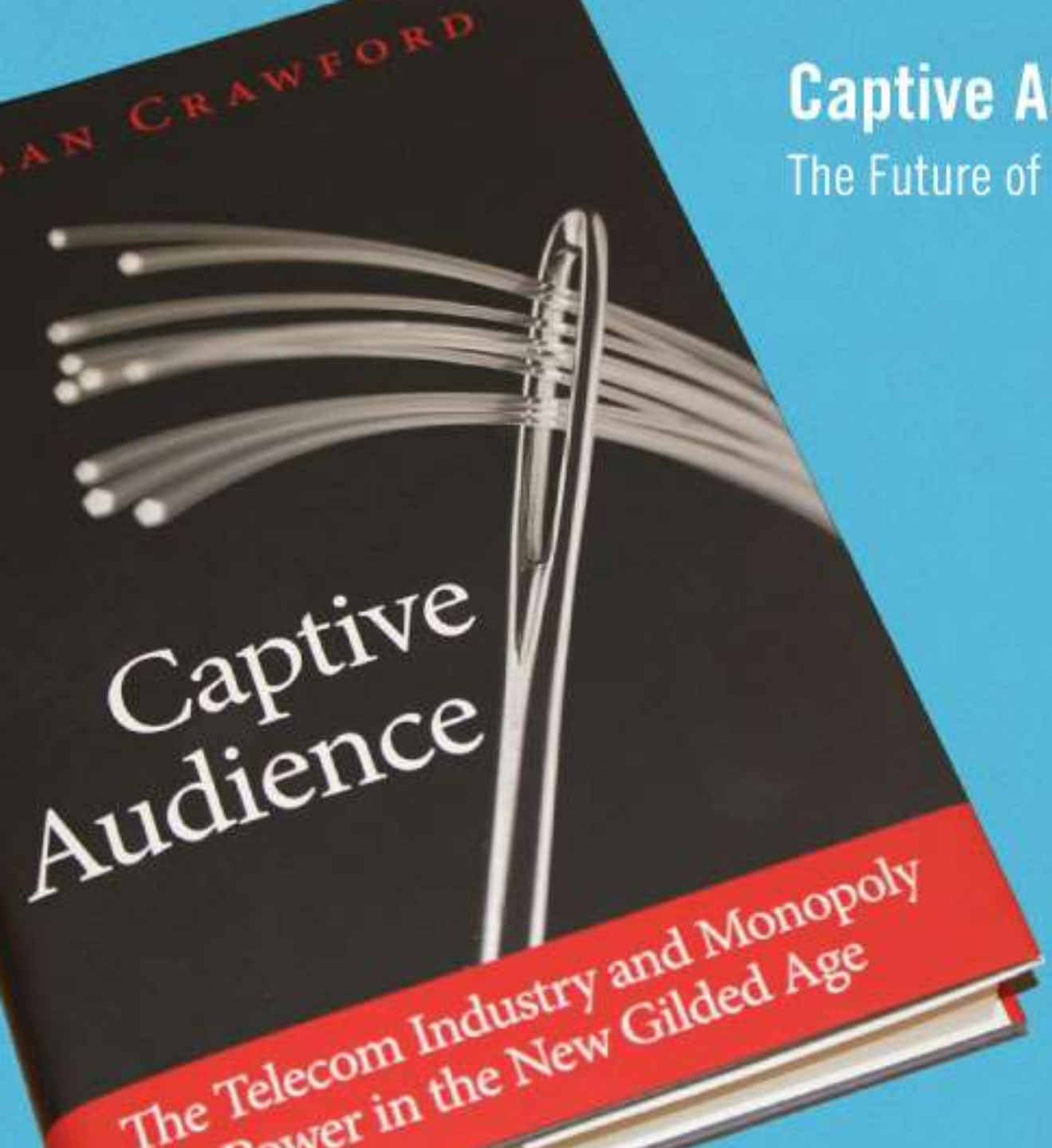
Preparing for the future of data use by local communities

