

# **Mechanisms to Facilitate Use- inspired Basic Research for Fostering Taiwan's New Industries: Mission of MOST Industry- University Advisory Committee**

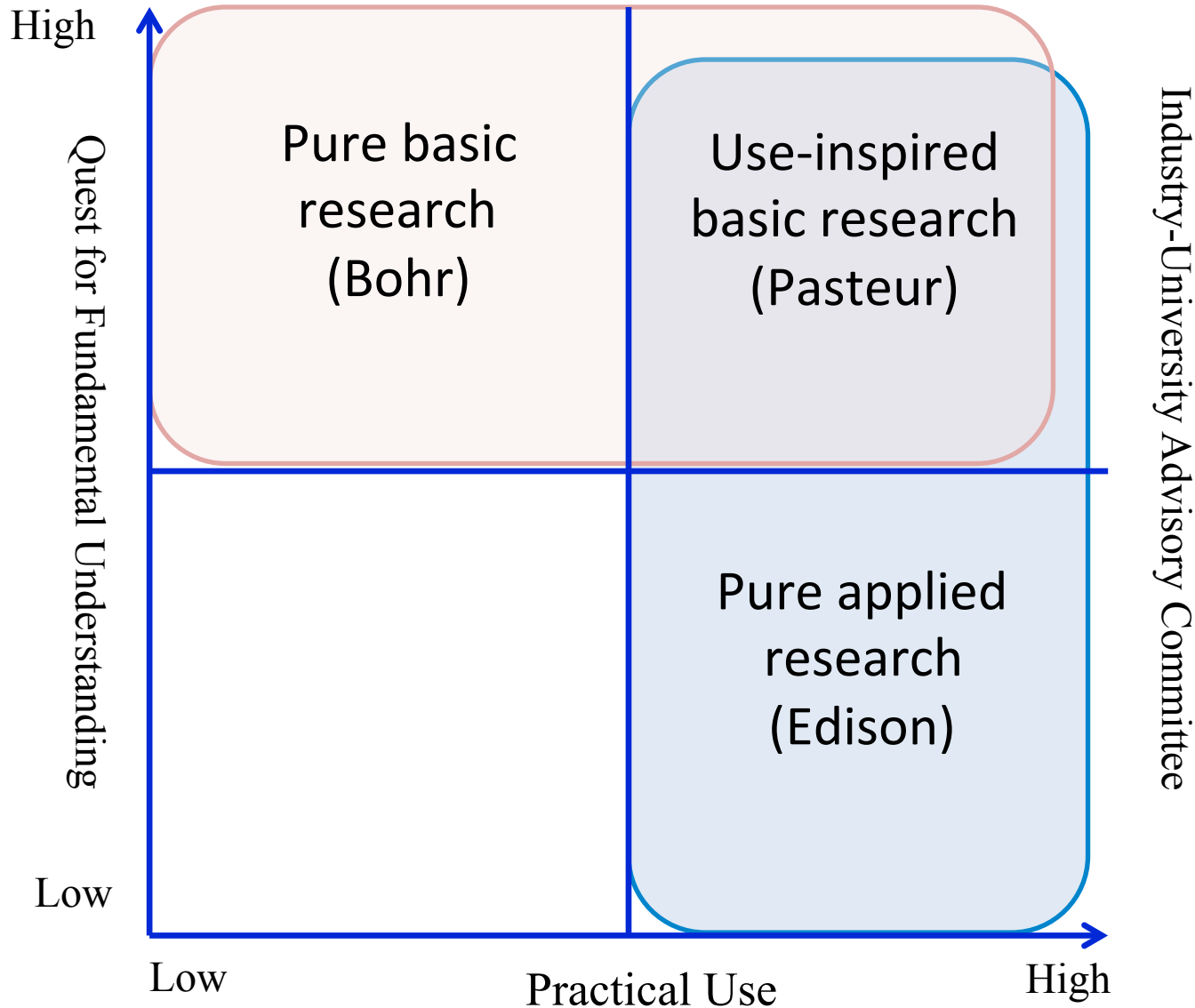
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(Revised from presentation originated by Dr. C.K. LEE)

March 2015

# Academic Research Advisory Committee vs Industry-University Advisory Committee: Pasteur's Quadrant

Academic Research Advisory Committee



# Learning From US DARPA

## Technology Development: *End-game Approach*

Research  
Teams



Research  
Teams



Research  
Teams

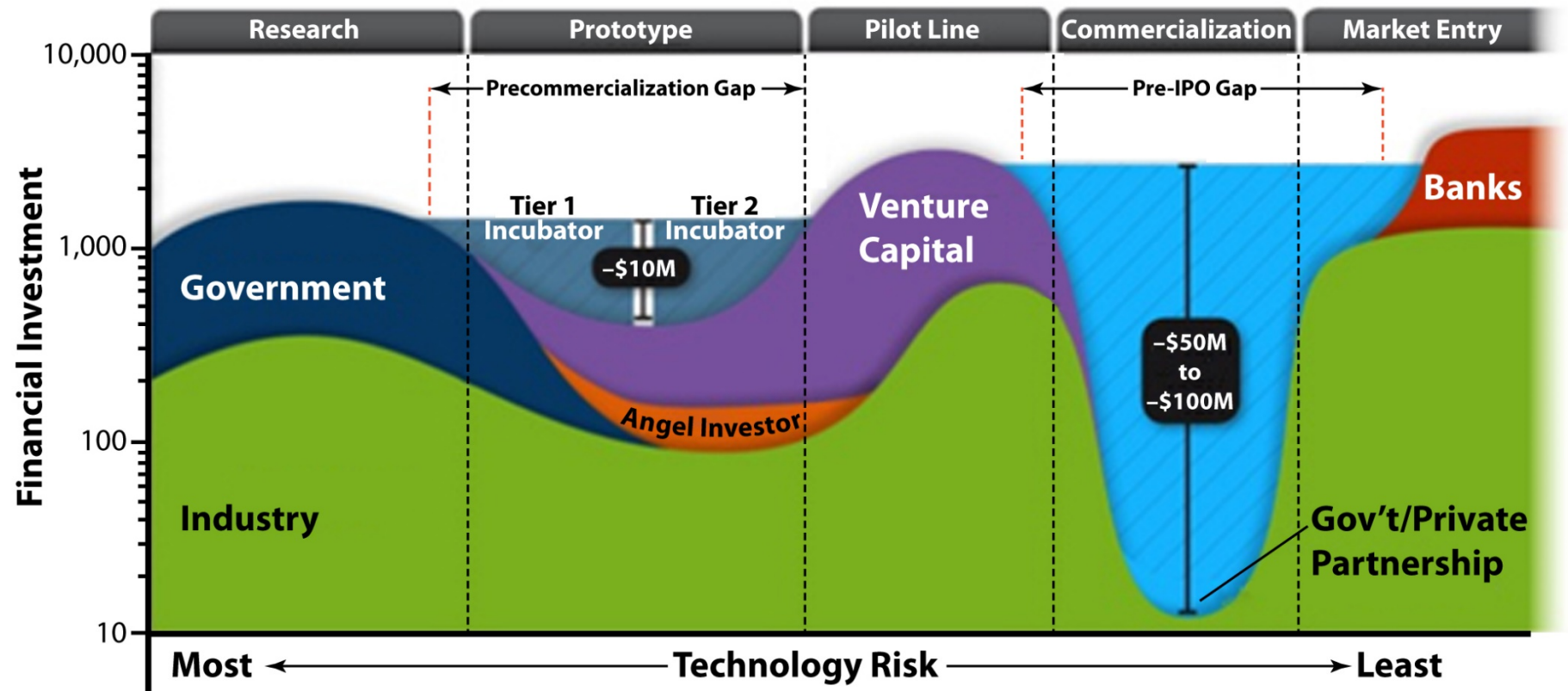
### Industry-university Advisory Committee:

1. Taking the experience of a Germination Program, systematically examine the research results of Academia. Identify cases with business potential and the corresponding unmet needs so as to promote business and technology advancing strategies and achieve enterprise values.
2. Adopt the program management model of DARPA, i.e. change from “monitoring mode” to “management mode” and strengthen the “end point approach” to achieve better project management. The National Engineering S&T program has been chosen as the platform to explore this approach.
3. MOST will design proper mechanisms to have graduate students interact and understand the needs of enterprises and businesses with an attempt to reduce the gap between university research and industry research.

