

Smart Cities and IoT

with opportunity comes risk



presenter



Steve Wong

former:

Industrial Automation Control System Engineer
Attorney

current:

Open Source Engineer Dell EMC



Note: opinions expressed are my own – this presentation is not on behalf of Dell Technologies or any affiliate

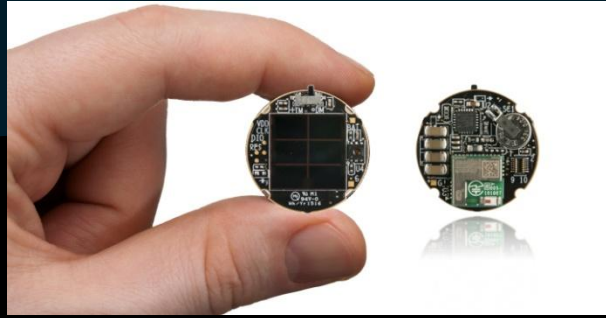
Smart Cities aka the Internet of Things



fostering collection of data related to many aspects of commerce, health, environment, and transportation.

- Energy
- Transportation
- Water
- Public Safety
- Buildings
 - Gov + Commercial
 - Homes
 - Data Centers
- Weather Conditions

How much data?

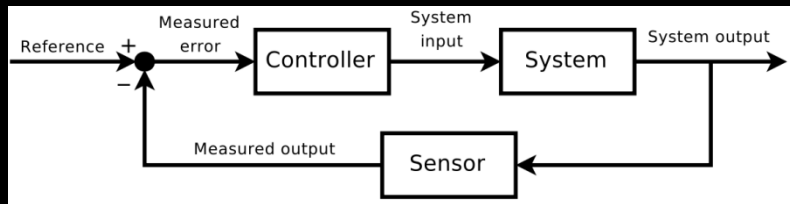


tiny devices aren't going to hold data for long. The devices will forward data to Internet connected data centers.

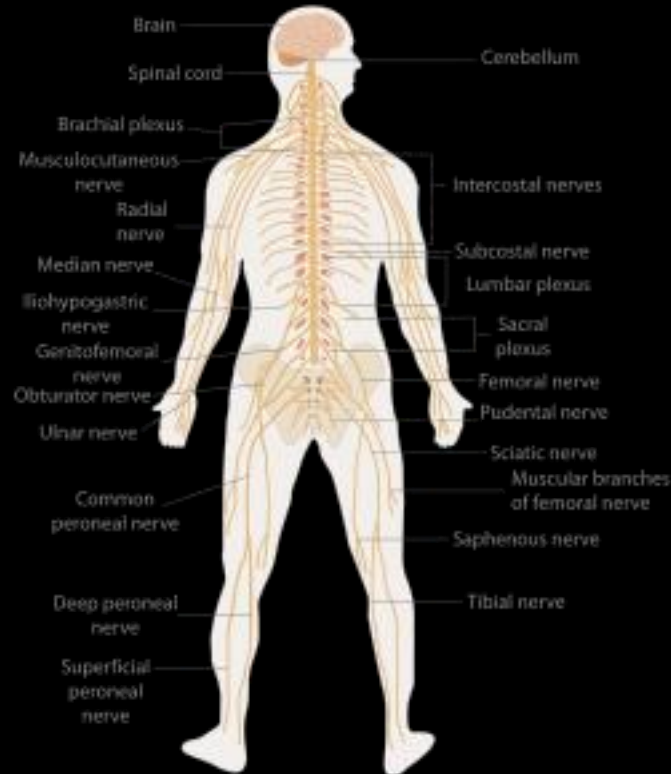
Ultimately this will drive demand for cloud hosted analytics that can access pools of this data with low latency, using results to influence and control many aspects of society.



What will this data be used for?



IOT = the central nervous system for society



What could go wrong?

