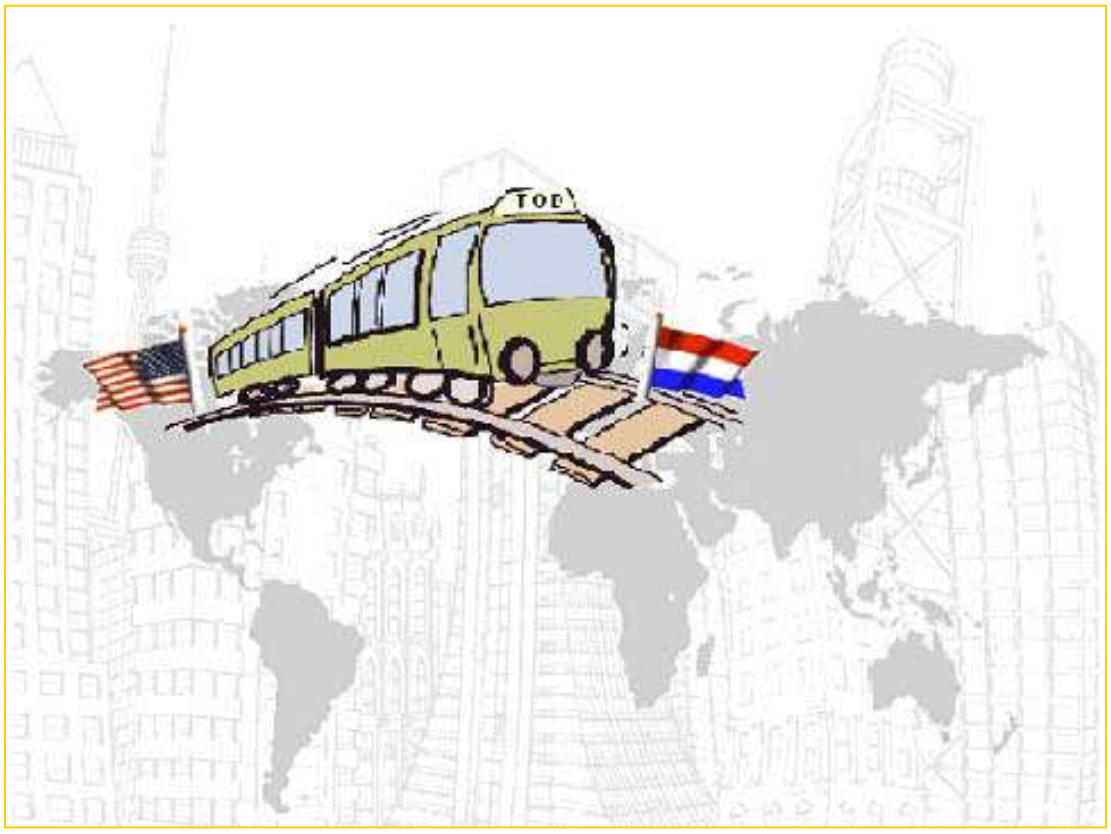
TOD&D



Transit Oriented Development
in Denver and Dallas

April, 2006

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Master choice program Mobile Assets & Governance
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Unless otherwise noted, all figures are created by the authors themselves

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Preface

From December 10th till the 20th, five young professionals and students visited Denver and Dallas, in search of recent practice in transit oriented development, and how this can help Dutch planners in using development potentials around rail stations, in this case the 'Stedenbaan' project in the South Wing of the Randstad Holland.

The project was part of the 2006 Utrecht University master choice program 'Mobile Assets & Governance', under the supervision of Luuk Boelens and Maurits Schaafsma.

This document reflects our findings and reports of our research trip. The results were first presented to a scientific commission at February 3rd, 2006 and will also be used in a forthcoming seminar and exposition.

1. Introduction

In trying to revitalize cities and increasing the economic competitive position of the country, the Dutch government pursues a strategy of optimizing the use of development potentials within the existing built-up area, including many railway stations. The role of Dutch governments (municipalities, provinces and the national government) in steering spatial development has always been relatively large. Its powers are however decreasing. There are two main reasons for this.

First of all, it is a consequence of a policy of decentralizing a substantial part of the process of decision making from national to provincial and municipal levels, and of privatizing government-owned companies like the housing corporations, the Dutch Railways (*NS*), local transport, and energy distribution. The other reason is the emergence of the network society which forces governments to reposition themselves relative to a kaleidoscope of local, national, and global companies. These shifts implicate that governments need to rethink their roles in spatial development. No longer are they dominating both planning and realization. They are 'just' partners in development, which sometimes results in a conflicting roles: they are both player and referee at the same time.

One of the consequences of these changes is that the development potential around transit sites is poorly used because of a lack of collaboration between the different involved public and private parties. In the US however, municipalities, developers and transit agencies seem to cooperate more successfully in an integral process of planning, financing and exploitation. In the US, *Transit Oriented Development* is an increasingly popular concept in smart growth strategies. What are the crucial variables for this success? What lessons can be leant for Dutch practice, specifically in the case of Stedenbaan?

The potential of public transport networks and accompanying station areas is currently underused because its development process is run by public parties only. A combined development of the station areas by public and private parties should lead to extra added value and benefits to all stakeholders, especially when marketing instruments are used to create consumer satisfaction.

The first research objective is to find crucial variables of successful TOD in the US for the process, the marketing and the finance. The second research objective is to translate these crucial variables into lessons for Dutch practise.

The data for this report was gathered during three phases:

- From half November till half December 2005, literature was studied and lectures form Prof. Dr. Ir. L. Boelens and Ing. M. Schaafsma were attended.
- Between December 10th and 20th 2005, field research in Dallas and Denver was carried out by visiting different TOD sites, and by interviewing members of government parties, public transport agencies and private parties. The last chapter of this report will give a list of all interviewed people.
- In January and February of 2006, the results were analyzed and compared to the case of Stedenbaan. For this reason some more interviews were held with Dutch planners (see chapter six).

This report concludes with summarizing remarks and recommendations based on the findings found herein.

2. Research context

2.1 The need for change

Transit has been a major structuring force for urban development for over a century. In the US this is done by both private and public parties, where in Europe governments keep the initiative to use transit as a tool for creating urban outlay, often with a density far higher than in the US. Since a decade, many US municipalities have rediscovered public transit as a tool for urban development, because there is a need for changing the urban planning policies.

In literature and policy documents a wide array of goals is connected to this so-called *transit oriented development*. The most important are discussed below.

The main task for governments is to *accommodate urban growth* and at the same time fighting its problematic consequences, like *congestion* and *air pollution.* Quite a few US metropolitan areas are growing fast. The Denver area had a mean growth rate of some 30 per cent in the last decade. Dallas for instance will see an increase of its population by 3 million in the next 30 years.

Part of the demand for housing cannot be satisfied with building more family homes in new outlays, since there is an increasing demand for housing that match typical urban lifestyles of immigrants, empty nesters, graying citizens, echo boomers, singles and creative workers. These *shifting housing demands* have to be catered for, also to *revitalize downtowns*.

For transit agencies there is the need to *improve the performance of the system* and to fight increasing deficits. Transit agencies and municipalities are formulating new, clearer transport policies with more focus on the customer, and an organization structure and culture which will be more open to incentives, also from private parties.

These are mostly real estate developers, looking for *private development opportunities.* In many cases property value appears to rise substantially when the accessibility by public transport has increased.

Figure 2.1 shows the different goals connected to TOD as found in the studied policy documents.

Figure 2.1: Goals of TOD

Source: TCRP, 2004

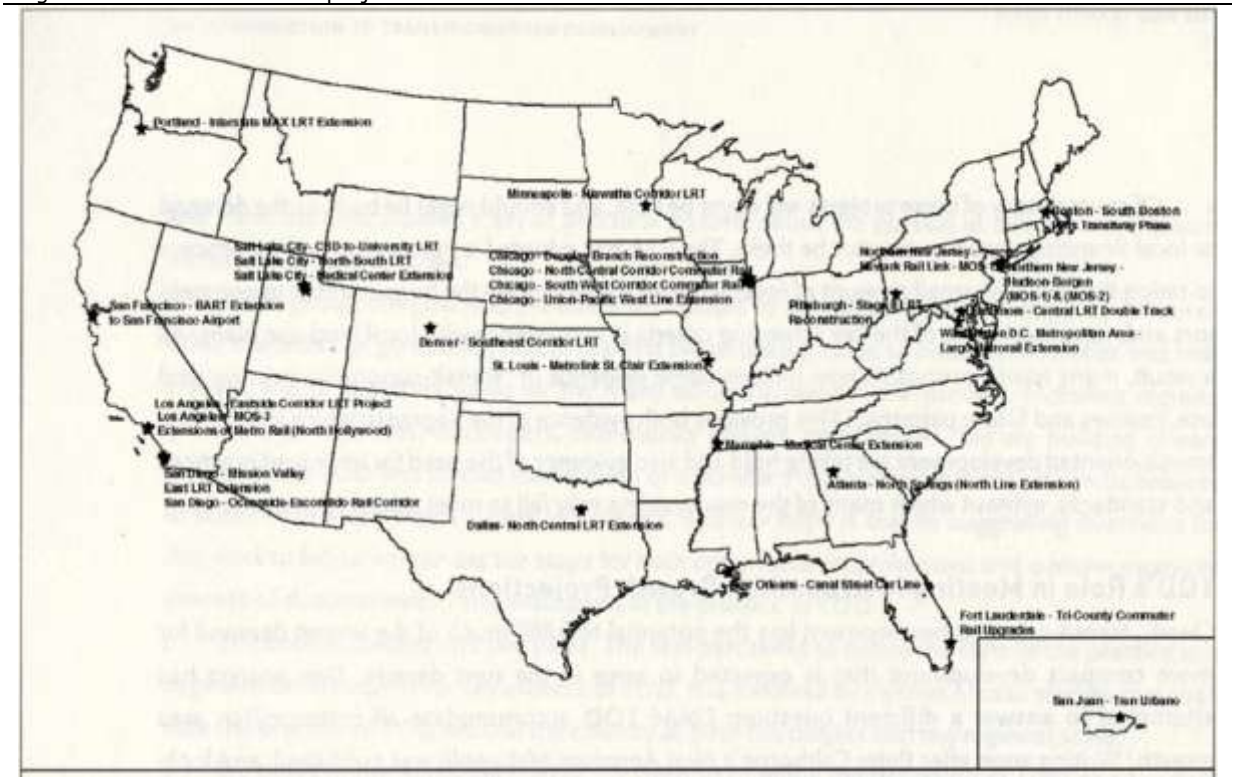
2.2 The definition of Transit Oriented Development

Transit Oriented Development lacks an unanimous definition but commonly has several of the following elements:

- The development is in the direct vicinity of a transit facility. There is debate about whether the development should be directly *oriented at* or just *adjacent to* the transit.
- The site is accessible both by car and public transport.
- The development increases densities of land use.
- The development promotes mixed use.
- Financing is done by both public and private parties.
- Special attention is given to create a high quality walking environment.

