

The Internet of Things and What it Means to your Local Government

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ICMA 100th Annual Conference
Charlotte, NC
September 15, 2014

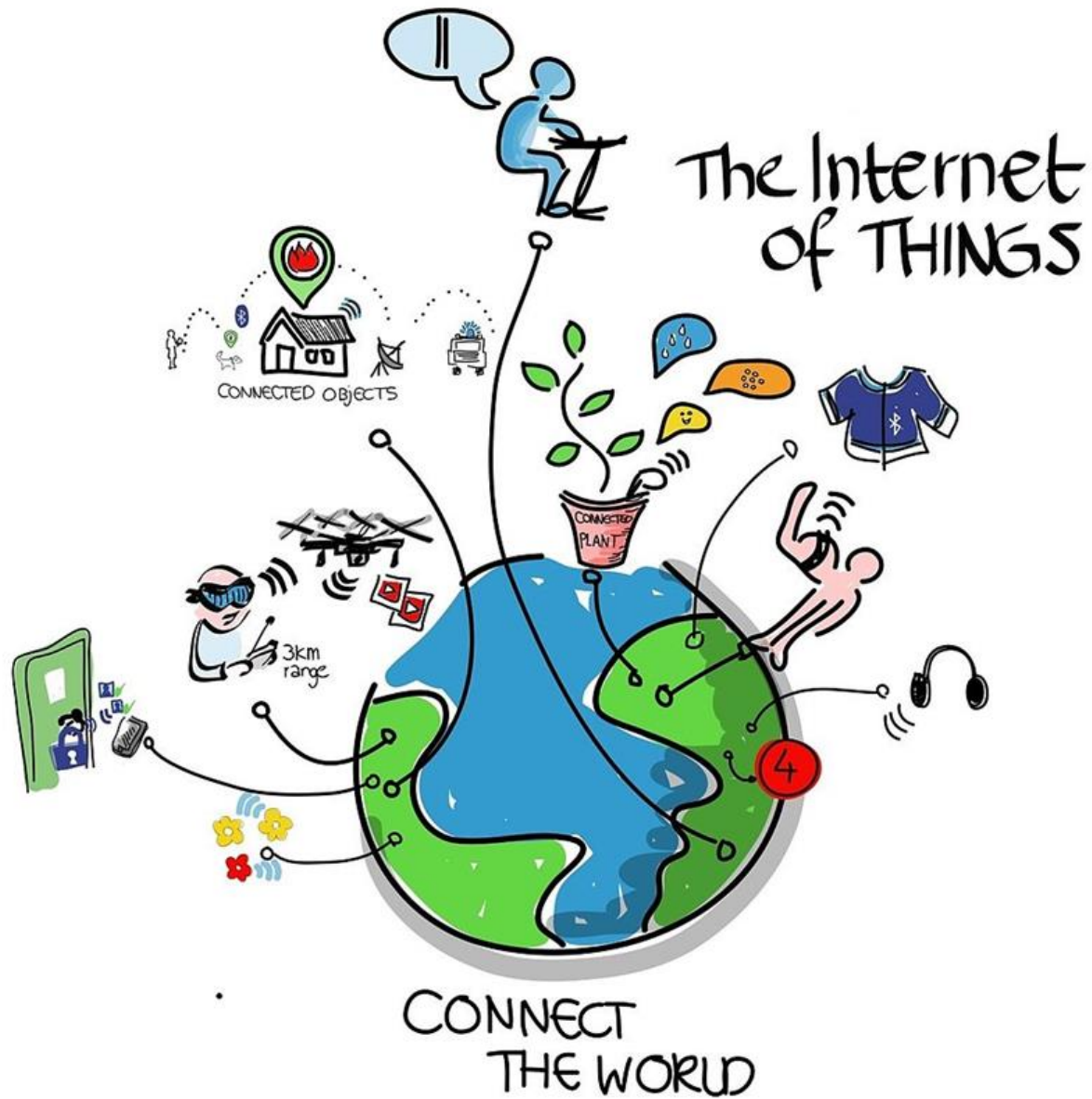




The Internet of Things

Definition:

the development of the Internet in which everyday physical objects have network connectivity and can send and/or receive data.



