



ARTIFICIAL INTELLIGENCE



DEPARTMENT OF SCIENCE AND TECHNOLOGY
PHILIPPINE COUNCIL
FOR INDUSTRY, ENERGY
AND EMERGING TECHNOLOGY
RESEARCH AND DEVELOPMENT
(DOST-PCIEERD)

Artificial Intelligence Roadmap

Updated as of September 2025

Legend (Text Font):	Ongoing	Done	Target
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OVERALL STRATEGIES

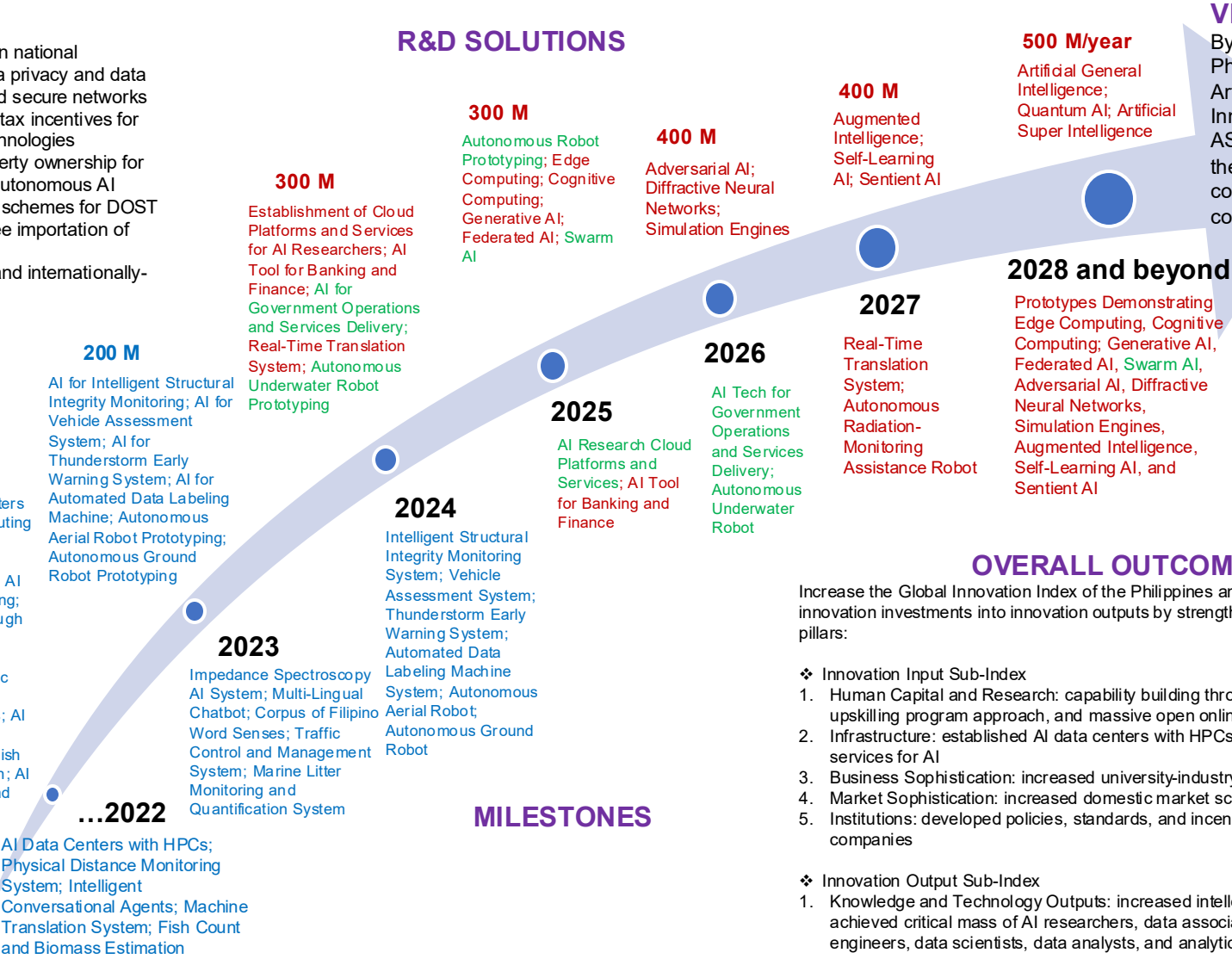
- Facilities and Services**
- Establishment of AI Data Centers with High-Performance Computing Servers
 - Establishment of Cloud Platforms and Services for AI Researchers
- Human Resources**
- Capability building through AI conferences and workshops
 - Establishment of AI innovation ecosystem to strengthen linkages
 - Implementation of massive open online courses on various data analytics pathways including data associate, data steward, data engineer, data scientist, data analyst, and analytics manager
 - Establishment of partnerships between international large tech companies and local universities through BigTech approach
 - Implementation of upskilling program approach for the current workforce with microcertifications focusing on AI applications