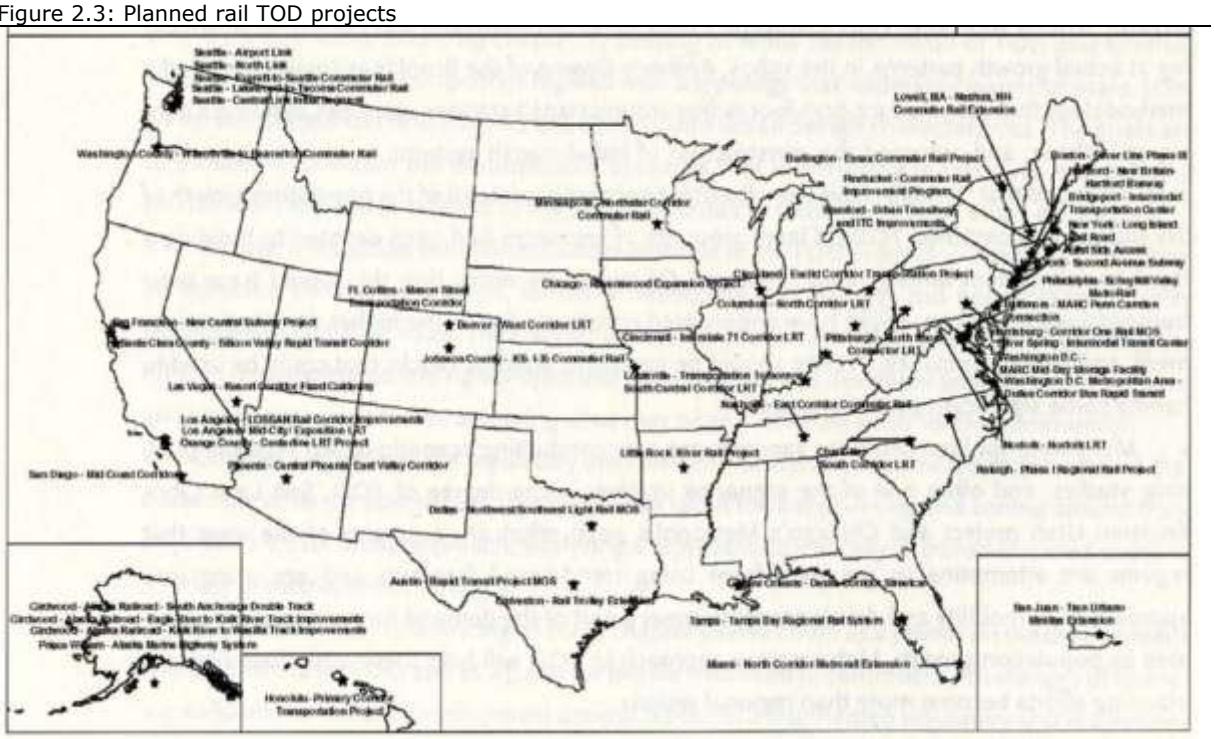
In the figures 2.2 and 2.3 we can see that there are many started and planned rail TOD projects throughout the whole of the USA.

Figure 2.2: Started rail TOD projects



Source: Dittmar & Ohland, 2004

Figure 2.3: Planned rail TOD projects



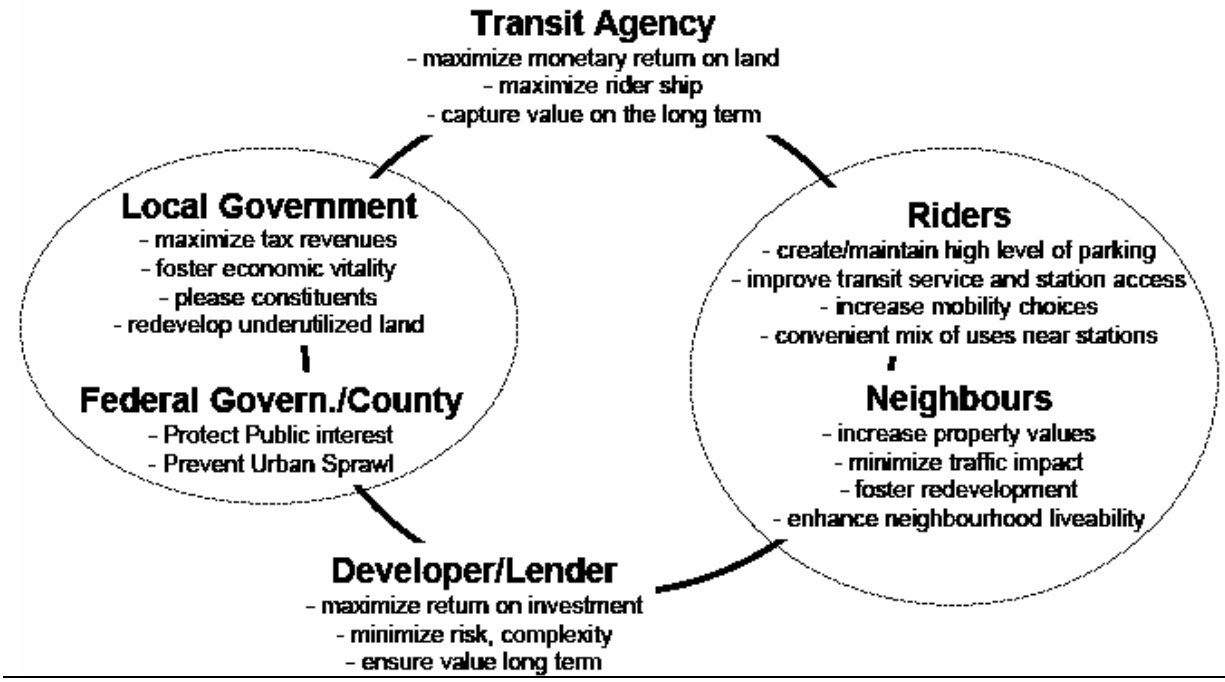
Source: Dottmar & Ohland, 2004

2.3 Actors in the TOD process

Most literature stresses the importance of recognizing the very different actors in making a TOD project, as well as the mutual dependency of all these players in complex joint development projects that TOD's commonly are. To help making these collaborations fruitful, the Urban Land Institute, the Center for TOD, and the Transportation Research Board have formulated some guidelines for successful development around transit. Some of the most important guidelines are:

- Political leadership, resulting in long term public commitment, proper legislation (like enabling mixed use and relaxed parking requirements), and coordination between public parties.
- A vision for each TOD project, shared by all parties involved.
- Build a place, not a project: create attractive, memorable, human-scale environments with accents on quality-of-life and civic spaces.
- Apply the power of partnerships: partnerships between private and public parties provide opportunities to set mutual expectations and to share risks, costs and rewards as well as being a framework for conflict resolution.
- Encourage every price point to live around transit. Engage corporate attention. Think development when thinking about transit. Make retail development market driven, not transit driven.

Figure 2.4:



Source: Dittmar&Ohland, 2004

2.4 Planning context

When trying to learn lessons from US practice for the Dutch planning process, it is very important to take into account the many spatial, cultural and political differences between the countries. But these don't always seem that large. Take for example the policy goals of the 2005 Denver Metro Vision: concentration of urban growth within growth boundaries; increasing densities by using vacant and underused existing urban space, and promoting compact development, especially close to transit facilities; improving air quality; finding space to store water; reduce traffic congestion; promoting

intergovernmental coordination. All of these goals are similar to those of the Dutch National Spatial Strategy.

So, the themes for planning policies are very much alike. But is quite different in the way the planning process is organized. In the US the local zoning map is the only legally binding planning document. In the process of formulating this document the municipality will incorporate all relevant stakeholders (large land owners, local business communities) to make it a product supported by the whole community. Zoning maps are commonly based on a comprehensive (sometimes regional) plan, but these lack a legally binding status. The state and federal government on the other hand formulate mandates which are legally binding, but often too specific (e.g. on emission limits of certain chemicals) to really decrease local policy making competences.

Based on the zoning map, municipalities can impose specific rules –ordinances- on developments within its boundaries, concerning things like parking, historical preservation, minimum floor heights, densities, et cetera. Changing the zoning map can be used as a tool to promote certain spatial developments. For example, in enabling transit oriented development the municipality can lower the minimum required parking spaces around a transit station to promote the use of bus or light rail.

Similar to the US, actual spatial development in the Netherlands is based upon the local land use plan (*bestemmingsplan*). The big difference is that the municipality has to make sure it's plan fits in the spatial plan of the province, which in turn has to comply with the National Spatial Planning Strategy of the national government. Like in the US, Dutch municipalities use the local plan to guide spatial developments, also around transit sites like (light)rail stations.

2.5 Types of transport systems

TOD has a direct relation with the transit system. The possibility of, and the kind of development depends on the transit system. This case focuses on urban development near light rail systems. There is no such thing as a single definition for light rail. It is a collection of all different types of public transport between a streetcar and a train. Because of these different types of public transport there are large differences between the capacities of light rail systems and their costs. Below, a (very) restricted attempt is done on a categorization of different types of light rail.

- Streetcar: Streetcars run at street level and share the street with car transport. The streetcars have an entrance with a high footboard, which makes it impossible to enter the streetcar with a wheelchair. Streetcars have a distance between stations of some hundreds of meters.
- Between streetcar and metro there are different types of public transport, which sometimes have a floorboard at platform level and/or have dedicated track. These types have a larger capacity than streetcars.
- Metro: A metro can transport a large amount of passengers and has a dedicated track with no interaction with other forms of public transport. The footboard is on the same level as the platform which enables an easy access for every user. A metro can have distances between the stations of about 1 kilometre.
- Train: A train is larger than a metro and has larger distances between the stations, about some kilometres, usually between the centres of urban areas.

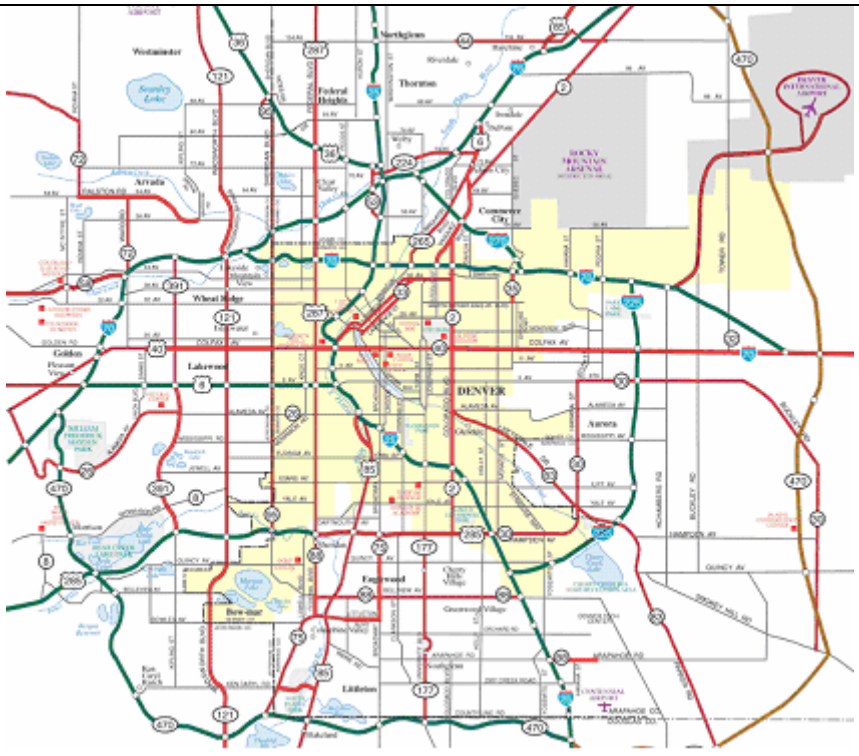
2.6 Problem issues in development of the transport system

The success of the public transport system in Denver and Dallas makes that plans are made to increase the capacity of the system, by integrating larger equipment. In Denver, the streetcar must preferably be upgraded to a system between streetcar and metro and the system between streetcar and metro in Dallas will be transformed to a more metro-like system. Problems for both cities in these developments are necessary changes in the city centre, where the system is a barrier and will have insufficient capacity in the future. These problems however are non existent in the train system of Stedenbaan and will not be elaborated any further within this research.

2.7 Denver, Colorado

The Denver-Aurora metropolitan area extends far beyond the City of Denver. According to the Denver Regional Council of Governments, the region includes the following eight counties: Adams, Arapahoe, Boulder, Clear Creek, Douglas, Denver, Gilpin, and Jefferson. Denver's position near the mineral-rich Rocky Mountains, makes energy and mining still important in Denver's economy today. The telecommunication industry benefits from the west-central geographic location of Denver in the Mountain Time Zone by allowing communication between American, Europe and Asia on the same business day.

Figure 2.5: Map of the Denver metropolitan area



Source: internet

The City of Denver is the capital and largest city of the U.S. state of Colorado. The central downtown district is on the east side of the South Platte River. Suburban development has transformed this region into a large metropolitan area, with urban development covering more than 550 square miles. More than 2,333,000 people, living in 959,000 households, make it the 22nd-largest metropolitan area in the U.S

The Denver metropolitan area is among the fastest growing in the US. Between 1990 and 2000 the overall population growth was 30.7 %. One of the six counties of the Denver metropolitan area, Douglas, recorded the fastest growth in the whole country with 191%.

METRO 6-COUNTY DENVER METROPOLITAN AREA

County	2000 Population	%Change 1990-2000
Denver	554,636	18.6%
Jefferson	527,056	20.2%
Arapahoe	487,967	24.6%
Adams	363,587	37.3%
Boulder	225,339	29.3%
Douglas	175,766	191.0%*

* Fastest growing county in US

Related to the fast growth rate are problems of severe congestion and pollution. Car use can be reduced by developing and stimulating public transportation, and thereby reducing the growth related problems.

