

Knowledge Based Economy and Innovation Strategy

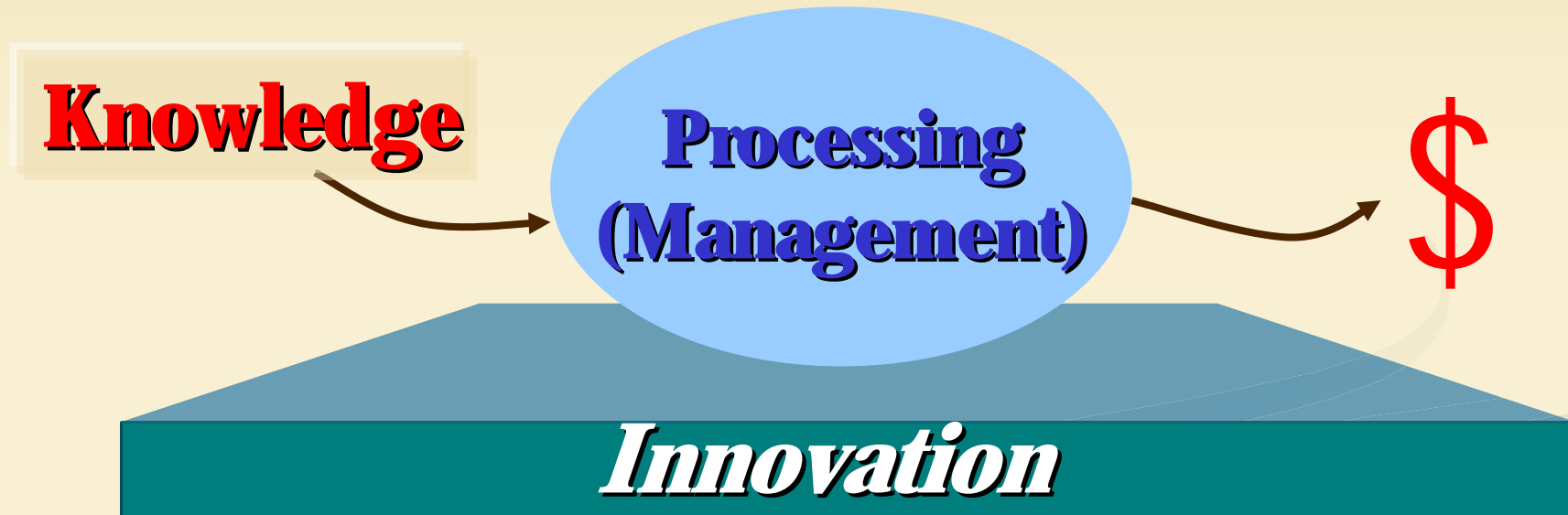
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Content

- **KBE and NIS**
- **Firm's Innovation Strategies**
- **Innovation Cluster as Core Element for NIS**
- **Conclusion**

Knowledge Based Economy



- ✓ **Knowledge through certain process (platform, management) in a society to generate economic impact, so called KBE**
- ✓ **Innovation is everything during the whole process from knowledge generation to economic impact**

Why Innovation ...?

Speed up the transformation process and the output as productivity

→ Built up new emerging Industry

S&T Development adherent with Economic Development

Upgrading the National Competence and Competitiveness

R

--Basic Research
--Oriented Research
(Strategic Research)

INVENTION

D

-- Technical and Engineering
Processing
-- Pilot Fabrication

INNOVATION

R&D



**Discovery
Invention
Innovation**

**R
D**



**New
Technology**

Innovation is a consequence of R&D

Issues for R&D

- ◆ Resources
 - R&D expenditure
 - HRST
 - S&T Infrastructure
- ◆ Organizational
 - Structure
- ◆ Strategic Planning
 - Priority setting
 - Resources allocation
 - Timing issue
 - How to cross the valley of death
- ◆ Performance Evaluation?



