



IFAME-2015 International Forum Korea on Advances in Mechanical Engineering

The efforts put into Innovation and Globalization for Small & Medium Enterprises in Taiwan

- Vice President Ching-ming Chen
- Metal Industries Research & Development Centre
- September 17, 2015





Contents

- 1. Introduction to the Metal Industries Research & Development Centre(MIRDC)**
- 2. Current Status of Taiwan Small & Medium Enterprises(SMEs)**
- 3. MIRDC's Strategies and Case Studies on Assisting Small & Medium Enterprises with Innovations**
- 4. Concluding Remarks**



Introduction to the Metal Industries Research & Development Centre(MIRDC)

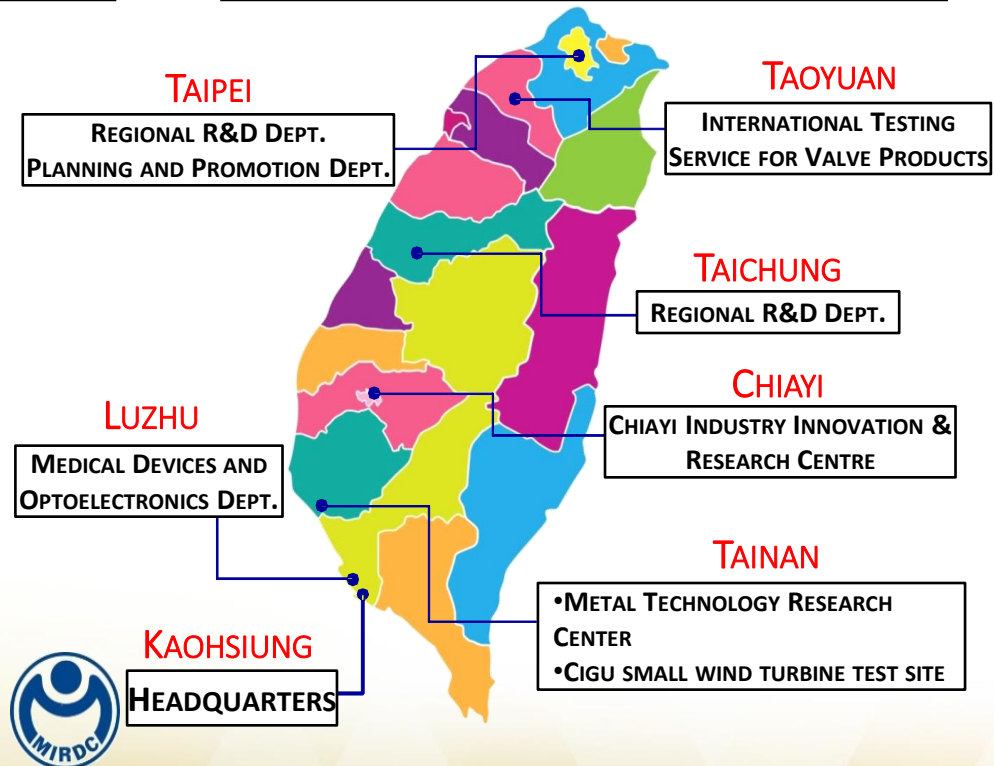
BACKGROUND

• ABOUT MIRDC:

- ESTABLISHED IN 1963 BY MOEA AND UN
- 800+ EMPLOYEES
- 3RD BIGGEST RESEARCH CENTER IN TAIWAN
- ONLY ONE (HEADQUARTER) IN SOUTH TAIWAN

• IN 2014:

- 700+ PROJECTS
- 14,000 PERSONS TRAINED SERVICE
- 779 PATENTS
- OPERATING INCOME USD 75.4M





MISSION

UPGRADING COMPETENCIES OF TAIWAN METAL INDUSTRY

INTERNAL FOCUSES

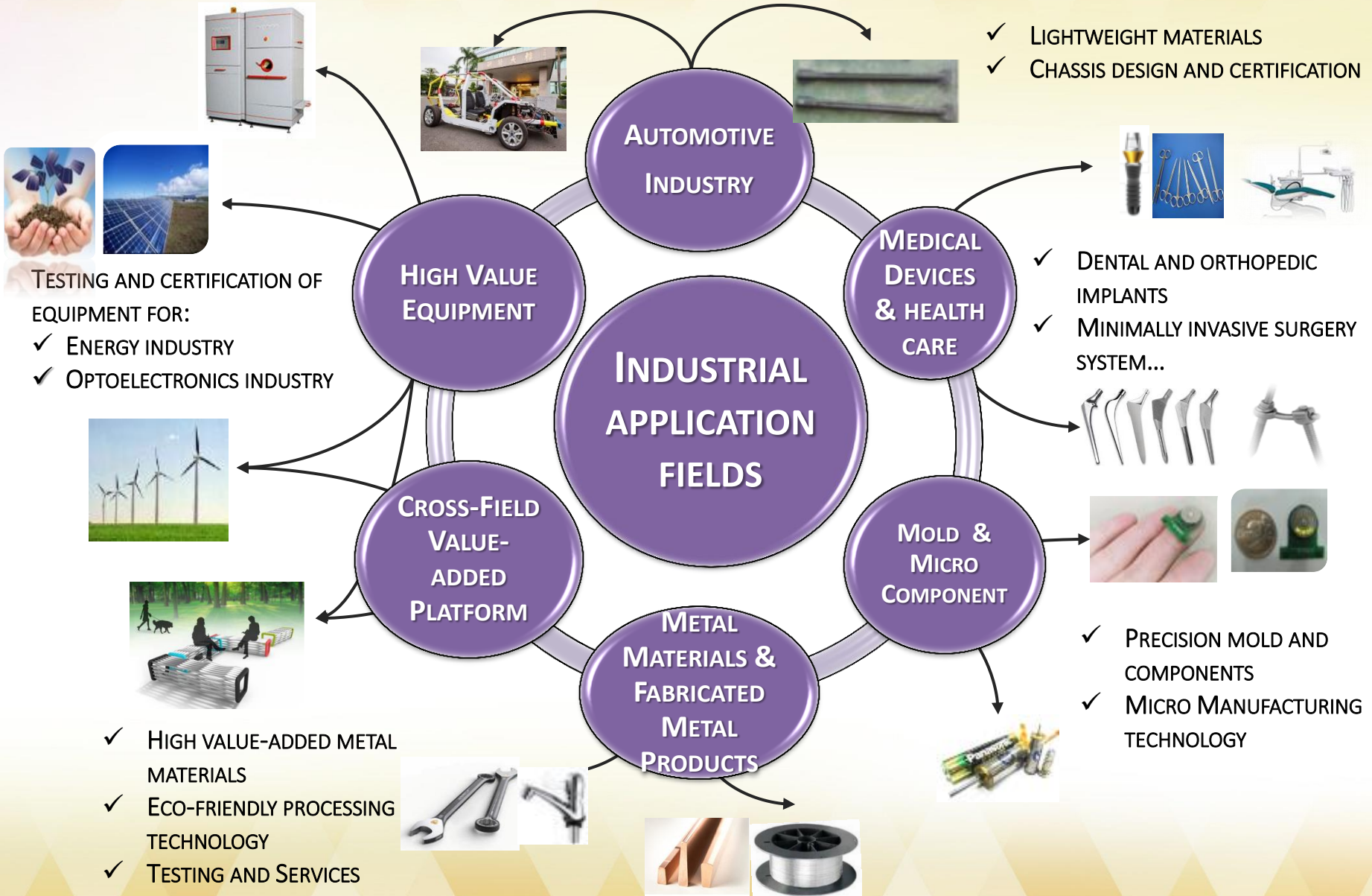
- ✓ **ADVANCED TECHNOLOGIES & KEY COMPONENTS / MODULES**
- ✓ **EFFECTIVE PROCESS DESIGN**
- ✓ **ESTABLISHING CORE LABORATORIES**

EXTERNAL FOCUSES

- ✓ **INTERNATIONAL COOPERATION**
- ✓ **INDUSTRIAL CLUSTERS**
- ✓ **COLLABORATING WITH INDUSTRIAL, ACADEMIC AND RESEARCH SECTORS**
- ✓ **TECHNOLOGIES TRANSFERRING**