The Regional Transportation District (RTD) is a public agency created in 1969 by the Colorado General Assembly. RTD operates a public transportation system in a seven-county service area, which includes all of Boulder, Broomfield, Denver and Jefferson Counties, and parts of Adams, Arapahoe and Douglas Counties.

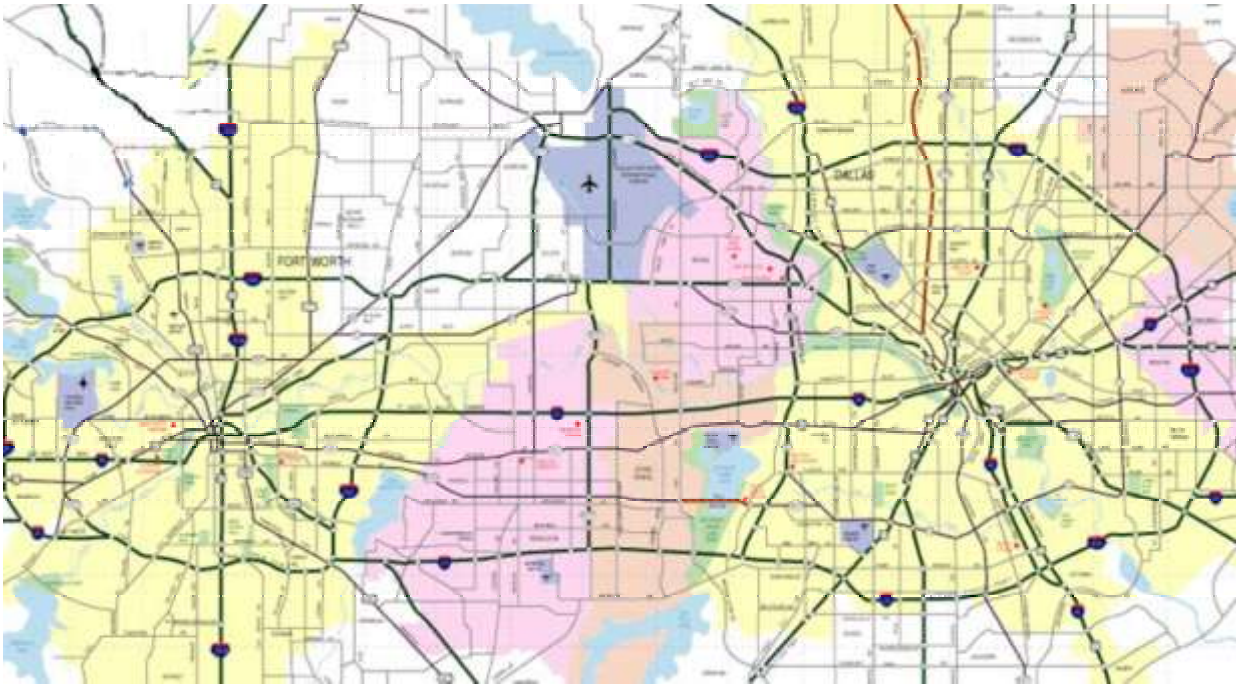
Denver has a short history in light rail transit. The first light rail line of five miles was located in the central area of Metro Denver and opened in 1994 by RTD. In 2000 RTD opened the Southwest light rail, expanding the existing light rail into the Santa Fe corridor. The latest project is the Transportation Expansion Project (T-REX) which will add 19 miles of light rail, and expand the existing light rail services into the Southeast corridor. RTD is also working on realizing the ambitious FasTracks Vision Plan, which will add 110 miles of new rail transit, creating a total transit network of 145 miles rail transit in 2016. This expansion would be the largest build-out of a transit system in the U.S.A. since the Washington Metro system.

2.8 Dallas, Texas

The Dallas-Forth Worth metropolitan area is a conglomeration of two cities located in the center of Texas. It is the second largest city in Texas (behind Houston) and the eighth largest city in the United States in 2000. The Dallas-Forth Worth region is currently nation's strongest metropolitan economy and boasts a booming commercial real-estate market. Residential densities are increasing in many parts of the Dallas area. This is evidenced by a tremendous apartment construction underway.

According to the latest population estimates from the US Census Bureau, Dallas-Fort Worth, with a 2001 population of 5.4 million, is the ninth largest urbanized area in the United States. Since 1990 it has been one of the fastest growing regions of the state. Dallas alone is expected to add about five million residents by 2030 while Fort Worth is projected to grow by about 1.5 million persons. For the Metropolitan area overall, population is projected to reach nearly 12.5 million by 2030. The demographic composition of the City of Dallas is changing in ways that will enhance the demand for public transit. Over the next 30 years, the North Central Texas region will see an influx, and all modes of transportation will need to be enhanced just to keep up with the growth.

Figure 2.6: Map of Dallas-Forth Worth metropolitan area



Source: internet

Increases in population and job creation are expected to put additional strain on an already congested transportation system, create additional air quality concerns, and exacerbate an already anticipated lack of funding. Identifying the appropriate tools to improve mobility is critical, as congestion continues to grow. Passenger rail offers an alternative that reduces emission by reducing the number of vehicles on the roadways. The State Implementation Plan for Air Quality included requirements for the Dallas-Fort Worth metropolitan area to reduce mobile source emissions for the years 2007, 2015, and 2025. Development of additional rail options in the region would aid in achieving this goal.

DART was created in 1983 as a regional replacement for the Dallas Transit System. In 2000, DART opened Cityplace Station, the first underground bus station in Texas. By 2002, DART light rail extended to the suburbs of Richardson, Plano, and Garland. In addition, the Trinity Railway Express (TRE) commuter rail line connected downtown Dallas with downtown Fort Worth (through an interlocal agreement with the Fort Worth Transit Authority, "The T") for the first time since the 1930s. DART itself currently operates two light rail lines, the Red Line and the Blue Line.

DART is currently designing the next phase of the expansion of the light rail system. Two new light rail lines will extend out of downtown Dallas by 2007 or 2008. One line will run southeast from downtown to Fair Park and continue to the Dallas neighborhood of Pleasant Grove. The other line will run northwest from downtown, connect to Love Field airport, and extend into the suburbs of Farmers Branch and Carrollton. The same line is also planned to branch off in Irving with eventual service to the north side of Dallas-Forth Worth Airport.

2.9 Stedenbaan, Randstad

The western part of the Netherlands is known as the Randstad. It consists of the four largest cities of the Netherlands and their surrounding areas. With its 7.1 million inhabitants (almost half of the population of the Netherlands) it's one of the largest agglomerations in Europe. Its main cities are Amsterdam, Rotterdam, Utrecht, and The Hague. A few smaller cities are: Delft, Dordrecht, Gouda, Haarlem, Hilversum, Leiden, and Almere.

Figure 2.7: The Zuidvleugel area

Source: internet

The Randstad can be divided into two parts, the Noordvleugel (the North Wing, the northern part of the Randstad), and the Zuidvleugel (the South Wing, the southern part of the Randstad).

The Noordvleugel, with a population of around 2.5 million people, consists of the Haarlem and IJmuiden conurbations in the west, Amsterdam at the centre and Almere and the Gooi-area in the east. The conurbation of Utrecht (population around an extra 800,000) could also be considered to be part of the North Wing. The main center is however Amsterdam, which could - as such - be considered a classic centralistic metro pole.

The Zuidvleugel, with a population of around 3.5 million people, is stretching some 60 kilometers from Dordrecht in the South East, to Leiden in the North. The main conurbations are more or less equivalent with Rotterdam and The Hague.

The growth and the urban development of the Zuidvleugel is an ongoing process. For example, between 2010 and 2030 Zuidvleugel has a need for 165.000 new houses. At least 40% of the new houses will be built in the existing built-up area. The locations of the new housing development should be accessible by car and, if possible, by public transport; this is the reason why the regional government will make use off the existing station areas in the Zuidvleugel. The regional government introduced the development plan Stedenbaan. Stedenbaan is a plan with two goals:
1. exploit the increasing capacity on the existing rail track
2. increase the building density around the stations,

3. Denver

The transit system in Denver is about to expand from a local scale to a metropolitan wide transit system. The South West corridor, which is the first line opened by RTD (Regional Transport District), is a great success. Those positive results have encouraged planners within the RTD to develop the T-REX (Transportation Expansion) Project. At the moment RTD almost has finished the T-Rex corridor. The successes of RTDs light rail projects have initiated the development of a major rail transit expansion plan: FasTracks.

This chapter will first give a short introduction into transit planning and organization in Denver. The second paragraph will give an overview of the current situation and the future plans of the area. The third and fourth paragraph will give insight into aspects of finance and marketing of the transportation system. The last paragraph will give an in depth look at transit oriented development and the related future of TOD in Denver.

3.1 Transit planning and organization

Transportation planning in Denver is divided into a highway part, which is the purview of the Colorado Department of Transportation (CDOT), and a light rail part which is the responsibility of the Regional Transportation District (RTD). This dualistic system also exists on federal level, where the Federal Highway Administration (FHWA) is responsible for highway development, the Federal Transit Administration (FTA) is responsible for public transportation.

A 1992 regional congestion study from the Denver Regional Council of Governments (DRCOG) recommended that not only the DRCOG and CDOT should consider expanding the highway, but also implement some sort of mass transit element. To address the heavy congestion problem, CDOT en RTD commissioned the Southeast Corridor Major Investment Study (MIS). DRCOG adopted the MIS recommendations. In 1998 CDOT and RTD worked together in a new entity: the Southeast Corridor Project Team and started working on realizing the T-Rex.

The study (MIS) identified several main factors that defined the corridor purpose and need. First there is the severe traffic congestion in both directions which exists throughout most of the corridor. Second the high accident rate in the northern part of the corridor. Third the deficiencies in the existing transit service, including the inability to compete with highway travel. Lastly the growing population and employment in the corridor.

Almost at the same time that RTD started planning the T-Rex, RTD initiated the development of the FasTracks plan. FasTracks is RTD’s twelve-year comprehensive plan for high quality transit service and facilities in the region. FasTracks is a proactive plan that responds to the growing transportation needs of the Denver metropolitan area by providing an enhanced region-wide, reliable and safe transit system. The Denver Regional Council of Governments (DRCOG), as well as the Metropolitan Planning Organization (MPO), have adapted the plan. The plan corresponds to the Metro Vision 2030 (developed by DRCOG), the long-range, comprehensive growth strategy for the Denver region.

The RTD Board of Directors is directly chosen by the citizens of the Denver area. This stresses the importance of working on time and in budget. Because they have to keep up with the promises they made the last elections, and in this way insure the future plans of FasTracks. Building on time and in budget influences the location planning of the lines by RTD. Mostly they choose to build on existing railways or construct it next to high ways.

3.2 Transportation system Denver

Denver has a streetcar type of public transport. The existing streetcar line is integrated at street level in the centre of the city and has some dedicated tracks further from the city centre. The newly constructed T-Rex corridor has a dedicated track, but also uses the relatively small streetcars. There are provisions for passengers in a wheelchair to enter the trains.

The newly planned lines on the north side of Denver will be served with a train system (possibly diesel trains). The stations will be located some kilometres apart from each other.

