Smart Cities and IOT
with opportunity comes risk

presenter

Steve Wong

former:

Industrial Automation Control System Engineer

Attorney

current:

Open Source Engineer Dell EMC

{code} by DELL EMC

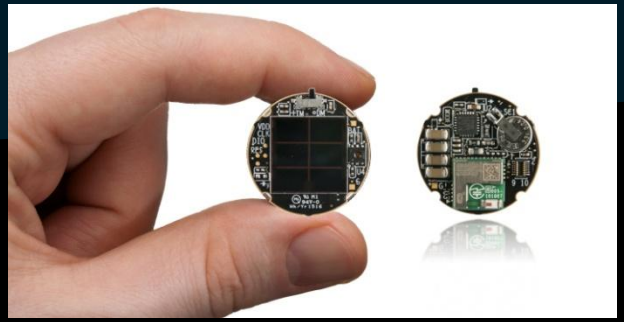
Note: opinions expressed are my own – this presentation is not on behalf of Dell Technologies or any affiliate

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

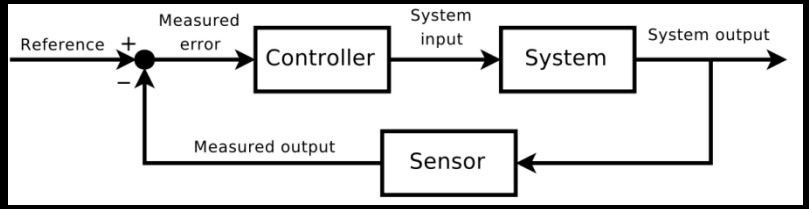
How much data?



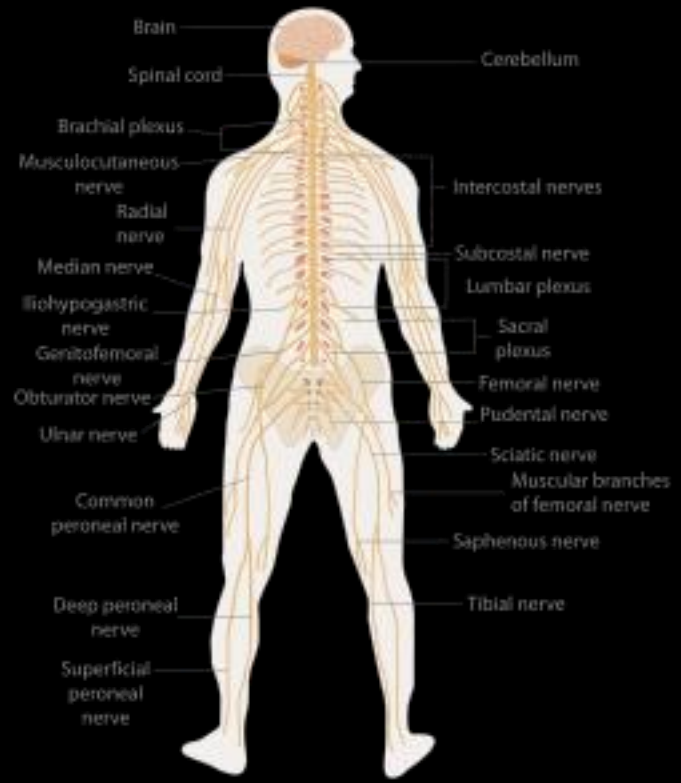
tiny devices aren't going to hold data for long. The devices will forward data to Internet connected data centers.

