



New Trend of Cooperation between Industry and Research in China

Prof. Dr. Mu Rongping

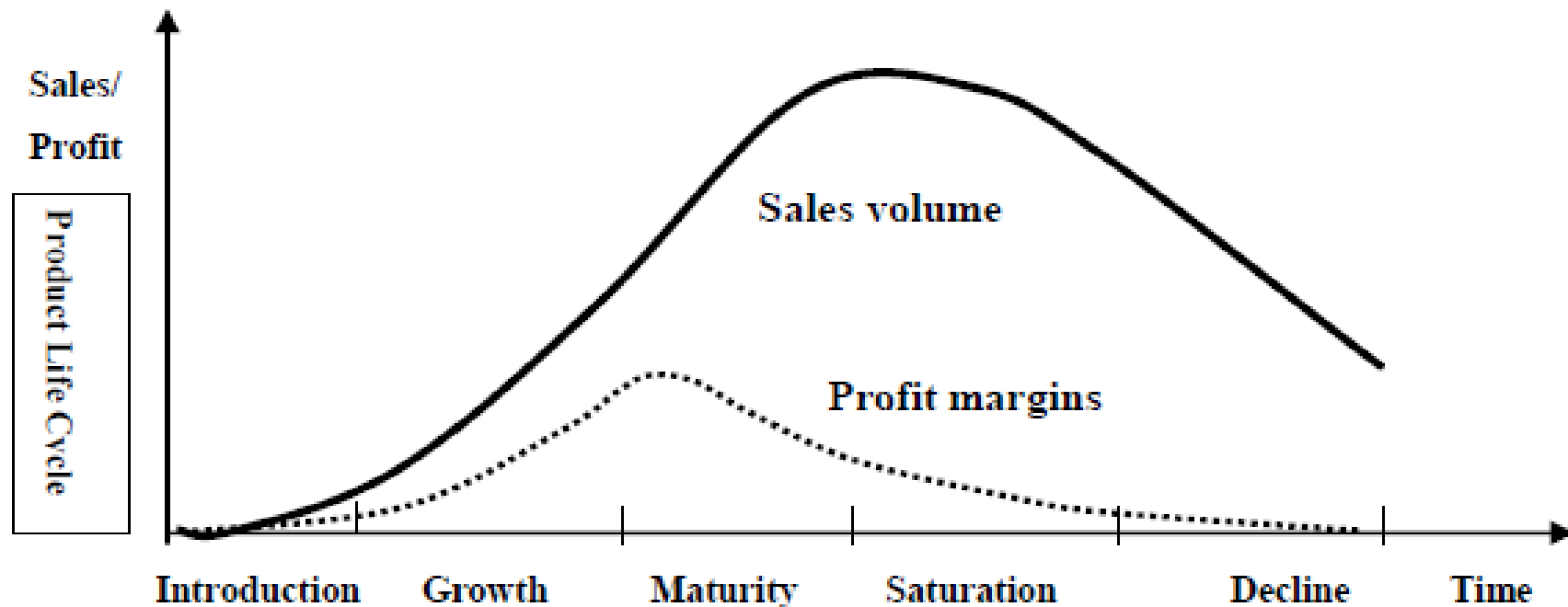
Director-general, Center for Innovation Development, CAS

