market demand through private development of individual parcels. Considering its vast area, this distributed approach appeared logical and less risky to the State of Victoria than other options. Government investments in the area to anchor redevelopment were expected to be sufficient to attract private developers.

> *In delivering a project of such magnitude and complexity, a PPP was considered suitable to transfer project risks where appropriate, and minimize long-term costs.*

The 2006 Commonwealth Games became a transformation catalyst for the distressed Docklands area and the Spencer Street Station, when plans for the proposed AUD2 billion (USD 1.09 billion in 2002) redevelopment were incorporated into the bid.

Public Private Partnerships in Victoria

The State of Victoria began aggressively privatizing government services in the 1990s. Starting with the Melbourne City Link, a toll road, and a tunnel network, the Infrastructure Investment Program for Victoria privatized economic and social infrastructure including wastewater treatment plants, prisons, and hospitals. In 2000, the privatization program was rebranded and Partnerships Victoria was established, with a focus on achieving value for money when evaluating PPP proposals. By 2018, Partnerships Victoria had contracted more than AUD30 billion (USD 22.4 billion) in infrastructure capital, with projects including wastewater plants, hospitals, academic and research institutions, prisons and correction facilities, and toll roads (State of Victoria, 2018). Southern Cross Station was one of the early PPPs under Partnerships Victoria.

The program has several notable features (Civic Nexus, PTV, and Dockland Authority, 2018). First, the State of Victoria does not have legislation pertaining to PPP contracts for infrastructure service provision; rather, the State of Victoria Treasury and Finance has a policy framework and guidance that dictates the use of PPP contracts. The authority to enter into a PPP contract rests with the service delivery ministries, which enter into contracts with government approval. Partnerships Victoria plays an advisory role to the ministries to ensure compliance as well as maintain standardized practices.

Second, Partnerships Victoria's PPP projects frequently include availability payment mechanisms. In availability payment PPPs, the Government makes periodic payments to private concessionaires, which is subject to abatement reflecting service performance. The mechanism effectively allocates the project's demand risk to the Government since the private partner can expect a steady revenue stream while undertaking design, construction, operation, maintenance, and other risks, as appropriate, to minimize the lifecycle costs of having the facility available for use. In this case, the Government would be concerned with risks pertaining to the economic returns associated with the project; as the Government's financial obligations related to the asset would be fixed, it would maximize economic return by promoting the use of the asset through policy and investment interventions. This mechanism can be effective, especially in cases where the financial viability of a project is perceived to be a challenge. A typical misperception is that PPPs are off-balance sheet and that governments can invest in economic infrastructure without adding to its debt. In reality, contractually obligated periodical payments are typically treated as debt on the balance sheet of the public agency and requires serious commitment for the debt and risks associated with the debt.

Third, PPPs are viewed as opportunities to introduce commercial development components to infrastructure projects to strengthen financial viability through additional revenue generation. Core public assets can become financially viable by tapping into the real estate development potential of the asset, and PPPs are a powerful mechanism to bring parties together and leverage urban redevelopment potential through private investment.

Southern Cross Station Redevelopment Project

Southern Cross Station Authority

It was clear from an early stage that the Southern Cross Station redevelopment project would be a complex undertaking. Commuter and intercity railways serving the station had been privatized under the previous administration, and services of over 1,000 trains per day would need to be maintained during the construction. Melbourne was scheduled to host the Commonwealth Games in 2006, and the project needed to be completed by then. It appeared appropriate to utilize the private sector's skills and experience to execute the project.

With the possibility that the project would be procured as a PPP transaction, the Government announced the intent to redevelop the station, and established a dedicated authority in charge of executing and managing the project in 2000. Spencer Street Station Authority (referred to here as the "Authority"; later as the SCSA) was set up as a special statutory board to represent the interests of the State of Victoria, Department of Transport, Department of Treasury and Finance, and Partnerships Victoria. The agency was governed by a four-member board appointed by the State of Victoria (US FTA, 2009). The Authority was the owner of the station, vested with the power to manage the precinct, including its redevelopment and related developments (SCSA and Civic Nexus, 2006).

Some of the complexity of the project was due to the involvement of different stakeholders in the station. The National Express Group Australia (NEGA), operated the rail services; Victoria Rail Track Corporation, a State-owned enterprise with an independent board reporting to the State of Victoria and its sole shareholder, owned the City Loop, telecommunications infrastructure, and telephone and radio communications equipment for the Emergency Train Control Room, among others.

It was a conscious decision of the government to establish an independent oversight authority rather than managing the project through a service delivery ministry, which in this case was Department of Transport. The advantages of establishing a project-specific authority include the ability to acquire and retain expertise dedicated for the project, and the flexibility to hire contract personnel since they are not as constrained as traditional government departments are with respect to employment conditions. More importantly, considering the size, complexity, and number of interfaces of the project, a separate authority could be the link between the Government, the operators, and the clients of the project (Civic Nexus, PTV, and Dockland Authority, 2018).

There are other ways that managing authorities can be set up to oversee station redevelopment projects. Box 4.1 describes the Union Station Redevelopment Corporation (USRC), a non-profit organization established to manage the redevelopment of the Union Station in Washington DC.

Figure 4.2. Empty Platform of the Southern Cross Train Station

Source: Adobe Stock.

Box 4.1. Union Station Redevelopment Corporation, Washington DC

Source: Adobe Stock.

The Washington Union Station, completed in 1908, served as a hub for intercity railways for many years. However, excessive demand, poor maintenance and the increasingly auto-centric focus of U.S. cities led to its deterioration post-World War II. Combined with insufficient funding for maintenance, the station fell to its lowest point in 1981 when the ceiling collapsed due to rain and a leaky roof.

Efforts to revamp the station coincided with broader urban regeneration trends in the city. The Congress passed the Union Station Redevelopment Act designating the Secretary of Transportation as the authority for rehabilitating the station in 1981 and establishing the Union Station Redevelopment Corporation (USRC) in 1983 to manage and implement the station redevelopment project.

Over the years, maintenance and improvements made to the station have led to higher ridership and total footfall. The Washington Union Station has become a multimodal hub for the regional transport network, and currently serves over 100,000 visitors using intercity railway, commuter rail, Metrorail and Metrobus, as well as intercity bus services. It also generates revenue through non-railway activities, as USRC grants a flow-through lease to Ashkenazy, a for-profit private real estate management firm that leases station spaces retail and commercial activities.

Recently, the USRC has been preparing the Washington Union Station Expansion project to accommodate the anticipated growth in railway demand, improve customer experience, preserve historic properties of the station, and address its safety, security, and accessibility needs. The Expansion project, as presented by FRA in 2020, includes "a new integrated single-level bus facility; underground pick-up, drop-off, and parking facilities; and new pedestrian and bicycle access along the west side, as well as new civic space." (Union Station Development Corporation, 2022).

Establishing a non-profit organization responsible for managing the station redevelopment project ensures coordination and pursuit of the various interests of parties affected by the project. Such an organization can be effective especially when a project faces a complex political environment. However, there is the risk that the project becomes politicized, which could result in a lengthy process to disentangle any conflicts among the various interests.

Project Procurement

Rationale for PPP

The objective of the Southern Cross Station redevelopment project was to establish the station as a gateway to the Docklands area and anchor urban regeneration in the surrounding neighborhoods, while positioning it as an icon of Melbourne in the 2006 Commonwealth Games. Significantly enhancing the public amenities and aesthetic quality of the station was, therefore, essential. Furthermore, as the population of Melbourne was projected to grow over the subsequent decades, making a cost-effective allowance for future expansion was also a project objective. In delivering a project of such magnitude and complexity, a PPP was considered suitable to transfer project risks where appropriate and minimize long-term costs to deliver Station-Infrastructure-as-a-Service. These risks included design and construction risks to meet operational requirements and the project delivery timeline, and operational and maintenance costs over the concession term, among others. Hence, the agreement with the private concessionaire would include mechanisms to incentivize the timely delivery of the redeveloped station and ensure accountability and transparency of the transaction to be executed in consultation with project stakeholders (SCSA and Civic Nexus, 2006) (Table 4.1).

Table 4.1. Southern Cross Station Project Timeline

Year	Southern Cross Station PPP
1989	Strategic framework of Docklands revitalization proposed
1991	The Docklands Authority (later Development Victoria) established
1992	Premier Kennet took office, beginning aggressive privatization policy
2000	- Intention to redevelop Spencer Street Station announced - SCSA established
2001	- Station planning study completed - SCSA solicited expressions of interest - Request for Proposals issued
2002	- SCSA announced Civic Nexus Pty Ltd. was selected as preferred bidder - Construction commenced
2003	Settlement deed agreed upon to address construction delays
2004	Construction delays continued
2006	Construction completion and commencement of operation

Source: World Bank.

Procurement Process

One of the first tasks of the SCSA was to evaluate alternative procurement models and develop a business case as to whether a PPP would be an appropriate approach (Victorian Auditor-General's Office, 2007). The Victoria Department of Infrastructure organized a team of in-house staff and external consultants with experience in PPP transactions in the UK and Australia. The team finalized the business case study report for the Government in June 2001, laying out station redevelopment

alternatives, expected costs and projected risks, financial evaluation, and cost benefit analysis. This study also analyzed the optimal allocation of key risks, and its commercial framework summary[20] assessed the Government's preferred risk allocation regime. Partnerships Victoria's Public Sector Comparator[21] was used as the basis for risk allocation, in consultation with the project team, Department of Infrastructure, and Department of Treasury and Finance. Risk allocation options were assessed to maximize value-for-money, which means, the allocation of particular risks was determined based on its expected costs to the State and the compensation the private concessionaire would require if it were to take it on. Following the completion of the business case study, the SCSA proceeded to issue a request for expressions of interest (RFEI) from potential bidders (US FTA, 2009). There was significant interest in the RFEI, and seven bidders were pre-qualified. A Request for Proposal (RFP), along with a project brief that detailed the design parameters and requirements for the station redevelopment project bids was released in October 2001. Three teams were selected and invited to submit proposals.

Architecture and Functional Requirement

In preparation for the 2006 Commonwealth Games, the redevelopment project was expected to transform the station into a city icon that would reflect Melbourne's status and livability. The project brief, released as part of the RFP, called for the following strategic visions to guide the design (Victoria Department of Infrastructure, 2002):

- **City Gate:** the station as a gateway, the first point of arrival for international, interstate, and regional visitors to Melbourne and Victoria.
- **West Door:** the civic metaphor of the Station-Entry in the west and *Parliament-Seat of Government* in the east as complementary civic functions, related by the east-west axis of Bourke and Collins Streets, and forming an anchor to the western edge of the city.
- **Hub:** the facility has a pivotal role in linking Victoria, connecting the urban systems of Docklands and the CBD and activities at the station.
- **Travel Experience:** the station space and the balance of the site provide an opportunity to create a positive, memorable, and significant travel experience. There is a clear opportunity to create a strong and enduring image for the traveler.

The functional requirements for the station facility generally encompassed aiding intermodal transfers, providing services for public transport users, facilitating pedestrian access from neighborhoods, and serving as linkages to road systems. Bidders were required to design the station capacity to serve the 2050 projected peak hour flow of 30,000 passengers. Specifically, design parameters such as the following were required:

[20] A commercial framework summary is a component of PPP project RFPs in Australia. It provides a summary of the proposed risk allocation issues and key commercial principles of the project, typically including project term, payment mechanisms, site issues, force majeure, changes in laws, modifications, termination and step-in rights, and end-of-term arrangements (Australian Government Department of Infrastructure and Regional Development, 2015).

[21] Once an investment project is justified on an economic basis through a cost benefit analysis, value for money (VFM) analyses can then assess whether conventional public procurement or a PPP is more efficient. A VFM analysis compares net present values of a PPP against a public sector comparator (in a public procurement scenario), reflecting allocation of project risk premiums under respective scenarios.

- For suburban trains, a minimum of 300 passengers per train clearing the platform within 90 seconds of the train stopping and allowing disembarkation, equivalent of four escalators, two sets of two-meter-wide stairs, and one elevator.
- For country and interstate trains, a minimum of 150 passengers per train clearing the platform within 120 seconds of the train stopping and allowing disembarkation, equivalent to a minimum of two escalators, two sets of two-meter-wide stairs, and one elevator.

Bidders were required to provide pedestrian modelling of passenger movements in the proposed facility.

In addition, functional requirements were provided with regards to ticketing equipment, platform, train fueling facilities, coach/bus terminal, parking for motor vehicles and bicycles, passenger facilities, station management offices, staff amenities, rail communication facilities, and emergency train control rooms.

The Role of Commercial Development

Commercial development at the station was considered a value capture opportunity for the concessionaire and a critical component for the station project to be financially viable. The project brief highlighted that areas not needed for the station facility would be made available by the Government for commercial development in the form of long-term leases. However, bidders were asked to plan for flexibility to accommodate possible changes to public transport requirements, rail infrastructure, and station redevelopment after the station lease expires, which may be before the expiration of commercial development leases.

The proposal by Civic Nexus Pty., Ltd. was selected for the Best and Final Offer, as it provided the best design at the lowest capital cost and lowest availability payment for O&M, with consideration for valuation of surrounding real estate. After a month of negotiation, the SCSA and Civic Nexus reached a final concession agreement, referred to as the Services and Development Agreement (SDA)[22] in July 2002. The process from the RFP to contract signing took nine months.

Southern Cross Station Services and Development Agreement

Scope of the SDA

The project brief, which detailed the expectations of the Government for the redevelopment, became the basis of the negotiation and eventually, a part of the SDA between SCSA and Civic Nexus. The most important component of the project was to redevelop the station. The contractor was obligated to design, construct, finance, maintain, and operate the station. The project site consisted of the station and rail yards. The boundary defining the precinct was Spencer Street (east), Wurundjeri Way (west), Latrobe Street (north), and Collins Street (south).

The station area would be leased to the concessionaire through the 30-year term of the agreement, at the end of which the land would revert to the State for a nominal residual value. Key features of the partnership include the following (US FTA, 2009):

[22] https://www.tenders.vic.gov.au/tenders/contract/download.do?id=11655&docIndex=1

- Term of concession: 30-year concession after completion of construction
- Public sector sponsor: SCSA
- Concessionaire: Civic Nexus Pty. Ltd.
- Project financing: 100 percent private financing
- Debt to equity financing of private sector funds: 74 percent debt; 14 percent equity; 12 percent value of real estate development rights
- Revenue stream: quarterly core service payments (CSP), equivalent to availability payments, for making the station available for public use, for capital investment, operation, and insurance

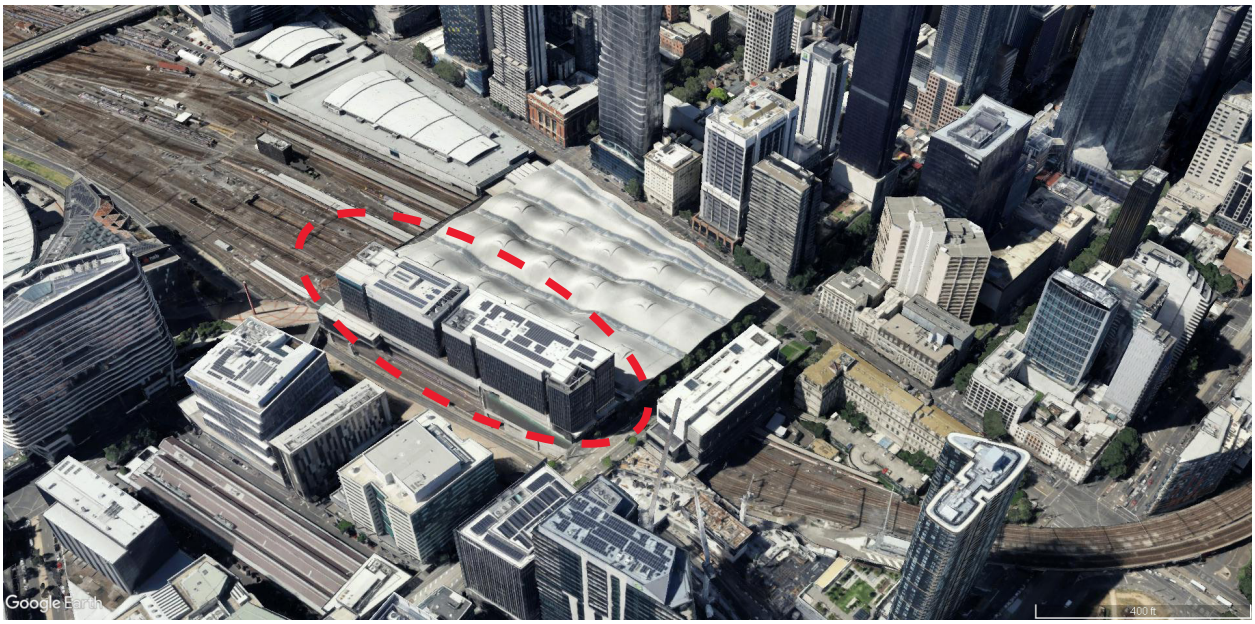
The station would need to be flexible to accommodate the future expansion of the Melbourne Airport Transit Link, City Loop, Flinders Street viaduct, and a possible interstate high-speed rail. Modifications to the rail asset was required as part of the project, and after completion, it would be leased by NEGA from the State of Victoria. NEGA would then take all risks associated with the rail assets. Similarly, updates to signaling systems would also be leased by NEGA from the State, which then would assume all management, operational, and maintenance risks after completion.

> *The Southern Cross Station PPP model is noteworthy with respect to its extensive KPI regime for monitoring the concessionaire's performance and enforcing service quality through a CSP abatement mechanism.*

Project Financing Arrangement

The construction of Southern Cross Station was entirely financed by Civic Nexus, the private sector partner of the transaction. The PPP project was valued in 2002 at AUD 309 million (USD 168 million) and was funded by a structured financing package consisting of a private bond by ABN Amro (76 percent), equity share by ABN Amro (14 percent), and the value of commercial real estate development rights transferred from the Government to Civic Nexus (12 percent). Civic Nexus' proposal was more competitive than other bidders' because it proposed to unlock the value of commercial development on a deck above the rail tracks (Figure 4.3), which effectively served to "cross-subsidize" the Government's cost (Civic Nexus, PTV and Dockland Authority, 2018). This private development of two office buildings would begin after the completion of the station, with 100-year leases, after which the buildings would be returned to the State. The lease for the office development was a different transaction from which the State did not bear any risk or reward. Yet it did play a key role in allowing the station delivery contract to be financially viable.

Figure 4.3. Southern Cross Station with Commercial Development on Deck above Railway Tracks (red dotted circle)



Source: Original figure, Maps data: Google Earth (2023).

Risk Allocation

As part of the selection process, bidders were required to express which risks they would be willing or unwilling to take in their proposals. One of the selection criteria of the Government was whether the set of risks bidders were willing to take was in alignment with its preferred risk. Proposals were evaluated in terms of VFM, which would reflect risk premiums, and Partnerships Victoria's guidance regarding risks that can be taken by the Government. While the risk allocation set forth in the SDA differed from the Government's desired risk allocation to some extent, a 2007 audit report by the Victorian Auditor-General found that some of these risk allocations did perform better than Partnerships Victoria's preferred allocation (Victorian Auditor-General's Office, 2007).

Key project risks transferred to the private contractor include the design, construction, finance, and operation of the station. In particular, the Government did not provide any guarantees regarding project debt, and hence, all private funding was at risk (US FTA, 2009). Furthermore, the risks associated with the design, construction, finance, operation, and integration of the commercial development portion of the project were almost completely transferred to the private concessionaire. In the initial agreement, the risks associated with the construction of rail and signaling infrastructure were also allocated to the private concessionaire (changes to the agreement were made during construction).

The private contractor also took legislative and political risks. The SDA states that any changes in the law or the concessionaire's compliance with any changes in the law does not entitle the concessionaire to any claim, limit or change its obligations, or relieve it of any liabilities. An exception to this clause was any financial costs associated with changes to the interpretation of Land Tax Act of 1958.

The SDA sets forth that unless stated otherwise, the concessionaire would accept all risks associated with the project. Examples of the risks taken by the private concessionaire include (SCSA and Civic Nexus, 2006):

- the actual cost of the project (including cost increases and interest rate) being greater than estimated
- the passenger usage of the station being other than estimated
- land or interests in land additional to the site being necessary to enable compliance by the concessionaire with the provisions of the SDA
- the risk of industrial action
- delay in any government agency granting an approval causing delays, increased costs, or decreased revenues
- the ability to obtain and maintain insurance in accordance with the SDA

The State did retain some of the critical project risks, but these were minor compared to those assumed by the concessionaire. For example, the State retained the cost of operating insurance until the beginning of the operational phase because its decisions on whether to maintain station services during the construction would influence the insurance costs (Victorian Auditor-General's Office, 2007). The State also took risks associated with specifying project output associated with the contract (US FTA, 2009).

Some key project risks were shared between the public and private partners. For example, the risks associated with pre-existing contamination of the station site, which were not identified at the time of the initial agreement, would be shared equally between the Government and the concessionaire.

Core Service Payments and Abatement Based on Key Performance Indicators

Under the SDA, the SCSA would make periodic availability payments, referred to as CSPs, after the commencement of station operation, adjusted based on the performance of the concessionaire as measured through the KPIs specified in the SDA (see Table 4.2). The following components constitute the CSPs (US FTA, 2009):

- reimbursement for station redevelopment capital investment (75 percent)
- compensation for station O&M (22 percent)
- cost of insurance for station operation (3 percent)

The amount of CSPs is disclosed only in terms of their nominal values, and payments would average AUD 34 million (USD 28 million in 2007) per year throughout the 30-year concession period.

Table 4.2. Composition of Southern Cross Station Project Core Service Payments

Cost Component	Cost per Quarter (AUD M)	Total Cost (AUD M)	Description
Capital	5.8 [a]	1120 [b]	Reimburses concessionaire for the cost of station redevelopment
Operating	2 [a]	433 [b]	Compensates concessionaire for managing the operations of the station for the 30-year concession period
Insurance	A quarter of the annual insurance premium		Compensates concessionaire for insuring the operations of the station for the 30-year concession period

Source: Victorian Auditor-General's Office (2007).
Note: [a] Base amount to be indexed according to a formula in the SDA (undisclosed); [b] nominal value

The CSPs are subject to abatement calculated based on the KPIs set forth in the SDA. The reporting regime consists of 60 KPIs under 15 categories (Table 4.3). Each KPI consists of service delivery requirements, rectification period, the number of incidents needed to trigger penalty, and penalty points to be fed into calculation of the abatement amount of periodical CSPs. Each KPI is assessed by a SCSA review, concessionaire's self-assessment, or customer surveys conducted by the SCSA.

Table 4.3. Southern Cross Station PPP Key Performance Indicator Categories

Key Performance Indicator Category	Number of KPIs
Performance monitoring	2
Administration matters	7
Availability	12
Repairs and maintenance	6
Security and emergency service	7
Cleaning	6
Passenger information and signage	3
Baggage handling and traveler assistance	5
Telecommunication	1
Food and beverage	1
Car parking	2
Energy management	2
Waste management	1
Pest control	1
Bus bays	4
Total	60

Source: SCSA and Civic Nexus (2006).

Most of the KPIs are quantitative. For instance, the KPIs under the 'Availability' category ensures that the concessionaire makes the station and all services available free of charge to the public and transport operators during the station's business hours. Another KPI requires that the station facility, except franchisee facilities and the areas occupied by the SCSA, be open and available to the public from 30 minutes before the first train service of the day till 30 minutes after the last train service of the day (except the bus facility, which should be open to accommodate for coach operator requirements). The rectification period for this KPI is 5 minutes, and the number of incidents to trigger penalty is one. This KPI is assessed by self-assessment, and 75 penalty points would be assessed for violation of this KPI. Table 4.4 lists more such KPIs.

Figure 4.4. Southern Cross Station, Melbourne

Source: https://en.m.wikipedia.org/wiki/File:Southern_Cross_Station_at_night.jpg

Table 4.4. Southern Cross Station PPP Select Key Performance Indicators

KPI	Rectification Period	No. Incident(s) to Trigger Penalty	Penalty Points	Assessment Method
5.5 (Repairs and Maintenance) The concessionaire must notify operators, passengers, and others of any planned majors works at least 15 days before the work begins	1 day	1	3	Self
6.3 (Security and Emergency Services) Security patrols are undertaken at least every hour, 24 hrs/day, 7 days/week	15 min	1	35	Self
7.1 (Cleaning) At least 80 percent of users must respond to user surveys conducted at least quarterly that all public areas are clean and tidy	N/A	1	3	User
13.1 (Energy Management) The electricity supply is maintained 24 hrs/day, 7 days/week	10 seconds	1	75/ incident	Self

Source: SCSA and Civic Nexus (2006).

Operationally, the SCSA reviews the performance based on the performance reports submitted by the concessionaire every quarter. Penalty points are assessed and the SCSA is given discretion to determine the actual number of penalty points, considering the severity of the breach, its material impact and frequency, and importantly, the concessionaire's effort to remedy the breach (SCSA and Civic Nexus, 2006).

In practice, the SCSA and Civic Nexus work together to address any operational issues that may arise. The SCSA has the right to exercise abatement to the CSPs, which could impact the financial standing of the concessionaire, and is a significant leverage to ensure the concessionaire's cooperation. In the first year of operation, the SCSA reportedly assessed the underperformance of the concessionaire in three out of four quarterly reports. However, abatement to the CSPs was applied only once. Rather than strictly enforcing service requirements through abatements, the partners have developed a working relationship through robust correspondence regarding operational details (Victorian Auditor-General's Office, 2007). Having a good working relationship is advantageous and effective, and should any unforeseen circumstances arise requiring the partners to reassess the contract, they can avoid the costs associated with conflicts.

Issues with the Performance Monitoring Mechanism

Under the SDA, the SCSA is responsible for monitoring the performance of the station O&M by requiring the private concessionaire to submit the following documentation: quarterly performance reports, operating manuals, quality assurance manuals, asset management plans, and annual reports. Along with the KPIs, the performance-monitoring regime is fairly extensive and robust, with clear delegation of the reporting responsibilities to ensure accountability.

Instituting a monitoring mechanism for undertakings of such complexity is a formidable challenge, and the case of the Southern Cross concession is no exception. A 2007 report by Victorian Auditor-General found a number of issues with the effectiveness of the SCSA's performance review.

i. The asset management plan was reportedly incomplete - only 800 of 3000 assets were registered, limiting the effectiveness of maintenance-related KPIs with respect to enforcing scheduled maintenance and compliance with service requirements.

ii. The data was unverified and its integrity might have been compromised as documentation was found to indicate inaccurate entries in the system by the concessionaire or its subcontractors, leaving open the possibility of undetected or unreported incidents, if not intentional fraud.

iii. Many of the KPIs required physical attendance at the station site and/or manual survey, which is unrealistic.

iv. The reporting requirements were not in the format that would have enabled trend analysis, hindering the ability of the SCSA to assess the overall VFM and the performance of the concessionaire (Victorian Auditor-General's Office, 2007).

These issues suggest that performance-monitoring systems need to be designed carefully to effectively impose service standards on private partners through availability payment PPP contracts.

Project Outcome

When completed, the Southern Cross Station stood out in Melbourne's city center with its unique waving roof and vast open entrance facing Spencer Street. The roof was designed for ventilation and dispersal of diesel fumes, exhaust gases, and hot air without the use of electric fans as a low-energy solution that contributes to environmental sustainability (Figure 4.4). The roof was made of ethylene tetrafluoroethylene (ETFE) film, which was a first for Australia. The station's unique architecture won a number of international awards, such as the Royal Institute of British Architects International Award, Lubetkin Prize, Victorian Architecture Medal, William Wardell Award for Public Architecture, and Victorian Industry Capability Network Industry Achievement Award.

These achievements were not without obstacles, and even today, the station faces unforeseen issues and challenges. As one of the first PPP transactions, the State of Victoria engaged in (though it had extensive experience in privatization), the concession continues to provide insights for the success of PPP projects.

For example, the station's innovative roof design suffered unanticipated outcomes. During the construction phase, it became apparent that the roof was not providing adequate ventilation as designed, and workers complained of the build-up of train exhaust fumes within the station. This issue persisted after the station began operation, and passengers raised the same concern. While the problem of train exhaust might be a perception issue rather than physical reality, the station users' views are important for the success of the station as a public infrastructure. In 2011, the State of Victoria agreed to fund the installation of large fans on the roof to improve ventilation and alleviate these concerns (Holmes, 2016).

Figure 4.5. Innovative Energy-Saving Roof Design to Diffuse Train Exhaust

Source: Scott Sandars, licensed under CC BY-NC-SA 2.0.

Construction

Civic Nexus contracted the project developer, Leighton Contractors, to design and build the station in August 2002. Leighton had access to the site only between 12:30 am to 5 am on weekdays so as not to disrupt railway operation, as stipulated by the Government through the procurement process. The developer reportedly underestimated the severity of this constraint. Furthermore, building the uniquely waving roof, which has been referred to as "an architect's dream but an engineer's nightmare" (Gomez-Ibáñez and Davidoff, 2006), turned out to be more challenging than the developer estimated.

It eventually became apparent that Leighton would not be able to meet the construction milestone set forth in the SDA. In the spring of 2004, Civic Nexus informed the government that it might not meet the deadline. Leighton was facing a penalty of AUD 24,000 (USD 17,650)/day for delays beyond the originally scheduled completion date, and announced that it expected to incur a loss of AUD 122.6 million (USD 90 million) for its AUD 350 million (USD 257 million) contract to build the station. Leighton went directly to the media and began making compensation claims primarily against the State, alleging that the expected loss was due to not having been granted adequate access to the project site.

The parties involved decided to continue the working relationship and negotiate rather than going to the court, as it was in the interest of all to complete the project. Asking Leighton to stop being vocal in the media, the Government cancelled some late-night train services so the workers could access the site by 10 pm. Leighton announced in May 2005 that at least the station roof would be completed for the Commonwealth Games in March 2006.

The SCSA, Civic Nexus, and Leighton eventually reached a global settlement agreement in July 2006, which was also when the principal construction work was completed. The timing allowed the State to minimize its exposure to risks of future claims from Leighton, as the agreement provided indemnification to the State from any future claims related to construction works that had been completed on the day of the agreement. If the agreement had been reached earlier, additional claims regarding further construction works may have been raised. The settlement included:

- a cash payment from the SCSA to Leighton for:
  - modifications and additional construction work payments, which the SCSA agreed that Leighton was entitled to under the original terms
  - compensation to settle claims for which the SCSA did not admit liability but considered it had financial risk
  - compensation to settle claims on site access after the 2006 Commonwealth Games
- extension of the practical completion date of principal works from April 2005 to the end of July 2006, and relief for Civic Nexus and Leighton on their obligation to pay liquidated damages for not meeting the originally scheduled completion date.
- revision of the scope of station development, including removing some rail modification and signal upgrade works from the original SDA, as they had become inadequate for the long-term needs of the station. The Department of Infrastructure took over the responsibility of completing the works, and the State received credit estimated by an independent reviewer from Civic Nexus for the de-scoped works.

- a cash payment of AUD 30 million (USD 23 million) by Civic Nexus to Leighton, introduction of an air quality management system, monitoring of air quality levels on a daily basis, and accountability for non-compliance with the air quality standard requirements.
- the concession period being revised to reflect delays. In the original SDA, the operation period would have started in April 2005, when CSPs would commence. As the deadline was not met, the SCSA withheld payments for 15 months. As per the agreement, the concession was split into a 30-year operating concession to start in July 2006 (actual completion), and a 30-year capital concession to commence in April 2005 (original schedule). The SCSA paid AUD 30 million (USD 23 million in 2006) for the capital concession upon settlement, which would have been due regardless of the concession period change, but the SCSA claimed the agreement provided a non-cash benefit worth AUD 20 million (USD 15 million) to Civic Nexus due to the difference of payments in net present values.

As a result of the dispute and negotiation process on the global settlement agreement, by June 2007, the SCSA incurred AUD135 million (USD 113 million in 2007) in costs for the project. The 2007 audit report by the Victorian Auditor-General's Office analyzed that if parties involved in the dispute had taken the route of litigation, the costs to the SCSA for legal advisers might have exceeded AUD 200 million (USD 167 million). Although any additional cost was not the most desirable outcome for the State, avoiding the potential litigation was considered necessary.

Station Operation

On August 1, 2006, the construction of the Southern Cross Station was completed, and its operation was handed over to Civic Nexus (Figure 4.5). The responsibility of the SCSA changed to monitoring and managing the concessionaire based on the reporting and KPI regime, along with capital and other projects/obligations as the owner of the precinct. The transition was phased from August to December 2006. In 2012, the State of Victoria enacted the Transport Integration Act, establishing Public Transport Victoria (PTV) to coordinate public transport systems in Melbourne and facilitate network expansions. At that time the SCSA was folded into PTV, and the contractual commitment (such as the quarterly CSPs until June 2036) pertaining to Southern Cross Station as well as the State's responsibility to manage the station's operator were transferred to PTV.

Figure 4.6. Southern Cross Station in Operation

Source: Bidgee, under CC 3.0 license (l.) and Jes under CC 2.0 license (r.).

Since its opening, Southern Cross Station's usage has continued to grow, and the growth is projected to continue through the foreseeable future. This is due to higher-than-expected population growth of Melbourne, economic development in the city and especially its CBD and Docklands precincts, as well as improvements to the public transportation network in the region. The original Project Brief projected that the peak hour passenger flow of the station would be 30,000 in 2050 (Victoria Department of Infrastructure, 2002) and stated that the terms of the agreement could be renegotiated if this rate was reached. It is possible that this target may be reached in advance of original forecasts (Jacks, 2019a).

In 2016, Civic Nexus made an unsolicited proposal to expand facilities to accommodate the unexpectedly high use of the station. The proposal included a new elevated concourse to provide extra access to platforms and an overhaul of the bus terminal (Jacks, 2019b), and it extended the lease and terms of the existing agreement in return for boosting the capacity of the station. The Government reviewed the unsolicited proposal and in April 2019, elected not to accept it. It is therefore possible, given the terms of the existing agreement, that PTV and Civic Nexus may need to negotiate the current KPIs and/or quarterly CSPs to address the target capacity issue.

The layout of the new station was also not popular, particularly among frequent station users (Holmes, 2016). Many daily commuters reportedly experienced inconvenience due to the layout change, with extremely congested "hot spots" appearing frequently, lowering the system's level of service. The station design has been criticized for its poor connectivity to Melbourne's famous tram system on the street level and to secondary streets surrounding the station, as there is frequent congestion during rush hours from pedestrians crossing Spencer Street and the tram line into the CBD.

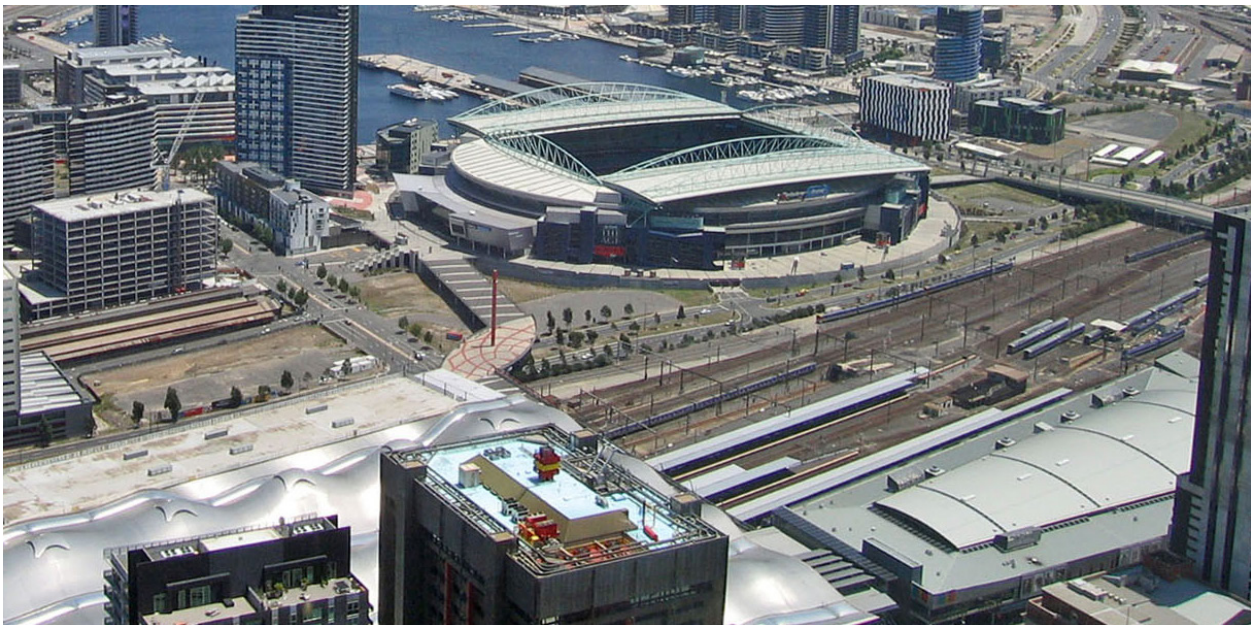
The station redevelopment concession also included plans for real estate development, which consisted of office space development and retail space development. The office spaces were built on a 200 meter-long deck constructed above the station's railway tracks (figure 4.3). The 35,000 square meter (gross floor area) building at 699 Bourke Street was completed in 2015, and the 38,000 square meter building at 664 Collins Street opened in 2018. These buildings also have a publicly accessible pedestrian pathway connecting Bourke Street Bridge and Collins Street (Grimshaw, 2018a, 2018b).

Spaces in the station not used for rail-related facilities were developed into retail areas. These areas, for which Civic Nexus is also responsible, have been struggling despite the success of the station (Holmes 2016). In November 2006, the station's shopping complex opened as a direct factory outlet with a food court and Virgin Megastore (a CD store), and in March 2007, the second phase of the retail space was completed, though no tenants had been found to occupy the space. In 2009, the direct factory outlet relocated from Southern Cross to a new site in South Wharf, and the retail space was rebranded as "Spencer Street Fashion Station." In 2013, the struggling retail space was again rebranded as "Spencer Outlet Centre." Critics suggested that a better mix of public spaces, a more efficient complex, and an optimized mix of retail facilities, possibly with more input from retail experts, might have led to better outcomes. Public opinion regarding the station's commercial development has not been favorable, limiting its positive impact on the neighborhood.

Development of the Docklands Area and the Role of Southern Cross Station

Melbourne has been consistently growing over the years, and Docklands has been driving this economic growth. The Southern Cross station played a critical role as the gateway to Docklands and an anchor to draw private investments into the neighborhood. Docklands has become both a thriving urban center with residential and commercial establishments and a destination for visitors from around and outside Melbourne (Figure 4.7).

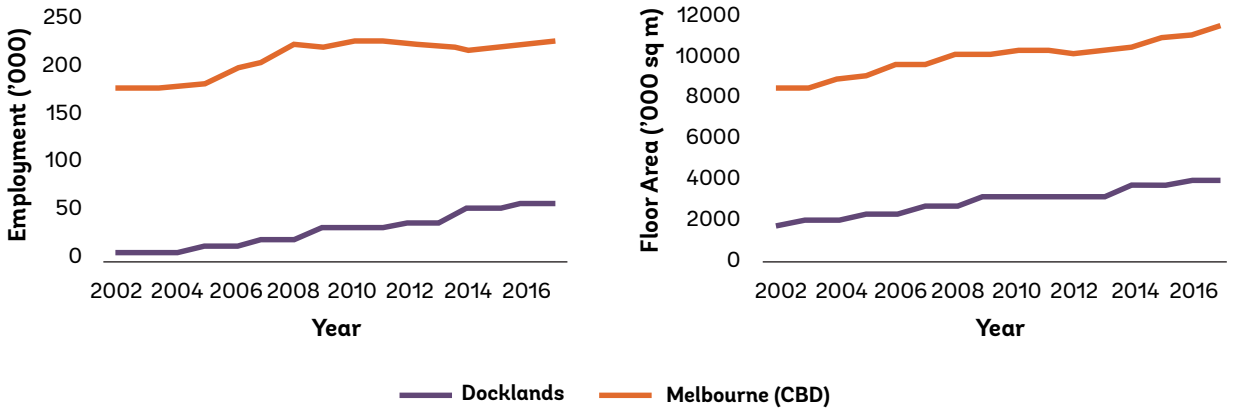
Figure 4.7. Docklands after Redevelopment



Source: Tim, CC BY-SA 2.0 via Wikimedia Commons.

Docklands has received more than AUD8.5 billion (USD 6.4 billion in 2018) in private investment, and Australia's largest corporations have offices there. Since 2002, the total occupied floor area in Docklands has more than doubled (Figure 4.8) and the growth accelerated after the completion of the Southern Cross Station. One reason for this growth is the fact that Southern Cross Station promotes public transportation in the precinct and thus lowers parking requirements, which is an attractive feature from a real estate developers' perspective (Civic Nexus, PTV and Dockland Authority, 2018).

Figure 4.8. Total Occupied Floor Area (left), Employment (right) of Docklands and Melbourne CBD, 2002-2021



Source: Original figure, based on City of Melbourne, (2023).

Most of Melbourne's employment growth over the last decade has also occurred in Docklands. Employment in Docklands grew seven-fold from just under 6,800 in 2002 to over 58,400 in 2016. In comparison, the employment growth of the Melbourne CBD area in the same period was 55 percent.

Docklands and Melbourne CDB also underwent considerable residential growth. The number of dwelling units in Docklands and Melbourne CBD increased by 94 percent and 142 percent, respectively, from 2006 to 2017. These statistics reflect a wider trend of residential returns to city centers such as the CBD and Docklands (City of Melbourne, 2017).

Lessons Learned

The experience of Southern Cross Station PPP offers a number of insights for railway operators and governments considering railway station redevelopment projects, and particularly, the use of PPP contracts for these projects.

Institutional arrangements for the station redevelopment and the area redevelopment were different, reflecting their different timeframes, stakeholders, and operational requirements.

Redeveloping Southern Cross Station was not a stand-alone project; rather, it was from the start considered integral to a wider Docklands area that needed a developmental anchor. Both projects were similar in terms of their dependence on private investments and the limited role of the government in only providing master plans and guiding asset development activities. However, the decision to separate the Docklands and Spencer Street Station redevelopment programs was the result of careful consideration. The Docklands redevelopment had a much longer timeframe and the approach adopted was for the Government to sell parcels while ensuring compliance with the master plan, whereas the station redevelopment involved continuous and rigorous monitoring of operational performance to ensure the delivery of quality infrastructure service. Furthermore, the railway infrastructure was publicly owned, and development rights were leased rather than sold. These tasks require interfacing with a very different set of stakeholders and clients, and thus necessitated different skillsets.

At the same time, the station redevelopment project was not implemented as part of a program within any state department such as the Department of Infrastructure or the Department of Transportation. The rationale was that the amount of work and number of interfaces to manage was robust enough to warrant an independent authority. Other benefits included organizational flexibility in allocating resources and showing the Government's commitment by having a single interface for the project. Railways implementing projects of similar size and complexity should assess the number of interfaces they have to manage and consider adopting this unique institutional model.

Even in well-prepared PPPs, unforeseen challenges can arise. Project sponsors may consider both contract remedies and other options, to find the solution with the least cost and delay.

Even as railways try to make their contracts as comprehensive and detailed as possible, it is impossible to predict every situation that might occur. The example from the SCSA illustrates one approach to managing unforeseen challenges.

In the case of Southern Cross Station, the delays in construction meant that it was within the right of the SCSA to terminate the contract or fine the developer, Leighton, for failing to meet its deadline. However, taking this route would have resulted in further delays in completing the redevelopment, as well as continued negative media coverage as Leighton was making public complaints against the State. Ultimately, the SCSA decided that negotiating with Civic Nexus and Leighton was its best option and aligned with all their interests.

