OUR MOBILE FUTURE: DELIVERING CITY VALUE & PROSPERITY THROUGH MOBILITY ORIENTED DEVELOPMENTS
Cities all over the world have a common concern - the mass migration of people to urban centers. More than half of the world’s population now live in urban areas and this trend is set to accelerate, with 75 million more people moving every year. By 2050, 70% of us will live in cities.

This vast, rapid urbanization is having a significant impact on how cities function. Some are positive. We can look forward to higher property values, greater volumes of quality talent, sustainability innovation and the development of urban areas that are great places to live and work. But the scale of the change presents significant challenges to city planners, designers and developers. If urban growth is not properly managed, cities will be incapable of supporting their citizens over the long term.

Support means providing a good quality of life and access to a healthy, vibrant, safe and sustainable environment. To create this supportive framework, the priority for city leaders must be to develop multi-functional neighbourhoods with an optimized population density. The population then needs the ability to move around quickly and easily with a choice of how to do so. An efficient transportation system with multiple modes of transport is therefore at the heart of the ultimate city of the future.

Yet even today our transportation infrastructure is failing. Developed cities have infrastructure in place but it is often aging and creaking under the pressure of current usage. Cities in emerging markets have little established infrastructure in place. Both require solutions that can accommodate not just large numbers of people, but also future growth and technological advancements.

It is important to recognize that capacity is just one half of the story. Transit-hubs are no longer simply a place where the traveller arrives or departs. The facilities in and around it increasingly make the area a destination in itself, and can provide an appealing ripple effect on the prosperity of, and investment in, the surrounding area. Therefore new transit-hubs cannot be developed in isolation and must be integral to the area they serve.

The scale of the current – and impending future – challenges require fast action. This is why Arcadis has been focussing on developing a transit model that can help our clients plan for the future and access the unrealized potential in their existing transport developments, not only economically but socially and environmentally too.

Our experience has shown us both best practice and missed opportunities in transit-hub development around the world. By using this insight we have developed a next level approach to transit-related developments called Mobility Oriented Developments (MODe).

The MODe approach helps to identify the key values of a transit-hub and by doing so can help unlock its overall potential.

Using the MODe approach we have benchmarked a selection of the world’s leading transit-related developments. By assessing four main indicators we have measured the quality of key elements that bring value to such developments:

1. Transit-hub accessibility and comfort
2. Urban environment
3. Social placemaking
4. Economic development.

The resulting rankings of these transit-hubs is our Mobility Oriented Development Index (MOLIDex). This report outlines our initial MOLIDex results and highlights why taking the MODe approach can unlock the potential of development programs yet to come, help transform how cities tackle transportation infrastructure and become integral to successful urbanization – laying the foundations for the mega cities of the future.

Bas Bollinger, Global Rail & Urban Transport Leader at Arcadis
“MODe enables our clients to provide their city with next generation transportation, economic growth and social prosperity. It is how the best possible outcomes can be delivered for the wellbeing of people. It helps to maximize social and economic benefits and the return on investment in urban mobility.”

To see a breakdown of the MODex results for the top 21 transit-hubs, go to page 12.

FIGURE 1: OVERALL MODEX SCORES

To see a breakdown of the MODex results for the top 21 transit-hubs, go to page 12.
MODe serves both public and private stakeholders looking into (re)developing a transit-hub, by unlocking and leveraging its potential. By attracting additional private investments, a MODe can maximize the return on investment of both the transit-hub and its surrounding area. It can also optimize and accelerate social and economic development.

Our approach gives a better understanding of how multi-modal urban environments can work together and helps us understand what characterizes a multi-modal urban environment, how the aspects of the environment relate and when the area is in balance. A MODe based approach shifts the emphasis from single-minded rail mobility to providing citizens with a full range of mobility options as they live, work, play and learn in high quality urban environments, from walking, cycling and bus to Bus Rapid Transit (BRT), Light Rapid Transit (LRT), metro and aviation. Where transit-related developments are traditionally designed to:

- induce ridership
- reduce driving
- increase walking and biking
- add convenience
- increase density
- and overall encourage transit use.

MODe takes it a step further by looking to:

- sustain that ridership
- discourage driving
- make walking and biking safe
- and support convenience.

By taking this approach, developers have an asset that works well within the overall area and is primed for future changes. Furthermore, public authorities can better understand how to realize financial potential from the overall development.

