

# WHAT DOES USER EXPERIENCE HAVE TO DO WITH BIG DATA?

## *Transportation Research Board*

*5th International Transportation Systems Performance Measurement and Data for Decisions and Performance Measures Conference*

*Peeter Kivestu*

*Teradata Government Systems*

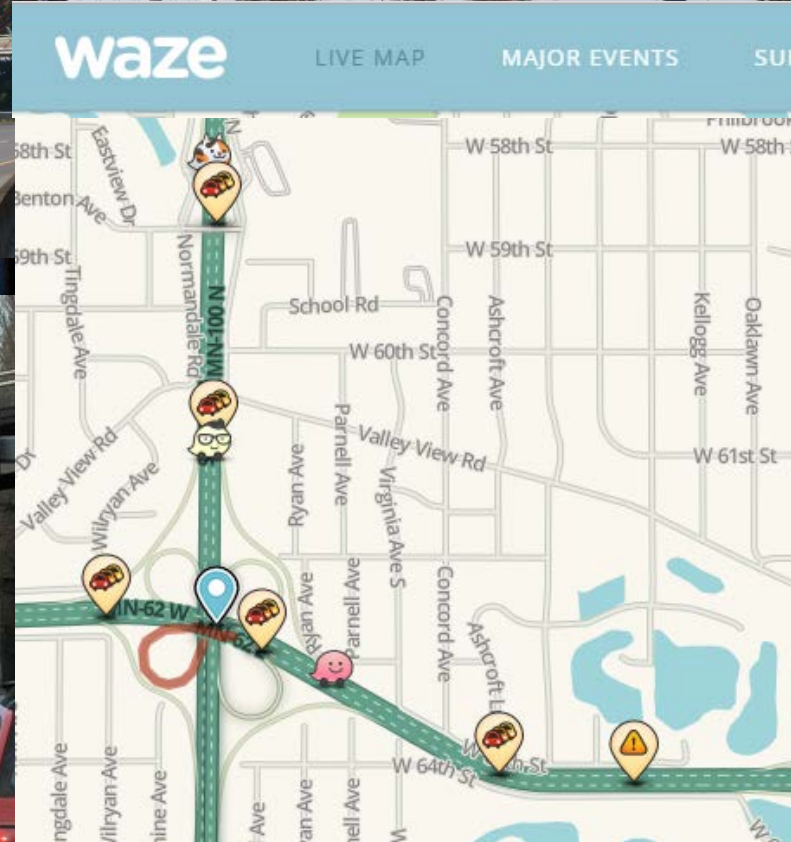
*June 2, 2015*

# What is User Experience?



# What is User Experience?

## *What does it have to do with data?*

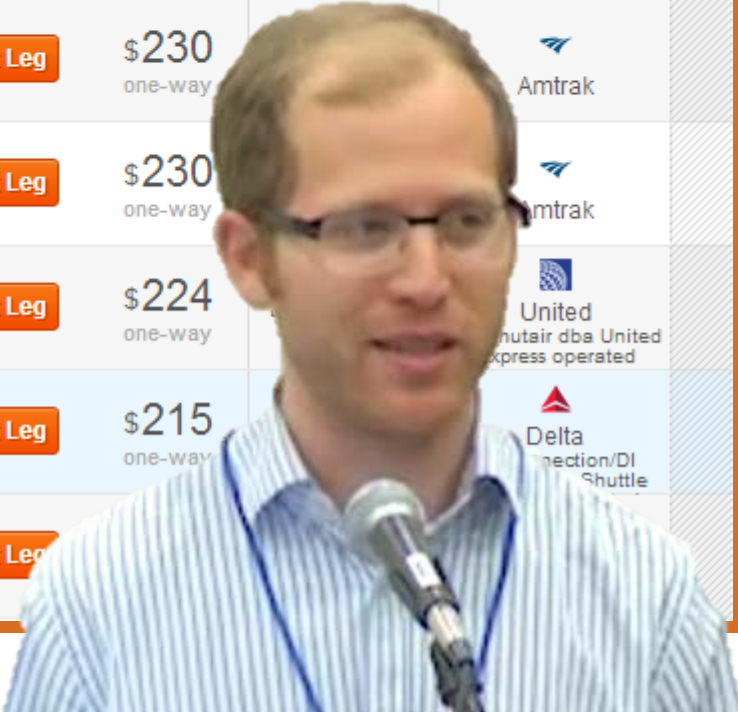




Get Fare Alert    Sort by: **Agony** Price Duration **Departure**    Filter by: **Airlines** Airports Stops     Only Nonstops

