

Spotlight

The view of aviation from airport CEOs

Aviation

UX: the next big thing for transit?

Rail forecasting

The importance of short-term forecasting for rail

North American

Edition

Issue 16

December 2016

The Review

Technology is reshaping the transportation experience.

Welcome

Welcome to the latest edition of the Steer Davies Gleave North America *Review*.

In this issue we explore how transportation is changing to reflect the needs of the communities in which we live and serve. Transit is becoming more focused on mobility through integrated applications of technology, encouraging people to take a more active approach to their journeys.

Also featured in this issue are articles on the future of aviation in North America, the importance of short-term forecasting in passenger rail, and how to deliver new infrastructure projects without affecting customer experience.

Along with thought-pieces and project insights, we bring you two compelling interviews with the Municipal Commissioner of Pune in India, and the Managing Director of Transport for West Midlands in the UK, offering a global look at their current transportation challenges and opportunities.

Finally, I would like to personally invite you to a brand new series of seminars running in Los Angeles from January 2017 called Movement Matters (pg.10). These seminars explore how transportation shapes and influences cities, drawing on our forty years of global experience.



Keith Whalen
Regional Director

New faces



Harold Sich
Associate

Harold joins our Toronto office, bringing 30 years' of experience in planning, environmental assessment, design and implementation of transportation infrastructure. Harold's focus in recent years has been on integrated land use, urban design and infrastructure solutions.



Andrea Pavia
Principal Consultant

Andrea joins our Los Angeles office from The Jerde Partnership. Andrea is an urban designer and planner with experience in designing and developing master plans for Transit Oriented Development, mixed-use, office, campus, and residential complexes in the US and China.



Dustin Rhue
Associate

Dustin joins our Los Angeles office from the Massachusetts Department of Transportation. Dustin is a sustainable transportation planner and will focus on further developing smart strategies and planning techniques for our behavior change offer in California.



Destree Lazo Bascos
Principal Consultant

Destree joins our San Diego office as manager of the 'Shift San Diego' TDM program, working closely with large local employers. Destree has over 12 years' experience in marketing and communications for behavior change campaigns, construction outreach and community engagement.

Consultants

Myriam Langlois joins our Toronto office; Valerie Jugulion joins our San Diego office; Kate Bridges joins our Los Angeles office, and Alex Malerba and Tessa Swanson join our Boston office.

Looking to move?

If you are considering your future and are looking for somewhere to make a real difference, Steer Davies Gleave has much to offer. The firm continues to grow in North America, Latin America and Europe. To find out about our current opportunities, visit our website: <http://na.steerdaviesgleave.com/careers-na>

New directors



Keith Whalen
Regional Director

Keith Whalen joins Steer Davies Gleave to lead our business development and operations in North America.

Keith brings 27 years of experience having held several senior leadership positions for top transportation management firms. Most recently, he was Senior Vice President, Operations and Business Development at First Transit where he was instrumental in bringing First to the US passenger rail market. Prior to this role, Keith served as President of Operations for MV Transportation. In this role he was responsible for 74 locations throughout the eastern part of the United States with an annual budget of \$350 million.



Stephen Van Beek
Director

Stephen Van Beek joins Steer Davies Gleave to lead the development of a North American aviation practice

from our new office in Washington DC. Stephen has represented all US and Canadian commercial service airports and has provided advisory services to over 50 US airports, including many of the nation's largest. At Steer Davies Gleave, Stephen will provide business and strategic planning as well as policy/regulatory services. He will initially focus on delivering advisory services to airports and commercial aviation companies, working with clients to deliver system-level solutions in the area of surface transportation and intermodal access.

Project updates

New wayfinding system for Toronto's PATH

Toronto's PATH is the world's largest underground retail complex. It connects seamlessly with public transit, and welcomes more than 200,000 business-day commuters and thousands of additional visitors.

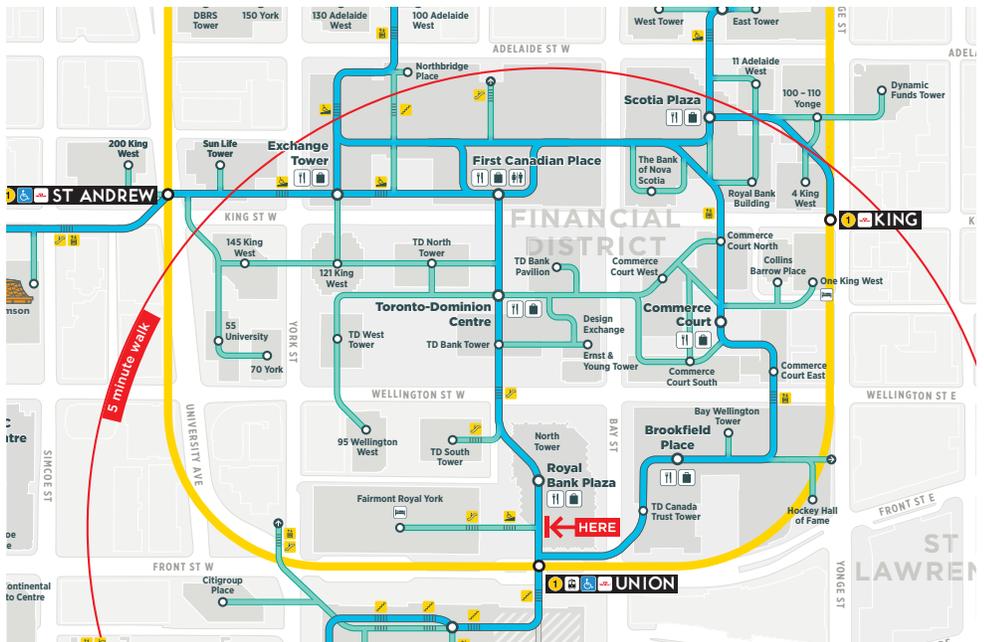
Expansion of the PATH since 2010 has resulted in an additional 700,000 square feet of retail space and generated \$300 million in sales revenue. However, it is not known for being easy to navigate, and a recent independent study quantified that for every 1% increase in regular PATH users, annual sales revenue would increase by \$17 million.

Steer Davies Gleave was commissioned by the Toronto Financial District BIA to develop a functional specification and design concept for an improved wayfinding system.

The PATH system will be built around connector routes – continuous paths that allow users to navigate the entirety of the network – joining transportation hubs such as Union Station to major destinations such as Yonge-Dundas Square, together with branch routes that indicate retail and other amenities located off the connectors. Steer Davies Gleave also designed the above ground TO360 pedestrian wayfinding system, with new maps and signage focusing on guiding people to major landmarks and neighborhoods.

Next steps will include a #PATH360 pilot project in a major downtown property to test the newly designed wayfinding tools.

Full implementation of the new mapping and wayfinding system throughout the PATH is currently envisioned for the beginning of 2018.



Improving paratransit in Canada

Steer Davies Gleave is working with Metrolinx to support its efforts in facilitating increased cooperation amongst specialized paratransit providers. Currently, these transit services are planned and operated by seven different providers in separate geographic areas within the Greater Toronto and Hamilton Area.

While there are no plans for amalgamating them, Metrolinx wishes to identify potential solutions to address the challenges for people traveling between jurisdictions.

