

The 31st STAG Board Meeting

Theme II: From S&T Research to Industrial Applications

2.4 Innovation Strategies of Taiwan's Science Parks

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I. Introduction

- **Taiwan's science parks have formed their own synergistic industrial clusters.**
- **Science parks as seedbeds of innovation have accelerated the industrialization of R&D results**
- **Science parks should strengthen their functions in the innovation system in order to face an increasing challenging environment.**

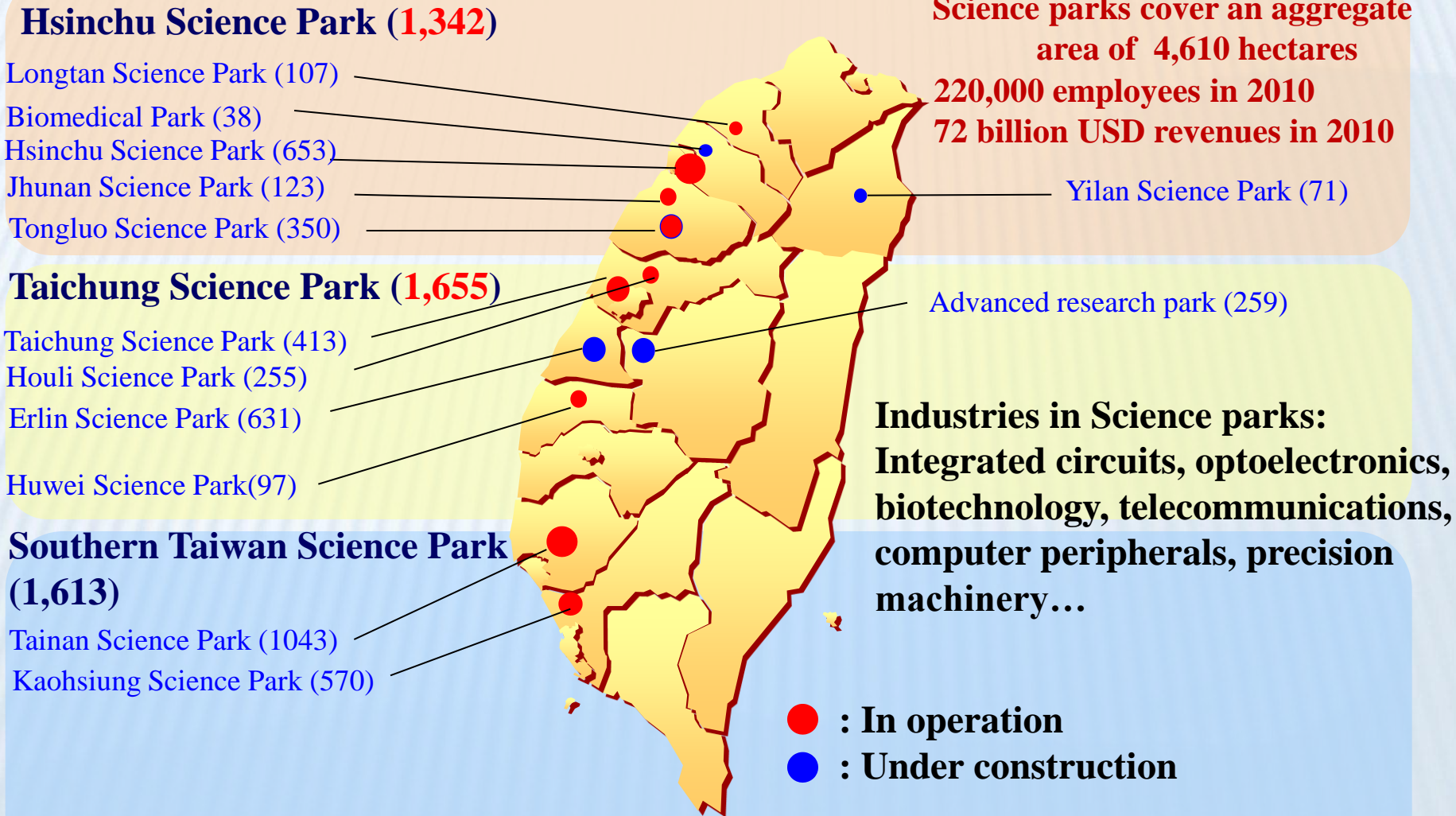
II. Overview of Taiwan's Science Parks

■ Current Status

- Description of science parks and major industries
- Innovation system of science parks and development of IC industry