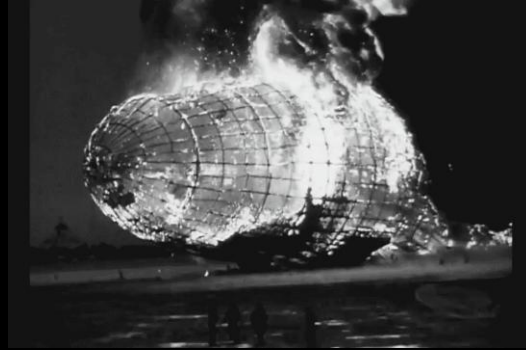
THE **PHYSICAL IMPACT** OF A **SEVERED SPINAL CORD**



Why should anything go wrong?



MakeAGIF.com



transit, public safety utilities = control small details
... what is the big picture? – the aerial view



LOS ANGELES OPEN DATA

Information, Insights, and Analysis from the City of Los Angeles

A Message from Mayor Eric Garcetti



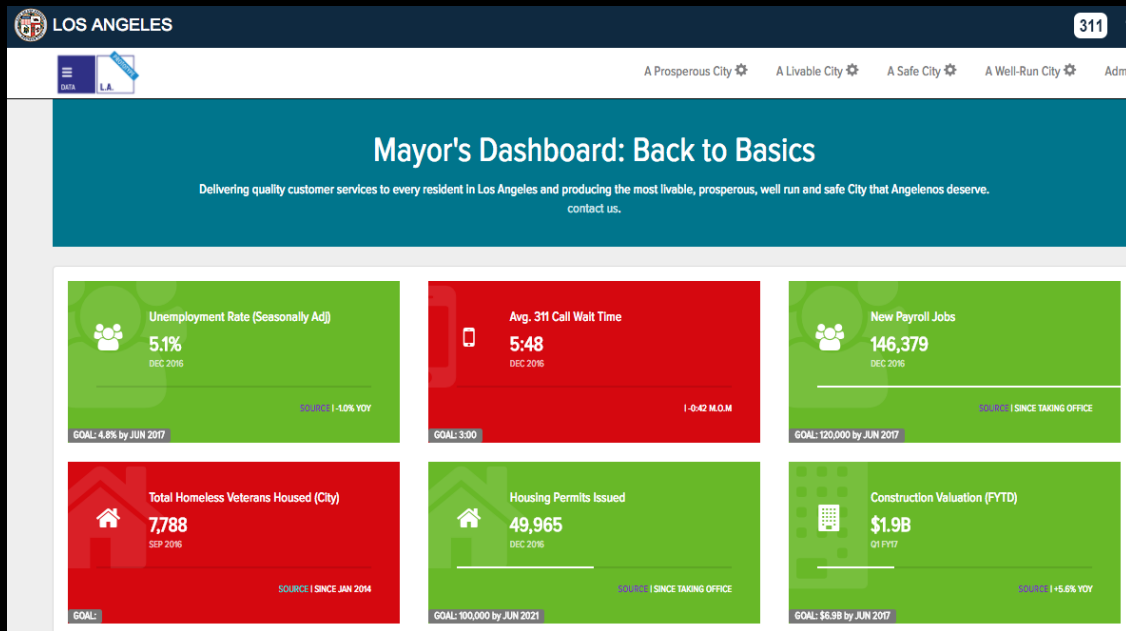
We are sharing city data with the public to increase transparency, accountability and customer service and to empower companies, individuals and non-profit organizations with the ability to harness a vast array of useful information to improve life in our city. I hope that this data will help drive innovation and problem solving within the public and private sectors and that Angelenos will use it to more deeply understand and engage with their city. I encourage you to explore data.lacity.org to conduct research, develop apps or simply to poke around.

