

**Library Future Reimagined for the Fourth Industrial  
Revolution: UJ case study**

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**UNIVERSITY  
OF  
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# Introduction

- Academic Library supports the University in learning, teaching and research
- The role of the library is to find, store and share information to users
- Library connects users to information resources-decision making
- Natural intelligence (man) and artificial intelligence (machines)
- Industrial Revolution is a world phenomenon
- Industrial Revolution made the modern world
- “Game changer” resulted to modern technological innovations
- It transforms how people live, work and relate
- Fourth Industrial Revolution is a bug that has bitten everyone directly or indirectly
- Manual, electrical, automation and intelligence
- Internet and technology drive the industrial revolution



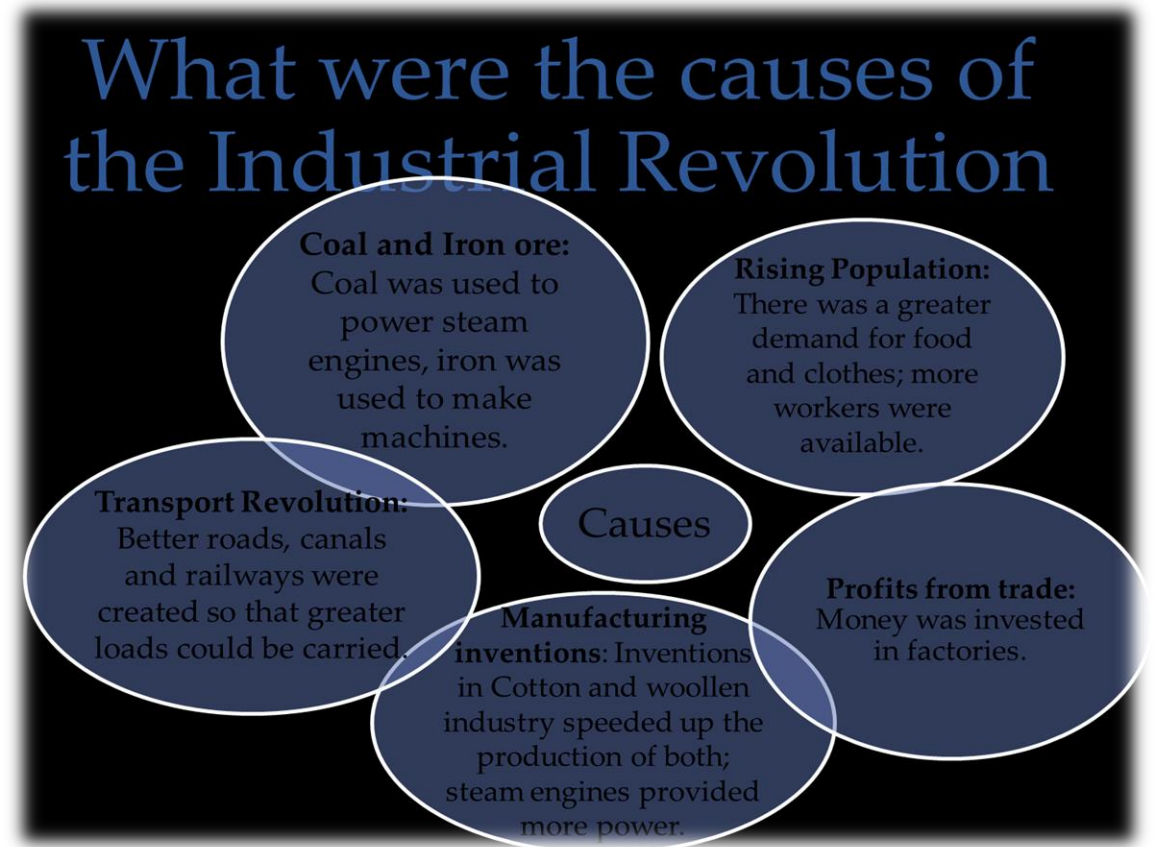


# What was the Industrial Revolution and causes

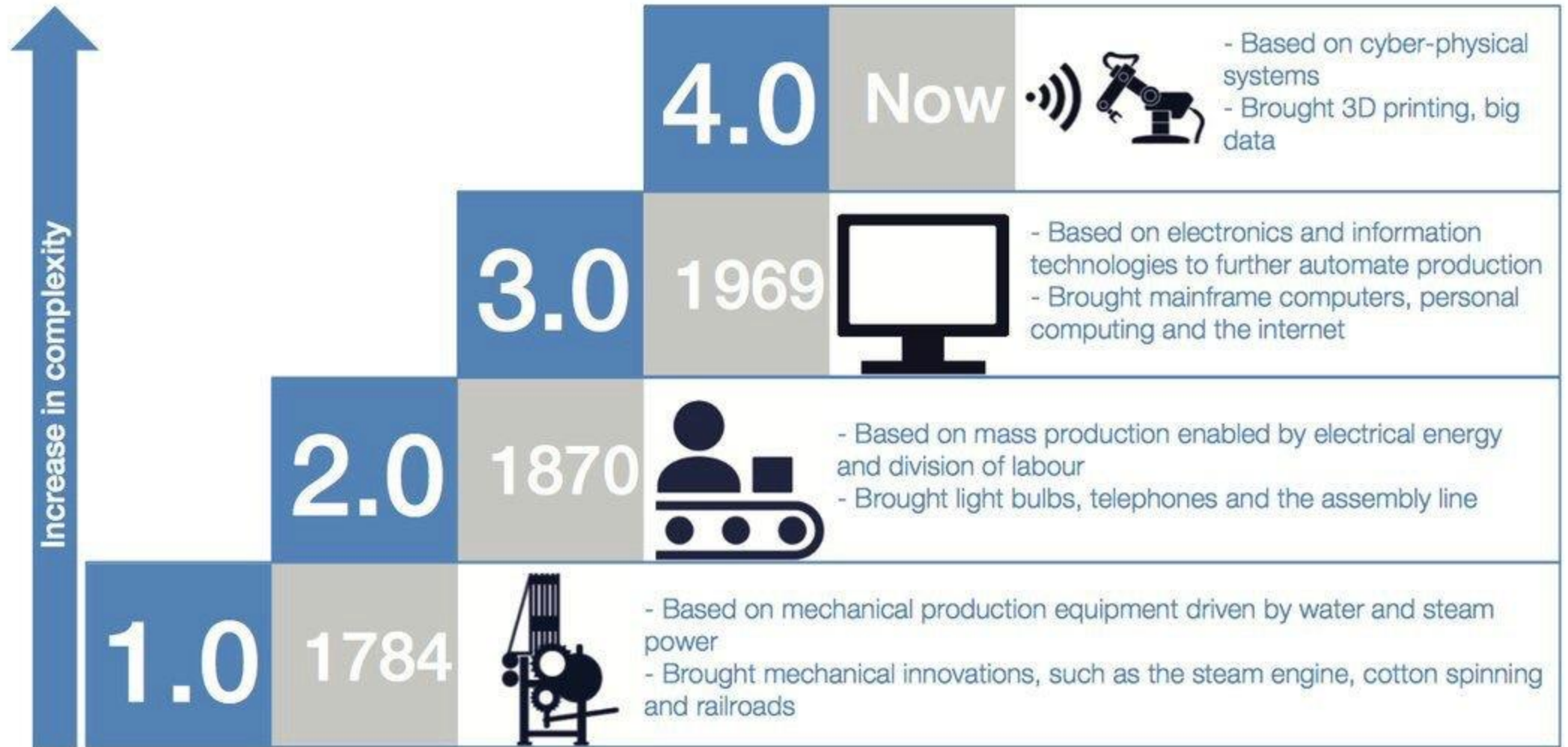
## Definitions

- Industrial Revolution was the change in the way goods were produced from humans(homes) to machines (factory)
- Machines were invented to replace human labour
- Machines used energy sources; water, steam, electricity
- Transportation improved; ships, trains, automobiles
- Telecommunication improved; telegraph, telephone, radio

