Research, Development and Innovation

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Department of Science and Technology

DOST

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science for the people
Innovation for Collective Prosperity

Research and development (R&D)

Comprising of **creative** work undertaken on a **systematic** basis in order to **increase the stock of knowledge**, including knowledge of man, culture and society, and the use of this stock of knowledge to **devise new applications**

Innovation

A process, product or service that is **new, original, or improved**, which **creates social and economic value**

New Products from Research, Development and Innovation

DOST

1. Biofertilizers and Plant Growth Enhancer

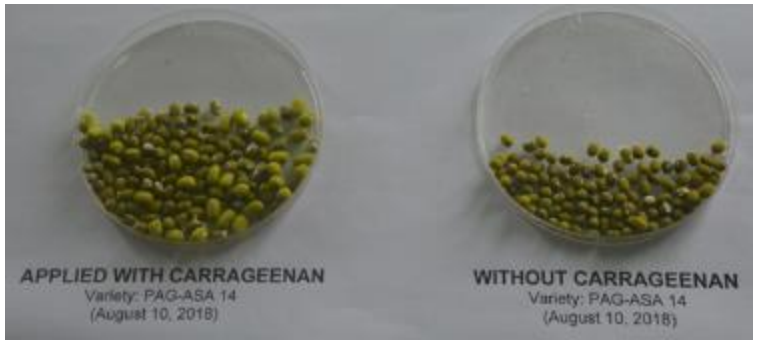
Irradiated CARAGEENAN Plant Growth Promoter

RICE YIELD INCREASE

15-40%

MONGGO YIELD INCREASE

33%



FERTIGROE slow release fertilizer for corn and sugarcane

nano
Plant Growth Regulator

MICROMIX

Biostimulant for Bell Pepper and Bitter Gourd

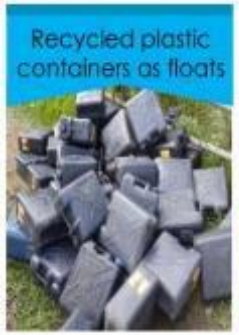
2. Feeds

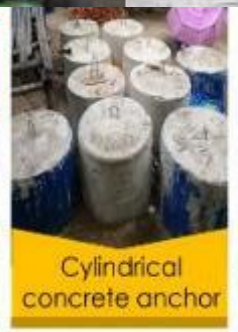
Sure Feeds for Goats

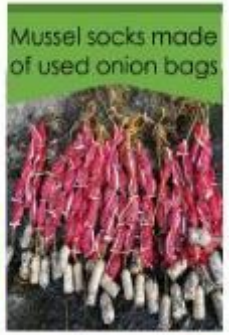
Microalgal Paste as Aquafeeds

Protein-enriched Copra Meal (PECM)