Join the Community

Enter Your email To Join the Community



This could be useful...
monitor government operations - measure effectiveness



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<http://dashboard.lamayor.org/>

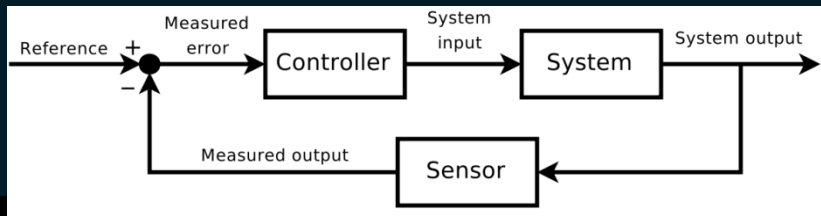
precedent for this open availability of data Boston Public Library



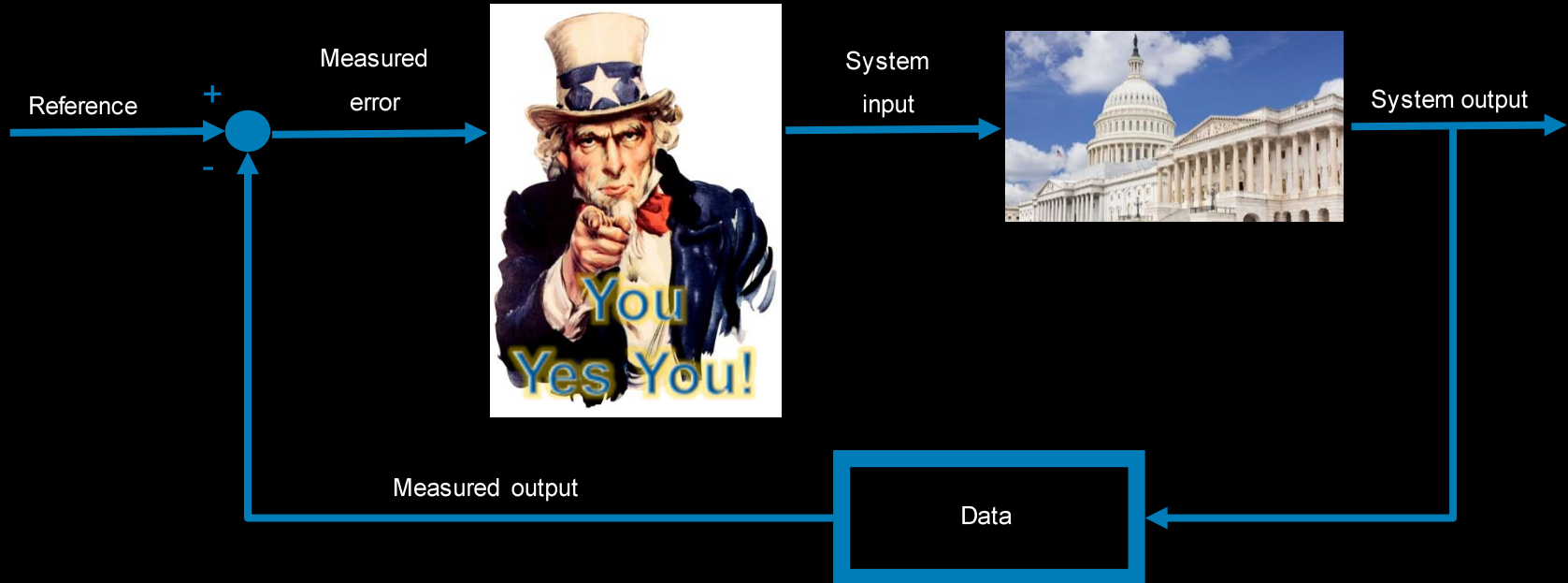
THE COMMONWEALTH REQUIRES THE EDUCATION OF THE PEOPLE AS THE SAFEGUARD OF ORDER AND LIBERTY



=



another control loop




Free and Open access to *trustworthy* data



Could something like this ever happen?



wikiHow to do anything... 

[Article](#) [Edit](#) [Discuss](#)

wikiHow to Change a Bad Report Card

Three Methods: [Studying to Improve Your Grades](#) [Altering Your Report Card Using a Photocopier](#) [Editing Your Report Card on the Computer](#) [Community Q&A](#)

Your teacher just handed back your report card for the term, and there are a few grades there you're less than excited to see. You now have two choices: take the report card home and face the disappointment of your parents, or fool them into thinking that you've done better.

