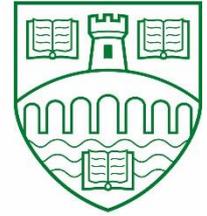




CENTRE FOR RESEARCH INTO INFORMATION,
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eGovernment Evolutions: Managing Information Flows in an Era of Smart Cities and Big Data

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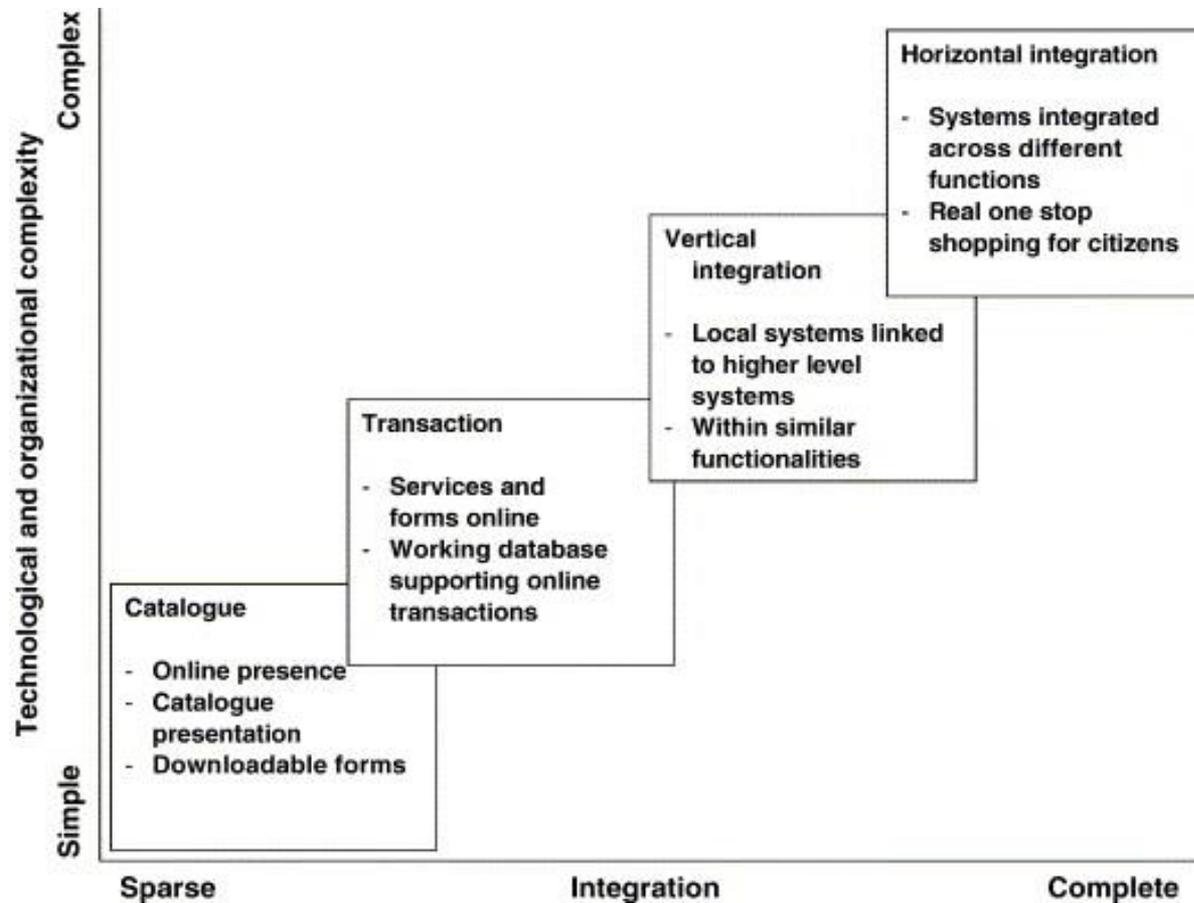
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Introduction

