

# Profitable Sustainability

## THE Killer App in IoT

INEX



ADVISORS

# We are busy on our screens ...

## Every Day

- 2.5 billion new items added to Facebook
- 300 million photos posted to Facebook
- 500TB of new data about society's innermost thoughts posted to Facebook
- As many words posted to Twitter every day as the entire New York Times in the last half-century
- 100 billion+ social media actions taken

*Source Data Wolfram Summit 2013: GDELT: A Global Catalog of Human Society  
GDELT Team: Kalev Leetaru (Georgetown), Philip Schrodt (Parus Analytical Systems), Patrick Brandt*

# ... and creating oceans of social data

## Every Minute

- 600 new websites created
- 204 million emails sent
- 700,000 shares on Facebook
- 200,000 photos posted to Facebook
- 277,000 tweets sent

*Source Data Wolfram Summit 2013: GDELT: A Global Catalog of Human Society  
GDELT Team: Kalev Leetaru (Georgetown), Philip Schrodtt (Parus Analytical Systems), Patrick Brandt*

# We are busy in our real lives too ...

- 400 billion gallons of water per day are used in the United States
- 100,000 gallons In one year, by the average American residence
- Individual averages: US 100 gallons/ day. EU @50. Sub-Saharan Africa 2-5.
- 10 gallons of water to produce one slice of bread
- 634 gallons of water go into the production of one hamburger.
- 1000 gallons of water are required to produce 1 gallon of milk.
- 713 gallons of water go into the production of one cotton T-shirt.
- 39,090 gallons of water to manufacture a new car

# ... and struggling to manage H2O resources

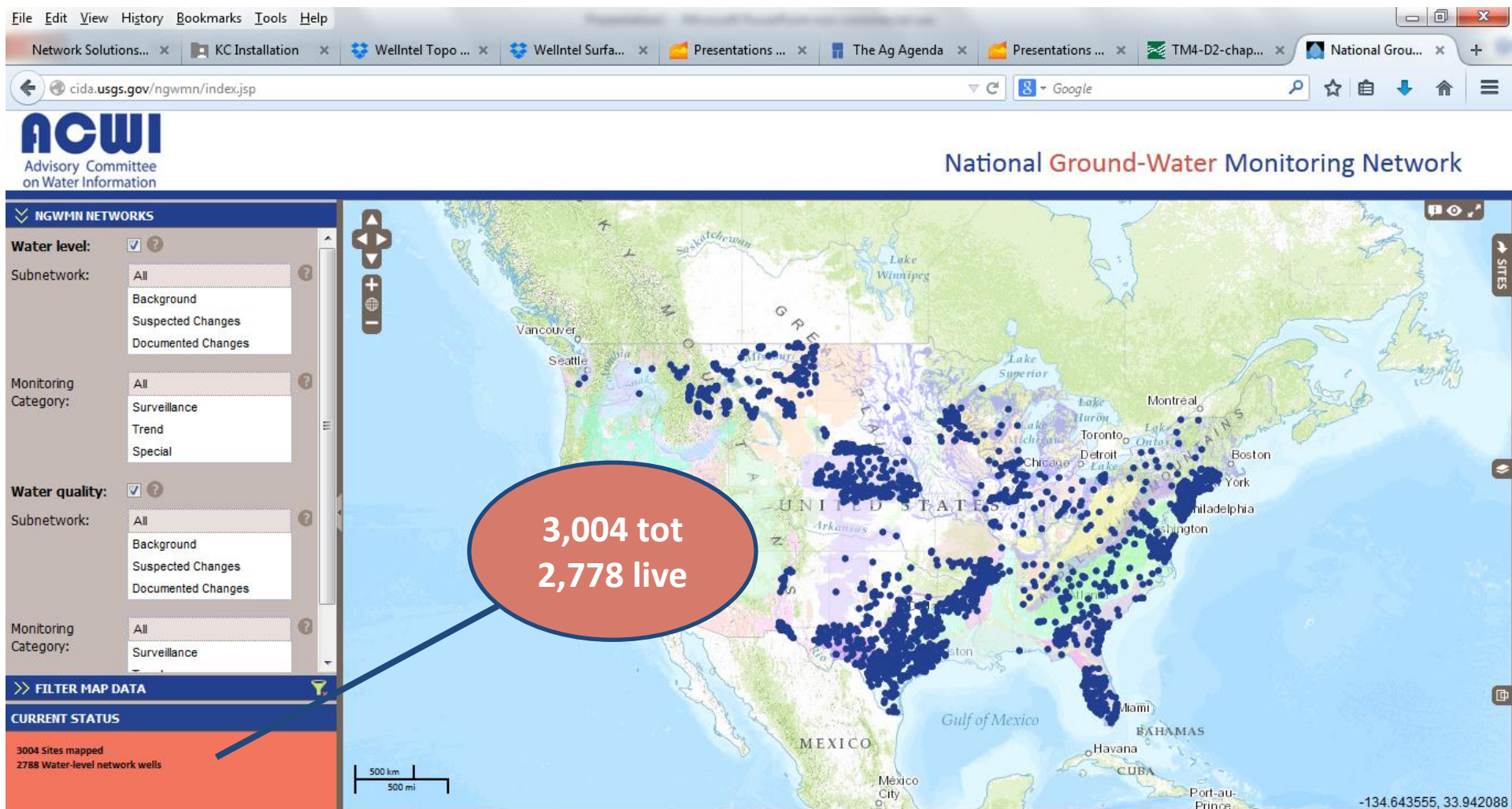
- Only 3% of Earth's water is fresh water. 97% of the water on Earth is salt water. Surface water makes up only 0.3%
- 68.7% of the fresh water on Earth is trapped in glaciers -- 30% of fresh water is in the ground.
- 1.7% of the world's water is frozen and therefore unusable.



