



**UPSCALING ENGINEERING
EDUCATION AND RESEARCH**

10TH

**Engineering
Research and
Development for
Technology
Congress**



September 30, 2022
Quezon City

10th Engineering Research and Development for Technology Congress

30 September 2022 | SREDC Hotel Rembrandt, Quezon City

Narrative Report

10th ERDT Congress

Concept Note

Theme: Upscaling Engineering Education and Research

In 2021, the United Nations Educational, Scientific and Cultural Organization (UNESCO) published a report that underscores the role of engineering in achieving the Sustainable Development Goals.¹ Among others, the report positions the academe at the center of responding to challenges of sustainability by producing graduates equipped with new engineering competencies, and by championing engineering education that is driven by a complex problem-solving approach that combines societal and sustainable problem analyses with academic technical knowledge and solutions.

In a collaborative study released in 2020, the Science Education Institute of the Department of Science and Technology and the Philippine Institute for Development Studies posited that while the S&T workforce forms only 5% of the country's total labor pool, demand for S&T human resources is projected to increase due to the emergence of new technologies and industries.² In order to meet said demand, it is thus crucial for the government and the private sector to support and promote S&T disciplines. This could not be overemphasized as we continue to navigate through the Covid-19 pandemic and the fourth industrial revolution.

While it is clear that the availability of financial grants and scholarships such as those offered by the ERDT is critical in the development of S&T, it cannot be denied that other factors must also concur for us to be able to upscale engineering education and research in the country. The 10th Engineering Research and Development for Technology Congress will explore how academic curricula could be redesigned to mirror and respond to current trends and future demands, how makerspaces, sandboxes and co-creating programs can accelerate innovation and enhance multi-sectoral collaboration, and how technopreneurship and service learning can be co-opted to produce engineering graduates who are agile and responsive to the needs of the time.

¹ United Nations Educational, Scientific and Cultural Organization, *Engineering for Sustainable Development*, (Paris/Beijing: 2021).

² Tabunda et al., *Future S&T Human Resource Requirements in the Philippines: A Labor Market Analysis*, (Quezon City: Philippine Institute for Development Studies, 2020).

10th ENGINEERING RESEARCH AND DEVELOPMENT FOR TECHNOLOGY CONGRESS

30 SEPTEMBER 2022 | HOTEL REMBRANDT

THEME: UPSCALING ENGINEERING EDUCATION AND RESEARCH

TIME	ACTIVITY	SPEAKER/MODERATOR
8:30 am-9:00 am	Registration	
9:00 am - 9:05 am	Singing of the Philippine National Anthem and a short prayer	
9:05 am - 9:15 am	Welcome Message	MARIA ANTONIA TANCHULING, Ph.D. Program Leader, ERDT
9:15 am - 9: 25 am	Keynote Speech	RENATO SOLIDUM JR., Ph.D. Secretary Department of Science and Technology
9:25 am - 9:45 am	Aligning Engineering Curricula with Real-World Challenges and Industry Demands	Dr. Czar Jakiri S. Sarmiento
9:45 am - 10:05 am	Research: The Foundation of Groundbreaking Innovations	Dr. Rowena Guevara
10:05 am - 10:25 am	Coffee Break	
10:25 am - 10:45 am	Accelerating Innovation through Makerspaces	Dr. Kevin F. Yaptenco
10:45 am - 11:15 am	Open Forum	
11:15 am - 11:25 am	Presentation of Certificates and Photo Op	
11:25 - 11:30 am	Reading of Instructions and Judging Criteria for the Poster Competition	
11:30 am - 12:00 nn	Exhibit Viewing for Attendees	
12:00 nn -1:00 pm	Lunch Break	
1:00 pm - 1:40 pm	Evaluation of Posters by Judging Panels	
1:40 pm- 2:30 pm	Success factors and challenges for Scholarpreneurs - Panel Discussion	Dr. Luis Sison (Moderator)
2:30 pm - 2:50 pm	Upscaling the Economy through AI	Dr. Eugene Rex Jalao
2:50 pm - 3:10 pm	Session Break	
3:10 pm - 3:30 pm	Service Learning/Leaving a Mark: Student and Faculty-led Research Projects aimed at Solving Existing Societal Issues	Engr. Isabelo Rabuya
3:30 pm - 4:00 pm	Open Forum	
4:00 pm - 4:10 pm	Presentation of Certificates and Photo Op	
4:10 pm - 4:20 pm	Awarding of Best Posters	
4:20 pm - 4:30 pm	Closing Remarks Engr. Albert Mariño Deputy Director, Science Education Institute -DOST	
4:30 pm - 4:40 pm	Photo session	