3. Agriculture/Aquaculture Productivity Technologies

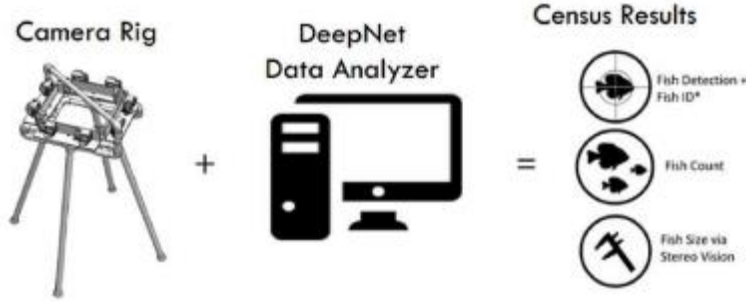




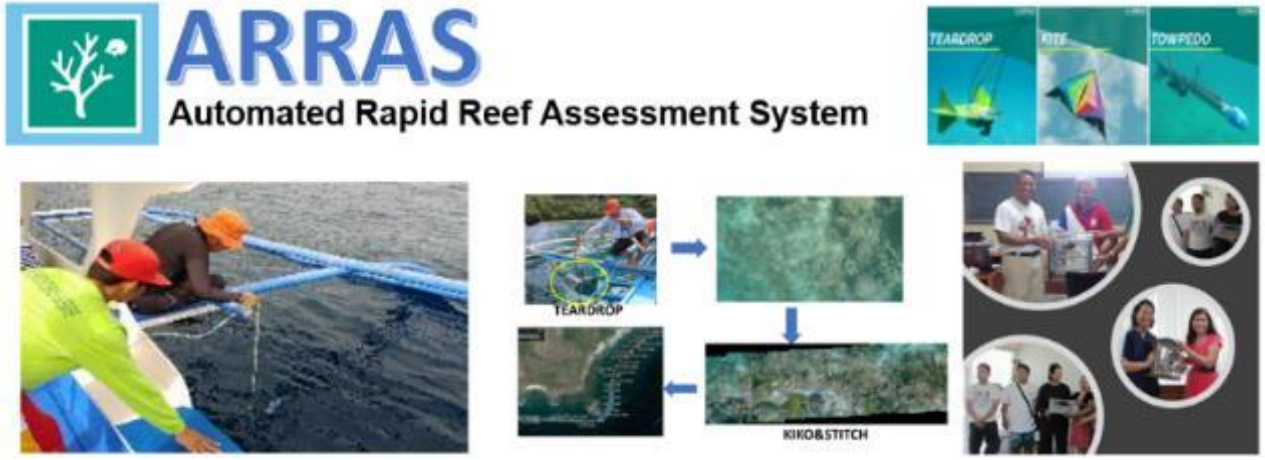


Return on Investments
87%

Payback Period
One Year



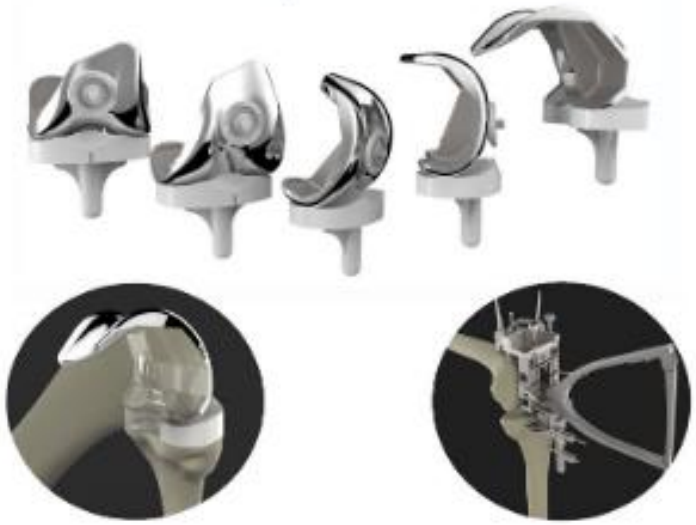
LAMP Kit for Shrimp Pathogens

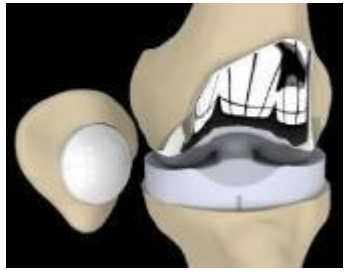


4. Medical Implant: Axis KNEE SYSTEM

✓ *Very affordable, costs 50% less than other knee implants in the market*

AXIS™ KNEE SYSTEM





A total knee replacement system that is specifically designed for the Asian population

Editha de Guzman shows her knees a few weeks after her knee replacement surgery. *(Photo by Gerardo Palad, S&T Media Service, DOST-STII)*

Staff of Orthopedic International, Inc conduct hands-on training on surgical technique using various instruments of Axis Knee System. (Text and Photo by: Allan Mauro V. Marfal, S &T Media Service)

5. Biomedical devices

AGAPAY Exoskeleton

https://www.facebook.com/AgapayPH

https://news.mb.com.ph/2018/01/13/4-filipino-scholars-to-pursue-doctorate-studies-in-uk/?fbclid=IwAR1VLb5e4DnJUsILu0eZyYrCv-cB_5m3SU4jxhdFjYX6rAdceGL4ih5s1CU

ReliefVent

the people's "breath of relief" ventilator

compact, affordable, safe, and effective ICU Ventilator

6. Diagnostic Kit: BIOTEK-M Aqua Kit

100% Filipino designed and locally-developed technology

http://tapitechnicom.dost.gov.ph/portfolio/biotek-m-dengue-aqua-kit-2/

Manila HealthTek Inc.

- ✓ Affordable rapid test kit for accurate detection of dengue infection within an hour
- ✓ Has high sensitivity, high specificity, robust, and is less expensive than current diagnostic tests in the market

Gold Awardee during the 46th International Exhibition of Inventions Geneva held on 11-15 April 2018 at Palexpo, Geneva

http://www.pchrd.dost.gov.ph/index.php/news/6354-biotek-m-wins-gold-medal-at-salon-international-des-inventions-de-geneve

7. For Proper Nutrition

Pancit Canton with Squash

Bakery Products with Squash

TUBIG TALINO™

Iodine-rich Drinking Water

Rice-Mongo Blend

Rice-Mongo Curls

Rice-Mongo Sesame Blend

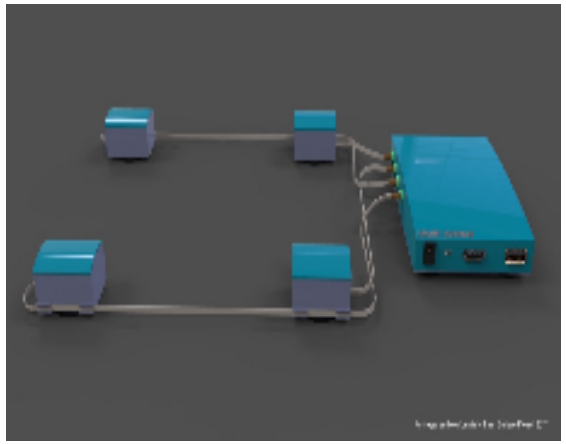
RICE MEALS

- 260 calories per 200g pouch
- Second stage emergency food
  - can be consumed when water and utilities are already restored

