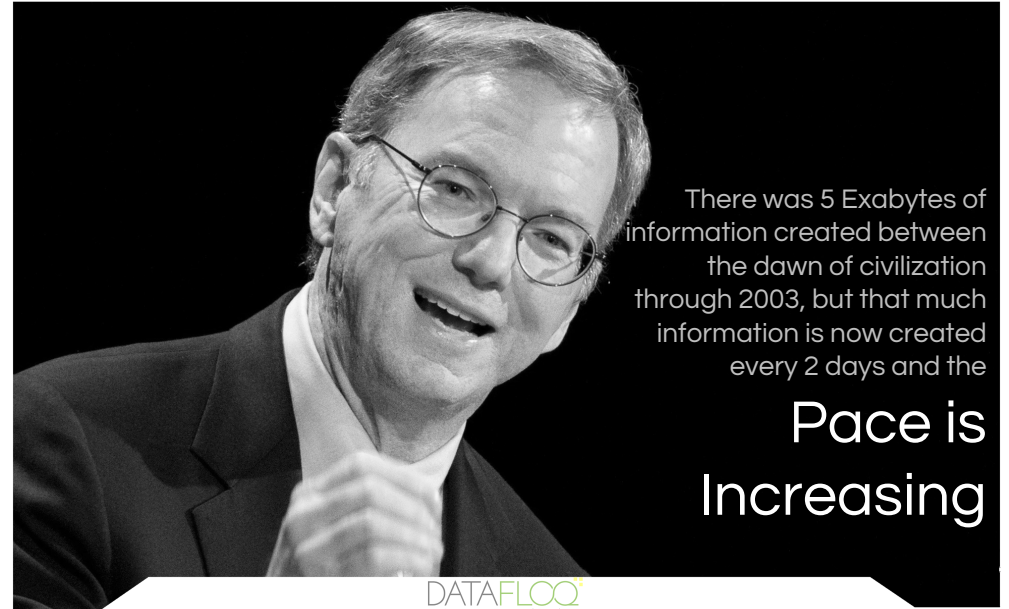


Big Data Bridging Workshop: It's time to Think Bigger

Mark van Rijmenam
October 9, 2015

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Connecting Data and People



There was 5 Exabytes of information created between the dawn of civilization through 2003, but that much information is now created every 2 days and the

