

**DOST-ADVANCED SCIENCE AND TECHNOLOGY INSTITUTE (DOST-ASTI)
FY 2022 Research and Development Projects**

No.	2022 Project/Program/ Activity Name	Fund Source	Brief Description	Beneficiaries	Duration	Division
1	Electronics Product Inclusive Innovation Center (EPIIC): EPDC Garage	ASTI-GAA	The EPIIC Garage project is a research and development initiative with the Electronics Product Development Center (EPDC) to promote innovation and spur the growth and advancement of EPDC as an electronics design and innovation hub. With the expansion and upgrade of services of the EPDC that promotes productivity and global competitiveness, this project will enable the agency to focus its efforts towards more "industry-facing" activities. Through EPIIC, local designers will be assisted in their electronic product development from ideation, design, innovation and commercialization. More innovative products and solutions will be generated and entrepreneurship and technology innovation shall be pursued with the end goal of promoting enterprise development and creation of start-ups and spin-offs.	1. Electronic companies and other members of the supply chain. 2. Higher Education Institutions 3. Venture capitalists, SMEs and inventors in the field of electronics.	1 Jan. 2021 - 31 Dec. 2024	SSED
2	Automated Electronic Survey System (Year 5)	ASTI-GAA	The AESS project aims to reduce the cost of conducting paper-based collection, processing and aggregation of data by providing a reusable standards-based transparent framework of technologies, systems and protocols. The system will address the need for a high level of visibility of its functionalities for purposes of determining the credibility and accuracy of the results. It will also provide an open, transparent, and secure development framework that will enable better interoperability/integration with other products and widen the number of potential competent third-party providers who may offer better support, maintenance and technical services.	1. COMELEC 2. Registered voters 3. Electoral candidates	1 May 2018 - 31 Dec. 2022	RDD
3	Research and Capability-building in Autonomous and Unmanned Systems (AUS) (Year 3)	ASTI-GAA	This project aims to continue and expand the initial efforts of the Unmanned Aerial Vehicle (UAV) Project to be able to contribute to the autonomous and unmanned systems research in the Philippines. It studies various types of autonomous and unmanned systems, such as multi-rotor, high-performance, underwater, and rover for possible application in areas such as disaster mitigation, agriculture, environmental monitoring, etc.	1. DOST-PHIVOLCS 2. NDRRMC 3. Philippine Red Cross 4. DA 5. DENR	1 Jan. 2020 - 31 Dec. 2023	RDD
4	Resilient Education Information Infrastructure for the New Normal (REIINN) Phase 1	DOST-GIA	Project REIINN focuses on a collective approach to ensure the continuity of learning during this pandemic and to address the challenges brought about by the digital divide. Although the issue of the digital divide is no longer new, the current pandemic further highlighted the urgency to bridge this gap. The project, through its LokalTE and RuralCasting components, aims to develop an LTE base station prototype and an educational interactive digital TV application framework leveraging ISDB-T datacasting technology to support the shift to online learning in remote communities.	1. Select remote unserved and underserved schools and communities with no or limited access to internet 2. Department of education 3. Local government units	15 Apr. - 30 June 2022	RDD/SSED
5	Resilient Education Information Infrastructure for the New Normal (REIINN) Phase 2 - Year 1	ASTI-GAA	Project REIINN focuses on a collective approach to ensure the continuity of learning during this pandemic and to address the challenges brought about by the digital divide. Although the issue of the digital divide is no longer new, the current pandemic further highlighted the urgency to bridge this gap. The project, through its LokalTE and RuralCasting components, aims to develop an LTE base station prototype and an educational interactive digital TV application framework leveraging ISDB-T datacasting technology to support the shift to online learning in remote communities.	1. Select remote unserved and underserved schools and communities with no or limited access to internet 2. Department of Education 3. Local government units	1 Apr. 2022 - 31 Dec. 2023	RDD/SSED
6	Automated Workflow for Research and Development Information System (AW4RDIS) Phase 1 (Year 2)	ASTI-GAA	The overall goal of the project is to improve the DOST's R&D processes through automation and creating online presence of applicable R&D activities. Specifically, it aims to (1) streamline each DOST agency's R&D processes, using DOST-ASTI's process model as baseline; (2) create flexible process models on the applicable R&D activities based on the streamlined R&D processes; (3) design and develop various automated R&D processes using a business process management tool which can be customized to other DOST agency's needs. The whole project consists of the different phases that make up the end-to-end process: Project Proposal, Project Approval, Project Implementation, Project Monitoring, Project Completion, Project Dissemination and Project Impact Assessment Module.	1.DOST RDIs R&D personnel and support staff 2.R&D projects funding agencies 3.DOST central office and management	1 Jan. 2021 - Dec. 31, 2022	KMD

