

國立成功大學

National Cheng Kung University



**NCKU Research Services for
Industry-Academic Collaboration
to Innovative Startups**

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Chair Professor

Department of Mechanical Engineering

2015/3/10

Historical City Tainan, Taiwan

High Speed Railway

1 hour and 40mins

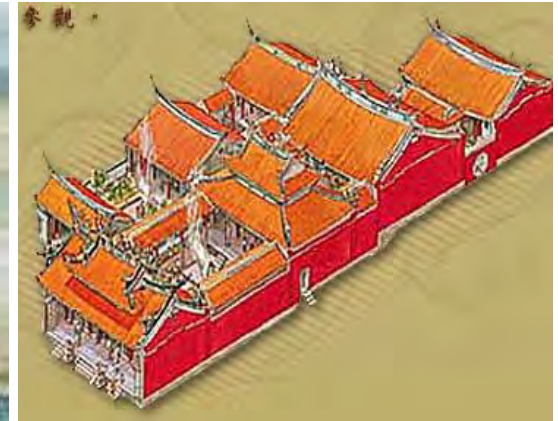


Historic Place: Oldest City with Temples, Traditional Opera...

1623 (Dutch Seaport)

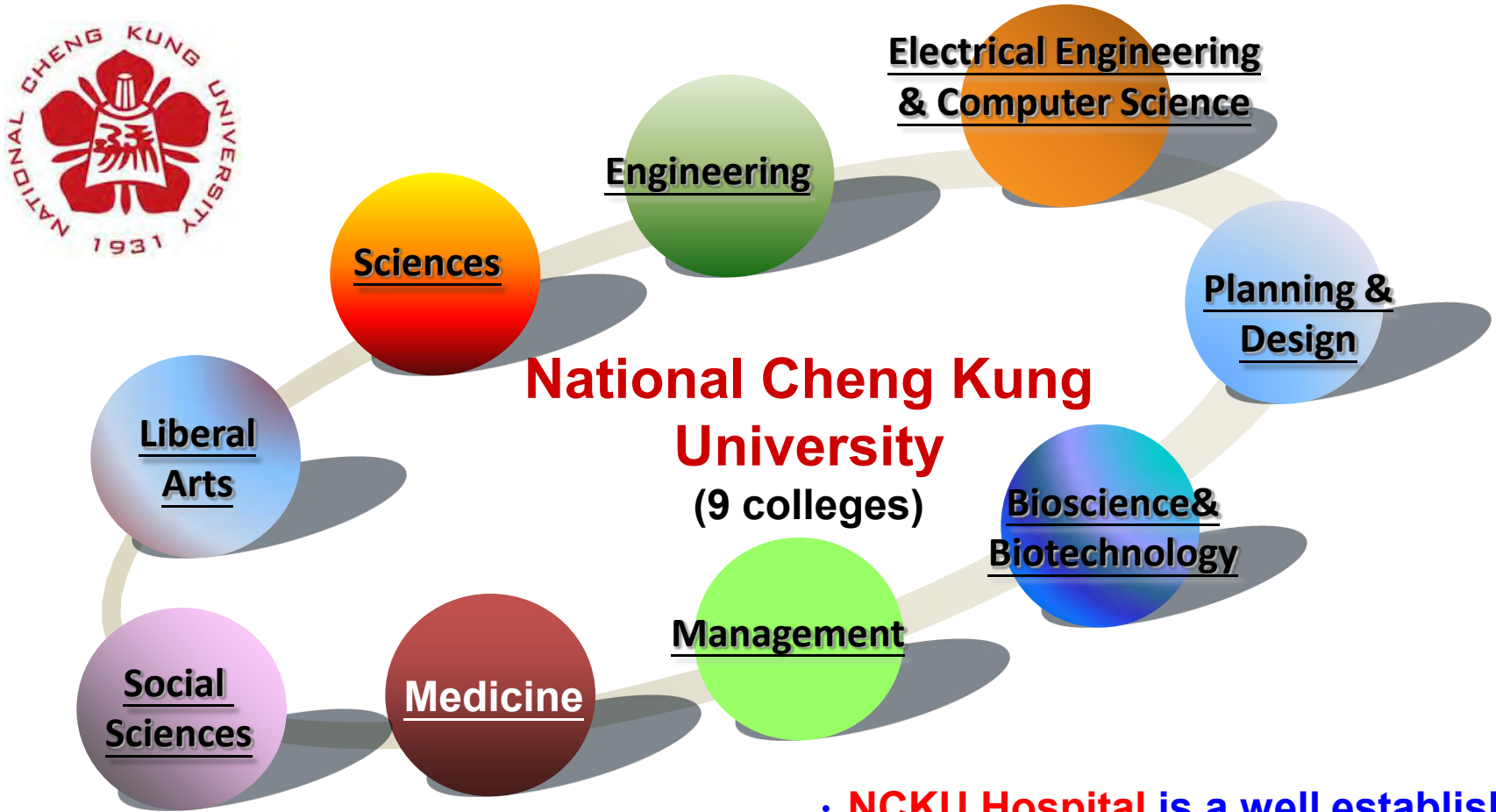


1661 (Ming Dynasty Palace)



A Comprehensive University

National Cheng Kung University (NCKU) established in 1931



- **NCKU Hospital** is a well established medical center in southern Taiwan.



