



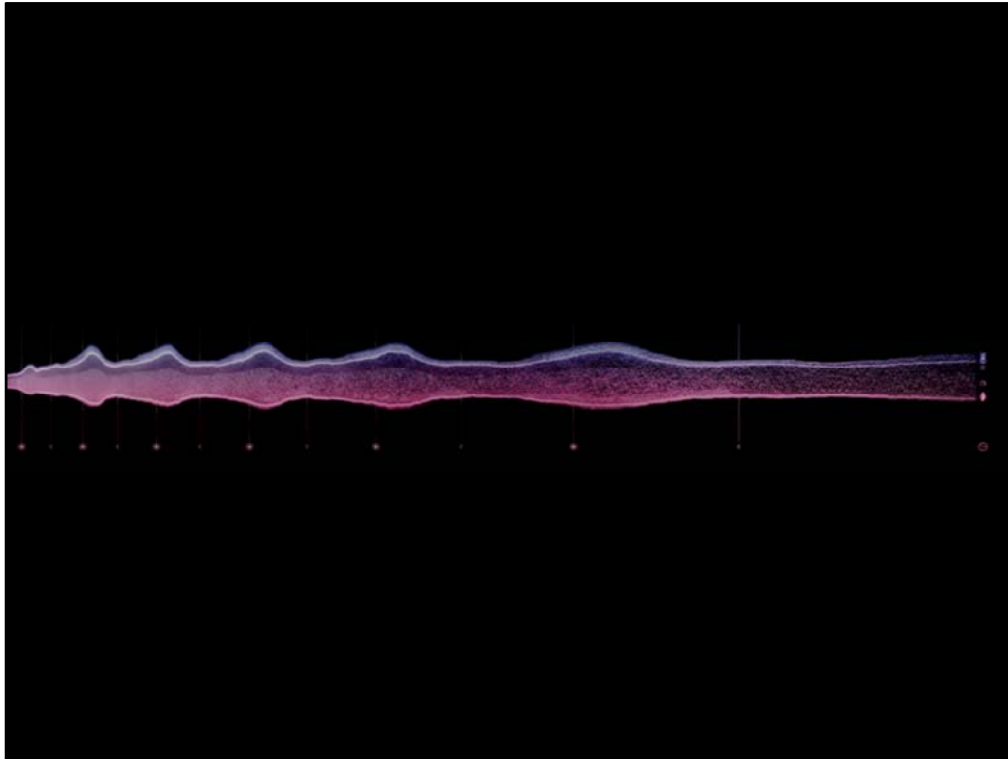
Thank you for having me here to present the work of our lab. We are about 35 researchers based at MIT and Singapore, studying the future of cities. Specifically, technology and use of data are changing the way we understand, live in, and shape urban environments. We are interested in all aspects of the city: mobility, health, social networks, design, infrastructure, and of course, waste.



Every conversation, SMS message, IP call and email in the world for one week on a single mobile network.

Every break up and business deal

Every thank you and I'm sorry

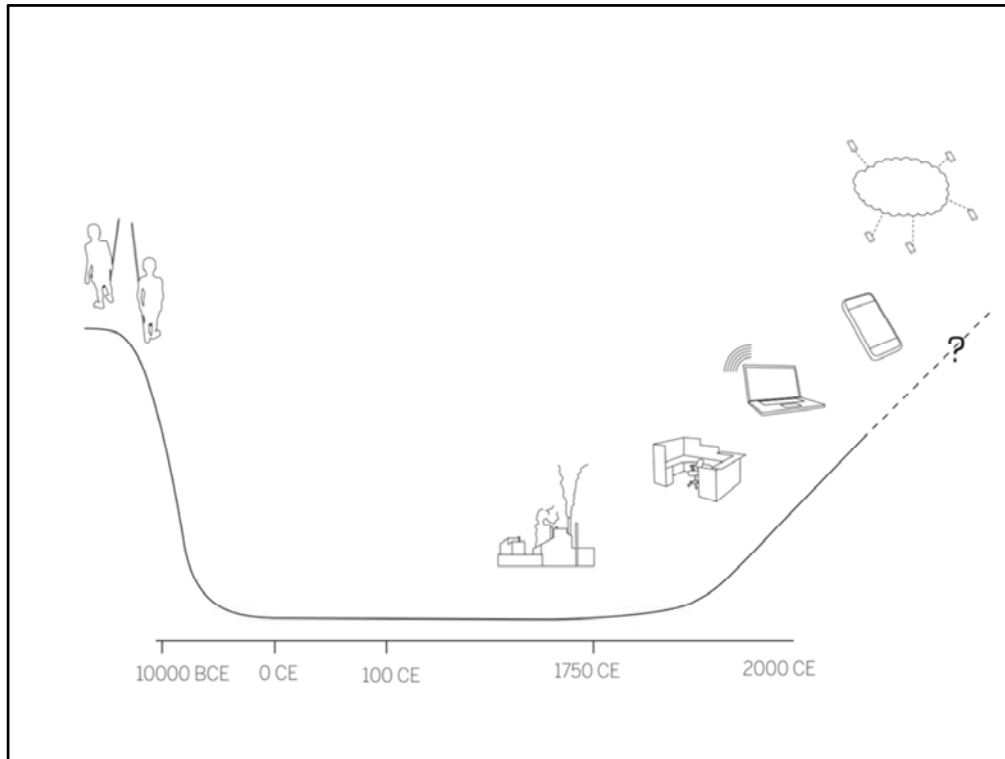


We call this the signature of humanity
When we look at the digital bread crumbs of our everyday lives, we can find interesting stories about us, humanity.