President, Chinese Association of Science of Science and S&T Policy

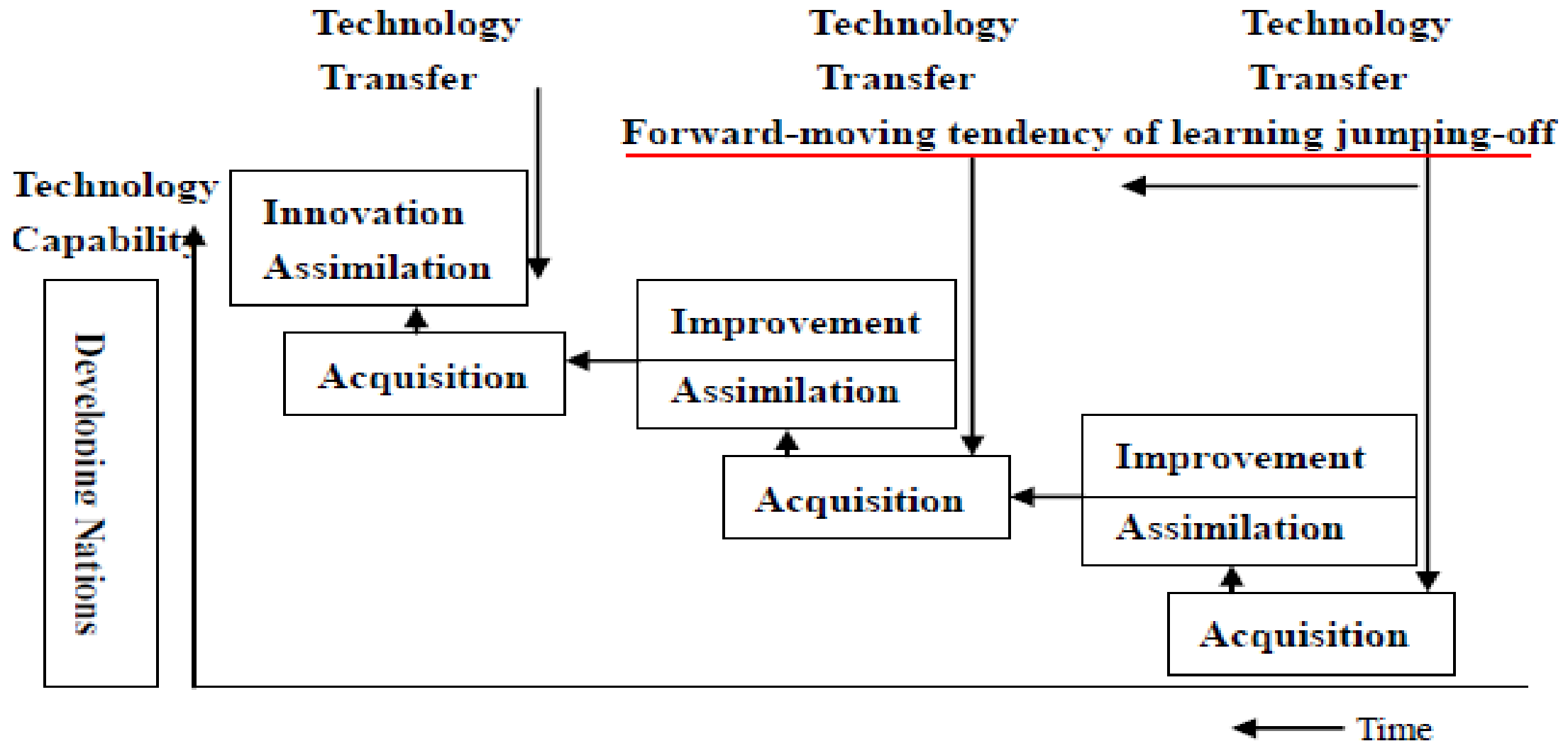


I. Cooperation Pattern Is Changing

- Interface From decline stage moving to maturity, growth stage
- From production technology moving to labs' technology
- From simple technology moving to complex product technology.
- From technology transfer moving to Innovation Entrepreneurship
- From Joint Technology Development moving to Innovation Capacity-building



