



14 years of bringing
S&T good news

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3Ds: Design, Develop, and Deliver is MATDEV's contribution to the medical field during the pandemic

By Ryan Sebastian Soyosa, DOST-STII

One of the many interesting innovations during the opening day of the 2021 National Science and Technology Week celebration (#2021NSTW) is on 3D design and development.

A two-hour webinar session was conducted by the Department of Science and Technology – Industrial Technology Development Institute (DOST – ITDI) that focused on aiding medical institutions. The webinar also featured providing solutions during this pandemic with coaching and mentoring workshops on design and production of medical equipment parts titled “Creating Hope with MATDEV”.

The Advance Manufacturing Center's Material Development Laboratory (AMCen's MATDEV) is taking the lead in research and development materials for 3D printing that aims to reduce cost of raw materials and increase utilization of local materials for high-end 3D printing.

Present during the webinar were experts from MATDEV led by DOST-ITDI Deputy Director Dr. Christine Marie Montesa, who spoke about the significant contributions and early efforts of DOST-ITDI, AMCen's MATDEV in the response against COVID-19 pandemic through

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Face shields and ear relief bands in 3D print designs. (Photos courtesy of DOST-ITDI)

DOST-NAST lauds Pinoy scientists in 2021 NSTW celeb for outstanding contributions

By Allyster A. Endozo, DOST-STII



Key recipients of DOST-NAST awards during the 2021 NSTW opening ceremonies (left to right): Prof. Mary Beth B. Maningas, Arsenia B. Sapin, Dr. Shirley C. Agrupis, and Dr. Francis Aldrine A. Uy. (Photos courtesy of DOST-NAST)

Ahead of the exhibits, fora, seminars, and workshops, the Department of Science and Technology (DOST) has once again recognized Filipino excellence in science and technology (S&T) at the opening ceremonies of the 2021 National Science and Technology Week (NSTW) celebration this 22 November 2021.

At the NSTW opening ceremonies, the National Academy of Science and Technology (DOST-NAST) has conferred four awards in the form of medals, plaques, and cash prizes to research and development (R&D) specialists for their outstanding S&T contributions.

Prof. Mary Beth B. Maningas and David Angelo V. Guanzon of the University of Santo Tomas won the Eduardo A. Quisumbing Medal for Basic Research, as the tandem bested four other nominees in the mathematical, physical, and life sciences category.

Their peer-reviewed article, published in the July 2018 issue of Developmental and Comparative Immunology, provides evidence that foreign dsRNA triggers a cascade of genes that promote an antiviral state in the edible whiteleg shrimp (*Penaeus vannamei*).

Moreover, the “fab five” team at the National Institute of Molecular Biology and Biotechnology

(BIOTECH) edged another nominee for the Julian A. Banzon Medal for Applied Research, which is reserved for agriculture, industry, health, and social sciences.

Arsenia B. Sapin led the BIOTECH project team at the University of the Philippines Los Baños composed of Dr. Rodney H. Perez, Fides Marciana Z. Tambalo, Arra Gaylon, and Maria Katrina N. Alaon—with support from Jessica Juarez and Roland Martinez.

Published in the June 2021 issue of the Philippine Journal of Science, their study proved that phenolics extracted from waste mango branches can promote higher antioxidant and anti-diabetic activities than ascorbic acid and acarbose, respectively.

On the other hand, Dr. Shirley C. Agrupis, President of Mariano Marcos State University (MMSU), topped two other nominees as she bagged the NSTW Outstanding Science Administrator Award or the Dioscoro L. Umali Medal for her work in agricultural sciences.

Dr. Agrupis' strategic vision focused on seven key areas dubbed as ACHIEVE: academic excellence; creative, relevant, and innovative research program; high-impact and transformative extension and outreach program; improved revenue generation; expanded

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David Angelo V. Guanzon presenting the findings of their research work on the whiteleg shrimp (*Penaeus vannamei*) to the panel members.



