

Health Research

Are We Ready for the Fourth Industrial Revolution?

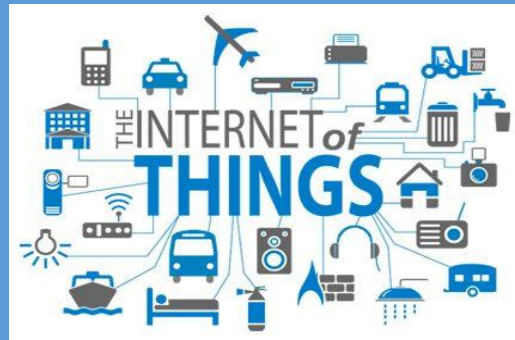
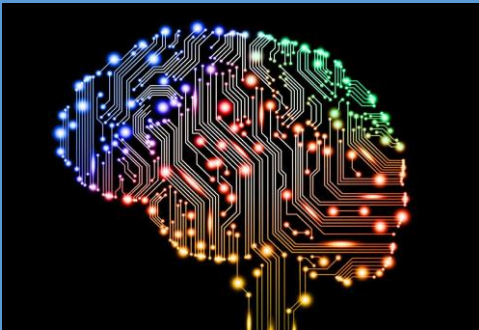
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Department of Science and Technology

15 March 2019; PICC, Pasay City



Industry 4.0 disrupting business models at an accelerated pace, is PH ready?



- PH: low level of readiness for future production, at risk
- Weak institutional framework, human capital, technology & innovation (WEF 2018)
- Upgrade technology platform, reskill/up- skill workers
- **Innovation: animating force behind the future of production**

Evolution of the Role of R&D

Teaching-centric

-R&D conducted to improve teaching and capacity building

University Ranking
#PhDs/University
PRC passing rate
CHED COE/COD

Peers-centric

-R&D conducted to contribute to the overall scientific knowledge

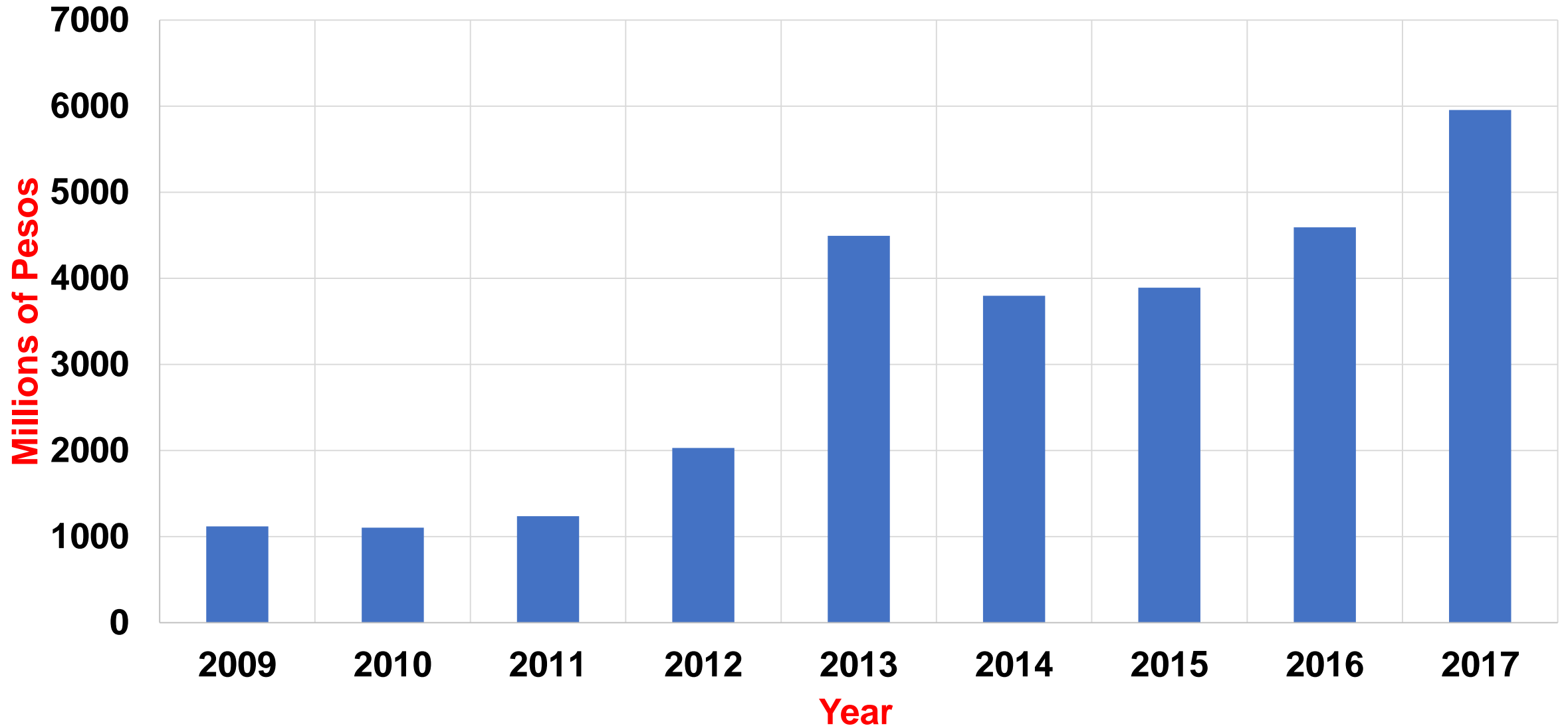
Publications
Patents
Impact factors
Citations H-index
SCS