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

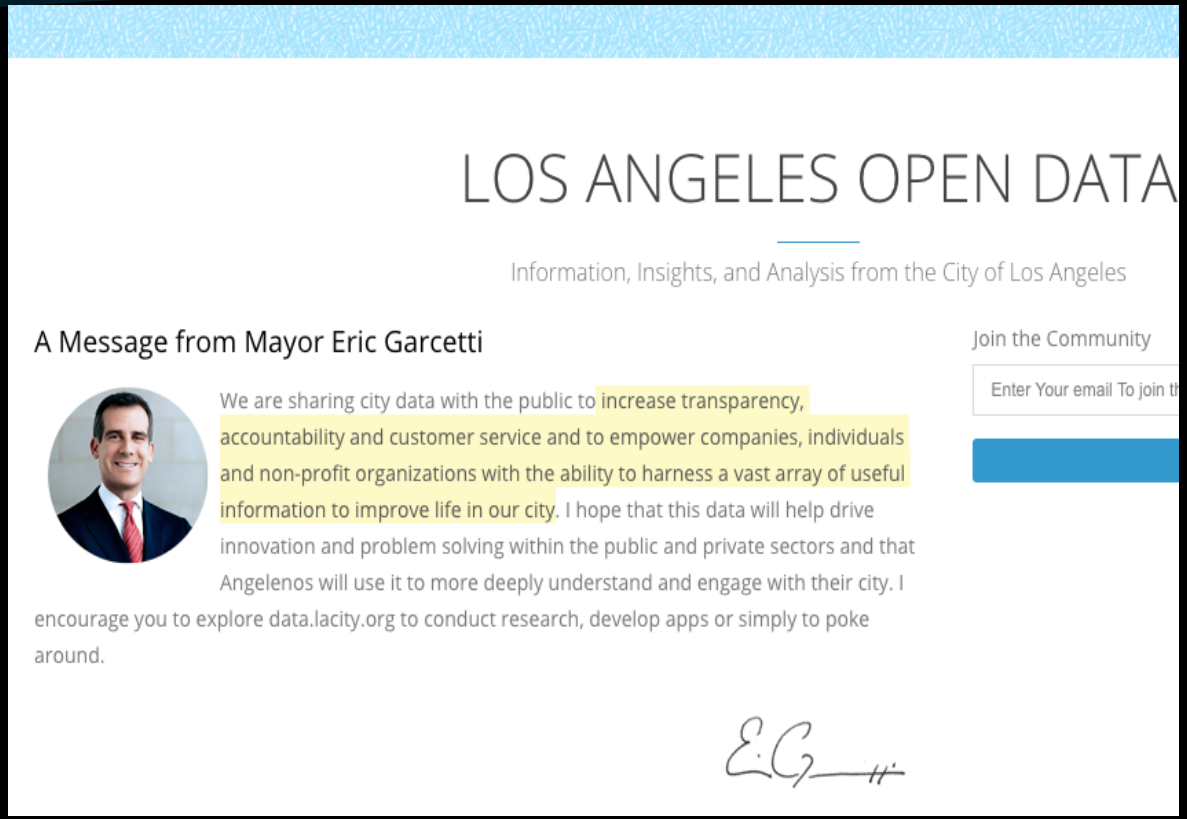


What could go wrong?

Why should anything go wrong?

THE TIMES
Alert 1,000 miles away in Sweden after Moscow admits casualties
Huge nuclear leak at Soviet plant

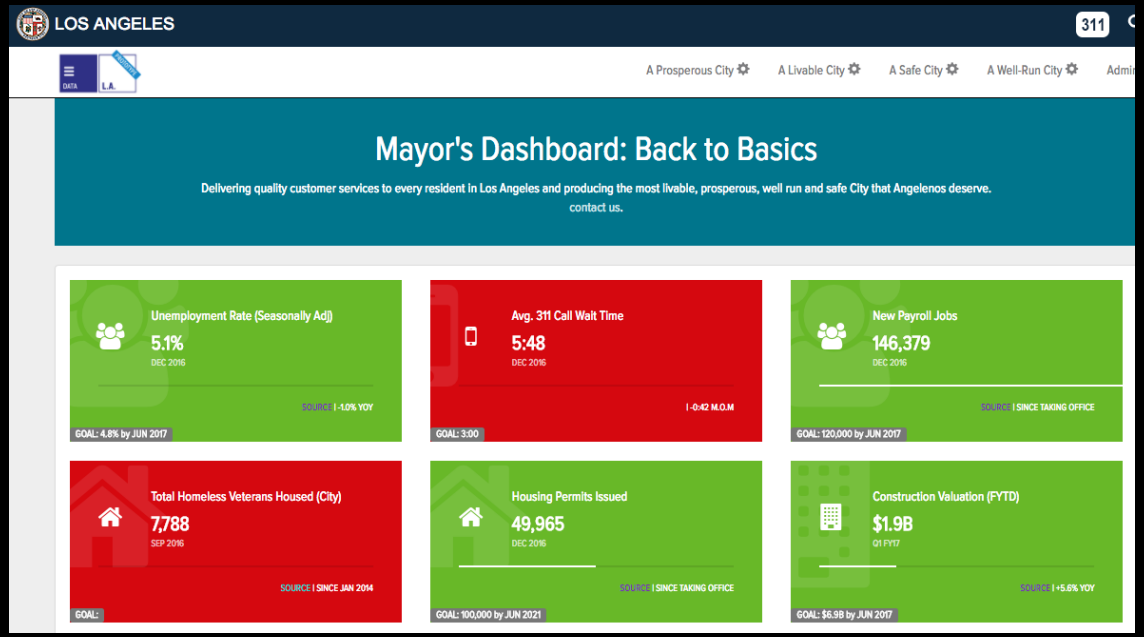
transit, public safety utilities = control small details
… what is the big picture? – the aerial view