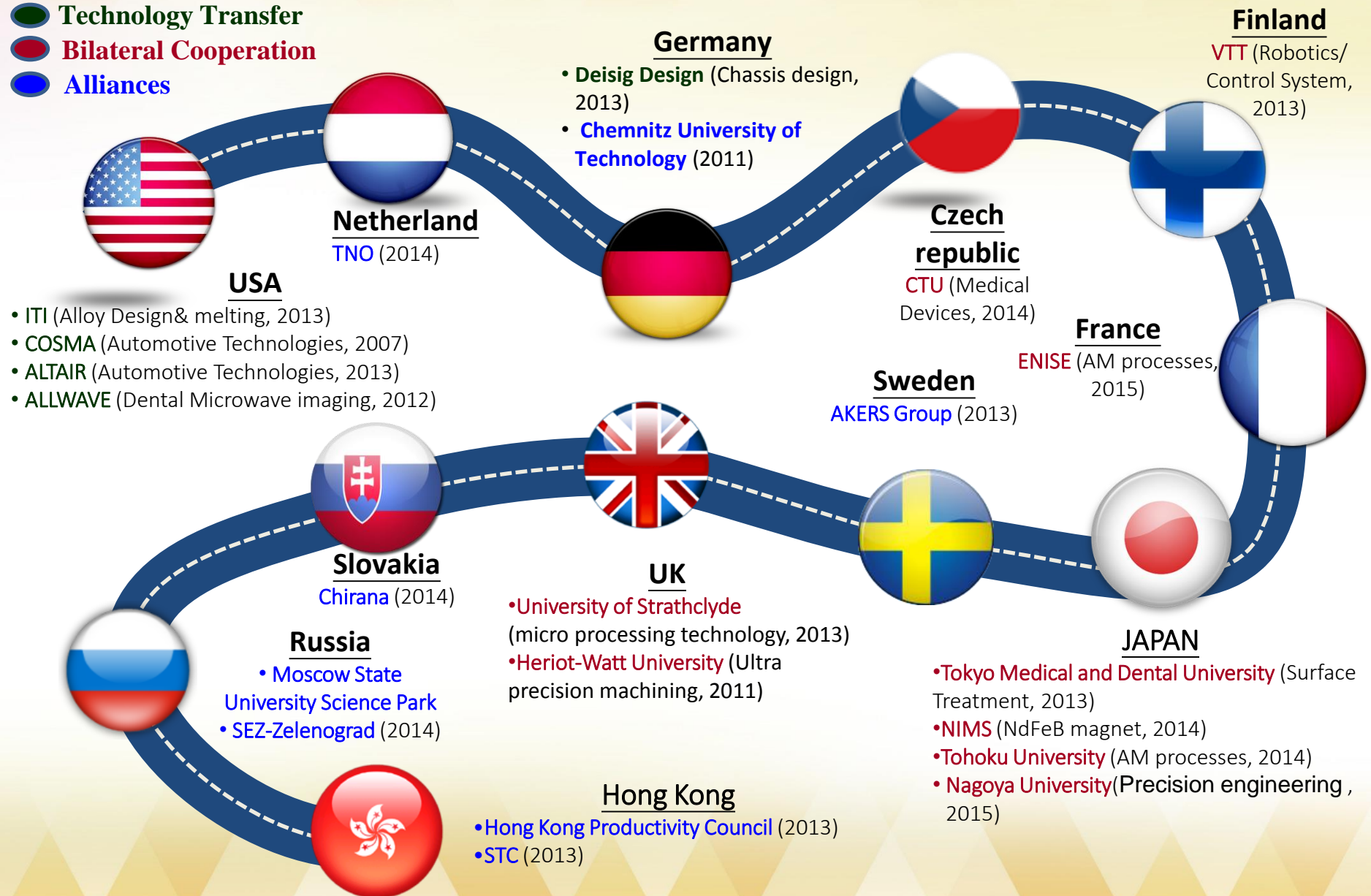
FOCUSED INDUSTRIES





INTERNATIONAL COOPERATION

- **Technology Transfer**
- **Bilateral Cooperation**
- **Alliances**





Current Status of Taiwan Small & Medium Enterprises (SMEs)



DEVELOPMENT STATUS FOR SMEs IN MAJOR ECONOMIES

Germany



- Stabilizing the Eurozone and allow SMEs to easily expand to transnational markets.
- Heavily subsidized SMEs during the financial crisis to create and maintain stable growth in the job market.
- Using SMEs substantial technical ability to promote Industry 4.0, to link up transnational manufacturing resources.

South Korea



- Promoting “Creative Economy”, to allow all innovative individuals to be able to easily start a business.
- Nurturing small but strong international SMEs to become South Korea’s version of hidden champions.
- Focusing on supporting innovative small businesses and young entrepreneurs.