Society-centric

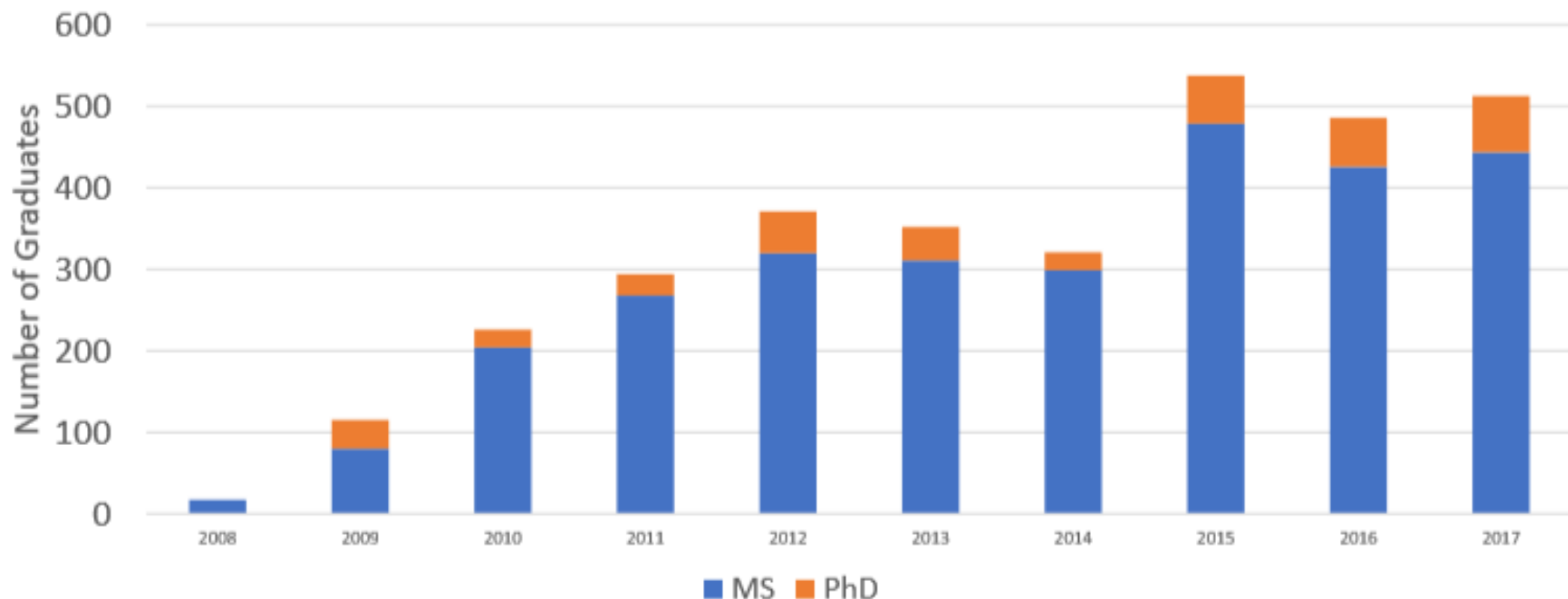
-R&D as a tool for positive societal change

Impact Assessment
Economic gains
Startups graduated

DOST R&D Grant-in-Aid Funding



ASTHRDP and ERDT 2008-2017



105 Disciplines

- ASTHRDP awarded scholarships for 4,335 MS and 889 PhD
- ASTHRDP graduates: 1,982 MS and 258 PhD

26 Disciplines

- ERDT awarded scholarships 2,244 MS and 366 PhD
- ERDT graduates 894 MS and 99 PhD

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**

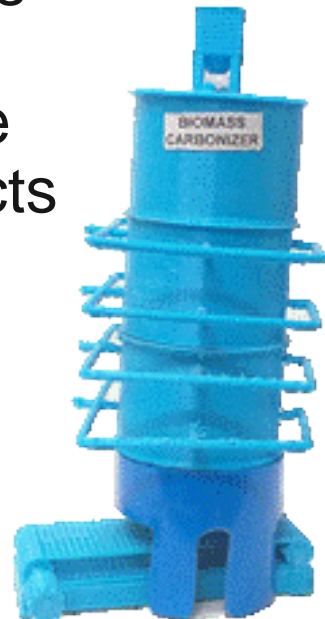
3D - Modelling

- Concept Design for the following
 - Herbal Processing Equipment
 - Microscale Diagnostics devices for animal testing
 - Testing kits for qualitative analysis for herbal extracts
- Theoretical Simulation testing

