R&D-DRIVEN PHILIPPINE ELECTRONICS INDUSTRY

Dr. Dan Lachica, SEIPI President
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PRESENTATION OUTLINE:

• SEIPI

• The Philippine Electronics Industry

• Performance

• R&D Activities

• Gearing Up Towards An R&D-Driven Industry
ABOUT SEIPI
Semiconductor and Electronics Industries in the Philippines Foundation Inc.

CRITICAL MASS OF GLOBAL PLAYERS

The largest organization of 300 foreign and Filipino semiconductor and electronics companies in the Philippines.

Its membership include leading global players like Continental Temic, Toshiba, BAG Electronics, Epson, Amkor, Fairchild Semiconductor, Cebu Mitsumi, Knowles, Texas Instruments, HGST, Ibiden, Samsung Electro-mechanics Phils., Corp., Fujitsu Ten, Analog Devices, Cypress, Moog, ON Semi, Maxim, ROHM, Tsukiden, P. Imes, PSMC Phils., Inc., STMicroelectronics, Filipino companies such as IMI, Ionics and Fastech Synergy.
VISION:
To make the Philippines a globally competitive business environment for semiconductor and electronics technology.

MISSION:
To enhance and promote the Philippines’ competitive advantages and growth opportunities in electronics manufacturing and technology business through Training, Research and Development, Advocacy, Information, Networking and Services (TRAINS).

VALUES:
- Service
- Excellence
- Innovation
- Promotion
- Integrity
THE PHILIPPINE ELECTRONICS INDUSTRY
The industry emerged in the 1970s when industrialized nations moved their production facilities to cost-competitive developing countries to control rising production costs.

The sector eventually became the largest foreign exchange earner of the Philippines, surpassing traditional exports such as coconut and sugar.
SECTORAL COVERAGE

Philippine electronics companies engage in both semiconductors manufacturing service (SMS) and electronics manufacturing service (EMS). SMS refers to the production of electronics devices’ semiconductors and components – from design to assembly. EMS involves the manufacture of electronics products for other companies on a contract basis, including circuit boards, electronics assemblies, and complete systems.

The Philippines is home to about 420 MNCs and Filipino-owned semiconductor and electronics companies.

<table>
<thead>
<tr>
<th>Sub-sector</th>
<th>Major Players</th>
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<tbody>
<tr>
<td>Semiconductor and other components</td>
<td>Texas Instruments, ON Semiconductor, Amkor, Analog Devices, NXP</td>
</tr>
<tr>
<td>Electronic Data Processing (EDP)</td>
<td>Western Digital Company (HGST), Toshiba and Samsung</td>
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<tr>
<td>Office Equipment</td>
<td>Funai (Lexmark), Canon, Brother and Epson</td>
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<tr>
<td>Telecommunication</td>
<td>Cirtek, ATEC</td>
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<tr>
<td>Communications and Radar</td>
<td>Murata</td>
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<tr>
<td>Control and Instrumentation</td>
<td>Maxim</td>
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<tr>
<td>Medical and Industrial Instrumentation</td>
<td>Microsemi, IMI and Sonion</td>
</tr>
<tr>
<td>Automotive Electronics</td>
<td>Continental Temic, FujitsuTen, STMicroelectronics, IMI</td>
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<tr>
<td>Consumer Electronics</td>
<td>Bag Electronics, Ionics</td>
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<tr>
<td>IC Design</td>
<td>Analog Devices, ROHM, Kyocera and Xinyx</td>
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</tbody>
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Source: PSA 2017
The Philippine electronics industry’s capabilities are at #3 of SMS and #6 of EMS.
TOP 10 EXPORT DESTINATIONS

USA 13%

NETHERLANDS 4%
GERMANY 6%
CHINA 12%
KOREA 3%
JAPAN 10%
HK 22%
TAIWAN 6%
THAILAND 4%
SINGAPORE 9%

REST OF THE WORLD: 11%

Source: PSA, July 2017
TOP 10 COUNTRIES OF IMPORT ORIGIN

USA 10%
CHINA 17%
KOREA 14%
JAPAN 13%
TAIWAN 14%
HK 7%
THAILAND 3%
VIETNAM 5%
MALAYSIA 3%
SINGAPORE 10%
REST OF THE WORLD: 5%

Source: PSA, July 2017
INDUSTRY PERFORMANCE
INDUSTRY PERFORMANCE FOR 2016

INVESTMENTS
- Accounted for PhP 49.349 Million FDI

EMPLOYMENT
- Employed 3.2 million workers

TAXES
- Paid an estimated PHP 48 billion in taxes

EXPORTS - 50.3% of total exports, at US$ 28.9 billion
IMPORTS - 26.6% of total imports, at US$ 21.9 billion
PHILIPPINE ELECTRONICS INDUSTRY R&D INITIATIVES