Prof. Mary Beth B. Maningas sharing her team's journey, having been invited to the National Cheng Kung University in Taiwan.

external linkages and partnerships; vibrant and nurturing learning environment; and efficient and effective management system.

Finally, Dr. Francis Aldrine A. Uy—Dean of the Mapúa School of Civil, Environmental, and Geological Engineering—toppled eight other nominees as he garnered the NSTW Outstanding Technology Commercialization Award or the Gregorio Y. Zara Medal.

Dr. Uy is the founder and Chief Executive Officer of USHER Technologies Inc. USHER (Universal Structural Health Evaluation and Recording System) enables 24/7 remote data monitoring and alerting on structural damage to a building as earthquakes occur.

All four awards were recently conferred during the NSTW opening ceremonies that was broadcast live at the NSTW official Facebook

page: <https://www.facebook.com/nstwdost>.

This year's NSTW is being celebrated virtually from 22–28 November 2021 under the theme “*Agham at Teknolohiya: Tugon sa Håmon ng Panahon*” and this was mirrored in the excellent achievements of our Filipino scientists and researchers.

The NSTW aims to bring S&T closer to the people by letting them experience the vital role of science, technology, and innovation in improving the people's quality of life, protecting the environment, and contributing to national development.



Dr. Francis Aldrine A. Uy presenting the USHER earthquake monitoring system.

3Ds: Design, Develop...

prototyping and production of various PPEs, medical components and devices that help address supply shortage at the height of the crisis. These initiatives are jointly undertaken with the DOST-Metals Industry Research and Development Center.

While MATDEV works on creating solutions to the problem, several restrictions during the early days of the pandemic led them to come up with their own design by using their resources and develop medical supplies in utilizing local materials and deliver face shields and ear relief bands to medical frontliners battling COVID-19.

This effort produced a total of 3,144 face shields and 2,770 ear relief bands distributed to 47 hospitals, 10 health centers and clinics, and four government agencies and other institutions, thus ensuring the safety and protection of the health workers and frontliners.

Other MATDEV medical equipment produced included the following: venturi valves, valve holding chamber, and modified oxygen mask, which were presented by one of the resource speakers, Engr. Manrusces Enot, a senior science research specialist.

Engr. Enot also shared the good feedback they received from the medical frontliners on the designs that are easy to use and comfortable as the parts are durable enough for daily tasks, indeed a breakthrough in the development of medical and healthcare equipment.

MATDEV's Project Leader Marianito T. Margarito shared the benefits of 3D printing to the medical sector including planning to reduce time of operations by using various applications



Other medical equipment in 3D print designs venture valves, modified oxygen mask, valved holding chamber and door handles.

and techniques of 3D printing through sorting a model first to practice on and replace parts that fit perfectly.

With these encouraging results, MATDEV wants to undertake more research and development and to continue to improve medical accessories and devices as DOST-ITDI called on to empower our medical professionals and make for a resilient health care system. Moving forward, MATDEV also takes this opportunity to establish connections and collaborations with potential partners by promoting 3D technology for product development and mass production with the help of MATDEV facilities and services.

“As of today, the team continues to provide services to help abate the negative impact of the pandemic,” Dr. Christine Marie Montesa, DOST-ITDI Deputy Director said.

The webinar also provides a short workshop mainly discussing the basic process, common materials, and technology used for 3D printing.

Incidentally, MATDEV is one of the featured innovations by the DOST and its agencies during the recently concluded 2021 National Science and Technology Week celebration held 22–28 November 2021. For more information on MATDEV, please visit their official Facebook Page www.facebook.com/ITDIDOSTUpdates.

USHER tech boosts disaster readiness of Cabuyao and San Pedro cities

By Allan Mauro V. Marfal, DOST-STII

The cities of Cabuyao and San Pedro in Laguna are aiming to have a more coordinated plan and response during times of natural disasters such as earthquake with their adoption and installation of USHER or the Universal Structural Health Evaluation and Recording, a technology developed through the support of the Department of Science and Technology (DOST).