Figure 3.1: Streetcar equipment of the current Denver public transport system

3.3 Current situation and future plans

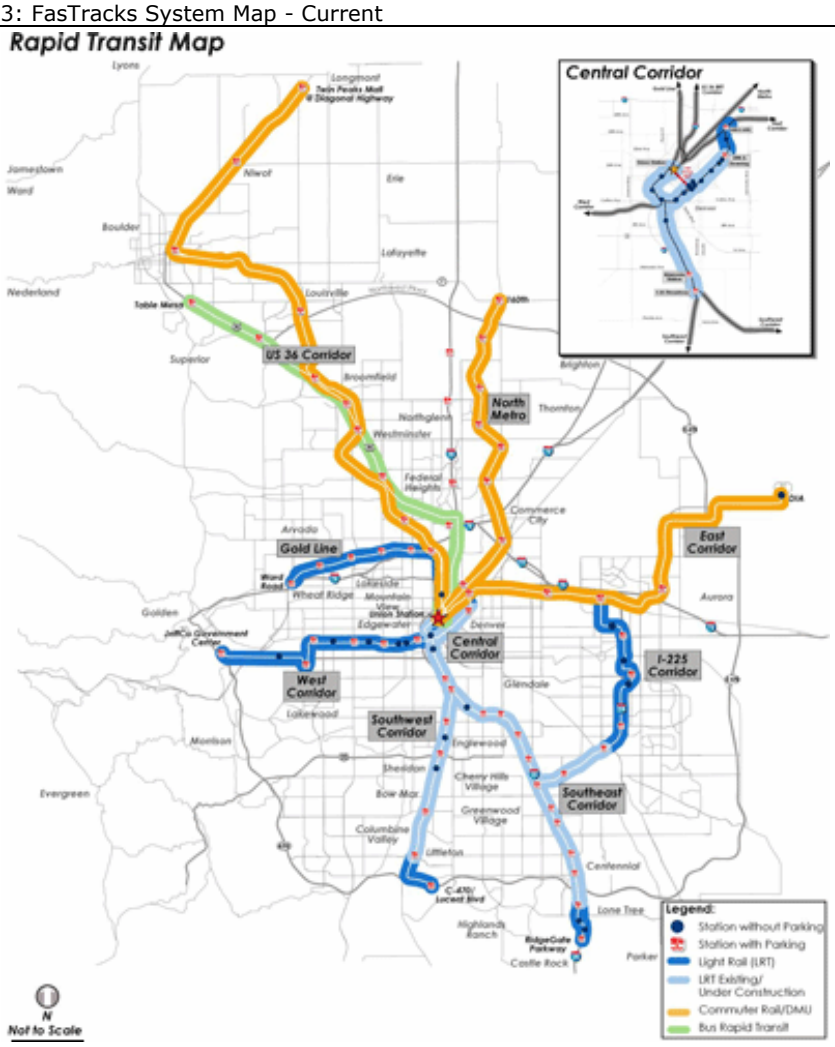
At the moment Denver operates two light rail lines. RTDs initial 5.3 mile long Central Corridor line opened in 1997 and links the Broadway light rail station, south of downtown Denver and Downing north of downtown. RTD's second light rail line opened on July 14, 2000, with service along the Southwest Corridor, stretching from the Broadway station through Englewood and ending at Mineral Avenue in Littleton. The Central Platte Valley line, which opened April 5, 2002, provides service to the Denver Union Terminal north of downtown Denver. The Central Platte Valley line serves educational, entertainment, sports and cultural venues in central Denver and in the city's popular Lower Downtown, or LoDo district.
Most of the current stations are based on sort of park and ride system. Riders park their car in a free parking lot or parking area and then take a train into the city center.

Ridership has exceeded the projected forecast of 8,400 riders per weekday, and averaged 17,900 riders in April 2002. To meet ridership demands, RTD increased service on the Southwest Corridor in conjunction with the opening of the Central Platte Valley light rail line in April 2002.

The success of the first lines made people vote for the Transportation Expansion Project. T-REX construction began in fall 2001 and is scheduled to open for service in the end of 2006. The T-Rex will add 19 miles of double-track light rail, which will connect to the existing rail system at the Broadway light rail station. It will also build 13 stations of which 12 will include park-and-ride facilities. A total of 34 light rail vehicles will be added to RTD's fleet. A new light rail maintenance facility will be constructed at Englewood.

After RTD starts service on the T-Rex, they will continue developing the lines mentioned in the FasTracks proposal. This is a 12-year comprehensive plan that will expand the entire metro Denver light rail system, adding six new lines, extending existing routes, and expand the regional bus network. The FasTracks Plan includes 119 miles of rail rapid transit in nine corridors and contributes to the construction of 18 miles of bus rapid transit. Near the new stations RTD will develop thirty-one new park-and-rides and at Union station a major downtown multimodal center which will provide access to nearly every rapid transit line as well as regional buses, local circulators and inter-city rail and bus services.

Figure 3.3: FasTracks System Map - Current



Source: RTD

The map of FasTracks shows the existing/under construction light rail is shown in blue. The T-Rex itself will start operating at the end of 2006, after T-Rex construction will start on other corridors as part of the FasTracks programme. Table below will give an overview of the planning schedule of FasTracks, including T-Rex.

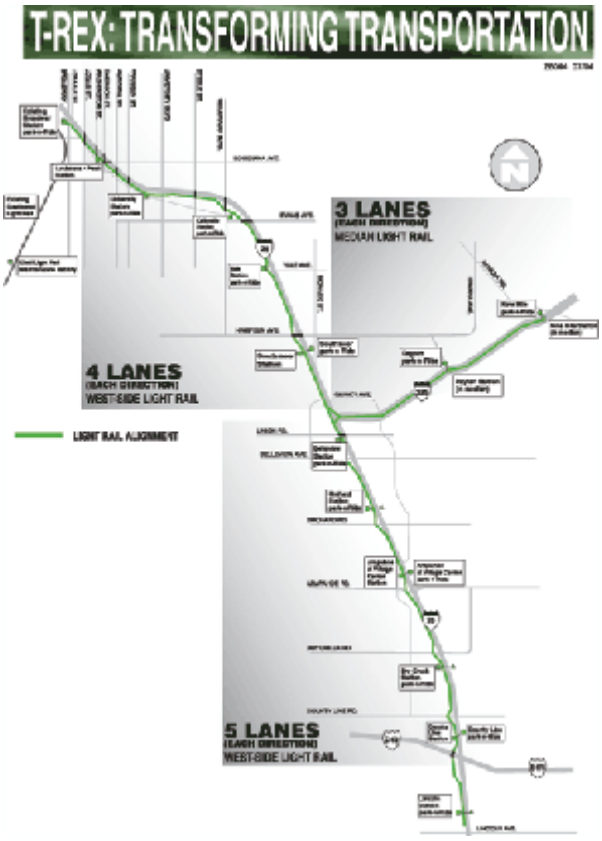
Planning schedule FasTracks

January 1, 2005	The 0.4-cent sales tax increase takes effect
2005	Environmental studies begin from North Metro, Interstate 225 and Arvada-Wheat Ridge lines. Study already done for Golden line, and under way for airport and Boulder lines
2006-08	Final design in and under way on all but the Littleton and T-REX extensions
2009	Construction begins on Lakewood-Golden line, Union Station revamp
2010	Construction begins on U.S. 36 bus rapid transit segment
2011	Construction is under way on all corridors except southwest and T-REX extensions
2013	First new line, to Lakewood and Golden, opens along renovated Union Station
2014	Commuter rail to Boulder and Longmont and to Denver International Airport open; construction begins on southwest and T-REX extensions
2015	New lines open on North Metro, I-225 and Arvada Corridors, plus downtown line connection from Five Points to the DIA line
2016	Southwest extension to Highlands Ranch and T-REX extension to RidgeGate open

Source: metrodenver.org

3.4 The T-Rex corridor

Figure 3.2: Overview T-Rex



Source:T-Rex Fact Book

The T-Rex will be constructed using the 'design-build delivery' method. Traditionally the design plans would be completed first, and then contractors would build sections one at a time. Design-build will be faster and less expensive, because construction and design will take place simultaneously. CDOT and RTD will only provide preliminary engineering design and requirements to the southeast corridor constructors.

This new light rail will be almost a fully individual system, which will not interfere with the road system. In the current situation the light rail is constructed at street level in the center of Denver. Road crossings and dependency on urban structure makes the T-Rex system in this area less flexible then outside the city center.

Twelve of the thirteen stations will have a parking facility, and are therefore more attractive to get people out of their car. For other users some of the T-Rex stations aren't very well accessible, especially for pedestrians.

Besides the residents living close to the stations, RTD expects that people outside the eight counties will make use of the parking lots and get on the light rail. Right now they will work on a 'first-in first-out' base, but there are already ideas to ask people from outside the counties for a small fee when making use of the parking lots. At the moment they expect that in the planned time schedule of the light rail there would not be enough capacity at peak hours to transfer all the users. RTD has to invest in the extension of the capacity of the light rail system with more and other trains.

3.5 Finance

The FasTracks Plan calls for fixed-guide way transit improvements in nine corridors at a total cost of $4.7 billion. Bonds will be issued to fund a portion of the cost. Transit service expansion operating costs are expected to be $1.5 billion. Construction on the new lines is expected to begin in 2008 and be completed by 2017.

The total projected costs of the T-Rex project is $1.67 billion. The light rail component will cost $879 million, the highway component $795 million. Other costs not included in the total projected costs are $91.8 million to purchase 34 light rail vehicles, $39.5 million to construct the Elati Light Rail Maintenance Facility, and $3 to $4 million to purchase ticket vending machines.

Forty percent of the light rail funds will come from RTD and local matching funds, sixty percent will come from the FTA's Full Funding Grant Agreement. The highway component will be funded with a combination of Highway Users Tax fund dollars, Senate Bill 97-01 money and bonding/federal revenues.

3.6 Marketing

Looking at the current transit lines, the RTD has some small marketing programs. They have an education program, an internet service to inform people about the transit system and for example a bike-and-ride promotion campaign. The current RTD lines already have a high ridership. During peak hours trains are full, more marketing could even be more of a threat for the light rail if they attracted more passengers because of the capacity problem.

Figure 3.4: Examples of marketing

Source: internet

T-Rex promoted the line to arrange the financing of the line. This way RTD gets people enthusiastic to vote for the line. At the moment they promote the project by supporting a website which informs the public about the process of the project, and keeps them informed with real time congestion information of different parts of the corridor.
Accept from the internet RTD offers a periodic newsletter containing the latest news of the T-Rex, they maintain communication with residents, commuters and businesses involved due to the building activities of T-REX. They also have a school program to inform students about the new coming line.
In relation to developments near the light rail, RTD has plans to create a website to give potential developers specific information about the T-Rex and other transit projects, and interest them to invest in the project.

Figure 3.5: Examples of marketing

Source: internet

3.7 Examples of TOD

The implementation of TOD in the T-Rex is a little disappointing, there are some stations at the T-Rex and other corridors who present interesting TOD cases. The most well known example of TOD in Denver is Englewood. The area around the station is developed in a public-private partnership between RTD, the City of Englewood, and Miller Wiengarten (the developer of the site). This TOD has become a success because the actors wanted to develop there own part of the area at the same time. They worked together to create an integrated plan between light rail, urban development and public space.

Three types of TOD can be recognized in Denver:
Type 1: TOParking
Type 2: TOD Public
Type 3: TOD Private

In this paragraph an example will be given for each of the three types of TOD. First the Station area Lincoln Street will be an example of TOParking. Second Union station area which can become one of the most successful public TODs in Denver. The last potential TOD is Gates, which is initiated by a private actor.

TOParking

Lincoln Avenue Station is an end-of-line station and will feature a parking structure with 1,734 spaces. Lincoln is one of several stations where they are proposing transit oriented development. This will include some retail, offices and residential locations. Lincoln station is an example of Transit Oriented Parking, with more emphasis on parking instead of development as would be the case in regular TOD.

Figure 3.6: Lincoln Avenue Station

TOD Public

Union Station will form the heart of the FasTracks system, and will become the most important station. There have been eleven responses to a 'request for qualifications' for a master developer for Denver Union Station. They expect to select a master developer in the summer of 2006. The Denver Union Station project team has been formed in 2002 and been initiated by the CCD, RTD, CDOT, and DRCOG. Union Station will be an important multimodal hub, which will connect the different corridors of the FasTracks program. Different modes will include RTDs regional light rail, local buses, commuter rail, Amtrak intercity rail, Ski Train, et cetera. Union Station is an example of public initiated transit oriented development.

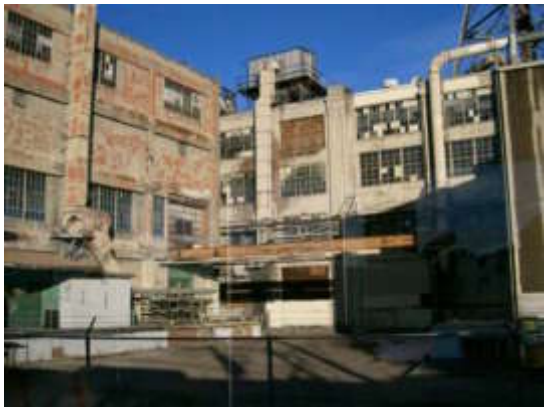
Figure 3.7: Union Station Sketch

Source: internet

TOD Private

The Gates Rubber site will be open for redevelopment. It could have a completed value over the next 20 or 30 years of $1.5 billion. Continuum Partners plans transit oriented development at the Gates site, costing $800 million, 2.3 million square foot. When completed it could include 1,900 residential spaces, 600,000 square feet of office space, and 160,000 square feet of retail space. It will also include a luxury hotel. Gates is an example of private initiated transit oriented development.

