

# **Topics & Times**

10:15am - 11:30am
Infrastructure, Asset Management, and Transport

Infrastructure, Asset Management, and Transportation

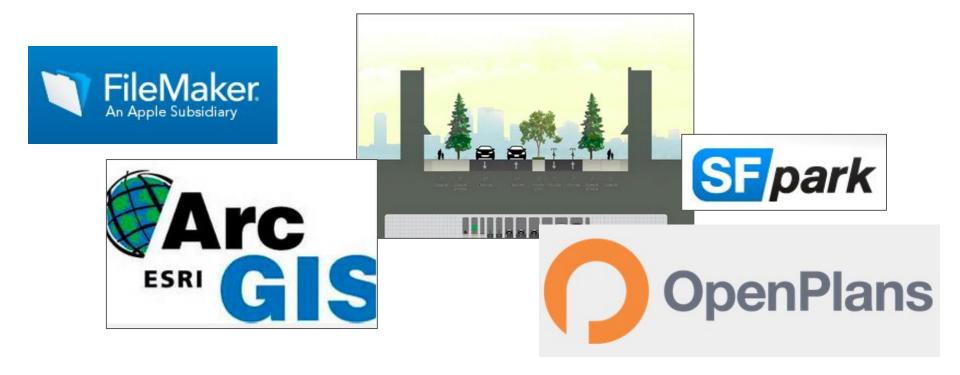
1:45pm - 3:00pm Community and Economic Development, Commercial Corridors, and Environment.

3:30pm - 5:00pm Civic Engagement, Transparency, and Design



# Featured Technologies

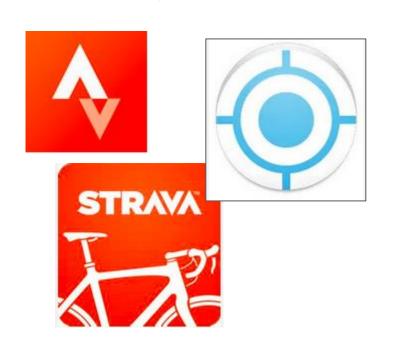
Infrastructure, Asset Management, and Transportation





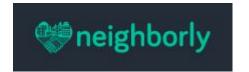
# Featured Technologies

Community and Economic Development, Commercial Corridors, and Environment.









GoodNotes



# Featured Technologies

Civic Engagement, Transparency, and Design













# Hosts

TJ Keiran, GISP, Hanover Engineering Associates, Inc.

**Andrew Schwartz**, AICP CUD, PLA, LEED AP, Environmental Planning and Design, LLC

Todd Baylson, AICP, Philadelphia Office of Innovation and Technology

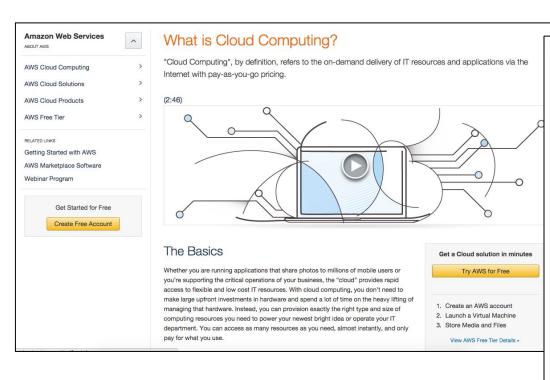
# General Intro to Contemporary Tech. (used for all 3 sessions)



# What is "The Cloud"? Buy as you go, spend \$ on functionality not infrastructure

Cloud computing and storage solutions provide users and enterprises with various capabilities to store and process their data in third-party data centers. The implications for government are that we need to spend less resources creating our own servers, infrastructure and on premise systems, except in cases where we want to have all security implications handled by our staff. For start up companies, and governments as well, one of the other big advantages is that cloud infrastructure scales very easily and quickly so you can typically buy more infrastructure when you need it, and shrink your needs (and your bills) when you do not. More info here: https://en.wikipedia.org/wiki/Cloud\_computing

## The Cloud



Cloud Computing provides a simple way to access servers, storage, databases and a broad set of application services over the Internet. Cloud Computing providers such as Amazon Web Services own and maintain the network-connected hardware required for these application services, while you provision and use what you need via a web application.

## Six Advantages and Benefits of Cloud Computing



#### Trade capital expense for variable expense

Instead of having to invest heavily in data centers and servers before you know how you're going to use them, you can only pay when you consume computing resources, and only pay for how much you consume.



#### Benefit from massive economies of scale

By using cloud computing, you can achieve a lower variable cost than you can get on your own. Because usage from hundreds of thousands of customers are aggregated in the cloud, providers such as Amazon Web Services can achieve higher economies of scale which translates into lower pay as you go prices.



#### Stop guessing capacity

Eliminate guessing on your infrastructure capacity needs. When you make a capacity decision prior to deploying an application, you often either end up sitting on expensive idle resources or dealing with limited capacity. With Cloud Computing, these problems go away. You can access as much or as little as you need, and scale up and down as required with only a few minutes notice.



### Increase speed and agility

In a cloud computing environment, new IT resources are only ever a click away, which means you reduce the time it takes to make those resources available to your developers from weeks to just minutes. This results in a dramatic increase in agility for the organization, since the cost and time it takes to experiment and develop is significantly lower.



### Stop spending money on running and maintaining data centers

Focus on projects that differentiate your business, not the infrastructure. Cloud computing lets you focus on your own customers, rather than on the heavy lifting of racking, stacking and powering servers.



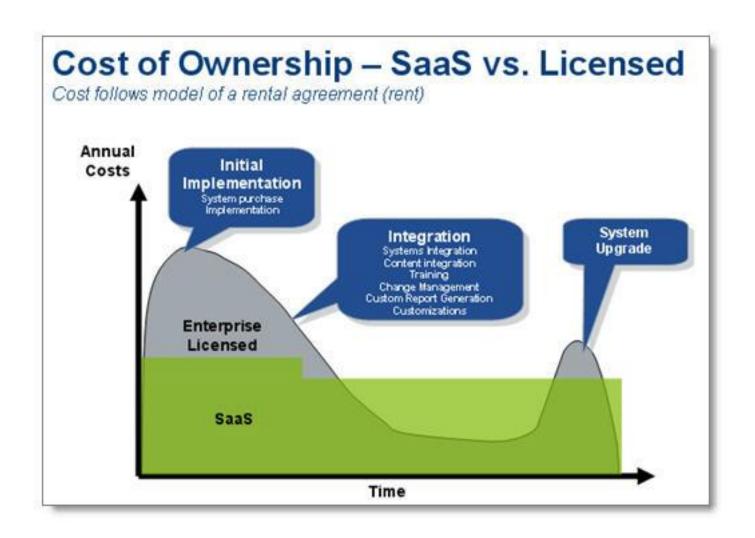
### Go global in minutes

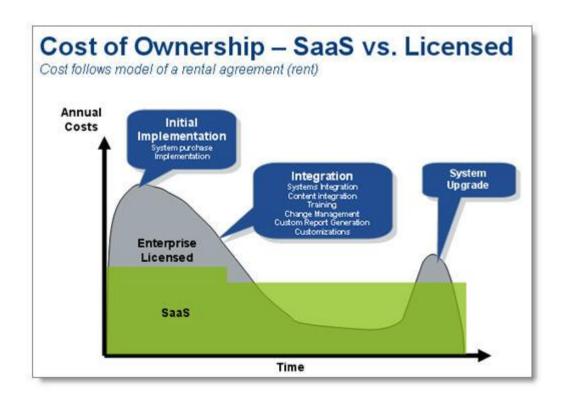
Easily deploy your application in multiple regions around the world with just a few clicks. This means you can provide a lower latency and better experience for your customers simply and at minimal cost.



# What is "Software as a Service (SaaS)"? Buy best of breed, and pay for the product/service rather than reinventing a wheel that is already outdated

SaaS is a software licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted, typically on the cloud by the software developer. It is typically accessed using the internet and does not require on premise servers, infrastructure, databases or other systems. The big picture implication for governments is that many things we used to build, host and maintain in order to use we will increasingly be able to subscribe to. These tools will see investment by their owners and we will benefit without having to do traditional maintenance. In the long term this could mean much more contemporary software that sees upgrades via the internet and less legacy maintenance of technology system. More info here: https://en.wikipedia.org/wiki/Software as a service





- A software licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted
- Typically accessed by users using a web browser.
- SaaS has become a common delivery model for many business applications, including:
  - office and messaging software
  - o payroll processing software
  - o DBMS software
  - management software
  - o CAD software,
  - development software
  - accounting
  - collaboration,
  - customer relationship management (CRM)
  - enterprise resource planning (ERP),



What is "The Internet of Things"?



# How the Internet of Things can drive revenue for your business



Michael Ni, Contributing Writer Mar 6, 2015, 1:27pm EST



Vany local governments are making

Many local governments are making budgets go further with LED smart street lighting that automatically reports when it needs to be repaired, such as this light pole on Santa Monica

- Products that "leverage the power of connectivity"
- Relies on "sensors, cloud computing, intelligent networking"
- Nests in homes to sensors on driverless cars to wireless utility meter reading
- Estimated to be a \$7 trillion marketplace by 2020
- Devices are a big part
- Recurring services will also be a big part
- Government needs to be a big player both as a buyer and regarding open data
- Verizon predicts that by 2025, organizations that adopt loT extensively will be at least 10 percent more profitable than competitors that don't.



"The Internet of Things is already impacting the daily lives of millions of Americans through the adoption of health and fitness monitors, home security devices, connected cars and household appliances, among other applications.

Such devices offer the potential for improved health-monitoring, safer highways, and more efficient home energy use, among other potential benefits.

However, the FTC report also notes that connected devices raise numerous privacy and security concerns that could undermine consumer confidence."



# Technology Salon **QUICK TECH PRIMER**

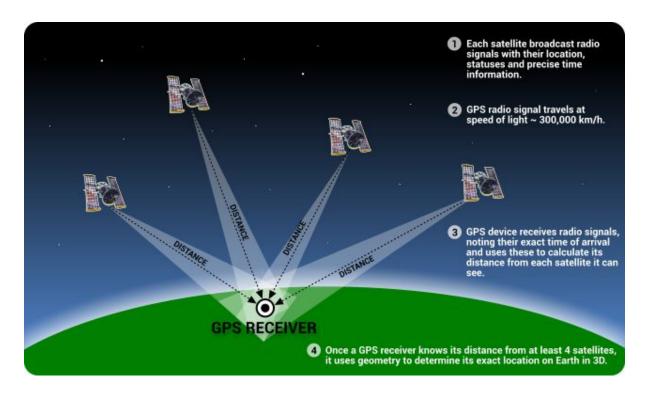
# What is "Open Data"?