By  
ant  
coc  
technology

- Fusion of two worlds: technology and business.
- DARPA approach: formalize the fusion

# *From Academic Research to Commercialization:* Past View of Death Valley and Darwinian Sea



**Myth:** R&D can be passed down from upstream to downstream step by step. For example, academia complete the first leg of research, research institutes then take over and the commercialization is done by the enterprise.

**Comparison:** Traditionally, military research results can drip down to impact civilian application. Military research has always been executed first before civilian R&D efforts. This is a WRONG perspective for today!

**Reflection:** From R to D and then to C, the resources needed grow exponentially. The number of projects are supposed to be reduced significantly. It is not a linear process when considering R&D investment.

Ref: <http://energy.sandia.gov/?p=16113><sup>4</sup>

# *From Academic Research to Commercialization:*

Combination of TRL and Modified Death Valley and Darwinian Sea

**Research Discoveries**

**Various Level of TRL**

**Commercialization**

TRL

TRL1

TRL2

TRL3

TRL4

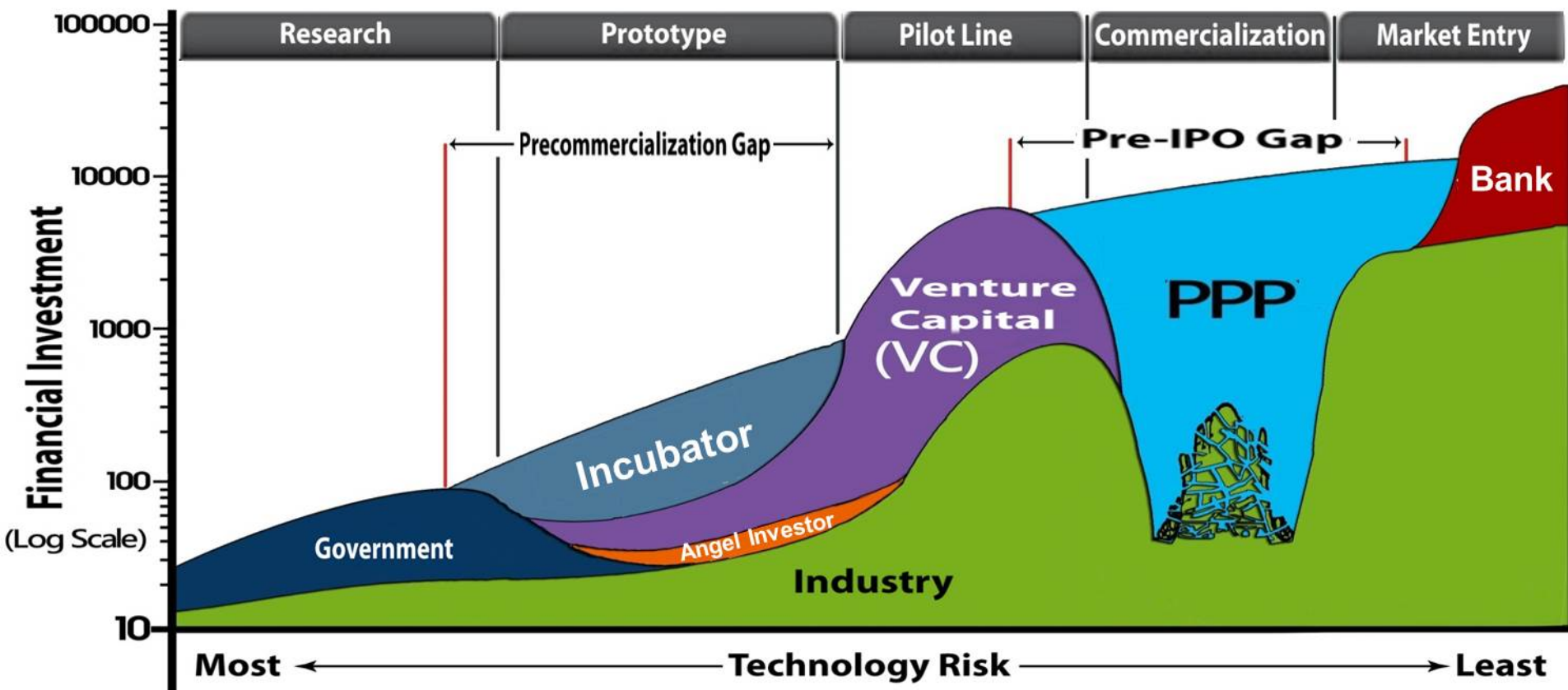
TRL5

TRL6

TRL7

TRL8

TRL9

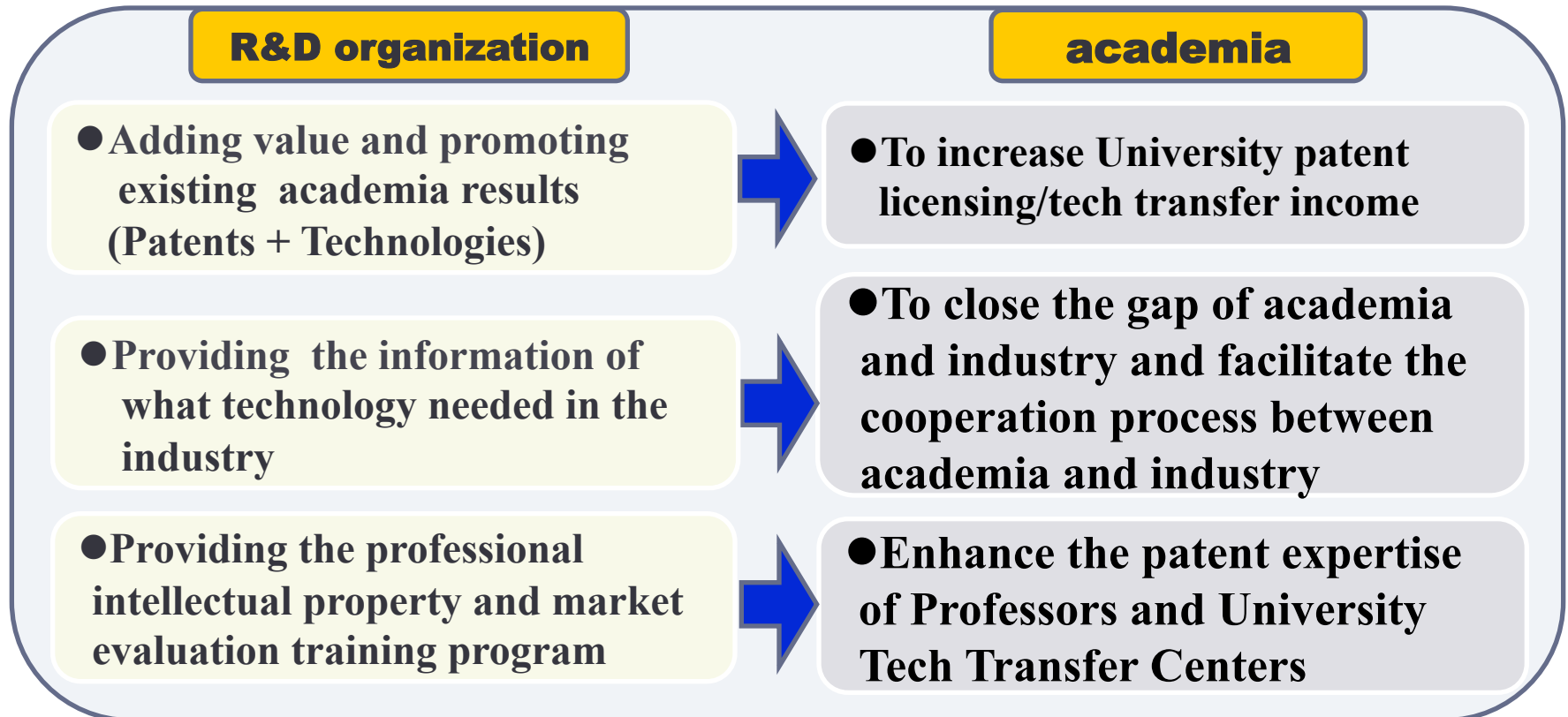


# **Measures of MOST in Promote Academia-Industry Collaboration (AIC)**

# (1) Linking Industry and Academia by Leveraging Capacities of R&D Institutes

## Goal

Create the **academia-industry collaboration model** by leveraging **R&D organization's capacities, experience** and **networking** from the industrial sector, and facilitate the industrialization process of academia research outcomes.