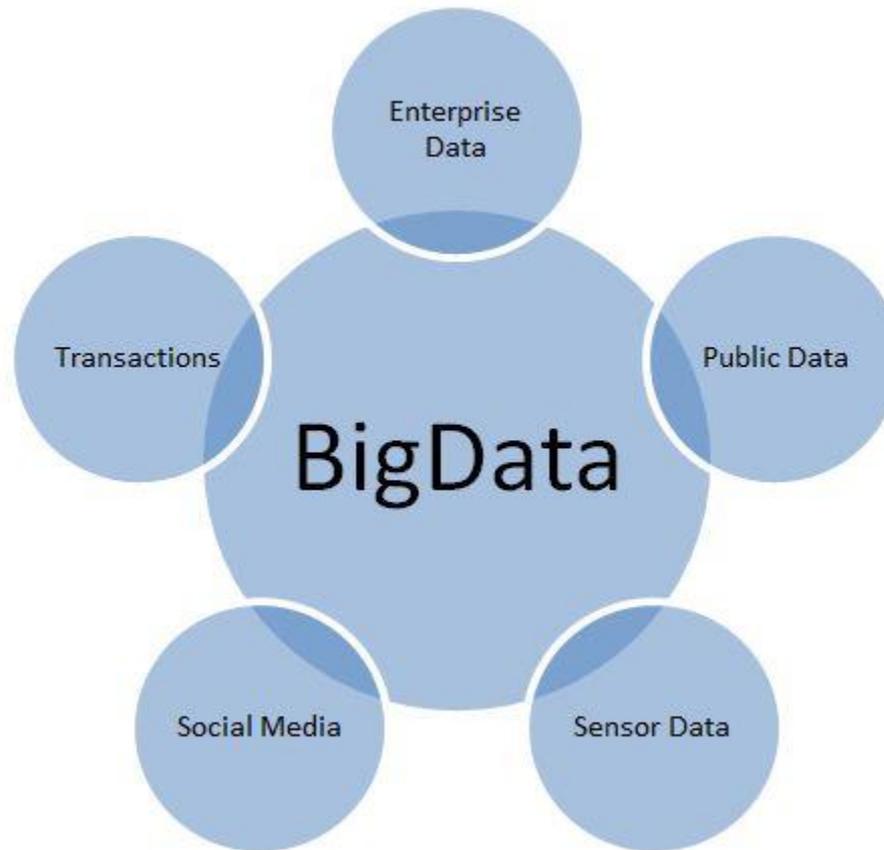
- Transformation in public service delivery and public policy associated with developments in new ICTs
- Embedded in this transformation are profound changes in the way information is used and flows in and around government and public services
- Public agencies play a key role in facilitating the digital revolution and ensuring mechanisms exist to govern information flows
- Data ingrained in technologically mediated information flows is increasingly seen as having ‘value’
- Contemporary developments associated with Smart Cities and Dig Data present significant challenges for the future governance and management of information flows

IT Trajectory in Government



(Source: Layne and Lee, The E-gov Maturity Model, 2001)

Big Data is Lots of Data



(Source: <http://beyondrelational.com/modules/24/syndicated/404/Posts/15890/who-on-earth-is-creating-big-data.aspx>)

How Much Data is Big Data

- All data created before 2003 is now created every two days
- The amount of data doubles every two years
- 90% of world's data created in last two years
- 6 billion mobile phones, 10 billion texts per day
- 955 million active Facebook accounts
- 140 billion new photos uploaded to Facebook every day
- 30 billion pieces of new content added to Facebook every day
- 48 hours of video uploaded to YouTube every minute
- 1 billion Twitter tweets per 72 hours

(Human Face of Big Data, 2012)

Big Data Characteristics



(Source: <https://www.youtube.com/watch?v=H7NLEcdBnps>)

Big Data Concepts

- Big data characteristics:
 - Three V's: volume, velocity and variety
 - Use of algorithms
 - Using 'all' the data
 - Repurposing of data
- Public service/policy contexts:
 - Open government and/or open data
 - Smart cities, eGovernment, Internet of Things
- Two core elements of big data:
 - Big data analytics or data science
 - Data visualisation