7	Sustained Support for Local Space Technology & Applications Mastery, Innovation and Advancement (STAMINA4Space) Program: Project 4- Ground Receiving Archiving Science Product Development and Distribution (GRASPED) for STAMINA4Space (Extension)	DOST-GIA	The GRASPED Project focuses on the operations of the Philippine microsatellites and the subsequent processing, archiving and distribution of data products. It has been operating the Diwata microsatellites since 2019 which will be eventually transitioned to the Philippine Space Agency (PhilSA).	1. Research agencies 2. Academic institutions 3. Local Government Units	3 Jan. 2019 - 2 July 2022	SSED
8	Development of Extreme Weather Monitoring and Information Sharing System in the Philippines: Understanding Lightning and Thunderstorms for Extreme Weather Monitoring and Information Sharing (ULAT): Year 3 with extension	DOST-GIA	The project aims to observe the country's weather behaviors by studying torrential rainfall and thunderstorm occurrences as parameters to eventually enable short-term forecasts. Through the automated weather stations developed by the Japanese experts, equipped with various sensors that measure both weather parameters and lightning occurrence, a network of 60 lightning instruments is expected to be established in the Philippines, particularly in Metro Manila, to collect torrential rainfall data and lightning events. If proven to be accurate, the project will be able to hasten weather forecasts benefiting disaster response.	1. Researchers 2. DRRM offices 3. Local Government Units	1 Apr. 2021 - 31 Mar. 2023	SSED
9	Synthetic Aperture Radar (SAR) and Automatic Identification System (AIS) for Innovative Terrestrial Monitoring and Maritime Surveillance (Year 4 & 5)	DOST-GIA	This project is being implemented to improve terrestrial monitoring and maritime surveillance of high priority areas using satellite images. It has developed a comprehensive maritime surveillance and monitoring system, called the Surveillance, Identification, and Assessment using Satellites (SIYASAT) portal synergizing the use of satellite based AIS with S-band SAR images to improve maritime domain awareness. The SIYASAT features automated ship detection in a web-based portal allowing government monitoring agencies to have the capability to identify ships which do not transmit AIS data.	1. Government agencies 2. Local Government Units 3. Academe	15 June 2018 - 14 June 2023	SSED
10	Leveraging Satellite BUS Development Best Practices and Platform on arQ (arQ 2.0 / Level-up) (Year 2)	ASTI-GAA	The arQ unit is the key component that acts as the "brain" of every PhilSensor designed for automated recording, processing, and wireless transmission of various in-situ environmental sensor data to a server for analysis. More than 2,000 Philsensors were strategically deployed across the Philippines since 2010 contributing tremendously in providing remote data for weather forecasting, flood monitoring, and agrometeorology making it as one of the most successfully mass-produced and commercialized electronic products of ASTI. Acknowledging the limitations of the first production model of the arQ, the project intends to continue its development to ensure its sustainability, leverage the already established baseline designs and know-how, and adapt to the ever-increasing number of active IoT devices globally.	1. Local Government Units 2. Government agencies 3. Academe	1 Jan. 2021 - 31 Dec. 2023	SSED
11	Kooha: Development of Social Sensing Network Application (Year 4)	ASTI-GAA	The DOST-ASTI has introduced its photo-sharing application called Kooha, coined from the Filipino word "kuha" which means to take or capture. Mobile phones have built-in sensors, making these devices valuable sources of data. Kooha serves as a data hub when photos are captured and shared using the app. Researchers can then use these data for applications related to disaster risk reduction, thermal mapping, earth observation, health science, etc.	1. General public 2. Researchers and citizen scientists who would like to do or are currently doing research and development work on data analytics, machine learning, artificial intelligence, and other related technologies	1 Jan. 2019 - 31 Dec. 2022	CSD
12	Gul.ai: AI- and IoT-assisted Small-scale Plant-growing System - Phase I (Year 4)	ASTI-GAA	The Gul.ai project is envisioned to contribute to alleviating the growing lack of interest of the Filipino youth in agriculture-related courses. This problem may have long-term effects on food security in the country. The project's primary goal is to encourage the Filipino youth to consider taking up areas of study and research, and eventually career paths, that would lead to the fusion of information and communications technology (ICT) and agriculture. The engineering of the Gul.ai system's requirements have been implemented and multiple new features have been developed.	1. State Universities and Colleges 2. Research Agencies 3. Government Agencies 4. Organizations involved in any of DOST-ASTI domain applications 5. Private sector	1 Jan. 2019 - 31 Dec. 2022	CSD
13	Development of HRIS for DOST-ASTI (Year 3)	ASTI-GAA	This project aims to produce a software specifically designed for the procedures and functions of the agency's HRMS, from recruitment to separation. The system will enable the electronic data entry and collection, data tracking and management, and provision of other information needs of the DOST-ASTI personnel. The HRIS shall streamline the HRM Core Systems of DOST-ASTI namely: a) Recruitment, Selection, and Placement, b) Performance Management, c) Learning and Development, and d) Rewards and Recognition in the most cost- and time-efficient manner.	1. Human Resource Section 2. DOST-ASTI Staff (Regular, Project, and Outsourced)	1 Jan. 2020 - 31 Dec. 2023	KMD

