



SCIENCE AND
TECHNOLOGY POLICY
INSTITUTE

*Emerging technology clusters & the impact of
rapid technology change on the SDGs frontiers
- Implications from Korean Experiences -*

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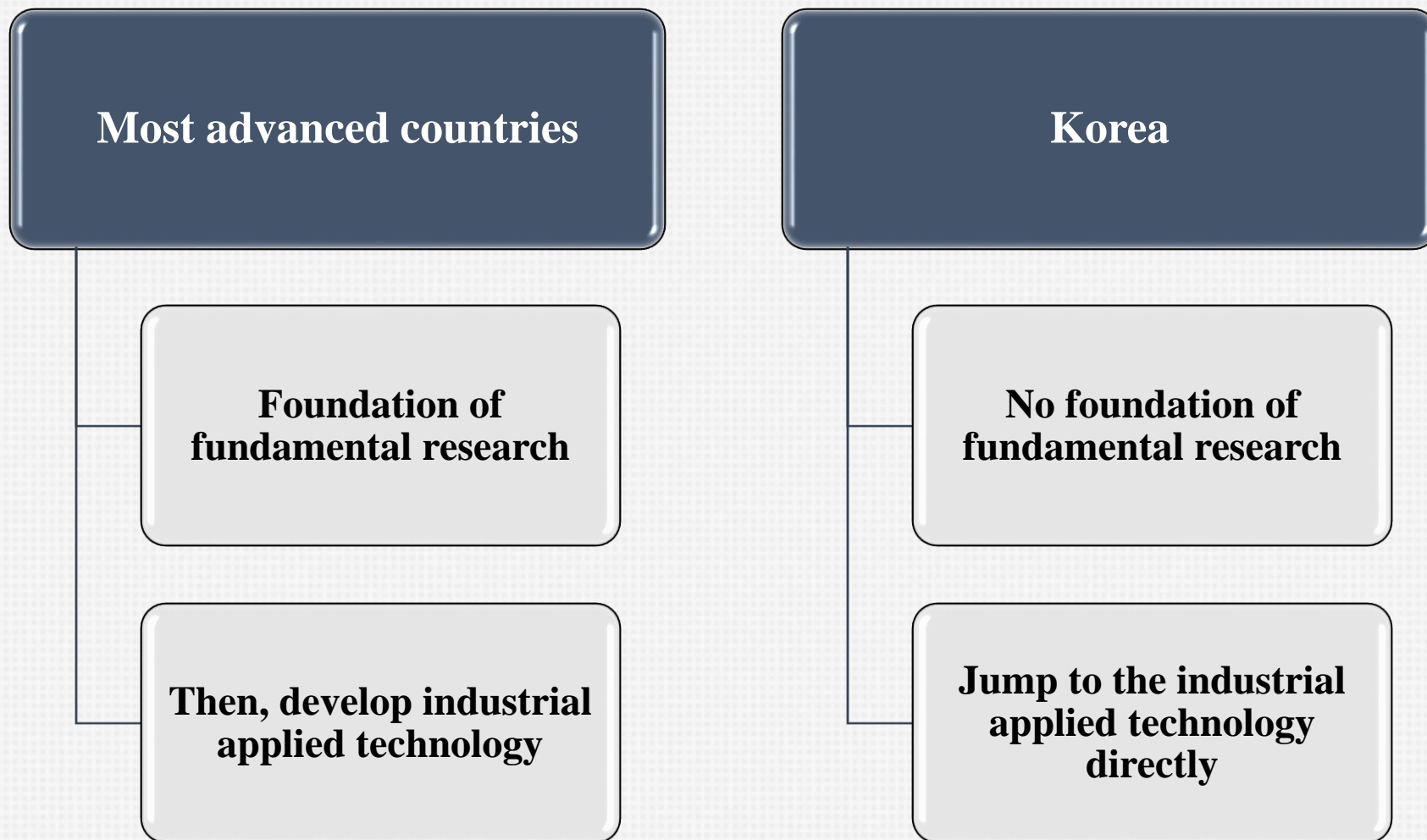
The Case of Korea

- Experience of Cluster Development -

Export-led Economic Growth

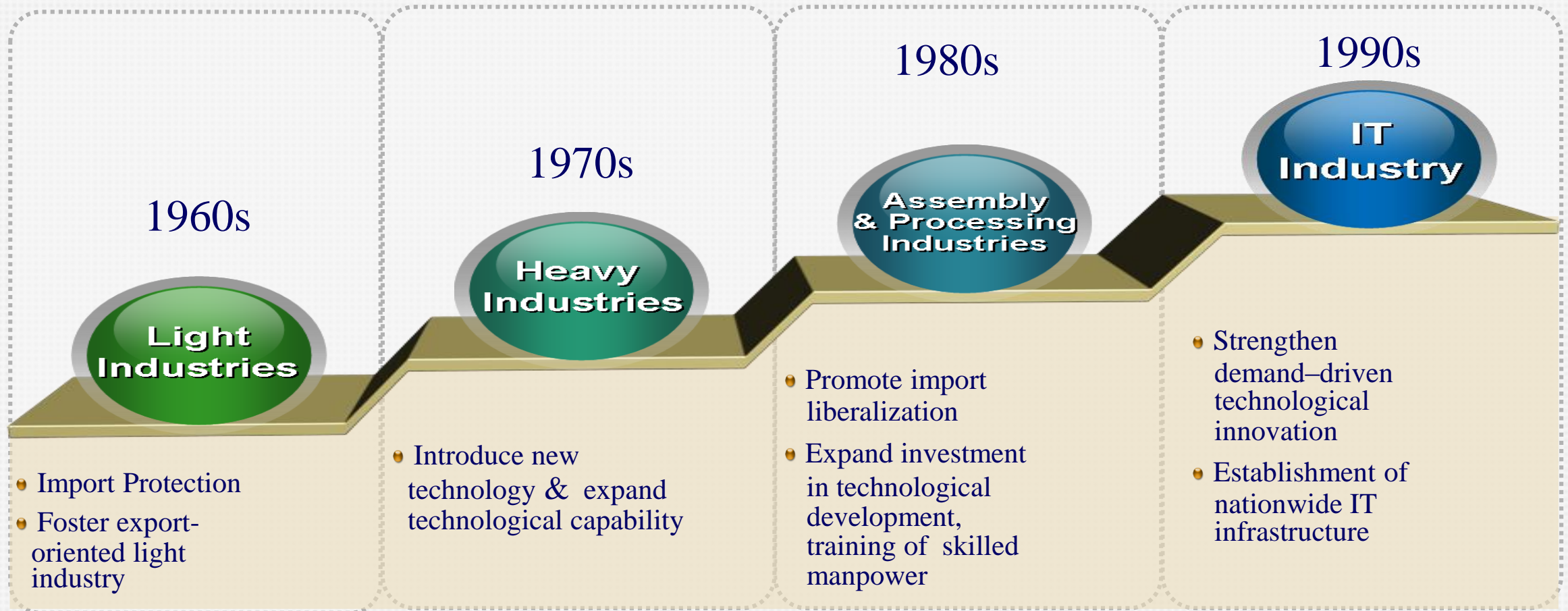
- **Why?**
 - Why did Korea adopt the strategy of export-led growth?
- **Market condition**
 - Lack of purchasing power in domestic market
 - Could not sell its own goods nor imported goods –not profitable
 - per capita GDP – around 90 USD in early 1960s
- **Resource condition**
 - Korea did not have the natural resources (gas & oil etc.)
 - Could not export any tradable natural resources
 - Korea did not have enough surplus in agricultural sector
 - Only human resources were available
 - Korea had to figure out how to utilize relatively qualified human resources