Susan Crawford
Professor, Harvard Law School
Dec. 12, 2018

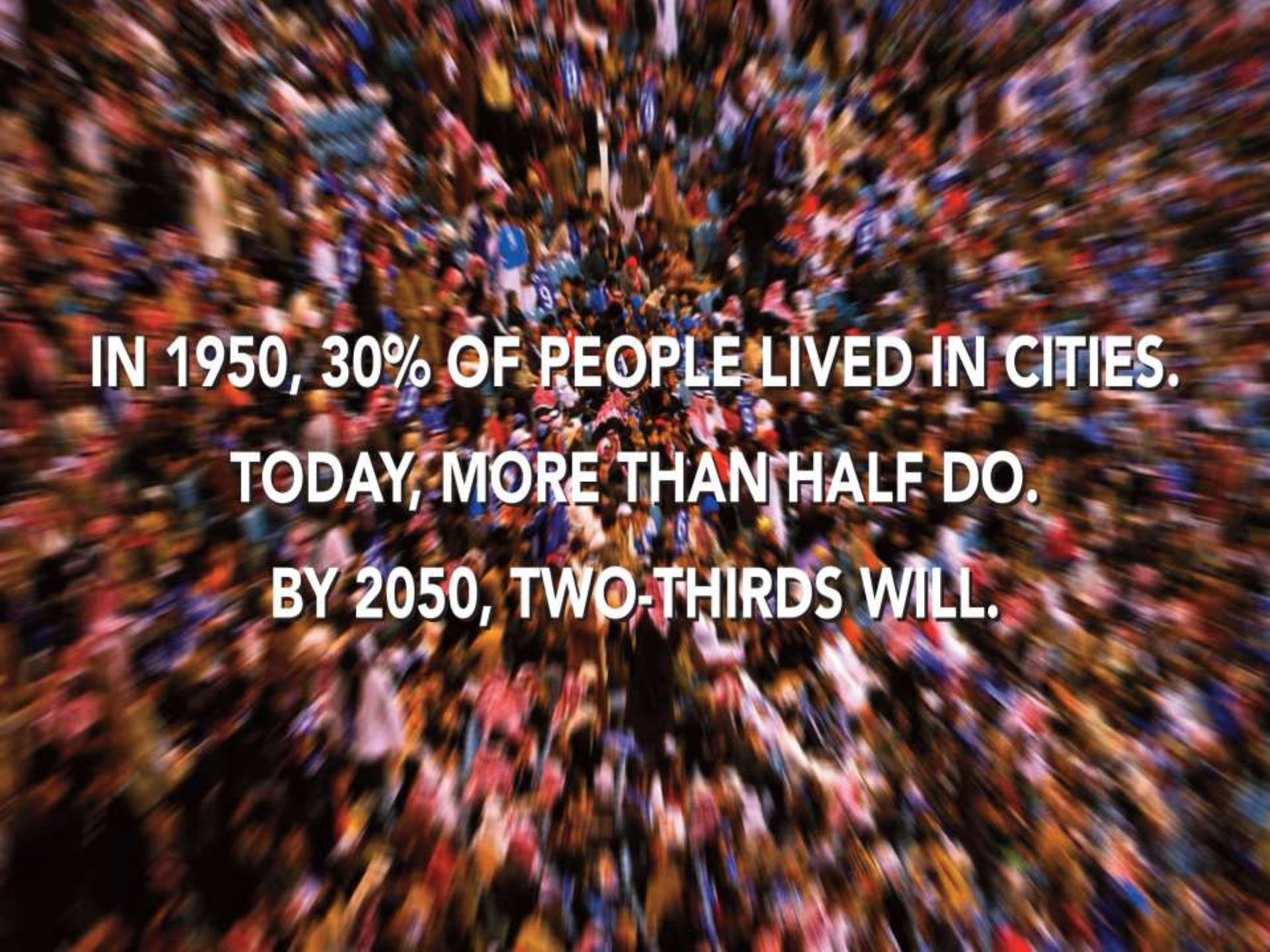


Captive Audience:

The Future of Information in America

#CaptiveAudience

Susan Crawford


IN 1950, 30% OF PEOPLE LIVED IN CITIES.
TODAY, MORE THAN HALF DO.
BY 2050, TWO-THIRDS WILL.