We are supporting Metrolinx in researching operational models to advance its goal in developing a coordinated cross-boundary bookings approach.

We are also developing an incentive program for encouraging specialized transit passengers to use GO Transit's services and producing communications material to inform and encourage a greater number of cross-border trips.



The urban boulevard

Once part of the famous Route 66, Colorado Boulevard is a major street in the Los Angeles region that has been greatly influenced by the automobile. However, the vocational use of this street is now shifting from a suburban car-driven model to a more urban, pedestrian-oriented one as cities densify, the mix of uses intensifies, and the craving for sociability rises.

By **Andrea Pavia**

Steer Davies Gleave was recently invited to provide comments on a proposed complete streets initiative for a segment of Colorado Boulevard that runs through Old Town Pasadena. We contributed to the discussion of how to enable this vocational shift by using complete streets and tactical urbanism techniques. More broadly, the conversation exposed the pros and cons of allowing this shift to happen versus preserving the status quo.

Colorado Boulevard exemplifies what boulevards have come to evoke in the US and particularly in Los Angeles – a large thoroughfare devoted to fast moving vehicular traffic serving private development.

Historically, however, these types of streets conveyed grandeur, formality, and civic pride. Allan Jacobs, in his seminal work "Great Streets" (1993), describes how street design in the US "started to fall victim to a narrowly focused approach that views unencumbered vehicular traffic flow as the highest priority" with destination and speed as the ultimate design goals.

As Jacobs reminds us, the origin of the boulevard lies in the axial planning of sixteenth-century Italian cities, particularly Rome, a model refined in Paris by Georges-Eugène Haussmann.



Boulevards arrived in the United States in the late nineteenth century as part of the vocabulary of the Park Movement and City Beautiful Movement. Among their most important functions was that of giving structure and comprehension to the whole city as it grew and diversified under the impulse of industrialization; becoming monumental links between important destinations and, at the same time, being major destinations in their own right.

The great urban boulevards of the past were designed as delightful places to be a pedestrian; walking was the focus. They were conceived to permit people to walk at varying paces, at their leisure, safe from vehicles. Trees added to the curb line and close enough to each other created spatial definition, a prominent pedestrian zone that felt safe and provided physical comfort without negating the natural environment. The essential purpose of a great boulevard for Jacobs was (and is) sociability – they were peopled, full of activity and life.

Planning for pedestrian environments and public spaces is still a responsibility that lies within the public domain, as urban fabric is generally created and regulated by a municipality. Across the country,

there is a renewed interest in urban living, suggesting, perhaps, that we are on the verge of a City Beautiful Movement 2.0. But the present-day debate over complete streets often betrays a lack of grand vision, with emphasis on street retrofit/upgrades – hardly the civic aspirations of the past.

The redesign of urban boulevards, should become a strategic opportunity for municipalities to beautify their cores, providing identity and space for sociability. In this direction incremental approaches by means of complete streets and tactical urbanism techniques can jumpstart a much larger public-private place-making vision.



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The image of the city

Many cities have invested in the creation of map databases to support the delivery of wayfinding systems. But why would a city commit to such investment and effort, considering the availability of free mobile map services and widespread Open Data?

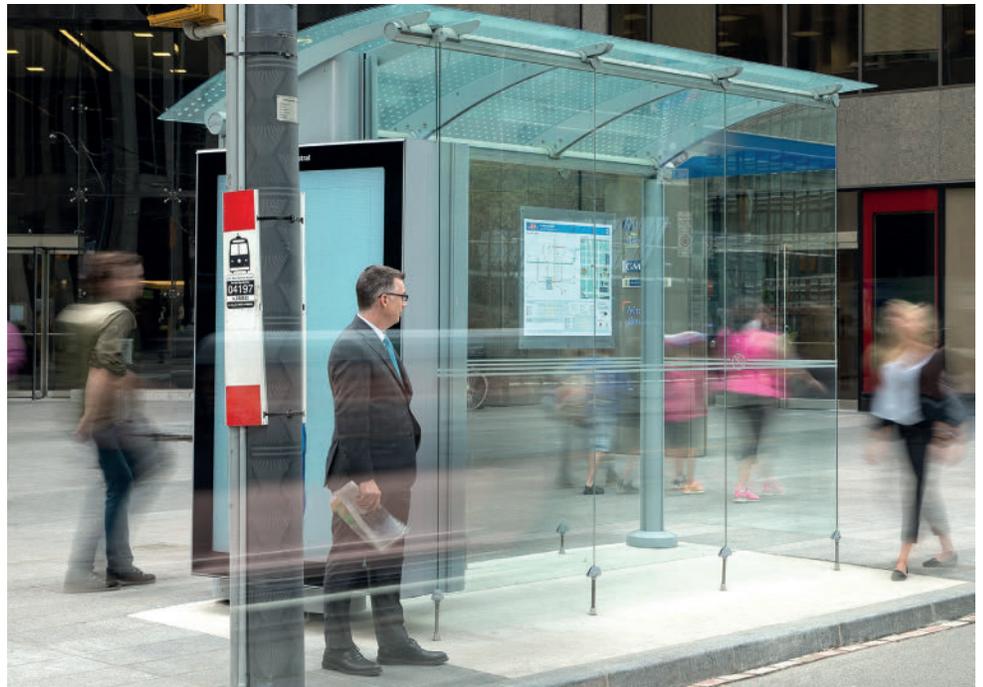
By Juan Pablo Rioseco

American urban planner Kevin A. Lynch coined the term wayfinding in his most famous work “The Image of the City” (1960). The book reports that users understand their surroundings in consistent and predictable ways, forming mental maps with five elements: paths, edges, districts, nodes and landmarks. Nowadays city wayfinding systems across the world – often known as ‘legible city’ projects, named after the original Bristol Legible City initiative – rely heavily on bespoke maps to support the creation of mental maps.

As demonstrated in cities such as London, New York and Toronto, effective mapping requires editing vast amounts of data down to a manageable amount of information. Building stakeholder and public consensus around a map style suitable to display street names, destinations and transit stops, while still revealing the unique character of a city and its neighborhoods, is not an easy task. There is never a one-size-fits-all solution.

Maps for walking

People walking through a city can feel at their most vulnerable in unfamiliar environments. Pedestrians are more exposed to the elements and may be unwilling to explore beyond their comfort zone or commit to a long walk. The availability of on-street pedestrian maps caters for the informational needs of people who have a destination in mind or are in need of general orientation and reassurance.



© Toronto Transit Commission

Evidence gathered through Steer Davies Gleave’s evaluation of the Legible London program in the UK¹ confirms that a consistent network of maps and signs reassures pedestrians and increases their confidence to explore. Additionally, design mechanisms such as the inclusion of walking time – as opposed to distance in meters – reduces the perception of the time required to make a journey on foot.

Walking is key to the success of multimodal networks. Purposeful walking is required at both ends of a journey and in interchange environments, including those integrated into the urban realm. Effective city wayfinding maps should support visitor exploration and discovery, but also enable residents to connect seamlessly to and from transit, bike hire or private vehicles.

Maps as assets

The benefits of installing high-quality (albeit costly) on-street pedestrian wayfinding signs can be amplified by the implementation of consistent mapping in existing infrastructure at marginal additional cost.