Figure 3.8: Gates rubber site



3.8 Future of TOD

As mentioned before, the future of transit in Denver has been given form in the FasTracks program, extending the transit system into different corridors. The RTD is one of the more important organizations as the constructor of light rail and parking. It operates at the level of special district. RTD facilitates the local developments, and the local communities itself organise the development. Although at the start of the project there weren't really private parties who joined in on the development, but right now they are slowly joining in and more TOD planning is on its way.

At the moment TOD itself is more of a byproduct instead of a strategy used at the start of the project. At the stations there is no really mixed use, although they do try to intensify and integrate the surrounding areas. The developers who do want to develop a station area are contacting the responsible authorities itself.
For Denver probably the most important factor will be the success of TOD near Union Station, as it will be the multimodal central station.

4. Dallas

The transit system in Dallas is already further developed then we have seen in the Denver region. Dallas has a transit system for almost ten years which will still expand in the future. The effects of transit in the urban area are in some places already visible.

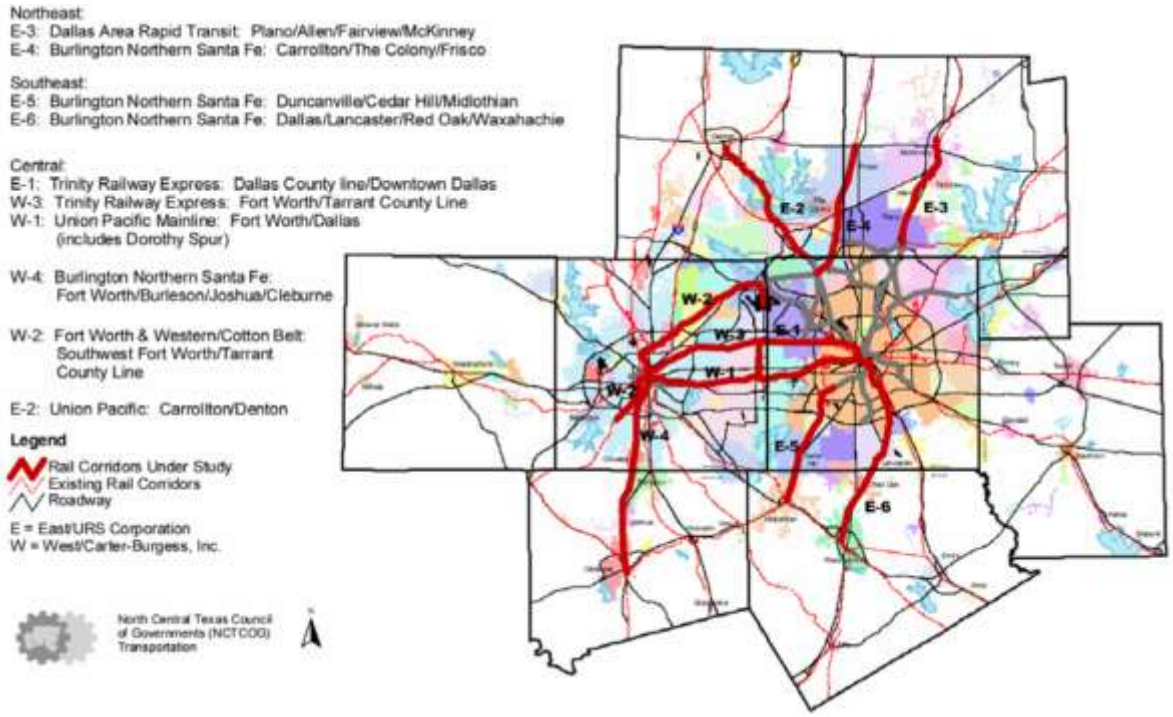
This chapter will first focus on the current situation and the future plans of the transit system in the metropolitan area and the organization of DART and the other institutions involved in the planning of transit. In this chapter information can be found about the finance and marketing of the transit lines and the developments. In the last part three cases of TOD are discussed: Mockingbird, Plano, and Carrolton.

4.1 Transit planning and organization

In the Dallas-Forth Worth metropolitan area a lot of different parties are involved in transit planning. As mentioned before, Dallas Area Rapid Transit (DART) is an organization who builds and manages the transit lines. The North Central Texas Council of Governments (NCTCOG) and the Regional Transportation Council (RTC) are responsible for the regional planning process. Most counties have a transportation authority which takes care of a good integration of their county into the regional transportation structure. The Fort Worth Transportation Authority (FWTA) and Denton County Transportation Authority (DCTA) will have an imported role in the near future because of the urban growth in those regions.

The organization of the DART is different from the organization of the RTD, which we have seen in Denver. The board of Dart is appointed by 15 member–city councils based on population. Eight members are appointed by the city of Dallas and seven by the surrounding cities. Board members serve for 2 years with no limits. In Denver we have seen that the RTD is a special district. In Dallas the DART has a stronger relation with the counties, and the communication between the local municipalities and the DART is easier. There is competition between DART member-cities and cities in the North of Dallas.

Figure 4.1: Regional Rail Corridor study – Rail Corridors



Source: internet

Since 1974 the North Central Texas Council of Governments (NTCOG) has served as the Metropolitan Planning Organization (MPO) for transportation in the Dallas-Fort Worth area. NCTCOG's Department of Transportation is responsible for the regional planning process of all modes of transportation. The department provides technical support and staff assistance to the Regional Transportation Council and its technical committees, which compose the MPO policy-making structure. In addition, the department provides technical assistance to the local governments of North Central Texas in planning, coordinating, and implementing transportation decisions.

The North Central Texas Council of Governments (NCTCOG) and its Regional Transportation Council (RTC), in partnership with Dallas Area Rapid Transit (DART), Denton County Transportation Authority (DCTA), and the Fort Worth Transportation Authority (FWTA) began work on a comprehensive Regional Rail Corridor Study (RRCS) in May 2003.

4.2 Transport system Dallas

The Dallas public transport system has equipment between a streetcar and a metro. In the city centre these trains are integrated at street level and their length is maximised to the city fabric. These trains have a larger capacity than the streetcars in Denver and they also have a footboard above platform level, which makes them less accessible. There are however also provisions to enable passengers in a wheelchair to enter the trains.

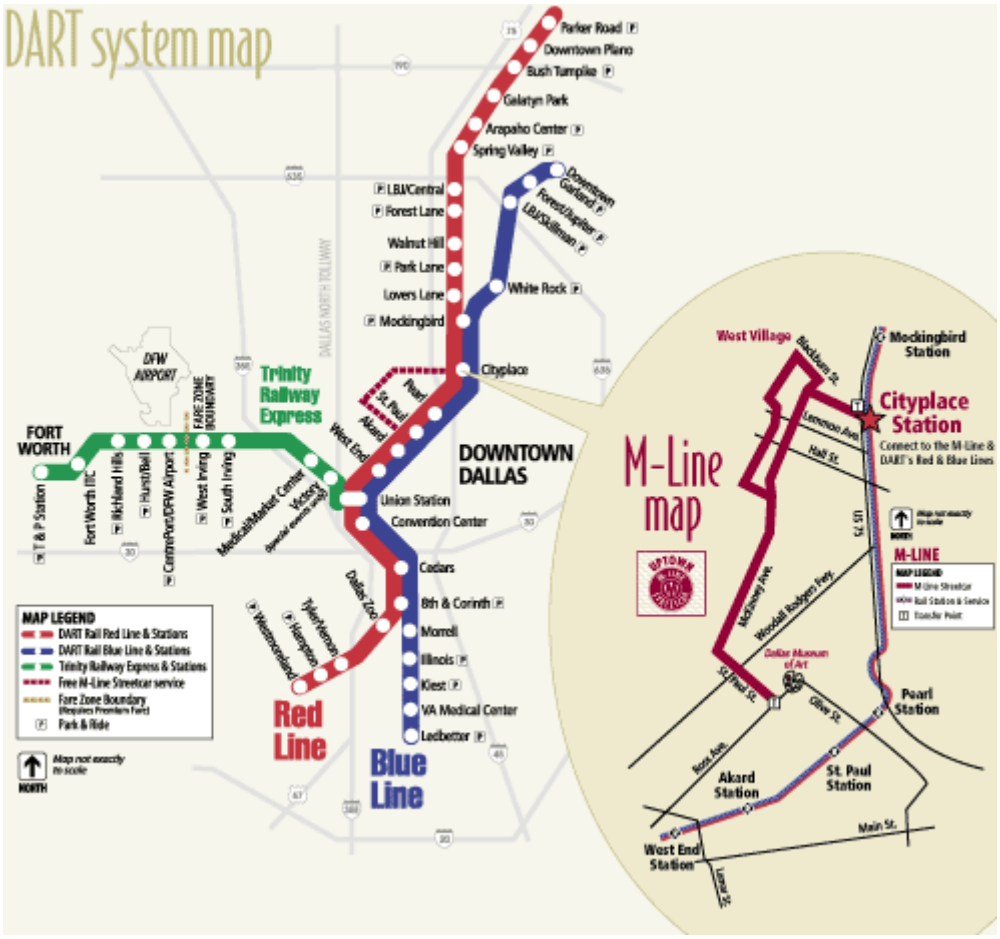
At the moment, plans are made to integrate metro equipment with a footboard at platform level to simplify the access, which will increase the capacity of the system.

Figure 4.2: Transport system Dallas

4.3 Current situation and future plans

At the moment DART serves Dallas city and 12 surrounding cities with approximately 130 bus routes, 45 miles of light rail transit, and paratransit service for mobility impaired. The Red and the Blue Line where one of the original rail lines in Dallas. The rail lines where part of the initial launch of DART's light rail service. DART and the Fort Worth Transportation Authority (the T) operate 35 miles of commuter rail transit (the Trinity Railway Express or TRE), linking downtown Dallas and Fort Worth with stops in the mid cities and DFW International Airport. The red and blue line opened in June 1996. Both lines are extended the years after opening and the TRE started service in 1997.

Figure 4.3: DART system map – current situation

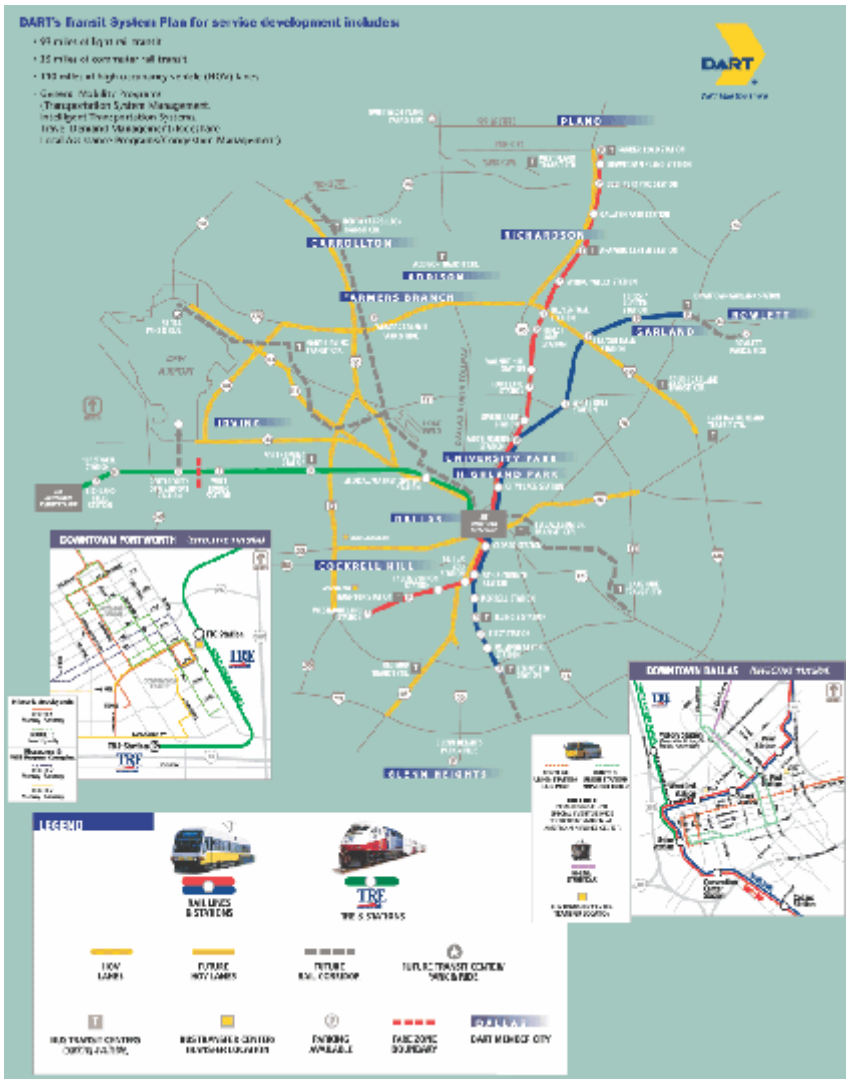


Source: internet

The current DART Transit System Plan was adopted by the DART Board in November 1995. This rail system is contained in the current regional long-range plan and was therefore assumed to be in place in the travel demand forecasts developed for the Regional Rail Corridor Study (RRCS) planning effort. The 2030 Transit System Plan Update process continued throughout the RRCS effort. At the outset of the RRCS, Dallas Area Rapid Transit was in the midst of developing an update to the DART Transit System Plan for 2030. The rail system provided and planned for by DART is an integral part of the region's transportation system and an important link for the planned rail improvements resulting from the Regional Rail Corridor Study.