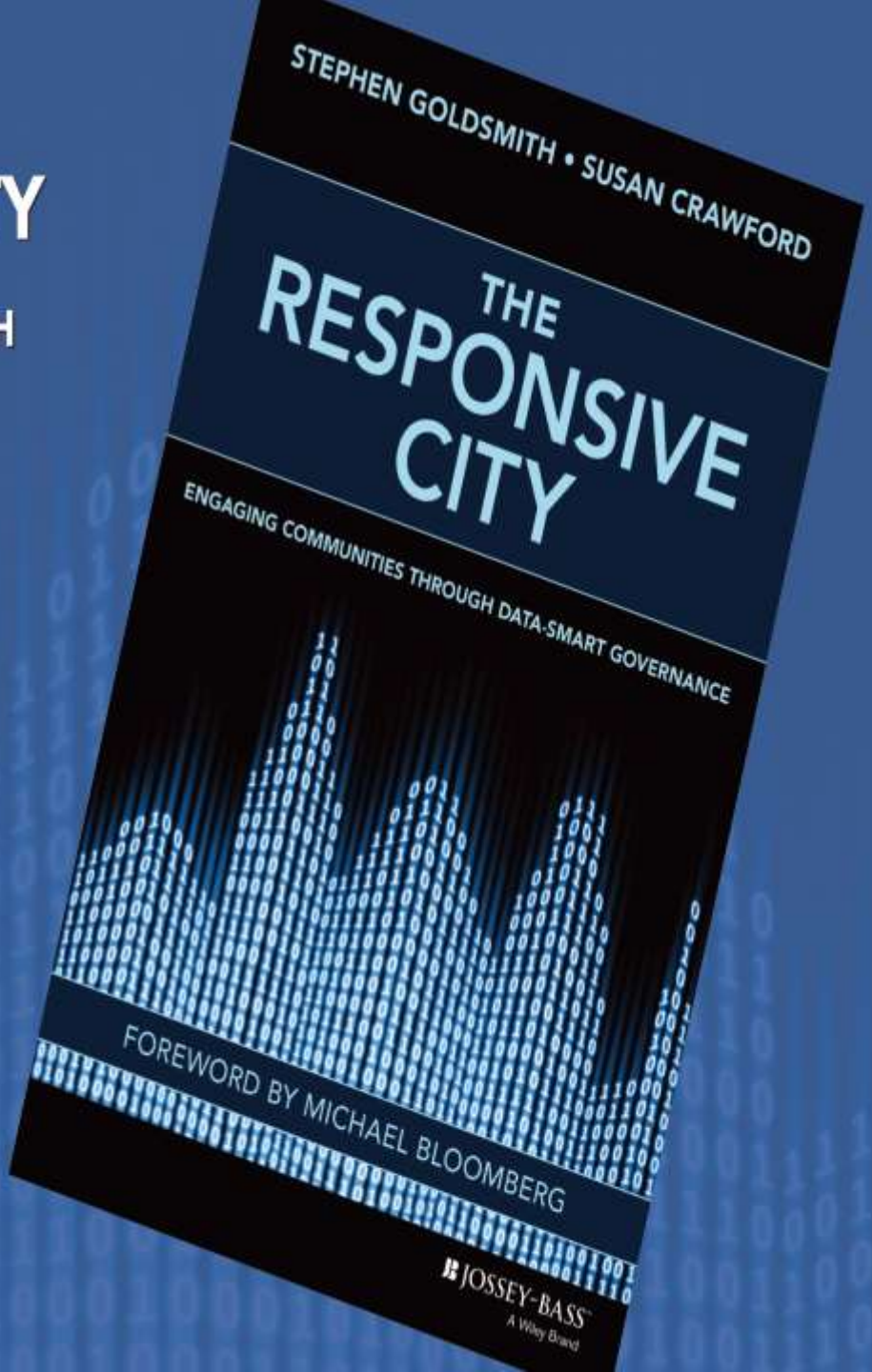
THE RESPONSIVE CITY

ENGAGING COMMUNITIES THROUGH DATA-SMART GOVERNANCE

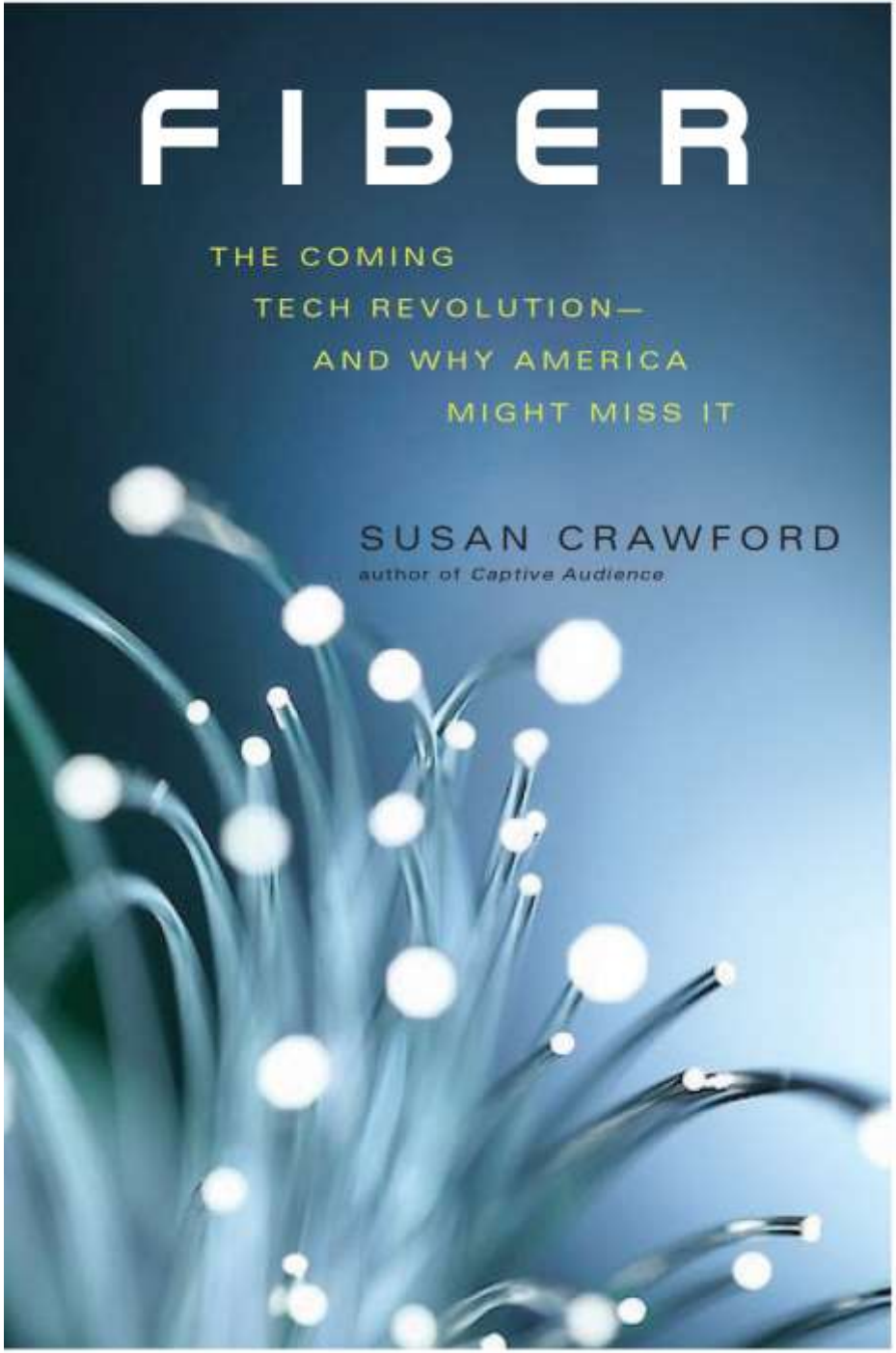
FORWARD BY

MICHAEL BLOOMBERG

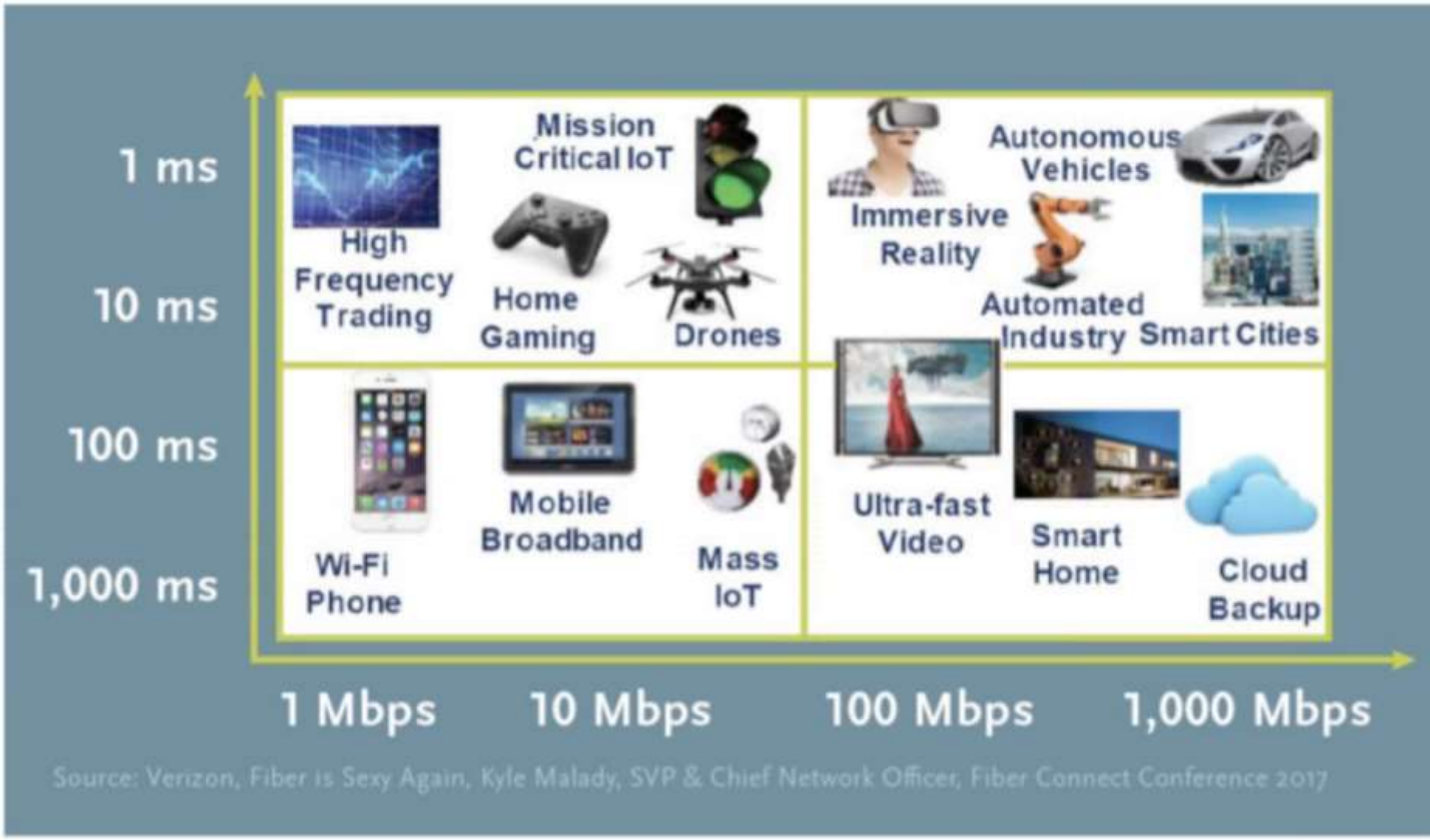
#TheResponsiveCity




CITY
HALL
CLOSED


FIBER
THE COMING TECH REVOLUTION— AND WHY AMERICA MIGHT MISS IT
SUSAN CRAWFORD
author of Captive Audience


ALGORITHMS
OBJ_CREATION_DATETIME
OBJ_CREATOR_FK
REL_RELATIONS
REL_CHILD_FK
REL_PARENT
SCREENS
WWW
OPEN DATA
SENSORS
OPEN FIBER



Source: Verizon, Fiber is Sexy Again, Kyle Malady, SVP & Chief Network Officer, Fiber Connect Conference 2017