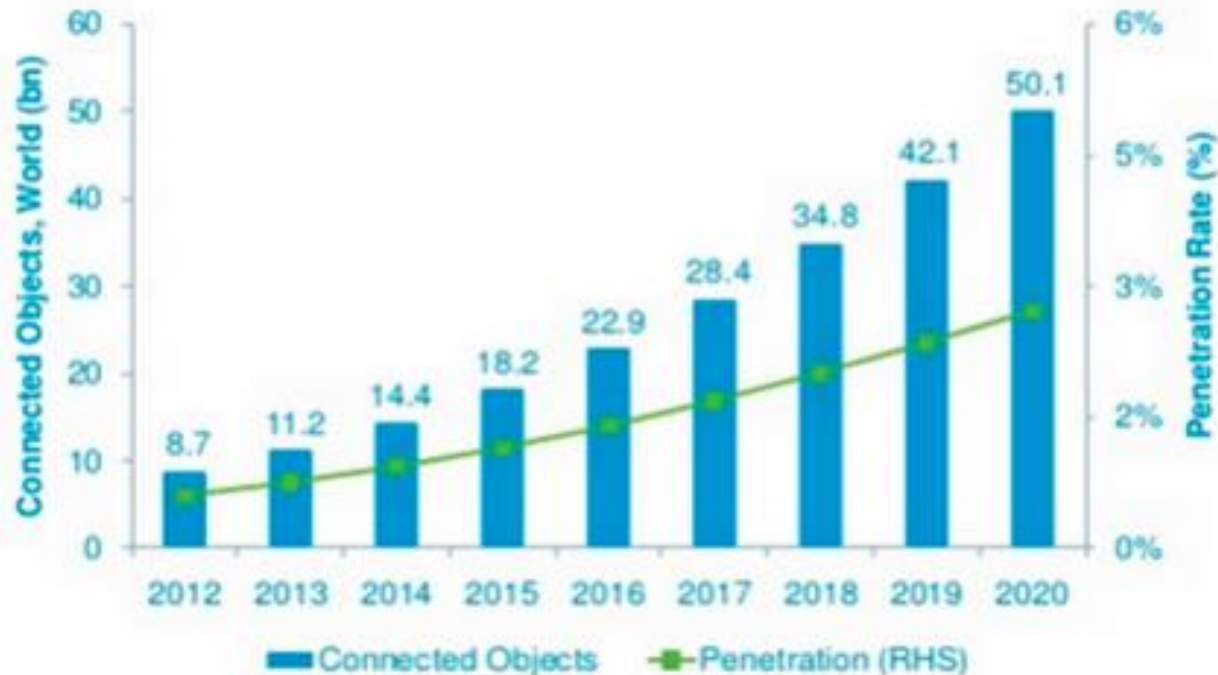


What is the Internet of Things?

- Thing or Physical Object
 - Identity
 - Communicate
 - Sensors or embedded electronics
- What can you do with these things?
- Connect Things
- Manage Things
- Monitor Things
- Search for Things
- Control Things



Number of Connected Objects Expected to Reach 50bn by 2020



Penetration of connected objects in total 'things' expected to reach 2.7% in 2020 from 0.6% in 2012

Source: CCS, 2013

Source: [Cisco](#)



Why should you care?

- Government and businesses should be prepared for an exponential growth in Internet of Things generated data
- The digital universe will **grow by a factor of 300** from 2005 – 2020 from 130 Exabytes to 40,000 Exabytes and big data represents 70% of this data
- It is expected to result in **\$4.6 trillion** in related savings and revenue for government in the next decade