Basically, open data refers to data (such as documents, databases, records, or transcripts, including those managed by outside vendors) released by a government or organization that is:

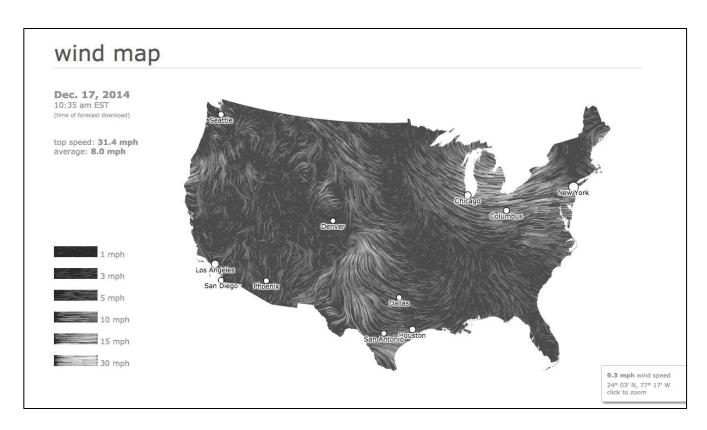
- freely available to be used, shared, and reused by anyone for any purpose, commercial or otherwise.
- available in digital, machine-readable formats (such as . csv) so that it can be used in combination with other data and applications.
- available in its entirety and able to be downloaded "in bulk" and not just manually retrieved record-by-record.

source: http://gsablogs.gsa.gov/innovation/2013/08/27/open-data-the-next-phase-in-the-technology-revolution/ and http://opengovdata.org/



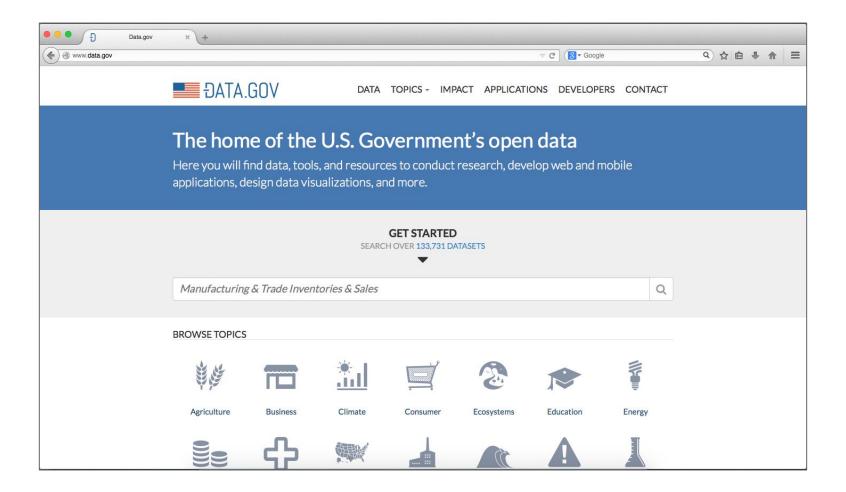
# Global Positioning System (GPS) and attendant satellites:

- Military origin, and opened for civilian and commercial uses under President Ronald Reagan
- Has enabled amazing technologies and supported new industries: navigation systems, precision farming, location-based computing etc.
- Estimated to contribute \$90 billion per year in value to the US economy

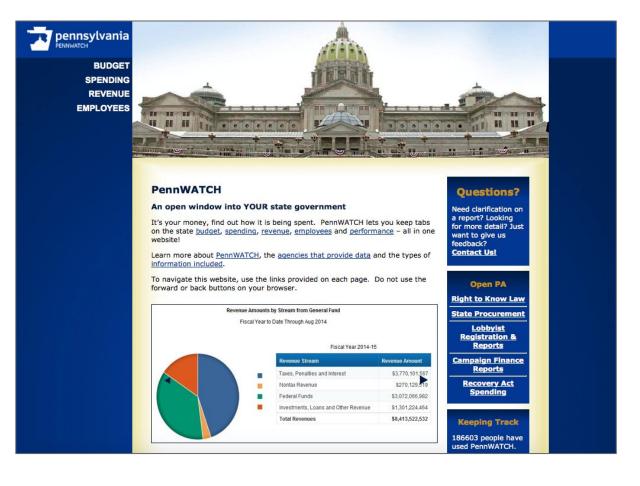


# Government weather data, once released:

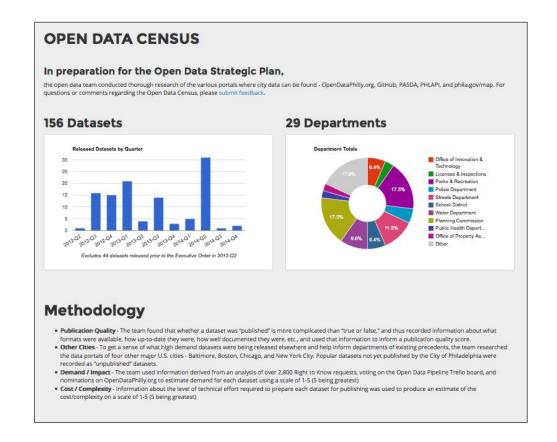
- Led to The Weather Channel, weather.com
- Also enabled weather insurance, better flood mapping etc.

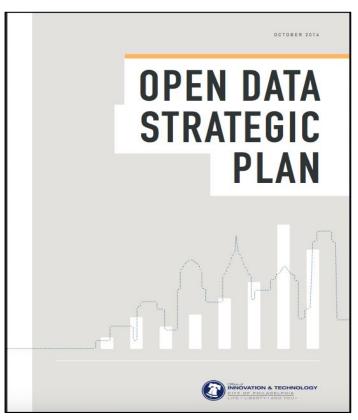


source: http://www.data.gov/



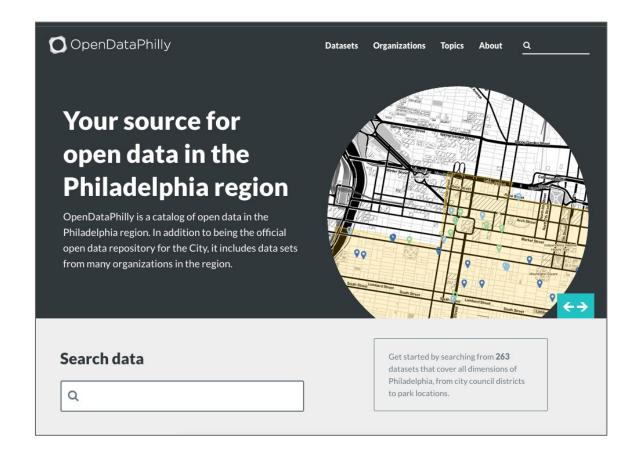
"Governor Corbett signed the Pennsylvania Web Accountability and Transparency Act into law on June 30, 2011, providing for the establishment of a "searchable budget database-driven Internet website detailing certain information concerning taxpayer expenditures and investments."











- What is available?
- What is not?
- Searchable / Malleable
- Ongoing releases
- Teasers for what is possible
- Recruiting new data



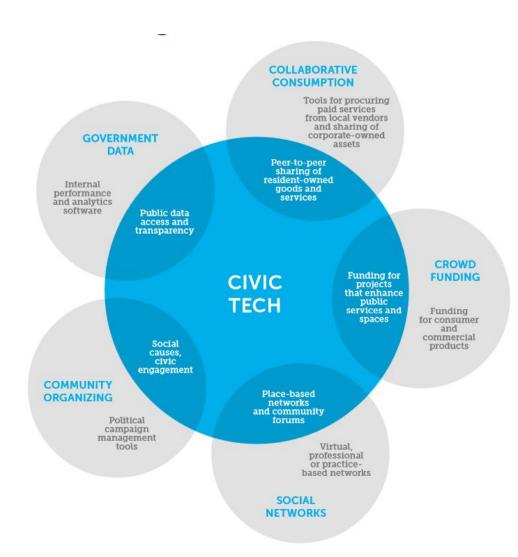
What is "Civic Tech"?



## **Civic Tech**

"Civic leaders, organizations, funders and citizens increasingly recognize the power of technology to connect people, improve cities, and make governments more effective."

 The Knight Foundation (investing \$9M + in civic tech.)



# Capturing the Wisdom of Crowds

Combining citizen intelligence and online civic platforms.

By Kevin C. Desouza and Kendra L. Smith

Online civic platforms are all the rage today. Examples include: **COURBANIZE**, **MindMixer**, **CivicLab**, **Neighbor.ly**, and **Civinomics**. They are emerging at an ever-increasing rate, all with the simple goal of harnessing collective intelligence to solve complex social problems and discover opportunities for innovation. Robert Steele, the author, activist, and advocate for open source intelligence, noted that citizen intelligence makes "possible the revival of the collective will of the people."

The Internet, he said, "is an instrument of frontline communication, largely uncensored, for those individuals who wish to communicate, calculate, and inform themselves and each other and, in so doing, perform their responsibilities as citizens of the Republic."

More than one observer has said that the greatness of crowds lies within the richness of knowledge available among many members of the group.

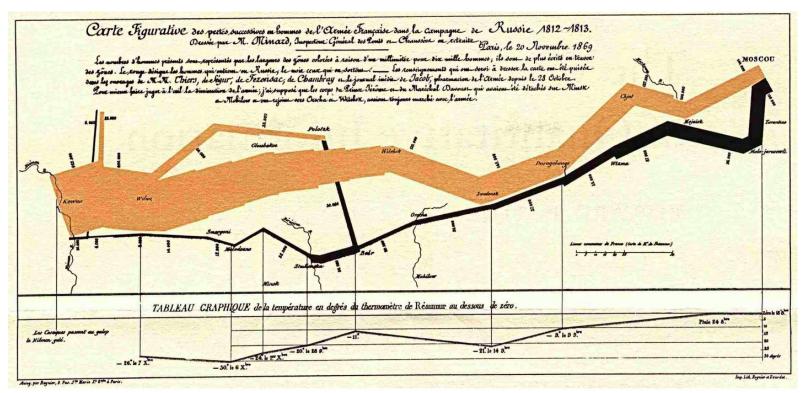
Francis Galton, in 1907, was one of the earliest writers to address the wisdom of crowds. He conducted a study that asked 787 participants to guess the weight of an ox. One group of participants were experts, such as butchers and farmers, and the other group were men with no special knowledge of the matter. The group of nonexpert guessers had an average guess of 1,197 pounds; the actual weight of the ox was 1,198.