*Source: EPA*

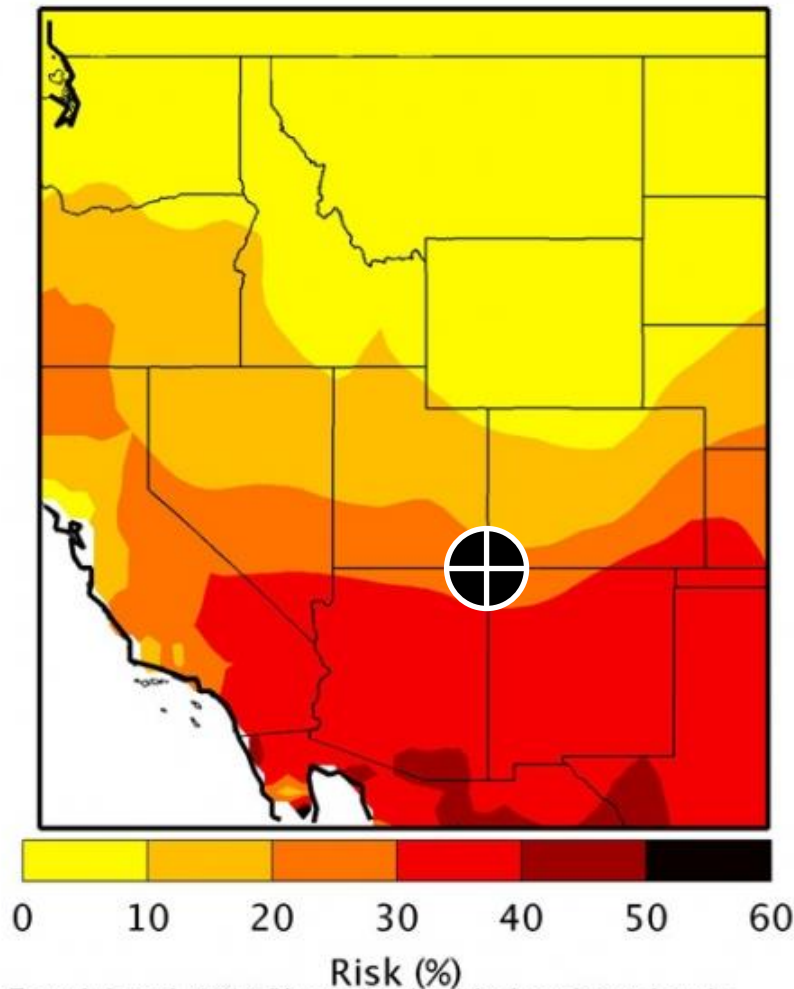


# We have strong GEOINT for surface water, but not much for groundwater ...

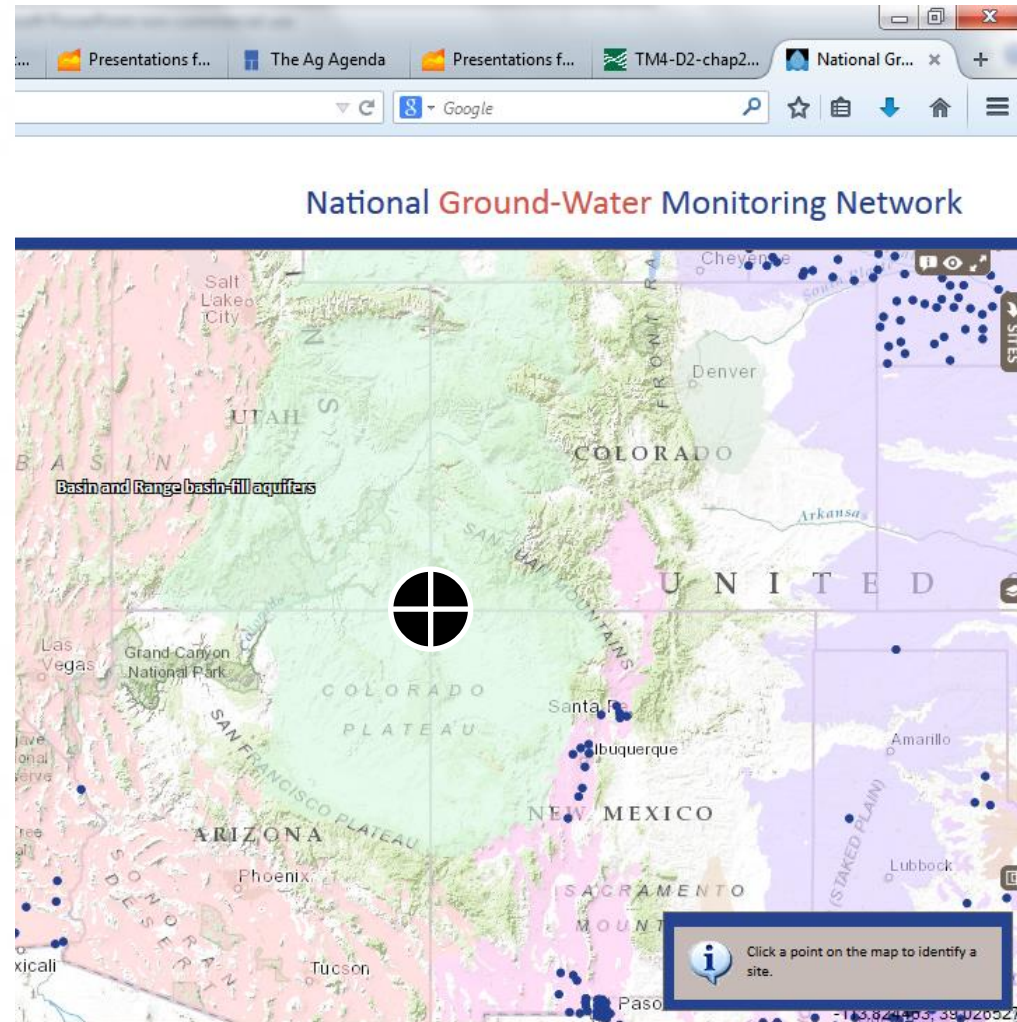


# We are thirsty for water and water data

## Megadrought Risk



From Ault et al., 2014: "Assessing the risk of persistent drought using climate model simulations and paleoclimate data"