Why talk about cities and data

- Beginning in 1980s: primacy of wealth creation, extensive privatization, growth in yawning inequality
- Cities are nonpartisan places where leaders are trying to address gravest social problems
- At the same time, cities collecting/using data are Facebook for … everything
- Sharpen understanding of public/private line
- Risks and opportunities abound

Three current use cases

- Autonomous vehicles and general mobility
- New urban landscapes designed with data in mind (Quayside, Toronto)
- Flooding, sea-level rise, and other water issues

(1) Autonomous vehicles

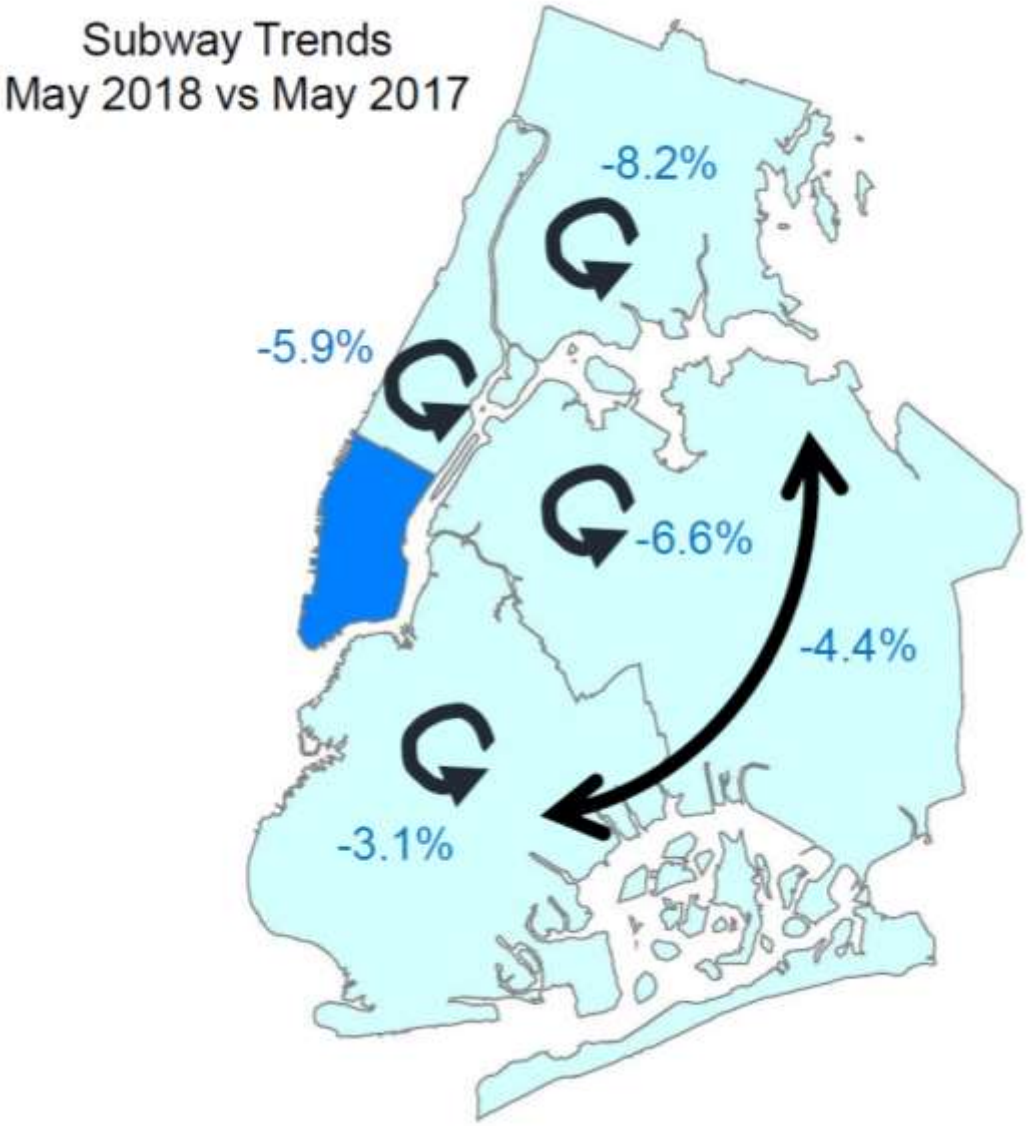
- Following $2B investment, Waymo (Google) driverless taxis now on streets in Arizona
- Uber/Lyft history makes US cities wary
  - Congestion
  - Effect on public transit
  - Pollution
- Data at the center of the story

Could be hell

Narrow sidewalks
Car dominates
No room for pedestrians
Concrete railings everywhere
Congestion
Dead retail at street level

Could be heaven

Broad sidewalks
Separation between bikes and AVs
Thriving retail sector
Pick up/dropoff zones
Outdoor seating
Bicycle parking
…all in harmony


Subway Trends
May 2018 vs May 2017
-8.2%
-5.9%
-6.6%
-4.4%
-3.1%

Current status

- High-stakes, right now
- Oslo: No way
- Cities using Uber/Lyft story to require permits and require data
- Cities looking for control over their own rights of way

San Francisco Grants 2 Scooter Permits (but Not to the Early Disrupters)

Uber Hit With Cap as New York City Takes Lead in Crackdown

Autonomous vehicles - recommendation

- Implement wonderful dropoff zones that flexibly serve all modes of transit and ride-hail vehicles
- In years to come, these zones can be used for driverless logistics vehicles or passenger cars