Investing in a robust map asset database will benefit the delivery of a wayfinding program and would also benefit third parties such as transit agencies, operators or private companies, who in return will deliver city wayfinding information through their own information and signage systems.

Steer Davies Gleave’s TO360 wayfinding pilot implementation for the city of Toronto initially consisted of 20 new maps and directional signs in the Financial District. This relatively small scheme was intensified thanks to a joint effort with TTC (Toronto Transit Commission) that led to the implementation of new bus shelter posters combining walking maps with local transit information. Furthermore, wayfinding maps were installed in Union Station to welcome passengers arriving from the airport to downtown Toronto via a third-party map-sharing agreement with Union Pearson Express.

The consolidation of mapping assets in a single database allows the authorities to retain control over the map content and enables the production of printed and online products. Once the database is set, data can be made available to city departments or third parties to produce their own map products. These can become additional delivery vehicles to maximize the benefits and awareness of a city wayfinding initiative without incurring additional infrastructure cost.

Steer Davies Gleave is currently supporting the cities of Toronto and Bologna in the delivery of pedestrian wayfinding strategies.



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¹ <http://content.tfl.gov.uk/legible-london-evaluation-summary.pdf>

The view of aviation from airport CEOs



In recent years North American aviation has gone through many changes, making the jobs of airport CEOs challenging ones. In order to try to address these changes, CEOs must carefully consider how these changes affect their business planning.

by Stephen Van Beek

In an era of dynamically-changing needs of the commercial airline industry, most of the largest airports face a pressing need to update their infrastructure – whether it be airside, terminal, or landside. At the same time, many small and medium-sized airports face a loss of air service and connectivity as the major airlines have consolidated traffic at their gateway hubs, feeding long-haul domestic and international destinations.

SYSTEM REALITIES

Nearly everything analysts and policymakers have assumed over the last 15 years about the future of the aviation industry, and the level and distribution of airline traffic to airports, is now wrong.

Changing market realities, together with a series of external shocks to the global aviation system, mean that the pre-2000 halcyon days of reliable 3-4% annual system growth, providing steady revenue flows into airport coffers and the Federal Aviation Administration's (FAA) Airport and Airway Trust Fund (AATF), are gone. That era has been replaced by years of comparative instability, sending FAA and many airport forecasts, and underlying financial projections, into the dustbin.

On the policy side, two years ago, the Canadian government began a comprehensive review of its aviation sector. Until now it has focused on key issues such as airport rent, providing better value for money for services such as security screening, and examining how to provide infrastructure support to many smaller Canadian airports serving rural and remote communities.

While the US Congress began an examination of the FAA's air traffic organization (ATO), and alternative models for managing, governing, funding and delivering services, to this point there has been no comprehensive review of outdated airport regulatory and funding policies. In addition, there has been no serious discussion of how the current outdated AATF model, supporting non-ATO services, would be replaced in a new policy regime that includes ATO reform.

With these changes in the airline industry, and ongoing reviews of national aviation policies, American and Canadian airport executives and government boards face a business environment that must be carefully managed; one where single-point forecasts and business strategies must be replaced by strategic reviews inclusive of a number of future forecasts and plans.

BOARDROOMS SPEAK TO THE REALITIES

Over the last year, strategic reviews with airport executives, boards and the associations that represent them have generated a prioritized list of issues and policies that are driving a reconsideration of business models and new management strategies. This list, while not exhaustive, provides a starting point for understanding how today's aviation industry will reshape North American airports. A detailed reassessment of an airport's Mission, Vision, Goals and Management Strategies – the foundation of a new airport strategic plan – must focus on its current business, stakeholders and place in the overall aviation system to understand how these issues relate and interact. The top issues include:

1. Reform: The policy architectures underlying the US and Canadian aviation sectors are stale, not comprehensively reformed since the turn of the century. Since then, airline restructuring, the growing power of global airline alliances, and changes in airline ticketing practices (i.e., growth of ancillary and “unbundled” pricing), to name just three, have remade the industry. Yet policymakers have not responded.



2. Regulation: Congestion at many of the global gateway hubs, especially those with competitive airline market shares, are policies such as the International Air Transport Association's (IATA) Worldwide Scheduling Guidelines and variants on outmoded policies such as New York's High Density Rule. These mechanisms do not allow for a proper accounting of airport proprietor rights, the value of airport infrastructure, or competitive concerns.

3. Security and facilitation: US and Canadian airport executives routinely decry the high cost of services, the diversion of security and facilitation taxes to the general fund of governments and/or other modes (instead of supporting aviation), and service levels for government-run and contracted services.

4. Air service: Concerns include competition – will low-cost and ultra-low cost carriers survive to provide robust competition domestically and internationally?

While new long-range aircraft are opening up direct services to almost the entire globe from markets such as Toronto and Chicago, the disappearance of 50-seat aircraft is putting connectivity to many smaller airports and communities at risk.

5. The customer: Services defined and delivered by yesterday's providers are being replaced by new and innovative peer-to-peer and third-party providers accessible on today's smartphones. Whether through transportation network companies such as Uber, or self-connecting a multi-city air itinerary, the customer has new options that airports can leverage to their benefit.

6. Safety: Safety Management Systems (SMS) provide new risk-based methodologies that help manage risks. Most global airports are ahead of the United States: the International Civil Aviation Organization's (ICAO) SMS framework is now nearly a decade old and plans have been implemented and reviewed at Canadian airports. Full implementation is just now coming to US airports, allowing risks to be managed better whether they are present in the movement, non-movement or other areas of the airport.

Steer Davies Gleave's professional team has experience in all aspects of today's aviation industry – from the point-of-view of the regulator, to trade associations representing US, Canadian and global airports, to helping client airports in every continent served by

today's commercial airlines. We take airport executives and boards through all phases of strategic and business planning – from setting the strategic direction, to prioritizing airport goals, and implementing the collaborative management strategies for the realization of the airport's Mission, Vision and Goals.



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INTERVIEW
Kunal Kumar



India's smart cities challenge

For this issue of *The Review*, we spoke to Kunal Kumar, Municipal Commissioner for Pune, India, about the city's ambitions to become a smart city.

Pune is a major Indian city, the second largest in the western state of Maharashtra. It is a wonderful example of the vibrancy, excitement and ancient culture for which India's cities are famous, but it suffers from all the social problems that come with the energy and color, too.

As in so many Indian cities, large-scale poverty and homelessness, crime, congestion and pollution in Pune are a constant challenge to politicians, planners and citizens. And with urban populations growing year on year – in a country on course to be the most populous in the world by 2030 – it might look as though those problems can only get worse.

Unless, that is, a radical new approach to city planning can be found. Pune Municipal Commissioner, Kunal Kumar, believes that the India Smart Cities Challenge can be the key to finding that radical alternative.

The Smart Cities Challenge invited all Indian states to nominate cities to compete for redevelopment funding. Pune was one of 20 winning cities selected from 97 initial entries for its creative 'smart' approach to planning. But what exactly does 'smart' mean?

Commissioner Kumar explains:

"When people hear 'smart' they think high-tech, but it doesn't mean that, or, at least, it doesn't necessarily mean that," he says.

"The main thrust of a smart approach is to maximize the use of existing resources, to get more from less and to mobilize the population. Putting all our heads together makes us all smarter; it's the only way of improving a place in the ways the people who live and work there really want and need."

