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Intelligent Economy, Intelligent Industry and Intelligent City

— *Economy and Industry Promote the Development of Cities*

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- 1 Interactions between economy/industry and cities
- 2 General strategy of Chinese industrialization and Informationization – fusion
- 3 Some new ICT applications : progress of “fusion” in China

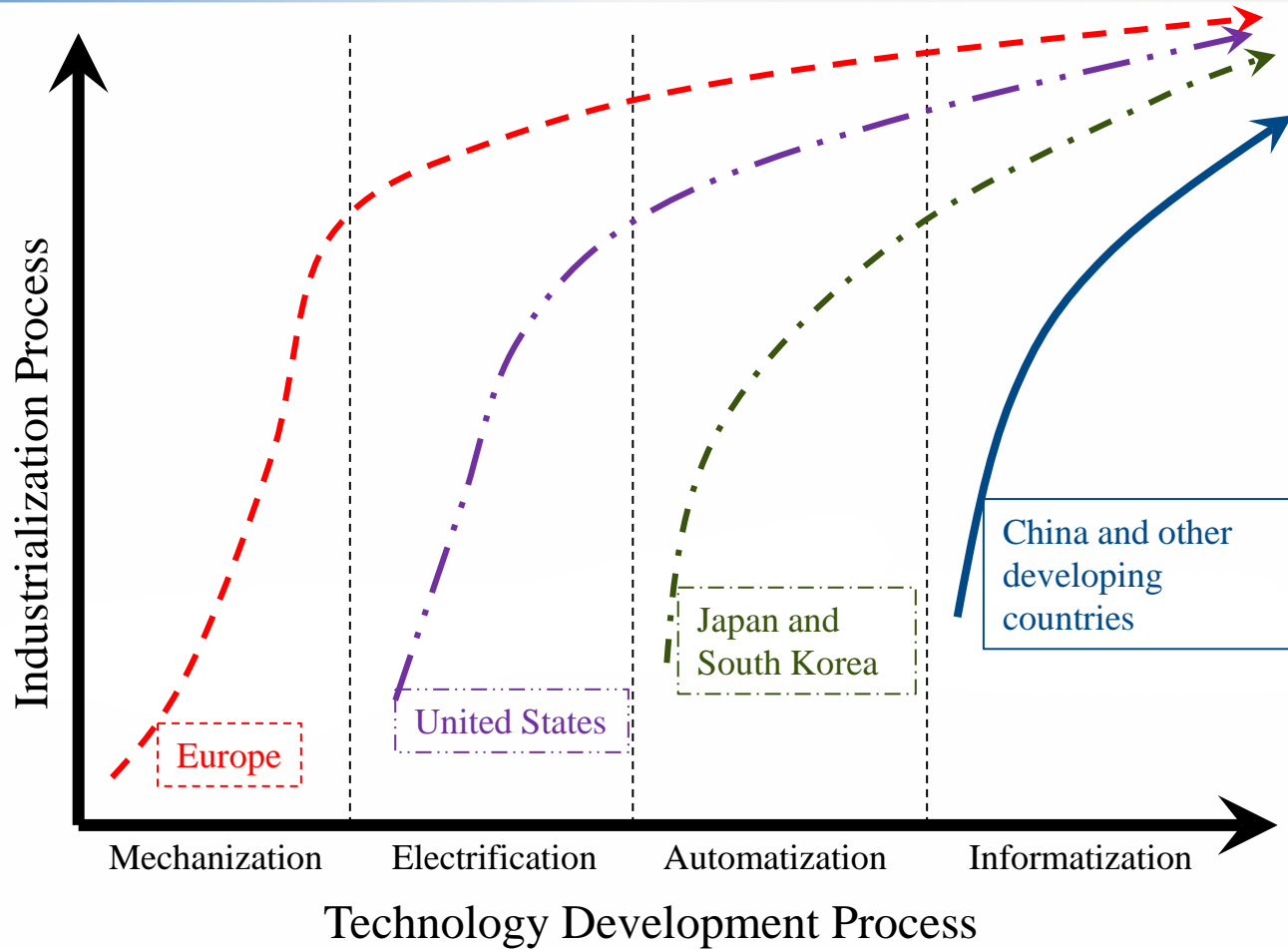
- Scope (functions) of cities (also intelligent cities) can be divided as:
 - Intelligent economy, such as,
 - industrial economy (manufacturing, process),
 - service economy (including communication, finance, insurance...)
 - Intelligent “people’s livelihood”, such as,
 - public transportation, medicine, environment, community service, all people beneficial oriented services etc.
 - Intelligent governance or management
 - public safety and security, policy decision making...