The 10th Engineering Research and Development for Technology Congress, with the theme, “**Upscaling Engineering Education and Research**” was held last September 30, 2022, at the SREDC Hotel Rembrandt, Tomas Morato Avenue, Quezon City. The Congress was attended by a total of one hundred three (103) face-to-face attendees and three hundred seventy-six (376) attendees via Zoom which was composed of ERDT Officials, Representatives from the Science Education Institute, ERDT Scholars, Faculty, and Staff.

The Congress started with a short prayer and the singing of the Philippine National Anthem followed by the Opening Remarks of the ERDT Program Leader, Dr. Maria Antonia N. Tanchuling. She emphasized the importance of introspection and reexamination of what the ERDT has achieved, missed, and learned so, as to be able to plan and strategize, prospectively, about its future, its renewed mission, and desired outcomes for our country's future.

Though he wasn't able to join us onsite, Secretary Renato Solidum, as a keynote speaker, delivered his recorded message. Sec Solidum talked about upscaling innovation and collaboration in order to meet the demands of achieving sustainable development goals and developing national wealth by investing in the human capital to fuel knowledge creation, innovation both in the academe and in industry, multi-stakeholder collaboration,

commercial and social application of technology, and the economic and social advancement of our cities and communities. He encouraged the ERDT Scholars to continue to strive for innovation and to contribute to nation-building.



Dr. Tanchuling delivers her opening remarks to welcome the ERDT Scholars, Officials, Guests, and other stakeholders



Sec. Solidum of the DOST on his recorded speech.

The first plenary speaker is Dr. Czar Jakiri Sarmiento, an Associate Professor 5 in the Department of Geodetic Engineering at the University of the Philippines Diliman. Aligning engineering curricula with industry demands and real-world challenges was the subject of his talk. Dr. Sarmiento discussed the history of the Geodetic Department at UP Diliman to

show how flexible the curricula were adjusting to the demands and needs of the current trends and issues. He summarized the department's curriculum in three words: "Improvise, Adapt, and Overcome". Dr. Sarmiento added that during the pandemic, the department adjusted its activities to align with the current situation. He ended the discussion in three words: Knowledge, Progress, and Service. He said, "When your values are clear your decisions will be simpler."



Dr. Jak Sarmiento during his presentation on "Aligning Engineering Curricula with Real-World Challenges and Industry Demands"

Dr. Rowena Cristina I. Guevara is a Professor XII at the University of the Philippines Diliman, at the Electrical and Electronics Engineering Institute discussed "Research: The Foundation of Groundbreaking Innovations". Dr. Guevara highlighted that Basic R&D and Applied R&D complement each other and that the R&D Agenda is a good guide for relevant research. She also added that Entrepreneurship and Business incubation in the academe would help translate research output into innovation.



Dr. Guevara in her presentation talked about how Research and Development address Societal concerns

The last speaker for the morning session was Dr. Kevin Yaptenco, a Professor at the University of the Philippines Diliman Los Baños, at the Agricultural, Food and Bioprocess Engineering Division (AFBED), a unit of the Institute of Agricultural and Biosystems Engineering (IABE). He started his speech by defining the word Makerspaces as a common area where people can create and modify existing products collaboratively. He talked about the relevance of Makerspaces for innovation. Dr. Kevin Yaptenco, emphasized that through the collaboration that makerspaces provide, we become more conscious of the needs of the community which leads to innovation.



Dr. Yaptenco during his presentation Accelerating Innovation through Makerspace

An open forum was facilitated by Dr. Eden Dela Peña, the Master of Ceremony of the morning session speakers, Dr. Sarmiento and Dr. Yaptenco joined the forum onsite while Dr. Guevara joined virtually.