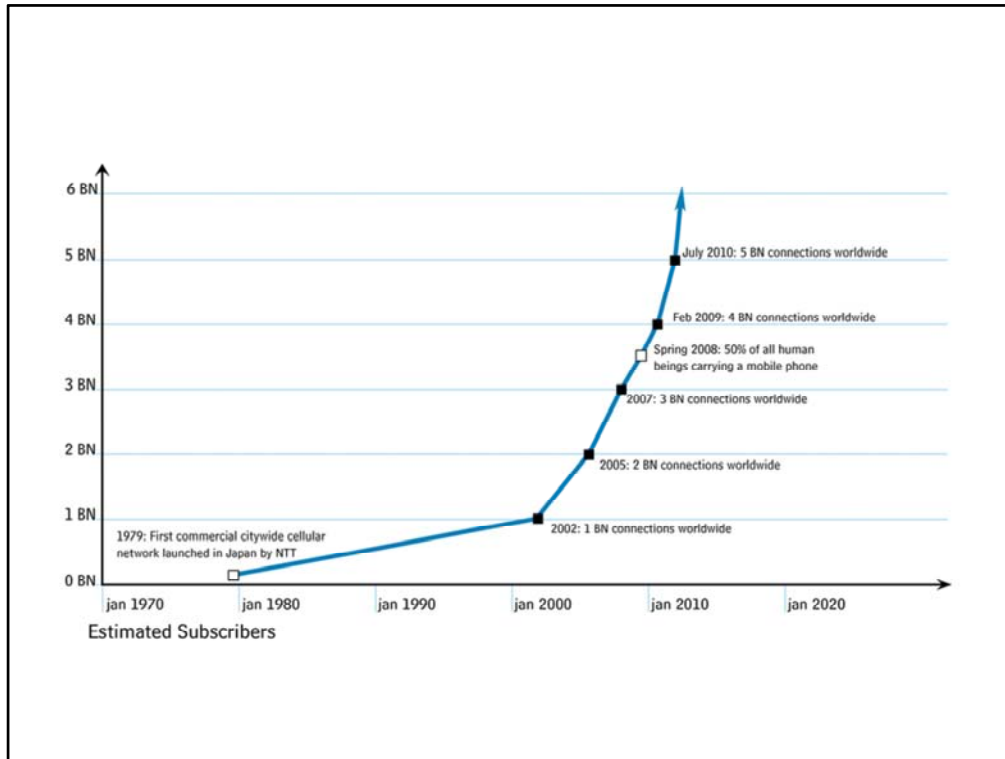


I start with a single, very large number
5 exabytes...

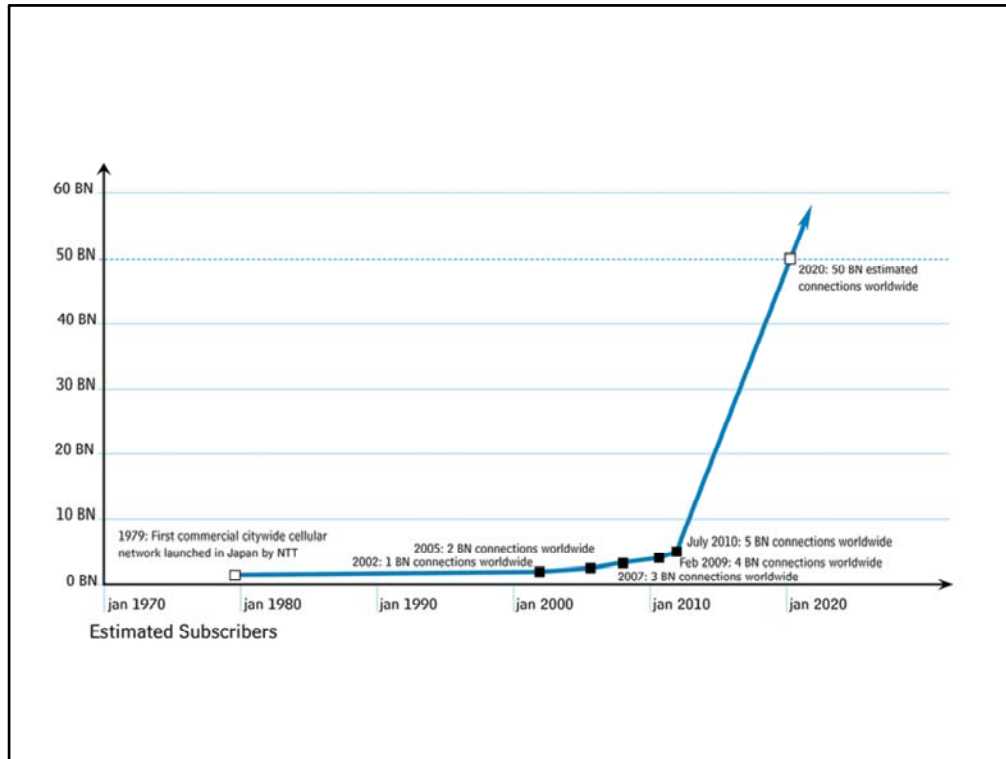
Amount of data created since dawn of humanity to 2003; but also the amount created in the past 48 hours. An amazing amount of information...



Our ability to generate, store, and analyze information about our own activities is growing rapidly.



As one example- cellphone network- one of the most pervasive across the world, across all socio economic backgrounds



Projections from ericsson indicate that we are set to reach 50bill connections by 2020... not 5 phones per person but... more objects, device and people becoming connected