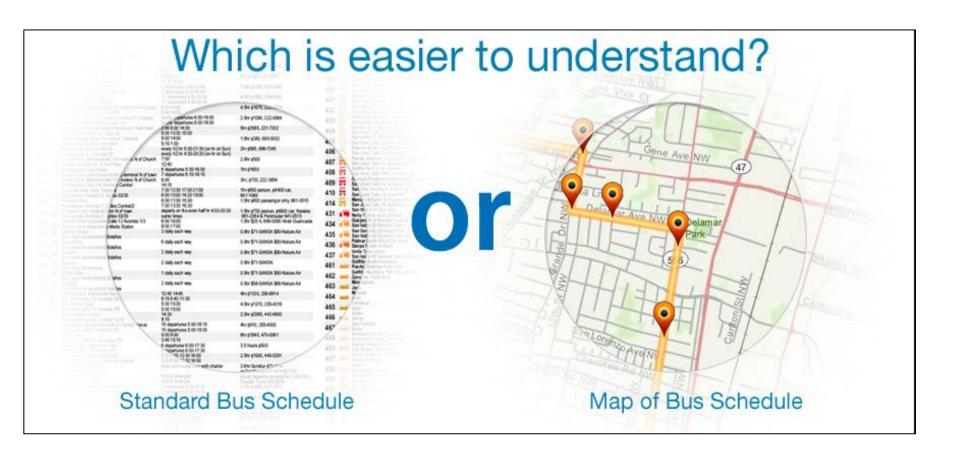
The civic platforms that leverage collective intelligence to solve policy and planning issues come in varied shapes and sizes. Over the last few years, we and our colleagues have studied the features of online civic platforms in major metropolitan areas within the U.S. and Europe. One feature is common



# Technology Salon **QUICK TECH PRIMER**

# What is "GIS"?

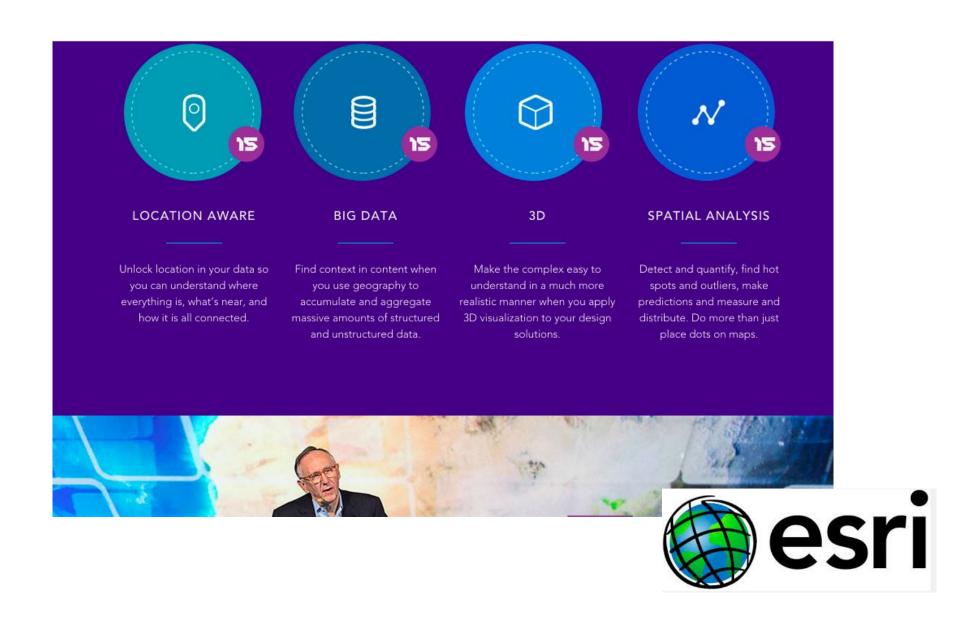








source: http://penniur.upenn.edu/publications/visualizing-philadelphias-neighborhood-change-process and http://www.esri.com/



# Technology Salon QUICK TECHPRIMER

What is "Big Data"?

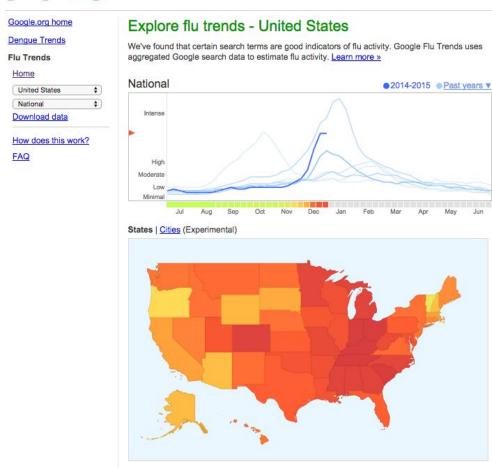


- Descriptive
- Real time
- Predictive

"The power to plow through multiple Everests of information, examine every grain of data therein, gather connections that have previously remained unseen or unrecognized, and present concise, actionable insights" (in easily accessible forms)

## **Big Data**

# google.org Flu Trends



## Means:

- External sensors
- Wireless networks
- Mobile phones
- Social media
- Web use and patterns
- Transportation systems
- Video cameras
- GPS devices
- Open data

## **Uses:**

- Analysis
- Explain behavior
- Visualize data
- Model the future
- Move faster less expensively

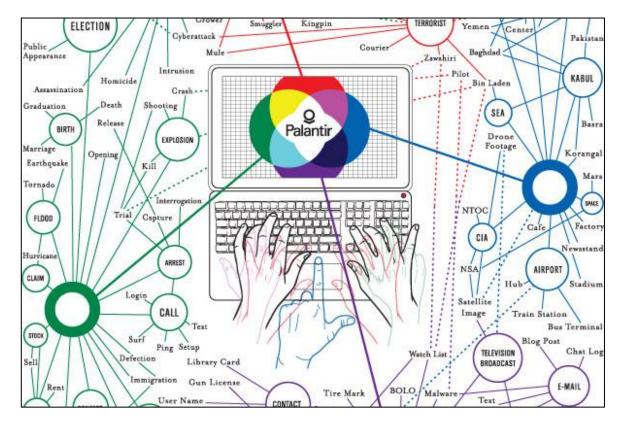
# **Big Data**



## **Decision Support System Optimizer (IBM)**

- Real time traffic management decision support (detour vs extend signal length etc.)
- Utilizes past and present data to anticipate the future
- Fills in the blanks in data to allow for statistical analysis on the fly
- Vets the consequences of potential traffic management decisions quickly
- Sees "the whole field" of potential options and issues
- Learns constantly and justifies decisions

# **Big Data**



## **Palantir**

- Seed funding from the CIA and Paypal (Peter Thiel)
- Originally designed to identify complex financial and credit card fraud and reduce capital risk
- Was 12% more effective at predicting IED locations in Iraq and Afghanistan than Army-designed system (that had cost \$4B)
- It worked by mapping insurgent activity, existing IED locations, and other data (text and radio signals for example) and sharing the data real time theatre-wide

# Technology Salon QUICK TECHPRIMER

What is "the Digital Divide"?

## **Digital Divide**

#### Cell owners in 2014 Among adults, the % who have a cell phone Have a cell phone All adults 90% Sex a Men 93b 88 b Women Race/ethnicity\* 90 a White b African-American 90 c Hispanic 92 Age group a 18-29 b 30-49 97<sup>cd</sup> 88<sup>d</sup> c 50-64 d 65+ 74 **Education level** a High school grad or less 87 b Some college 93<sup>8</sup> 93<sup>8</sup> c College+ Household income a Less than \$30,000/yr b \$30,000-\$49,999 90 99ab c \$50,000-\$74,999 d \$75,000+ 98ab Community type

Source, Pew Research Center Internet Project Survey, January 9-12, 2014. N=1,006 adults. Note: Percentages marked with a superscript letter (e.g., <sup>9</sup>) indicate a statistically significant difference between that row and the row designated by that superscript letter, among categories of each demographic characteristic (e.g., age).

88 92

88

\* The results for race/ethnicity are based off a combined sample from two weekly omnibus surveys, January 9-12 and January 23-26, 2014. The combined total n for these surveys was 2,008; n=1,421 for whites, n=197 for African-Americans, and n=236 for Hispanics.

PEW RESEARCH CENTER

a Urban

c Rural

b Suburban

- Mobile is allowing us to leap over the traditional sense of the "digital divide"
- The divide does exist still, but more around digital literacy than access to resources eg writing a resume, not communicating
- Quick nod to the City's KEYSPOT initiative regarding digital literacy
- 90% of the US has a cell phone
- Slightly more hispanic people have cell phones than do white people (92% vs 90%)
- Low income people are very likely to have a cell phone (84%, < \$30k income/yr)</li>
- Participation is consistently high across the transect (urban 88% vs rural 88%)

source: Pew Foundation

#### **Digital Divide**

#### Cell internet access:

As of May 2013, 63% of adult cell owners use their phones to go online.

**34% of cell internet users go online <u>mostly</u> using their phones**, and not using some other device such as a desktop or laptop computer.

For more specific information on cell internet access, visit our recent report.

#### How Americans use their cell phones (activities):

#### Cell phone activities

The % of cell phone owners who use their cell phone to...

81	send or receive text messages
60	access the internet
52	send or receive email
50	download apps
49	get directions, recommendations, or other location-based information
48	listen to music
21	participate in a video call or video chat
8	"check in" or share your location

Source: Pew Research Center's Internet & American Life Project Spring Tracking Survey, April 17 – May 19, 2013. N=2,076 cell phone owners. Interviews were conducted in English and Spanish and on landline and cell phones. The margin of error for results based on all cell phone owners is +/- 2.4 percentage points.