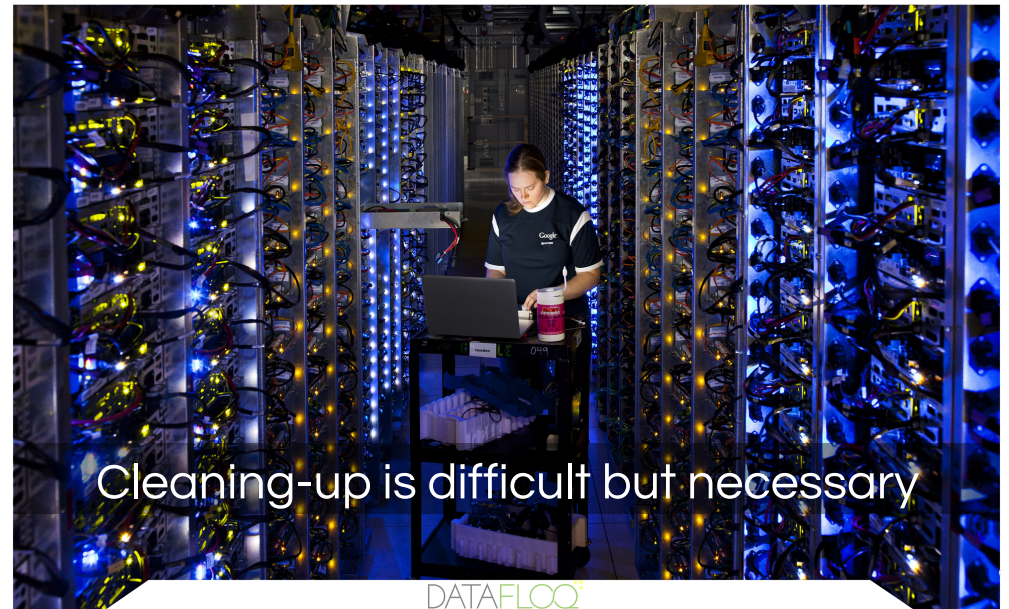
Pace is Increasing

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From Clean to Messy

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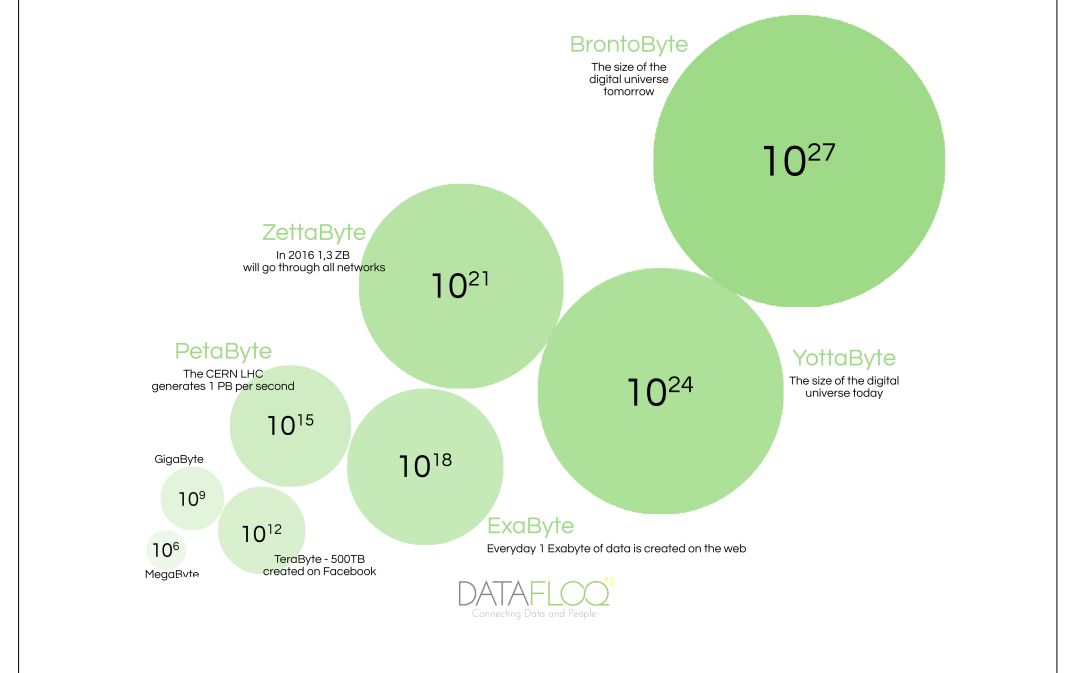
Cleaning-up is difficult but necessary

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We are just getting started

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100 times back and forth

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Accelerated Change is the only Constant

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BIG DATA

Accelerated change that results in Big Data

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Veracity Capture Curation Storage Search

Velocity

Sharing

BIG DATA

Volume Variety Analysis

Visualization Transfer

But what exactly is Big Data?

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Let's take a look at the 7V's

Velocity

Volume

Variety

Veracity

Variability

Visualization

Value



Structured data

- Spreadsheets;
- Log files;
- Sensor data;
- GPS data;
- Flat files.

Unstructured data

- Image objects;
- Social data;
- Documents;
- Voice data;
- Business records.

Semi-structured data

- RSS Feeds;
- Documents with meta tags;
- XML objects.

Complex Structured data

- Hierarchically structured data



Velocity



Youtube: 130 hours of video are uploaded every minute



Twitter: 400 million tweets per day



Facebook: 1.5 billion users, 5 billion likes per day, 500 Terabytes of data per day



