



**OTTAWA 2023**

64TH WORLD STATISTICS CONGRESS



**IPS90**

## **The Fourth Industrial Revolution and The new Data Eco-System**

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Monday 17 July: 2pm-3:40pm



- ❑ Definition of Industrial Era**
- ❑ Characteristics of Various IEs**
- ❑ The Fourth Industrial Era and The Data Revolution**
- ❑ The New Data Eco-system**
- ❑ What are They?**

# What is Industrial Revolutions



- ❖ IR Are:
- ❖ Wave of major innovations
- ❖ linked to each other and together bringing about a fundamental change in human society
- ❖ Wherein new technologies are developed and introduced
- ❖ Times of technological change
- ❖ Have a particular set of characteristics that are connected to, and contemporaneous with, broader social transformation.
- ❖ Changes that go beyond discreet technological capabilities and, shift entire systems of Humans interaction.
- ❖ Link to Evolutions and Transformation in Data and Statistics Production



# Characteristics of various IE and Data Production

- ❑ The 1-IE was the transition from human and animal labour technology into machinery
- ❑ It brought about chemical manufacturing and iron production processes
- ❑ It improved efficiency of water power, increasing use of steam engine, and development of machine tools.
- ❑ Statistics and Data Collection have also been evolving into more complex forms over a period of time or Era
- ❑ The earliest data collections took the form of census, Hand Counting, the use of Tallies
- ❑ Data Storage was difficult

# 2-IE and Data Production



- It builds on 1-IE.
- Cause by expansion of electrical technology.
- Transformed by unprecedented urbanization and rapid territorial expansion.
- Time of great technological advancement.
- Rapid changes in communication and manufacturing technologies.
- In 2-IE, Sampling was eventually discovered and gave rise to surveys and then multi-topic surveys.
- Data Storage evolve using Vacuum Tubes and Transistors
- Leading to huge improvements in quality of life for people all over the world

# 3-IE and Data Production

- ❑ It came into being through a combination of science, technology and demand for products
- ❑ “The Digital Revolution Era”
- ❑ Move from mechanical and analogue electronic Technology to Digital Electronics
- ❑ It is based on energy transition and digital technologies, and the internet.
- ❑ Data becomes big, diskette, flash-Drive, CD-ROM, Micro-chips etc were discovered

# 4-IE and Data Production



- The 4-IE is building on the Third, the digital revolution that has been occurring since the middle of the last century.
- It is characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.
- reduce barriers between inventors and markets due to new technologies such as 3D printing for prototyping
- increasing trends in artificial intelligence, Robotic, Electric Car, Ultra-Fast Train ,Drive less cars etc

# The Fourth Industrial Era...



- It as an exponential growth of several key technological fields' concepts, such as intelligent materials and block chain technology
- A name for the current trend of automation and data exchange in manufacturing technologies, including cyber-physical systems, the Internet of things, cloud computing and cognitive computing and creating the smart factory.
- A world where individuals move between digital domains and offline reality with the use of connected technology to enable and manage their lives

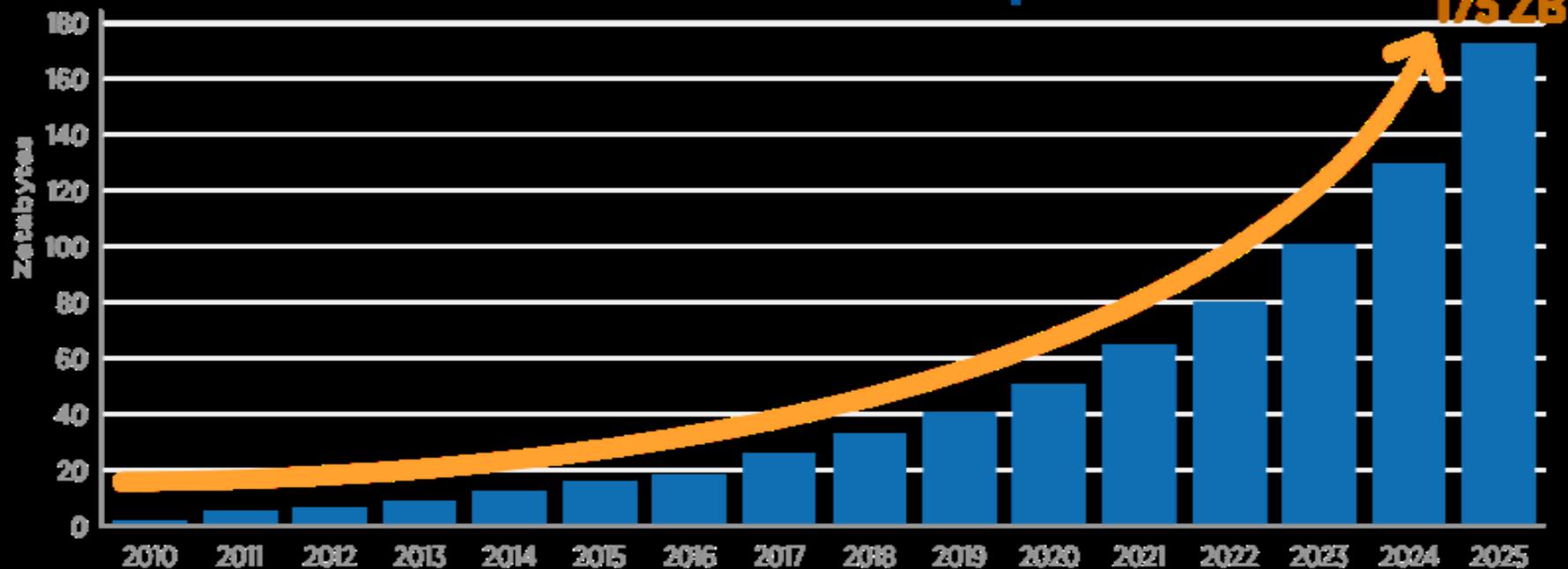
# 4-IE and Data Revolution....



