



APCTT
Asian and Pacific Centre
for Transfer of Technology



Technology Innovation, Entrepreneurship and Startups: Opportunities and Challenges in the Asia-Pacific

24 September 2024

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Technology Application and Promotion Institute (DOST-TAPI)

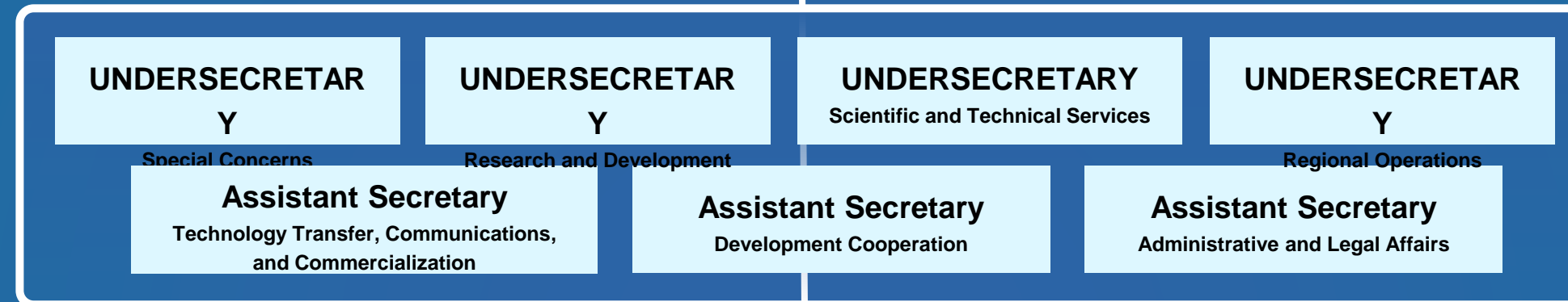


Introduction: Overview of the DOST

DOST OFFICE OF THE SECRETARY



Dr. RENATO U. SOLIDUM, JR.
Secretary, Department of Science and Technology
Republic of the Philippines 2022-present



SECTORAL PLANNING COUNCILS

- PCAARRD**
Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development
- PCHRD**
Philippine Council for Health Research and Development
- PCIEERD**
Philippine Council for Industry, Energy, and Emerging Technology Research and Development

SCIENCE & TECHNOLOGY SERVICE

- PAGASA**
Philippine Atmospheric, Geophysical, and Astronomical Services Administration
- PHIVOLCS**
Philippine Institute of Volcanology and Seismology
- PSHS**
Philippine Science High School
- SEI**
Science Education Institute
- STII**
Science and Technology Information Institute
- TAPI**
Technology Application and Promotion Institute

RESEARCH AND DEVELOPMENT INSTITUTES

- ASTI**
Advanced Science and Technology Institute
- FNRI**
Food and Nutrition Research Institute
- FPRDI**
Forest Products Research and Development Institute
- ITDI**
Industrial Technology Development Institute
- MIRDC**
Metals Industry Research and Development Center
- PTRI**
Philippine Textile Research Institute
- PNRI**
Philippine Nuclear Research Institute

COLLEGIAL AND SCIENTIFIC

- NAST**
National Academy for Science and Technology
- NRCP**
National Research Council of the Philippines

1

Startup and Technology Transfer

Law

Challenges

- ❑ Inefficient Intellectual Property (IP) Management
- ❑ Limited Technology Transfer
- ❑ Insufficient Return on Investment
- ❑ Lack of Innovation Ecosystem

Solution

**Republic Act
No. 10055**

**Philippine
Technology
Transfer Act
of 2009**

Results

- ❑ Clear legal framework for the ownership, management, use, and commercialization of IP generated from government-funded R&D
- ❑ Promote technology transfer
- ❑ Incentivize innovation
- ❑ Support for technology-based industries

Challenges

- ❑ Regulatory hurdles/Complex regulations
- ❑ Limited access to funding
- ❑ Skills shortage
- ❑ Market entry barriers
- ❑ IP protection issues
- ❑ Limited infrastructure
- ❑ Lack of mentorship support