## Causes



**Figure 3:** Evolution of the Four Industrial Revolutions



# Evolution of Industrial Revolutions

- **FIRST INDUSTRIAL REVOLUTION (~ 1760 to 1840)**

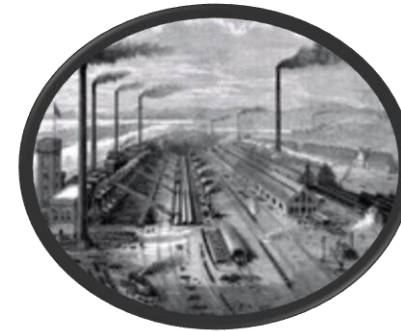
- Steam Power
- Rise of the Factory System
- Machine tools, chemical manufacturing, iron production

- **SECOND INDUSTRIAL REVOLUTION (~ 1870 to 1914)**

- Rapid industrialization
- Electricity, telephone, rail
- Increased inter-connectedness

- **THIRD INDUSTRIAL REVOLUTION (~1969 to 2000s)**

- Rise of electronics
- Microprocessors, telecommunications, automation





# What is Fourth Industrial Revolution (Embrace new technology or perish)

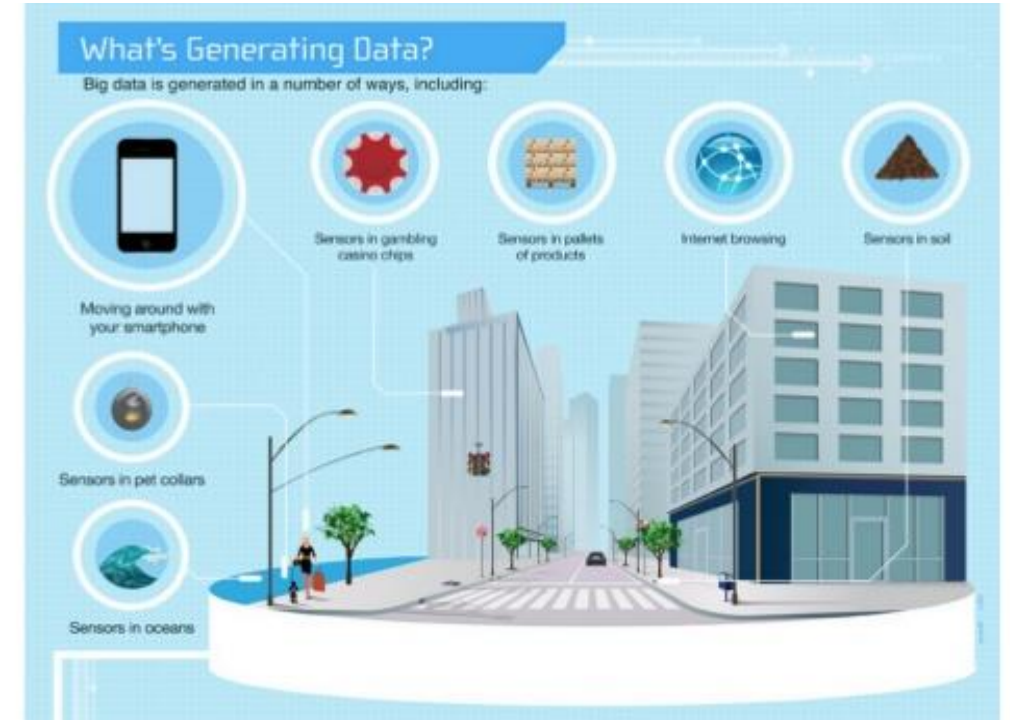
## 4<sup>th</sup> Industrial Revolution Technologies

fav

### 12 Technologies



Source: World Economic Forum



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# Technologies driving Fourth Industrial Revolution

- Disrupt taxi industry – use uber
- Book accommodation online-
- Shopping online