Railways need to be prepared for the possibility of challenges arising, even in the most well-planned project. Even if the contract provides certain means (such as arbitration or termination) to control these challenges, they should consider the situation as the SCSA did, as there may be other solutions that would result in lower costs and fewer delays.

The Southern Cross Station PPP used KPIs effectively to deliver service quality.

The Southern Cross Station PPP is noteworthy with respect to its extensive KPI regime for monitoring the concessionaire's performance and enforcing service quality through a CSP abatement mechanism. The regime consists of 15 categories of KPIs collected through self-assessment and surveys administered to station users, with private sector partner Civic Nexus required to submit documentation at intervals specified in the SDA. The KPIs are extensive, addressing a wide range of operational aspects that affect quality in providing station service to its users.

While penalties can be applied to Civic Nexus, the SCSA usually manages the performance of Civic Nexus through negotiation. Should any issues of non-compliance arise, the SCSA will collaborate with Civic Nexus to address the issue rather than immediately impose a CSP abatement. This approach is unique and can be effective, especially since the complexities of railway station operation are likely to result in unforeseen operational issues.

A report by the Auditor-General of Victoria made recommendations to improve the monitoring regime to ensure appropriate data collection and reporting activities so that the SCSA could more effectively enforce compliance with the terms of the agreement. The example of the Southern Cross Station points to the importance of developing a monitoring system based on realistic assumptions of the ability to collect KPI data and evaluate the data to identify areas of improvements.

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CHAPTER 5

Italy: Station Redevelopment through PPPs – Exploring Stations' Commercial Value and Preserving History *by Esther John*

FSI and its subsidiaries are known across Europe for their excellent management and operations of the Italian railway system. The companies set up to oversee the redevelopment of stations across Italy were jointly owned by FSI and the private concessionaires. This allowed FSI to retain a say in decisions surrounding the redevelopment, while bringing in retail and real estate expertise to manage the commercial side of the redevelopment. This joint venture PPP has seen much success in the railway station redevelopment, including the renovation of historic buildings. This is exemplified by Milano Centrale, and has been recognized as a best practice by other European railway companies.

Introduction and Background

Railways have served the Italian economy for almost two centuries, with the first railway line built in 1839. The network now reaches all the major cities in Italy (figure 5.1). Over time, many changes were made to its organization and management, culminating in its nationalization in 1905. The State railway group, Azienda Unitaria della Ferrovie dello Stato (FSI, n.d.) - now called FSI - continues to manage the Italian railway system to this day.

> *The Italian state-owned railway group FSI sold 40 percent shares of both GS and CS only to private investors that were knowledgeable in real estate development.*

By the 1990s, it was clear to FSI that changes needed to be made to many of Italy's historic railway stations. There were three main reasons for this.

i. The number of unused spaces in many of the stations were increasing. Technological improvements had resulted in a decrease in the size of tracking and signaling equipment, and structural transformations within FSI had reduced the workforce by about half over a span of 10 years (Manente, 2012). This, in turn, had led to a significant reduction in the space occupied by both station staff offices and apartments for railway employees. Besides, many of the freight terminals located near the railway stations were lying unused, and FSI realized that this space could be used more productively.

ii. There was a desire to increase the regional connectivity of Italy via an enhanced railway network between cities.

iii. Both national and local authorities wanted to improve the railway station to boost the long-term urban development of the parts of the city surrounding it. The expectation was that an improved station with better accessibility would lead to a general rise in the real estate value of the surrounding regions.

Figure 5.1. Map of Italy's Railway Lines

Source: World Bank.

With these goals in mind, FSI conducted research on the stations' commercial potential, and studied global best practices regarding the amount of space in a station used for commercial operations, the level of quality that needed to be achieved, and the types of companies that were needed to manage and operate these stations. Based on these benchmarks, FSI developed a strategy to redevelop the stations, not only to meet its objectives of urban redevelopment and improved connectivity, but also to make the best use of vacant areas to improve station quality, provide new services to station users, and generate additional revenue that could be used to cover operational costs.

In 1997, Roma Termini S.p.A. was created for redeveloping the Roma Termini station. Roma Termini S.p.A. was owned solely by FSI, and it used dedicated investment funds from the Government for the redevelopment project. The great success of the redeveloped Roma Termini, which was completed in 2000, prompted the decision to extend redevelopment to other railway stations in Italy.

Simply based on financial gain and passenger usage, the redevelopment has clearly brought a revival to the stations. However, the numbers only tell part of the story. The Italian model of public-private partnerships (PPPs) used to carry out these redevelopment projects has been considered a "best practice" by other European railway companies such as Deutsche Bahn (FSI, 2017). FSI not only manages and operates rail transport internationally but is also known for its experience in redeveloping historic railway stations while ensuring that important heritage sites and building features are preserved.

Institutional Set-up

One of the distinct features of Italy's railways is the model of PPPs used in the redevelopment of the railway stations. This model not only demonstrates how PPPs can be used to attract financial investments for the improvement of railway stations, but also the type of expertise and know-how that is necessary. This section discusses the structural organization of the FSI Group and the institutional setup that was created to manage and carry out the station redevelopment projects.

Establishing Rete Ferroviaria Italiana, Grandi Stazioni, and Centostazioni

With the success of the redevelopment of Roma Termini, FSI decided to redevelop other railway stations around Italy. Hence, Roma Termini S.p.A., whose original purpose was the redevelopment of Roma Termini, was renamed Grandi Stazioni S.p.A. (GS) in 1999. The goal of GS was to carry out and manage the redevelopment of its portfolio of stations, which were the 13 largest and most profitable in Italy (one more station was added later for a total of 14), so that the infrastructure division of FSI could focus on its core business – railway operations. However, while Roma Termini S.p.A. had been 100 percent owned by FSI, FSI decided to sell a part of GS to private companies, as it did not have the sufficient expertise in the businesses of commercial operations and real estate. This know-how was necessary to execute station redevelopment projects successfully to make the stations more efficient as well as generate retail revenue. FSI sought private shareholders that would bring the necessary expertise. Rather than using the traditional method of having a concession contract of fixed years for the commercial development of the land it owns, FSI put 40 percent of GS shares on the market through a public tender, and sold the shares based on bids that included not only monetary amounts, but also redevelopment plans for the stations. (See box 5.1) In 2000, the shares were sold for ITL 406 billion (approximately EUR200 million today) to Eurostazioni S.p.A., a consortium primarily comprising three private investors (Table 5.1). The remaining 60 percent of GS shares were held by FSI.

Box 5.1. Italian PPP Model versus Traditional PPP

The Italian PPP model has pros and cons compared to a traditional PPP. Here. a traditional PPP is defined as one where the public entity issues an open tender to the market. In the case of station redevelopment, the tender would probably call for a proposal to be made involving parameters of the redevelopment, approaches with which the redevelopment would be carried out, and the financial terms and requirements, if any. In exchange, the private entity that wins the bid would gain development rights and the rights to generate revenue from authorized activities for the duration of the contract. Any risks associated with the project would be allocated to one of the contracting parties or shared with specific terms.

In the Italian model, the procuring public contracting party (FSI) participates in the project companies by owning 60 percent of the shares, essentially sharing all project risks. FSI remains intimately involved in the decision-making at the board level and shares any gains/losses through business undertakings with the project companies. FSI is also an equity holder, and is therefore able to participate in the upside of the investment. Since FSI is invested in the project success, it can facilitate relatively quick decision-making. In addition, the Italian PPP model also helps bring expertise into project companies.

A year after forming GS, FSI formed Centostazioni S.p.A. (CS). The purpose of CS was to redevelop and manage an additional 103 mid-sized and small-sized stations around Italy. It was separate from GS because the types of redevelopment work needed were different for its smaller stations. In particular, the stations in the GS portfolio often required much bigger redevelopment projects involving the surrounding areas. As with GS, CS was originally 100-percent owned by FSI, which then put 40 percent of the shares on the market to be sold through public tender. These shares were sold to Archimede 1 S.p.A., a consortium consisting of four private investors (Table 5.1).

Table 5.1. Consortium of Companies Making up Eurostazioni S.p.A. and Archimede 1 S.p.A., Respectively

Name of Company	Type of Company	Share (%)
Eurostazioni S.p.A.		
Sintonia (now owned by the Benetton Group)	Infrastructure	32.71
Vianini Lavori (now owned by Caltagirone Group)	Construction and real estate	32.71
Pirelli & C	Consumer tire manufacturer	32.71
SNCF Participations S.A.	Holdings company	1.87
Archimede 1 S.p.A.		
Società Aeroporto di Venezia S.p.A.	Airport management	40.5
Manutencoop S.c.a.r.l.	Real estate	40.5
Banco Popolare	Bank	15
Pulitori ed Affini S.p.A.	Real estate & environmental sanitation	4

Source: World Bank, based on information provided by FSI.

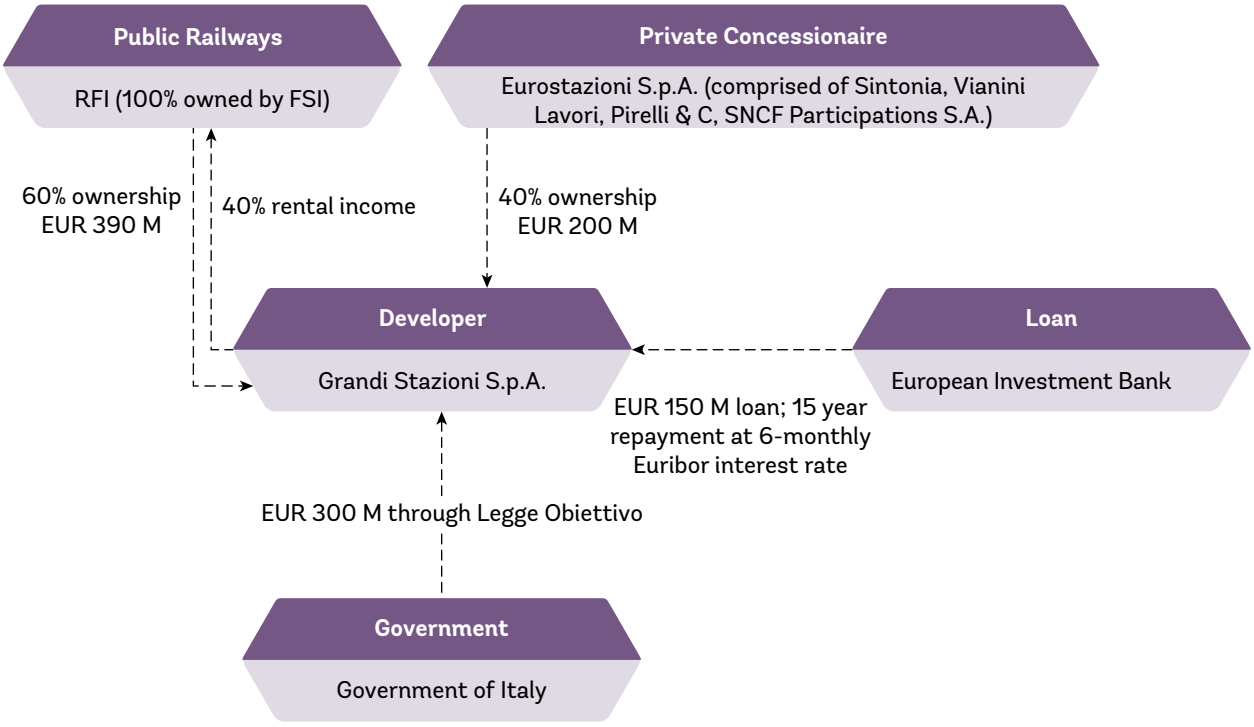
With FSI keeping 60 percent of the shares, five of the nine board members were from FSI and the remaining four from the private shareholders. Later, when the number of board members was reduced to five, three of them were from FSI. In addition, FSI selected the chairman of the board of directors and the CFO, while the private shareholders from GS and CS selected their CEO.

Originally, the redevelopment contracts were signed between FSI's infrastructure division and GS and CS respectively. On July 1, 2001, this infrastructure division became a separate subsidiary of FSI, and was named Rete Ferroviaria Italiana (RFI). RFI is 100 percent owned by FSI, and is responsible for the management and maintenance of rail infrastructure. It also manages the control and safety systems connected with train operations, defines the criteria for the use of the network, and enters into contracts with railway companies for access to the rail infrastructure. This vertical separation of railway operation management, with contracts given to access rail infrastructure, is common throughout the EU. All the original obligations of FSI's infrastructure division passed on to RFI, and subsequently, the station redevelopment contracts involved RFI and GS or CS.

Financing Station Redevelopment Works

FSI station redevelopment financing was a combination of investments from both RFI and GS/CS. This section explains in detail the financing of the redevelopment work carried out by GS, with that of CS following a similar pattern (Figure 5.2).

Figure 5.2. Financial Structure of GS Station Redevelopment



Source: World Bank.

When GS was formed in 1999, the infrastructure division of FSI (later RFI) transferred not only the right to develop the retail assets of the stations to GS, but also a commitment of providing EUR 200 million (a part of FSI's equity contribution of EUR 390 M to GS) for non-recurrent and extraordinary

maintenance of the stations in the GS portfolio. This maintenance included work such as repairing building features, carvings, and other structural parts. The money would also fund the installation of new station features that were necessary to comply with the law (such as fire code requirements). These public funds came from a program agreement with the Ministry of Transport, which had initially owned all the railways and had given them as a concession to RFI. In this program, the Ministry finances all investments in railways, including all infrastructure, and money was put aside for station redevelopment.

GS committed to investing a minimum of EUR 370 million within 10 years on redevelopment work aimed at enhancing the commercial value of the station buildings, such as the installation of advertising billboards or building of retail spaces within the stations. Of this amount, EUR 190 million would come from FSI (the remaining part of FSI's equity contribution of EUR 390 M to GS), while GS was responsible for acquiring the remainder of the funds. In exchange, 40 percent of the rental income acquired by GS would be paid to RFI. In addition, GS was responsible for all capital expenditure beyond EUR 370 million.

In 2000, Eurostazioni S.p.A. won the bid for the purchase of 40 percent of the shares of GS for EUR 200 million. These funds were left in GS to use for the redevelopment work. GS also acquired a loan of EUR 150 million from the European Investment Bank, to be repaid over 15 years at a six-month Euribor interest rate.

From December 2001, GS also received funds from the Italian Government. This was through the Legge Obiettivo, which is government financing for infrastructure deemed to be of strategic importance to the country. This included GS works such as road access projects and parking spaces. As a result, GS received an additional EUR 300 million from the Government that could be used for such redevelopment work.

Working out the Kinks: Contracts between RFI and GS/CS

The contracts signed between RFI and GS/CS for their respective portfolios of stations stated that GS/CS would carry out the redevelopment of the railway stations,[23] transforming them from cost centers to profit centers by exploiting the concept of travel retail without sacrificing transport customer service. In exchange, RFI gave GS and CS the right to lease all commercial spaces, offices, and apartments within the stations, and to earn revenue from these leases. Forty percent of all revenue, including rent and advertising, is transferred back to RFI. The only constraint to this right to lease was that no actions could be taken that would affect or damage the railway operations managed by RFI. Both contracts have a duration of 40 years and are due to end in 2040 and 2041 for GS and CS, respectively.

The contracts split the duties of the station clearly between RFI and GS/CS. All aspects of the station that had to do with railway operations was RFI's responsibility. As the rail infrastructure manager group under FSI, RFI oversees the entire railway network of Italy, and as such, anything that has to do with rail infrastructure is under its jurisdiction, including maintenance of railway tracks and management of train information, schedules, and display boards.

[23] The assets included in the contract with GS also covered the areas surrounding the station buildings, such as parking lots and other viable buildings. This was due to the complexity of the bigger stations managed by GS. In contrast, the assets in the contract with CS were limited to the station buildings only.

The commercial aspect of the redevelopment is entirely managed by GS and CS, and their responsibilities include the following:

- setting up the commercial strategy, including performing an analysis of the catchment area to better understand the commercial needs of the surrounding areas
- planning the strategy implementation and determining the exact mix of merchandise that the station will include
- managing the design and construction phases
- project management tasks, with a specific focus on the lease contracts
- leveraging the commercial planning and establishing relationships with tenants
- facility management and upkeep of all station premises excluding the railway infrastructure

As part of the contract, all designs (both the initial preliminary designs and the detailed project designs), scope of work for construction tenders, and facility management contracts with tenants had to be submitted to RFI for approval. However, contracts concerning commercial strategy did not have to be submitted to RFI for approval.

Establishing Agreements

With so many stakeholders involved in the redevelopment of the Italian railway stations, early-stage agreements are key to preventing future conflicts that would potentially delay the project. At the highest level, communication hinged on FSI Group procedures, shareholder agreements, and the meetings of the Board of Directors of GS and CS. These elements provided the clarity needed for such large-scale projects. At the day-to-day level, communication between RFI (as the asset owner) and GS and CS (as the developers) were also important.

An example of successfully navigating agreements is the way space was allocated to and used by GS and CS to enhance the stations' commercial value. GS and CS were given the right to lease all commercial spaces, offices, and apartments for railway employees within stations, except for the spaces that would affect or damage the railway operations managed by RFI. As part of this, a clause in the contract stated that GS and CS had the right to ask for spaces that were occupied by some of RFI's operations, and upon approval, RFI would have to vacate within 12 months. This clause was included to support the redevelopment and maximize the return of the stations. However, it had the potential of leading to a conflict of interest between GS/CS and RFI, where both parties regard a space as necessary for their own use. The two parties overcame this difficulty by assessing from the beginning of the project the importance of different spaces. RFI categorized the station areas into different levels of importance, from those critical to railway operations (and thus could not be taken over by GS/CS), to spaces that could be vacated under certain conditions. As a result, there was an understanding written into the contract and communicated between RFI and GS/CS, reducing much of the tension that might otherwise have existed.

Post-2016: The Splitting of Grandi Stazioni

In June 2015, GS's board of directors agreed to a demerger agreement, implementing a corporate reorganization that would separate the retail activities of GS from the core railway transportation services and other real estate and infrastructure businesses (Rothschild S.p.A., 2015). The three parts were named GS Rail, GS Retail, and GS Immobiliare (Real Estate).

GS Rail's main objective is to develop, enhance, and manage the 14 major Italian railway stations (the same portfolio of stations that belonged to GS before the split). To this end, GS Rail deals with:

- facility management (including maintenance, cleaning, and other general services)
- office management (including office rental and relationships with office tenants)
- parking management and construction
- engineering services (including investment management and the delivery of engineering services on demand to RFI and GS Retail)

This way, GS Rail took over the management of all main elements in the railway stations except the retail business.

GS Retail has long-term concession contracts with FSI for the exclusive commercial use of retail areas and advertising spaces of the 14 major railway stations (Rothschild S.p.A., 2015). These contracts expire in 2040, except those for Roma Tiburtina and Napoli Metronapoli, which expire in 2044 and 2050, respectively. GS Retail oversees everything to do with the retail side of the stations, including lease management, media and advertising, and services to customers. GS Retail is also involved in facility management through supervising activities performed by GS Rail in retail areas (Rothschild S.p.A., 2015).

Finally, GS Immobiliare is a company that owns five buildings located in the Napoli Centrale, Bologna Centrale, Florence Santa Maria Novella, and Genova Piazza Principe railway stations. These are buildings that were purchased by GS in the past as part of its investment strategy and are now rented out for different purposes. GS Immobiliare manages the rentals of these buildings and receives rental income directly, but the facility management is carried out on demand by GS Rail. GS Immobiliare intends to sell these buildings and will most likely dissolve once all buildings have been sold.

The demerger agreement of 2015 included non-proportional ownership of the new entities by FSI and Eurostazioni S.p.A. (Table 5.2), with the additional agreement that the entire share capital of GS Retail would be sold through a competitive procedure (Grandi Stazioni, 2015). This sale was completed in July 2016 for EUR 953 million, with GS Retail now owned by a consortium of private investors – Antin Infrastructure Partners (French fund manager), ICAMAP (Luxembourg-based real estate investor), and the Borletti Group (Luxembourg-based real estate investor) (Dockreay, 2016).

Table 5.2. Ownership of GS Rail, GS Retail, and GS Immobiliare after Demerger and Sale

Entities	Ownership Pre-demerger	Ownership Post-demerger	Ownership Post GS Retail Sale
GS Rail	60% FSI 40% Eurostazioni	100% FSI	100% FSI
GS Retail		55% FSI 45% Eurostazioni	100% Antin Infrastructure Partners, ICAMAP and Borletti Group
GS Immobiliare		60% FSI 40% Eurostazioni	60% FSI 40% Eurostazioni

Source: Rothschild S.p.A. (2015).

The change in the institutional set-up of GS reflects how railways' needs can change over the duration of the redevelopment project. By 2016, most of the redevelopment work at the stations had been completed (RFI, 2016), and FSI wanted to concentrate its resources on rail operations and management rather than retail management. Prior to the demerger, FSI was still involved, as a partial owner of GS, in the managerial decision-making of the retail business. With the demerger and sale of GS Retail, FSI instead granted GS Retail the right to leverage economically the commercial and advertising spaces of the 14 railway stations for 25 years (Grandi Stazioni, 2015), removing itself from retail management decisions and concentrating on its rail business.

With the formation of these three separate companies, new relationships formed among them. Only GS Rail and GS Retail have direct involvement in the railway station buildings and ongoing redevelopments, and thus, this case study focuses on the relationships among GS Rail, GS Retail, and RFI (as the asset owner). Officially, GS Retail has a contract with the asset owning companies (mainly RFI, although some of the assets are held by FSI and FS Sistemi Urbani, a real estate development branch of FS). However, ownership responsibilities have been delegated to GS Rail, and so practically, a relationship exists between GS Rail and GS Retail.

While both GS Rail and GS Retail manage facilities and provide services, they take charge of different aspects of the railway station. GS Rail manages the services in the public places (entrance halls, galleries, transit areas) that are used by both travelers and retail clients. GS Rail is also in charge of general utilities (such as the supply and maintenance of heating and cooling systems) for the shops, since these belong to a central system. However, if there is standalone equipment within the shop unit space that needs maintenance, it would be managed by GS Retail. In addition, GS Retail signed a contract with GS Rail that designates spaces within the railway station for retail purposes, and then subleases these spaces to vendors. Finally, GS Rail provides engineering services on demand to both RFI and GS Retail.

Into the Future: The New Corporate Strategy

> *The Italian Government has found that the CdS reduces the total amount of time taken between the submission of the project and its final authorization, since all discussions can happen at once among all the different parties of concern, without having to transfer slowly from one authority to the next.*

Starting in 2017, FSI's new corporate strategy changed from focusing only on the commercial and real estate aspects of the station to concentrating on promoting intermodality. Intermodality has become an important concept for Italy, as the urban centers become increasingly crowded, with urban transport demand forecasted to double by 2050. The modal split of passenger transport by passenger-km in Italy was 81.9 percent by car and 18.1 percent by public transport in 2016 (Eurostat, 2018). It is thus essential to think about a new shared and integrated mobility approach to transportation to avoid congestion. In line with this, FSI believes that every station should be integrated efficiently with other modes of transport (including cars, buses, and bicycles) as well as maintain and improve its current levels of services, security, and environmental and social sustainability. By extension, both GS Rail and CS (which became a 100 percent FSI-owned subsidiary at the beginning of 2017) are changing their strategies when it comes to the continual improvement and maintenance of the railway stations.

The railway station is envisioned to carry out three roles: that of an intermodal node, revenue generator, and polyfunctional pole[24]. One way FSI is ensuring that the focus of stations shifts to intermodality is by changing its classification system. Up to this point, stations had been classified as either platinum, gold, silver, or bronze, based on a specific formula that takes into consideration the following criteria:

1. total number of people passing through the station daily, including both commuters and those visiting the retail shops
2. the level of rail service, which is valued based on the type of trains that serve the station, and consist of four categories: commuter, suburban or urban trains (0.5 points), regional trains (one point), long-distance trains (two points), and high-speed trains (four points)
3. the size of the railway station, which is a weighted sum of the size of commercial areas, operational areas (such as lobbies, rest areas, hallways), and connective areas (such as platforms, transit areas, pedestrian walkways)
4. intermodality, which accounts for the presence of other modes of transportation in or nearby the station, including buses, taxis, parking areas, and airport connections. It also considers the provision of information concerning intermodal options in and around the station

The score for a station is calculated through the weighted sum of each of these criteria, and based on this score, the station is given a class. Different strategies and levels of investment are then awarded to the station based on its class. The current classification focused more on the number of passengers and the level of rail service that was at a station, and less on intermodality. However, the proposed change to the classification system will instead focus on the role of the railway station in the greater intermodal network[25].

The Skill of Coordination: Managing Station Redevelopment in the Context of Other Public Entities

Communication is important between the public and private entities involved in a PPP. However, station redevelopment projects impact not only these companies, but also the local municipality and the people who use the station every day. Additionally in Italy, many of the station buildings are considered historic, and Italy has a specific ministry that is concerned with the preservation of historic heritage sites. As such, GS and CS had to negotiate with these public entities when planning and designing their redevelopment projects.

> “Coordination and negotiation are part of every project and important for successful project completion.

This section focuses on the public entities with which GS and CS had to work closely during the entirety of their station redevelopment projects. It describes how GS and CS redeveloped the stations considering the historical heritage laws of Italy, and their negotiations with the

[24] The stations that originate trips and the stations that attract trips.

[25] It is worth noting that the methodology for assigning a class for stations in Italy considers similar factors used in the 3V Framework proposed by Salat and Ollivier (Salat and Ollivier, 2017). The 3V framework can be used to classify railway stations based on the assessment of their node, place, and market values.

Superintendencies for Historical Heritage. Following this is a discussion of the relationships between GS and CS and the local municipalities and regional governments with which they work for each of their redevelopment projects.

Historic Preservation

With Italy being an ancient and culturally rich country, historic preservation and heritage sites are extremely important. Not only are certain buildings explicitly listed as heritage sites, but all public buildings older than 70 years are automatically considered historic buildings. Thirteen out of the 14 large railway stations managed by GS and 81 out of the 103 medium-sized railway stations managed by CS are either explicitly listed heritage sites or listed as a historic building due to their age. As a result, interaction with the Superintendencies for Historical Heritage is not only mandatory under Italian law, but a vital part of the redevelopment process.

Superintendencies are government bodies first instituted in 1907 (Monari, 2007). Since then, many new statutes have changed their organizational makeup and structure, but their overall purpose has remained the same. Today, the Superintendencies are associated with the Ministry of Cultural Heritage and Activities and Tourism (Ministero dei Beni e delle Attività Culturali e del Turismo [MiBACT]). They also have regional departments, and many cities, particularly the large and important ones like Rome and Milan, have their own Superintendencies.

During the design phase of the redevelopment process, the Superintendencies must authorize and approve the project features, building layout, and materials and lighting used. Since any change made can potentially impact a part of the building that has historical significance, both the design team and the building permitting team of GS and CS must liaise with the Superintendencies to balance preservation with getting the best value for money from the redevelopment. The Superintendencies will often actively participate in the design of the redeveloped station, and must be involved in the execution of the redevelopment work.

Historic preservation can impact any part of the building. In Milano Centrale Railway Station, the redevelopment team wanted to reroute passengers so that they would pass by retail areas on their way to the platforms. However, the Superintendencies decided that this would destroy the original architectural purpose of the station, which was to bring passengers directly from the entrance to the platforms. As such, negotiations were necessary to come to an agreement between the two parties.

Another example is in the preservation of the original floors and artwork in the building. Figure 5.3 shows an example in Milano Centrale Railway Station, where the Superintendencies wanted to preserve all the original artwork on the floor. However, GS wanted to cut into the floor at the exact location of the artwork to build an escalator that would aid in passenger flow. After negotiations, they agreed that the position of the majority of the artwork would be maintained, except that the wing would be placed on the glass paneling surrounding the escalator. This way, the goals of both the Superintendencies and GS were met.

Figure 5.3. Original Artwork Preserved by Moving Wing on New Glass Panel

Source: John, Esther.

Negotiations with the Superintendencies must be factored into the redevelopment work schedule and final completion date of the station. However, it will not be known at the outset how long the Superintendencies might take to approve the redevelopment plans. For example, the superintendents in charge of St. Peter's Railway Station required six months to approve the new paint color of the station. As a result, GS and CS must know how to build flexibility into their schedules.

Relationship with the Local Municipality and Other Regional Authorities

Redevelopment project goals have always supported the long-term urban development of the surrounding parts of the city. Both the private developers and the local and regional authorities hoped that station redevelopment projects would spur urban renewal in the surrounding areas, resulting in better accessibility, a larger catchment area for the station, and a rise in the value of the real estate assets in the area. These shared goals led to the collaborative planning and coordination between GS and the authorities at the regional and local levels. As the stations under CS management are smaller projects, they have, at times, been coordinated at the regional government level, but most often at the local municipality level.

Despite these common goals, tensions can still exist between the local municipality and regional authorities, and the developers, GS and CS. In Milan, for example, the local authorities felt that each area of the city had a good mix of residential, commercial, and business activities, in addition to adequate green spaces and good connectivity. As such, the amount of commercial space that GS/CS can add to Milan's redeveloped railway stations will be limited by the City's plans.

Another example of conflict between CS and Milan's local municipality arose over the issue of the parking square in front of Milano Porta Garibaldi station. This parking square sits in the pathway between the new city center and the station and is viewed by the local authorities as obstructive to

commuter flow and taking up valuable space in the center of the city. Thus, local authorities have, for years, been pushing CS to improve the parking square. However, the parking square was also a valuable revenue source for FSI, and thus CS did not want to remove or reduce the number of parking spaces in that lot. From the local authority's point of view, CS did not seem interested in improving the public space for the people. Only in the last few years was a proposal for improving the parking square made by CS and approved by the local authorities.

There were also instances of the level of attention and resources allocated by FSI, and GS and CS not matching with the expectations of the local authorities. The initial focus of FSI, and consequently GS and CS, were on the larger stations due to the possibility of higher returns on investment, as it was necessary to first generate enough revenue. As a result, many of the smaller local stations were downsized to cut costs, resulting in fewer services offered. This conflicted with the local authorities' expectations that all stations, including smaller local train stations, would be well maintained. It is only in recent years that investments started in many smaller railway stations.

In addition to approvals from the local municipality, the larger station redevelopment projects can also grow to include the nearby areas, such as parking lots, surrounding roads, and squares and underpasses, to connect areas separated by the railway tracks. More stakeholders than just the local municipality become involved in projects of this scope; often, the regional or even national government will have a say, especially through the departments or ministries dealing with transport.

To coordinate discussions most efficiently between all parties, an institution called the Conferenza dei Servizi (CdS) is utilized. CdS, which is authorized by Italian law, gathers the different entities involved in a redevelopment project, and enables multiple discussions to occur at the same time. These entities include everyone – both public authorities and private companies – from whom permissions are needed before the entire redevelopment project can be fully authorized. The Italian Government has found that the CdS reduces the total amount of time taken between the submission of the project and its final authorization, since all discussions can happen at once among all the different parties of concern, without having to transfer slowly from one authority to the next.

Example of Milano Centrale

Milano Centrale, the main railway station of Milan, is a grand building located in the center of the city at piazza Duca d'Aosta. It is the second largest station in Italy in terms of size and traffic volume and is served by almost 600 trains per day (including regional high-speed rail), two metro lines, and several urban buses, tram lines, and airport shuttle buses. The station is used by over 320,000 people per day, or 120 million per year (GrandiStazioni Rail, 2017).

The construction of Milano Centrale began in 1925 after delays due to the First World War and a lack of funds. The station was finally inaugurated in 1931 (Figure 5.6), although it would not be completed fully until several years after its inauguration (den Boer, 2015).

Over the years, changes were made to Milano Centrale, including the installation of escalators connecting the ticketing hall to the main gallery, a new opening in the ticketing hall to accommodate these escalators, and service and commercial facilities (GrandiStazioni Rail, 2017). Major redevelopment work began in 2005 by GS to transform the station into an urban commercial center, providing services that would be of interest and useful to the city of Milan (Ingenium RE, 2000). Parts of the building that had deteriorated over the years also needed to be fixed or restored (Pelà, et al., 2013). Ticket offices were moved to the ground floor and upgraded, with self-service machines located near primary passenger traffic flows, and information and passenger assistance areas

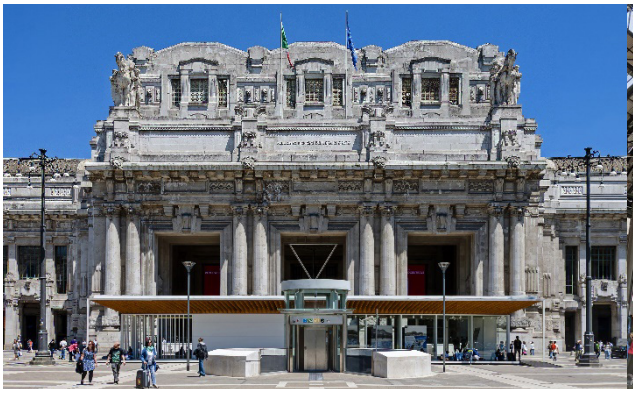
moved to locations that are more easily accessible. The old carriage gallery has now been closed to vehicular access and made into a large pedestrian walkway and public space, complete with moving walkways that give travelers direct access to the metro running underground. A new passenger tunnel was also created from spaces previously used for equipment and storage to improve pedestrian flow. (Figure 5.4).

Figure 5.4. Old Carriage Gallery (left) and Redeveloped Gallery (right) with direct Access to Metro

Source: den Boer 2015 (l.); Robot8 2022 (r.).

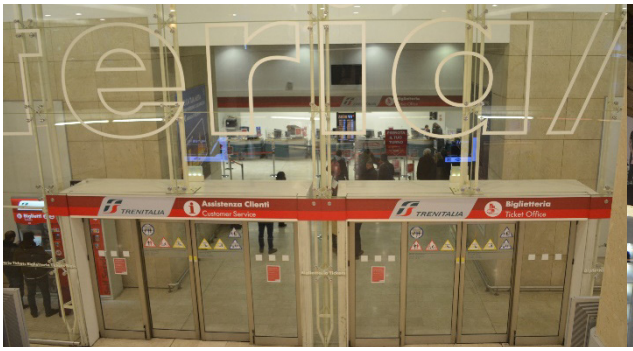
With all the ticket offices consolidated on one level, ample space remained for commercial and retail businesses to be set up. Space along the pedestrian tunnels and mezzanines were constructed for commercial activities, and several pop-up stores were set up in the large pedestrian plazas to create space. Advertising billboards and panels were also installed around the station (di Silvia, 2010) (Figure 5.5). The entire refurbishment project cost around EUR 100 million.

Figure 5.5. Features of the Redeveloped Milano Centrale Station



Source: Case, Daniel. Front entrance portico of Milano Centrale.

Source: Case, Daniel. Station platform.



Source: John, Esther; Ticket offices.

Source: John, Esther. Gallery with pop-up stores.

Lessons Learned

This case study focused on the institutional set-up of GS and CS, the companies that managed the redevelopment of railway stations, as well as their coordination with other public entities, particularly those related to the historic preservation of the stations and the local, regional, and national public authorities. These topics are of direct relevance to other countries that are looking to redevelop their railway stations and are summarized below.

Joint venture agreement mobilized private expertise and financing, while maintaining the railway's control over key decisions.

The Italian PPP used in the station redevelopment projects is a unique and effective means by which these projects can be carried out. It ensured that the correct expertise was obtained for the redevelopment work, since FSI sold 40 percent shares of both GS and CS only to private investors that were knowledgeable in real estate development. In addition, the public entity (FSI) still held the majority of the shares and board seats, ensuring that all decisions made at the board level still needed FSI, and thus national, approval.

Detailed and explicit contract terms set the boundaries between retail businesses and railway operations.

While the contracts between RFI and GS/CS supported the redevelopment of stations to maximize retail revenue, it also drew clear lines around what was vital for railroad operations. This ensured that neither party overstepped their boundaries or made decisions that would be detrimental to the commuters and visitors using the stations.

Preservation of historic buildings was prioritized.

Many developing countries have stations that have significant historical value. Although this can add complications to the overall redevelopment project, prioritizing preservation of a historic building is important as they can add much significance to the railway and city.

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CHAPTER 6

San Francisco: BART's TOD program – Generating Real Estate Value for Transit and Community Improvement

by John Good

Since the early 1990s, the San Francisco Bay Area Rapid Transit (BART) District has developed BART-owned property (primarily parking lots) into mixed use complexes of housing and retail with improved station access through station plaza and roads with wide sidewalks. These station redevelopment projects fulfill local needs as well as BART's transit-oriented development (TOD) goals, including the increase of its ridership. The revenue generated through the value capture strategies of TOD help enhance BART's financial base and address community needs, especially the provision of affordable housing. This case highlights how the under-utilized land parcels surrounding railway stations can be redeveloped to enhance real estate value and spur urban and community development.

Introduction

> *Through effective risk sharing and ground leases to retain control and flexibility, transit and railway agencies can generate additional revenue while maintaining flexibility for the future.*

The San Francisco Bay Area ("Bay Area") is one of the largest metropolitan areas in the United States, and one of the most complex. Bisected by a large bay, its urban form has spread across rugged coastal mountain ranges, bayside flatlands, and inland hills and valleys. Such geographical complexity, coupled with population growth, has led to serious issues in housing affordability and traffic congestion in the region. The metropolitan area is connected by a network of expressways and rail lines, with key chokepoints at the six bridges and one rail tunnel crossing San Francisco Bay. The largest flow of travelers is between San Francisco and Oakland on the Bay Bridge with the BART[26] transbay tube, and rejuvenated ferry lines that link the two cities. The constrained geography has increased congestion on the highways in the region, and as a result, many people use public transport, including BART; the San Francisco Municipal Transportation Authority trains and buses (Muni); Caltrain commuter rail; Altamont Commuter Express commuter rail; and numerous county-level bus systems (Figure 6.1).

[26] This case study refers to BART as an official abbreviation for the government agency responsible for the heavy rail public transit system in the Bay Area, which is also often known as the BART system.

Figure 6.1. BART System Map

Source: BART, 2023 used under CC BY 3.0 license.

This case study discusses how BART has helped address both transport and housing challenges in the Bay Area through its rail station redevelopment initiatives, commonly known as BART's TOD program, or the Transit Village Program. It showcases how the agency has generated additional funding by better monetizing its land uses for significant improvements in station infrastructure and public transit services. This has been done through various project types and mechanisms, including joint development[27], tax increment financing (TIF), and specialized redevelopment agencies and

[27] Joint development is defined by the US Federal Transit Administration as "a public transportation project that integrally relates to, and often co-locates with commercial, residential, mixed-use, or other non-transit development. Joint development may include partnerships for public or private development associated with any mode of transit system that is being improved through new construction, renovation, or extension".

assessment districts. BART has established a clear agency policy on how to pursue and evaluate potential station redevelopment projects, which must provide benefits that are beyond financial and include social measures like affordable housing. A paramount consideration is raising additional revenue by increasing the number of riders on the system and securing additional annual non-farebox revenue through ongoing ground leases[28]. The agency has often partnered with private developers so that it does not have to use its own financial resources to improve station plazas and access.

Importantly, the agency has improved the quality and consistency of its land transactions and redevelopment deals by establishing a professional planning and real estate development team. These aspects provide useful lessons to other rail systems around the world as they evaluate how to monetize their own surplus land assets. Through effective risk sharing and ground leases to retain control and flexibility, transit and railway agencies can generate additional revenue while maintaining flexibility for the future. This should generally be the goal of any railway agency looking to attract more investments to their stations and the immediate surroundings.

Background

Transport History in the SF Bay Area & Development of BART

San Francisco was incorporated as a city in the United States in 1850 during the California Gold Rush, and quickly grew to become one of the country's largest by 1900. As the land price increased substantially in space-constrained San Francisco, incoming dwellers flocked to the suburbs around the Bay Area. The population in Oakland and other areas on the eastern side also grew quickly. The Bay Area's unique geography called for ferries to be a large part of the transportation network to connect the commercial center in downtown San Francisco with the growing residential areas east of the bay (East Bay). However, ferries were largely replaced by the San Francisco-Oakland Bay Bridge in 1936. While the bridge originally accommodated streetcar trains, the system declined in popularity and the rails were removed and replaced by buses in 1958. However, the Bay Area continued to grow, and planners knew they could not rely just on automotive travel for this corridor. A study recommended an underwater rapid transit tube to connect San Francisco with Oakland, and formal planning for the BART system began in 1957.

The BART District was established in 1957 as a special-purpose district body to oversee the planning and implementation of the new BART system serving six Bay Area counties, namely San Francisco, Alameda, Contra Costa, Marin, San Mateo, and Santa Clara, of which five counties except Santa Clara nominated 16 members to the Board of Directors. However, board representation was later reduced to three counties as Marin and San Mateo decided to withdraw their participation in 1962 due to funding issues. As a result, planning for the BART system was quickly revised from a five-county to a three-county plan. In November 1962, voters in these three remaining counties approved a shorter system that was focused on the San Francisco-Oakland connection, and construction began in 1964. This system was built primarily as a commuter-focused rapid transit system, with large parking lots at the suburban stations in Alameda and Contra Costa counties in the East Bay. It was assumed that suburban employees would drive to the stations and take the train to their jobs

[28] A ground lease is a real estate lease that allows a landlord to lease to a tenant a vacant piece of land for uses such as constructing housing or retail buildings. Once the construction is complete, the floor space can be sub-leased to end-user tenants (First National Reality Partners. 2021, Net Lease vs. Grodun Lease in Commercial Real Estate).

in downtown San Francisco, and to a lesser extent, downtown Oakland. The first part of the system to open was the line to Fremont in the southeast portion of the Bay Area in 1972. The core system from Oakland to San Francisco was established in 1974 when the Transbay Tube was opened to BART train service.

At the time BART was being built, a regional expressway network was quickly taking shape as part of the US interstate system. The Government built a comprehensive network of additional expressways to connect the major Bay Area cities to growing suburban areas through a network of beltways and crosstown expressways. In this complex and polycentric region with numerous employment centers, many people choose to drive to work, especially if they do not work in congested downtown San Francisco.

BART is governed by a nine-member Board of Directors, with each member directly elected by a corresponding geographical district of the service area. The Board of Directors appoints a General Manager to oversee the daily operations of the agency and carry out development work. Funding is negotiated with the three county governments, and BART's needs are balanced against county-specific transit agencies, which generally require more tax subsidy.

Bay Area Transportation/Land Use Issues & BART Funding

As one of the major innovation hubs in the United States with a fast-growing population, the Bay Area has struggled over the last decade with rising congestion and worsening housing crisis. Housing prices have risen significantly due to supply shortages for both market-rate and affordable segments. To illustrate the extreme housing crunch in recent years, the region added 600,000 jobs while only adding 50,000 housing units from 2010 to 2015 (BART, 2018). This imbalance has created an urgent need to find space for housing wherever it can be located, preferably nearby public transit so that additional residents would not add vehicles to the already congested expressway network.

The Metropolitan Transportation Commission (MTC)[29], the regional transportation agency and metropolitan planning organization for the Bay Area, recognized new housing along public transit lines as a solution to the housing crisis and thus adopted this approach in Plan Bay Area 2013[30]. Plan Bay Area 2040, a limited and focused update of the 2013 Plan Bay Area, was finalized in 2017 and continued to focus on how the region would add more housing in priority development areas (PDAs) located in areas of enhanced public transit. According to this plan, MTC would direct federal and state transportation funding to support growth in these designated areas. Local governments have established over 200 PDAs since 2008, representing 5 percent of the total land space in the Bay Area, and these were expected to accommodate 80 percent of the new housing development. In fact, most of the PDAs were located around BART's stations, creating a new set of opportunities and challenges for BART. It needed to figure out how to increase funding to meet the growing service demand while simultaneously redeveloping its large parking lots adjacent to BART stations for compact housing and mixed-use neighborhoods.