The Interface of Technology Transfer Is Moving Up

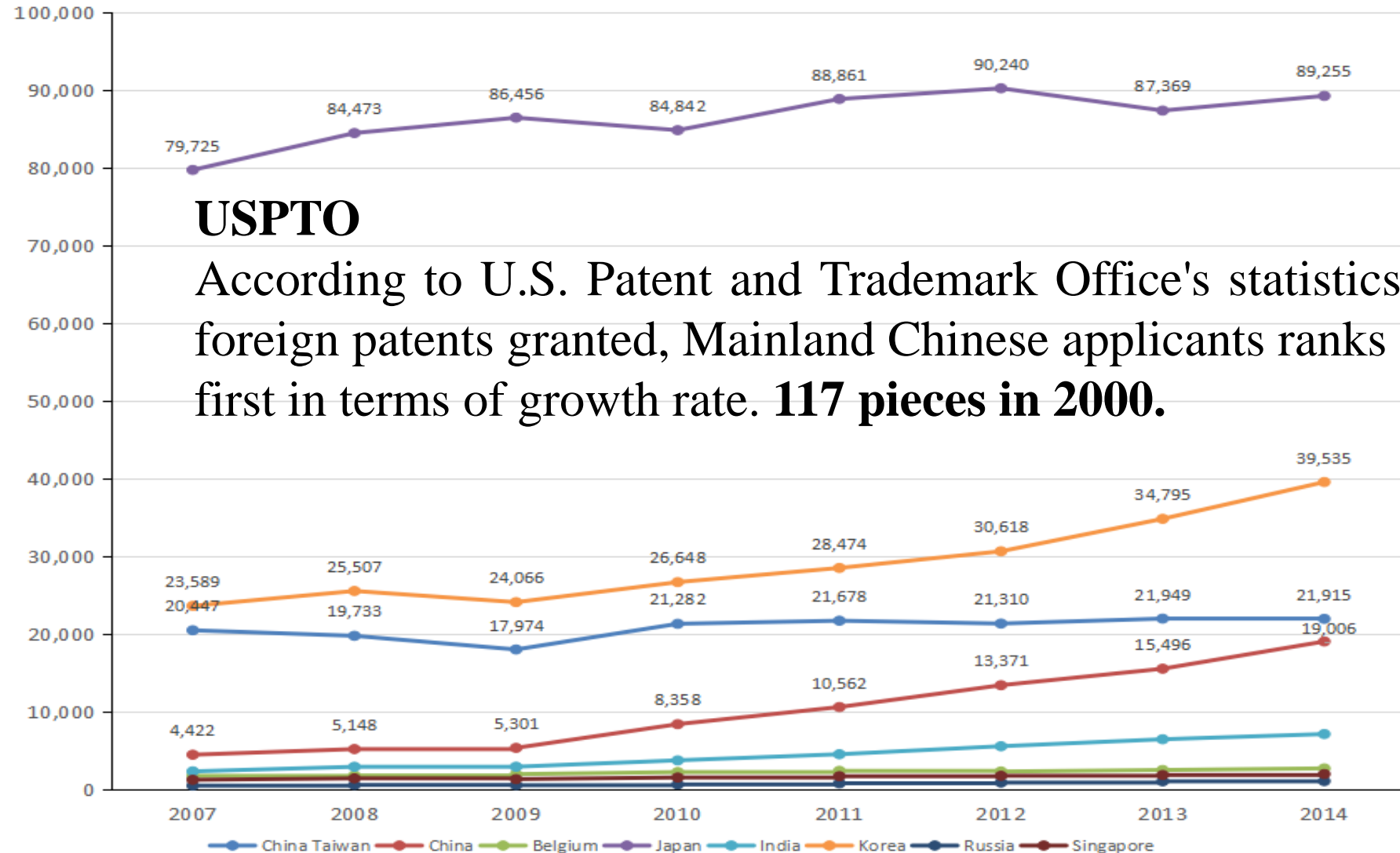


Evolution of Technological Capability in Developing Countries

Innovation capacity-building is successful

USPTO

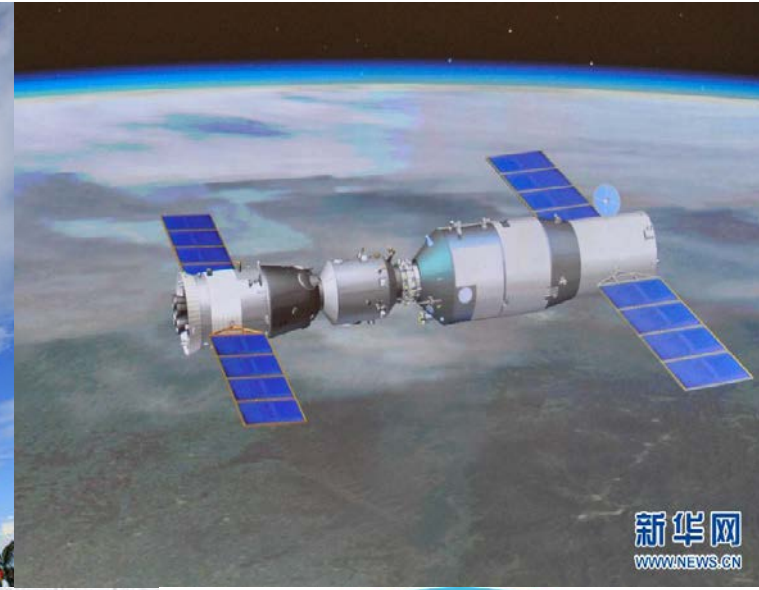
According to U.S. Patent and Trademark Office's statistics of foreign patents granted, Mainland Chinese applicants ranks the first in terms of growth rate. **117 pieces in 2000.**



I. Cooperation Pattern Is Changing



Sunway TaihuLight



	Site	Architecture	Computer	Country	Cores	Power
1	National Supercomputing Center in Wuxi	NRCPC	Sunway TaihuLight NRCPC Sunway SW26010, 260C 1.4GHz	China	10,649,600	93
2	National University of Defense Technology	NUDT	Tianhe-2 NUDT TH-VB-FEP, Xeon 12C 2.2GHz, Intel Xeon Phi	China	3,120,000	33