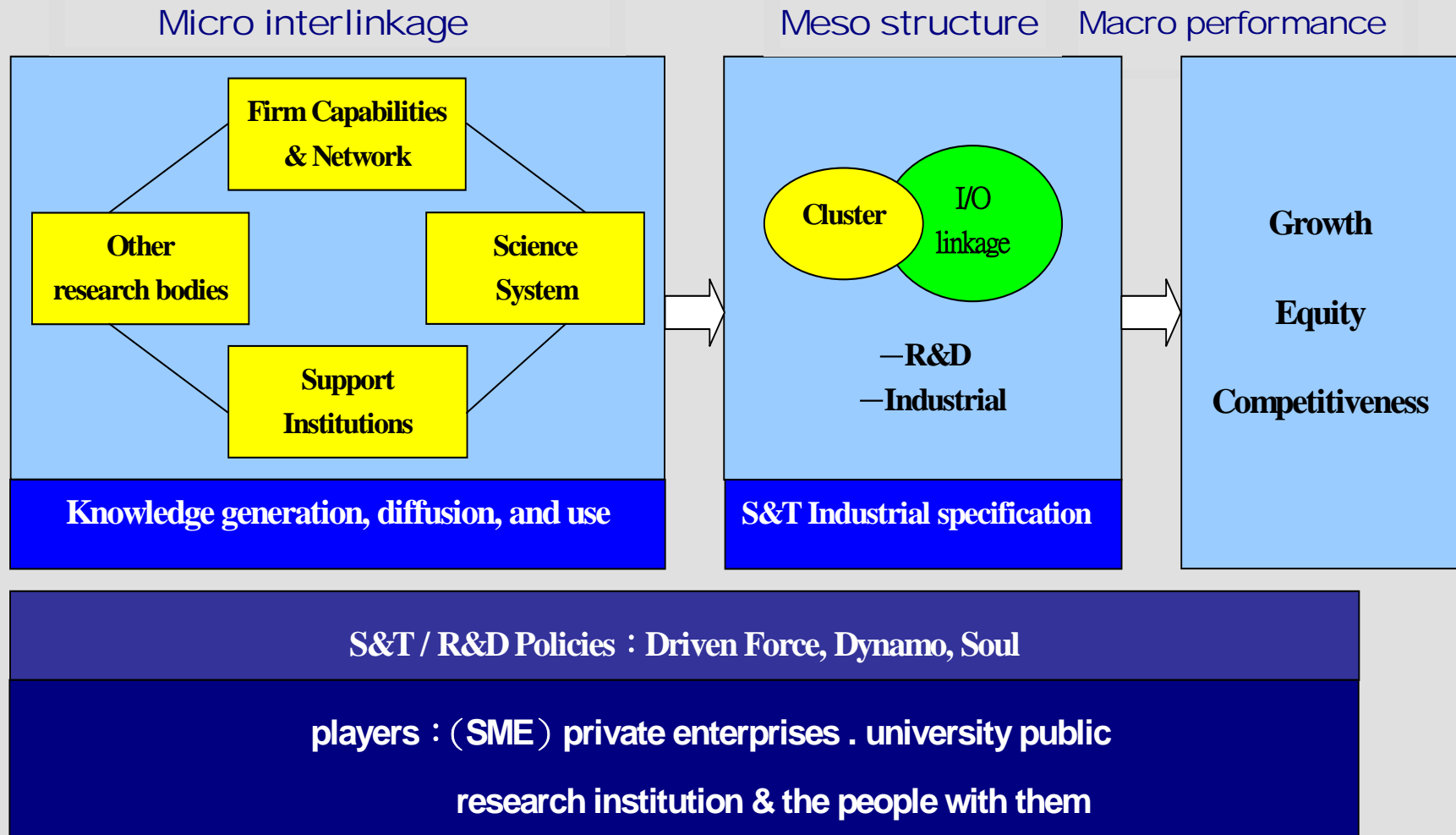
How to improve the innovation capacity?

- 1992** Lundvall – NIS “is a social organization & behavior and relationship among them are located within or rooted inside borders of a national state and that interact in the production, diffusion, and use of new and economically useful knowledge.”
- 1993** Nelson – NIS “is a set of elements of knowledge institutions whose interaction determine the innovative performance of national firms”
- 1995** Christopher Freeman — NIS
- 1980s ~ 1990s** NIS – innovation policy in its infancy
R&D System is mature
- 2000s** KBE NIS – Mature system

Innovation in a system context

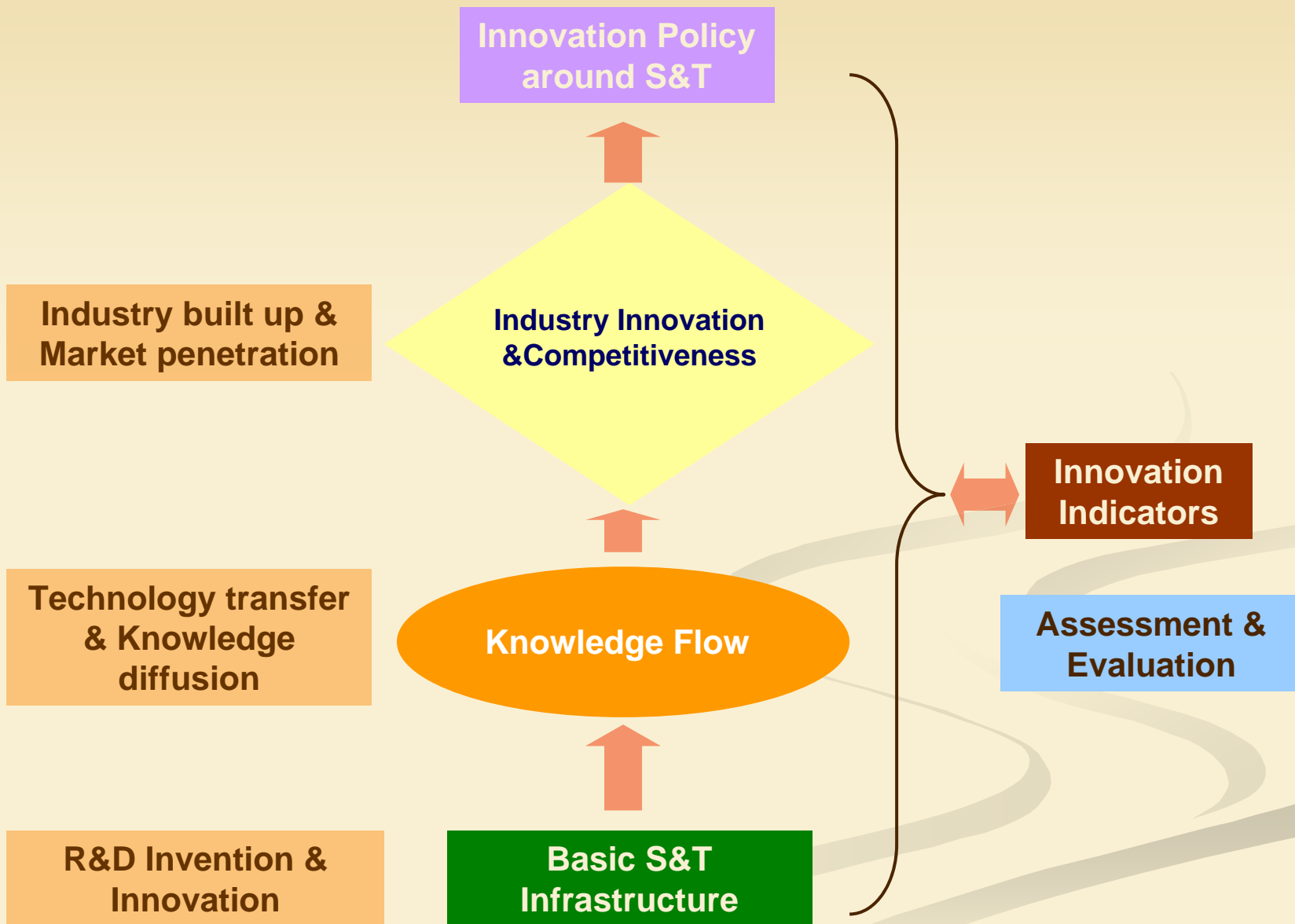
- ◆ It rests on the capacity to learn, to create, and to use knowledge
- ◆ It is pervasive
- ◆ It is based on collaboration, interactive learning, and flow of knowledge