■ Major Issues for the Future Development of the Innovation System

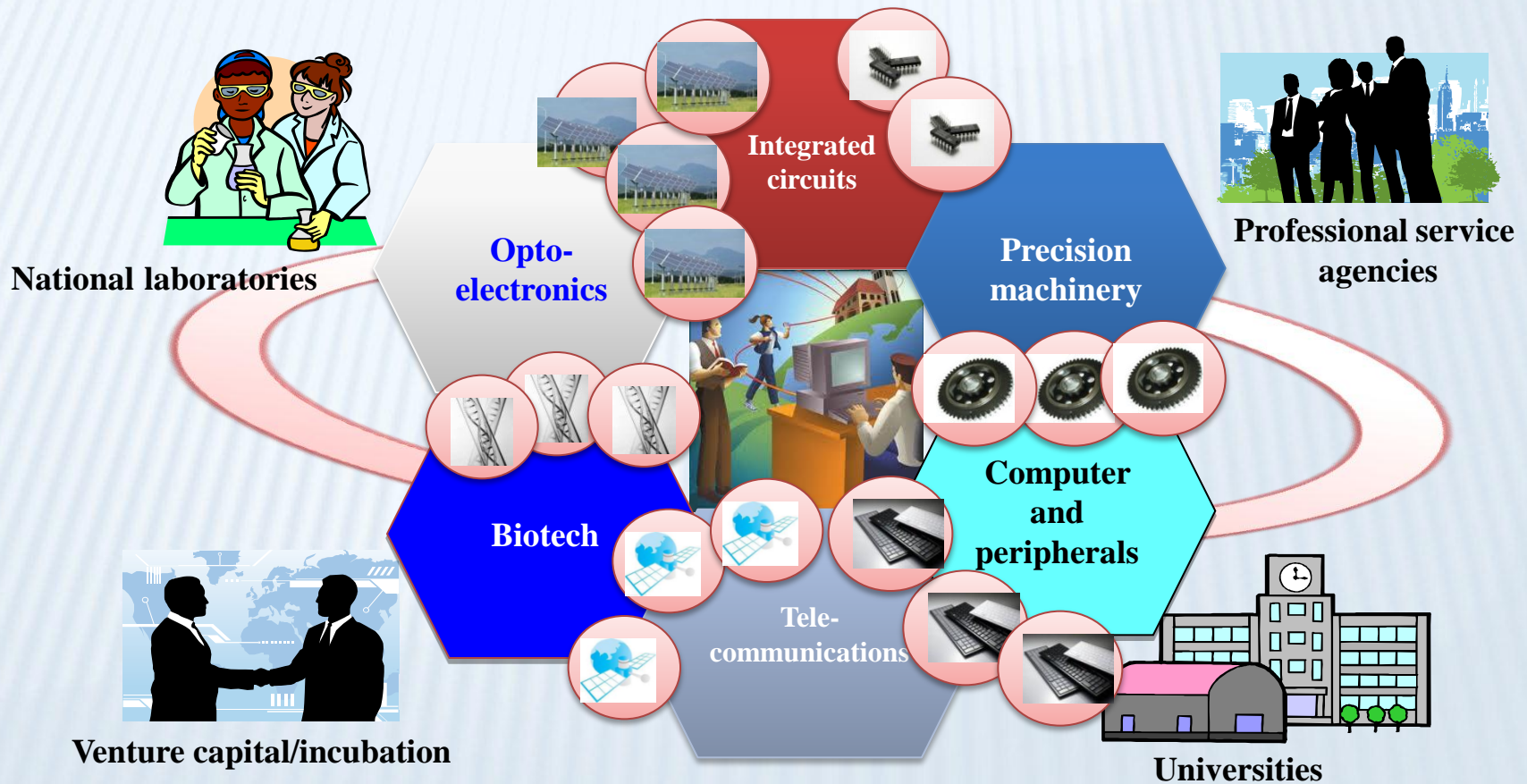
The Hsinchu Science Park, the first SP in Taiwan, was established on Dec. 15th, 1980 to recruit international talents, transform traditional industries, and upgrade industrial technology for the development of the national high-tech industry.