BART proposed agency-brokered transit village-type developments to increase its non-fare income through land sales and joint housing projects, making the most of the land available in parking lots around its suburban stations. The new strategy had mixed implications for the traditional

[29] The MTC, formed in 1970, serves as a regional transportation planning agency and a metropolitan planning organization for the Bay Area. The agency also dictates where the federal transportation funding will be spent and prioritizes projects in the short-, mid-, and long-term.

[30] 2013 Plan Bay Area, prepared by MTC, is the long-range integrated transportation and land use plan for the Bay Area.

BART funding model, which mostly consisted of fare revenue, sale taxes revenue, and other public subsidies. Compared to most other US rail transit agencies, BART has historically had a higher farebox recovery ratio due to the relatively high average train fares of USD 3-7 one-way, yielding USD 511 million in FY18. Parking revenue is also substantial, with a FY18 revenue of USD 35 million. As a result, the transit village developments would put pressure on parking revenue and potentially reduce fare revenue from passengers that relied on driving to the stations, which might be offset by demand from new residents and customers of the transit villages.

Institution Building at BART for Real Estate Development

For the past three decades, real estate development has been important to BART's business. This is because real estate development could generate additional funding for the agency as well as leverage its land asset to achieve one of its social equity goals of providing affordable housing for the Bay Area through the transit village model. BART's first transit village project was the Strobridge Court Apartments at the Castro Valley station in 1993, in which BART partnered with BRIDGE Housing, a non-profit affordable housing developer, to deliver a USD 75-million affordable housing project with 96 units. BART and its partners successfully delivered three more projects, namely Hayward (1998), Richmond Transit Village Phase 1 (2004), and Fruitvale Transit Village Phase 1 (2004). In 2005 the agency began to institutionalize its real estate development strategy by introducing a TOD-oriented policy in 2005. Since then, the policy framework for BART's TOD and real estate development has continued to evolve to meet with the rising demand for both public transit services and housing in the Bay Area. As of March 2021[31], BART and its developer partners have completed 18 joint developments at 12 stations, adding a total of 3,251 housing units (28 percent affordable) and a total of 643,690 square feet of commercial space to the Bay Area's housing market.

> *BART proposed agency-brokered transit village-type developments to increase its non-fare income through land sales and housing projects, making the most of the land assets available via parking lots around its suburban stations.*

It is important to note that most of BART's rail stations were built in the 1960s and 1970s, and have had minimal upgrades and renovations over the years. Thus far, BART's focus has been on making the most of the adjacent parking lots and structures on agency-owned land, with limited changes to the original station infrastructure. This makes for simpler projects that do not impede the core operations of the system. However, it also means that BART does not get involved in station redevelopment projects that fully renovates station infrastructure and are integrated with adjacent land use. At best, its stations are improved with enhanced pedestrian plazas (MacArthur Station) and new bus plazas and pedestrian infrastructure to improve first/last mile connections with the surrounding areas.

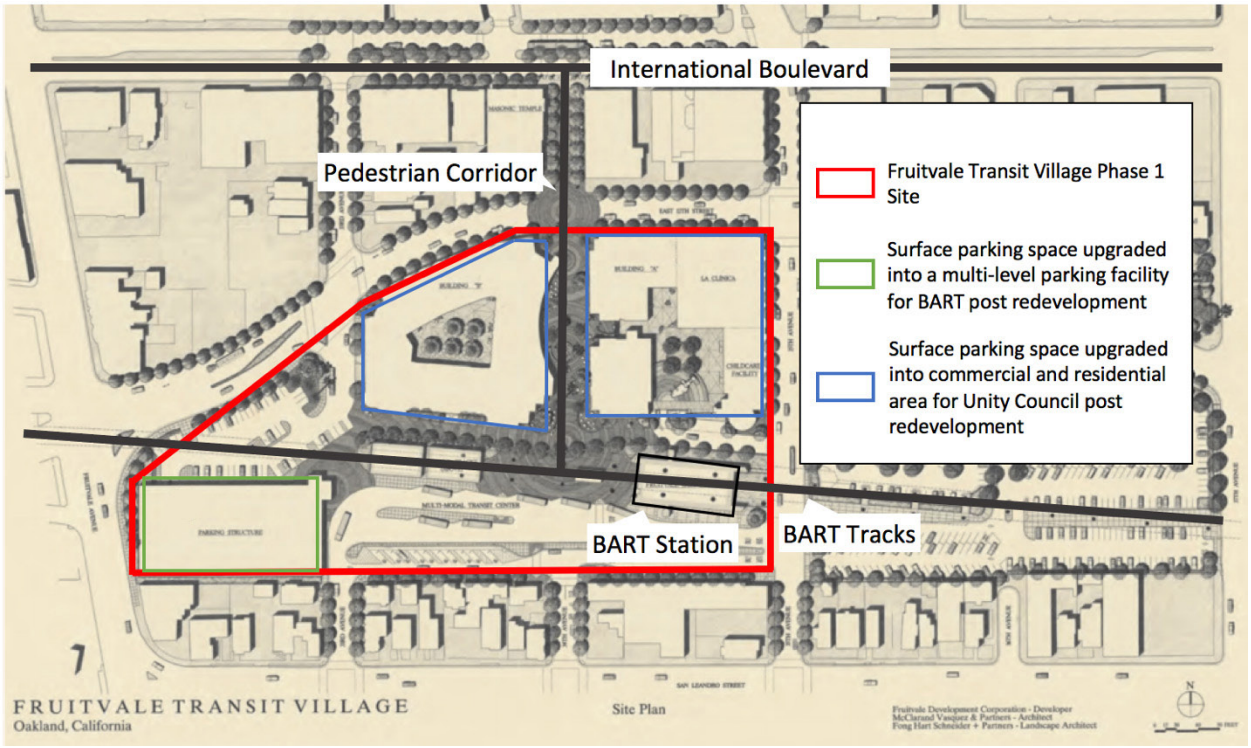
Early BART Real Estate Transaction at Fruitvale

One of BART's earliest and most iconic real estate developments was Fruitvale Transit Village Phase 1, completed in 2004 (figure 6.2). This project is often lauded as one of the best examples of TOD in the United States. It was a mixed-income project that was led by the Unity Council,

[31] According to a table summary of development within BART's TOD portfolio as of March 2021, available at https://www.bart.gov/about/business/tod

a community-based organization for the Spanish-speaking community in that area. This USD 100-million project included a replacement parking garage for BART with a capacity of 1,500 cars, 47 housing units, 37,000 square feet of retail, a high school, and 71,000 square feet of community space including a health clinic, preschool, senior center, and public library.

Figure 6.2. Fruitvale Transit Village Phase 1 Land Use



Source: Unity Council Department and Bart, used with permission.

This project required a complex mix of financing sources. It included a land swap from the south to the north side of the station—the non-profit Fruitvale Development Corporation and Unity Council gave land to BART for the construction of the parking garage at the southwest corner of the site in exchange for more marketable sites north of the station. The parking garage was also partially financed by the Unity Council to secure the development rights for Phase 1 of the main Fruitvale Village project (The Unity Council, 2021).

Evolution of BART Policy Framework for TOD and Real Estate Development

BART began to integrate and formalize its real estate development strategy and TOD principles into a TOD policy framework in 2005. Table 6.1 shows major BART-adopted policy documents guiding its TOD and real estate developments since 2005.

Table 6.1. BART-adopted Policy Documents Guiding TOD Program

Major Documents	Description
2005 TOD Policy *Status: Replaced by 2016 TOD Policy*	First TOD policy framework illustrating BART's policy vision, goals, and implementation strategies
2016 TOD Policy *Status: Effective since 2016 with some amendments in 2020*	A revised version of the 2005 TOD Policy providing the general framework to advance TOD projects near and on BART-owned land
2016 Station Access Policy *Status: Effective since 2016*	Provides station access investment framework for BART with a station access design hierarchy to promote multi-modal access and discourage auto-parking
2016 Performance Targets *Status: Effective since 2016*	Sets clear TOD policy performance measures and targets to increase the pace and scale of BART's TOD projects
2017 TOD Guidelines Status: Effective since 2017	Articulates BART's process for TOD development and expectations for station area planning
Affordable Housing Policy *Status: Effective since 2016*	Sets the minimum affordable housing units goal in BART's joint development projects
Assembly Bill 2023 Development Principles *Status: Effective since 2020*	Adopted by the Board in 2020 and supplements existing TOD policy framework; focuses on key implementation areas of Bill 2923

Source: World Bank based on data from BART 2021b.

The 2005 TOD Policy was the first important document adopted by the Board to clearly illustrate the agency's vision, goals, and implementation strategies for BART's TOD program and real estate development. Accordingly, the goals were to:

- increase transit ridership and enhance quality of life by supporting high-quality TOD
- increase TOD projects on and off BART property through creative partnerships with local communities
- enhance the stability of BART's financial base through value capture strategies
- reduce the use of automobile access to the stations by enhancing multi-modal strategies

To achieve these goals, the agency laid out various implementation strategies. BART needed partnerships with local jurisdictions to form joint powers/assessment districts early to coordinate development and solicit a wide variety of proposals from real estate developers. Any project would be evaluated based on the financial performance for BART, including new transit ridership, lease payments, and parking revenues.

Since June 2016, BART has upgraded its TOD policy framework with the adoption of the 2016 TOD Policy, 2016 TOD Performance Targets, 2017 TOD Guidelines, and numerous other guidance documents (see Table 6.1) to further address the ongoing housing crisis in the Bay Area and the statewide policy goal of CO_2 emission reduction from transportation. The agency aims to achieve the following six TOD Policy goals through both station area planning and the development of BART-owned property:

- complete community
- sustainable communities strategy
- ridership
- value creation and value capture
- transportation choice
- affordability

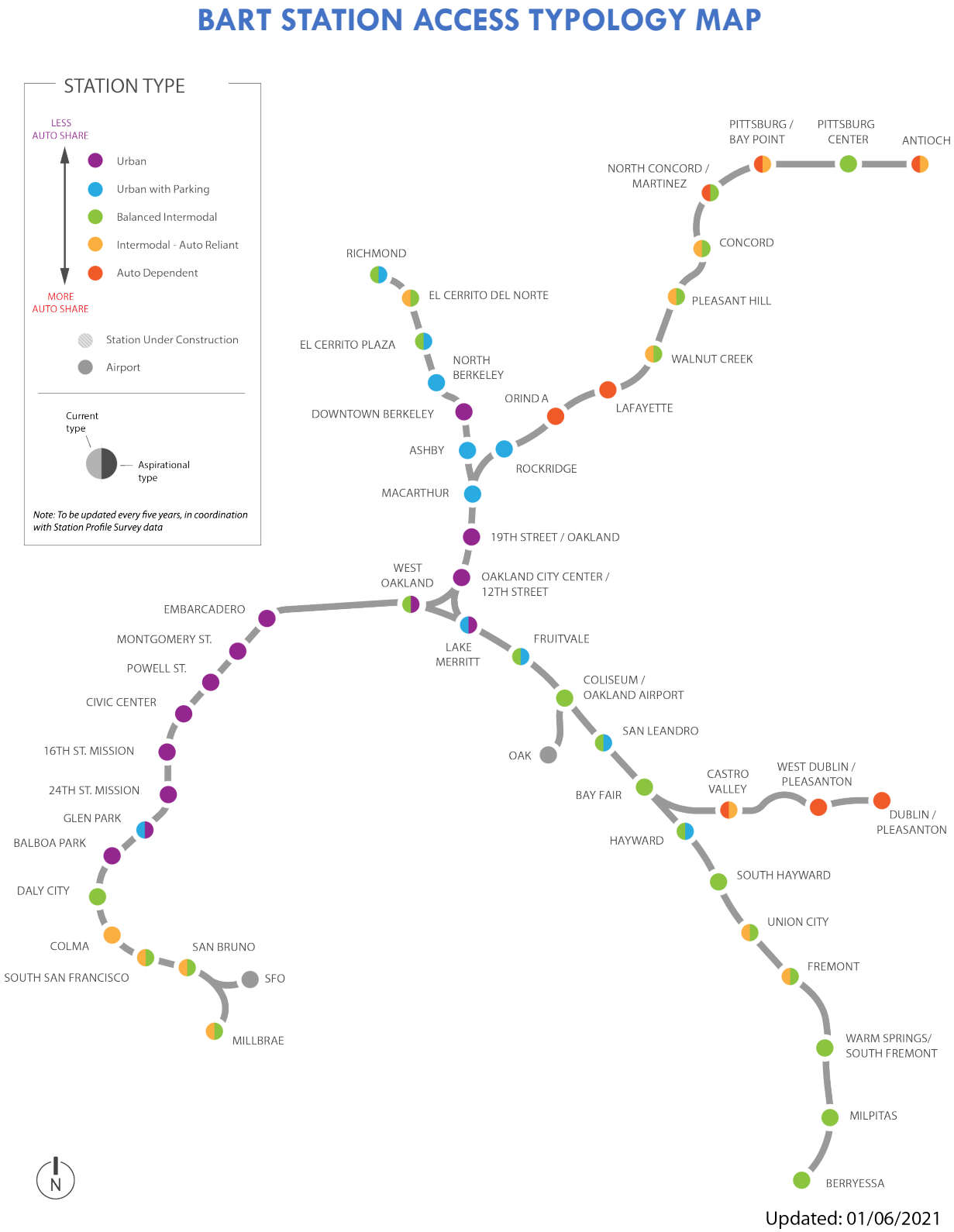
Compared to the 2005 document, the new policy re-focused BART's real estate business towards building communities surrounding its stations and sustainability, which, in turn, would benefit BART's overall business (through increased ridership and land value). Besides the general policy framework, BART adopted the 2017 TOD Guidelines to clarify its expectations for TOD at and around its stations, set standards for new properties on BART's land, and provide procedures for developers to partner with the agency in new housing projects.

2016 Station Access Policy

Besides the TOD Policy framework adopted in 2016, another key policy decision made by the Board in 2016 was to adopt the station access investment framework via the 2016 Station Access Policy. The Policy classifies stations by urban typology, and therefore, the kinds of access modes that should receive investment – urban, urban with parking, balanced intermodal, intermodal/auto reliant, and/or auto dependent. At the more urban stations, parking is discouraged and BART does not prioritize parking in these areas. In balanced intermodal stations, BART maintains existing parking assets, and partners with alternative mode providers to improve access, such as through feeder buses. In more auto reliant stations, BART will selectively consider investments in parking expansion.

As the majority of BART's station area land not used for rail infrastructure is devoted to car parking, agreeing on its future is a key prerequisite before the Board can support any other uses there. The overall goals, based on the 2021 Station Access Policy, are to create a system that is "safer, healthier, greener," and prioritizes the most sustainable access modes, encourages "more riders" especially on reverse-peak trips (by directing office growth toward the East Bay). In practice, that means looking at partnerships with technology companies like Scoop to provide shuttle service and carpooling to stations and enhancing bike and pedestrian infrastructure to encourage non-car access at most stations (Figure 6.3).

Figure 6.3. BART Station Area Access Strategy



Source: BART 2021a, used with permission.

Formalizing the BART Real Estate Team & Transaction Procedures

To deliver on these agency policies, BART also dramatically expanded the number of its professional staff dedicated to these transactions, hiring planners and real estate experts from the private sector to ensure the agency was not being taken advantage of by for-profit developers. The Real Estate department was first formed in 2007, after a decade of developments that had been handled in more ad hoc ways.

More recently, BART has moved from primarily freehold land sales and land-swap deals to using ground leases that guarantee ongoing revenue for its operations and capital needs. The American real estate development industry is increasingly willing to consider such arrangements, and BART has taken advantage of that change in approach. Ground leases are now the standard for new transit villages, which also provide flexibility for BART well into the future.

Future Opportunities and Challenges

As of March 2021, BART has four projects under construction and seven approved projects in its pipeline, with an estimated 2,987 new housing units (975 affordable) and a total of 2.6 million square feet of new commercial space (BART n.d.). It also owns an estimated 250 acres at 27 stations that would be eligible for future TOD consideration. The agency has expressed its continued commitment to expanding and accelerating the TOD program with the ongoing formulation of its draft TOD Program Work Plan, published in August 2020. According to the document, BART plans to add 5,700 units and 2.6 million square feet in 2020-2025 and a total of 12,400 units and 1.9 million square feet in 2025-2030 (BART 2020).

While BART has many opportunities to expand its TOD portfolio and accelerate its program, it needs to address three key challenges:

- effective collaboration and interest alignment between BART and local governments, especially when it comes to local zoning in the densifying area near its stations
- further streamlining of its TOD process
- additional investments in its staff and pre-development work to facilitate project implementation

The first challenge has been partially addressed after state legislation in 2018 gave BART the authority to override, to some extent, local zoning controls on its land and properties. Meanwhile, the agency is pursuing various strategies to overcome the two remaining challenges. There have been efforts to improve the internal TOD process at BART. The agency is also making additional investments in internal staffing and in strategies to reduce the predevelopment costs for real estate developers. For instance, it offers grants and loans toward predevelopment costs for projects with high share of affordable housing (as well as discounts of up to 60 percent on land value for such).

MacArthur Station Area Redevelopment Project

The redevelopment of the MacArthur station area exemplifies many typical aspects of BART's TOD program, exploiting its own property surrounding the station. MacArthur station opened in 1972 and was one of the first stations in the BART network. It is located in the densely populated area

of North Oakland, in the middle of an expressway that travels from the urban core to the eastern suburbs of Orinda and Walnut Creek cities. Sequentially, MacArthur is the next station from the busiest BART station in Oakland and the East Bay area, 19th Street Oakland Station, and two stops from the 12th Street/Oakland City Center Station in downtown Oakland.

The neighborhoods around the station had not experienced significant new investment in the decades since the station's opening. BART-owned land was limited to a small parking lot on the eastern edge of the station. The rest of the adjacent parcels were fully built out in a low-medium density urban neighborhood.

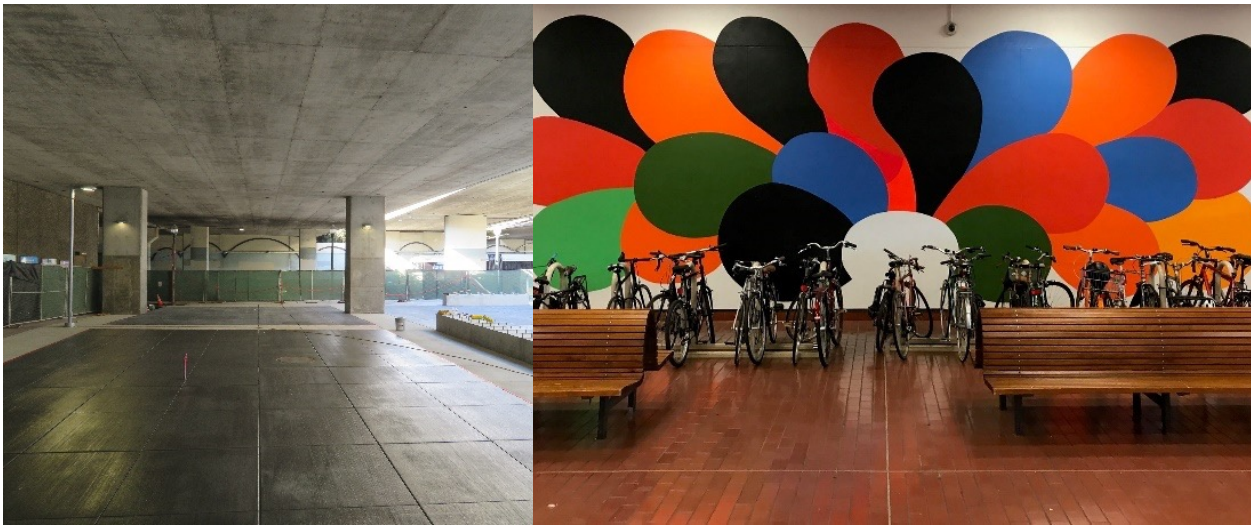
The area's development potential due to its central and convenient location began to attract attention in the early 2000s. This set the stage for a transformative high-density redevelopment of the parking lots immediately to the east of the station, and improved access to the station itself.

Project Overview

The redevelopment project was planned on the 8.18 acres project site, composed of 6.02 acres surface parking lots for BART with seven privately owned parcels amounting to 1.36 acres. The project was planned as the developer negotiated acquisition of privately-owned parcels and worked with BART for the sale or lease of parcels owned by BART (City of Oakland, 2008).

MacArthur station had about 430 trains pass through the station per day in 2006, connecting to downtown Oakland (3 minutes) and downtown San Francisco (16 minutes). During the weekday AM peak commute period (6:00 a.m. to 9:00 a.m.), headways to San Francisco ranged from two to eight minutes. There were approximately 6,740 total daily boardings at the station. The tracks and platforms of MacArthur station were between the viaducts of State Route 24 of the State of California. Under the viaduct on the east side of the station, there was a station plaza that provided pedestrian access to the station's fare gates and included waiting areas for shuttle and bus operators. The redevelopment project included improvements to the plaza, but not the station itself (Figure 6.4).

Figure 6.4. BART Station MacArthur before and after Redevelopment



Source: (l.) Pi, Wikimedia Commons; (r.) CTG/ SF, Flickr.

The project aimed to redevelop and revitalize the underutilized site to create a vibrant transit village that provides a pedestrian-oriented, mixed-use development (including housing, commercial, and community services) that enhances the character of the neighborhood and improves BART ridership and access to BART for all travel modes.

The City of Oakland, BART, and the surrounding community started discussions around TOD at MacArthur station in the mid-1990s. A partnership established for this development - the MacArthur Transit Community Partners Limited Liability Company comprised BRIDGE Housing Corporation and MacGrath Properties, Inc. (a private real estate investment and development company founded in Oakland in 1996). It submitted a proposal to demolish all existing buildings and parking lots to allow for the construction of a new mixed-use, transit village development project. The proposal included the following features:

- up to 675 units of high-density multi-family housing, of which approximately 20 percent of the market rate units will be below market rate rental
- up to 44,000 square feet of commercial space
- 5,000 square feet of community center space or childcare facility
- 300 parking spaces for BART patrons (600 spaces existed)
- development of pedestrian and bicycle-friendly internal streets and walkways
- improvements to the BART plaza and other public access

Development History

The City of Oakland approved the Preliminary Development Plan for the Planned Unit Development for the MacArthur Station Project in July 2008, authorizing the development of up to 875 residential units, 49,000 square feet of commercial space, 5,000 square feet of community space, a parking structure for BART patrons, and various infrastructure improvements on the 8.2-acre site. The approval was given with conditions requiring the developer to submit final development plans (FDPs) in five stages, for each of the five blocks/parcels of the project site by 2019.

The status of the project development stages are (City of Oakland, 2017):

- Stage 1 Parcel E – BART Garage and Infrastructure Improvements: On April 5, 2011, the city approved the Parcel E Parking Structure/Stage 1 FDP to construct the new BART parking structure and all horizontal infrastructure improvements (including streets and sidewalks). The number of parking spaces approved was 483, including 33 for non- BART users. The garage opened in September 2014.
- Stage 2 Parcel D – Mural Apartments: On May 17, 2011, the City approved the Stage 2 FDP for the development of Parcel D with 90 residential units and 90 parking spaces. The construction of Mural Apartments was completed in 2016.
- Stage 3 & 4/Parcel A & C1 - MacArthur Commons: On May 19, 2015, the City approved Stages 3 and 4 FDP for development of Parcels A and C1. Stages 3 and 4 FDP entails the construction of two six-story mixed-use buildings on Blocks A and C1. Block A includes 286 residential units (eight of which are affordable), 22,287 square feet of ground-floor commercial and building

amenity space, and 254 parking spaces. Block C1 includes 93 residential units (four of which are affordable), 2,235 square feet of ground-floor commercial space, and 63 parking spaces. The construction started in 2017 and completed in 2019.

- Stage 5 Parcel B – The Skylyne at Temescal: On March 7, 2019, the City approved Stage 5 FDP for the development of Parcel B with a 260-foot tower that includes 13,000 square feet of ground floor commercial and 402 residential units (45 of which are affordable). The construction was completed in 2020.

Community Planning & Support for Increased Density

Planning for the MacArthur Station transit village required significant stakeholder engagement to build community support for project approval from the Oakland City Council. The inclusion of a very significant affordable housing component by a respected local non-profit (BRIDGE Housing) was a major reason for this project finding community support. While the inclusion of a 25-story market-rate residential tower by Boston Properties was controversial, the community-focused components yielded a project that has largely been embraced by the surrounding neighborhood. The station area now includes a grocery store and other amenities.

Development Project Financing & Private-Sector Provision of Infrastructure

This project was financed by a complex mix of state incentives and private capital to meet mandates from the City of Oakland. To make the project work for the city, developers needed to build a new access road along the east side of the freeway/rail corridor to enable access into the core portion of the TOD project. Through a state grant of USD 37 million for public improvements, the master developer built the replacement parking structure and access road and invested in the new public plaza at the station's entrance. Additionally, through a unique Transit Benefit Covenant, BART negotiated a 1 percent share of sales or gross revenue from the entire site on a 100-year basis, which was enabled through the State of California's enhanced finance infrastructure district.

Affordable Housing as Key Financing Strategy

In the United States, new housing that is affordable to lower-income households is incentivized through the Low-income Housing Tax Credit program. This tax credit lowers the effective income tax for developers that build affordable housing, enabling projects to be financially feasible. Importantly, these tax credits are transferrable and resalable, and the tax benefits have a tangible market value. Affordable housing developers in the United States can therefore use this value upfront, raising enough capital to finance their project. At MacArthur Station, a 90-unit pure affordable housing project was built in the first phase, as well as 143 units out of a total 880 units in another major building in the station area. Specifically, in the second phase of the project, USD 37 million in state assistance was crucial for making the USD 43.8 million Mural Apartments development viable for BRIDGE.

Development of both affordable and market-rate housing at MacArthur Station was possible because of these tax credits, which provided a guaranteed source of funding in an emerging market, where demand was yet unproven. In other countries, publicly financed housing can also be thought of as a catalytic development at a station with less clear market demand. If designed well, it can spark developer interest in retail and other real estate products in the same project.

As of March 2021[32], BART and its development partners have completed 18 joint developments at 12 stations, adding a total of 3,251 housing units (28 percent affordable) and 643,000 square feet of commercial space to the Bay Area's real estate market. Table 6.2 presents BART's completed TOD projects.

Table 6.2. Portfolio of BART's Completed Projects

Station/Project	Total Residential Units	Affordable Units	Affordable (%)	Commercial Space in Square Feet
Castro Valley (1993)	96	96	100	0
Fruitvale Phase 1 (2004)	47	10	21	64,000
Fruitvale Phase 2A (2019)	94	92	98	0
Pleasant Hill Blocks A & B (2008)	422	84	20	35,590
Pleasant Hill Block C (2020)	200	0	0	0
Hayward (1998)	170	0	0	0
Ashby (2011)	0	0	0	80,000
Richmond Phase 1 (2004)	132	66	50	9,000
MacArthur Phase 1 (2016)	90	90	100	0
MacArthur Phase 2 (2019)	385	0	0	39,100
MacArthur Phase 3 (2020)	402	56	14	0
San Leandro Phase 1 (2017)	115	115	100	6,000
San Leandro Phase 2 (2019)	85	85	100	0
West Dublin (2013)	309	0	0	0
East Dublin (2008)	240	0	0	0
South Hayward (2017)	354	152	43	0
Coliseum (2019)	110	55	50	0
West Pleasanton (2019)	0	0	0	410,000
Total Completed	**3,251**	**901**	**28**	**643,690**

Source: World Bank analysis based on BART (2020).

Lessons Learned

This chapter illustrates how BART has been able to capitalize on the large parking lots adjacent to many of its stations to secure an ongoing stream of revenue to support its operations. To do that effectively, it has built institutional capacity and developed policies to unlock that value in a systematic way. Ultimately, it supports the broader public objectives of affordable housing, higher density, and reduced car dependency. While the agency continues to face challenges in communities that resist increases in density, the professional real estate team has worked to build relationships with local communities to improve the likelihood of implementation success. The following are key lessons learned from BART's successes and challenges.

[32] According to a table summary of development within BART's TOD portfolio as of March 2021 available at https://www.bart.gov/about/business/tod

To generate revenue, BART has freed up prime land for lease to private sector developers, by replacing surface parking lots with multi-story parking garages and/or by reducing parking.

Over the last 20 years, BART has worked to deliver projects that meet community goals and guarantee a long-term revenue source that can be used to fund infrastructure enhancements. By constructing multi-story parking garages to replace surface lots and by reducing parking at some stations, BART freed up valuable prime land for development. These core elements were demonstrated in the MacArthur Station, where the public sector spending was limited, and significant development and value was provided through private sector developers.

BART built up an in-house real estate development division with expertise to represent its interests.

Through the course of projects, BART developed new expertise in structuring real estate deals, and worked with municipalities and other state agencies to acquire/consolidate land, while funding key roads and other access infrastructure. The agency built a real estate division with highly competent and knowledgeable people to represent their interests effectively in negotiations.

Railway agencies should explore how they could leverage underutilized air rights above their stations and station-plus areas of well-located land parcels.

Importantly, BART has understood that its primary resource is well-located land parcels that are currently used for parking, but which have significant untapped value for land developers that want to build housing and office space. As development pressure intensifies in the Bay Area, every piece of land is being re-examined for its highest and best use. With land prices continuing to increase, the principle of unlocking the agency's resources for private sector entities with capital may evolve in form. Exploring how the agency could leverage air rights above its stations and consider large-scale station integrated projects may be appropriate in the future.

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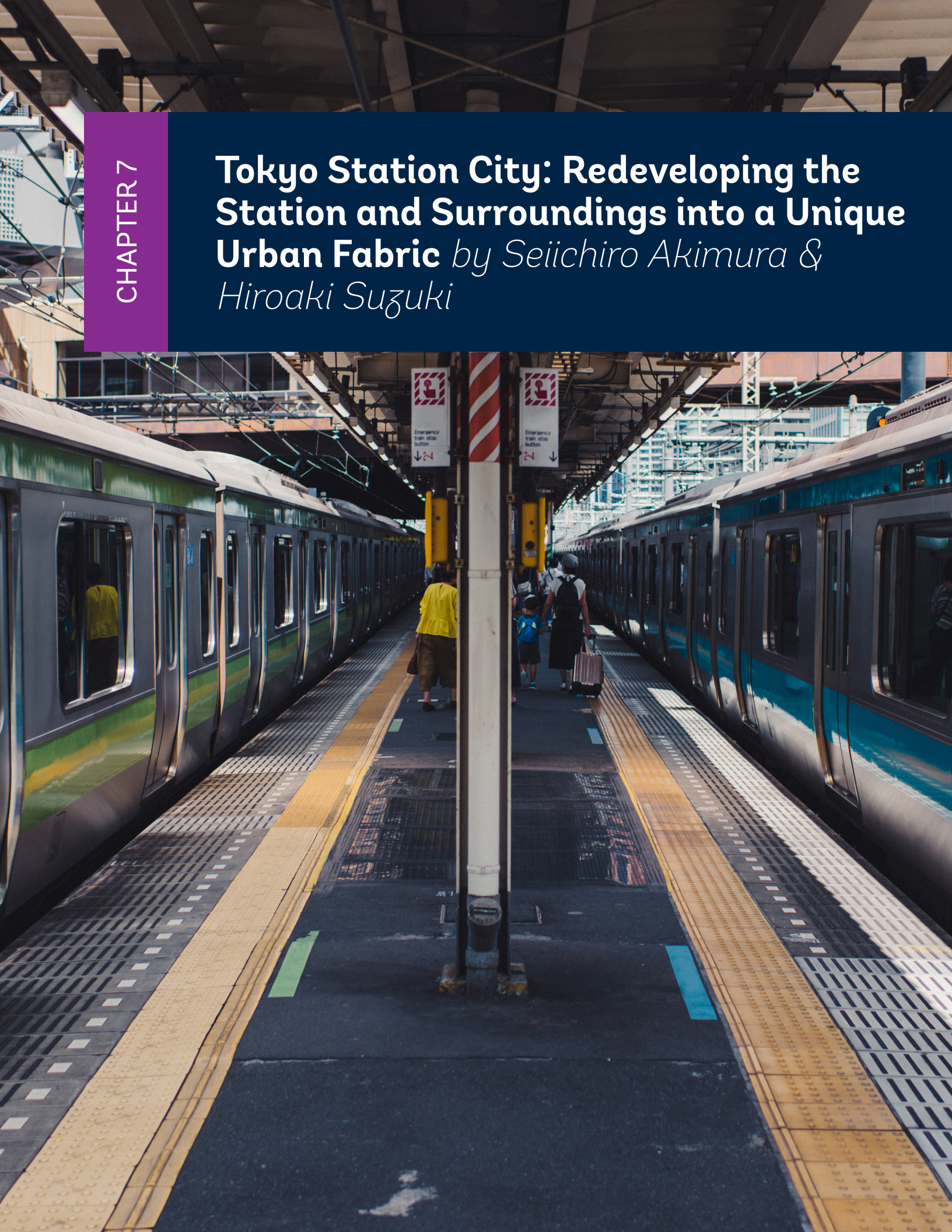
CHAPTER 7

Tokyo Station City: Redeveloping the Station and Surroundings into a Unique Urban Fabric *by Seiichiro Akimura & Hiroaki Suzuki*



JR East has increased its non-farebox revenue, mainstreaming its non-transportation commercial businesses under a clear corporate vision and strategies. Tokyo Station recently underwent a major redevelopment program called, "Tokyo Station City", converting one of Japan's busiest railway terminals into a unique urban fabric surrounding railway facilities, offering a variety of services such as office, restaurant, department store, and hotel. This transformation attracted more passengers to Tokyo Station, leading to a significant increase in non-farebox revenue. JR East's experiences highlight the importance of mainstreaming non-transportation commercial businesses at the corporate level and planning and implementing station redevelopment investments in close collaboration with key stakeholders.

Introduction

The Tokyo Metropolitan area[33] is the largest transit metropolis in the world, where extensive railway networks serve 37 million people (Statistics Bureau 2000). In total, there are 3,500 km of railways and 2,000 stations, operated by 48 public and private railway companies. Cities and towns developed around railway stations to the extent that a large part of the central area of Tokyo is within an 800m walkable radius from a railway station.

> *The institutional framework under which JR East, the landowners of the surrounding station area, and the local governments were able to collaborate and coordinate was instrumental in integrating the station redevelopment project with the development of the surrounding area.*

East Japan Railway Company (JR East), one of the seven privatized regional railway companies that spun off from Japanese National Railways (JNR) (Box 7.1), operates 1,200 km of Shinkansen and 620 km of conventional lines, including very profitable commuter lines in the Tokyo Metropolitan area. Anticipating farebox revenue decline due to Japan's demographic change, JR East has been exploring non-farebox revenue by mainstreaming non-transportation commercial businesses and adopting articulated corporate visions and strategies under an institutional setting to materialize them.

[33] The Tokyo Metropolitan Area consists of the Tokyo Metropolis, Kanagawa Prefecture, Chiba Prefecture, and Saitama Prefecture. Its population is about 36,730,000 in 2019.

Box 7.1. Privatization of JNR[34]

JNR was established in 1949 as an independent public corporation, fully owned by the Government, to succeed all railway operations nationalized since 1906. JNR rapidly implemented a series of capital investment programs to modernize and expand its infrastructures and capacities to respond to rapidly growing commuter demand in the Greater Tokyo Metropolitan area and Kansai Metropolitan area. For example, Tokaido Shinkansen was constructed in 1964, just before the Tokyo Olympic Games, and was the world's fastest bullet train line at the time, connecting Tokyo and Osaka (500 km) in less than 3 hours.

However, JNR's financial performance deteriorated in the mid-1960s because of diverse structural problems:

- intensifying competition from automobiles and airway travel
- over-staffing and strong labor unions
- local lines in remote areas and freight operations that did not generate profits
- inefficient fare prices
- huge debt services for loans borrowed for aggressive capital investments

Consequently, JNR recorded a deficit of JPY 830 billion (USD 6.3 billion) in FY 1964 alone. Although a few restructuring plans and legislations were adopted, none of them turned around a distressed JNR.

As the public sector-led JNR restructuring plans failed, the Government privatized[3] JNR in 1987, changing its ownership, management, and operations, while taking on its entire debt. JNR was divided into seven private regional railway companies, a few other private companies, and two public agencies for special purposes. The Government's intention was to revitalize the privatized JR companies using market force, demanding accountability for its business performance in exchange for independent managerial decisions on investments, financing, and personnel. Overall, the Government's privatization strategy proved effective and a privatized JR Group companies recorded net sales of JPY 6.9 billion in 2016 (USD 63.5 million), roughly double that of JNR before the privation.

Source: World Bank.

Tokyo Station is one of the busiest in Japan, located in the heart of the city's prestigious business district and close to the Imperial Palace. Tokyo Station recently underwent a major redevelopment program called, "Tokyo Station City," which aims to improve the station's transportation functions by expanding and rearranging corridors and concourses and by renovating station plazas, enhancing safety by adapting seismic structures and technologies, and increasing non-transportation revenue by expanding retail spaces.

[34] The privatization of JNR was carried out in phases. In the first phase, the Government divided JNR into corporatized JR companies and held all the shares of the companies. The Government's shares were later sold to private investors, considering the market conditions and the financial performance of each JR regional company. So far, JR East, JR Tokai, JR West, and JR Kyushu have been fully privatized, leaving JR Shikoku and JR Hokkaido as state-owned companies due to their weak financial positions and limited railway demand in their regions.

Tokyo Station City was also conceived to transform the major railway terminal into a unique focal point of the surrounding urban fabric, reflecting the area's history, and offering passengers a variety of high-quality and well-integrated dining, shopping, and lodging experiences, both inside and outside the station.

JR East developed the "Ekinaka" (inside station. In Japanese, "Eki" translates to "station", and "naka" to "inside") retail business model through its retail subsidiaries. It is unique in that some of JR East's retail subsidiaries not only lease retail spaces to the tenants, but also develop the store brands, identify targeted customers for specific stations, develop relevant marketing strategies, design store floors, and allocate suitable spaces to selected tenants. JR East's retail business subsidiaries closely coordinate with JR East's railway operations department. This coordination is to ensure that:

- retail customers do not cause disruption for passengers
- emergency plans are developed in consideration of both railway and retail operations
- flexibility is kept for future changes with railway operations as priority

JR East's station redevelopment programs such as Tokyo Station City demonstrate the changes in value propositions of railway stations as perceived by operators. The variety of business models and project types that evolved over time to achieve financial and commercial viability illustrate the importance of integrated *flow* and *stay* functions to ensure efficient railway operations and consumer services businesses.

Background

Non-farebox revenue contributing to the revitalization of JR East

JR East was formed as one of seven privatized JR group companies, operating in the eastern part of Japan, which covers the Kanto, Tohoku, and a part of the Central regions. Its network consists of about 1,200 km of Shinkansen (high-speed trains) and 620 km of conventional lines, including very profitable commuter lines in the Tokyo Metropolitan area.

Following the deregulation of commercial activities as a part of the privatization program, JR East promoted a variety of non-farebox revenue generating activities.

After the privatization, JR East significantly improved its financial performance and in FY 2018, generated JPY 2,950 billion (USD 26.2 billion) in operating revenue and earned JPY 481 billion (USD 4.3 billion) in operating income. The share of operating revenue from non-transportation business lines accounts for about 30 percent (table 7.1). Profit-oriented strategic investments, operational efficiency, and independent management decisions without political interference, all made possible after privatization, contributed to this success.

Table 7.1. JR East Group's Operating Revenues by Business Lines (March 2018)

Segment	Transportation	Retail & Services	Real Estate & Hotels	Financial and Other Services	Total
(JPY Billion)	2,018	515	340	77	2,950
Share	(68.4%)	(17.5%)	(11.5%)	(2.6%)	(100.0%)

Source: World Bank.

JR East's in-house business model

> *Uniquely, corporate financing allowed JR East to raise funds faster and at lower costs than project financing can mobilize, while ensuring flexibility when the business environment changes.*

Unlike most other railway agencies that outsource non-transportation, JR East carries out non-transport businesses mostly in-house. It has established more than 100 subsidiaries (table 7.2) specializing in retail, real-estate, hotels, and other services. These subsidiaries were established to develop specialized business entities suitable for a repetitive business line, different from the transportation business. Compared with their parent company, JR East, the much smaller subsidiaries can make decisions faster and therefore, quickly adjust themselves to a rapidly changing business environment.

Figure 7.1. Early morning platforms are crowded at the city's train station, Tokyo, Japan

Source: Adobe Stock.

The subsidiaries recruit both new graduates and mid-career employees with experience to nurture in-house expertise and capacities toward long-term business strategies. JR East and its subsidiaries exchange their personnel to ensure synergy between the railway transportation and non-transportation businesses and to share experiences and expertise across the JR East Group companies. JR East and its subsidiaries also exchange their staff with various non-JR East group companies if they need to gain expertise not available within the group or when they intend to establish a business alliance with non-group companies.

Table 7.2. JR East's Major Subsidiaries as of April 1, 2022

Business Groups	Activities	Numbers	Major Subsidiary Companies
Large-scale retails	Station building, shopping centers	11	Atre, Lumine
Small-scale retails	Ekinaka (in station) shops: restaurant, cafes, bookshops, convenience stores, souvenir shops	3	JR-Cross JR East Retail Net Co Ltd Livit
Real estate	Property management, developer, event organizer	1	JR Japan East Building
Realtor	Shopping center, offices, housing and property management, investment	4	JR East Urban Development, JR East Estate Management Co., Ltd
Hotel	Hotel	4	Nippon Hotel, owns Tokyo Station Hotel, Sendai terminal building
Trading and Distribution	Trade and distribution logistics	2	East Japan Railway Trading Corporation (EJRT)
Tourism and rental cars	Tourism services, and car rental	2	JR East Japan View Tourism & Sales, JR East Rental Lease
Sports and leisure	Sport facilities, ski resort	2	JR East Japan Sport, Gala ski resort
Information, finance, personnel	Information, financial, and personnel services	5	JR East Japan Information System, JR East Japan Management Services (JEMS)
Credit card	Credit card services	1	View Card
Advertisement and publication	Advertising and publication	2	Jeki, Orange Net
Maintenance and cleaning	Maintenance and cleaning of railway stations and railway wagons	14	Tessei, Jetts
Other businesses	Consulting, rollingstock manufacturing, electric generation, venture capital	16	Japan International Consultants for Transportation

Source: JR East website https://www.jreast.co.jp/group/.

