

THE ROLES OF INTERMEDIARIES AND THEIR CAPABILITY DEVELOPMENT IN SECTORAL INNOVATION SYSTEM IN THAILAND

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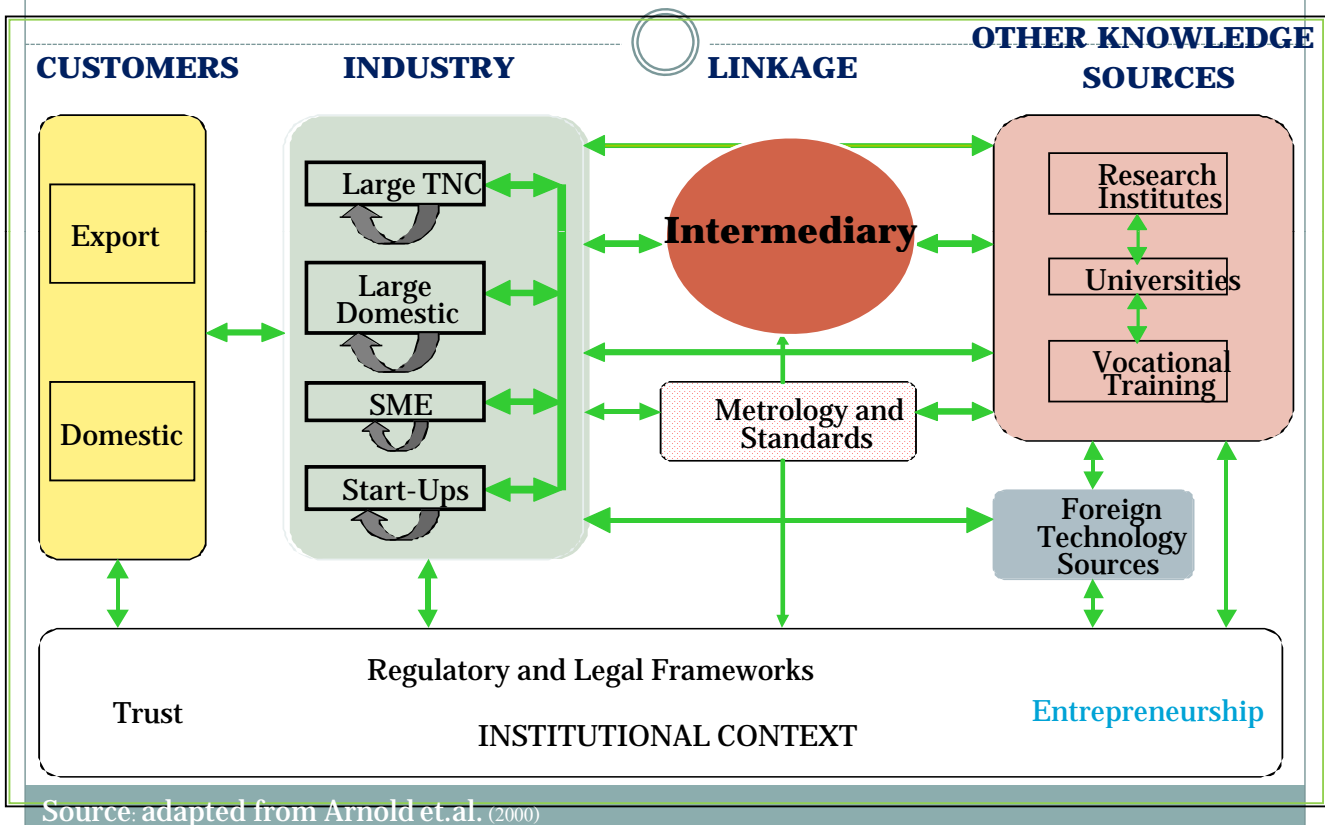


Presentation Outline

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- Intermediary concept
- Research objectives
- Cases
- Lessons learnt
- Policy Recommendations

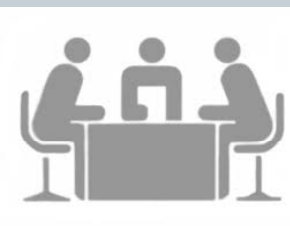
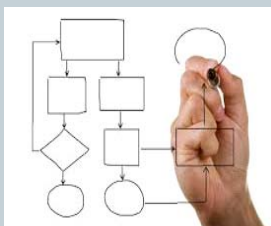
System of Innovation



WHAT ARE INTERMEDIARIES WHY DO THEY MATTER?