Data updated in 2011/07

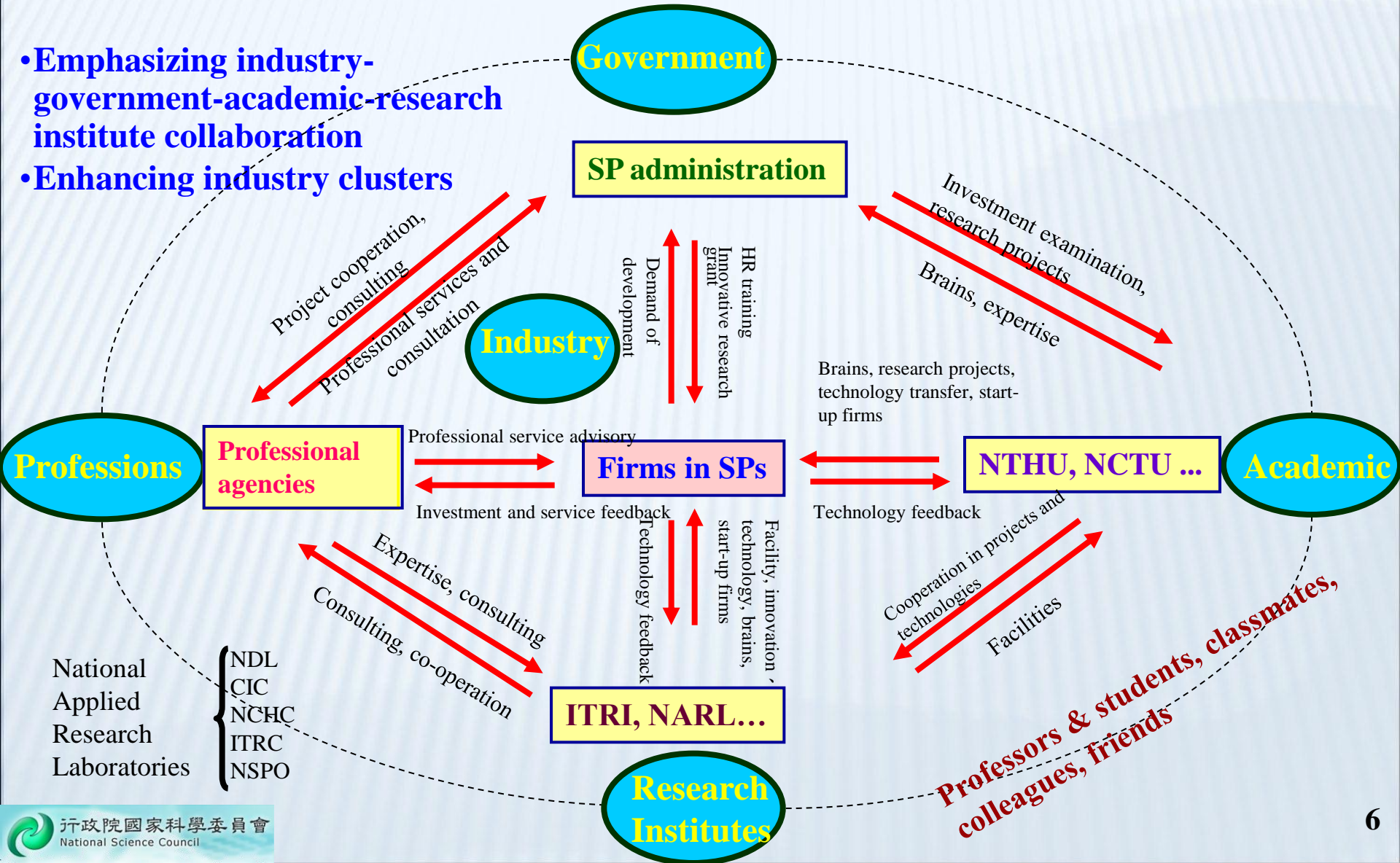
Establishing Synergistic Industrial Cluster Networks