Solution

**Republic Act
No. 11337

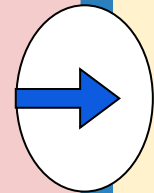
Innovative
Start-up Act**

Results

- ❑ Financial support
- ❑ Market access
- ❑ Regulatory reforms
- ❑ Talent development
- ❑ Mentorship support

Challenges

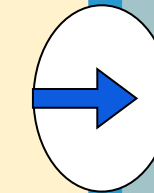
- ❑ Limited funding for research and development
- ❑ Inadequate intellectual property protection
- ❑ Complex regulatory environment
- ❑ Shortage of skilled talents
- ❑ Limited access to market
- ❑ Cultural barriers to innovation



Solution

**Republic Act
No. 11293**

**Philippine
Innovation Act**



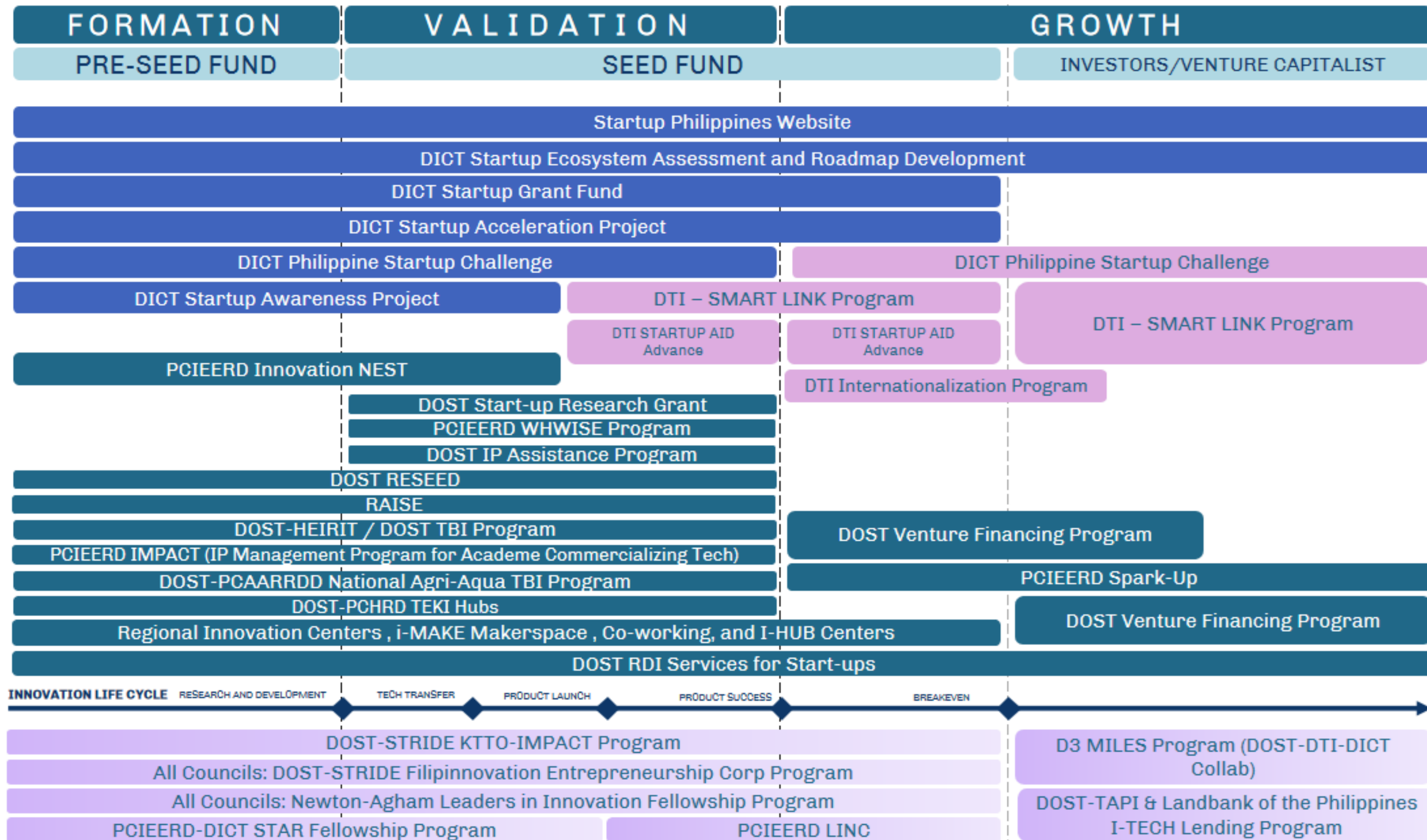
Results

- ❑ Increased funding for research and development
- ❑ Improved intellectual property protection
- ❑ Simplified regulatory environment
- ❑ Enhanced STEM education
- ❑ Increased access to markets
- ❑ Cultural shifts towards innovation