Research & Services Headquarter (RSH)

**-A Unique Framework Dedicated for
Industry-University Collaboration**



The Unique Operating Framework of RSH

- ◎ RSH looks like a **Mega Department Store**
- ◎ Each Research Center acts as **Boutique/Shops**



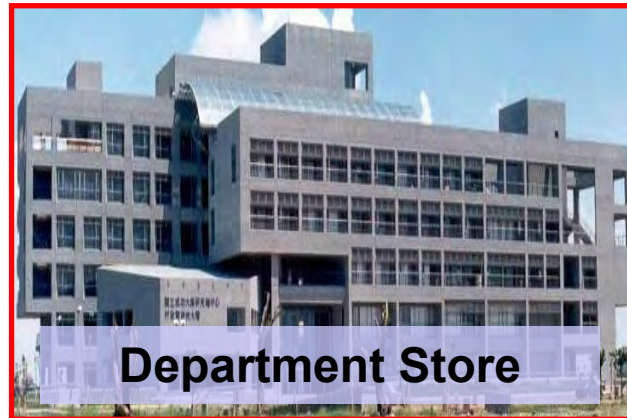
Aquatic Animal Bio-Medicine
Research Center
(農業生物科技研究中心)



Fire Protection & Safety
Research Center
(防火安全研究中心)



Research Center for
Energy Technology and
Strategy (能源科技中心)



Department Store

RSH



Emotors Technology
Research Center
(馬達科技研究中心)



Technology Transfer &
Business Incubation Center
(技轉育成中心)



Center for Industrial Elite
Training & Convention
Management
(產業人培暨會展中心)

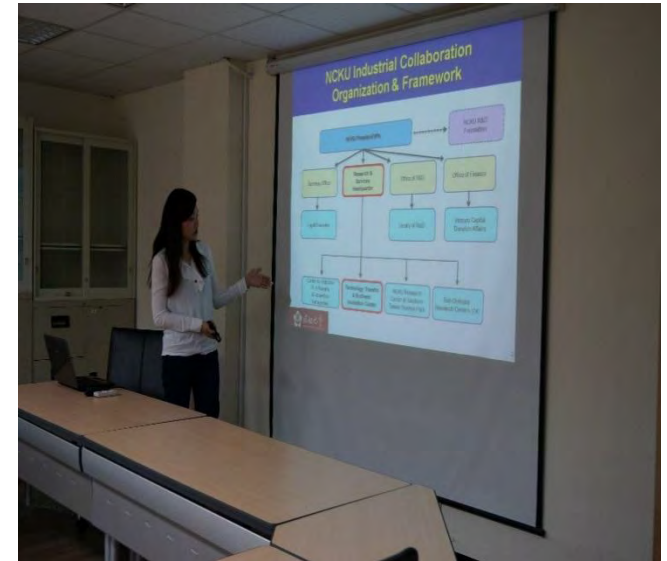


NCKU Research Center at
Southern Taiwan Science
Park (南科研發中心)