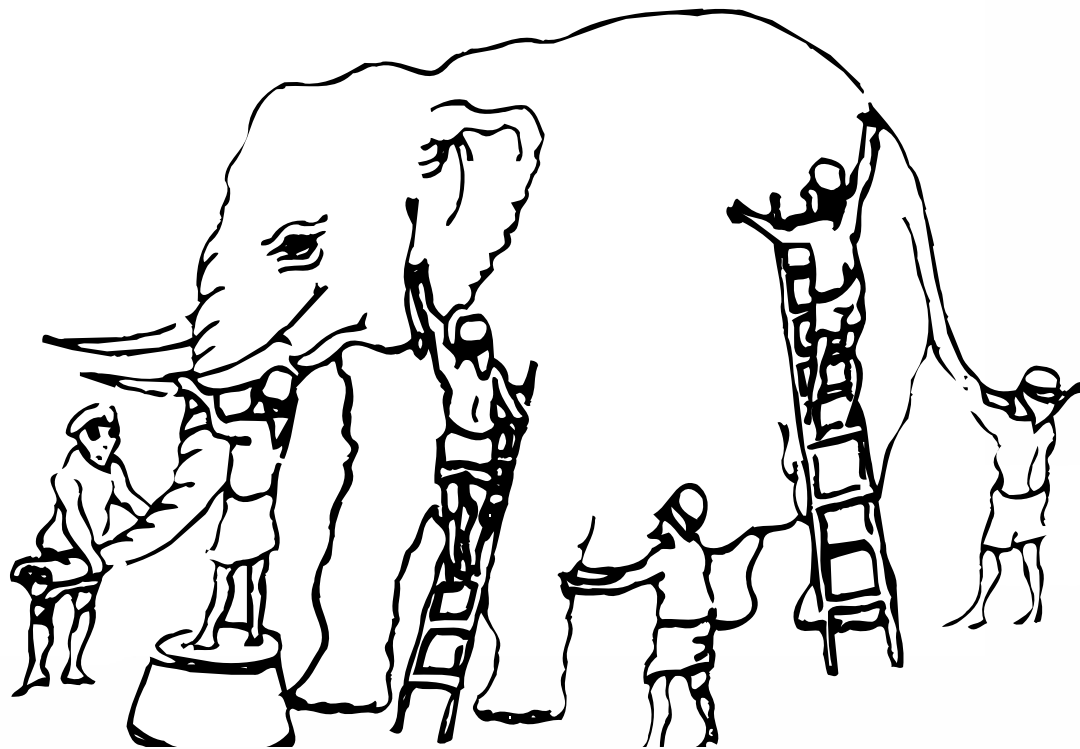
- From an economic view
 - Intelligent economy, mainly including real economy (Entitative Economy, such as manufacturing/process industry), which **provides** society employment, **fund**, kinds of products ;
 - Intelligent “people’s livelihood” **need** fund (without capital, nothing can be done) ;
 - Intelligent governance and management balance the demand and supply of **fund**, and to approach better benefits
- The supply is **only** from economy (manufacturing industries, service industries)
- So, a basic point: **economy is the base and engine for city development.**