- ❑ Data represents a post-industrial opportunity.
- ❑ Through the use of internet, social media, commercial transactions, digital images etc Data is being created
- ❑ The world creates 2.5 exa-bytes [ $10^{18}$ ] of data every day
- ❑ 90% of the data in the world today were created in the last two years
- ❑ In 2022, the digital universe was estimated to consist of 44 zeta-bytes of data, predicted that by 2025, approximately 175 Zeta-bytes data would be created every 24 hours worldwide
- ❑ The Era of Big Data

Figure 1 - Annual Size of the Global Datasphere

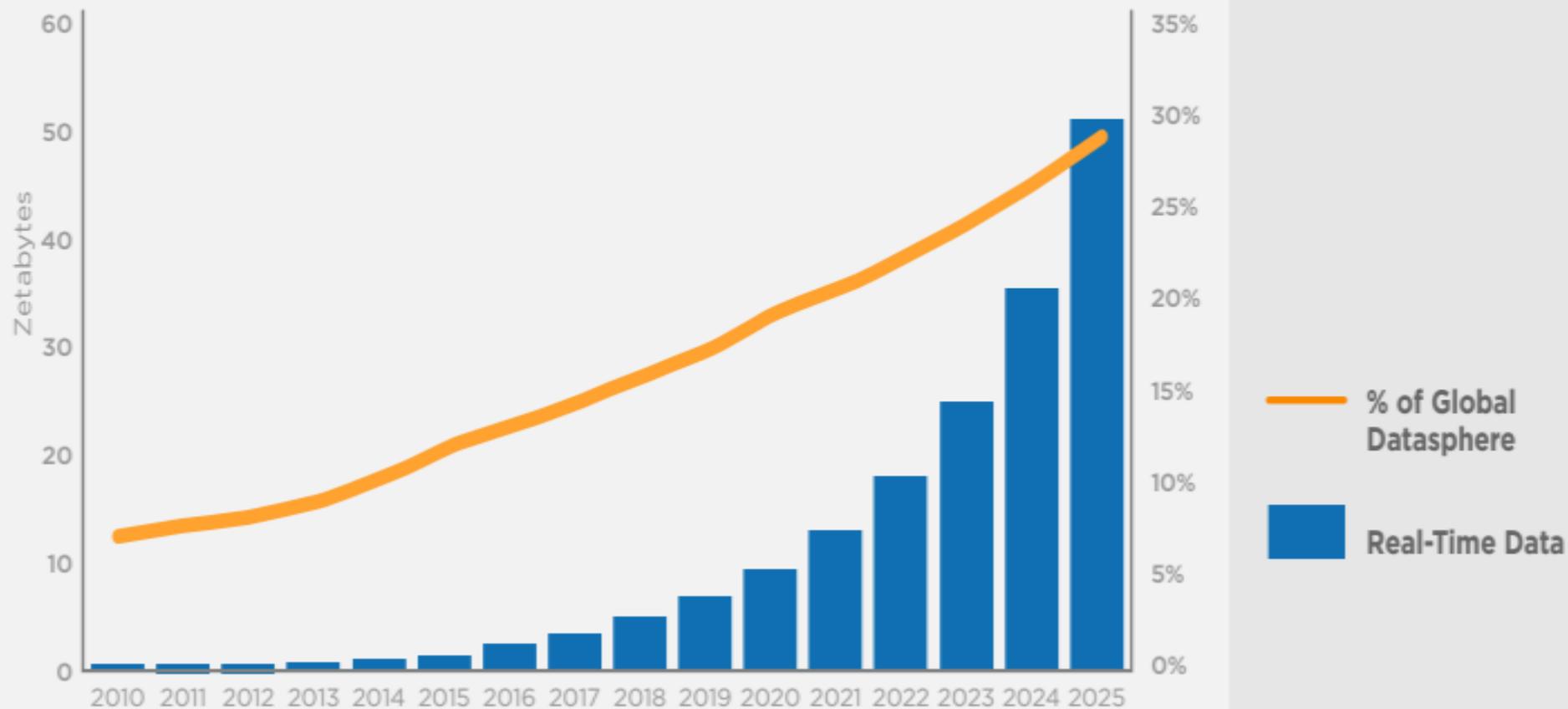
## Annual Size of the Global Datasphere



Source: Data Age 2025, sponsored by Seagate with data from IDC Global DataSphere, Nov 2018

Figure 8 - Real-Time Data

## How Much of Global Datasphere is Real-Time?



# The New Data Eco-system



- As of June 2022, there were more than 4.5 billion people online; and 80% of digital content is available in nine out of every ten languages
- Google processed 3.7 million queries, Facebook saw 1 million logins, and YouTube recorded 4.5 million videos viewed every 60 seconds.
- In the Social Media the data generated every **minute** include Snapchat users share 527,760 photos;
- more than 120 professionals join LinkedIn; 4,146,600 YouTube videos; 456,000 tweets; and Instagram users post 46,740 photos.
- More than a quarter of the world's 7 billion humans over 2 billion are active on Facebook.
- On this platform alone 1.5 billion people are active daily; five new Facebook profiles created every second; more than 300 million photos get uploaded per day

# What are They?

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- Data is now everywhere
- As data continue to grow in size and complexity, new algorithms need to be developed so as to learn from diverse data sources
- What do we do with all of these data? Are these data useful for Official Statistics? What are it's real-world applications? These questions will be answered in this session.



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THANK YOU.