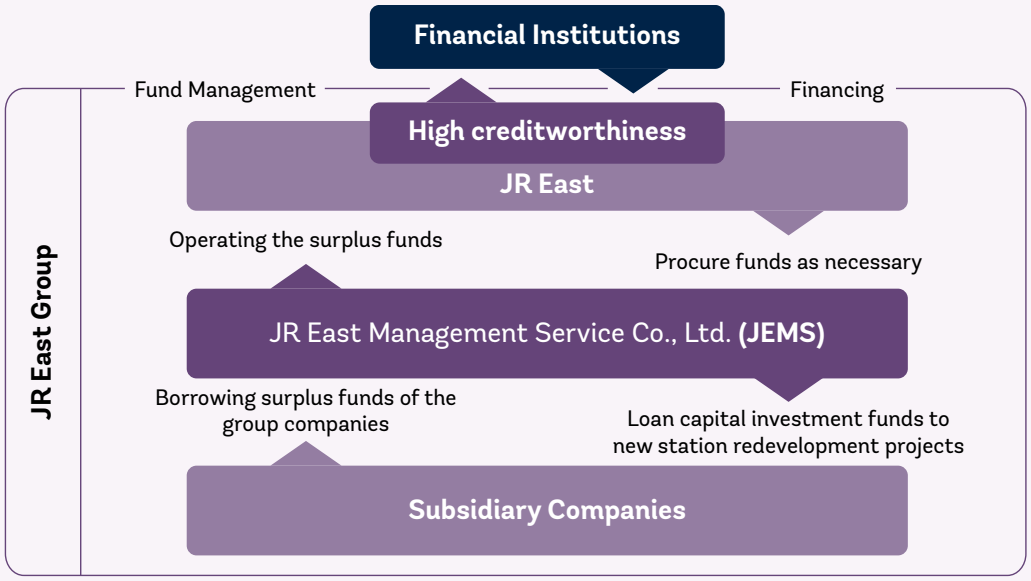
JR East also adopted an "in-house" business model for financing. Building on its strong financial base, JR East used corporate financing rather than project financing for major capital investments such as station redevelopment projects (Box 7.2). JR East does not opt for project financing as it is time consuming, and more importantly, its financing cost is higher. Furthermore, concession contracts do not allow it to react quickly and flexibly when the business environment changes.

Box 7.2. JR East's Corporate Financing Scheme

JR East enjoys a strong financial rating (Aa3 by Moody's Japan) in the Japanese capital market. In 2018, JR East issued seven unsecured bonds with a total nominal amount of JPY 90.0 billion (USD 821 million), maturing from 2027 through 2058. JR East also has access to bank overdraft facilities of its principal banks, totaling JPY 330 billion (USD 2.9 billion). As of March 31, 2018, JR East did not have any outstanding balance of commercial papers and bank overdrafts.

JEMS was established as JR East Group's "bank" and financial service company (Figure B7.2.1). Using its cash management system (CMS), JEMS pools and manages JR East group companies' surplus funds and makes internal funds available for projects identified as high priority in JR East Group's strategic investment plans. If the internal funds are not adequate, JEMS will transfer the proceeds of high-grade JR East Corporate bonds to JR East's subsidiaries, thus reducing their financing cost. CMS is also used to offset internal financial settlements among the subsidiaries.

Figure B7.2.1. Institutional setup of JR East



Source: World Bank, adapted from JR East Management Service Co., Ltd. (JEM) https://www.jre-jems.co.jp/services/finance/.

Evolution of JR East's Retail Businesses

Even before privatization, JNR conducted retail businesses by leasing its land and floor spaces not required for railway functions to tenants. Daimaru Department Store opened in 1956 and occupied 31,500m^2 of floor space of the Testudo Kaikan building of JR East (Yaesu exit side of Tokyo Station). Right after the privatization of JNR into JR companies in 1987, JR East Retail Net Co. Ltd. was established as a subsidiary specializing in retail businesses. However, its business activities remain similar to what it inherited from JNR, which were kiosks and food stands in the concourse and on the platforms, and a few station buildings leased to tenants at major terminal stations such as Tokyo Station.

To diversify revenue sources for the corporation and to provide a better customer experience for rail users, JR East decided to renovate some of its terminals, develop commercial spaces in them, and mainstream retail operations at stations in one of the non-transportation business lines. In this context, the Ekinaka business was developed as an important component of the "Station Renaissance"

strategy under JR East's 2001 mid-term corporate vision, "New Frontier 21." In 2003, JR East Station Retailing was established to transform the conventional space leasing concept into a next-level inside-station railway-led retail business model. Based on this, a new type of Ekinaka business model was developed where JR East creates space for retail businesses by rearranging and/or reconstructing station facilities and JR East Station Retailing creates a clear merchandising concept and lease space to shops and restaurants that are often new in the area. The intention was to create an entirely new form of commercial area inside stations under a new brand name, "Ecute," which is common across different stations, with the subsidiary company taking control of all details from concept development and floor layout to tenant selection and marketing the branded shopping areas.

The first Ecute opened in 2005 in Omiya Station, a major terminal in Saitama prefecture (Box 7.3). Later, JR East Station Retailing also started operating its own retail and service businesses such as restaurants, shops, and hotels. In an "Ekinaka" development, JR East seamlessly integrated two potentially contradictory functions of the stations: the flow function for the smooth transfer and movement of passengers, and the stay function for convenient and comfortable consumer services inside the station.

Box 7.3. "Ecute" Branding in JR East's Retail Businesses in "Ekinaka"

Ecute is the brand name of retail facilities developed by JR East in "Ekinaka". Its naming was selected through a public naming contest. Ecute is composed of the initial letters of five keywords - E for *eki* (station in Japanese), C for *central*, U for *universal*, T for *together*, and E for *enjoy*, which means the station where all people can enjoy. Each Ecute facility is designed with a different concept, considering its location and targeted customers. More than 20 Ecute facilities operate in major JR East stations, including Tokyo Station (Figure B7.3.1).

Figure B7.3.1. Ecute Shinagawa in Tachikawa

Source: JR Cross and World Bank

Photo: ITA-ATU, used under public domain, Wikimedia Commons.

Tokyo, the World Largest Transit Metropolis

The Tokyo metropolitan area is the world largest conurbation with a population of 37 million, accounting for 30 percent of Japan's total population. This area is also known as the largest transit metropolis in the world, where 3,500 km of railways and 2,000 stations are operated by 48 public and private railway companies (Figure 7.1). Most of the area of Tokyo's 23 wards is within walking distance from a railway station, making the trains and metros (subways) indispensable to social and economic activities. The modal share of Tokyo's 23 wards comprises 51 percent trips by rail and bus, 37 percent by non-motorized modes (bicycling and walking), and 12 percent by car.

Figure 7.2. Network in Greater Tokyo Metropolitan Area

Source: FML, own work, used under CC 3.0 license.

Tokyo Station and Tokyo Station Area

Tokyo Station is in the heart of Chiyoda ward, the Central Business District of Tokyo, where more than 4,000 companies, including the head offices of 83 Japanese blue chips companies, are located. They generate JPY 135 trillion (USD 1.1 trillion) or about 10 percent of Japan's total corporate revenue. Tokyo Station is within walking distance of important places such as the Imperial Palace, Ginza, and Nihonbashi commercial areas, the Tokyo Stock Exchange, and Tokyo International Forum (international convention hall owned by Tokyo Metropolitan Government- TMG).

Tokyo Station is the busiest station in Japan in terms of the number of train departures and arrivals, exceeding 4,000 per day. Ten inter-/intra-city rail lines, and seven Shinkansen (inter-region high-speed trains) lines provide service at Tokyo Station. In addition, seven subway lines provide service at stations located within the Tokyo Station-area. In total, more than 1.2 million passengers use Tokyo Station daily (Table 7.3), with 3.24 million passengers using JR railways and subways in the Tokyo Station area (Table 7.3).

Tokyo Station has a prominent status as the gateway to the international city of Tokyo due to its prestigious location and its key transit hub function. Its 100-year-old red brick station building at the Marunouchi entrance is considered a Tokyo landmark.

Table 7.3. Daily Passenger Use of Tokyo Station Area

Location (Area m²)	Type	Number of Lines	Operator	Daily Passenger Trips (Estimated)
In-station (92,400)	Shinkansen (Inter-region bullet rail)	6	JR East	157,236
		1	JR Central	195,600
	Inter-/Intra-city rail	10	JR East	905,098
			In-Station sub-total	1,257,934
Station-plus (175,400)	Bus, taxi, car		Public & private	(1,021,000)
	Metro (Tokyo Station)	1	Tokyo Metro	211,558
			Station-Plus sub-total	1,232,558
Station area (899,200)	Metro (7 stations)	6	Tokyo Metro	653,845
		1	Tokyo Metro. Gov.	94,834
			Station Area sub-total 7	748,679
Total (1,167,000)	24 Lines 4 Operators			3,239,171

Sources: JR East, JR Central and Tokyo Metro.

"Tokyo Station City" Program

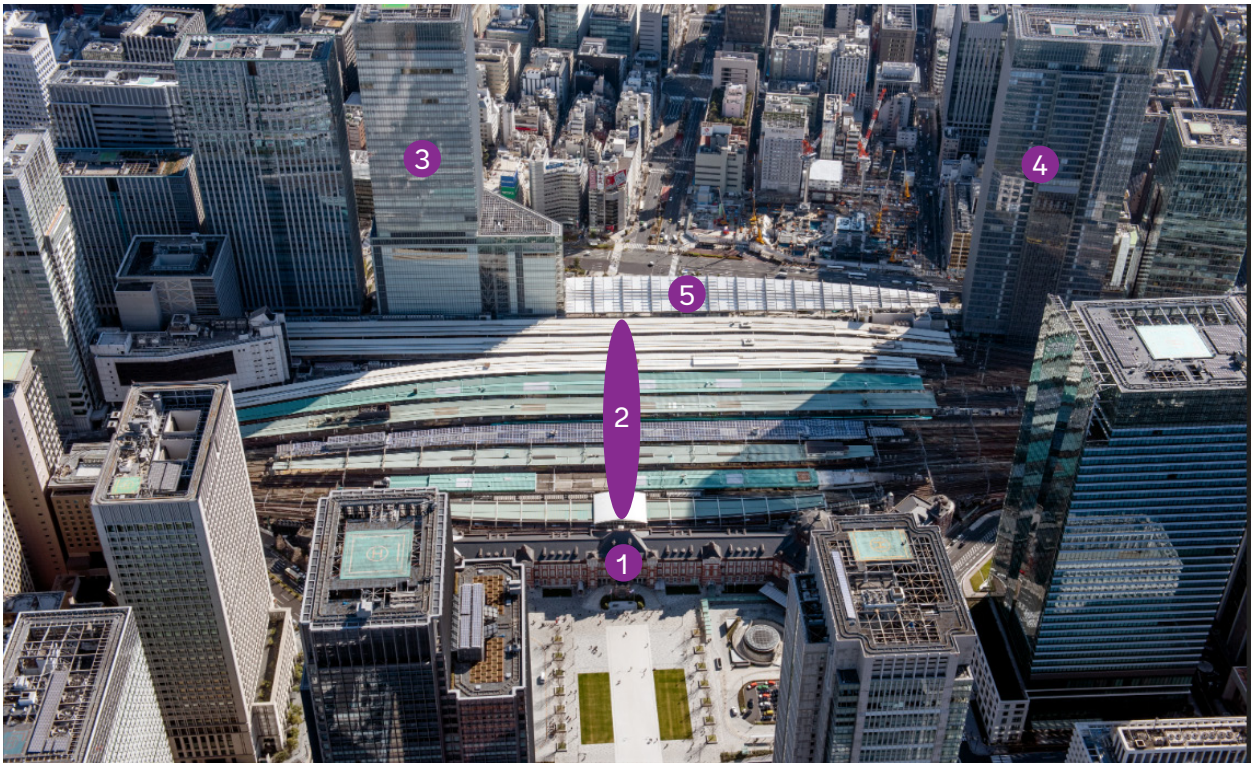
In the 2000s, JR East and the owners of the land adjacent to Tokyo Station undertook a major station redevelopment program called "Tokyo Station City". Its objectives were to:

- improve its transportation functions by expanding and rearranging corridors and concourses, and by renovating station plazas
- enhance safety by adopting aseismic structures and technologies
- increase non-transportation revenue by expanding retail and other consumer service spaces

Tokyo Station City was also conceived to redevelop Tokyo Station as part of a unique urban fabric, which provides passengers with a variety of services from dining, shopping, to lodging, before and after taking trains.

The "Tokyo Station City" program included all three types of station redevelopment projects: in-station, station-plus, and station area. The major investments were carried out at three locations: the Marunouchi entrance (West), concourses and corridors inside the ticket gates, and the Yaesu entrance (East) (figure 7.3). Tokyo Station City was an integral part of the Tokyo Station Area redevelopment program developed and implemented in close collaboration with the national and local Governments and other landowners in the station area.

Figure 7.3. Overview of Tokyo Station City



Source: World Bank, adapted from JR East, used with permission.

Notes:
1. Restoration of Marunouchi Station Building and redevelopment of Marunouchi Station Plaza
2. Expansion of Concourses and Corridors
3. Construction of GranTokyo North Tower
4. Construction of GranTokyo South Tower
5. Construction of GranRoof and redevelopment of Yaesu Station Plaza

Marunouchi Entrance Redevelopment (2007-2012)

Marunouchi entrance redevelopment consists of the restoration of Marunouchi Station Building and the redevelopment of Marunouchi Station Plaza.

Restoration of Marunouchi Station Building

- Type: In-Station
- Construction Period: 2007- 2012
- Construction Cost: JPY 50 billion (USD 396 million)
- Financing: Proceeds of unused FAR of Tokyo Station (JPY 50 billion [USD 396 million])

The restoration of Marunouchi Station Building, which is a registered important cultural property, was an iconic project of "Tokyo Station City," as the 100-year-old red brick building is considered the face of Tokyo Station and a landmark of Tokyo. After five years of work, in which the original building was reinforced with aseismic structure and technologies, the Marunouchi Station Building was entirely restored in 2012. The renovated three- story building is used for the station facilities, a five-star hotel with 200 rooms, a JR East travel service center for foreign tourists, and a station gallery.

Restoration of the Marunouchi Station building cost approximately JPY 50 billion (USD 396 million) and was entirely financed with proceeds from the sale of unused floor area ratio (FAR)[35] from Tokyo Station to other landowners of the redevelopment projects, which were carried out at adjacent sites, including those of two towers at the Yaesu entrance.

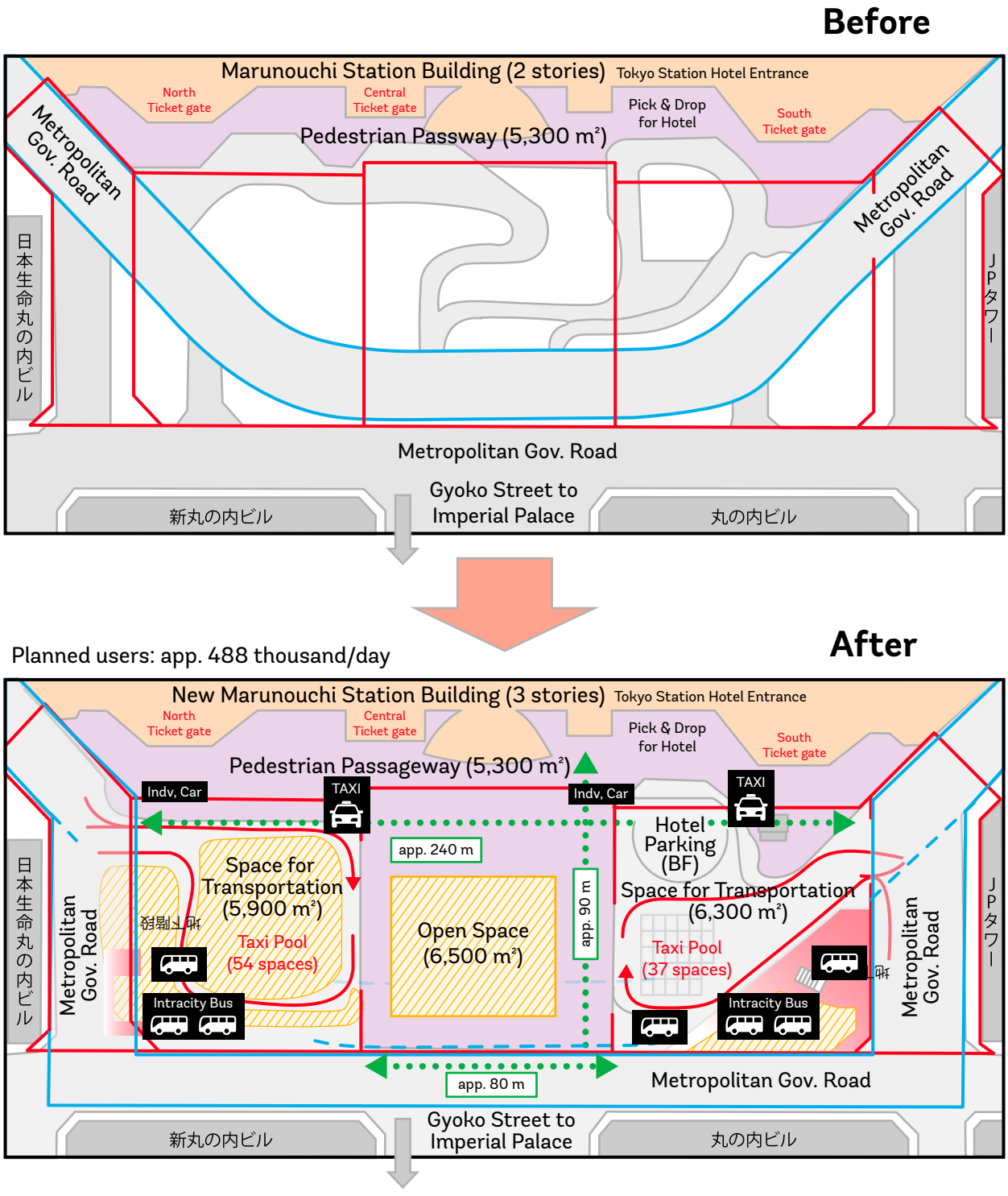
Redevelopment of Marunouchi Station Plaza

- Type: Station-plus
- Construction period: 2007- 2012
- Construction cost: JPY 6.6 billion (USD 56 million)
- Financing: JR East - JPY 3.9 billion (USD 33 million) and Tokyo Metropolitan Government (TMG) - JPY 2.7 billion (USD 23 million)

The station plaza redevelopment project was carried out to create a new open space of 6,500m^2 and 12,200m^2 for transportation use, relocating a road of TMG (Figure 7.4). JR East also redeveloped the underground of the station plaza and created a new 3,600m^2 commercial space as "GranSta Marunouchi" and additional pedestrian passageways, enabling smooth connection between the station and surrounding buildings and metro stations. After the redevelopment, railway passengers had smooth access to other public and private transport modes, and they could easily move towards the offices in the Marunouchi District and the Imperial Palace, further to the west. Besides, the vista from Tokyo Station to the Imperial Palace was improved, attracting many tourists to the area (Figure 7.5). The huge spaces created in the basement of Marunouchi Station Plaza became a functional underground passageway with an event place and shops, directly connected to major buildings and metro stations in the Marunouchi area. This space will be also used as a temporary evacuation area in the event of major disasters such as an earthquake.

[35] FAR is a ratio of a building's total area to the size of the land on which it is built. FAR is regulated in the land use plans. The Japanese Government amended the city planning law and building standard law in 2000 to enable exceptional FAR transfer in the designated areas where high-density use of land is required. In 2002, the TMG designated the Tokyo Station area with 116.7 ha as a district to apply the exceptional FAR transfer system.

Figure 7.4. Redevelopment of Marunouchi Station Plaza



Source: World Bank, based on JR East and Tokyo Metropolitan Gov.

Figure 7.5. Renovated Marunouchi Station Building and the Station Plaza

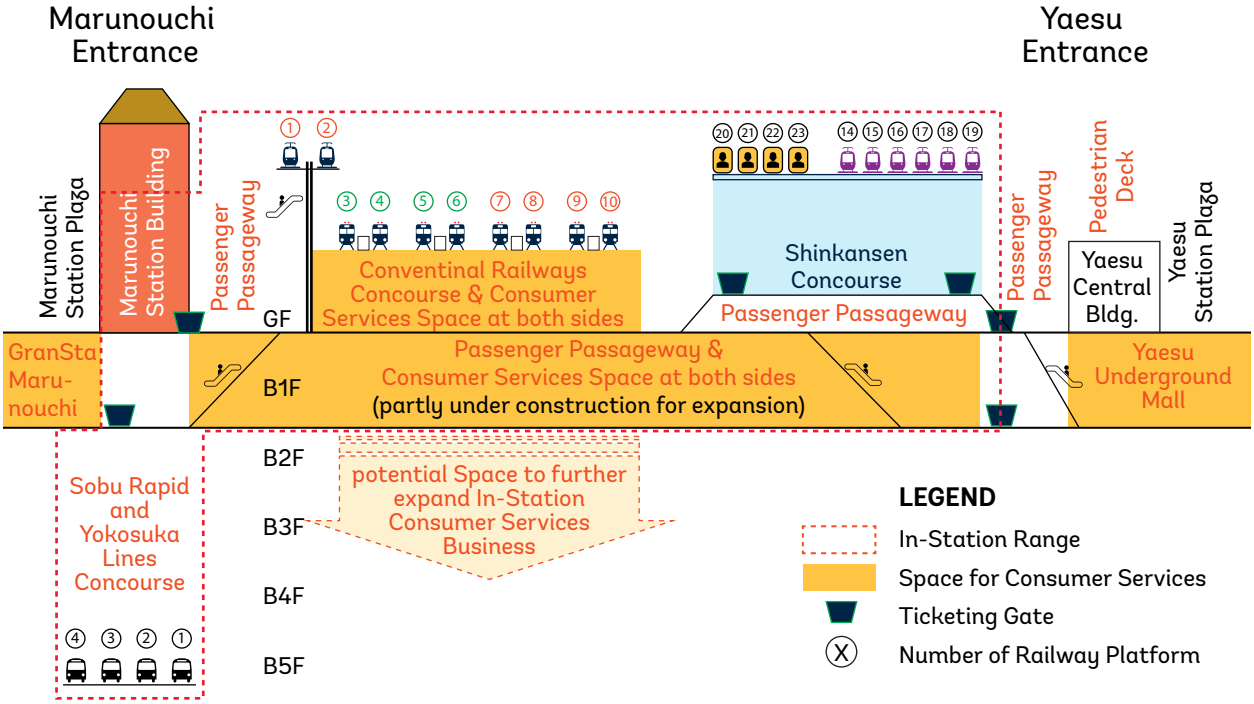
Source: Andi Winata.

Expansion of Concourses and Corridors Inside the Ticket Gates

- Type: In-station
- Construction period: 2015- 2021
- Construction cost: not available
- Financing: JR East Corporate Financing

Tokyo Station has a long history of developing commercial spaces inside and outside the station, since the early 1950s when Daimaru Department and Yaesu Underground shopping street opened at the Yaesu entrance on the east. Since then, JR East gradually redesigned and expanded the concourses and corridors inside the ticket gates to increase the retail spaces, while ensuring passengers' smooth transfer between the trains and their destinations. In 2010, JR East opened two shopping area branded as "GranTokyo" and "Ecute Tokyo" inside the ticket gates. Expecting further increase in passengers during and after the 2020 Tokyo Olympics, JR East decided to expand the concourses and corridors located on the underground and the ground floors connecting the Marunouchi side and Yaesu side, as a part of the Tokyo Station City Program (Figures 7.6 and 7.7).

Figure 7.6. Cross Section of Tokyo Station, Illustrating the Structure of the Central Corridor



Source: World Bank, based on data provided by JR East.

The expanded concourses and corridors on the ground floor and the underground floor not only helped passengers smoothly move to their destinations, but also created a large retail space. Today more than 200 shops, mostly located in JR East's branded shopping areas, "GranSta" and "Ecute," provide passengers with a variety of dining and shopping services.

Figure 7.7. Underground shopping mall "Gransta Tokyo" at Tokyo Station

Source: Maeda, Akihiko.

Yaesu Entrance Redevelopment

The Yaesu entrance redevelopment consisted of the construction of twin-tower buildings connected with the GranRoof pedestrian deck, and the redevelopment of the Yaesu Station Plaza.

Construction of Twin-tower Buildings and GranRoof

- Type: Station-plus and station area
- Construction period: Phase 1 (South Tower & Phase 1 of North Tower- Office Spaces) 2004-2007 and Phase II (Phase 2 of North Tower- Retail Spaces[36] and GranRoof[37]) 2004-2013
- Construction cost: JPY 130 billion[38] (USD 1.2 billion)
- Financing: JR East and other landowners[39]

The owners of three old buildings (South Building, Testudo Kaikan Building, and North Building) located adjacent to the Yaesu entrance, JR East, and four private companies, decided to replace these buildings with two 42-story towers connected with a pedestrian deck covered by a large awning (GranRoof) and to redevelop the Yaesu Station Plaza (figure 7.8). This was accomplished by transferring unused FAR from the Marunouchi Station Building to the lots of the new towers and relocating the former land of the old central building (Tetsudo Kaikan Building) to the new north tower lot.

Two 42-story towers named "GranTokyo North Tower" and "GranTokyo South Tower" opened in November 2007. The Daimaru Tokyo Department Store, which used to occupy the demolished Testudo Kaikan Building, was relocated to the lower floors (B1 - 14th floor) of the north tower, while the remaining floors were leased as office and retail spaces. The south tower became a first-class business center directly connected to Tokyo Station and most of the floors were leased as office spaces. The two towers are connected with GranRoof, a 240m pedestrian deck covered by a rooftop (figure 7.8).

[36] 2004-2012
[37] 2004-2013
[38] This does not include the cost of land and other project expenses to be borne by the individual companies involved.
[39] JR East 60.2 percent, Mitsui Fudosan Co. Ltd. 18.8 percent, Kashima Yaesu Development Corporation 10.2 percent, Kokusai Kanko Kaikan Co. Ltd. 6.0 percent, and Nippon Oil Corporation 4.8 percent.

Figure 7.8. Redeveloped Yaesu Station Plaza and GranRoof

Source: SS Co., Ltd. Tokyo Station Yaesu Development, used with permission.

Redevelopment of the Yaesu Station Plaza

- Type: Station-plus
- Construction period: 2003- 2014
- Construction cost: Unknown.
- Financing: JR East

Yaesu Station Plaza had inadequate space for bus berths (originally nine) and taxi berths (originally three), and there was neither a taxi pool area nor private car berths. This created traffic congestion and a long queue of cars that extended to the main road. To address these problems, JR East decided to expand the Yaesu Station Plaza by adding four bus berths (new total of 13) and one taxi berth (new total of 4) and constructed new taxi pools (50) and private car berths (seven). A part of the plot of the demolished Tetsudo Kaikan building was allocated to the redeveloped plaza. These improvements resolved the problems of the traffic congestion and ensured a smooth transport mode.

Extending the Development Impact of Station Redevelopment to the Surrounding Area

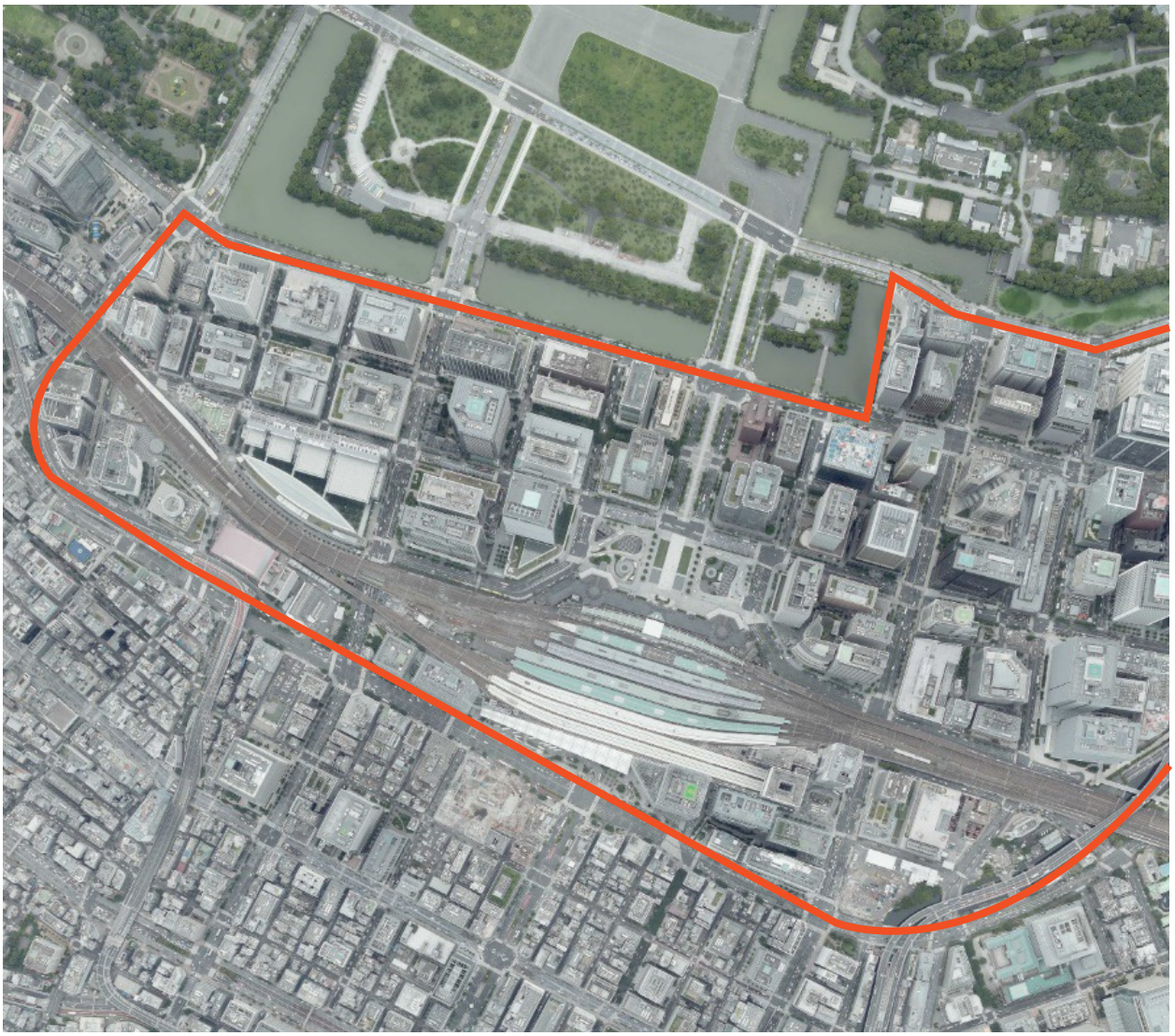
A major station redevelopment project like Tokyo Station City has a huge impact on the development of the area surrounding the station. The restoration of the Marunouchi Station building, the renovation of the station plaza, and construction of the GranSta Tokyo North and South Towers were significant improvements to Tokyo Station and increased the development potential of the surrounding area. The Tokyo Station City redevelopment successfully changed the image of the area from an established, yet outdated, business district around the terminal to an area that presents itself as an integrated and modern business-commercial hub rooted in history.

The institutional framework under which JR East, the landowners of the surrounding station area, and the local governments (TMG and Chiyoda ward) were able to collaborate and coordinate was instrumental in integrating the station redevelopment project with the development of the surrounding area.

The OMY District, the area of 100 hectares surrounding Tokyo Station (see Figure 7.10), is the center of Japanese business where around 4,300 offices are located. The district contributed to Japan's rapid economic development in the 1950s to 1970s as Tokyo's grade A[40] office district. However, many office buildings constructed during the high-growth period in the 1950s and 1960s had grown functionally obsolete by the late 1980s, and the office-only district was deserted on weekends.

[40] Grade-A office is defined as office buildings with the total floor area of more than 30,000 square meters, built within the past 15 years, located in the top five central business wards in Tokyo (Chiyoda, Chuo, Minato, Shinjuku, and Shibuya). (Y. Nakayama, T, Yamagata, 2015).

Figure 7.9. Overview of OMY District

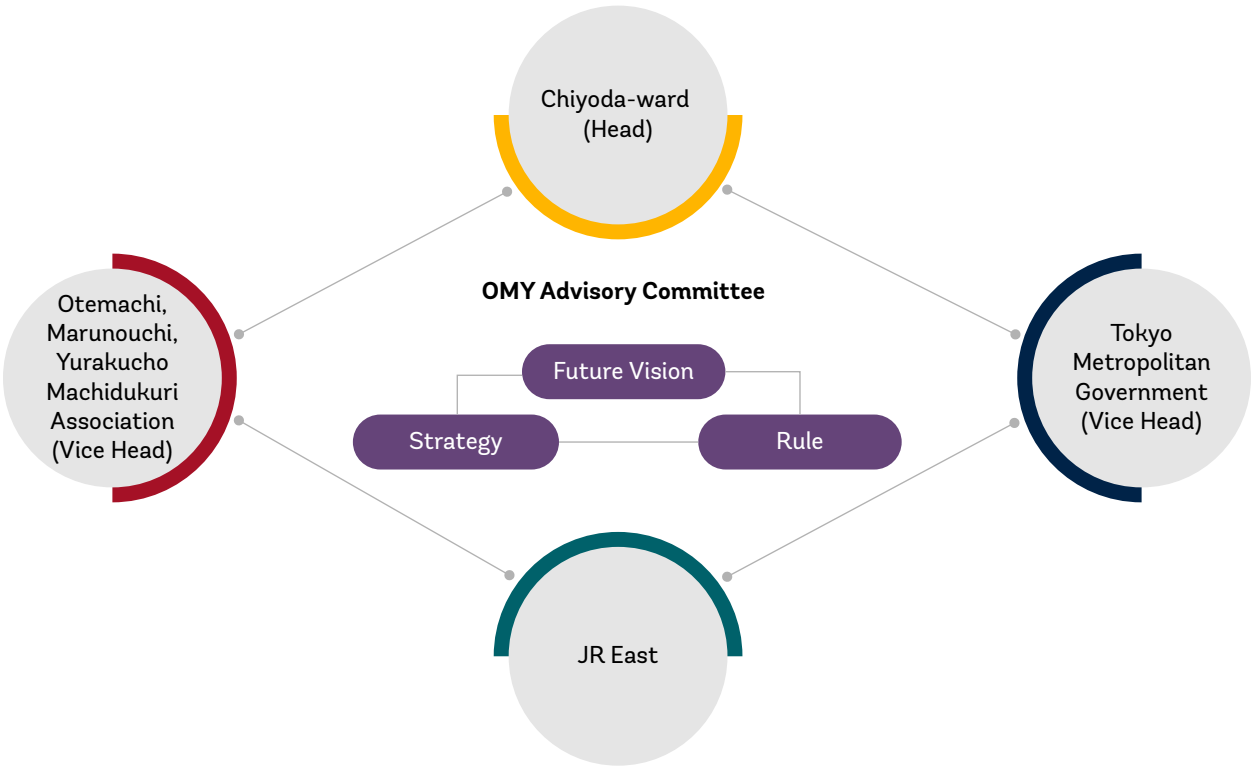


Source: World Bank, adapted based on the Digital Map 10000 published by the Geospatial Information Authority of Japan.

To resolve these problems, the landowners of OMY District, including JR East, established the OMY District Redevelopment Project Council (OMY Redevelopment Council) in 1988. This resulted in the OMY District Basic City Planning Agreement to redevelop the OMY District. Furthermore, in September 1996, TMG, Chiyoda Ward, JR East, and the OMY Redevelopment Council jointly established the Advisory Committee on OMY Area Development (OMY Advisory Committee) to discuss comprehensive strategies including the area's future vision, policy tools, and rules to realize the vision. As a result, in 2000, the OMY Advisory Committee compiled the OMY District Area Redevelopment Guideline consisting of:

- eight development goals
- principles to achieve explicit urban development based on zone, axes, and hubs
- rules of urban design, city function, environment, traffic, pedestrian network, skyline

Figure 7.10. OMY Advisory Committee for the Redevelopment of OMY District



Source: World Bank, adapted from Yasui, (2015).

Following this development guideline, many area development projects were carried out in close collaboration among the stakeholders, under the guidance of the Advisory Committee (Figure 7.10). Redevelopment of the underground walkway network surrounding Tokyo Station is one of the successful OMY area redevelopment projects, which is well integrated with Tokyo Station City. The redeveloped underground walkways provided direct connections between Tokyo Station and the major buildings in the station area. The redevelopment of old buildings has enabled expanded connections with the underground walkway network. Today, 29 percent of passengers use underground ticketing gates.

Outcome of Tokyo Station City Program

Tokyo Station City has created a unique urban fabric surrounding the railway facilities, connecting the Marunouchi area and Yaesu area. Both areas have distinguished cultures and histories, which are well reflected in the fully restored Renaissance-style red brick Marunouchi Station building at the Marunouchi entrance and the two modern crystal towers connected with GranRoof at the Yaesu entrance. The retail spaces were significantly expanded in the concourses and corridors, connecting the two entrances inside the ticket gates. This way, Tokyo Station was transformed from a place where passengers only get on and off trains to go to their destinations to a place where they can enjoy a variety of dining, shopping, and lodging experiences, before and after taking trains.

This transformation attracted more passengers to Tokyo Station. The number of daily users of Tokyo Station increased from 763,408 in 2011 to 934,330 in 2019 at a compound annual growth rate (CAGR) of 2.6 percent, much higher than the 0.7 percent CAGR of the population increase of the

Tokyo Metropolitan area[41] during the same period. Although it is difficult to quantitatively attribute the impact of Tokyo Station City on the increase of the daily users of Tokyo Station, as opposed to other factors such as macro-economic conditions and railway operational changes, it is certainly one of the key contributing factors.

The expansion of space for retail facilities, both within the station and in station-adjacent spaces, led to the increase of the commercial revenue of JR East. A JR East subsidiary, Tetsudou Kaikan Co. Ltd., which owns and manages the commercial facilities branded as GranSta Tokyo, earned a net income of JPY 1,746 million (USD 15.8 million), JPY 2,065 million (USD 18.9 million), and JPY 1,935 million (USD 18.1 million) in 2018, 2019, and 2020[42], respectively[43].

Lessons Learned

JR East's strategic approach and institutional framework to mainstream retail business provides railways worldwide with valuable insights for developing their own visions, strategies, and institutional and financial framework. Its unique retail business model, exemplified by Ecute and a comprehensive station redevelopment project like Tokyo Station City shows how to translate these corporate visions and strategies into robust business outcomes and bottom line.

Non-farebox revenue-generating activities were mainstreamed with articulated corporate vision and strategies.

> *The innovative and efficient use and creation of spaces enabled JR East to expand its commercial areas ("stay" function), while making use of the additional space for enhancing the smooth and safe movement of passengers ("flow" function).*

JR East, a privatized former national railway operator, needed to explore revenues sources beyond farebox revenue as it could no longer rely on government subsidies and its farebox revenue was expected to decline as the Japanese population was estimated to decrease. It developed "New Frontier 21" in 2001 as its mid-term corporate vision (2001-2005), and "Station Renaissance" was adopted as one of the important strategies. As part of this strategy, JR East identified its stations – with daily visits of over 16 million passengers –as important business assets to expand its revenue base beyond farebox revenue. Following this strategy, it decided to mainstream non-farebox revenue-generating activities under three distinct business lines: retail and services, real estate and hotels, and finance and other services.

JR East leveraged its strong financial position to finance station redevelopment with corporate financing, which provided flexible funding at lower cost.

Building on its strong financial base, JR East used corporate financing rather than adopt project-financing schemes. Corporate financing allowed JR East to raise funds faster and at lower costs than project financing can mobilize, while ensuring flexibility when the business environment changes. This is a unique feature of the station redevelopment business of JR East. From a financial perspective, this is an easy decision, but maintaining the levels of flexibility, which is difficult in project financing schemes, is also important to quickly adjust to changing business environment and remain prepared for crisis.

[41] The population of the Tokyo Metropolitan area increased from 13,161,999 in 2011 to 13,906.416 in 2019 at a CAGR of 0.7%.
[42] The decline of net profit in 2020 seems to be due to the negative impact of the COVID 19 pandemic
[43] The net income of Ecute Tokyo is unknown because the subsidiary operating Ecute Tokyo also operates other Ecute shops and the net income of each shop is not available.

Spaces for retail and service activities and improved passenger flow were created by transforming and/or relocating non-essential transportation facilities.

While JR East first created spaces for retail activities by relocating railway operation-related facilities that were suitable for retail, it also then decided to redevelop large-size stations (more than 200,000 daily passengers) by rearranging railway-related operations and innovatively creating additional spaces underneath, above, and around railway facilities. This innovative and efficient use and creation of spaces enabled it to expand its commercial areas (*"stay"* function), while making use of the additional space for enhancing the smooth and safe movement of passengers to switch trains and move to their destination (*"flow"* function).

JR East carried out full-fledged retail business operations, from branding and marketing, to designing and allocating floors to tenants.

The unique feature of the business model of JR East's retail operation is that it creates brands with different concepts for targeted markets and locations through its retail subsidiaries. They not only lease retail spaces to the tenants, but also identify targeted customers for specific locations, develop relevant marketing strategies, design store floors, allocate suitable spaces to selected tenants, and run campaigns together with tenants. The business model is similar to that of department stores. Inside Tokyo Station, areas near the Marunouchi and Yaesu entrances are seamlessly connected with expanded concourses and corridors, accommodating more than 200 shops and restaurants. Ecute Tokyo and GranSta Tokyo were created as two large-scale core shopping areas. With "Re-standard Japan" as its concept, Ecute Tokyo promotes shops offering Japanese high-quality goods collected from Tokyo and all over Japan. On the other hand, "Try New Tokyo St (Station)" is the concept of GranSta Tokyo, where visitors can enjoy new shops and services. Although the two JR East subsidiaries operating these brands recently merged, they continue to maintain these distinct brands.

Station were redeveloped as part of an organic urban fabric, harmonized with surrounding areas.

A station represents its area and sometimes, its entire city, while the history and functions of its surrounding areas characterize the feature of the station. It is important that the concept and design of the station redevelopment integrate unique histories, functions, and values of the areas surrounding the station. In the Tokyo Station City Program, two entrance areas were redeveloped with different features. At the Marunouchi entrance, the restoration of a 100-year-old redbrick Marunouchi Station building, together with a spacious and well-functioning station plaza, properly represents the Marunouchi District where Japan's most prestigious office district and the Imperial Palace are located. Meanwhile, two 42-story crystal towers with business and commercial functions connected with GranRoof in the shape of sail act as a hub to connect the dynamic Yaesu and Nihonbashi business and commercial districts[44].

The development impact of Tokyo Station City was extended to the station's surrounding area through an institutional mechanism for collaboration and coordination.

A major station redevelopment project like Tokyo Station City has a huge impact on the development of the area around the station, called the OMY area. For example, the restoration and renovation of the Marunouchi Station building, Station Plaza, and the construction of GranSta Tokyo North and South Towers contributed to the development of the station's surrounding areas. The OMY Advisory Committee, established to implement the OMY redevelopment program, facilitated JR

[44] Tokyo Station City, http://www.tokyostationcity.com/en/learning/granroof/

East and other stakeholders to maximize the impact of Tokyo Station City in the surrounding areas, providing an institutional framework for collaboration and coordination among them. As a result, the redevelopment of the underground walkway network surrounding Tokyo Station is a successful OMY area redevelopment project, which is well integrated with Tokyo Station City.

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CHAPTER 8

Metro de Madrid Bus Interchanges: Using BOT Concession to Improve Metro-Bus Integration *by Esther John*

The regional authority responsible for the Metro system and most bus services in the Madrid region has used public-private partnerships (PPPs) to address bus access to its Metro stations. PPPs have financed the design, construction, and operation of five new underground bus interchange stations, removing buses from the surface streets. The improvements also boosted usage of the buses and Metro. The PPP returns for the concessionaire took the form of a minimum revenue guarantee from the regional authority, revenues from additional bus operators, leasing of retail space, advertising, rental of parking lots, and other miscellaneous sources. This approach allowed the regional authority to deliver these bus interchanges long before it would have been possible using traditional government finance.

