Regional Standardization Forum
Emerging Economic,
Regulatory and Policy Trends
in a Fast-Changing Digital World

Xi'an, China, 27 August 2018

Big Data: Opportunities, Challenges and need for a global policy framework

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ITU-T REGIONAL GROUPS 1968-2018

Hosted by CAICT
中国信息通信研究院

Era of Big Data

- Strategic Resource of the 21st Century/Important driver for disruptive change
- Big data is used to describe the massive volume of digital data produced by human activity that is very difficult to manage using conventional data analysis tools
- The term big data refers not only to data, but also to the tools and practices for analyzing, processing, managing and visualizing these massive, complex, and rapidly evolving data sets
- A paradigm for enabling the collection, storage, management, analysis and visualization, potentially under real-time constraints, of extensive datasets with heterogeneous characteristics [*ITU-T Y.3600 (2015), Big Data- Cloud computing based requirements & capabilities*]
- Big data and big data analytics thus get used interchangeably

Characteristics of Big Data
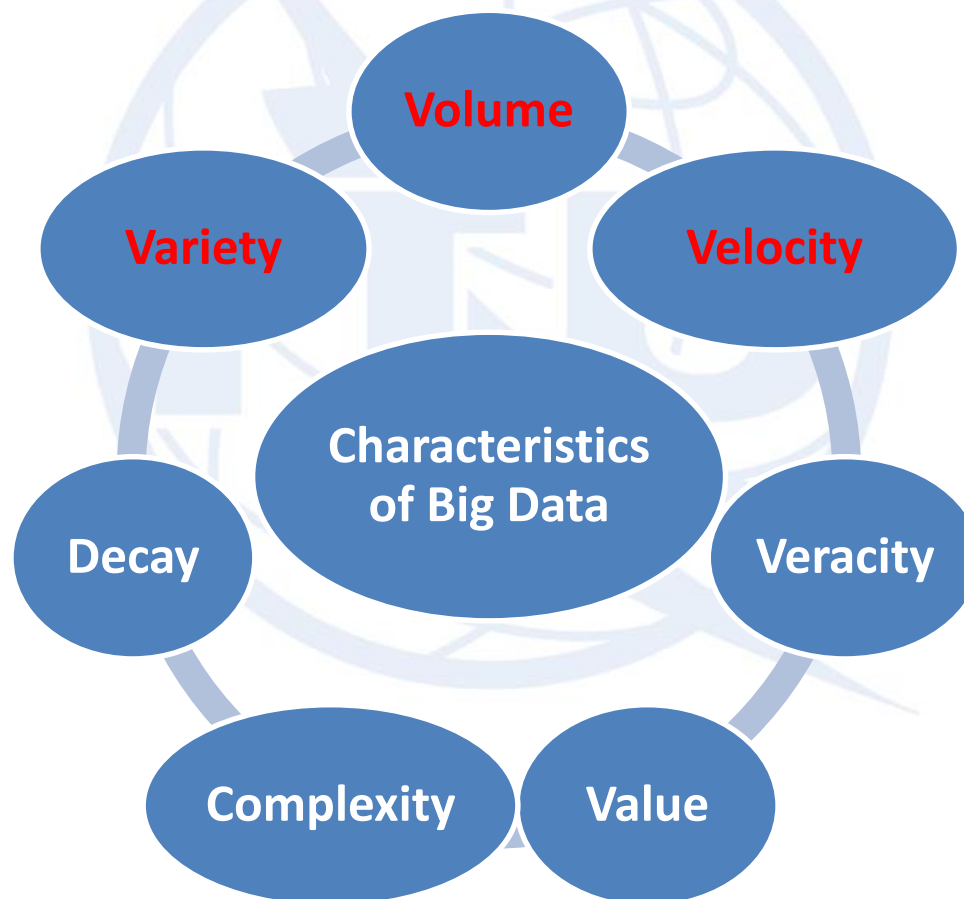
# Factors leading to growth of massive Data & its applications

Factors

- Advancements in Information and Communication Technology (ICT)
- Affordability and ubiquity of networks and electronic devices
- Emergence of participatory sensing
- Multiple Date sources
- Increase in Computing power