Person to person



Devices to person



Person to computer to machine



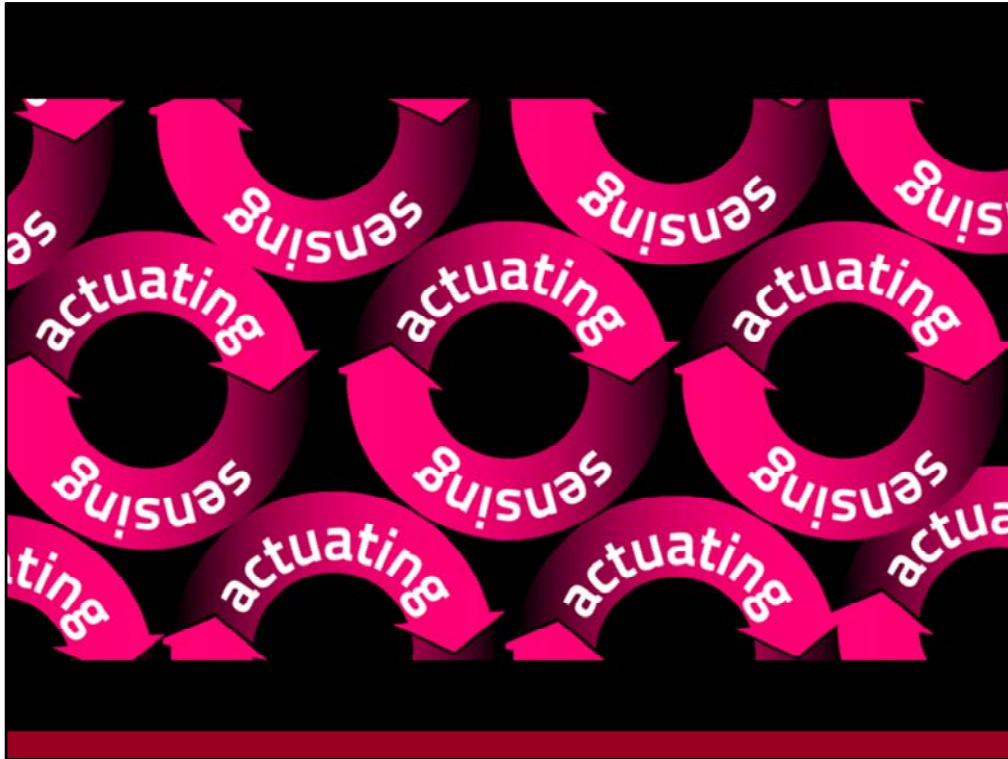
Machine to machine



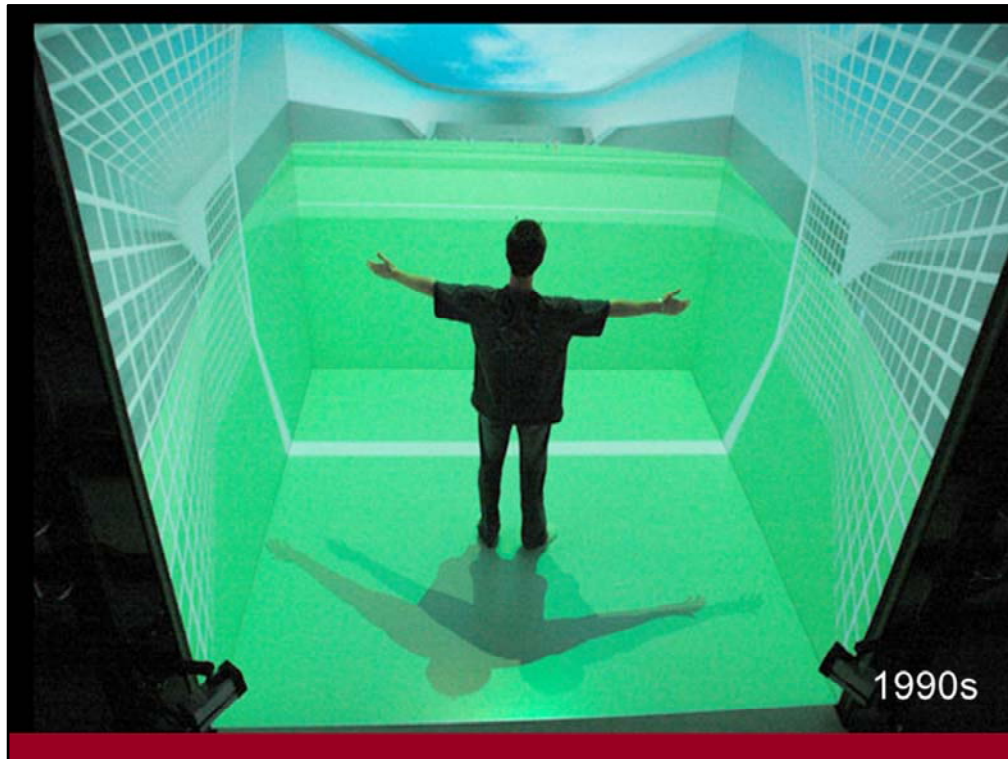
Sensing, you collect information

Actuating, you respond to that information.

We do this everyday as humans. You smile and I respond in kind. If you're falling asleep to this meeting, I also have to change.



Now, the amazing thing is we believe it's almost like every atom out there in our cities
radically changing interface between individuals and the city.



1990s vision of virtual reality... Technology would change everything

"...cities are leftover baggage from the industrial era" and concluded that "we are headed for the death of cities..."

GEORGE GILDER

George Gilder, a futureist declared that...

"...the post-information age will remove the limitations of geography. Digital living will include less and less dependence upon being in a specific place at a specific time, and the transmission of place itself will start to become possible..."

NICHOLAS NEGROPONTE
BEING DIGITAL

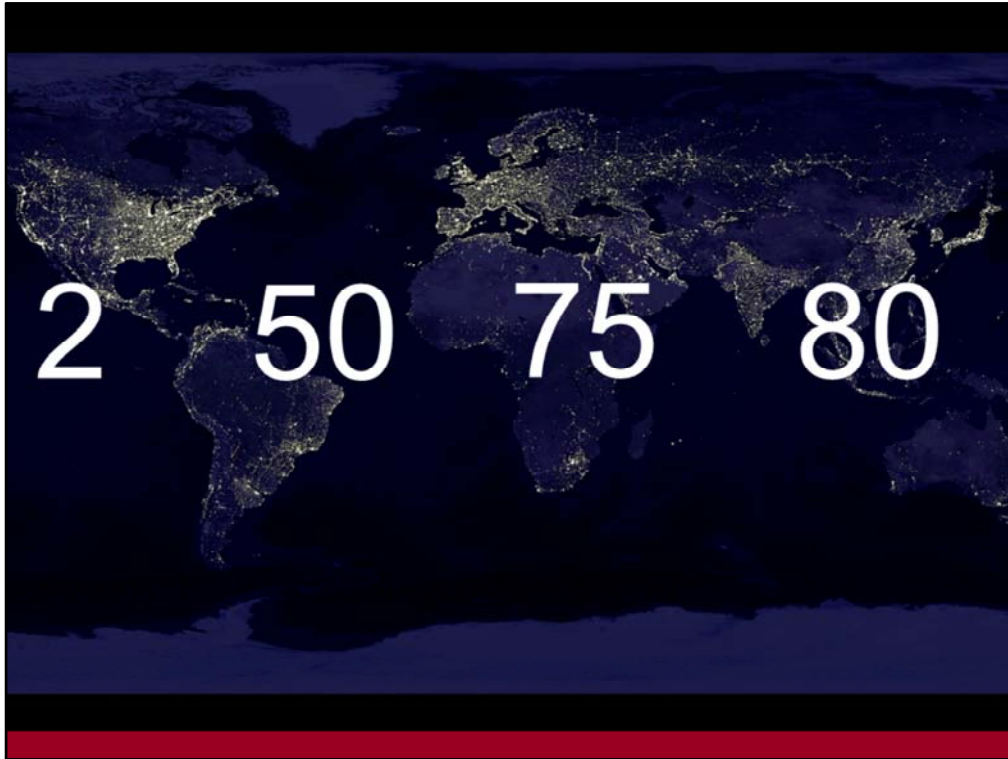
Nick Negroponte even write that...



"in 2008, the world reached an invisible but momentous milestone: for the first time in history more than half its human population, 3.3 billion people, live in urban areas. by 2030, this is expected to swell to almost 5 billion".