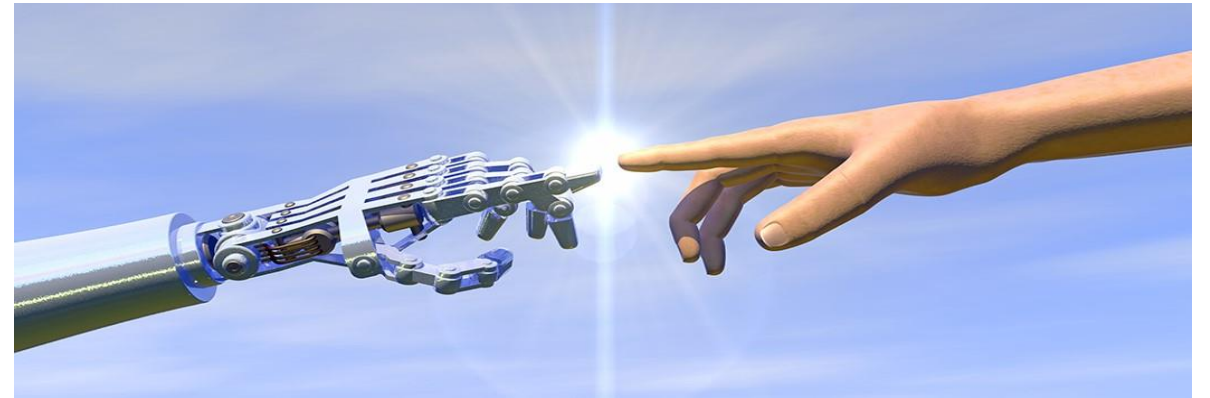


- Paying bills online



# Opportunities of 4th Industrial Revolution

- Robots(machines) to augment humans for better service
- Training opportunities- embrace adapt and adopt
- Multitask and job rotation
- Willingness to learn and relearn
- Upskilling, reskilling and out skill
- Speed of connectivity 24/7 to the internet
- Human vs machines- youth to drive 4<sup>th</sup> IR
- Knowledge sharing and skills transfer
- Collaboration with peers and engage with technology infused with AI
- Excited about new technologies