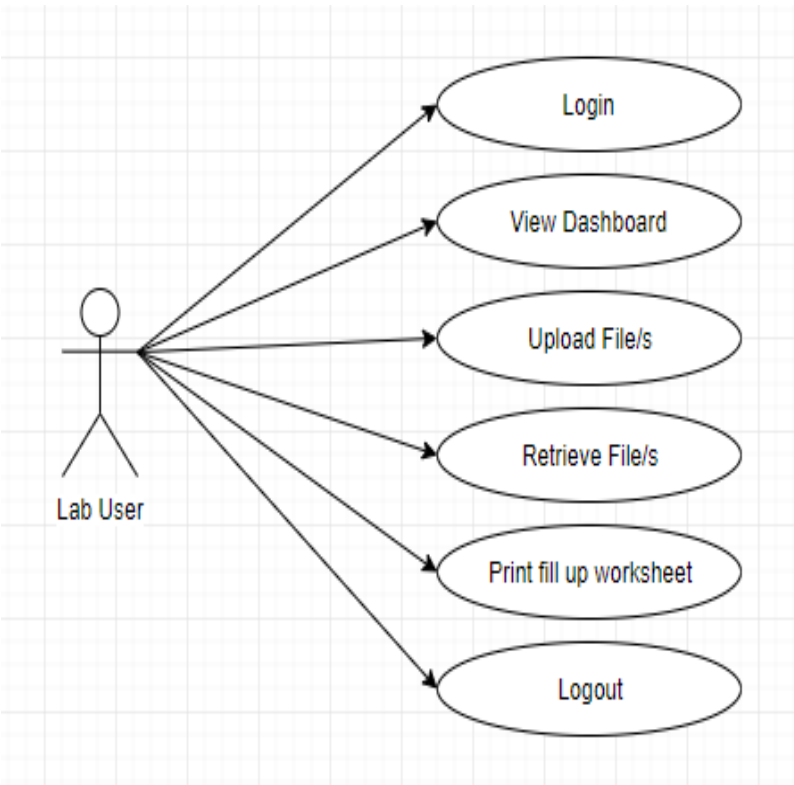
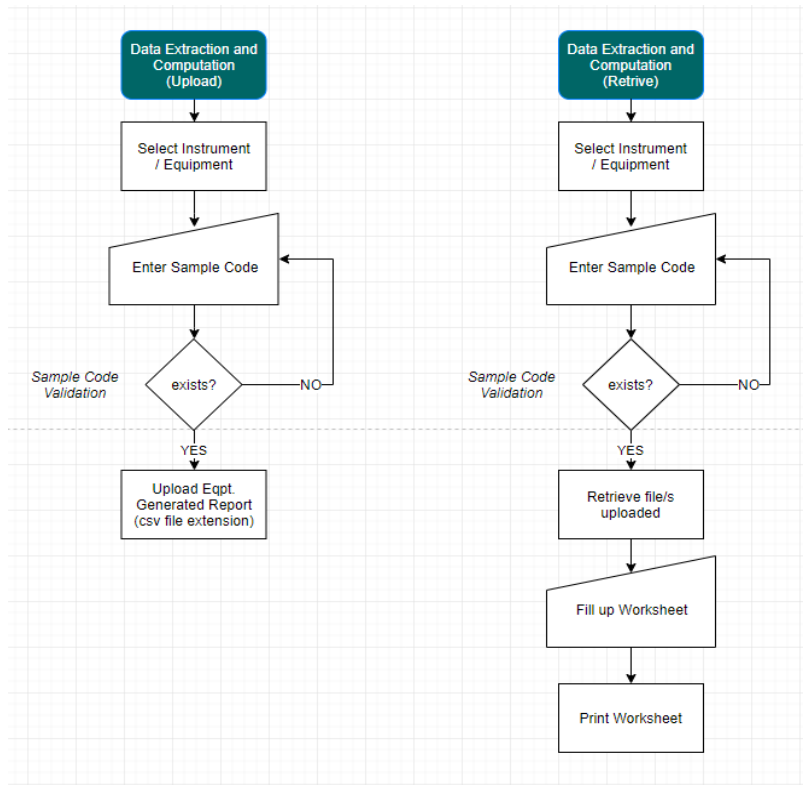


3D - Printing

- Printing of the following
 - Herbal equipment models
 - Herbal plant layout
 - Testing kits for qualitative analysis for herbal extracts



Automating data acquisition of analytical laboratory equipment



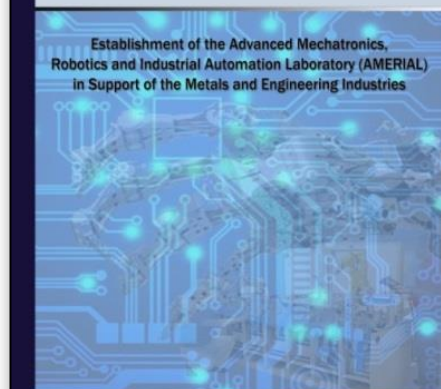
Process Flow

Analytical Laboratory Equipment

Advanced Mechatronics, Robotics and Industrial Automation Laboratory (AMERIAL) in Support of the Metals and Engineering Industries