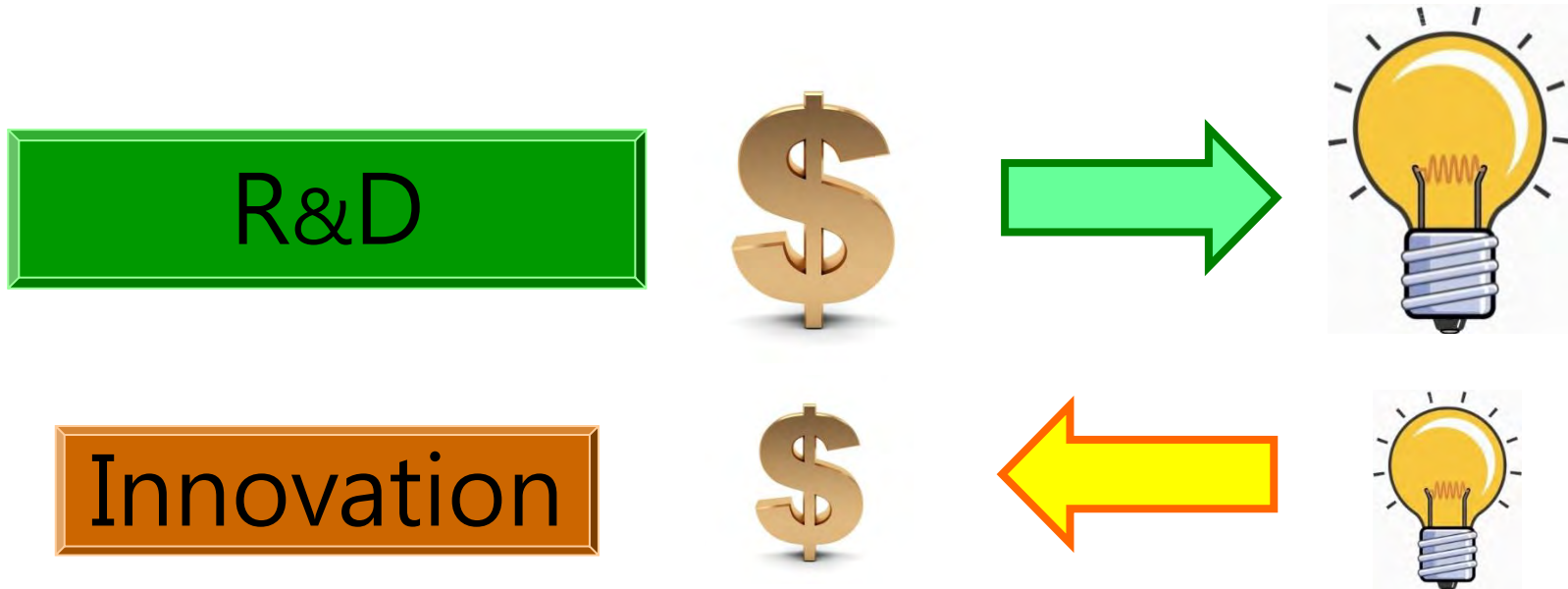
Total: 76 research centers

JST President Visited NCKU



2013.3.18 JST President Michiharu NAKAMURA and his fellow officers visited NCKU RSH (Research and Services Headquarter)

R&D vs. Innovation



R&D- Discover Something New

Innovation- Commercialize Something

Innovative Strategies on University-Industry Collaboration

Early-stage
Discovery
Incubation



Germination

1. Technology Prospecting & Incubation
2. IP Portfolio
3. Business Model Assessment and Planning

Co-R&D of
Interdisciplinary
Collaboration



Matching Fund

1. Introduced External Resources
2. Cross-college integration
3. Co-R&D with Industry

Germination : aims for early stage incubation

■ Goals

- Close the gap between research discoveries and commercialization
- Bring early stage discovery/technology to the market

■ Requirements:

- Highly disruptive and innovative
- With high potential of industrial development

■ Output

- Start-up
- Licensing



On-site Service at Medical School

Providing **timely** on-site service



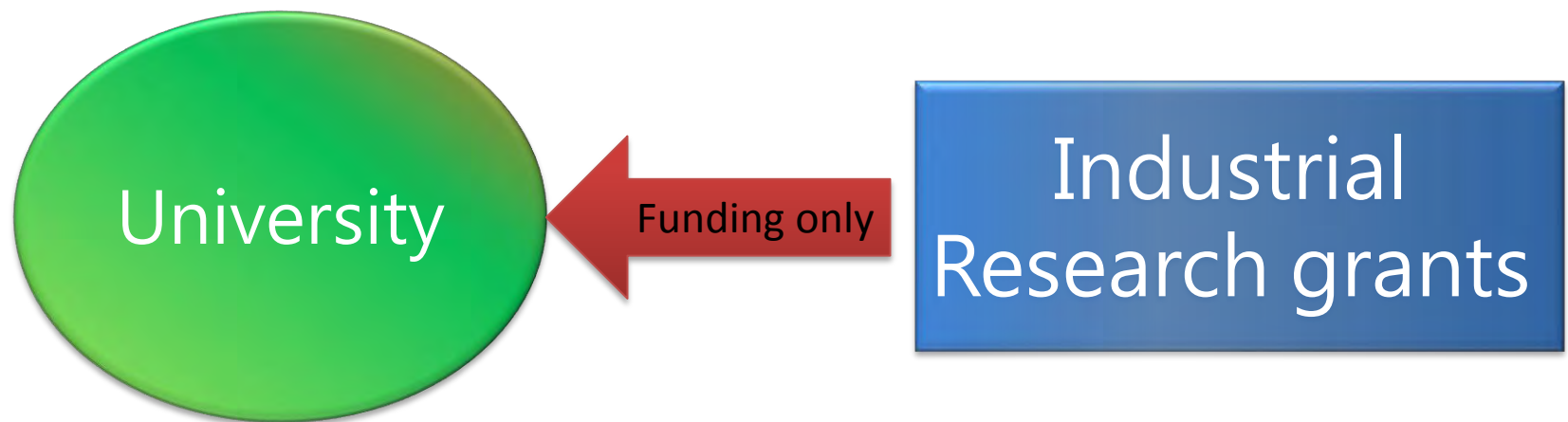
- **In-house IP Attorney (Lawyer)**
- **Technology Licensing**
- **Incubation Service**
- **Startup Service**