If you can connect people’s lives by designing a place that provides an efficient commute and easy access to places to relax, shop, eat and live, there is no need to use a car. I myself am able to visit my gym, buy gifts and groceries, dine out and commute to work all from the one area around my local station in Hong Kong, so why drive? Whilst ensuring that the station is commercial it has the added benefits of helping the environment and making the development more sustainable.”

Diane Legge Kemp, Vice President CallisonRTKL

“The success of a MODe is mostly determined by how well you plan the complete program upfront, in an integrated way. Success will be judged by how well the development is managed – with all key stakeholders involved – and the opportunities it creates for others.”

Bas Bollinger, Global Rail & Urban Transport Leader at Arcadis
INTRODUCING THE MODex BENCHMARK

Our MODex defines the overall value of integrated development at and around transit-hubs. It is built using indicators that measure the quality of key elements that bring value to a development. In this way, transit-hubs can be compared before and after development, to increase understanding of how high quality multi-modal urban environments can be created, and the main factors that optimize them for wider social benefit.
MODex addresses four key values, each built from a number of specific indicators, which have their own set of variables to measure the score of the development and benchmark it against others:

1. Transit-hub: accessibility and comfort
Describing the quality of the transit-hub in relation to the connections, variety and quantity of transit modalities, proximity to other important locations and facilities, and providing comfort to the traveller.

2. Urban environment
Informs us about the urban form of the environment within the transit zone and the degree to which sustainability has been taken into account. Indicators such as density and whether a development is mixed-use determine urban form.

3. Social placemaking
Defined by indicators that contribute to a vibrant, cohesive and safe multi-modal urban environment, such as the quality of the public space and the variety of public facilities within the transit zone.

4. Economic development
Defined by the relative prosperity, economic activity and property value of the urban environment within the transit zone.

Using these values we assessed a selection of transit-related developments around the world, of which we show the performance of 21 leading developments.

MODex reveals the potential of existing developments or plans to open up opportunities for the future development of urban centers. It provides:

- the ability to investigate how far investment in a transit-hub contributes to the success and added value of the multi-modal urban environment, including higher property values, pleasant public spaces and increased revenue for local businesses
- the ability to find out where there is room for improvement
- quantification of qualitative measures
- a global comparison of performance of multi-modal urban environments on different aspects.
Our findings show that New York’s Grand Central Station development ranks highest overall, scoring in the top five in all categories and topping the rankings for transit-hub connectivity and economic development. Grand Central is fully embedded in the surrounding high density environment and adds to it. More importantly Grand Central itself and the area it sits in are socially appealing attracting many types of visitor whether commuters or tourists and contribute economically to the city. All of this contributes to its high score and the result is that it is one of the most high performing transit-hubs in the world. Although Grand Central tops the ranking, our MODe approach highlights that there is further value to be unlocked from the hub to maximize its overall value. While Grand Central’s quality of public space, prosperity and revenue all score well, potential remains untapped in sustainability, relative property value and transit quality, if it is to achieve perfection.

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Transit-hub: accessibility and comfort

Grand Central again scores strongly in the transit-hub connectivity category, with consistently high results in hub facilities and transit quality. Hong Kong’s station also performs well in second position; the city is known for not only providing dense public transportation, but also developing the urban tissue around the stations for mixed-use development. Both stations are well connected and offer a lot of transfer possibilities in a highly concentrated area, which contribute to their scores.

Urban Environment:

Sydney’s Chatswood Station tops the urban environment ranking due to its high density surrounding built environment. This density created predominantly from the number of tall buildings in the vicinity, make it a vibrant and engaging social area. Added to this, Sydney Central assists the vibrancy of the area with just the right balance of mixed-use facilities available to citizens. Overall London King’s Cross St Pancras came second in the index due to good performance on sustainability measures. While LA Union scores lowest in urban environment, this will likely improve as the new station is being designed and the area will transform over the coming years. In general, climate resilience and ambitions in sustainability cannot always be explicitly recognized. These can be seen as one of the key challenges for the near future.
Social Placemaking:
Dallas Area Rapid Transit (DART) in Texas, USA leads the social placemaking rankings, with equally impressive scores for both quality of public space and the public facilities available. Meanwhile Brussels Midi shows a significant disparity in its scores. Although it scores relatively positively for its available amenities for those using the hub, its public spaces score poorly making it socially an unappealing area at certain times of the day. In Dubai’s Union Station the situation is reversed, it has a very high quality of public space available but it lacks the public facilities to make it as attractive as it could be.