Autonomous vehicles - recommendation

- Implement data standards for mobility providers, starting with dockless bikeshare, electric scooters, and ride-hail providers
- LA working hard on Mobile Data Specification
- Cities coordinating

Autonomous vehicles - recommendation

- Invest in public transit and active mobility, both where density already exists and where density could be achieved

Think of autonomous vehicles as infrastructure

- Like internet, disruptive/transformative
  - Although AVs not currently generating revenue, US auto dealers made $1T in retail sales last year (17M+ new vehicles) and charged $114B for repairs (46% profit for repairs)
  - Hollowing out of public transit as riders switch to Uber/Lyft and then AVs
  - Drastically reduced public revenue

Like the arrival of the internet

- Both may make significant potential contributions
  - Elderly/disabled mobility
  - Removal of barriers in rural areas
  - Energy savings if arrows aligned
- Both have substantial grey areas
  - Safety for AVs depends on human activity
  - Human autonomy and agency questions
  - Unknowable security risks
  - May increase rather than diminish inequality

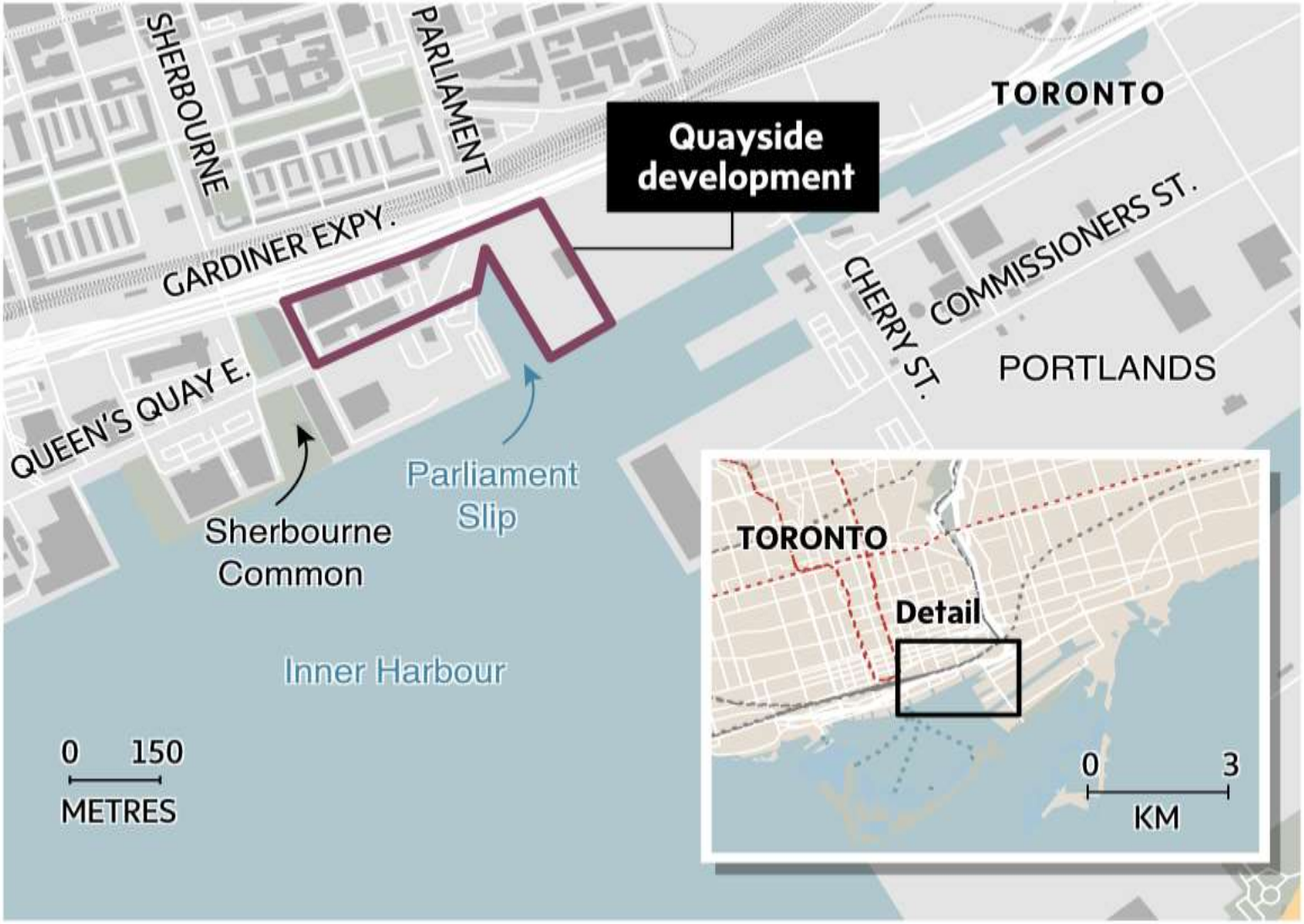
Like the arrival of the internet

- Both depend on cheap, world-class communications capacity
- Both have potentially destabilizing effects on workforce (45M drivers in US)
- Both started out scary
  - As of April 2018, 73% of U.S. drivers would be too afraid to ride in a fully self-driving vehicle; previous results were 63% (12/17) and 78% (01/17)
  - Millennials had the largest change from 49% in 12/2017 to 64%

