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Unit Profile

The Research and Development, and Innovation Services Office (RDISO) is an administrative unit under the Office of the Vice President for Research and Development, Innovation, and Extension (OVPRDIE) tasked with overseeing and supporting the university's research and innovation ecosystem. This operates to assist the OVPRDIE in managing and coordinating the activities of the university's Research and Development, and Innovation (RDI) Centers. This office ensures the effective planning, implementation, monitoring, and evaluation of research and innovation programs across the institution. RDISO plays a vital role in facilitating research agenda alignment not only with institutional priorities but also with the regional and national and strengthening research quality and output.

With the recent addition of three (3) new RDI Centers, we are now composed of a total of twenty (20) fully operational RDI Centers, each focusing on distinct fields of research. The Centers are as follows:

1. Action for Greater Advancement of Knowledge (AGAK)
2. Caraga-Center for Agricultural Research and Entrepreneurship (Caraga-CARE)
3. Caraga Center for Geo-Informatics (CCGeo)
4. Caraga Center for Peace and Development (CCPD)
5. Center for Nanoscience and Technology for Research and Entrepreneurship (CeNTRE)
6. CSUCC Energy and Power Research and Innovation Center (CEPRIC)
7. Center of Human and Computer Interaction (CHCI)
8. Center for Robotics, Automation, and Fabrication (CRAFT)
9. Center for Resource Assessment, Analytics, and Emerging Technologies (CREATE)
10. Center for Research in Environmental Management and Eco-Governance (CREME)
11. Food Innovation Center (FIC)
12. Forest Product Innovation and Training Center (FPITC)
13. Information and Communication Technology Center (ICTC)
14. Mindanao Institute for Mineral Resources Management Research and Training (MinRES)
15. Mathematical and Statistical Computing and Research Center (MSCRC)
16. Sustainable Mineral and Mining Operations Using Industry 4.0 Center (SuMMO)
17. Virtual Learning Research Center (VLRC)
18. CSUCC Food Innovation Hub / Food Research Ideation and Entrepreneur Development (FRIED) Hub,
19. Center for Health Research and Innovations in Medicine and BioEngineering (CHIME),
20. Center for Industrial Technology for Educational Development (CITED)

Performance Narrative

As of the reporting period, RDISO continued to exhibit strong performance in mobilizing research resources and delivering substantial outputs, despite challenges encountered in operational execution. Research projects implemented across the RDI Centers generated more than ₱85 million in research funding, exceeding the established target of ₱61 million. Enhanced collaboration among the Centers likewise resulted in 47 Scopus-indexed publications and 27 intellectual property applications. In addition, 43 research partnerships and 10 agri-food system projects were successfully implemented, demonstrating robust stakeholder engagement and effective program implementation. The corresponding Means of Verification (MOVs) for these accomplishments are presented in the succeeding scorecard: RDISO Report for 2025.

Table 1. RDISO Report for 2025

Deliverables	Target	Actual Accomplishment	% Accomplished
Percentage of GS faculty engaged in research work actively pursuing in the last three (3) years	60%	64.77%	107.95%
Total research funding obtained from public and private sector partners, Increase revenue from Income-Generated ProjecG (IGPs) - Combined for all RDI Centers.	24000000	85,000,000.00	354.17%
Number of Scopus-indexed journal publication as either main or co-author (on top of the professorial rank) - Combined for all RDI Centers.	8	47	587.50%
Number of patent, utility model, industrial design, or other Intellectual Property (i.e. copyright) application - Combined for all RDI Centers.	8	27	337.50%

Number of research collaborations established with other agencies and/ or academic institutions and with active MOA/MOU - Combined for all RDI Centers.	8	43	537.50%
Number of Scopus-indexed journal article from an affiliated faculty member of the RDI Center with an international author. - Combined for all RDI Centers.	8	20	250.00%
Average utilization rate of allocated funds for research and development (for all funding: GAA, IGF and others, i.e. DOST, CHED)	90%	64.66%	71.85%
Number of research outputs utilized by the industry or by other beneficiaries - Combined for all RDI Centers.	8	14	175.00%
Number of research outputs completed within the year (i.e. from either GAA or externally-funded projects; or students' thesis projects packaged with scholarly work with project proposal registered at OVPRIE) - Combined for all RDI Centers.	40	70	175.00%
Number of creative research outputs registered as intellectual property, rights (i.e patent, utillty model, industrial design, copyright -Ims Manuals) and utilized for commercial and industrial purposes.	2	5	250.00%
Number of research creative outputs registered as intellectual property rights (i.e. patent, UM, industrial design, copyright – IMs or Manuals), but not utilized for commercial and industrial purposes.	2	6	300.00%
No. of research projects proposed, directed, mandated, or focused on CSU internal challenges or priorities, and	8	8	100.00%

implemented within the year.			
No. of implemented research projects/ programs pertaining to agri-food systems (combined target for all R&D Centers) - Combined for all RDI Centers.	4	10	250.00%
Percentage of Research outputs published in internationally refereed or CHED recognized Journal within the year (combined target for all R&D Centers).	40%	99%	246.91%

SO Indicator 0.1: Percentage of GS faculty engaged in research work actively pursuing in the last three (3) years

As of September 2025, the Percentage of GS faculty engaged in research work actively pursuing in the last three (3) years target is at 64.77 that reached the target of 60%.

Table 2. Percentage of GS faculty engaged in research work actively pursuing in the last three (3) years

College	Accomplishment
CAA	60.00%
CCIS	100.00%
CED	89.47%
CEGS	100.00%
CHASS	0.00%
CMNS	42.86%
COFES	62.50%
CSUCC	No Report
SOM	No Report
TOTAL (Averaged)	64.77%

SO Indicator 0.2: Total research funding obtained from public and private sector partners; Increase revenue from Income-Generated Projects (IGPs) - Combined for all RDI Centers.

In terms of total research funding mobilized from various sector partners, the Research and Development and Innovation Services Office (RDISO) achieved a 354.17% accomplishment rate as of December 2025. This exceptional performance was driven by strong strategic partnerships, well-coordinated proposal development efforts, and sustained collaboration across the different RDI Centers. With actual research funding amounting to approximately ₱85,833,792, the University demonstrated its strong capacity to attract high-value research investments aligned with both institutional and regional priorities.

Funding support was secured from major national agencies, including the Department of Science and Technology (DOST), the Department of Budget and Management (DBM), and the Department of Agriculture (DA).

Table 3. Projects with fundings obtained from public and private sector partners, and the utilization rate as of the period reported.

RDI Center	Project Title	Funder (do not abbreviate)	Total Approved Budget	Overall Utilized
AGAK	Safety In Schools: Health Risks Management and Policy Solutions in Caraga Region	Department of Science and Technology DOST-Philippine Council for Health Research and Development (PCHRD)	424,999.00	60.02%
MSCRC	Machine Learning of Physics-Based Earthquake-Induced Landslide Parameters and for Efficient Prediction and WArning in the Philippines	DOST-PCIEERD	₱19,812,176.00	69.24%
	Comprehensive Assessment for reinforcing equity in screening for Breast Cancer	DOST-PCHRD	₱999,748.00	43.24%
	Carrying Capacity of Major Agricultural Growing Areas in Misamis Oriental: Basis for Model Development and Policy Recommendation to Enhance Food Security	DOST-PCAARRD	₱5,000,000.00	66.89%
CHCI	AgriVista Program: Project 1 - DA-BAFE Digital Roadmap Development Project	DA-BAFE	3,124,996.00	95%
	ISySSCDM Project	DOST PCIEERD,	6,506,315.30	57.15%
	ORIS Material Intelligence - FMR Project	DA-BAFE	6,300,000.00	82.60%
	MARVEL Project	DOST PCIEERD	11,400,000.00	100.00%
	FAMRIA Project	DA-BAFE	10,000,000.00	100.00%
CRAFT	RS-Dev't and Implementation of SSLSIRLICS in Partnership of Caraga LGU's and Barangay's	CSU-RAF (GAA 2025)	10,934,000.00	47.13%
ICTC	COULIGLIG	Department of Science and Technology - Philippine Council for Industry, Energy and Emerging	9,983,088	63.00%

		Technology Research and Development		
VLRC	PAMANA: Digital Preservation of Cultural Dances		1,000,000	80.65%
	ABEMIS 3.0		2,400,000	64.26%
CEPRIC	Tun-EE: Electrical System Infrastructure Optimization in Elementary Schools for Enhanced Energy Efficiency, Safety, and Learning Environment.	Department of Budget Management	1,553,000.00	84.50%
MinRES	Heavy Metal Contamination Assessment and Pollution Load Estimation in Aquatic Ecosystem Gradients of Agusan Marsh; Implications to the Safety and Security of the Agusan Marsh Wildlife Sanctuary	DOST-NRCP	4,427,935.45	45%
	Minesite Airborne Partiulates Matter Measurement and Monitoring	Norweah Metals & Minerals Co. Inc	200,000	
Caraga Care	Establishment of a Mulberry Demonstration Farm and Development of Soil Amelioration Protocol for the Rehabilitation of Mined-Out Lands	DOST-CARAGA	1,500,000.00	67%
	Implementation of Alternate Wet and Dry (AWD) Technology for Rice Production and Methane Reduction in Butuan City, Agusan del Norte	Green-Carbon-VCC I International	1,291,990.00	27%
	Upgrading of Plant Tissue Culture Laboratory of Caraga	DA-ACEF	4,999,730.00	14%
CCPD	Development of a Community-Based Psychosocial Support of Rural Communities in Caraga (2024 Continuing)	GAA	370,825.01	40.35%
	Falacata Pathways (2024 Continuing)	GAA	374,215.68	36.29%
CREATE	Prototype Enhancement and Testing of Village Level Sago-Pith Extracting Machine	DOST-Technology Application and Promotion Institute	2,344,480	99.60%
SUMMO	ICT4RM 2.0		3,300,000.00	12.70%

FIC	Establishment of Regional Agri-Business Hub (ABH) in Caraga through the RAISE Program	Department of Science and Technology (DOST) PCAARRD	2,278,800.00	96.86%
CCGeo	Mapping and Quantification of Habitat Fragmentation in Agusan Marsh Wildlife Sanctuary: A Preliminary Study in a Protected Wetland of the Philippines	NATIONAL RESEARCH COUNCIL OF THE PHILIPPINES	1,980,870.00	44%
CREME	Formulation of Cluster Management Plans on Integrated Approach in Management on Eastern Mindanao Biodiversity Corridor - Clusters 1,3, & 4		11,005,744.00	83%
	Formulation of Cluster Management Plans on Integrated Approach in Management on Eastern Mindanao Biodiversity Corridor - Cluster 2		6,900,000.00	27%

These projects reflect the university's commitment to collaborate with various stakeholders in order to significantly contribute in research and development across health, environment, education, technology, agriculture, and industrial innovation

SO Indicator 1: Number of Scopus-indexed journal publications as either main or co-author (on top of the professorial rank) - Combined for all RDI Centers.

Achieving a total of 47 Scopus-indexed journal publications against a target of eight underscores RDISO's strong commitment to advancing research quality, enhancing international visibility, and contributing meaningfully to both local and global knowledge production. With a target of one publication per RDI Center across the 20 RDI Centers, this notable achievement is attributed to the proactive research funding support provided by the OVPRDIE, complemented by sustained publication mentoring initiatives led by the Research and Development Publications Management Office (RDPMO).

Table 4. Scopus-indexed journal publications as either main or co-author (on top of the professorial rank) - Combined for all RDI Centers.

Center	**Authors**	**Title of Article**	**Journal Publisher (do not abbreviate)**
CCGeo	Meriam Makinano-Santillan, **Arnaldo C. Gagula,**	Envisioning a Sustainable Water Resource Governance in Sambunitan Watershed: Integrating GIS, Hydrology, Geology, and	Journal of Ecosystems Science and

	Rowena P. Varela, Jojene R. Santillan	Water Quality Insights	Eco-Governance (JESEG)
	Arnaldo C. Gagula, Juliet T. Demata, and Izza Nicole D. Fortun	A GIS-Based Network Analysis in Finding Optimal Route on Accessing Tourist Places in Siargao Island, Philippines	IOP Conference Series: Earth and Environmental Science
	Arnaldo C. Gagula, Carlo P. Enoy, and Kiss Swiss D. Postrero	Assessing the Land Use Land Cover Change for Carbon Stock Dynamics Estimation in Agusan Marsh Wildlife Sanctuary, Caraga Region, Philippines using Remote Sensing, Geographic Information System, and InVEST Software	IOP Conference Series: Earth and Environmental Science
	Arnaldo C. Gagula, Stephanie Mae Salcedi-Albores, Jun Love E. Gesta	Assessing Land Cover Change and Flood Exposure from River Embankment Using GIS and Remote Sensing for Sustainable River Management: A Case Study of the Tumampit River in Ampayon, Butuan City, Philippines	Journal of Ecosystems Science and Eco-Governance (JESEG)
CeNTRE	Teody Gumabat, Jeanne Phyre Lagare Oracion, Jolina Fedelis, Ethel Keleste, Rey Capangpangan, Noel Lito Sayson, Gerard Dumancas, Arnold Algunocd and **Felmer Latayada**	NHS-ester conjugated gold nanoparticles for spermine detection: a potential tool in meat spoilage monitoring	Sensors & Diagnostics, Royal Society of Chemistry
	Roland Gier D. Delara, Joycelyn C. Jumawan, Roland Care B. Burdeos, Giovanni Felicitas, Sherley Ann T. Inocente, Marybeth Hope T. Banda, **Felmer S. Latayada**, Temmy P. Vales, Romell A. Seronay, and Rey Y. Capangpangan	Exploring Microplastic Contamination in Wetland Mollusks: Species-specific Findings from a Major Wetland Habitat	Thai Society of Higher Education Institute on Environment
	Roberth San Abando Solita, **Felmer Sesaldo Latayada**, Julius Anthony Magadan Leones, Elizabeth Pio Parac, Arnold Cafe Alguno, Rey Yonson Capangpangan	Inhibiting Stenotrophomonas maltophilia, a Pathogenic Bacterium Responsible for Kernel Rot Disease in Pili Nut (Canarium ovatum Engl.) with Ionic Liquid-loaded Nanoemulsions	King Mongkut's University of Technology North Bangkok

