

Industry 4.0

Week-1

L1 Course Outline

- I 4.0 is a mgmt. thought process, industry talks.

L2 Origins of I 4.0

- German Acad. (academy of sc. & tech.), Industry 4.0. I 4.0 & digitizaⁿ of industry became a core concern of the federal admin's digital agenda.
- Kaergemann → 4th industrial revolution.

L3 Progression of Industrial Era

| (1780s) | (1890s) | (1960s) |
|--|--|---------------------------|
| 1.0 Steam | ⇒ 2.0 Assembly line | ⇒ 3.0 IT |
| Mechaniza ⁿ Use of steam | mass produc ⁿ , electric power | Comp., IT, CNC, Robots |
| ⇒ 4.0 IOT (2010/2020s) | | |
| Autonomous sys. IIOT, digitiza ⁿ | | |

L4 Egs. of 4 Industrial Era

| | Comm. | Transporta ⁿ | Energy |
|-----------------|--------------------|-----------------------------|------------------|
| 1 st | Printing press | steam loco. | steam |
| 2 nd | telephone | combust ⁿ engine | crude oil |
| 3 rd | email | hybrid | electricity |
| 4 th | cloud / AR / VR | hyperloops | hydrogen / solar |

- 1st rev. → Eng. (James Watt, Manchester) → France
- 2nd rev. → USA (Graham Bell, Henry Ford)
- 3rd rev. → USA, Japan
- 4th rev. → German (Acatech)

L5 Revoluⁿ / Evoluⁿ

- Ability to create sth. totally new, unexpected & at the end requested. The speed at which Δ happens.
- Additive manufacturing (3D printer) is new, also, idea of co-creaⁿ.
- Digitizaⁿ part of I4.0 is new, also, automaⁿ (robots in logistics & manufacturing)