Introduction

Public transportation has existed in Madrid since the end of the 18th century, where the first public car service consisted of four-seater mule-drawn carriages that primarily served the highest social classes. Since then, Madrid has embraced a variety of public transportation modes, including the railway linking Madrid to its more distant suburbs, the tram that runs within the urban centers, the city Metro lines, and the public bus system. The latter included both urban and interurban buses, which served the wider metropolitan area.

As the interurban bus network grew through the 20th century, many buses did not enter the city center, but stopped at areas on the outskirts of the city. These points naturally became interchange points where passengers transferred between lines to enter the city center. Soon, management of passengers and buses at these exchange points became a major issue, and the lack of proper infrastructure resulted in poor transfers and traffic congestion. In addition, there were no direct connections between the surface bus terminals and the underground Metro lines.

To improve the situation at these points, the Madrid Regional Transport Authority, called the Consorcio Regional de Transportes de Madrid (CRTM), began to develop transport interchange stations at several major exchange points. The idea of building an underground bus station was a response to the need to achieve seamless connections between the different modes of transport. With the success of the first such station, built entirely using public funds from the Madrid Regional Government, CRTM began to plan for the construction of several more underground stations. However, a lack of public funds turned its focus to alternate means of financing, and CRTM decided to use PPPs to deliver the projects.

CRTM has been able to deliver five underground bus interchanges linked directly to the existing Metro and suburban railway systems using PPPs. These interchanges removed buses from the surface streets, reducing congestion and allowing for more seamless transfers between transit modes. In addition, PPPs allowed CRTM to deliver these bus interchanges long before it would have been possible using traditional government financing.

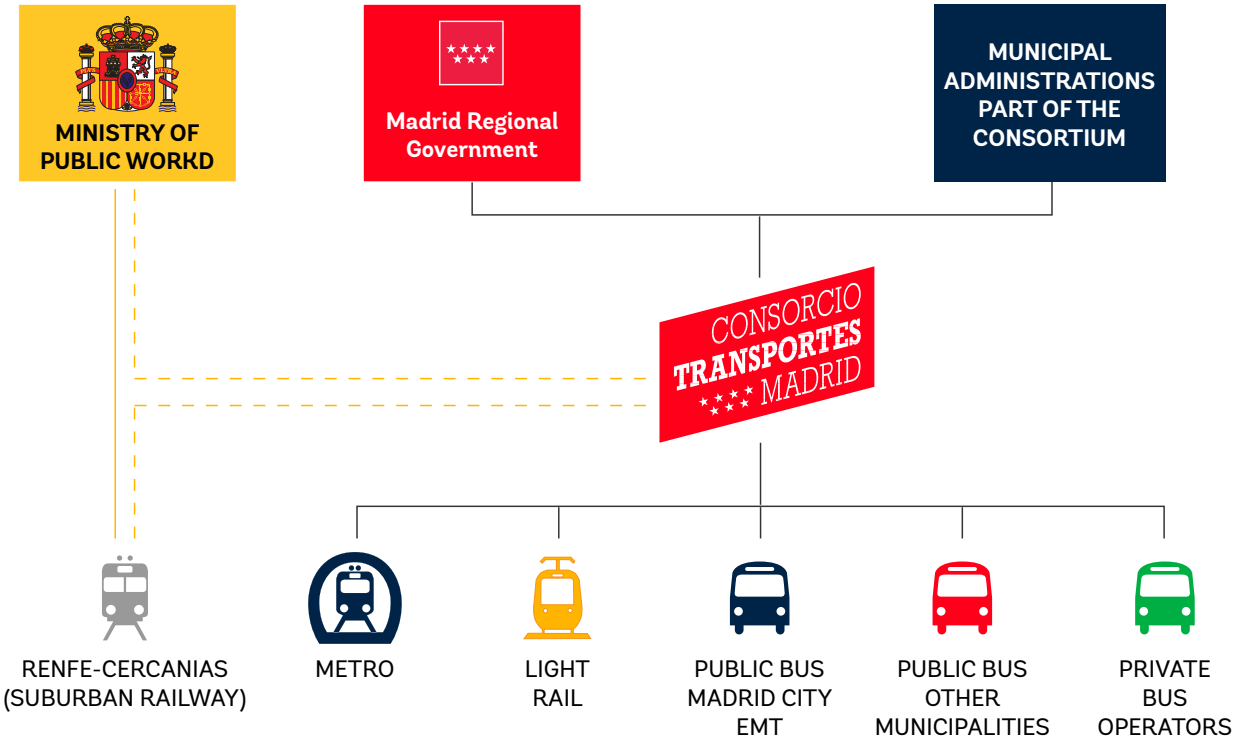
The experience of redeveloping Madrid's Metro stations into functional interchange stations provides several key insights for railways. In particular, the projects illustrate the importance of improving intermodal connectivity, as this would increase the usage and popularity of the transit system and lower congestion, which is an issue in many cities worldwide. CRTM also effectively used a minimum guaranteed income to ensure that the PPP project would be financially viable for the private sector. It successfully renegotiated the contract to accommodate additional changes to the Avenida de America interchange station, ensuring the continued delivery of quality service to commuters.

Background

Madrid Regional Transport Authority

The autonomous region of Madrid comprises 179 municipalities, one of which is Madrid city. A variety of modes services the entire region, namely the underground Metro system, the Madrid city urban bus system, the suburban railway system, the metropolitan and regional buses (interurban buses), the urban buses in other municipalities outside of Madrid city, and the light rail system. These are owned and run by different operators, and the authority in charge of managing the entire public transport system (except for the suburban railway system) is CRTM.

Figure 8.1. Institutional Framework of CRTM at the time of the project (2013)



Source: CRTM 2013, ©CRTM. Reproduced with permission from CRTM; further permission required for reuse.

CRTM was created in 1985 as the public transport authority for the Madrid region by the Madrid Regional Government and manages all public transport services except for the suburban railway (figure 8.1). Its administrative board is composed of representatives of the Madrid region, whose municipalities are a part of the consortium, the state administration, and other entities, including private transport operators, trade unions, and user and consumer associates (CRTM 2018).

CRTM considers the integration of the different transportation modes to be its top priority, and this multimodal focus is seen throughout all levels of its work. Administratively, being the only transport authority allows for the effective integration and coordination of public transport operators and urban planning. CRTM also encouraged fare integration through the introduction of a multimodal travel card. Modal integration is being carried out through the extension of the Metro line and bus networks, the crossing of suburban rail and Metro lines, and the addition of bus interchanges, which is the focus of this study.

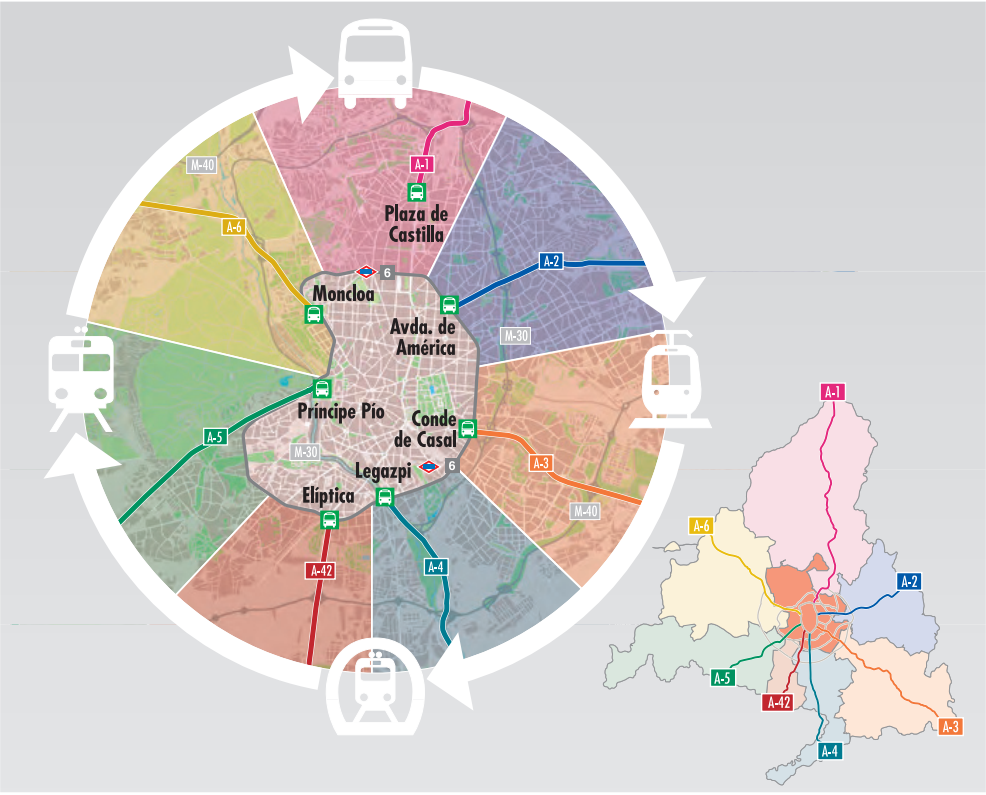
Transport Interchange Stations

Transport interchange stations are defined by CRTM as an "area whose purpose is to minimize the inevitable sensation of having to change from one mode of transportation to another" (CRTM 2009). They initially emerged as natural exchange points where buses stopped on the outskirts of the city and passengers transferred to city buses. Management was an issue at these exchange points, and by 1929, it had already been noted that "shortage of [public bus] stations not only burdens the public, but also frequently produces conflicts with traffic" (CRTM 2009).

Even with the construction of new highways in the 1950s that were meant to redirect traffic to less-populated areas of the city, the situation at the interchanges remained chaotic. Buses stopped at several different stations depending on the direction from which they entered the city. Despite exchange points being placed close to the Metro network to facilitate the transfer between modes, a study conducted in 1977 found "a lack of spatial coordination that currently exists in the urban transport network, both in the central nucleus and in the peripheries" (CRTM 2009). COPLACO made specific reference to the fact that there was no proper infrastructure to help facilitate transfers between the networks in a way that would avoid traffic congestion.

The opening of Metro line circular (line 6, a circular line around Madrid city) in 1979 greatly improved the connection among the interurban buses, suburban rail, and the Metro line. However, the number of bus departure and exchange points continued to increase. By 1986, CRTM's first year of operation, there were 65 interchange stations in Madrid. At these stations, buses stopped at surface terminals, creating local congestion as well as air and noise pollution. The surface terminals were not connected directly to the Metro lines, and passengers disembarking from the buses would find it difficult to access the Metro entrance directly from the bus terminal (Figure 8.2). This resulted in many complaints from both commuters and other road users.

Figure 8.2. Access Roads Leading into Madrid City and Location of Transport Interchange Stations



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Based on several studies conducted on Madrid's interchange stations and 13 international transport interchange stations, CRTM produced a methodology to evaluate the interchange stations, placing significant emphasis on station location. As a result, CRTM decided to primarily locate its transport interchange stations where the radial access roads to the city intersected with Metro line 6 (Figure 8.2), for the following reasons.

- The interurban buses were already using these roads to enter the city, and so it was natural to choose locations along these roads to serve as transfer points for passengers.
- The Metro had become the city's supplementary mode of transportation, serving much of the city and complementing the urban bus network. Thus, the interchange stations had to provide connectivity to the Metro, and Metro line 6, which circled the city center and provided transfers to many of the other Metro lines, proved an excellent choice for accessibility.
- The locations chosen had to be accessible to not only the Metro and urban bus network, but also the suburban railway network and the interurban bus network, which served the greater metropolitan area. This was to provide a seamless transfer for passengers entering Madrid city from distant municipalities.
- CRTM believed that it was crucial for the transport interchange stations to be within an urban environment that is attractive to the traveler, providing them more services and places of activity.

Transport Interchange Station Development Stages

The development of the transport interchange stations happened in three stages. From 1986 – 1993, the surface spaces of several existing interchanges were developed to improve accessibility and services. The first transport interchange station was built in 1986 in Aluche, which prior to 2018, had been the second most highly used Metro station (in terms of number of passengers switching between transport lines and modes), and the busiest Metro station during rush hour. Passengers traveling from the southwest municipalities would switch between the suburban railway network and the Metro network at the Aluche station. This interchange station location was selected to facilitate the change from one mode of transportation to another by reducing the physical distance between modes, while also making the experience for passengers more seamless and pleasant.

In 1992, the second transport interchange station was built at Plaza de Castilla, which had, for years, been an important departure point for bus routes traveling to the northern municipalities. The purpose of building the transport interchange station here was to organize the large number of bus stops that were dispersed across the Plaza and its nearby streets. This resulted in improved the road conditions in the area, reduced congestion caused by the haphazard parking of the buses and ensured all the bus bays were near the Metro station, thus improving connectivity.

Both Aluche and Plaza de Castilla were surface stations. From 1994 – 1997, a greater effort was made to achieve seamless connections between different modes of transport, which led to the construction of underground public bus stations. Placing the stations underground allowed for a greater expansion of the stations beyond what the surface could allow. In addition, as the existing Metro stations were located underground, it further minimized the transfer distance between modes. In 1995, the first underground public bus station was built at Moncloa, transforming it into a transport interchange station. This station, built entirely with public funds from the Madrid Regional Government, was a noteworthy success because it proved that having underground public

bus stations and the tunnels leading to them avoided congestion on the access highways leading to Madrid City Center (Vassallo, Di Ciommo and García 2012). The completion of this station tied in with the arrival of Metro line 6 to Moncloa (through an extension of the original Metro line) as well as the opening of a bus and high-occupancy-vehicle-only lane on the A-6 motorway, off which Moncloa is located. All these factors resulted in a 30 percent increase in the demand for public transport on the A-6 corridor over just five years (1995 – 2000) (CRTM 2008).

The success of Moncloa spurred the decision to build a similar transport interchange station in Avenida de América, which was situated at the entrance to Madrid from the A-2 highway. Thus, on April 7, 1997, CRTM and the Madrid City Council signed an agreement for the "preparation of a draft plan for the construction and operation of a bus transport interchange station and a car parking lot for residents in Avenida de América" (CRTM 2009). This agreement kickstarted the process of planning, funding, constructing, and managing the transport interchange station at Avenida de América, which would serve as the prototype for the planning and funding of future transport interchange stations.

Avenida de América

> *The Avenida de América transport interchange station was an achievement for CRTM not only because of the success of the interchange itself for public transport, but also because it was built and financed entirely using private funds.*

There were several reasons for choosing Avenida de América as the location for the next transport interchange station. Avenida de América was already an important transfer point that served the A-2 corridor, and bus routes from the northeast entered Madrid City Center via Avenida de América. Especially during peak hours, traffic was heavy, resulting in congestion and pollution. Interurban bus operators, particularly Continental Coaches, Ltd., were looking for new locations to situate a bus terminal that would have a larger capacity compared to what already existed. In addition, new developments in the eastern border of the City of Madrid and new connections linking the city with the enlarged Madrid airport were driving the need for an interchange in this area of Madrid (Lopez-Lambas and Monzon 2010). Thus, Avenida de América was a natural choice for a transport interchange station.

However, the Regional Government of Madrid did not have enough money to build this transport interchange station, as the development of the subway network was happening concurrently (Vassallo, Di Ciommo and García 2012). Thus, it was decided that PPP would be used; specifically, the public sector would launch a concessionary tender on a build, operate and transfer (BOT) basis. CRTM was tasked with preparing a plan for the transport interchange station and conducting an economic viability study examining how the money invested could be recovered. On September 8, 1997, an agreement was signed between the Public Works, Urban Planning and Transport Department of the Regional Government and CRTM to carry out a public tender for the planning, construction and management of the transport interchange station and its attached parking lot for a period of 25 and 50 years, respectively (CRTM 2009).

Contract Design and Risk Allocation

In December 1997, an open tender was launched for the BOT of the Avenida de América station, by the Madrid City Council (as the land owner), the Madrid Regional Government, and CRTM. CRTM was the main entity in charge of planning and drafting the tender. Through this concession approach,

CRTM would give the concessionaire responsibility for the design, financing, construction, and operation of the Avenida de América transport interchange station and parking lot for 25 years and 50 years, respectively. This concession would be awarded to the best offer presented by the bidders, who were judged on several criteria, as listed in Table 8.1. Points were awarded for each criterion, and the bid with the highest number of points was determined to be the best offer.

Table 8.1. Evaluation Criteria for the Bid for Avenida de América Transport Interchange Station

Criterion A: Technical Offer (up to 30 points)
– Plan detailing construction, operation, and maintenance of the transport interchange station, including justification of construction costs
– Plan for coordination with CRTM's control center, which is in charge of scheduling and planning of the public transport services
– Quality of physical construction and materials used
– Consideration of emergency plans, including emergency evacuation responses and fire safety
Criterion B: Economic Offer and Financial Plan (up to 30 points)
– Proposed rate per traveler that uses bus lines operated by CRTM; this rate is charged by the concessionaire to the traveler
– Proposed rate per long-distance bus (not operated by CRTM) containing passengers traveling to the station
– Soundness of financial plans
Criterion C: Improvement on Base Criteria (up to 20 points)
– Construction term being less than 22 months
– Improvements in traffic conditions during the construction period
– Higher investment made than was defined in project (for example, increasing quality of materials, larger investments made in providing information or lighting)
Criterion D: Stability and Quality of Employment (up to 20 points)
– Stability of employment through the provision of fixed contracts to workers
– Use of companies that hire between 60-70 percent of permanent workers

Source: CRTM, n.d.

The bids had to meet certain basic conditions laid out by CRTM. Specifically, the transport interchange station had to include floors for the interurban bus services, parking lots for residents and the public, a direct connection for buses from the A-2 highway via a tunnel, good connections with the Metro and urban bus services, and a space for shops and other transport-related service areas. CRTM also identified specific expertise that it was looking for in the building and operation of the interchange station; it was stipulated in the bidding document that at least one regular passenger transport operator and at least one financial company had to be participants in each bid, and these companies had to be reliable and in good standing.

The revenues collected by the concessionaire would come from four different sources: i) transport fee charged for passengers/buses who used the interchange,[45] ii) rental of parking facilities, iii) commercial leases that the concessionaire could leverage, and iv) other activities such as

[45] This fee is not collected by the concessionaire, but through the purchase of CRTM's fare cards. CRTM collects the money and pays the concessionaire based on passenger counts and the rate per passenger as established in the contract.

advertising and vending machines. Of these, the greatest source of income would be the transport fee, which was also an important deciding factor for choosing the concessionaire—the lower the fee offered, the higher the chance of being awarded the concession. Thus, it was important for the bidder to offer a competitive rate that would still be financially feasible with respect to the investment that they had to make to construct the interchange.

The contract contains many other clauses to ensure that the standards of the transport interchange station are up to the CRTM's required standards. The interchange was expected to begin operation within two years from the signing of the contract. Not only will the concessionaire have to return the interchange to CRTM in good condition at the end of the concession period, but regular maintenance standards need to be met, and CRTM checks the stations to ensure that they are continually being maintained. The concessionaire is also required to make improvements to the station related to technological progress. If the concessionaire does not meet these requirements, or fails to deliver on schedule, then it is subject to a fine, and in some cases, CRTM has the right to take possession of the interchange.

In addition, most project risks are borne by the private shareholders. The public sector contributes no money to the construction or even management of the transport interchange, except through the minimum guaranteed revenue. The concessionaire must bear all risks related to the construction and operation of the transport interchange. It bears the risk of design, as the building will need to be both practical and efficient to cover the cost of maintenance for the entirety of the contract. As it receives no income until the transport interchange begins operation, the concessionaire must ensure that construction is completed in a timely manner. It also bears the risk of financing, as the repayment of the debt is its sole responsibility. In addition, as part of the contract, CRTM requires that the concessionaire purchases insurance that will cover all civil liabilities related to the construction, maintenance, and operation of the interchange station.

Outcome of the Avenida de América Tender

Several consortia prepared bids for the Avenida de América interchange, and after four months of consideration by CRTM, the concession was awarded on March 30, 1998. The companies comprising the winning concessionaire are listed in Table 8.2. The contract between CRTM and the concessionaire, Intercambiador de Transportes de Avenida de América S.A, was signed on June 12, 1998.

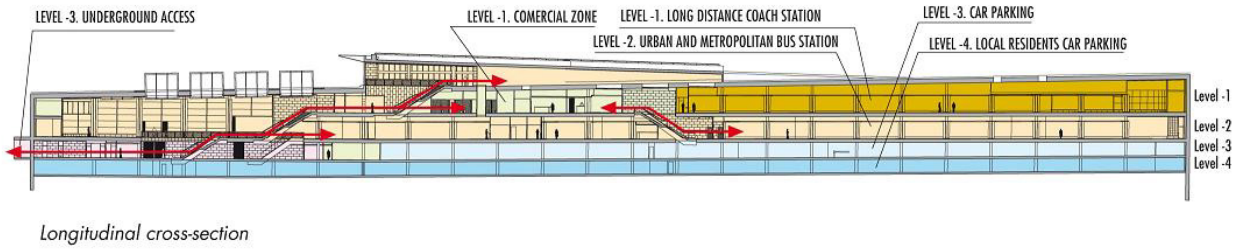
Table 8.2. Consortium of Companies that Won the Bid for Avenida de América Interchange

Name of Company	Type of Company	Share (%)
Continental Auto S.A.	Interurban transport operator	25.5
Trap S.A.	Interurban transport operator	25.5
ACS S.A.	Construction	20.5
Ferrovial S.A.	Construction	20.5
Banco de Negocios Argentaria S.A.	Bank	5
Cobra Instalaciones y Servicios S.A.	Installations	2
Prointec S.A.	Consultant	1

Source: Lopez-Lambas and Monzon (2010)

Avenida de América was constructed in 17 months (7 months less than the maximum allowance of 2 years) and was inaugurated on January 7, 2000 (Lopez-Lambas and Monzon 2010).

Figure 8.3. Cross-section of Avenida de América Interchange Station

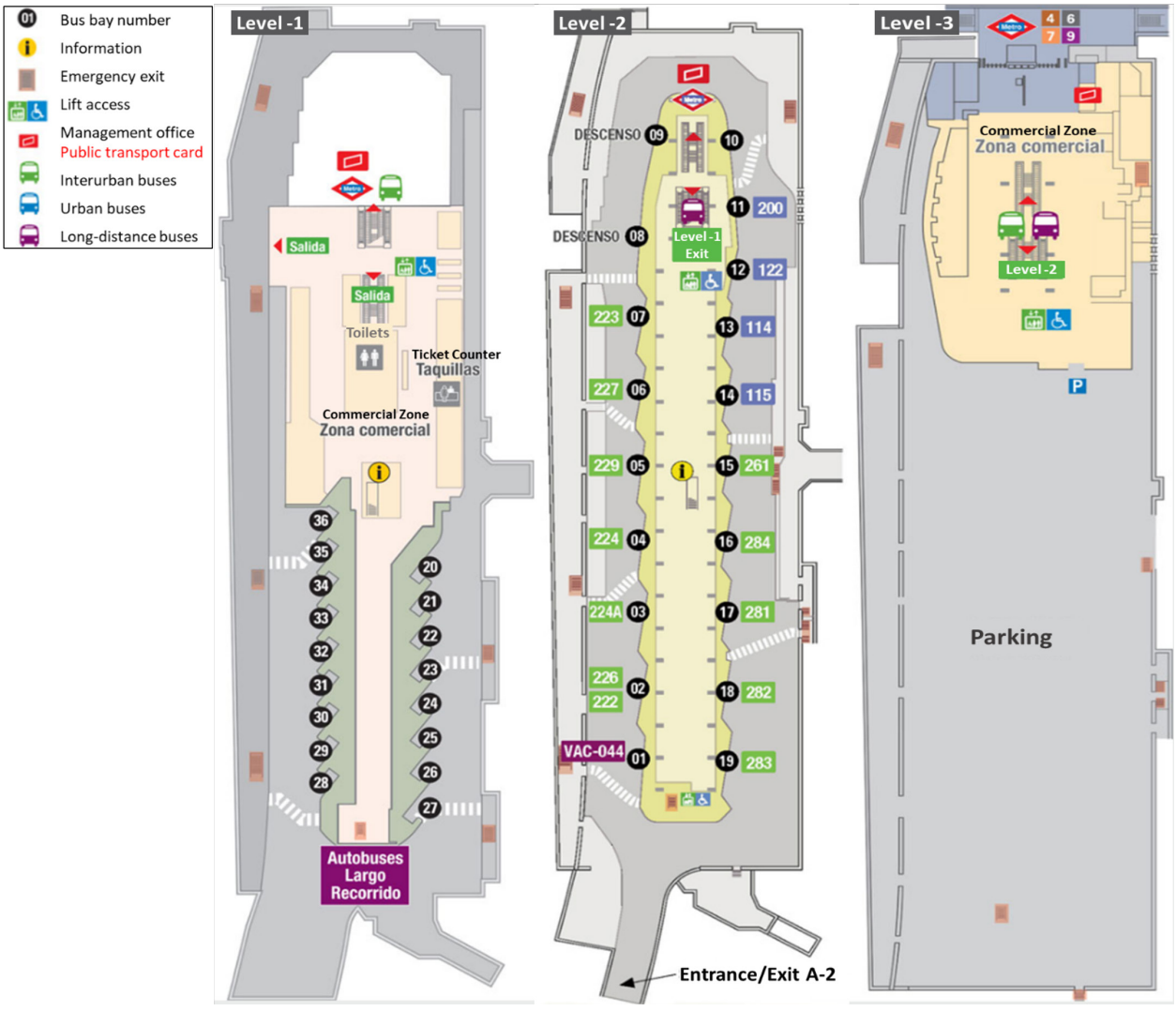


Longitudinal cross-section

Source: EMTA 2006, ©EMTA. Reproduced with permission from EMTA; further permission required for reuse.

The Avenida de América interchange is built underground on 4 levels (levels -1, -2, -3, and -4), with floor space totaling around 40,000 square meters, of which 1,342 square meters are for commercial businesses and 523 square meters for offices (Figures 8.3 and 8.4). Thirty-seven bus bays are located on two levels (levels -1 and -2), and 800 meters of underground tunnels connect these bus levels to the A-2 highway. In addition, there are 665 parking spaces, of which 396 are leased to local residents (Lopez-Lambas and Monzon 2010).

Figure 8.4. Layout of Levels -1, -2 and -3, Avenida de América Interchange Station



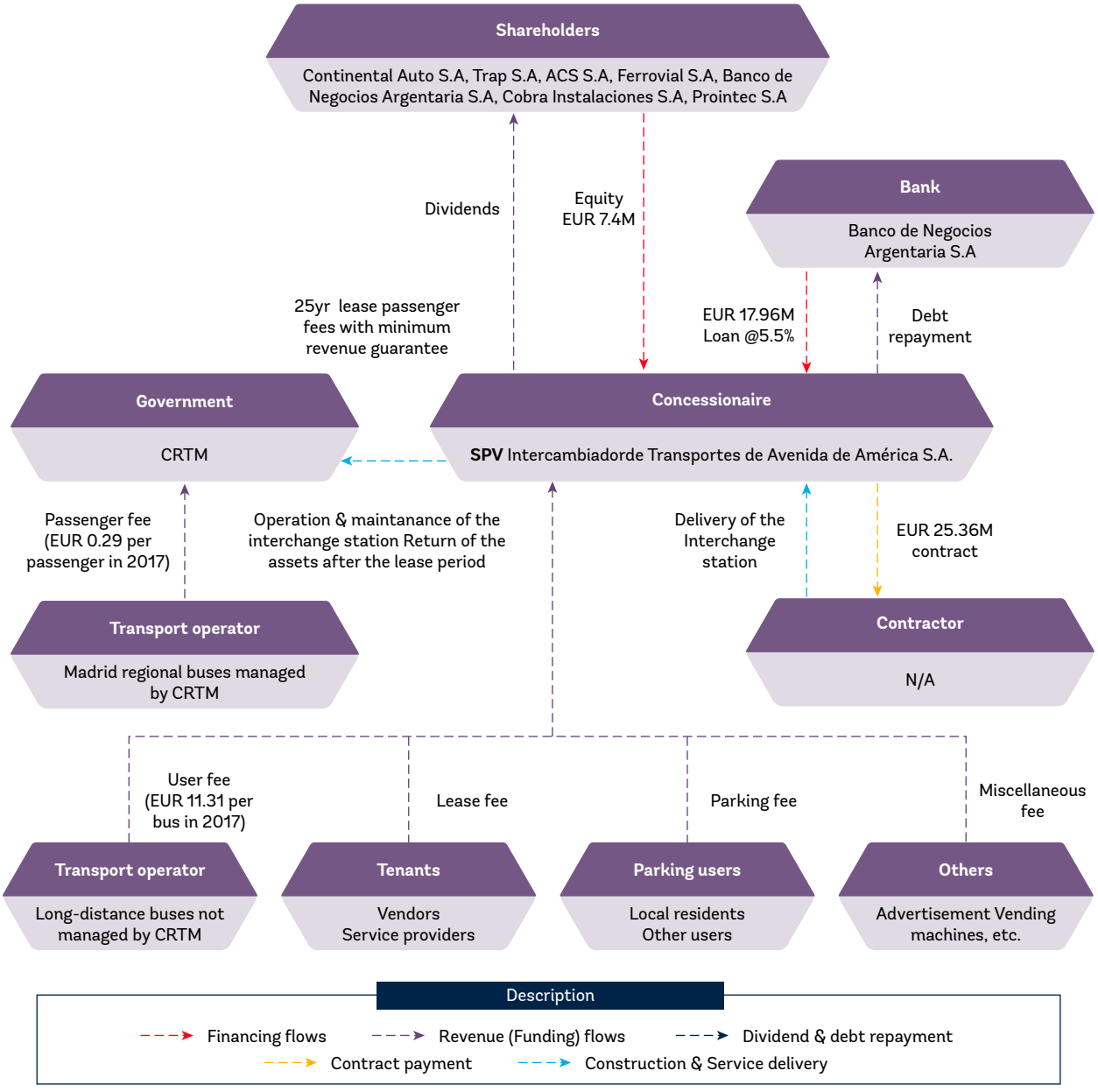
Source: CRTM 2019, ©CRTM.

In keeping with the overall goal of building interchange stations, Avenida de América provides easy access between the Metro lines and the bus bays. Escalators connect the bus bays on levels -1 and -2 to the Metro access on level -3. Elevators also connect these levels as well as provide access to the Metro from the street.

Financial Model for Avenida de América

The construction of the Avenida de América transport interchange station required an initial investment of EUR 25.36 million (USD 27.56 million). This was solely paid for by the concessionaire, without using public funds. Most of the financing was acquired through a bank loan (Banco de Negocios Argentaria S.A.), with the amount required being reduced by pre-selling parking spaces to area residents, which provided some initial resources (Lopez-Lambas and Monzon 2010) (figure 8.5).

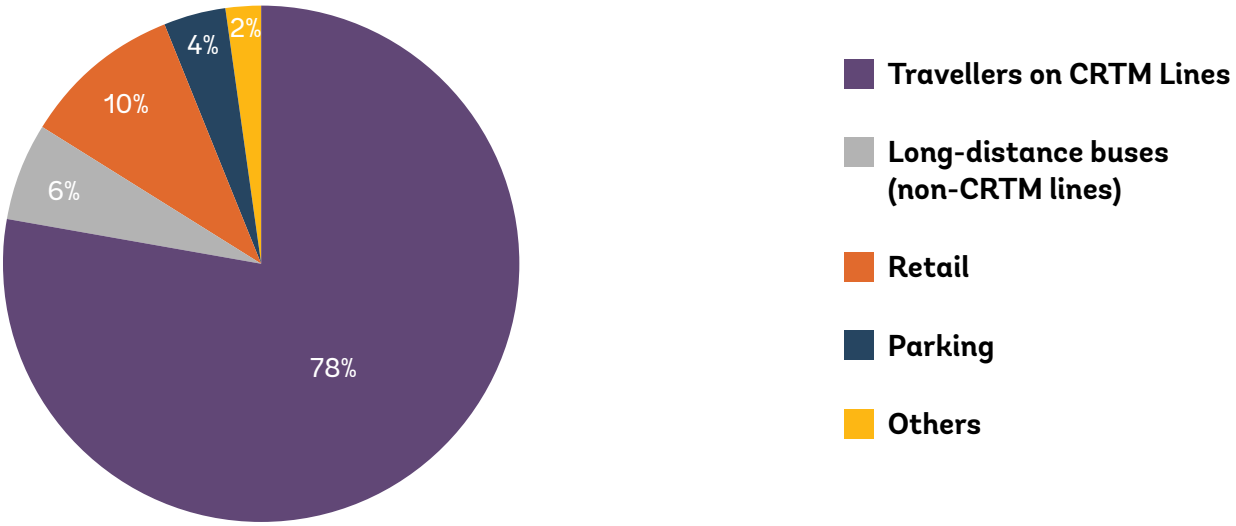
Figure 8.5. Financial Structure of Avenida de América Transport Interchange station



Source: World Bank, based on CRTM, (2018).

The concessionaire has three main sources of revenue: traffic (transport fees), retail, and parking (Figure 8.6). Traffic revenue forms the bulk of this and comes from two sources The first is from passengers who travel on Madrid region buses managed by CRTM, which in 2017 accounted for 78 percent of the concessionaire's revenue. Transport operators of these bus lines pay a fare per passenger who leaves the interchange using their buses. In 2017, this fare was EUR 0.2923 (USD 0.30) per passenger, and the money is paid to the concessionaire through CRTM, which collects it through fare card payments. Both the concessionaire and the transport operators count the number of passengers who use the buses to ensure that the amount of money being paid is accurate. In addition, the contract establishes a minimum guaranteed number of passengers per year. Thus, if the number of passengers who use the interchange does not meet the minimum guaranteed number, the difference in revenue is paid by CRTM directly to the concessionaire. This number changes yearly, and the minimum guaranteed passengers for 2017 was 40.2 million passengers.

Figure 8.6. Revenue of Avenida de América Transport Interchange Station, 2017



Source: World Bank, based on Intercambiador de Avenida de América S.A.

It was necessary for CRTM to include this minimum guaranteed revenue into the contract with the concessionaire because in general, public transport is not a profitable business. Therefore, CRTM it had to provide an incentive to the private sector to fund the construction of the interchange. As of 2017, the actual passenger volume is only about 70 percent of the minimum guarantee, and considerable growth would be needed before the minimum guarantee is exceeded.

The second source of traffic revenue is from the long-distance buses, which are not managed by CRTM. Each bus containing passengers that enters the interchange is charged EUR 11.34 (USD 11.63). These bus lines are mostly owned and run by private companies, and the revenue is variable and depends on the number of buses that use the interchange. In 2017, this accounted for about 6 percent of the concessionaire's revenue.

Retail revenue comes through retail exploitation—the leasing of commercial spaces. In 2017, this accounted for 10 percent of the concessionaire's revenue. The concessionaire signs individual leasing contracts with tenants who set up shop in the interchange; thus, it is the concessionaire that determines the mix of shops and rental amounts for each. However, CRTM must approve the retailer before a contract can be signed. In addition, the tenant also must obtain a license from the city

council to set up a shop in the interchange. As of 2018, the concessionaire estimated the occupancy rate of commercial space in Avenida de América to be about 70 percent. Some of the levels (and particularly level -1) have a low occupancy rate despite the concessionaire setting a lower leasing rate, as the passenger flows through that level are not high. In contrast, the commercial spaces on level -3, which has access to the Metro, has a higher occupancy rate as many people pass through that floor.

The last major source of income for the concessionaire is through the parking spaces, which, in 2017, accounted for about 4 percent of total revenue. Parking at Avenida de América is available not only to residents but also to the public through short-term parking. This generates revenue for the concessionaire as well as encourages passengers to leave their cars at Avenida de América and use public transport to enter the city center, thereby reducing congestion in Madrid city.

There are also other miscellaneous sources of income, such as advertising and vending machines. As the concessionaire is not an expert on advertising, it subcontracted this element of the business to an advertising company, which pays it a percentage of the income obtained. Again, CRTM must approve all advertising, including the location, content, and design, before anything is displayed.

Table 8.3 shows the financial statement for the concessionaire of Avenida de América interchange during its first two years of operation (2000 and 2001, with operation beginning in January 2000), and again in 2007. As can be seen, the concessionaire began earning a profit immediately on opening the interchange, and revenues have continued to grow over the years.

Table 8.3. Evolution of Revenues and Costs in the Avenida de América Interchange

Financial Year	2000		2001		2007	
	Real (EUR)	%	Real (EUR)	%	Real (EUR)	%
Income:						
Transport operators	2,400,324	62	2,244,342	57	2,727,596	55
Shops	631,008	16	786,720	20	1,134,017	23
Public parking	124,842	3	295,950	7	579,356	12
Others	691,578	18	640,944	16	503,460	10
Total income	***3,847,742***	***100***	***3,967,956***	***100***	***4,944,429***	***100***
Expenditures:						
Operation costs	1,263,582	38	1,446,504	37	2,411,751	53
Taxes	62,928	2	107,232	3	15,721	0
Loan interest	896,682	27	852,492	22	547,010	12
Loan amortization	1,121,196	34	1,556,478	39	1,578,821	35
Total expenditures	***3,344,388***	***100***	***3,962,706***	***100***	***4,553,303***	***100***
Profit	***503,364***		***5,250***		***391,126***	

Source: Data from Lopez-Lambas and Monzon (2010).

Impact of Avenida de América

The Avenida de América interchange station has had a positive impact both on transportation in Madrid as well as on the urban landscape and the social wellbeing of the area's residents. First, the interchange station has helped promote intermodality in Madrid. Recognizing that the transfer from the interurban and regional buses to the Metro or urban buses was necessary for most commuters, CRTM decided to make this transfer as seamless as possible through the transport interchange stations. As Avenida de América was the second underground station to be built in Madrid (with the first being the basic underground interchange at Moncloa), it was important that it improved the user experience. Commuters along the A-2 highway corridor were now able to connect directly and easily from buses to the Metro, thus enjoying travel time savings. The clear layout and provision of services in the interchange also provided for an excellent experience. The fact that users enjoyed the experience and used the station can be seen in how the annual average growth of bus demand during this period was 5.66 percent, greater than the 1.78 percent annual average growth of private car demand in the A-2 highway corridor (Vassallo, Di Ciommo and García 2012).

Building the interchange has also benefited the transport operators, which previously had to deal with heavy congestion when they would stop at various bus bays on the surface. By directing all the buses underground through exclusive tunnels linked directly to the A-2 highway, surface congestion has greatly reduced, leading to a more pleasant experience for both the buses and other road users. This also resulted in reduced travel times, which meant lesser operating costs for bus operators. The lack of congestion also led to an improvement in service regularity, as the bus schedules could be more accurately planned and followed.

Avenida de América has also brought about other social and urban benefits. Residents are now provided with a parking garage close to their homes, and can rent parking spaces at a reduced price. The availability of public parking also reduces the hassle of finding on-street parking. The building of exclusive tunnels leading from the highway to the bus terminal means that the bus-only lanes on the highway are no longer necessary, resulting in an additional lane on the highway and thus capacity increase. The removal of buses idling on the surface also reduces both air and noise pollution. Finally, building an underground interchange enables the recovery of pedestrian spaces on the surface.

Perhaps the best validation of the positive impact of Avenida de América is that it won the first prize in the Integrated Transport Awards 2002 for having achieved the following qualities:

- ideal transfer between different transport modes and reducing the transfer time between the Metro and buses
- integration of the interchange with the urban structure, and recovery of pedestrian spaces on the surface
- provision of clear information and signs for users
- completely private financing, which was used as a prototype for subsequent transport infrastructure investments.
- 30 percent increase in demand within the first two years of operation due to the reduction in travel and transfer times.
- reduction in trip times for both transport operators and passengers due to the construction of tunnels linking the A-2 highway directly to the bus interchange

Refurbishing Avenida de América (2012-2014)

From 2000 to 2011, Intercambiador de Transportes de Avenida de América S.A. continued to operate, manage, and make technological improvements to Avenida de América. However, in 2011, CRTM requested the concessionaire to make substantial changes to the interchange that would require heavy investments and was outside the scope of "technological improvement" that was required by the contract. As a result, CRTM and the concessionaire negotiated a modification to the original contract. In exchange for the additional investment and changes that would be made to the interchange, the contract was extended by another 10 years, bringing the total duration to 35 years. The fares per passenger were also increased because the concessionaire needed to recover its investment in the length of time left on the contract.

> *The redeveloped station achieved a 30-percent increase in demand within the first two years of operation due to the reduction in travel and transfer times.*

The request for refurbishment was partially due to new safety conditions and standards that had come into effect. When Avenida de América was first built, passengers were in direct contact with the buses; this means there were no glass screens between the passengers' waiting area and the bus bays. This also exposed passengers to bus exhaust fumes. Fire escapes and emergency evacuation areas no longer met safety standards. In addition, the station needed to be adapted to allow buses running on natural gas to use the station. Thus, major changes were made to the interchange, including adding glass screen doors between the passengers and the buses, extending the main passenger platforms, adding emergency exits that lead directly to the surface, reinforcing the structure of the interchange, and installing detectors to detect leaks of natural gas and other gases such as carbon monoxide.

Madrid's Interchanges

The Avenida de América transport interchange station was an achievement for CRTM not only because of the success of the interchange itself for public transport, but also because it was built and financed entirely using private funds. In 2004, another agreement was signed among the Madrid City Council, the Madrid Regional Government, and CRTM that allowed for public tenders to be put out for the construction, financing, maintenance, and operation of four additional transport interchange stations. These would be located at Príncipe Pío, Plaza de Castilla, Plaza Elíptica, and Moncloa, each of which served a major corridor that entered the city and were already important interchanges between the highways and Metro line 6. The only exception to this is Plaza de Castilla, which serves the A-1 highway, but does not join up with Metro line 6. However, it serves three Metro lines (lines 1, 9, and 10), and already had a surface bus terminal.

With the experience gained from Avenida de América, CRTM developed specifications for tenders for these four transport interchange stations. The general layout of the contracts is similar to that of Avenida de América, although each interchange station required a different amount of investment and were of different sizes based on need. Table 8.4 shows the details of each transport interchange station, as well as the year in which they began operation.

Table 8.4. Construction and Operation Details of Each Transport Interchange Station

	Avenida de América	Príncipe Pío	Plaza de Castilla	Plaza Elíptica	Moncloa
Year that operation started	2000	2007	2007	2007	2008
Investment (EUR million)	25.36	58	118.32	41.76	112.78
Concession period (years)	25	35	35	35	35
Area built underground (m^2)	40,000	28,300	74,000	29,700	46,000
Number of underground floors	4	2	3	3	2
Length of tunnels (m)	800	400	2000	600	1000
Number of bus bays	37	30	45	20	36
Area of commercial space (m^2)	1,342	550	2,500	Unknown	Unknown
Area of office space (m^2)	523	40	300	Unknown	Unknown
Number of parking spaces	665	--	400	--	--
Interurban bus lines	14	13	37	14	35
Urban bus lines	11	8	16	10	14
Metro lines	4	3	3	2	2
Suburban railway lines	--	2	--	--	--

Source: World Bank, based on data from CRTM, 2009 and Saldaña, (2008).

Having five interchange stations serving the different corridors around Madrid has allowed the transport system to contribute substantially to the development of towns around the region, as it connects those towns to the city center. Towns can now develop in every direction around the city center. Transport connections have also improved, not only between public transport, but also between private vehicles and public transport, as the provision of parking lots persuades drivers to leave their cars and take public transport into the city center.

Lessons Learned

Madrid's Avenida de América and subsequent interchange station developments illustrate how government can use its convening and organizing powers to develop well designed stations at key transport interchange points, without limited expenditure of public funds. The stations greatly improved transit services, reduced congestion, reduced pollution, improved public space, and improved safety.