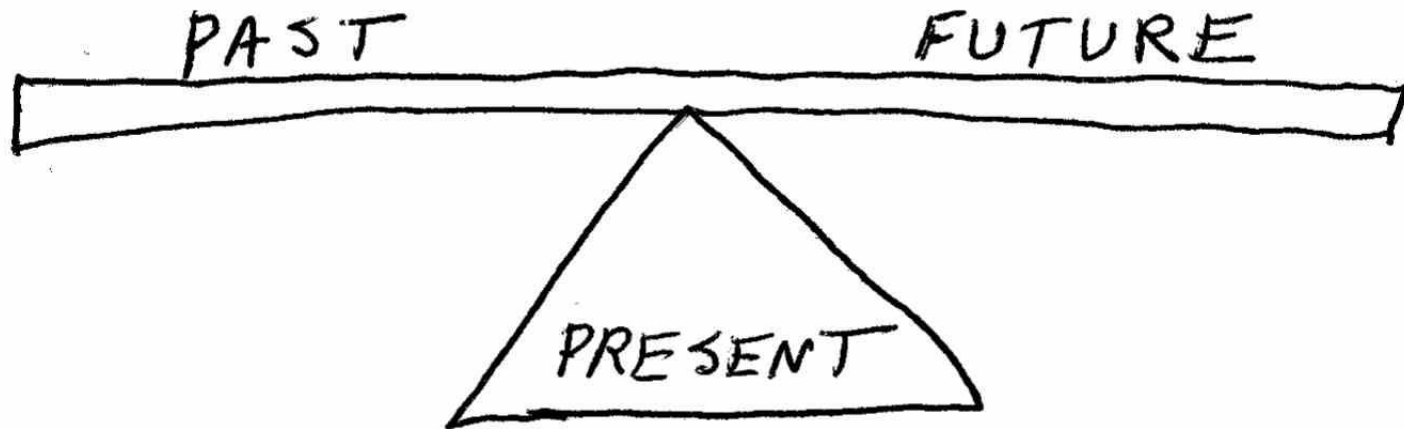
# The net result ...