- R&D Technologies (Mission-Driven Programs)**
- AI for Industries
- Intelligent Structural Integrity Monitoring; Vehicle Assessment System; Faster Impedance Spectroscopy Analysis; AI Tool for Banking and Finance; AI for Government Operations and Services Delivery
- AI for Health and Education
- Multi-lingual Chatbot for Health Monitoring; Physical Distance Monitoring; Man-Machine Interaction through Conversational Agents; Bidirectional Neural Machine Translation System; Diachronic Representation and Linguistic Study of Filipino Word Senses; and Real-Time Voice Translation System
- AI for Mobility, Environment, and Disaster Risk Reduction
- Traffic Control and Management System; Fish Count and Biomass Estimation; Marine Litter Monitoring and Quantification; Thunderstorm Early Warning System
- AI for Cross-Cutting Applications
- Automated Data Labeling Machine; Autonomous Aerial Robot; Autonomous Ground Robot, Autonomous Underwater Robot; Autonomous Radiation-Monitoring Assistance Robot

- Emerging AI Tech Platforms
- Edge Computing; Cognitive Computing; Generative AI; Federated AI; Swarm AI; Adversarial AI; Diffractive Neural Networks; Simulation Engines; Augmented Intelligence; Self-Learning AI; Sentient AI; Artificial General Intelligence; Quantum AI; Artificial Super Intelligence

- S&T Policies**
- Collaboration with DICT on national cybersecurity plan for data privacy and data exchange with reliable and secure networks
 - Collaboration with DTI on tax incentives for industries adopting AI technologies
 - Policy on intellectual property ownership for inventions generated by autonomous AI
 - Development of incentive schemes for DOST Projects including duty-free importation of capital outlay
 - AI ethics for responsible and internationally-aligned use of AI

R&D SOLUTIONS



VISION

By 2040, the Philippines will be the Artificial Intelligence Innovation Hub in the ASEAN region driving the productivity and competitiveness of the country's industries.

OVERALL OUTCOME

- Increase the Global Innovation Index of the Philippines and effectively translate innovation investments into innovation outputs by strengthening the following pillars:
- ❖ Innovation Input Sub-Index
 - Human Capital and Research: capability building through BigTech approach, upskilling program approach, and massive open online courses
 - Infrastructure: established AI data centers with HPCs and cloud platforms and services for AI
 - Business Sophistication: increased university-industry research collaborations
 - Market Sophistication: increased domestic market scale of AI technologies
 - Institutions: developed policies, standards, and incentives for local AI companies
 - ❖ Innovation Output Sub-Index
 - Knowledge and Technology Outputs: increased intellectual properties and achieved critical mass of AI researchers, data associates, data stewards, data engineers, data scientists, data analysts, and analytics managers

List of Artificial Intelligence Projects (for the whole duration of the roadmap)

R&D Technologies	Project Title	Budget Allocation							Status
		2022	2023	2024	2025	2026	2027	2028	
Artificial Intelligence	Program: Philippine Sky Artificial Intelligence Program (SkAI-Pinas) Project 1. Automated Labeling Machine - Large-Scale Initiative (ALaM-LSI)	48,310,532.16	23,032,430.36						Terminated (DOST-GIA) (PCIEERD-GIA)
	Program: Philippine Sky Artificial Intelligence Program (SkAI-Pinas) Project 2. ASTI-Automated Labeling Machine (ASTI-ALaM)	61,739,080.52	24,115,217.60	57,909,420.33					Ongoing (DOST-GIA) (PCIEERD-GIA)
	"Program: Program: Autonomous Societally Inspired Mission Oriented Vehicles (ASIMOV) Project 1: Harmonized Aerial Watch and Knowledge-based Survey (HAWKS) "	15,393,057.00	7,103,057.00						Terminated (PCIEERD-GIA)
	"Program: Program: Autonomous Societally Inspired Mission Oriented Vehicles (ASIMOV) Project 2: ROAMER (Robot for Optimized and Autonomous Mission-Enhancement Responses)"	9,408,272.00	7,652,296.60	17,014,406.88					Ongoing (PCIEERD-GIA)
	[CRADLE] Unistar Automated Repossessed Motorcycle Assessment System (Unistar ARMAS)	2,385,504.00	2,340,504.00						Completed (DOST-GIA)
	AI-TEWS: Development of an AI-assisted Thunderstorm Early Warning System from Analysis of Doppler Radar Data	6,046,744.22	3,553,771.24						Completed (PCIEERD-GIA)