Applied Technology First!



Industrialization w/ S&T Progress

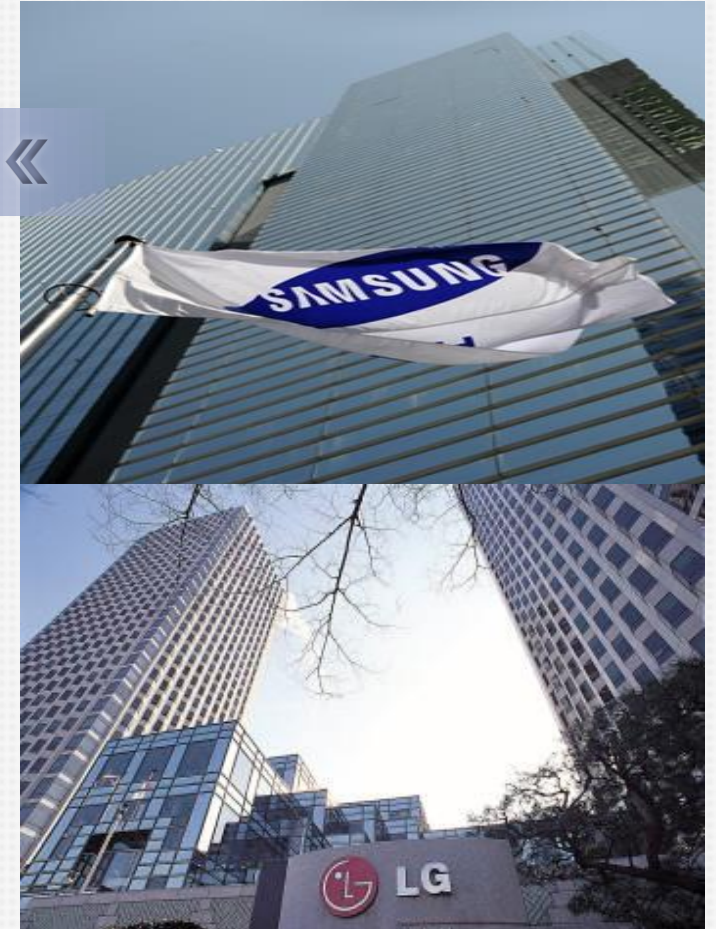
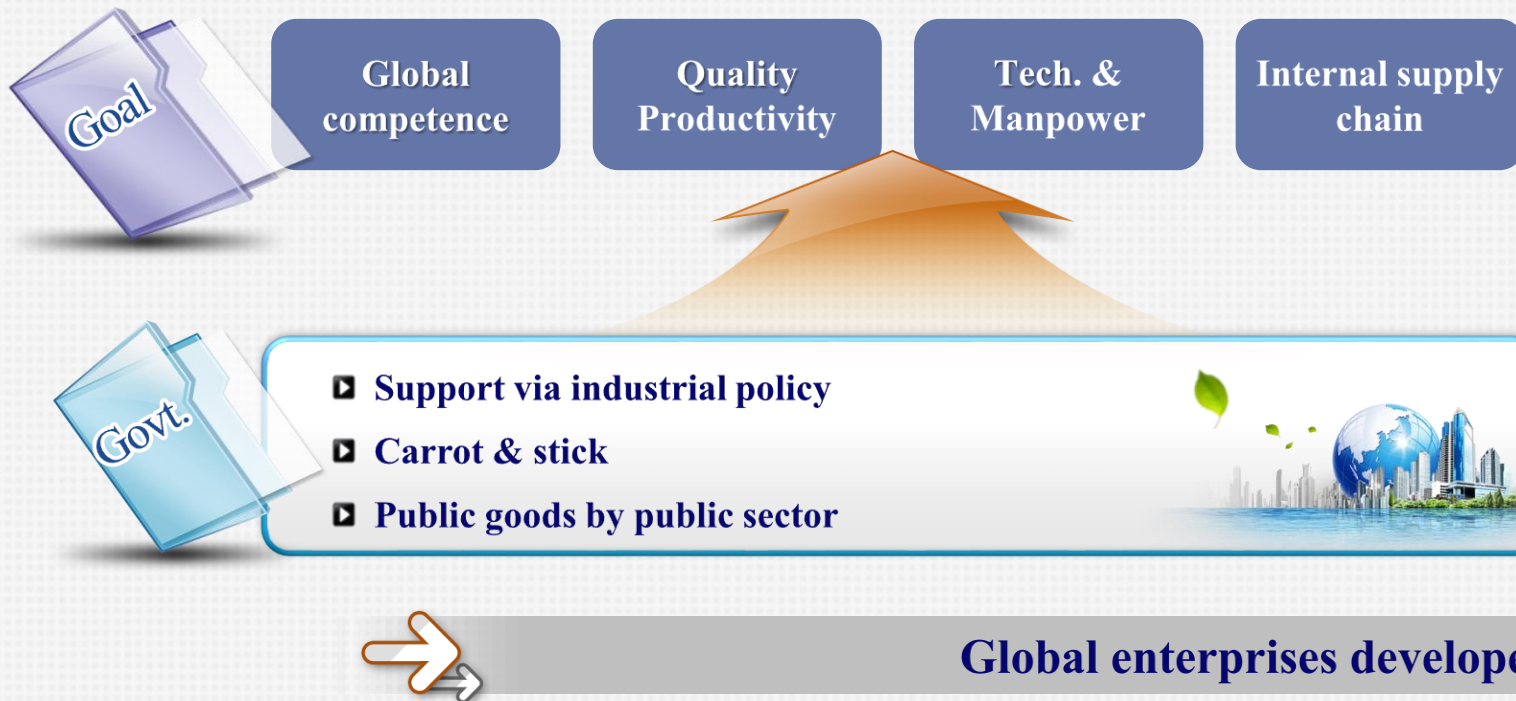
“Select and Focus & Export-Oriented” Strategy