Some of our models  
for groundwater  
are accurate  
only to a resolution of

**100 square miles**



# The net net result for MANY policies ...



Un ven

Decision  
suppppport  
da a

for th cha ges

Conf o ing us

# The triple net result for our us ...

## **Sub optimal resource management:**

Hamstrung economic development

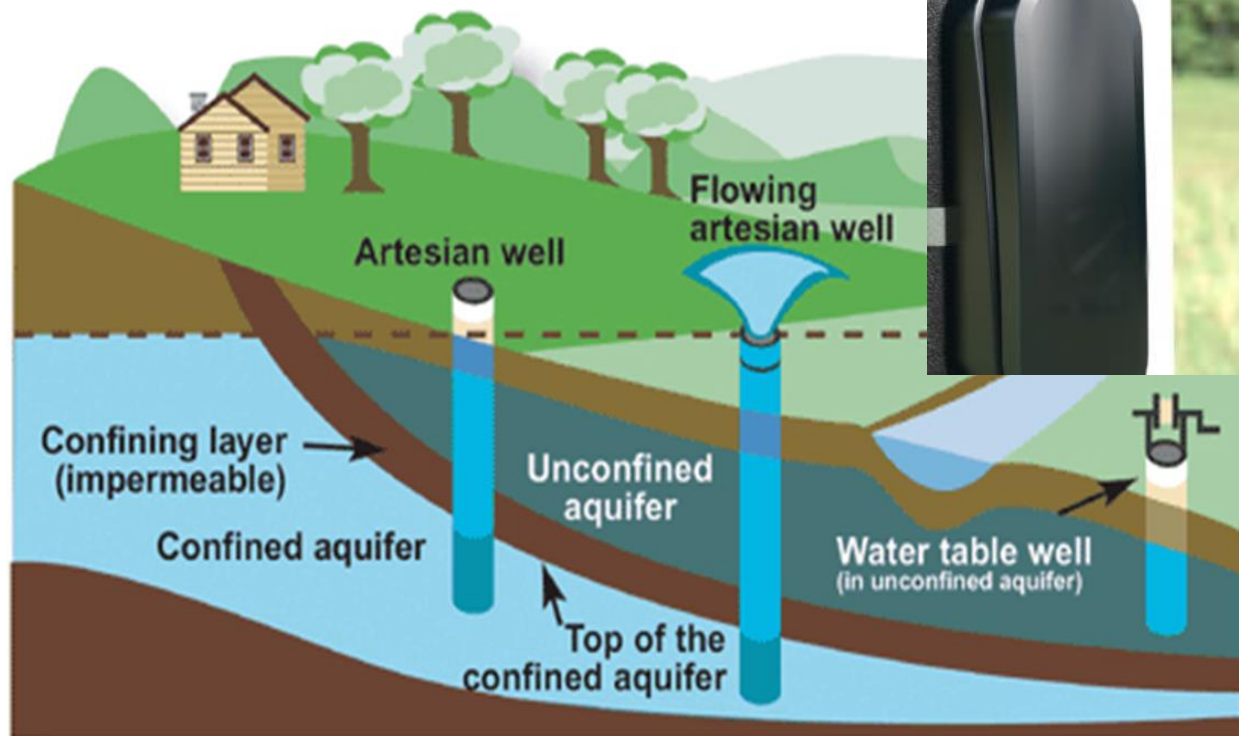
Compromised population health

Cored out conservation

## **CONFLICT**

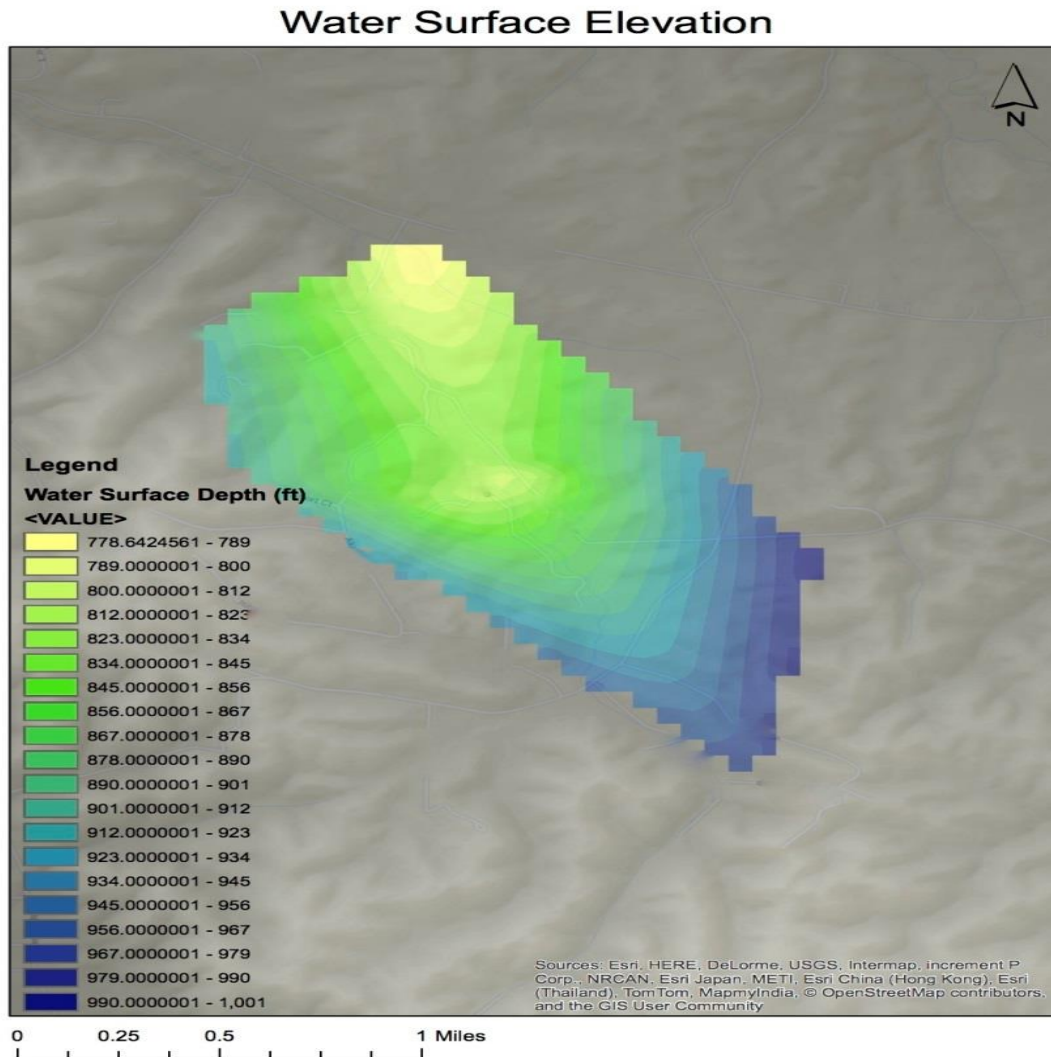
# What if we could effectively deploy millions of sensors?