8. Educational Tools

Versatile Instrumentation System for Science Education and Research

Smart Surface Technology



Learning English Application for Pinoys

9. Water Treatment Materials

BEFORE VIGORMIN

AFTER VIGORMIN

10. Solid Waste-to-energy technologies

Biogas Digester

BIOGAS

Heat output delivered is about 78.4-89.6 Kcal/liter

Pyrolyzer

GAS AND OIL

- with feed rate of about 6 kg/hr of shredded laminates
- Heating value of oil is 17,460 BTU/lb.

Carbonizer and Briquetting Machine

CHARCOAL BRIQUETTE

11. Sustainable Transportation

Hybrid Trimaran

Rapid Charging E-Vehicle Station

Charging in Minutes (CharM)

https://www.eee.upd.edu.ph/news/charm-project

12. Monitoring water availability

Automated Real-time Monitoring System (ARMS)

Transmit real-time data to the office of NWRB for monitoring

NATIONAL WATER RESOURCES BOARD

rainfall, temperature, atmospheric pressure, soil moisture, wind speed and evaporation

Water Advisory for Irrigation Scheduling System (WAISS)

Innovation Drivers in the Investment Priority Plan 2017-2019

- Research and development activities
- Clinical trials (including drug trials)
- Centers of Excellence (e.g., academic and medical facilities)
- Innovation centers
- Business incubation hubs
- Fablabs/co-working spaces
- Shared Service Facility for MSMEs
- ***Commercialization of new and emerging technologies and products of DOST or government-funded R&D***

New S&T Facilities

DOST

science for the people

Innovation for Collective Prosperity

1. Space S&T Applications and Services for Environmental Monitoring and Natural Resources Management

PEDRO
Philippine Earth Data Resource and Observation Center

COARE

DATOS

Data and Asset Management

Science Data Infrastructure

Data Processing and Analytics

2. For developing Medicines

- 10 Tuklas Lunas Centers

  for screening plants and marine samples or endemic natural products for therapeutic properties

- Bioactivity and Toxicity Facility
  for Inflammation, Diabetes, Hypertension, Pain, Gout, Cancer, Cholesterol-lowering, Immunomodulation

PHILIPPINE GENOME CENTER

3. For developing and Testing New Products

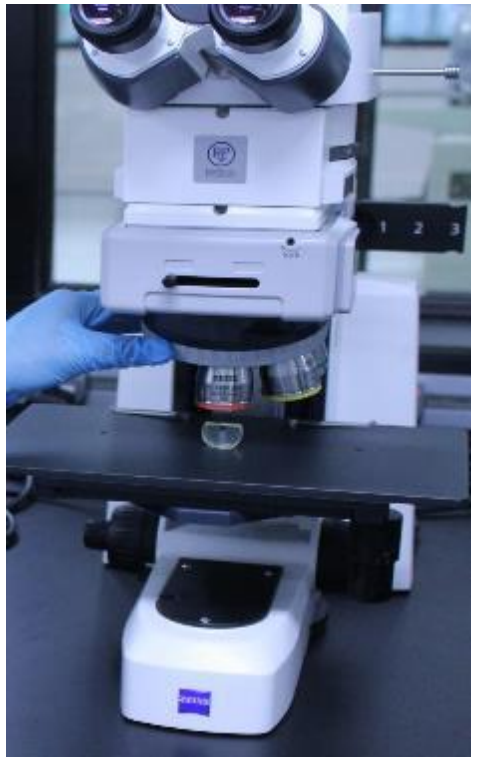
MIRDC Die and Mold Solution Center

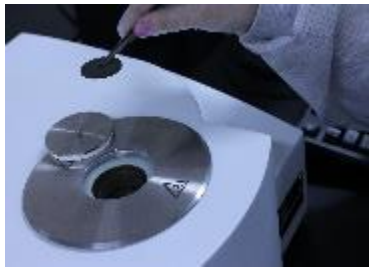
Sample Product

Food Innovation Center (FIC)

3. For developing and Testing New Products

ADVANCED DEVICE AND MATERIALS TESTING LABORATORY (ADMATEL)