See: http://pewinternet.org/Reports/2013/Cell-Activities.aspx

- 63% of adult cell owners access the internet
- 81% send or recieve texts
- 34% of cell internet users go online mostly using their phones rather than a desktop or tablet
- Only 50% download apps.

source: Pew Foundation

## 1st Session:

10:15am - 11:30am

Infrastructure, Asset Management, and Transportation



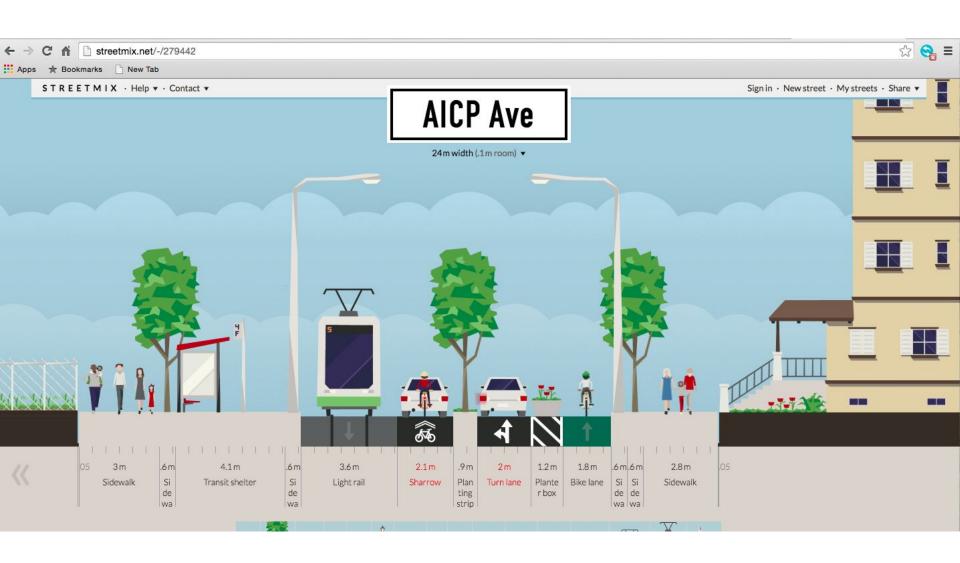
## **Streetmix**: Street Sections on the fly



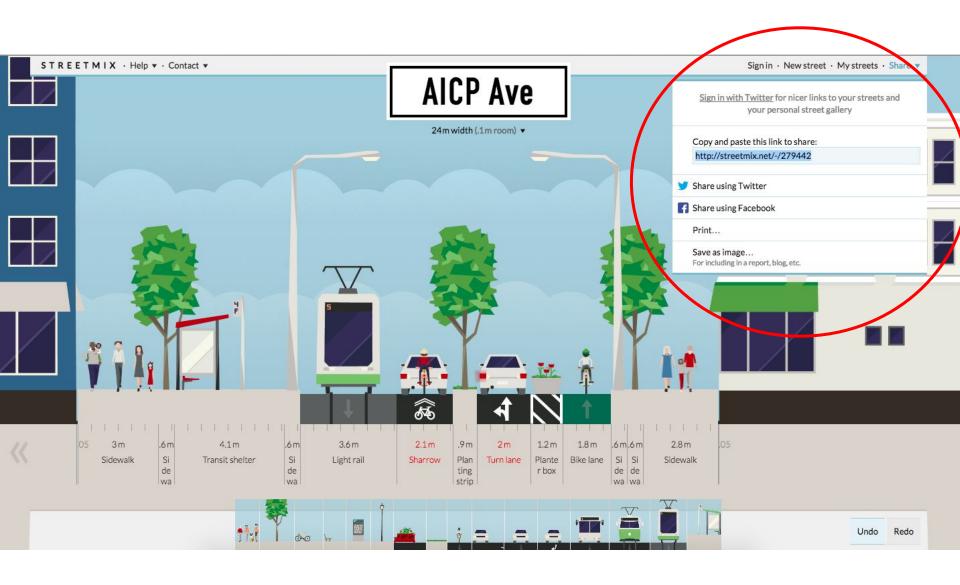
#### **Streetmix**



#### **Streetmix**

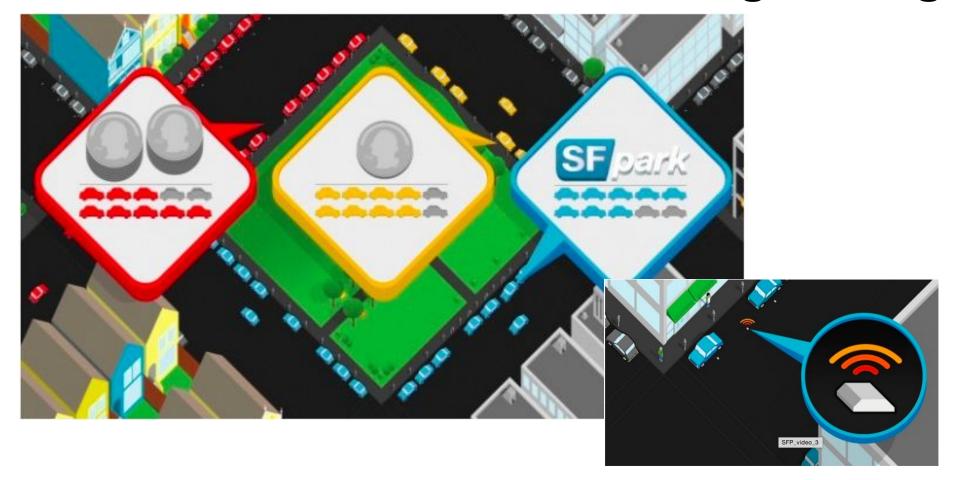


#### **Streetmix**





### SF Park: Demand-Based Parking Pricing



#### SF Park

### **Pricing**



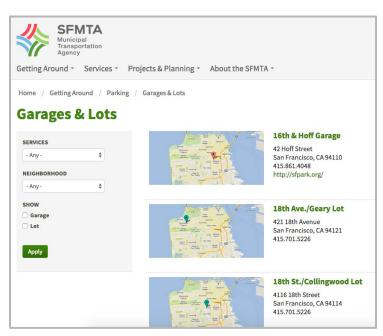




### Open Data and Source Code



SFpark encourages independent developers and researchers to use its public API, open data and open source code to create new apps and data visualizations that support the project's goal of making parking more readily available. The data feed provides variable rate parking pricing and regulation information for metered blocks and parking space availability and pricing information for public garages within SFpark areas.



### **Meters**

### Sensors

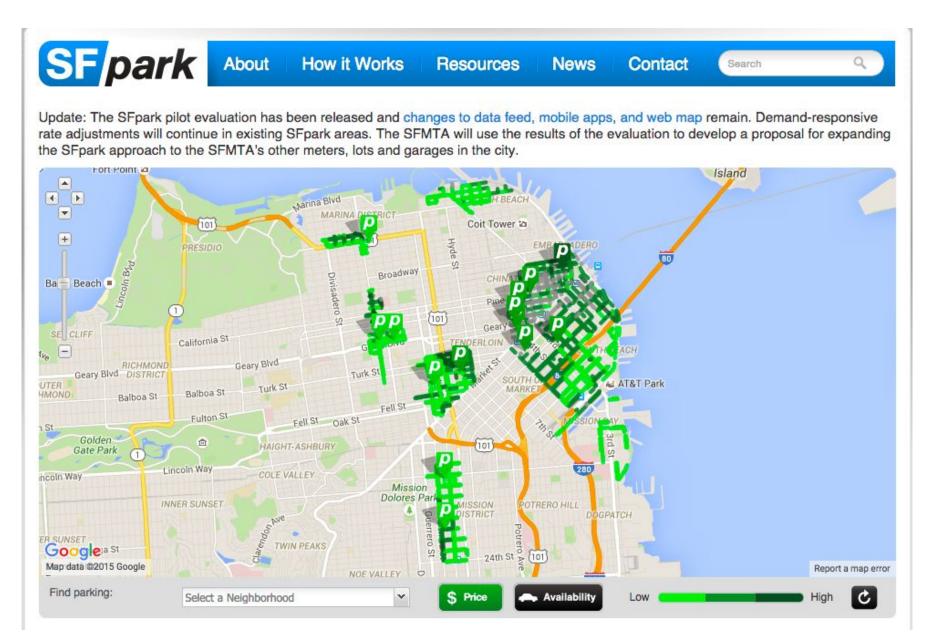


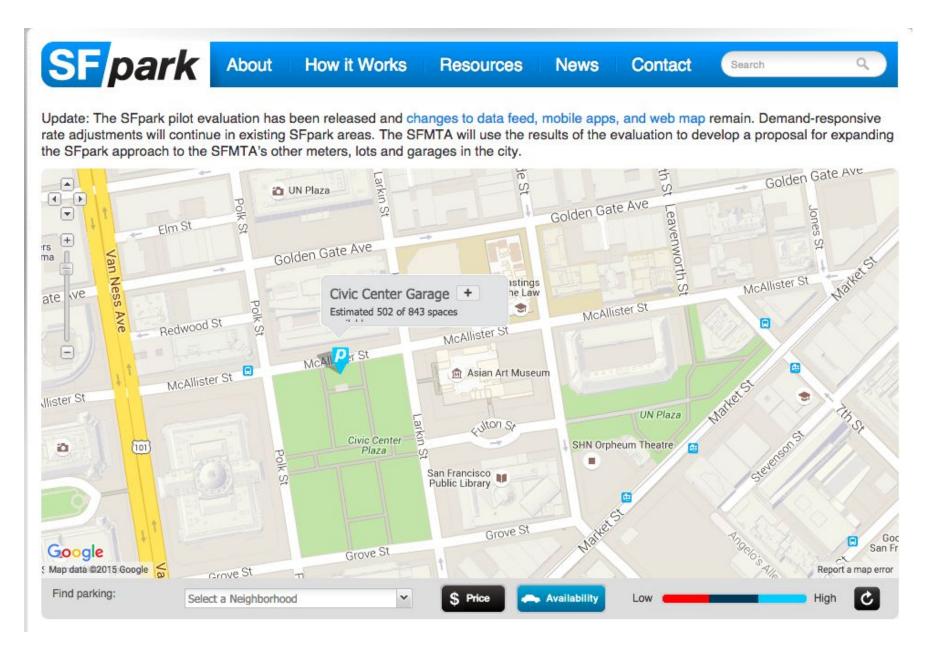


### **PayByPhone**

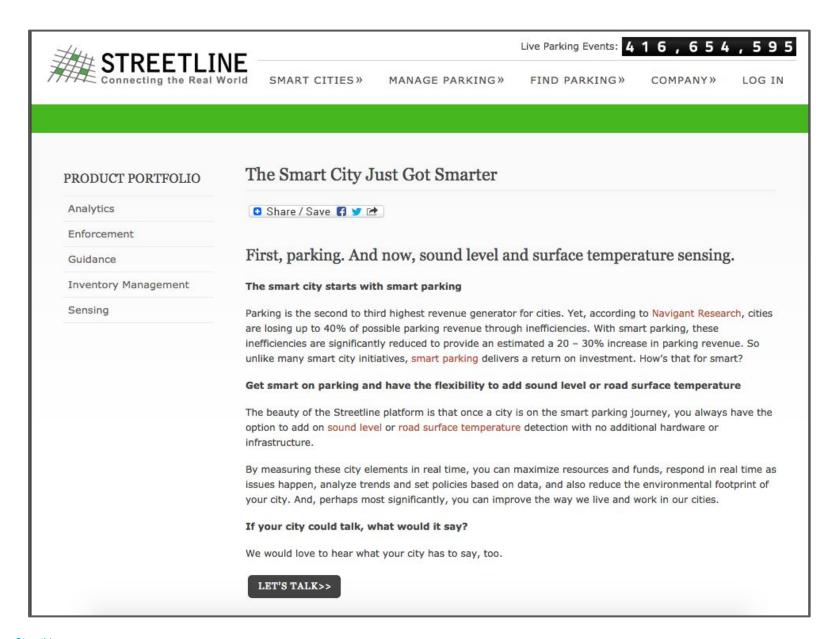


Making it easier to pay for parking helps people avoid parking tickets. PayByPhone enables customers to add time without returning to the meter (subject to time limit restrictions), receive a reminder message when time is almost up, and download receipts online. The service provider adds a 27¢ fee per transaction.