Applications

- Across domains to name a few: e-commerce, e-government, science, health, security, weather forecasting, Intelligent Transport Systems, Credit rating by Fintech countries etc

Classification of Big Data based on 5 aspects
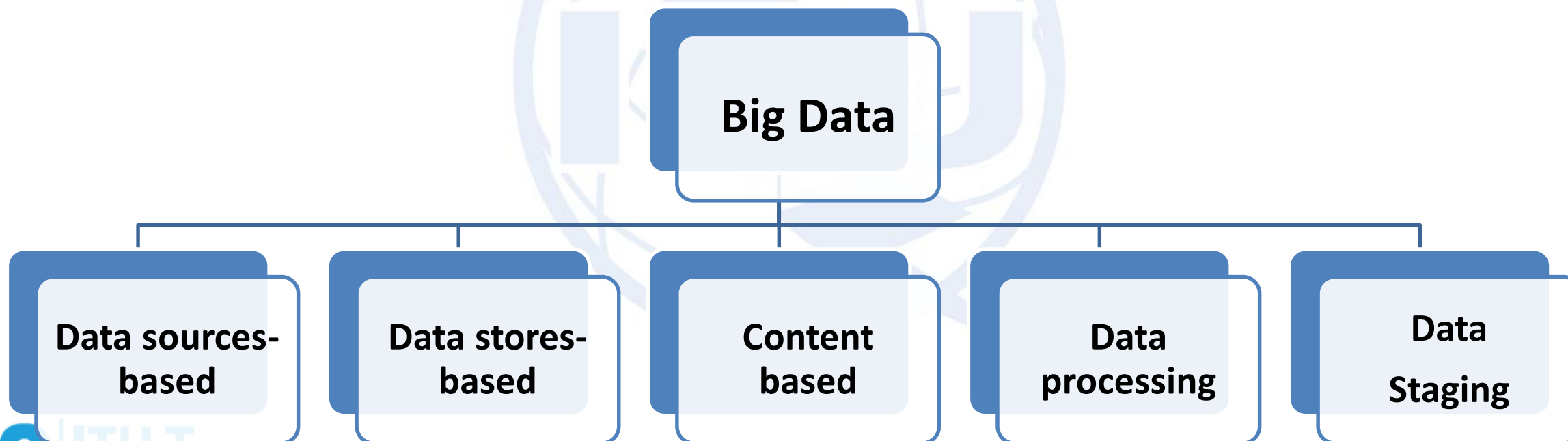
Impact of big data on international telecommunication services

- 7.3 billion mobile-cellular subscriptions worldwide in 2016 *[The Little Data Book on ICT,2018 (World Bank & ITU)]*

- 3.5 billion people were using the internet, of which 2.5 billion were from the developing countries

- Increase in IoT, M2M applications

Big Data Ecosystem

- Service providers, content/application service providers, device manufacturers, operating system providers

- Positioned at the centre: service providers, content/application service providers

- Call Data Records, SMS, e-mails, web-search, mobile applications, social media profiles, etc-Wealth of Information with service providers

Impact of big data on international telecommunication services

- Big data available to TSPs/ content/application service providers is a massively potent instrument in their hands

- Real-time usage data; habits & preferences; demographic information; location & interactions

- The big data at their disposal can be easily indexed on the basis of unique identifiers such as Mobile Station International Subscriber Directory Number (MSISDN) /user profiles based on the usage etc

- Help Serve their users better and, in turn, improve economic outcomes

- Availability of vast amounts of data and the potential for its processing and harvesting also gives rise to serious threats of its misuse

Challenges

2013 ITU-T Technology Watch Report highlighted the following challenges:

- *Big data facilitates the tracking of people's movements, behaviours and preferences and, in turn, helps to predict an individual's behaviour with unprecedented accuracy, often without the individual's consent*

- *Its use therefore often contrasts with **data avoidance** and **data minimization**, two basic principles of data protection*

- *This calls for assurances about the appropriate use of personal data, in the context of the intended uses and in accordance with relevant laws*

Economic and policy issues related to big data in international telecommunication services

- Data storage, management and processing issues

- Data security

- Data Quality

- Data protection and privacy

- Ethical issues related to the usage of data-Business ethics violations?