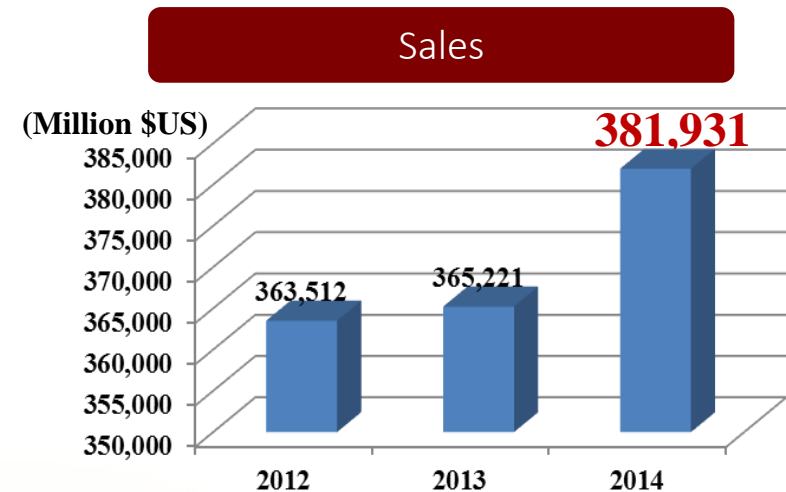
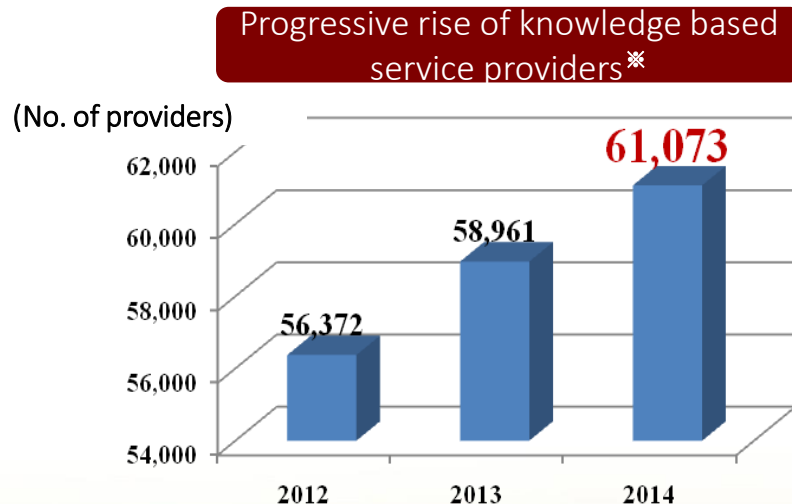
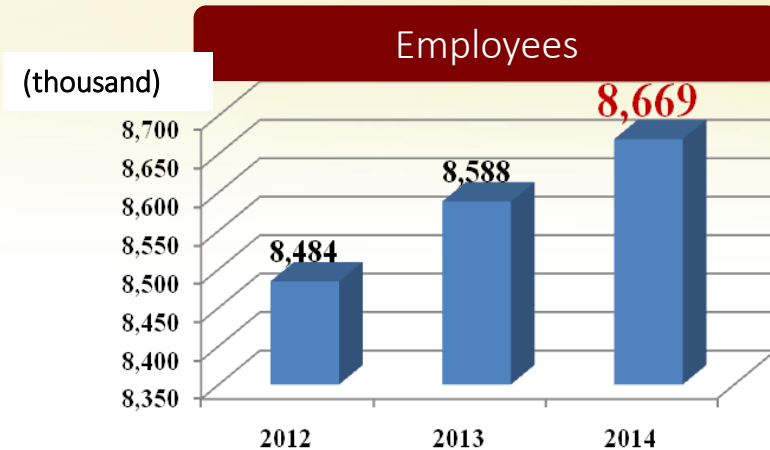
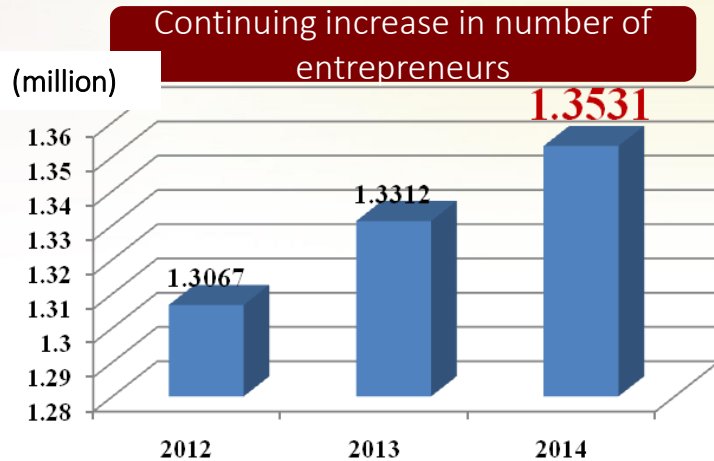
Taiwan



- Fostering emerging SMEs with innovative abilities and creative characteristics. Improve industrial development base and vitalize local economies.
- The goal is to establish future policies and regulation on development mechanisms for Taiwan SMEs, and to create an environment for youth and women’s entrepreneurship and employment.