# (1) Linking Industry and Academia by Leveraging Capacities of R&D Institutes Framework

## Collection / Categorization

### ➤ Target:

- ✓ R&D results (in the last 3 years)
- ✓ Patents obtained (mainly those in the last 10 years)
- ✓ Patents under review

### ➤ Scope : 2011~2013

- ✓ Information and communication
- Electronics and electrical engineering
- Optical engineering
- Computer engineering - hardware
- Communication engineering
- 3 national programs (Network communication, intelligent electronics, nano technology)

## Selection / Evaluation

Value-addedness and matchmaking of R&D results

Assessment of patented results (Needs analysis)

Talent incubation in intellectual property

## Value-addedness / Potential for commercialization

Inquiry services / matchmaking

Value-addedness / technology synergy / marketing

One-on-one coaching

## Results

- Facilitating Industry - Academia collaboration
- Creating good practices
- Increasing patent incomes
- Start-up businesses
- Improving patent quality
- Training program Intellectual Property

➤ Project Office : [www.link-iac.org.tw](http://www.link-iac.org.tw)



## (2) MOST's Industry-Academia Collaboration mechanism and focus

- Developing the demo platform based on “Pilot Project Leveraging Capacities of R&D Institutes for Linking Industry-Academia Collaboration” and “MOST's R&D Results Industrialization Project in Planning & Promotion” : Creating the Academia-Industry-research Alliance to resolve the technology issues for the industry.
- Promoting “Academia-Industry Cooperation Project for Pioneering Technology (Major Academia-Industry Alliance)”: Encouraging the leading companies to create alliances and identify the research projects focusing on either pioneering, key components or basic research, and the projects could be jointly conducted by academia and industry.
- Promoting “Academia-Industry Technology Alliance Program (Minor Academia-Industry Alliance)”: Encouraging academic research to provide services to firms. The technology or knowledge developed by the academia can therefore be disseminated in the industry through the Academia-Industry Technology Alliance.
- Promoting “Pilot Project of Joint Sponsorship between academia and industry for the Ph.D. Student Incubation”: Encouraging the industry to sponsor Ph.D. research programs for at least NTD10,000/month per student, by matching the research fellowship NTD10,000/month from MOST. A revised program is being studied to upgrade the matching fund to NTD20,000/month, which could more efficiently facilitate the technology talent incubation process.

# **(3) Promoting scientific discoveries into new businesses or new industries**

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**I. Germination programs**

**II. Si<sup>2</sup>C (Supra Integration and Incubation Center):  
Change Agent & Promoter for Branding Taiwan  
Biotech**

**III. From IP to IPO(FITI)**

**IV. Nurturing Taiwan Startups**

**V. Promoting R&D results into emerging industries**

# (3)-I. Germination Programs- Introduction

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1. In 2006 the National Science Council (NSC) (the former name of MOST) launched a program called “**Foresight Taiwan**” to fund research for economic gains. The program discovered 9 high commercially potential cases of which five has been technology transferred.
2. Following the Principles of Foresight Taiwan, in 2011, the NSC launched “**Germination Programs**” to encourage students, professors, and researchers with a major discovery or invention to establish a fundable start-up and to continue supporting academic research outcomes into industrial development.
3. In 2013 the Executive Yuan approved the National Science and Technology Development Plan (2013-2016). The Germination Program (GP) had been emphasized the significance and the essential of the following impetus in the "Germination—closing the technology gap" of "Goal 4—To Bridge Academic Research and Industrial Application."

# (3)-I. Germination Programs-

## Objectives: Closing the Technology Gap

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### 1. Principles

- Promote the concurrent technology and business development of academic research outcomes to close the technology gap between discoveries and industry.

### 2. Goal

- Establish an institutionalized procedure for exploiting and prospecting industrial value of research outcomes to motivate researchers (e.g. PIs) to develop early-stage technology applications and towards commercialization.

### 3. Ideal Endpoint: **Fundable Start-up**

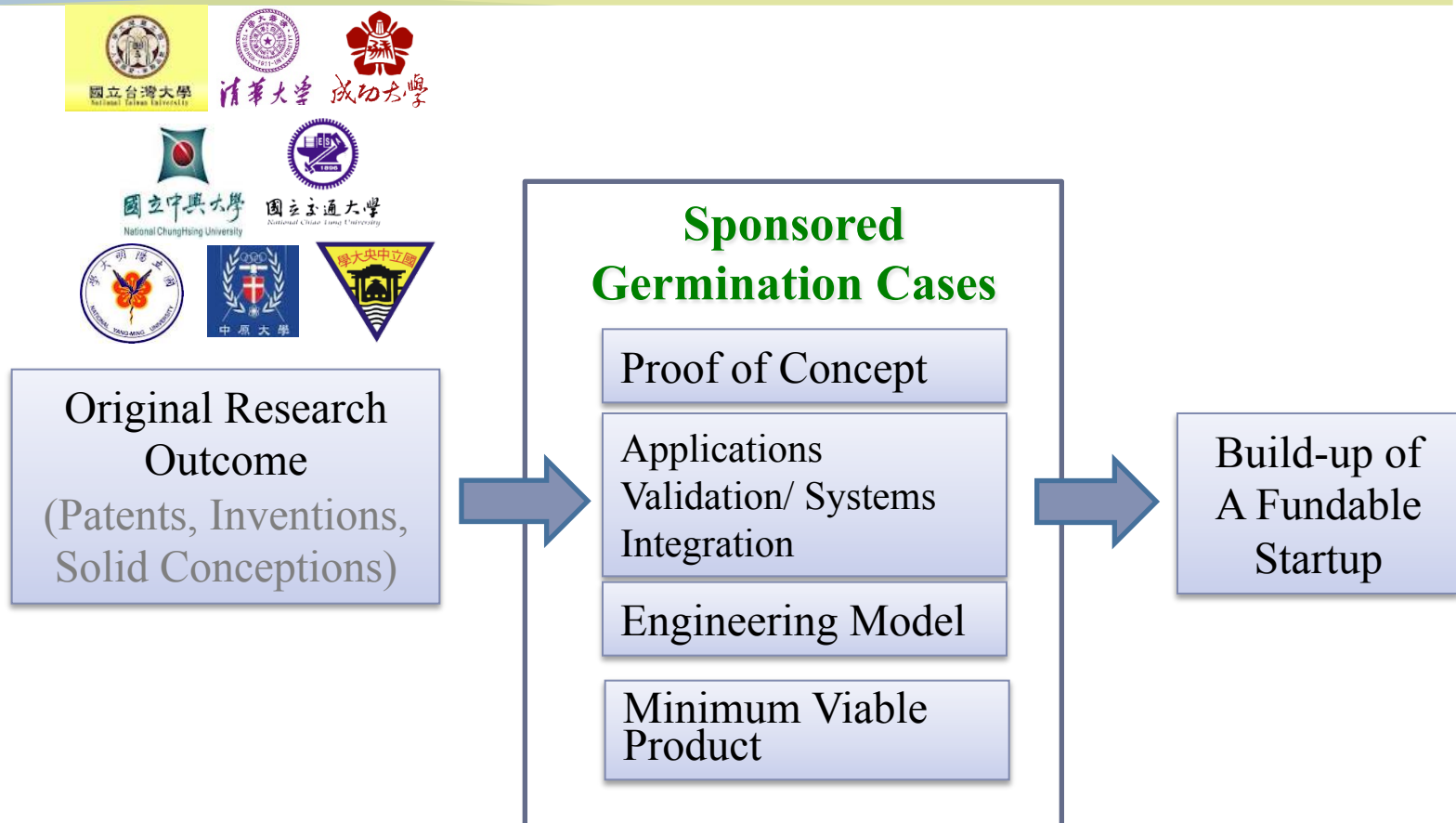
- Identify specific applications of research outcomes to raise market value and increase the probability of attracting future investment from industry.