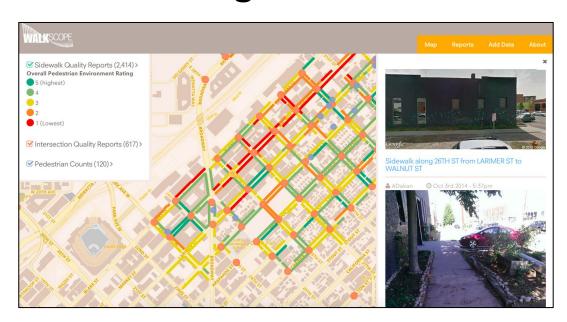
source: SFPark



source: StreetLine



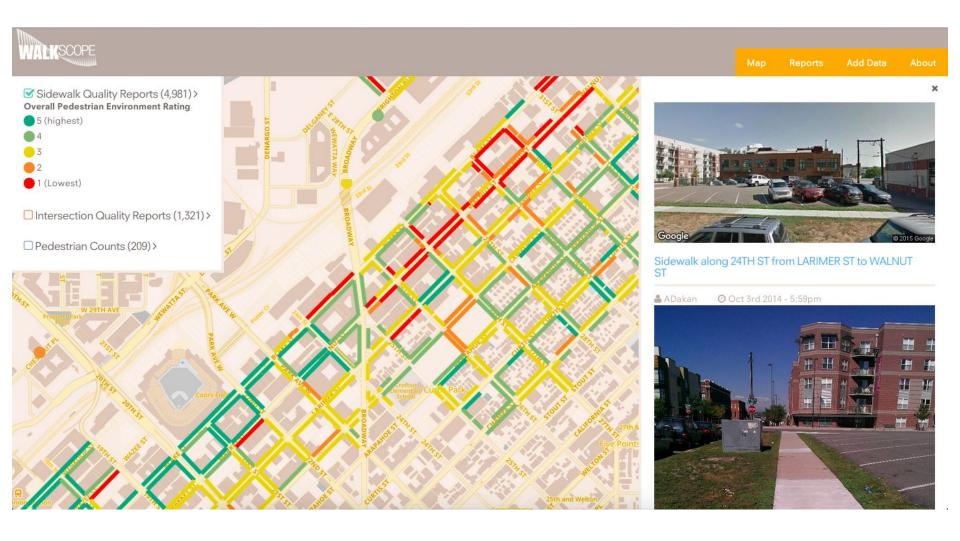
### Walkscope: Citizen walking infrastructure surveys



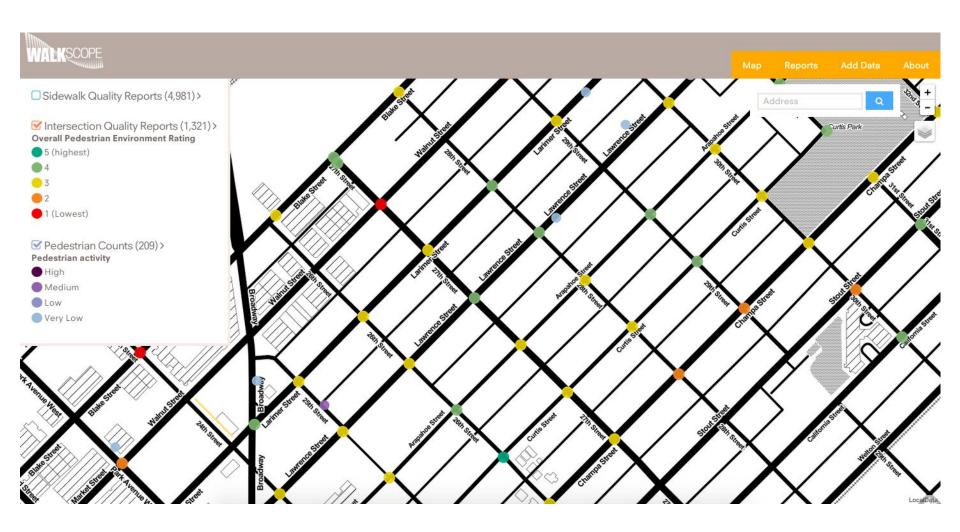
A mobile tool developed by WalkDenver and PlaceMatters for collecting data related to sidewalks, intersections, and pedestrian counts in the Denver metro area. This information will help create an inventory of pedestrian infrastructure, identify gaps, and build the case for improvements.

source: http://www.walkscope.org

#### Walkscope



#### Walkscope





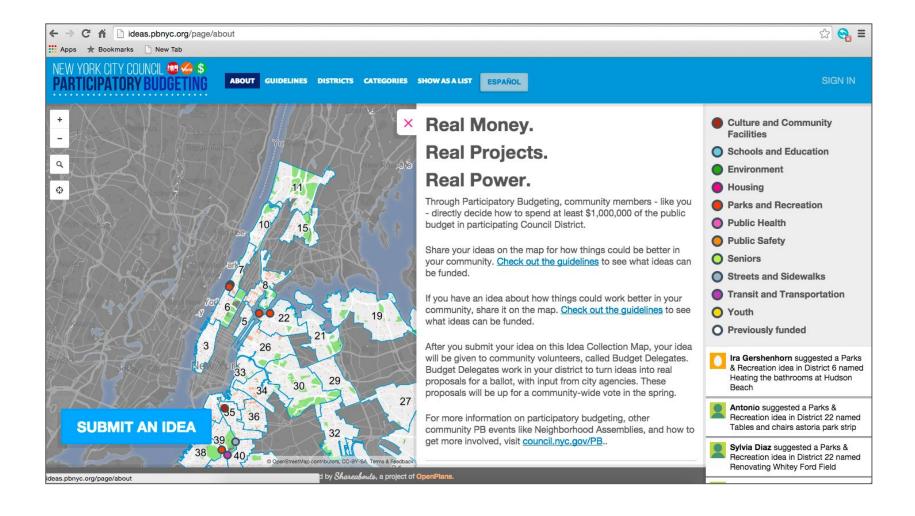
**OpenPlans:** Organizing and Online Maps



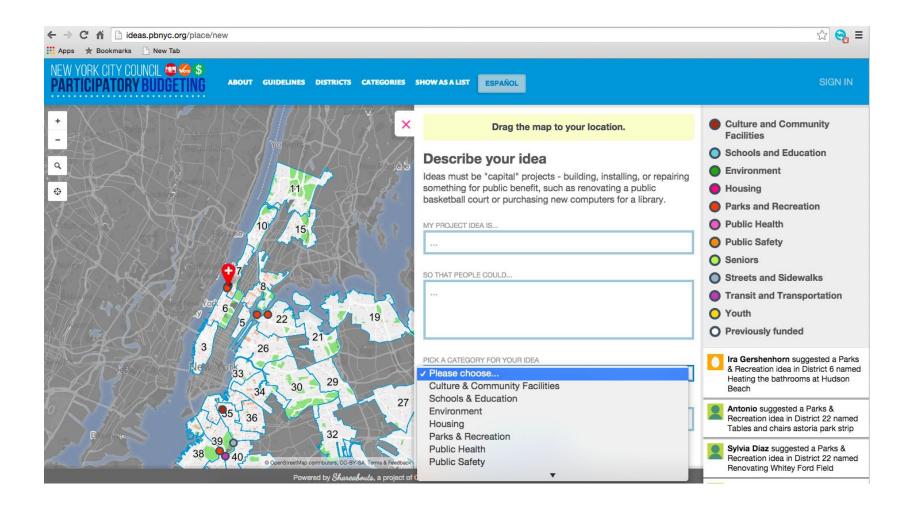
#### **Open Plans: Community Organizing**