University-Industry Cooperation Models

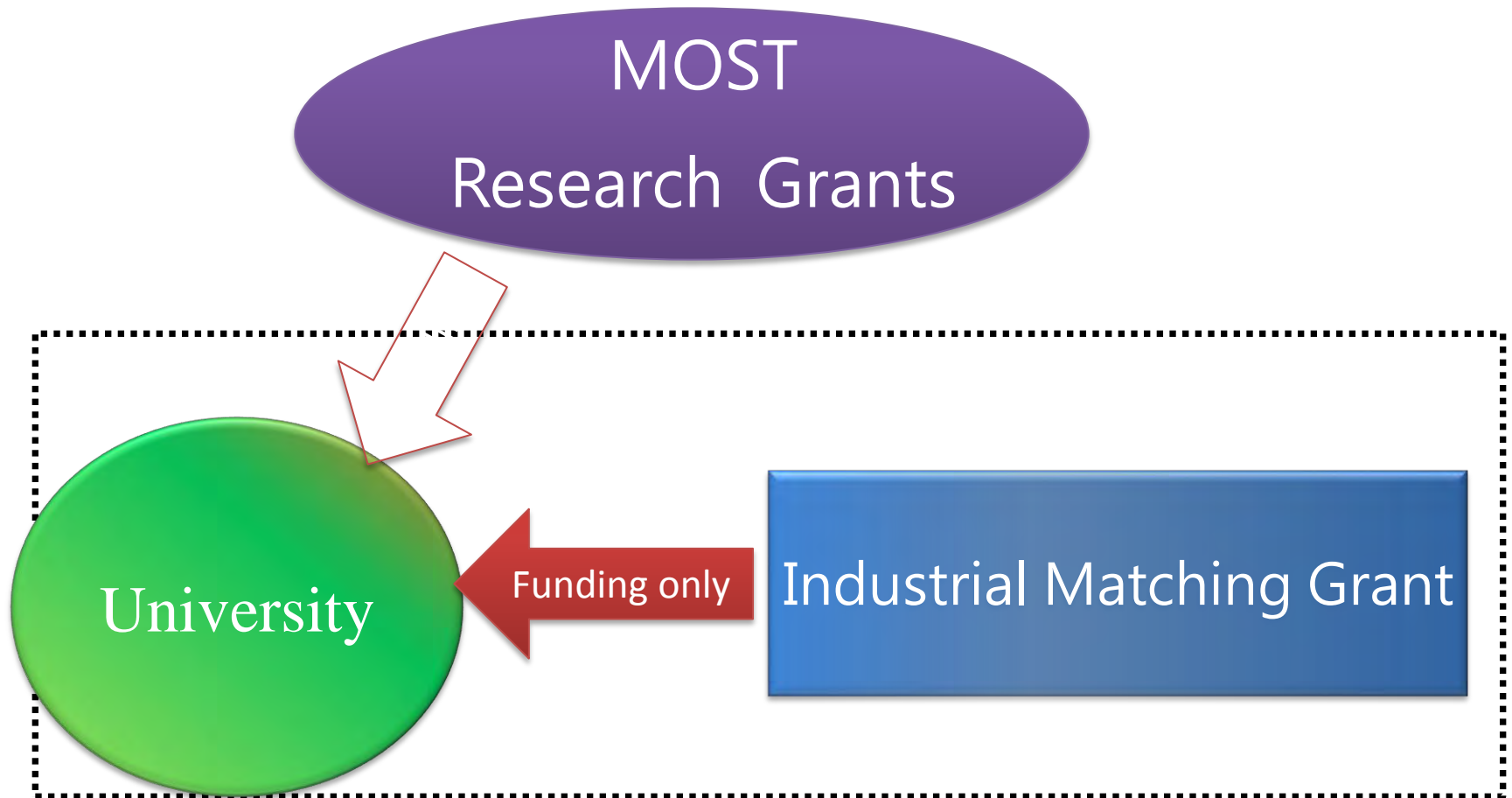


Typical Model

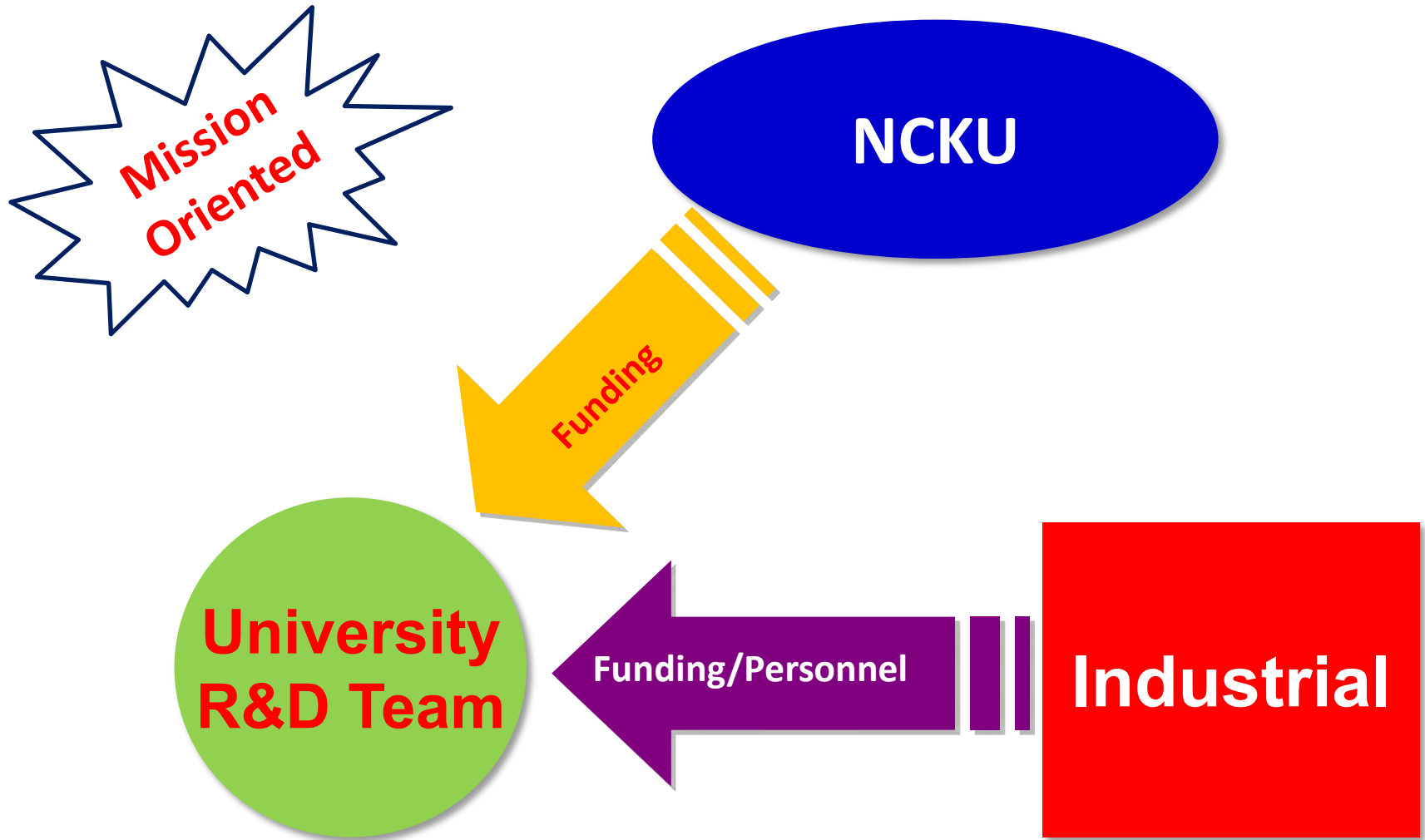
University-Industry Cooperation



Government Supported Model



Matching Fund Project: Co-R&D Investment



Matching Fund Project