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		2022	2023	2024	2025	2026	2027	2028	
Artificial Intelligence	Intelligent Structural Health Monitoring via Mesh of Tremor Sensor	5,357,260.00	6,147,668.00						Completed (PCIEERD-GIA)
	SpaceBetweenUs: A Computer Vision Application for Physical Distancing Monitoring in Public Areas	1,699.090.00							Completed (PCIEERD-GIA)
	A Mobile-Web Bidirectional Neural Machine Translation System for Filipino and Cebuano								Completed in 2021 (PCIEERD-GIA)
	Cost-effective Technology for Monitoring and Quantifying Benthic Area Covered by Marine Litter in Shallow Coastal Areas	2,603,544.00							Completed (PCIEERD-GIA)
	Development of a CNN and RNN Topology for Impedance Spectroscopy Analysis	2,156,056.00							Completed (PCIEERD-GIA)
	Development of Multi-lingual Chatbot for Health Monitoring of Public School Children	7,410,108.00							Completed (PCIEERD-GIA)
	Design and Development of Intelligent Traffic Control and Management System	2,203,750.00							Completed (PCIEERD-GIA)
	[CRADLE] Diachronic Representation and Linguistic Study of Filipino Word Senses Across Social and Digital Media Contexts	2,408,654.40							Completed (DOST-GIA)
	[CRADLE] A Lightweight Edge Computer Vision Solution for Smart and Efficient Traffic Management		4,942,302.10						Completed (DOST-GIA)

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R&D Technologies	Project Title	Budget Allocation							Status
		2022	2023	2024	2025	2026	2027	2028	
Artificial Intelligence	Development of a Meranaw Speech Corpus				3,322,347.80	1,257,122.80	1,429,622.80		Ongoing (PCIEERD-GIA)
	Autonomous Underwater Robotic Vehicle for Mapping Benthic Surface Solid Pollution				20,874,350.90	6,334,600.90			Ongoing (PCIEERD-GIA)
	COULIGLIG: Cooperative Unified Logistics using Intelligent Grouped Robots				6,236,544.00	3,746,544.00			Ongoing (PCIEERD-GIA)
	REFORM: Recidivism Evaluation and Forecasting Optimization with Rehabilitation Metrics in Bureau of Jail Management and Penology (BJMP) Region X				4,299,025.39	2,579,873.39			Ongoing (PCIEERD-GIA)
	Nexus for Advanced Risk Reduction and Analytics System for PNP-COCPO				3,039,936.00				Ongoing (PCIEERD-GIA)
	Project 1: DOST-Nexus for Artificial Intelligence Research and Applications (DOST-NAIRA)				104,253,991.22	54,513,588.42	47,803,413.19		Ongoing (DOST-GIA)
	Project 2: TexSCAN: Textile Screening and Quality Control using Artificial Intelligence (AI) and Neural Networks				25,928,622.55	10,180,000.95	10,776,484.55		Ongoing (DOST-GIA)
	Project 3: Integrating AI technology in Philippine Food Composition Table (PhilFCT) Database: A Tool for Nutrition Assessment and Food Science Advancement (Phase 1 - Big Data Infrastructure and AI-Enhanced Data Generation and Management for PhilFCT)				6,877,995.45	4,794,431.65			Ongoing (DOST-GIA)

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		2022	2023	2024	2025	2026	2027	2028	
Artificial Intelligence	Registration and Identity-enrollment Technologies for Everyone (RITE)				11,369,848.50	8,958,598.50	9,872,348.50		New (PCIEERD-GIA)
	aiRack: AI-Driven Hybrid-Powered Smart Data Cabinet with Intelligent Thermal and Power Management for Sustainable IT Operations					5,365,640.00			New (PCIEERD-GIA)
	Development of an Autonomous Underwater Vehicle with Vision-guided Navigation and Acoustic Communication					12,853,867.20			New (PCIEERD-GIA)