The emphasis on participation is a constant theme: "The people best placed to understand what a city needs are the people who live and work in it," argues Commissioner Kumar. "Right from the start we based our plans on consultation. We asked what people wanted and developed their ideas into three main 'pillars': economic sustainability; environmental sustainability; and quality of life. Of course the needs of a city like Pune are complex but the number one priority was very clear: better transportation."

This is, perhaps, not such a surprise. Transportation directly impacts all three of Commissioner Kumar's 'pillars'. "Encouraging car owners to get out of their vehicles and into much more energy-efficient and green modes of transportation can make a huge difference to the air quality in our city as well as reducing congestion," he explains. "But we had to be clever about it. We didn't want to just commission some shiny new eco-buses that

would end up adding to the congestion, looking green on paper but not so much on the streets." The solution was one area where 'smart' really does mean high-tech. Steer Davies Gleave was invited to work with the city on transportation planning, and proposed an Intelligent Transportation System. GPS tracking through a control and command center will keep the buses moving and keep the passengers up to date with live information about where they are.

Coupled with new spending on pedestrian friendly road infrastructure, the smart bus system should deliver faster, more reliable journey times with lower emissions. It is a virtuous circle: getting car owners onto buses and buses running efficiently with good consumer information makes space for cycle schemes that actually work – Pune plans to increase cycling from 9% to 25% of journeys.

All too often the image of public transit in India calls to mind the ancient and horribly overcrowded train or bus, struggling through chaotic, congested streets. Pune and other smart cities could be about to change all that.

As Commissioner Kumar says: "The difference that these changes could make for the quality of life in Pune cannot be exaggerated. And if we can do it, others can too. We know that people think of Indian cities as chaotic and overcrowded, but watch this space. We're changing things here and the way we are doing it could offer lessons for the whole world."



A self-driving Navya Arma bus in Germany

The cost of driverless buses

The introduction of driverless cars has been the subject of thousands of words of analysis. Many of these analyses have concluded that this may lead to a decrease in conventional transit ridership. However, this discussion generally carries the assumption that buses won't change. But what if we had driverless buses, too?

By Tom Willis

Drivers form a major part of transit operational costs: between 50% and 75%, depending on jurisdiction and local factors. As a result, transit agencies that switch to driverless buses could achieve major cost savings. Eliminating drivers would naturally create some new operating costs, such as a need for more roving fare inspectors, but these costs are likely to be minor when compared with the savings. The cost savings could then be used to provide better service, while keeping subsidy levels unchanged.

Using conservative assumptions of drivers being 50% of costs and farebox revenue being 25% of costs, driverless buses could potentially allow service levels to be *tripled*.

Many smaller towns and cities in North America offer transit with hourly or half-hourly service, making transit use practical but not attractive. Tripling these levels would allow service every 10-20 minutes – frequent enough to eliminate the need for passengers to consult schedules and to make transit much more convenient and desirable to potential users.

The additional service levels would naturally produce a significant increase in both ridership and revenue, and these increases would almost certainly offset

any increases in other operating costs. Thus, the introduction of driverless buses would engender a virtuous circle of ridership and service growth.

The lower operating costs of driverless buses could also encourage municipalities without transit to introduce it, as the financial commitment would be smaller.

Another common discussion point is whether privately-operated driverless vehicles could provide point-to-point service.

Many transit agencies already use such services for low-density (or low-demand) areas. However, this method of service delivery is limited in how many trips it can make each hour compared to fixed-route services, which are more efficient in medium or high density areas. If an area can sustain fixed-route transit provided by buses with drivers, then a switch to driverless buses will mean it is still more efficient than a driverless demand-responsive service.

The capital cost of driverless vehicles, in the initial stages of the technology's development, will almost certainly be higher than existing vehicles. However, most of the lifecycle cost of a bus is in the operating costs rather than the capital purchase cost. Consequently, a driverless bus that costs double a conventional bus would still pay for itself in a few years.

In short, driverless buses could provide a financially sustainable path for significant improvements in transit service levels, despite the likely higher capital costs.



To find out more contact:
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Staff profile Keith Whalen



What drew you to working in transportation?

Through college I drove buses for the university-run transit system, caught the 'public transit bug' and have been working in transportation ever since.

Which city do you admire most for its transportation and why?

I really admire London for its extensive rail and bus networks that provide the core of mobility for the city. From a public transit perspective, London is certainly an excellent example of a city offering people different mobility options other than automobiles.

What is the most interesting mode of transportation you have been on?

A tuk-tuk in India. It was a really unique experience because it's a common mode of transportation for people in India but very uncommon for people in North America. There also isn't very much between you and other vehicles on the road!

What project are you most proud to have worked on?

I am very proud of working with SDG when First Transit was beginning its operations in Pune, India. I am also very proud of being involved in delivering projects that benefit communities, such as a paratransit service in Washington DC.

What would you be doing if you didn't work in a transportation consultancy?

I'm a huge sports fan so what I would *want* to be doing is working in a professional sport organization, probably in the marketing team or the front office.

What couldn't you live without?

My family.

What is a major issue in transportation today and what challenges/opportunities does it create?

Transit agencies in the US have typically delivered services on a fixed route but communities now want and need mobility options. Transit authorities and agencies are faced with the challenge of providing more dynamic mobility options while addressing the increasing costs of delivering a paratransit program. This does, however, create the opportunity of integrating new technology into the service provision process to enhance the mobility offering, and to do so in a more cost-effective way.

Movement Matters

LOS ANGELES

Movement Matters is a series of meet-ups, presented by Steer Davies Gleave, exploring how transportation shapes and influences the cities we live in.

Our first series of meet-ups take place in Los Angeles, where we share a program of insightful discussions on some of the most current topics in the industry, including technology, Mobility as a Service, behavior change, wayfinding systems, and transit funding.

Packed full of innovative ideas and first-hand global experience, Movement Matters meet-ups provide a burst of fresh thinking without taking you out of the office for too long.

Here is a taste of our upcoming events:

01

Beyond the trip planner

January 24, 2017

Topics discussed:

What is Mobility as a Service (MaaS)?

What are the benefits of an intelligent mobility platform?

How will this impact on traditional approaches to changing travel behavior?

Our relationship with transportation is changing. We are seeing a shift from personally-owned transportation towards mobility solutions that are consumed as part of a service.

Mobility as a Service (MaaS) solutions can not only connect commuters with the best transportation option for their daily journeys, it can also provide a constant stream of insight and intelligence to transit operators and city governments via an integrated data platform. It is hoped that this approach can better manage congestion in Southern California, as well as improving the health of its citizens.

Our specially-selected expert panel will discuss the future of intelligent mobility, its benefits and how it will impact on transportation demand management, data insights, transit operations and whole journey information and payment systems.

Speakers

Ashley Hand, Cityfi

Alex Fay, Syncromatics Corp

Antoinette Meier, SANDAG

Jennifer Dice, Sound Transit



02

Encouraging an active first and last mile journey

March 7, 2017

Topics discussed:

What does Measure M mean for Los Angeles?

How can we encourage people to get out of their cars?

First-hand experience in encouraging an active first and last mile journey

Now that the residents of Los Angeles have voted by 70% to support Measure M, \$860 million will be brought in annually to fund transportation projects. This new sales tax will dramatically transform transportation in the region with funding dedicated to projects that will benefit people of all ages and abilities to walk and bike their journeys, as well as making first-and-last mile improvements in access to transit.