Transforming Philippine MSMEs through Industry 4.0 Technologies

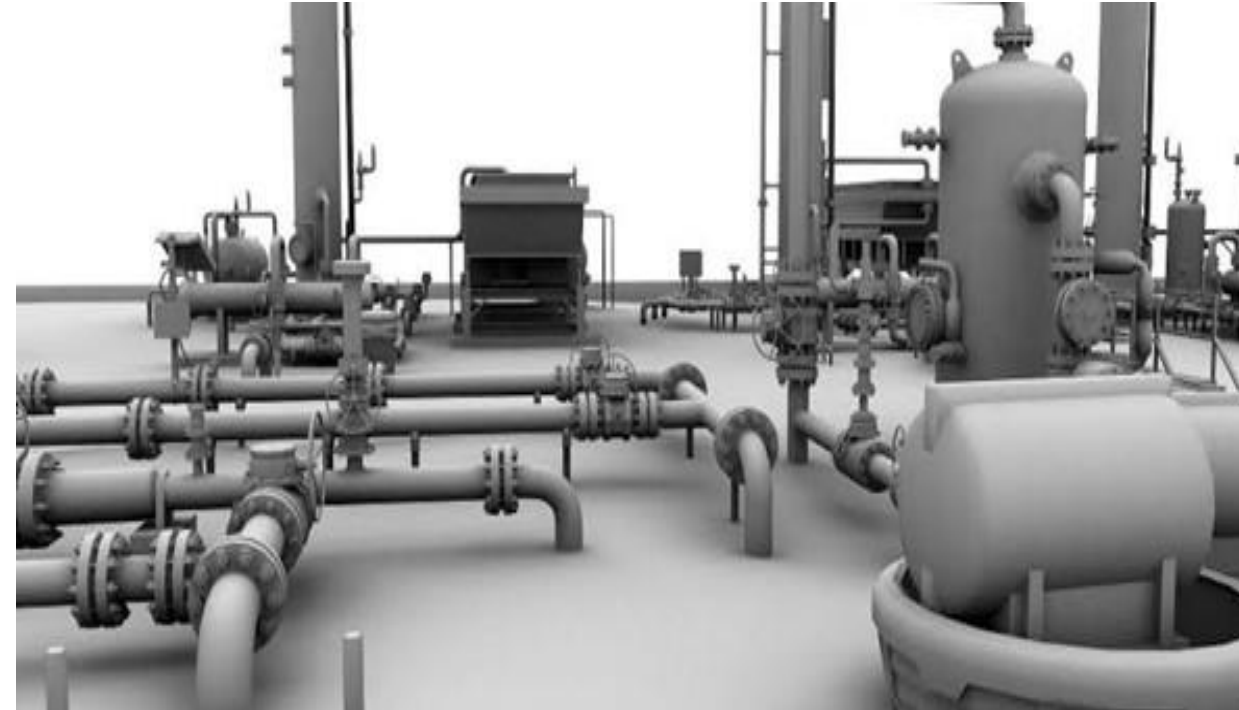
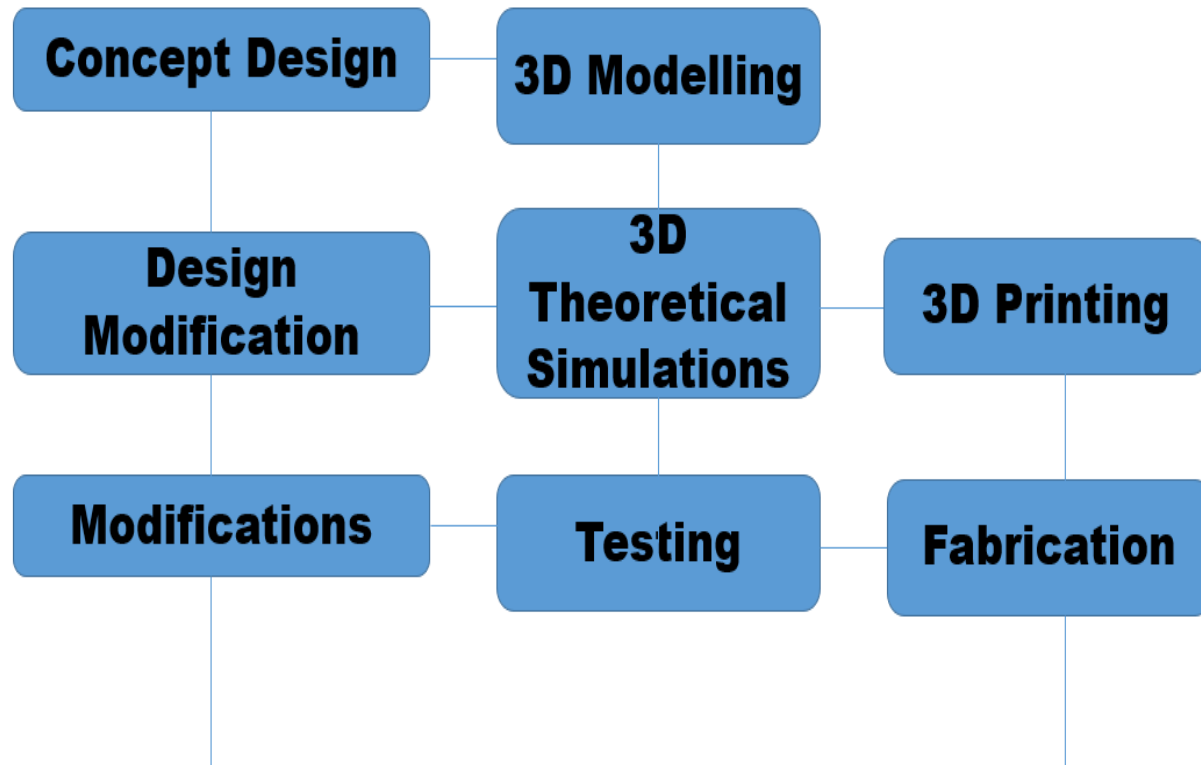
Establishment of the Advanced Mechatronics, Robotics and Industrial Automation Laboratory (AMERIAL) in Support of the Metals and Engineering Industries