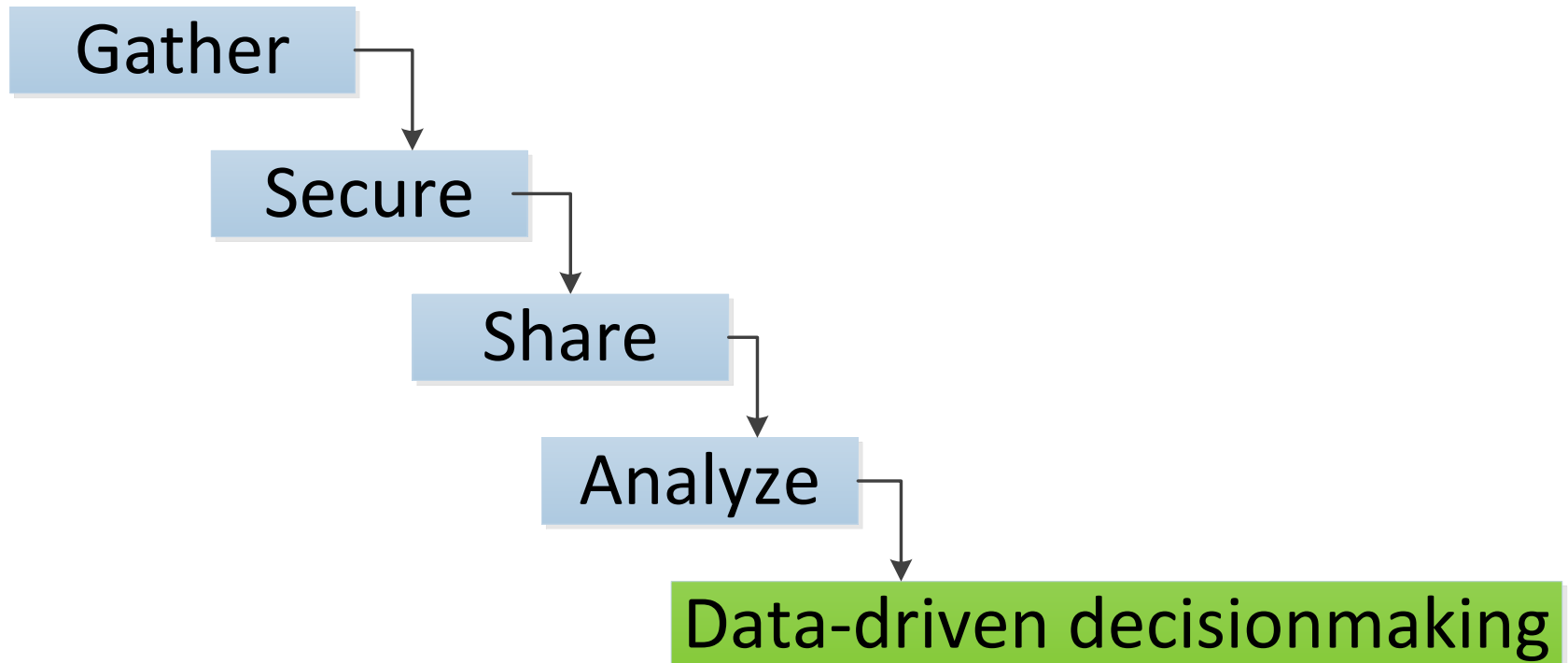


IP Addressing Growth

- In 1984 there were few hundred thousand addressable devices
- The IPV4 standard we relied on since Internet inception is 4.3 billion
- With a new IP addressing protocol called IPV6 the number of devices can grow to:
340,282,366,920,938,463,463,374,607,431,768,211,456
- That's 100 addresses for every atom on the face of the earth.



What to do with all this data?





Everyday Consumer Examples



E-health/Telemedicine



Computer embedded clothing



Fitbit/Watches



Nest



Basketballs



Pharmaceuticals



Consumer Examples



Nest Learning Thermostat



Turn it up. Turn it down. The Nest thermostat learns your schedule and the temperatures you like. It keeps you comfortable and saves energy when you're away.

Meet Your **DIGITAL COACH.**

NO MORE GUESSING.

GET OBJECTIVE DATA & FEEDBACK TO IMPROVE YOUR GAME

It's fast - about 100 millisecond speed from action to visual display. The ball measures any forces applied to it - spin, acceleration, you name it. A full 360 degree view of the ball - and the player that moves it. The ball is going to give you data and feedback about your game that is smart, precise, and freakishly accurate. Yeah, it's that good.





Local Government Examples



License Plate Readers



Smart Meters – Water/Gas/Electric



Sensored Roadways



Smart Parking Meters



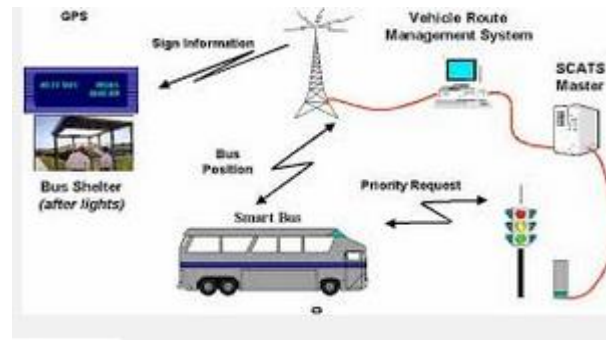
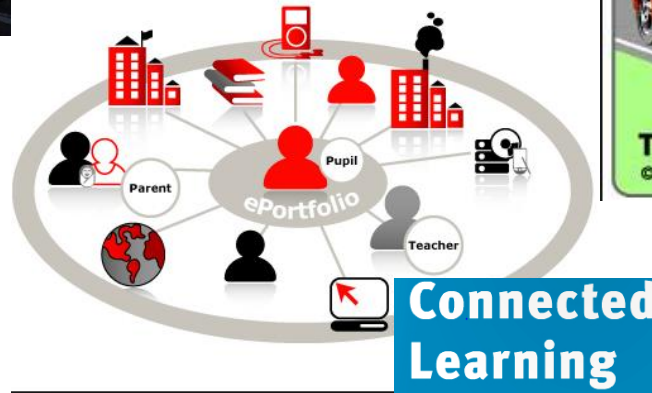
Bus/Public Transportation monitoring



Connected Learning



Local Government Examples





Internet of Things Video

<https://www.youtube.com/watch?v=sfEbMV295Kk>



According to 2014 PTI Survey

Have you begun thinking about how IT can facilitate a "smart city/county" strategy for your jurisdiction?

