EMERGING FRONTIERS: STI DEVELOPMENT with IMPLICATIONS FOR SDGs

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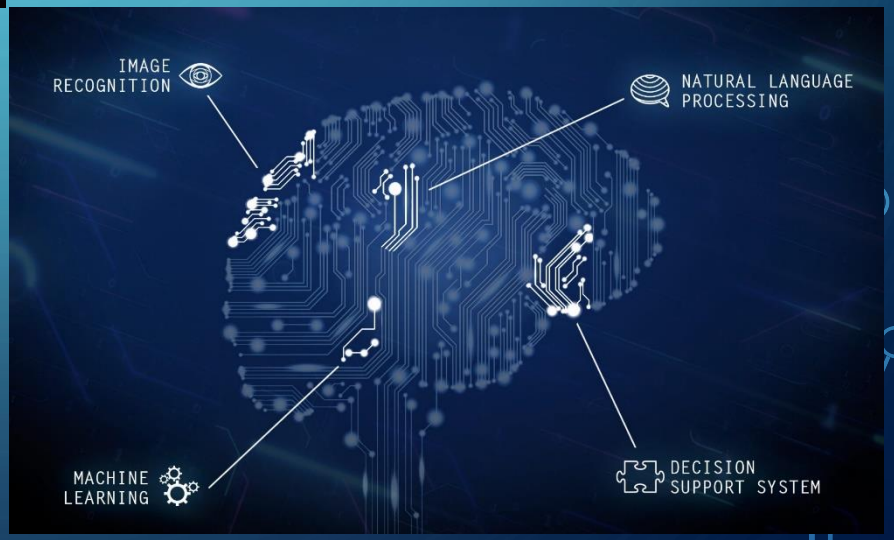
EXPONENTIAL TECHNOLOGICAL CHANGE ARTIFICIAL INTELLIGENCE