So now this measure has been approved by the electorate where should the funds be spent to get the best return – what is the evidence from overseas? Will it make people get out of their cars and use transit? Will it improve the health of the community? Where is the money best spent to get the greatest benefit? Is there too much emphasis on the physical investment on improving infrastructure rather than the softer side of behavior change?

Our expert panel will share first-hand experience in delivering first and last mile strategic plans, together with techniques for encouraging behavior change especially from a health perspective.

Speakers

- Ben Plowden**, Transport for London
- Melani Smith**, University of South California
- Tracy Bryars**, St. Jude Medical Center

03

Wayfinding: what, how, where and why?

April 6, 2017

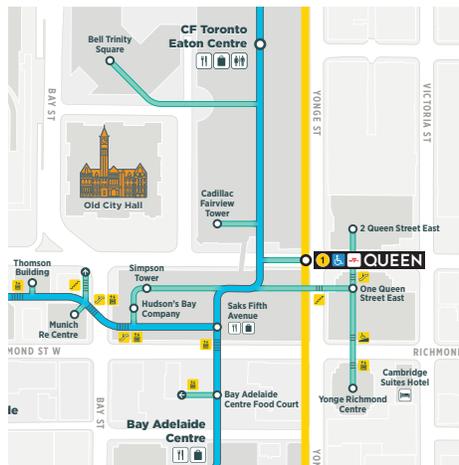
Topics discussed:

First-hand experience of delivering wayfinding systems in the city of Toronto

What are the economic benefits of such a project?

How would wayfinding work for Los Angeles?

Toronto's PATH network is the world's largest underground retail complex connecting the office towers in Downtown Toronto, Canada, providing an important contribution to the economic viability of the city's downtown core. The system connects seamlessly with public transit, and experiences more than 200,000 business-day commuters, and thousands of additional tourists, visitors and residents.



Expansion of the PATH since 2010 has resulted in an additional 700,000 square feet of retail space and generated \$300 million in sales revenue. However, it is not known for being easy to navigate and a recent independent study quantified that for every 1% increase in regular PATH users, annual sales revenues would increase by \$17 million.

Our expert speaker Evan Weinberg will share his experience of delivering Toronto's PATH wayfinding system as a BIA working in partnership with the City of Toronto to deliver their city wayfinding system. Additionally, James Brown, Principal Consultant at Steer Davies Gleave, will discuss how consistent and user-centered design can lead to an enhanced customer experience.

Speakers

- Evan Weinberg**, Toronto Financial District BIA
- James Brown**, Steer Davies Gleave

To register for free or to find out more about Movement Matters, please visit: movementmatters-sdg.com



Upcoming

Beyond the trip planner

January 24, 7.30-9.30am

Speakers

- Ashley Hand**, Cityfi
- Alex Fay**, Syncromatics Corp
- Antoinette Meier**, SANDAG
- Jennifer Dice**, Sound Transit

Encouraging an active first and last mile journey

March 7, 7.30-9.30am

Speakers

- Ben Plowden**, Transport for London
- Melani Smith**, University of South California
- Tracy Bryars**, St. Jude Medical Center

Wayfinding: what, how, where and why?

April 6, 7.30-9.30am

Speakers

- Evan Weinberg**, Toronto Financial District BIA
- James Brown**, Steer Davies Gleave

The role of the private sector in funding transit

May 2017, 7.30-9.30am

Speakers

- LA Metro**
- Caltrans**

*Please note, the program and speakers are subject to change.

Transforming the future without damaging the present



The transformation of transit infrastructure is happening across the US, even creating opportunities to develop new gateways and multimodal interchanges. But how do you create a step change in passenger experience, neighborhood benefit and operational resilience without damaging the current?

By Mike Goggin

2016 has seen multiple announcements about the rejuvenation of major transit and railroad hubs in New York City (including the creation of Moynihan), Baltimore, Chicago, Washington DC and Philadelphia. These developments will be once-in-a-generation opportunities to create civic amenities for five iconic US cities. But how do you rebuild vital transportation infrastructure without damaging rider experience, neighborhood benefit and operational resilience?

The challenge is a big and tangible one. From lost ticket revenues through to community anger and direct disruption, the impact of poorly delivered investment in transportation infrastructure can be catastrophic for the delivery organizations and their political and financial supporters.

What then can be done? The mantras of "going into it with your eyes wide open", "preparation is the key to success", and "rapid learning is the key to survival" may sound trite but are borne out as critical success factors.

"Eyes wide open"

Understanding the value – operational, economic, financial and reputational – of the railroad station/transit hub/highway junction will provide a clearer case for investing in alternative transportation

strategies, construction methodologies or program phasing. Simply promising a "better future" will not remove rider and neighbor needs and wants. Better then to understand them thoroughly, prioritize their delivery and communicate fully.

"Preparation is key"

True preparation is building inherent strength and resilience into all the organizations involved. Ensuring staff capability and equipping them with the tools to deliver is necessary but not sufficient. Individual and collective insight on what is important, and the sense of mission, will empower appropriate rapid and holistic decision-making. Minute-by-minute decisions will impact thousands of commuters just as millions of dollars are laid in concrete and steel. Equilibrium of understanding must exist between immediate business and transportation outcomes and ultimate project delivery.

"Learning to survive"

Monitoring, listening, engaging and testing need to be continuous through the project's delivery. Amending temporary layouts, information provision and retail to respond to unanticipated reactions, and seasonal impacts like adverse weather or holiday shopping is required. It's an opportunity to minimize passenger and neighbor disruption and to help support a better final station/hub/junction, without the baggage of a newspaper headline calling attention to failures during construction.

So what does this mean for America's renaissance of stations, and I'd argue, for its public transit and highway networks in

major cities? It means a cold, hard calculated assessment of the impacts, conservatism as to the ambition over what can be achieved, a ruthlessness to simulate and pilot different scenarios for their impacts, and a creativity to embrace technical, commercial and behavioral tactics to develop optimal solutions. Once-in-a-generation reconstruction is worth paying for but not at any price.



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Poor planning causes chaos in the UK

During Christmas 2014, Network Rail in the UK was performing a major railroad renewal in the center of London that impacted on one of the city's most significant rail stations. Things went wrong in the renewal works and the track blockade continued.

This bad news was further exacerbated when the contingency plans were not implemented, as different teams of staff decided to react to the situation in front of them, without cognizance of the wider impacts. Although they were working in good faith, ignoring the plan for something untested and uncommunicated sparked hostility from passengers and provoked a highly critical national media. This example shows us that there is a need for shared confidence of decisions and intent through well-rehearsed collective cohesion among individuals and organizations.

INTERVIEW
Laura Shoaf


Lessons from across the pond

Born and educated in the US, Laura Shoaf now holds one of the UK's top transportation jobs, Managing Director of Transport for West Midlands (TfWM). We asked Shoaf whether the new transportation agenda there could offer any lessons for planners in North America.

The UK has seen a major shift in the way it approaches transportation planning in the last five to ten years. Rather than designing and delivering transit systems to achieve transportation outcomes, planners are now addressing wider social, environmental and economic issues.