Example: **Medical Device Development**

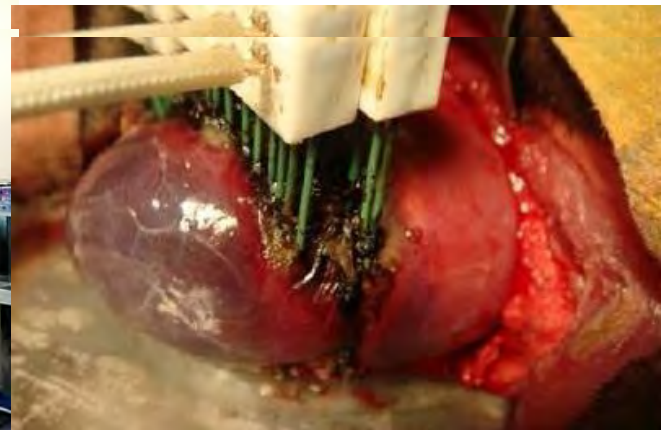


National Cheng Kung University



Metal Industries Research and Development Center

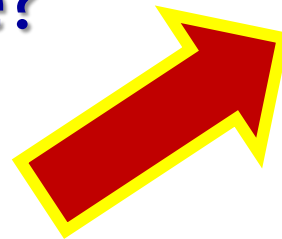
To Develop an electromagnetic thermotherapy system for minimally invasive tumor treatment