	Ethel P. Keleste, Jolina S. Fedelis, Wendy Faye T. Opusa, Sherley Ann T. Inocente, Marybeth Hope T. Banda, **Felmer S. Latayada,** Joycelyn C. Jumawan, Temmy P. Vales, Romell A. Seronay, and Rey Y. Capangpangan	Assessment of Microplastic Pollution Load and Ecological Risk Index in Surface Water and Sediment Matrices in the Mangrove Ecosystem along Butuan Bay, Southern Philippines	Faculty of Environment and Resource Studies, at Mahidol University
	Giovanni Felicitas, · Joycelyn C. Jumawan · Roland Care B. Burdeos · Roland Gier D. Delara · Romell A. Seronay · Temmy P. Vales· **Felmer S. Latayada** · Sherley Ann T. Inocente · Marybeth Hope T. Banda · Rey Y. Capangpangan	Microplastics in Surface Water and Gastrointestinal Tracts of Demersal Fishes (Oreochromis niloticus and Cyprinus carpio) in the Largest Wetland of the Philippines	Springer Nature
	Jessa Mae T. Lazarte, Connie Fern Miranda, Ruel S. Apas, Eulogio S. Auxtero, Jr., Angeline M. Atacador, Marco Laurence M. Budlayan, Ferdinand Michael B. Calo, Jr., Rey Marc T. Cumba, Gladys Edilo , Jade C. Jusoy, Felmer S. Latayada, Ronieto Mendoza, Edmar G. Pantohan, Temmy P. Vales, Mark Vincent Vergara , and Joey Arles O. Vergara	Perceived Health Impacts of Surface Mining: Local Perspectives from the Mining Communities in Libjo, Dinagat Islands, Philippines	MDPI
CREATE	James Villamor Ariston , Christian Dave Domingo Ungab **, Aljon Ente Bocobo,** Arnold Gemida Apdohan, and Antonietto Ortega Cacayan Jr.	Evaluation of Suitability of the Taguibo River Irrigation System Diversion Dam, Philippines	Pertanika-Journal of Science and Technology
	Aljon Ente Bocobo, Arnold Gemida Apdohan, Antonietto Ortega Cacayan Jr. , Kenneth John Peña Lajera, and Febe Hyacinth Andoy	Application of GIS and SWAT Model for Assessing Water Yield at Taguibo River Watershed Forest Reserve (TRWFR), Butuan City, Philippines	Pertanika-Journal of Science and Technology

	Simbolas		
CHCI	Jane Francis P. Jaictin, Princess Jane P. Ruedas, Vicente A. Pitogo & **Elbert S. Moyon**	Corporate Social Responsibility in a Private Academic Institution: Impact on Achieving the UN Sustainable Development Goals	Integrating Big Data and IoT for Enhanced Decision-Making Systems in Business
	Arian Jay Prisco (BSIT, presenter), Drandreb Reyes (BSIT), Cristina Repollo (BSIT), **Elbert Moyon**	Redesigning the CSU-Rent-A-Bike Platform for Enhanced HCI Compliance: A User-Centered Evaluation and Iterative Design Approach	International Symposium on Artificial Intelligence and Data Processing (IDAP 2025)
	Kent T. Espejon, Jaymer M. Jayoma, **Elbert Moyon**	Q-Learning-Based Parameter Tuning of Alpha and Beta in Ant Colonization Algorithm and Inverse Ant Algorithm for Optimized Pathfinding	International Symposium on Artificial Intelligence and Data Processing (IDAP 2025)
	Bernie Cherry Rante (BSIT), Kurt Reserva (BSIT), Kylene Angela Rocales (BSIT, Presenter), **Elbert Moyon**	Redesigning MyAneco Using Human-Computer Interaction Guidelines: A User-Centered Approach to Improving Usability and Accessibility	International Symposium on Artificial Intelligence and Data Processing (IDAP 2025)
AGAK	Junrie B. Matias, Gladys L. Lagura, Grace T. Flores, Trixie E. Cubillas, Laurence B. Calagui, Myron T. Cubillan, Ritchfildjay L. Mariscal, Erlin S. Rodas, Miraluna L. Herrera, Renante P. Tabudlong	Navigating Teaching Performance in the New Normal: Insights from Student Ratings	Journal of Education and Learning
	Grace T. Flores; Cuestas Clarence Edriann; Nicko J. Dapar; Zsarish Lee M. Del Rosario	Revolutionizing Education: Artificial Intelligence (AI) Educational Tools in Research and FactChecking, Challenges, and Future Insights	2025 International Conference on Artificial Intelligence and Digital Ethics (ICAIDE)
	Trixie E. Cubillas, Ariel U. Cubillas, Leo L. Codilla Jr. Maris T. Lasco, Gladys L. Lagura Grace T. Flores	Understanding academic well-being in indigenous contexts: a predictive analysis of social support and cultural diversity among senior high school indigenous students in Caraga	Cogent Education Taylor and Francis

	Grace T. Flores, Ken Galanida Escototo, Flora Mae Galaura, and Shery Mae Trinidad.	Adoption and Implementation of Artificial Intelligence in Education: Insights from Science Teachers	2025 11th International Conference on Education and Technology (ICET)
CEPRIC	Erickson A. Tacda; Niño Ludy P. Aca-ac; Samson G. Petil II	Techno-Economic Evaluation of a Small-Scale Hybrid On-Grid Solar PV with Battery Energy Management System for Study Spaces	2024 4th Asian Conference on Innovation in Technology (ASIANCON)
	Melgie Rose Acero; Erickson A. Tacda Khrezitte Kurlstein Rey Jary Labalan Blessilah Pangisban	IoT-Enabled Autonomous Water-Surface Drone for Real-Time Water Quality Monitoring, Forecast-Driven Decision Support, and Automated Aeration in Small-Scale Fishponds	9th International Artificial Intelligence and Data Processing Symposium
	Erickson A. Tacda Grethyl C. Jamero	BiLSTM-Based Predictive Modeling of Paralytic Shellfish Toxin Occurrences Using Satellite-Derived Meteorological Data: A Case Study in Lianga Bay, Philippines	9th International Artificial Intelligence and Data Processing Symposium
	Erickson A. Tacda Leynard Roy Miguel Capilitan Glenn Mar Tucong	Comparative Evaluation of an Autonomous IoT-Enabled RAS with Image-Based Tilapia (Oreochromis niloticus) Growth Monitoring and Traditional Farming Practices	9th International Artificial Intelligence and Data Processing Symposium
	Blondie T. Sanchez Erickson Tacda Junell T. Bojocan Jed Edwin Ramos	Real-Time Tray-Level Egg Fertility Detection on Raspberry Pi Using YOLOv5 and Custom LED Backlighting	9th International Artificial Intelligence and Data Processing Symposium
CREME	Roland Gier D. Delara, Joycelyn C. Jumawan, Roland Care B. Burdeos, Giovanni Felicitas, Sherley Ann T. Inocente, Marybeth Hope T. Banda, Felmer S. Latayada, Temmy P. Vales, **Romell A. Seronay,** Rey Y. Capangpangan	Exploring Microplastic Contamination in Wetland Mollusks: Species-specific Findings from a Major Wetland Habitat	
	Giovanni Felicitas, Joycelyn C. Jumawan, Roland Care B. Burdeos, Roland Gier D. Delara, Romell A. Seronay, Temmy P. Vales, Felmer S. Latayada, Sherley Ann T. Inocente, Marybeth	Microplastics in Surface Water and Gastrointestinal Tracts of Demersal Fishes (Oreochromis niloticus and Cyprinus carpio) in the Largest Wetland of the Philippines	International Journal of Environmental Research

	Hope T. Banda & Rey Y. Capangpangan		
	Ethel P Keleste, Jolina S Fedelis, Wendy Faye T Opusa, Sherley Ann T Inocente, Marybeth Hope T Banda, Felmer S Latayada, Joycelyn C Jumawan, Temmy P Vales, Romell A Seronay, Rey Y Capangpangan	Assessment of Microplastic Pollution Load and Ecological Risk Index in Surface Water and Sediment Matrices in the Mangrove Ecosystem along Butuan Bay, Southern Philippines	Environment and Natural Research Journal
	Raquel M. Balanay, Nicholas Zeam Ace M. Aguilos, Maricar M. Aguilos, Ashly R. Guinancias, Romell A. Seronay, Femilyn Tangcogo	Community Well-Being andWillingness as Key Drivers of Watershed Conservation in Mt. Magdiwata Watershed and Forest Reserve in Northeastern Mindanao, Philippines	Conservation
	Raquel M Balanay, Nicholas Zeam Ace M Aguilos, Ashly R Guinancias, Romell A Seronay	Water use analysis among the village people in the Can-Agtiw watershed for local area conservation in Malimono, Surigao del Norte, Philippines	Discover Sustainability
	Jamael Abato, Millanie Abatay, Archie Along, Nonillon Aspe, Caryl Kaye Awa, Nick Anthony Burias, Laurence Calagui, Shirlamaine Irina Calagui, Warren Caneos, Merimee Dahilog-Caralde, Meljan Demetillo, April Joy Jovita, Julius Anthony Leones, Allexc Mae Niez, Romell Seronay, Hiroshi Kajihara	Species composition of the genus Baseodiscus Diesing, 1850 (Pilidiophora: Valenciniidae) in Japan and the Philippines with turbotaxonomy of two new species	Marine Biology Research
	JOE VINCENT B. DELUAO,* , MILBURN O. MACALOS , JAYROLD P. ARCEDE	CONSTRUCTION OF RLUF-TYPE COPULA GENERATED BY RÜSCHENDORF METHOD TO MODEL TIME-VARYING DEPENDENCY FOR DENGUE Reff, PRECIPITATION AND TEMPERATURE	Asia Pacific Academic
	Medina, L.; Savelli, A.; Souza de Matos, V.; Kizilkaya, S.; Torres, M.A.; Arcede, J.; Jaquet, S.; Sabugaa, M.; Hellin, J.; Sieber, S.; Bonatti, M.; Pacillo, G. (2024)	Community voices on climate, peace, and security: Mindanao, Philippines	CGIAR

	Stefanus Raynaldo Septyawan, Esther Yolandyne Bunga, Nuning Nuraini, Jayrold P. Arcede	The Spread of Rumors in Society: A Mathematical Modeling Approach in Election Case Studies	CBMS
	Loreniel E. Añonuevo, Jayrold P. Arcede, Youcef Mammeri	Modeling Tourism Sustainability with Stigma Dynamics in Disease-prone Tourist Destinations	International Conference on Mathematics and Its Applications
	Rachel Arcede, Jewry Catle, Ordem Maglinte, Jayrold Arcede	Invisible labor and unequal futures: Womens structural constraints in Philippine Mining Communities	The Extractive Industries and Society
	Vitalian Christophere L. Napone	Plato's Metaphors and Socratic Style: An Insight to Education	Educational Philosophy and Theory REPT
	Edgardo Ricardo B. Sajonia Jr.	Development of Computer-based Multi Scale Feature Entrenched Aortic Stenosis Detection Using Deep Learning and X-Ray Coronary Angiographic Imaging	Institute of Electrical and Electronics Engineers
CRAFT	Edgardo Ricardo B. Sajonia Jr.	Design and implementation of adaptive signal conditioning based on programmable gain amplifier for dynamic range multi-frequency bioimpedance measurements	Engineering Research Express
FIC	Charles D. Lagamayo, **Marie Bless B. Galang**, Dennis Marvin O. Santiago, Frankie Lycurgus D. Avorque, Rona Camille M. Lizardo-Agustin, and April Shayne L. Sulabo	Enzyme-mediated Improvement of Sensory and Physico-chemical Properties in Purple Sweet Potato (Ipomoea batatas L.) Powder-infused Bread	Philippine Journal of Science
	Clark Justine L. Gonzales Ramil Regen Sanchez Jemuel Gen Medroso Prince Lloyd Cagampang	Leveraging XGBoost, RoBERTa, and Ensemble Techniques for Hate Speech Detection in Tagalog	2025 9th International Artificial Intelligence and Data Processing Symposium (IDAP)
ICTC	Paolo L. Pacaldo Junrie B. Matias Jaymer M. Jayoma Gleen A. Dalaorao **Clark Justine Gonzales** John Michael Cutamora	Enhancing Cebuano-English Neural Machine Translation Using Pseudo-Labeling and Transformer Architectures	2025 9th International Artificial Intelligence and Data Processing Symposium (IDAP)

	Paolo L. Pacaldo Junrie B. Matias Jaymer M. Jayoma Cristopher C. Abalorio **Clark Justine Gonzales** Gleen A. Dalaorao	Hybrid DeepFake Detection Using Xception and XGBoost with Bayesian Optimization	2025 9th International Artificial Intelligence and Data Processing Symposium (IDAP)
MinRes	Giovanni Felicitas, Joycelyn C. Jumawan, Roland Care B. Burdeos, Roland Gier D. Delara, Romell A. Seronay, Temmy P. Vales, Felmer S. Latayada, Sherley Ann T. Inocente, Marybeth Hope T. Banda, Rey Y. Capangpangan	Microplastics in Surface Water and Gastrointestinal Tracts of Demersal Fishes (Oreochromis niloticus and Cyprinus carpio) in the Largest Wetland of the Philippines	International Journal of Environmental Research
	Ethel P. Keleste, Jolina S. Fedelis, Wendy Faye T. Opusa, Sherley Ann T. Inocente, Marybeth Hope T. Banda, Felmer S. Latayada, Joycelyn C. Jumawan, Temmy P. Vales, Romell A. Seronay, and Rey Y. Capangpangan	Assessment of Microplastic Pollution Load and Ecological Risk Index in Surface Water and Sediment Matrices in the Mangrove Ecosystem along Butuan Bay, Southern Philippines	Environment and Natural Resources Journal
	Jessa Mae T. Lazarte, Connie Fern Miranda, Ruel S. Apas, Eulogio S. Auxtero, Jr., Angeline M. Atacador, Marco Laurence M. Budlayan, Ferdinand Michael B. Calo, Jr., Rey Marc T. Cumba, Gladys Edilo, Jade C. Jusoy, Felmer S. Latayada, Ronieto Mendoza, Edmar G. Pantohan, Temmy P. Vales, Mark Vincent Vergara andJoey Arles O. Vergara	Perceived Health Impacts of Surface Mining: Local Perspectives from the Mining Communities in Libjo, Dinagat Islands, Philippines	International Journal of Environmental Research and Public Health
VLRC	Edsel Matt O. Morales	Multi-armed Bandit Algorithm as Reinforcement Learning Approach in Online Recommendation System of Learning Materials	International Conference on Humanoid, Nanotechnology, Information Technology, Communication

			and Control, Environment and Management
	Edsel Matt O. Morales	A Client-base Map Rendering Technique: Leveraging the Browser's Capabilities for Web Mapping and Web GIS	International Conference on Humanoid, Nanotechnology, Information Technology, Communication and Control, Environment and Management
CITED	Marisol Jane Beray Hannah Rosales Jundy Pael Adlao Junlloyd Dagani Jun Elmer Dagani	Intelligent Vision-Based Autonomous Waste Carrier	IEEE 2025 9th International Artificial Intelligence and Data Processing Symposium
	Beray, Marisol Jane Cubero, Angelica Casidsid, Robegine Codenera, Rhessan Jade	Assessing education students' self-directed learning experiences for optimal online learning	International Journal of Evaluation and Research in Education (IJERE)

SO Indicator 2: Number of Patent, Utility Model, Industrial Design, or Other Intellectual Property (IP) Applications

With the guidance of the Technology Transfer and Licensing Office (TTLO), RDISO successfully filed a total of 27 intellectual property applications, encompassing patents, utility models, industrial designs, and process copyrights across multiple RDI Centers. This milestone marks a significant increase in intellectual property generation and reflects the institution's strategic emphasis on innovation, product development, and technology transfer. Enabled by robust funding support and sustained mentorship from the TTLO Director, this achievement underscores the institution's continued commitment to advancing research, development, and technology commercialization.