The synergistic clustering effect of Taiwan's high-tech industry is outstanding. Taiwan was ranked No. 1 in the WEF's Global Competitiveness Index industry cluster sub-index from 2006 to 2008

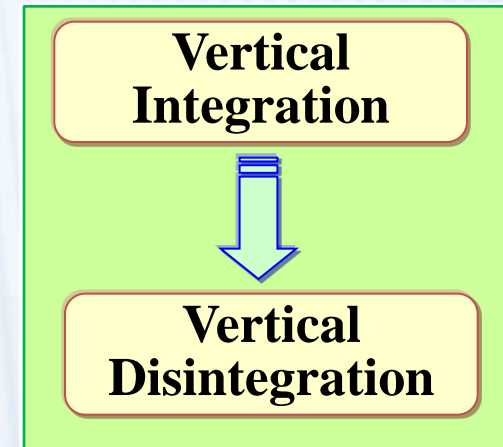
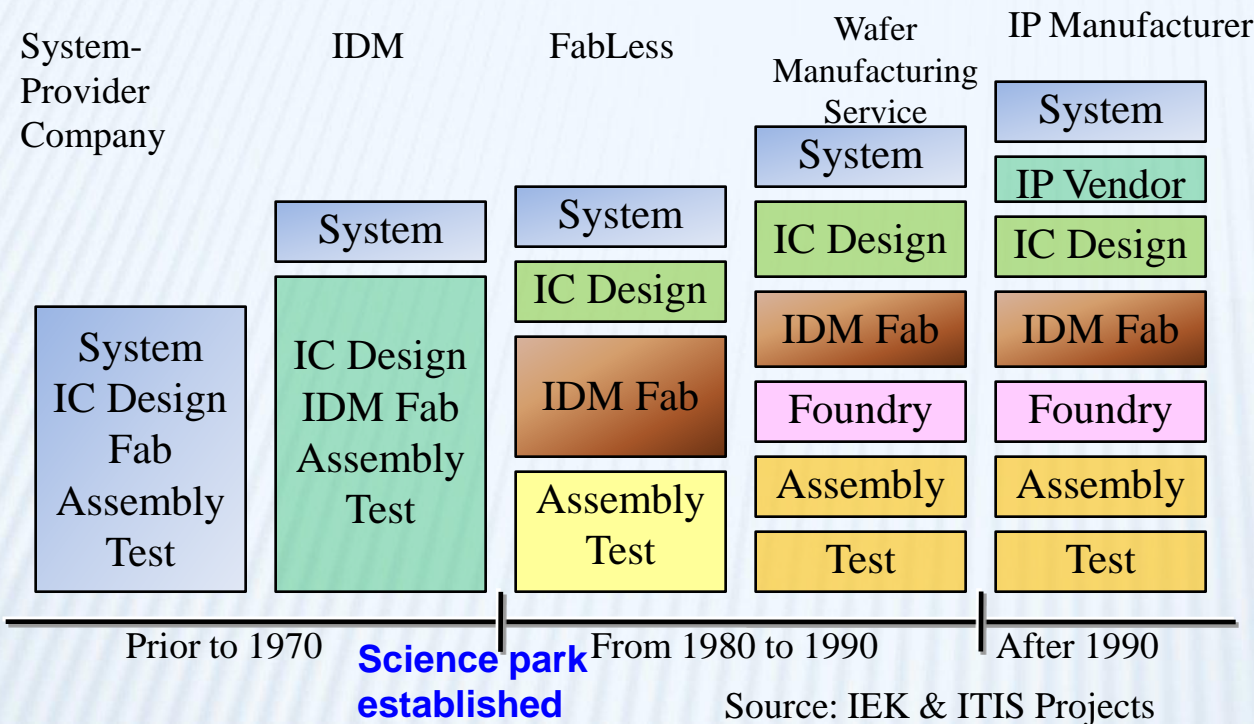