**One-way price / person**  
 (includes taxes & fees)  
 Additional baggage fees may apply

	8:00am	depart	11am	3pm	arrive
<b>Select Leg</b> \$144 one-way BWI → BOS Delta Endeavor Air dba Delta Connection operated			RDU		4h 42m 1 stop
<b>Select Leg</b> \$179 one-way IAD → BOS JetBlue					1h 28m nonstop
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<b>Select Leg</b> \$230 one-way Amtrak					6h 34m nonstop
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<b>Select Leg</b> \$224 one-way United Sunair dba United Express operated			EWR		3h 54m 1 stop
<b>Select Leg</b> \$215 one-way Delta Connection/DI Shuttle	10:00am			1:15pm	3h 15m 1 stop
<b>Select Leg</b>					6h 34m nonstop



I didn't know anything about the travel industry, how pricing worked, how information got passed between airline systems, how airlines made decisions...

all I knew was **how to write code and I had a problem** and I thought other people did as well...

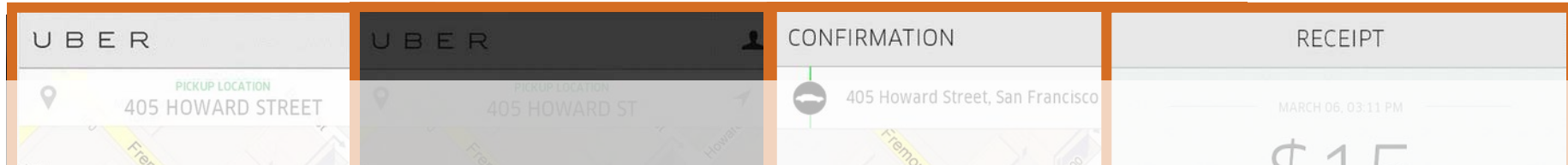
[increasingly] the **debate about who owns the content is secondary in importance to how that content gets used**

Adam Goldstein



# Uber

- Redefining taxi, as a mobile app that connects a network



**“Customers will have an experience; the question is, will it be one you**

**designed?”**



# Lessons Learned from Airline Deregulation

## What happened?

- Controls lifted 1978
- Fly anywhere (in US)
- Charge any price

## What was Impact?

1. *Dramatic price changes*
2. *New route networks*
3. *Customer segmentation*

*Data driven innovation throughout*

- Where was the tension in the airline system?
  - ✓ How did it get addressed?
- Where is the tension in public sector surface transportation?
  - ✓ How might it be addressed?
- What role do data driven solutions play?
- ***What does this mean for user experience?***

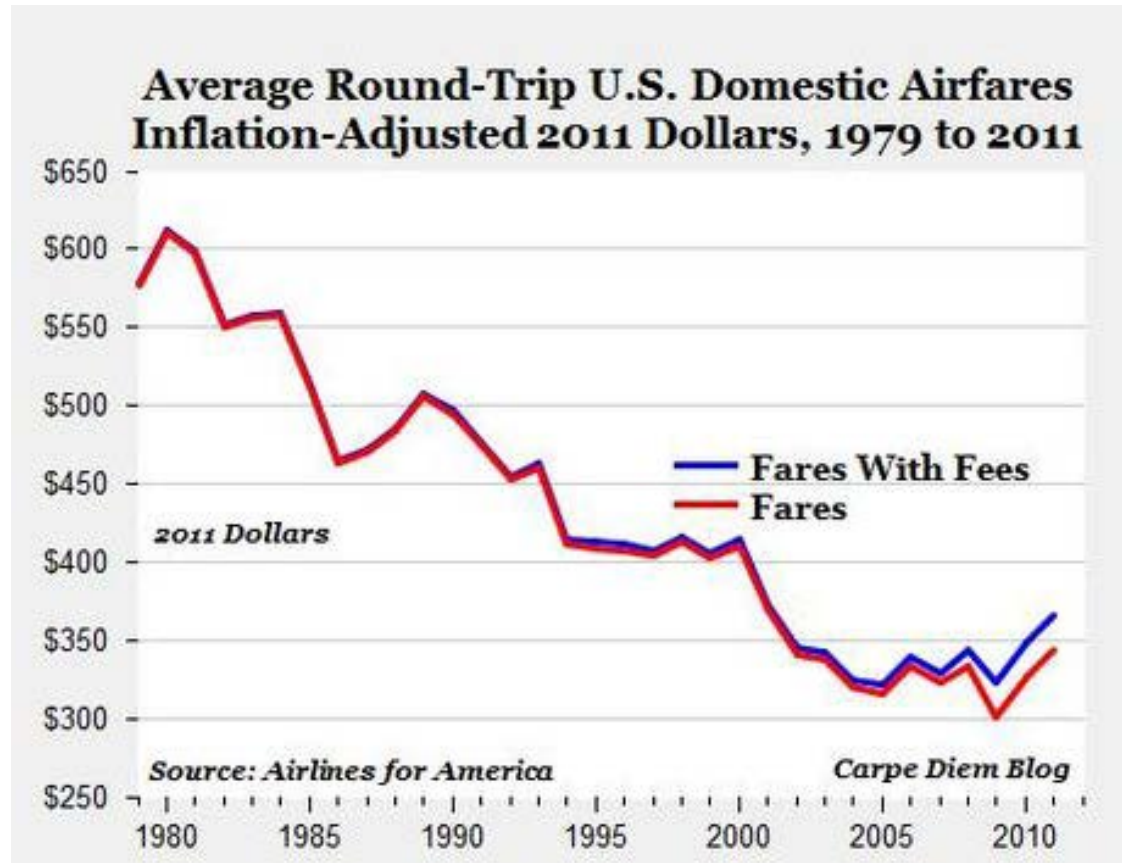
# #1. Dramatic Price Innovation emerging from Airline Deregulation