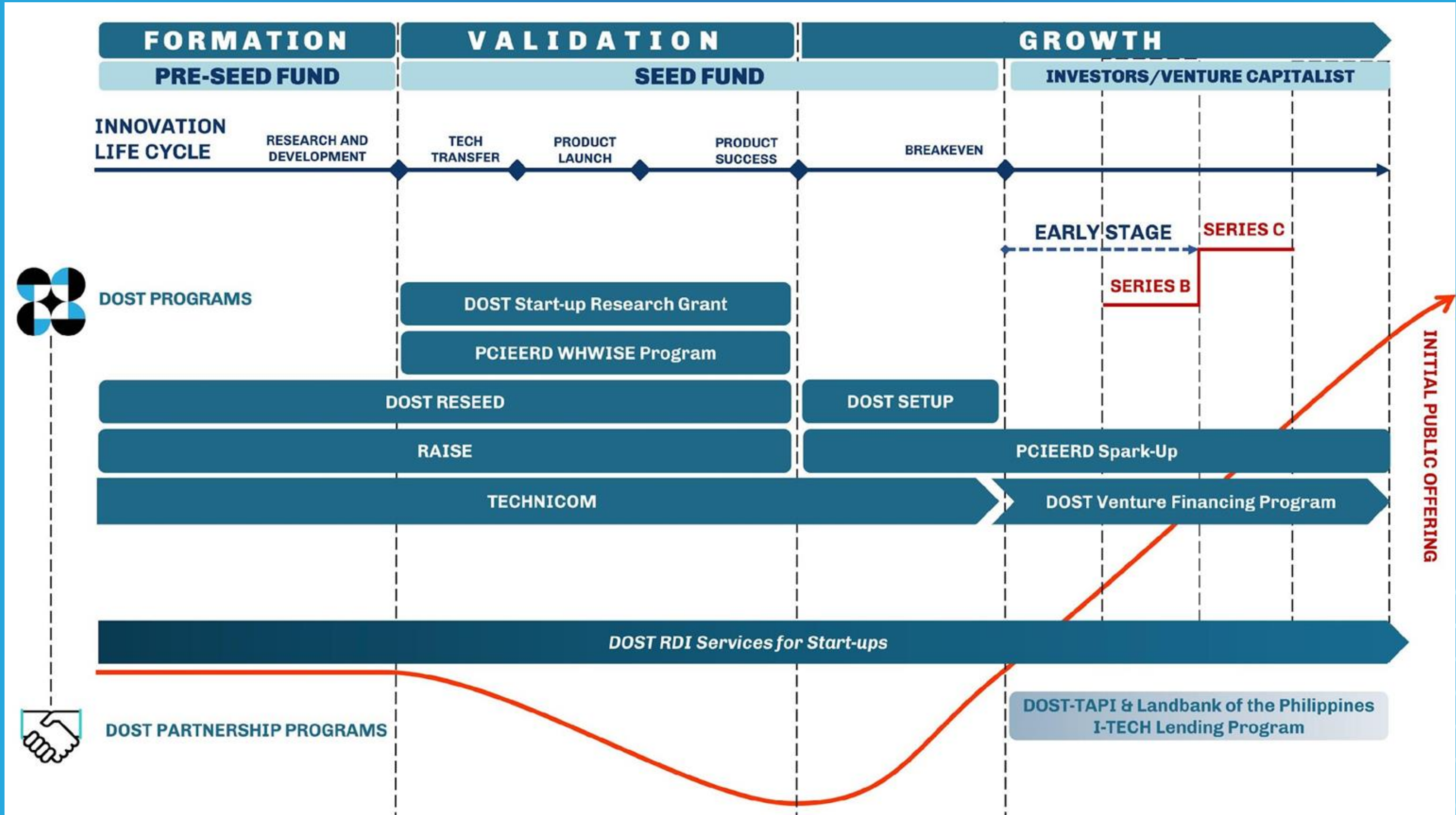
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Philippine Government Initiatives