Innovation System in Science Parks: Hsinchu SP

- Emphasizing industry-government-academic-research institute collaboration
- Enhancing industry clusters



Development of IC Industry in Science Parks — Clustering in Cooperative Networks



- **No. 1 global market share in wafer manufacturing services**
- **No. 2 global market share in IC design industry**

Critical factors for success:

1. **Government policy: tax incentives, recruitment of talent**
2. **R&D on leading technologies to promote competitiveness**
3. **High-end infrastructure and one-stop service**
4. **Cooperation among industry, academic and research institutes, as well as the investment of venture capital**
5. **Enhanced international cooperation**

Major Issues for the Future Development of the Innovation System

SPs' challenges

- **Industrial talent**
 - **Interdisciplinary intelligence**
 - **International cooperation**
 - **Software and knowledge business**
- **Academic-industry collaboration**
 - **Technology transfer**
 - **Regulation liberalization**
 - **Incubation function**
- **Incentives for domestic investment**
 - **Industrial development support**
 - **Adding value to services**
 - **Innovative environment**

Major Issues for the Future

Recruitment of talents and international cooperation

Academic-industry collaboration and entrepreneurship

Strengthening the innovation environment in science parks

III. International Trends of Science Parks

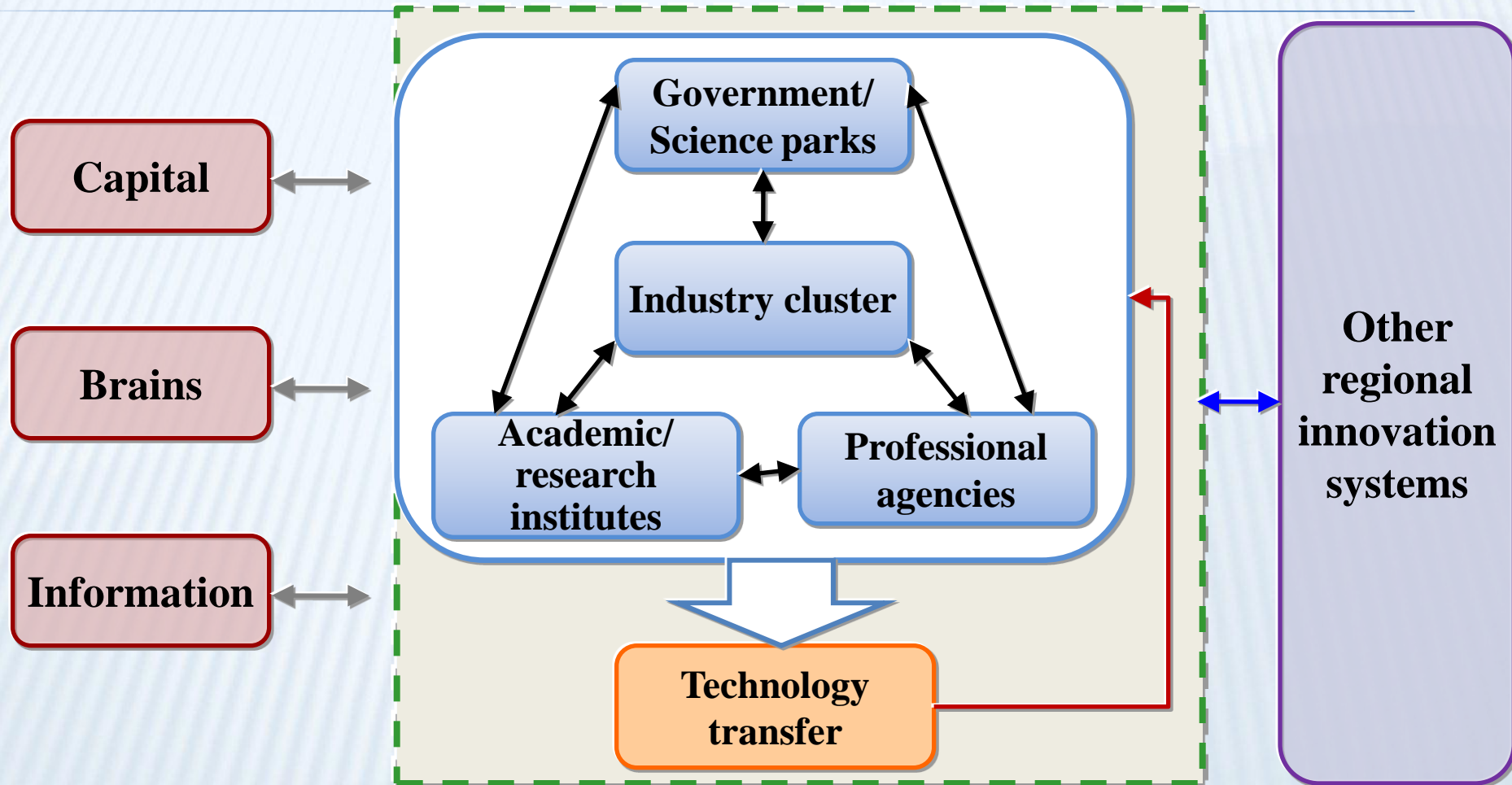
■ Role of Science Parks in Regional Innovation Systems (RIS)