NIS — (OECD Model)



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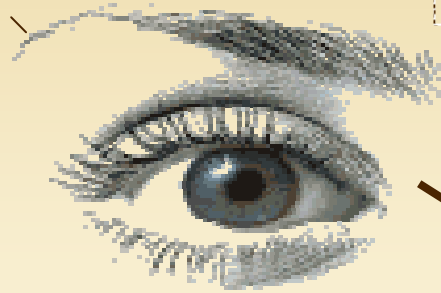
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NIS is

- ◆ a conceptual framework
- ◆ a real running system

Firm's View



Innovation

Technology substitution (TFT LCD → CNT FED)

Product substitution (Typewriter → PC)

**Continuous Innovation
3rd Generation of R&D**

+

**Discontinuous Innovation
4th Generation of R&D**

Convergent Thinking

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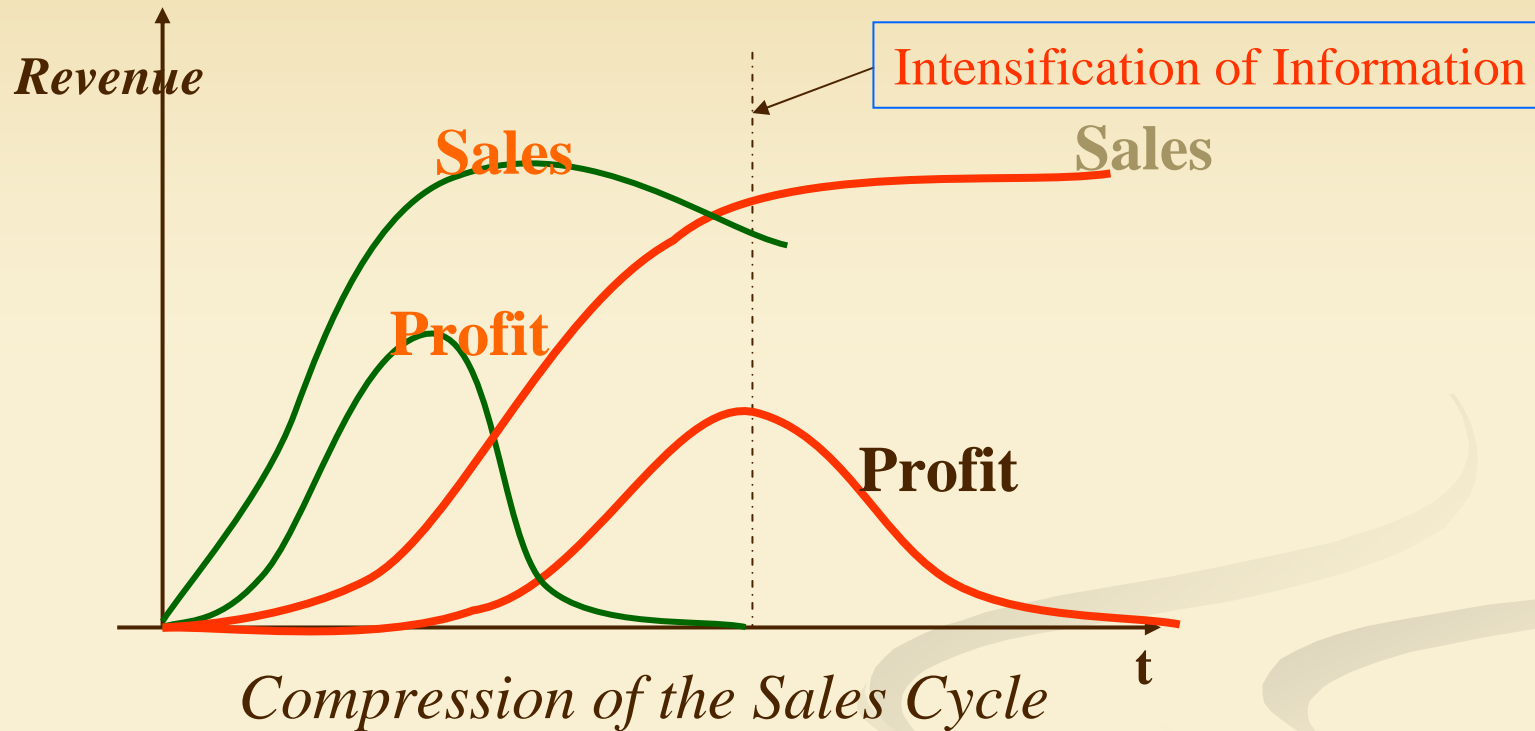
Divergent Thinking

Business “process” focused on “Innovation”