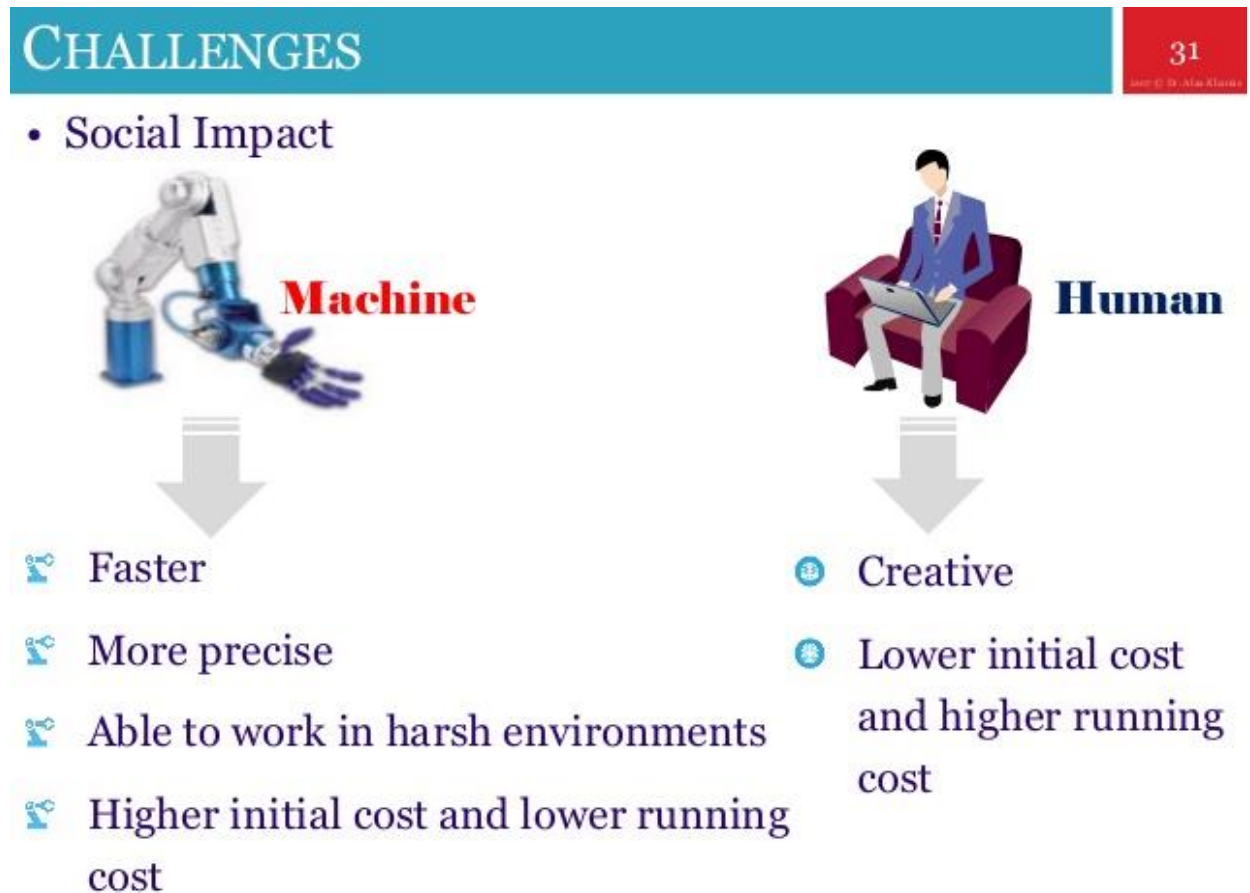




# Challenges and Risks of 4th Industrial Revolution (fast, disruptive and destructive)

## Technical Challenges

- Handling big data-digital footprint
- Cyber security-hackers
- Lack of funds for IT infrastructure
- Lack of skills and courage
- Robot have no feelings and moral compass
- **Social Impact**
- Reluctant and resistance to change (BBT)
- Lack of needed skills and crime issues
- Unemployment, electricity-load shedding
- Digital divide and data issues, inequality



# UJ Library readiness for 4<sup>th</sup> Industrial Revolution

## **Change Management**

- Change mind-set
- Embrace change transformation

## **Task Teams (skilling library employees)**

- 16 task teams
- Trial and error phase no expert
- Learning and exploring new skills
- 20% learning vs 80% contracted

## **New UJ Library opportunities/Initiatives**

- Book to desk- academics
- Mobile work lists- shelving assistants
- Student App- still coming
- Makerspace- DFC campus
- RFID self check machine upgraded
- RDM in progress
- Chatbot (AI infused)- answering machine in progress



# Essential skills for 4<sup>th</sup> IR

Be empowered with essential skills to be ready for the technological disruptions



Source: Future of Jobs, World Economic Forum





# Impact and way forward to fourth industrial revolution

## Impact

### **Industry**

- Need to revamp, rethink and reinvent
- Embrace change

### **Government**

- Adapt to fast changing environment
- Collaborate and learn
- Global cooperation

### **People**

- Reinvent, create tomorrow
- Empowerment

## Way forward

- Industries to put people first and empower them with essential skills
- Be creative and innovative
- Bridge the digital divide -smart phone penetration over 80%, digital skills
- “Rome was not built in one day”- take baby steps-no rush
- Encourage lifelong learning from cradle to grave
- Intensive research to be done on 4IR technologies



# Conclusion

- 4<sup>th</sup> IR comes with risks and opportunities, its success/failure lies in the hands of all the stakeholders
- Library bridge gaps and remove boundaries to information access
- New possibilities and opportunities with anxiety and uncertainty
- Entrepreneurial mind- solve social problems eg energy, littering
- **Soft skills**; emotional intelligence, creativity and critical thinking
- Data as the new currency, needs data to access data
- Niche of the library that cannot be replaced by robots
- Robot creators; engineers, programmers, designers
- Customise robots based on needs of the library
- Train workers before introducing the technology
- 4<sup>th</sup> IR be inclusive leaving no one behind and building libraries we want



Thank you for your attention!!

To survive 4<sup>th</sup> Industrial Revolution be willing to learn new skills