Exhibit A: ... it's happened before



Health » How tap water became toxic in Flint, Michigan

The hero doctor



Dr. Mona Hanna-Attisha

In the pediatric ward of Flint's Hurley Medical Center, Dr. Mona Hanna-Attisha was seeing more and more worried parents fretting over rashes and hair loss.

No one believed state and local officials when they said that this icky brown water was safe.

Hanna-Attisha, an animated and passionate young pediatrician with horn-rimmed glasses who everyone calls Dr. Mona, realized there was a way to determine

whether the water was affecting kids. Medicare requires states to keep records of blood lead levels in toddlers. The comparison was astonishing. Lead levels doubled and even tripled in some cases.

"When (my research team and I) saw that it was getting into children and when we knew the consequences, that's when I think we began not to sleep," Hanna-Attisha said.

At first, the state publicly denounced her work, saying she was causing near hysteria. They spent a week attacking her before reversing their narrative and admitting she was right.



Exhibit B: Distrust in “Authority”

After Fukushima: Crowd-Sourcing Initiative Sets Radiation Data Free



By Laurence Cruz
@zasque5

0

total
shares



Internet entrepreneurs have created a global sensor network for collecting and sharing radiation measurements to empower people with data about their environments.

MARCH 04, 2014

It's nearly three years since the massive Tohoku Earthquake and ensuing tsunami devastated the east coast of Honshu, Japan, triggering the catastrophic Fukushima Daiichi nuclear disaster. Sean Bonner remembers it well. As news of the March 11, 2011 disaster spread, the Internet entrepreneur and hacking enthusiast began an e-mail thread with friends and colleagues around the world—including **Joi Ito** and **Pieter Franken**. With the safety of family and friends confirmed, another concern arose: How high were radiation levels coming out of the stricken nuclear plant?

To their amazement, this potentially life-saving data simply was not available. Bonner says the Japanese federal government gave out broad-bush averages that were useless—a single reading for an entire city, for instance.

"That's akin to a weather forecaster giving out a single temperature for the whole of California," says Bonner, who shuttles between his home base of Los Angeles and Tokyo. "Radiation readings are vastly more nuanced than

Related Media



Sean Bonner of SAFECAST shows the Geiger counters that collect radiation data.



Mobile devices can show radiation amounts down to neighborhood and street level.