Intermodal interchange stations promote public transport use by reducing travel time and congestion.

Today's Madrid region has many public transport modes owned and run by different operators. These include the underground Metro system, which serves the majority of Madrid city and is supported by the city's bus system. There are also the interurban buses, urban buses in other municipalities, light rail system, suburban railway system, and other long-distance buses. All these modes create a complex intermodal system, and the governments in Madrid have put a lot of effort into integrating them. One of the ways in which this was carried out was by constructing interchange stations at five major points around Madrid city.

Many commuters enter Madrid city center from surrounding municipalities and were already transferring from one mode to another at various points around the city center. Knowing that most commuters have at least a two-seat ride to enter the city, CRTM aimed to make this ride as seamless as possible through the construction of interchange stations. The interchanges made it more convenient for commuters to transfer between modes and reduced the total travel time for both commuters and bus operators due to reduced congestion at these interchange locations. They also provided an added benefit of increasing the popularity of public transport in Madrid, thus promoting a more sustainable mode of commuting (compared to private cars) and reducing the overall amount of congestion in the city center.

Many developing countries are facing similar issues of congestion and questions concerning intermodality. Cities around the world are heavily congested, which leads to other social and environmental problems such as pollution, and health and road safety issues. Cities and transport operators should look at the example of Madrid to see how an intermodal interchange can significantly improve travel time and comfort for their users and reduce external impacts on local congestion, air quality, and road safety. Public transport authorities can and should imagine ways to make public transport more appealing. Other ways of doing so might be to plan bus terminals near Metro stations or provide a bridge or underground walkway to connect the different modes of transport.

The PPP structure should ensure the project's financial viability, timely project completion, and their proper O&M.

Another takeaway from Madrid's interchange stations is the PPP structure that was used. Madrid gained five top-class interchange stations without spending any public funds upfront. However, it is important to note that the operations of the interchange stations are still subsidized by the Government through the minimum guaranteed income. In fact, there were two other smaller interchange stations (at Legazpi and Conde de Casal) for which tenders were also issued, but no bids were offered as private companies did not find them financially viable. It is thus important to make a strong case that the project being tendered is financially viable for the private sector. This might even take the form of a demonstration project built using public funds, as CRTM did with the first interchange station at Moncloa.

Designing a strong contract is also important in any PPP. CRTM included clauses in its contracts to ensure that the interchanges would remain in good condition, and that they would be opened and operated in a timely manner. Finally, the concessionaire should also be able to generate revenue through other sources, such as parking spaces and advertising, which helps to fund and maintain the interchange stations. It is important to identify and make use of the potential of available spaces.

Problems will inevitably arise over time; communication and negotiation skills are critical for resolution.

A final takeaway from the Madrid case is the way the contract was renegotiated in 2011 to accommodate the additional changes that CRTM wanted to make. Even though it was not necessary for the concessionaire to make these changes based on the original contract, both parties were willing to communicate and negotiate a deal that would benefit both as well as the commuters using the interchange. This skill of communication and negotiation is vital when working on long-term projects like station redevelopment where many factors - physical, environmental, or consumer demand - are likely to change over time.

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CHAPTER 9

Kuala Lumpur Sentral Station: Funding Station Construction with a Land Swap *by Nobuhiko Daito*

The Malaysian Government built KL Sentral Station in Kuala Lumpur at the former Brickfields site, adopting a land-swap scheme under which a concessionaire constructed the new station in exchange for the ownership and development rights to the land adjacent to KL Sentral station. With the Government's strong political and financial support, the concessionaire opened the new station in 2001 without much delay, despite the Asian Financial Crisis of 1997. The concessionaire recouped its investment costs and gained substantial profit by capturing the incremental values of the developed land, enhanced by KL Sentral station's good connectivity. Today, the KL Sentral Station serves seven railway lines used by more than 200,000 daily passengers. The station area has become a vibrant new Central Business District (CBD), contributing to the city's economic and urban development.

Introduction

Kuala Lumpur, the capital of Malaysia, is a city with long history extending from Chinese settlement and British colonialization to economic development in the modern era. Officially a Federal Territory of Kuala Lumpur, the population of this 243 km^2 territory was 1.98 million in 2020 (DOSM, 2023). KL Sentral is a gateway and a public transport hub to the city and is one of the core business districts of the Klang Valley Region.

Public transport in Kuala Lumpur has a relatively short history as most of the systems began operations in the 1990s and the 2000s, and KL Sentral Station opened only in 2001 to replace the old Kuala Lumpur Station built in 1910. As a unique and successful case of economic development, Malaysia, and in particular, the Klang Valley Region, underwent rapid motorization and experience severe congestion on its road network. The Government began pursuing a series of transport investments to promote multimodality, and intermodal links were identified as critical for the success of the nation's transport policy.

Malaysia has a robust record of privatizing infrastructure assets as well as diverse services conventionally provided by public agencies to promote economic efficiency and reduce the fiscal burden on the Government. The PPP Unit of the Malaysia Ministry of Finance and the PPP Committee of the Cabinet work together to rigorously implement privatization programs and PPP projects.

Building on its experiences with public-private partnerships (PPPs), the Government structured the KL Sentral Station development project as a land-swap transaction under which a concessionaire, KL Sentral Sdn. Bhd. (KLSSB), designed and built the station at a former railyard site with its own financing, in exchange for ownership of the remaining areas of the site. Buoyed by the construction of the new modern railway station at the strategic central hub of the public transport network of the city, and in a supportive macro environment with high economic and population growth, the value of the KL Sentral project site increased 32 times in gross development value (GDV)[46] from RM500 million (USD 198.7 million) in 1996 to over RM16 billion (USD 3.7 billion) in 2018. As a result, Malaysia Resource Corporation Bhd (MRCB), the major shareholder of KLSSB, and KTMB, the Government-owned railway company, both realized profits shared according to their ownership ratios in KLSSB (73 percent MRCB, 27 percent by KTM Barhad [KTMB]).

The KL Sentral Station development exemplifies the difficulties in estimating the future price of real estate development sites in volatile real estate markets in developing economies. These difficulties stem from:

[46] GDV is a common performance metric of a real estate development to value a project when construction has been completed. It is calculated based on the market conditions prevailing at the date of the valuation, and may be based on an analysis of recent property transactions for similar properties in the area of development.

- the unprecedented complexity of the KL Sentral Station development
- the large-scale of the real estate development
- uncertainty of future land prices of these sites

Although there is no way to accurately estimate future land prices, the Government could have considered alternative land-based transaction schemes such as a long-term lease contract, which could reduce the risks associated with the land price changes for both parties.

Despite the Asian Financial Crisis of 1997, the concessionaire completed the station construction in 2001 without much delay. Today, served by seven railway lines, 200,000 passengers use the KL Sentral Station every day. With luxury condominiums, office towers, and multiple upscale hotels totaling over 1.75 million square meters of gross floor area, KL Sentral has become the most successful example of transit-oriented development (TOD) in the nation (Figure 9.1).

However, the project was not without its share of difficulties, and it still faces a challenging environment. Soon after the signing of the land-swap agreement, the Asian Financial Crisis occurred. This increased the property development risk to the concessionaire in the early years of the station operation and real estate development. Today, parts of the station are experiencing patronage far exceeding its capacity. Safety and security related to terrorism are becoming serious concerns for what is now the icon of the nation's public transport system. With various stakeholders and different interests, finding a sustainable solution to respond to the changing environment is challenging task.

Figure 9.1. Kuala Lumpur Sentral during Construction of the Surrounding CBD

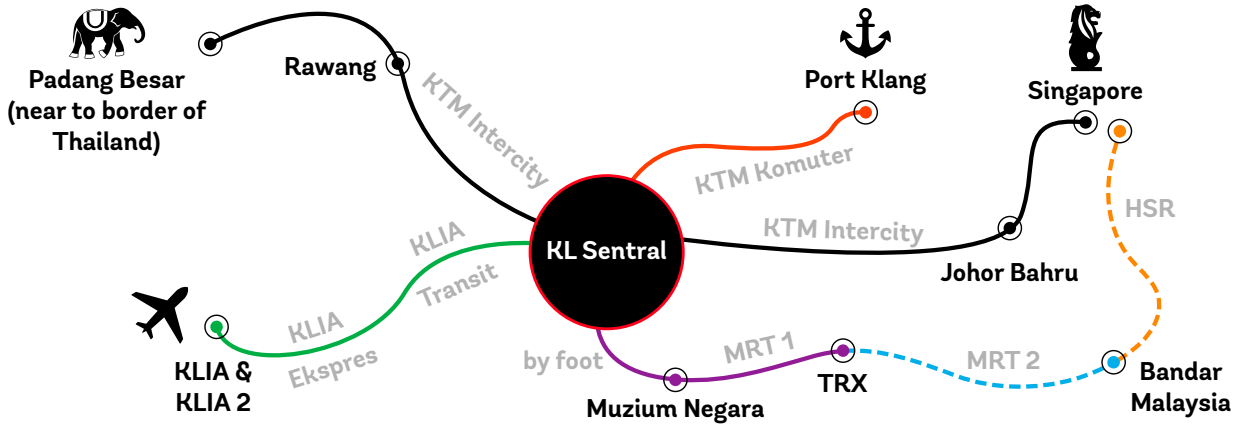
Source: pjfncs27 2008, used under CC BY-NC-ND 2.0 license.

Background

Transport in the Klang Valley Region

Since its independence in 1957, Malaysia has successfully diversified its economy and achieved sustainable economic development, curtailing high poverty rates while reducing income inequalities. The metropolitan Klang Valley region, where the Federal Territory of Kuala Lumpur is located, experienced steady economic growth as well as rising traffic congestion over the past several decades. By the mid-1990s, the number of personal vehicles in the city on a weekday reached 1.4 million, exceeding the city population of 1.3 million. The average number of vehicles entering the city was increasing by 17.5 percent annually. While motorization was a sign of the population's growing affluence and residents' higher standards of living, the Malaysian Government identified it as a critical area of policy consideration (Economic Planning Unit, 1996).

Figure 9.2. Overview of Transport Connections to KL Sentral



Source: JLL Property Services 2018, used with permission.

Malaysia has had a long history of intercity railways with passenger and freight services dating back to early 20th century, when the Federated Malay States Railways acquired a fragmented railways across what is today Malaysia. It was later named Keretapi Tanah Melayu in 1962. In 1992, the Malaysian Government corporatized it as a government-owned company, KTMB. In the 1990s, the Government initiated a series of public transport improvement projects to promote a multimodal transport system in the Klang Valley region. One such project was the operation of an electric, fuel-efficient suburban commuter passenger service between Kuala Lumpur and Rawang 1995 (Figure 9.2). Table 9.1 summarizes the rail based public transport developed to serve Kuala Lumpur.

Table 9.1. Rail Public Transport in Kuala Lumpur

Name	Type	Network	Operator
LRT Ampang, Sri Petaling, and Kelana Jaya Lines	Light rail	91 km, 73 stations	Rapid Rail*
Express Rail Link (ERL)	Heavy rail	57 km, 6 stations	ERLB
KL Monorail	Monorail	8.6 km, 11 stations	Rapid Rail*
MRT Sungai Buloh-Kajang Line	Heavy rail	51 km, 31 stations	Rapid Rail*
KTM Komuter	Heavy rail	456 km, 79 stations	KTMB
KTM Intercity	Heavy rail	Nationwide	KTMB

Source: World Bank.

Note: *Rapid Rail Sdn. Bhd., a subsidiary of Prasarana Malaysia Bhd., a government-owned company.

The region's LRT systems were built using PPP contracts. The LRT Ampang Line and Sri Petaling Line were first delivered as the Sistem Transit Aliran Ringan-LRT (STAR-LRT) system with a 60-year BOT contract. This closed in 1991 for Phase 1 (RM 1.28 billion or USD 465 million) and in 1995 for Phase 2 (RM 2.1 billion or USD 837 million). The design, supply, and construction contract priced at RM 1.65 billion (USD 658 million) was granted to the private joint venture, Kuala Lumpur Transit Group, with the work completed on time and within budget in 1996. The LRT Kelana Jaya Line was first delivered by Projek Usahasama Transit Ringan Automatic Sdn. Bhd. (PUTRA)-LRT, a private company established in 1994 with a 60-year concession contract to design, construct, and operate the system. The project was initially estimated to cost RM 4.35 billion (USD 1.1 billion) but later the estimate increased to RM 5.4 billion (USD 1.4 billion). The project was eventually completed on time and below budget and started operations in 1998. Both LRT systems quickly faced serious financial problems meeting their debt obligations, and the Government established Sharikat Prasarana Negara Bhd. (SPNB, later "Prasarana"[47]), a government-owned company, to take over the two LRT lines (Mohamad, 2003).

Kuala Lumpur Monorail opened in 2003 from KL Sentral to Titiwangsa, serving as the link between KL Sentral and the central business district of Kuala Lumpur. The RM 1.17 billion (USD 400 million) system was delivered with a BOT contract dating back to 1996 between the Government of Malaysia and Kuala Lumpur Monorail System Sdn. Bhd., with a concession term of 40 years. Construction work stopped during the Asian Financial Crisis, and after the operation started, the concessionaire experienced serious financial challenges. In 2007, SPNB took over the operation of the Kuala Lumpur Monorail while taking over the concessionaire's debt. Later, SPNB was rebranded as Prasarana Malaysia Bhd., and ownership of the public transport assets was transferred to its subsidiary, Rapid KL.

Express Rail Link (ERL) was built as a critical connection to the Kuala Lumpur International Airport (KLIA), which was built 57 km south of Kuala Lumpur. ERL Sdn. Bhd. was a joint venture of private companies that was awarded a 30-year concession contract in 1997 by the Malaysian Government to finance, develop, and operate the railway line. The total project cost RM2.4 billion (USD 632 million), and revenue service started in April 2002. ERL offers two types of services: KLIA Ekspres, a non-stop service from KL Sentral to the two terminal stations at the KLIA, and KLIA Transit, which makes four additional stops between KLIA and KL Sentral to serve commuter demand.

[47] Prasarana had been formed in 1998 to integrate and transform the then-fragmented public transport systems in the Klang Valley region. In 1999, it was tasked to take over the two financially troubled LRT systems, which it completed in 2004. Today, Prasarana owns public transport assets in the Klang Valley region, while Rapid KL, a subsidiary of Prasarana, operates the LRT lines.

Mass rapid transit (MRT) is another heavy rail system serving the Klang Valley region; however, its Sungai Buloh-Kajang Line currently serves KL Sentral Station only tangentially, as its Muzium Negara Station is accessible from KL Sentral on foot. MRT is owned by MRT Corporation Sdn. Bhd. and operated by Rapid KL. The system consists of a 9.5 km underground section and with some elevated sections. Phase one from Sungai Buloh to Semantan began operation in December 2017, and phase two from Semantan to Kajang began operation in July 2017. Currently, the Sungai Buloh-Serdang Putrajaya Line is under development and will be a 52.2km connection from Sungai Buloh to Putrajaya with 35 stations. The scheduled opening of the Swasa Damansara – Kampung Batu section of this line in August 2021 was postponed due to the COVID-19 pandemic and is expected to be open in 2023. This line will not serve KL Sentral Station.

As part of the Seventh Malaysia Plan (1996-2000), which sets forth the national economic policy, the Government decided to focus on intermodal connectivity of its public transport systems. The city's railway terminal had been Kuala Lumpur Station, which dates to 1910. The station, together with the adjacent Railway Administration Building (presently the KTMB headquarters), feature historic architecture that is rare in the country today.

As improvements to the urban transit systems were underway, the Government of Malaysia planned to develop KL Sentral Station to functionally replace Kuala Lumpur Station. Located less than a kilometer away, the plan called for the redevelopment of the Brickfields site to construct an "integrated railway complex" with "state-of-the-art facilities and a bigger capacity" (Economic Planning Unit, 1996.) Brickfields was a railyard with related facilities owned by KTMB and was considered a "grotty" and "crime infested" area (Wong, 2011) (figure 9.3). The new terminal would connect the KTMB commuter service, LRT lines, and ERL to the KLIA, buses, and taxis (Economic Planning Unit, 1996), while transforming the neighborhood into a much more desirable commercial and residential district. To realize this vision, the Malaysian Government approached the new Sentral Station project with plans to allow private entities to play key roles in project delivery.

Figure 9.3. Aerial Photo of KL Sentral and the surrounding CBD

Source: JLL Property Services 2018. Used with permission.

Private Participation in Malaysia's Infrastructure Projects

> *Buoyed by the construction of the new modern railway station at the strategic central hub of the public transport network of the city, and in a supportive macro environment with high economic and population growth, the value of the KL Sentral project site increased 32 times in gross development value*

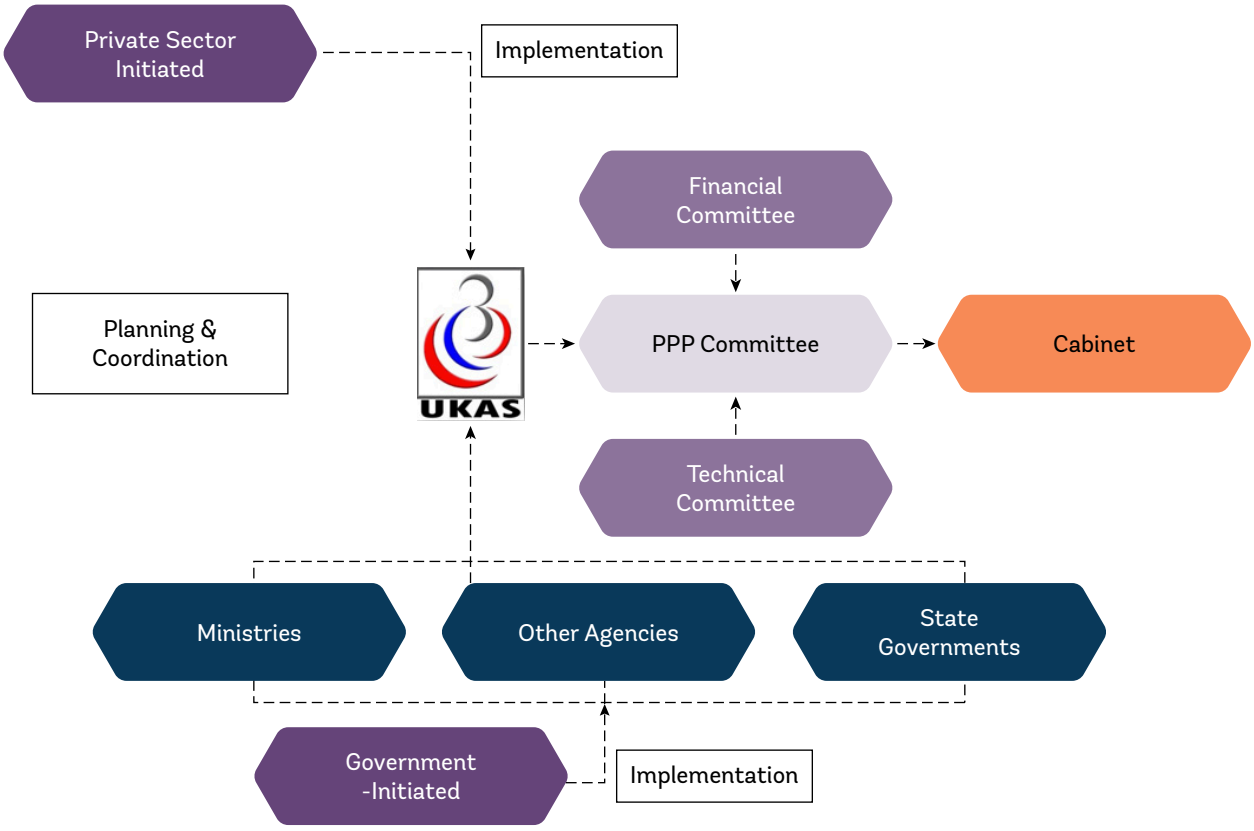
Malaysia has had a well-established privatization program in place since 1980s. It aimed to reduce the Government's fiscal burden by promoting economic efficiency in investing in economic infrastructure, while providing services to its citizens. The privatization policy was formally initiated in 1983, and the Privatization Special Task Force was established under the Economic Planning Unit of the Prime Minister's Department. In 1991, the Government introduced the Privatization Master Plan, setting forth a policy framework, implementation procedures, and prioritization of projects while identifying 246 candidate projects for privatization.

The Malaysian Government aggressively pursued its Privatization Program, enhancing the viability of candidate projects by providing various forms of assistance including soft loans, tax incentives, and preferable concessionary terms. Privatization often required mobilizing financial resources from the private sector, and government-linked investment companies (GLIC) such as the Employees Provident Fund (EPF)[48] also provided loans and equity financing. Privatized entities were allowed and encouraged to access innovative financial sources, including Islamic Debt Securities and soft loans by the Government (Economic Planning Unit 1996).

By 2018, 824 privatization projects had been implemented across all sectors, shifting some 110,000 government jobs to private entities. The Ninth Malaysia Plan (2006-2010) introduced the private finance initiative as an alternative model for infrastructure delivery. In 2009, the Privatization and Private Finance Initiative Unit, which later became the PPP unit (Unit Kerjasama Awam Swasta [UKAS]) of the Prime Minister's Department was established (Figure 9.4). The UKAS was moved under the Ministry of Finance in 2018.

[48] The EPF is one of seven GLICs including Kumpulan Wang Persaraan Diperbadankan (KWAP, Retirement Fund Incorporated). GLICs have substantial de facto ownership of the financial sector and are by far the most influential players in the Malaysian capital market (Gomez et al., 2018).

Figure 9.4. Government of Malaysia Public-Private Partnership Project Governance at Time of the Project



Source: World Bank, based on UKAS, (2018).

Although there is no enabling legislation, Malaysia has robust institutional and administrative procedures to implement PPP projects based on their experience and strong policy direction to utilize PPP contracts in pursuit of the nation's economic policy goals. The Cabinet is vested with the authority, on a consensus basis, to approve project agreements and decide bid winners. The PPP Committee of the Prime Minister's Department consists of the Director General of UKAS as the Chairperson with the following permanent members: the Attorney General, the Prime Minister's Department of Economic Planning Unit, the Ministry of Finance Investment, MKD and Privatization Division, UKAS Deputy Director General of Policy, and UKAS Deputy Director General of Development. Based on needs, other experts may join from:

- budget management
- government procurement
- loans management
- financial market and actuary
- Economic and International Divisions of Ministry of Finance
- implementing ministries and agencies
- Bank Negara Malaysia

Consisting of stakeholders as well as financial and domain area experts from the client Ministry, the PPP Committee is responsible for making recommendations to the Cabinet and the Prime Minister about PPP transactions. UKAS plays a central role in supporting the PPP committee, while monitoring project implementation. Implementation and monitoring are decentralized and delegated to the ministries and state governments (UKAS, 2018).

KL Sentral Station Project

Contractor

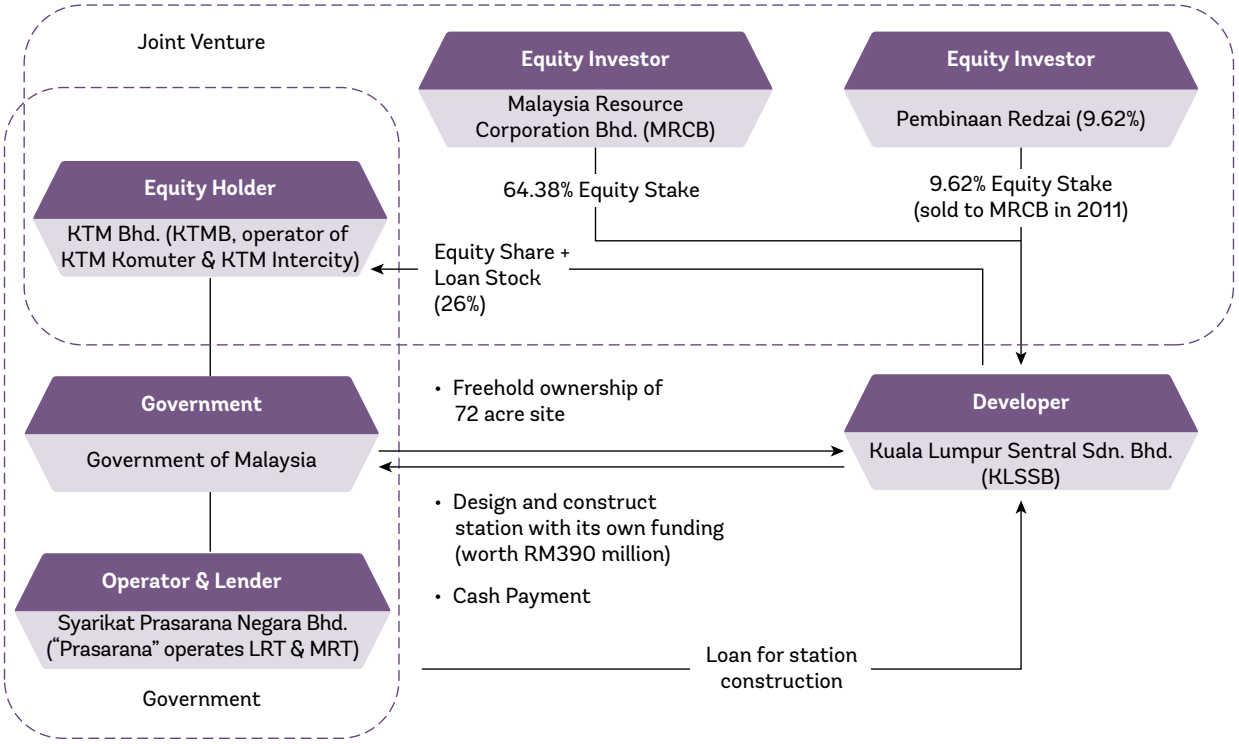
KL Sentral Station was developed through a tri-party agreement consisting of the Government of Malaysia; Sharikat Tanah and Harta Sdn. Bhd., a government owned company holding land; and KL Sentral Sdn. Bhd. (KLSSB)[49], a company set up to deliver the project. KLSSB was a joint venture of Malaysia Resource Corporation Bhd. (MRCB), KTMB, and Pembinaan Redzai (Figure 9.5).

Figure 9.5. KL Sentral is Malaysia Largest Intermodal Transportation Hub, Kuala Lumpur, Malaysia

Source: Adobe Stock

[49] KLSSB had been incorporated on November 7, 1994 under a different name, Freshway Properties Sdn. Bhd., but was renamed KLSSB on September 20, 1995 (MRCB, 2007).

Figure 9.6. Structure of KL Sentral Station Development



Source: World Bank, based on data from Saripudin et al., (2012) and WikiBooks, (2023).

MRCB was a conglomerate linked to numerous companies, including a major newspaper and a leading private television network. MRCB later became a government-linked company (GLC) focused on real estate development with the EPF as a major shareholder (Gomez et al., 2018). Holding 54.38 percent equity share of KLSSB, the project became an opportunity for MRCB to redefine itself as a real estate development and construction icon of Malaysia (Wong, 2011).

Pembinaan Redzai was a Malaysia-based private investment management company founded in 1985. The firm has a strong presence in seaport management, as it held 40 percent stake in Westports Malaysia Sdn. Bhd., managing Westports at Port Klang, Malaysia. Pembinaan Redzai also had a stake in a joint venture to develop Vizhinjam International Transshipment Terminal Port in Kerala, India (MIDA, 2008). In 2011, Pembinaan Redzai sold MRCB the 9.62 percent stake it had in KLSSB, both ordinary shares and loan stocks with accrued interest for RM12.5 million (USD 3.3 million). As a result, Pembinaan Redzai no longer has any stake in the station project, while the equity shares of MRCB in KLSSB increased to 74 percent (MRCB 2011).

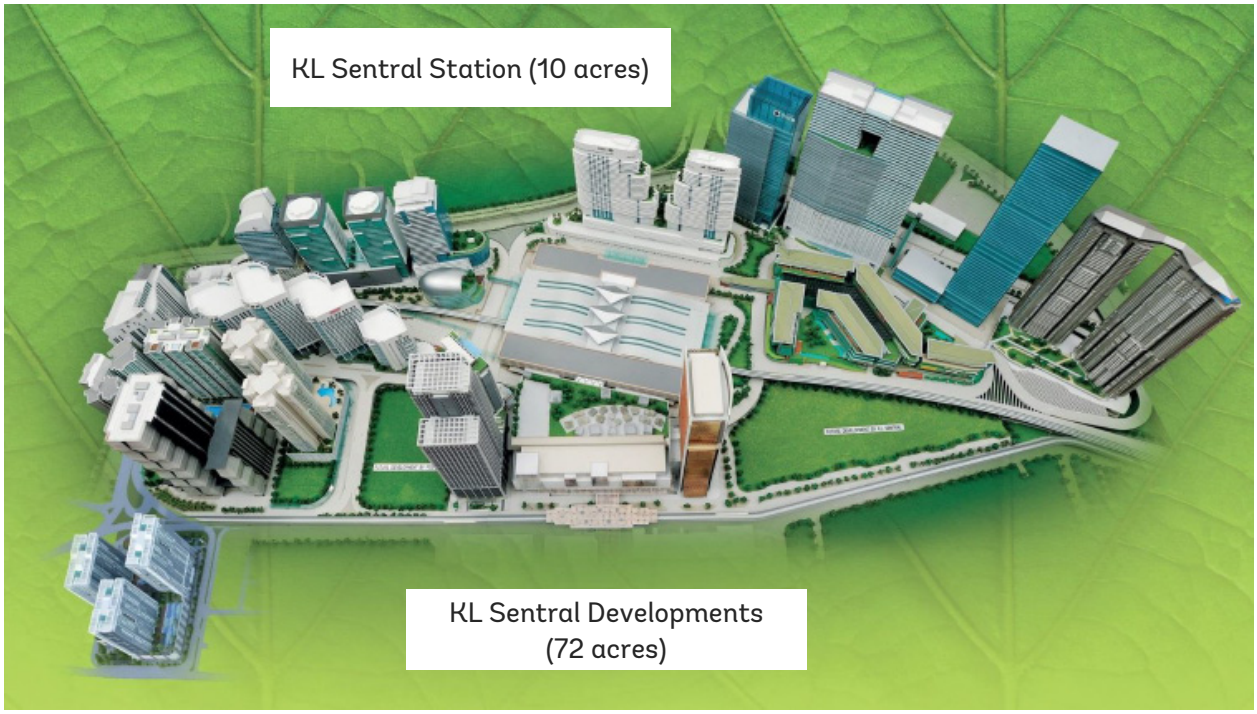
KTMB operates KTM Komuter and KTM Intercity, and as a government-owned company, it is considered as part of the Government of Malaysia. It owned the Brickfields site prior to the land swap and after the development, it continues to own KL Sentral Station. The assessed value of the properties for land swap was higher than the estimated construction cost of the station and associated railway infrastructure. As such, the transaction offset the difference with a cash payment from KLSSB to the Government of Malaysia as well as equity shares and loan stocks transferred to KTMB, a government-owned company, which aggregated to 26 percent of KLSSB's total equity shares.

Parties involved in the deal agree that for this project, there was a bidding process through which MRCB was selected. An overarching design was bid on, and it was made clear that the successful bidders would be required to team with KTMB in delivering the project (UKAS, 2018). While the criteria for selecting the winning bid are not available, Malaysia's economic policy has long emphasized addressing inter-ethnic inequality and enhancing the welfare of the Malay population. The privatization policy stipulated that at least 30 percent of the equity shares of privatized entities be held by the Malays (Economic Planning Unit, 1996). Therefore, MRCB might have been competitive due to its status as a Bumiputera (Malay)-owned company (Chhina, 2018).

Project Contract

The agreement for the station construction project was signed in April 1996 among KLSSB, the Government of Malaysia, and Syarikat Tanah and Harta Sdn. Bhd., a government-owned company holding government-owned land. The agreement set forth a land swap, whereby KLSSB would be responsible for developing, with its own financing, the KL Sentral Station, railway tracks, and railway facilities including depot and associated buildings. When complete, these assets related to the railways would be handed over to the Government. In return, the government-granted freehold[50] ownership of the land and the right to develop the surrounding land (36 acres), land over the tracks, and the depot (26 acres). Including the area of KL Sentral Station (10 acres), the total area of the Brickfields site was 72 acres (Figure 9.6). The initial cost of station construction – excluding upgrading and refurbishment of railway tracks and related facilities, as well as construction of the deck for initial developments – was RM390 million, or USD 102.6 million (MRCB, 2018).

Figure 9.7. KL Sentral Station and Entire KL Sentral Site



Source: JLL Property Services (2018), used with permission.

[50] Freehold transfer of land ownership is unusual for the Malaysian Government, as leasehold is more common. Considering this project was one of the first land-swap deals, the Government may have employed the freehold approach due to its lack of experience and/or idea of what to expect (UKAS, 2018).

Station Construction

The Brickfields was originally a KTM's marshalling yard with rail tracks, a warehouse, and sheds. The site was generally flat and had some natural shrubs, though it been used as a working area for some time. The site was isolated from the main road, and a drain waterway crossed the site from adjacent Lake Garden (Chhina, 2018). In developing the site, KLSSB and MRCB hired EKD, a joint venture consisting of Dragages Malaysia Bhd. (leader), Ekovest Bhd., and Syarikat KMZ, for the design and construction of the station, access roads, maintenance depot, 18km of new rail track, and three decks that would eventually support two hotels, offices, and an auditorium (Leong, 2001).

The five-story station building with the footprint of 700 feet by 515 feet has 12 platforms: KTM Intercity (2), KTM Komuter (4), KLIA Ekspres (2), KLIA Transit (2), and PUTRA-LRT (2). The station has 12 tracks for passengers and 14 tracks for maintenance, with two tracks used for freight. Facilities for railway operations include a locomotive maintenance building, carriage maintenance building, carriage preparation building, carriage washing facility, parcels facility, control rooms, service buildings, and stores, among others (Semasa Sentral Sdn. Bhd., n.d.).

Each railway operator had distinct operational parameters that required design consideration. For instance, the target market for ERL was domestic and international air travelers to/from KLIA, and its City Air Terminal would require dedicated space for passenger and luggage handling. Similarly, it was expected that KTM Komuter would need sufficient areas for intercity railway passengers. In contrast, quick entries/exits and transfers would be desirable for passengers of LRT lines. As such, the station was designed to provide dedicated concourse space for each railway operator to meet its respective operational requirements (Mohamad, 2003). To address those distinct design needs effectively, railway operators were asked to provide a statement of needs for operation to help plan for station facilities at the beginning of the design and construction works. Planning station facilities for systems with special needs, such as the ERL, required extensive customization. For example, ERL needed four tracks specifically dedicated for its two types of services, KLIA Ekspres (direct service to KLIA) and KLIA Transit (commuter service with additional stops), as they have different requirements than other systems. Due to these customizations, construction costs exceeded the initial estimate, and ERL, after negotiation with MRCB, agreed to pay an additional RM74 million (USD 19.5 million) to complete the station in specification with its requirement (ERL, 2018).

Table 9.2. Kuala Lumpur Sentral Station Project Timeline

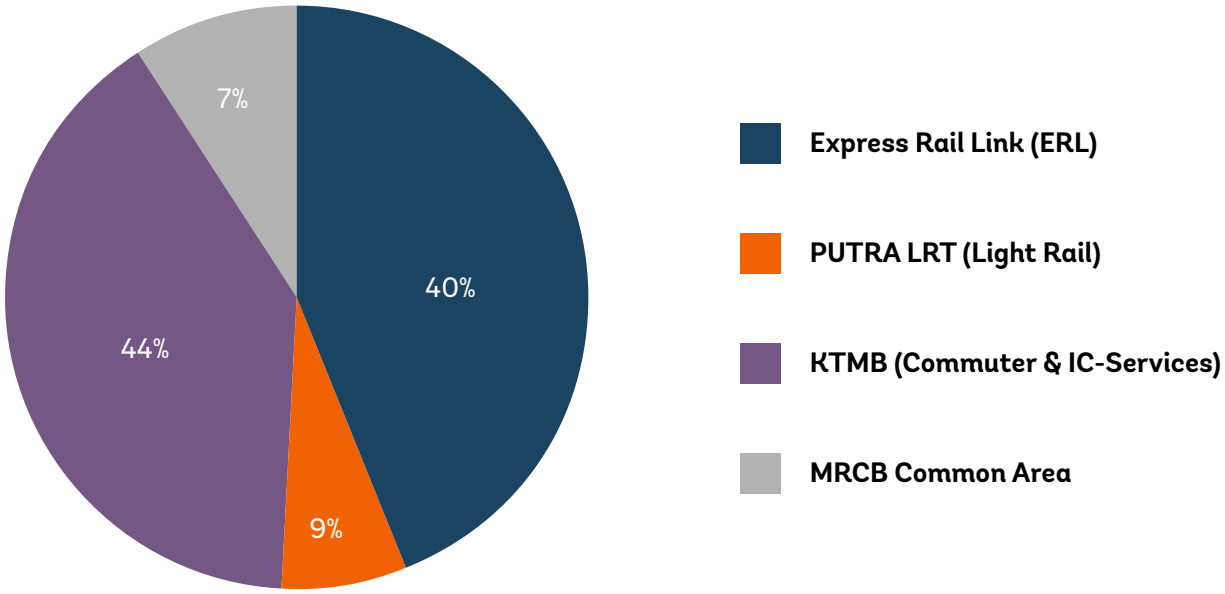
Year	Event
1995	KTM Komuter started revenue services between Kuala Lumpur and Rawang
1996	STAR-LRT started service on the Pudu-Ampang Line
March 1996	KL Sentral construction started
1997	Asian Currency Crisis
1998	PUTRA-LRT started revenue service from Subang Depot to Taman Melati
October 2000	KL Sentral Station construction completed
November 2000	Semasa Sentral began operation at KL Sentral Station
April 2001	KL Sentral Station began operation
April 2002	ERL started service
2002	SPNB took over STAR-LRT and PUTRA-LRT
2015	Semasa Sentral's facilities management lease expired, then year-to-year agreements were signed
2017	MRT Line began service

Source: World Bank.

Station Management Lease

After the station construction was completed, as shown in table 9.2, the Government had discretionary powers to decide how the station would be managed. MRCB proposed to oversee operation and management of the station because it had strategic interests in the station in terms of infrastructure, service quality, and safety and security. These factors would drive the success of the development of the surrounding areas, which it now owned. Semasa Sentral, the MRCB subsidiary, and the Government signed a lease agreement in June 2004, under which Semasa Sentral would manage and operate the common and commercial areas of the station and pay a nominal annual concession fee of RM60,000 (approximately USD 16,000) to the Government. Samasa Sentral leases 9 percent of the station area (just under 6,000 square meters) for commercial activities, and 29 percent (approximately 18,700 square meters) for common space. The facilities management services that Semasa Sentral provides include customer service to passengers and tourists, cleaning, security, and mechanical and electrical services in the common areas of the station. It offers these services to railway operators (KTMB, ERL, and Rapid KL) in their areas of the station for a fee. (Chhina, 2018; UKAS, 2018). When the lease agreement between Samasa Sentral and the Government was signed, the station had already begun operating. Therefore, the contract was backdated to November 2000. The term of the lease agreement was 15 years, and in 2015 the contract expired. Since 2015, the contract has been extended annually while the Government considers longer-term solutions. The station is leased separately for O&M of railways as well as retail and commercial activities. Figure 9.7 summarizes the breakdown of the station area occupancy.

Figure 9.8. Occupancy Breakdown between Rail Operators of KL Sentral Station Area



Source: World Bank, based on data from Semasa Sentral Sdn. Bhd., n.d.

Of the rail operators, KTMB, the operator of KTM Komuter and KTM Intercity, and ERL lease most of the station areas for their operation (passenger waiting, ticketing, airport operation at CAT, corporate operation) as well as limited retail activities. The term of concession for ERL is 50 years, and ERL pays no lease fee, since it is providing services to the public in its station area, for the benefit of the Government. At the end of the concession term, the station area leased to the ERL will revert to the Government. The lease agreement was independent from MRCB and Semasa Sentral Sdn. Bhd. (ERL, 2018).

Rapid KL, also uses a small part of the station for its operations. Both KTMB and Rapid KL are government-owned and are essentially part of the Malaysian Government, hence there are no lease agreements such as those with Semasa Sentral or ERL. KTMB actively engages in retail and commercial activities in the area it manages, perhaps more than the other operators (ERL, 2018).

Funding and Financing Arrangements

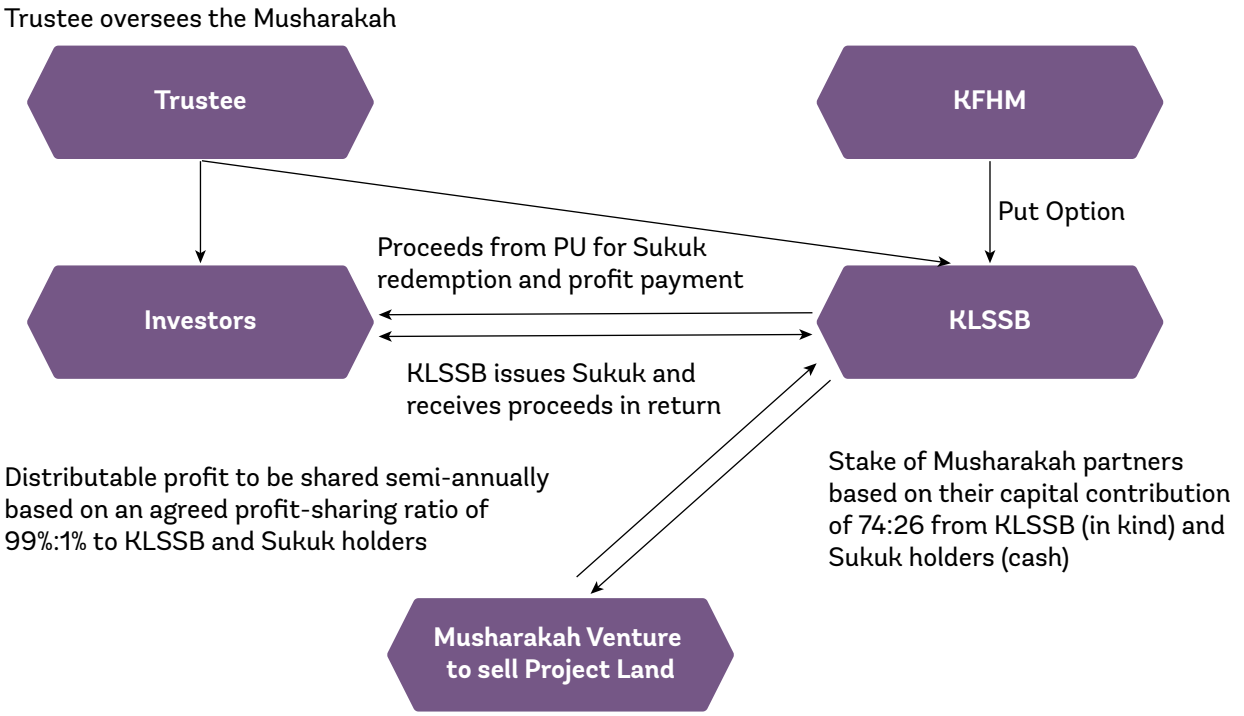
> *A long-term lease scheme enables adjustments of the payments from the concessionaire to the Government during the duration of the contract. While such mechanisms can be complicated to implement in a land-swap scheme, they can significantly reduce the risk associated with land price changes for both parties.*

The land-swap agreement between KLSSB and the Government of Malaysia dictates that KLSSB provides funding for construction of the station and associated facilities. The financing scheme approved by the management of KLSSB for the initial work on the station and related facilities was debt financing with SPNB. As SPNB was a government-owned company, the debt financing from SPNB to KLSSB can be interpreted as the Malaysia Government's support to the project. Although its amount and any terms and conditions associated with the arrangement are not known, KLSSB would develop parcels surrounding the station and sell those properties, proceeds of which would then be used to repay debt and pay dividends (MRCB, 2018). KLSSB would develop parcels surrounding the station and sell those properties, proceeds of which would then be used to repay obligations of the debt (MRCB, 2018).