Indigenous Firms

▣ Importance of indigenous enterprises

- Tried to develop domestic firms from the first stage
- Tried to develop manufacturing sector and firms
- Let private firms produce for the market



Cluster – Science Park & Techno Park

* Industrial Complex

- *Export Processing Zone*

* Seoul R&D Complex

- *KIST, KDI, KORSTIC, KAIS, ADD, KAERI*

* Daedeok Science Park

- *Scientific research & technology development*

- *Currently 25 GRIs*

* Technopark

- *Regional innovation via Triple-Helix*

- *Currently 18 technoparks*

Industrial Complex



Steel Industry



Petro-chemical Industry



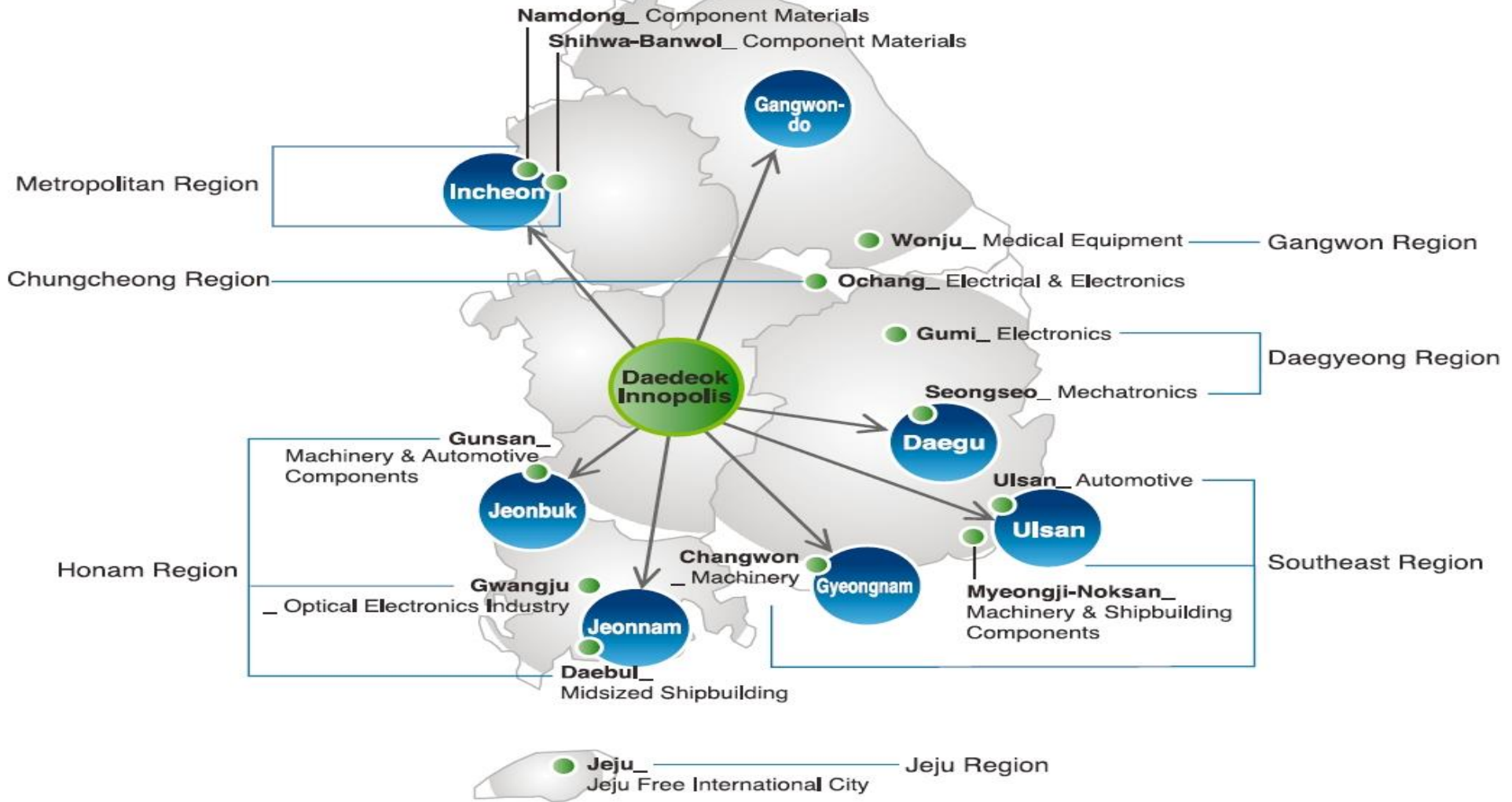
Shipbuilding



Automobile



Semiconductor



* Frontier technology cluster in 1970s

Implications & Issues

- Emerging Technology on SDGs -

Technology – Methodology or Solution



Objective of / Demand for
- Industrialization or Social Infrastructure Building



Technology Provider W/ Human K
- Scientist, Engineer, Technician

What to do?

- **Industrialization?**

- Manufacturing or Agriculture (Agroprocessing)?
- Common Technology or Emerging (Frontier) Technology?