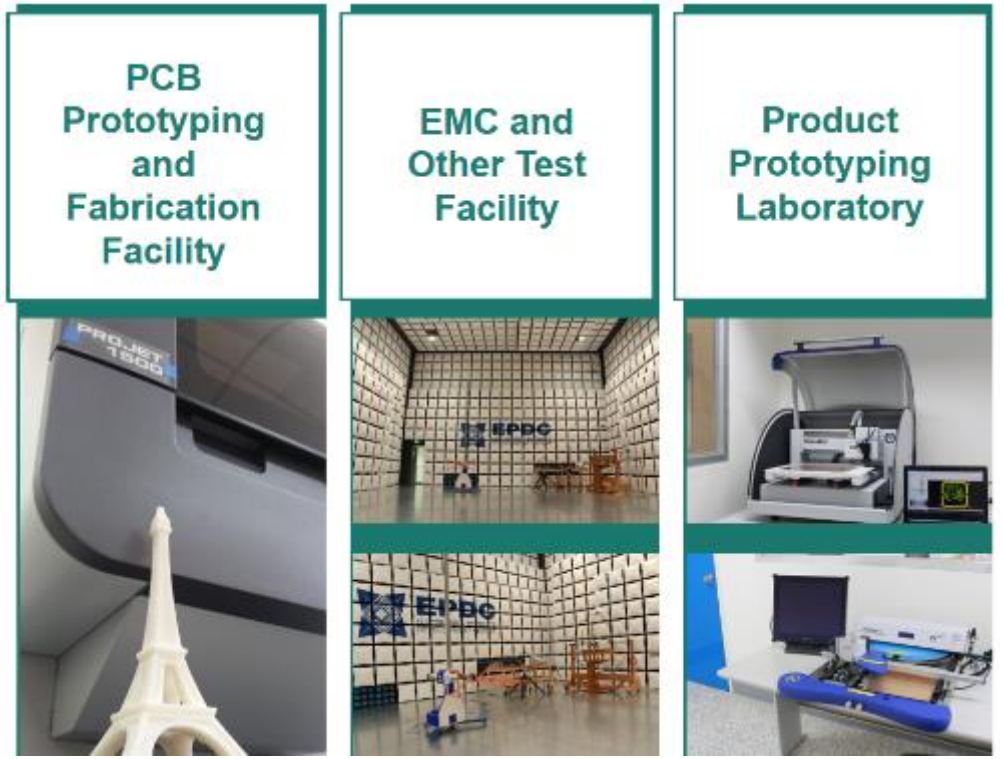




To reinforce/upgrade the Failure Analysis (FA) and materials testing facilities of our local industry, provide shorter turn-around time and less expensive analysis

3. For developing and Testing New Products

ELECTRONICS PRODUCT DEVELOPMENT CENTER (EPDC)

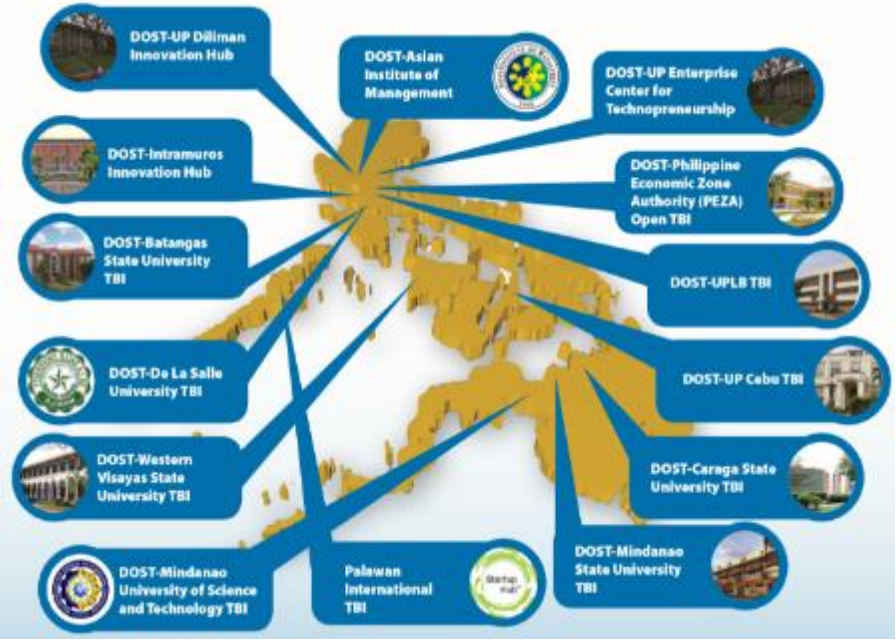


3. For developing and Testing New Products

AMCen
Advanced Manufacturing Center
Beyond the Conventional.