CURRENT STATUS OF THE DEVELOPMENT OF TAIWAN SMEs



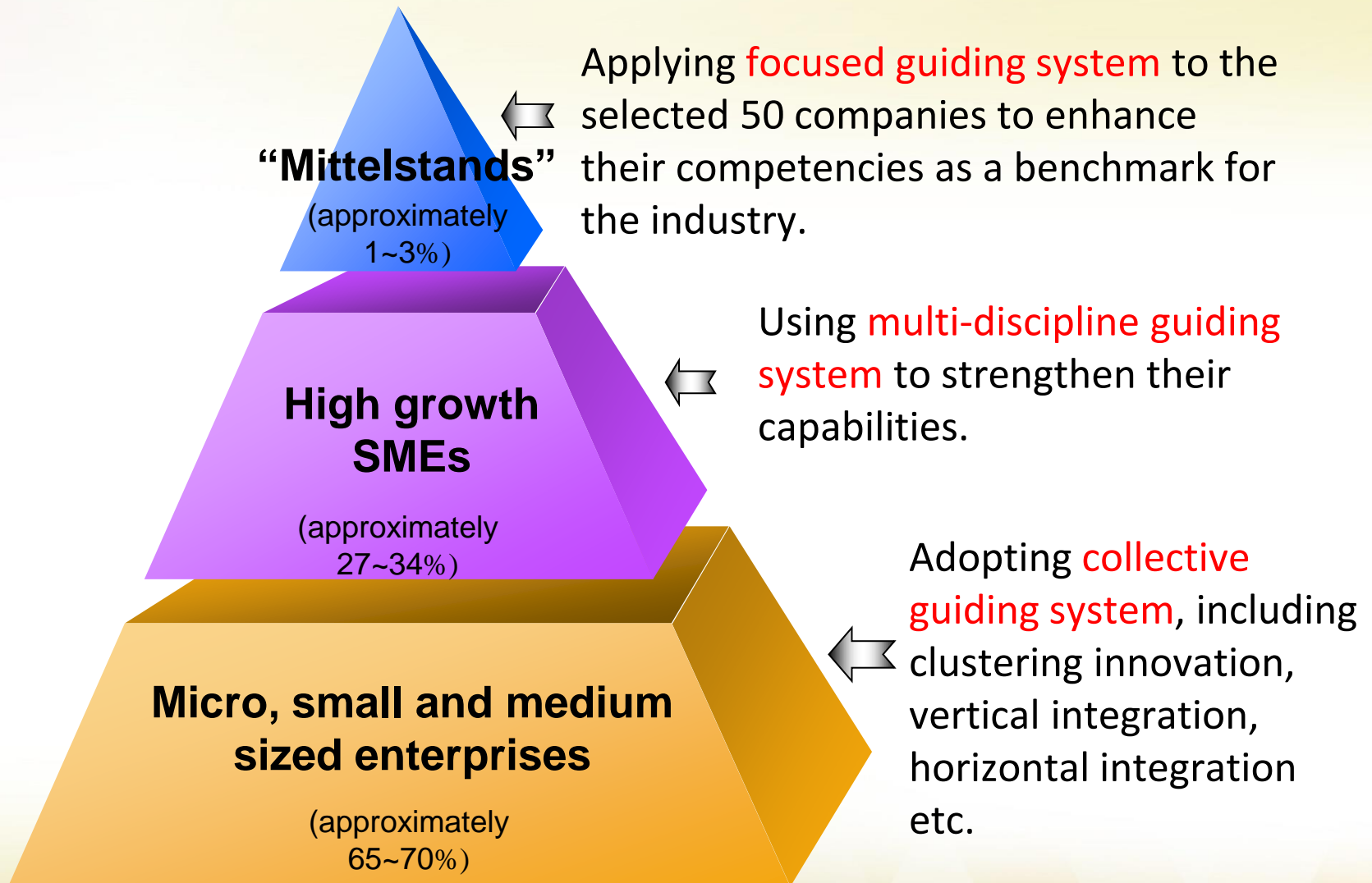
In 2014, there were 1.35 million SMEs in Taiwan, which account for **97.6% of all businesses**; 8.67 million people were employed (**78.3% of the national total**); sales value reached \$382 billion USD (**29.4% of all businesses**).

* knowledge based industries specialize in information and communication (e.g., science and technology services).