## What Happened?

- New low fare airlines
- New price competition
- Intense financial pressure
- Fight for survival

## What was result?

- Continuous evolution of prices, restrictions
- Distinguish price driven vs non-price customers
- Higher load factors
- New customers
- *New data science*



30 year decline in *real* price is 35%



# Price Innovation in public sector transportation

## What is situation?

- Funding limitations
- Infrastructure crisis
- Rising expectations

## What is opportunity?

- Tension between
  - > Private vs public funding
  - > New roadway building vs maintenance
  - > More transit vs more roadways
- Not all trips are equally important



# Stockholm Congestion Pricing

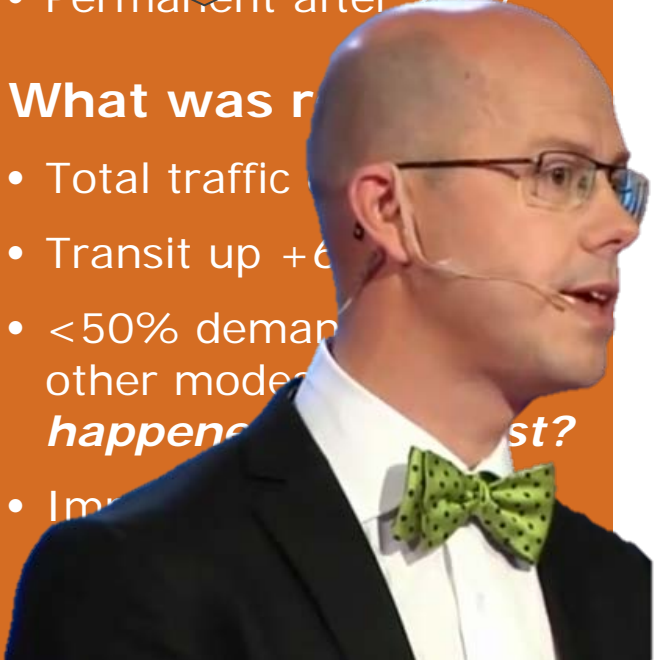
## *Understanding from detail data*

Who changed? And where did they go? They don't know themselves

- Permanent after 2007

### What was r

- Total traffic
- Transit up +6
- <50% demand other modes
- *happened*
- *st?*
- Imp



- travel **patterns** are much **less stable** than you might think... each day people make new decisions and people change, work changes...
- each day decisions are **nudged ever so slightly** away from rush-hour car driving in a way people do not even notice...
- [when addressing social systems] create incentives, don't plan details, let **people figure out** how to adapt

**Jonas Eliasson**

*Director Centre for Transport Studies at Royal Institute of Technology (Sweden)*