- 23% reported No, but we should
- 44% reported Yes, we are just beginning
- 18% reported Yes, we are well along in our strategy development
- 15% reported No, it is not relevant to my jurisdiction

Source: State of City and County IT 2014: The IT Organization and Operations National Survey summary report



What is “big data?”

Definition:

is the all-encompassing term for any collection of data sets that becomes difficult to process using traditional data processing applications



How much value does "Big Data" have for local government operations?

- 44% responded that they cannot tell just yet
- 27% responded that it will become increasingly important
- 8% responded big data is all hype
- 11% responded that there may be something to it
- 9% responded big data is a valuable part of the operational strategy

Source: State of City and County IT 2014: The IT Organization and Operations National Survey summary report



Christchurch, NZ Sensing City Initiative

The Sensing City is a social enterprise driven by three core values which must be present for the whole system to be viable. They are:

1

Open

The information must be open. This means that the same information that is available to the City Council will also be available to the public. This not only creates total transparency, it also creates an innovative ecosystem where a two-person start up company has the same advantage with the information as a multi-national corporation.

2

Individual freedom

Individuals will not be tracked. Sensing City believes there is more value in tracking flows of things across the city (water, traffic etc) than tracking individuals. Arguably the technology to track an individual is already widely accepted by society, with cellphones carried by the majority of the population.

3

Measure everything

The real value of the concept is reached when anything that can be measured is measured. The value of measuring a certain variable may not be fully understood at the implementation stage, but is likely to be discovered at a later date from an unexpected source.





Christchurch's "Little Water Sensor"

- Partnered with MIT
- Empowers citizens to test water quality around the City with "sensors"

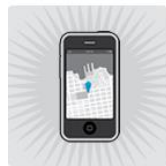




City of San Francisco

SFpark About How it Works Resources News Contact

Apps



In addition to the parking information map available on the SFpark.org homepage, information on parking availability is distributed via a free SFpark iPhone app, Android app, and the region's 511 phone system.

Open source data for app developers

A data feed is available [free to developers](#) who want to incorporate live SFpark pilot area parking availability and pricing information into their own apps and websites.



How it Works

- > Pricing
- > Apps
- > Open Data and Source Code
- > Garages
- > Meters
- > Sensors
- > PayByPhone
- > Accessible Parking Policy
- > Mission Bay Parking Planning

Related News

- [SFpark pilot evaluation and mobile app changes](#)
- [New source code available for SFpark apps and map](#)
- [Excerpt from "Gov on the Go: Boosting Public Sector Productivity by Going Mobile" a white paper by Deloitte](#)
- [SFMTA upgrades the SFpark.org online parking map using OpenGeo technology](#)

Related Resources

- [Changes to SFpark availability feed and mobile apps](#)
- [Screenshot: SFMTA reEnforce pilot app](#)
- [Android app screenshots with phone](#)
- [Android app screenshots](#)



Steps your local government can take

- Learn from the successes of other local governments and businesses
- Get outside help when you don't have the expertise
- Train staff
- Develop standards and policies
- Prioritize purchases of objects that have tags or sensors



Steps you can take (continued)

- Build your back office technology capacity to handle all this data (storage, network bandwidth, etc).
- Experiment/ Create pilot projects
- Utilize performance analytics and predictive analytics to measure, track and forecast how you are doing

World-class Performance Management Software for Local Governments

- Developed in partnership with leading analytics software developer SAS[®]
- A great tool for communities to conveniently report, benchmark, and compare their performance to other participating jurisdictions
- Goal is to build a community of 2,000 participating **communities** all sharing and comparing data world-wide through ICMA Insights
- Features the latest technology employed by Fortune 500 companies but at a fraction of the cost
- Offers 5-tier levels to match every community's budget & performance management needs
- Training and consulting services are available through ICMA

Features Advanced Analytics, Scorecards, Dashboards, Customizable Graphs and More

Internal Services

Turnover Rate: All full-t... Turnover rate: Public saf...