# **(3)-I. Germination Programs- Framework & Organization Components**

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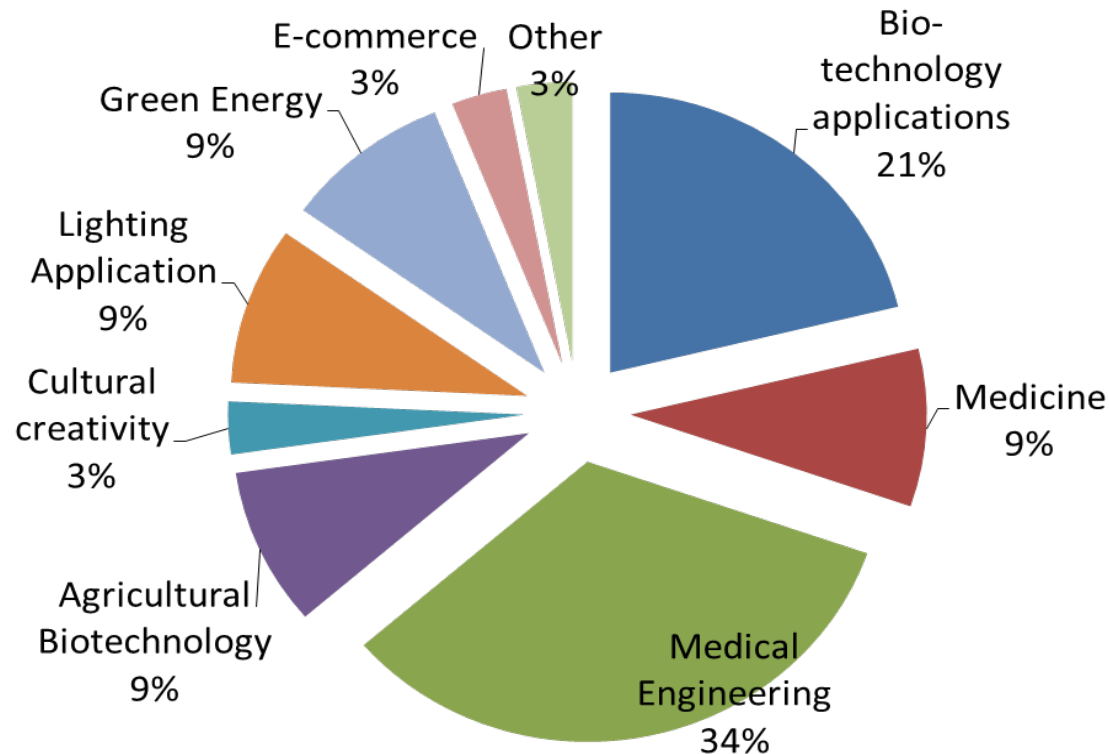
- 1. Ministry of Science and Technology (MOST)**
  - ✓ Guidance/Sponsorships/Evaluations/Grant Approvals
- 2. Review/Mentor/Grant Committees**
  - ✓ Strategic Steering/Advisory/Grant Approvals
- 3. Germination Program Office (Hosted by NARLabs)**
  - ✓ Coordination/Program Management
- 4. Functional Units**
  - ✓ Case Development/Coaching/Evaluations/Mentoring
- 5. Germination Cases**
  - ✓ Concurrent Technology and Business Development
  - ✓ Ideal Endpoint: Fundable Start-up

