Ethical Implications of Big Data Analytics

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Part 2 Outline

1. Introduction
   - Big Data Analytics (BDA)
2. A Stakeholder View on BDA
3. Social Processes enabled by BDA
4. Ethical Implications of Big Data Analytics
5. Conclusion

Introduction

	Top 3 silicon valley (2014)	Top 3 automakers (1990)
Revenue	$247 billion	$250 billion
Number of employees	137000	1.2 million employee
Market capitalisation	$1.09 trillion	$36 billion

(Zuboff 2015)

What is Big Data Analytics?

- The ability to collect, store, and process increasingly large and complex data sets from a variety of sources, into competitive advantage (LaValle and Lesser 2013)

- Big data management capabilities
  - Volume, Variety and Velocity (3Vs) + Veracity (4Vs)
- Algorithms to process big data
  - Advanced statistical and computational techniques to process large, unstructured and fast data

Is this a sufficient definition?

Creepy uses of data in the media

- Target exposing a teen girl's pregnancy
  - *Father: "My daughter got this in the mail!" he said. "She's still in high school, and you're sending her coupons for baby clothes and cribs? Are you trying to encourage her to get pregnant?"*

  https://www.businessinsider.com.au/the-incredible-story-of-how-target-exposed-a-teen-girls-pregnancy-2012-2

- Facebook's 2012 secret mood experiment
  - how people react to an emotional contagion process
  - filtered users' news feeds – the flow of comments, videos, pictures and web links posted by other people
  - 689,000 users affected

  https://www.theguardian.com/technology/2014/jun/29/facebook-users-emotions-news-feeds

Consequences of Big Data Analytics

- Positive consequences
  - Tracking criminals, higher product margins, new business models, improved healthcare and …
- Negative consequences:
  - Misuse of personal information, breeching privacy, profiling of individuals, discrimination and …
- Where is the boundary?
  - There is no agreement on what is ethical and what is not!

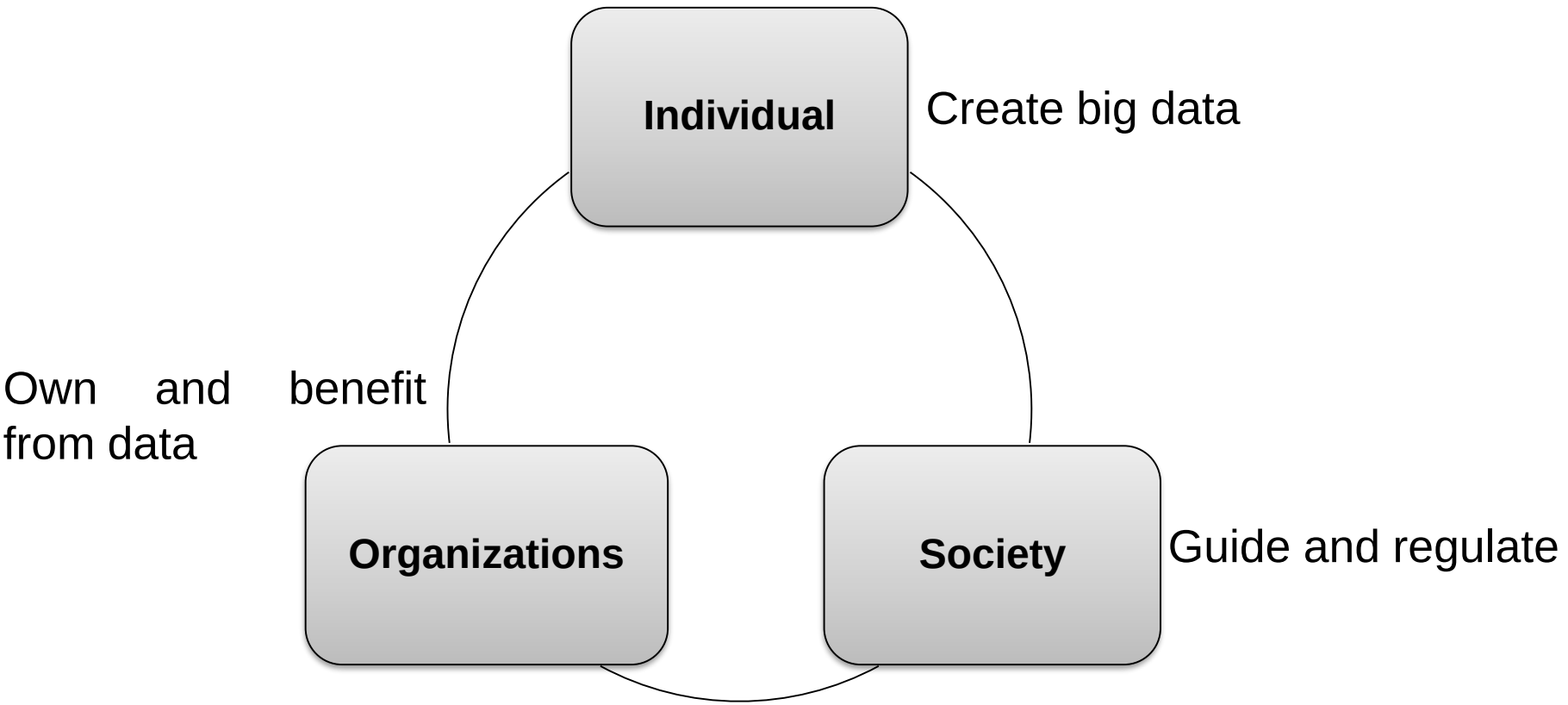
(Markus and Topi 2015; Newell and Marabelli 2015)