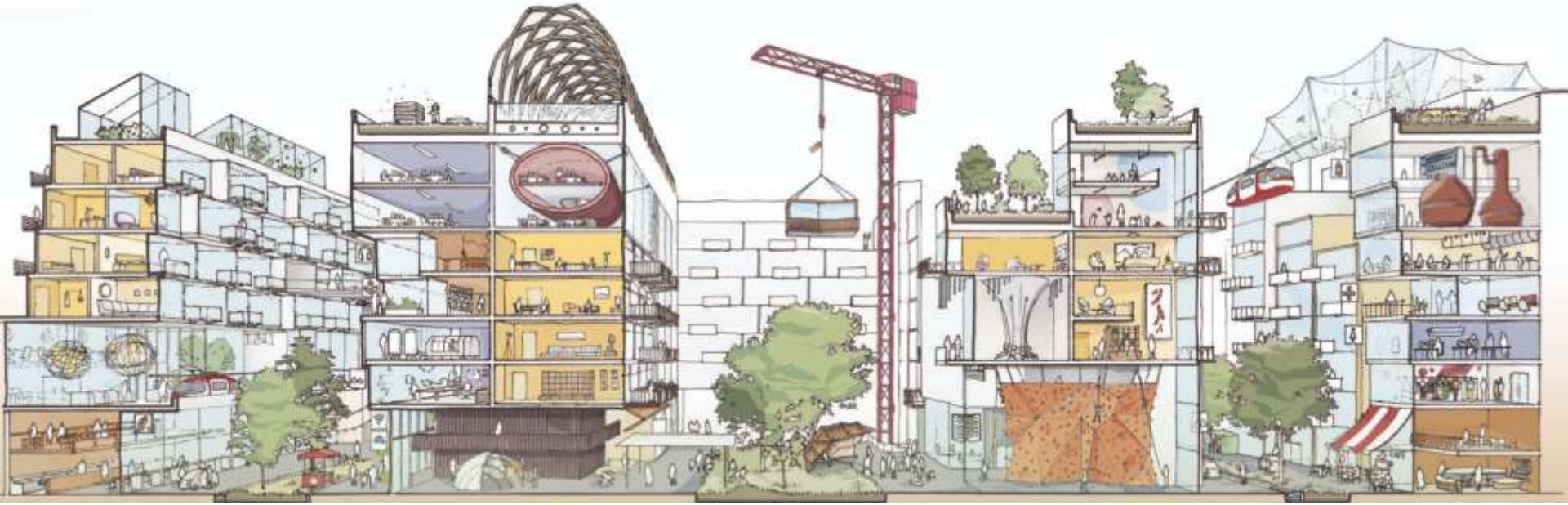
Autonomous vehicles: a data story

- Data about use of curbs and streets can assist policy goals
  - Dynamic pricing for access
  - Fees and other sanctions to support shared use and avoid congestion
  - Equity across neighborhoods
- Real-time data needs to be collected in standardized form

(2) New urban landscapes (Quayside, Toronto)



New urban landscape developed and designed by Sidewalk Labs (Google)



New urban landscape developed and designed by Sidewalk Labs (Google)