# (3)-I. Germination Programs- Process



**Grant: NT\$3M to NT\$10M per case**

# (3)-I. Germination Programs- Output



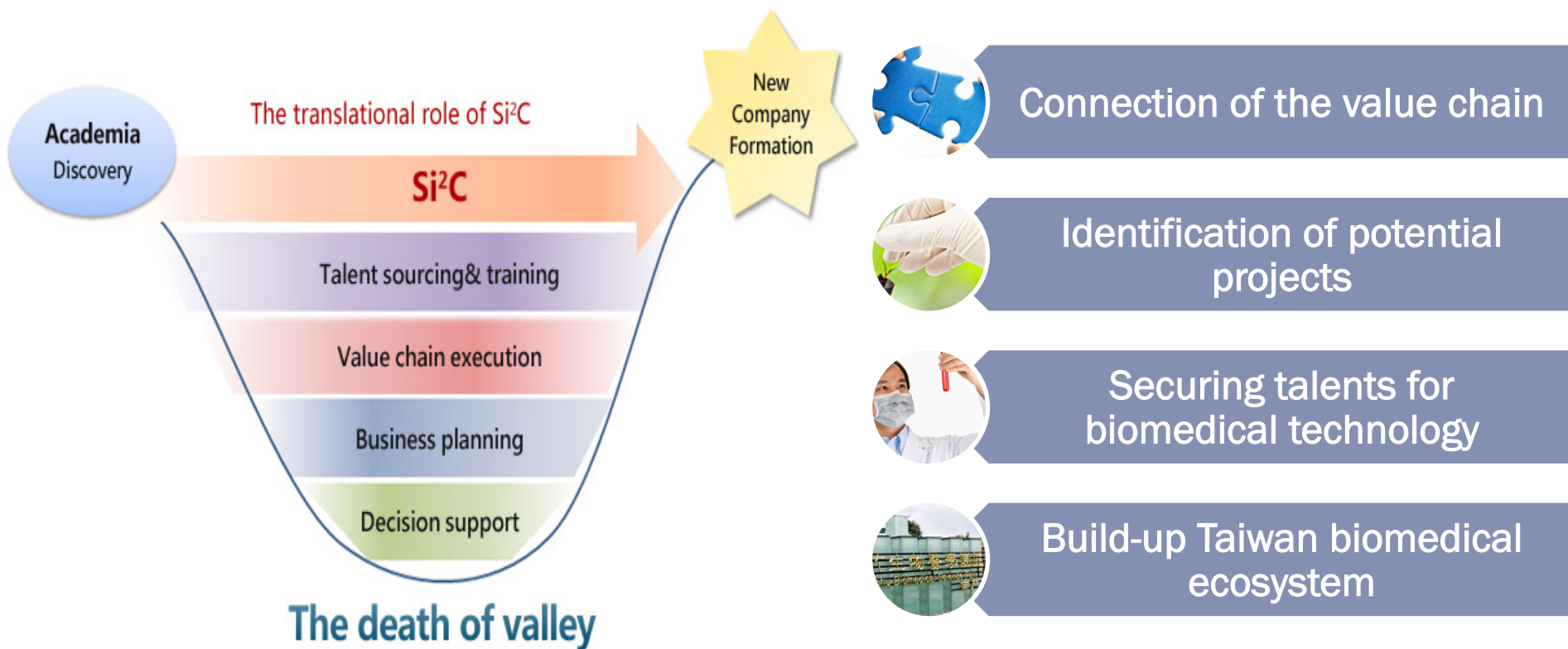
**Grant: NT\$3M to NT\$10M per case**

**Total Sponsored Cases: 33**

**Start-up Companies: 6**

Note: as of January, 2015

# (3)-II. Si2C (Supra Integration and Incubation Center) - Mission and Goal: **"Branding Taiwan"**





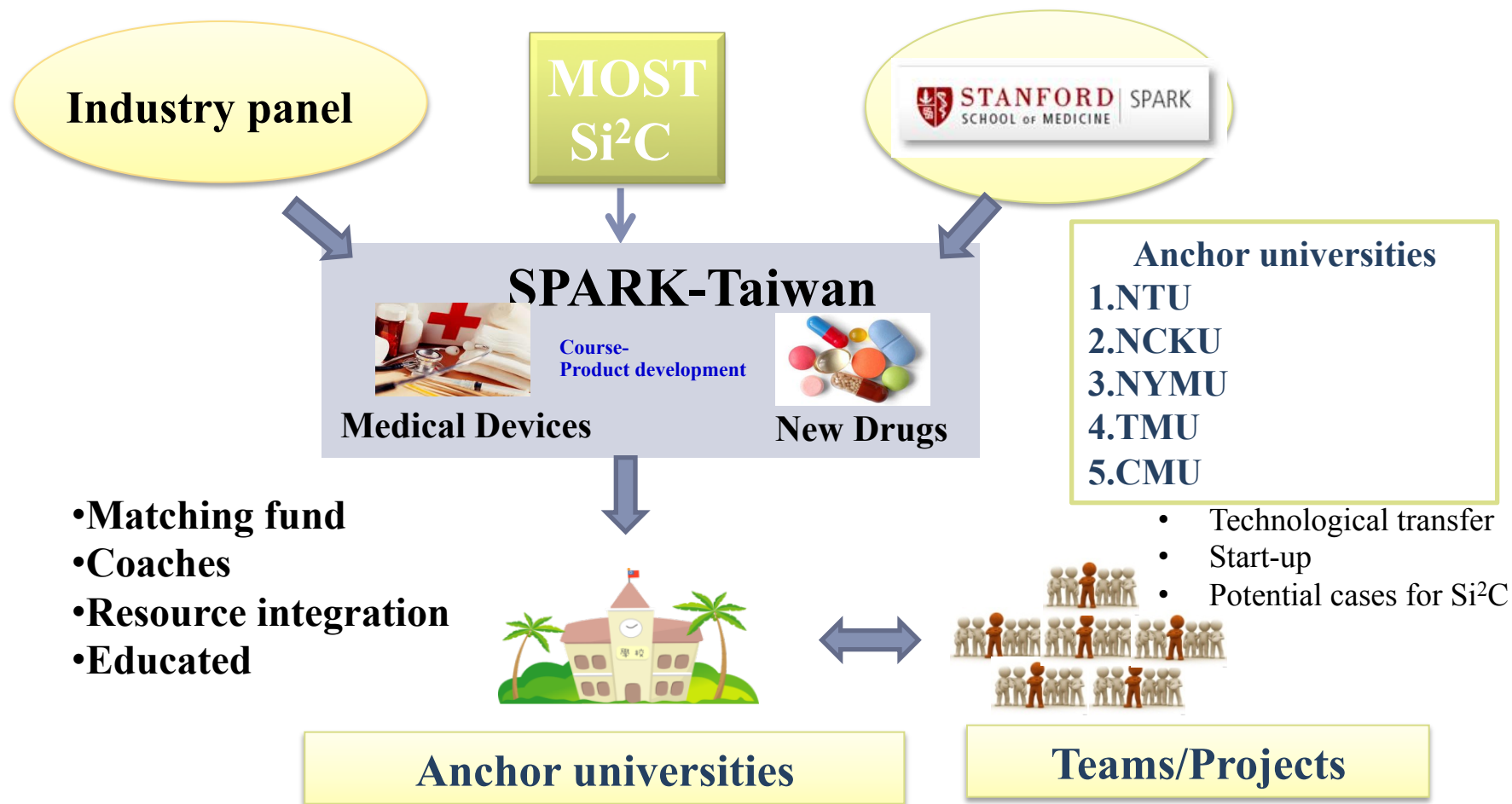
# (3)-II. Si2C (Supra Integration and Incubation Center) - Connection of the value chain

- New Drug: liver cancer, hepatitis B, lung cancer, breast cancer, tuberculosis, huntington's disease
- Medical device: orthopedic device, in-vitro diagnosis and biochips, combination product, simple/smart/small bio-electronics, computer-aided surgery, hema-related device, bio-photonics and Bio-imaging, High performance dental biomaterials & devices, regenerative medicine device, assistive device

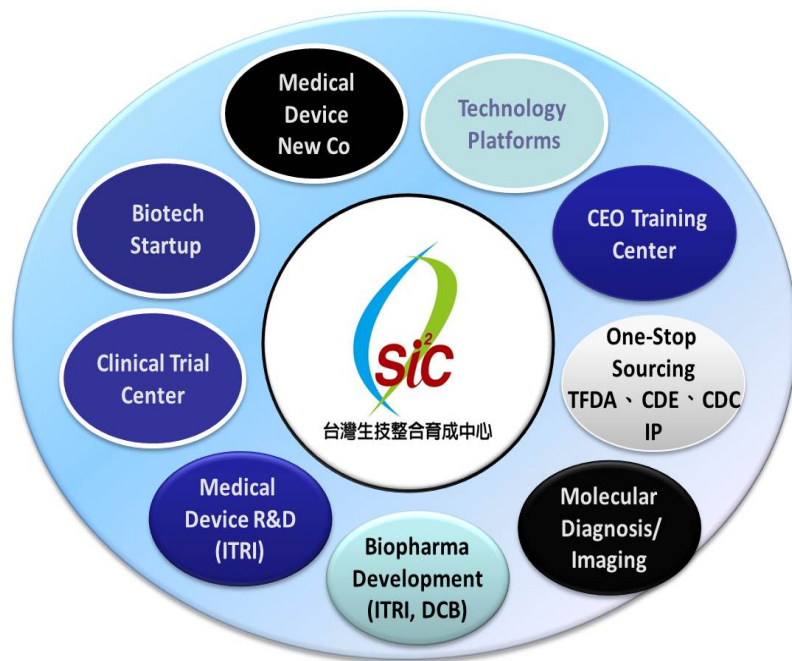
## • Identification of potential projects

	Project scouting	Funded by MOST	Funded by MOEA	Startup company
New drug	48	3	2	0
Medical device	84	6	3	2

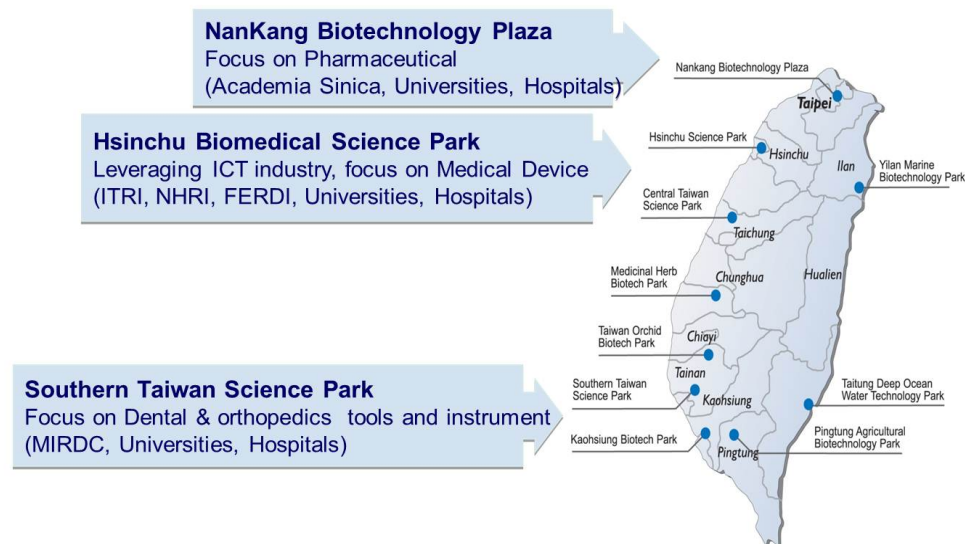
# (3)-II. Si2C (Supra Integration and Incubation Center) - Securing talents for biomedical technology



# (3)-II. Si2C (Supra Integration and Incubation Center) - Build-up Taiwan biomedical ecosystem



*The 3 Bioparks which have strong ties with Si<sup>2</sup>C*



Assist academia and new start-ups to utilize the new HsinChu Biopark and NanKang Biopark; and recognize the bioparks as a "one-stop shop" tool for utilization. And to serve as a window for connecting relevant government agencies with start-up companies.

# (3)-III. From IP to IPO (FITI) - Goal & Objectives

- **Goal:** To encourage students, professors, and researchers with exceptional innovation ideas and academic research achievements to form an entrepreneur-team, furthermore, to start a real business.

- **Objectives:**

1. To offer entrepreneur-teams various support and resources.
2. To transform research capacity towards marketable innovations, to pass down the techno-entrepreneurship tradition in Taiwan.
3. To create an eco-system for academic entrepreneurs.