The financing for the station development project was restructured multiple times. The debt that MRCB owed for the construction works of the station and initial phase of real estate development reached RM 720 million (USD 189.5 million) (Wong, 2011). In March 2001, KLSSB issued RM920 million (USD 242 million) in Al-Bai Bithaman Ajil Islamic Debt Securities (BaIDS) Facility, effectively to refinance the existing debt with competitive cost and longer tenor (over RM 400 million, or USD 105 million), and to complete the infrastructure work related to KL Sentral Station and commercial developments. This Islamic financing facility would give KLSSB long-term financing tenor that matched the projected cash flow, while also providing KLSSB with a fixed financing instrument (MRCB, 2001).

Furthermore, KLSSB refinanced the BaIDS in April 2007 by issuing Sukuk Musharakah, another type of Islamic financing facility, for up to RM 720 million (USD 189.5 million, the then-nominal value of the BaIDS outstanding). Sukuk Musharakah effectively established a Musharakah Venture for which KLSSB would also make in-kind contributions worth RM 254 million (USD 67 million), where profit would be shared among investors including KLSSB and with a predetermined profit ratio (Sukukholders 1 percent and KLSSB 99 percent). If the Musharakah Venture were to go bankrupt, the debt would be shared among investors proportional to the capital contribution ratio (KLSSB 26 percent and investors 74 percent). The Sukuk Musharakah was issued to repurchase and cancel the exiting BaIDS (Kuala Lumpur Sentral Sdn. Bhd. 2007), reducing KLSSB's financing costs from 10 percent to 4.8 percent (Min 2007) (Figure 9.8).

Figure 9.9. Structure of Sukuk Musharakah Islamic Bond to Refinance KL Sentral Debt



Source: Saripudin et al., (2012).

Outcomes

Delivery of KL Sentral Station

The construction of KL Sentral Station began in March 1996, was completed in October 2000, and began operation on April 16, 2001. With a gross floor area of 92,560 square meters, the cost of the entire public transport hub reached RM1.1 billion, or USD 289.5 million (Chhina, 2018). Customization of railway facilities for specific systems resulted in additional costs to the railway operators over and above the initial estimates (ERL, 2018).

The opening of KL Sentral Station became a milestone of public transport network improvements in the Klang Valley Region. As Malaysia continued to expand its public transport systems, KL Sentral became a critical hub of the regional network. Of the 10 railway lines serving the Klang Valley Region, seven provide service at KL Sentral. Of these, the two ERL lines, KL Monorail, and MRT began operation after KL Sentral Station opened. Compared with the old Kuala Lumpur Station, which was served by the two KTM Komuter lines, an LRT, and an MRT line, KL Sentral significantly enhanced the multi-modal connectivity of transport networks in the region. This was a significant achievement since the provision of efficient public transport systems had been identified by Malaysia's transport policy to address the rapid growth of private automobile ownership and associated traffic congestion (Economic Planning Unit, 1996).

The contemporary architecture of the station incorporates traditional Islamic motifs of a multi-pointed star, which can be seen on the dome and the floor tiles (www.klsentral.com). The station won many awards for both its unique and aesthetic design and functionality. These include Persatuan

Arkitekt Malaysia (Malaysian Institute of Architects) in 2002 in the public and civic building category and 'best steel roof design', and the FIABCI (the International Real Estate Federation)-Malaysia award of distinction in 2002.

The number of passengers that use the station has continued to grow. In 2010, the station handled 140,000 passengers per day. Its network connectivity improved as MRT and KL Monorail began revenue services and underwent ramp-up periods, and further developments reached completion at KL Sentral, increasing the demand for passenger trips through the station. By 2018, station ridership had increased to 200,000 passengers per day (MRCB, 2018).

Real Estate Development at KL Sentral

The funding scheme of the project, in which KLSSB and MRCB would need to develop surrounding parcels and lease or sell them to meet its debt obligations, represented considerable risk for KLSSB. In 1997, the year following the project commencement, the Asian Financial Crisis took place. Several large Malaysian corporations were over-leveraged with insurmountable corporate debt, and they soon had trouble meeting their debt obligations. The Malaysian Government responded by using GLICs to bail out many of these companies. By the early 2000s, such companies went under the ownership of GLICs and became GLCs, recognized as a legacy of the 1997 bailouts (Gomez et al., 2018).

MRCB was no exception. Not only was it a major mass-media conglomerate with TV stations and newspapers but it had also extended its business lines to engineering, construction, and property management, and by 2000 had an aggregate debt of RM4 billion (USD 1 billion). When the KL Sentral project commenced, there was substantial concern that the project might not succeed. The Asian Financial Crisis lowered real estate property demand and MRCB could have difficulty selling its properties after the station was completed. A former MRCB executive recounted that a parcel of land was sold at a low price to Japanese investors to build Hilton Kuala Lumpur and Le Meridien Hotel, which eventually placed KL Sentral on the radar of investors and businesses seeking office space.

Phase two of the Plaza Sentral Project, which commenced in 2004, became a turning point for KL Sentral. With severely limited corporate resources, MRCB's management decided to undertake an aggressive marketing campaign for the development. As a result, Maxis[51] took up an office block as an anchor tenant, and other buyers followed. Subsequently, the sale prices of properties increased as KL Sentral became increasingly perceived as a brand (Wong, 2011).

KL Sentral was a risky undertaking for MRCB. After the station opened in 2001, Suasana Sentral Condominium completion in 2002, and the hotels' construction in 2003, it was not until 2006 that another development, Plaza Sentral, was completed. After 2006, properties began to sell at a consistent rate with at least one property every year except in 2009 (Table 9.3). This generating revenues of hundreds of millions of Malaysian Ringgit (Chhina, 2018). By 2004, MRCB had successfully refinanced its RM720 million (USD 189 million) debt raised for the construction of the station.

[51] Maxis is Malaysia's leading 4G & 5G network provider.

Table 9.3. Sequence of KL Sentral Development Projects

Lot	Name	Year	Gross Floor Area (1000 m²)	Est. GDV (million RM)
A	Menara CIMB (office tower)	2013	77.5	404
B	Menara Q Sentral (office tower)	2014	130.1	1,000
C	St. Regis Hotel (hotel & residential)	2014	92.9	1,000
D	The Sentral Residences (residential)	2015	130.1	1,200
E	Platinum Sentral	2011	91.2	678
G	NU Sentral Mall, Aloft Hotel, NU Tower (shopping mall, hotel, and office)	2012	290.9	2,259
H	Kuala Lumpur Sentral Station	2001	78.3	1,000
I	Hilton KL and Le Meridien KL (hotels)	2003	92.7	1,000
J	UEM, SSM, MIDA, Axiata Tower, Sooka (office towers)	2010	153.9	690
K	Suasana Sentral Condominium (residential)	2002	85.3	249
L	Suasana Loft Condominium (residential)	2008	85.3	351
M	Plaza Sentral (office tower)	2006	151.8	579
N	1 Sentral (office tower)	2007	42.2	161
348	Menara Shell (office tower) Ascott Sentral (hotel)	2013 2014	92.9	914
349	Sentral Suite (residential)	2023	176.3	1,600
	Future Development			
F	Lot F (Planned Office Tower)		297.3	3,800
	Grand Total		2,068.7	16,885

Source: MRCB, (2018).

KL Sentral Today

Today, the network connectivity of KL Sentral provides considerable advantage as a TOD over developments of equivalent magnitude in the region (JLL, 2018). All seven transit lines serve KL Sentral, compared to three lines at Kuala Lumpur City Centre (KLCC), two lines at Bangsar, and no lines at Mont Kiara. It is also well connected to KLIA: 30 minutes from KL Sentral via KLIA Express versus 50 minutes from KLCC and Bangsar via LRT and KLIA Express, and 50 minutes from Mont Kiara by car. KL Sentral is also closely connected to other key developments in the region, including KLCC, Putrajaya (Malaysia's Federal Administrative Office establishments), and fringe areas (such as Mont Kiara and Bangsar).

Through the development of the station as well as surrounding parcels, the project became a successful TOD as well as a brand name in the regional real estate market. Prior to the development of KL Sentral Station, the former Brickfields Yard was valued at approximately RM 500 million (USD 198.7 million). Currently, with Lot F still awaiting development, the GDV of KL Sentral is estimated to be RM 16.8 billion (USD 3.9 billion, land and buildings). The gross floor area of the KL Sentral CBD

has reached 22.3 million sq. ft, with areas for offices (45.6 percent), residential (23.1 percent), mixed development (18.6 percent), hotels (9.0 percent), and the station and transport hub (3.8 percent) (Chhina, 2018).

Competing against other new developments such as Kuala Lumpur City Center, KL Sentral offers office space with less traffic congestion and better public transport connectivity, drawing commercial real estate demand. In 2017, the office occupancy rate of the "Kuala Lumpur Prime Fringe," including KL Sentral, reached 91.3 percent, exceeding that of Kuala Lumpur CBD at 85.3 percent (JLL 2018). Companies that have offices in KL Sentral include multinational corporations such as PwC, Shell, General Electric, Google, and Facebook; Government agencies such as SPAD, MIDA, JKJR, and ISKANDAR; and financial institutions such as Kuwait Finance House, Bank Islam, and CIMB Bank.

KLSSB, and its majority shareholder, MRCB, captured most of the value created from real estate development at KL Sentral, while the benefit that the Government and railway operators realized has mostly been transport service for the public and profits from limited retail activities at respective station premises. Understandably, railway operators and the Government feel that they could have received larger shares of the profit now that the KL Sentral has become so successful (UKAS, 2018; and ERL, 2018). Nevertheless, KLSSB and MRCB took considerable risks before the investment returns materialized, and retrospectively, it is difficult to estimate the value of risk premiums associated with the transaction. It was one of the first of this type of transaction for the parties involved and taking risks for an uncertain future (for example, the Asian Financial Crisis) was possibly an endeavor in and of itself.

Outlook for the Future

KL Sentral Station faces operational challenges of growing demand with uncertainties in a changing environment. For example, the Malaysian economy was on a continuing growth trajectory of 5-6 percent annual growth when the COVID-19 pandemic hit. The Malaysian GDP fell by 5.6 percent in 2020 and use of public transit dropped[52]. However, Malaysia has invested heavily in public transport systems over the years, focusing on developing a "people-centric public transport system" to change the course of persistent motorization. As part of The National Land Public Transport Master Plan 2012-2030, Malaysia has begun implementing initiatives to achieve the goal of 40 percent public transport modal share in urban areas by 2030. The demand for public transport did show steady growth pre-pandemic: ridership of rail transit systems in the Klang Valley region grew from 171 million in 2010 to 226 million in 2014, at an average annual growth of 7 percent. The Klang Valley MRT, Sungai Buloh-Kajang Line, became fully operational in 2017 as part of the Eleventh Malaysia Plan, and the construction of Sungai Buloh-Serdan-Putrajaya Line from Sungai Buloh to Putrajaya is underway. With these developments, the ridership at KL Sentral Station, the transport network hub to which most of the public transit systems in the region are connected, is expected to recover post-pandemic.

Concurrent with the demand growth, KL Sentral faces strategic and operational challenges to ensure the sustainable operation of the station. KL Sentral Station has undoubtedly become the key node for public transport networks in the Klang Valley Region. However, the railways and station operators may have different views on the needs and strategic direction for the future. MRCB and

[52] Malaysia PM orders 'total lockdown' amid COVID-19 surge. May 28, 2021 (Reuters, 2021).

Semasa Sentral Bhd. have identified safety and security risks as a serious threat to the continuing operation of the station. In recent years, several terrorist attacks around the world have targeted railway stations as they are the icons of the cities and tend to have large crowds of people. Central stations are thus vulnerable to malicious intent to maximize impact.

In contrast, railway operator ERL, which operates ERL Ekspres and ERL Transit at KL Sentral Station, is of the view that the ridership growth has been stable and the station is equipped with sufficient capacity to handle travelers to/from KLIA and commuters using ERL transit stations. Reflecting the magnitude of operational costs for the railway systems, ERL feels that it does not have the financial resources or capacity to invest in safety/security enhancements at the station (ERL, 2018). It should be noted that the station ridership increase is likely to be due in part to the new services of KL Monorail and MRT at KL Sentral, as well as improvements to the LRT networks. Each operator has a unique operating environment, and accounting for the distinct needs of different public transport operators is a challenge at KL Sentral as a public transport hub.

As the lease agreement between the Government of Malaysia and Semasa Sentral Sdn. Bhd. has become a year-to-year contract since the 15-year contract expired, renegotiation is underway, with retendering the station operation/management under consideration. With the presence of multiple stakeholders with possibly competing interests, finding a solution to address capacity limitation issues as well as emerging safety/security concerns will be a challenge. However, these represent situations commonly facing railway stations generally, and its unique model and the outcome may be insightful for decision makers in other contexts.

Lessons Learned

The experience of KL Sentral Station development provides lessons for railways considering station redevelopments and exploring the value of their land.

Evaluating land value in PPP schemes is challenging.

The KL Sentral Station development shows the difficulties in estimating land prices in PPP schemes that use land-based financing. The government signed a concession contract with a concessionaire, KLSSB, under which the concessionaire designed, built, and transferred the KL Sentral station building in exchange for ownership of the sixty-two acres of land around the station.

Among others, the development potential and the prevailing fundamental macro conditions – economic and demographic trends – of the project city and the country are two important factors that affect the land price of the project site. The land adjacent to KL Sentral, the central hub of the public transport network of the nation's capital, which was to be linked to seven rail lines, including the KLIA Ekspres link serving the KLIA, had strong development potential. During the project implementation and operation period, the Malaysian economy annually grew at 3 percent on average, despite the economic downturn at the time of the Asian Financial Crisis in 1997-1998. Meanwhile, the population of Kuala Lumpur annually increased by about 6 percent from 2.9 million in 1990 to 5.8 million in 2005. Triggered by the construction of KL Sentral Station, and in a supportive macro environment with rapid economic growth and a high population increase, the value of the KL Sentral real estate development site, measured in the aggregate GDV, increased 32 times, from RM500 million (USD 198.7 million) in 1996 to over RM16 billion (USD 3.7 billion) in 2018.

MRCB, the major shareholder of KLSSB, reaped most of the profit from the real estate development, while another shareholder, KTMB, the government-owned railway company, earned the rest, based on the ownership ratio of 73 percent by MRCB and 27 percent by KTMB. This ownership ratio addressed the difference of the estimated price of the land granted to KLSBB by the Government and the estimated construction costs of KL Sentral Station. Considering that most of KLSSB's revenue was generated from the development of land granted by the Government, legitimate questions might be raised as to the estimated land price of the real estate development site,[53] as it was one of the most important factors to determine the above-mentioned ownership ratios of KLSSB.

The difficulties in estimating the land price around KL Sentral Station lie in the following two factors:

- The project had unprecedented unique features. The government intended to convert a distressed and crime infested railyard field to a new modern central transit hub (10 acres) that serves seven railway lines, connected to city's key locations, including the international airport, and then develop the station's surrounding area (62 acres) as a new large-scale CBD. There was no similar real estate development in Kuala Lumpur for a comparative estimate of the land price of the project site.
- The GDV was calculated based on the market conditions prevailing at the date of the valuation, before the contract. However, the real estate development around the station can only take place after the completion of the construction of the complex station. Furthermore, the land price is usually determined based on estimated cash flows from the real estate development over 20 years. It was extremely difficult, if not impossible, even for the real estate experts to accurately forecast the future land price over the extended period. In addition, the volatility of the real estate market in the developing economies made this exercise even more challenging.
- The level of knowledge and expertise about the real-estate market is asymmetrical between the Government/railways and the developers. In general, developers have more information and experience regarding the real estate market than the Government/railways. The Government/railways, therefore, need to be assisted by real-estate experts in estimating the land price and negotiating with developers.

However, realistically there is no way to accurately estimate the current and feature land prices. The Government/railways need to design the PPP scheme and prepare the concession contract in a way that could mitigate, to the extent possible, the risks associated with land price changes.

One such PPP scheme the Government could have considered is adopting a long-term land lease rather than a straight land-swap. The risks associated with land price changes can go both directions – underestimation and over-estimation. Under a long-term lease scheme, in the case of under-estimation, the lease fee that was set at the time of the contract would be lower than the market rate, and the Government would receive less than what the concessionaire could receive from its tenants and buyers. However, the Government will be able to retain the land value appreciation, as it retains the land ownership. On the contrary, in the case of over-estimation, the concessionaire would have to pay a higher lease fee above what it could receive. The long-term lease scheme can include adjustment clauses for the lease fee and lease-period in the concession contract, to be triggered in case the price changes beyond the pre-determined range. Such a mechanism that enables an adjustment of the payment from the concessionaire to the Government during the duration of the contract, which is complicated to achieve in a land-swap scheme, can reduce the risk

[53] The land price of the project site was estimated using the GDV method.

associated with land price changes for both parties. On adopting a long-term lease scheme, UKAS, Malaysian government's PPPs unit, noted that, "the Government may have adopted the freehold approach rather than lease approach, due to their lack of experience and/or idea of what to expect."

The PPP transaction was facilitated by strong government privatization experience.

KL Sentral Station Development adopted a complex PPP structure based on a land-swap mechanism involving multiple stakeholders. Despite this complexity and the difficulties triggered by the Asian Financial Crisis of 1997, the Government and its national railway agency were able to deliver the project without substantial delay. This was due to the Government's strong commitment and experience in PPPs and privatization, accrued through its privatization program in place since the 1980s.

The privatization program was supported by a strong institutional framework with the highest political visibility. In 1983, the Privatization Special Task Force was established under the Prime Minister's Department. This task force formulated the Government's privatization policy and plans, and helped the PPPs committee make decisions on specific privatization projects, including the KL Sentral Station Development. Later in 2009, the Privatization Task Force was transformed into the PPP Unit (UKAS) of the Prime Minister's Department. UKAS played the role of the secretariat of the Government's PPPs committee under the cabinet. It was later shifted to the Ministry of Finance in 2018, considering the importance of financing issues in PPPs. The PPP committee, assisted by UKAS equipped with PPP expertise, delivered more than 800 privatization projects through various forms of PPPs. Thus, the Government's experiences and expertise in privatization, combined with a robust institutional framework, are key factors for the successful delivery of large-scale PPP projects such as the KL Sentral Station Development Project.

The governance structure defined by the PPP embeds important tradeoffs that require careful consideration.

KL Sentral Station's unique PPP structure highlights the importance of trade-offs and implications of alternative governance structures on railway station redevelopment projects. In this case, the Malaysian Government required bidders to include KTMB as part of the project joint venture, along with the arrangement that equity shares and loan stocks be part of the land-swap deal to address the difference in the value of the site and the station construction costs. This arrangement enabled the Government to have a stake in the concessionaire's decision-making as a joint venture participant, while also accepting the financial risks of the project, including the financial consequences of any unforeseen changes in project circumstances.

Importantly, this arrangement enabled a public transport operator to take part in the station development concession. From KTMB's perspective, this arrangement allowed close collaborations on station development tasks related to planning/operation and others, including real estate developments. It also, however, informalizes the relationship between railways and other parties, making transparency and public accountability a challenge, particularly the relationship with other public transport operators, in this case, ERL. If the Government's priority was the effective collaboration of public transport operators at this hub, ERL and other operators too could have been involved as a joint venture participant to enable comparable levels of collaboration with all operators involved in station development. If the Government desired to minimize the risks of its involvement in the project as a joint venture partner, the transaction could have been solely through cash transfer and require the concessionaire to independently interface with all public transport operators serving the station. Overall, the case highlights the importance of determining a governance structure with consideration to interfaces with multiple fronts and risk implications.

The PPP involved several important scoping issues that affected incentives and working relationships among the parties.

The scope of the original concession agreements and changes in contractual relationship between the concessionaire and the Government also highlights questions that need to be addressed through preparation. The original land-swap contract to develop KL Sentral Station did not include the O&M of the station after its completion. After the station began operation, KLSSB approached the Government and proposed it would be responsible for the operation and management of the common area and commercial areas, which totaled 38 percent of the station's floor area. Railway operators manage their areas of the station to provide services such as ticketing and traffic control. For instance, ERL has an agreement with the Government, the station owner, to occupy and manage the space for CAT and other services, and the lease is at no cost because the services provided are for the public's benefit. ERL also has service contracts for utilities and other essential services to purchase from Samasa Sentral (KLSSB), but besides that, there is no contractual relationship between ERL and KLSSB. This is a complex arrangement.

Governments and railway operators may consider several alternative O&M models for station redevelopment projects. For example, the original transaction could have been bundled with O&M phases; in exchange for the freehold development rights of surrounding parcels, the concessionaire would be required to operate and manage the station for a predetermined period. Such an arrangement would have incentivized O&M considerations to be reflected in the design and construction of the station, optimizing its lifecycle costs in pursuit of economic efficiency. Under such scenarios, the risk of expected gains from real estate developments, as perceived by the concessionaire, might have required a premium from the Government beyond what it would be able or willing to do.

Alternatively, the Government could also have considered internalizing the redevelopment of the Brickfields site by leasing or selling individual parcels depending on market appetite. If a steady stream of sales or lease proceeds could be expected, the revenue stream could have been securitized to finance the construction of the planned station. The Government might have recouped at least a part of the returns from the real estate developments, which could have been reinvested in transport system enhancements or other policy objectives.

Several challenges can be expected under such scenarios. First, value creation from real estate developments would be dependent on the presence of the railway terminal, and the Government would need to show substantial commitment to the entire scheme to convince investors of the potential value of the site. Second, the development of a 62-acre site is a major undertaking. It requires a clear vision and a grand scheme to implement the program, in addition to coordination with the development of a public transport hub, which is likely to be over an extensive period. Both the external environment (for example, market conditions) and internal condition (for example, public/private leadership and/or changes in policy priority) may shift, making it difficult to follow through with such complex undertakings. Decision-makers should determine the scope and a contractual modality based on a clearly defined objective along with a robust assessment of constraints and project environment.

Another aspect of project scoping is conditions required of the contractor in the project agreement. As is commonly discussed, private sector involvement is not a silver bullet to solve any problem. If complex and challenging conditions are imposed, expected costs, and associated risks will also rise. In the case of KL Sentral Station development, the contractor was required to continue active railway services during construction, effectively imposing severe constraints to their work. The

contractor utilized the time of day when railway operations would cease (late evenings and early mornings) and the electricity system feeding the trains could be disconnected. Furthermore, rail tracks were diverted one by one to the final locations so that interruptions to the railway operations could be minimized (Leong, 2001). There are instances of railway station redevelopment projects where no railway service interruption was permitted, leading to schedule and cost overruns. The project owner should, therefore, carefully consider these potential tradeoffs and risks associated with project scoping and conditions imposed by contractors.

At the construction stage, the concessionaire had to go through major design and specification changes of the tracks to meet ERL's operational requirement. ERL required four tracks dedicated for ERL's two types of services, KLIA Ekspres and KLIA Transit, with a specification not originally verified at the design stage. These customizations led to the cost-overrun and delayed project completion. To avoid these, the concessionaire should have actively consulted with the rail operators on their requirements and reflected them in the station design. A more proactive approach would be to include the train operators as a concessionary participant. As many stakeholders, including train operators, retailers, station maintenance companies, and other service providers are involved in station development, the concessionaire needs to set up an effective consultation mechanism with them through all the stages of the project development, design, construction, operation, and maintenance. It is also important that the Government and the project implementation agency design the railway-related facilities with the ability to expand capacity to accommodate future demand in the long-term (30-50 years), as retrospective adjustment would be difficult and costly.

Figure 9.10. KL Train Station

Source: Adobe Stock

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CHAPTER 10

Denver Union Station: Revitalizing a Transit Hub and its Neighborhood with a Private Master Developer *by John Good*

The City of Denver and the Regional Transportation District (RTD), the region's public transit agency, renovated the more than 100 years-old historic Denver Union Station (DUS) and the underutilized former railyard by engaging a private master developer to accommodate the growing transport demand and revitalize the regional economy. The City of Denver wanted to integrate disparate elements into a cohesive, inviting urban center, and created 19.5 acres of new office, retail and residential development surrounding the newly renovated Union Station. After the project was completed, DUS has become not only an integrated regional multimodal transportation center, but also a real community gathering place, fostered by a suite of public spaces. The entire DUS neighborhood has emerged as a powerful economic engine for the city and the region, generating USD 3.5 billion in initial impact. This case highlights the benefits of pairing the public planning process with a private master developer that has a holistic view of all aspects of the development, while keeping a focus on profit.

Introduction

> *The financing plan for capital construction included a significant public contribution that would be paid back through a TIF district, which allowed the City to benefit from the uplift in value of the surrounding parcels.*

Denver is the capital of and largest city in the U.S. state of Colorado. In the two decades prior to project initiation, the metropolitan area had grown, and the greater downtown area had attracted significant investments in office space, residential units, and hotel rooms. However, like most American cities, Denver has not had a widespread and robust system of public transport, and growth has brought increased congestion to the road network. RTD, the region's public transit agency, and the City of Denver have worked to improve transit options, with improved bus service and new light rail options. DUS and the surrounding parcels presented an opportunity to bring together these regional transit options at a central location. In 2004, voters in the Denver metropolitan area passed a sales tax increase to pay for a USD 4.7 billion investment in light rail, commuter rail, and enhanced bus service called FasTracks[54]. The network was primarily designed to connect downtown Denver and its suburbs, with a central hub of the network at a revitalized historic train station, DUS. This station brought together rail and regional bus and has effectively acted as a convergence point and central gathering place for the city.

The station and a surrounding former railyard site were some of the last few large parcels of developable land in central Denver, and the RTD and the City of Denver understood that this entire DUS district had significant value as an integrated real estate development project.

The successful buildout of the development has recentered downtown commercial development toward the train station and connected the established commercial core to growing neighborhoods to its northwest (Figure 10.1). Its potential was maximized by the early appointment of a master developer, the Union Station Neighborhood Company (USNC), which oversaw the phased development and guaranteed a standard of quality through thoughtful integrated design and placemaking.

RTD and the City of Denver captured the value created by these surrounding parcels through land sales, tax increment financing (TIF districts[55]), and other land value capture mechanisms. These financial mechanisms were paired with long-term debt financing that allowed the city to invest in long-term transport improvement projects and create a new mixed-use neighborhood at the same time.

[54] FasTracks is RTD's voter-approved transit expansion program – the largest in the nation – that is transforming transportation through the Denver metro region.
[55] See footnote 9 for definition of TIF.

These successes were enabled by a cohesive governance structure that kept exploring solutions to deliver the vision in a fast and efficient manner. By pairing the public planning process with a private-sector master developer having a holistic view of all aspects of the entire development while keeping a focus on profit, Denver could channel the development pressure that already existed in the area and focus on improving public assets by capturing value strategically.

Figure 10.1. Denver Union Station Area - 1970s and Current (the red circles at the station)

Source: Google Map and Regional Transportation District. Used with permission.

The project also benefitted from fortuitous timing. The city and RTD had laid the groundwork and planned proactively for its redevelopment. While private developers struggled to hold on during the financial crisis and recession in 2008-2010, the city's leadership took advantage of stimulus resources from the national Government and were able to capture the rebound in demand from a strengthening Denver economy post-2012.

The case of DUS provides background on best practices, transactions, and the governance structures that were key to the project's success.

Transport in Denver Metropolitan Region

Denver was founded in 1858 as a frontier town during the western expansion of the United States, originally relying on a mining- and natural resources-based economy. By the early 1900s, it was one of the leading cities in the inland western part of the country. Like many American cities that grew during this era, Denver had an extensive network of streetcars (trams), which formed the core of the transportation network.

By the mid-20th century however, public policy shifted to a road focus. The streetcar system was dismantled, and the Denver metropolitan area started building an extensive network of limited-access expressways, which provided quick options to travel downtown from the suburbs. In addition,

the region became more polycentric as businesses started moving to newly opened suburban office parks, which cemented the reliance on car travel. Most notably, the Denver Tech Center (DTC), which was first started in the 1960 along I-25 in South Denver and Arapahoe County, grew to over 9 million square feet of office space[56] and became home to the region's fast-growing telecom industry. However, the Central Business District (CBD) in Denver remained strong, with large-scale new office skyscrapers constructed in the 1980s and the opening of a downtown pedestrian/transit corridor (the 16th Street Mall). The combination of these trends meant that the city was polycentric with dispersed travel patterns throughout the region, though with more demand between downtown and DTC along I-25.

By the 1990s, I-25 and other expressways saw increasingly severe traffic congestion. City and regional leaders started looking at ways to provide new public transport options, including a modern light rail system. RTD opened a starter line along the main north-south rail freight corridor from downtown to Broadway/I-25 in 1994 and followed that with an extension to Littleton in 2000. In the early 2000s, RTD and the State of Colorado developed a joint-venture project to remake the congested I-25 corridor from Broadway to the southern edge of the metro area. This Transport Expansion Project combined significant expressway widening and modernization with a 19-mile (31-km) extension of the RTD light rail with 11 new stations.

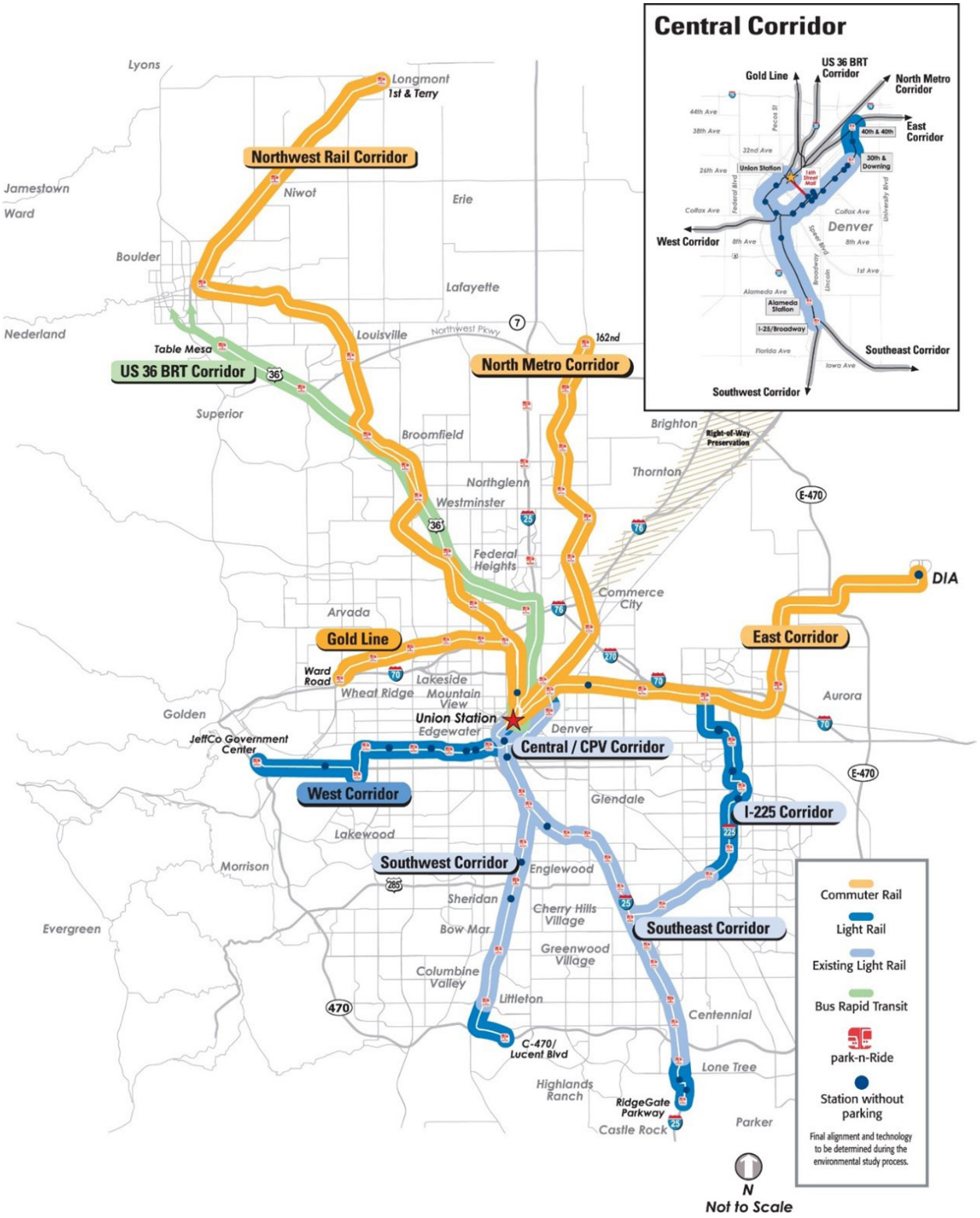
The tangible progress of initial railway lines of Southwest and Southeast gained public support for further expansion. Building on this momentum, a comprehensive transit expansion plan, FasTracks, which proposed to increase the sales tax to build 122 more miles (196 km) of additional rail across the region, was passed in 2004 (See figure 10.2 for the network expansion plan of FasTracks).

Figure 10.2. Beautiful View From the Union Station in Denver Colorado

Source: Adobe Stock.

[56] Shea Properties. https://sheapropertiescolorado.com/what-we-do/land-development/denver-tech-center/

Figure 10.3. FasTracks Plan



Source: Regional Transportation District. Used with permission.

A main goal of the FasTracks expansion was to enable most of the new lines to converge in downtown Denver at a redeveloped DUS transit hub, adding modern platforms and transfer facilities for rail and bus to the historic station. The FasTracks budget set aside USD 208.8 million for this DUS redevelopment work. After detailed design work started, project partners realized the complexity of the original vision, and the design of the station complex evolved significantly over time to keep costs under control.

Central Stations in the US Intercity Rail Network

Intercity travel in the United States is overwhelmingly by highway and air. Amtrak, the national system of intercity trains, provides approximately 1 percent of the combined air-rail-road passenger-miles, and most of it is concentrated in the Northeast US between Washington D.C., New York City, and Boston. As a result, the US' current-day rail stations are largely afterthoughts in their city's geography, especially as most cities receive intercity train service only a few times per day. Many are situated in semi-industrial areas on the edges of downtowns, which were often partially abandoned during urban decline in the 1970s and 1980s. Additionally, during this period, Amtrak opted to construct new limited-facility stations that were often small, modern buildings to reduce maintenance costs compared to the large, historic structures they replaced. With minimal architectural value, these stations were normally unable to catalyze any development around them.

However, by the 1990s, the cities that had kept their historic stations were rediscovering their value, especially as new demand for urban living grew alongside a preservation movement. The industrial neighborhoods on the edge of downtown that had been forgotten were often the first to be gentrified with residential loft conversions in the 1990s. The historic stations became significant opportunities for redevelopment, and many stations in midsize to large cities were redeveloped during this era. Some, like Washington Union Station or Chicago Union Station, had large passenger flows and were the legitimate transportation hubs of their regions. However, for other stations with only sporadic service, like Kansas City Union Station and St. Paul Central Depot, renovation was primarily a real estate and neighborhood revitalization project.

In other situations, station redevelopments were part of an expansion of local rail-based public transport services. This is the case in Los Angeles, where the art deco Union Station became the hub of the Metrolink commuter rail network in 1993; in Dallas, where the historic Union Station became a hub for light rail trains in the late 1990s; and in Denver, where DUS was intended to be the hub of a larger regional network in 1999.

DUS and Lower Downtown Historic Preservation

The main DUS building was completed in 1914. While the city never stopped using it as the main intercity rail station, for many years, the station building was faded and underutilized, with travel functions primarily located outside near the tracks. The main hall had a waiting area with few commercial amenities.

However, the building was iconic, especially the large "Travel By Train" signs that are mounted on both sides of the roof. It sits at the end of the central Denver diagonal street grid, and Denver law has maintained view corridors so that people throughout downtown can see the sign (see box 10.1). It was an ever-present component of the Lower Downtown (LoDo) neighborhood as it was revitalized in the 1980s and 1990s and valued for its historical authenticity.

The Tattered Cover Bookstore, a key neighborhood institution, was opened in LoDo in 1994, and in subsequent years, the rectangular brick warehouses of LoDo were steadily turned into restaurants, breweries, and shops. The upper floors of the transformed warehouses were converted to residential condos, which were popular among people moving back to the central city in the 1990s. Spurred by the clear market interest, developers started new construction by the late-1990s. Interest in this area of Denver rose further with the opening of the Coors Field baseball park on the northern edge of the neighborhood. By 2000, considerable pressure existed to unlock the land in the railyard behind DUS for additional development and expand LoDo, amid strong regional economic growth.

Box 10.1. Denver's View Corridors and Implications for DUS District Design

Source: Alex Patton, WikiMedia Commons; used under public domain.

The DUS sign is so iconic and important for Denver residents that it is one of the key "view corridors" that are protected within the zoning and planning law. The City of Denver has 14 such view corridors throughout the city, with the aim of keeping key vistas from being blocked by new buildings. These view corridors primarily protect views of the nearby Rocky Mountains and the skyline of the City of Denver.

Limiting the above ground development along the view corridors had the eventual effect of encouraging designers to explore how to use the space under the pedestrian promenade. This became the underground bus terminal, providing an all-weather connection between the commuter rail platforms at the historic station and the light rail platforms along the mainline freight rail spine.

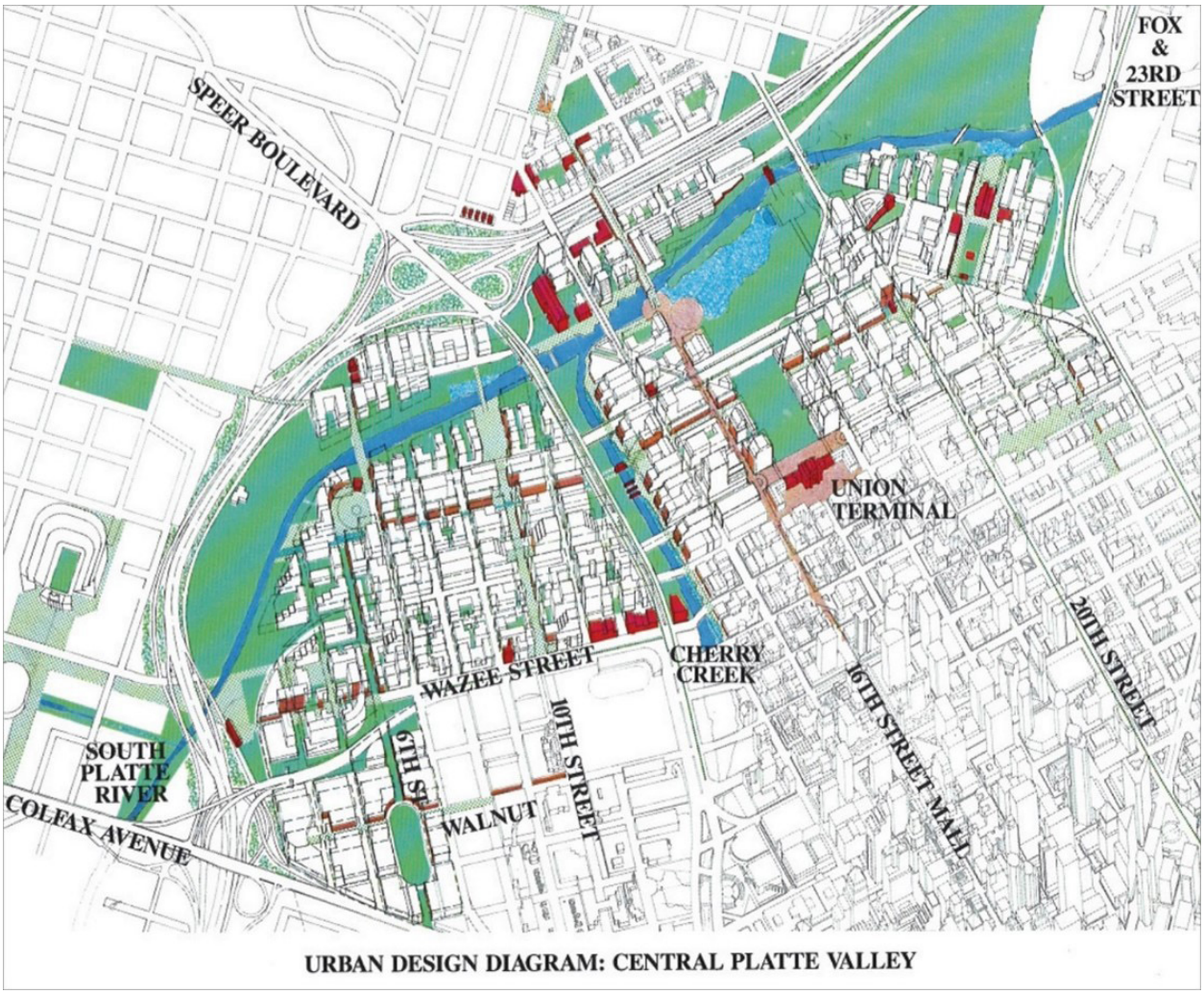
Source: Union Station Master Plan, 2004.

Comprehensive District Planning

For most of the 20th century, the Central Platte Valley, where DUS is located, was an afterthought for Denver residents, with a large railyard, warehouses, and bisected-by-road viaducts on 15th and 16th Streets. In the 1950s, the I-25 expressway was constructed through this area and further split downtown from the Highlands neighborhood (figure 10.4).

However, from the 1980s, city leaders started major projects to revitalize downtown and this area, redirecting traffic and restoring the riverfront along the Lower Platte River. The 16th Street Mall turned a busy corridor of traffic, one block south of DUS, into a transit and pedestrian-only promenade. This project won national awards and the street became a popular retail corridor. Specifically, as part of the 1986 Downtown Area Plan, planners redirected traffic to/from downtown and I-25 onto Speer Boulevard and 20th Street and constructed a series of large new riverfront parks. This freed up the area behind DUS and made it much more walkable and pedestrian friendly.

Figure 10.4. Central Platte Valley Master Plan (1980s)



Source: Regional Transportation District. Used with permission.

Starting in the 1990s, the freight rail lines were redesigned into a Consolidated Main Line behind DUS, and maintenance yards were focused in the northern part of the city away from downtown. Confluence Park was built, and private developers started to assemble land for mixed-use development.

At the same time, regional leaders saw the potential for DUS to not only serve as an intercity rail station but as a hub for metropolitan transit as well, and partner agencies –RTD, the City and County of Denver (CCD), the Colorado Department of Transportation (CDOT), and the Denver Regional Council of Governments (DRCOG) – started talking in earnest. In 2001, RTD acquired the main 19.5-acre (7.9 ha) site, including the DUS station building, platforms, and some land immediately behind the tracks. The cost was USD 49.5 million (Larry, 2018).