The morning session speakers during the open forum

The afternoon session of the Congress began with the Poster Competition. Forty-one entries were accepted and evaluated under the five ERDT R&D Tracks. The Congress provided a space for the judges and the scholars to view and ask questions to the authors. The Awarding happened in the latter part of the program. The recipients of the Best Poster Awards are:

ENERGY R&D TRACK

OBRA, JOHNDDEL - EVALUATION OF THE SPATIO – TEMPORAL SOLAR AND WIND ENERGY COMPLEMENTARITY IN THE PHILIPPINES USING PEARSON CORRELATION



ENVIRONMENT AND INFRASTRUCTURE R&D TRACK

GREGORIO, EARL GERALD - NUMERICAL ANALYSIS OF THE SEISMIC PERFORMANCE OF A RETROFITTED FOUR-STORY BUILDING WITH IN-PLANE DISCONTINUITY USING STERA-3D



INFORMATION AND COMMUNICATIONS TECHNOLOGY R&D TRACK

YA-ON, CZERITONNIE GAIL - EXPLORING THE POTENTIAL OF OPEN DATA FOR REAL ESTATE VALUATION



MANUFACTURING AND MACHINERY R&D TRACK

MANEJA, JOAMAE - DEVELOPMENT OF A SEED TAPE MACHINE FOR ONION (ALLIUM CEPA L.) SEED



discussion on Success factors and challenges for Scholarpreneurs. The panelists who joined the discussion were **Prof. Benjamin Mirasol**, a professor and strategy and entrepreneurship at the Ateneo de Manila University School of Management, **Dr. Maria Sheila Ramos**, Dean of MSU-IIT, **Dr. Kevin Yaptenco**, a Professor at the University of the Philippines Los Baños, **Dr. Angelo Cabije**, the Tech Hub director of USC Bridges, **Dr. Virgilio Linis**, Program Manager Animo Labs, DLSU and **Ms. Margarita Caparas**, UPSCALE-Enterprise lead, UPD.

SEMICONDUCTOR, MATERIALS AND ELECTRONICS R&D TRACK

CALINAO, VICTOR - ENERGY AND NVIDIA SIONNA-BASED SIGNAL INTEGRITY: SELECTION DESIGN FOR OFF-THE-SHELF SYNTHETIC APERTURE RADAR-CAPABLE UNMANNED AERIAL VEHICLES



Dr. Luis Sison (left), moderating the panel discussion on Success Factors and Challenges for Scholarpreneurs.

Dr. Luis Sison a professor at the Electrical and Electronics Engineering Institute of the University of the Philippines Diliman, Director of the UP system Technology Transfer and Business Development Office, and the Program Leader of the UPSCALE Innovation Hub, moderated a panel

To provide a deeper understanding of the topic of Artificial Intelligence and its contribution to innovation, Dr. Eugene Rex Jalao talked about “Upscaling the Economy through AI” Dr. Rex highlighted that AI is not replacing the manual system but uplifting the lives of the people as well as helping to the economic growth.



Dr. Jalao discusses how Artificial intelligence can contribute to economic growth

The last plenary speaker, Engr. Isabelo Rabuya, an Assistant Professor at the Department of Electrical and Electronics Engineering at the University of San Carlos, stressed the importance of going beyond our circle to reach out to the community and help them address their needs through research. He also urged the consortium universities to put forth their best efforts and demonstrate how the research will be useful in forming public policy through research-based recommendations by collaborating with various organizations, communities, local government units, and private institutions, including academic institutions.



Engr. Rabuya during his presentation on Service Learning/Leaving a Mark: Student and Faculty-led Research Projects aimed at Solving Existing Societal Issues

An open forum was facilitated by Dr. Eden Dela Peña, the Master of Ceremony for the afternoon session speakers, Dr. Sison, Dr. Jalao, and Engr. Rabuya.



The afternoon session speakers during the open forum

Engr. Albert Mariño, Deputy Director from the DOST - Science Education Institute delivered his closing remarks. He encouraged scholars to turn their research into technology that will be useful to the Philippines. He urged the ERDT scholars to embrace service learning and to become technopreneurs. He added that measuring the success of this 10th ERDT Congress can only begin by applying the learnings.



Engr. Mariño delivered his closing remarks.