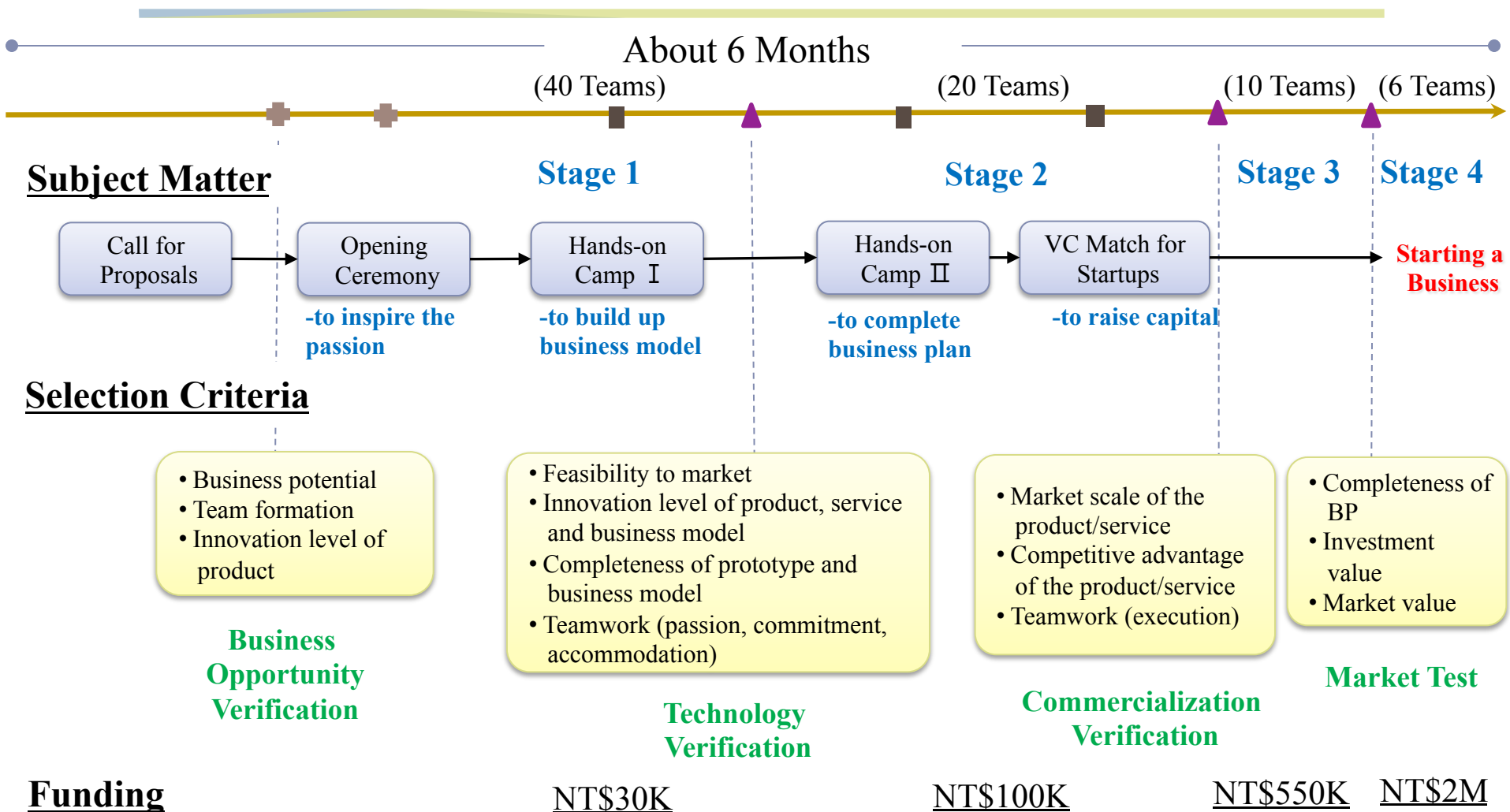
### **(3)-III. From IP to IPO(FITI) - Critical resources offered**

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- Comprehensive hands-on workshop training.
- Mentoring networks.
- Experience-sharing and advice of venture capitalists from Silicon Valley.
- Endorsement and donations from Taiwan's leading enterprises.
- Supporting system for technology demo and prototyping from NARLabs and Science Park.
- Funding in 4 stages (grants and entrepreneur-rewards).



# (3)-III. From IP to IPO (FITI)



# (3)-III. From IP to IPO (FITI) - Achievement (Since 2013 March-2014 December)

## 1. Boost up entrepreneur atmosphere:

- Successfully inspire 853 proposals.
- 160 selected startup teams are well-trained.
- Cultivate 964 potential entrepreneurs.
- Help to establish 34 startup companies.
- Connect 265 mentors at Taiwan as well as Silicon Valley.
- More than 6,320 active members follow FITI FB community page.



## 2. Startup company:

- Directly create 162 job opportunities.
- Accumulated capital: Over 425 millions.
- Help startups to raise fund: Over 88 millions.

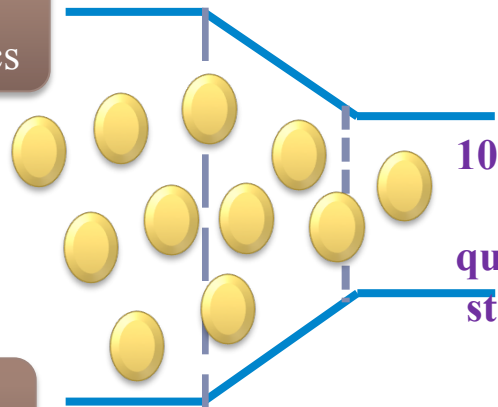
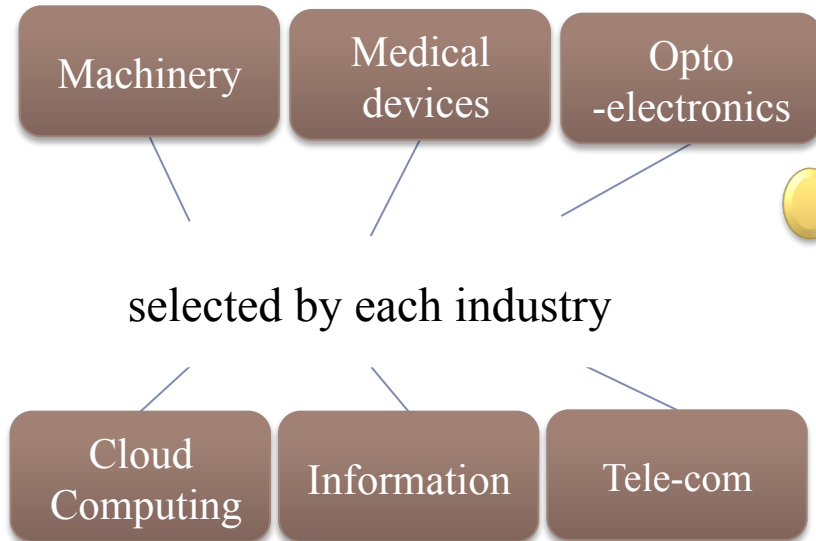




# (3)-IV. Nurturing Taiwan Startups - 2015 Goals: 10 startups

## *Execution practices*

The Taiwan strategic planning group select qualified startups.



Taiwan startups are screened by Silicon Valley experts.

Taiwan startups enter the Taiwan-Silicon Valley Accelerator.





# (3)-IV. Nurturing Taiwan Startups - The Process of Innovative Technology Scouting

## Listening Post: scouting Silicon Valley frontier technologies

- Connect domestic startups, VCs, universities, and research institutes.