# #2. New Route Networks emerging from airline deregulation

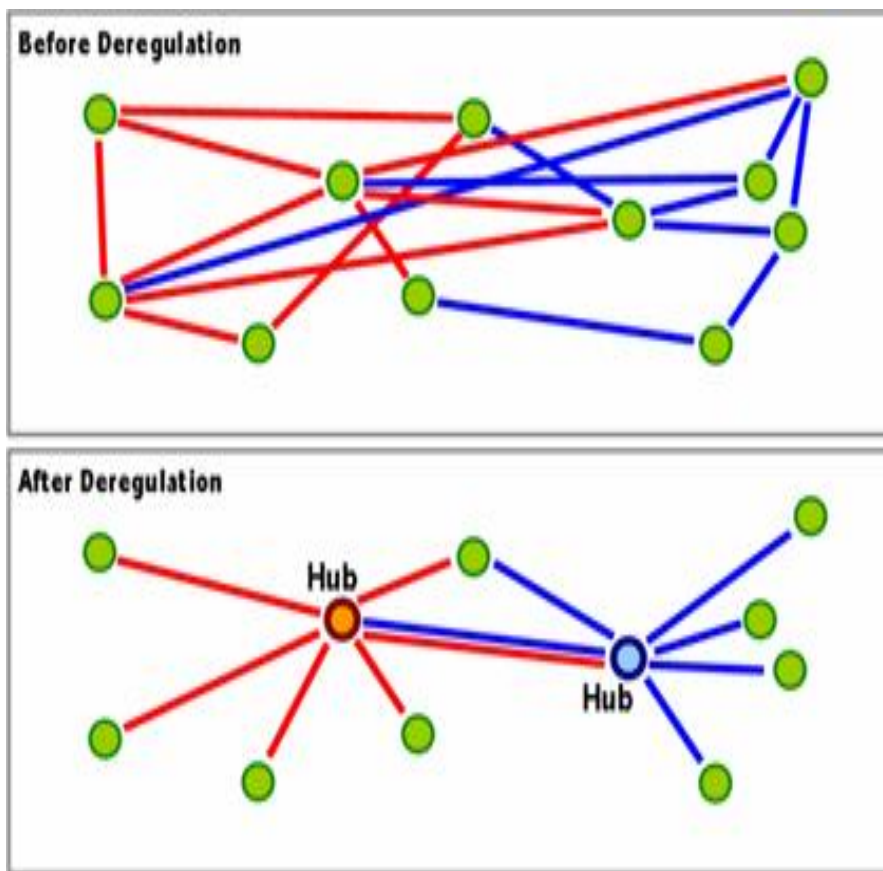
## What Happened?

- Routes realigned in hubs
- New provider types
- Hub driven expansion

## What was Result?

- Greater connectivity
- Many new flights
- New customers
- Higher load factors
- Competitive growth
- *Data tools for managing contribution & performance*

## US Airline Domestic Route Structures



# Capacity & Service Innovation in public sector transportation

## What is Situation?

- Manage congestion
- Improve connectivity
- Improve return on investments
- Rising user expectations

## What is Opportunity?

- HOT lanes, better access
- Public-private partners for road, rail and transit
- Improve transit and last mile solutions
- ***Network flow focus***

*“we need a system that is robust to modeling error... a system of growth and development where we don't need to project correctly in order to succeed”*