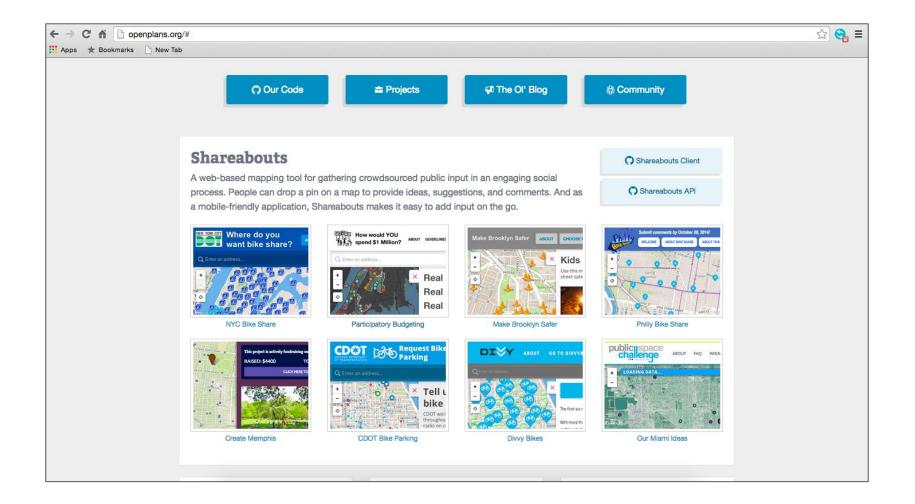


#### **Open Plans: Participatory Budgeting**

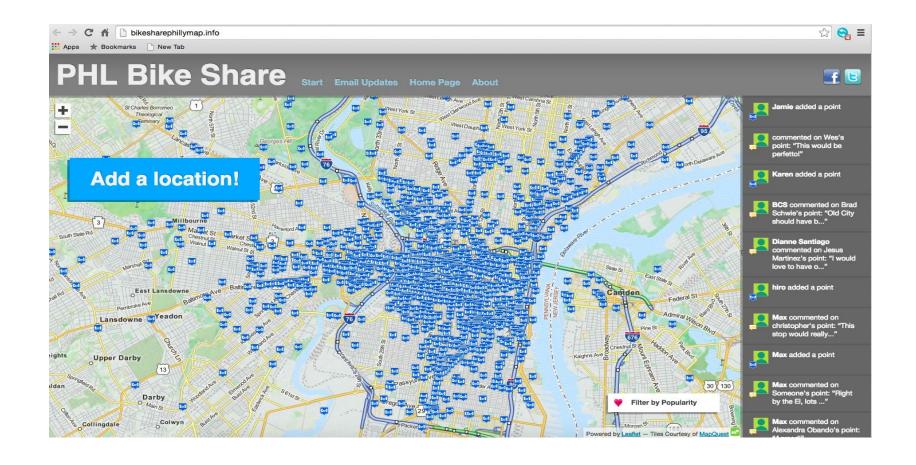


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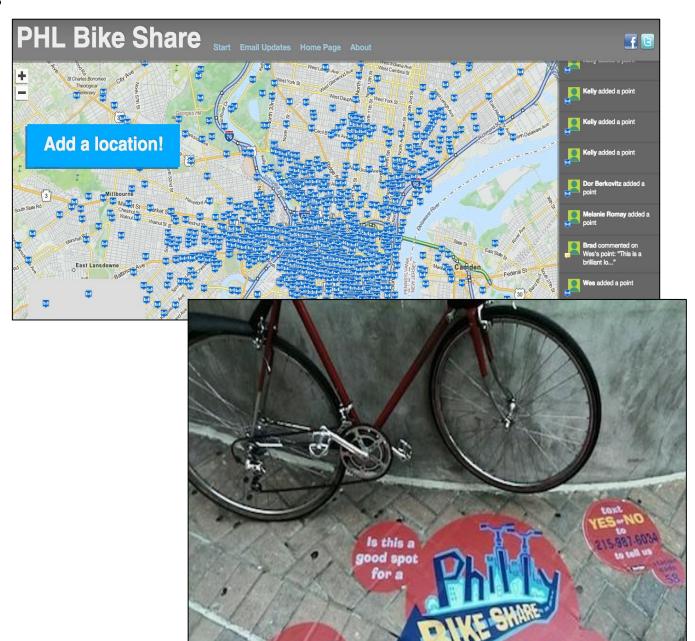




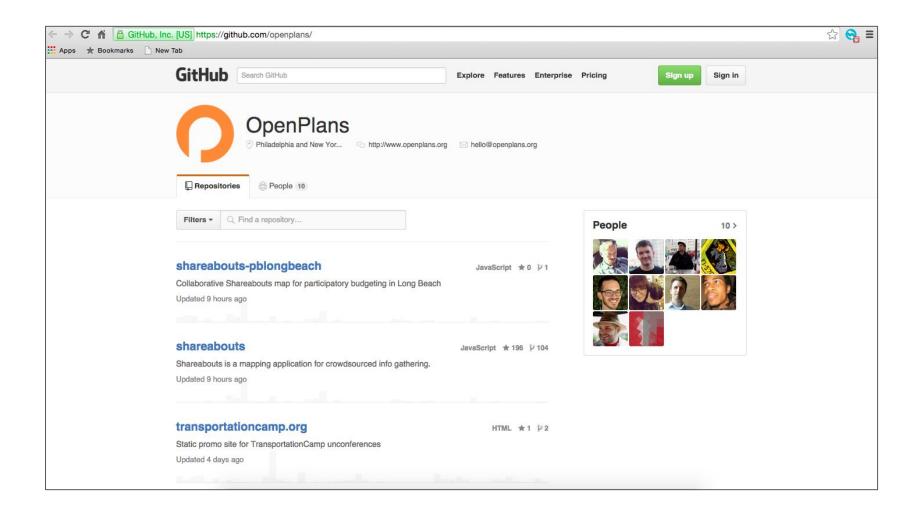
source: OpenPlans



"Data culled from the online map and the SMS responses allowed for the making of an "anti-density map" indicating underrepresented areas...for those neighborhoods with fewer responses — Newbold and Mantua were two examples community teams were dispatched to solicit feedback in person."

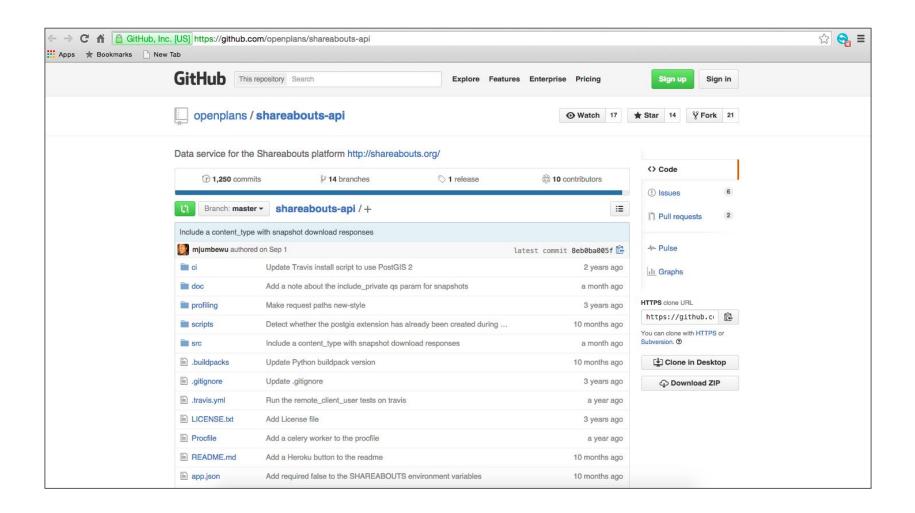


#### Open Plans: GitHub + Open Source



source: OpenPlans

#### Open Plans: GitHub + Open Source

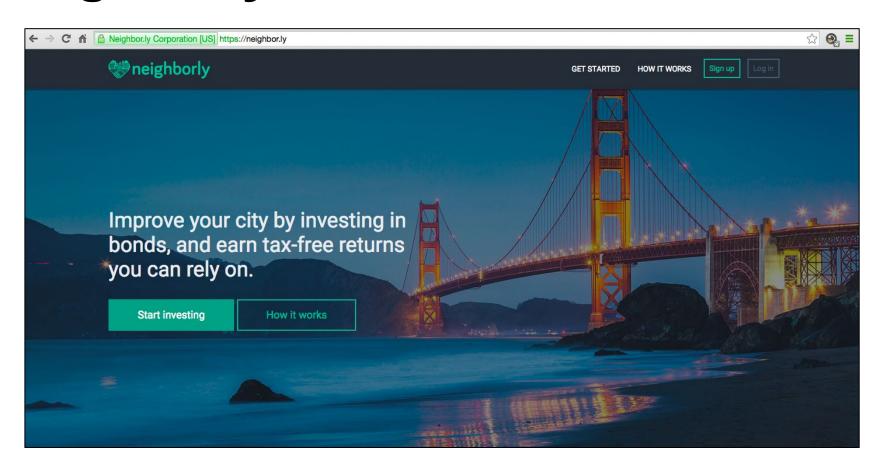


## 2nd Session:

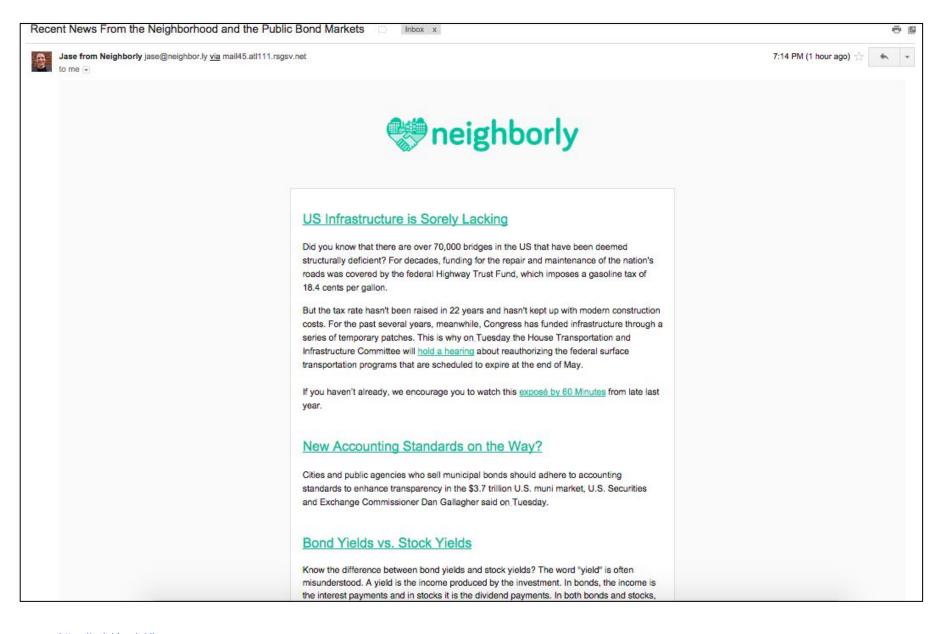
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## Neighborly: Crowdfunding Municipal Debt

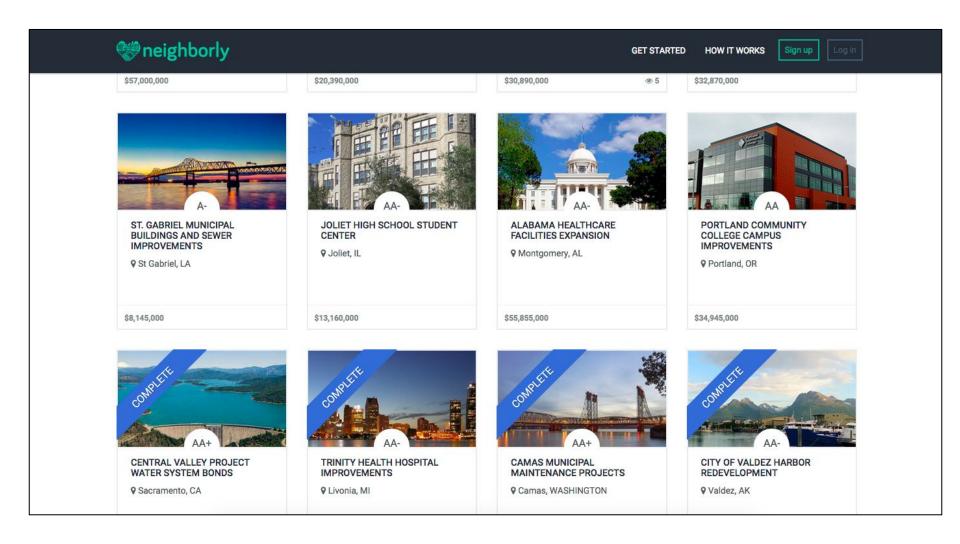


#### **Neighborly**



source: https://neighbor.ly/discover

#### Neighborly



#### Neighborly

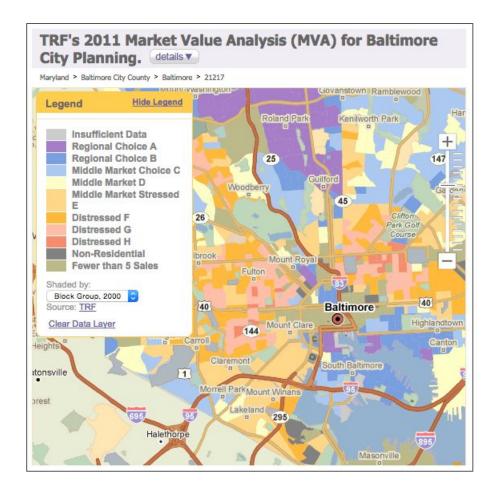
A startup called Neighborly is hoping to narrow that gap with a \$5.5 million round of funding from Joe Lonsdale's Formation 8 and Ashton Kutcher's Sound Ventures. An earlier incarnation of the product was about crowdfunding civic projects, kind of like a Kickstarter for your neighborhood.