3	Oak Ridge National Laboratory	Cray	Titan Cray XK7, Opteron 16C 2.2GHz, Gemini, NVIDIA K20x	USA	560,640	17
4	Lawrence Livermore National Laboratory	IBM	Sequoia BlueGene/Q, Power BOC 16C 1.6GHz, Custom	USA	1,572,864	17
5	RIKEN Advanced Institute for Computational Science	Fujitsu	K Computer SPARC64 Villix 2.0GHz, Tofu Interconnect	Japan	795,024	10
6	Argonne National Laboratory	IBM	Mira BlueGene/Q, Power BOC 16C 1.6GHz, Custom	USA	786,432	8.5
7	Los Alamos NL / Sandia NL	Cray	Trinity Cray XC40, Xeon E5 16C 2.3GHz, Aries	USA	301,056	8.1
8	Swiss National Supercomputing Centre (CSCS)	Cray	Piz Daint Cray XC30, Xeon E5 8C 2.6GHz, Aries, NVIDIA K20x	Switzerland	115,984	6.2
9	HLRS - Stuttgart	Cray	Hazel Hen Cray XC40, Xeon E5 12C 2.5GHz, Aries	Germany	185,088	5.6
10	King Abdullah University of Science and Technology	Cray	Shaheen II Cray XC40,	Saudi Arabia	196,608	5.5