https://data.lacity.org/

This could be useful…

montitor 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

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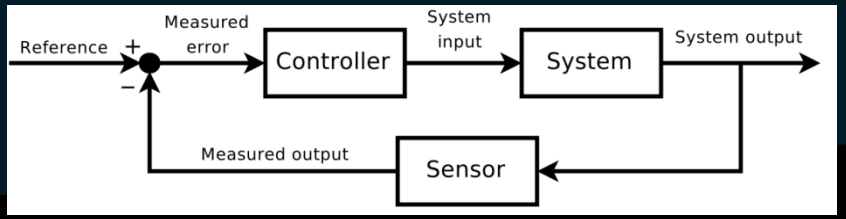
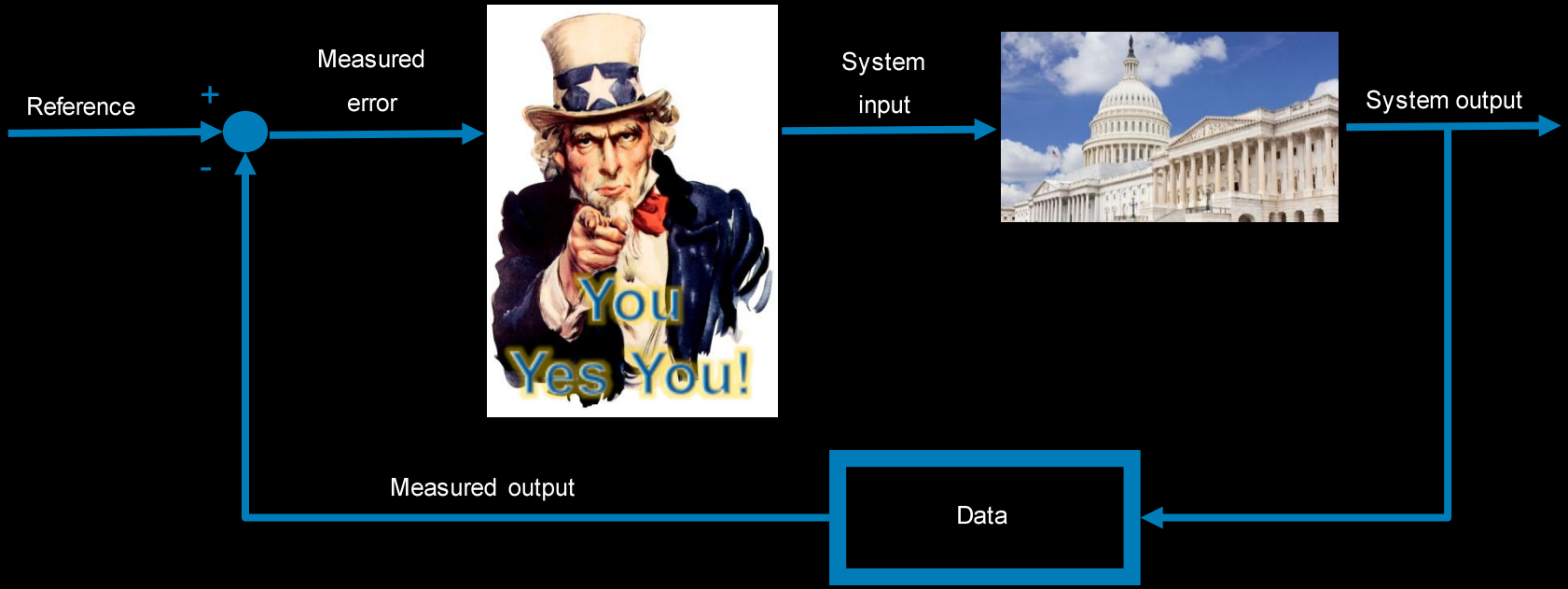


