

# Opportunities and Challenges of VGI Utilization

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# In the Garden of Big and Evil

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- Our interest focuses on two questions:
  - Why that happens (descriptive)?
  - What might happen (predictive)?
- Big Data analytics must provide a clear ROI or value proposition
  - A better answer (new knowledge)
  - A quicker answer or savings in time/energy/money
  - Enable individuals through organizations
- More data doesn't always provide a better answer
  - Applications are often time sensitive
- Big Urban Data
  - Data of urban environments that are generated because of our increasing ability to observe and measure
- Urban Big Data
  - Data generated by urban modeling and simulation with increasing computational capacity
  - New form of data from social media generated by urban crowd

# Crowdsourcing for Big Data

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- Mail and phone based traditional surveys methods are no longer useful
  - Alarmingly low response rates
- The *prosumer* generation
  - Increasingly receptive to openness and sharing
- Progress and commoditization of geospatial, cyber, and communication technologies will only increase data production and use
  - Internet interest groups and social networks
  - Real time streaming platforms
- Crowdsourcing is an effective strategy
  - Hotline, Tipline, Amber Alert

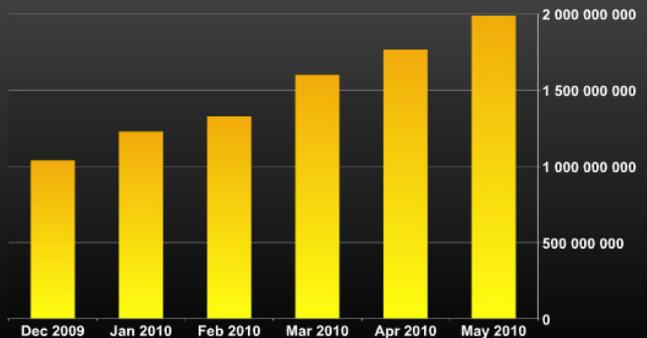
facebook

Facebook helps you connect and share with the people in your life.