PRIME TIME

RADIOACTIVE COVER-UP

TEPCO under fire for delayed notice of tainted Fukushima water

THE  TIMES

Child **cancers up fiftyfold**
after Fukushima disaster

AP

Study shows **alarming thyroid**
cancer rates in children living
near Fukushima

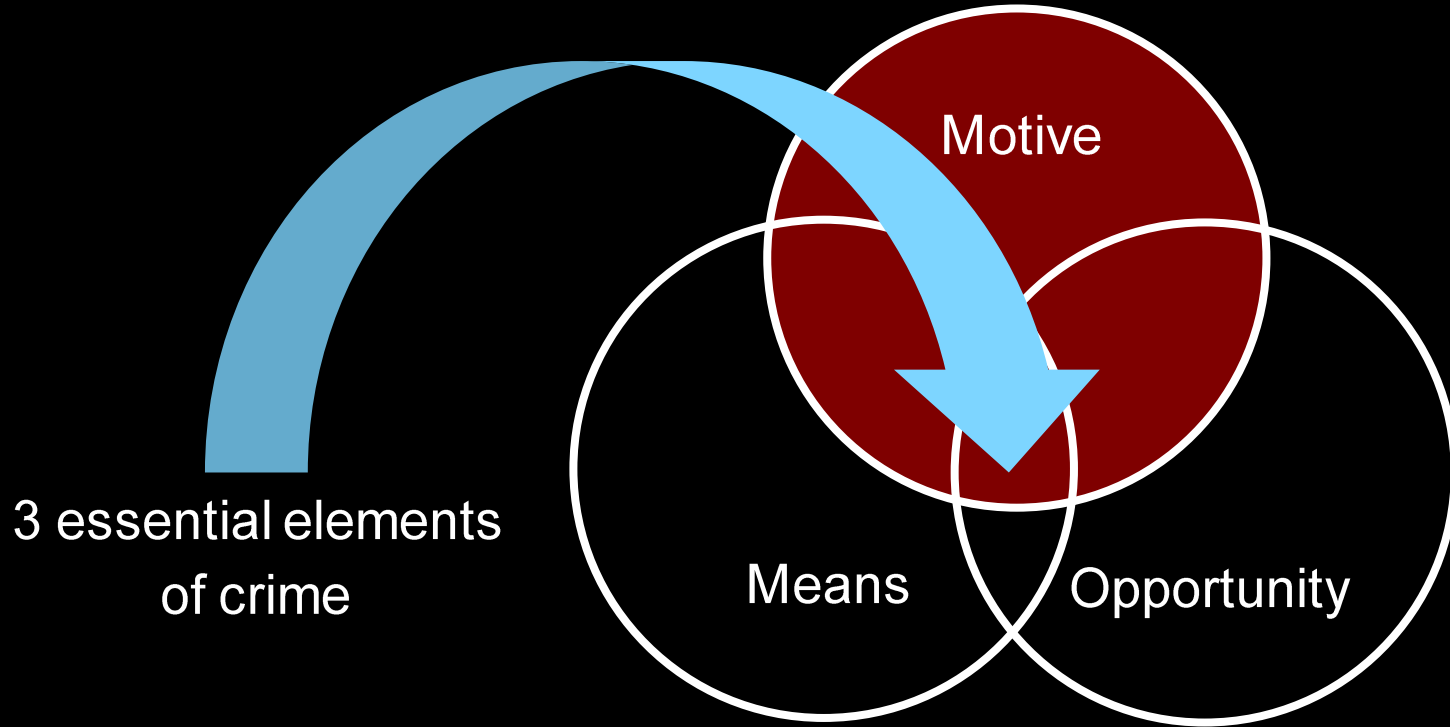
UPI

A team of Japanese researchers... said
cases of thyroid cancer in Fukushima
Prefecture have **skyrocketed**

Summary: people have motives to tamper inside and out



Let's assume powerful parties have bad motive
.. Can evil still be prevented?



Historical precedent: failures + attacks

Redundancy



Historical precedent: errors + fraud detection record transactions in two places

	Dr	Cr
Balance Sheet Items	Liabilities Liability accounts are DEBITED when they are decreasing	Assets Asset accounts are CREDITED when they are decreasing
Profit and Loss Statement Items	Income Income accounts are DEBITED when they are decreasing	Expenses Expense accounts are CREDITED when they are decreasing

Creative accounting is an absolute curse to a civilization. One could argue that double-entry bookkeeping was one of history's great advances.

Charlie Munger

Historical precedent: “keep honest people honest”

The cash register was one of the great contributions to civilization. It's a wonderful story. Patterson was a small retail merchant who didn't make any money. One day, somebody sold him a crude cash register which he put into his retail operation. And it instantly changed from losing money to earning a profit because it made it so much harder for the employees to steal