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- “An organisation acts as an agent or a broker in any aspect of the innovation process between two or more parties’.
- **4 important roles:** consulting, brokering, mediating, and resource providing.
- Without intermediaries → Insufficient interactions and learning between these parties → Fewer innovations



Research Objectives

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- To investigate the role of intermediaries under the concept of sectoral innovation systems in Thailand
- To explore the different roles and underlying capabilities between different types of intermediaries.
- To investigate the division of labor between public and private intermediaries

Case Studies: Public vs. Private

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Hard Disk Drive Industry: (Hi-technology)

- Hard Disk Drive Institute (HDDI)
- International Disk Equipment and Materials Association (IDEMA)

Automotive Industry: (Mid-Technology)

- Thailand Automotive Institute (TAI);
- **Thai Auto-Parts Manufacturers Association** (TAPMA)

Frozen Food Processing Industry: (Resource-based)

- National Food Institute (NFI);
- Thai Frozen Foods Association (TFFA)

Field Survey and Interviews: August 2011 - March 2012

CASE STUDY I

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HARD DISK DRIVE INDUSTRY

Overview of HDD Industry in Thailand

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- world's number 2 exporter
- employs more than 100,000 people,
- dominated by giant TNCs : Seagate, IBM/Hitachi, Western Digital and Fujitsu.
- local content 30-40%.
- Challenges
 - shortages of specialized engineers and IT personnel
 - Weak linkages between universities, research institutions and industry;
 - Insufficient indigenous HDD suppliers

International Disk Equipment and Materials Association (IDEMA)

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- IDEMA--Thailand established in 1999
- an important role in diffusing technology/market data to its members.
- includes all main TNCs, suppliers, BOI, AIT, and NECTEC.
- focuses on Thailand needs: HRD/automation infrastructure
- with BOI, made HDD a “prioritized” cluster receiving special tax privileges

Roles	Learning 1	Learning 2
1. Consultancy		-
2. Broker - Policy Development - Connected TNCs with Thai firms/ universities	The IDEMA Thailand White Paper (2000)	Collaborate with TNCs to set up a program to train local trainers
3. Mediator	Building and operating a pre-competitive commercial standards program	-
4. Resource Providing - Information - Training - Testing	Setting industry technology standards and benchmarks The dissemination of IDEMA’s regular magazine Supplier development (1999)	Holding regular International Symposia on Storage Technology The Certificate of Competence in Storage Technology (CCST) (2000)

Findings

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- Brokering role is very important
- It worked because of being a part of global associations: networks, market and tech trends
- Beauty of 'informal' meetings

Hard Disk Drive Institute (HDDI)

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- set up under NSTDA in 2004
- to develop capability on the HDD technology
- Supports University-industry collaborative research
- linking TNCs with local suppliers.

Roles	Learning 1	Learning 2	Learning 3
1. Consultancy	Supply chain & cluster management consultancy services (2007-2011)		
2. Broker - Policy Dev. - Connected TNCs with Thai firms/ universities	Electrical & Electronics Industry master plan for 5 years (2006) Establishment of HDD Technology Training Institute (2006-2008)	Providing the proposal about HRD and R&D incentive package to BOI(2006)	Conducting policy research(2006) SMEs meet Makers (2010)
3. Mediator	Establishment of Industrial Automation Community Thailand : IA Community (2009)	Arranging HDD Expo and Data Storage Technology conference (DST-con) (2010)	
4. Resource Providing - Information - Training - Testing	Est.of Industry/Uni Cooperative Research Center (2006-2010) Developing the course of HDD Engineering Technology (2006-2008) Establishment of Central Testing Laboratories for HDD (2006)	Est. of Research Unit and Technology Road Map (2006-2008) Supporting Research Scholarship (2006-10) Establishment of a laboratory prototype for HDD industry (2009)	Conducting the research of 70 initial R&D projects (2006-2008) Establishment of Early Recruitment (2009) Establishment of Electrostatic Discharge Lab : ESD Lab (2010)