Economic Development:
The economic development category sees New York’s Grand Central leading the rankings again, with good scores across prosperity and revenue but a lower score for higher property value around the station, relative to the rest of the city. Madrid’s Principe Pio experiences a striking difference in its scores across the three categories of the economic development indicator, with prosperity and property value performing far better than revenue.

The MODex highlights that a mobility-oriented policy pays off. Like in many places in the world, for instance in the Netherlands and North America, governments have proactive policies to invest strongly in and around transit-hubs. There are a notable number of developments from these countries that score highly in the MODex as a result. In the Netherlands this is also influenced by the fact that it is a compact country with a dense public transport network.

If you would like to know how your transit-hub performs in our MODex benchmark, get in touch.
They must incorporate a wider area with more leisure, housing and workplace options – making it easier for citizens to connect all parts of their lives. They need to create neighbourhoods that are destinations in themselves and where the address carries prestige. Urban environments offering a high quality of life also have the added value of attracting new people and businesses. Investment in easily accessible neighbourhoods is attractive, especially in those that become popular in a short amount of time. Leveraging the value of such a development is a very complex process with a lot of stakeholders, who all have different interests and dynamics. These include city planners, developers, retailers, investors, transit owner-operators and community groups. It may appear easier for each party to only concern themselves with the part of the development that they have direct influence over, and if further developments follow then all well and good. But this limits the overall impact of a hub development and makes it hard to fully integrate it into the wider surrounding area. In these cases, development regularly happens around a transit-hub as a consequence of it, rather than in tandem with it. The result is really transit-served developments, rather than transit-oriented developments. This disparate activity leads to developments not realizing their design potential, not efficiently connecting all parts of the development, and not achieving the best value – as passengers continue to merely pass through the hub and not see it as a destination. For example, to attract finance and generate an early return, many transit-oriented masterplans predominantly focus on high-end residential elements and not enough on other components that also add wider social, economic and environmental value to the development. Or, by focusing on road and rail connection plans, the opportunity is missed to encourage use of other, more sustainable options.

The integrated approach to the development of a train station and its surrounding area was first established in the USA at the start of the 21st century, when three major trends converged:

1. A resurgence of investment in America’s downtown areas.
2. Growth and maturity of the country’s suburbs.
3. A renewed interest in transit use and investment.

This combination illuminated the need for a new form of development. One that incorporated walkable, mixed-use areas around transit stops and offered more than one mode of transportation. This development provided residents with an improved quality of life, reduced transportation costs and reduced environmental impact, while giving the area stable mixed income neighbourhoods and real alternatives to traffic congestion. This was a powerful proposition and one that took off – not just in the USA but around the world. Attractive transit-hubs alone can flourish, be it because they are well designed to operate efficiently, or have become recognized as an iconic structure in the area. However, taking an integrated approach to developing the area around the hub, as well as the hub itself, produces higher value and extra benefits.

The accelerating challenges faced by modern cities calls for a next-level approach to transit-hub development. To meet the expectations of modern urbanites and contribute to a better quality of life, these hubs must be genuinely mixed mobility-oriented, offering a range of transit modes and encouraging use of sustainable options.

**WHY TRANSIT-RELATED DEVELOPMENT NEEDS TO EVOLVE**

So why is a new approach necessary and what can MODe bring to the world of urban developments? As more and more people flock to cities, we will ask transit-hubs to deliver increasingly high value – economically, environmentally and socially. To meet these demands early planning, collaboration and a truly holistic outlook – not just for the obvious economic and environmental benefits, but also socially for public health, inclusion and quality of life – needs to be a priority.

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The accelerating challenges faced by modern cities calls for a next-level approach to transit-hub development. To meet the expectations of modern urbanites and contribute to a better quality of life, these hubs must be genuinely mixed mobility-oriented, offering a range of transit modes and encouraging use of sustainable options.
A well-balanced MODe has the power to transform how we think about existing transport infrastructure and raise our aspirations for what transit-hubs can achieve commercially, environmentally and socially. Using this holistic approach, we can truly begin to see the full value of our transport assets and how we can leverage them – not just for better returns, but better lives and better futures.

Integrated planning can only be achieved by full involvement of all key stakeholders. It seems obvious, but in practice it is not. The interests of stakeholders can be very different. But what they have in common is reaping the benefits of a successfully developed plan. As part of this integrated planning, a shared vision, transparency and a clear strategy are crucial for aligning stakeholders.