PH Startup Development Program



DOST's Program Initiatives for Startups



DOST-TAPI Programs Supporting Technology-Based Start-ups

- 01 **Concept Prototyping Program (CPP)**
- 02 **Intellectual Property Rights Assistance Program (IPRAP)**
- 03 **Expanded Intellectual Property Rights Assistance Program (E-IPRAP)**
- 04 **Grants and Assistance to Leverage Innovations for National Growth (GALING)**
- 05 **Technology Innovation for Commercialization (TechNiCOM)**
- 06 **Honing Innovations, Research, Agreements, and Negotiations of the Government-Funded Technologies (HIRANG)**



Provided financial assistance to 76 start-ups amounting to USD 3M

DOST's Capacity Building for Startups



Higher Education Institution Readiness for Innovation and Technopreneurship (HEIRIT)

- capacitates 27 HEIs and SUCs
- supported thirty-two (32) TBIs across the country



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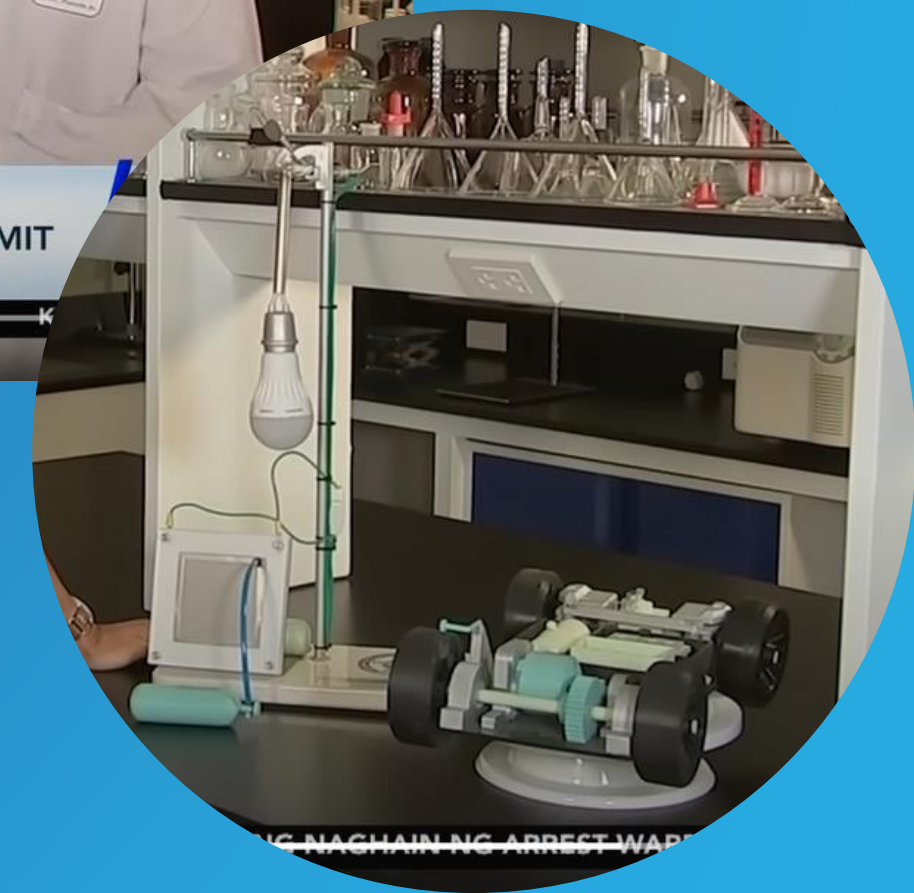
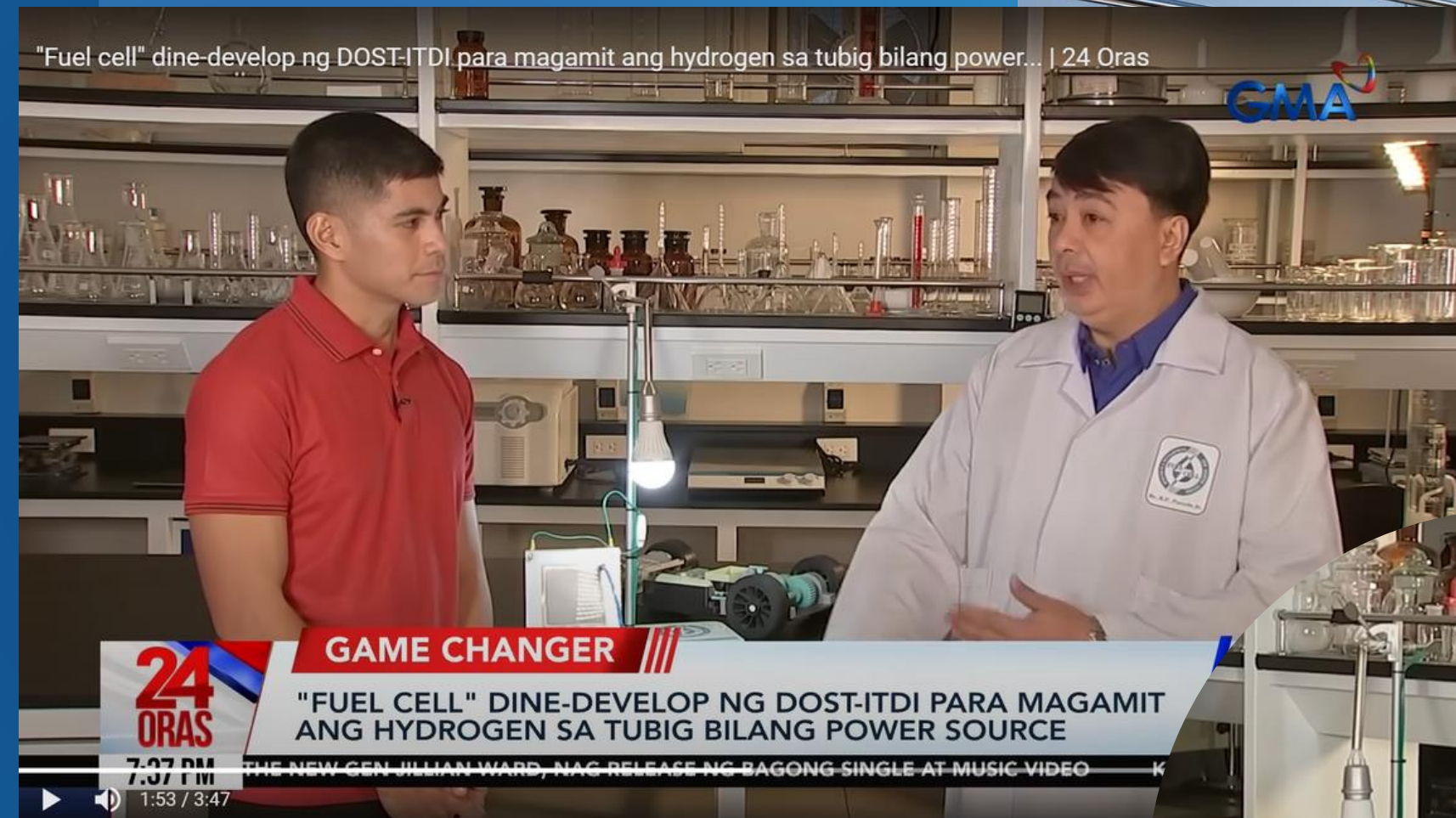
Opportunities :

DOST initiatives on green hydrogen and energy storage

DOST-Assisted Green Hydrogen Initiatives: Fueling Innovation in Fuel Cell Technology

DOST-ITDI's fuel cell research and development (R&D) and testing center

- provide the industries, start-up with support on basic and applied research and technology development.
- a facility dedicated for the conduct of research and development of fuel cell technology focusing on materials development and innovation for specific cell components.