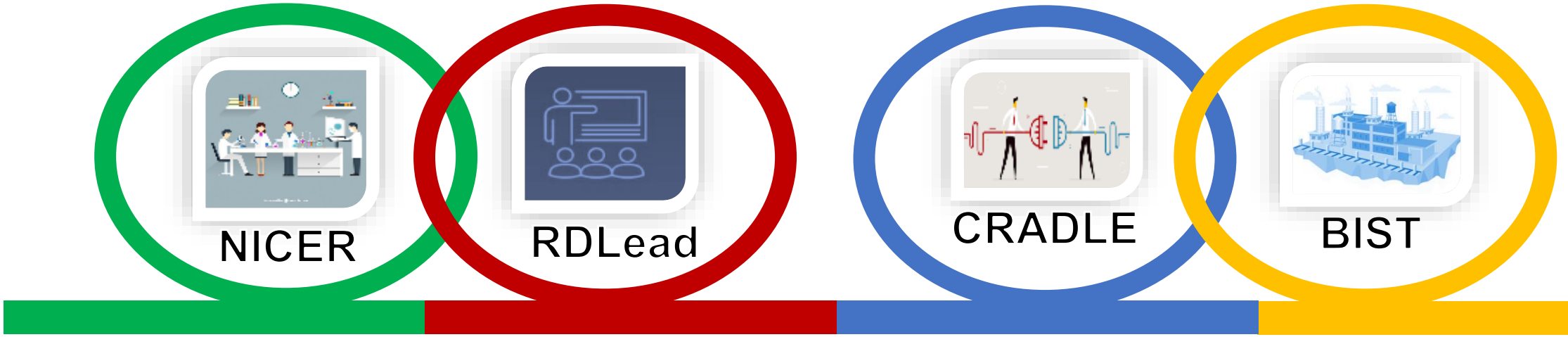
4. For Incubating Startups

20 Technology Business Incubators and 2 Innovation Hubs



Startups

Accelerated R&D Program for Capacity Building of Research and Development Institutions and Industrial Competitiveness



Niche Centers in the Regions (NICER) for R&D

Establish R&D Centers in the regions to promote regional development.

R&D Leadership (RDLEad) Program

Engage R&D experts to lead in strengthening the research capabilities of the Higher Education Institutions (HEIs) and Research Development Institutions (RDIs).

Collaborative Research and Development to Leverage Philippines Economy (CRADLE) Program

Create synergistic academe-industry relationship to invigorate Philippine R&D.

Business Innovation through S&T (BIST) for Industry Program

Facilitate the acquisition of strategic and relevant technologies by Filipino Companies to support R&D activities.