In 2002, the public planning process started, and a 96-member Citizens Advisory Committee (CAC) was formed to advise on the master planning work. The four main partner agencies (RTD, CCD, CDOT, and DRCOG) worked together with the CAC and the Union Station Alliance Project Team comprising Parsons Brinckerhoff, Civitas, and CRL Associates, along with 19 other firms as advisors and consultants. This team worked together with the CAC to come up with a vision for the historic station

and surrounding site (the 19.5 acre publicly-held site) that "establishes a unified regional multimodal transportation center that accommodates all contemplated public and private modes of ground transportation in one location, with flexibility to expand transportation services and operations", and "creates simple and convenient access to and connections between transportation modes" (City and County of Denver, 2004). The team considered up to 40 different alternatives for arranging the elements on the site and decided on an arrangement of having all rail platforms below street level immediately behind the station, and a bus interchange underground in front of the station.

The 120-page *Denver Union Station Master Plan* was published in September 2004, and contained detailed diagrams on circulation, urban design, and development vision for the entire DUS area. The same month, the Community Planning and Development (Denver CPD) department rezoned the entire area to T-MU-30 (transit mixed use) to allow for much higher densities in alignment with the vision. This vision was pitched together with the FasTracks regional rail expansion referendum in the November 2004 election, which was approved by voters.

Denver Union Station Development Project

The DUS project was a complex urban transit-oriented redevelopment project consisting of the restoration of the historic station building, construction of a new transit hub, and development of six blocks of urban mixed-use residential and office buildings around the station. The surrounding station area was developed through a complex mix of five public and private partners, using nine different funding sources.

The overall vision and project implementation were primarily shepherded by the City of Denver, as they had the greatest ability to provide upfront capital and guarantee bonding capacity for the district. This project and the vision for this district evolved significantly over the 10-year planning and construction period, weathering a major recession and financial crisis, and changes in available financing. While the original design called for a stacked underground interchange immediately adjacent to the historic station, project architects and engineers saved money by spreading out transit components and designing them in a more innovative horizontal arrangement. The transport hub enabled the integration of intercity rail with light rail, commuter rail, regional and express buses, commercial buses, the downtown circulator, pedestrians, bicycles, and parking.

The end result was a collaborative project that won the 2015 ULI Global Awards for Excellence. The overall timeline is presented in table 10.1.

Table 10.1. Denver Union Station Consolidated Project Timeline

Year	Event
Aug 2001	RTD acquires site with the assistance of the City of Denver, in accordance with agreement between RTD, CCD, CDOT, and DRCOG
2002-2004	Master planning with public advisory committee and public agencies
Sep 2004	Vision plan approved by partner agencies; DUS site rezoned to T-MU-30
Nov 2004	RTD FasTracks plan approved by voters, guaranteeing revenue for rail service expansion and dedicating funds for DUS improvement
2005-2006	Selection process for master developer

Year	Event
Nov 2006	USNC selected as master developer, with SOM/AECOM/Kiewit
2007-2008	Design refinement, including relocation of transit elements
2008	DUSPA, DDA, DUS Met Districts created, TIF district established
Dec 2008	Preliminary engineering complete
2008-2009	Financial crisis and recession
Jan 2009	Obama administration comes into office, launches ARRA stimulus
2010	Major construction begins on transit elements
July 2010	USDOT Federal Government loans closed (TIFIA and RRIF), providing majority of funds needed for DUS construction
2011-2014	Amtrak relocates Denver station during CRT platform construction
Dec 2011	New LRT station opens on western edge of site
Apr 2013	West Rail Line (LRT) opens, connecting DUS to Golden
May 2014	Union Station bus terminal opens for commuter and commercial buses
Jun 2014	DUS multimodal construction complete
Jul 2014	DUS historic building reopens after redevelopment
Apr 2016	A Line (East Rail Line CRT) opens, connecting DUS to airport
Jul 2016	B Line (Boulder Line CRT) opens to Westminster

Source: World Bank.

Project Management and Governance

To carry forward from the DUS master planning process, the four partner public agencies established an Executive Oversight Committee (EOC) to coordinate the project management and appointment of a master developer.

The master plan and initial financing plan called for significant private-sector investment in the freed-up land behind the station to fulfill the vision and to help finance the entire project. The EOC set forth a plan to appoint a master developer rather than assign individual developers to parts of the DUS area designated for redevelopment in the 2004 Master Plan. It was envisioned that the selected master developer would purchase the land and development rights, facilitate private vertical development, provide coordination between and integrate development and transportation infrastructure. A master developer with stakes in land and development rights would have more incentive to optimize the design, phasing, and alignment of public and private interests so that it can capture more land value increase for a higher return on investment. Having a single developer for all these tasks ensured seamless connections between transit, public spaces, and the private amenities that would be developed in the district.

Selection Process & Appointment of Master Developer

Starting in 2005, an 18-month national search for developers was undertaken, with the first request for qualifications (RFQ) launched in June 2005. Eleven teams responded to the RFQ. In early 2006, a two-part RFP[57] was launched, with a smaller group of five development teams. In the end, a final set of two teams was considered, and public presentations that explained their concepts for the DUS site, including financing, were given in September 2006.

In November 2006, the Government project leaders selected Union Station Neighborhood Company (USNC), a consortium between Continuum Partners and East-West Partners, two real estate developers based in Denver with significant experience in mixed-use redevelopment. The public agencies preferred their plan because it reinforced "the distinctive character of individual buildings consistent with the surrounding neighborhoods" (Dunn et al., 2016). USNC's plan continued the street grid behind DUS, with planned developments having similar scale and massing to LoDo. Additionally, the EOC liked that the USNC proposal could accomplish the goals of the 2004 Master Plan in a single phase by using the concept of a transit district to lower costs and provide sufficient financing. The other concept focused on a tall building immediately behind the historic station and had much higher capital costs and a longer development timeframe.

The USNC team also benefitted from effective control over many of the privately held sites behind DUS. As part of the Master Development agreement, RTD and CCD stipulated a timeline for USNC to acquire each of the publicly held sites, along with a set price for each parcel. Through this agreement, the master developer and the EOC were able to refine the financial plan and the expected contribution of TIF and other funding sources.

Figure 10.5. Exterior view of Union Station in Denver, Colorado

Source: Adobe Stock.

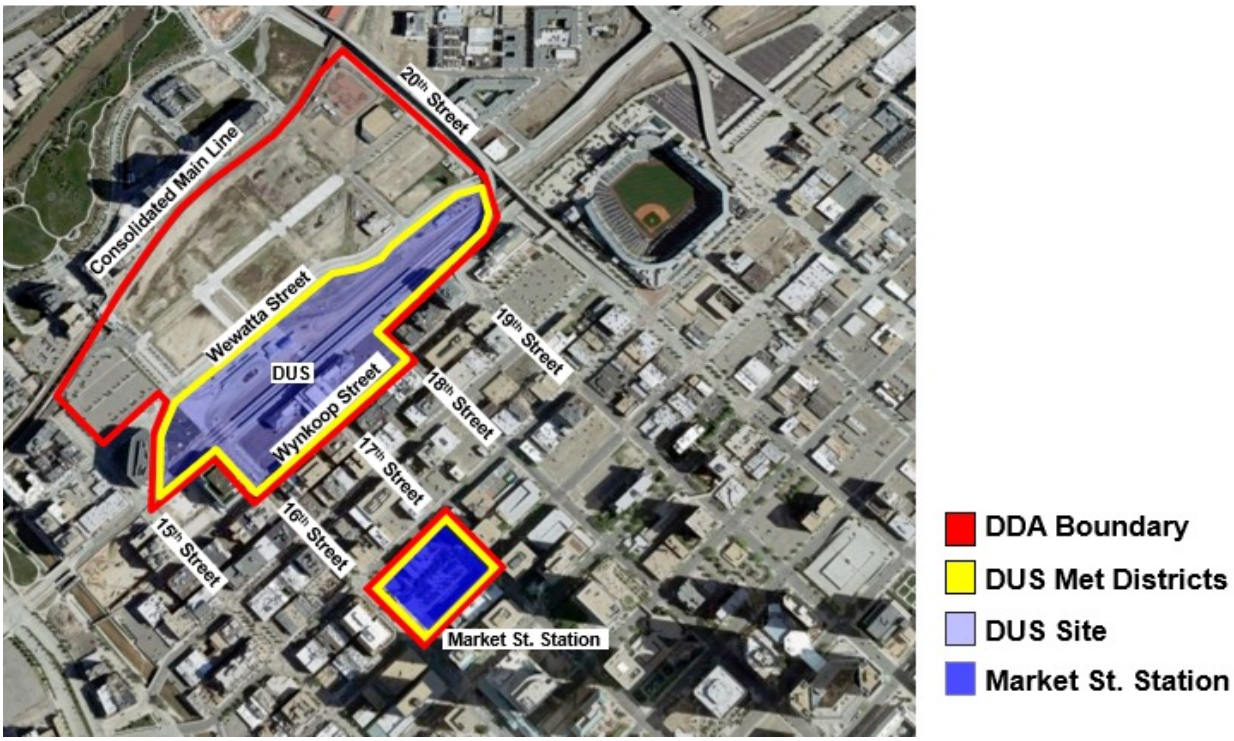
Public Sector Management Framework

Following the agreement of a transit plan and cost estimate by the Government project leaders, the Denver Union Station Project Authority (DUSPA) was created in 2008 to coordinate on behalf of the public sector and issue bonds to fund construction. At the same time, the DUS Metropolitan Districts

[57] An RFQ to RFP approach was adopted to eliminate the teams without capacities to undertake a project of this complexity and magnitude based on their experience. As the evaluation of REP is time consuming, it made sense that RFQ-qualified teams were allowed to submit the proposal under RFP. The Government's selection criteria were not available.

No. 1-5 (Met Districts) were then formed to cover the 19.5-acre (7.9 ha) section of publicly held land, including the parcel where the Market Street Station was located, which was going to be replaced by the new DUS bus interchange. The Met Districts have the power to levy property taxes, which represents a benefit when these publicly held parcels are sold to private developers. Finally, the public agencies formed the Denver Downtown Development Authority (DDA), which has the power to capture marginal TIF over the larger 40+ acre (16+ ha) site, including the privately held parcels outside of the RTD land (figure 10.6). The difference between these powers is that Met Districts can introduce new property taxes, while the DDA, through TIF, can only capture the existing City of Denver taxes on the marginal value above and beyond the pre-development land value.

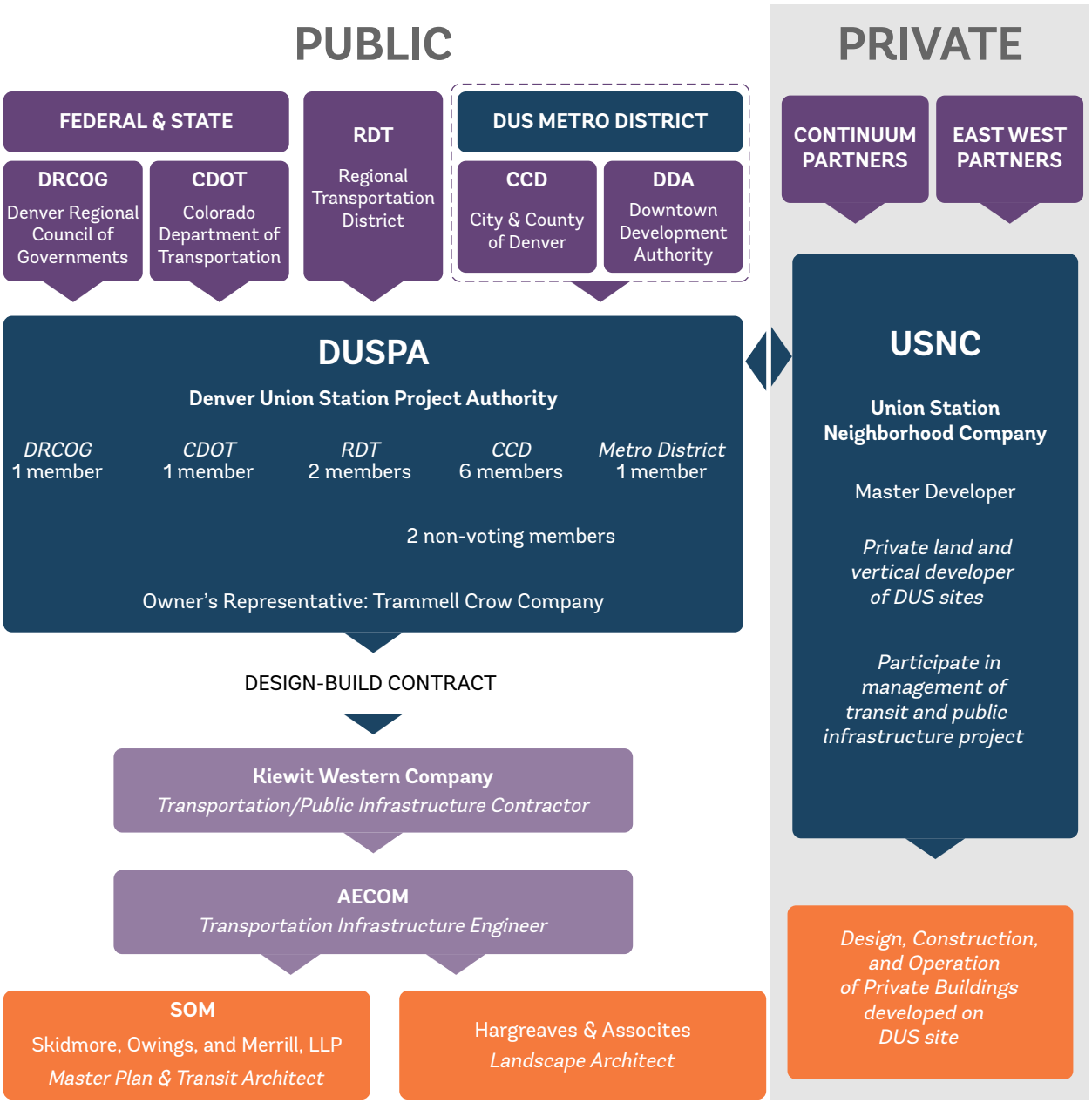
Figure 10.6. DDA and DUS Met Districts Boundaries



Source: Regional Transportation District (RTD), used with permission.

This public sector partnership was organized through the DUSPA, where each entity had representatives. In DUSPA, Denver's City Government (CCD) held the most seats appointed by the Mayor (six voting members and two non-voting members) as it took the most financial risk on this project and therefore, wanted the greatest control. RTD had two members, and CDOT, DRCOG, and the Met District had one member each. (The number of representatives was generally decided based on which entity controlled the most assets at the site and took the most financial risk in the project). Through a design-build contract, DUSPA appointed the Kiewit Western Company as the transportation and public infrastructure contractor, which, in turn, appointed AECOM as the engineer, SOM as the master planner and transit architect, and Hargreaves & Associates as the landscape architect. These firms were part of the USNC team in the proposal selected in November 2006. To help manage this contract and confirm development assumptions, DUSPA retained Trammell Crow Company as the owner's representative. In this arrangement, DUSPA, with its design-build contract, was responsible for constructing the platforms, tracks, and other public infrastructure at the core of the DUS transit hub (Figure 10.7).

Figure 10.7. Institutional Setup for Project Management

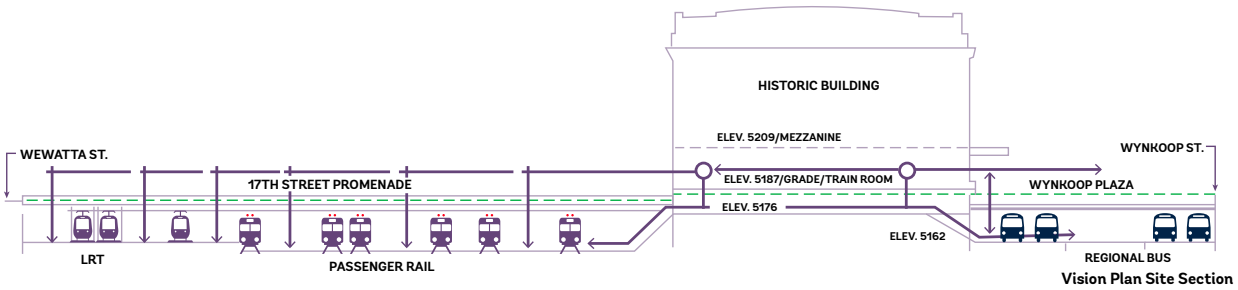


Source: World Bank, based on Regional Transportation District (RTD), (2015).

Design Evolution and Cost Engineering

In the 2004 DUS Master Plan for the DUS district, the platforms for the mainline rail, the LRT, and commuter rail transit (CRT) were located underground directly behind the historic station building, allowing for easy street-level connections through the station and along the primary 17th Street corridor. This would also allow for the future underground through-routing of the mainline rail to the southwest (which did not exist at that time), enabling a new north-south rail corridor that would extend to cities in the north (Fort Collins, and Cheyenne) and the south (Colorado Springs and Pueblo). In this design, the bus interchange was planned under the public plazas in front of the historic station building. The vertical plan drawing in figure 10.8 shows the rail platforms and bus interchange planned on the underground level. These transportation elements were estimated to cost approximately USD 560 million, necessitating borrowing to cover the gap between FasTracks funding and the overall vision.

Figure 10.8. Vertical Plan of 2004 Master Plan



Source: Regional Transportation District (RTD), used with permission.

However, when USNC started examining the actual costs of this concept as part of its master developer proposal, it found that the 2004 proposal would cost more than USD 1 billion, which would impede the viability of the entire project. Public feedback on the initial design plans also indicated that a significant redesign was necessary. Therefore, USNC proposed a new design. Central to its new proposal was to spread out the transit elements in a "transit district," connected by the underground bus terminal on the perpendicular 17th Street axis. After the design and engineering team was selected, USNC was required to refine the design significantly, moving from a concept to a detailed engineering solution with a cost estimate.

In 2007, USNC worked with the Citizens Advisory Committee to explore a variety of different options, as it received significant criticism on the idea to split the transportation elements. Many people thought it was too long to walk and would impede the kind of multi-modal connections that DUS was intended to foster, especially for people going to the airport carrying luggage. UNSC pointed out that the three-block distance between the commuter rail and light rail platforms was the same as the length between the three gates at Denver International Airport, and that people could walk either indoors or outdoors, depending on the weather. Ultimately, through community outreach, USNC worked to refine the design with SOM and the public partners.

Ultimately, the practical and cost benefits to this design won over most critics, and the more spread-out transit design was incorporated in a 2008 update to the DUS Master Plan (Master Plan Supplement), which ended up being the arrangement that exists today. The cost for public transit infrastructure was then estimated to be USD 488 million, which would be in line with expected project funding contributions from RTD, the City of Denver, and other sources (table 10.2).

This design was formalized in the Environmental Impact Statement filed with the U.S. Federal government, and a record of decision for this project was issued in October 2008. After the design concept was finalized by all parties, the design-build contractor, Kiewit, proceeded with the detailed engineering design, supported by consultants, AECOM and SOM. In 2009, as the design was nearly completed, DUSPA issued a Limited Notice to Proceed to Kiewit under the design-build contract, and preliminary fieldwork started.

Table 10.2. Project Cost Summary for 2008 Master Plan Supplement

Cost items	Amount (USD million)
Light rail	56.9
Passenger rail	145.2
Regional bus	219.0
Streets & public spaces	40.0
DUS renovation	17.0
Miscellaneous	9.9
Total	488.0

Source: Regional Transportation District (RTD).

Financing Plan

Original Financing Plan for 2008 Master Plan Supplement

The original financing plan as projected in the 2008 Master Plan Supplement was made up of a mix of projected revenue under RTD's FasTracks tax, other public earmarks from RTD and CDOT, property tax from the Metropolitan Districts, land sales, and an obligation from the City. As many of these revenue sources were projected into the future, the intended mechanism was to float bonds by the DUSPA and backed by the City, with repayment through the yearly FasTracks tax. The city-obligated revenue would be generated through the DDA TIF district set up for the entire site. This is detailed in table 10.3.

Table 10.3. Project Revenue Sources (Original 2008 Plan)

Revenue Sources	Amount (USD Millions)
RTD FasTracks	208.80
RTD earmarks (SAFETEA-LU & FTA 5309)	8.6
CDOT earmark (PNRS SAFETEA-LU)	40.0
CDOT SB-1 (Statewide Transportation Improvement Program)	16.8
Metropolitan district (property taxes)	25.4
Surplus Land Sale (including the USD 28 million land options and Market Street Station)	38.0
City-obligated revenue	120.8
Other sources	18.6
Total Estimated Project Revenues	477.0

Source: Regional Transportation District (RTD).

Revised Financing Plan Approved in 2010

In 2008, as the effects of the financial crisis were becoming clear, the original financial plan agreed to just months prior was in disarray. The intended mechanism was to leverage expected TIF revenue to float bonds through DUSPA and backed by the City. However, this avenue was blocked by a dysfunctional municipal bond market at the time, and the team had to pivot. DUSPA was adaptable, so it managed to keep options open and take advantage of additional financing from the US Federal Government stimulus to provide bridge financing for the work to proceed. The master developer, USNC, managed to hold out during this challenging period, even as the market strained its balance sheet. In the end, it reaped significant profits when the economy and the real estate market rebounded.

When President Obama entered office in January 2009 during a severe downturn, the first order of business was to launch a fiscal stimulus package that would get federal grants and loans quickly out to communities that could use the money for infrastructure ("shovel-ready projects"). As DUS had got its Environmental Impact Statement completed the prior year, the project was ready to launch, from the US Government's perspective. The Mayor and Governor contacted people in the Obama Administration, and several new grants were secured under the American Reinvestment and Recovery Act (ARRA).

One-time grants and land sales helped cover the capital costs, and these were supplemented by two large federal loans that totaled approximately USD 300 million. Various grants were arranged - approximately USD 50 million came from the Federal Highway Administration (FHWA), USD 18.6 million through CDOT, USD 28.6 million from the ARRA/stimulus through DRCOG and RTD; USD 9.6 million through FTA and state transportation improvement grants. An additional USD 25 million from land sales from RTD to USNC, in accordance with the prenegotiated option prices to the master developer with an additional USD 11 million for the Market Street Station parcel. This revised plan is detailed in table 10.4.

Table 10.4. Revised Project Revenue Sources (Approved in 2010)

Revenue Sources	Amount (USD Millions)
Loans	
USDOT Transportation Infrastructure Finance and Innovation Act (TIFIA Loan) [Note: secured/paid back by RTD FastTracks revenue]	145.0
Federal Railroad Administration (FRA) Railroad Rehabilitation and Improvement Financing (RRIF) Program [Note: secured/paid back by TIF revenue and backstopped by City of Denver]	155.0
Grants	
FHWA Grant, via Colorado DOT	50.0
ARRA ("2009 stimulus"), through DRCOG and RTD	28.6
FTA Earmarks to RTD (SAFETEA-LU & FTA 5309)	9.6
CDOT SB-1 (Statewide Transportation Improvement Program)	18.6
Surplus land sale (including USD 26 million in land options and Market Street Station)	37.4
Other sources (state and local revenue)	35.8
Total Estimated Project Revenues	480.0

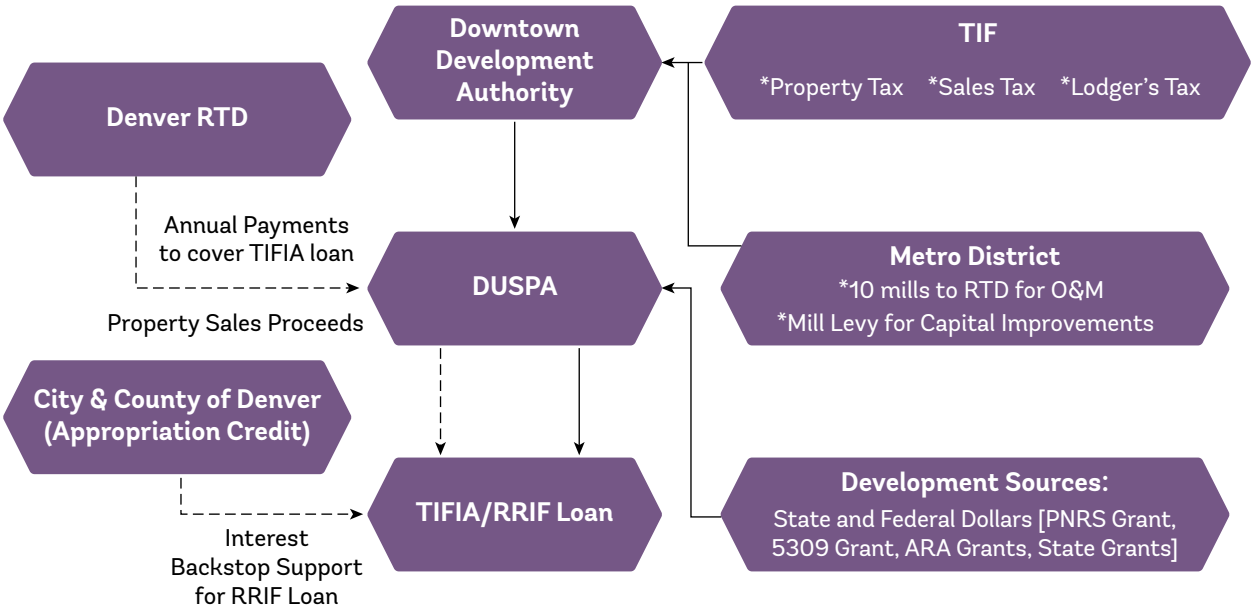
Source: Regional Transportation District (RTD).

The USDOT loans used for the project were the Transportation Infrastructure Finance and Innovation Act (TIFIA) and the Federal Railroad Administration (FRA) Railroad Rehabilitation and Improvement Financing (RRIF) programs. For both of these programs, the DUS presented new challenges that federal officials had never encountered. For TIFIA, the participation of a private sector development partner was unusual, and based on the enabling statute, the US DOT could not fund over a third of the project cost. RRIF, on the other hand, had only been lending to private freight railroads, whose infrastructure and railcars could be used as collateral. For the DUS project, there was no collateral pledged, and other guarantees had to be sought.

For both major loans of TIFIA's USD 145 million and RRIF's USD 155 million, DUSPA had to show that there were dedicated revenue streams large enough to pay debt service. Of FasTracks' original USD 208.8 million DUS allocation, USD 43.8 million had already been spent on design and other upfront work. The remaining USD 165 million was annuitized at 5.65 percent, which converts to USD 12 million annually. RTD pledged this amount to DUSPA to secure and repay the TIFIA loan. For the RRIF loan, future TIF tax increment capture and Met District property tax revenue was pledged by the DDA and the City to DUSPA for 30 years to secure the loan. However, even with a projection by a real estate consulting firm that showed steady revenue growth in the TIF district, the FRA was reluctant to provide the loan due to the unproven revenue stream. Ultimately, the City of Denver had to guarantee a limited interest backstop of up to USD 9.3 million per year to convince the FRA loan officials. The projections showed that the TIF/Met District revenue would grow to much more than that.

The financing structure, using one-time development grants and ongoing revenue sources to repay the two major loans of TFIA and RRIF is shown in figure 10.9.

Figure 10.9. Financing Structure



Source: Regional Transportation District, (2015).

Note: *TIFIA/RRIF Loans : RRIF: Railroad Rehabilitation & Improvement Financing program; ARRA: American Recovery & Reinvestment Act Program; PNRS: Projects of National and Regional Significance; 5309 Grant: Capital Investment Grants – 5309, which is an FTA discretionary grant program that funds transit capital investments.

The financing plan for the development was agreed upon with DUSPA and USNC, and the loans were finalized with the USDOT in July 2010. Immediately afterward, DUSPA issued the Full Notice to Proceed to Kiewit.

Construction of Transit Infrastructure

The DUS area had already largely been cleared from its prior use as a railyard, with the Burlington Northern Santa Fe consolidated freight line taking up a much smaller piece of land, demarcating the western edge of the district. In the district, there was a light rail platform behind Union Station that had been built in 2002, and the existing train platforms used by Amtrak. The rest of the land was vacant, with the exception of some new roads constructed by a developer that had started work on mixed-use development in the area in the early 2000s. By 2008, these sites[58] were under the control of the USNC master developer consortium.

Thus, the construction of public transit infrastructure could happen relatively unimpeded by surrounding buildings, with a focus on cost-efficient phasing. During the construction planning, USNC and Kiewit realized it would be much easier to demolish the existing roads on the site, and excavate the "bus box" (structure for the underground bus interchange) directly instead of trying to preserve the preliminary infrastructure that was there (Figure 10.10) (Falcone, 2018). Additionally, Amtrak agreed to temporarily relocate the Denver station to a temporary platform next to Coors Field, which gave the contractors full access to the site. During this Phase 1 construction, the LRT platform, which had been behind the station along 16th Street, was relocated in 2011 to be immediately adjacent and parallel to the consolidated main line. To provide direct access for the travelers who were using that service, which remained open through construction, the contractors completed 16th Street, and RTD extended the existing free downtown shuttle (MallRide) to the LRT platform.

In Phase 2, the underground bus terminal was finished by extending it to reach the DUS station building and the new commuter rail facility was constructed above it for RTD and Amtrak trains. The bus terminal opened in May 2014, and the rail line to the airport was opened in April 2016. Simultaneously, USNC was exercising its options to purchase sites from RTD, and private development was well underway when the transit components were opened. Major mixed-use developments, including the Union, the Cadence, and others were completed during this time. USNC completed some of the building itself and sold off sites to third-party developers as well. This rapid construction, responding to strong market demand, had the effect of completing build-out of the station area more than 10 years ahead of schedule. In turn, this accelerated revenue being captured by the TIF district and directed to DUSPA.

Historic Station Building – Development and Operations

At the symbolic heart of the site, the historic DUS building with its "Travel by Train" sign at its top was also being redeveloped between 2011 and 2014. Under the terms of the project agreement, RTD retained control of the building and was able to direct a separate bidding process for its redevelopment. RTD's aim was to access its potential lease revenue and encourage more private capital to be invested in the preservation and restoration of the building.

In 2011, RTD evaluated two proposals – one from the USNC master developer consortium, and one from the Denver Union Station Redevelopment Team (DUSRT), which was composed of a local hospitality group and a well-regarded LoDo preservationist, Dana Crawford. USNC proposed a grand

[58] This land includes sites previously controlled by other developers that sold their interest to the developers in the USNC consortium.

food hall in the west wing of the building, preserving the main train hall for transit-related activities, and potential direct airport check-in facilities. Upper floors would be dedicated to incubator space for local non-profits and entrepreneurs. DUSRT proposed a boutique hotel in the upper floor, retail and restaurants on the wings, and a grand hall that was also the lobby of the hotel. It proposed investing significant equity of its own in the project. Ultimately, RTD chose the DUSRT proposal, and negotiated a low guaranteed rental rate with a dedicated portion of revenues generated from the food and beverage facilities at the station. This proved to be a profitable decision for RTD, which had been looking for every potential revenue source possible to speed up the implementation of the rest of FasTracks. RTD also reviewed the design of the grand hall design to ensure public transport needs were prioritized.

In 2014, the hotel and retail spaces opened, and the station was an instant success with Denver residents. DUSRT has explained that it chose the restaurant and retail concepts based on extensive focus groups with local area residents, with the aspiration of creating a public living room for the city. The DUSRT partnership invested significantly in ongoing place management and maintenance to make the station building a welcoming place for all (Figure 10.11). Based on interviews with the current managers, this has resulted in much higher O&M expenses than were expected, as security and cleaning contracts needed to be significantly enhanced to cope with the high usage of the space.

Figure 10.10. Inside the Refurbished Station Hall

Source: John Good, reproduced with permission.

Project Outcomes

DUS Transit Hub

The primary outcome of the DUS redevelopment was the construction of the transit hub itself, which handles over 45,000 passengers per day. This comprises three main components: (1) the six commuter rail platforms immediately behind the station building, (2) the underground bus interchange with 21 bays, and (3) the three relocated light rail platforms. These transit components are complemented by Amtrak offices and baggage facilities in the historic DUS redevelopment. The integration of these different transit modes allows for easy modal transfers and connections to Denver International Airport (Figure 10.12).

Figure 10.11. Denver Union Station Transit Hub Diagram

Source: Regional Transportation District (RTD), 2023, used with permission.

Note: Underground Bus Concourse in the left.

As the most regionally anticipated new rail line from DUS, the A Line commuter rail to the airport has approximately 18,000 daily riders as of 2018. The average daily ridership from the three light rail lines and two commuter rail lines that terminate at DUS is approximately 23,500, and the two daily trains from Amtrak only add slightly to that number. However, as commuter rail lines are extended to the north and eventually to Boulder, this is set to change over the next 10 years, and facilities will be tested on their ability to handle larger crowds. Already, the station operators are seeing that maintenance and overall management will be a larger cost than originally anticipated, and it is likely to only grow (RTD, 2018).

Bus ridership was also enhanced by the new facility and has improved service quality along major corridors, most notably the Flatiron Flyer BRT to Boulder along US-36, which had over 13,000 riders per day as of 2018 (RTD, 2018). The Union Station bus interchange has significantly more capacity than the previous Market Street bus station, allowing RTD to add frequency into Downtown Denver.

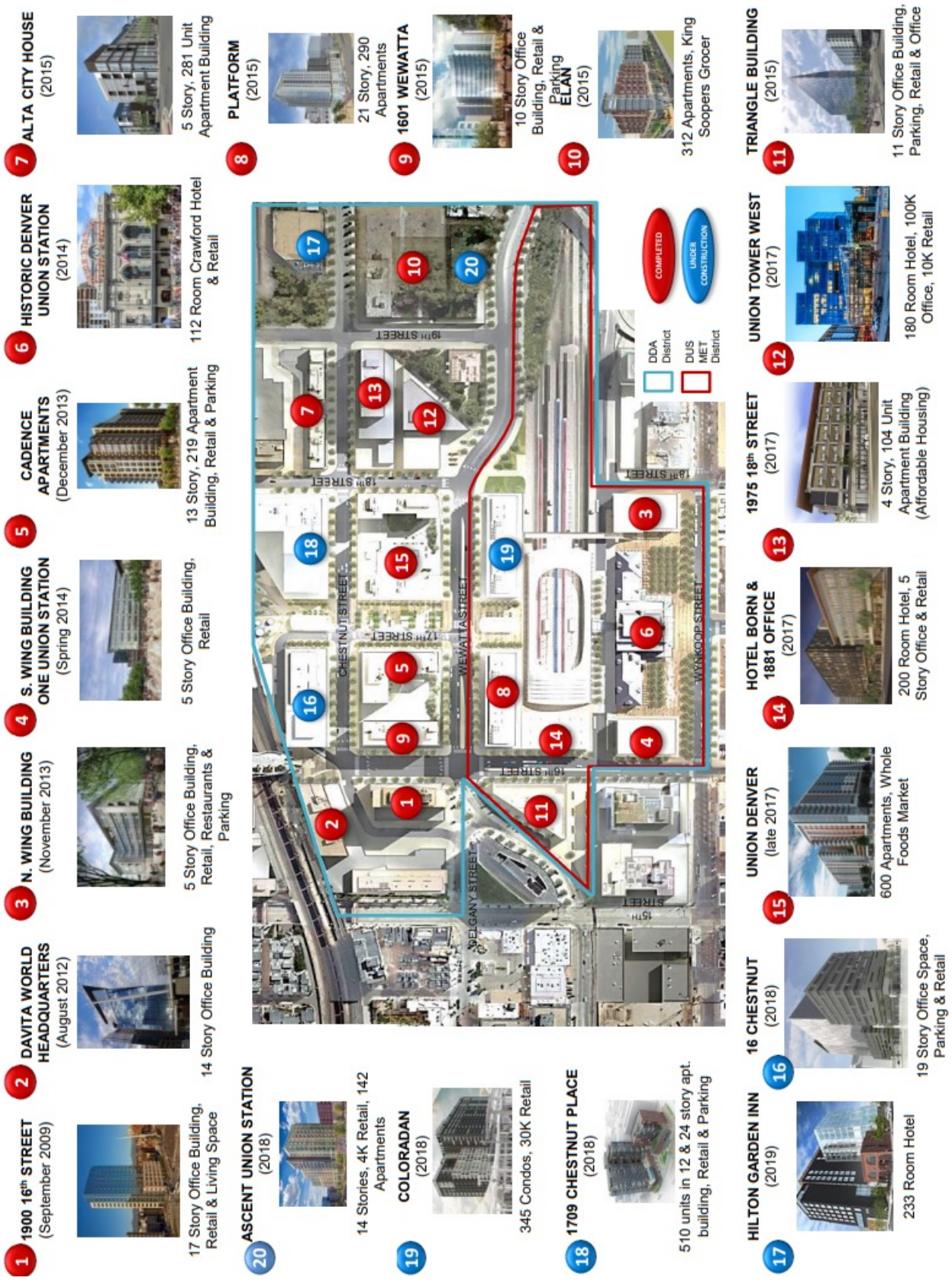
The transit facilities are built to handle more people, and as new transit lines are opened and extended in the next decade, ridership is projected to increase significantly. While the COVID-19 pandemic substantially reduced ridership on the RTD system, in the coming years, Denver's continued population growth is expected to drive a rebound in transit ridership.

Real Estate Response – A New Neighborhood

The partnership within USNC between the two Denver-based real estate developers, Continuum and East-West Partners, ensured that there would be significant and coordinated development in the parcels behind the historic DUS station building. However, given the strength of the market in the Denver region, the developers exercised their options to purchase all of the land in a very short amount of time. Instead of the district being built out over 20 years, as was initially predicted, the buildings have all been completed in under 10 years. The last phase of buildings was completed in 2019.

As the zoning of the district was flexible, the developers could respond to the demands of the market. After some initial office construction at the Triangle lot and on the wings of the station building, most of the space has been constructed as residential with retail on the ground floor (Figure 10.13). Given the preference for downtown living and the region's rapidly increasing population, there was significant demand for this product. The buildings are primarily rental, but with a for-sale condominium building also constructed in 2019.

Figure 10.12. Private Sector Development in DUS Area



Source: Regional Transportation District (RTD), used with permission.

Financial Performance

In many ways, the funding mix for the DUS project came together in a unique set of conditions in the external environment of 2008-2009. When the main project construction period was completed in 2015 and private-sector development was well underway, the region had recovered from a recession and was growing strongly. Both the private- and public-sector agencies benefitted from this upswing, and tax returns came in ahead of projections, allowing the city to retire debt earlier than expected.

As explained earlier, the financing plan for capital construction included a significant public contribution that would be paid back through a TIF district, which allowed the City to benefit from the uplift in value of the surrounding parcels. By 2017, the property tax proceeds in the TIF district were coming in at levels not expected until 2022, and using this surplus of revenue, the City was able to refinance the TIFIA and RRIF loans on the private tax-exempt market (Murray, 2017). The effect is that RTD will save a substantial USD 134 million in interest costs over the length of the long-term loan, and the Federal Government was paid off years in advance.

DUS as Downtown Anchor and Regional Center

As of 2018, DUS and the area surrounding it had become a major anchor for downtown expansion to the northwest, linking the traditional CBD with the rapidly developing Highlands neighborhood to the northwest. Offices in the Union Station neighborhood are highly valued for an easy commute for urban and suburban employees and has reliable access to the airport. This is evidenced by the average rental rates in the LoDo/Platte district being higher than the traditional CBD (USD 40.09psf vs. USD 33.38psf) (Savills Studley, 2018).

Moreover, the Union Station building and adjacent public spaces have become a real community gathering place, fostered by intentional design and place management by the master developer (USNC) and the station operator (DUSRT). The station hall itself has become a place for people to meet and students to study, taking advantage of the comfortable furniture, historic architectural setting, and availability of a variety of restaurants. It has become a regional showpiece and a gateway to the Denver area, as people arrive from the A Line airport train. As DUSRT explains, local residents often take visitors to Union Station to show it off (USNC, 2018).

Figure 10.13. Urban Design in DUS Station Area

Source: John Good, reproduced with permission.

Overall, the development of the station district has served to rebalance both the structure of downtown Denver and the relationship of it to the metro area as a whole. The DUS area has emerged as a second activity center for downtown, leveraging previously underutilized land. At the same time, the transit hub effectively links people to the established office core to the southeast, strengthening the entire downtown (Figure 10.13). By allowing further downtown office development, the DUS project has reinforced the primacy of Downtown Denver in the regional economic structure, with significant agglomeration benefits.

This competitiveness has been demonstrated frequently in the past five years with companies moving downtown from the suburbs. As job growth accelerates downtown, it encourages more people to take transit to work, as it is a viable option for these commutes. Indeed, approximately 40 percent of people take transit to work[59], a much higher mode share than other metro area residents. Through these effects, the DUS project has strengthened the appeal of the rail network and expanded the potential market willing to consider transit as a realistic alternative.

[59] Downtown Denver Partnership, Transportation.

Lessons Learned

DUS provides a suite of best practices in design, financing, and ongoing place management that should be reviewed carefully by midsized cities in other parts of the world. The success of the station as a public place and the rapid development of the surrounding district shows the power of strong market demand, a historic station, and careful urban design crafted in partnership with the community. While it must be noted that Denver is a fast-growing city in a rich country with highly mature financing mechanisms and available public funding options, the principles that were embodied in this project can be utilized by other cities in other contexts.

Integration of the regional transport modes with high quality public spaces and restored historic building promoted the development of the station and its surrounding area.

The redevelopment of DUS and its surrounding area has been a tremendous success, winning awards for architecture, urban design, and real estate ingenuity. The project demonstrates the value of integrating and connecting multiple regional transport modes, high-quality planning and design, public spaces, and architectural restoration in building the value of a location. These elements, in turn, strengthened the area's brand and accelerated the development of adjacent parcels, which allowed the project to be on stronger financial footing overall.

Nimble and cohesive governance structure of the project owner, aided by a long-term planning process, helped deliver the vision in a fast and efficient manner.

These successes were enabled by the nimble and cohesive governance structure of the project owner that kept exploring solutions to deliver the vision in a fast and efficient manner, even as the 2008 financial crisis upset initial financing plans. Importantly, these were facilitated by a long-term planning process that reduced the burden on the area to accommodate road viaducts.

Pairing the public planning process with a private master developer that had a holistic view and a focus on making a profit helped improve the public assets and adopt innovative financing arrangements with clear incentives.

By pairing the public planning process with a private-sector master developer with a holistic view and a focus on making a profit, Denver could channel development pressure that already existed in the area and focus on improving public assets by capturing value strategically.

This governance structure enabled an innovative financing arrangement that placed a master developer at the center with properly aligned incentives. As the land purchase options were at a fixed price, the developer was motivated to raise the land and property value when it sold off its interest in finished developments. In turn, a TIF arrangement over a long term helped make the most of these enhanced property values, which serves the interest of public authorities. This expected recurrent revenue allowed public authorities to borrow for the capital costs of the core transit infrastructure. While complex, the financing structure provided the right motivation for all parties to build for the long-term best interest of the DUS district.

Despite the difficult capital market conditions, sound project financing strategies, methods, and flexible adaptation to market conditions ensured project continuation and completion within the original schedule.

In addition to the effective governance structure, the DUS project exemplifies sound project financing strategies, methods, and their flexible adaptation to market conditions. The project included 12 different funding sources, including: federal grants, state grants, the budget dedicated to RTD's

FasTracks, property sales proceeds, tax-exempt securities secured by RTD's annuitized FasTracks allocation and CCD's incremental tax revenues, and Federal loans. When the capital market for tax-exempt securities became non-functional during the 2007-2008 financial crisis, the City of Denver and RTD swiftly switched the sources of debt financing by securing two major federal government loans – a TIFIA loan and an RRIF loan, which required restructuring the DUS repayment scenario to accommodate federal requirements. This alternative financing scheme ensured project continuation and completion within the original schedule.

Focusing on a consistent district-wide master plan over many years and crafting a land value capture/property tax mechanism that actually captures the value uplift are elements that all cities can consider in their station redevelopment projects.

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