DOST-Assisted Green Hydrogen Initiatives: Fueling Innovation in Fuel Cell Technology



Photos retrieved from DOST-ITDI website

**Mock-up Model Unit of the Single-Cell Fuel Stack
Assembly Featured During the 3rd Clean Energy
Philippines Conference**

International Collaboration:

- **Knowledge enhancement**
- **Symposium and joint R&D cooperation**
- **Research visit and benchmarking**

DOST-Assisted in Energy Storage



**NICER R&D
Center for
Advanced
Batteries**



Photos retrieved from [Advanced Batteries Center Philippines Facebook Page](#)

DOST-Assisted in Energy Storage

 **Project NextGen of ABC PH fabricates Philippines' first-ever Sodium-ion Batteries**





Cathodes being studied:

-  Polyanionic Compounds (Borate-based)
-  Layered Transition Metal Oxides
-  Prussian Blue Analogues

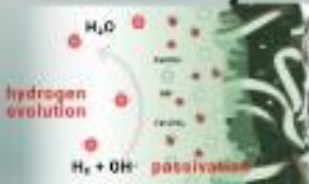
A TALE OF NICKEL-IRON BATTERIES: ITS RESURGENCE IN THE AGE OF MODERN BATTERIES
Abarro, J.M.E.; Gavan, J.N.L.; Loresca, D.E.D.; Ortega, M.A.A.; Esparcia, E.A.J.; Paraggua, J.A.D.R.

STRATEGIES

- electrode morphology
- electrode or electrolyte additives
- electrode composites
- β -Ni(OH)₂ optimization
- α -Ni(OH)₂ stabilization

CHALLENGES

 hydrogen evolution
 $H_2 + OH^-$ passivation

CATHODE

- γ -NiOOH
- volume change
- irreversibility
- limited energy density
- β -NiOOH

PERSPECTIVE

- novel materials
- advanced characterization techniques
- multiphysics model
- ab initio calculations
- expanding areas of application

Impact of DOST Assistance on Start-ups (As of 2023)

- Startup Grant Fund (SGF) Program provided **Php 230 million** to over 60 startups for research and development purposes and to strengthen their intellectual property (IP).



- WHWISE Program has helped 15 enterprises since 2021 with a total funding of PHP53 million.



Impact of DOST Assistance on Start-ups (As of 2023)



- TBI program has already established 54 TBI networks and aims to add 27 new TBIs with a funding of PHP400 million in the next two years

- ReSEED has a total funding of **PHP120 million** to 16 regions in the Philippines.



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**Challenges:
A Call for Action
and Collaboration**

Possible Collaborations

1

Cross-border information sharing through a universal platform for technologies for commercialization

2

Harmonize policies among member countries on technology transfer and commercialization to enable cross-border technology diffusion (to compel disclosures for commercially viable and sensitive technologies)

3

Provision of intercountry climate financing and incentives for the advancement of research and development, and the implementation of clean and sustainable technologies

4

Conduct of innovation skills enhancement and development on cross border technology transfer and commercialization