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Findings

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- Two roles are very important
- As a resource (funding) provider to support development of platform technologies for industry
- As a broker for U-I, and TNCs-local suppliers linkages
- Challenges: NSTDA's mission dilemma leading to fluctuation of budgetary support

CASE STUDY II

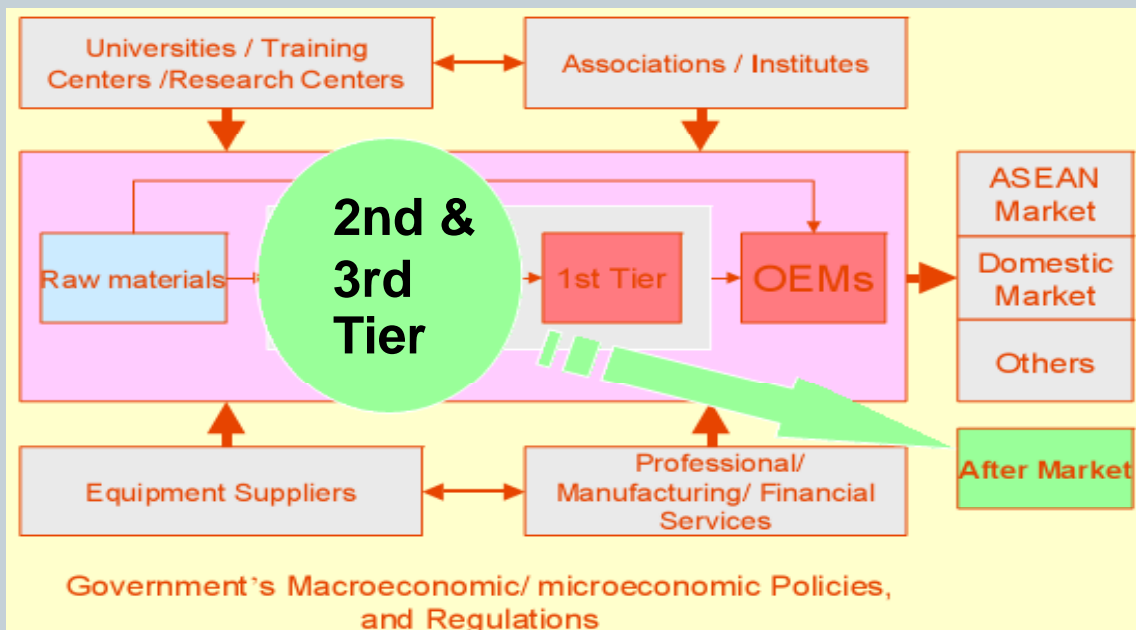
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THAI AUTOMOTIVE INDUSTRY

Automotive Industries Cluster

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Thailand Automotive Institute (TAI)

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- Established on July 7, 1998
- To strengthen co-operation between government and industry
- Flexibility: not bureaucracy but under a MOI's foundation.
- Around 100 staff
- Direct gov funding for the first 5 years . Later self-financed.
- bringing TNCs, local/foreign parts suppliers, universities and other government agencies

Roles	Learning1	Learning2	Learning3
1. Consultancy	Automotive Experts Dispatching Program: AEDP (2005-2006)	Developing the production management system "Lean Manufacturing" (2010)	Developing the quality management systems ISO/TS 16949 (2010)
2. Broker - Policy Development - Connected TNCs	Thai Automobile industry master plan1 (2002-2006) Establishment of Automotive Human Resource Development Project :AHRDP (2006)	Thai Automobile industry master plan2 (2007-2011) Automotive Human Resource Development Institute Project :AHRDIP (2012)	Establishment of The Early Warning System for Automotive industry (2010) -
3. Mediator (Director)	Abolishment of local content requirement (1999)	- JTEPA (2004) and AHRDP (2006)	- Eco-Car Product Champion (2007)
4. Resource Providing - Info - Training - Testing	Establishment of Automotive Intelligence Unit :AIU (2000-2011) Establishment of Skill Certification System for automotive industry (2003, 2005) Purchasing necessary equipment for testing (2005-2006)	Establishment of Asian Auto-parts Portal Site : AAP (2006-2007) Implementation of Toyota Production System: TPS (2008-2010, 2012) Strengthening the Capacities of Testing Laboratories for Auto-parts product (2008-2009)	Establishment of Technology Road mapping (2010) Creating and developing Thai examiners and trainers (2009-2010) Inspection unit for Automotive and Auto Parts products (2009-10)

TAI

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- Prominent brokering, resource providing and consulting roles (but not mediating)
- **Best project:** AHRDP bringing TNCs and universities' experts to train local engineers and technicians of local parts manufacturers
- These roles were seriously compromised by lack of government's **mandate** and **financial support**.