"We are thinking about how transportation can help ensure we have housing where we need it, how it can unlock jobs and ensure that educational opportunities are in the right place," says Shoaf. "That's the fundamental change that has happened here."

As a result of this change in approach, neighboring authorities have started to work together on the transportation agenda, which in turn has paved the way for wider political collaboration. These new, larger areas have a stronger voice in central Government, where the ruling Conservative party's focus is on devolution of power to the UK's regions.

This is the case in the West Midlands where seven local authorities, including Birmingham, the UK's second biggest city, created a combined authority in June this year.

The combined authority is tasked with driving economic growth and leading strategic policies such as skills, economic regeneration and transportation. Almost 3 million people live in this region, with 77% of households owning cars; last year they made 275 million trips by bus, 50 million by rail and 5 million by light rail.

Shoaf, who studied urban planning at New York University before moving to the UK, heads the combined authority's transportation arm TfWM, having worked her way up to this top transportation job via a number of strategic planning roles across the West Midlands.

"Our plans are ambitious, but they are ambitious for the right reasons," she says. "It's what the people of this region deserve. We want to deliver a sustainable, integrated transit network and we want to see mode shift; the region is still heavily dependent on cars and we would like to see that change."

The challenges faced by the West Midlands' cities and towns are not too different from those faced by many of the US's growing urban conurbations: road and rail networks at capacity, population growth, dependency on cars, and the question of how best to harness the benefits that technologies such as smart ticketing and autonomous cars can bring. In the next 20 years, the area expects its population to grow by 440,000 people, a number equivalent to the UK city of Liverpool's current population.

Over the next few years, West Midlanders can expect to see their 'Midland Metro' light rail network expand and the creation of transportation links to stations for HS2, a planned high-speed railway which will link London with Birmingham and cities in the North of England. Buses too, are an important part of the picture, says Shoaf, accounting for the lion's share of journeys each year.

Of course there is one huge difference between the UK and the US, and that is scale. "We struggle because we are a small island, so the ability to use more space is definitely more challenging here," says Shoaf. "We have to be more innovative in the ways we build capacity, because we can't just add another lane to a highway." Perhaps those lessons of working in limited space could be useful for the US too, muses Shoaf, since one of the battles faced by some US towns and cities is how to limit urban sprawl.

Urban planners in the US could also look to Europe for ideas on how to create 'green cities', says Shoaf, perhaps considering congestion charging to reduce the use of cars in city centers. "Not just in the UK, but across Europe, we're making great strides in defining what green cities look like, what car-free cities look like," she says. "There are some fantastic examples of how modern infrastructure can make a city feel world class and genuinely achieve modal shift."

What's around the corner?



Long-term forecasting is a vital part of planning for new passenger rail projects, but what about the short term? Forecasting for the month, week, or even the day ahead is just as important.

by Jon Bottom and Pierre Vilain

Steer Davies Gleave is often appointed to develop long-range forecasts that support the planning, design and financing needs of large rail infrastructure projects and rolling stock procurements. In this work, it is not unusual to predict travel demand, project revenues and transportation network conditions 40 or more years into the future, because the long service life, extended impacts and high costs of such projects require the consideration of a substantial time frame.

Many of the standard quantitative techniques used in transportation forecasting were originally developed to analyze such projects and, when appropriately applied, they are generally well-suited to this purpose.

It is perhaps less widely recognized that the forecasting of rail transportation demand, revenues and conditions in the near-term future can also be very important.

For example, a commuter rail service provider is considering a fare increase and needs to have as precise an estimate as possible of the near-term impact on ridership and revenues.

Similarly, for service planning or budgeting purposes, the operations and finance groups of public transportation agencies may be interested in forecasts of weekly or monthly ridership and revenue over, say, a year ahead.

In short-term forecasting, factors such as service levels, on-time performance, special events and calendar effects – a major sports or entertainment event, the presence of a holiday in a particular week, or the number of weekends during a month – can be important to take into account. Standard transportation forecasting techniques are not designed to do this and are not reliably able to produce forecasts at this level of detail – different methods are needed.

Steer Davies Gleave has recently been involved in several projects in which we developed short-term forecasting tools to meet the financial planning and budgeting needs of our rail operator clients.

We have developed short and medium-term forecasting models for Metro-North Railroad and the Long Island Rail Road in the New York City region and for Translink in Vancouver.

The premise of the forecasting approach is to develop statistical models that account explicitly for both demand and supply factors. Demand for transit is typically generated by a series of factors, including various types of economic activity (both

commutation and leisure uses), and is also influenced directly by transportation prices (transit fares and also fuel prices, which reflect the price of alternatives). Supply of transit is represented by service levels.

The development of the models makes use of statistical techniques that are widely used in the social sciences, but have only recently become more prevalent in transportation. The resulting models are typically based on large amounts of data on transit usage, usually at the line, zone or ticket type level of detail.

By observing thousands of ticket transactions, the resulting models achieve high levels of reliability for both forecasting purposes and scenario analysis, such as predicting the impacts of fare or service level changes. The fact that the models incorporate the various economic and demographic variables that influence transit demand means that the model can flexibly incorporate these effects in future year forecasts.

Figure 1 provides an indication of how well a model developed for one of the commuter services “understands” the effects of economic trends (including the recession of 2008-2009) as well as changes in fares. The model was applied to historical data on the economy and fares to assess how well its outputs track the known historical ridership. The past ridership

“predicted” by the model accounts extremely well for all these effects and the predicted ticket sales line up squarely with the actuals in each of the past months dating back to 2008.

Our team is currently developing a tool for another passenger rail operator that predicts and tracks monthly ridership and ticket revenue in support of its annual and ongoing budgeting process. The tool is based on a statistical approach called state space modeling. This approach entails specifying the pattern of temporal variability in monthly ridership or revenue totals (a general time trend overlaid with regular monthly periodicity and random disturbances) and identifying external factors (demographic, economic, service disruptions) that may also influence these totals.

By analyzing historical time series data, the relationship between monthly ridership and revenue and the specified temporal and other components is quantified and used to forecast monthly values into the future. These results will be incorporated in a software tool that the operator can use to develop 12 months of forecasts for annual budget planning.

As the forecast year progresses, unanticipated developments (operating disruptions or changes in the economic climate)

will inevitably affect the actual monthly ridership and revenue outturns. State space modeling provides a statistically rigorous way to update and refine the annual forecast in the light of successive monthly results as they become available during the year.

Figure 2 demonstrates the potential of state space methods. Using the ridership data available from January 2007 up to a given month, and following an initial “learning” period, the model’s predictions of ridership in the following month (orange line) track actual ridership (purple line) closely. The model was also used to forecast monthly ridership between May 2015 and April 2016, using only data available in April 2015 (the vertical dash line). Again, the model’s forecasts (blue line) track actuals quite closely.