MRSP

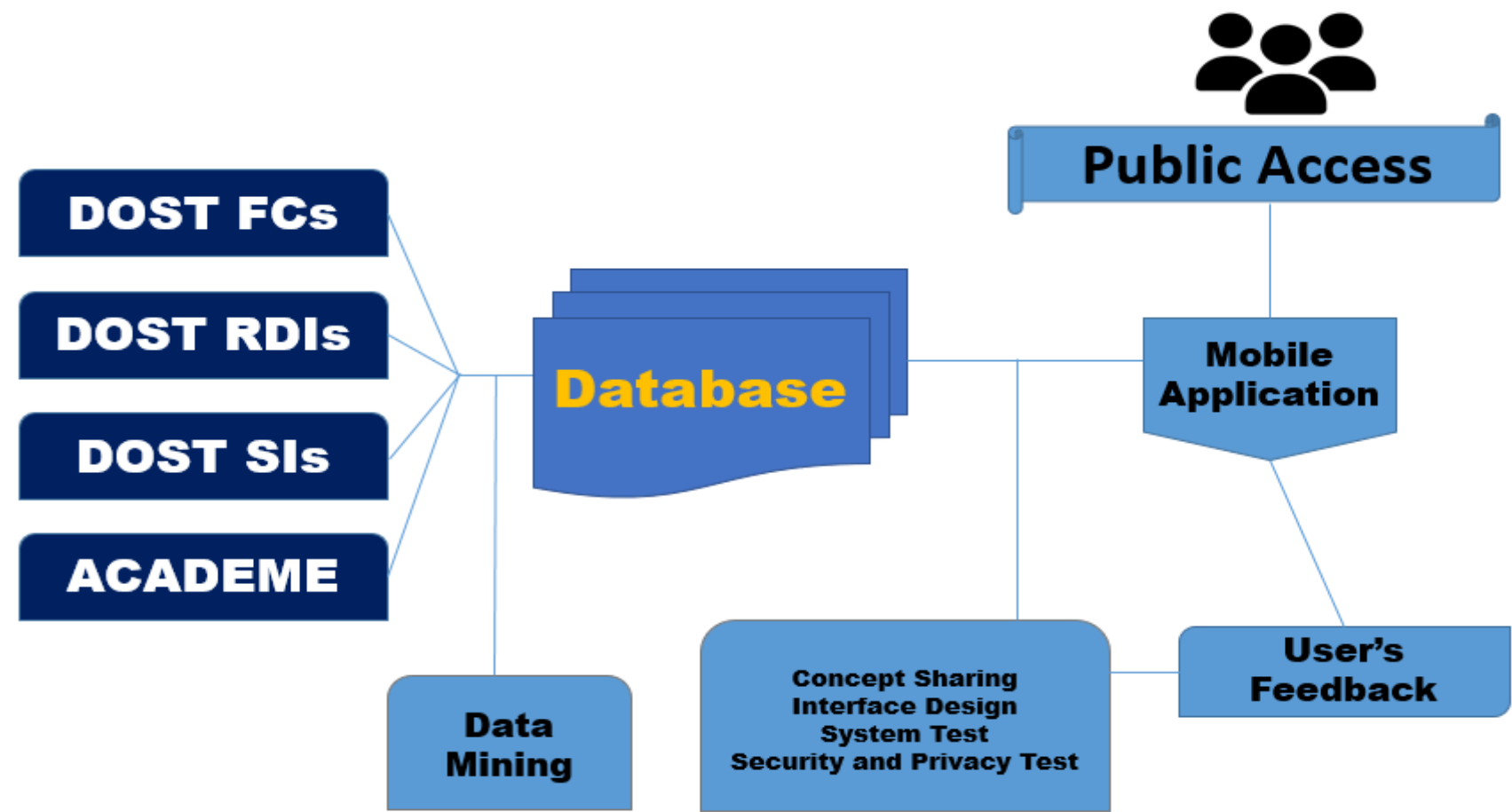


Utilization of 3D Printing Technology for Herbal Plant Design