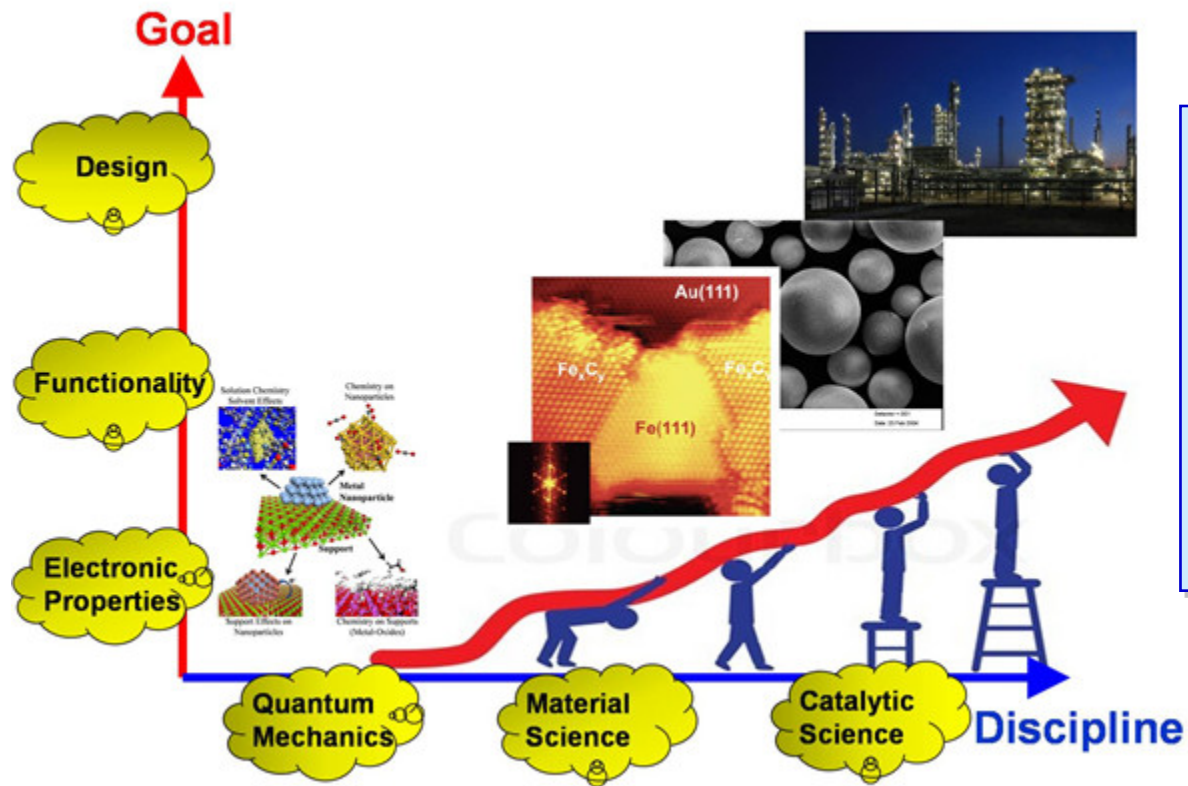
the world's fastest, most energy efficient supercomputers.

CASE one: Coal-to-liquids (CTL) technology

- Dec 21st 2016, the clean quality diesel with all indicators qualified was generated from the synfuels device of 4.0 million t/a Shenhua Ningxia Coal Coal-Indirect-Liquidation Demonstration Project based on the [Synfuels China](#) CTL Technology, which indicated that overall CTO process was put into operation.

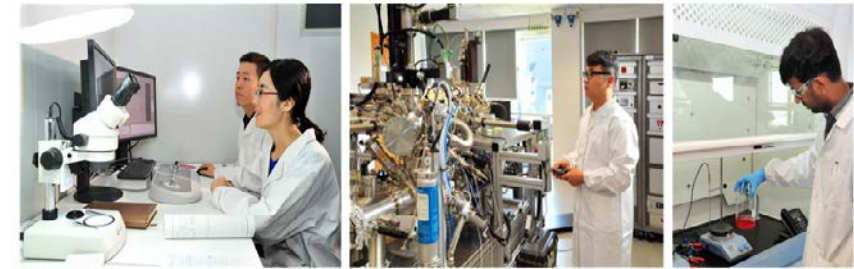
Coal-to-liquids (CTL) technology has experienced rapidly development in China during last ten years.





There are more than 900 employees in Synfuels China, and over 80% of them are engineers and technical researchers, including 47 PhD, 203 master, 18 professors, 139 associate professors & senior engineers.