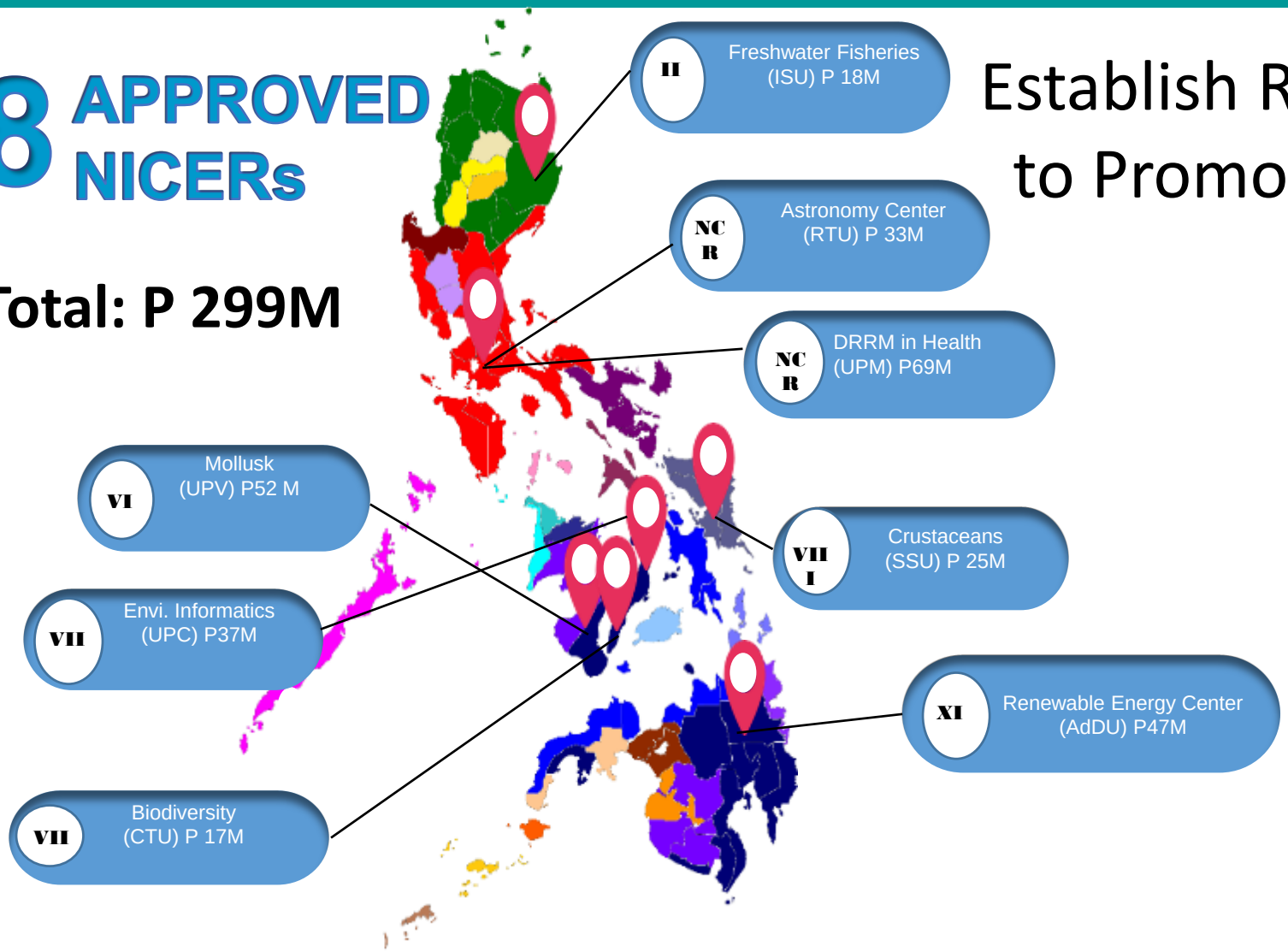
Science for Change Program

NICER

Niche Centers in the Regions for R&D

8 APPROVED NICERs

Total: P 299M



Establish R&D Centers in the Regions to Promote Regional Development

RDLead

R&D Leadership

Engage R&D experts to lead in Strengthening the research capabilities of the HEIs and RDIs

https://www.vectorstock.com/royalty-free-vector/male-and-female-scientists-vector-6637550

Who can become an RD Leader?

- ✓ A doctorate degree in the relevant field from a reputable academic institution;
- ✓ With at least ten (10) years professional experience in the relevant field;
- ✓ Has made an outstanding contribution in his/her field of specialization;
- ✓ Has demonstrated competent training and leader skills;
- ✓ Has refereed publications;
- ✓ In good health with no accountabilities with DOST and previous employer/s.

CRADLE

Collaborative Research and Development to Leverage Philippine Economy

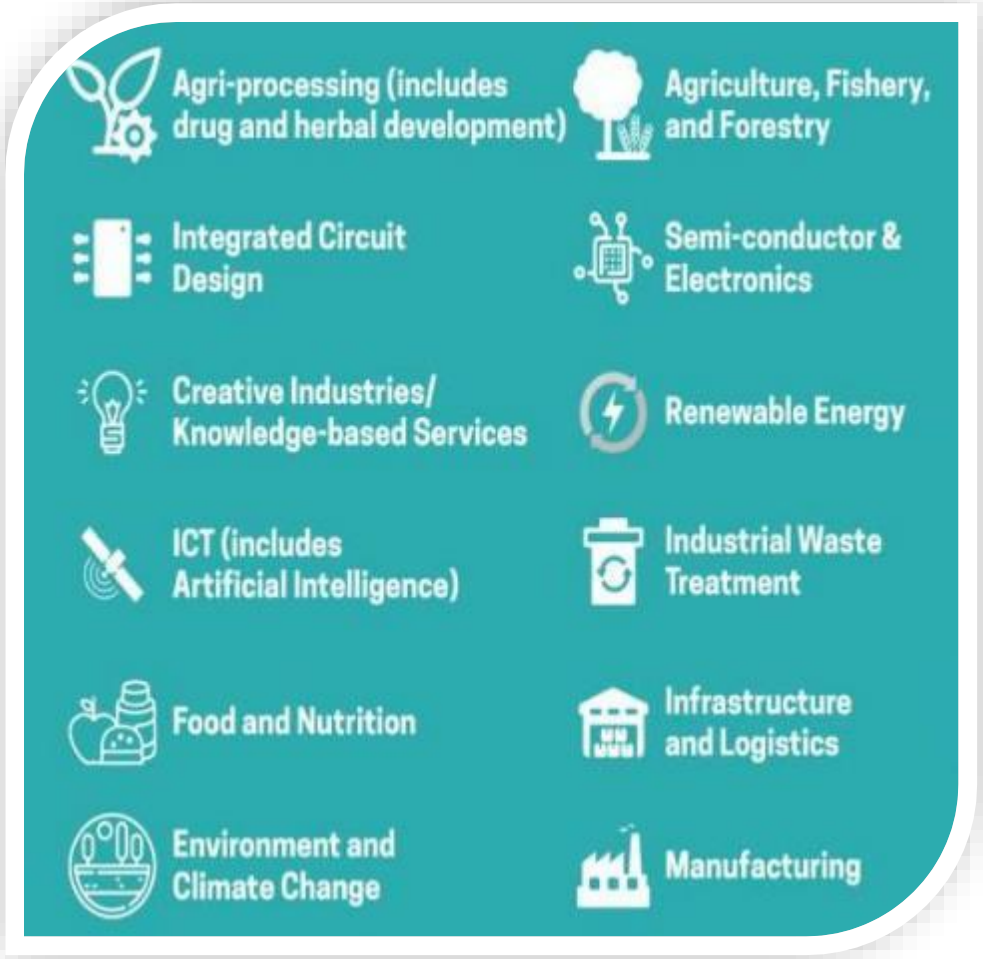
CRADLE Program creates synergistic relationship between the academe and the industry with the goal of invigorating Philippine R&D