another control loop



Free and Open access to *trustworthy* data

Could something like this ever happen?

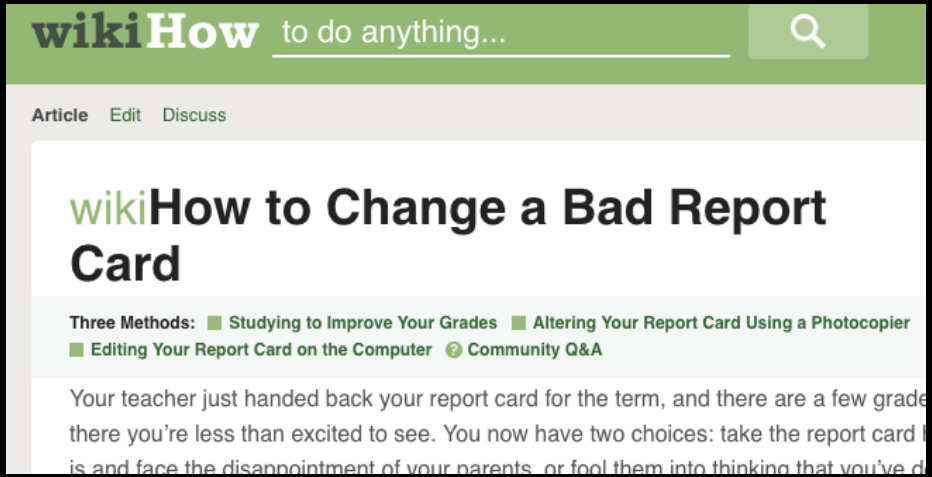


Exhibit A:
… it's happened before

CNN 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.