UNITED NATIONS
POPULATION FUND

But we know that something else actually happened. We became an urban population with more than half of the world's population now resides in cities.



Cities are a big deal:

2% of earth's crust

50% of population of world

75% of energy consumption

80% of CO2 emissions... BIG implications if we can make cities more efficient.



More fundamentally, there's always been a relationship with cities and technology.
Learning from the past models of city making and building



Car centric city... The great monument of the Interstate Highway system, for example.



To today.. Rapid growth in SIZE and DISTRIBUTION across all continents... But what is the new city?



But what does the future city look like

-Where technology can serve to enable the citizen in a profound new manner...

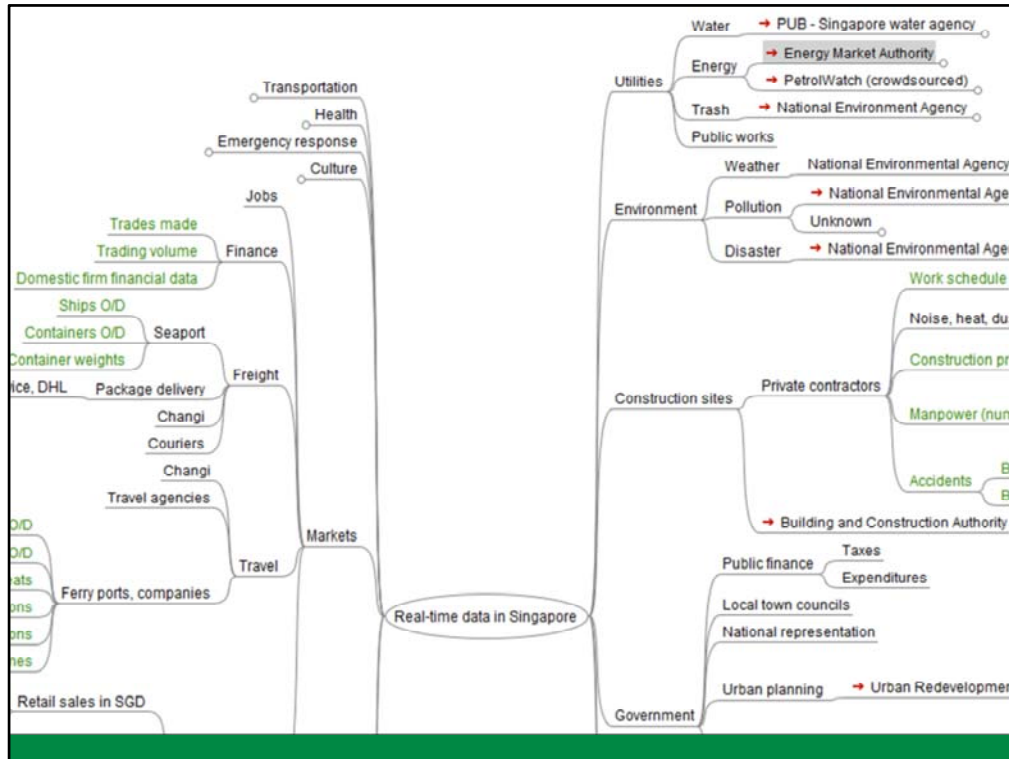


Where technology can serve to enable the citizen in a profound new manner...

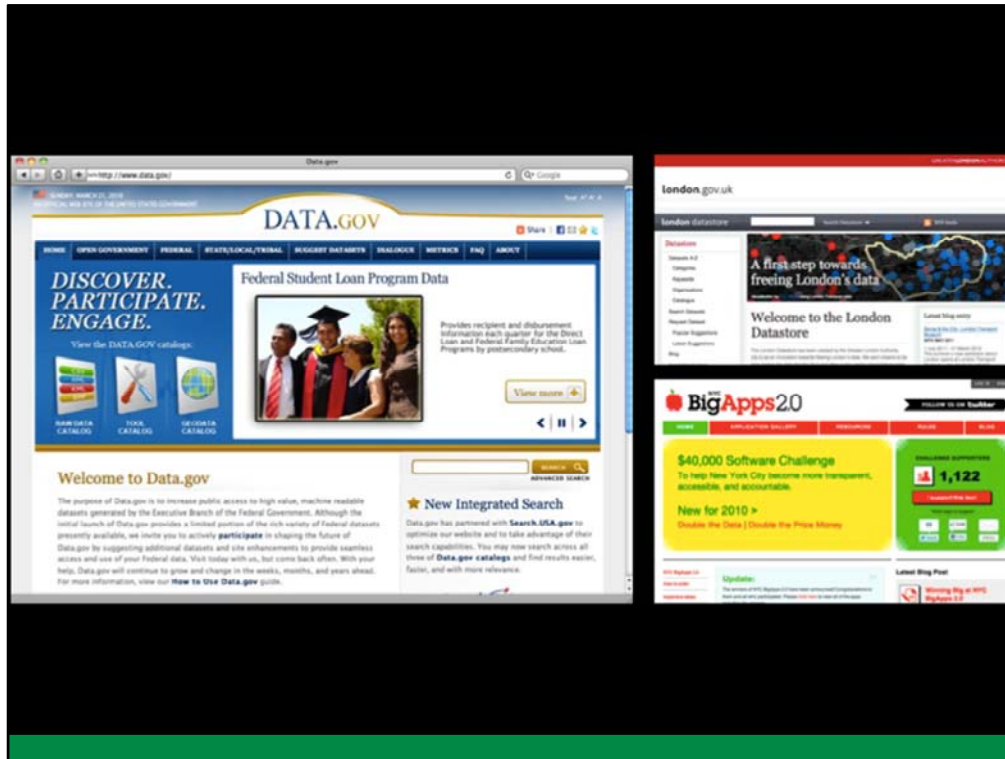
A large green square with a thin black border, containing white text.

LIVE SINGAPORE!