AI & AI Robotics Roadmap Assessment

OVERALL ASSESSMENT

HIGHLIGHTS

Human Resource Needs

- Conduct of 1st AI PINAS R&D Conference-Workshop in March 2023 participated in by 115 participants; with 10 proposals submitted
- Online Training on Multitasking AI for ASEAN Member States was conducted in 2022
- Participated in the Allan Turing Workshop on AI Governance last February 2025 conducted by the UK Embassy Manila.
- Conduct of 1st National Artificial Intelligence Stakeholder's Conference last October 2025.

Facilities and Services

- AI Data centers with HPC in selected HEIs (8 HEIs: CarSU, DLSU, UPD, UPLB, UPMIN, DOST-ASTI, USTP, MSU-Naawan)
- Platform for open data sharing and infrastructure for AI – Robotics R&D e.g. SkAI-Pinas Program
- AI Center in Davao City operational for possible absorption by the DOST Central Office for its GATES Program.
- Establishment of AI virtual hubs in the Philippines to advance AI research, development, and collaboration across various sectors through the Advancing Computing, Analytics, Big Data and Artificial Intelligence in the Philippines (ACABAI-PH) Program.

R&D Technologies

- 12 Mission-driven AI R&D projects (ETDD, Completed)
- 7 ongoing projects that aims to provide solutions for the government, logistics, food, and textile sector.
- 3 newly approved projects for government, industry, and underwater applications.

S&T Policies

- PCIEERD Guidelines on the Responsible use of AI (2024)
- Signed MOU with the Bangko Sentral ng Pilipinas on AI for Finance and Banking last June 2025.
- Approval of the National Artificial Intelligence Strategy of the Philippines (NAIS-PH) last May 2025.

WHAT STILL NEEDS TO BE DONE/IMPLEMENTED?

Facilities and Services

- Establishment of AI R&D Center in Visayas

Human Resources

- Strengthening partnerships with international universities and supporting at least 100 scholars for AI-related MS/PhD degrees.
- Embedding AI programs in non-STEM undergraduate curricula.
- Conduct of AI Summer School and Hackathon in 2025
- Launching programs to institutionalize AI policies, laws, and standards.
- Further development of intelligent applications, AI for finance and banking, and large language model platforms (e.g., for KWF).

R&D Solutions

- Large-scale deployment of LLMs for Philippine languages.
- Development of AI for finance and banking (securities recommendations). - AI-focused cybersecurity solutions. - Broader commercialization pathways for prototypes (e.g., through FASTRAC, Sprint)

S&T Policies

- Launch programs to formulate AI policies, laws and standards

CHALLENGES, actions taken, if any

- Limited number of proponents and experts with AI and AI Robotics background.

WAY FORWARD

- HRIDD to intensify talent search and develop AI fellowship programs.
- Institutionalize AI ethics, IP policies, and regulatory frameworks.
- Ensure balanced funding across infrastructure, talent development, and mission-driven R&D projects.
- Involve foreign experts in the next update of the roadmap to benchmark against global practice

Program Refinement Sheet – Artificial Intelligence

Program / Initiative	What Worked (Define Enablers)	What Didn't Work (Define Barriers)	Lessons Learned	Identify Whether			Reason	Suggested Improvement
				Continue	Redesign	Stop		
AI for Industries <i>Technologies/Topics: AI for banking & finance, AI for government ops/service</i>	Multiple mission-driven pilots delivered; strong industry/government relevance <i>Completed projects: mESHM, Spectroscopy, ARMAS, TrafficEZ</i>	No takers for AI for banking and finance	Modular platforms improve reuse	✓			High demand from industry and government; high practical impact potential	Develop shared APIs/datasets; co-fund with industry; AI Discovery grants for small scale R&D
AI for Education <i>Technologies/Topics: Development of LLMs</i>	Active participation / engagement of previously completed projects on NLP <i>Completed projects: Chatbot, FilWordNet, ISIP projects</i>	Proposals on LLMs were disapproved due to siloed approach/independent submissions from proponents.	Co-design early with DepEd/KWF; include safety/ethics evaluations	✓			Foundational for equitable access & local languages	Create a separate program and directed workshop for LLM; AI Discovery grants for small scale R&D