- **Operational features of RIS**
- **Elements enabling success in 3G science parks**

■ International Observations

- **International observations of major science parks**
- **Strategies for key issues —**
 - **Recruitment of talents and international cooperation**
 - **Academic -industry collaboration and entrepreneurship**
 - **Innovation environment in science parks**

Operational Features of RIS



- Core assets of RIS are ingenuity and outstanding talents.
- The main duty of RIS is to foster firms' innovation capability and entrepreneurship.
- The government should be involved in RIS to create an environment for innovation.

3G Science Parks & Success Elements

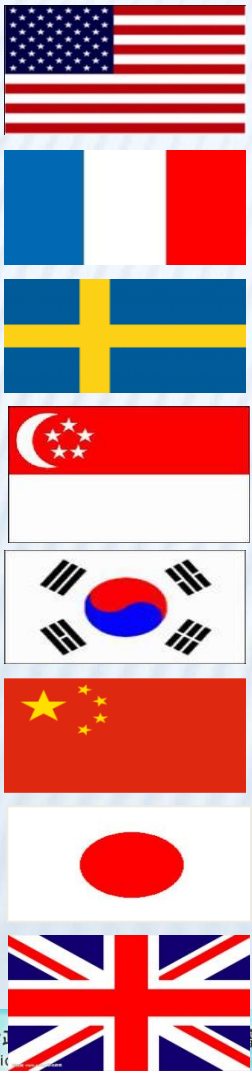
3G Science Park Definition:

- An integrated development community in which the infrastructure of the science park and the urban area is integrated.
- A leading role as a driving force in the regional innovation system.

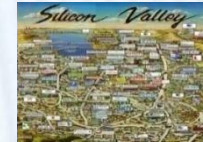
3G Science Park Success Elements:

- Ingenious managers and talents
- Close links locally and globally
- Active interaction with universities
- Bridge to regional and national innovation strategies
- Long-term explicit strategies and top-quality governance
- Interactive and innovative working and living environment
- A wide range of services and support for business growth

International Observations of Major Science Parks



Countries	Science Parks
U.S.A.	Silicon Valley, Massachusetts Route 128, NC Research Triangle Park (RTP)
France	Sophia Antipolis
Sweden	KISTA
Singapore	Singapore Science Park
South Korea	Daedeok Innopolis
China	Zhong Guan Cun
Japan	Tsukuba Science City
U.K.	Cambridge Science Park