Thai Auto-Parts Manufacturers Association (TAPMA)

- created on June 1978 as the central voice for auto parts makers
- to address problems that hinder the automobile industry's development in terms of
 - production technology efficiencies,
 - raw material import difficulties
 - developing skilled labors and engineers
- Limited resources. No government support
- A lobbyist group seeking favors from government.
- Limited role as an intermediary, connecting members to other actors in the sector.



Roles	Learning 1	Learning 2	Learning 3
1. Consultancy	Supporting production enterprises or hiring to produce automobile parts, components, and tools by partnering with the government for support.	Supporting members with welfare within the parameters of Act 22 under the 1966 Commercial Association Decree.	-
2. Broker	-	-	-
3. Mediator	Entering into agreements for members detailing their roles in operating smooth and problem-free manufacturing plants	Negotiating conflicts between members and between members and outside parties.	Supporting members by tackling problems and negotiating on behalf of members to establish common
4. Resource Providing - Info - Training - Testing	Researching the latest technical and production developments -Supporting members in producing quality auto parts, equipment, tools and accessories	Requesting from members statistics, documents or information concerning their enterprises including parts, equipment and accessory projects with explicit permission from individual members.	- - -

Findings

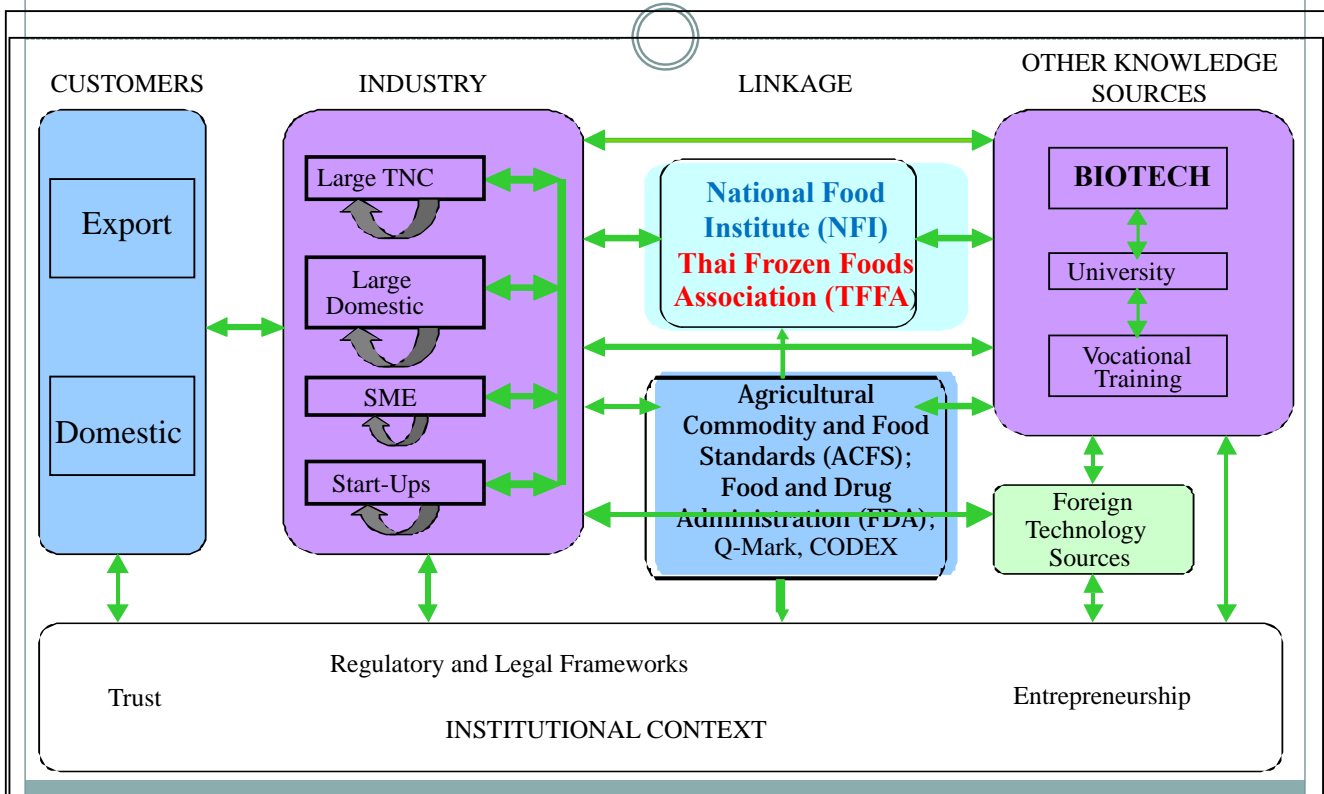
- limited human resource and operating fund.
- Not equipped to play resource providing roles
- But good at mediating
- An issue of the division of labour and collaboration between TAI and TAPMA