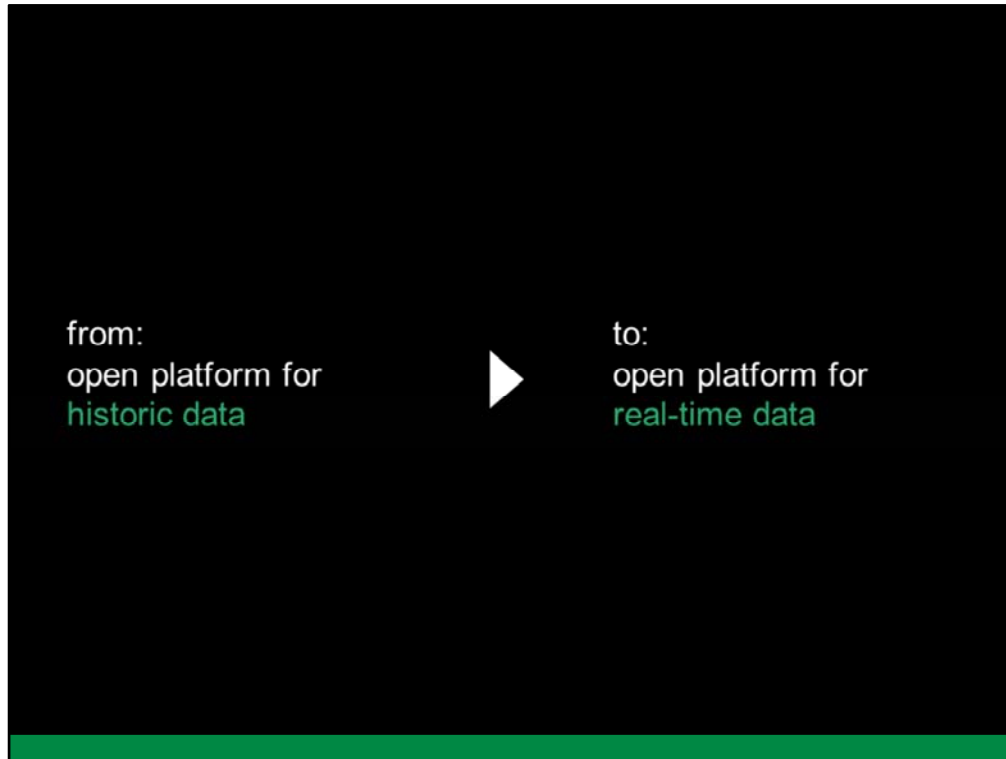
MIT-SINGAPORE ALLIANCE FOR RESEARCH & TECHNOLOGY



A city produces a ton of data in realtime... From billing and permits to transportation operations.



While cities have created platforms to make available archived data, which to be frank is often poorly organized and lacking substance, can we do something for real-time information.

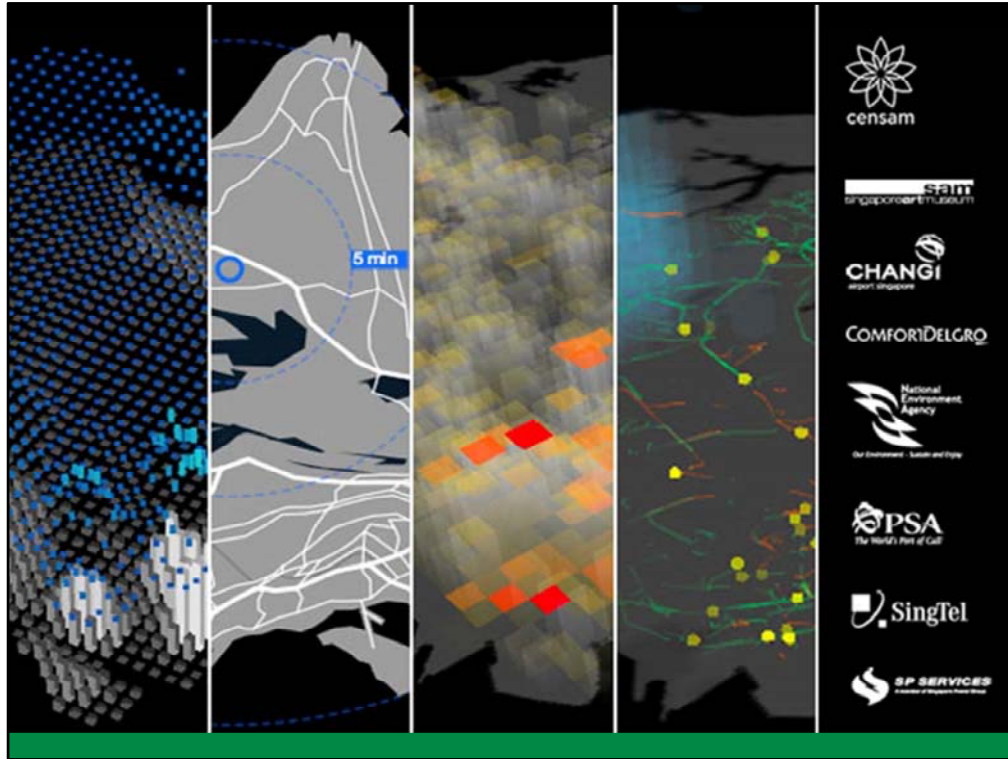


Idea of the real-time city and tapping into the invisible data streams in our environments has evolved.

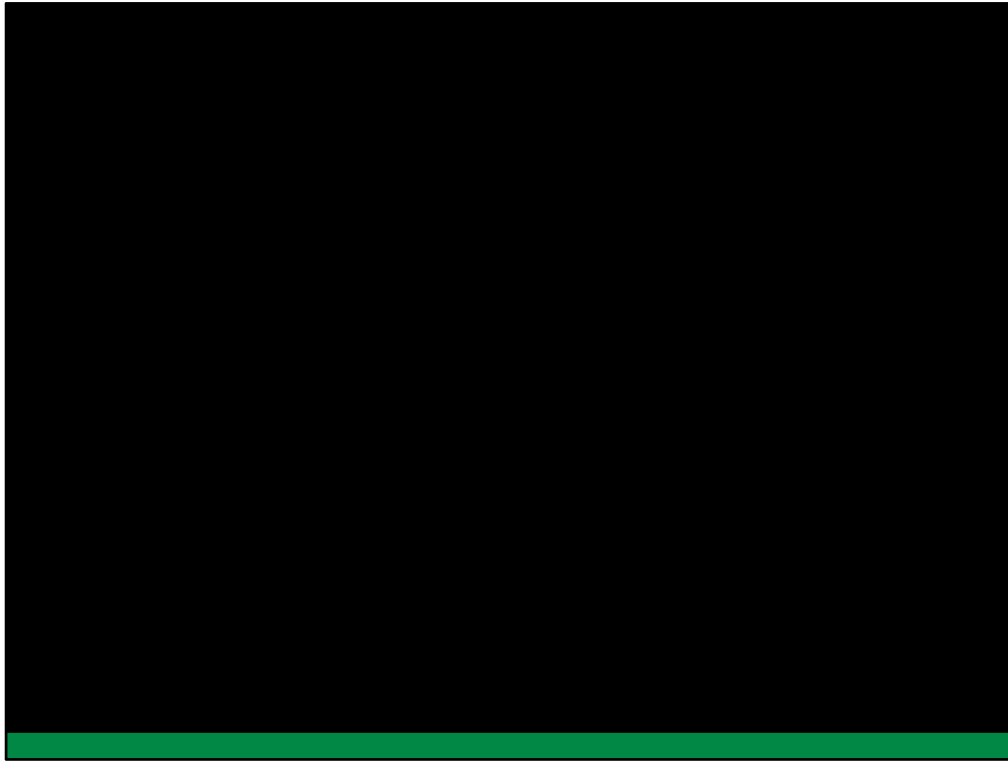
In April, we launched our newest project in Singapore where there is an abundance of data being collected throughout the city.