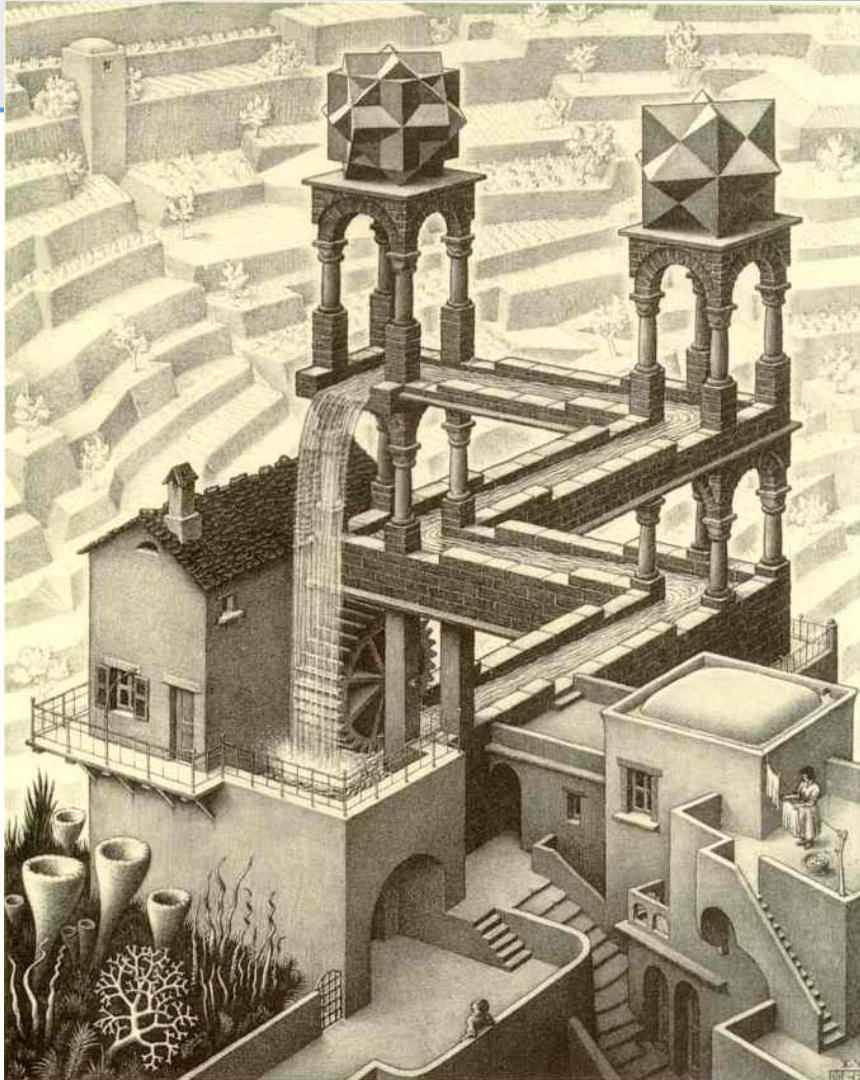
- On the other hand
 - Better governance and management (the duty of city) may promote economy progress better by reforming policies, investment guidance...
 - for example, better industry structure to get more income and environment protection
- Therefore, **the interactions between industry and people's livelihood exist everywhere.**
- As a developing country, in intelligent city category, **intelligent industry is an essential part for city planning and developing.**



Industrialization and Technology development







- Since last century, about Chinese industrialization and Informationization, there is a general strategy, **fusion**, mixed each other and created quantitative and qualitative change of economy growth.
- ICT leads the developing of industrialization better.
- Industrialization also promotes ICT progress.

- The general idea are:
 - Benefits driven for ICT application in industry and cities (economic benefit, social benefit....)
 - Top down planning for ICT application in industry or cities under constraints
 - Bottom up implementation
 - Break through key technology in each realization
 - Check the benefit obtained and summarize experience and lesson learned
- This strategy contributes and leads to the better growth of Chinese economy quantitatively and qualitatively.
- It should be noted that fusion is the essence of CPS (**Cyber Physical System**):
 - ICT and new ICT means Cyber;
 - Industry and cities are very large physical systems.

- In past 30 years, many useful technology are researched and developed in fusion such as
 - Numerical manufacturing
 - Integrating manufacturing
 - Intelligent manufacturing
 - Virtual manufacturing
 - networked manufacturing
 - green manufacturing
 - service-type manufacturing
 - corporative optimum manufacturing
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- They have made great contribution to Chinese industry to be the first large manufacturing industry worldwide. (large but not very strong)
- At the same time, Chinese cities are also developing quickly with plenty of technology implementation:
 - E-government
 - Digital city
 - Intelligent transportation
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- All these technology supported the **urbanization** process of China.

3 Some new ICT applications : progress of “fusion” in China

- New ICT are emerging technology in recent years, such as mobile computing, Internet of things, cloud computing, big data, and new progress in intelligent technology (natural language recognition, machine learning etc.)
- Following are some examples of new ICT application in Chinese industries.

- For collaborative manufacturing, we should provide an infrastructure to industry.
- The platform should support to realize:
 - Interconnection
 - Intercommunication and
 - Interoperation
- It also should be to form as a **federate** coordinative structure:
 - as a federate (a company or an user , or a software, or a NC...).
 - if they join the platform they have the ability of 3 inter-C
 - if someone of them separates from the platform, there is no any influence to the operation of the platform
- **It actually is a special distributed real-time operating system**

Cloud manufacturing is a kind of paradigm and approach of intelligent manufacturing in Internet era

New paradigm of manufacturing

"production" plus "service" -oriented, intelligent manufacturing with the on-demand serviced, networked, individualized(customized), flexibilitized features at anytime and anywhere in all manufacturing systems and full lifecycle of manufacturing.



New technology approach of manufacturing

"digitalization", "things networking", "virtualization", "service - oriented", "collaboration", "customization", "networking", and "intelligence".

- Intelligent industry is the base and engine of intelligent city development .
Emphasis its roles is necessary and beneficial.
- The “fusion” of ICT and industry in China is an important strategy in economy growth. It has been proved successful by Chinese 30 years practice.
- New ICT applications get more attention in Chinese industry and will have more bright future.

Thanks for your attention