That was an important niche, but large-scale and impactful projects require on the order of hundreds of millions or billions of dollars. For instance, the city of San Francisco is asking voters to pass a \$300 million affordable housing bond this November amid a major shortage, and the regional transit system, BART, has more than \$9 billion in maintenance needs through the next decade.

So Neighborly is shifting back to its original idea, which was to create a platform for retail investors to invest in municipal debt that actually affects where they live. It's an enormous market with a size of roughly \$3.7 trillion.



## PolicyMap: Cloud-based data & mapping platform

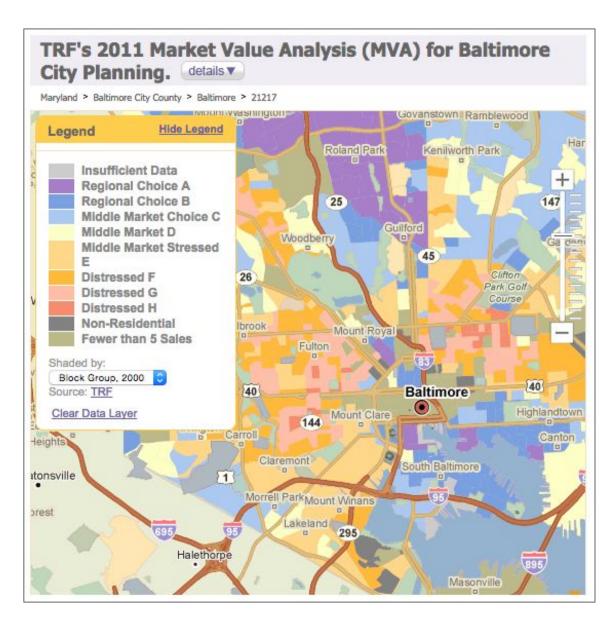


#### **PolicyMap**



- Determine Low-Mod, NMTC, CRA, CDBG eligible areas
- Create more compelling grant applications
- Load your own project data to view it against eligible program areas, as well as income, education, workforce, health and demographic data
- See how an area is changing over time
- Engage and educate public with interactive maps on your website
- Share data with other agencies within your state, county or municipality
- Plan and prioritize for Land Banks, Choice Neighborhoods and Promise Zones
- Analyze impediments to fair housing and lending"

#### **PolicyMap**



TRF uses a statistical technique known as cluster analysis that helps to uncover patterns in data

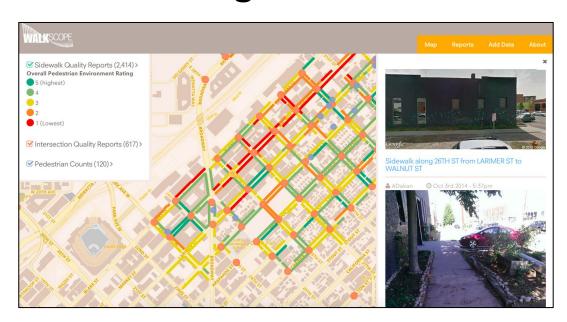
#### Data includes:

- average home sale price
- percent change in average home sale price over time
- percent owner occupancy
- percent vacancy
- percent vacant lots
- percent of rental units that are Section 8
- percent commercial
- percent of properties with foreclosure
- percent prime home purchase loans
- number of new construction permits
- number of Sheriff sales as a percent of owner occupied units
- number of public housing units
- percent of properties deemed dangerous
- percent of structures demolished
- percent of high risk or very high risk credit scores for predatory lending
- percent of housing units built before 1950.

source: Policymap



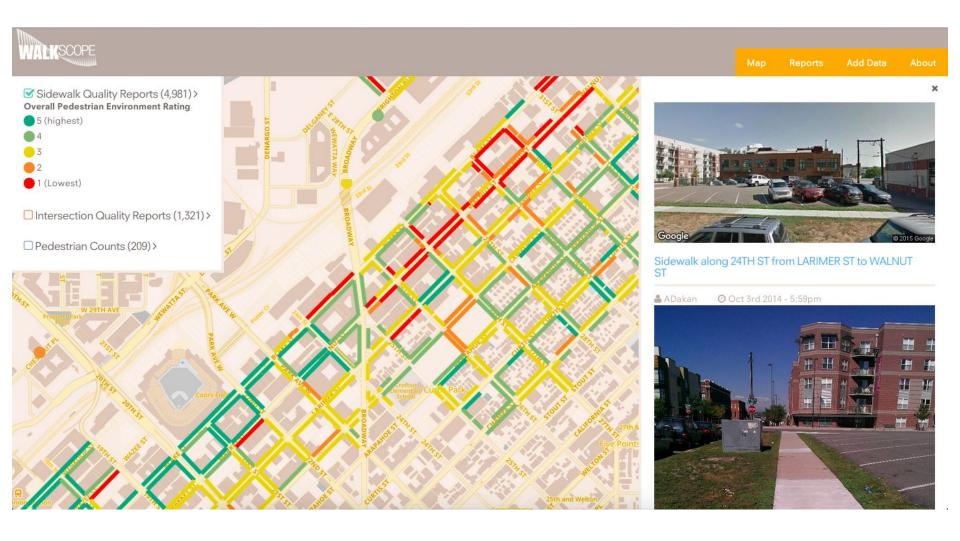
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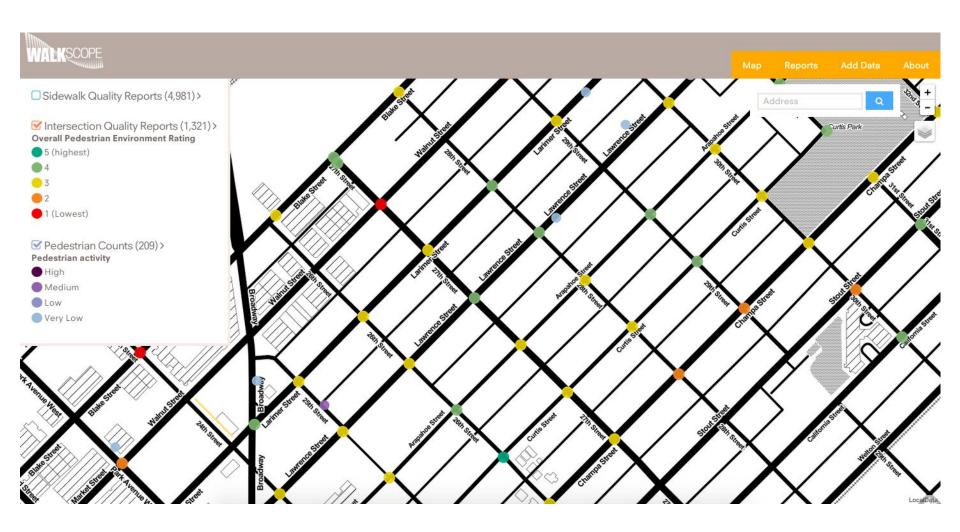
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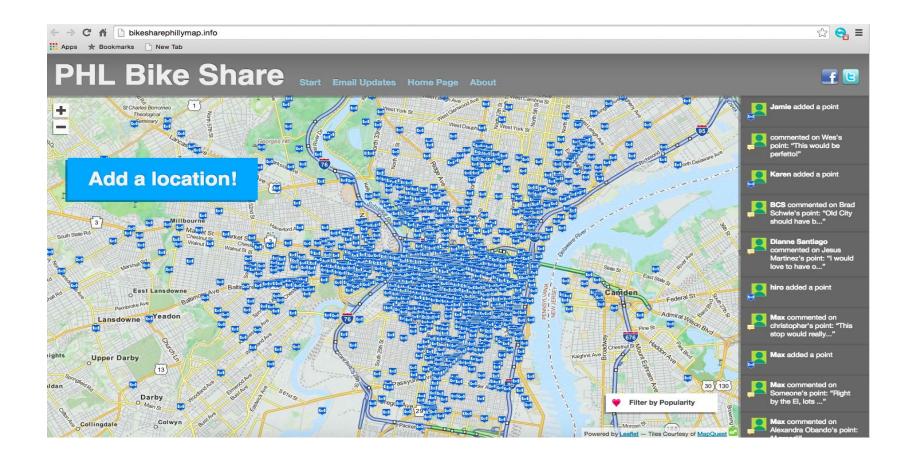
#### Walkscope





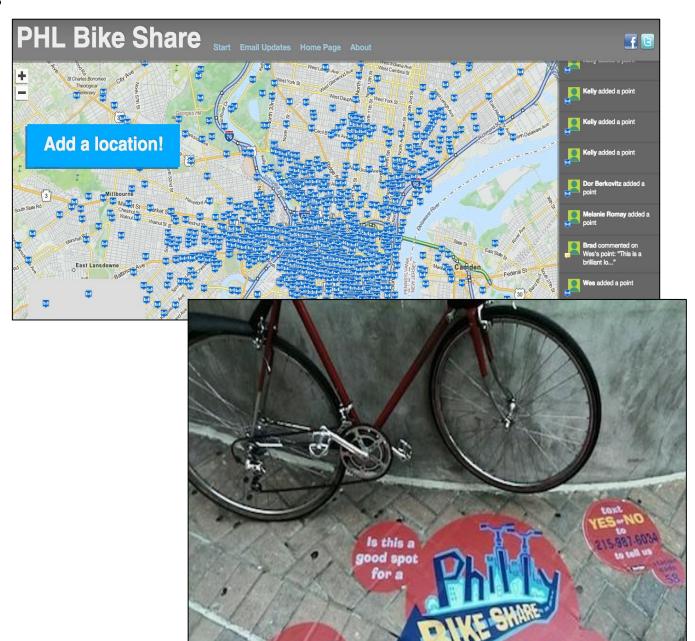
**OpenPlans:** Organizing and Online Maps





#### **Open Plans: Shareabouts**

"Data culled from the online map and the SMS responses allowed for the making of an "anti-density map" indicating underrepresented areas...for those neighborhoods with fewer responses — Newbold and Mantua were two examples community teams were dispatched to solicit feedback in person."