European Union's "General Data Protection Regulation(GDPR)" addresses usage and protection of personal data

- Processed lawfully, fairly and in a transparent manner ("Lawfulness, fairness and transparency")

- Collected for specified, explicit and legitimate purposes ("Purpose limitation")

- Adequate, relevant and limited to what is necessary ("Data minimization")

- Accurate and, where necessary, kept up to date("Accuracy")

- Identification no longer as necessary for the purposes ("Storage limitation")

- Processed in an appropriate manner to maintain security ("Integrity and confidentiality")

- Accountability(documentation)

Indian Experience with regard to ITU work

- Contribution at the SG3RG AO meeting in October 2017 highlighted the emerging issues in Big Data

- Contribution on Draft recommendations on a "Proposed policy framework and principles for data protection in the context of big data relating to international telecommunication services" sent to the April 2018 meeting of SG3 meeting

- Contribution on Study on Big Data made for the 2018 SG3RG AO meeting

- Contribution on privacy, security and ownership of data in telecom sector by TRAI made for the 2018 SG3RG AO meeting

Ongoing work in ITU-T SG3

- Draft recommendations on a "Proposed policy framework and principles for data protection in the context of big data relating to international telecommunication services"
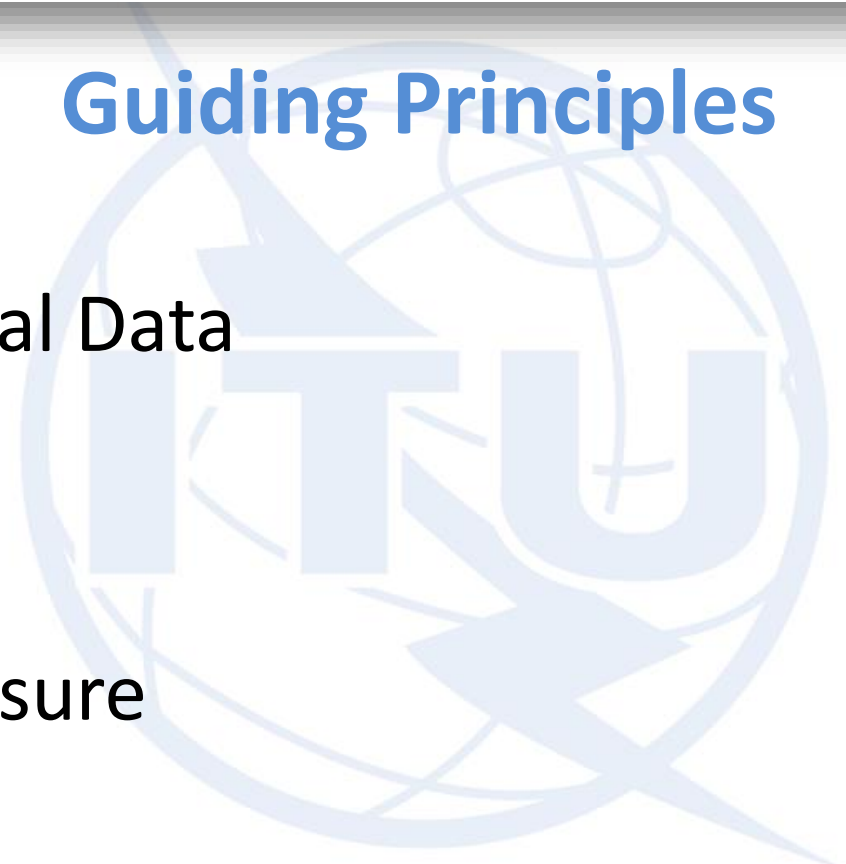
A policy framework, which is:

- Transparent

- Accountable

- Secure

- Effective and enforceable

Guiding Principles

- Adopt a 'privacy by design' and 'privacy by default' approach while designing their systems and processes

- User Consent: It should be genuine, informed and meaningful

- Notice

- Purpose limitation

- Participation Rights

- Conditions for Processing

Guiding Principles

- Security of Personal Data

- Anonymisation

- Risk assessment

- Sharing and disclosure

- Retention period

Thank You

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