Table 5. Patents, Utility Models, and Industrial Designs applied.

CENTER	**Name of Product**	**Creators**
AGAK Center	AN EDUCATIONAL APPARATUS FOR TEACHING TRIGONOMETRIC LESSONS	TAGUPA, Eubert R ARNADO, Alvic A
	Trigonometry Teaching Apparatus	TAGUPA, Eubert R

CREATE	RASPING DEVICE(Patent)	Aljon E. Bocobo, Neil Caesar M. Tado, May Rose B. Osoteo, Cindy May Belivestre,Art M. Dalman, Godfrey Jhon Bailo,Kim Kelly Datinggaling, Mark Louie Bacalso & Juven G. Luzorata
	RASPING DEVICE(Industrial Design)	Aljon E. Bocobo, Neil Caesar M. Tado, May Rose B. Osoteo, Cindy May Belivestre,Art M. Dalman, Godfrey Jhon Bailo,Kim Kelly Datinggaling, Mark Louie Bacalso & Juven G. Luzorata
	A COMPACTING DEVICE(UM)	Neil Caesar M. Tado, Art M. Dalman & Mercideth Bagtilay
	A FLOUR-EXTRACTING DEVICE(Patent)	Cindy MaY C. Belivestre, Nervine Dave Docdoc & Beverly S. Morales
	A COMPACTING DEVICE(Industrial Design)	Neil Caesar M. Tado, Art M. Dalman & Mercideth Bagtilay
FIC	PROCESS OF PREPARING A GLUTEN-FREE BROWNIE BAKING PREMIX	ILIGAN, Bethel Jane N, LABID, Jumae Boy C, : PALEN, Arnold Ian, CORVERA, Milca M, CUTAMORA, Genesis Jared A, FABE, Kristy Valentina D
	COMPOSITION OF GLUTEN-FREE BROWNIE BAKING PREMIX	ILIGAN, Bethel Jane N, LABID, Jumae Boy C, : PALEN, Arnold Ian, CORVERA, Milca M, CUTAMORA, Genesis Jared A, FABE, Kristy Valentina D
	PROCESS OF PRODUCING A GLUTEN-FREE BROWNIE	ILIGAN, Bethel Jane N, LABID, Jumae Boy C, : PALEN, Arnold Ian, CORVERA, Milca M, CUTAMORA, Genesis Jared A, FABE, Kristy Valentina D
	PROCESS OF MAKING A CHOCOLATE-BASED CONFECTION	ILIGAN, Bethel Jane N, LABID, Jumae Boy C, : PALEN, Arnold Ian, CORVERA, Milca M, CUTAMORA, Genesis Jared A, FABE, Kristy Valentina D

	COMPOSITION OF A CHOCOLATE-BASED CONFECTION	ILIGAN, Bethel Jane N, LABID, Jumae Boy C, : PALEN, Arnold Ian, CORVERA, Milca M, CUTAMORA, Genesis Jared A, FABE, Kristy Valentina D
CHCI	Method for Creating a Virtual Reality-Based Mining Engineering Learning Platform	Jayoma, Moyon, Morales, Espejon, Amper, Dollete, Empang, Rosillo
	CHCI Logo Trademark Application	
CRAFT	AN AUTOMATED COMMODITY DISPENSING MACHINE	SAJONIA, Edgardo Ricardo B JAMITO, Aldrin A PATAYON, Reydien O SAJONIA, Anamarie P
Caraga CARE	TrichoChar	Reuben James Rollon, Leo Jude Villasica, Elizabeth Parac, Maria Lima Pascual
	MycroChar	Reuben James Rollon, Leo Jude Villasica, Elizabeth Parac, Maria Lima Pascual
CEPRIC	Project Tun-EE Logo	Erickson A. Tacda
CREME	Copyright of Fish Field Guide in Agusan Marsh Wildlife Sanctuary	Romell Seronay, Joycelyn Jumawan, Joey Arlis Vergara
VLRC	PAMANA Logo	James Earl Cubillas, John Michael Cutamora, Kimberly Ann Palaran
CITED	A FERMENTATION DEVICE FOR EXTRACTING OIL	Beray, Marisol Jane Aroy, Vicardo Alan, Frank Aiken Felisilda, Clark Juegos, Tracy Rivera, Mary Grace
	A FLOATING DEVICE FOR PLANTING CROPS	Estillore, John Tabat, Cerelo Constancia, Marjun
	Electronically-Controlled Root Crop Processor	Papa, Chris John Tabat, Cerelo Lunio, Jesson
	OIL FERMENTATION CHAMBER	"Beray, Marisol Jane Aroy, Vicardo Alan, Frank Aiken Felisilda, Clark Juegos, Tracy Rivera, Mary Grace

	A ROOT CROP PROCESSOR PROCESSING APPARATUS	Papa, Chris John Tabat, Cerelo Lunio, Jesson
	A FLOATING DEVICE FOR PLANTING CROPS	Estillore, John Tabat, Cerelo Constancia, Marjun
FRIED HUB	Vegetable Food Bar	Alecris V. Gregorio Maryrose Abelardo Rhoan Gaye Engalan Estephanie Cortex

SO Indicator 3: Number of research collaborations established with other agencies and/ or academic institutions and with active MOA/MOU.

The institution significantly exceeded its target for establishing research collaborations with external agencies and academic institutions. Against an initial target of eight partnerships, a total of 43 active research collaborations were established. These partnerships are formalized through Memoranda of Agreement (MOA) and Memoranda of Understanding (MOU), underscoring the institution's strong commitment to fostering academic and research excellence. The breadth and scale of these collaborations reflect the institution's dedication to advancing knowledge, promoting interdisciplinary research, and contributing to both local and global scientific communities. Through these sustained partnerships, the institution continues to strengthen its position as a hub for collaborative research and innovation.

Table 6. Research collaborations established with other agencies and/ or academic institutions and with active MOA/MOU.

Center	Project Title	Proponents	Name of Partner
AGAK	Safety In Schools: Health Risks Management and Policy Solutions in Caraga Region	Dr. Ariel U. Cubillas	DOST- PCHRD
Caraga CARE	Establishment of a Mulberry Demonstration Farm and Development of Soil Amelioration Protocol for the Rehabilitation of Mined-Out Lands	Reuben James Rollon, MSc., Febie Paglinawan, MSc., Sharyl Mae Daverao, MSc., Naomi Grace Lancita, MSc., Aljon Allunam, MSc., Glenn Arthur Garcia, PhD., Leo Jude D. Villasica, MSc., Elizabeth P. Parac, PhD., Clarisse Torayno, MSc (on-going), Rennielynn F. Canales, MSc, Rolyn C. Daguil, PhD, Alexander T. Demetillo, PhD	DOST-Caraga, Buenavista LGU

	AWD Green Carbon Project	GLENN ARTHUR GARCIA, LEO JUDE VILLASICA, REUBEN JAMES ROLLON, SHARYL MAE DAVERAO, ANGELICA LABIANO, HAZEL FUERTES, IANIL MANGURUBAN	VCCI-Green Carbon (International)
	Agriculture's Footprints, Gaps and Potentials Towards a Circular Bioeconomy: The Case of the Smallholder Farms in Caraga Region	Raquel Balanay, Rex Parro, Analou Piquero	PCAARRD
CCGeo	Hydrological Study of Manoligao Watershed for the Development of the Dinagat Islands Conservation Program	Arnaldo C. Gagula	KAISAHAN TUNGO SA KAUNLARAN NG KANAYUNAN AT REPORMANGPANSAKAHAN, INC. (KAISAHAN)
	Establishment of Active Geodetic Station	Arnaldo C. Gagula	NATIONAL MAPPING AND RESOURCE INFORMATION AUTHORITY (NAMRIA)
	Mapping and Quantification of Habitat Fragmentation in Agusan Marsh Wildlife Sanctuary: A Preliminary Study in a Protected Wetland of the Philippines	Dr. Jess H. Jumawan	NATIONAL RESEARCH COUNCIL OF THE PHILIPPINES
MinRes & CeNTRE	Heavy Metal Contamination Assessment and Pollution Load Estimation in Aquatic Ecosystem Gradients of Agusan Marsh: Implications to the Safety and Security of the Agusan Marsh Wildlife Sanctuary	Temmy P. Vales - Project Leader Felmer S. Latayada - Project Staff Bridget Y. Orog - Project Staff Mark Anthony M. Lavapiez - Project Staff Margarito G. Caadan - Project Staff	DOST-NRCP
	Minesite Airborne Partiulates Matter Measurement and Monitoring	Temmy P. Vales - Project Leader	Norweah Metals & Minerals Co., Inc.
CREATE	Prototype Enhancement and Testing of Village Level Sago-Pith Extracting Machine	Engr. Aljon E. Bocobo-PL Engr. Neil Caesar M. Tado-PS Engr. May Rose B. Osoteo-PS Engr. Cindy Mae F. Belivestre-PS Engr. Art M. Dalman-PS	LGU Esperanza LGU Julita & Julitanhon Integrated Association Sanico

		Engr. Juven G. Luzorata-PS Engr. Godfrey Jan Bailo- PTA II	
FIC	Establishment of Regional Agri-Business Hub (ABH) in Caraga through the RAISE Program	Genesis Jared A. Cutamora Rex G. Parro	DOST PCAARRD
	Upgrading of Food Innovation Center at Caraga State University, Butuan City, Agusan del Norte	Genesis Jared A. Cutamora Lix B. Modina	DA ACEF
	ASCEND: Advancing Sustainable Caraga Food Innovation Consortium Development	Genesis Jared A. Cutamora Lix B. Modina	DOST Caraga
	FICs Forward: R&D Boost and Support to Caraga Food Innovation Cen ters for Product Development, Process Development, Process and Formulation Optimization, and Technonology Commercialization	Genesis Jared A. Cutamora Lix B. Modina	DOST Caraga
	Transforming Coconut into Value-added Coconut Products	Genesis Jared A. Cutamora	Tagasaka Coconut Farmers Agriculture Cooperative
	Establishment of Caraga Food Innovation Consortium	Genesis Jared A. Cutamora	DOST Caraga
	FAST Co	Genesis Jared A. Cutamora Lix b. Modina Kristy Valentina D. Fabe	DOST Caraga; JOESFESJOY FOOD INC.
MSCRC	CSU and UGM Educational Research And Technological Cooperation		Universitas Gadjah Mada, Indonesia
	Machine Learning of Physics-Based Earthquake-Induced Landslide Parameters and for Efficient Prediction and WArning in the Philippines	Project Leader: Dr. Jayrold P. Arcede (Math Modeling, CSU) Project Staff: Dr. Arturo Daag (EIL, Geol, PHIVOLCS) Engr. Margarita Dizon (EIL, Geol, PHIVOLCS) Prof. Mark Asch (University of Picardie, France) Dr. Nicole Anthony Pacle	CRA with UPLB

	Machine Learning of Physics-Based Earthquake-Induced Landslide Parameters and for Efficient Prediction and WArning in the Philippines	(Geol, CSU) Mr. Arnaldo Gagula (Remote Sensing, CCGEO-CSU) Mr. Earl James Cubillas (ML, IT, CSU) Mr. Roland Joseph B. De Leon (Geol, EIL, PHIVOLCS) Mr. Clark Justine Gonzales (Network Maintenance, CSU)	MOA with University of Science and Technology of Southern Philippines, Cagayan De Oro City
	Machine Learning of Physics-Based Earthquake-Induced Landslide Parameters and for Efficient Prediction and WArning in the Philippines		MOU with Bukidnon State University, Malaybalay City
	Carrying Capacity of Major Agricultural Growing Areas in Misamis Oriental: Basis for Model Development and Policy Recommendation to Enhance Food Security	Project Leader: Engr. Maricel Villamor (USTP-Claveria)	CRA with USTP-Claveria
	Comprehensive Assessment for reinforcing equity in screening for Breast Cancer	Project Leader: Sheila Rae Permanes	CRA with Adela Serra Ty Memorial Medical Center Tandag
	Comprehensive Assessment for reinforcing equity in screening for Breast Cancer	Project Leader: Sheila Rae Permanes	MOA with PCHRD
CHCI	AgriVista Program: Project 1 - DA-BAFE Digital Roadmap Development Project		DA-BAFE
	MARVEL Project		DOST PCIEERD, AMCI
	FAMRIA Project		DA-BAFE
	ISySSCDM Project		DOST PCIEERD, PNP
	ORIS Material Intelligence - FMR Project		DA-BAFE
CRAFT	RS-Dev't and Implementation of SSLSIRLICS in Partnership of Caraga LGU's and Barangay's	1. Engr. Edgardo Ricardo B. Sajonia Jr. 2. Dr. Alexander T. Demetillo 3. Dr. Jeffrey T. Dellosa 4. Engr. Ronieto N. Mendoza 5. Engr. Alfred Dennis Balamad	BLGU Bobon, Butuan City
			BLGU La Januza, General Luna, SDN
			BLGU Campo, Bacuag, SDN
			BLGU Pongtud, Bacuag, SDN