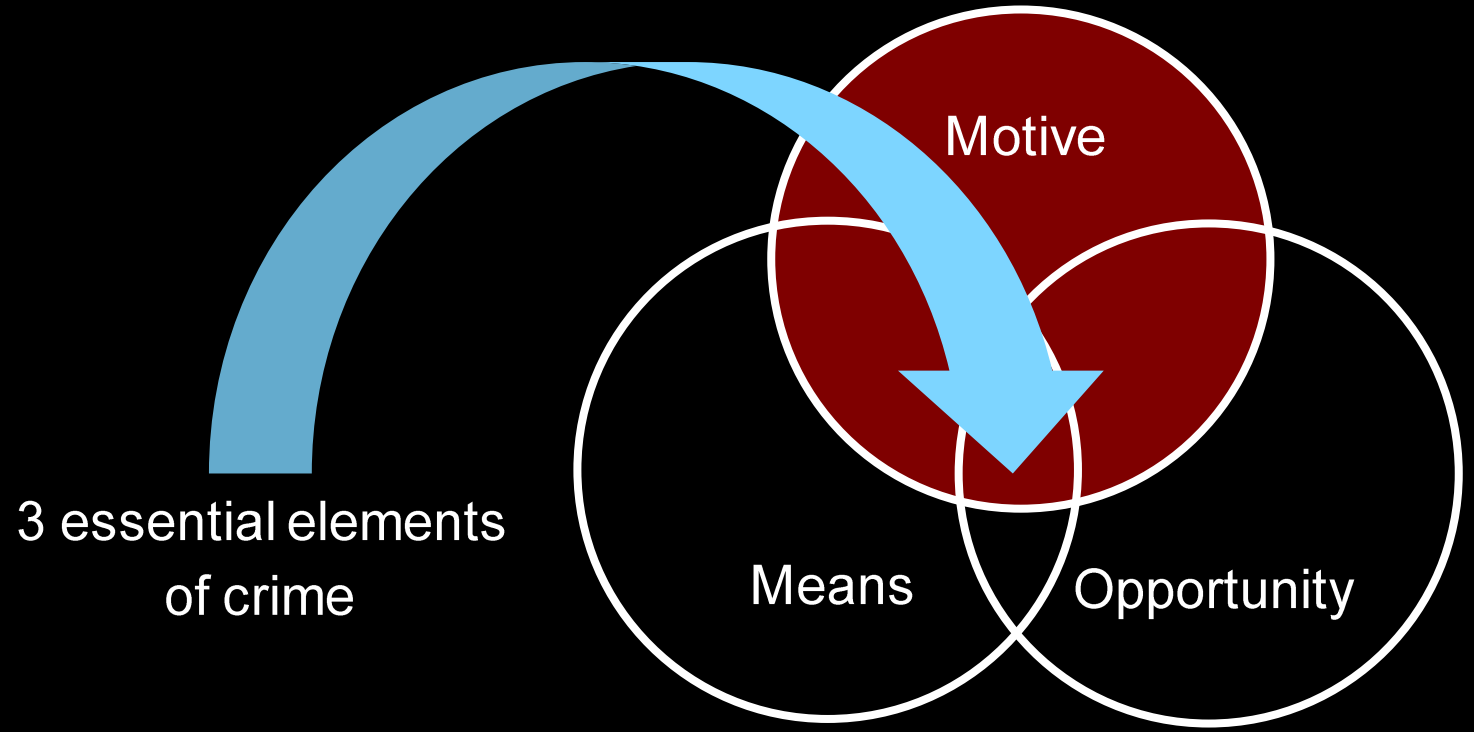
THE TIMES
Child cancers up fiftyfold after Fukushima disaster

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

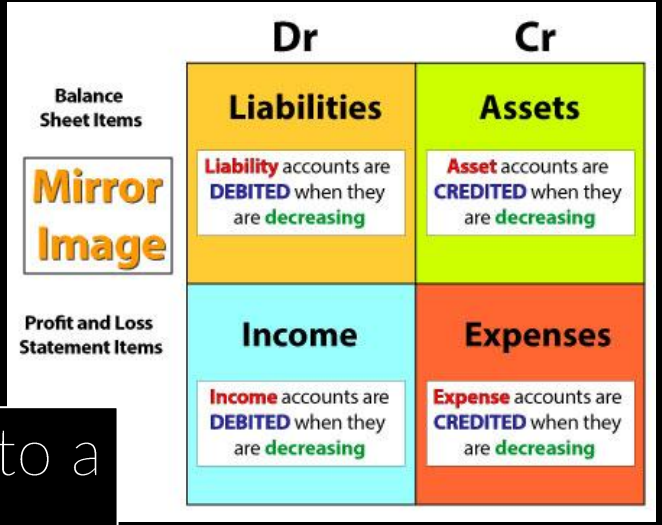
Let's assume powerful parties have bad motive .. Can evil still be prevented?



Historical precedent: failures + attacks

Redundancy

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



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”

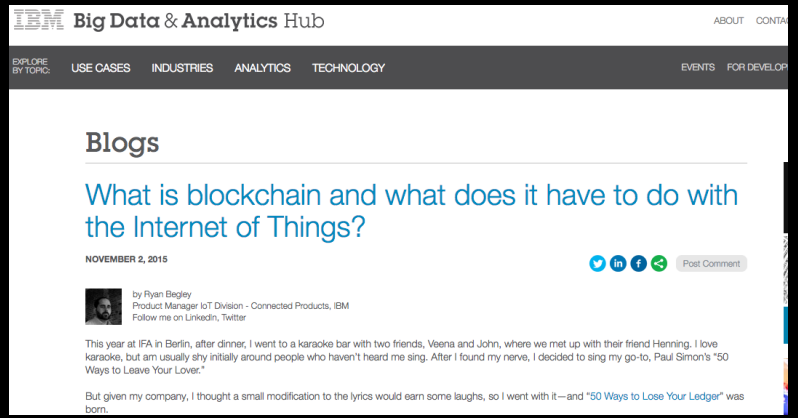
The cash register was one of the great contributions to civilization. It’s a wonderful story. Patterson was a small retail merchant who didn’t make any money. One day, somebody sold him a crude cash register which he put into his retail operation. And it instantly changed from losing money to earning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