Source: statistics from Small and Medium Enterprises Administration, Ministry of Economic Affairs, Taiwan



TAIWAN SMEs GUIDANCE SYSTEM

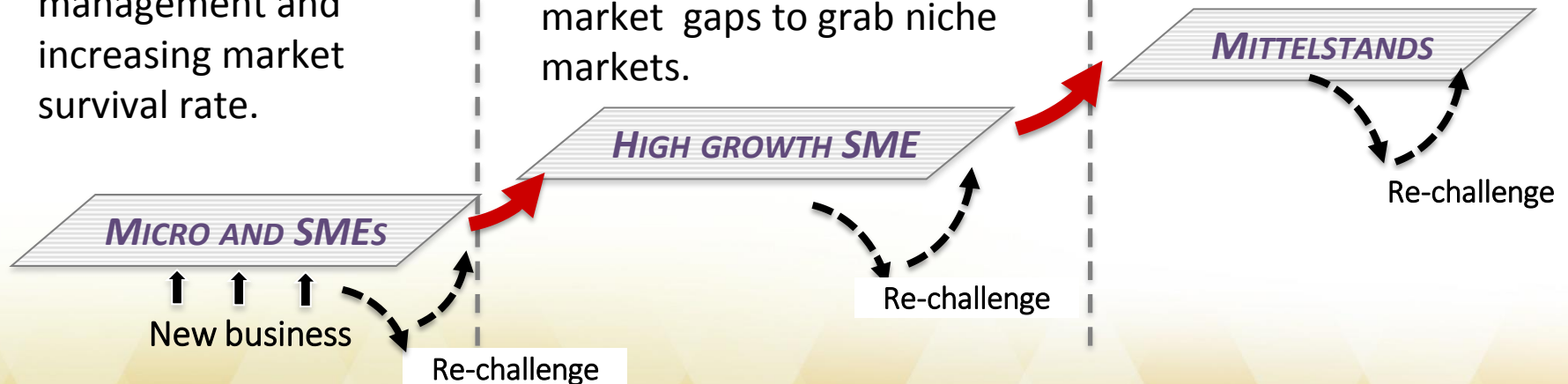




STRATEGY TO IMPLEMENT SMEs GUIDANCE SYSTEM

*NURTURING THE DEVELOPMENT OF KNOWLEDGE-BASED MICRO BUSINESSES TO IMPROVE THEIR MARKET SURVIVAL RATE AND FACILITATE THE DIVERSIFICATION OF INDUSTRIAL STRUCTURE.
IDENTIFYING HIGH GROWTH SMEs TO STRENGTHEN INTERNATIONAL INNOVATIONS.*

- Encouraging creativity, innovation and entrepreneurship. Driving the investment marketplace.
- Strengthening operational management and increasing market survival rate.
- Identifying “high growth SMEs”
 - Providing R&D, human resource, capital and market sales, and customized integration guiding mechanism.
 - Assisting to master key technologies and identify market gaps to grab niche markets.
- Assisting Mittelstands to use the central-satellite system and industrial clustering.
- Pursuing upgrading and transformation





USING GUIDANCE SYSTEM TO ASSIST SMEs

■ *MANUFACTURING :*

- Research development, production technology (Industrial Development Bureau, Department of Industrial Technology), information management (Small and Medium Enterprise Administration)

■ *MARKETING :*

- Domestic and international marketing (Bureau of Foreign Trade, Department of Commerce)

■ *MANAGEMENT :*

- Improving quality, business start-up and incubation, operational management (Small and Medium Enterprise Administration)

■ *FINANCE :*

- Sound finance (Small and Medium Enterprise Administration)

ACCORDING TO GUIDANCE SYSTEM, R&D INSTITUTES(MIRDC ETC.) WILL ASSIST SMEs FOR UPGRADING AND TRANSFORMATION.



MIRDC's Strategies and Case Studies on Assisting Small and Medium Enterprises with Innovations

I2I DEVELOPMENT MODE OF TAIWAN'S SMEs

NEEDS OF INDUSTRIES

From the perspective of industrial chain, realize the market demands from materials, manufacturing to system services



IDENTIFICATION OF THE TECHNICAL GAP

Identifying the required high-value materials or process technology corresponding to the demands of industries



INDUSTRIAL-ACADEMIC INTEGRATION

Emphasis of multiple applications and integration of innovative technologies



INDUSTRIALIZATION PROMOTION

- Setting up spin-off companies
- Establishing new production line

ESTABLISH CORE CAPABILITY OF INNOVATIVE TECHNOLOGY

- Developing key technology of high value materials
- Establishing key process technology of industries