The ceremonial turnover was held on 24 November 2021, spearheaded by the DOST-CALABARZON, as part of the 2021 National Science and Technology Week (NSTW) celebration.

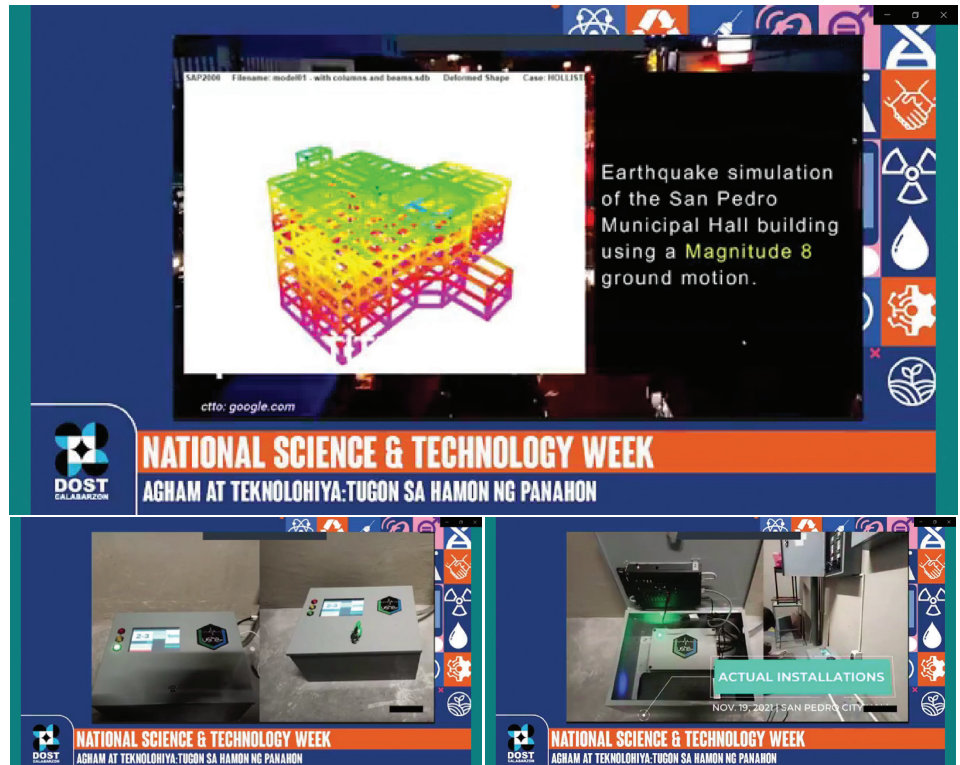
USHER System is a 24/7 economical and hassle-free system that provides advanced decision support tools for building managers and officials of local government units to implement structural health monitoring and management. It is a weather and theft-proof system that remotely monitors the structural health of bridges and buildings, enabling officials to determine whether the structures need repairs or upgrades to withstand natural hazards like earthquakes.

It is a research product commercialization project of Mapúa University through Dr. Francis Aldrine A. Uy, and the Department of Science and Technology-Philippine Council for Industry, Energy, and Emerging Technologies Research and Development.

During the turnover, DOST-CALABARZON Regional Director Emelita P. Bagsit said that USHER technology can assist local government units in monitoring the structural condition of critical government infrastructures. Bagsit further said that it is an accurate method to ascertain mitigation strategies to safeguard the buildings where the USHER is installed. It can be used to determine whether the building needs retrofitting or if people are still safe to return to the building in the event that a high-intensity earthquake hits the area.

"As of now, USHER technology adopters are concentrated in the National Capital Region. That is why we are really looking forward that there will be more technology adopters of the USHER here in the CALABARZON region. Soon, we will become a testimony to other regions and motivate them also to adopt the USHER and further build a strong country prepared for the disasters such as the most feared: the Big One," said Bagsit.