Sidewalk Labs's plans

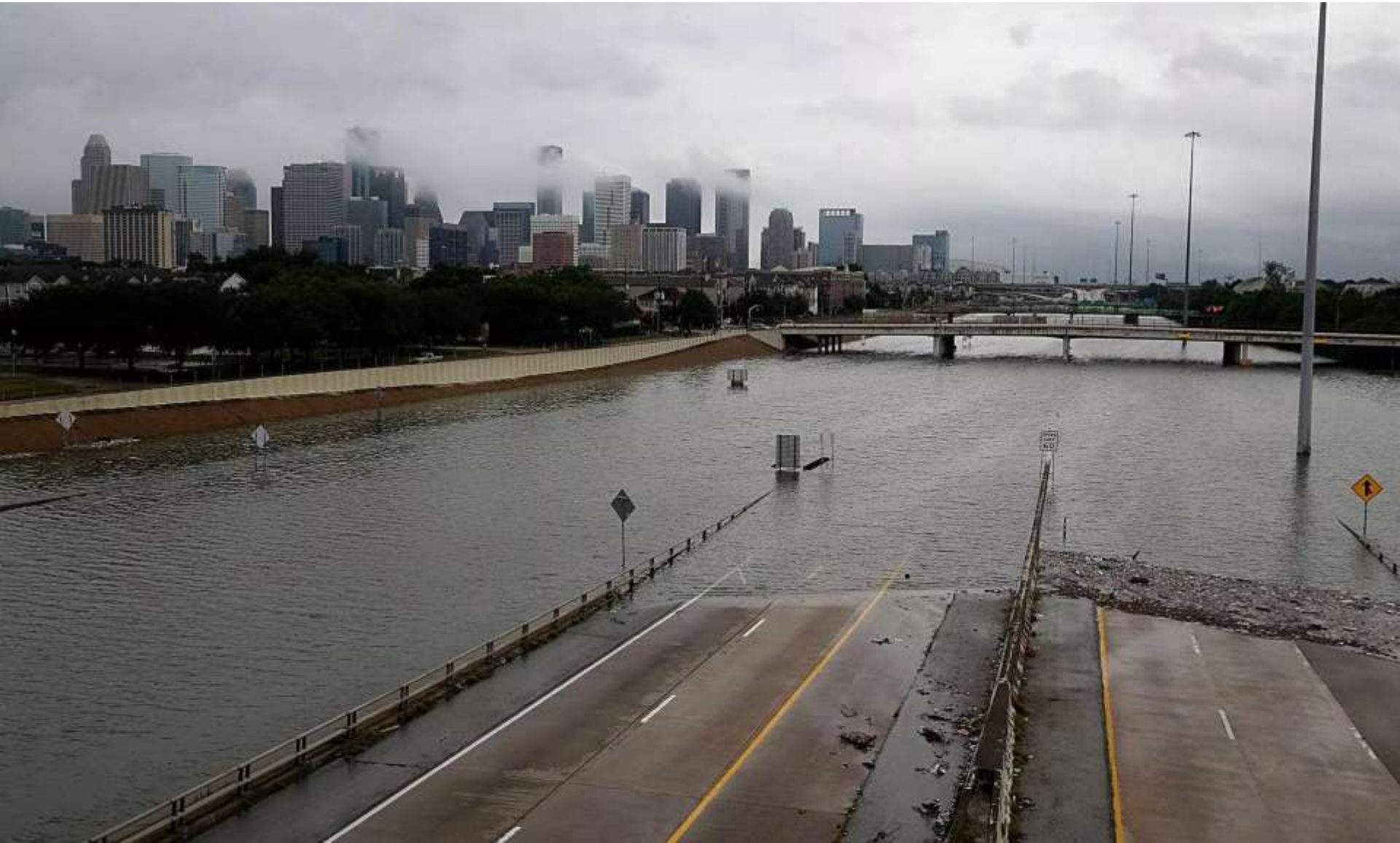
- Master Innovation and Development Plan coming Jan. 2019
- Sensors for everything: traffic, smart grid, counting pedestrians, air quality, garbage
- Extensive debate over privacy has delayed project
- Appears data will not be owned by Google; "Civic Data Trust" to be formed (no detail yet)

The Sidewalk Labs proposal in the competitive bid for the project floated all kinds of technological dreams: a thermal energy grid that would be carbon neutral, sensors that separate waste from recycling, modular buildings that convert from retail to housing, monitors that track noise and pollution, self-driving transit shuttles, shared-ride taxibots, adaptive traffic lights, delivery robots, heated bike paths and sidewalks that melt snow on their own.

Overall context

- What Google learns will be useful to it in providing smart city services around the world
- Former RIM CEO Jim Balsillie: "a colonizing experiment in surveillance capitalism attempting to bulldoze important urban, civic and political issues."
- 2018 has been a rough year for privacy
  - Cambridge Analytica scandal
  - EU sweeping new data-privacy laws
  - Enormous breach at Facebook

(3) Flooding, sea-level rise



Flooding, sea-level rise

- Water from all sides: storm surge, rainfall, tidal flooding
- Example: StormSense project along Virginia coast
  - real-time data from water gauges reporting to satellite network
  - bridge-mounted ultrasonic and microwave radar water-level sensors
  - mapped on Esri ArcGIS server, visualized forecasts

Additional elements

- Could include data from Waze or citizens
- Automated threshold alerts, defined based on LIDAR elevation records and flood models
- Developed on AWS cloud
- Updated every 6 minutes
- Allows voice-querying

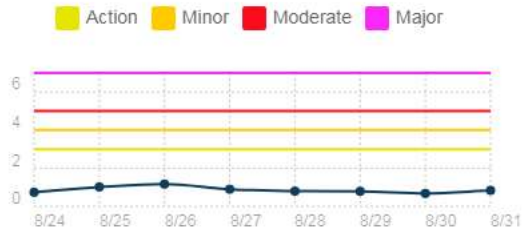
VIRGINIA BEACH - FLOOD 3

Sensor: StormSense

FT | 3 Days | 30 Day | 36 HR Forecast

Last Reported: 8/31/2018, 4:18:00 PM
Last Reading: 0.11 FT

ESTUARY OR OCEAN WATER SURFACE ELEVATION ABOVE NAVD 1988, FT




UPGRADE
Communication
NEWS
http://www.
Support
SSN

Overall context

- In the next two years, 25 billion ‘things’ will connect with each other and with billions of people. Many of those things will be cars.
- IoT will generate data volumes that double every 12 hours rather than every 12 months, as is the case now.
- Same time: confronting climate change, rising inequality, low political satisfaction
- Lots of data. Lots of threats.

The future

- What's the goal?
  - Gross domestic product per capita
  - Sustainability
  - Power
  - Peace
  - Average life span
  - Happiness
- Who decides what a "responsive" city should offer?

Future vision for data uses

- Economic growth: new ideas, new ways of making a living ("The Economy's Hidden Problem: We're Out of Big Ideas")
- Healthcare: research, addressing isolation, connecting rural areas
- Education: presence in the classroom; many forms of classrooms
- Augmented reality plus real-time translation..
- New occupations deploying human skills