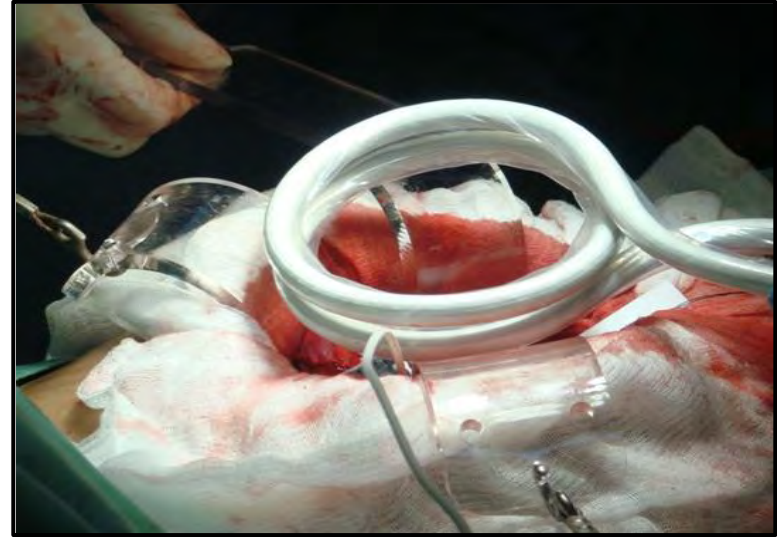
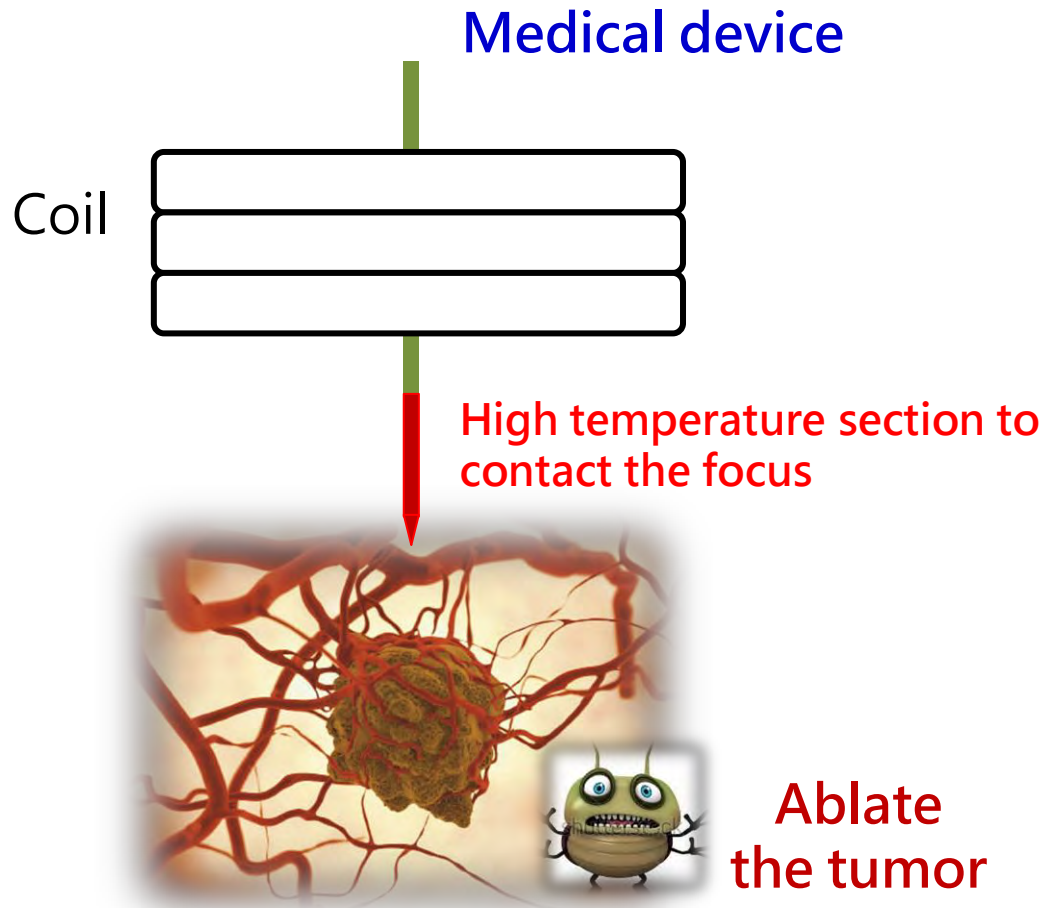
A Sparkling Idea to Innovation

Imagine...