-REAL TIME DATA to ENABLE YOU TO KNOW WHAT IS HAPPENING AROUND YOU in your city

-Creating open data platform- combining multiple data streams- with different combinations information that can be extracted growths



First “urban demo”, a step to make our work public was an exhibit at the Sing Art Museum bringing in various data in real-time or near real time for people to view and engage.



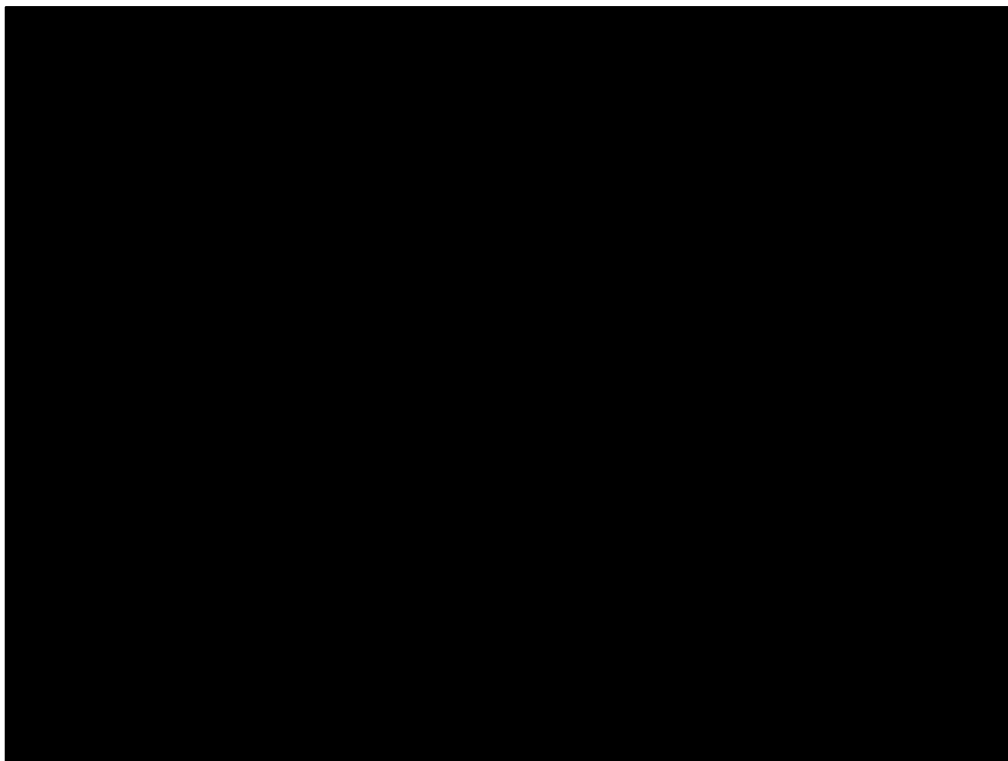
Involves several partners – who have shared data...

- First yr-- SAM exhibit- presented first iteration- demonstrating the merit and strength of combining different datasets- 2nd PLATFORM ARCHITECTURE

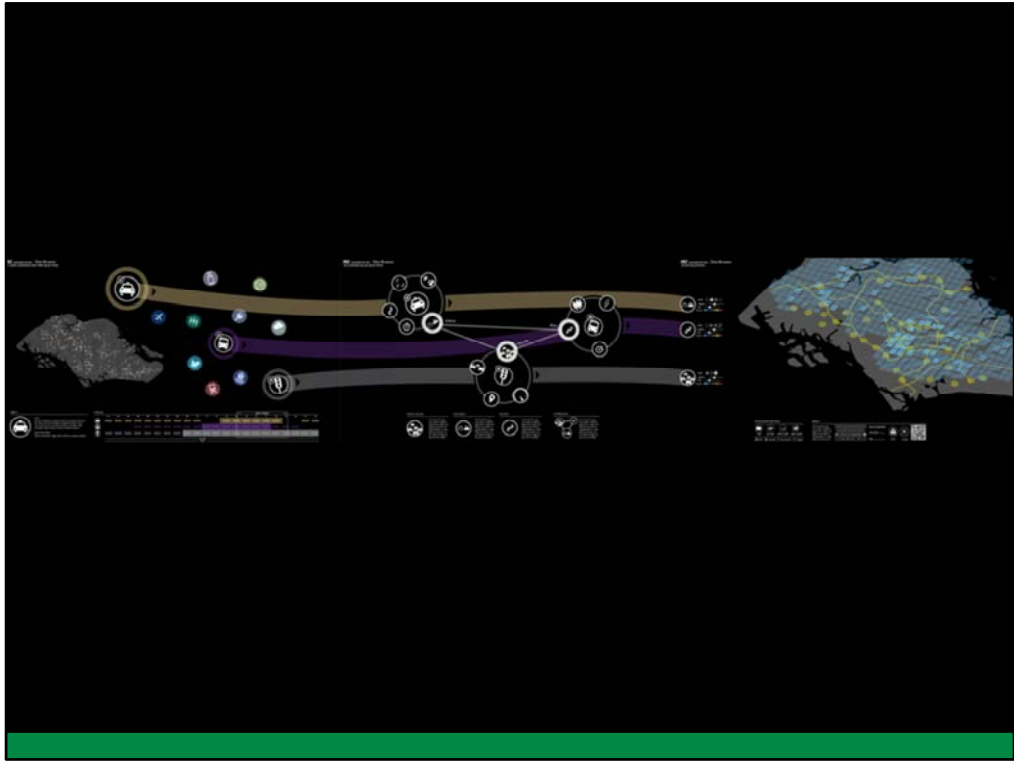
- Urban real-time data platform- interface and interaction models for the platform, visualization tools for urban data



Drastically different view of the city, its operations and how we make decisions...