BDA: Not only about Technology

- Technological view (3Vs) does not help to understand unethical use
  - Technology is neutral in nature
  - It does not consider the underlying processes that are enabled
  - It does not consider the stakeholders that are involved and influenced
  - 3Vs do not consider either people or process
  - A new social phenomenon, a new market economy

- We need a new perspective on big data analytics

Stakeholder View on BDA



Unequal exchanges between stakeholders

BDA Social Processes

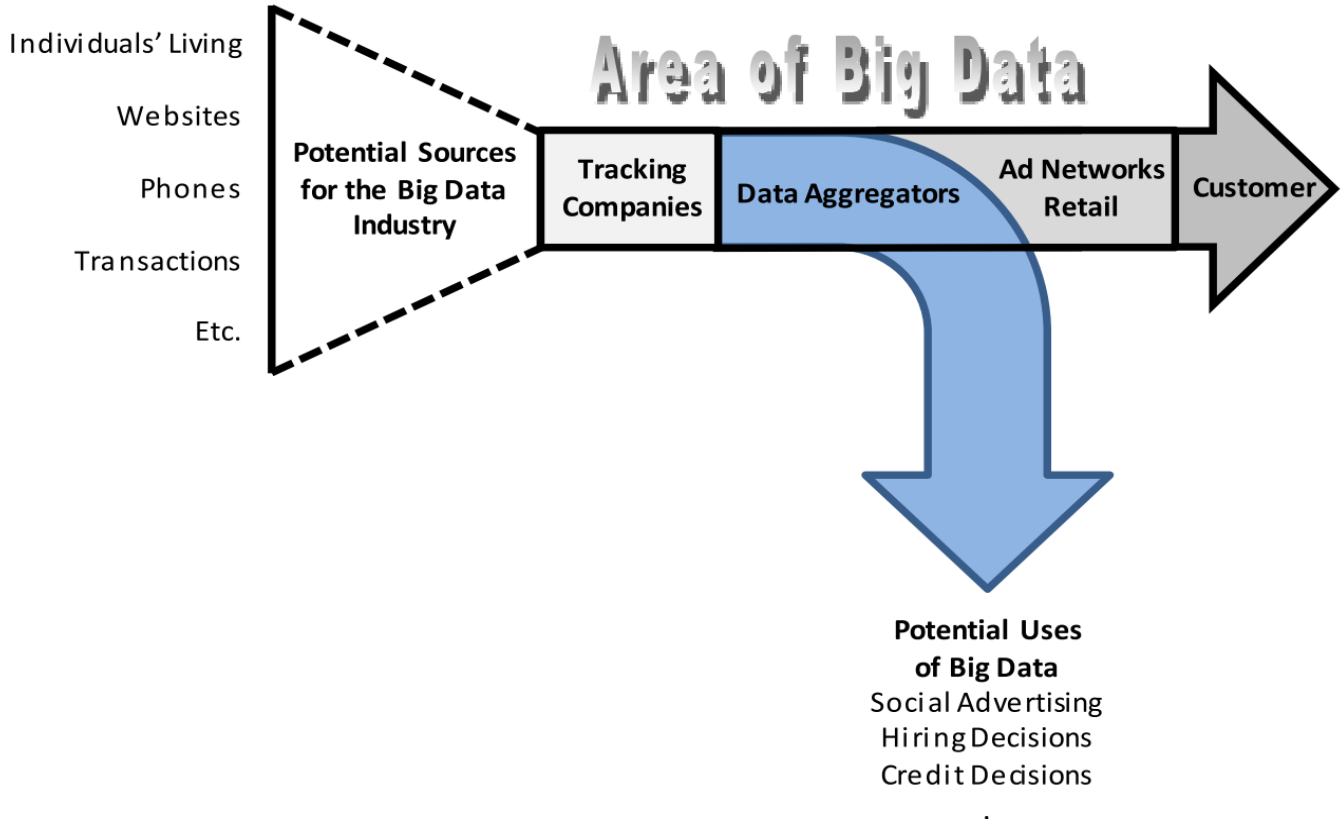
- Data extraction
- Data commodification
- Decision making
- Control and monitoring
- Experiments