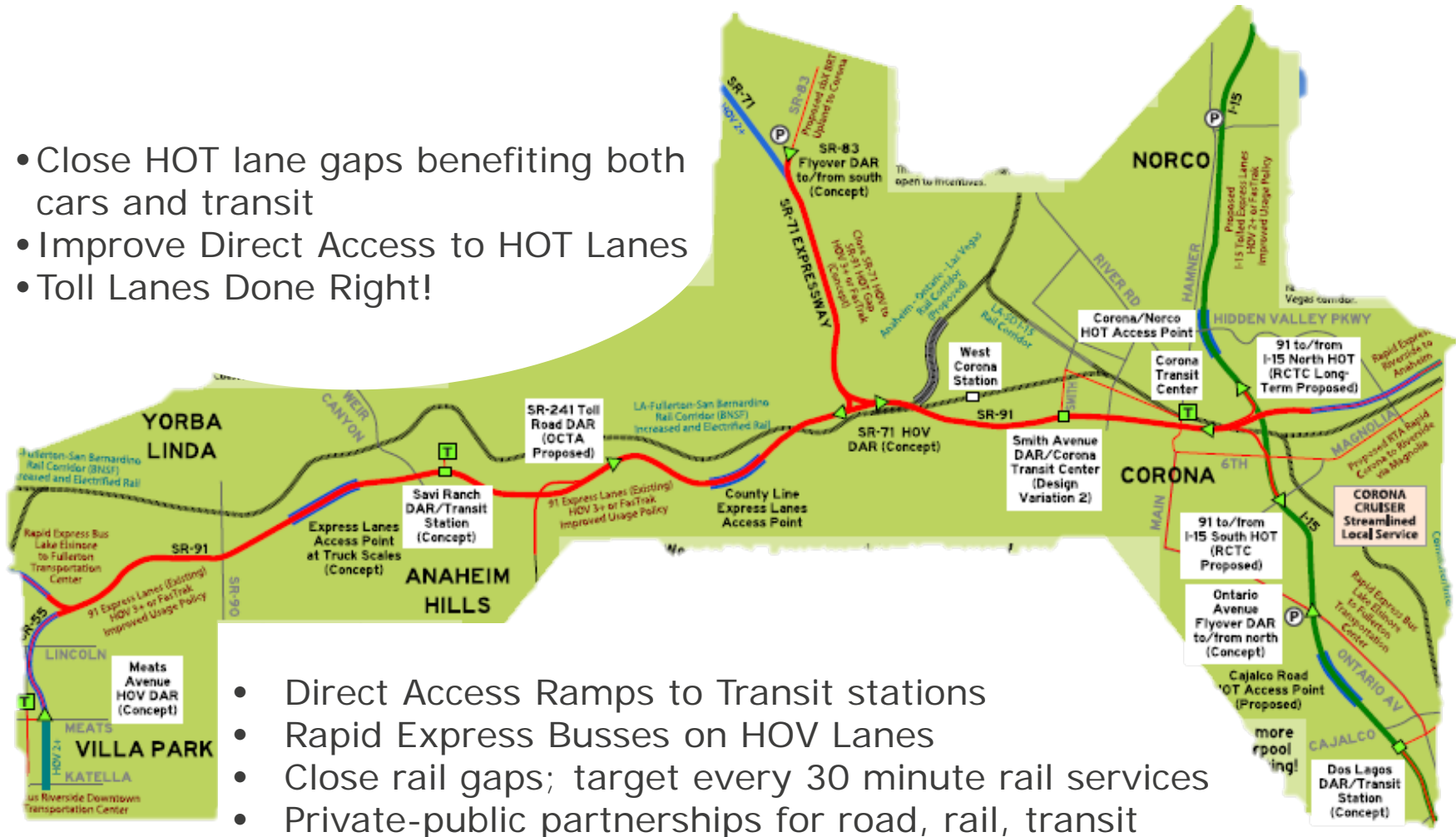
Charles Marohn  
Streets.MN



# The Transit Coalition **FUTURE VISION** 91 Freeway Corridor

Multi-Modal Mobility

- Close HOT lane gaps benefiting both cars and transit
- Improve Direct Access to HOT Lanes
- Toll Lanes Done Right!



- Direct Access Ramps to Transit stations
- Rapid Express Busses on HOV Lanes
- Close rail gaps; target every 30 minute rail services
- Private-public partnerships for road, rail, transit