Program Refinement Sheet – Artificial Intelligence

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				Continue	Redesign	Stop		
AI for Mobility, Environment & DRR <i>Technologies/Topics: Intelligent traffic control, marine litter quantification, fish count & biomass, thunderstorm early warning (AI-TEWS)</i>	Conduct of AI Workshop; Targeted needs <i>Completed projects: AI-TEWS, Traffic Control, Marine Litter</i>	None	Ensure NGA/LGU has budget for O&M/sustainability; establish data-sharing MOUs early			✓	Call should be under EUSTDD and ENVI sector if it is applications based. Other exploratory research related can be submitted under AI Discovery Grants or mission-driven project (emerging tech).	N/A
AI Cross-Cutting (Robotics & Data) <i>Technologies/Topics: autonomous radiation-monitoring robot</i>	Multiple autonomous prototypes <i>Completed projects: HAWKS, ROAMER, ALaM-LSI, ASTI-ALaM</i> <i>Ongoing Project: ACABAI-PH Program</i>	Project discontinuities (some terminations)	Prefer Commercial Off-The-Shelf parts for easier implementation			✓	Autonomous aerial, ground, and underwater robot (new) platforms have been developed; previous ground robot has potential to be repurposed as a radiation-monitoring unit and can be submitted under AI Discovery grants for small scale R&D	N/A

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Program / Initiative	What Worked (Define Enablers)	What Didn't Work (Define Barriers)	Lessons Learned	Identify Whether			Reason	Suggested Improvement
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Emerging AI Tech Platforms <i>Technologies/Topics: Edge, cognitive, generative, federated & swarm AI, adversarial AI, diffractive NNs, simulation engines, augmented intelligence, self-learning/sentient AI; long-horizon AGI/Quantum/ASI</i>	Pilots/PoCs for swarm AI; awareness via conferences / workshops <i>Ongoing Project: COULIGLIG</i>	Lack of AI experts	Tiered TRL pathways	✓			Topics are still emerging	Conduct capacity building; targeted fellowships Consultation with stakeholders to validate relevance of those technologies not yet implemented.
Facilities & Services <i>AI data centers with HPC (8 HEIs), cloud platforms/services for AI</i>	HPC/AI centers operational in 8 HEIs; open data platforms aiding AI & robotics R&D Approval of ACABAI-PH Program	N/A	Shared cloud/HPC governance & cost-recovery models improve sustainability	✓			Core infrastructure enabling most programs/projects	Expand to Visayas; Facility enhancement thru R&D

Program Refinement Sheet – Artificial Intelligence

Program / Initiative	What Worked (Define Enablers)	What Didn't Work (Define Barriers)	Lessons Learned	Identify Whether			Reason	Suggested Improvement
				Continue	Redesign	Stop		
Human Resources <i>Big Tech-linked capability building, MOOCs (data associate→analytics manager), micro-cert upskilling, AI summer school/hackathon</i>	Conferences / workshops delivered; AI training	Limited number of proponents with AI/robotics depth; uneven faculty capacity	Scholarships; ladderized tracks; mentor networks accelerate capacity	✓			Talent is a primary bottleneck	Create a training program that is aligned with the NAIS-PH.
Partnerships <i>Industry–academe linkages; BSP MOU (AI in finance); inter-agency Collaboration</i>	Growing university–industry collaboration <i>MOU with BSP</i>	Lack of engagement with other sectors/industry; siloed initiatives	Framework MOUs with KPI	✓			Partnerships amplify resources & adoption	Expand with DICT/DTI/NEDA/CHED/ TESDA/DEPED/LGUs thru NAIS-PH; possibility of creating challenge grants
S&T Policies <i>DICT cybersecurity collaboration, DTI tax incentives, IP for AI-generated inventions, duty-free capital outlay, AI ethics/responsible use</i>	Policy concepts identified; ethics emphasis recognized Approval of NAIS-PH framework Conduct and attendance to Alan Turing Institute Workshop	Operational policies lag deployment; slow adoption	Policy sandboxes help iterate; clarity on AI IP/ethics reduces adopter ris	✓			Need enforceable, harmonized, time-bound policies	Assist in the formulation of the implementation strategy for the NAIS-PH