Industry to identify a problem

Partner HEI or RDI to undertake the R&D to find solution

GENERAL CRITERIA

All CRADLE proposals must be in line with the priority R&D areas and industries identified by the DOST and DTI



- **Maximum** funding is **5M**, **for 1 to 3 years**
- **HEI/RDI** should have **at least 1 partner company**
- **Partner company will adopt the R&D output**
- **Partner company will provide 20% counterpart***

**may be in cash, kind or person-hour support for the academe.*

Agriculture, Aquatic & Natural Resources

REGION	TITLE	UNIVERSITY (MAIN PROPONENT)
XI	Synergize Academe-Industry Research Undertaking to Improve Productivity through Development of Banana Diseases Surveillance System	University of Southeastern Philippines and HIJO Resources Corporations
IV-A	Micropropagation of Selected Genetically-verified, Superior Bamboo to Protect the Environment and Develop an Alternative Wood Industry	UPLB and Carolina Bamboo Garden
NCR	Development of Aquafeed from *"Lab-lab"*	DLSU and SANTEH Feed Corporation
XI	Fermentation and Purification Research to Produce Food Grade, Pharmaceutical-Grade and Polymer Grade Lactic Acid	UP Mindanao and Monde Nissin Corporation

Food and Food Industry

REGION	TITLE	UNIVERSITY (MAIN PROPONENT)
NCR	Development of Chicken Egg White Powder and Granules from Low value Edible Shell Eggs	UPD and Batangas Egg Producers Cooperative
IV-A	Reinventing Ice Cream into a Functional Food Matrix	UPLB and Sugar and Ice Confections Inc.
VI	Metabolomics as Tool for the Discovery of Hypocholesterolemic Natural Products from Pineapple	University of San Agustin and Del Monte Philippines
NCR	Post-Treatment of Food Processing Wastewater Effluent for Nutrient Removal	ITDI and Central Macaroni Co. Inc., (CENMACO)





CENMACO

ICT and Electronics

REGION	TITLE	UNIVERSITY (MAIN PROPONENT)
NCR	PCOPEIA: Predictive Chromatography of Organic Plant Extracts with Intelligent Agents	TIP- Manila and Pascual Pharma Corp.
XI	PISOLAR: Payment Innovation for SHS Ownership by Lay Away Routine	University of Southeastern Philippines and LeadTech Inc.
NCR	Enhancement and Market Validation of Plasma Enhanced Chemical Vapor Deposition Industrial Prototype for Nitride- Based Coatings	UPD and Asian Semiconductor Electronics Technologies (ASET) Corporation
IV-A	Development of a Design Guideline Using Finite Element Analysis (FEA) for Semiconductor Packages	DLSU-Laguna and Integrated Micro-Electronics Inc (IMI)

BIST

Business Innovation Through S&T for Industry

BIST Program facilitates the acquisition of **strategic and relevant technologies** by **Filipino companies** for immediate incorporation in their **R&D activities**.

70% of the eligible expenses*

30% must be sourced by the applicant

*will be refunded to DOST at **zero percent** interest

Eligible Expenses

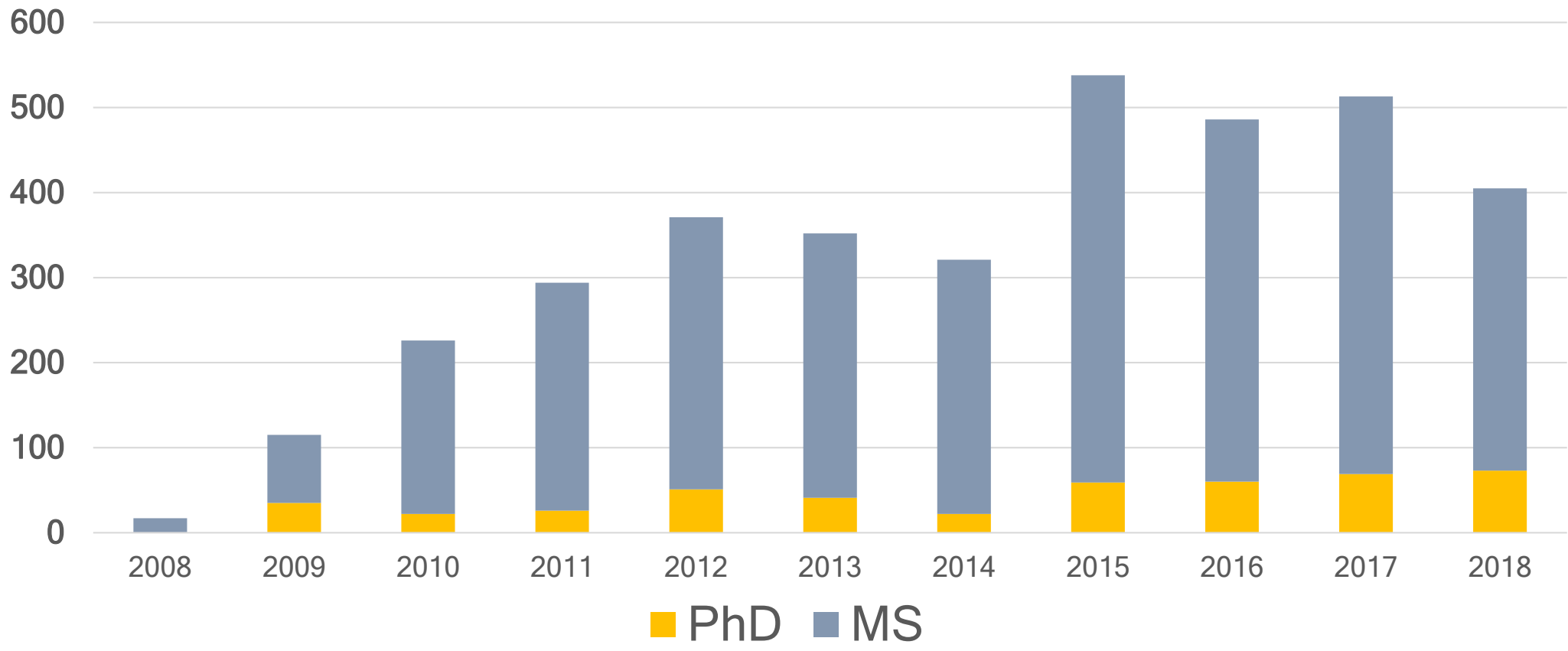
Acquisition of technology could be in the form of acquiring **know-how/rights/blueprints** of a **registered Intellectual Property** via one of the following methods:

a. Licensing of technology
b. Outright purchase of technology
c. Acquisition of hardware/software for R& D

NOTE: R&D does not include market research

https://www.123rf.com/photo_88446109_stock-vector-grunge-acquisition-hands-growth-chart-icon-with-scratched-design-and-dust-texture-unclean-vector-blu.html

ASTHRDP & ERDT Graduates 2008-2018



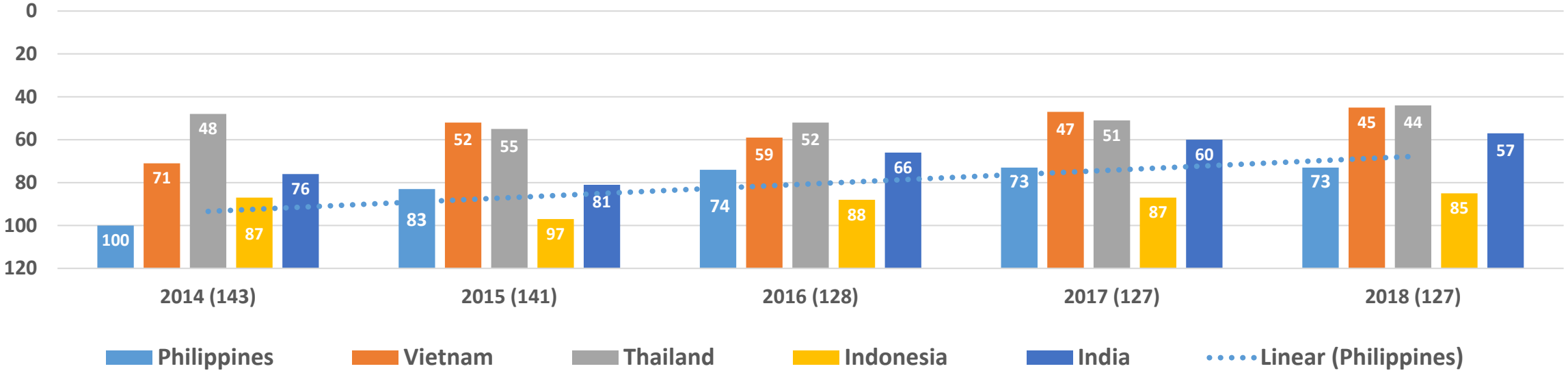
105 Disciplines

- ASTHRDP awarded scholarships for **5,009 MS** and **1,069 PhD**
- ASTHRDP graduates: **2,111 MS** and **304 PhD**

26 Disciplines

- ERDT awarded scholarships **2,520 MS** and **389 PhD**
- ERDT graduates **1,009 Ms** and **119 PhD**

Global Innovation Index 2018



STRENGTHS:

graduates in science & engineering (#17);

trade, competition & market scale (30);

firms offering formal training (9);

research talent (7);

high & medium high-tech manufactures (27);

ICT services exports (8)

WEAKNESSES:

ease of starting a business (#121);

education (#105);

expenditure on education (#109);

gross expenditure on R&D (#97);

pupil-teacher ratio (#95);

tertiary inbound mobility (#104)

global R&D Companies (#40)

scientific & technical articles (#120);

new businesses/th population (#91);

creative goods & services (#104),

online creativity (85)

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