- **Social Infrastructure Building?**

- Energy & Electric Power
 - #1 Task for Most Developing Countries
- SOC (Social Overhead Capital)
 - Transportation (road/railroad), Education/Health (school, library, hospital), Communication (telephone/internet) and Utility (water/waste treatment)

- **Jump to the Emerging Technology Utilization?**

- Cable (Wired) vs. Wireless Internet

How to Secure Enough # of Tech. Provider?

- * Social Value on Technology

- * Social Value on Technology Provider?

- * Cultural /Ethical Context & Social Acceptability

- * Social / Private Return on Tech. Provider

儒教

Confucianism

Joseon Dynasty
(1392-1897)

Korean Empire
(1897-1910)

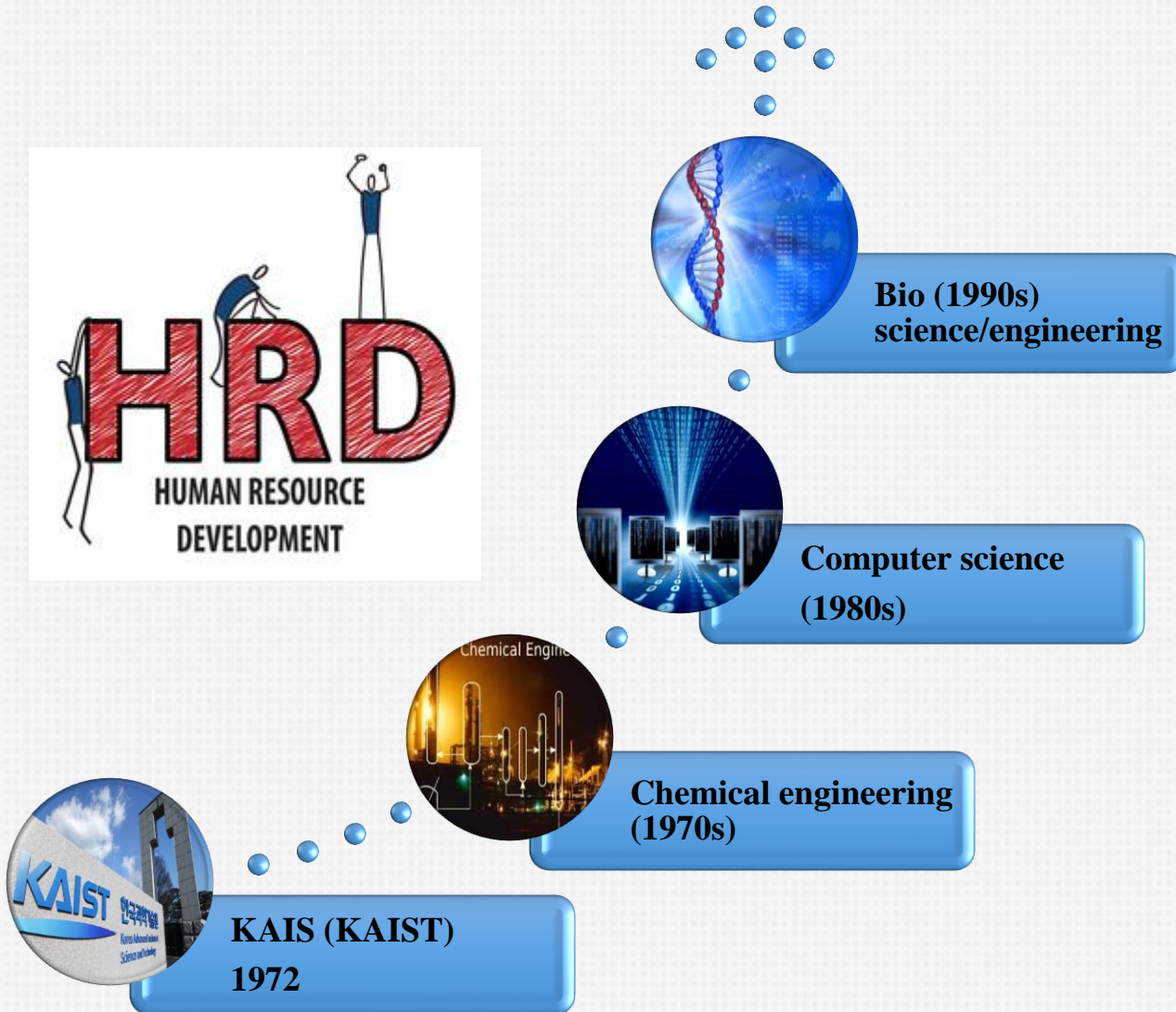
士 – Scholar/Bureaucrat/Politician

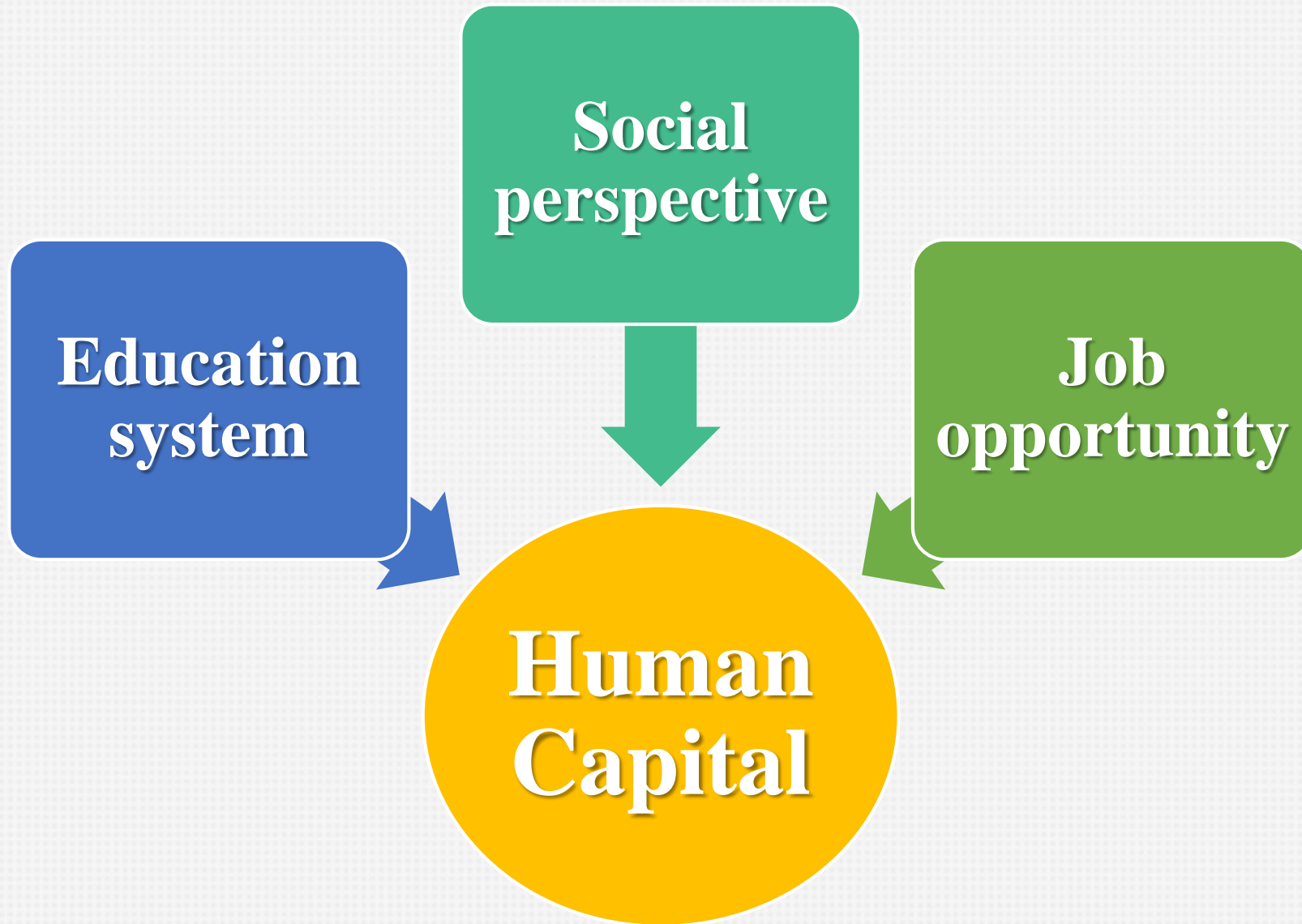
農 – Farmer (Foundation of Heaven/Earth)

工 – Manufacturer

商 – Merchant

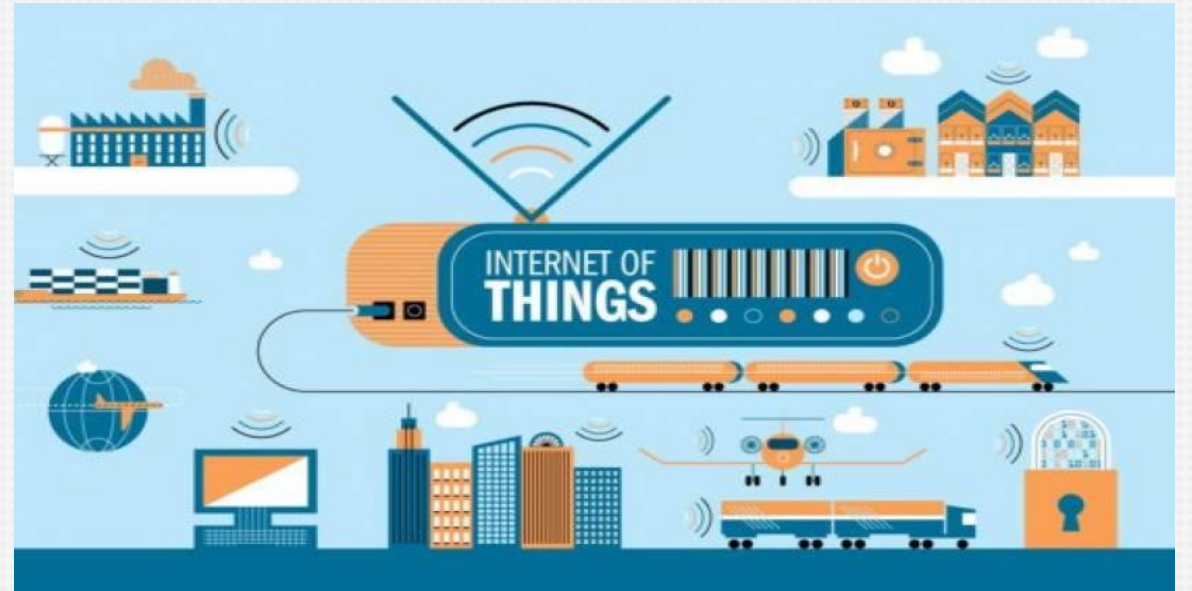
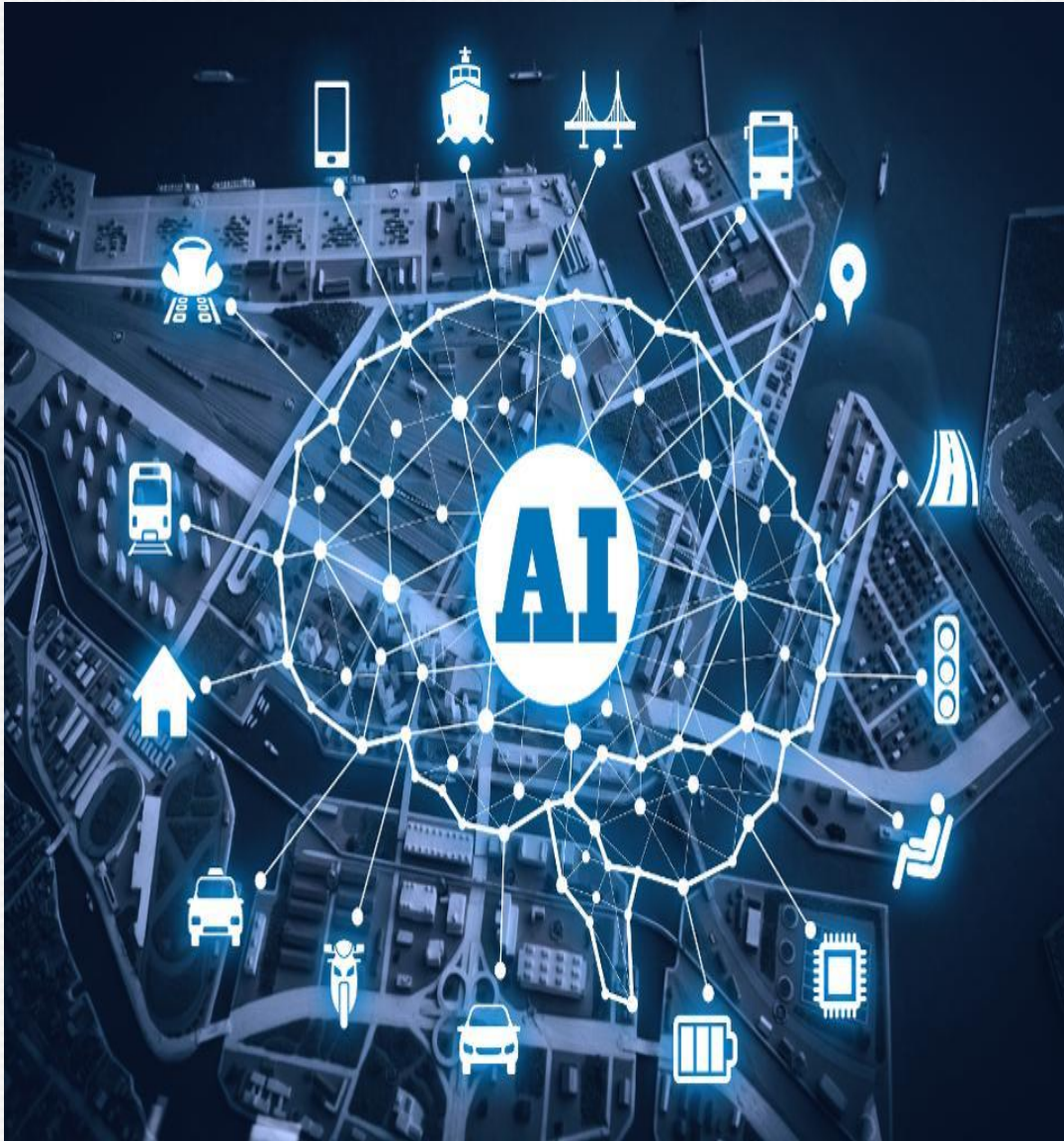
What Korea Has Done?