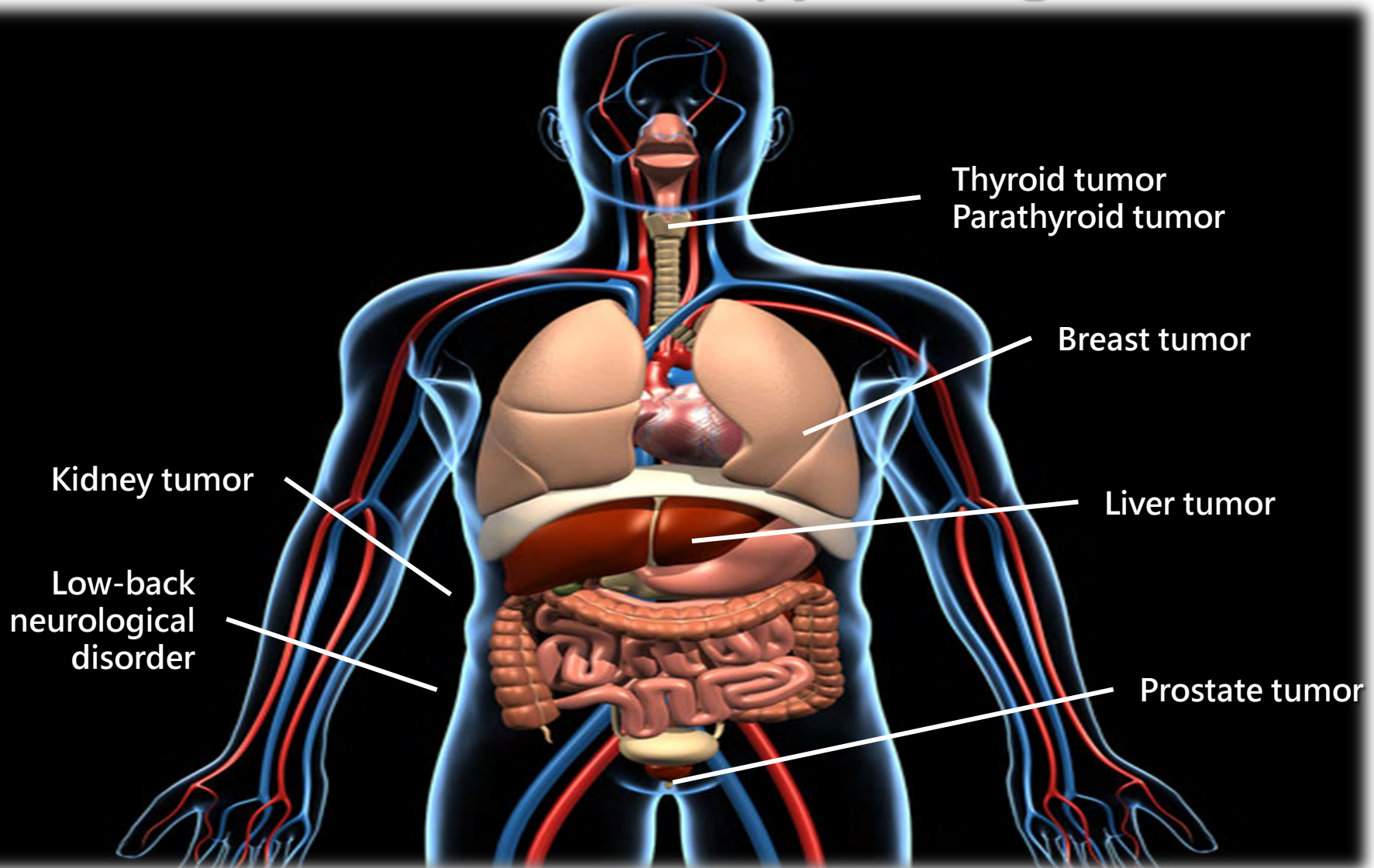
an induction heating cooker
can be turned into an
innovative medical device?



Electromagnetic Thermotherapy for Oncological Treatment



Applications of Electromagnetic Thermotherapy for Organ Tumors



Value-added Services for Innovation



Animation **Scenario** for Promotion

The Animation Maker

Prof. Shieh
Meng-Dar

Creativity,
Innovation and
Entrepreneurship
Center



The Inventor

Dr. Lin Xi-Zhang

Department of Internal
Medicine, College of
Medicine, NCKU



Work out the animation for

**“Development of electromagnetic thermotherapy
system for minimally invasive tumor treatment”**

Invited Angel Investors from Silicon Valley



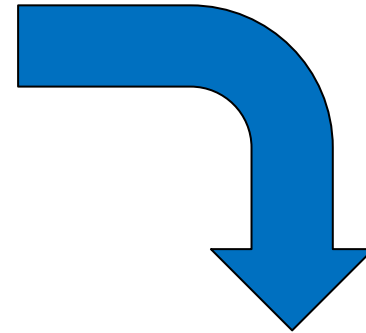
Electromagnetic Thermotherapy

-A New Course

Human Clinical Oncology



**Breast cancer treatment
without resection**



Animal Clinical Oncology



Mast Cell Tumor



14-year-old dog, (left) pre-op; (mid) burning; (right) post-op.

12 -min ablation

no resection
no in-situ reconstruction
no skin-grafting
no suture

25 -min total operation

secondary self healing

The Healing Process

After 1.5 months



Amputation is No Longer the Option



(left) pre-op; (mid) post-op; (right) 24h after treatment

12 min ablation

no resection
no in-situ reconstruction
no skin-grafting
no suture
no bleeding

43% debulked in 6 hours

78% debulked in 30 hours

100% detached in 72 hours

恭賀本院林錫璋教授領導之研究團隊榮獲科技部
創新創業激勵計畫創業傑出獎



R&D on High-end Medical Devices

Electromagnetic
Thermotherapy
for Cancer Treatment

HUMAN
Use

Clinical Trial
at NCKU Hospital

Will pitch the 2nd
Startup after officially
approved clinical trials

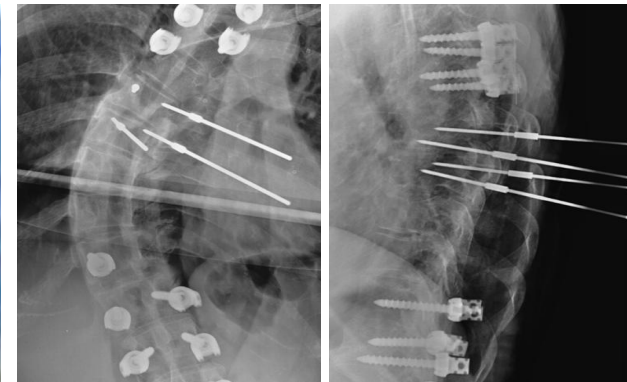
ANIMAL
Use

A New Startup
Taiwan Earning Medical
Co., Ltd.