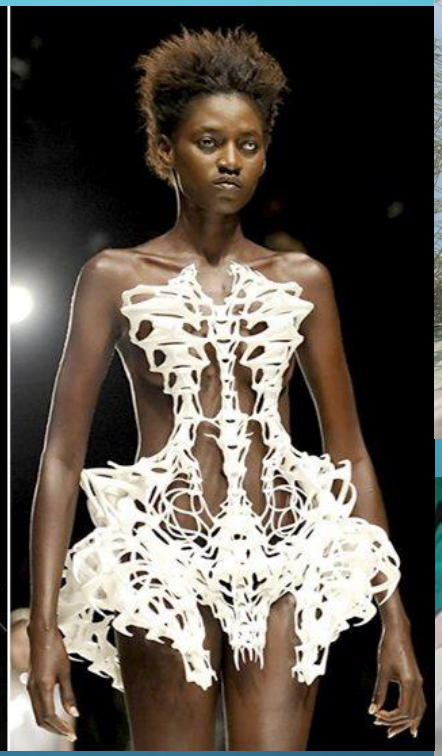
Alpha Go
Driverless car, …

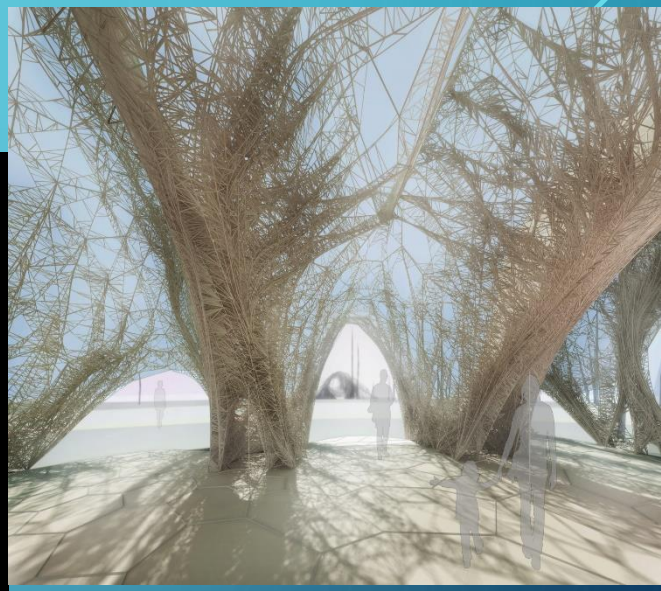


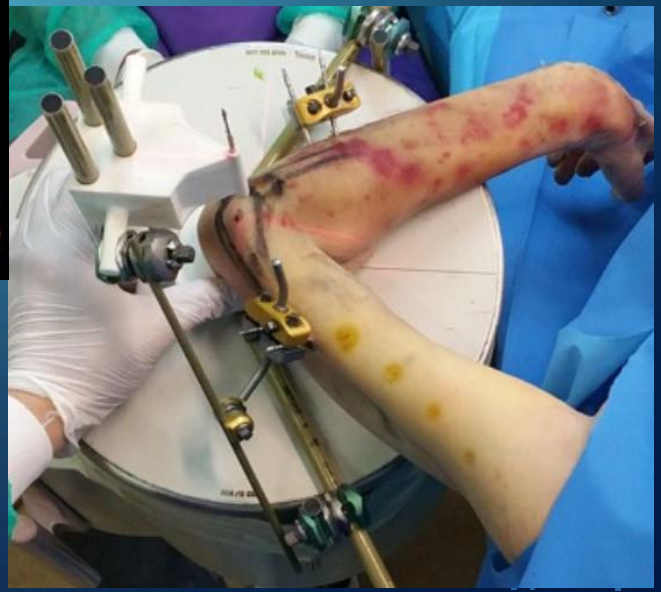
ROBOTICS

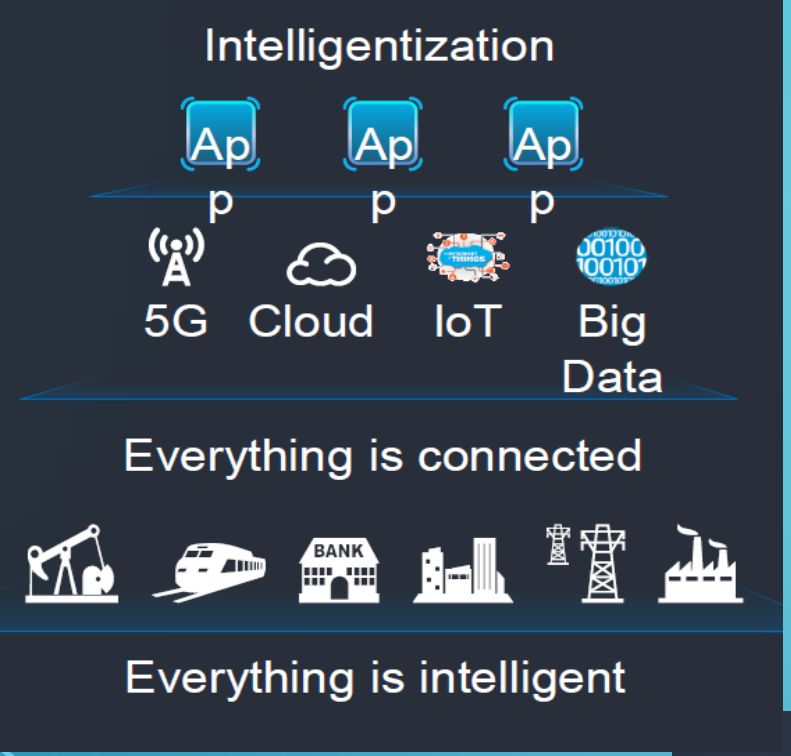
Smart manufacturing,
IoT,
Industry 4.0, ……

3D PRINTING



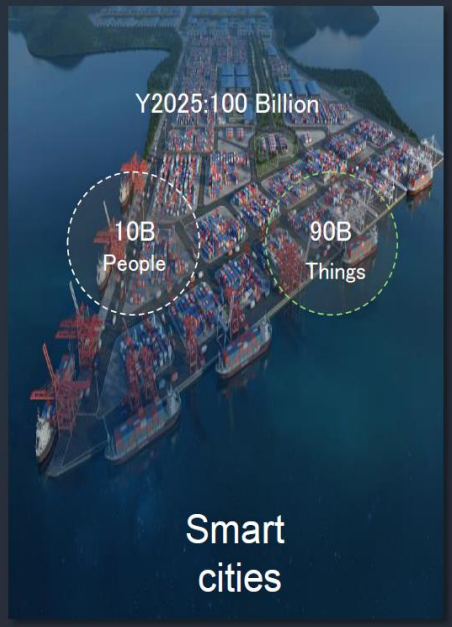






WIDE APPLICATIONS IN MANUFACTURING & BEYOND, PRIVATE & PUBLIC SERVICES

Source: Gartner, 2016; Weigel, 2016



IMPACT ON SDGS: MIXED

- **Connectivity enhancing & human empowering**

Eg. Mobile phone tech, internet, Cloud, 5G, big data

Impact: connectivity, access, empowerment, efficiency, making impossible possible. - Universal

- **Human replacing**

Eg., automation, robotics, AI

Impact:

1. Efficiency gains, consumer welfare
2. Work condition improvement
3. Labour replacing
4. Income inequality

EMPLOYMENT CHALLENGE

- Job replacement
- In a wide spectrum of sectors, not only blue collar workers (from lorry drivers, office white collar, to highly skilled financial sector)
- Difficulties in re-employment for some.
- Political instability & social un-sustainability

DISTRIBUTIONAL EFFECT

- Biased technical change
- Greater income inequality (significant)
- Capital vs labour; Skilled vs un-skilled
- Challenges to low income countries: further backwardness
- Deepening global income divide

CHANGES IN GLOBAL ECONOMY

- Re-shore of manufacturing back to developed countries
- Opportunities for LDCs to catch up narrowed

- Revolution in global production network led by 3D printing
- Distributed localised production replaces mass production
- Challenges to China: the world's manufacturing workshop

POLICY IMPLICATIONS

- Policy guidance
- Policy to remedy negative effects
- Policy to assist LDCs

  - Technology transfer, cooperation in training.

  - MNEs to play a more active role

  - Global governance reform, partnerships

GLOBAL PARTNERSHIP & EFFORTS

- 2030 global Sustainable Development Goals (SDGs)
- UN Technology Transfer Mechanism (TFM)
- UN Technology Bank for LDCs