14	Robot for Optimized and Autonomous Mission-Enhancement Responses (ROAMER)	PCIEERD-GIA	The Project ROAMER aims to aid agricultural farms suffering from productivity issues specifically those brought about by the late detection of plant diseases such as Panama Disease (or Fusarium wilt) in banana plantations. It will develop autonomous mobile robots that will survey, detect features of interest (specific plant parts, etc.) and produce 3D maps using Artificial Intelligence (AI)-based methods in computer vision, sensing and navigation at different sites. This will improve monitoring, provide better assessment of the location, and gather data to help improve decision-making. These land-based prototypes would serve as learning platforms towards building field-ready autonomous vehicles for mission-specific tasks.	1. Researchers and practitioners in the field of robotics 2. Other robotics industry	15 June 2021 - 14 June 2024	RDD
15	NTC Fixed and Mobile Benchmarking System: Regions 3,8,11, CARAGA	NTC	The Project developed a broadband measurement tool for fixed devices, and a speed test application for mobile devices. These tools were designed in such a way that provisions can be made for further enhancement and modifications. This project builds upon the outputs of the first phase of the NetMesh initiative, with NTC ROs 3, 8,11 and CARAGA as the proponents. Under the project, new and improved versions of the following software were developed: broadband measurement tool for fixed devices, speed test application for mobile devices (Android and iOS), and web-based speed test tool with data visualization. These tools are intended to be used by NTC and all its Regional Offices to perform audit and assessment on the Quality of Service (QoS) of Internet Service Providers (ISP), and as a platform to test the quality of experience (QoE) for consumers.	1. NTC and its regional offices 2. Academe	1 June 2021 - 30 June 2023	RDD/SSED/KMD
16	Philippine Sky Artificial Intelligence Program (SKAI-Pinas): ASTI Automated Labeling Machine (ASTI-ALaM) - Year 1 & 2	DOST-GIA	The Project aims to establish an optimized workflow for developing machine learning and artificial neural network-based models, and an online model store, to host the developed models for usage in different application domains. It intends to promote mapping and other computer vision tasks, through application of traditional remote sensing, machine learning, and deep learning methods to be used through the developed model store and in training and optimization of models. Target applications of the Project include: the segmentation of satellite-captured RGB images into several classifications of natural and man-made features (agricultural land, water, buildings, etc.), and the estimation of the structural strength of buildings in satellite-captured images.	1. research groups focused in AI and machine learning 2. ALaM-LSI research group	1 Oct. 2021 - 30 Sept. 2024	CSD
17	ITANONG: A Natural Language Interface to Databases for Filipinos	ASTI-GAA	ITANONG aims to develop a natural language interface to relational databases (NLIDB). When installed, this artificial intelligence (AI) application can be accessed through a web browser or a mobile app that will enable the Filipino end-users to key in questions or queries in natural language that the users are comfortable with. The Project will enable important databases more accessible to the general public, especially Filipinos who can hardly express themselves well in English much less in technical or computer language.	1. General Public 2. government offices 3. Academe	1 Jan. 2022 - 31 Dec. 2024	CSD
18	V2X Initiatives for Road Safety (VIROS) - Year 1	PCIEERD-GIA	The VIROS Project aims to design and develop an intelligent traffic controller unit with wireless communication capability. The intelligent traffic controller can gather and assess traffic conditions, undertake data-driven traffic control, and communicate these traffic conditions to road-users. For its pilot implementation, the application of the technology is intended to aid traffic management and improve overall road safety and driver decision making while traversing the roads. Using AI-based methods in computer vision, the intelligent traffic controller can analyze traffic statistics such as vehicle recognition and vehicle flow rate, assess traffic condition, and direct traffic. The traffic information is then communicated by these controllers wirelessly to vehicle drivers, pedestrians, and other road-users through Vehicle-to-Everything (V2X).	1. General public 2. Road traffic enforcement agencies 3. NTC 4. Emergency response units	1 Mar. 2022 - 28 Feb. 2024	RDD
19	Establishment of Quantum Innovation Laboratory: Optimizing a Decision Diagram-based Free and Open-Source Quantum Circuit Simulator for Benchmarking in an HPC Environment using Entanglement , Random Circuits and Quantum Algorithms Benchmark Datasets	DOST-GIA	The project aims to establish a Quantum Innovation Laboratory optimizing a decision diagram-based free and open source quantum circuit simulator for benchmarking in an HPC environment using entanglement, random circuits and quantum algorithms benchmark datasets	1. DOST-ASTI COARE facility 2. Research Institutions	10 May 2022 - 9 May 2024	CSD/RDD

20	Signal Assessment Using Geospatial Analysis Project (SAGAP) Phase II (Year 2)	ASTI-GAA	This project is aimed towards extending the range of data used to determine the most suitable and cost-efficient satellite data for RF propagation. It will focus on conducting more field measurements for more accurate data points. The refined outputs that will be generated can be used by relevant government agencies, telecommunication companies, TV and radio operators, and other stakeholders operating wireless sensor networks and rural networks to strategically place their transmitters while considering their own radio parameters, geographical conditions, and obstructions.	<ol style="list-style-type: none"> 1. Research institutions 2. NTC and regional offices 3. Local Government Units 	3 Oct. 2022 - 31 Dec. 2024	SSED
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