中科合成油
SYNFUELS CHINA



Institute of Coal
Chemistry of CAS



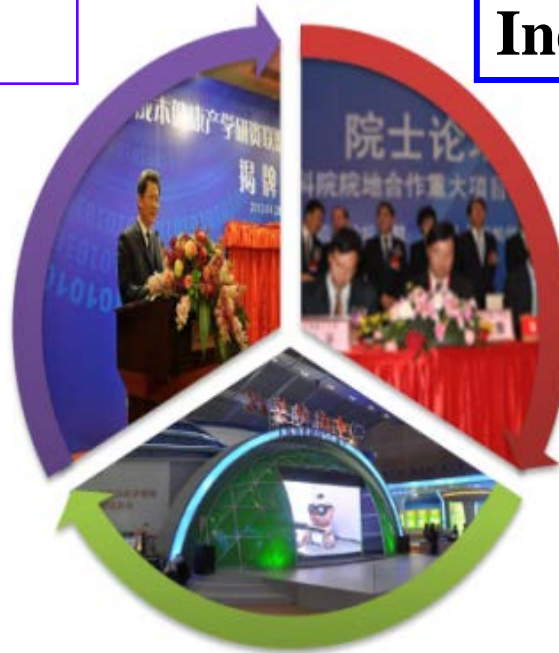
神华集团有限责任公司
SHENHUAGROUP CORPORATION LIMITED