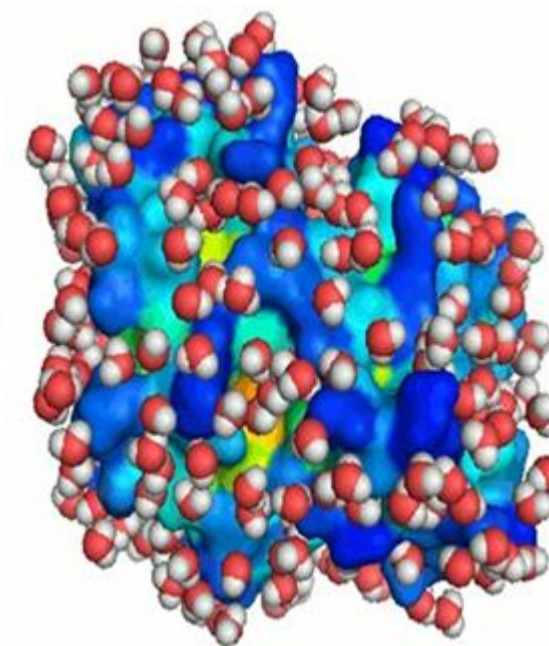
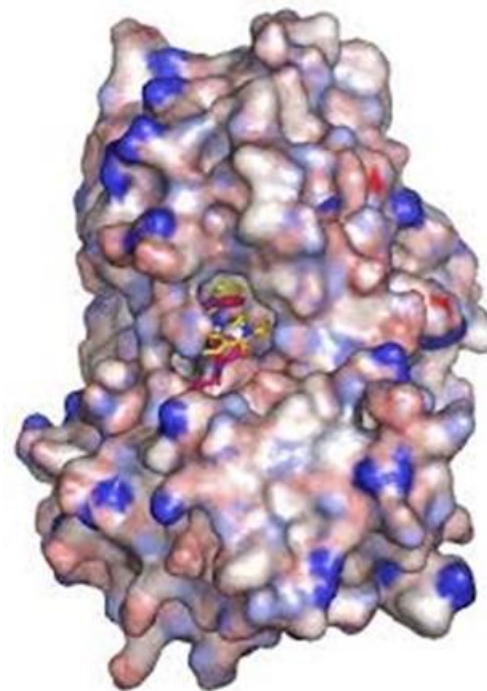
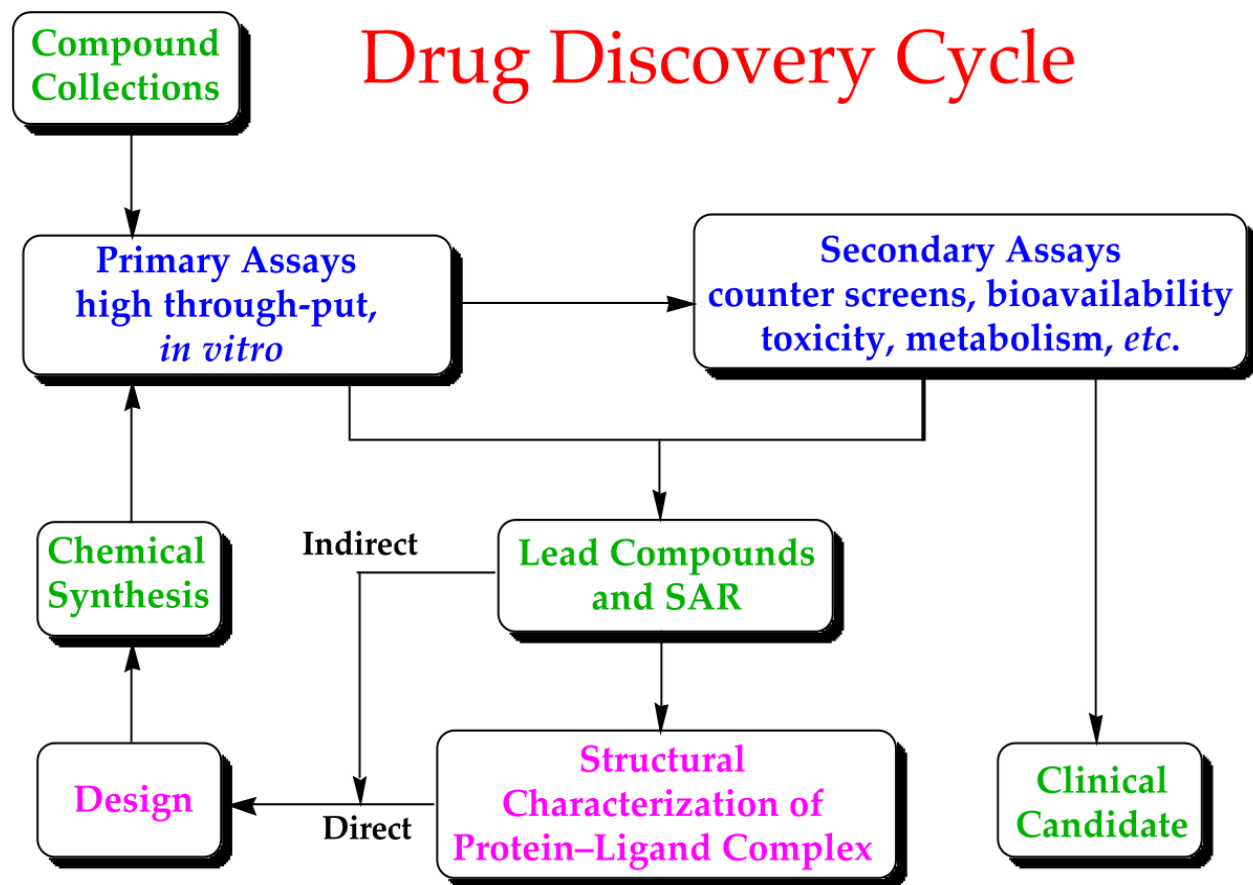