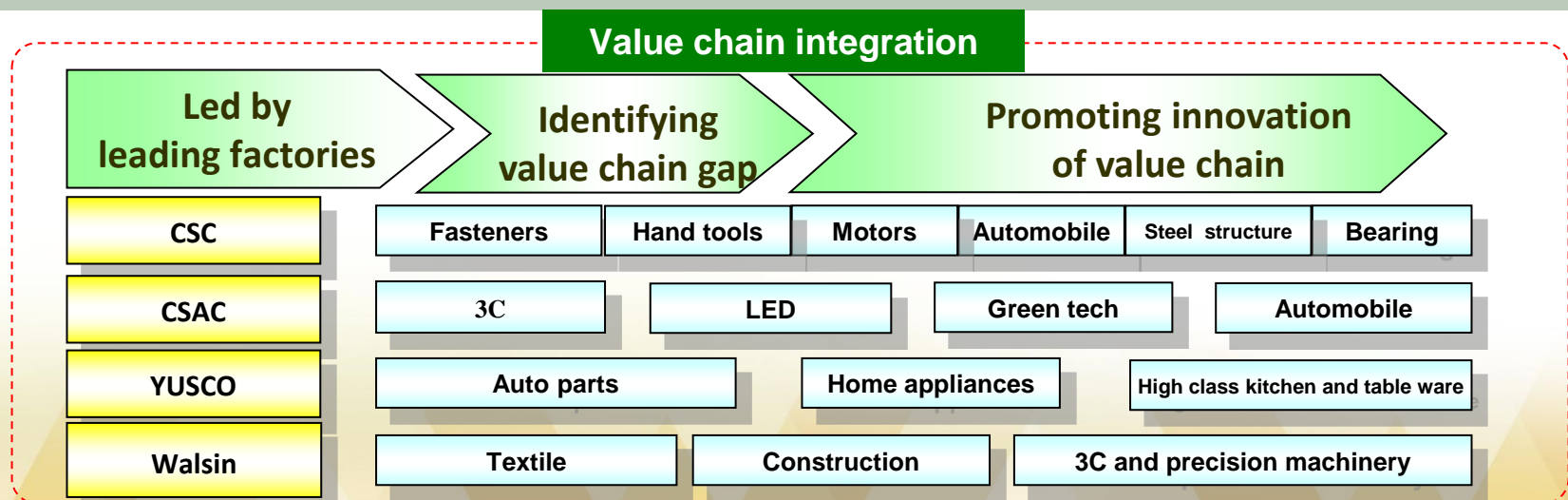


CASE 1: ENHANCEMENT OF INDUSTRY VALUE CHAIN LED BY LEADING MATERIAL FACTORIES

INDUSTRY PROBLEM :

- Lack of large scale system factories
- The scale of industries is small

- **ANALYSIS OF INDUSTRIAL NEEDS:** carrying out analysis of the needs of industry
- **INTEGRATION OF VALUE CHAIN:** promoting leading material factories to lead and form value chain's R&D alliance with upstream, midstream and downstream manufacturers
- **INTEGRATION OF BENCHMARK OPERATORS:** connecting system operators to jointly develop new products





CASE 2: DEVELOPMENT OF KEY TECHNOLOGIES FOR BIO-TECH & FOOD EQUIP.

MAJOR TECHNOLOGIES

- Biomass pre-treatment
- Supercritical Fluid Extraction, Separation & Purification
- High Pressure Processing
- Powder & microencapsulation
- Automated solid-state fermentation
- Inspection and Analysis of Natural Compounds

ACHIEVEMENTS / SERVICE MODELS



- (Chiayi Innovation) Setting up pilot production line so that local materials can be adopted and develop high value-added products



- MIRDC is equipped with developing bio-tech and food equipment and can conduct customized development.