## Partnership: establishing long-term collaborative partnership with Silicon Valley

- Provide funding, technology collaboration, and collaboration, and services of Rapid Prototyping Center



- Report regularly potential technologies.
- Facilitate strategic collaboration between Taiwan and the US



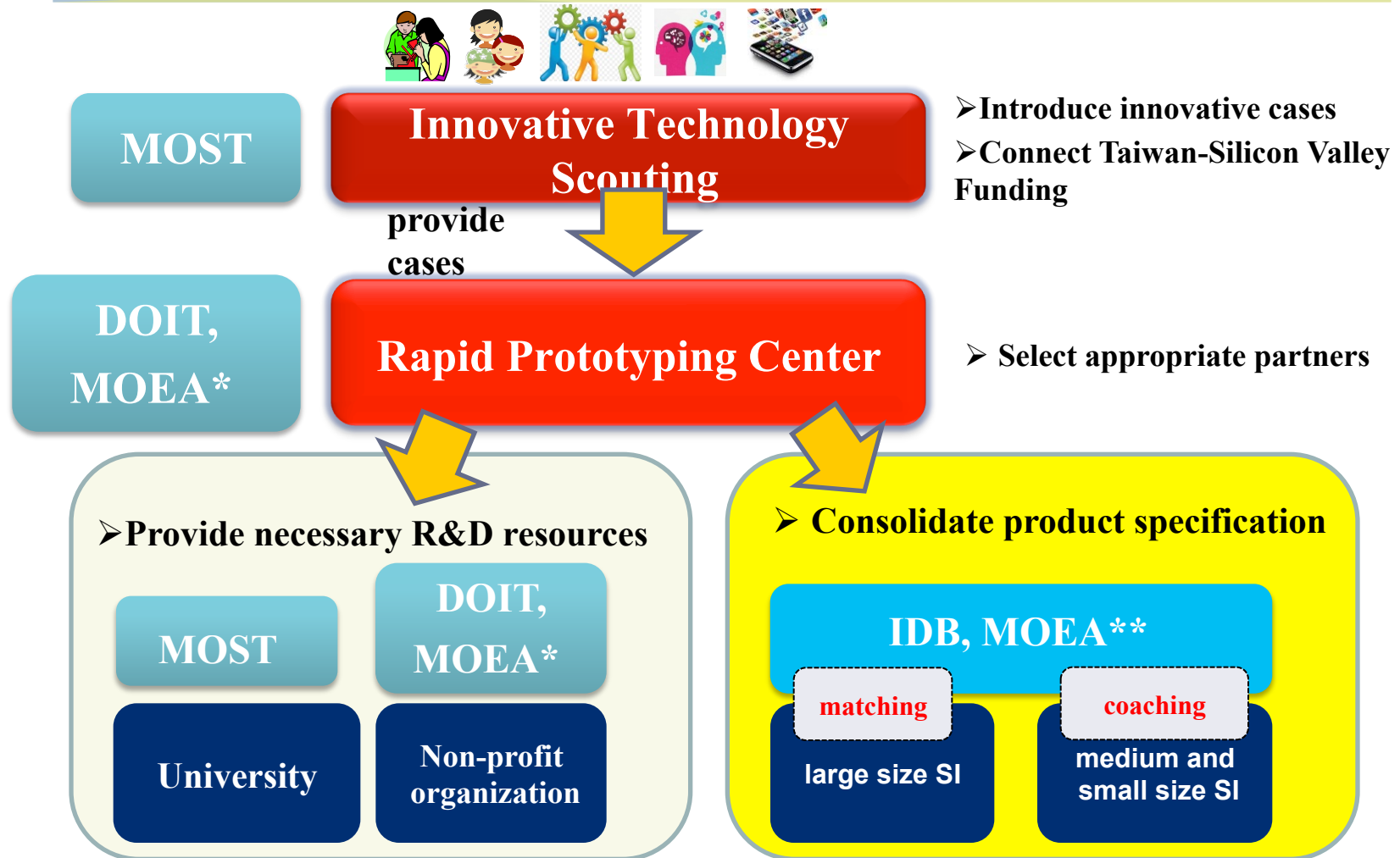
## Receiving Post: Reporting information and planning the transferring mechanism



## Evaluation: Evaluate strategic appropriation

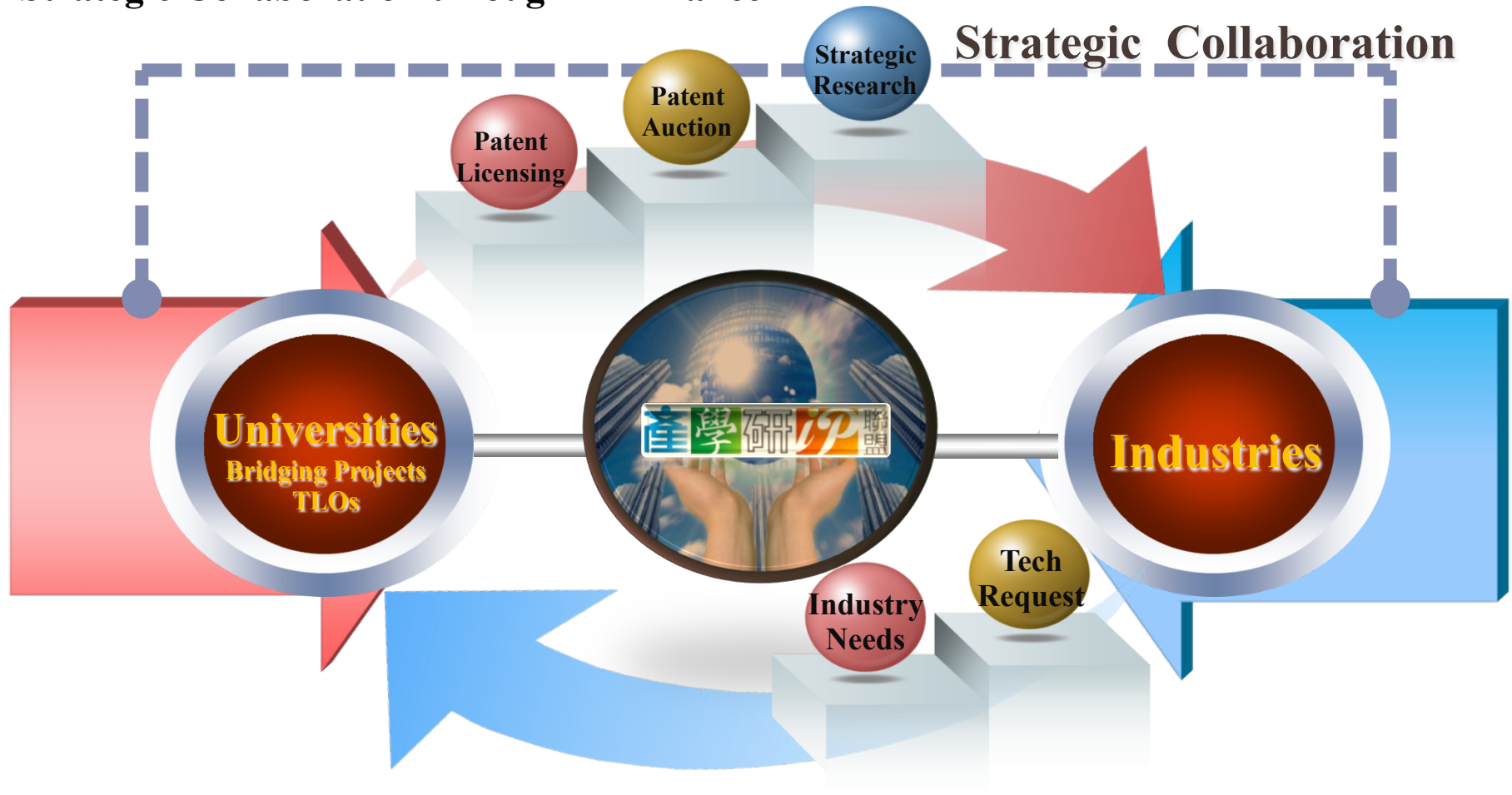
- Enhance the sensitivity of the trend
- Fulfill the need of Taiwan industries and policies