## Aquifers and wells



Source: Environment Canada

# We could turn up the resolution. And?



Source: WellIntel.

- 800% increase in resolution maybe?
- 100 sq meter resolution versus 100 sq miles
- What then could we do?
  - Resource management
  - Conservation
  - Economic development
  - Population health
  - For policy development

# Well that depends on who you ask.

- The old paradigms of stakeholders, lifecycles, capital value and values are changing
- There are multiple parties with specific interests in these connected assets
- New privacy and data control policies are enabled
- Enabling technologies exist to realize this





# Where is ROI? Who benefits? Subscribers?

- Residential example
  - Homeowner QoS
  - Homeowner as investor
  - Property insurer
  - Mortgage/ title insurance
  - Water well drillers/ servicers
  - Water pump OEMs
  - Regional water management
  - Regional planning authorities
  - Real estate developers
  - Conservation groups
  - Ecology research
  - Public assessors
  - Population health
  - Health research
- Agriculture
- Commercial
- Energy
- Industrial
- Municipal
- Other



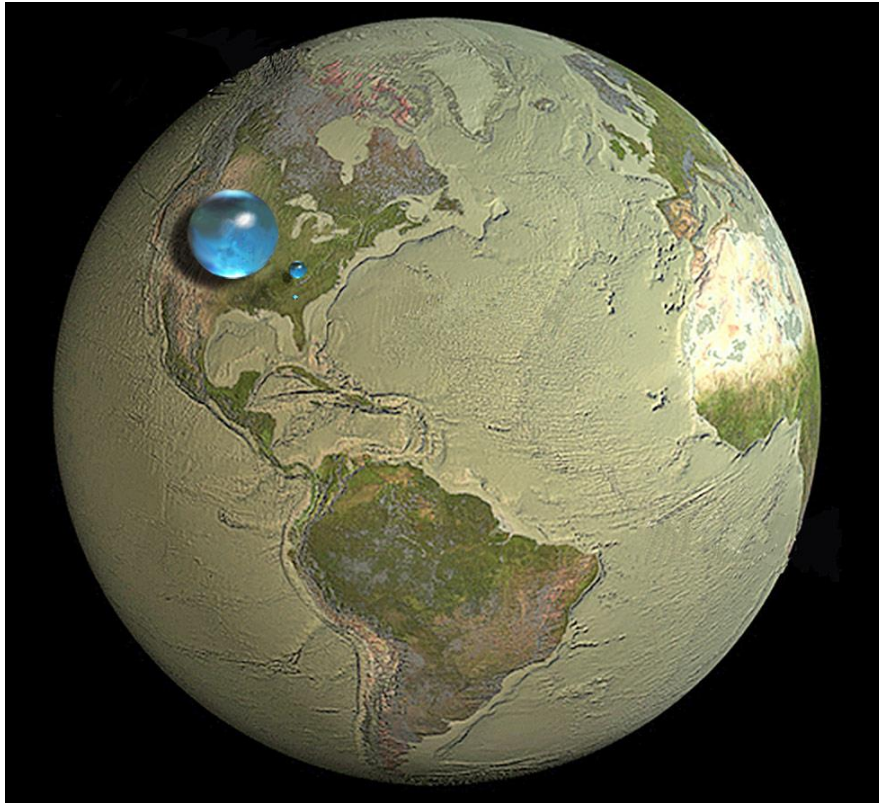
# How can this be done?

- **30 days of complexity.**
- **30 months of investment.**
- **30 years of benefits.**

# How can this REALLY be done?

- Asset definition
- Scope of intelligence – fulcrum data
- Standard data definitions
- Stakeholder and stakeholder interest map
- Who owns/ controls the asset?
- Who owns/ controls / secures the data?
- What are the access rules/ tools/ rights?
- Transparency
- Profitability
- Agility

# Thank you



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