

ELECTRONICS R&D ROADMAP

	2012	2013	2014	2015	2016	2017
AGRICULTURE AND FOOD	Field Monitoring System		Precision agriculture using locally engineered environmental sensors	System for Urban Farming		
	Moisture Meter		Locally engineered sensor modules for monitoring farm environment conditions	System for Greenhouse Control		
ENVIRONMENT, NATURAL RESOURCES, DISASTER MITIGATION & MANAGEMENT	Acoustics Sensor Kits and Rain Monitoring Alarm System Model	Landslide Sensors	Development of Wireless Sensor	Speed enforcement Radars	Unmanned Aerial/ Underwater Vehicle	Massively interconnected sensors
		Prototype Meteorological Buoy	Smart Systems Doppler Radar	Low-cost Traffic Control Radar for seaports	Low-cost Air Traffic Control Radar for small airports	
	AWS, ARG, WLMS		Building Blocks for Traffic Control Radars			
EDUCATION		Versatile Instrument Systems for Science Education and Research (VISSER)	Mobile TechnoLab for ECE	Mobile TechnoLab for ECE FPGA-based		
HEALTH		Portable Medical Devices for Maternal Health Care	Locally engineered Sensor modules using Commercially available sensor chips	Imaging	Prosthesis	
			Locally engineered sensor modules			
ENERGY			Energy Efficiency & monitoring (for manufacturing Systems)	Smart Wire Integrated zero-maintenance sensor platforms for Smart Grids	Smart Grid Systems Application Development	
			High efficiency inverter drivers for BLDC motor control			
			Fast charger for e-vehicle			
			Micro-inverters for solar panel installations	High-power, high-efficiency and highly compact motor drivers for e-vehicle applications	Controller for Solar/Wind/ Hydro	

Technology Cluster	Areas / Discipline	2014	2015	2016	2017	2018
Ubiquitous / Pervasive Computing	Sensors, Embedded Systems, Machine Vision, Wireless Network, Robotics, Security, Image/Video Retrieval, Next Generation Network	<ul style="list-style-type: none"> Empathic Space for Stroke Patients 	<ul style="list-style-type: none"> Empathic Space v2.0 for Persons Afflicted with Autism 	<ul style="list-style-type: none"> Security APIs for Mobile/Handheld Devices 		
		Developing Technology-based Therapies for Stroke Patients (Dr. Suarez)	Developing Technology-based Support Tools for Children with Autism (Dr. Suarez)	Security Mechanisms for Mobile Devices (Dr. Festin)		
		<ul style="list-style-type: none"> Vision-Based Vehicle Counting System and Traffic Emissions Inventory 	<ul style="list-style-type: none"> Security APIs for Mobile/Handheld Devices 	<ul style="list-style-type: none"> Collaborative control systems for multiple UAVs surveying a geographical Area 		
		Vision-based Vehicle Counter for Emissions Inventory and Traffic Monitoring (VIVEC-ET) (Dr. Suarez)	Security Mechanisms for Mobile Devices (Dr. Festin)	Aerial Dynamic Assessment Robot for National Advancement – phase III (Dr. Suarez)		
			<ul style="list-style-type: none"> Unmanned Aerial Vehicle System (UAV) for Surveillance Operations 			
			Aerial Dynamic Assessment Robot for National Advancement – phase II (Dr. Suarez)			
Human Machine Interaction	Empathic, Affective, NLP, Speech Recognition, Machine Vision, Machine Intelligence	<ul style="list-style-type: none"> Embodied Conversational Agents Teaching English 	<ul style="list-style-type: none"> Embodied Conversational Agents Interacting with Persons Afflicted with Autism 	<ul style="list-style-type: none"> Computer Storytellers in an ILE to Motivate Learners 		
		Teaching English as a Second Language using ECAs (Dr. Suarez)	Developing Technology-based Support Tools for Children with Autism (Dr. Suarez)	<ul style="list-style-type: none"> Exploring Stories as Tools to Influence the Emotion of Learners (Dr. Suarez) 		
		<ul style="list-style-type: none"> An Affect Model of Readers in an ILE for Reading 	<ul style="list-style-type: none"> Software Tutors for Gifted Children 			
		Building an Affect Model of Student Readers as they Read Story Text (Dr. Suarez)	Developing Empathic Educational Software for Gifted Children (Dr. Suarez)			
		<ul style="list-style-type: none"> Alex: A Collaborative Peer in an Interactive Storytelling Environment for Disaster Preparedness 	<ul style="list-style-type: none"> Interactive Storytelling Environment to promote Maternal Health Awareness 			
		Supporting Behavior Awareness through Interactive Social Stories (Dr. Suarez)				
			<ul style="list-style-type: none"> Embodied Conversational Agent interacting with Readers in an ILE for Reading 			

			Integrating an Embodied Conversational Agent into an ILE for Reading (Dr. Suarez)			
			<ul style="list-style-type: none"> Development of low cost research platforms that can assess user engagement, boredom, confusion based on posture, eye-gaze and biometrics 	<ul style="list-style-type: none"> Data gathering in various contexts, e.g. film, advertising, driving, learning 	<ul style="list-style-type: none"> Data analysis Report writing Publication 	
			Development of low-cost research platforms for assessing user affect (Dr. Rodrigo)			
Computational Systems and Services	Grid, Cloud, Modeling & Simulation, Visualization, Datamining , Analytics		<ul style="list-style-type: none"> Algorithms for Secure Data Mining 	<ul style="list-style-type: none"> Algorithms for Secure Data Mining 		
			Algorithms for Secure Data Mining (Dr. Festin)			
Digital Media and Creative Content	Games, Animation, Digital Lib, E-learning/Instructional Systems, Entertainment Computing, Image/Video Processing	<ul style="list-style-type: none"> Mobile Picture Books 	<ul style="list-style-type: none"> Animated Picture Books 	<ul style="list-style-type: none"> Intelligent Tutoring Game System 		
		Story Generation Systems as Support Tools for Literacy Development in Children (Dr. Suarez)		Development of intelligent tutoring systems for Araling Panlipunan and Filipino for middle school (Dr. Rodrigo)		
Web Science	Web Semantics, Q&A on the Web, Social Networking, Ontologies, Internet of Things					
Foundation of Computer Science	Algorithms, Systems Software, Languages, Basic Research on Computer Science Architecture		<ul style="list-style-type: none"> Algorithms for Secure Data Mining v.1.0 	<ul style="list-style-type: none"> Algorithms for Secure Data Mining v.2.0 		
			Algorithms for Secure Data Mining (Dr. Festin)			
ICT for Development (Government Thrusts – usage and applications)	GIS, Health Informatics, Instructional, Environment, Service Science (incl. Tele-health), Bio-informatics, E-governance	<ul style="list-style-type: none"> Pinoy SimCity v1.0 	<ul style="list-style-type: none"> Pinoy SimCity v2.0 			
		Developing an Environment for Simulating City Planning through Community-Based Monitoring System Data (Dr. Suarez)				
			<ul style="list-style-type: none"> Personal Health Records on Mobile Devices 	<ul style="list-style-type: none"> Personal Health Records on Mobile Devices 		
			Personal Health Records on Mobile Devices (Dr. Festin)			