# (3)-IV. Nurturing Taiwan Startups - The Position and Services of Rapid Prototyping Center



# (3)-V. Promoting R&D results into emerging industries

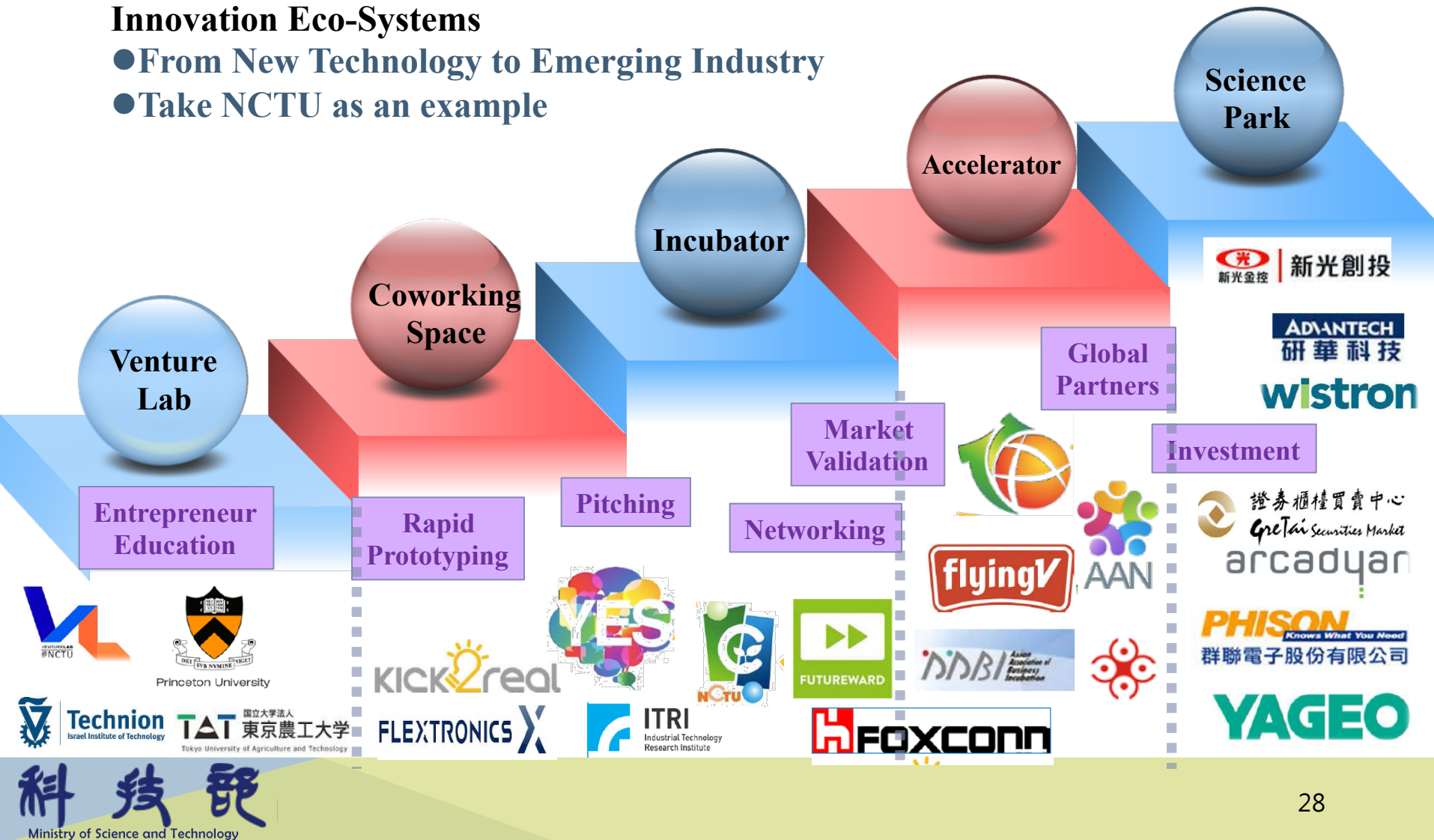
## Strategic Collaboration through IP Alliance



# (3)-V. Promoting R&D results into emerging industries

## Innovation Eco-Systems

- From New Technology to Emerging Industry
- Take NCTU as an example



## (4) Enhance Inter-Ministry Communication

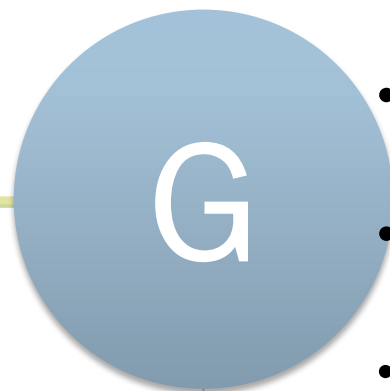
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Platform between MOST and Ministry of Education (MOE)

MOST and MOE will formulate schemes jointly on the following issues

- To revise the regulation which says Professors are not allowed to hold positions in any start-ups
- To relax the regulations on Professorial promotions

# NARLABS CATALYST



G

- 科技部鏈結各政府機關  
經濟部、文化部、教育部、
- 內政部、衛福部、交通部、  
金管會、農委會
- 國研院鏈結各機關所屬財團法人

C

- 科普教育
- 一般大眾

MOST  
NARLabs

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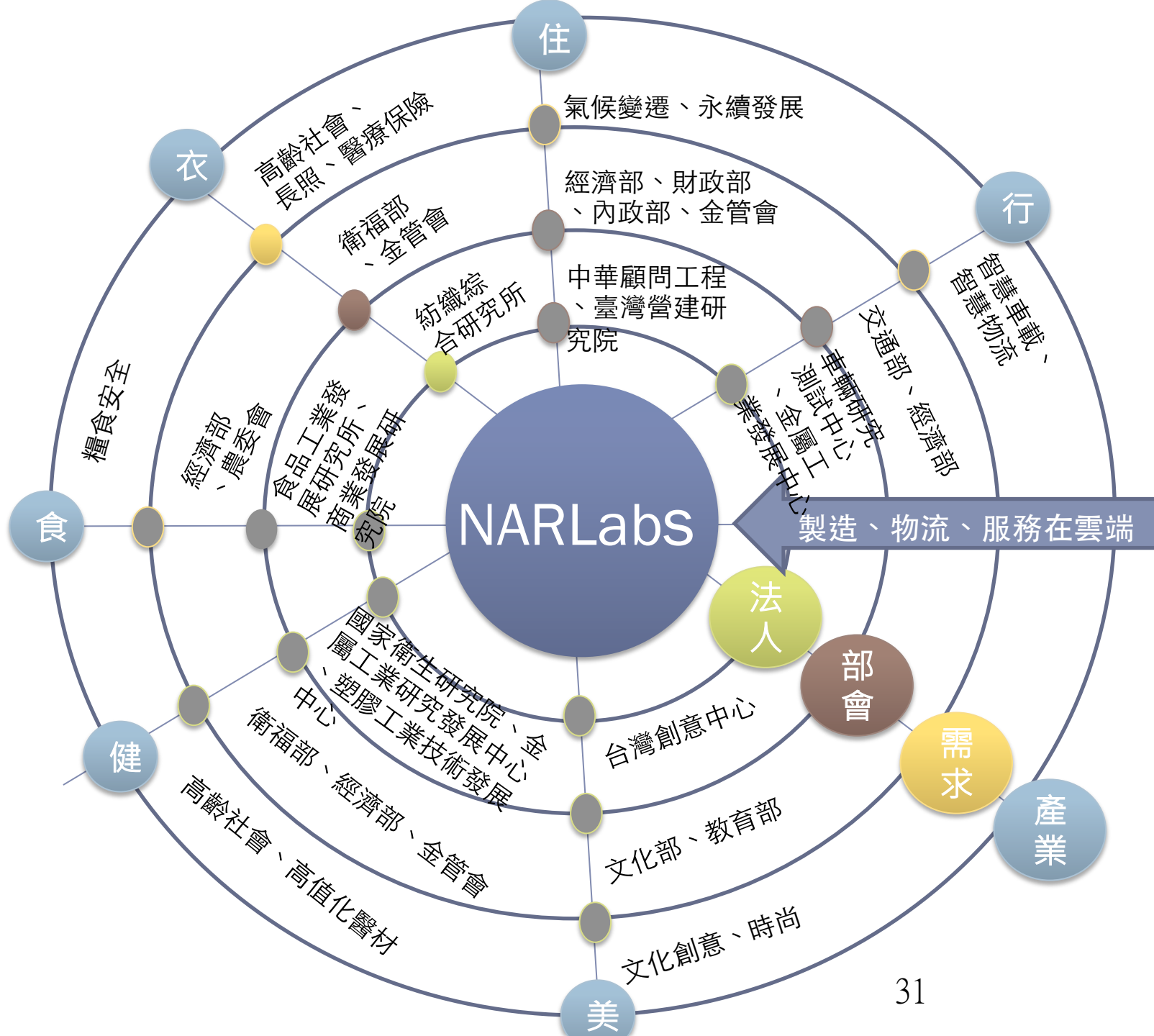
- 配合科技部各司
- 服務大學校院

B

- 新創事業
- 傳產與中小企業：  
與經濟部產業輔導中心接軌  
、鏈結研發資源
- 中大型企業：  
公協會模式(e.g. 磐石會)  
校友會模式(e.g. 交大校友會)

國際合作

- Siemens Open  
Innovation Hub
- Fujitsu





**THANK YOU!**