Industry 4.0

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4.0

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Industry 4.0 Roadmap

Updated as of 21 September 2023

OVERALL STRATEGIES

Facilities and Services

- Establishment of Advanced Mechatronics, Robotics, and Industrial Automation Laboratory (AMERIAL)
- Establishment of a Smart Factory demonstrating Industry 4.0 architecture
- Establishment of a Smart Factory Web

Human Resources

- Creation of Industry 4.0 Technical Working Group
- Conduct of industry-led webinar series for Industry 4.0 awareness and adoption
- Assessment and certification of Smart Industry Readiness Index (SIRI) and Smart Manufacturing Maturity Index (SMMI) of industrial companies
- Development of modules on Supervisory Control and Data Acquisition (SCADA) to accelerate connectivity and automation
- Capacitate local professionals to be Industry 4.0 Certified SIRI Assessors
- Implementation of flexible and modular skills certification programs

R&D Technologies

- Development of non-intrusive sensor-based prescriptive maintenance . platform
- Development of integrated and intelligent sensors and actuators
- Utilization of big data and analytics for demand forecasting and predictive and proactive maintenance
- Process visualization through augmented reality technology for worker maintenance and training
- Development of local manufacturing execution systems (MES), SCADA, and enterprise resource planning (ERP) software
- Digitization and integration of horizontal and vertical system for on demand manufacturing
- Development of collaborative robot for materials handling
- Development of autonomous robot for lights-out manufacturing
- Implementation of cloud robotics and robotics-as-a-service
- Modeling and simulation of a digital predictive twin of an entire shop . floor for cyber physical production system
- Development of in-memory and NoSQL database technology .
- Application of cybersecurity technology for manufacturing equipment
- Application of blockchain in smart manufacturing
- Application of edge and fog computing for IIOT
- Implementation of cloud manufacturing-as-a-service
- Implementation of ubiquitous / wireless manufacturing
- Transformation to Industry 5.0

S&T Policies

- Incentive systems for companies undergoing Industry 4.0 transformation
- Development of local standards for Industry 4.0 readiness assessment and certification
- Incorporating curriculum changes to increase responsiveness
- Formulation of cybersecurity protocols for smart manufacturing

200 M

Development of integrated and intelligent sensors and actuators: Big data analytics for demand forecasting and predictive and proactive maintenance; Development of collaborative robot: Process visualization through AR; Modeling and simulation of a digital predictive twin

50 M Establishment of AMERIAL: Development of non-

intrusive sensorbased prescriptive maintenance platform

AMERIAL: Prescriptive maintenance platform

....2022

300 M

Establishment of

Development of

Horizontal and

vertical system

Application of

manufacturing

2023

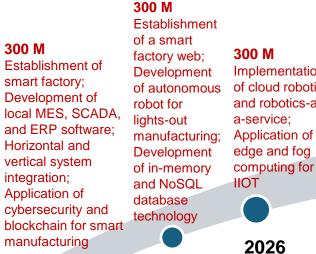
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cybersecurity and

integration;

and ERP software:

smart factory;



R&D SOLUTIONS

2025

2024 Cobot: AR tech for process Digital visualization predictive twin simulator: Demand forecasting and proactive maintenance platform

Implementation of cloud robotics and robotics-as-

Smart factory:

SCADA, and

300 M

of cloud

Implementation

manufacturing-

as-a-service

2027

Smart factory web: Autonomous industrial robot; Proprietary MES. In-memory and NoSQL database tech

2028... Cloud robotics: Roboticsas-a-service; Edge and fog computing; Cloud manufacturing-as-aservice; Ubiquitous

OVERALL OUTCOME

A solution space for Industry 4.0 available and accessible to our industries and MSMEs

Republic of the Philippines DEPARTMENT OF SCIENCE AND TECHNOLOGY PHILIPPINE COUNCIL FOR INDUSTRY, ENERGY AND EMERGING TECHNOLOGY RESEARCH AND DEVELOPMENT blockchain for smart manufacturing

ERP: Integrated horizontal and vertical chains; Cybersecurity protocols and

MILESTONES





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ONGOING TARGET

VISION

DONE

300 M

Implementation of

Transformation to

Industry 5.0

ubiquitous manufacturing;

Create and foster a flourishing innovation ecosystem for Industry 4.0 in the country

List of Industry 4.0 Projects (for the whole duration of the roadmap)

R&D Technologies	Project Title	Budget Allocation ('000)							Status
		2022	2023	2024	2025	2026	2027	2028	Status
Industry 4.0	Non-Intrusive Sensor- based Prescriptive Maintenance Platform for Wire Manufacturing Factory								Completed in 2021 (PCIEERD-GIA)
	New: Digital Manufacturing Assembly Trainer (DMAT) and the Digital Twin Simulator (DTS)			6,570,129.80					Ongoing (PCIEERD-GIA)



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