Enter the market

One More Case_ **Dental Implants**

**Received 2013 MOST Startup Award
Setup a New Company (巧醫) “CHOICE”**



**Products and Service
Intelligent Operation
of Dental Implants**

Animation Scenario for Promotion – one more example

The Animation Maker

**Prof. Chen,
Kuo-Hsiang**

College of
Communication
and Design,
I-Shou University



The Inventor

Prof. Fang, Jing-Jing

Department of
Mechanical Engineering
College of Engineering,
NCKU



Collaboration for

**“Algorithms for Reconstruction and Rehabilitation
of Teeth and Jawbone”**

Summary of NCKU RSH's Mission

A **service platform** for academia-industry collaboration

To cross the **innovation** between academia and industry

To extend the academic research to **real-life scenario**

To promote **international** academia-industry collaboration

To provide **value added** services

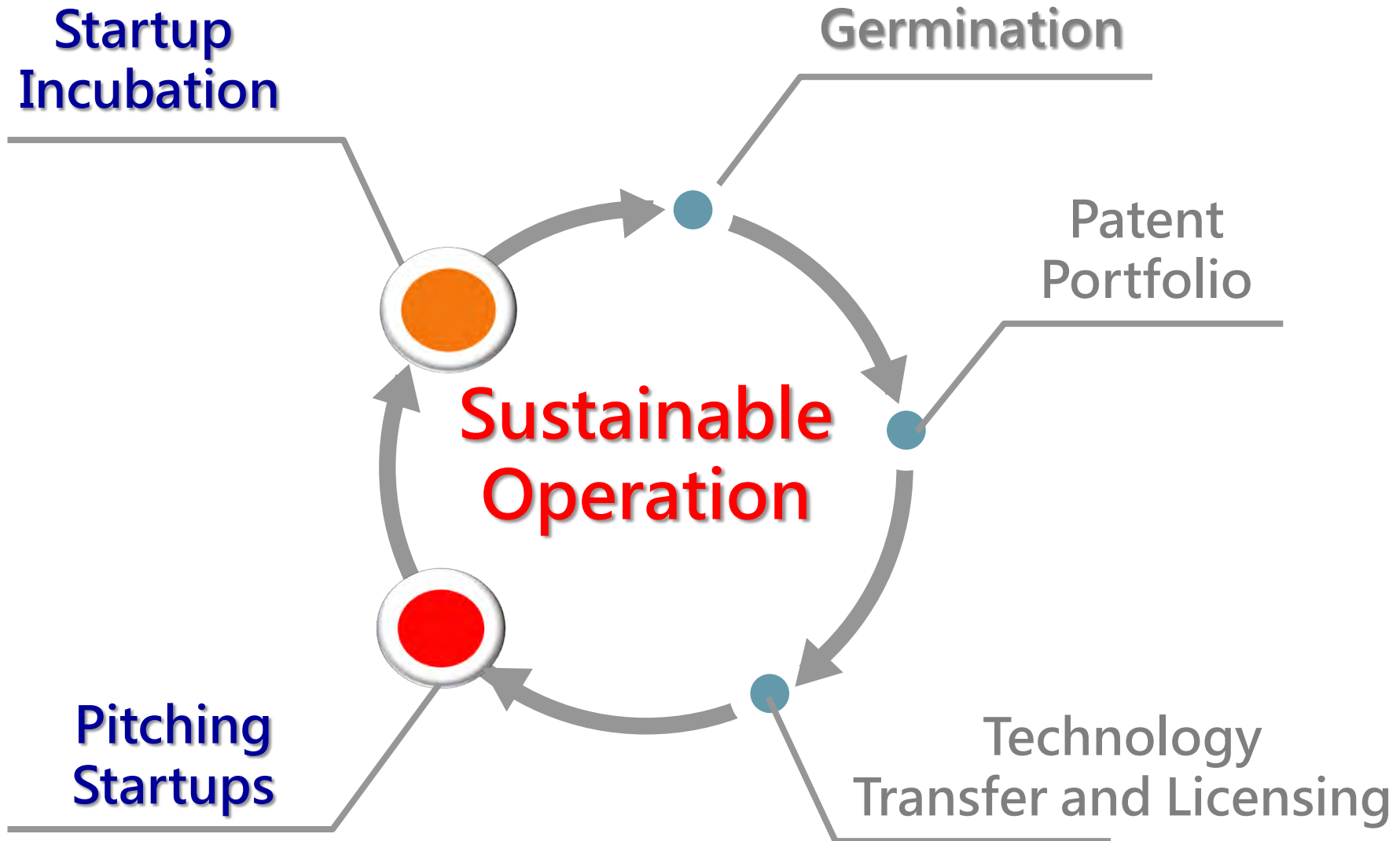


International Cooperation



NIDEC-NCKU Jointed Research

Eco-system of Sustainability





Thank You