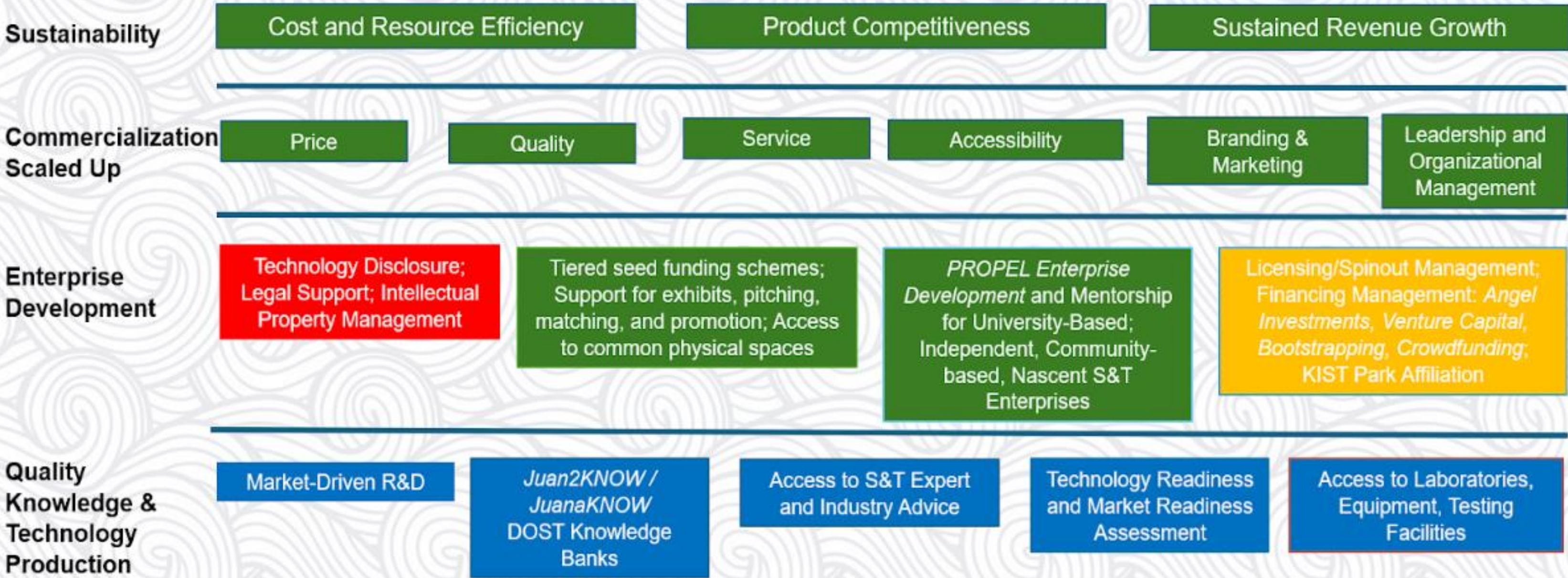
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Way Forward:

**DOST on Technology Innovation,
Entrepreneurship, and Startups**

DOST Program PROPEL

Locally Relevant and Globally Competitive, Profitable STI Enterprises

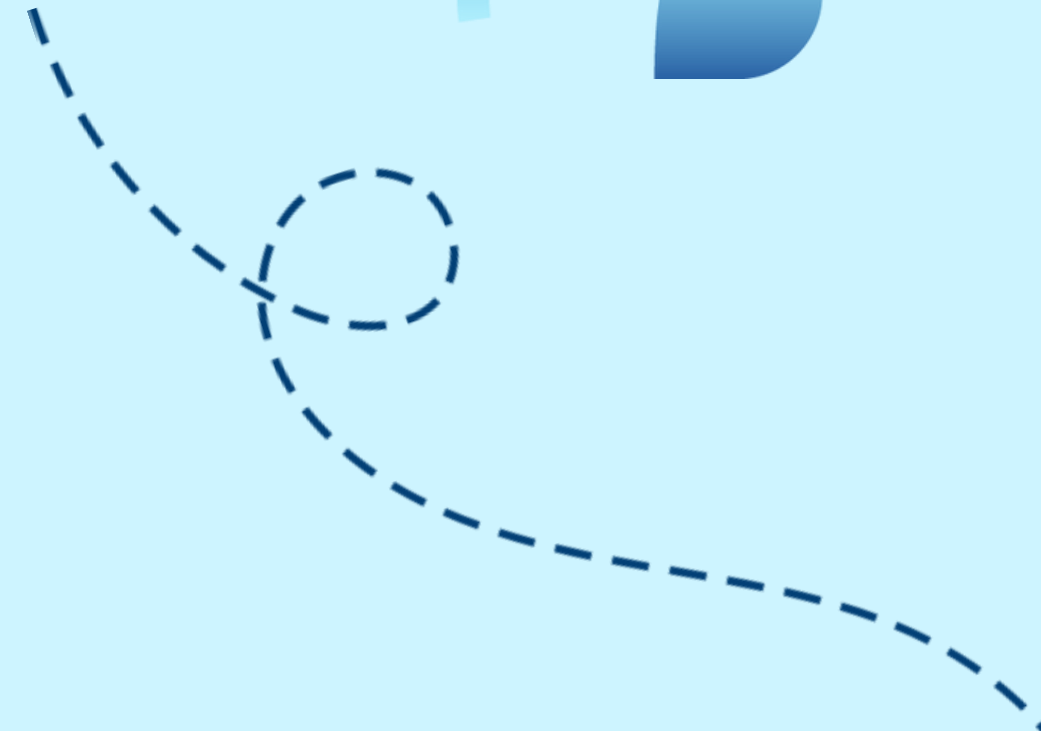


**“By building Islands of
Venture, a Philippine Archipelago of
Wealth rises.”**



- DOST PROPEL

- Sharpen up your Breakthroughs
- Fuel your Potential
- Highlight your Distinctive Edge