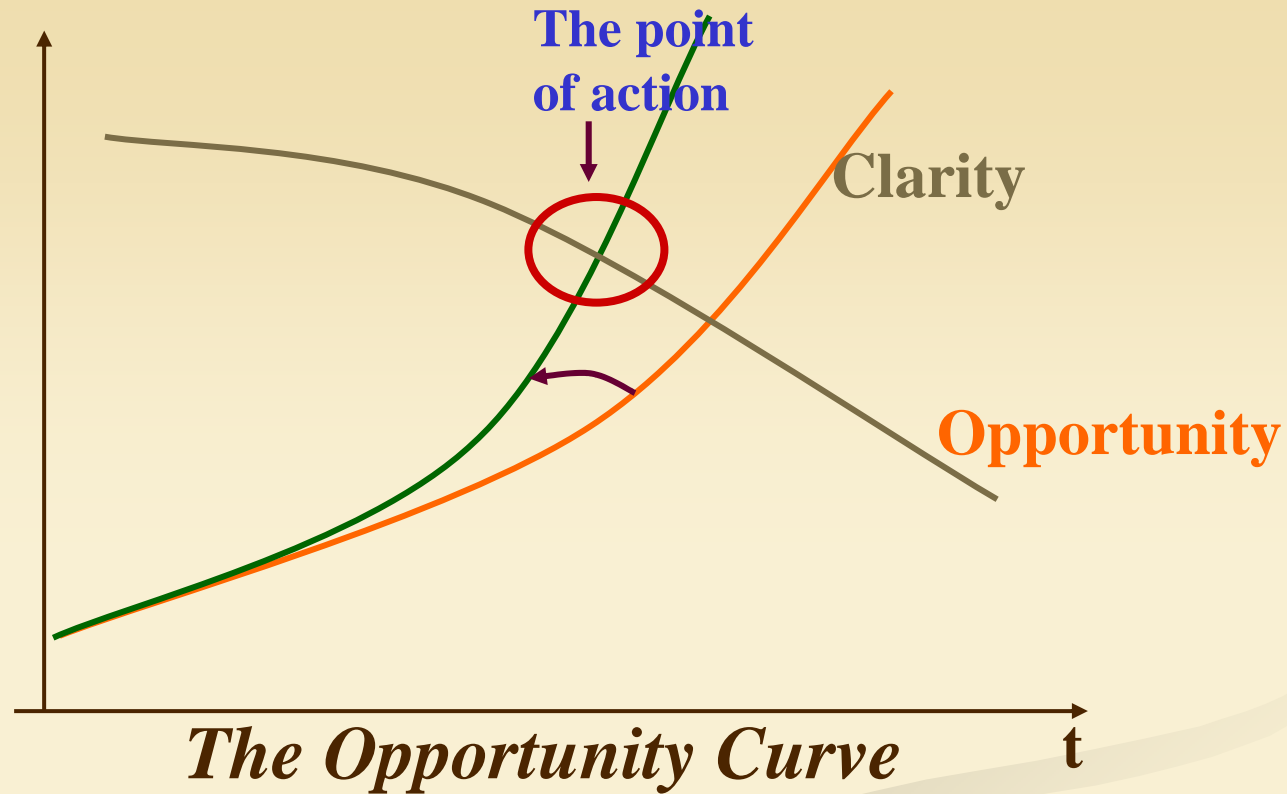
rather than

Business “structure” focused on R&D, Tech.
Development & product/service Development

Innovation Strategic Planning?



- ~ To shorten the time to market the new products, and even make profits earlier*
- ~ How?*
- ~ Strategy 1*



Innovation and R&D

3rd R&D: continuous innovation



4th R&D: Continuous and discontinuous innovation



How to manage
"knowledge"

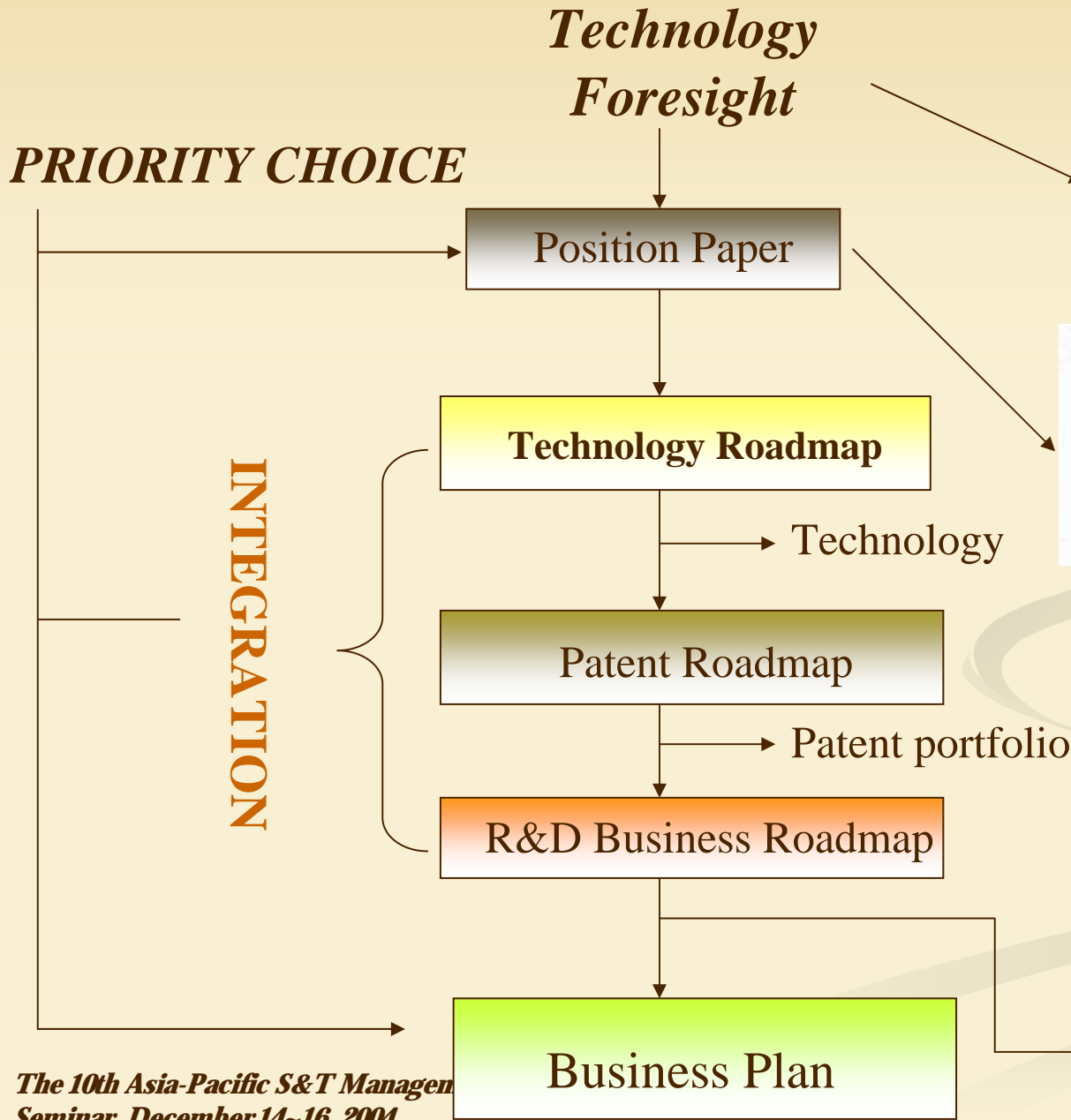
Strategy 2: *How to achieve clarity earlier?*