Throughout 2014 the Dart system is planned to more than double in size to 93 miles. Extensions now in development include the 17.5 miles Northwest corridor serving downtown Dallas up to Carrolton. The 13 mile extends of Northwest corridor to North Irving's Las Colinas Urban Center. And another 10.2 mile extension will serve the South East Corridor.

Figure 4.4: DART Expansion Plan



Source: internet

Dart Rail Corridor	**Target Revenue Service Year**
Southeast Corridor – Downtown tot Pleasant Grove	
Downtown to Fair Park	2009
Fair Park To Pleasant Grove Transit Center	2010
Northwest Corridor – Downtown tot Carrolton	
Downtown tot Medical Market Center	2009
Medical Market Center to Northwest Highway	2010
Northwest highway to Farmers Branch	2010
Farmers branch to North Carrolton	2010
Northwest Corridor – Northwest Hwy to DFW Airport	
Northwest Highway to Las Corlinas Urban Center	2011
Las Corlinas Urban Center to State Higway 161	2012
State Highway 161 to DFW Airport	2013
Other Line Sections	
Northeast – Downtown Garland to Rowlett Park & Ride	2012
Central Business District – New Line through Downtown	1013
South Oak Cliff – Loop 12 to LJB Freeway (I-20)	2018

4.4 Finance

The initial system was constructed in two phases: the starter system (20 miles long with 20 stations requiring an investment of $860 million) and phase two - North Central (24 miles long with 14 stations that required an investment of $1.011 billion).
The light rail system is due to doubled in length by 2014 to 93 miles. A major extension will be the 17.5-mile northwest extension to connect downtown Dallas up to Carrollton; estimated cost of this extension of the Blue Line are $850 million. The Purple Line will get nine stations and has been budgeted at $459.53 million. Most of these projects are due to be completed between 2010 and 2014, however some shortfalls in funds are to be expected and these timescales may be extended.

The financing for building lines and managing the transit system is quite similar to the Denver system. The development of new lines and the extension is financed by bonds based on rising property values. Operating trains is paid by sales taxes, fares only cover 15 % of the costs.

4.5 Marketing

The marketing of DART can be divided in two parts, first the promotion of the Dart system and lines. Second the promotion of the different stations. To increase the amount of riders DART offers a variety of programs to make it easier to use the system. The figure below shows examples of DART to help people to find there way into the system. DART also offers al kinds of programs for special target groups. First they have an education program for children and senior people. DART's Transit Education program teaches all about the ways transportation influences life and also how people can use mass transit safely and effectively. Next to this education program DART publishes a newsletter containing the latest news about the transit system and the development of the new constructed lines and stations. Special events and products are offered by Dart.

Figure 4.5: Examples of marketing in Dallas

Source: internet

DART is socially oriented. They try to make transit accessible for all kinds of passengers, like disabled, seniors, students, business people and culture class. The comparison between car and transit is a main issue in the promotion of DART. Also the difference in costs between car and transit is mentioned. Especially at places where station development is successful DART promotes riders to visit these places. Often they offer a saving when showing a DART ticket for a visit.

4.6 Examples of TOD

Light rail in the Dallas area has had an influence on the type and density of development. Stations located on the edge of the cities will have smaller-scale development. Closer to the city center, development becomes more suburban.

Three types of TOD can be recognized in Dallas:
Type 1: TOD Private
Type 2: TOD Public
Type 3: TOD Public–Public, and probably Private

The Mockingbird Station provides the best example in the region. This station was privately planned and developed with urban lofts, retail and entertainment uses.
The Downtown Plano Station was built around a historic downtown; the development is initiated by the municipality of Plano. The TOD in this location has dramatically revitalized downtown Plano. The planned transit line up to Carrollton gives potential for future TOD, at the moment initiated by two public actors and possibly in the future developed by private actors.

TOD Private

Mockingbird station area is seen as the main example of Transit Oriented Development in Dallas and many other cities in the USA. An eight-minute rail ride from Dallas' Central Business District, Mockingbird Lane Station now has much to offer. More then 200 apartments, a film center, café, more than 90 shops and restaurants, office and parking space, and an enclosed public plaza, all linked to the Mockingbird Lane Station. Commercial and residential tenants are drawn to Mockingbird Station as much for its convenience as for its true urban character, which mixes materials, architectural styles and unprecedented amenities to create a lively community.

Figure 4.6: Mockingbird Station

The urban development started after DART finished the red line and the rail started to function. One of the biggest developers of Dallas, K. Hughes, developed the industrial area into a commercial and residential compact urban area. The developer used the potentials of the location near the transit line. In the urban design he chose to make a direct connection with the station platform. Part of the new development is oriented at the central corridor from the urban area to the station which is constructed in cooperation with the DART.

In this case the initiator of the development is the private developer. He even paid for the air rights to overbuild the light-rail in order to make a decent connection between the developed area and the station. The public actor, DART, was open minded for the initiatives of this private developer and facilitated his ideas, this was already a big change in mind set.

TOD Public

Figure 4.7: Plano Station

The success of the developments near Mockingbird worked as a catalyst for the Plano Station area. Downtown Plano Station is served by the North Central segment of the DART Rail Red Line. Downtown Plano Station provides access to the city's municipal center, courthouse and business district, reflecting its downtown historic neighborhood with turn-of-the-century architectural designs atop columns and vintage flower beds near entrances.
When DART started to plan the extension of the red line up to Plano, the municipality initiated the development of a new zoning plan for the neighborhood. This plan made it possible to develop a new mixed use urban area. The municipality did quite a lot to improve the quality of the public space. This project was already a success before the DART line was finished. Some of the new residents even sold their apartment because they had to wait to long for DART started operations.
In this case the initiator of this project was the public actor, the municipality of Plano. With the changing of the zoning plan they made it possible to develop a mixed use urban area. The station area is developed together by DART and the municipality. The investments in the public space of the station, the surrounding area and the developments are strictly divided.

TOD Public-Public

Figure 4.8: Carrollton Sketch

Source: Carrollton

DART is planning a rail corridor from Downtown Dallas to North Carrollton, this Northwest Corridor is planned to be finished in 2010. The successes of earlier developments near transit lines changed the vision of this type of station areas. The municipality of Carrollton already developed zoning plans for the three expected DART stations. Despite the low density in this county, the municipality expanded to the borders. This is the opportunity for the city of Carrollton to create a more compact and mixed use urban area. The municipality in close contact with DART about the exact location of the stations, and the design of the public and urban space in the surrounding areas of the stations. Also a lot of developers showed interest in the potential urban development areas.
Developers are interested but are not involved in the cooperation between DART and the municipality of Carrollton.

4.7 Future of TOD

The three mentioned examples of TOD don’t give an unambiguous solution for an ideal cooperation. The developments have individualistic characteristics and the different plans don’t seem to be integrated in an early planning stage. Especially when looking at collective investments, there is a strong separation between the actors. There is no mutual dependency.

One can notice strong culture change in Dallas. Mockingbird showed the potentials of a compact mixed use urban development near transit. This project stimulated others to think about the new chances the coming transit might give.

5. Financial base of transport systems

There are two types of investments in a light rail system. Firstly, the construction of the infrastructure must be funded and after that the exploitation. The construction of the infrastructure is funded with bonds[1]. After a sales tax increase is voted for, a part of the future tax income can be put into bonds. These bonds are issued by the special district or by the municipalities. Because these government organisations are financially reliable, these bonds get an AA rating (very reliable bonds, which therefore have a lower interest level). The exploitation of the public transport system is also funded with sales tax. Both for Denver and Dallas, the major part of the exploitation depends on this sales tax. Only 15% (Dallas) and 20% (Denver) of the costs are covered by ticket sales.

5.1 Sales tax

Sales tax is a form of value added tax. The sales tax is levied on products that are sold within the municipalities. Sales tax increases are approved by public voting. Sales tax differs per location. The city of Carrollton, Dallas, has a sales tax of 8.25%, of which 1% is designated for the public transport authority DART [Carrollton, 2002]. Retail sales tax only concerns direct sales to public within the taxing area. Other added values are not taken into account because they cannot be retrieved. The consequence of the tax policy is that all municipalities within the DART zone pay $1 out of every $100 to the public transport system. A negative consequence of this system is that sales tax in surrounding municipalities is 1% lower (the 1% tax zone), while the inhabitants also use the DART system. In this way direct unfair competition emerges. The division of the total sales tax to different authorities gives an interesting insight in the division of tax income (figure 5.1)

Figure 5.1: Sales tax in the TOD planned in Carrollton

Total retail sales		
$81.753.528,00		
City of Carrollton	**Dallas MTA**	**State of Texas**
$817.535,00	$817.535,00	$5.109.596,00
1,00%	1,00%	6,25%

NB Dallas MTA = Dallas Metropolitan Transit Authority

5.2 Property tax

Besides sales tax, tax on property is used to finance infrastructure or developments around infrastructure. The percentage of property tax is higher than Dutch property tax. In the Netherlands, the total amount of tax that is charged on property is about 1%. This percentage is higher in the USA because it is also used to finance special districts like schools. The example of Carrollton is again used to indicate the percentage of property tax for a TOD development, 2.79% in total (figure 5.2). The division of the property tax over different government layers is different from the division of sales tax. A larger amount is collected by the municipalities, compared to the county. In this way, the instrument of property tax might be more interesting than sales tax.

[1] A bond is a debt security, in which the issuer owes the holders a debt and is obliged to repay the principal and interest (the coupon). Bonds are generally issued for a fixed term longer than one year. A bond is just a loan, but in the form of a security, although terminology used is rather different. The issuer is equivalent to the borrower, the bond holder to the lender and the coupon to the interest. Traditionally, the U.S. Treasury uses the word bond only for their issues with a maturity longer than ten years.

Figure 5.2: property tax for TOD development in Carrollton

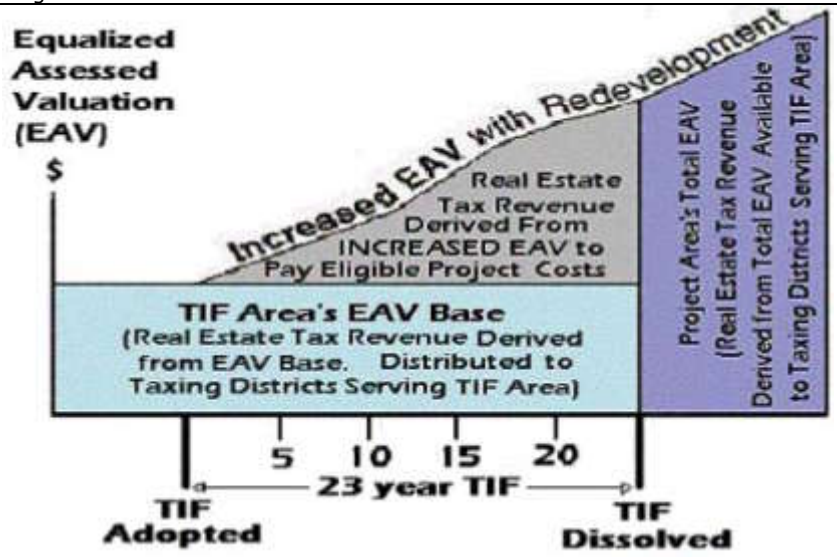
Total property value		
$119.961.721,00		
Carrollton / FB ISD	**City of Carrollton**	**Dallas County**
$2.011.398,00	$718.931,00	$606.607,00
1,68%	0,60%	0,51%

NB: Carrollton / FB ISD =
Carrollton / Farmers Branch Independent School District

5.3 Financial base of TOD

In projects where real estate developments do not generate enough revenues to cover the project costs, tax measures are used to cover the deficits. In order to profit from the effects of newly developed infrastructure and the surrounding urban developments, the instrument of Value Capturing is used. Value Capturing is used to keep added economic value of the project within the project itself. A way to do this is to directly put tax income back into the project. This instrument is called Tax Increment Finance (TIF). When a new project is developed, a special TIF district can be set up that collects the increment in tax revenues. The increment in tax income is used to finance the project up front. This is however maximised to prevent that all projects in a city are TIF based. An overview of how a TIF works is given in figure 5.3. A TIF can also function as a special district. When future tax increase is estimated, bonds can be issued to collect the tax increment up front.