		6. Engr. Lovely Mae D. Balamad 7. Engr. Re-ann Cristine C. Puerin 8. Engr. Eldie Labisto 9. Engr. Ervine E. Lanquino 10. Engr Charle Magne L. Cillo 11. Engr. Anamarie P. Sajonia 12. Engr. Aljon E. Bocobo 13. Engr. Juven G. Luzorata	BLGU Sto. Rosario, Bacuag, SDN BLGU Cabugao, Bacuag, SDN BLGU Payapag, Bacuag, SDN BLGU Mabua, Surigao City
CCPD		CHASS & CCPD	Diponergo University
		CHASS & CCPD	DSWD Caraga
VLRC	Pamana Project	James Earl Cubillas	DOST-PCIEERD
	ABEMIS 3.0	Edsel Matt O. Morales	DA-BAFE
CEPRIC	Electrical System Infrastructure Optimization in Elementary Schools for Enhanced Engery Efficiency, Safety, and Learning Environment	Erickson Tacda	ANECO
		Erickson Tacda	IEEE, DEPED
CREME	Formulation of the Cluster Management Plans of Cluster 2 for the DENR-UNDP/GEF project on Integrated Approach in Management of Major Biodiversity Corridors in the Philippines" or BD Corridor Project – Eastern Mindanao Biodiversity Corridor.		DENR XIII
	Biodiversity Assessment of the proposed Establishment of Local Conservation Area in Barangay Sumile, Butuan City		City Government of Butuan, Barangay Sumile
ICTC	Development and Maintenance of a Performance Management System (PMS) for DBM RO XIII	Clark Justine L. Gonzales	Department of Budget and Management
FRIED HUB	Nutritional Composition and ShelfiLife Stability of	Mae Karren L. Correos	DOST Caraga

	Hito Go: Spanish Style Hito in Corn Oil		
	Nutritional Profile and Shelfife Evaluation of Milkfishloaf	Mae Karren L. Correos Alecris V. Gregorio	DOST Caraga
	Nutritional Profile and Shelflife Evaluation of Vegetable Food Bar	Alecris V. Gregorio	DOST Caraga
	Nutritional Profile and Shelfife Evaluation of Herbfruit Blend	Erlin S. Rodas Mae Karren L. Correos Alecris V. Gregorio	DOST Caraga

SO Indicator 4: Number of Scopus-indexed journal articles from an affiliated faculty member of the RDI Center with an international author.

The Research and Development and Innovation (RDI) Centers significantly surpassed their target for Scopus-indexed journal publications involving affiliated faculty members and international authors. Against a target of eight publications, the institution successfully produced 20 articles in reputable Scopus-indexed journals. This achievement highlights the strong collaborative engagement between faculty researchers and international partners, thereby enhancing the global visibility and scholarly impact of the institution's research outputs. These publications reflect the high quality of research undertaken within the RDI Centers and contribute to the strengthening of international academic linkages while advancing knowledge across diverse fields of study.

Table 7. Scopus-indexed journal articles from an affiliated faculty member of the RDI Center with an international author.

Center	Authors	Title of Article	**Journal Publisher (do not abbreviate)**
CCGeo	Arturo G. Cauba Jr., Roshanak Darvishzadeh, Michael Schlund, Andrew Nelson	Estimation of transplanting and harvest dates of rice crops in the Philippines using Sentinel-1 data	Journal on remote Sensing Applications: Society and Environment
	Jojene R. Santillan, Mareike Dorozynski, Christian Heipke	Uncertainty Quantification and Monte Carlo Simulations to Enhance SDG 11.3.1 Monitoring	ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences
MSCRC	Stefanus Raynaldo Septyawan, Nuning Nuraini, Jayrold P. Arcede, Esther Yolandyne Bunga	The Spread of Rumors in Society: A Mathematical Modeling Approach in Election Case Studie	Communication in Biomathematical Sciences

	Sheila Rae Permanes, Melen Leclerc, Youcef Mammeri	Spatiotemporal modeling of host–pathogen interactions using level-set method	Science Direct / Elsevier
	Breix Michael Agua Salim Bouzebda	Single index regression for locally stationary functional time series	AIMS Mathematics
CaragaCARE	Raquel M. Balanay ,Nicholas Zeam Ace M. Aguilos ,Maricar M. Aguilos, Ashly R. Guinancias,Romell A. Seronay and Femilyn B. Tangcogo	Community Well-Being and Willingness as Key Drivers of Watershed Conservation in Mt. Magdiwata Watershed and Forest Reserve in Northeastern Mindanao, Philippines	Consevation - MPDI
	Catherine Hazel Aguilar, Mariquit De Los Reyes, Claudette Oraye, Alangelico San Pascual, Angelbert Cortes, Mari Neila Seco, Victor Corbita, Gladys Cabelin, **Joanne Langres**, Mark Angelo Balendres	Domestication, ecology, and utilization of roselle (Hibiscus sabdariffa L.): harnessing the potential of an underutilized crop for improvement	Journal of Crop Improvemen
	Catherine Hazel Aguilar, David Pires, Cris Cortaga, Reynaldo Peja Jr, Maria Angela Cruz, **Joanne Langres**, Mark Christian Felipe Redillas, Leny Galvez, Mark Angelo Balendres	Harnessing Legume Productivity in Tropical Farming Systems by Addressing Challenges Posed by Legume Diseases	Nitrogen
CENTRE	Teody Gumabat, Jeanne Phyre Lagare Oracion, Jolina Fedelis, Ethel Keleste, Rey Capangpangan, Noel Lito Sayson, Gerard Dumancas, Arnold Algunocd and Felmer Latayada	NHS-ester conjugated gold nanoparticles for spermine detection: a potential tool in meat spoilage monitoring	Sensors & Diagnostics, Royal Society of Chemistry

	Marco Laurence M. Budlayan, Dina C. Palangyos , Jonathan N. Patricio , Susan D. Arco , Raphael A. Guerrero	Tunable optical beam focusing using static water droplets on an electrospun polymer fiber	ELSEVIER/Science Direct
	Marco Laurence M. Budlayan, Juan Paolo S. Bermundo, James C. Solano, Mark D. Ilasin, Raphael A. Guerrero, and Yukiharu Uraoka	Droplet-Scale Conversion of Aluminum into Transparent Aluminum Oxide by Low-Voltage Anodization in an Electrowetting System	American Chemical Society/Langmuir
CHCI & ICTC	Vicente A. Pitogo; Rolyn C. Daguil; Mark Phil B. Pacot; Rozanne Tuesday G. Flores; Riski Zulkarnain; Richki Hardi	The Digital Shift: Review and Landscape of e-Participation	2025 8th International Conference on Information and Computer Technologies (ICICT)
CRAFT	Jeffrey Tamba Dellosa Norzaima Nordin Nur Ezalifah Ahmad Mokhtar Maidiana Othman Muhamad Nur Alif Nadzri Mohd Rashdan Saad Mohamed Tarmizi Ahmad	A Parametric Study of Small-Scale Offshore Vertical Axis Wind Turbines: Unlocking Potential in Low Wind Profile Regions	Journal of Advanced Research in Fluid Mechanics and Thermal Sciences
	Jeffrey T. Dellosa Robert Kerwin C. Billones Dan Arris S. Lauresta Yang Bong Lampros K. Stergioulas Sharina Yunus	AI Ecosystem and Value Chain: A Multi-Layered Framework for Analyzing Supply, Value Creation, and Delivery Mechanisms	MDPI - Technologies
	Edgardo Ricardo B. Sajonia Jr. Ryan Yulianto Isnan Nur Rifai	Design and implementation of adaptive signal conditioning based on programmable gain amplifier for dynamic range multi-frequency	Engineering Research Express

		bioimpedance measurements	
CREATE	Philip Donald C. Sanchez, Norhashila Hashim, Dimas Rahadian Aji Muhammad	Properties, Uses, and Utilization Methods of Cacao (Theobroma cacao) Bean Shells (CBS): Applications of Emerging Green Extraction Techniques–A Review	Journal of Food Composition and Analysis
CREME	Raquel M. Balanay, Nicholas Zeam Ace M. Aguilos, Maricar M. Aguilos, Ashly R. Guinancias, Romell A. Seronay, Femilyn Tangcogo	Community Well-Being andWillingness as Key Drivers of Watershed Conservation in Mt. Magdiwata Watershed and Forest Reserve in Northeastern Mindanao, Philippines	Conservation 2025,
	Jamael Abato, Millanie Abatay, Archie Along, Nonillon Aspe, Caryl Kaye Awa, Nick Anthony Burias, Laurence Calagui, Shirlamaine Irina Calagui, Warren Caneos, Merimee Dahilog-Caralde, Meljan Demetillo, April Joy Jovita, Julius Anthony Leones, Allexc Mae Niez, Romell Seronay, Hiroshi Kajihara	Species composition of the genus Baseodiscus Diesing, 1850 (Pilidiophora: Valenciniidae) in Japan and the Philippines with turbotaxonomy of two new species	Marine Biology Research
ICTC	Regina Ramos; Lordelie Darog; Salfer Ian Openiano; Vicente A. Pitogo; Cristopher C. Abalorio; Jack Febrian Rusdi	Livestock Management Platform: An Agile Web-based Agricultural Solution	Institute of Electrical and Electronics Engineers
	Vicente A. Pitogo; Rolyn C. Daguil; Mark Phil B. Pacot; Rozanne Tuesday G. Flores; Riski Zulkarnain; Richki Hardi	The Digital Shift: Review and Landscape of e-Participation	Institute of Electrical and Electronics Engineers

MinRes	Jianren Wang, Xin Zhang, Jinkang Liu, Adekunle Adedapo Obisanya, Yan Ma, Xuewei Li, Zhibin Ren, Tianshuo Yang, Xinyi Tan, Deomila Basnig-Mamaoag, Liang Ma, Faming Gao	Decoupling charge transfer of sodium ions in birnessite towards enhanced capacitive deionization	Chemical Engineering Journal
VLRC	Regina Ramos,,Lordelie Darog, Salfer Ian Openiano, Vicente Pitogo, Cristopher Abalorio, Jack Febrian Rusdi	Livestock Management Platform: An Agile Web-based Agricultural Solution	2025 8th International Conference on Information and Computer Technologies (ICICT)

SO Indicator 5: Average utilization rate of allocated funds for research and development (for all funding: GAA, IGF and others, i.e. DOST, CHED)

Despite the notable success in securing research funding, the Research and Development and Innovation (RDI) Centers encountered challenges in translating these funding commitments into proportionate expenditures during the first half of the calendar year. The average utilization rate of allocated research and development funds reached only 64.66%, falling short of the 90% target.

This variance underscores a key operational challenge, particularly delays in fund disbursement and project implementation. Moving forward, the catch-up and improvement plan will focus on strengthening financial management systems, conducting targeted trainings and capacity-building workshops, and accelerating project mobilization to improve fund utilization and overall program efficiency.

SO Indicator 6: Number of research outputs utilized by the industry or by other beneficiaries.

The office successfully exceeded its target for research outputs utilized by industry and other beneficiaries. Against a target of eight (8), a total of fourteen (14) research outputs were adopted and put into use, demonstrating strong industry engagement and affirming the relevance of the institution's research initiatives in addressing practical, real-world needs.

Table 8. Research outputs utilized by the industry or by other beneficiaries.

Center	**Name or Project**	**Funder**	**Name of Output Utilized**
AGAK	Beginning Reading para sa mga Tsikiting (BRPT)	CSU- Extension Project	Pupil Learning Support Materials (PLSM) by **Babag Elementary School**
	Reading Enhancement and Development Initiatives in the New Normal for Grade Schoolers (READINNG)	CSU- Extension Project	Pupil Reading Instructional Materials (PRIMs) **(Lemon Elementary School and FR Sibayan Central Elementary School)**
	Mentoring and Upskilling Groups Towards Nativigating theor Action- Response (MUGNA) Caraga Region	CSU- Extension Project	Instructional Materials for Math and Science (**Schools Division of Butuan City, Department of Education**)
CARAGA CARE	Project Biochartilant	DA-BAR	Biochartilants
CREATE	Prototype Enhancement and Testing of Village Level Sago-Pith Extracting Machine	DOST-TAPI	Sago Pith Extracting Machine(**LGU Esperanza**)
			Sago Pith Extracting Machine(**LGU Julita & Julitanhon Farmers Integrated Association**)
CHCI	FAMRIA	DA-BAFE	Impact Assessment Report **(DA-BAFE)**
SUMMO	ICT4RM	MGB RO 13	OTP Utilization **(Mines and Geosciences Bureau Regional Office XIII)**
CREME	Biodiversity Assessment for the proposed Local Conservation Area of Barangay Sumile (BACAS)	CSU-RAF	Biodiversity Assessment output was considered in the formulation City Ordinance declaring 19 Hectares of Forest Land in **Barangay Sumile, Butuan City**
ICTC	Farm and Fisheries Clustering and Consolidation Program	DA	Web Application **(Department of Agriculture - Regional Field Office XIII)**
CCGeo	GeoSAFER Agusan Project	DOST PCCIERD	Bayugan City Digital Surface Models, Bayugan City Terrain Models, Bayugan City Flood Hazard

			Shapefiles, Bayugan City Flood Hazard Maps
CRAFT	RS-Dev't and Implementation of SSLSIRLICS in Partnership of Caraga LGU's and Barangay's	GAA 2025	AIoT-driven autonomous self-diagnostic system for streetlights
	RS-Dev't and Implementation of SSLSIRLICS in Partnership of Caraga LGU's and Barangay's	GAA 2025	WSN-based Smart Streetlighting Monitoring System
	RS-Dev't and Implementation of SSLSIRLICS in Partnership of Caraga LGU's and Barangay's	GAA 2025	LoRA-based Smart Streetlighting Monitoring System
VLRC	ABEMIS 3.0	DA-BAFE	ABEMIS 3.0 Logo

SO Indicator 7: Number of research outputs completed within the year (i.e. from either GAA or externally-funded projects; or students' thesis projects packaged with scholarly work with project proposal registered at OVPRIE)

For the indicator on research outputs completed within the year, the institution recorded a total of seventy (70) outputs against a target of forty (40), reflecting strong research productivity and a robust project pipeline. This performance is driven by the sustained implementation of institutionally and externally funded research, as well as the active progression of student research projects, indicating a healthy continuum of ongoing and forthcoming research outputs.