Opportunity remains substantial and attractive

Strategy 3:

- ◆ Comprehensive methodology should be developed
- ◆ Identify the core tech's of the firm
- ◆ Integration & Fusion of tech's
- ◆ Tech's platform for products

Methodology for Commercialization of Hi-tech



Nanotechnology:
The Technology for the 21st Century
Vol. I Summary Report of a Foresight Project

5.4 Nanostructured Materials (Chinese Taipei)

Prepared by Science and Technology Information Center (STIC), National Science Council, Chinese Taipei.

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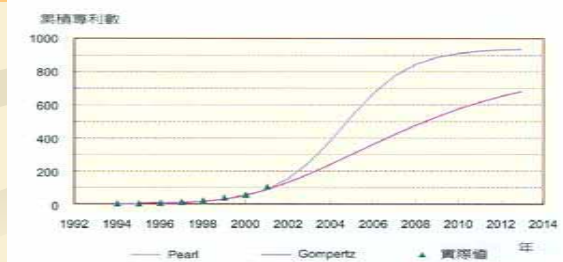
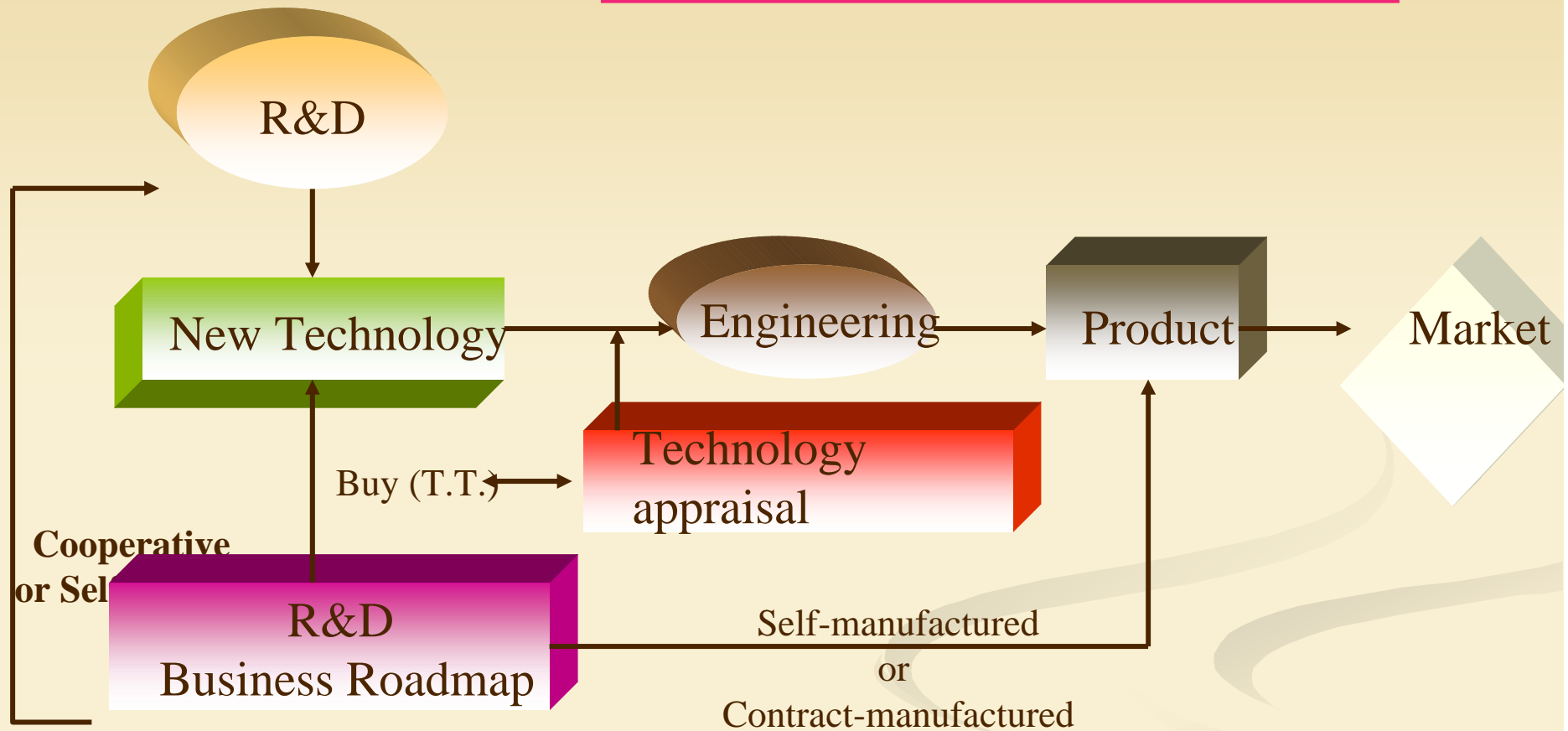