66.67%
66.67%

Dollar amount of purcha... Wo

Code Enforcement

Code cases available | Code Cases per FTE | Code Expenditures per capita | Code cases resolved | Citizen rating | Days to compliance

Select the year: [Dropdown] | Select a State: [Dropdown]

Total Code Enforcement Expenditures Per Capita

Code Expenditures per capita

Population Breakout	Code Expenditures per capita
Under 25,000	~\$9.5
25,000-49,999	~\$6.0
50,000-99,999	~\$4.5
100,000-249,999	~\$6.5
250,000-499,999	~\$5.0
500,000-1,000,000	~\$3.0
Over 1,000,000	~\$7.0

Select the Jurisdiction

Population Breakout	Jurisdiction	Code Expenditures per capita
Over 1,000,000	Dallas, TX	\$12.98
	Fairfax County, VA	-
	Miami-Dade County, FL	\$5.13
	Phoenix, AZ	\$4.86
	San Antonio, TX	\$5.80
	Austin, TX	-
500,000-1,000,000	Milwaukee County WI	-
	-	-

Neighborhood Services

Greatville, USA
Code enforcement: Average calendar days, Inspection to Voluntary Compliance

25 [Progress bar]
50 [Progress bar]
Performance 88.33% [Progress bar]

Greatville, USA
Code Enforcement cases per FTE

Actual 297 [Progress bar]
Target 300 [Progress bar]
Performance 110.40% [Progress bar]

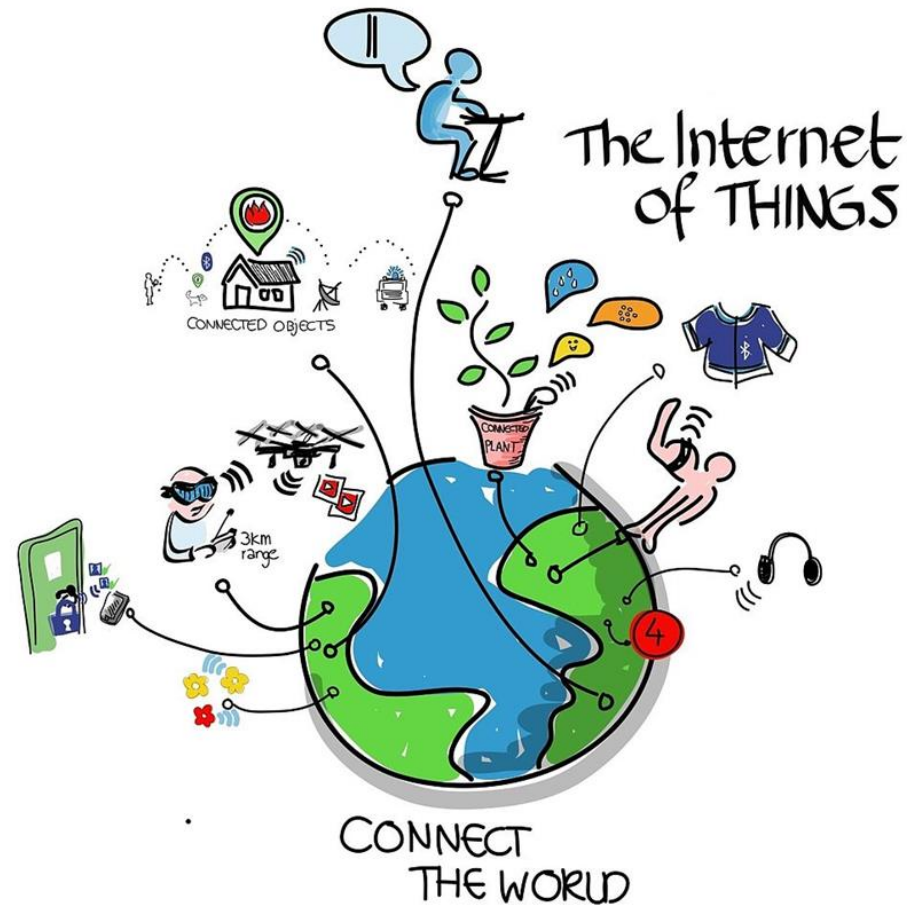


Additional Resources

- The Internet of Things will Thrive by 2025 – PewResearch Internet Project
- The Economist – The Internet of Things Business Index, 2013
- Mckinsey Quarterly: The Internet of Things
- Information Week: Internet of Things: 8 Cost-Cutting Ideas for Government
- San Francisco – sfpark.org



Questions?





ICMA *100*th ANNIVERSARY
1914 ■ 2014

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