Case Study III



FROZEN FOOD PROCESSING INDUSTRY

Frozen Food Processing Industry



National Food Institute (NFI)

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- established in 1996 under MOI's foundation
- Official mission:
 - analyzing and disseminating information,
 - training,
 - testing,
 - policy development
 - consultancies.
- 72 full-time staff but many contracted consultants



Roles	Learning 1	Learning 2	Learning 3
1. Consultancy	Implementation of HACCP programs (1999-2003)	Supply chain management for HACCP accreditation (2007)	Thailand food forward (2010)
2. Broker - Policy Development	Thai food industry master plan 1 (2002)	Thai food industry master plan 2 (2008)	The strategic plan to promote 'halal' business (2010)
3. Mediator	- Local firm vs. University researcher	-	-
4. Resource Providing - Info - Training - Testing	Establishment of database for food industry (1997-99) Developing training courses (1996-2002) Enhancement potential laboratory for accreditation ISO/IEC 17025 (2002-2011)	Establishment of database to develop the food industry (2001-2002) New Entrepreneurs Creation for food industry (2005-2011) Trade Capacity Building in Thailand through Strengthening the Capacities of Testing Laboratories for Food and Agricultural Products , NFI-UNIDO cooperation project (2008-2010)	Establishment of food intelligence center (2006-2011) Development personnel to food industry (2011) Risk Assessment of cadmium and arsenic in livestock product (2010)

Findings

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- Prominent brokering, resource providing and consulting roles (but not mediating)
- NFI's capabilities were accumulated from the learning process overtime

Thai Frozen Foods Association (TFFA)

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- a private non-profit organization founded in 1968
- Official missions:
 - to promote entrepreneurship
 - harmony /information exchange among members
 - to cooperative with the government agencies
- income is annual membership fee and services
- around 210 members and 20 staff.



Thai Frozen Foods
Association

Roles	Learning 1	Learning 2	Capabilities
1. Consultancy	Pre-audit consulting services	-	High level knowledge, skills, and experience in relevant consulting areas
2. Broker - Policy Development - Connected TNCs	Encouraging, both in quantitative and qualitative, the business of fishery and agricultural products in response to the increasing demand of both domestic and international markets.		1) Analytical skill 2) Co-ordination skill
3. Mediator	Promoting harmony and information exchange among members.	Est. regulations and mutual agreements for members	1) Skills in capacity to engage with parties 2) highly networked with business and research organization 3) high level facilitation and communication skills
4. Resource Providing - Info - Training	Compiling statistics about fishing, production, sales and export. To survey and study the member's opinions		1) IT capability 2) Understanding of market and technology 3) Identification of needs and selection expert 4) Consulting and training skills

Findings

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- Enough technical/administrative staffs and own funding.
- Big **Thai** players are members. Sectoral advantages
- Prominent consulting/mediating roles: advise members on laws/regulations/international standard (e.g. GMP/HACCP)
- Good at dealing with emergencies (anti dumping sanctions from us)

Lessons Learnt and Policy Recommendations

“Different Sectors need Different Types of Intermediaries”