Emerging Technology

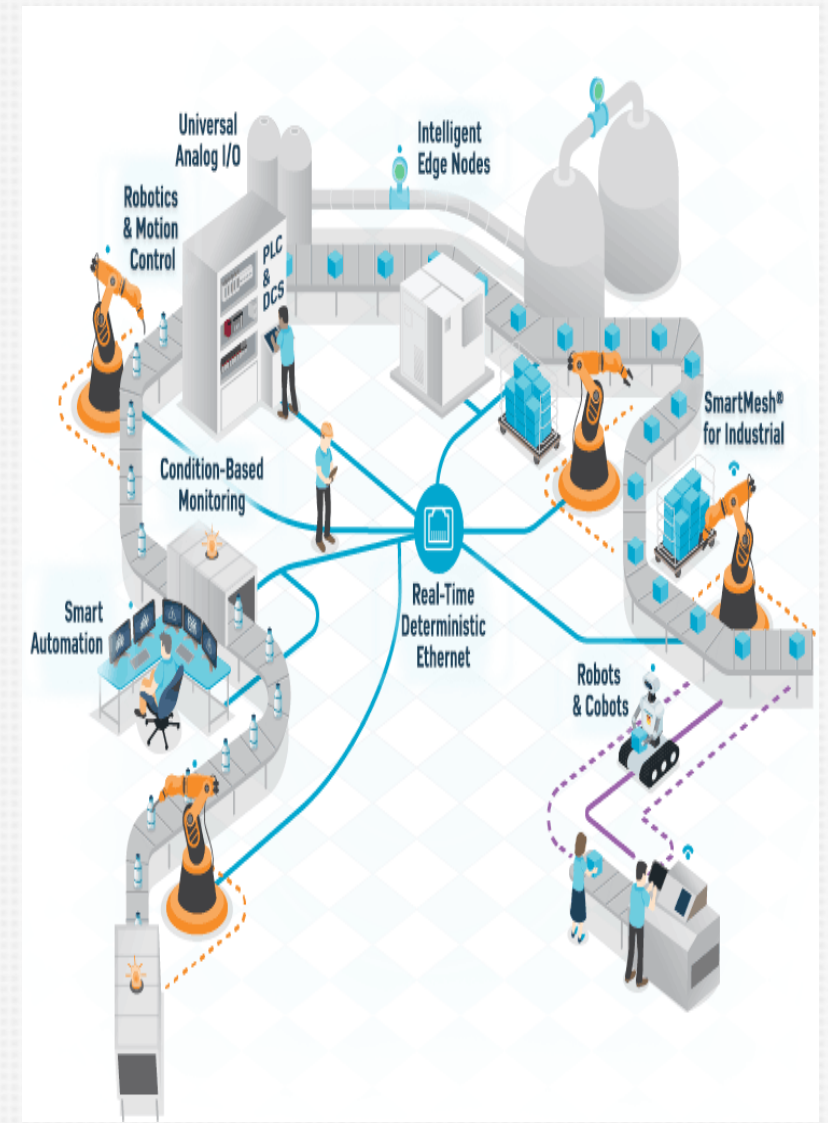
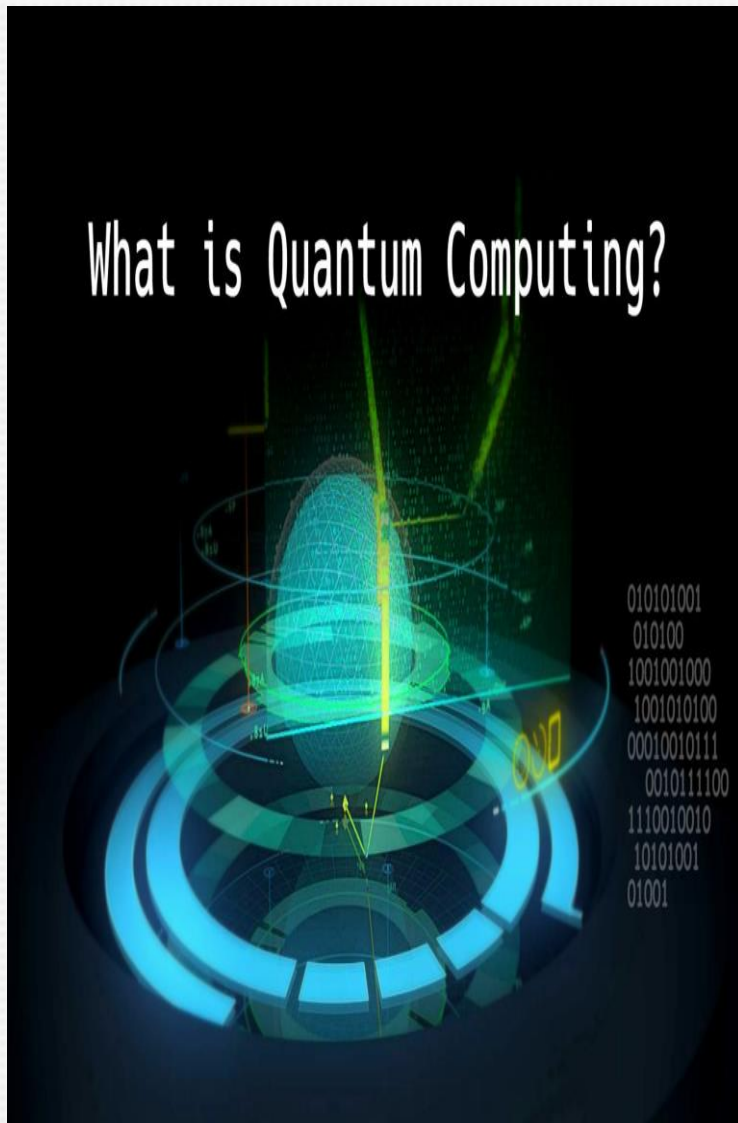