• There are 8 Companies who have existing R&D activities in the country

DISCIPLINES / FIELDS OF EXPERTISE

• Electronics and Electrical Engineers
• Mechanical and Material Engineers
• Test Development Engineers
• Software Engineers
• Application Engineers
• Circuit and PCB Designers
• Optics Engineer
CURRENT R&D ACTIVITIES IN THE PHILIPPINES INVOLVE:

- Signal processing and conversion
- RF communications
- Product development
  - DVT/EVT/PVT
  - Prototyping
- Platform development on automotive cameras, motor drivers, power modules, NFCs etc.
- Small precision assembly (bare die and stacked die, flip chip technology)
- Optoelectronics
- Mobile manufacturing robots for automation
- Energy Management System
- Data Security
KEY SUCCESS FACTORS

• Steady pool of Skilled Engineers
  1. Continuous professional development for engineers
  2. High retention of employees
  3. Competitive compensation package
• Good relationship with company headquarters (HQs).
• Aggressive leadership and direction to localize R&D
• Milestone-based progress monitoring
• Number of patents
  o Example of awarded patents:
    1. Switching Regulator with Integrated Resonant Circuit For Ripple Filtering
    2. Vertical Magnetic Isolation Barrier Wall in a customized module lead frame
    3. Resistor Controlled Timer Circuit with Gain Ranging
    4. Method and Apparatus for Creating a Uniform and Stable Magnetic Field for Stimulating Magneto-Resistive Devices
• Government Support
GOVERNMENT SUPPORT

§ Advanced Device and Materials Testing Laboratory (ADMATEL)
   - Equipped with state-of-the-art analytical equipment for failure analysis and materials characterization
   - Reduces the delays and costs of having products tested abroad

§ Philippine Electronics Product Development Center (EPDC)
   - Realizes electronic product designs from theory to working PCB prototypes
   - Assured reliability of products as they are exposed and tested in a 10-m semi-anechoic chamber for EMC testing

§ Philippine Institute for Integrated Circuits (PIIC)
   - An extension and supporting facility enhancing incubation and innovation schemes and cross-cutting research projects
   - Bridges the academe, industry and government together

§ Training for Work Scholarship Program thru TESDA

§ PATHS (Product and Technology Holistic Strategy)
GEARING UP TOWARDS AN R&D-DRIVEN INDUSTRY
LEVEL OF TECHNOLOGY

• In terms of technology and business operations, the electronics industry of the country is strong in manufacturing assembly and test.
• While this has been true for the past three (3) decades, the need to move gradually towards the higher end of the value chain (i.e. R&D and IC Design) is being expressed. This is just one of the factors that will sustain the country’s competitiveness.
PRODUCT AND TECHNOLOGY HOLISTIC STRATEGY (PATHS)

An overall industry strategy necessary to guide the industry players on how to move up the value chain and what specific products and technologies the semiconductor and electronics industry must pursue in the growing sectors in the next five years; and identify economic and political solutions that will address the requirements of the identified products and technologies

OBJECTIVES
1. Identify global technology trends in the semiconductor and electronics industry.
2. Based on the semiconductor and electronics technology trends, determine the strategic and specific products and technologies that the Philippines should focus on in the following sectors:
   a. Semiconductor Manufacturing Service (SMS)
   b. Electronics Manufacturing Service (EMS)
3. Review the current country factor resources and state-of-the-art technological capabilities and the business operating environment of the electronics and other industries and the country vis-à-vis the new product lines.
4. Given the specific products and technologies to pursue in the SMS and EMS sectors, identify the necessary and desired industry resources, policies, supply chain and operating environment that will support the thrust for existing firms to expand into or attract new investors to locate in the Philippines.
5. Formulate a product and technology strategic roadmap to close the gap between the current and the desired state of the country’s electronic industry identifying specific action programs for marketing, physical facilities, skills, policy, etc. that are needed to successfully resurrect and grow the Philippine electronics industry.
EMERGING TECHNOLOGIES

- Wearables
- IoT
- Robotics
- 3D Printing
- Cognitive Systems/Artificial Intelligence (AI)
- Augmented Reality (AR) / Virtual Reality (VR)
- Next-Gen Security
- Cloud
- Mobility
- Big Data Analytics

Source: IDC
COMPONENTS AND TECHNOLOGIES INVOLVED
THANK YOU and GOD BLESS.