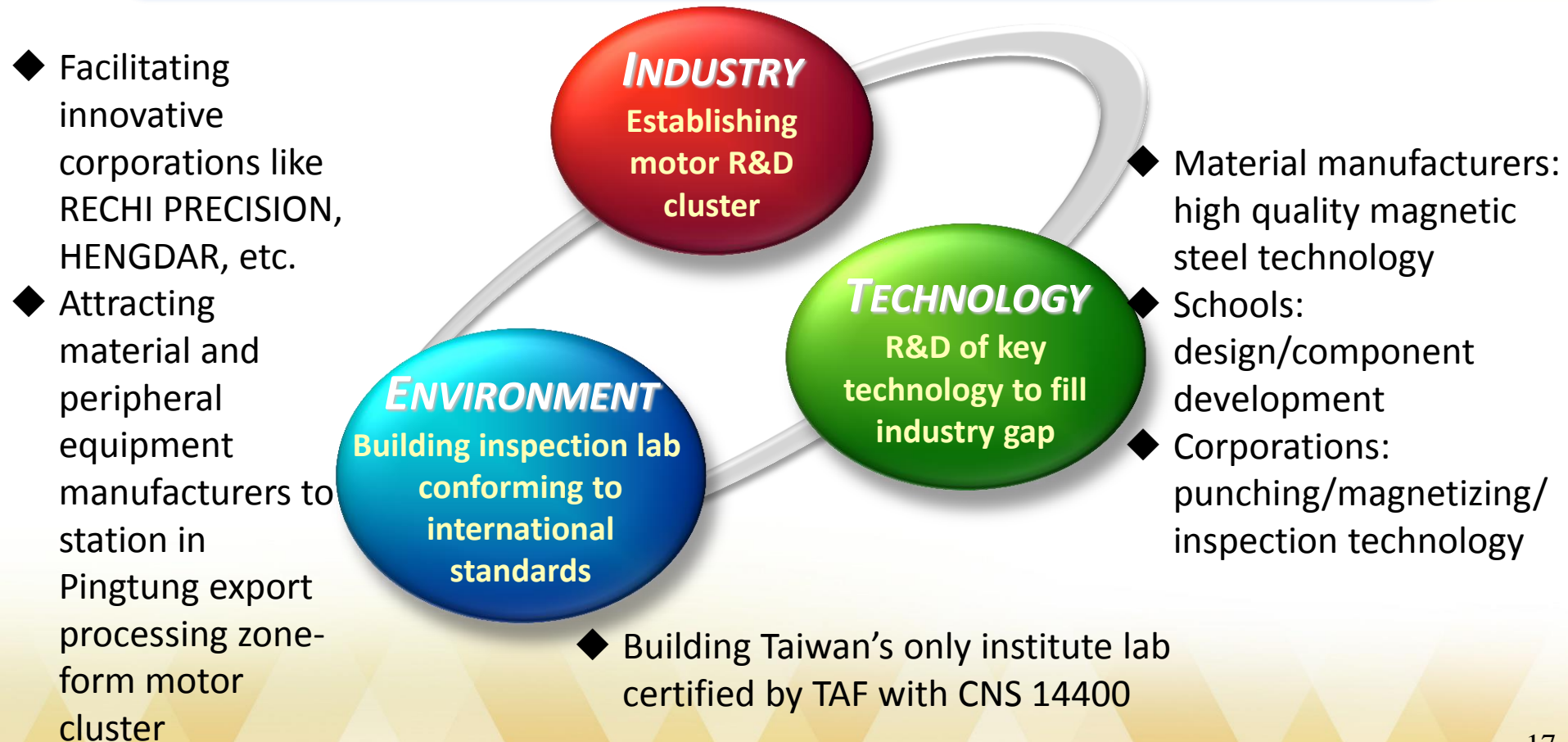




CASE 3: NETWORKING AND PROMOTION OF THE AUTONOMY OF MOTOR INDUSTRY

INDUSTRY PROBLEM :

- Energy consumption takes up a huge proportion (46%) of industrial electricity
- Magnet and high quality magnetic steel still depend on imports





CASE 4: PROMOTION OF WIND TURBINE INDUSTRY

Taiwan is fully dedicated to the promotion of “renewable energy” and has issued the “Thousand Wind Turbines Promotion Program”, which is scheduled to complete 450 turbines on land (1.2GW installed capacity) by 2020 and 600 turbines offshore (3GW installed capacity) between 2015-2030

Promotion measures



Development of key subsystem



Development of offshore wind power generation service industry



Test and certification platform for wind turbine

CREATE DEVELOPMENT ENVIRONMENT FOR EMERGING INDUSTRIES

Facilitating the cooperation between CSC and Taichung Port of Taiwan International Ports Co., Ltd. and build an “Exclusive Port and Industrial Park for Offshore Wind Power Industry” at Taichung Harbor

ENHANCEMENT OF PRODUCTION VALUE

item	2013	2020
Total production value (\$100 million USD)	2.6	41.8
Job created (person)	1,400	4,640
Investment (\$100 million USD)	0.64	32.2



Concluding Remarks

- Taiwan government promotes a series of policies and applies guidance system to assist the upgrading and transformation of SMEs.
- MIRDC networks government policies and industrial needs and plays an important role in the innovation and globalization process for Taiwan SMEs.
- We will further enhance the international collaborations to help Taiwan SMEs and partner up to upgrade their capabilities and competencies.



Thank you for your attention