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Figure 1 - Backcasts for monthly commutation

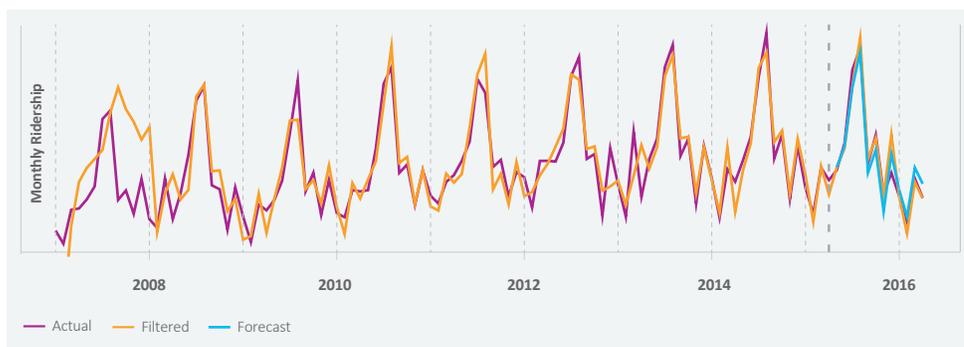


Figure 2 - Application of a state space model to monthly ridership

News in brief

Southeast Passenger Rail Planning Study

Steer Davies Gleave is working as part of a team on the Southeast Passenger Rail Planning Study for the Federal Railroad Administration (FRA) in the US. Our scope includes a review of baseline conditions, development of ridership and revenue forecast for various alternatives, provision of high-level capital cost and help with defining investment priorities. We will also assist with governance issues and policies, along with providing input to the cost-benefit analysis.

As part of this project we are also working on the update of the CONNECT tool, which will be used to produce ridership and revenue forecasts to evaluate various network design and service plan concepts. This will provide vital base data to develop a proposed passenger rail network map and a description of service concepts.

Traffic and revenue analysis for the SH 288 Toll Lanes project

Steer Davies Gleave supported the bidding process for a concession to design, build, operate, finance and maintain the toll lanes between the US 59 interchange in the north and the county line south of Beltway 8 on the State Highway 288 in Harris County, Texas.

The SH 288 project is a 10-mile facility that consists of two toll lanes per direction, and has three sets of tolled direct connectors to facilitate highway-to-highway movements to and from Beltway 8 and Interstate 610, as well as a connection to the Texas Medical Center.

Our services included a preliminary, sketch-level traffic and revenue analysis to gauge the revenue potential for the facility and to support a go/no-go decision and alternatives analysis process for the consortium.

Our team then performed an investment grade traffic and revenue study for purposes of project financing, followed by continued support services for discussions with rating agencies, TIFIA, underwriters and investors. The efforts included support for the consortium for the POS and OS for private activity bonds, presentations and the roadshow to reach financial close of the project.

Promoting better commutes

Commuting is something the vast majority of adults have to contend with on a daily basis and, with average commutes taking at least 30 minutes, the morning journey plays a key role in setting the tone for our workday.

By Geoff England

Steer Davies Gleave's recent work with the San Diego Association of Governments (SANDAG) and 'iCommute', the agency's Transportation Demand Management (TDM) program, has shown that companies are increasingly interested in helping to shape their employee's commuting habits and providing flexibility in how they get to work. Companies understand that the next generation of young professionals want more flexibility in their personal mobility and better balance in their lives, and that starts with making commuting easier.

In 2014, Steer Davies Gleave helped SANDAG initiate a program refresh for iCommute. Some of the key principles for motivating employers to participate have yielded impressive results, so we've compiled our...

Top strategies for commuter engagement

1. Targeted outreach: iCommute has determined that each Account Executive can engage with about 50 companies at a time. With over 1,000 large companies in San Diego, iCommute targets companies with over 200 employees and conducts research to identify which factors will motivate each company to start a discussion about employee commuting.

2. Proactive engagement: Commuting is rarely top of the list of key corporate initiatives, so proactive engagement to raise the profile of commuting is important. Along with targeted outreach, since 2014 iCommute has used cold calls, networking and referrals to connect with over 200 companies, developing ongoing relationships with many of them.



3. Motivational Interviewing: Steer Davies Gleave trains iCommute's staff in Motivational Interviewing – a conversational, person-centered engagement technique that empowers participants to identify transportation challenges that affect them and develop personalized solutions. Using this technique, 85% of employers have participated after an initial conversation.

4. Building relationships: iCommute's ethos of valuing the relationship has proved to keep employers engaged and motivated to participate and to do so over time; over 65% of participating employers have been active in the program by hosting an on-site event, conducting a commuter survey, communicating with employees to promote alternatives to solo driving or participating in regional events and seminars.

5. Measuring results: An early requirement for participating companies is to conduct a commuter survey, so that Account Executives can recommend solutions based on employee travel habits and potential motivators for change. The data and mapping that emerge from the survey helps create targeted, cost-effective and efficient commuter programs by identifying the top modes of interest among employees. In the 24 months since iCommute has been motivating companies to conduct surveys, over 45% of participating employers have completed one.

6. Recognition: iCommute has a long-held tradition of recognizing employers for their efforts in enabling alternative and sustainable

commuting. iCommute's Diamond Awards focus on three factors that help employers achieve an award: commuter program participation, annual event participation, and mode share. The greater the success in each criterion, the more points gained, and the higher the award level. Since 2014, 69 companies (40% of participating employers) have achieved an award and 17 have achieved the highest Platinum level. In addition, iCommute helped 7 Platinum level employers achieve the national Best Workplaces for Commuters distinction as well!

In the two years since full implementation of iCommute's refreshed Employer Outreach Program, engagement has been a huge success:

- 79 companies, representing 187,000 employees, have completed commuter surveys, providing iCommute with a dataset to plan future outreach and monitor progress over time.
- 9 companies have completed a follow-up survey (recommended every 18-24 months), with an average 18% reduction in single-occupancy vehicle mode share, providing an optimistic future for iCommute's flagship outreach program.

Steer Davies Gleave continues to support the program and to provide innovative ways to engage and motivate employers to shift travel behavior.



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UX: the next big thing for transit?

Los Angeles is on the cusp of change. With new infrastructure projects in the pipeline, what could the city's transit agencies learn from user experience (UX) research?

By Craig Nelson

In 2016, Los Angeles opened a new rail line to the beach, extended the Gold Line light rail system and introduced bikeshare to five of its cities. The future looks positive, with Measure M (a recently approved half-cent sales tax) set to fund a number of large-scale rail and road projects over the next fifty years.

I've lived in Los Angeles for two years now, and have noticed and welcomed the way new urban mobility is being discussed. One area that people like to talk about is technology, particularly self-driving vehicles and how we will 'subscribe' to transportation in future – put simply, we won't own vehicles, but instead use transportation as a service.

In order for all this to be achieved, we have to put the user first. We've already seen this with companies such as Uber. Their app makes hailing a cab stress-free, and they 'iterate' all the time – applying tweaks on a weekly basis. Getting to this level of simplicity has meant placing the user experience (or UX) at the center of the design process. It's a constant feedback process – design, test, iterate and repeat – and is the key to the growth of their company. It also means that they are constantly capturing data points – about how their users engage with the app, as well as the trips they take.

Uber has continued this design process with their driverless vehicle pilot in Pittsburgh: the user, sitting in the back of a Volvo XC90, is placed in the middle of the driverless experience. Uber's process is different to the way Google is testing its vehicles – with emphasis on machine learning, without a member of the public providing feedback.

This got me thinking – what could a transit agency learn from this? How can we 'onboard' new transit users and get them to try an



alternative mode? How can agencies then learn by capturing and analyzing the data that they collect, and make their riders happy?

At the moment, a number of real and perceived pain points prevent people from even considering transit – even those that live close to express bus or railway lines. In many cases, enthusiasm for transit vastly outweighs actual usage.