Table 9. Number of research outputs completed within the year (i.e. from either GAA or externally-funded projects; or students' thesis projects packaged with scholarly work with project proposal registered at OVPRIE)

Center	Project Title	Proponents
AGAK	Enhancing Learning Competencies and Teachers Pedagogy in Learning Modalities through Outcomes-Based Education, Instrument Development, Rasch Analysis, and PLS-SEM	Eubert R. Tagupa Alvic A. Arnado Marsha O. Arnado Leo L. Codilla Abzonie Reño Rolly N. Apdo Hazel H. Montederamos Jenelin G. Enero Alvie Jean G. Reburra Jereco Cultura Azriel Barrientos Russell Dave A. Lanzaderas

		Myron T. Cubillan
	Exploring Artificial Intelligence (AI) in Education: A Comprehensive Analysis of ICT Integration Skills, Benefits, Challenges, and Effectiveness Among Pre-Service and In- Service Teachers	Leo L. Codilla Jr. Abzonie Reño Rolly N. Apdo Marlou C. Tagarao Emybel M. Alegre Gladys L. Lagura Ariel U. Cubillas Trixie U. Cubillas Joy G. Torion Rissa L. Mercado Minie L. Bulay Julie S. Berame Junrie B. Matias
	Technology- Driven Instruction: Developing, Utilizing and Evaluating Interactive Materials for Enhanced Learning Outcomes	Minie L. Bulay Grace T. Flores Leo L. Codilla Jr. Jereco F. Cultura Apple Jane S. Lima Gladys L. Lagura
	Promoting Effective Instructional Practices and Innovations in Early Childhood Education	Marichu D. Tulang Marlou C. Tagarao Leo L. Codilla Jr. Russel Dave A. Lanzaderas Jereco F. Cultura Cristina A. Cubillas Rissa L. Mercado Charito C. Rodriguez
	Contextualized Learning Manual for Sexuality in Biology Education: An Essential Component of Learning	Julie S. Berame , Junifer S. Visto
	Contextualized Laboratory Workbook for Teaching Cell and Molecular Biology in Education	Julie S. Berame, Minie L. Bulay, Julito S. Gulle
	Establishment of a Mulberry Demonstration Farm and Development of Soil Amelioration Protocol for the Rehabilitation of Mined-Out Lands	Reuben James Rollon, MSc., Febie Paglinawan, MSc., Sharyl Mae Daverao, MSc., Naomi Grace Lancita, MSc., Aljon Allunam, MSc., Glenn Arthur Garcia, PhD., Leo Jude D. Villasica, MSc., Elizabeth P. Parac, PhD., Clarisse Torayno, MSc (on-going), Rennielynn F. Canales, MSc, Rolyn C. Daguil, PhD, Alexander T. Demetillo, PhD

	Black Fiesta	Balanay, Raquel
	CaraGaling	Balanay, Raquel and Langres Joanne
	Policy Brief	Balanay Raquel
	AWD Project	Glenn Arthur Garcia, Reuben James Rollon, Leo Jude Villasica, Sharyl Mae Daverao, Angelica Labiano, Hazel Fuertes, Ianil Manguruban
	Agriculture's Footprints, Gaps and Potentials Towards a Circular Bioeconomy: The Case of the Smallholder Farms in Caraga Region	spearheaded by Dr. Balanay with Rex and me as project staff.
	Implementation of Alternate Wet and Dry (AWD) Technology for Rice Production and Methane Reduction in Butuan City, Agusan del Norte	Glenn Arthur Garcia, Reuben James Rollon, Leo Jude Villasica, Sharyl Mae Daverao, Angelica Labiano, Hazel Fuertes, Ianil Manguruban
CREATE	Prototype Enhancement and Testing of Village Level Sago Pith Extracting Machine	Engr. Aljon E. Bocobo, Engr. Cindy May Belivestre, Engr. May Rose B. Osoteo, Engr. Art M. Dalman, Engr. Juven G. Luzorata, Engr.Neil Caesar M. Tado
MSCRC	Distance-2 Chromatic Number of the Central and Shadow Graphs of a Cycle and its Application to Computer Science	Merliza Libao, Kyla B. Abarca
CRAFT	RS-Dev't and Implementation of SSLSIRLICS in Partnership of Caraga LGU's and Barangay's	1. Engr. Edgardo Ricardo B. Sajonia Jr. 2. Dr. Alexander T. Demetillo 3. Dr. Jeffrey T. Dellosa 4. Engr. Ronieto N. Mendoza 5. Engr. Alfred Dennis Balamad 6. Engr. Lovely Mae D. Balamad 7. Engr. Re-ann Cristine C. Puerin 8. Engr. Eldie Labisto 9. Engr. Ervine E. Lanquino 10. Engr Charle Magne L.

		Cillo 11. Engr. Anamarie P. Sajonia 12. Engr. Aljon E. Bocobo 13. Engr. Juven G. Luzorata
	Development and Implementation of Caraga State University Solar-powered Smart Drip Irrigation System (CSU-SDIS)	1. Engr. Edgardo Ricardo B. Sajonia Jr. 2. Rodel G. Pasion 3. Dr. Jaymer M. Jayoma 4. Engr. Aljon E. Bocobo 5. Engr. Ronieto N. Mendoza
ICTC	Farm and Fisheries Clustering and Consolidation Program	Dr. Vicente A. Pitogo
	Special Area for Agricultural Development Phase 1	Dr. Vicente A. Pitogo
	Advanced Property Management System using Unified OOAD for Optimizing Real State Operations	Dr. Riah E. Encarnacion Ms. Mary Rose O. Raz Ms. Glaicel A. Araneta
VLRC	CHARMAFA Billing System	Dexter Romaguera
	TTLO Web Application	Edsel Matt Morales
	AgriTrack: A Web-based Monitoring and Inventory System of Agricultural Production in City Agriculture and Veterinary Department of Butuan City	
	PAMANA	
	ABEMIS	
CREME	Culture and provisioning: the case of Human - Long tailed Macaque Interaction in Sumile	Sheryll L. Paz
	Community Well-Being andWillingness as Key Drivers of Watershed Conservation in Mt. Magdiwata Watershed and Forest Reserve in Northeastern Mindanao, Philippines	Romell Seronay
	Water use analysis among the village people in the Can-Agtiw watershed for local area conservation in Malimono, Surigao del Norte, Philippines	Romell Seronay
	"Population Estimation and Residents' Knowledge, Attitude, and Perception of Long-tailed Macaques (Macaca fascicularis) in Barangay Sumile, Butuan City, Philippines"	Eve Gamalinda
	Exploring Microplastic Contamination in Wetland Mollusks: Species-specific Findings from a Major Wetland Habitat	Romell Seronay, Joycelyn Jumawan
	Microplastics in Surface Water and Gastrointestinal Tracts of Demersal Fishes (Oreochromis niloticus and Cyprinus carpio) in the Largest Wetland of the Philippines	Romell Seronay, Joycelyn Jumawan

	Assessment of Microplastic Pollution Load and Ecological Risk Index in Surface Water and Sediment Matrices in the Mangrove Ecosystem along Butuan Bay, Southern Philippines	Romell Seronay, Joycelyn Jumawan, Felmer Latayada
	New distribution records of amphibians and reptiles in Tinuy-an Falls Protected Landscape, southeastern Mindanao, Philippines	Jeszianlenn Plaza, Romell Seronay, Jeco Jed Ruales, Jeza Bantilan, Angie Abucayon, Chennie Naling, Eve Gamalinda
	Ribbons under the rocks: intertidal ribbon-worm fauna (phylum Nemertea) from selected islands in central and southern Philippines	Jamael Abato, Millanie Abatay, Merimee Dahilog-Caralde, Warren Caneos, Nonillon Aspe,Archie Along, Laurence Calagui, Meljan Demetillo, Julius Anthony Leones, Saturnino Luke Sobrevega and Hiroshi Kajihara
CEPRIC	Techno-Economic Evaluation of Small Scale Hybrid On-Grid Solar PV with Battery Energy Management System for Study Spaces	Niño Ludy P. Aca-Ac; Samson G. Petil; **Erickson A. Tacda**
	An Egg Incubator with IoT-Based Control and Monitoring System	**Blondie T. Sanchez** Kent Andrey M. Porras Eleazar Ranez Giever Cabajes
	Design and Development of a Smart Blind Stick for Enhanced Mobility and Independence of Visually Impaired Individuals	**Jaybie Sanjorjo** Rima Villacencio Sepriel Lahinao Janmarjun Apiag
	Design and Development of a Bangus Sorting and Quantifying Machine using ArUco Marker Based-Image Processing	**Donna Lyn Castillo** Aramie Espuerta Kliff Alexis Soria Anna Mae D. Custan
	Development of a Drowse and Erratic Driving Detection Dashcam using Haar Cascade	**Danijane Gonzales** Jannah Jane Bugas **Novie Dave Perez**
	Design and Development of a Multi-Charging Portable Power Generator with Mobile Applications	**Novie Dave B. Perez** Jac Alain Gulle Ronel Wapili Gian Madridano
	Academic Performance Analysis of Diploma Students Using Predictive Analytics	**Mario B. Caday**
	Streamlining Barangay Services: An In-Depth Study on an Enhanced Appointment System in Poblacion 1, Tubay, Agusan del Norte	**Junell T. Bojocan** **Mario B. Caday** **Kris Jess P. Boligor** Niño Quisada Stephen Pide

	Streamlining Human Resource Leave Management System	**Ryan O. Cuarez** Christian Mar G. Pulido Rosalyn Deligero Christian Novicio
	On the Transformation of Digital Elevation Model (DEM) into Elevation Profile using Aggregated Transect Line	**Ryan O. Cuarez** **Rolyn C. Daguil**
	Design and Development of a Web-based Marketplace for Aquatic Products in the Municipality of Magallanes, Agusan del Norte	**Federico M. Griño** Emmanuel Ruben M. Castil Irizbern S. Paldo Teodorico Luis M. Mayorga
	A Web-Based Attendance Monitoring System Utilizing QR (Quick Response) Code Technology	**Ronald Monzon** **Mary Jun M. Palima** Delven Bergosa Shaina Jane Macasocol Keannu Cipriano Ortega
	Automated Extraction of Information from Speech Signals for Speaker Identification and Emotional State Analysis	**Joseph Vistal** **Jaymer M. Jayoma**
	Automated Extension of Information from Speech Signal for Speaker Identification and Emotional State Analysis	**Melgie Rose C. Acero** **Erickson A. Tacda** Khrezitte Kurlstein Rey Jary Labalan Blessilah Pangisban
	BiLSTM-Based Predictive Modeling of Paralytic Shellfish Toxin Occurrences Using Satellite-Derived Meteorological Data: A Case Study in Lianga Bay, Philippines	**Erickson A. Tacda** **Grethyl Jamero**
	Comparative Evaluation of an Autonomous IoT-Enabled RAS with Image-Based Tilapia (Oreochromis niloticus) Growth Monitoring and Traditional Farming Practices	**Erickson A. Tacda** Leynard Roy Miguel Capilitan Glenn Mar Tucong
	Design and Development of FisherLink: A Solar-Powered VHF Radio with APRS and Integrated Database for Real- Time Location Tracking and SOS Messaging	**Jaybie T. Sanjorjo** Elroe D. Anunciado Charlene O. Estenzo Anthony J. Golapo Alex A. Macalma
	An Embedded Computer Vision System with Image Processing for Aflatoxin Detection in Cacao Beans	**Donna Lyn B. Castillo** Cris Jay Lord M. Eduarte Christena D. Lariva Mark Joseph Fabroquez
	Design and Development of ALARM: Automatic Flood Response for a Residential Electrical System	**Victor B. Arlan** **Marloun M. Auguis**
	Web-Based Item Tracking System using Optical Character Recognition (OCR) Integration and Levenshtein Matching for Image to Record Verification	**Ryan O. Cuarez** Chris James Amba Rustom Goden Jeelord Cuarenta

	IDAP_7. Web-Based Item Tracking System using Optical Character Recognition (OCR) Integration and Levenshtein Matching for Image to Record Verification	**Blondie T. Sanchez** **Junell T. Bojocan** **Erickson Tacda** Jed Edwin Ramos
	A Comparative Study of Tri-ESP32-Based Smart Sliding Gate Automation Against Existing RFID and Single-Node Systems	**Blondie T. Sanchez** Nelson Inocente Jeanette Sanchez Jireah Jean Magsayo
	Design and Development of an Autonomous Fire-Extinguishing Robot Leveraging Computer Vision for Early Fire Detection	**Roland W. Agujar** Jay S. Genita Julian Sean Paul T. Falch Jezreel D. Daguplo
CCGeo	Hydrological Study of Manoligao Watershed for the Development of Dinagat Islands Conservation Program	Stephanie Mae Salcedo-Albores, Arnaldo C. Gagula, Sicenio D. Aberra Jr., Jun Love E. Gesta, Yvonne T. Olayvar, Nichole Anthony Pacle, Marlon V. Elvira, Rex Makinano, Arturo G. Cauba Jr., Eric Dave D. Doria, John Rudmark L. Ebol, Meriam Makinano-Santillan
CCPD	Plato's Metaphor and Socratic Style: An Insight to Education	Vitalian Christophere L. Napone
	Perceived Health Impacts of Surface Mining: Local Perspectives from the Mining Communities in Libjo, Dinagat Islands, Philippines	Connie Fern Miranda & Mark Vincent Vergara
	Implications of the 24.9-Megawatt Lake Mainit Hydroelectric Power Plant on Farming and Fishing Activities in Southern Philippines	Connie Fern Miranda, Mark Vincent Vergara & Rex Makinano
	Invisible Labor and Unequal Futures: Women's Structural Constraints in the Philippine Mining Communities	Rachel N. Arcede and Ordem K. Maglente
CHCI	AgriPlace: A Fair Pricing Regulated E-Marketplace for Agricultural Commodities	Faculty: Almonteros, Jayrhom R. Students: Leyson, J. B., Nucos, B. J., & Parado, J.
	INTEGRATION OF DATA VISUALIZATION AND CRITICAL STOCK MONITORING FOR EQUIPMENT INVENTORY AND MANAGEMENT SYSTEM	Faculties: Jayrhom R. Almonteros, Elbert S. Moyon, Giovanni T. Esma, Students: Claire P. Nakila, Shane Naicen C. Nardo, Trixie E. Maylid
	MARVEL Project	
	FAMRIA Project	

	GAN-based Hybrid Image Generation: ARF-GAN and MobileGAN Synthesis	Elijah N. Banguis, James Jasper C. Dela Cruz, Rosalyn M. Mollida, Takeyasu V. Nakazato, **REGIEN NAKAZATO**
	Analysis of Correction Techniques for Perspective Distortion Using Image Processing Domain	Dino Rey V. Barliso, Gracylejohn B. De Jesus, Alyssa Kyla F. Monton, Mark Phil B. Pacot, Takeyasu V. Nakazato, **REGIEN NAKAZATO**
	Wi-Fi Network Intrusion Detecting using Multi-Layer Stacking Ensemble Learners	Regien B. Nakazato
	Fake News Detection Using Textual Features: A Performance Comparison of Feature Selection Approaches and Machine Learning Models	Regien B. Nakazato

SO Indicator 8: Number of creative research outputs registered as intellectual property rights (i.e patent, utility model, industrial design, copyright -Ims Manuals) and utilized for commercial and industrial purposes.