twitter

From 1 to 2 billion tweets per month on Twitter

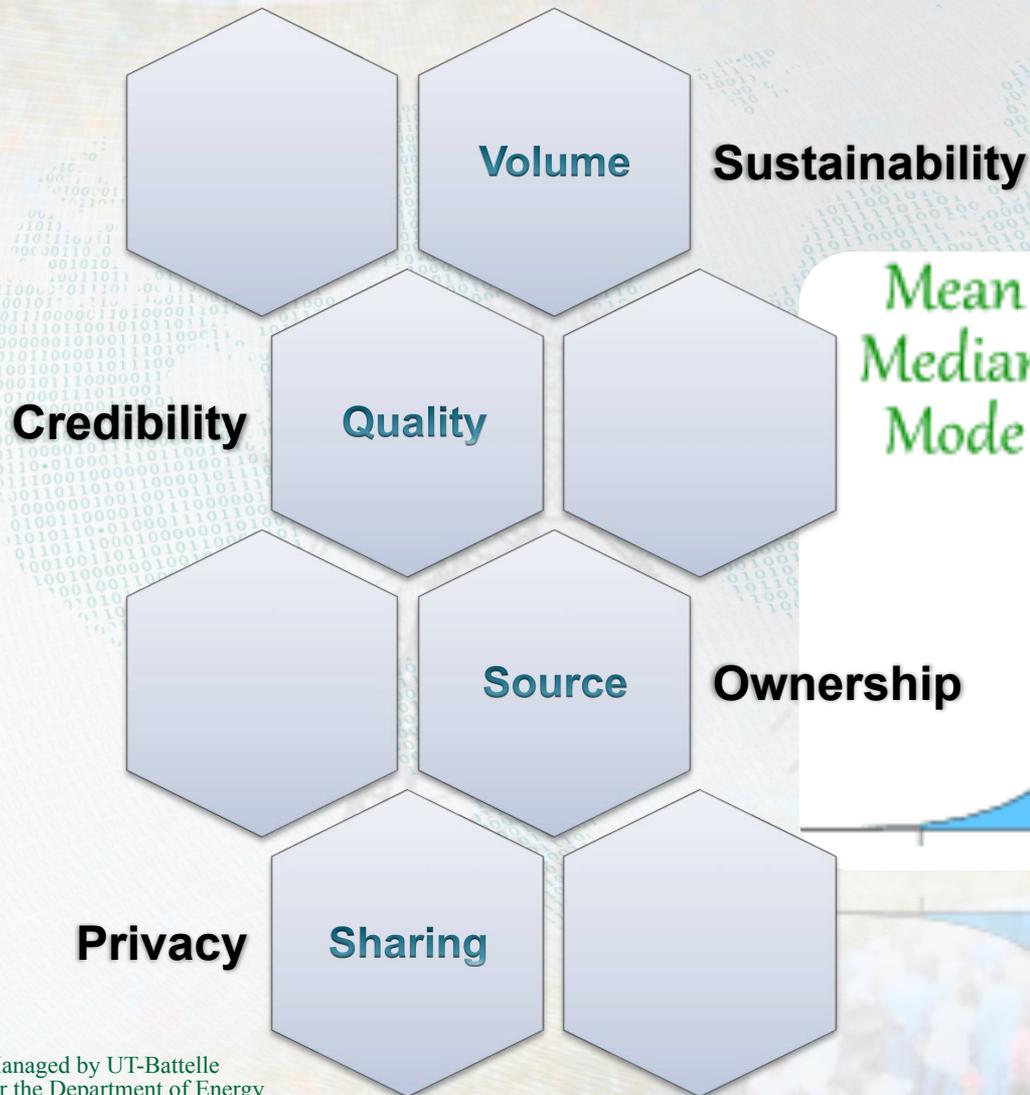


www.pingdom.com

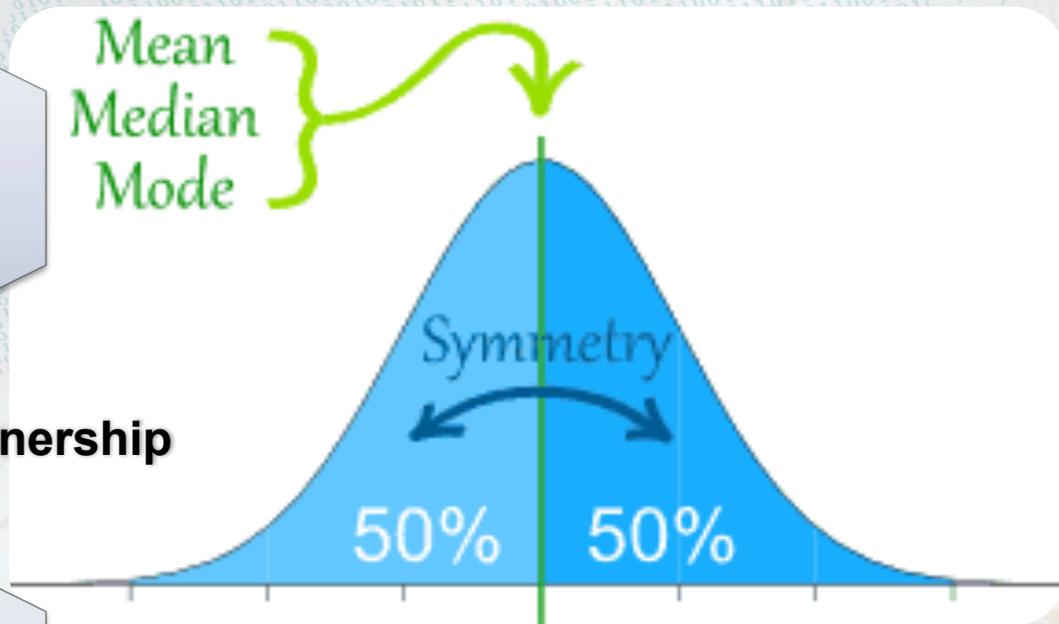
# The unknown unknowns



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- But is a 50% nonrandom sample better than a 5% random sample?



# Democratizing My Data in Big Data



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USA TODAY Snapshots®

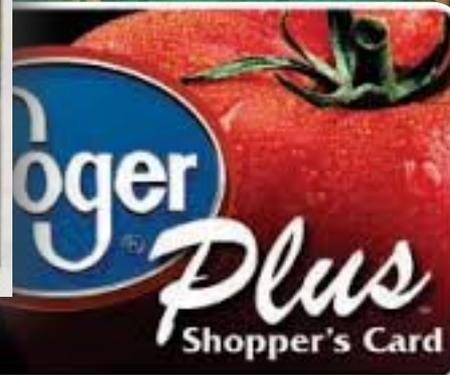
Are you willing to buy reusable shopping bags?