潞安集团
LU'AN GROUP

CASE two: Shenzhen Robotics Industry

Shenzhen Robotics Association



Shenzhen Robotics Industry-Research Alliance



II. Innovation Development Policy is coming

Evolution of S&T and Innovation Policy

Science Policy



Science & Technology Policy



Innovation Policy



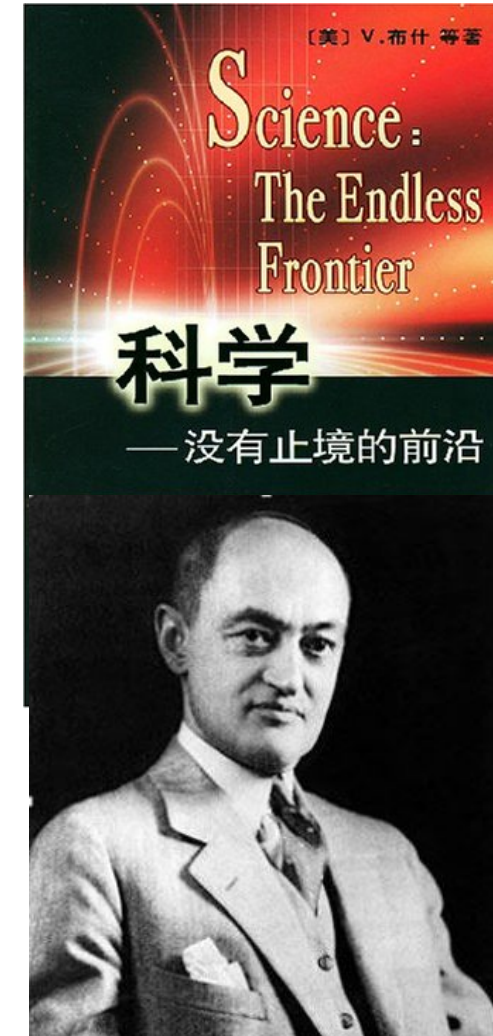
Innovation Development Policy

Discovery

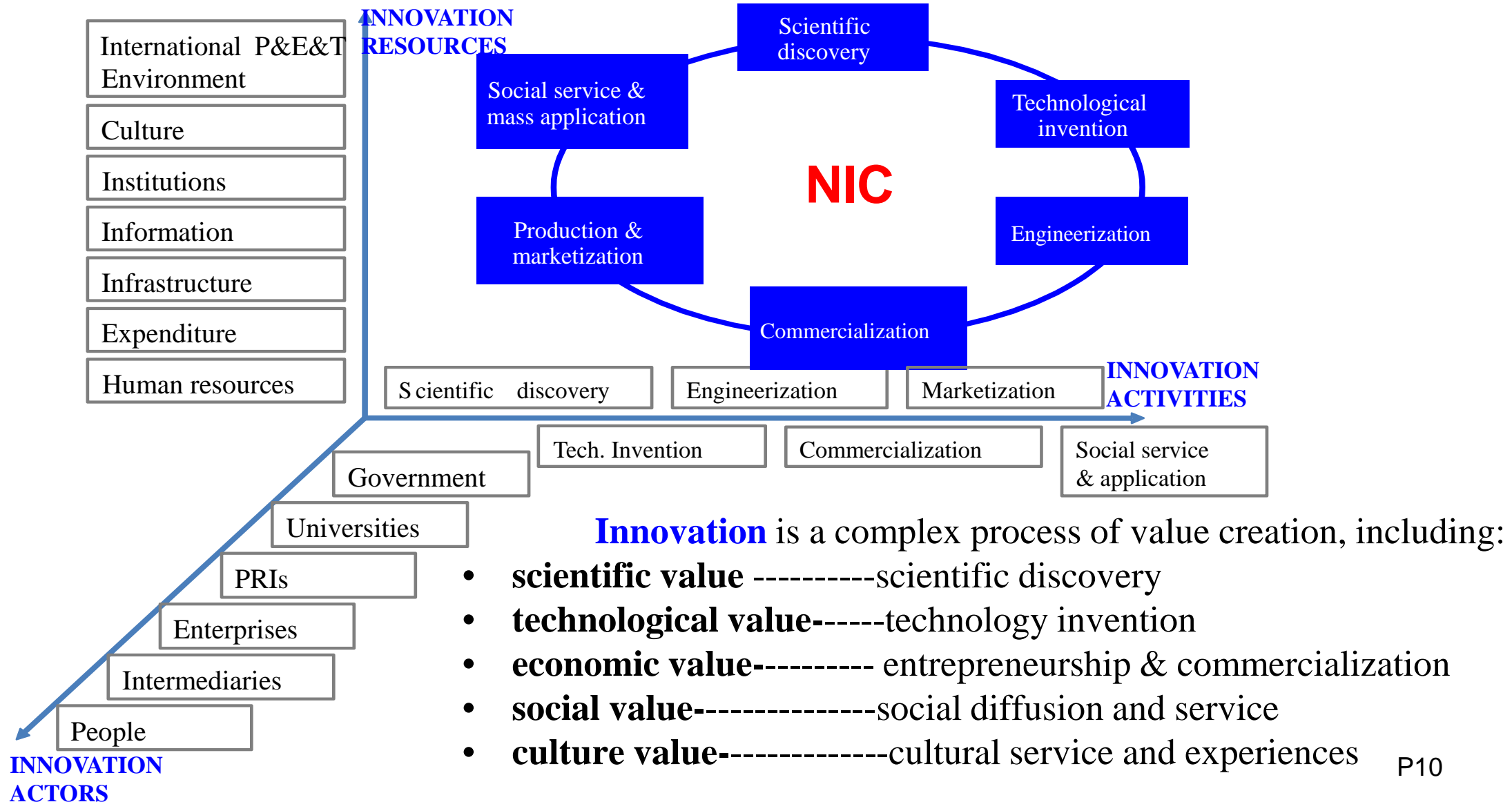
Discovery + invention

Commercialization
+ diffusion

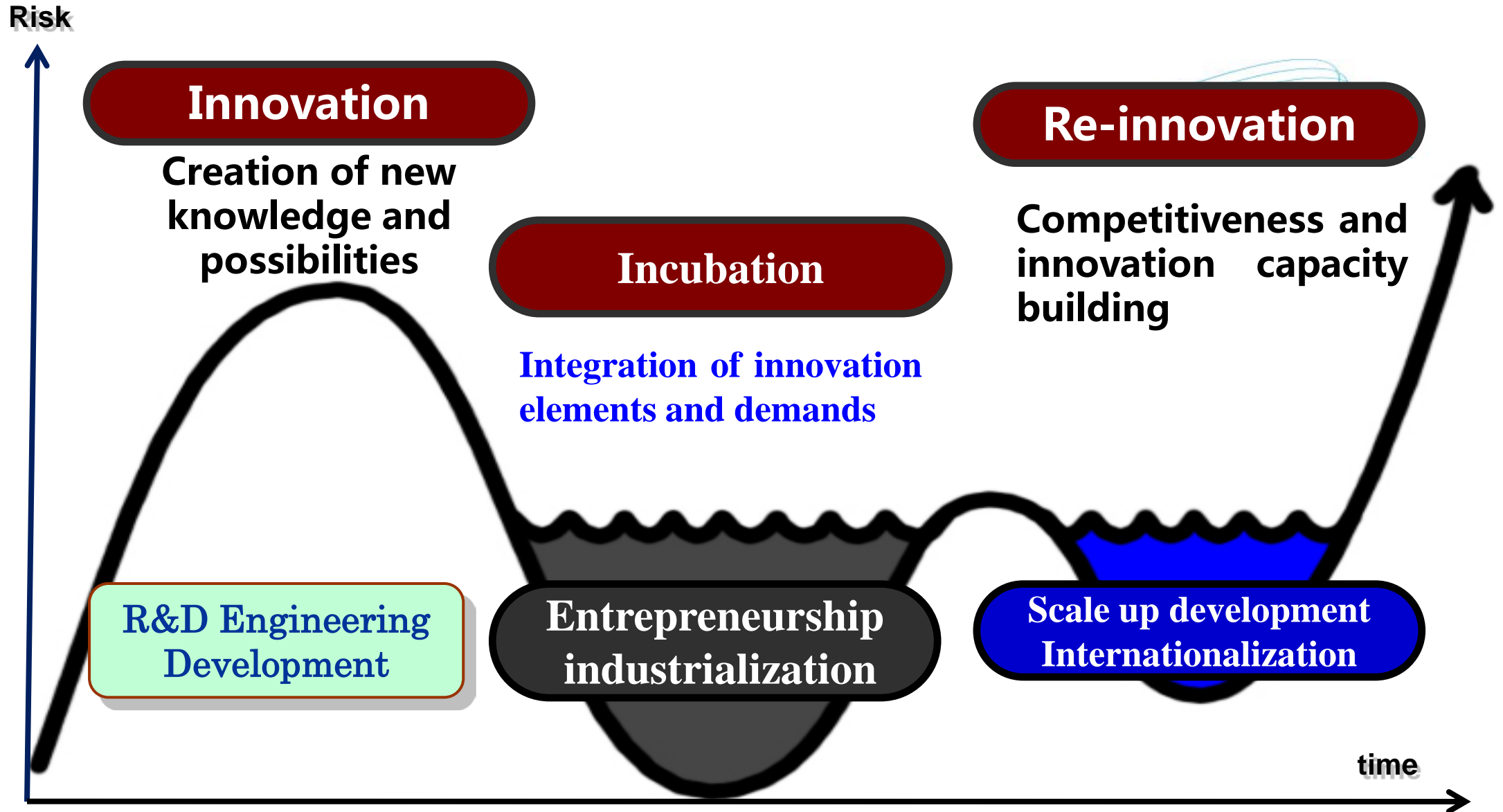
Innovation for
Development



II. Innovation Development Policy is coming



II. Innovation Development Policy is coming



II. Innovation Development Policy is coming

Pilot Area of Comprehensive Innovation & Reform

to remove institutional hurdles of innovation driven development by means of systematic, comprehensive and coordinated reform so as to achieve transformation of innovation driven development.

- 8 areas including Shanghai, Guangdong, Anhui, Sichuan, Wuhan, Shenyang, Beijing-Tianjin-Hebei in 2016.
- About 172 items of pilot policies will be authorized by central government to those areas.

Trial and Improvement



Policy for Mass Entrepreneurship & Innovation

Guidelines to promote mass entrepreneurship and innovation



1

System and
Mechanism



5

Entrepreneurial
services



2

Fiscal and
taxation



6

Innovation and
entrepreneurship
platform



3

Finance markets



7

Returning
personnel



4

Venture capital
investment



8

Innovation and
entrepreneurship
personnel



Thank you for your attention!
mrp@casipm.ac.cn