Internet of Things – Database Mobile App

Ethnobotanical and Phytochemical Database of Philippine Terrestrial Flora with Public Access Mobile Application



3D Modelling for Molecular Docking Technologies



PLANS MOVING FORWARD...



Development of New/Advanced Materials
Design concepts
Training
Prototyping Services
Testing/characterization Services
R & D
Contract Research
Education formation

Key Research Areas



Pharmaceutical /Healthcare

The image contains two process flow diagrams. The left one is for "MATDEV MATERIALS DEVELOPMENT" and the right one is for "RAPPID-ADMATEC RESEARCH ON ADVANCED PROTOTYPING FOR PRODUCT INNOVATION AND DEVELOPMENT USING ADDITIVE MANUFACTURING TECHNOLOGY". Both diagrams show a sequence of steps from materials processing to final testing and characterization, with various facilities and equipment icons associated with each step.

MATDEV MATERIALS DEVELOPMENT

Materials Processing → Materials Characterization → Prototyping → Performance Testing

- NanoLab
- NanoLab
- ADMATEL
- Standard Testing Division (STD)

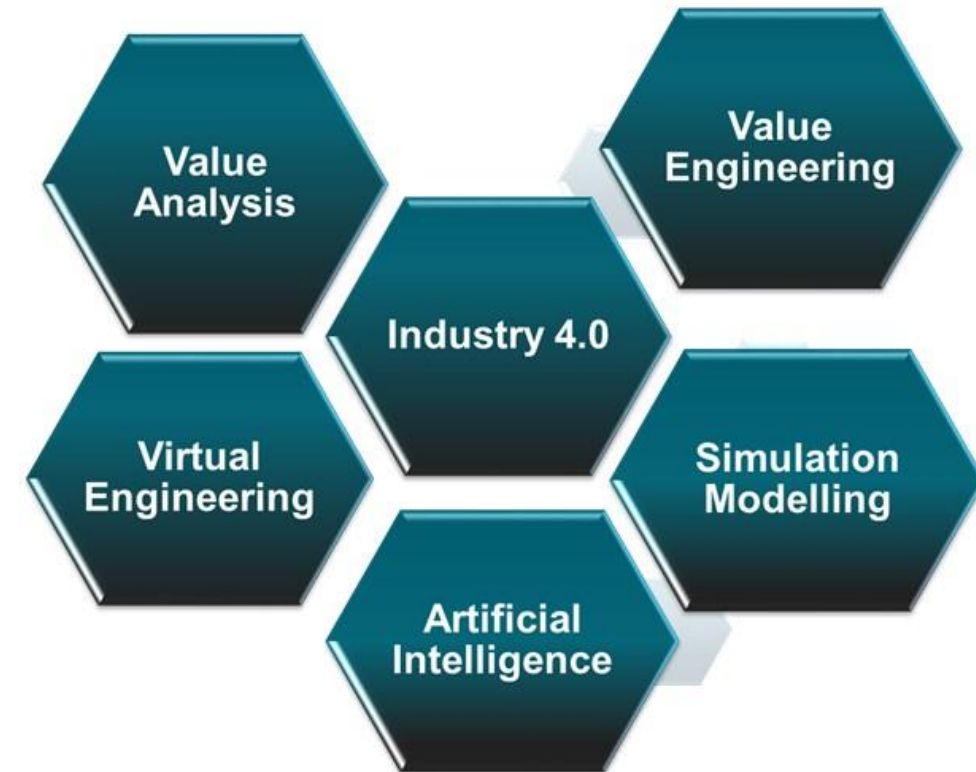
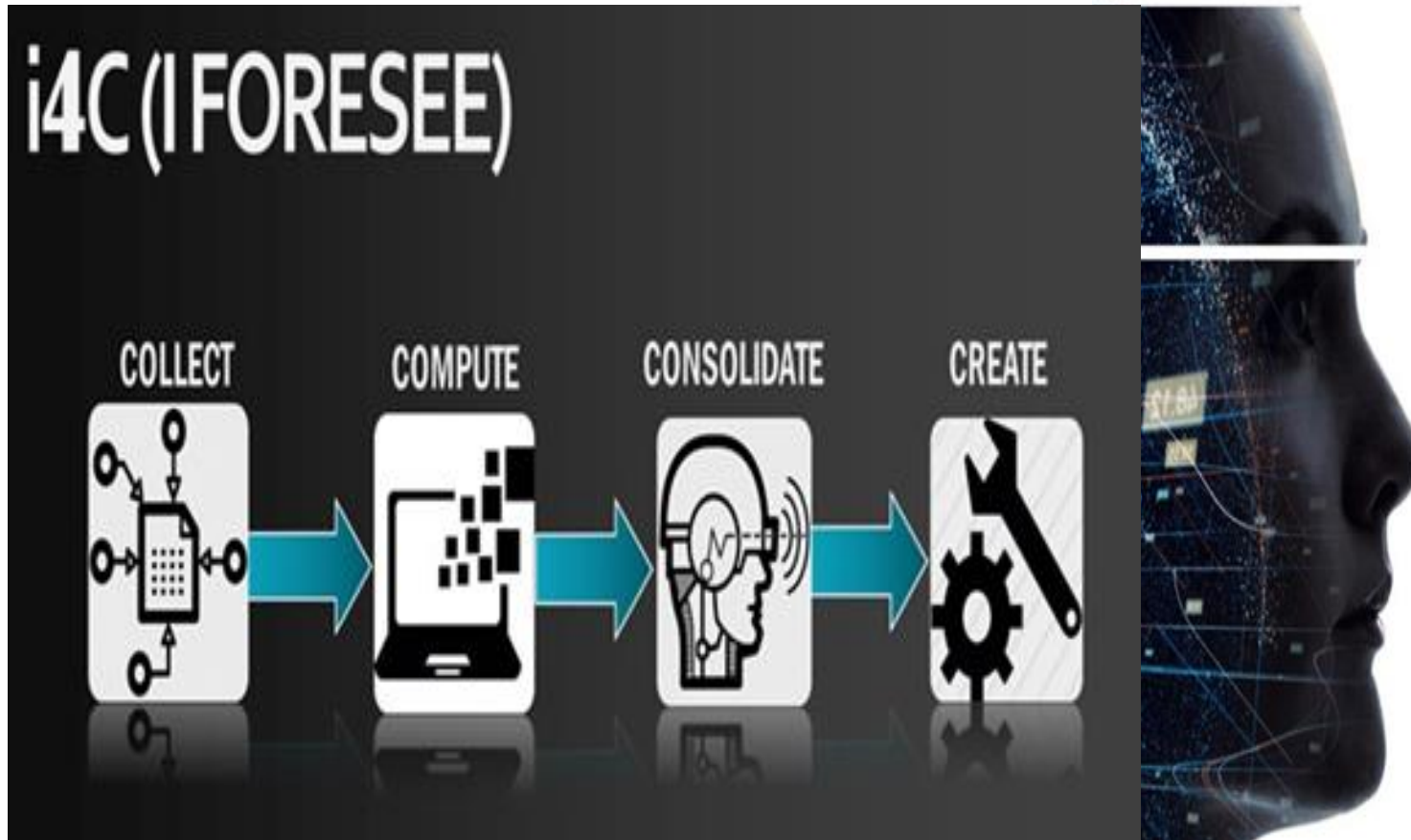
RAPPID-ADMATEC

RESEARCH ON ADVANCED PROTOTYPING FOR PRODUCT INNOVATION AND DEVELOPMENT USING ADDITIVE MANUFACTURING TECHNOLOGY

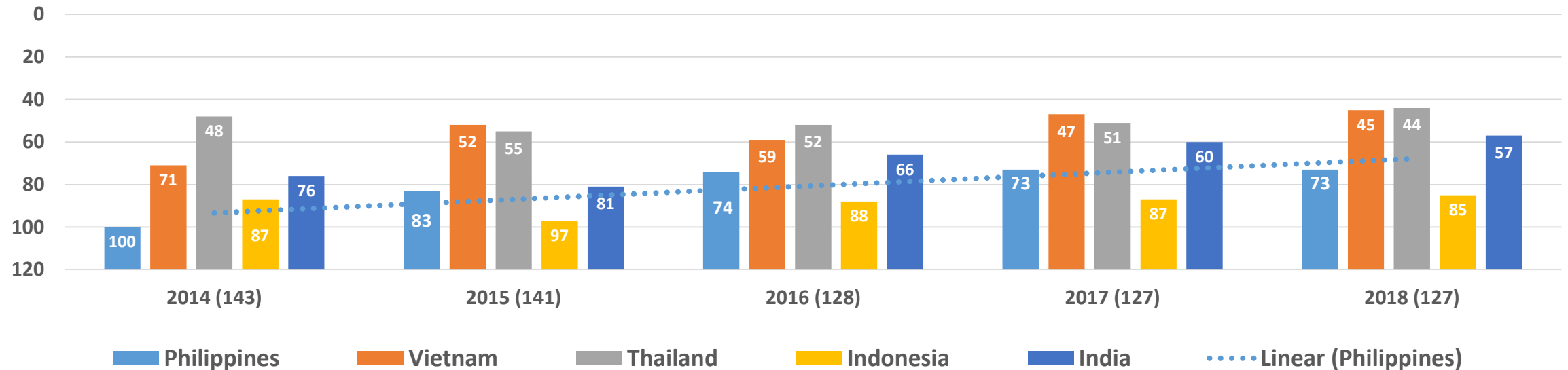
Reverse Engineering / Characterization → 3D CAD Modeling → Optimization → 3D Printing → Post Processing → Validation / Characterization