Meanwhile, DOST Secretary Fortunato T. de la Peña shared that USHER is a 24/7 web portal system that allows remote monitoring and analysis of the structural integrity of buildings and other structures and it enables economical and hassle-free compliance to government regulations.



USHER or the Universal Structural Health Evaluation and Recording has been turned over to cities of San Pedro and Cabuyao in Laguna on 24 November 2021 to aid in providing advanced decision support tools to building managers and officials of local government units for structural health monitoring and management.

"I am glad that USHER is now crossing boundaries outside Metro Manila. This testifies the need for and importance of this research product commercialization to our people – it is a good example of making science for the people," said Sec. de la Peña.

On the other hand, the Office of Civil Defense-CALABARZON Regional Director Ma. Theresa R. Escolano underscored how USHER technology could be a big leap in disaster management in the region as it plays an important role in determining the safety and integrity of infrastructures before, during, and after an earthquake.

"This technology is a breakthrough in disaster management and tools and equipment. As we face risks brought about by the earthquake, this locally developed technology will guide and help structural engineers as well as disaster managers in the monitoring and immediate assessment of infrastructure," said Regional Director Escolano.

Moreover, San Pedro City Laguna Mayor Lourdes S. Cataquiz shared her appreciation to the DOST as she cited that this partnership with DOST-CALABARZON and the adoption of USHER would really help the City Government of San

Pedro especially during times of calamities and disasters.

"The USHER system is a very innovative tool to guarantee that our buildings are safe, especially every time we experience earthquakes. This will help us protect and ensure the safety of our constituents. We are very thankful for this opportunity and may this be the start of many collaborations with you as we work towards the betterment of our communities and constituents," said Mayor Cataquiz.

The turnover ceremony was part of the DOST-CALABARZON's project on the Deployment of a Structural Health Monitoring System for Critical Government-Owned Buildings along with the Valley Fault System. With the support of the Office of Civil Defense – CALABARZON and the LGUs concerned, DOST-CALABARZON aims to deploy earthquake sensors that can provide a rapid assessment of critical government buildings and infrastructures in preparation for "The Big One".

The 2021 NSTW is a weeklong virtual celebration that features the various DOST developed and implemented projects, programs, and services held from 22–28 November 2021. (With information from DOST-CALABARZON)