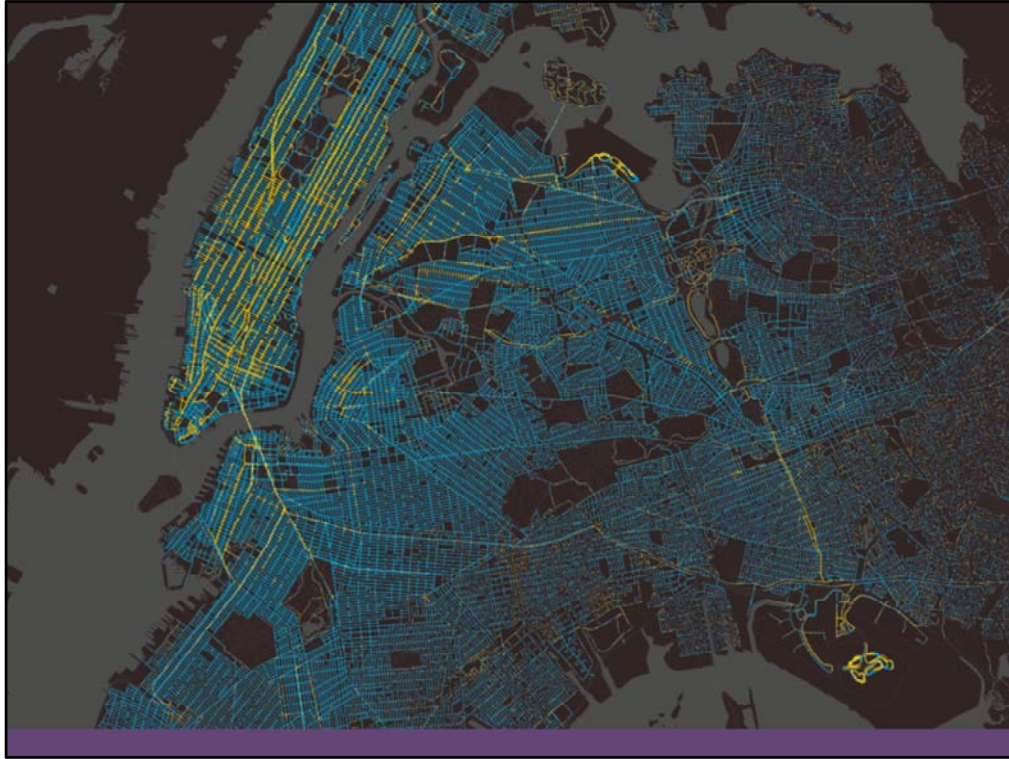




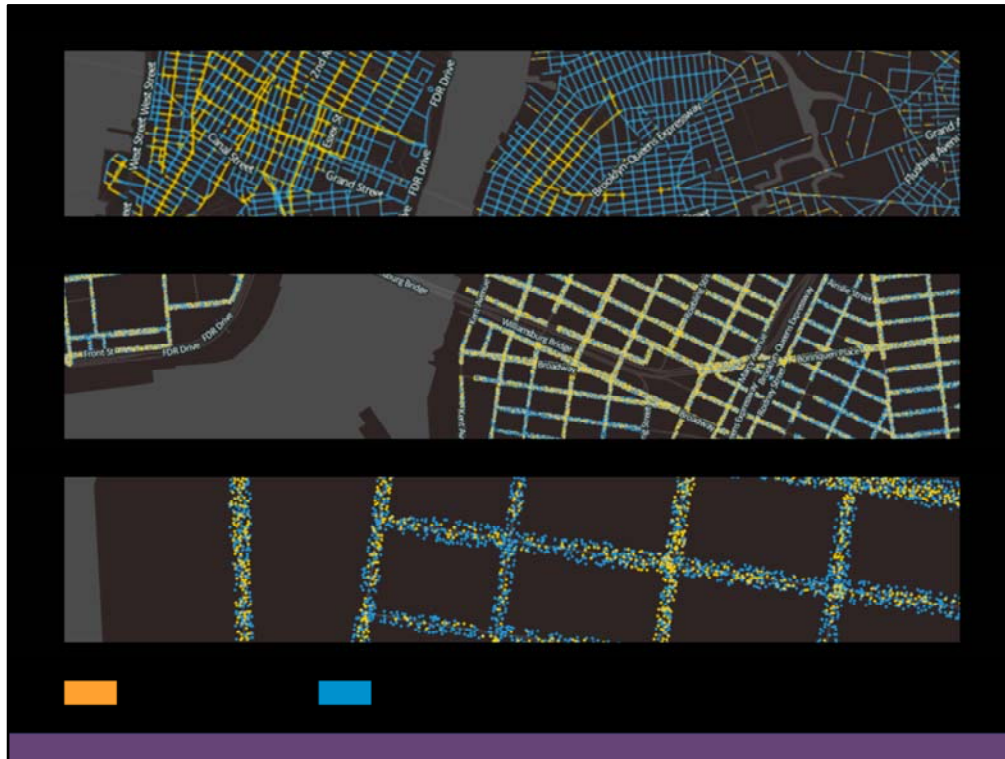
HUBCAB
GENERAL ELECTRIC



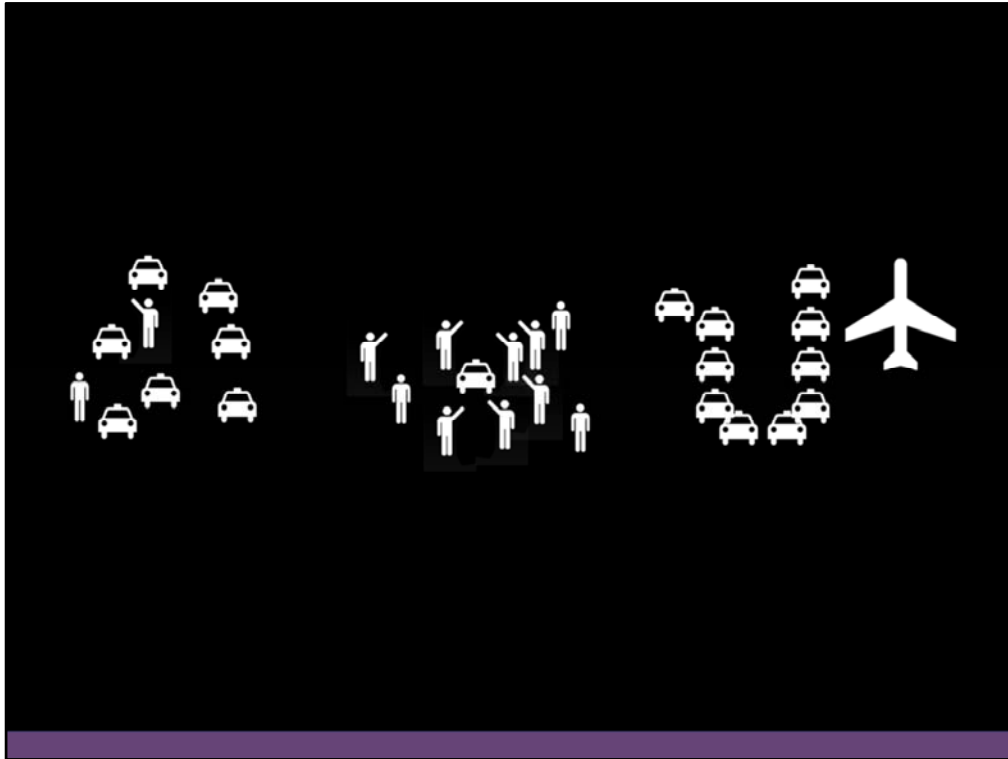
13,500 taxis in new york, data on drop offs, pick ups.