Flickr: 51 million members with each 1 Terabyte storage = 50 exabyte



WhatsApp processes > 60 billion messages per day



204 million emails are sent every day

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Volume



Airplanes create 2,5 billion terabyte per year

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Volume



Square Kilometer Array Telescope: 1 Exabyte

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Volume



Self-driving cars: 2 Petabyte per year

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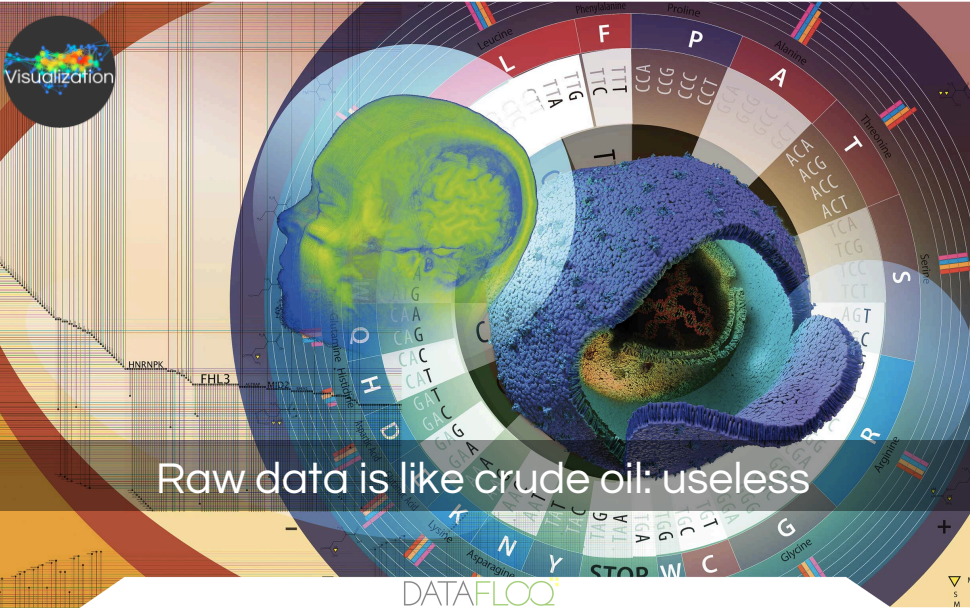


quality

Incomplete and incorrect data are useless.
33% of managers do not trust their data!



Data is highly variable: context is important!



Raw data is like crude oil: useless



Big Data offers tremendous value



Aurora Health Care saves \$ 6 million annually due to fewer re-admissions

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UPS saves \$ 50 million annually on fuel due to routing optimization

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That having said; I don't like the term Big Data

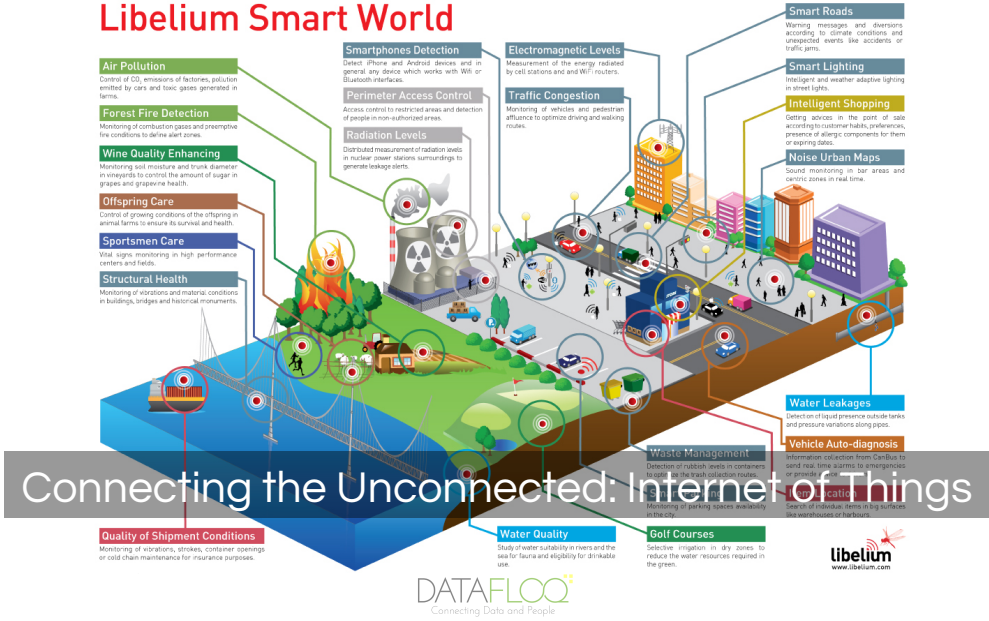
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Big Data Trends

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Libelium Smart World





But what can Big Data do for civil infrastructure?

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We Dutch know a thing or two about water:
Bring in the IJkdijk: A dike full of sensors

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We also like to experiment with bridges:
The 'Hollandse Brug' is our first smart bridge

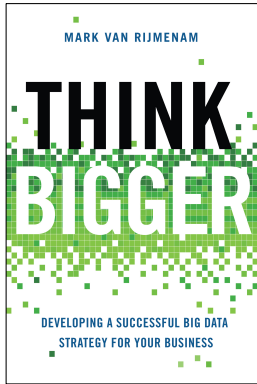
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The 2nd Jindo Bridge in South Korea has set the
standards for smart bridges around the globe

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Available on Amazon

Thank you

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