# Capacity and service integration

## Anaheim Regional Transportation Intermodal Center

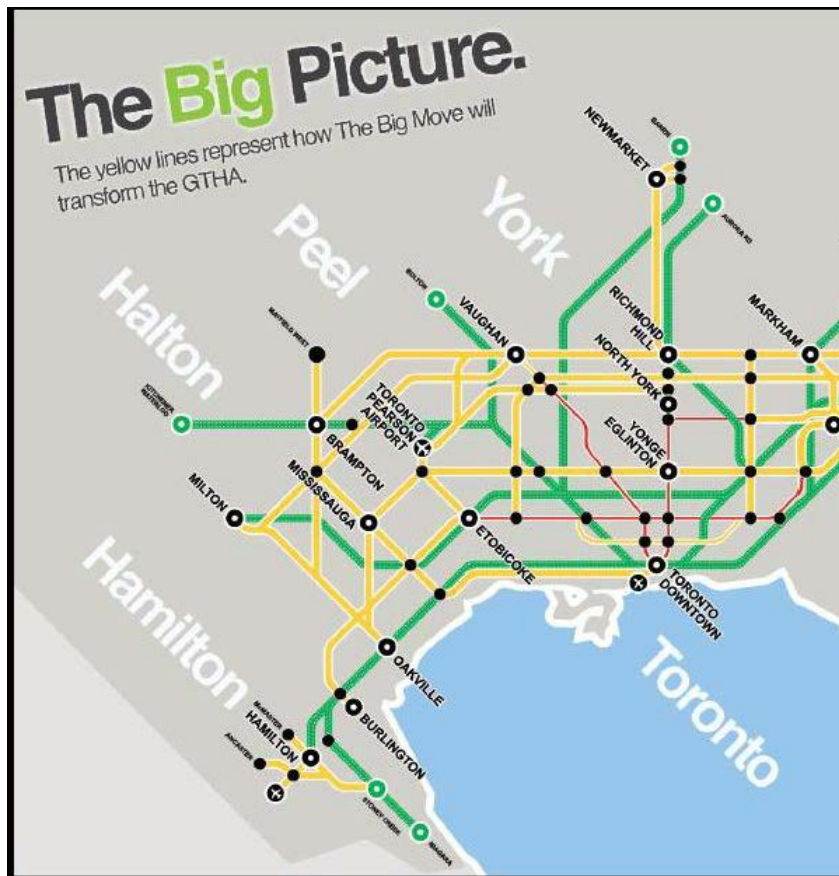
- Rail: Amtrak intercity and Metrolink commuter
- Bus: Orange County Transportation (OCTA), Anaheim Resort Transit (ART), and Megabus
- Highway: access to California State Route 57
- Bicycle: directly accessible from Santa Ana River Trail



### *Proposed terminus of:*

- *Future streetcar to Anaheim Resort and Platinum Triangle*
- *California High Speed Rail*
- *California – Nevada Maglev*

# Regional Mobility Hubs Greater Toronto



“system of connected mobility hubs”:

- for transit
- high density development
- ***customer service excellence***
- as origin, destination, or ***transfer point*** for a significant portion of trips...

# Singapore Land Transport Authority

## *Achieving excellence in people centered land transport*

### Problem/Challenge

- Plan for road, rail, bus, taxi and private vehicle network
- IT systems not designed for **analytics**
- Amount of data online is **insufficient**

### Solution

- Integrate data from disparate systems for high volume data crunching, statistical analysis and reporting

### Result

- Information readily available for analyzing historical KPIs and travel patterns
- New measures of user experience
- Measure efficiency levels & resource use
- Support modeling for strategic plans



...policy and planning decisions with fast turnaround are critical success factors...our expertise, knowledge and experience are complemented by **data-driven analytics on different domains**

...to achieve a **people centered land transportation system**

- Rosina Howe, Group Director of Innovation and Infocomm Technology, LTA



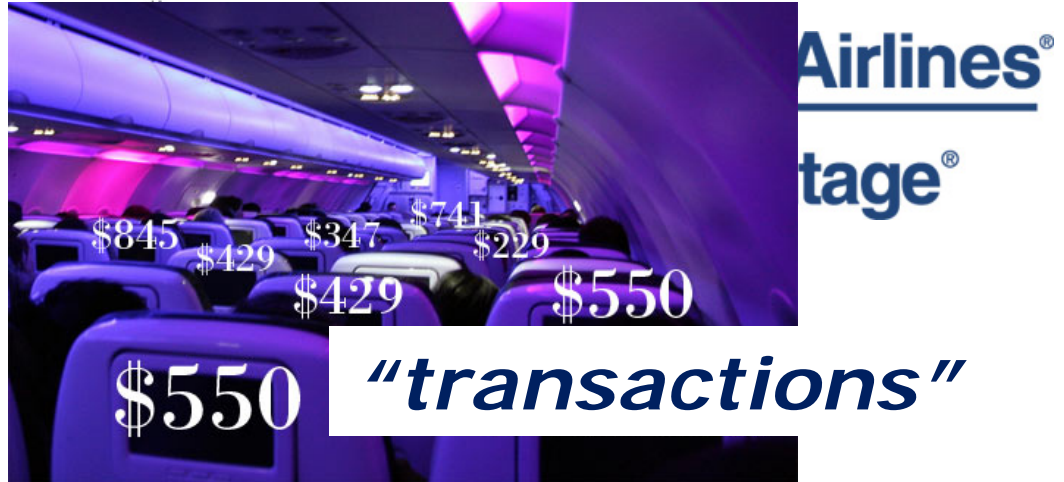
# #3. Customer innovation emerging from airline deregulation