From anecdotes and surveys, many people cite safety as a major barrier, alongside the cleanliness of vehicles and stations – the rider experience can be perceived as somewhat challenging, and vastly different from that offered by Uber and Lyft. Others suggest that they are too disconnected from the network – they live too far from a bus stop or rail station and it's quicker to drive. Payment can also be difficult, and is often one of the trickiest aspects of new rider 'onboarding' to overcome.

Los Angeles has the TAP smart ticketing system, but, to many, it's a complicated barrier that they'd rather do without. Trip planning information – the simple answers to 'what options are available' and 'when is my bus/train leaving' – can also be forbidding to a new user.

Many of these barriers could be solved through user experience research and design, as well as the capture of data points and feeding them back into the design and planning process.

Let's take the payment issue. Why ask the user, who may already use their smartphone to pay for groceries, to sign up to another payment system? Why not allow them to pay for their ticket using a tap of their smartphone? For those who don't have smartphones, ask them (and be sure to include potential riders) what pain points slow their travel or even prevent them from using transit.

What about that disconnect issue? Transit agencies are working more closely with rideshare and bikeshare companies to integrate first and last mile solutions and, again, payment should be seamless. Partnerships with companies who put the customer first are potentially a very powerful way of encouraging people to leave their cars at home.

There are also a host of apps out there for trip planning – while many of them are excellent, they are suited to existing commuters and keep all the useful user data behind closed doors, so why do transit agencies invest money in websites that fail users?

Steer Davies Gleave's work in Seattle and San Diego has focused first on the user (both existing and new) and asked them how they interact with the network using online tools and the issues they experience. Take this knowledge and design accordingly – be bold and look at new ways of presenting information, as well as monitoring impacts through data analysis.

While it is exciting that a number of planned infrastructure projects could open up new commute options, agencies in Los Angeles will need to up their UX game. They need to start asking their customers questions, and understanding how they can learn from the step change in user experience that companies such as Uber have created (and the ways that they leverage the data) – in that way, they may have a better chance of capturing those who are open, but may otherwise never give transit a go.



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Designing for safer LRT



Low floor LRT is growing in popularity across North America, though it always raises the question of safety. So what best practice should the designers, planners and operators be implementing to ensure a safe interaction?

By Laura Sidi

The emergence of ‘urban style’ light rail transit (LRT) projects in North America, especially in Canada, has been noticeable over the past decade. As a rapid transit mode solution catering to intermediate ridership, the benefits of light rail reach far beyond efficient and practical people-moving.

This type of light rail, highly utilized in Europe, is a well-known catalyst for city shaping – numerous LRT projects in Canadian cities are either under construction or about to begin (Confederation Line, Ottawa; ION in Waterloo; Eglinton-Crosstown, Toronto; and Valley Line, Edmonton), while several other cities are planning for new projects (Surrey, Hamilton, Toronto, Calgary and Montreal).

When working on light rail planning projects, one of the first questions Steer Davies Gleave receive is ‘what about safety?’ and rightly so, as it is of utmost importance. Light rail safety can be a mysterious concept for the unfamiliar, as it is based on a subtle integrative approach whereby light rail and its operations are tied into the surroundings in order to reduce visual intrusion on the street. The introduction of a new transit technology

can be an overwhelming prospect at first, as the interactions and interface between all road users must be navigated to a higher standard than before.

Urban style LRT relies on an intuitive, user-centered design to keep those that interact with the system safe without intruding upon the esthetics of the urban realm. Light rail should be designed for user behavior, rather than attempting to restrict it, ultimately leading to improved and evolved safety.

A key example we often hear from stakeholders is the issue of pedestrians jaywalking across LRT tracks. The first instinct is to prevent people from jaywalking, but this is not simple or practicable. It can be expensive, incur property impact and be visually intrusive.

The opposite approach has the potential to be more effective – designers assume that pedestrians will jaywalk and implement clear urban design treatments (curb and track types, planting, colors, pavement markings, tactile warning, etc.) to let pedestrians know where they should and should not stand.

Equally, LRT operators require clear operating rules and right of way delineation through urban design so that they have a visual cue to confirm they are safe to proceed when pedestrians are clear of these limits.

Another typical example is traffic and light rail interaction. Clear use of traffic signals, pavement markings and signage is key. Reducing visual clutter for drivers can

help them to navigate safely – this includes enhanced lighting and avoiding excess signage, as well as using subtler visual cues such as urban design treatments and special road geometry to improve visibility of pedestrians, cyclists and the LRT.

Provision for cyclists follows many of the same principles of best practice design with special signage to warn cyclists of hazards and use of urban design to guide cyclists to cross rails at appropriate angles. A key point to consider for stakeholders embarking on a new LRT project in Canada is that Transport Canada, the federal rail regulator, does not currently apply safety regulations to LRT systems. The City of Ottawa, for example, has sought to be delegated authority from Transport Canada as the safety regulator of its new LRT system.

As this technology continues to be planned and operated in Canada, it makes sense to begin developing clear and consistent standards of practice, as well as to set out evolving best practice guidelines based on worldwide standards and experiences.



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A guide to consistent evaluation

Producing a consistent and comprehensive evaluation allows decision-makers to understand how a transit project contributes to broader strategic goals.

By Patrick Miller

Transit system performance directly impacts how cities and regions grow and prosper. As a result, transit improvements are increasingly being framed as more than a means to facilitate reliable and timely movement of people and goods.

The level of investment required to deliver major transit means that there is a growing need, in project evaluations, to capture benefits beyond increased mobility and accessibility. Evaluation of transit can capture its contributions to society by assessing project performance from multiple considerations, including alignment with strategy/policy, economic value to society, and financial and technical delivery requirements.

A robust evaluation allows decision-makers and stakeholders to compare directly the performance of different transit projects against overarching strategic objectives.

For example, economic evaluation has an established set of tools and approaches that can be adapted and applied to most transit

projects. This allows decision-makers to compare in clearly defined terms a diverse set of projects that may be addressing the same or different problems/opportunities.

While economic analysis employs a consistent set of approaches between projects, strategic evaluation is often conducted in an ad hoc manner, which presents two challenges:

- **Inconsistency:** The strategic performance of two or more projects that were evaluated using different standards or approaches may not be directly comparable.
- **Incomprehensive:** Key strategic benefits and negative impacts may be misrepresented, absent, or difficult to understand.

Steer Davies Gleave has recently completed guidance for conducting strategic evaluations in a consistent and comprehensive manner. This approach overcomes the challenges of ad hoc evaluation, but is also flexible enough to assess the unique characteristics of a given project. It also allows strategic issues such as social equity, environmental impact, and urban development to be evaluated consistently between projects.

A key process in this approach is to define the strategic context of a project by considering:

- an evidence based problem/opportunity that describes the key issues to be addressed;
- direct links between the problem/opportunity and the region/city's goals or objectives;
- a desired end state or vision that speaks to changes against the same goals and objectives; and
- an analysis using a set of tools, that determine progress towards or away from objectives, and are applied consistently to each project.

When a consistent and comprehensive evaluation approach is followed, it allows stakeholders and decision-makers not only to understand the nuances of how a project contributes to broader strategic goals and plans for society, but also how the project compares to other proposals and priorities.



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