… Chalie Munger

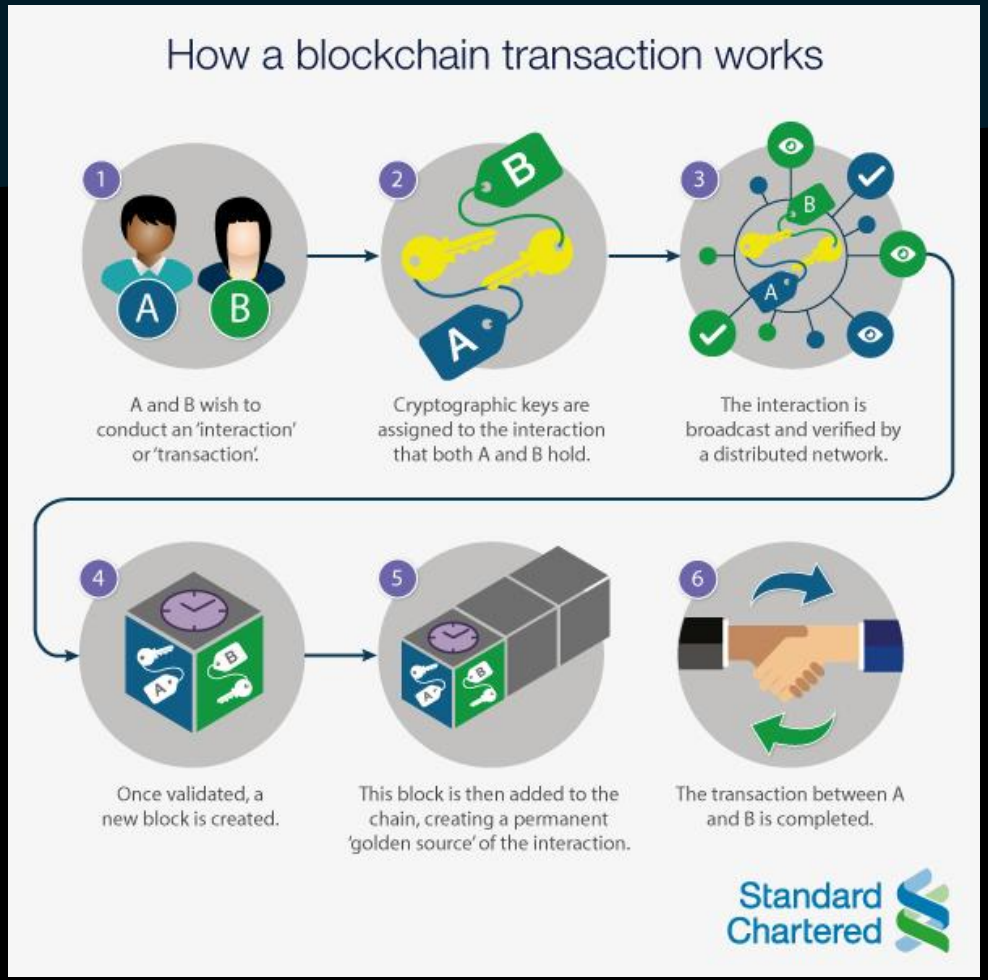
precedent: dual communication channels

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.



Blockchain


How a blockchain transaction works
1
A
B
A and B wish to conduct an 'interaction' or 'transaction'.
2
B
A
Cryptographic keys are assigned to the interaction that both A and B hold.
3
B
A
The interaction is broadcast and verified by a distributed network.
4
B
A
Once validated, a new block is created.
5
B
A
This block is then added to the chain, creating a permanent 'golden source' of the interaction.
6
The transaction between A and B is completed.
Standard Chartered

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 relief 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, our by your own, non-public devices, is different – and different rules should apply

Questions?

- @cantbewong