Process 1: Data Extraction

- Data extraction, not data collection
- Our everydayness quantified
- Incursions into legally and socially undefended territory
- Google has the largest unpaid number of employees

Process 2: Data commodification

- Sell personal data until it turns into waste
- Big data as a new industry (secondary markets)

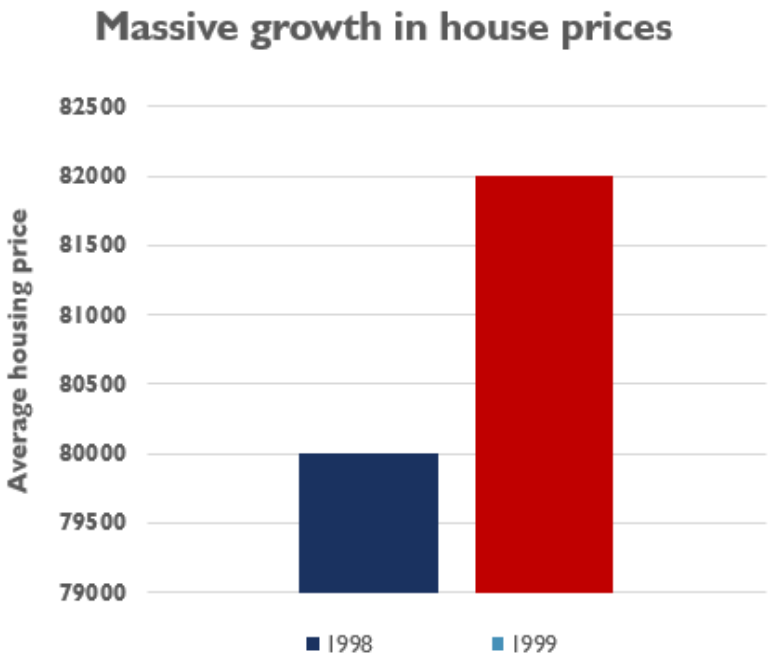


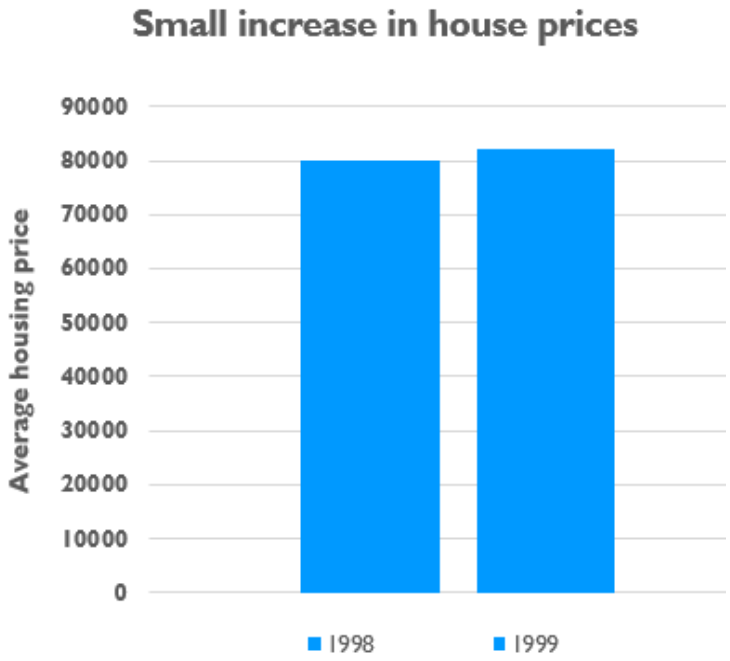
(Martin 2015)