## What Happened?

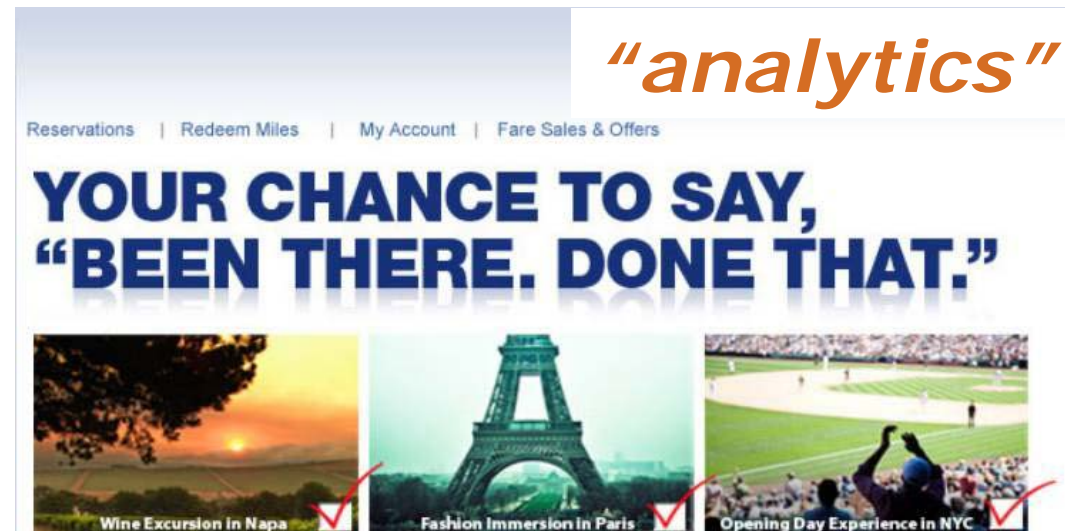
- Mileage based FFP created
- Program expands beyond airlines

## What was Result?

- Better differentiate for high value customers
- Opportunities for marketing communication
- Partners add value for customer and carrier
- *Data driven customer experience innovation*



***"transactions"***



E6

12:24 pm



### Standby Upgrades Available for Purchase

Want to upgrade to First Class?

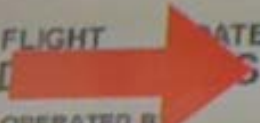
If the Class code on your boarding card is B, H, K, M, Q or Y, you may use your credit card to purchase an upgrade to first class.



BE FIRST MORE OFTEN.



FLIGHT	DATE	CLASS	ORIGIN
[REDACTED]	SEP	Y	JACKSONVILLE FL
OPERATED BY		COACH	DESTINATION
DELTA AIR LINES INC			ATLANTA



14 1:00 pm

s To:  
rk-LGA

12:25 pm

Gate E11  
Delayed  
des Avail.



PHILIPS

# Nishi-Nippon Railroad Co.

## *Smart Card Analytics*

### Problem/Challenge

- Large railway and provider of local and long-distance bus service
- Changing customer demographics

### Solution

- Launched Nimoca smart card, for fare payment and retail shopping outlets
- Equip users with near-real time analytics

### Result

- Customer analysis for participating stores, provides details of daily purchases
- Stores conduct more effective marketing and improve customer service
- Expansion into alliances with cards and services provided by other rail, bus, etc



“The broad and quick service cycle linking the three players—card holders, member stores and NIMOCA Co.—will improve the benefits each player gets”

*Masataka Sugimoto,  
Nishi-Nippon Railroad Co*



# Mobility Hubs in Toronto

## Engaging Customers in the Funding Challenge

# THE BIG MOVE

TRANSFORMING TRANSPORTATION IN THE GREATER TORONTO AND HAMILTON AREA



**5 Share Your Choices** Build the conversation and keep informed

	You:	Average user:
Parking levy (\$ per day)	+0.5	+0.92
Road tolls (\$ per km)	+10	+7.56
Gas tax (\$ per litre)	+14	+6.9
Sales tax (%)	+0.25	+0.57
Transit fares (\$ per trip)	-20	+2.52

This shows how your funding choices compared with other users.

Thank you for participating!  
Visit [www.BigMove.ca](http://www.BigMove.ca) for more information.