PH indigenous languages preservation through online community dictionary

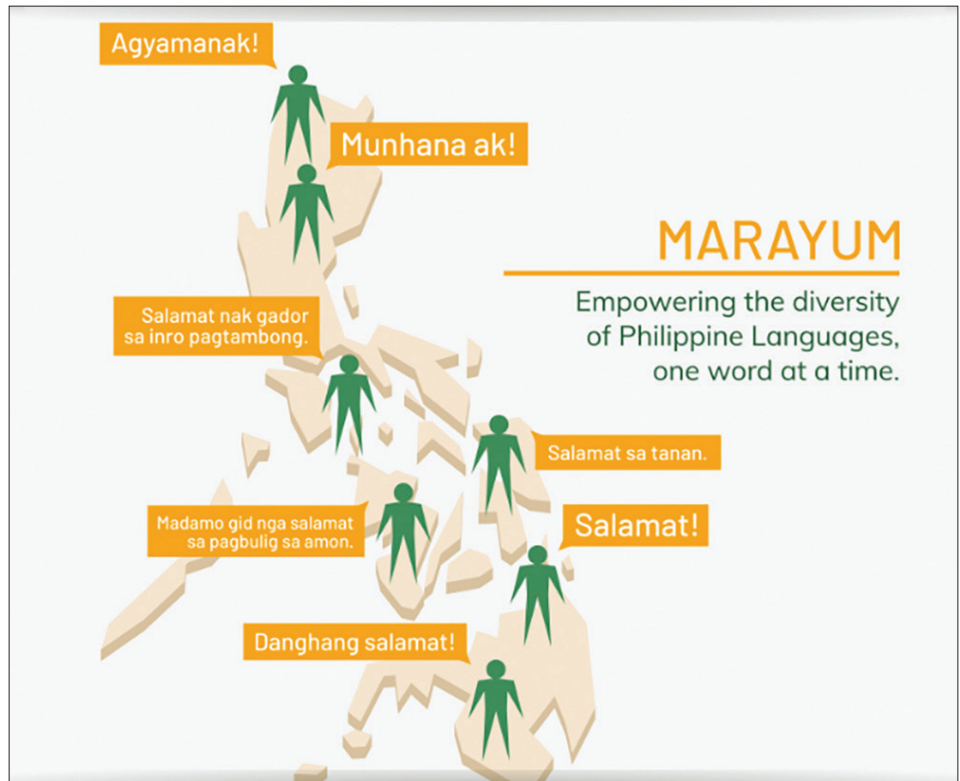
By Rachel R. Perez, DOST-STII

Targeted to empower native languages through the help of the new technology, a team of computer scientists and linguists from the University of the Philippines - Diliman (UPD) developed a dictionary-making tool that can be used as an online dictionary platform for Philippine indigenous languages.

Breaking the language barrier through project Marayum, this tool also aims to preserve and save endangered Filipino languages. It allows users to enjoy different local languages that could support their connection towards the community. Furthermore, through this initiative, not only during “Buwan ng Wika” can Filipinos appreciate the different local languages outside the month long celebration.

Users can just type a local word on the search engine or can browse the full list on the website. Each language corresponds with an English translation and also provides an example on how to use a certain word. A user does not need to have technical expertise in website design, implementation, and maintenance. It also allows interested language communities to create an online dictionary whose content would be owned by the members and reviewed by assigned language experts.

However, revisions are allowed only to registered language speakers with entries and will undergo a review.



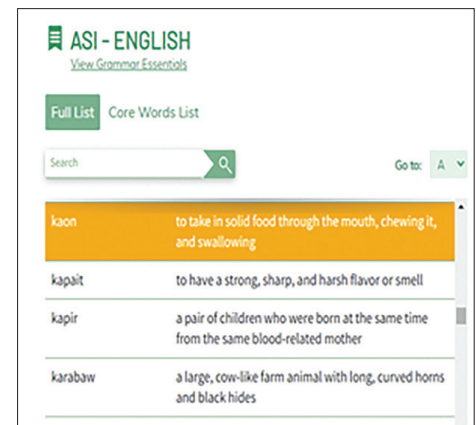
Users who want to contribute may apply for an account at the Marayum website, and those who just want to avail its services as reference or to learn a language, they can use it all for free without creating an account.

The said initiative is now available online at <https://marayum.ph> with four dictionaries: Asi-English, Cebuano-English, Kinaray-a-English and Hiligaynon-English.

Meanwhile, other dictionaries are in the works, including Bikol-Buhi’non-English, Bikol-Rinconada-English, Masbatenyo-English, Kapampangan-English, Chavacano-English, Gaddang-English, Inakyeanon-English, Waray-English, and Ilocano-English. These dictionaries are being managed by their communities and by assigned linguists.

The website itself is owned and run by the research team from the UPD and they are working in partnership with select regional universities.

Marayum is led by UPD Department of Computer Science Assistant Professor Mario Carreon and is funded by the Department of Science and Technology-Philippine Council for Industry, Energy, and Emerging Technology Research and Development.



Marayum, translated as “wise words” in the Asi language of Romblon, is very easy to use.

This technology is one of the projects supported by DOST and many similar innovations, development projects, and knowledge products were featured during the celebration of the 2021 National Science and Technology Week (NSTW) held from 22–28 November 2021.

The week-long celebration of the NSTW carries the theme, “Agham at Teknolohiya: Tugon sa Hamon ng Panahon,” which showcased the many innovations, knowledge products, and services developed to benefit the Filipinos.

ABOUT US

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