Process 3: Decision Making

- Big Data Quality (Veracity)
  - Data accuracy for aggregated data
  - Completeness of our digital identity
  - Meaning changes as data flows (Metadata?)
- Data Analysis
  - Predictions based on the past
  - Objective reality based on subjective data,
  - Predictions based on correlations or centring to mean
  - What about outliers?
- Data Visualization
  - Decision making biases
  - Presentation biases

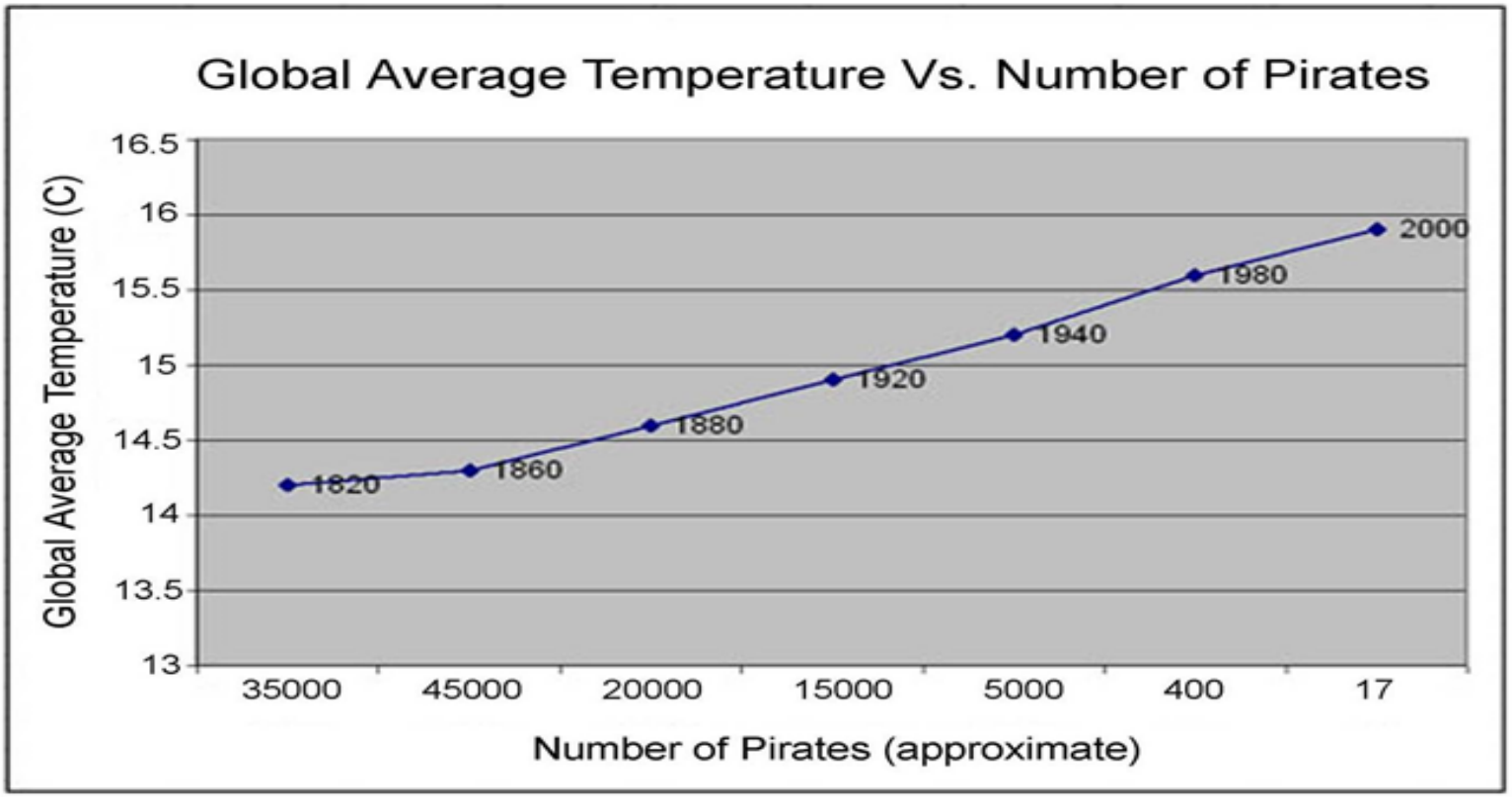
Example 1


Massive growth in house prices
Average housing price
82500
82000
81500
81000
80500
80000
79500
79000
1998
1999


Small increase in house prices
Average housing price
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
1998
1999

Example 2

- Do you want to stop global warming? **BECOME A PIRATE**!