Time is also a key factor. Time to invest in aligning the initial planning stages and think them through in all aspects. In the Amsterdam Zuid financial district redevelopment, this approach has led to a strong improvement of the business case for investment. In light of variable time pressures coupled with complex and often high-density sites, a clear phased plan is needed to realize incremental steps towards the larger vision for all stakeholders. The transition period itself is one of the key elements of a successful plan.

2. Developers and investors need a clear framework

There are multiple examples proving the upside of a clear framework for bringing plans to life. The transit agency or station owner plays an important role in setting these parameters, but the local authorities are also crucial. They provide the glue between the public space and public transport pieces of the puzzle, which contributes hugely to achieving the envisaged quality.

Getting this relationship right leads to predictability and certainty for developers and investors, which they need to make the high investments as part of integrated planning. In cases where this is not in place, the investors back off.

3. Hubs with international and high-speed connections are more attractive for investors

International high-speed and long-distance connections to other cities or international airports contribute to a higher level of facilities, a higher standard of the environment and through that more commercial activities and revenues. When used well, this can be a very powerful component of leveraging the value of the mobility hub.

CONCLUSION: A LA MODe

MODe: FIVE KEY OPPORTUNITIES:

1. Integrated planning leads to better outcomes

When not only the main rail functions but also the other connecting transport options are included in integrated planning, it is possible to create a more logical and compact transit-hub. This brings a higher level of comfort to the traveler – even in shorter travel times.

At the new Rotterdam Central and King’s Cross St Pancras, all urban and regional connections were brought closer, which makes transfers very attractive. In Rotterdam this was combined with a high quality pedestrian route to the centre.

In contrast, the out-dated separation of taxi, bus, and private vehicles at hubs in China has resulted in unsafe and unattractive environments and missed opportunities for vibrant mixed-use development – all of which can easily be corrected with integrated transit and urban planning.
4. Transit-hub development often is the catalyst for wider urban investment

In many cases, station (re)development is the catalyst for other urban development projects. Often increasing needs for transit capacity and facilities or – on the flip side – aging infrastructure leads to new aspirations and possibilities. When this happens, the additional value for the surrounding city starts to become visible and the urban development processes can start.

A good example is the area around London King’s Cross St Pancras. The impact on the city of the redevelopment of the stations has been enormous. This trend could yield new opportunities at railway stations in rapidly urbanizing markets such as China in the future – once the focus moves from initial system build to improving existing functionality and the performance of station area real estate.

5. Down with commuting, up with more sustainable outcomes

Mixed-use ‘live, work, play and learn’ hubs can reduce strain on urban systems, because more people can live and work in one place without the need to commute. A truly mixed-use development around a station will give people the option to work near home and use transit to connect other parts of their lives.

Communities and countries without public transport often need to see and touch the benefits before choosing to drive less. As transit hubs become mixed-use, high density, high interest destinations in themselves, the choice becomes easier. Added to lower household expenditures of time and money on car ownership and the benefits become hard to ignore. Stations like Grand Central in New York have once again resumed their place in the civic realm of cities as an important place for connecting people, commerce and culture.

“Integrated developments can only be realized by full involvement of all key stakeholders. Developers and PPPs need predictability and certainty to make an investment. Knowing what works and what doesn’t only comes from the trial and error of having been there before. Through years of experience in bringing parties together to optimize results, we know what can be achieved.”

Bas Bollinger, Global Rail & Urban Transport Leader at Arcadis
CASE STUDIES

DALLAS AREA RAPID TRANSIT (DART)

The DART authority connects 13 cities in Texas, North America – operating transport in Dallas and 12 of its suburbs. David Leininger, Executive Vice President & Chief Financial Officer, explains their multimodal approach and how they put the community at the center of this exciting development:

“With DART we managed to integrate a multimodal system which includes 90 miles of light rail, 130 bus routes, 34 miles of commuter rail, 84 miles of HOV lanes, paratransit, rideshare and ITS in one project. By planning all of these interchanges together we have been able to deliver a much better and result for users. Being able to transit quickly and easily between train and bus means that travel becomes an enjoyable experience, not one that the traveller dreads.

“Our project also took account of individual local communities when constructing its stations. We deliberately did not go for a ‘one size fits all’ station. Each and every one of our stations was designed to complement the community it serves and the area around it. It was important to us to fit into what already existed and enhance that, not detract from it.

“DART has invested into the locations that we predict will generate most value. The local area and public authorities benefit from changes to the area and find ways to earn further public funds from the increased value. We also encouraged thinking outside of the box, as championing partnership between stakeholders is essential to any such development. Our success was due to working in conjunction with other stakeholders to realize the entire development.