In 2025, the office recorded a total of five (5) creative research outputs registered as intellectual property rights and utilized for commercial and industrial purposes, exceeding the target of two (2). This achievement highlights the institution's strengthened initiatives in research innovation, intellectual property protection, and technology transfer, and underscores its commitment to promoting research-based products and services with clear commercial potential.

Table 10. Creative research outputs are registered as intellectual property rights (i.e patent, utility model, industrial design, copyright -Ims Manuals) and utilized for commercial and industrial purposes.

Center	**Name of Product**	**Creators**
AGAK	Book_ Facilitating Learners-Centered Teaching (Copyright)	Maria Gloria E. Liquido Trixie E. Cubillas Ariel U. Cubillas Nelia S. Raganas
	Field Study 2: Participation and Teaching Assistantship (IMDB Resolution No. 01, s. 2023)	Julie S. Berame Minie L. Bulay Maris T. Lasco Leo L. Codilla Ariel U. Cubillas Gladys L. Lagura Rissa L. Mercado Marichu D. Tulang

	Campus Journalism: A Beginner's Guide to Learning the Basics of Journalism	Trixie Estrebella Cubillas, Marlou C. Tagarao
	Teaching Science in Primary Grades (Biology and Chemistry)	Julie S. Berame Minie L. Bulay
	Teaching Science in Intermediate Grade (Physics, Earth, and Space Science)	Julie Berame

SO Indicator 9: Number of research creative outputs registered as intellectual property rights (i.e. patent, UM, industrial design, copyright – IMs or Manuals), but not utilized for commercial and industrial purposes.

For the reporting period, a total of six (6) creative research outputs were registered as intellectual property rights but have not yet been utilized for commercial or industrial purposes. This figure significantly exceeded the target of two (2), reflecting strengthened efforts in intellectual property generation and protection. The accomplishment underscores the institution's growing commitment to safeguarding research innovations and creative works, thereby establishing a strong pipeline for future commercialization and technology transfer initiatives.

Table 11. Research creative outputs registered as intellectual property rights (i.e. patent, UM, industrial design, copyright – IMs or Manuals), but not utilized for commercial and industrial purposes.

Center	**Name of Product**	**Creators**
CREATE	A DEVICE FOR DRYING OF AGRICULTURAL CROPS	Jack O. Bertulfo, Angelica L. Olaybar, Nikky R. Amuray & Mark Lester Olais
	A DEVICE FOR MOLDING COCOA MASS INTO TABLEA	Jobelle J. Capilitan & SaraH Jean Serdoncillo
	A DEVICE FOR EXTRACTING OUT THE STARCH FROM STARCH PRODUCING CROP	Jobelle J. Capilitan, Doni Koshi Estacion & Cywin Abacahin
CaragaCARE & FIC	PROCESS OF MAKING A CHOCOLATE-BASED CONFECTION	Lix Modina, Genesis Jared Cutamora
	COMPOSITION OF A CHOCOLATE-BASED CONFECTION	Lix Modina, Genesis Jared Cutamora
AGAK	TRIGONOMETRY TEACHING APPARATUS	Eubert Tagupa

SO Indicator 10: No. of research projects proposed, directed, mandated, or focused on CSU internal challenges or priorities, and implemented within the year.

A total of eight (8) research projects addressing CSU's internal challenges and institutional priorities were proposed and implemented, meeting the target of eight (8). Any variance observed was due to the ongoing evaluation and realignment of certain proposals to ensure alignment with the University's strategic directions. Nonetheless, the completed projects have made meaningful contributions toward addressing institutional concerns and supporting the University's overall development objectives.

Table 12. Research projects proposed, directed, mandated, or focused on CSU internal challenges or priorities, and implemented within the year.

CENTER	**Project Title**	**Proponents**
CCGeo	Integrated Civil Engineering Assessment for Sustainable Infrastructure Development at Caraga State University	Stephanie Mae Salcedo-Albores, Marc Lin Abonales, Erwin Mendoza, Sicenio Jr. Abera
VLRC	TTLO Web Portal	Edsel Matt O. Morales, Cristopher Abalorio, Gleen Dalaorao, James Presbitero, Clark Justine Gonzales
	Manlayag (PreUIP and Bridging Program Platform)	Edsel Matt O. MOrales, Dexter Romaguera, Kimberly Ann Palaran, Clark Justin Gonzales, Paolo Duga
CRAFT	Development and Implementation of Caraga State University Solar-powered Smart Drip Irrigation System (CSU-SDIS)	1. Engr. Edgardo Ricardo B. Sajonia Jr. 2. Rodel G. Pasion 3. Dr. Jaymer M. Jayoma 4. Engr. Aljon E. Bocobo 5. Engr. Ronieto N. Mendoza
CCPD	Neositive Duty as a new category between negative and positive duty: A new philosophical theory in normative ethics for Global Justice	Vitalian Christophere L. Napone

	Developing the 4M (Maka-Diyos, Makatao, Makakalikasan, Makabansa) Core Curriculum for Philippine State Universities: Research and Curriculum Development for Maka-Diyos and Makakalikasan Toward Peace, Sustainability, and Nation-Building	Vitalian Christophere L. Napone
	Plato's Metaphors and Socratic Style: An Insight to Education	Vitalian Christophere L. Napone
CREME	Development of a web-Based GIS Platform for the Management and Visualization of Caraga's Flora and Fauna	Edsel Matt O. Morales, MSC.; Jayrhom R. Almonteros, MSc.; Jayson C. Dollete, CAR; Kent T. Espejon, MSc.; Kier Patrick A. Empang; Clark Justine L. Gonzales, MSc.; Romell A. Seronay, PhD; Meljan T. Demetillo, PhD; Ian Niel B. Dela Cruz, PhD; Jesiel Cris C. Paylangco, MSc.; Archie A. Along, MSc.; Jeszianlenn Plaza, MSc.; Exur M. Buenaflor, MSc.; Jashin J. Rosal, MSc.; Eve F. Gamalinda, PhD; Chennie S. Naling, MSc.

SO Indicator 11: No. of implemented research projects/ programs pertaining to agri-food systems.

A total of ten (10) research projects and programs focused on agri-food systems were successfully implemented, significantly surpassing the target of four (4). This notable achievement underscores the institution's strengthened commitment to advancing agricultural research and innovation, promoting food security, and supporting sustainable agri-food value chains through research-driven interventions and collaborative initiatives.

Table 13. Implemented research projects/ programs pertaining to agri-food systems (combined target for all R&D Centers).

Center	**Project Title**	**Proponents**
CARAGA CARE	Effects of solid-state fermintation using trichoderma harzianum and saccaromyces cerevisiae on proximate and fiber content analysis of coffee husk	Baldoman, Jan marie, Bihag Isabel, Labadan Princess
	Establishment of a Mulberry Demonstration Farm and Development of Soil Amelioration Protocol for the Rehabilitation of Mined-Out Lands	Reuben James Rollon, MSc., Febie Paglinawan, MSc., Sharyl Mae Daverao, MSc., Naomi Grace Lancita, MSc., Aljon Allunam, MSc., Glenn Arthur Garcia, PhD., Leo Jude D. Villasica, MSc., Elizabeth P. Parac, PhD., Clarisse Torayno, MSc (on-going), Rennielynn F. Canales, MSc, Rolyn C. Daguil, PhD, Alexander T. Demetillo, PhD
	AWD Project	Glenn Arthur Garcia, Reuben James Rollon, Leo Jude Villasica, Sharyl Mae Daverao, Angelica Labiano, Hazel Fuertes, Ianil Manguruban
	Agriculture's Footprints, Gaps and Potentials Towards a Circular Bioeconomy: The Case of the Smallholder Farms in Caraga Region	spearheaded by Dr. Balanay with Rex and me as project staff.
CHCI	AgriPlace: A Fair Pricing Regulated E-Marketplace for Agricultural Commodities	Faculty: Almonteros, Jayrhom R. Students: Leyson, J. B., Nucos, B. J., & Parado, J.
CEPRIC	An Egg Incubator with IoT-Based Control and Monitoring System	Blondie T. Sanchez Kent Andrey M. Porras Eleazar Ranez Giever Cabajes
	Design and Development of a Bangus Sorting and Quantifying Machine using ArUco Marker Based-Image Processing	Donna Lyn Castillo Aramie Espuerta Kliff Alexis Soria Anna Mae D. Custan
CREATE	Prototype Enhancement and Testing of Village Level Sago-Pith Extracting Machine	Engr. Aljon E. Bocobo-PL Engr. Neil Caesar M. Tado-PS Engr. May Rose B. Osoteo-PS Engr. Cindy Mae F. Belivestre-PS Engr. Art M. Dalman-PS Engr. Juven G.

		Luzorata-PS Engr. Godfrey Jhon Bailo-PTA II
FRIED HUB	Formulation, Analysis, Testing, Marketability and Commercialization of Permeric Crunch: A Healthy Snack Alternative	Gigi Minoza Erlin Rodas Anthony Minoza
	Alugbati (Basella Alba) Flavored Cokies: A Product Innovation	Maria Jovita Serrano Alecris V. Gregorio

SO Indicator 12: BOR approved Research Manual and presence of Ethics Board (combined target to all R&D Centers)

As of the reporting period, the RDI Services Office has not yet achieved the targets related to the Board of Regents (BOR)–approved Research Manual and the establishment of an Ethics Board. While these deliverables remain pending, their critical role in strengthening and institutionalizing research governance is fully recognized.

The preparation of the Research Manual is currently in progress, with efforts focused on integrating best practices, consolidating existing internal guidelines, and ensuring alignment with regional and national research priorities. Likewise, plans for the establishment of an Ethics Board are underway to ensure compliance with ethical standards in research. The formal proposal for the Ethics Board has been initiated by the Research and Development Publications Management Office (RDPMO).

Although these outputs have not yet been finalized, the concerned offices remain committed to completing and formalizing the BOR-approved Research Manual and the Ethics Board at the soonest possible time.

SO Indicator 13: Percentage of Research outputs published in internationally refereed or CHED recognized Journal within the year (combined target for all R&D Centers).

The Centers achieved a 99% rate of research outputs published in internationally refereed or CHED-recognized journals, reflecting the University's strategic emphasis on submitting papers to Scopus-indexed journals. This focus on Scopus-indexed publication ensured that nearly all research outputs were disseminated through internationally recognized and CHED-accredited scholarly outlets, thereby enhancing research quality, visibility, and global impact.

Major RDISO Activities

The Research, Development, and Innovation Services Office (RDISO) implemented a range of initiatives to advance the university's research and innovation agenda. An online reecho session of the DOST Conference was conducted to share priority research areas and encourage faculty to prepare concept proposals ahead of the March 2025 deadline. The event, opened by Vice President Dr. Jeffrey T. Dellosa, featured presentations from key resource persons on funding opportunities and concluded with an interactive Q&A that engaged 42 participants from various colleges.





Figure 2. DOST Call Conference

RDISO, together with the Center Chiefs, also convened a Quarterly Accomplishment Report Presentation Meeting via Zoom to review each RDI Center's progress toward Special Order targets, highlight accomplishments, and address implementation challenges.





Figure 3. DOST Full Blown Project Proposal Writeshop

The RDI Centers actively participated in activities organized by the Department of Science and Technology. On April 21, 2025, CHCI, FIC, and SuMMO hosted guided tours during the first National Innovation Day Celebration in Caraga. On May 6, selected Centers, including Mine Gears, CReATe, FIC, and MARVEL Technology, showcased their innovative outputs at the DOST Mindanao-wide Zonal Conference. Additionally, RDISO co-hosted the first DOST Full-blown

Research Proposal Writeshop, resulting in the submission of at least 30 project proposals for DOST funding by mid-May.



Figure 4. RDISO Semi-Annual Assessment and Monitoring Activity

To promote transparency and strategic alignment, RDISO held its first Semi-Annual Assessment and Monitoring Activity on June 24, 2025. Representatives from 17 RDI Centers presented their accomplishments, research outputs, and challenges. Locally funded projects also reported on their progress, including initiatives on electrical system optimization in schools, development of SSLSIRLICS with LGUs and barangays, and species composition studies in Mt. Hilong-Hilong. Action points were identified to streamline implementation and reinforce institutional support.

In line with its commitment to advancing research, development, and innovation, the Office conducted a Call for Project Proposals on July 8, 2025, inviting faculty researchers and affiliated centers to submit project concepts for potential funding in Fiscal Year 2026. The call aimed to identify high-impact, relevant, and sustainable research initiatives aligned with institutional priorities and national development goals. During the announcement, the Office provided comprehensive guidelines covering thematic priority areas, eligibility requirements, expected deliverables, and evaluation criteria. Researchers were encouraged to design proposals addressing pressing local and sectoral challenges, with particular emphasis on interdisciplinary approaches, community engagement, and technology-enabled solutions.



Figure 5. Call for Project Proposals

RDISO successfully hosted this year's Annual LIKHA Summit from September 30 to October 3, 2025, carrying the theme "Innovating for a Sustainable Future: Research, Development, Innovation, and Extension in Practice." The summit served as a dynamic platform for showcasing research outputs, promoting innovation, and strengthening collaboration among researchers, innovators, and extension practitioners, while reinforcing the university's commitment to sustainable development and inclusive growth.