Process 4: Control and monitoring

- Monitoring the uncontract
- What happens to social trust?
- Surveillance is the precise opposite of the trust-based relationships
- Moving towards Surveillance Economy

(Zuboff 2015 and Martin 2015)

Process 5: Experiments

- Modify behaviour: Reality mining
- Rewards and punishments
- Reality is subject to monetization
- God’s view

(Zuboff 2015)

BDA from Social Perspective

- Interactions among stakeholders
- Data is contributed, collected, extracted, exchanged, sold, shared, and processed for the purpose of predicting and modifying human behaviour in the production of economic or social value.

Ethical implications for Individuals

Data Control	The extent to which an individual is empowered to audit the access to, storage, exploitation and modification of data about the individual.
Awareness	The extent to which an individual is mindful in consenting as to what data is collected about them and how it is used.
Trust	The extent to which an individual can have confidence that the parties who have access to their data respect the individual's rights.
Privacy	The extent to which an individual is able to restrict the disclosure of their personal information.
Choice	The extent to which an individual is able to make choices without being unfairly discriminated against or constrained by the use of big data and analytics.
Anxiety	The extent of psychological discomfort engendered by the collection and use of personal information for big data analytics purposes.

Ethical implications for Organisations

Data Quality	The extent to which organisations ensure the accuracy, currency, completeness and validity of big data.
Data Sourcing	The extent to which organisations collect, buy, and aggregate data from multiple sources in a manner that respects the rights of individuals.
Data Sharing	The extent to which organisations share, sell or otherwise disclose data in a manner that respects the rights of individuals.
Decision Making	The extent to which big data analytics and resulting organisational decisions respect the rights of individuals.
Ethical Culture	The extent to which organisations have values, norms and shared beliefs that promote ethical big data analytics practices through education, training and other means.
Ethical Data Governance	The extent to which organisations articulate ethical standards, decision rights and responsibilities for sourcing, analysing and sharing big data.
Behaviour	The extent to which organisational actors behave consistently with their organisation's ethical culture and standards.
Reputation	The extent to which relevant stakeholders (e.g. customers) believe an organisation will manage and utilise data about them ethically.
Competitive Pressure	The extent to which organisations are subject to pressure to compete using big data analytics unethically.

Ethical implications for Society

Power Imbalance	The extent to which power in society is imbalanced by the use of big data analytics by a dominant group, organisation or government.
Coercion	The extent to which participation and functioning in society is dependent on contributing one's own data to a collection for analysis.
Social Awareness	The extent to which members of a society are aware of the role of big data analytics in directing and regulating behaviour in the society.
Surveillance	The extent to which the lives of individuals in a society are observed, monitored, measured and profiled.
Principles and Guidelines	The extent to which effective principles and guidelines exist to protect the rights of individuals impacted by big data analytics.
Authority	The extent to which an entity (e.g., government, professional association) acts to enforce, through sanctions or other means, the rights embodied in the established principles and guidelines for big data analytics.
Social Mindset	The extent to which society collectively feels anxious and oppressed (or opposingly assured and empowered) about the use of big data analytics.

What do we do?

- We need to empower individuals
  - Educate individuals, raise social awareness
  - Provide data access and control (e.g. Google activity)
    - http://www.abc.net.au/4corners/stories/2017/04/10/4649443.htm
- Define and develop a culture of acceptable data use
  - Organizations should internalize the costs
  - Genuine consent from individuals
  - Be transparent and clearly communicate intent of data collection and analytics
  - Provide data control to individuals

Societal actors need to provide oversight and regulate

- EU General Data Protection Regulation (To be enforced from May 2018)

- Aims to regulate and protect data privacy for all EU citizens.
  - Penalty 4% of annual global turnover of the organizations.

- The consent
  - should be clear, concise, not too long and intelligibly written—should attach the reasons of data collection and analyses.
  - individuals have the right to withdraw the consent with the same easiness that they have previously agreed with.

- Accessing individual's data
  - Individuals have the right to ask for a copy of their personal data together with information regarding the processing and purpose of data collection and analyses from a controller
  - Individuals have the right of data portability, which means that they can transfer their data from one controller to another.

http://www.eugdpr.org/eugdpr.org.html

Conclusion and Questions!

- Ultimately, we need to balance between benefits and costs
  - We need faster social evolution
  - We need more regulations and oversight