High-technology (HDD)	Mid-tech (Automotive)	Resource-based (Frozen-food Processing)
<ul style="list-style-type: none"> • TNCs dominated industry • Technological change is rapid • Intermediaries should have the trust of TNCs and be able to keep pace with technological change • It should be able to link TNCs with local actors (<i>brokering role</i>). 	<ul style="list-style-type: none"> • Technology and skills are rather mature, tacit and belong to TNCs. • Industry comprises both TNCs and local suppliers • Intermediaries should understand local suppliers and be able to support them (resource providing). • It should be able to negotiate with TNCs in order to help local firms develop technology (<i>mediating role</i>). 	<ul style="list-style-type: none"> • Technology is quite mature. • Industry is fragmented and dominated by large local firms with many small firms • Intermediaries should be able to understand the capabilities of local firms, local resources, and market trends • It should be able to support local firms to build up capabilities (<i>consulting and resource providing roles</i>) and develop acceptable industrial standards (<i>brokering roles</i>)

“Different Sectors need Different Types of Intermediaries”

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High-technology (HDD)	Mid-tech (Automotive)	Resource-based (Frozen-food Processing)
<ul style="list-style-type: none"> • Suitable candidates: public research institutes and international industrial association 	<ul style="list-style-type: none"> • Suitable candidate: government agencies with clear mandate and budget and insightful local industrial associations 	<ul style="list-style-type: none"> • Suitable candidate: government agencies with clear mandate and budget and neutral local industrial associations

The ‘division of labor between a public and a private intermediary

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The Roles of Intermediaries	Public	Private
Consultant	●	○
Broker	○	●
Mediator	●	●
Resource Provider	●	○

“The government should concern the issue of the ‘division of labor and collaboration between a public and a private intermediary.”

The 'division of labor between a public and a private intermediary

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Public intermediaries should play active role in producing "PUBLIC GOODS"

1. formulating policy,
2. providing important training in critical skills and knowledge,
3. providing testing facilities,
4. initiating R&D programs in the fields critical for upgrading in global value chain.

Private interm. should play role in industry / firm specific issues

1. promoting trust among members,
2. diffusing technology know-how and information,
3. assisting their members to upgrade manufacturing technologies,
4. enhancing their international marketing ability and the operation management.
5. bridging the industry and the government.

What are Required Capabilities of an Effective Intermediary?

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Consultant	Broker	Mediator	Resource Provider
<ol style="list-style-type: none"> 1. High level knowledge, skills, and experience in relevant consulting areas 2. Problem solving capabilities 3. Advising capabilities 	<ol style="list-style-type: none"> 1. Highly networked 2. Relevant industry knowledge 3. Knowledge of legal and IP 4. High-level communication and negotiation skills 5. Ability to see 'big picture' and opportunity 6. Ability to follow through on leads & opportunities 	<ol style="list-style-type: none"> 1. Skills to engage with different parties 2. Highly networked with business and research organizations 3. High-level facilitation and communication skills 	<ol style="list-style-type: none"> 1. Understanding of terms, condition and expectations of collaboration funding programs; market and their requirements 2. Budgeting/ resource provision 3. Project management 4. Monitoring evaluation 5. IT capability

What Should the Thai Government and their Agencies Do?

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1. Providing clear mandates and financial supports for public intermediaries based on their performance
2. Paying more attention to the issue of the division of labor and collaboration between public and private intermediaries. Avoid crowding out private initiatives and supporting emergence of profit-seeking private intermediaries.
3. Supporting intermediaries to enhance their own capabilities required for their effective roles.