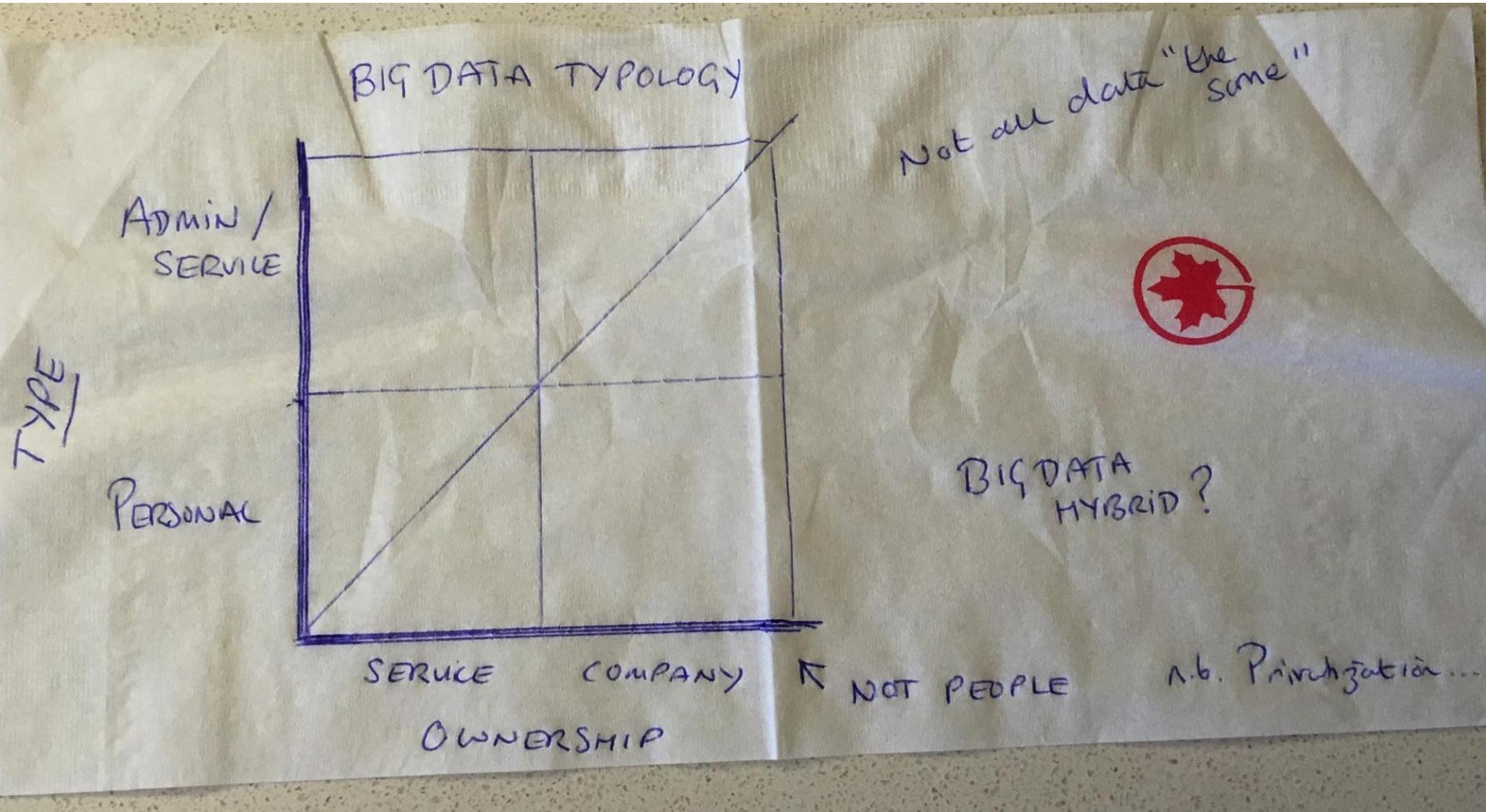
Big Data / Smart City Benefits

- Increased efficiency and cost reduction through better use of IT/data
- Supported and improved policy and decision-making – access to huge range of data about citizens' behavior and activity
- Innovative service delivery - citizen focused services, taking account of needs, preferences and actual experience of using public services
- Innovative opportunities for co-production of services and policy
- New sensory devices providing new service opportunities
- Data mined from social media or administration can provide new data which can enable agencies to monitor performance
- Use social media to understand what people are saying about public services and public policy
- Increased transparency and accountability through data trails

Big Data / Smart Cities in a Public Policy Context

- Policy rhetoric – captures a diverse range of practices and informational flows
- What's new about big data/smart cities for public services?
 - Track record of collecting and processing data
 - Data sharing protocols supported by DP
 - Established eGov practices (and literatures)
 - Established governance mechanisms
- In practice significant and substantive change
 - Access to administrative data sets
 - Open data and data sharing protocols
 - Use of data deriving from social media

'Air Canada' Big Data Typology



Compliance with Data Protection / Privacy

Where personal data is used organisations must ensure they comply with their obligations under data protection/privacy regulations. Big data / smart cities could pose a problem for certain data protection principles:

- Fairness: transparency in how the data is obtained
- Repurposing: making individuals aware that data is being used for different purposes than that for which it was collected
- Data minimisation: use as little data as possible
- Anonymity: ensure that you cannot identify individuals in the data being analysed
- Consent: ensuring consent for remote sensory devices

Governing Information Flows

The critical issue is how to design governance mechanisms for information flows in the opaque era of big data and smart cities:

- Robust protocols for information sharing and integration where the ownership of data is unclear
- Mechanisms to provide and audit of information sharing activities
- Mechanisms to govern and audit the reindividualisation of anonymised personal data
- Mechanisms to determine appropriate levels of consent for information gathering and sharing
- Mechanisms to determine reliability of data for public policy and services where data derives from multiple sources
- Mechanisms for ensuring compliance with existing and future governance arrangements
- Mechanisms for deterring, discovering and penalising data breaches

Concluding Comments

- Big data /smart cities represent a critical point in the evolution of eGov - 'game changer' for public policy and services
- Initiatives associated with big data and smart cities offer significant opportunities for service redesign & the co-production of services/policy
- Those charged with creating and implementing public policy have no choice but to confront the challenges posed by big data
- The challenge will be to balance the opportunities offered by big data at the same time as safeguarding personal data
- Public agencies are the guardians of personal data and have a legal duty, as well as a moral obligation, to safeguard personal data and to establish governance arrangements suitable for the digital age
- The governance of personal data / information flows will be strained, as data breaches, reindividualisation and repurposing of data to be expected

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