We have developed an evaluation methodology to assist cities, developers and landowners in understanding the potential for any given location and this methodology is generally applicable to most urban markets.

“This methodology also allows us to prioritize developments and find the best ways to invest around that station location. In the USA, large corporates are looking to align their name with railway lines and stations in the same way that they do with stadiums or other large venues. This is a whole new way of raising revenue on a station, but it also encourages people to start referring to the area with a familiar name, subsequently giving kudos because such a brand wants to be associated with that area.”

“Development near to a transit-hub is not the same as development oriented to the transit-hub. The two should not be confused. Planning the total development and leveraging the revenue that the transit brings ensures that it positively impacts on and becomes part of the whole community.”

David Leininger, DART

HIGH SPEED 1 (HS1)

St Pancras International Station in London, UK, is home to HS1, Britain’s only high speed rail line and its rail connection to the Continent. It is also home to three major domestic train services. The general public have voted St Pancras International the UK’s favourite station every year since it reopened in 2007. Nicola Shaw, CEO of HS1 Ltd, explains how they have created an award-winning and transformational transport hub:

“St Pancras was built in 1863 to serve the transport needs of a different age; its redevelopment required a radical rethink for the needs of travellers, workers and residents now. The redesign extended the number of platforms and the range of connections available, opened up the unused area beneath the station to create a light and airy retail and circulation space, and transformed the iconic Grade I listed building – including the restoration of the 5 star hotel at the Front entrance. The result is an aesthetically beautiful and efficiently functioning station which sets a new standard for rail destinations.

“The station redevelopment has been an important factor in the rapid regeneration of the wider St Pancras and King’s Cross area. The area is now a high quality environment where locals are proud to live and work and in which multiple international businesses have relocated, including Google’s new European Headquarters. It is also now the location for London’s leading art University – the University of the Arts London.

“As an important transport hub, the station connects trains, buses and metro, but also provides public space where art and music has flourished. This is one of the reasons the Academy of Urbanism gave St Pancras its ‘Great Place’ award for 2015. Many of the station’s visitors say that it is a destination in itself; in fact, one in four of our visitors come to enjoy all that the station has to offer, not just to travel. Retail is an important part of this, combining well-known brands with boutique and luxury retailers. We are always looking for ways to improve our offer – in early 2014 we were the first UK train station to launch our own consumer app, allowing our customers to capitalise on new shopping trends. We have retail spending levels in line with medium sized European airports and those in the vicinity of the station have also benefited. We have seen retail space within a quarter of a mile of the station experience a 13.4% return.

“Traveler experience is key to our strategy. From making sure our trains run on time to ensuring that helpful staff are always on hand, from providing clear signage and helpful staff are always on hand, from providing clear signage and free toilets to staging an extensive program of art and music activity, we make a conscious effort to ensure that we remain best in class in everything we do.”

“St Pancras International sets new standards. As home to HS1, the UK’s only high speed line and international rail connection, St Pancras is a unique transport hub with a fresh and distinct personality. It is proof that a coherent vision of both connectivity and public space can cultivate growth and prosperity.”

Nicola Shaw, HS1
The index originates from Arcadis’ original approach to transit-related developments known as Mobility Oriented Developments (MODe).

The MODex is a result of global collaboration between Arcadis and CallisonRTKL (a Design Consultancy of Arcadis). We have worked closely together in order to develop and apply the benchmark.

Despite the fact that most indicators of the MODex are based on theoretical concepts and scientific literature, the benchmark itself is not scientific. The MODex contains both quantitative and qualitative measures. Qualitative measures are quantified where possible by adapting proven theoretical frameworks. In cases where data was not available, we made use of the expert judgement of our specialists and consultants in urban and transportation planning, economy and sustainability. For the quantitative parameters, which mainly included socio-economic and real estate data, we made use of the available sets of data.

In contrast to other global benchmarks, where data is mainly conducted on country or city level, the MODex demands data on district and neighbourhood level or even lower. Quantitative data at this level is not always available in every country, and often when it is the data is subject to its own local guidelines and regulations.

Sources

We have conducted the following types of data sources, not limited to:

- International databases (GDP, average income & property prices);
- Statistical year books of cities and municipalities;
- Transportation schemes;
- Google Maps;
- Site observation.

Depending on the indicator, the maximum score is based on two different aspects:

- Maximum points that can be achieved with a normative checklist;
- Calibration of the maximum score based on the case with the highest performance.

Contact

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