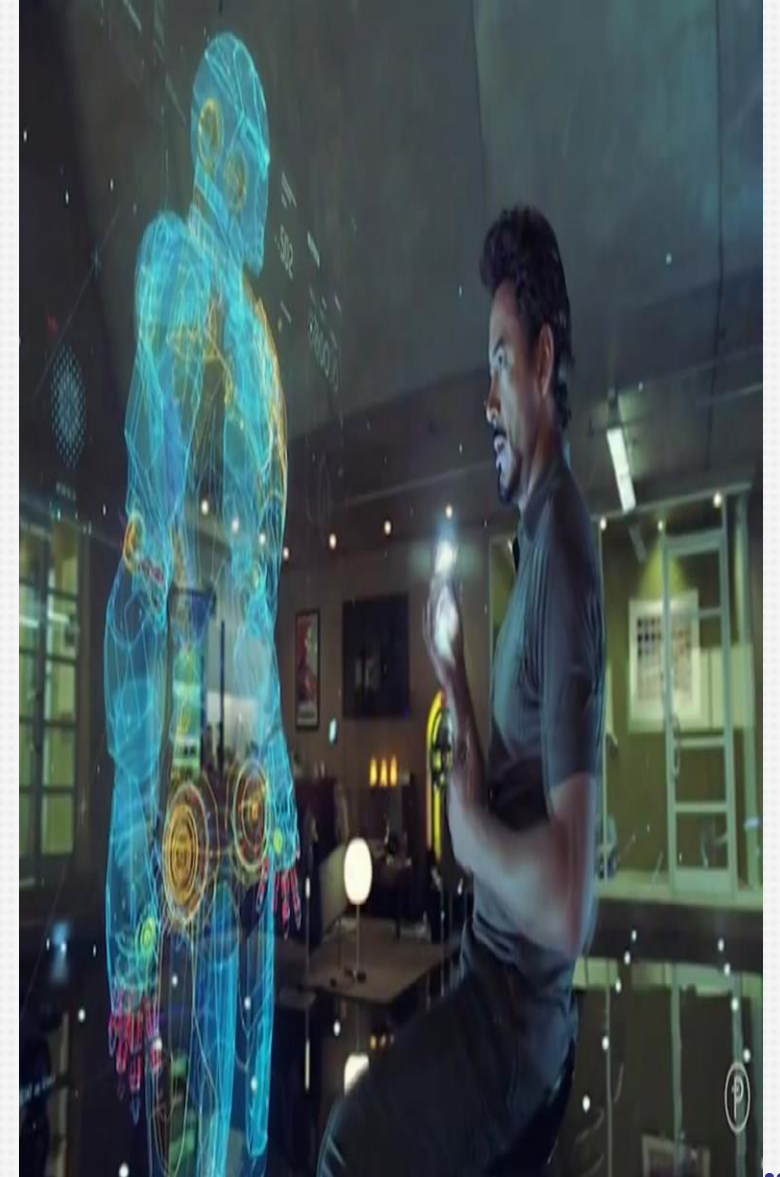
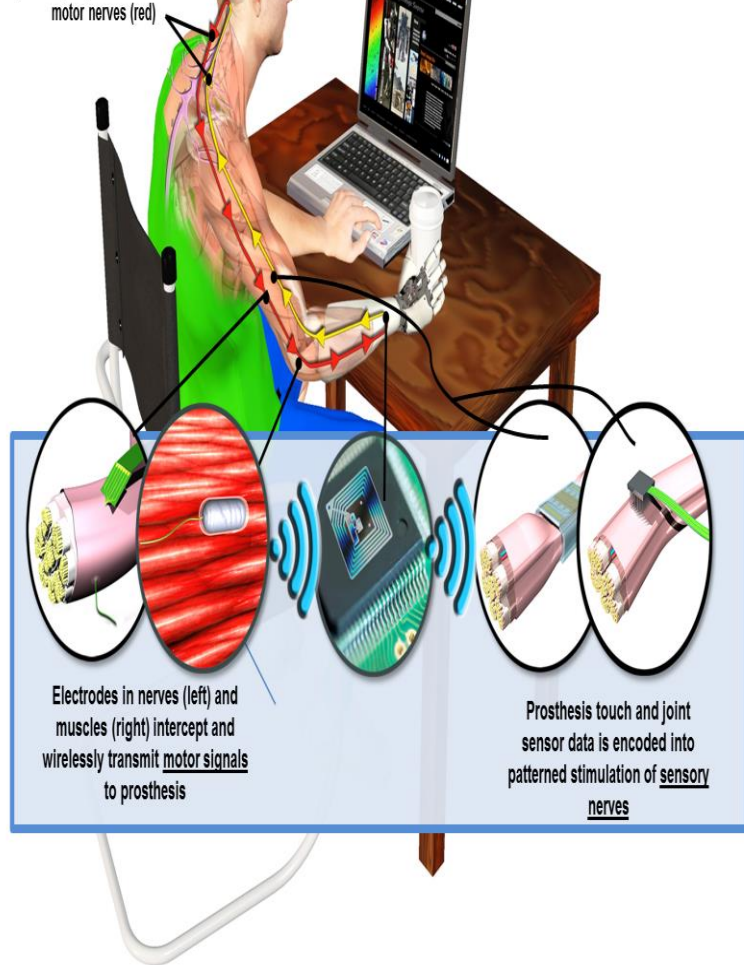
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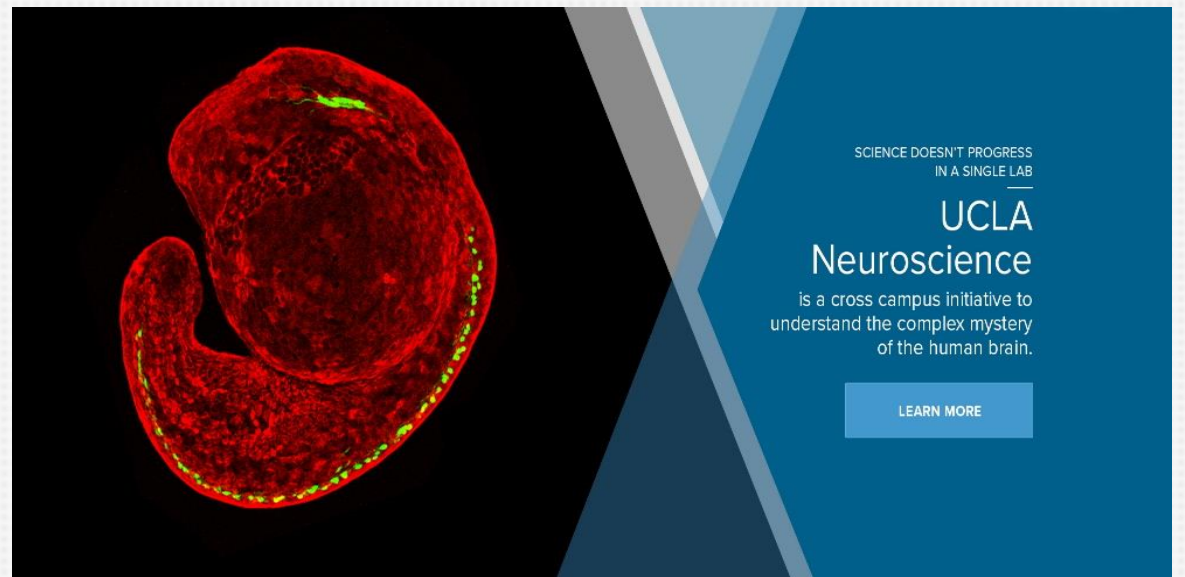
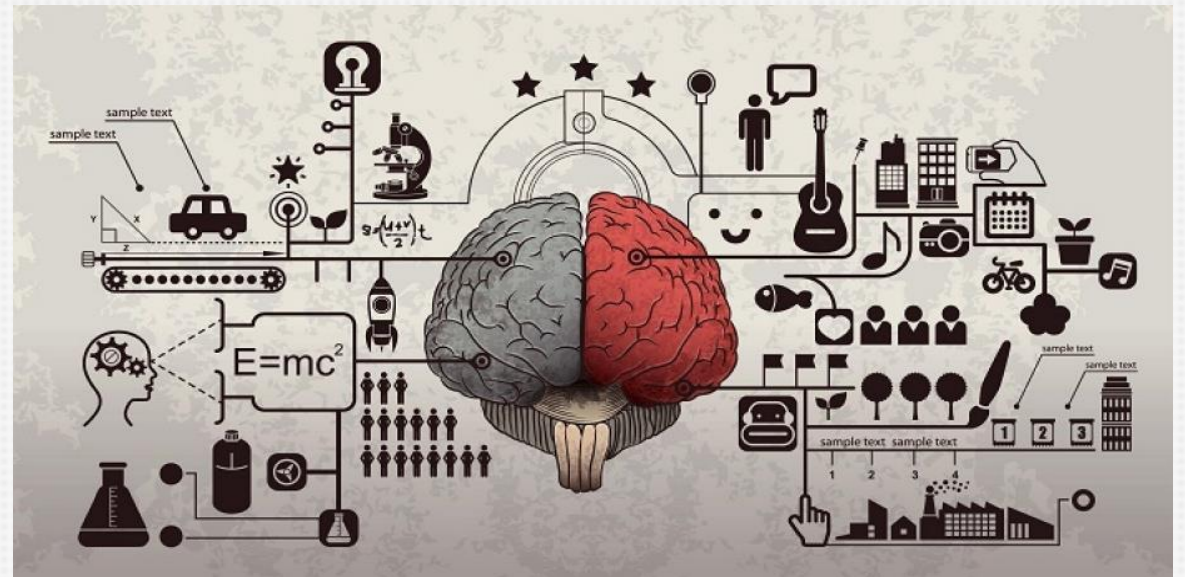


What is Quantum Computing?



The Central Nervous System receives touch and proprioception information from sensory nerves (yellow) and generates movements by sending signals to muscles via motor nerves (red)





Technology, embodied in or independent upon?



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graph TD; A[Technology, embodied in or independent upon?] --> B[New types of capital – new economics]; B --> C[Productivity gap – larger & widen]; C --> D[The ownership & income inequality]; D --> E[Social context (acceptability/perspective)];
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New types of capital – new economics

Productivity gap – larger & widen

The ownership & income inequality

Social context (acceptability/perspective)

Technology – important but not almighty

Society & People – more important but forgotten

Culture – acceptability, custom and tradition

Thank you!