... **Charlie Munger**



precedent: dual communication channels



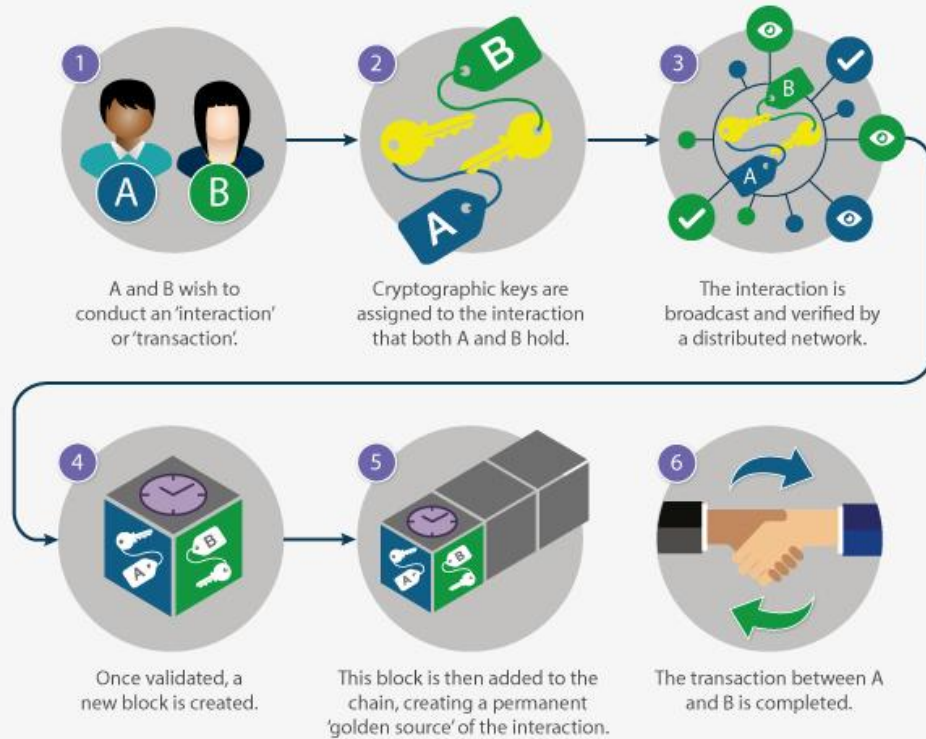


Blockchain

a **distributed** database that maintains a continuously growing list of data records that are **hardened** against tampering and revision, even by operators of the data store's nodes.

The screenshot shows the IBM Big Data & Analytics Hub website. The header includes the IBM logo and navigation links for 'ABOUT' and 'CONTACT'. Below the header is a navigation bar with categories: 'EXPLORE BY TOPIC', 'USE CASES', 'INDUSTRIES', 'ANALYTICS', and 'TECHNOLOGY'. On the right side of this bar are links for 'EVENTS' and 'FOR DEVELOPERS'. The main content area is titled 'Blogs' and features a post titled 'What is blockchain and what does it have to do with the Internet of Things?'. The post is dated 'NOVEMBER 2, 2015' and is written by 'Ryan Begley', who is identified as a 'Product Manager IoT Division - Connected Products, IBM'. There are social media sharing icons for Twitter, LinkedIn, Facebook, and Google+, along with a 'Post Comment' button. The post text begins with 'This year at IFA in Berlin, after dinner, I went to a karaoke bar with two friends, Verna and John, where we met up with their friend Henning. I love karaoke, but am usually shy initially around people who haven't heard me sing. After I found my nerve, I decided to sing my go-to, Paul Simon's "50 Ways to Leave Your Lover." But given my company, I thought a small modification to the lyrics would earn some laughs, so I went with it—and "50 Ways to Lose Your Ledger" was born.'

How a blockchain transaction works



Wrap Up

1. There is an opportunity
2. There is a ~~problem~~ risk
3. **You** are likely part of the solution

But why me?

Can't we just trust the government to take care of this?

Issues with government and *open* data

Conflict of interest

Incentive to hide bad report card

Precedent of censorship and slanted and one sided information delivery

Beware the use of fear mongering:

"THE ENEMY COULD USE THIS"

Issues with government and *open* data

Limited resources

Technology moves rapidly

How well has this worked before under civil service hiring?
government procurement practices?

The sport's team analogy

Issues with government and *open* data

Basic fairness

Our own personal lives have become open books to both governments and corporations to a historically unprecedented degree

“You have zero privacy, get over it” – **Scott McNealy**

NSA offer: let us have access to all your data and we will relieve your fear

Are these good, or fair bargains? Open Data could begin to level the playing field?

consider: “Citizens have the right to free and open access to all data the public paid for”

Where to go from here?

1. There is a problem
2. **You** are likely part of the solution

Thank You

This session wasn't a deep dive into IOT or block chain technology – more information abounds on the web

Data collected within the confines of you own house, or by your own, non-public devices, is different – and different rules should apply

Questions?



[@cantbewong](#)