- Rapid Prototyping Facility
- Physical Metallurgy
- Chemical Laboratory
- 3D CAD/CAM/CAE Software
- FEA Facility
- Rapid Prototyping Facility
- Die and Mold Solution Center
- Heat Treatment Facility
- Surface Engineering Facility
- Quality Assurance Facility
- Mechanical Testing Facility
- ADMATEL

New Digital Industrial Technologies



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)

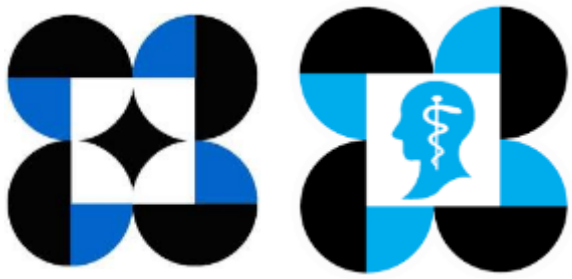
global R&D Companies (#40)

scientific & technical articles (#120);

new businesses/th population (#91);

creative goods & services (#104),

online creativity (85)

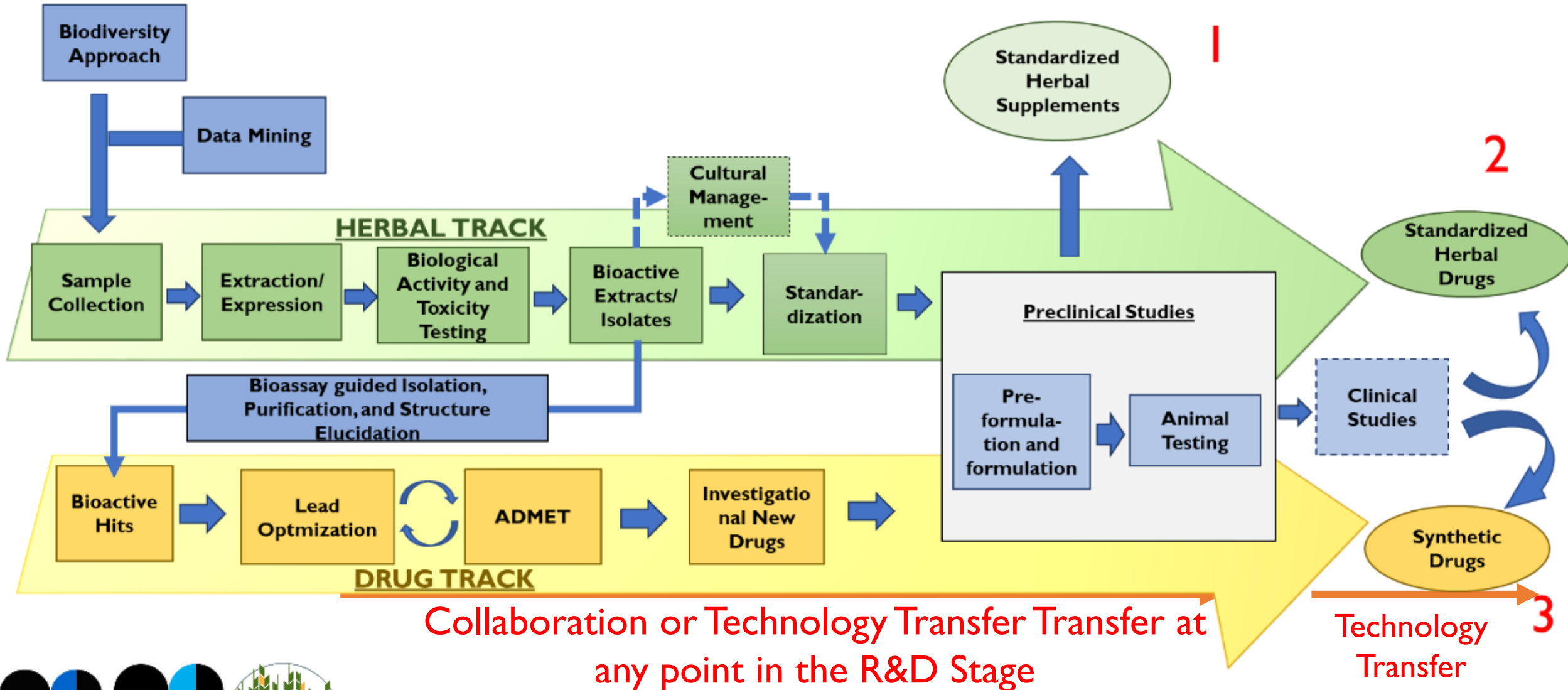


TUKLAS LUNAS PROGRAM: the Drug Discovery and Development Program of DOST

Vision

“To produce world-class medicines derived from the Philippine biodiversity, leveraging on local expertise”

Partnership Points with Industry



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