The success of the LIKHA Summit was made possible through the collective efforts, strong cooperation, and unwavering support of all Research and Development Institutes (RDIs) and the pillars of the Office of the Vice President for Research, Development, Innovation, and

Extension (OVPRDIE). Their active participation and shared commitment significantly contributed to the effective implementation of the activities and the overall impact of the event.



RDI Center Reports

AGAK

The AGAK Center continued to advance its mandate as a dynamic research and development institution focused on enhancing functional literacy, professional growth, and socio-cultural responsiveness aligned with the Philippine EFA 2015 Plan. From January to December 2025, the Center implemented strategic Research, Development, and Innovation (RDI) initiatives aimed at strengthening research capacity, fostering collaboration, and improving institutional outcomes.

Key activities conducted throughout the year included mentoring and coaching, scholarly work peer review, coordination meetings with project leaders and members, research presentations and publications, and research orientation for newly hired faculty. These activities were systematically planned and implemented using strategic methodologies that contributed to sustained research excellence and professional development within the institution.

In terms of performance against approved targets, the AGAK Center exceeded several key indicators. It achieved 150% of its target for Scopus-indexed journal publications, 200% for intellectual property applications, 300% for research outputs utilized by beneficiaries, and 500% for creative research outputs registered as intellectual property and utilized commercially. Research collaborations met the annual target, while 90% of planned research outputs were completed within the year. All graduate school faculty members (100%) remained actively engaged in research activities. Additionally, the percentage of research outputs published in Scopus and other recognized journals significantly exceeded targets at 250%.

Feedback from the Director of Research, Development, Innovation, and Extension, the Publication Management Office, and fellow center chiefs was systematically reviewed and

integrated into operational strategies. This feedback guided process refinement, improved service delivery, and ensured alignment with institutional objectives.

Despite these achievements, the Center encountered challenges, primarily related to financial constraints and limited manpower, which affected program expansion and operational efficiency. Funding utilization reached 60%, with allocations primarily directed toward publication expenses through the OP IGF Publication Fund.

To further strengthen performance, the AGAK Center recommends diversifying funding sources, enhancing proposal development through capacity-building activities, and strengthening collaborations with research institutions and funding agencies. These measures are expected to improve resource utilization, increase research output, and amplify the Center's overall impact.

CaragaCARE

The Caraga Center for Agricultural Research and Entrepreneurship (Caraga-CARE), composed primarily of faculty researchers from the College of Agriculture and Agri-Industries, demonstrated notable progress in research productivity, collaboration, and funding generation as of November 2025, despite operational and timing constraints.

In terms of publications, eleven (11) Scopus-indexed journal articles with complete Means of Verification were validated, including three (3) publications with international co-authorship—exceeding the Center's target of one. While the expected publication output based on faculty rank was higher, ongoing initiatives such as writeshops, continuous peer mentoring, and publication monitoring have resulted in more than twenty (20) additional manuscripts either submitted or under review. All recorded publications were published in Scopus-indexed journals, reflecting the Center's emphasis on quality and international visibility.

The Center also recorded strong performance in intellectual property generation, with seven (7) IP applications filed during the year, five (5) of which were granted utility models. These IPs primarily focus on biofertilizer formulations and novel food processing methods. While none have yet reached commercialization, they are currently being positioned for application and adoption.

Research collaboration exceeded expectations, with three (3) active partnerships established against a target of one. These included an international collaboration with a Japan-based carbon credit company and a national partnership with DOST-Caraga for mulberry production initiatives.

In terms of research funding and project implementation, four (4) research projects were monitored, generating more than ₱2.7 million in external funding—surpassing the ₱1 million target. However, fund utilization remained at approximately 40% due to the late commencement of most projects during the third and fourth quarters of the year, as well as delays in fund disbursement within the university's financial system.

With respect to research utilization, one (1) research output—Biochartilant—was successfully adopted by the Local Government Unit of Sibagat for a DA-BAR-funded demonstration farm, meeting the Center's utilization target.

Overall, Caraga-CARE surpassed several key performance indicators, particularly in intellectual property generation, research collaborations, agri-food system projects, international publications, and research funding acquisition. While challenges remain in publication volume completion, commercialization of IPs, and fund utilization, the Center's strong research pipeline, active mentoring mechanisms, and expanding partnerships position it well for improved performance in succeeding periods.

CCGeo

The Caraga Center for Geo-Informatics (CCGeo) demonstrated strong research, collaboration, and international engagement throughout 2025. The year opened with the successful Project Inception of ML-PREP on February 20, 2025, held at CCGeo, Caraga State University, with the participation of DOST-PCIEERD, DOST Caraga, PHIVOLCS, partner institutions, faculty, and students. The activity served as a platform for aligning project goals, presenting accomplishments, and strengthening collaboration among key stakeholders.

In June 2025, CCGeo successfully completed the one-year Hydrological Study of Manoligao Watershed, funded by KAISAHAN Inc., in support of the Province of Dinagat Islands' 5-year Islandscape Development Framework. The project contributed to conservation planning and sustainable livelihood development through multi-sectoral collaboration with local governments and civil society organizations.

CCGeo further expanded its research portfolio through the implementation of a newly approved two-year project on habitat fragmentation in the Agusan Marsh Wildlife Sanctuary, with a total budget of ₱3.96 million. Preparatory activities during the third quarter included stakeholder coordination with DENR-PAMB and local government units, acquisition of satellite imagery, and the development of field sampling and data collection protocols, establishing a robust methodological foundation for the study.

The Center also strengthened its international research presence, with Caraga State University recording a record participation in an Engineering and Sciences Conference in Japan. Additionally, CCGeo-affiliated faculty actively participated in the Philippine Geomatics Symposium (PhilGEOS) 2025, presenting research papers that highlighted the application of geospatial technologies in urban planning, agriculture, and environmental analysis. These engagements underscored CCGeo's commitment to advancing geospatial research, environmental sustainability, and global academic collaboration.

CCPD

Throughout 2025, the Caraga Center for Peace and Development (CCPD) demonstrated sustained progress in advancing research capacity, academic collaboration, peacebuilding, and

community-responsive initiatives aligned with the mandate of Caraga State University and the College of Humanities and Social Sciences (CHaSS).

At the international level, CCPD facilitated the establishment of academic partnerships, most notably the drafting and coordination of a Memorandum of Understanding between Caraga State University and Universitas Diponegoro, Indonesia. This partnership laid the groundwork for collaboration in education, research, faculty and student exchange, and joint supervision of graduate and research students, strengthening the university's global engagement.

In support of research development, CCPD spearheaded multiple capacity-building activities, including fundable research proposal writeshops, reorientation sessions, and a CHaSS research retreat. These initiatives resulted in the development, refinement, and submission of several full-blown research proposals to funding agencies such as DOST–NRCP, DOST–CHRDC, and PCHRD. Notably, a DOST–NRCP-funded research project on duty ethics was approved under the Blue Skies Program with a budget of ₱1.61 million, underscoring the Center's contribution to high-impact humanities and social science research.

CCPD also strengthened quantitative research competencies through the successful conduct of a three-day Structural Equation Modeling (SEM) training for CHaSS faculty, enhancing their skills in advanced data analysis and research design. Complementing this were research colloquia and student research presentations that promoted interdisciplinary scholarship and academic discourse across social science and humanities fields.

The Center expanded its collaborative network by initiating and formalizing partnerships with key government agencies and organizations, including the Department of Social Welfare and Development (DSWD), Commission on Human Rights (CHR), Commission on Population and Development, and other development partners. These collaborations supported evidence-based research, policy evaluation, and community development aligned with national and regional priorities.

In terms of dissemination and recognition, CCPD-affiliated faculty presented research outputs in national and international conferences and were recognized during the Pasidungog Awarding 2025 for producing indexed publications. These achievements highlighted the Center's role in fostering a culture of research excellence and scholarly productivity.

CCPD likewise contributed to peacebuilding and governance initiatives through participation in regional and national forums, training, and advocacies, including peace reintegration programs, human rights consciousness activities, and policy review forums related to the Local Government Code. These engagements reinforced the Center's mission of promoting peace, social justice, human rights, and inclusive governance.

Despite moderate fund utilization for ongoing projects—largely due to continuing implementation timelines—CCPD maintained steady progress across its research, training, and partnership initiatives. Overall, the Center's 2025 accomplishments reflect its strong

commitment to academic excellence, research-driven policy engagement, and community-centered peace and development efforts.

CeNTRE

During the fourth quarter of 2025, the Center for Nanoscience and Technology for Research and Entrepreneurship (CeNTRE) demonstrated strong progress in research capacity building, international collaboration, and scholarly productivity, despite operational constraints.

A major milestone was the successful submission and approval of a proposal under the DOST-PCIEERD Human Resource Development Program (HRDP). The approved research fellowship with the Nara Institute of Science and Technology (NAIST), Japan focuses on the development of transparent metal oxide layers using water droplet-based fabrication, with applications for the aluminum architectural industry. This initiative strengthens CeNTRE's international collaboration, research capacity, and co-authorship opportunities, with the Memorandum of Agreement currently under preparation.

CeNTRE also advanced its internationalization efforts through a series of exploratory meetings with Professor Doris Vollmer of the Max Planck Institute for Polymer Research, Germany. These engagements involved research presentations, technical consultations, and proposal conceptualization for future funding applications in 2026, particularly in the field of self-cleaning coatings and surface technologies.

At the national level, the Center supported interdisciplinary collaboration by participating in consultation meetings with the MSU–Naawan research team for the Microcapture project, which focuses on innovative materials for microplastic pollution mitigation. This engagement included progress monitoring, technical input, and the formalization of collaboration through a signed Memorandum of Agreement.

In terms of research development, CeNTRE maintained an active proposal pipeline, with several proposals submitted to regional and internal funding programs, including conditionally approved and pre-budget hearing submissions. The Center also sustained strong research output generation, with multiple Scopus-indexed conference papers published, presented, or under review, reflecting ongoing productivity in nanoscience, materials science, and nuclear-related research applications.

Despite these achievements, the Center encountered challenges such as overlapping deadlines, the absence of operational funds, and urgent facility concerns—particularly the malfunctioning air-conditioning system in the laboratory housing high-value research equipment. Addressing these constraints remains critical to sustaining research operations.

Overall, CeNTRE's accomplishments during the period reflect a resilient and forward-looking research agenda, marked by strengthened international linkages, active publication efforts, and a growing portfolio of innovative research proposals, positioning the Center for continued growth in the succeeding year.

CEPRIC

From January to December 2025, the CSU Cabadbaran Campus Energy and Power – Research and Innovation Center (CEPRIC) played a key role in advancing research, innovation, and extension initiatives focused on energy efficiency, electrical safety, and sustainable power systems. Serving as a convergence platform for faculty, students, technical staff, and external partners, the Center translated research outputs into practical, policy-relevant, and community-responsive solutions aligned with national priorities and institutional goals.

Throughout the year, CEPRIC implemented research and extension activities using systematic, participatory, and outcome-oriented methodologies. These included the development and application of standardized technical assessment tools for electrical safety and energy efficiency, on-site inspections, load profiling, data validation, and technical reporting. The resulting outputs supported evidence-based decision-making and policy development among partner institutions, including the successful approval of a policy brief under Project Tun-EE by the DepEd Schools Division Superintendent.

Capacity-building remained a major focus of CEPRIC's work. The Center trained a total of 135 individuals through a three-day training program and supported faculty participation in multiple national and professional engagements. CEPRIC also demonstrated a strong project development pipeline, submitting multiple research and extension proposals to funding agencies such as DBM, CSU internal programs, and the PIP for FY 2027. In recognition of its contributions to knowledge co-creation and entrepreneurship, CEPRIC was named a LIKHA Awardee during PASIDUNGOG 2025.

Feedback from prior evaluations and stakeholder consultations was systematically integrated into planning and implementation processes, resulting in improved stakeholder engagement, clearer documentation, and more outcome-focused activities. These refinements strengthened the technical rigor and relevance of CEPRIC's research and extension outputs.

Despite challenges related to limited research funding, faculty workload constraints, scheduling issues with partners, and logistical limitations for field activities, CEPRIC maintained strong implementation performance. Project Tun-EE achieved a budget utilization rate of 99.61%, reflecting efficient financial management and compliance with government accounting regulations.

Overall, CEPRIC's 2025 accomplishments underscore its growing role in energy-related research, policy support, and capacity building, while recommendations for expanded external funding, streamlined processes, and enhanced coordination provide a clear pathway for sustaining and scaling its impact in the succeeding years.

CHCI

The CSU team, in collaboration with ORIS and the Department of Agriculture–Bureau of Agricultural and Fisheries Engineering (DA-BAFE), successfully launched the Climate Resilience Impact Assessment of Farm-to-Market Roads (FMR) Project through an online kick-off meeting. The session aligned stakeholders on project phases, roles, and expected outputs, with Phase 1 focused on developing the Project Charter to define deliverables, milestones, and responsibilities. Discussions emphasized inter-agency collaboration and data-driven planning to strengthen climate-resilient infrastructure development.

Key technical discussions centered on CSU's support in facilitating access to critical datasets from DA-BAFE, including GEOAgri and ABEMIS platforms, to enhance climate risk and FMR assessments in the Caraga Region. The teams identified data requirements such as agricultural production statistics, road and traffic conditions, soil and climate data, bridge geolocation, and updated census information, as well as opportunities for system integration and automation to improve analysis and prioritization.

The CSU, DA-BAFE, and ORIS teams also addressed administrative and compliance matters related to the international partnership, particularly tax implications under the PH–France tax treaty and Philippine domestic tax regulations. Strategies were discussed to ensure proper classification of payments, compliance with withholding tax and VAT requirements, and budget augmentation to cover potential tax liabilities.

CHCI-affiliated faculty and staff further advanced international and national collaborations through benchmarking and coordination meetings for the ISySS Chemical Distribution Management (CDM) Project. Engagements with Japan's Ministry of Economy, Trade, and Industry (METI) provided valuable insights into regulatory best practices, licensing processes, and digital governance systems, while discussions with the Philippine National Police clarified system requirements and informed priority enhancements for licensing and documentation modules.