## 3rd Session:

3:30pm - 5:00pm

Civic Engagement, Transparency, and Design



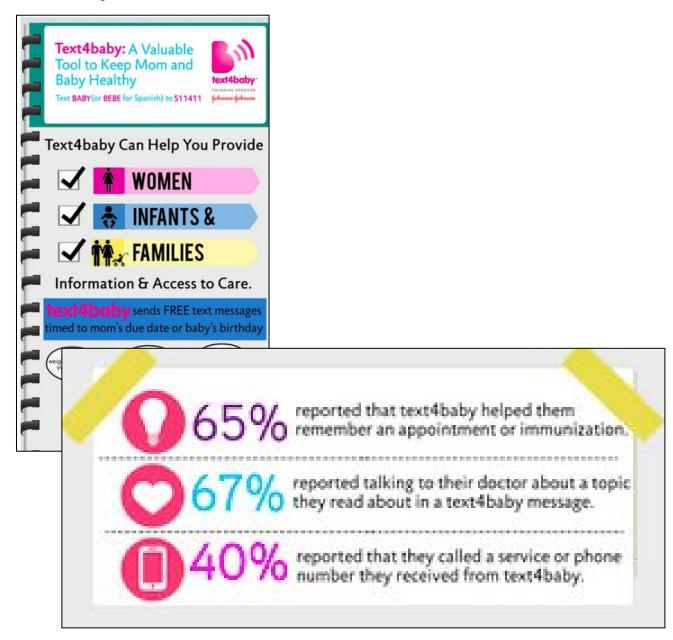
## Technology Salon

### **Text Message Outreach**

While 90% of Americans have a mobile device, 42% of those mobile users don't have a smartphone with internet access. But they can all send and receive texts.

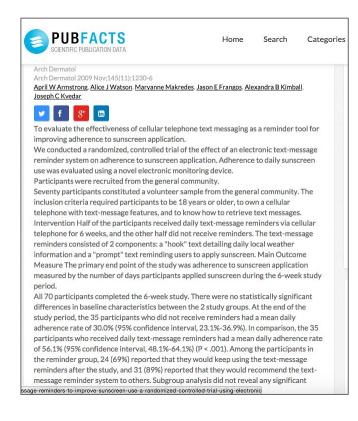
source: https://www.govdelivery.com/

#### **Text 4 Baby**



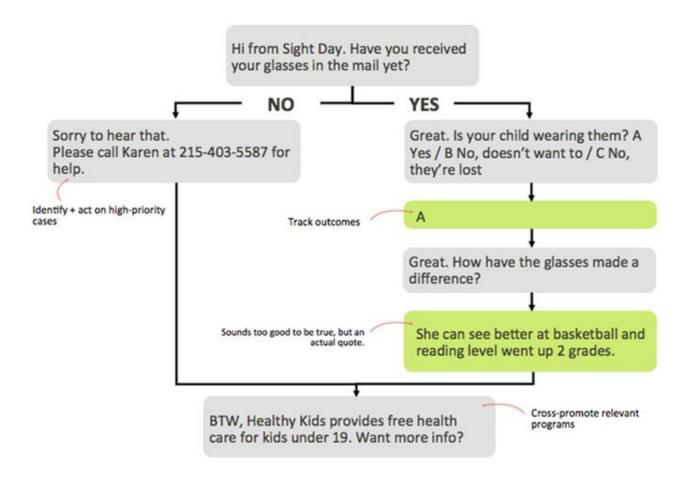
- 740k subscribers
- 2013 national survey of sample group of subscribers (n=1,171)
- 259 spanish speaking
- half of respondents had annual incomes < \$16k</li>
- Avg household size of 3.83 people (national avg. of 2.59 in 2010)

#### **Text Msg Improves Program Adherence**

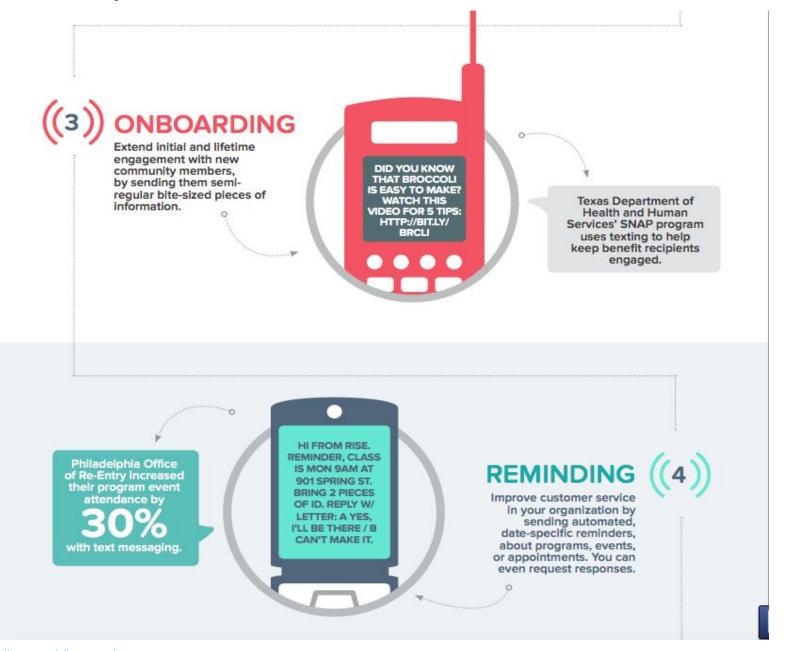


- Studying the impact of SMS prompts and reminders on appropriate use of sunscreen
- 70 participants
- Hook (weather notice) + Prompt (sunscreen needed)
- The 35 participants who did not receive reminders had a mean daily adherence rate of 30%
- The 35 participants who received daily text-message reminders had a mean daily adherence rate of 56%
- Of those who received reminders, 24 (69%) reported that they would keep using the text-message reminders after the study, and 31 (89%) reported that they would recommend the textmessage reminder system to others
- "The use of ubiquitous communications technology, such as text messaging, may have implications for large-scale public health initiatives"

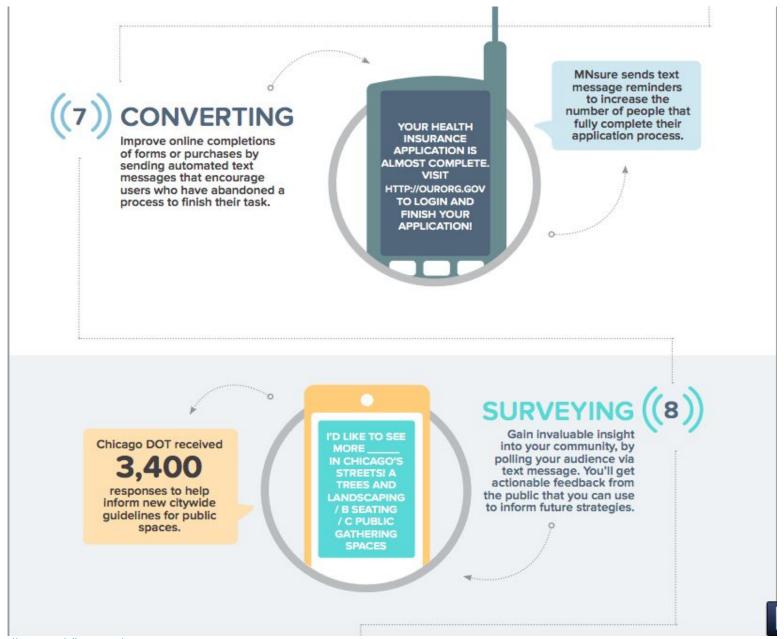
#### **HEALTH AND HUMAN SERVICES FOLLOW UP**







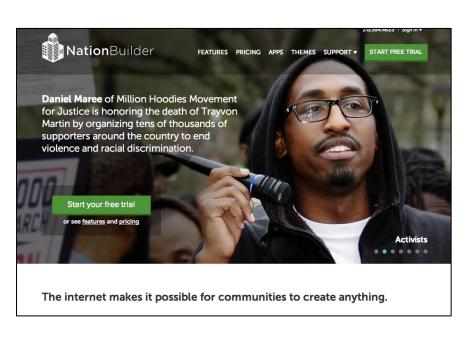






# Technology Salon

### **Communications Platforms**



A Community Organizing System (COS) including website, CRM, social media etc.

mobilecommons REQUEST A DEMO UPLAND SOFTWARE ANNOUNCES upland ACQUISITION OF MOBILE COMMONS Mobile Commons Joins Upland welcomes New York MTA Software PROVIDE ACCURATE REAL-TIME INFORMATION VIA SMS mobile commons National Cancer Institute HELP PEOPLE CHANGE THEIR LEARN MORE

Used by the Obama Campaign in 2012 for personalized text messages

https://www.mobilecommons.com/

http://nationbuilder.com/

#### "Teaching" Innovation

- Start With People First: What problem am I solving for my user?
- 2. **The Worm's Eye View Rules**. Getting to where your customers live, move, think and make decisions is critical.
- 3. **Failure IS An Option**: This is a big culture shift in any organization.
- 4. **Story Is A Strategic Tool** Short stories promote the meta-values that speak meaningfully to us.
- 5. **Problem Framing Is The Priority** The majority of your time should be spent focused on *framing* the problem. That is, did you even ask the right question?
- 6. **Brilliance Comes From The Margins** This point speaks to the value of encouraging emergent leadership, and calling upon the under-tapped competencies of those on the front line in sales or in supporting roles. Design thinking has the capacity to democratize leadership.
- 7. **Prototype & Experiment**. Designers are excellent at embracing the rough draft, the ugly mock up held together with duct tape, and using those models to get reactions and new questions from potential users and customers.