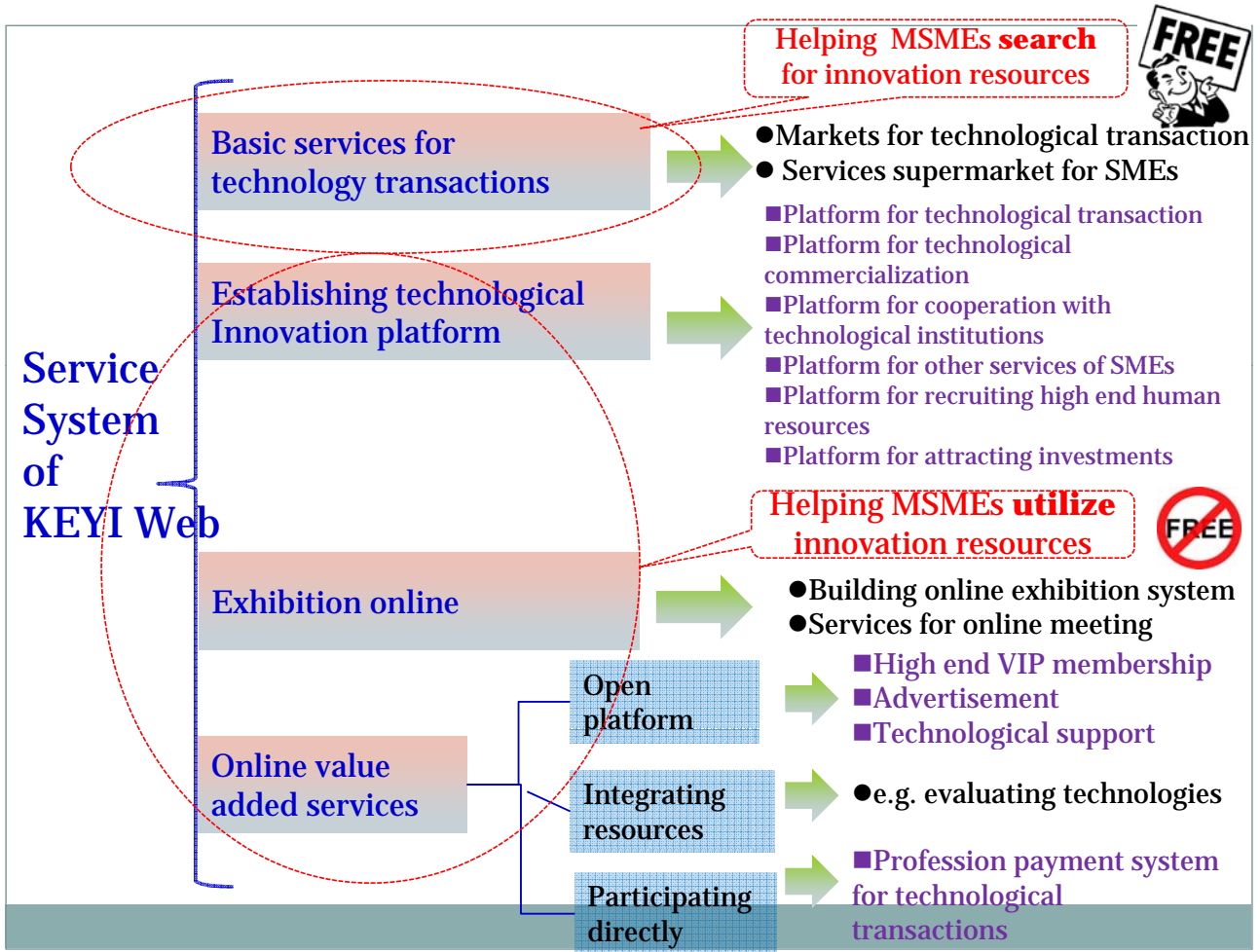
Keyi Web: An example of profit seeking intermediary

Keyi Web focuses on commercialization and transfer of technologies as well as related services. Nowadays, it is the portal website in the area of technological services characterized by large scale, plenty of resources, professional services, and high efficiency.

- Daily Flux : More than 100,000
- NO. of firms as customers : several million
- NO. of Success cooperation through the website : almost 80,000
- NO. of Successful technology transfer : more than 1800

The screenshot displays the Keyi Web homepage with a navigation bar at the top containing categories like '科技成果', '专家平台', '技术产品', '科易服务', '政策中心', '科技资讯', '科易知道', and '科易资源'. Below the navigation bar is a search bar with the text '请输入搜索关键字' and a '搜索' button. The main content area is divided into several sections: '科易服务' (Keyi Services) with a list of services and their status; '在线技术展会' (Online Technology Exhibitions) with a table of upcoming events; '科易动态' (Keyi News) with a list of recent news items; and '快速体验科易通' (Quickly Experience Keyi Tong) with a '免费下载' (Free Download) button. At the bottom, there is a '第三方平台' (Third Party Platform) section with a '在这里' (Here) button and a '政策应用? 知识产权? 还是...' (Policy Application? Intellectual Property? Or...?) link.

First page of Keyi We (www.1633.com)



Q&A

Thank you