Figure 5.3: TIF diagram



Source: internet

6. Zuidvleugel

This chapter will focus on a Dutch TOD plan, Stedenbaan. The lessons from the USA will be projected on the Dutch situation. Before describing the Stedenbaan concept, the Dutch policy on spatial planning and transport will be introduced. This policy is the framework for the development of the Stedenbaan concept. In chapter two already introduced the Zuidvleugel, this chapter will focus on the Stedenbaan.

6.1 Planning and organization

In The Netherlands, the national spatial planning policy and the national Mobility Policy Document (Nota Mobiliteit) are leading policies for the plans made at the lower governmental levels. A provincial plan should be in line with the national policy for spatial planning and the mobility policy.

The national spatial planning strategy has the following main goal: 'creating space for the different functions that demand it, on the limited surface area that is available in the Netherlands'. More specifically, the government focuses on four general objectives: strengthening the international competitive position of the Netherlands; promoting strong cities and a vibrant, dynamic countryside; securing and developing important national and international spatial values; and ensuring public safety. The national government wants to concentrate urbanization and infrastructure into national urban networks, economic core areas, and major transport axes as much as possible. Concentrating urbanization, infrastructure, and organization in urban networks is the policy strategy the national government wishes to follow. The derivative policy objectives are: developing national urban networks and urban centers, strengthening the economic core areas, and improving accessibility.

The national government has designated 6 national urban networks: Randstad Holland, Brabantstad, Southern Limburg, Twente, Arnhem-Nijmegen and Groningen-Assen. A national urban network is defined as an entity of larger and smaller cities, including the open spaces in between. The cities and centers that compromise these networks, complement and reinforce each others' strengths, so that they have more to offer together then they would do as individual cities.
The first step into the development of the network city Randstad is creating a network city in the southern part of the Randstad, the Zuidvleugel. The cities in the Zuidvleugel should work together to form a network city, the parties in the network city should work together on their spatial plans. For example: to answer the question where to realize the housing development for the next decades. As mentioned in chapter two, the Zuidvleugel has a need for 169.000 houses. In the plans for Stedenbaan at least 25.000 houses will be constructed near rail stations. Constructing houses near rail stations is in line with the planning policy in the Netherlands; using the existing areas on accessible places.

The Nota Mobliteit is the policy document for transport. Similar to the Spatial Planning Policy Document, it focuses on strengthening the economic structure. In 2020, traffic must be moving faster at all the current bottlenecks. It should take a car no longer than 45 minutes to drive 50 km on the motorway in peak hours. That is 50% more than the normal travel time. On urban ring roads, travel time at peak hours should be no more than twice the time it takes outside peak hours. This means a target rate of 10 km in 12 minutes.

Train passengers also expect acceptable and predictable travel times. This is why a norm has been set for 90% of trains which should leave on time. In order to achieve this target, there will be a considerable investment in the existing railway infrastructure. No less than 13.4 billion euro will be spent on maintenance and the replacement of old rails. This will lead to improved punctuality, so that more trains can travel over the available tracks.

Stedenbaan is a concept designed for the province of Zuid Holland, by the so called platform Zuidvleugel. A key figure in this platform is the major of the city Dordrecht. The occasion was the high speed track plan, which has been build between Rotterdam and Amsterdam. This high speed track is a new dedicated track. When the new track is in use, extra capacity will become available on the old track. In the Stedenbaan plan this capacity will be used by a new railway system in the Zuidvleugel. Besides the rail system idea, the province made a plan for developing new stations. In the first plans they wanted to build around 30 new stations, in the most recent plans 5 new stations are planned. Stedenbaan is not a concept for only infrastructure, it is also a concept for urban development. It also plans to promote the use of areas near the stations.

The goals of the plan are:
1. Exploiting the increased capacity of the existing rail track
2. Increase the building density around stations, goals: improve the use of public transport in the Stedenbaan corridor, and to protect the rural area from urban development.

In order to reach the Stedenbaan goals, a coalition has been created in the Zuidvleugel. This coalition is part of the platform Zuidvleugel. Members of this platform are:

- Province Zuid-Holland
- The cities near Dordrecht
- The coalition of municipalities Holland Rijnland
- Stadsgewest Haaglanden
- Community Den Haag
- Coalition of municipalities Midden-Holland
- Coalition of cities around Rotterdam
- community Rotterdam

The national government is not member of this platform, but is related to the platform as a partner.

Platform Zuidvleugel has no direct planning power, on one hand this is a problem for Stedenbaan, on the other hand this also offers a challenge. The problem is that the platform cannot create a development plan for Stedenbaan. Result of this disadvantage is that the Stedenbaan plan is a development vision, and not a blueprint. The local planning is a task for the local government, in harmony with the other partners in the Zuidvleugel.

Private parties are not connected to the Zuidvleugel coalition. For at least one station a coalition of private partners is creating a development plan, most other development plans are designed by public parties. So there are no examples of public private partnerships in the Zuidvleugel.

6.2 Transport system Zuidvleugel

The transport system of Stedenbaan is a train system. The stations are all kilometres apart, and the train has a dedicated track. This train system is already in use, and the only plans that are made will lead to an increase in the number of stations to serve also smaller suburban city centres. Related changes are expected in the safety system of the infrastructure.

Figure: 6.1: Train system Stedenbaan

6.3 Current situation and future plans

In the Zuidvleugel (South-Wing) are several infrastructure projects that will improve the transport possibilities. The most important public transport projects are Stedenbaan, Randstadrail and the Rijn - Gouwelijn.

The use of the existing train system in the province of Zuid-Holland is up for change after high speed and cargo trains start using their own infrastructure in 2007. Local and regional authorities are pushing for the introduction of a new system: the Stedenbaan, a so-called rapid transit system. In many aspects the year 2007 will be significant for the province of Zuid-Holland and its rail network. The Thalys high speed train will start its operation using the new line, straight from Rotterdam Central to Amsterdam Airport, bypassing Delft, The Hague and Leiden. In the same year the Betuweroute will start its operation. Cargo trains from Rotterdam to Germany will bypass Dordrecht. As a consequence, the regular train network will be relieved, enabling the introduction of a new transit-system, called the 'Stedenbaan'.

Stedenbaan is a rapid transit concept similar to the S-Bahn in Germany, the RER in France, or the Suburban Rail in Greece. It will replace the regular local train services on three key rail lines in the Southern Randstad: Leiden-Dordrecht, The Hague-Gouda and Rotterdam-Gouda. The Stedenbaan concept includes a higher frequency service, to start with a frequency of one train every 15 minutes, trains more suitable for suburban use (faster acceleration and braking), new transit stations and most of all, a dedicated spatial planning that concentrates new housing within the system's reach.

The amount of passengers is expected to increase with 20 percent in the year 2007 and an increase of 80 percent in the year 2030.

Figure 6.2: The "master plan" for Stedenbaan

Source: internet

Besides Stedenbaan, other light rail plans in the Zuidvleugel are Randstadrail and the Rijngouwelijn. Randstadrail is a connection between Den Haag and Rotterdam, and between Den Haag and the new town Zoetermeer. The new light rail line Randstadrail is connecting the streetcar network of Den Haag, servicing all other stations that exist between the cities mentioned before. The start of this service is planned next year.

The Rijngouwelijn is a new service with light trains on the existing rail line between Alphen aan de Rijn, Gouda and Leiden. Goal is to improve the service quality and build some stations in new urban areas.

6.4 Finance

In the period after 2010, maintenance will be carried out, in order to end congestion on the motorway network. This will be followed by a significant investment in new road surfaces. On national level ten billion euro is available for maintenance. In addition, construction for approximately 14.5 billion euro will be carried out on new projects, and almost 4.5 billion euro on projects already planned. In total, there will be between 1000 and 1200 kilometers of new road surfaces. Furthermore, the plans for new projects, such as the Hanze Line and the Zuiderzee Line, will remain in place. That also applies for light-rail projects, such as the Rijn-Gouwelijn and Stedenbaan.

At this moment only an indication can be given for the investments needed for the Stedenbaan plan. An investigation study for Stedenbaan (MIT verkenning Stedenbaan), to anticipate on the national transport investment plan, will be published soon. In this investigation the newest Stedenbaan plans are worked out and the global costs of the plan are presented. Beside the investigation study for stedenbaan moment the region works with the national government on the investigation for Stedenbaan and on the Network analysis Zuidvleugel. This product will be the basis for negotiating the national transport investment plan (MIT) for the period until 2020.

6.5 Examples of TOD

There are different types of stations in the Zuidvleugel:
Type 1: stations in city centers with a high density;
Type 2: stations with a mixed development plan;
Type 3: stations with a private development plan.

High density city center stations

A good example is Delft. Delft is an old city in which new development is difficult and needs good planning and design. A great advantage of this station is the fact that a tunnel is planned for the rail tracks. At this moment the tracks are on a great viaduct trough the city. When the tunnel has been build, space will be free and the existing houses will be relieved from the noise.

Figure 6.3: Delft Station

Source: internet

Combined planned development

Figure 6.4: Delft Zuid

Source: internet

Delft Zuid is at the moment a small station. It is situated in an area with some houses and an outdated industrial area. Not far from this station is the campus of the Technical University of Delft. The local government has developed the plan, the website of the plan describes the plan's ambition like this:
"In the immediate vicinity of the Technical University in Delft (TU Delft), a large-scale, spacious Research & Development site has been realized: Technopolis Innovation Park. It is a site that is meant primarily for companies with a high research & development component. The companies that locate in Technopolis will be able to profit optimally from the knowledge at the TU Delft, from a prime economic location and from collaboration with the (local) government. Technopolis will be one of the leading 'science parks' in Europe."The development plan is made by public and private parties.

Private development plan

Figure 6.5: Lombardijen

Source: internet

Near the station Lombardijen in Rotterdam, a private coalition created a development plan. Palijs (Private Alliantie Lombardijen Ijsselmonde) created an integrated plan fore the area, and used the nearby-located hospital and schools to give the development a distinguished signature. All kinds of interesting new concepts are included in the plan, like ICT development and new housing concepts. Problem with this plan is the lack of interaction between the public and private parties.

6.6 Future of TOD

The future of TOD in the Zuidvleugel depends on the development of the network city and the development of the public transport. The national planning policy focuses on the existing built-up areas and on the use of the existing infrastructure. If the public transport improves like the plans for Stedenbaan, the chances for TOD are rising. In the old Stedenbaan plans 30 new stations where projected in the Zuidvleugel. At this moment the 30 new stations are a bridge too far. The costs are too high and the spatial program is not big enough to fill the capacity near al the stations. But if the Zuidvleugel keeps on growing, the 30 stations are possible TOD locations.

And not only in the Stedenbaan plan area are chances for TOD, station areas on other Light rail tracks are potential TOD locations. The development of the Rijngouwelijn depends on TOD development.

7. Concluding remarks

Our research on TOD in the US taught us some interesting aspects of Transit and TOD. In this final chapter some concluding remarks sum up our findings. Based on these some recommendations are given for Dutch TOD projects.

Dutch practice in how to develop a railway station area, how to realize a mixed use program and a pedestrian friendly area is much further developed than we saw in Denver and Dallas. On the other hand, the newly developed public transport system and completely new station areas with a clear focus on ridership and limiting congestion forces American city planners to step up and to create a lively place around public transport. Notes from their point of view teach us other ways to look at a similar planning problem. The context of this planning challenge is different though: the driving force of American TOD is the need to accommodate enormous growth of population and economy, while in The Netherlands TOD projects are commonly redevelopments of existing station areas.

In general, we concluded that TOD in America is more theory than practice. A small number of pioneers, such as ken Hughes, showed that these developments are financially interesting while they also form an important added value to the city. Still, limited examples are available and future plans must show if TOD in general will be developed in the US.