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To see more comparison information, fill the progress bar above and then click Compare Yourself

Thank you for participating!  
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Share

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+



# So, what does User Experience have to do with Big Data?

**Tension exists in:**

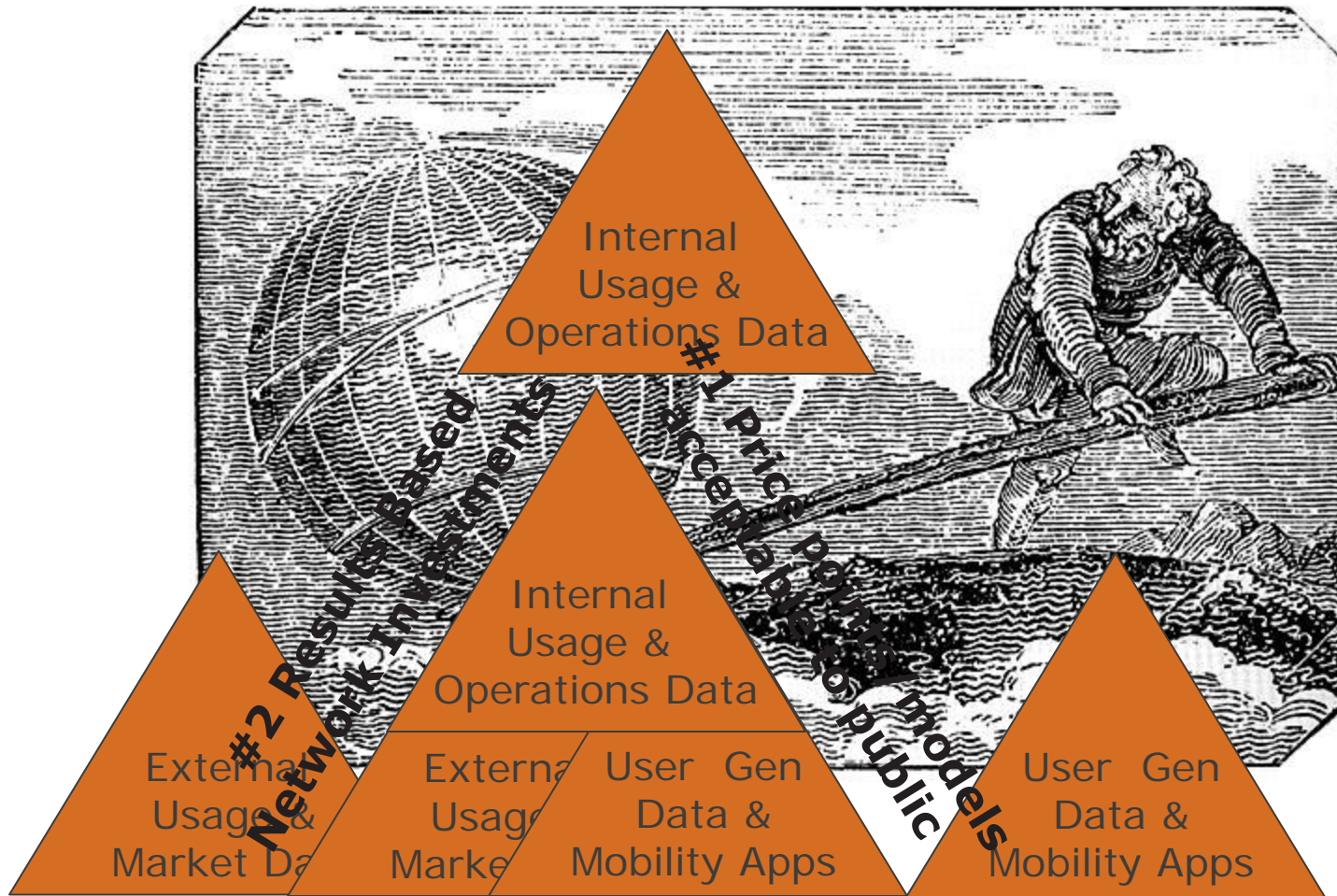
**Analytic Insights from:**



Customers will have an experience: will it be one you designed?

# Opportunity in Transportation Data

*Integration is a "force multiplier"*



Real advantage comes from integrating them leveraging accumulated data

User Experience

TERADATA®

# THANK YOU!

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Read more on Teradata Voice on Forbes.com