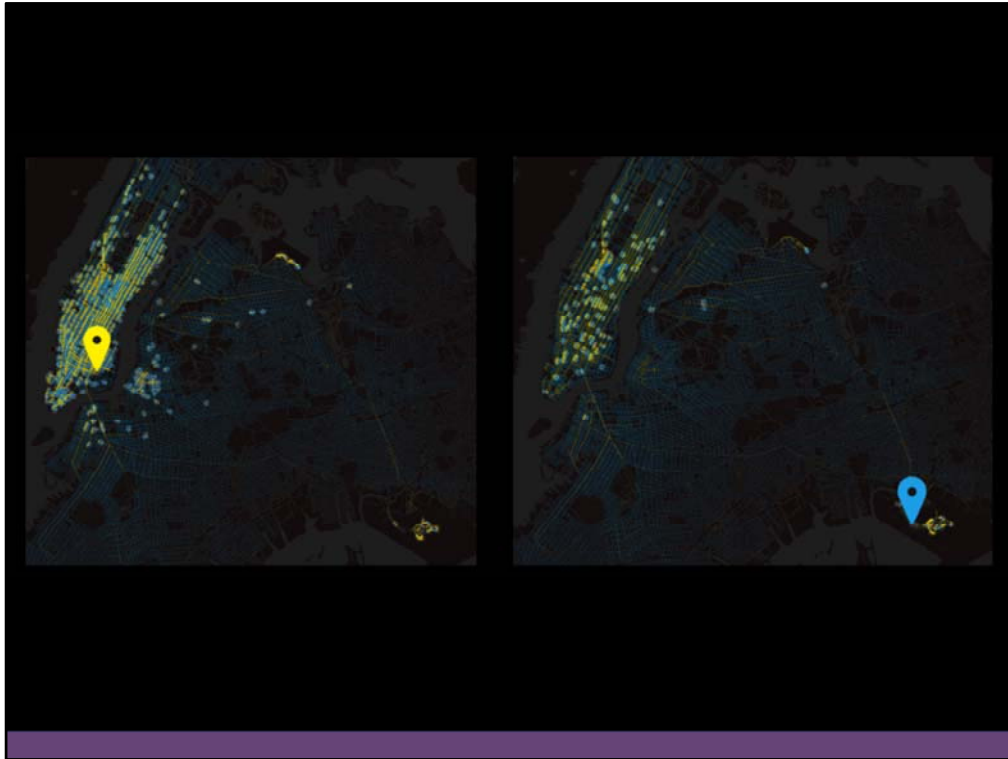
An amazing data set of taxis
170,000,000 trips a year

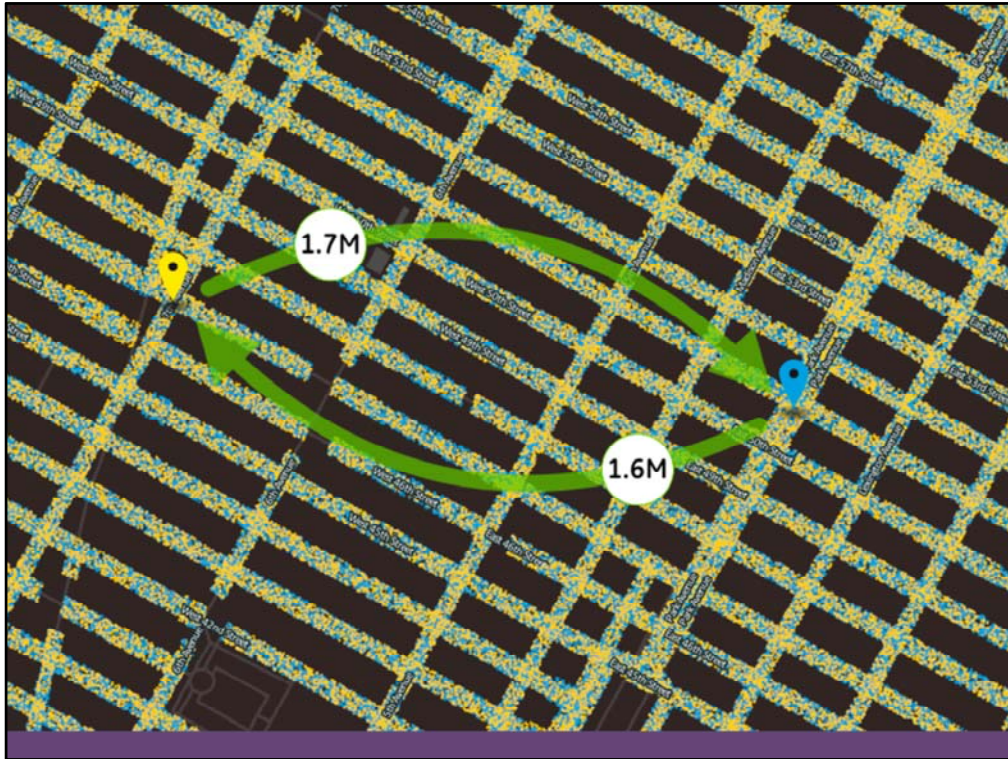


170,000,000 trrps a year



Currently inefficient





Looking at this information, we can combine trips!

k