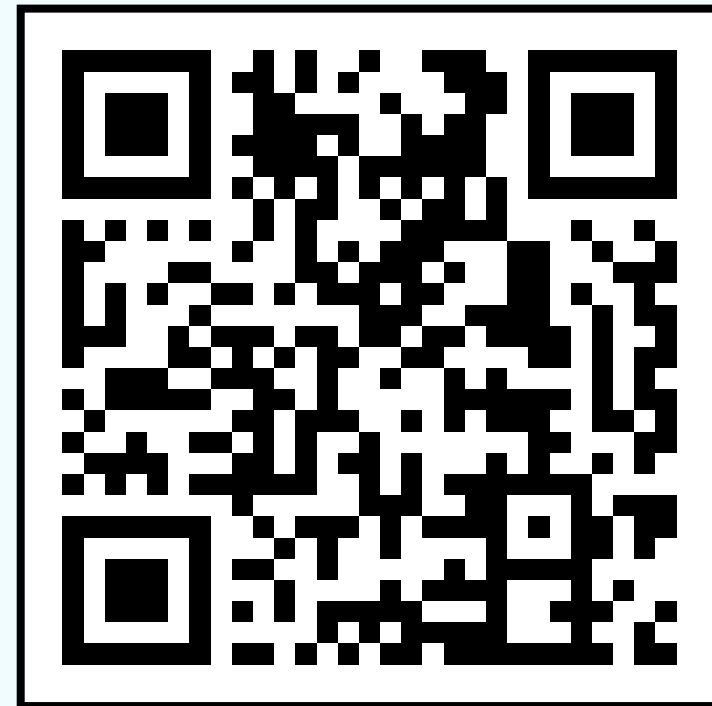
“Our mission at DOST is to build an integrated, inclusive, and sustainable startup ecosystem. We hope to support startups at every stage of development, from formation to validation, until growth.”

- DOST Secretary Renato U. Solidum, Jr.

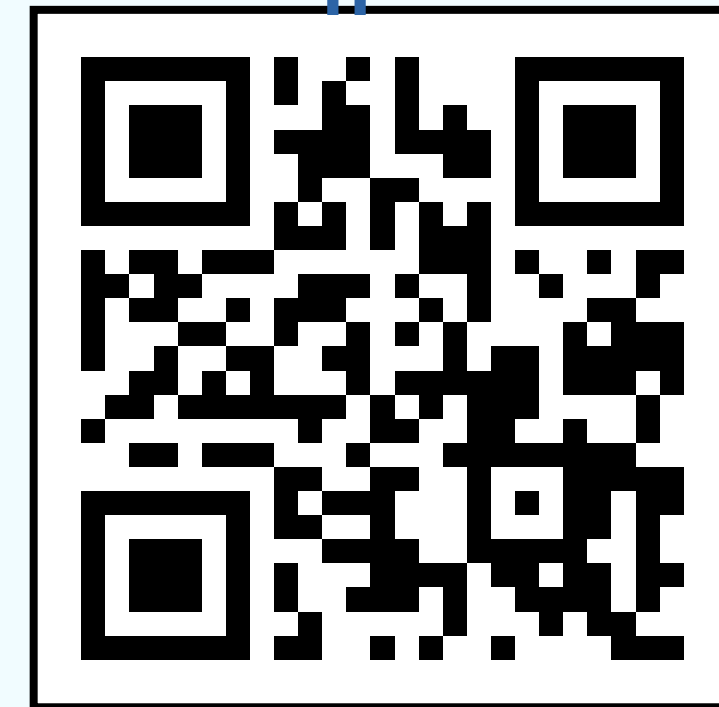
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