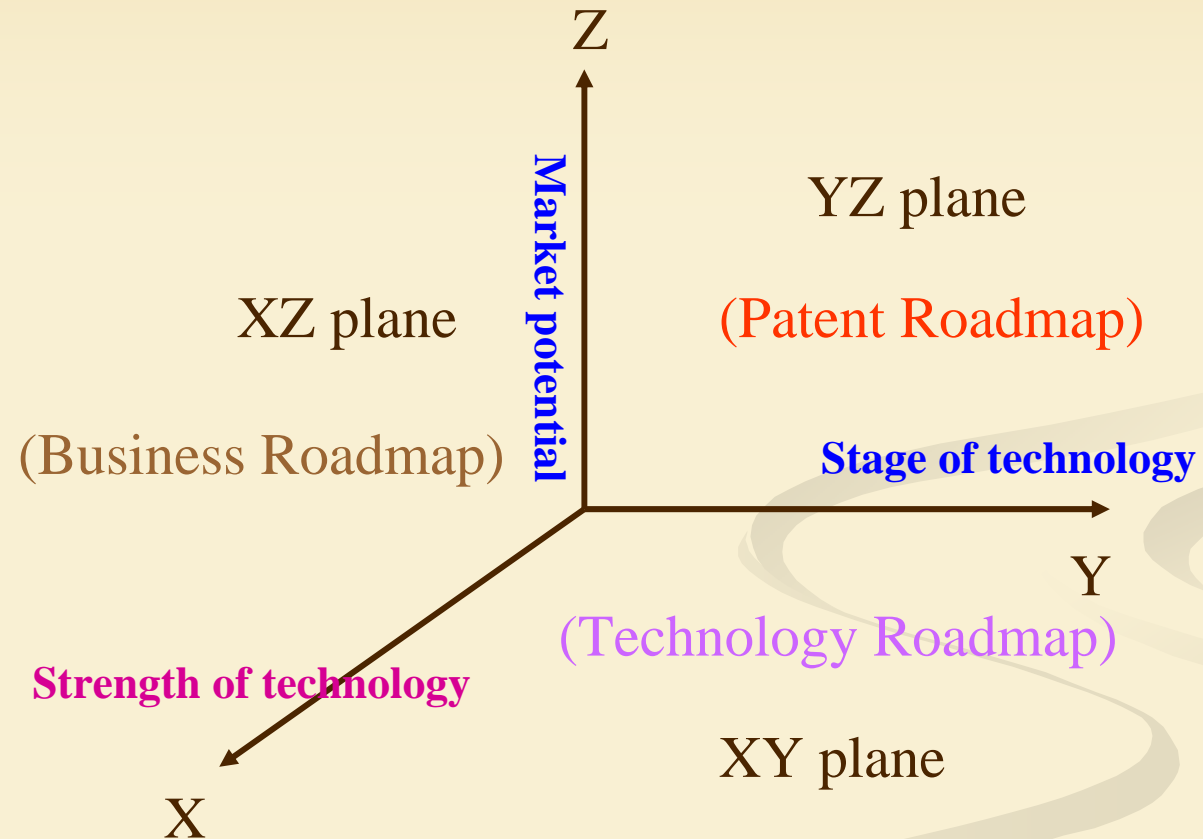
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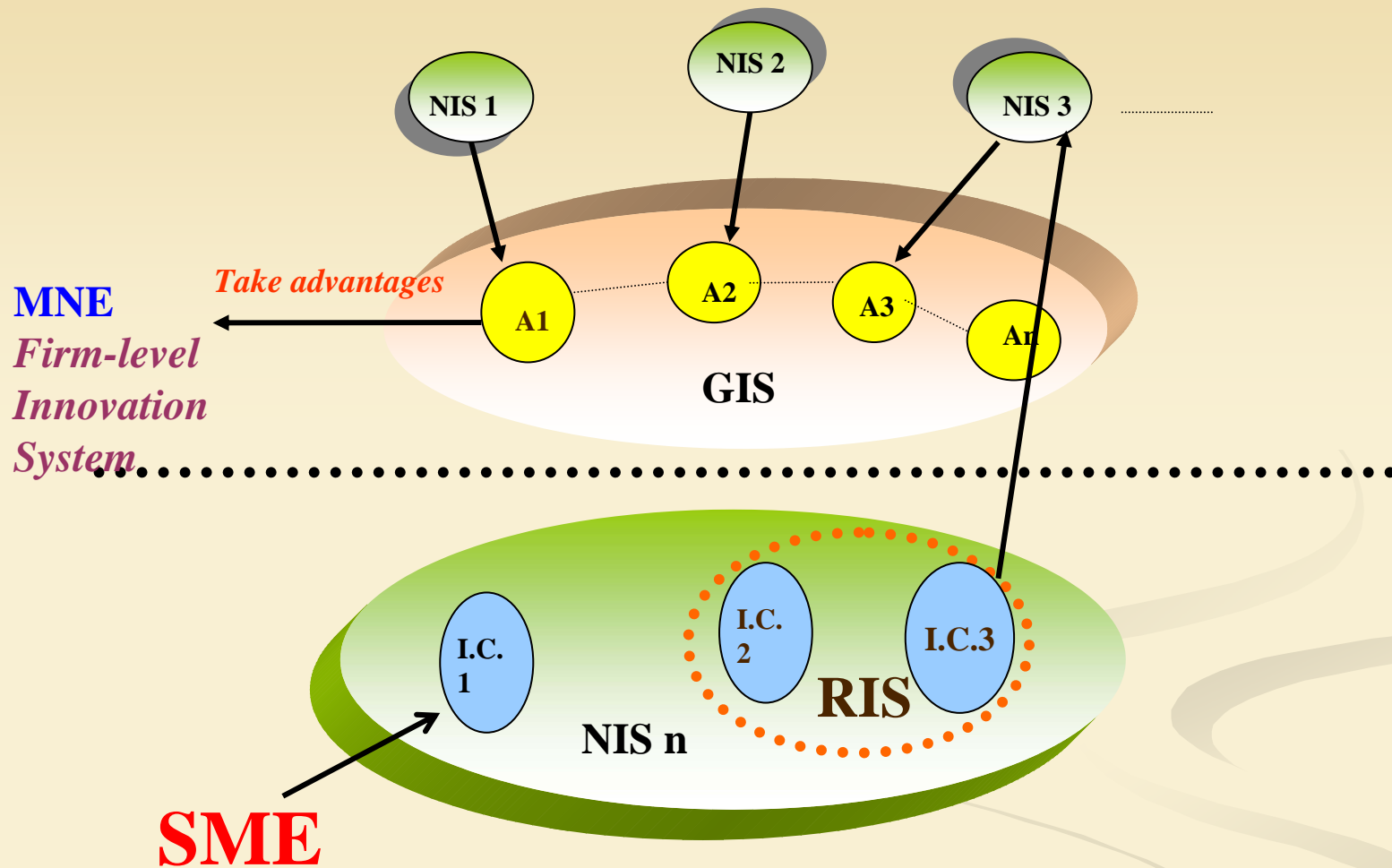
R&D Business Roadmap