International Observations of Talent Recruitment & International Cooperation

- **Establishing special projects or agencies to enhance talent recruitment and international cooperation.**
- **Designing a brain flow mechanism to encourage university faculty and talent involved in entrepreneurship and linkage with incubation hubs.**
- **Encouraging closer links with international research institutes to foster global exchanges of talents.**
- **Enlarging the “specialist pool” by recruiting overseas talent for national development needs.**

International Observations of Academic-industry Collaboration and Entrepreneurship

- **Encouraging firms in the early R&D phase and establishing integrated technology transfer systems to strengthen commercialization of R&D results.**
- **Setting up incubation centers by governments, universities or enterprises and creating facilities to support start-up companies.**
- **Providing curriculum and education networks for international technology entrepreneurship.**
- **Utilizing “industry-academic cooperation platforms” and “open laboratories” to help develop major industries.**

International Observations of Strengthening the Innovation Environment in SPs

- **Building culture-rich science towns with their own local characteristics.**
- **Providing a sound environment for entrepreneurship with venture capital, facilities, etc.**
- **Creating collaboration systems between agencies for commercialization and a TLO system to enhance technology marketing and industrialization networks.**
- **Building a globalized environment by providing service and support centers for foreign partners.**
- **Integrating administration and innovation resource platforms to provide efficient, demand-oriented services.**

IV. Action Strategies

- **Vision & Mission of Science Parks**
- **Action Strategies for Major Issues**

Vision & Mission of Science Parks

Workshop of Planning for Prospective & Strategic Development of SPs in Taiwan (December 2010)

Vision

Best target location for international top high-tech enterprises by 2020

Mission

Leading Role —

Foster government-industry-academic collaboration to incubate next-generation industries and upgrade the sci-tech level to become the best target location for international top high-tech enterprises

Assisting Role —

Establish a sound investment environment and regional innovation system to facilitate the capacity of industry-academic-institute collaboration to boost competitiveness of enterprises in the global market

Key Issues and Strategies

- Enhancing recruitment of talents and international cooperation
- Nurturing academic-industry collaboration and entrepreneurship
- Strengthening the innovation environment in science parks



Action Strategies: Enhancing Recruitment of Talents & International Cooperation

- **Offering competitive packages to recruit and keep talent.**
- **Encouraging international exchanges & cooperation to tap international expertise.**
- **Promoting international alliances for industrial R&D, industrial standards, and product specifications.**

Action Strategies: Nurturing Academic-industry Collaboration and Entrepreneurship

- **Supporting academic-industry collaboration in creating an interdisciplinary and cross-industry system to stimulate innovation.**
- **Strengthening the function of incubation centers for accelerating technology transfers and commercialization of R&D results, and coupling with venture capital investment to facilitate start-ups.**
- **Establishing the governmental seed funds to foster venture capital investment in emerging industries.**

Action Strategies: Strengthening the Innovation Environment in Science Parks

- **Developing special features for each science park to enable it to have its own unique innovation mechanism and environment.**
- **Creating a sound environment for Technopolis by establishing a communications platform with local governments and other stakeholders.**
- **Introducing demand-oriented service management to the science park administration and establishing a demand surveying mechanism.**
- **Integrating production and living environments with service planning, and serving as a pilot demonstration arena for innovative applications.**
- **Completing the roadmaps for key technologies and related patent maps for national emerging industries and establishing an IP management platform.**

V. Conclusions

- **Science parks play an essential role in RIS to meet international competitive challenges and national industrial development demands.**
- **Three key issues need to be emphasized: “enhancing recruitment of talents and international cooperation”, “nurturing academic-industry collaboration and entrepreneurship”, and “strengthening the innovation environment in science parks.”**
- **The aforementioned strategies will be implemented based on the existing foundation, but feature new ways of thinking and innovative practices.**