Methodologically, CHCI adopted a participatory and iterative approach across its projects, incorporating needs assessment, stakeholder engagement, prototyping, field testing, and performance tracking. This approach guided the successful pre-alpha testing of the ISySS-CDM system at Camp Crame, where stakeholder feedback led to actionable improvements in system usability, workflow, and interface design.

Additional benchmarking activities and system orientations, including the GEOAgri and ABEMIS Systems Orientation and the review of ABEMIS 3.0 with DA–RAED 7, strengthened system relevance, data integration, and user validation. Overall, these coordinated efforts significantly advanced climate resilience planning, chemical management system development, and data-driven decision-making through strong inter-agency collaboration, international benchmarking, and continuous stakeholder engagement.

CRAFT

In 2025, the Center for Renewable Energy, Automation, and Fabrication Technologies (CRAFT) demonstrated strong research productivity, innovation, and community engagement, reinforcing its role as a leading research hub in renewable energy, automation, and smart technologies.

Under the leadership of Center Chief Engr. Edgardo Ricardo B. Sajonia Jr., CRAFT produced a substantial body of scholarly outputs, including twelve (12) Scopus-indexed conference and journal publications, several of which were published in internationally recognized outlets such as IOPScience, IEEE, and IEICES. These outputs covered key areas including AIoT-enabled solar streetlighting, smart energy systems, healthcare diagnostics, precision agriculture, and renewable energy infrastructure. In addition, CRAFT generated a robust publication pipeline, with multiple papers submitted and awaiting publication, as well as two book chapters published with Springer Nature.

CRAFT also strengthened its intellectual property and collaboration initiatives. One patent application was filed for an automated commodity dispensing machine, while nine (9) Memoranda of Agreement were established with barangay local government units to support the implementation of solar smart streetlighting and energy-related projects. The Center further expanded its international research collaboration, producing three (3) Scopus-indexed journal articles with international co-authors.

In terms of project implementation and utilization, CRAFT achieved a high fund utilization rate of 88.27%, despite procurement and coordination challenges. Four (4) research outputs were successfully utilized by beneficiaries, including smart streetlighting monitoring systems and a solar photovoltaic microgrid. Six (6) research projects were completed within the year, while one institution-focused project—the CSU Solar-powered Smart Drip Irrigation System—continued implementation beyond 2025.

Beyond research, CRAFT maintained a strong commitment to capacity building and extension services. The Center conducted seven (7) technical training programs that benefited over 270 participants from industry, local communities, and partner barangays. It also facilitated student immersion programs for high school and university students, supporting experiential learning and skills development.

CRAFT further strengthened its global and institutional presence through participation in international conferences, academic exchanges, and short courses, as well as by hosting visits from educational institutions and community organizations. Collectively, these accomplishments highlight CRAFT's growing impact in advancing science, technology, and innovation, while contributing to sustainable development at the local, national, and international levels.

CreATe

From January to December 2025, the Center for Resource Assessment, Analytics, and Emerging Technologies (CREATE) demonstrated exceptional performance in research productivity,

innovation, technology transfer, and international engagement, reinforcing its role as a key driver of research-based development at Caraga State University.

CREATE achieved strong scholarly outputs, securing multiple Scopus-indexed publications across reputable journals and conference proceedings, including Springer Nature, Pertanika Journal of Science and Technology, and IOP Conference Series. These publications addressed critical themes such as watershed management, environmental assessment in mining areas, irrigation systems, agricultural biomass energy, and climate-resilient resource management, all aligned with the Sustainable Development Goals (SDGs). Affiliate researchers also secured numerous international paper acceptances and presentations at prestigious conferences such as IEICES 2025 in Japan and AICEE 2025 in Malaysia, significantly enhancing the university's global research visibility.

In the area of innovation and intellectual property, CREATE filed one patent application and secured one utility model, both related to agricultural machinery and sustainable biomass utilization. A major milestone was the receipt of an Innovation Grant from the Intellectual Property Office of the Philippines (IPOPHL) for the Village-Level Sago Pith Extracting Machine, affirming the technology's novelty, commercial potential, and relevance to rural livelihood development.

CREATE's flagship Sago Project emerged as a cornerstone of its accomplishments. Funded by DOST-TAPI and supported by DOST Caraga, the project progressed from prototype enhancement and testing to technology deployment, training, and commercialization planning. The Center established multiple partnerships with LGUs, farmer associations, and fabrication firms in Visayas and Mindanao, conducted technology deployment and MOA signings, delivered training and workshops benefiting over 100 participants, and facilitated community adoption of mechanized sago processing. The project gained wide public attention through features by the Philippine Information Agency and Radyo Pilipinas, strengthening outreach and advocacy for grassroots innovation and circular economy practices.

CREATE also demonstrated strong capacity-building and proposal development initiatives. The Center conducted proposal writeshops, submitted numerous papers for international conferences, and supported faculty researchers in securing accepted proposals under DOST funding calls. Notably, CREATE secured ₱4.5 million in project funding under the National Urban and Peri-Urban Agriculture Program (NUPAP) for Project SPROUT, which will establish a smart greenhouse integrating renewable energy, climate control, and digital monitoring technologies for sustainable urban agriculture in 2026.

Beyond research and innovation, CREATE actively participated in national and international knowledge platforms, including PSABE conventions, innovation expos, benchmarking visits, and media engagements. Its technologies and researchers were featured in national innovation events such as NSTW's Grassroots Innovation and Circular Economy Expo and DOST-TAPI's Lunduyan 2025, further strengthening industry linkages, investor interest, and policy relevance.

CREATE's 2025 accomplishments reflect a robust research pipeline, strong international presence, effective technology commercialization efforts, and deep community engagement. These achievements underscore the Center's commitment to advancing science, innovation, and sustainable development through research-driven, community-responsive, and globally engaged initiatives.

FIC

The Caraga Food Innovation Center (CFIC), through Project 2 of the RAISE Program, actively advanced agripreneurship, product innovation, and market readiness in 2025 through capacity-building activities, product showcases, and competitive achievements. A key initiative was the successful conduct of a three-day Agripreneurship Training on Product Development and Enterprise Readiness for MSMEs on August 5–7, 2025, at CSU Ampayon, Butuan City. The training equipped aspiring and existing agripreneurs from Barangay Ampayon with skills in entrepreneurial mindsetting, food safety, labeling and packaging, agri-product marketing, and hands-on food processing of value-added products such as chili garlic sauce, cassava chips, calamansi juice, and camote molido, guided by CSU faculty and CFIC experts.

CFIC also showcased its innovations in various regional platforms, including participation in the Bag-o Nga Sinugatan Hong Butuan Market Testing during the 75th Adlaw Hong Butuan, where its research-based food products were exhibited to promote local entrepreneurship and food culture. The Center gained significant recognition after winning 1st Place in the Professional Category of the InnovEats 2025 Competition during the Caraga Regional Science, Technology, and Innovation Week, with Sago Survival Soup Cubes emerging as champion and Sago Choco Nutri Porridge included among the Top 10 finalists.

Further strengthening its visibility and industry linkages, CFIC joined the LIKHA Summit 2025, highlighting research-driven food innovations and sustainable development initiatives, and participated in the 27th Davao Agri Trade Expo, where TroChips Durian Flavor attracted industry interest and led to the signing of licensing term sheets with two adopting partners. These activities demonstrate CFIC's sustained commitment to empowering MSMEs, promoting innovation, and translating research into market-ready agri-based products that support local economic growth and sustainability.

ICTC

Key ICT and digital transformation initiatives were advanced through system demonstrations, strategic partnerships, infrastructure deployment, and capacity-building activities. A system demonstration of the Financial Automation and Resource Management System (FARMS) was conducted at J.H. Cerilles State College, highlighting its core modules for real-time financial tracking, asset inventory, reporting, enrollment, and document tracking, and supporting the institution's evaluation for possible adoption. In a separate engagement, Pampanga State Agricultural University successfully procured and installed a ₱2.8 million FARMS, formalized through a Memorandum of Agreement, to modernize and streamline its financial and administrative operations.

Strategic collaboration efforts were strengthened through a joint meeting involving the Virtual Learning Research Center (VLRC) and the Center for Human Computer Interaction (CHCI), resulting in a consolidated proposal presented to Apex Mining Co., Inc. (AMCI). Caraga State University further presented ICT-driven project proposals to AMCI, focusing on underground network infrastructure, personnel tagging and tracking systems, and customized digital solutions to enhance operational efficiency and safety, aligned with the company's corporate social responsibility goals.

Digital connectivity and cybersecurity capabilities were also enhanced. EduROAM was successfully deployed at Caraga State University, enabling secure and seamless international internet access through partnerships with DOST-ASTI and ON-IDLE. In support of national capacity building, CSU ICT and research personnel participated in the Asi@Connect Network Management, Monitoring, and Internet Security Training at the University of the Philippines Diliman, strengthening expertise in network operations and cybersecurity to support robust and secure digital infrastructure.

MSCRC

The reporting period highlighted strong academic collaboration, capacity building, and research productivity in statistics and mathematics at Caraga State University (CSU), led by the Mathematics Department and the Mathematical and Statistical Computing and Research Center (MSCRC).

In September 2025, CSU faculty conducted an academic benchmarking visit to the Institute of Statistics (INSTAT) of the University of the Philippines Los Baños to review the BS Statistics program, gaining insights into curriculum design, research integration, and extension practices, and opening opportunities for future collaboration. MSCRC also participated in a three-day Training-Workshop on Quantitative Impact Evaluation organized by DEPDev Caraga and NEDA, strengthening faculty competencies in evidence-based policymaking and program evaluation.

CSU faculty and students actively engaged in the 2025 Regional CBMS Convention and Data Festival Caraga, earning major recognitions including first-place finishes in data presentation and survey competitions, and showcasing student research. These achievements demonstrated CSU's strength in applied statistics and community-driven data initiatives.

In October 2025, MSCRC co-organized the 1st CSU LIKHA Estadistika 2025 as part of the LIKHA Summit and National Statistics Month celebration. The event featured plenary messages on the role of statistics in research and decision-making, as well as hands-on workshops promoting experiential learning through experimental design and data analysis activities.

November 2025 marked a period of expanded research collaboration and proposal development. MSCRC formalized a Collaborative Research Agreement with USTP-Claveria for a food security–focused agricultural carrying capacity study, co-facilitated enumerator training to

ensure data quality, and submitted two externally funded research proposals addressing social impact assessment and maternal work–family balance in the Caraga Region.

These activities reinforced CSU's leadership in statistics education, research collaboration, and evidence-based development, while strengthening institutional partnerships and contributing to data-informed policy and community outcomes.

SuMMO

From July to August 2025, the ICT4RM 2.0 initiative advanced its goal of promoting responsible, transparent, and inclusive mining through a series of coordinated activities involving government, academe, industry, and host communities.

In early July, the project team conducted on-site meetings and beta testing of the ICT4RM 2.0 Community Web Application with partner mining companies and community representatives. The activity showcased system enhancements such as an improved user interface, real-time data visualization, and automated report generation, while stakeholders actively tested key functions and provided usability feedback to guide further system refinement.

Mid-July activities focused on strengthening institutional partnerships, with coordination meetings held to finalize documents and preparations for the Memorandum of Agreement. The formal MOA signing on July 18, 2025, marked the official launch of ICT4RM 2.0, uniting Caraga State University, MGB XIII, CREDO, and 18 mining companies in a shared commitment to transparency, accountability, and community-centered mining governance.

In August, the initiative was further reinforced through the 1st PSEM Caraga Mining Symposium, which served as a major platform for knowledge exchange and innovation. CSU faculty participated as resource speakers and presenters, highlighting ICT4RM 2.0, ESG integration, and sustainable mining technologies. The symposium also featured research presentations and industry exhibits that emphasized safety, environmental responsibility, and community development.

These engagements demonstrated the steady progress of ICT4RM 2.0, strengthened multi-sectoral collaboration, and positioned Caraga as a leader in advancing digitally enabled, sustainable, and well-governed mining practices.

VLRC

In 2025, the Virtual Learning Research Center (VLRC) sustained strong momentum in research, digital innovation, and inter-agency collaboration, anchored by two major externally funded programs: Project PAMANA under DOST-PCIEERD and ABEMIS 3.0 under the DA-BAFE AGRIVISTA Program. Both initiatives progressed according to schedule and transitioned from preparatory stages to active implementation.

A major milestone was achieved in July 2025 with the successful completion of the four-stage Free, Prior, and Informed Consent (FPIC) process for Project PAMANA, culminating in the

signing of a Memorandum of Agreement with the Manobo ICC/IP of CADT 272 in Las Nieves, Agusan del Norte. This formally authorized field-based cultural documentation and enabled the development of VR-based digital heritage outputs. In parallel, ABEMIS 3.0 advanced from planning to technical development through a series of intensive coordination meetings, stakeholder engagement workshops, and technical design sessions from July to September, defining system architecture, workflows, security standards, and data migration strategies.

Throughout the year, VLRC strengthened its research pipeline by refining and submitting interdisciplinary proposals in AI, geospatial systems, digital governance, and cultural preservation. Two full-blown proposals—AI-Powered Judicial Assistant and Usiba—were submitted to DOST. To boost year-end outputs, the Center consolidated six undergraduate research projects aligned with its thematic areas, preparing them for scholarly registration and future publication.

VLRC also maintained critical digital infrastructure and learning platforms, including continuous support for the Manlayag (Open EdX) platform used in Pre-UIP and Bridging Programs, and the regular updating of its website as a repository for projects, publications, and stakeholder engagement.

In terms of intellectual property and research assets, the Center recorded one IP output and initiated additional filings, including trademark applications for the PAMANA and ABEMIS 3.0 logos and copyright preparation for ABEMIS 3.0 technical documents and PAMANA VR assets. Formal partnerships were strengthened through signed MOAs with NCIP/Manobo ICC/IP and DA-BAFE, positioning VLRC to deliver deployable outputs and prototypes.

Budget utilization remained aligned with implementation timelines, reaching 91.51% for ABEMIS 3.0 and 79.17% for Project PAMANA as of December 2025, with remaining funds programmed for final documentation, honoraria, and content development.

By year-end, VLRC focused on completing scholarly submissions, filing additional IP registrations, and preparing prototype demonstrations—particularly the PAMANA VR experience and ABEMIS 3.0 modules—ensuring readiness for operational adoption and broader rollout in 2026.

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