Looking at the way in which the process of developing TODs is organized, we can learn a lot from American practice. Organizations like RTD, but even more DART, are very open towards developers and give them a lot of freedom in generating added value for the transport system, while also making money themselves. In the Netherlands, public and private parties operate at larger distance and with less confidence. Lack of confidence makes that added value melts away in the process. The strict division between responsibilities in transport and urban development in America makes it possible to develop a transit line in a short term. Public transport lines are financed by sales tax and especially the RTD in Denver takes up the challenge to realize its transport lines within budget and within time, completely opposite to the (long) public process which often leads to budget overruns and project delays. What is also interesting is that public transport companies in the US give direct account to the public, whereas the Dutch public transport parties only communicate with the central government.

Another lesson from our practice in Stedenbaan is the way in which tax incomes are used to finance TOD. Especially the use of TIF zones was very new to us and might be interesting for financing TOD’s in Stedenbaan.

Based on our lessons on TOD in the US we recommend the following for the public transport of Stedenbaan:

- Generate a specific concession for Stedenbaan, similar to the RTD in which the transport company gives direct account towards the citizens. This concession should also include obligation on support for TOD development
- Split up the investments in the Public transport system and the TOD. Don’t try to make money out of local urban development, but take it as an extra for generating ridership.
- Use more marketing tools in Stedenbaan like the DART does in Dallas. Use more methods to generate ridership in stead of waiting for your train to be filled. This marketing should also include services in the stations.
- The instrument of sales tax to directly finance public transport should be analyse more as an alternative for Dutch central planning

Based on the US lessons we recommend the following for the TOD developments:

- Split up different urban developments in time and real estate demand. Try to gear the developments towards the economy. By doing so, unnecessary competition can be avoided.
- Give more attention to parking. The US showed the opportunities of added value of parking facilities, while in the Netherlands, the number of parking places is limited, because there is public transport. But, by limiting the number of parking places, ridership is also limited.
- Give room for initiatives from private parties. Let them also profit from these developments and higher ground value. The higher goal is to promote ridership.
- The instrument of tax increment finance should be considered as an extra instrument to directly stimulate development around transit

8. Resources

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Interviews

During our research interviews have been held with the following persons:

Denver:
- Catherine Cox, Denver Planning Department
- Bill Elfenbein, Chairman RTD
- Bill Sirlois & David Beckhouse, FasTracks
- Andy Mutx, T-Rex
- Stacey Turpenoff, TCRS Englewood

Dallas:
- Christofer Barton, Chief Planner van Carrollton
- Cheri Bush, Senior Planner DART
- Jack Wierzenski, Director economic affairs DART
- Elisia Hopkins, North Central Texas Council of Governments
- Kenneth Hughes, Real estate investor KHHughes

Stedenbaan:
- Joost Molenaar, Project secretary Stedenbaan

Appendix

This appendix contains a handout regarding a presentation which was presented to a scientific commission at February 3rd, 2006 and will also be used in a forthcoming seminar and exposition.

TOD&D

Transit Oriented Development in Denver, Dallas en de Zuidvleugel

Eindpresentatie, Utrecht, 3 februari 2006

Inhoud

- Kader
- Denver en Dallas
- Zuidvleugel
- Conclusies en aanbevelingen
- Discussie

Aanleiding

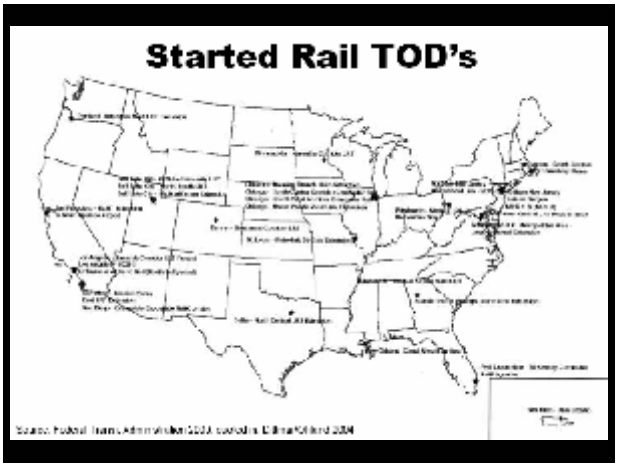
- USA: TOD populair concept bij Smart Growth
- NL: Potentie van OV-knopen nog weinig benut door ontbreken samenwerking publieke en private partijen
- Welke cruciale variabelen kunnen we vinden voor succesvolle TOD binnen Stedenbaan?

Methodologie

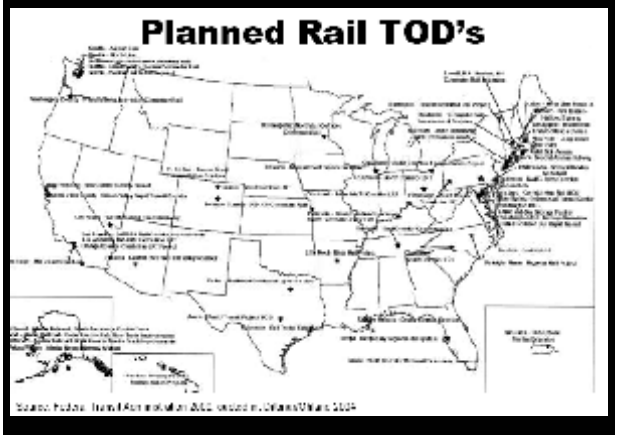
- Literatuurstudie en colleges
- Veldonderzoek naar TOD in Denver en Dallas
- Interviews met overheden, vervoerders en private partijen
- Specifieke analyse van onderzoeksthema's
- Onderzoek en interviews Zuidvleugel/Stedenbaan
- Vergelijkingsanalyse USA en NL

Wat is TOD?

- TOD heeft de volgende elementen:
  - Nabij OV knoop (Oriented dan wel Adjacent)
  - Multimodaal (OV én auto)
  - Intensivering
  - Functiemenging
  - Op basis van publieke én private investeringen
  - Hoogwaardige voetgangersinrichting



Planned Rail TOD's



Rol actoren

- Urban regime theory, identificeren rol en belangen van actoren:
  - Overheid: maatschappelijk nut
  - Vervoerder: rendement in exploitatie
  - Ontwikkelaar: benutten marktpotenties

Planningscontext USA

- Federaal en staat:
  - Nauwelijks planning, wel (specifieke) regels
- Metropolitaan:
  - komt eigenlijk niet voor in VS, elkaar informeren maar geen planningsmacht
- Municipality:
  - Zoning maps op basis van comprehensive plan
  - Zoning map is basis voor specifieke regels
  - Invulling met belastingen en private investeerders
- Special District:
  - Regionaal verband voor één functie

Denver & Dallas

Denver

- Sterk groeiende regio ruim 2,3 mln. inwoners
- Congestie aanleiding voor OV ontwikkeling
- Verstedelijkingsopgave in Blueprint Denver
  - Verdichting
  - TOD
- Ingevuld met infra-programma FasTracks

FasTracks

OV in Denver

- RTD bouwt en exploiteert light rail
- RTD is een Special district
- Financiering aanleg met bonds
- Exploitatie via sales tax (80%) en fares (20%)

TOD in Denver

- RTD faciliteert TOD mits niet verstorend
- RTD geen financiële positie in development
- Lokale communities organiseren development
  - Blueprint van lijnen in FasTracks
  - Ruimtelijke sturing met zoning maps
- Private partijen haken langzaam aan

- *3 typen TOD in Denver*

Lincoln Street Station

Type 1:

TOParking

Union Station

Type 2:

TOD Publiek

Gates

Type 3:

TOD Privaat

Denver – sterk/zwak

Sterk:

- Slagvaardige ontwikkeling van de infrastructuur
- Succesvol ridership (capaciteitsprobleem)

Zwak:

- Ruimtelijk en vervoer zijn gesplitste organisaties
- Meer TOP dan TOD
- Nauwelijks ruimtelijke ontwikkeling
- Omgeving en haltes niet op elkaar afgestemd

Dallas

- Metroplex Dallas/Fort Worth 5,7 mln. inwoners
- Luchtkwaliteit belangrijk issue
- Dallas heeft sterke scheiding arm/rijk
- Ideeën voor ambitieuze uitbreiding van OV

DART

OV in Dallas

- DART verantwoordelijk voor het OV
- Bestuur DART samengesteld uit municipalities
- DART is geen special district
- Financiering aanleg met bonds
- Exploitatie via sales tax (85%) en fares (15%)
- Dart zowel social als commercial interest
- Marketing via malls, scholen en bedrijven

Marketing

TOD in Dallas

- Gemeenten spelen in op aanleg infrastructuur
- DART doet aan grondpolitiek
- Succes Mockingbird is het referentiebeeld
- Ontwikkelaars benaderen gemeenten

- *3 typen TOD in Dallas*

Mockingbird Station

Type 1:

TOD Privaat

Plano Station

Type 2:

TOD Publiek

Carrollton

Type 3:

TOD Publiek – Publiek, mogelijk ook Privaat

Dallas – sterk/zwak

Sterk:

- Kansen vanuit systeem worden ruimtelijk benut
- Coalities / regimes worden gezocht
- Grondpolitiek DART biedt financiële mogelijkheden
- Nieuwe allianties worden gezocht via marketing

Zwak:

- Coalities bestaan nog niet
- Imago van systeem is niet sterk / sociaal vervoer

Zuidvleugel

Zuidvleugel

- Meerkernig gebied met 3,5 mln. inwoners
- Dubbeldoelstelling Stedenbaan:
  - Bereikbaarheid verbeteren in de Zuidvleugel
  - Ruggengraat voor de bouw van nieuwe centra voor wonen en werken, tot een stedelijke netwerk
- Stedenbaan is een ambtelijk programma binnen de Zuidvleugel, zonder direct dwingende kracht

Stedenbaan

OV in Stedenbaan

- Vrijkomende capaciteit benutten
- Hoge frequentie (6x per uur)
- Niet één partij voor beheer en exploitatie
- Investeringen in aanpassingen, systeem ligt er

TOD in Stedenbaan

- Herstructurering bestaand stedelijk gebied
- Ten dele de woningbouwbehoefte vervullen:
  - 25.000 v/d 165.000 woningen
- Landschap openhouden
- Ruimtelijke kwaliteit vergroten
- Geen direct contact met private actoren

- *3 typen TOD in Stedenbaan*

Delft Centraal

Type 1:

TOD Stedelijk Centrum

Delft Zuid

Type 2:

TOD Publiek initiatief

Rotterdam Lombardijen

Type 3: TOD Privaat initiatief

(**PALIJS: P**rivate **A**lliantie **L**ombardijen **IJ**sselmonde)

Stedenbaan – sterk/zwak

Sterk:

- Inspelen op infraruimte die ontstaat door HSL
- Stedenbaan is een programma en géén project, hierdoor katalysator voor ruimtelijke ontwikkelingen

Zwak:

- Publieke en private partijen werken gescheiden
- Ruimte en vervoer niet goed afgestemd
- Er wordt niet slagvaardig geopereerd

USA vs. NL

Gebied		Denver	Dallas	Zuidvleugel
Systeem		FasTracks	DART	Stedenbaan
Locatie		TOP	TOP>TOD	TOD no P
Marketing		P&R	Complete mix	'NS'
Proces	Systeem	Publiek direct gekozen	Publiek getrapt gekozen	Publiek en privaat (NS)
	Locatie	Geen belang TOD	Belang TOD, grondhandel	Belang en weinig grond
	Regime	Privaat	PPS	Geen
Financiën	Systeem	Bonds uit taxes	Bonds uit taxes	NS en overheid
	TOD	TIF en Tax	Grond, TIF & Tax	Grond

Conclusies

- TOD in Amerika is meer theorie dan praktijk
- NL kan leren van USA voor wat betreft proces en houding ten opzichte van privaten
- USA is slagvaardiger bij de ontwikkeling van transit door scheiden verantwoordelijkheden
- Vervoersmaatschappij directe verantwoording naar burger

Aanbevelingen OV

- Specifieke concessie voor Stedenbaan, inclusief verplichtingen ten aanzien van medewerking bij TOD
- Scheiden van vervoersysteem en locatieontwikkeling
- Verder trekken van de transit marketing

Aanbevelingen TOD

- Stedelijke ontwikkelingen per locatie en afhankelijk van economische vraag
- NL meer focus op kansen (P&R)
- NL leren van financieringssystemen USA
- Stationsgebiedsontwikkeling in PPS
- Open staan voor private initiatieven