- *Investment in technology development*
- *Technology appraisal*
- *Timing chosen*
- *Manufacturing issue (raw material - product?)*
- *Marketing*

Three Dimensional Vision of Technology

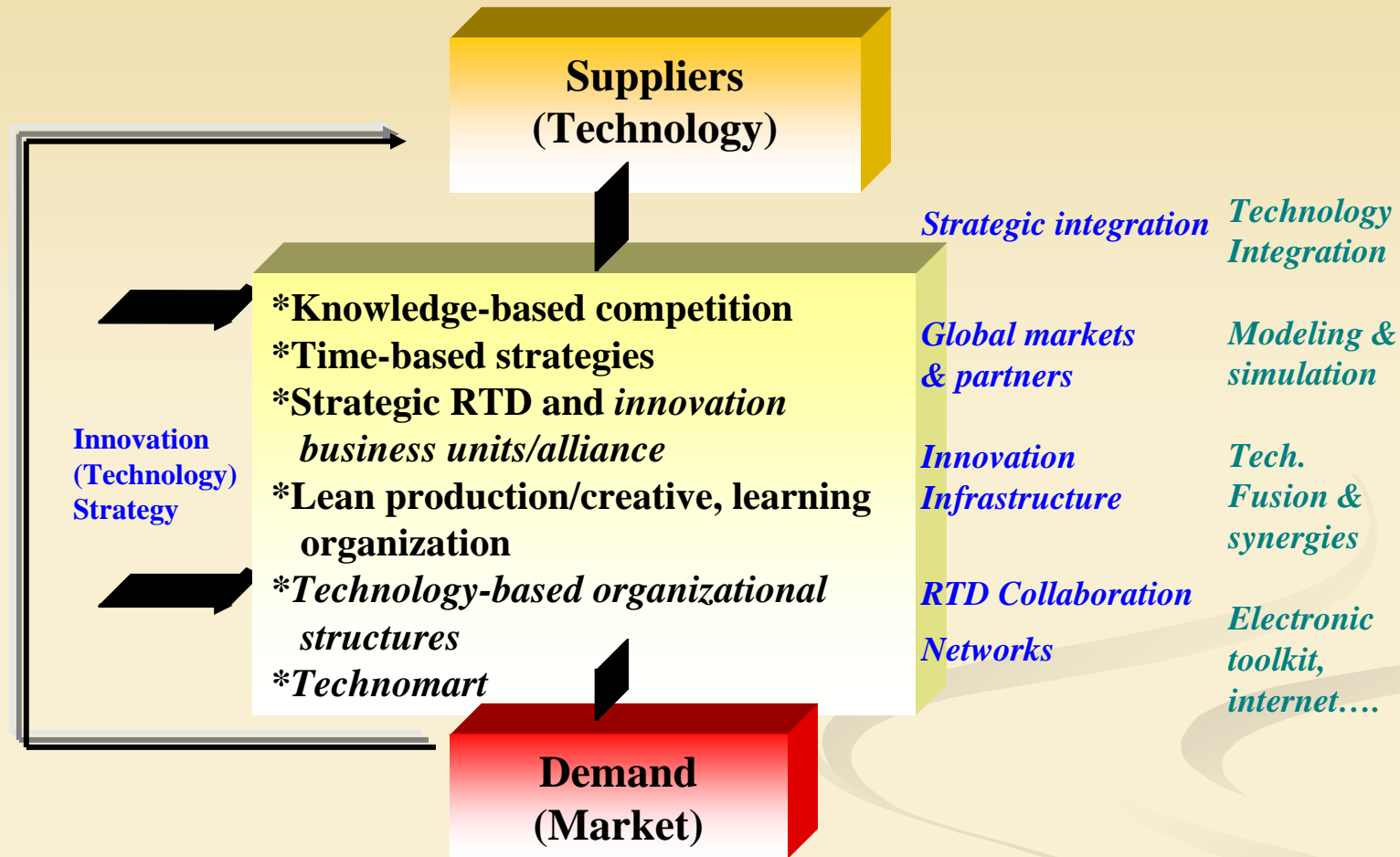




Conceptual approaches to show how MNE benefits from GIS and SME from NIS

Characterization of Innovation Cluster

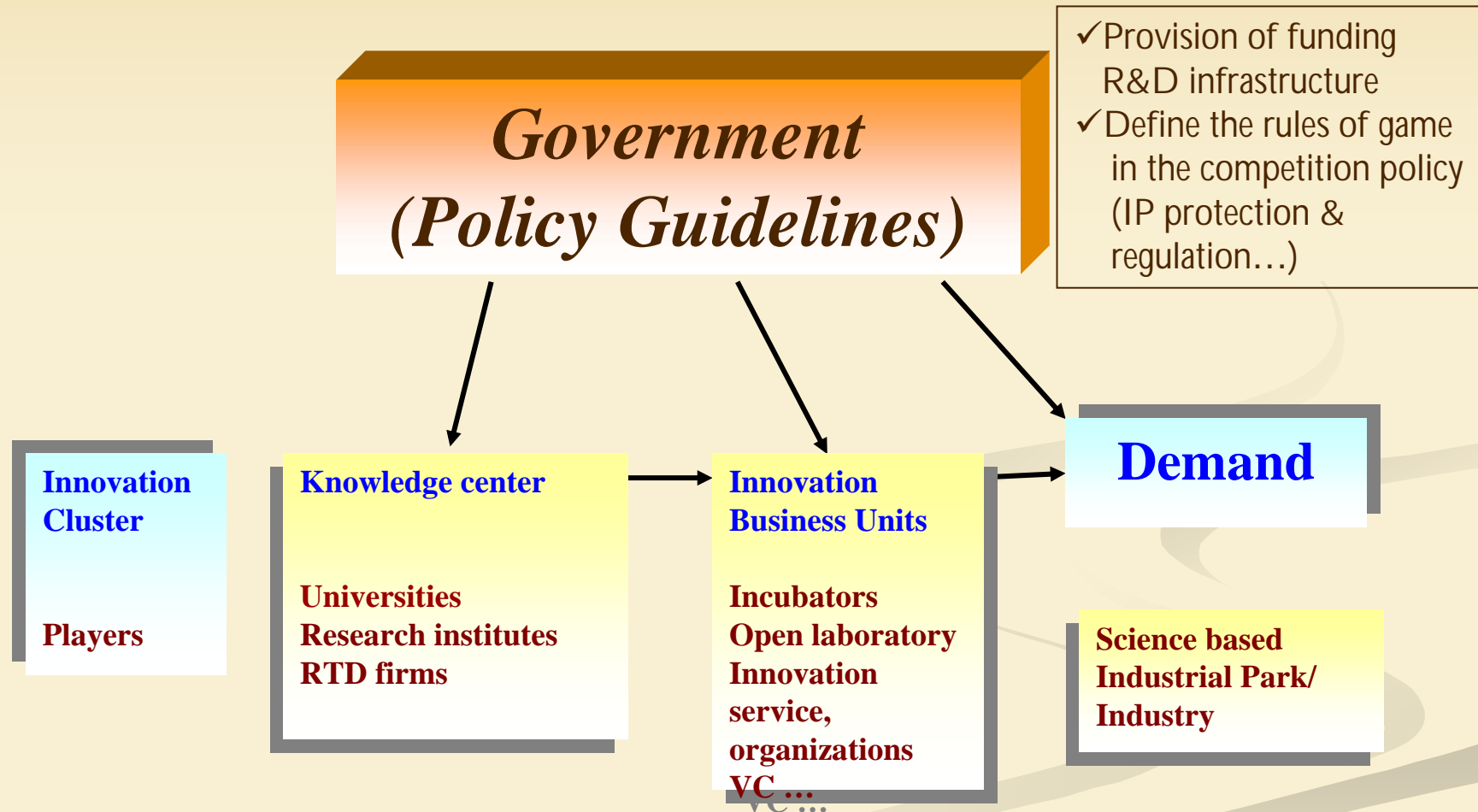
- ◆ ***The Era of Knowledge based economy***
 - ~ *University, GRI and private RTD company to form “knowledge center” of innovation cluster*
- ◆ ***Globalization***
 - ~ *“Internationalization” character of innovation cluster*
- ◆ ***E-age***
 - ~ *Networking and strong interaction among the members of innovation cluster*
- ◆ ***Time-based strategies***
 - ~ *Innovation cluster should have the “dynamic” characteristic*
- ◆ ***The impact of nanotechnology***
 - ~ *It offers an opportunity for the “later-comer” reshuffle*



The modified 5th generation thinking of innovation process
from R. Rothwell and M. Dodgson

*These could be an R&D institute, an RTD division within a company, or an R&D company itself.

A Model for Innovation Cluster



Conclusion

- ◆ Innovation cluster expect to be formed in KBE & as the core element of NIS
- ◆ For firm's innovation, innovation is the linkage between market & technology, innovation is driven by market
 - ~ Dynamic strategy for shortening the sales cycle
 - ~ To make the action point with high opportunity at the earlier time
- ◆ A systematic & analytical method has been developed to make the innovation strategy more "appropriate"



***Thank you very much
&
Merry X'mas***