Source: BrandSpark International/Better Homes and Gardens American Shopper Study of 66,000 adults

By Michelle Healy and Paul Tran, USA TODAY

- A new sharing paradigm
- Privacy is a concern, but has resulted in overcorrected systems
- It's my privacy, so is my data
- Individual motivations and incentives are a key driver

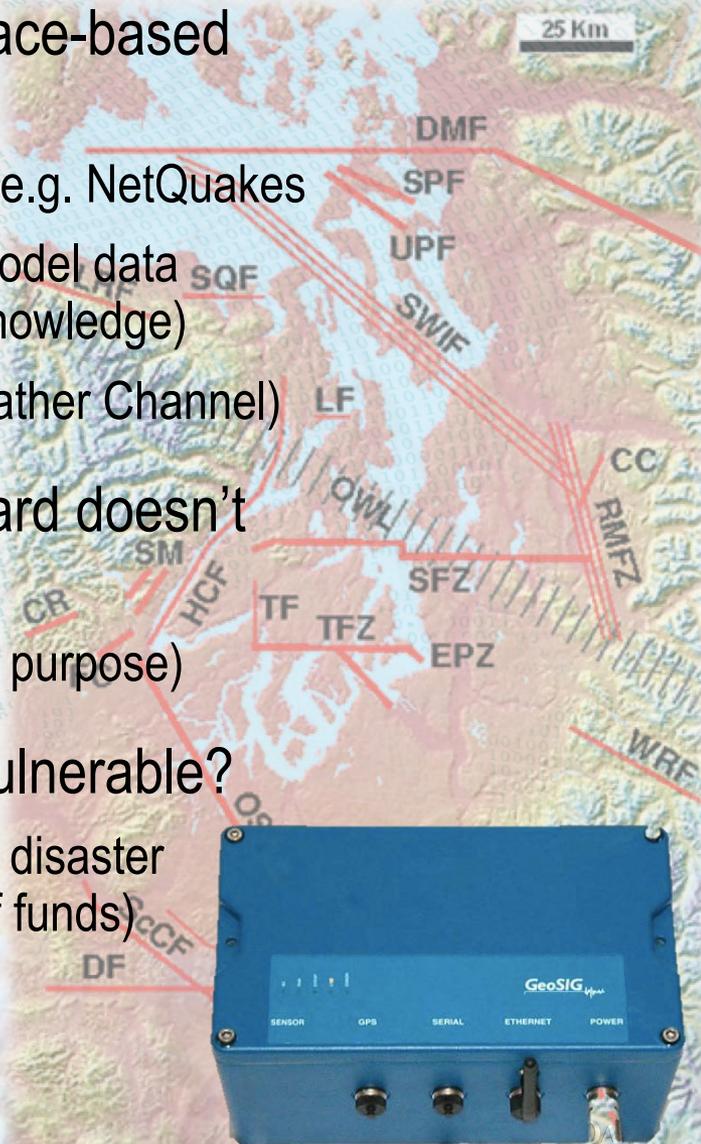


# Crowdsourcing: Points to ponder



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- Crowdsourced information clearly augment space-based data
  - Increase density and resolution of data (Gap filling) e.g. NetQuakes
  - Enhance currency and quality of observation and model data (incidence report, damage qualification, and local knowledge)
  - The media makes great use of it (CNN iReport, Weather Channel)
- Traditional top-down spatial data quality standard doesn't work
  - When good is good enough (user defined and fit for purpose)
- When does crowdsourcing make the system vulnerable?
  - Reliability of the crowd and crowd fatigue (are there disaster magnitude and frequency thresholds similar to relief funds)
  - Digital divide, victim crowd, and system overuse
  - Social, legal, and ethical concerns



# Challenges and Opportunities



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## Social

- Recruiting the crowd could benefit from high-profile volunteer catalysts
- The crowd may not be aware of engagement opportunities
- Success may be locally variable because of cultural differences

## Legal

- Expectation of privacy is a variable standard
- Legal standards are not clearly defined and understood
- Self disclosure could be an effective way to address privacy

## Ethical

- Does this involve deceptive principles (instrumenting national parks, GPS and battery life)?
- Should we promote the crowd as only volunteers?
- Self disclosure may come with expectations of service guarantee

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