



Making science
work for you

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Online transactions now faster, safer

By JOY M. LAZCANO
S&T Media Service, *DOST-STII*

The public may now avail of government services faster, more safely and efficiently right in their homes and workplaces through the use of digital certificates.

This becomes possible with the Department of Science and Technology's (DOST) Philippine National Public Key Infrastructure (PNPKI), an initiative which secures communications among individuals and government agencies when conducting transactions over the Internet.

This was revealed by Denis Villorente, director of DOST's Advanced Science and Technology Institute (DOST-ASTI) during a stakeholders forum at the 2014 National Science and Technology Week held last July 24-28, 2014 at the SMX Convention Center in Pasay City.

PNPKI refers to the virtual 'key' which subscribers can use to secure files sent over an otherwise unsecure 'public' network like the Internet. As more people do business over the Internet, the public needs trusted infrastructures that will authenticate and validate virtual personal identities by providing digital certificates to validate the authenticity of the person on the other end of the transaction.

"The PKI is a way to identify people, organizations and machines electronically. To be able to have reliable and trusted transactions online, systems must be able to identify the parties they are transacting or communicating

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http://www.ikeepsafe.org/



The MOSES tablet - an 8-inch Internet-based, two-way communication tool between warning agencies and disaster responders developed by the Department of Science and Technology's Project NOAH. Aside from its selection as pilot area for Project NOAH, Marikina also became the first recipient of this new tool with 20 tablets handed over to the local government unit. (*S&T Media Service*)

Project NOAH is our reliable partner – Marikina City

By SUZETTE J. DALUMPINES
S&T Media Service, *DOST-STII*

"Project NOAH is our reliable partner to make Marikina a disaster-resilient city."

This was the closing statement of Dr. Val Barcinal, head of Marikina City's disaster and risk reduction management office, in his testimonial during Project NOAH's (Nationwide Operational Assessment of Hazards) second anniversary press conference in Quezon City last July 22, 2014.

Launched in July 6, 2012 in Barangay Balubad, Concepcion Uno, Marikina City, Project NOAH was the Department of Science and Technology's (DOST) response to President Benigno Aquino III's instruction to put in place a responsive program for disaster prevention and mitigation. Its aim

was to provide a 6-hour lead time warning to vulnerable communities against impending floods and use advanced technology to enhance current geo-hazard vulnerability maps. The launch was attended by no less than the President himself.

Being vulnerable to floods and having been inundated by Tropical Storm Ondoy in 2009, Marikina City was targeted as pilot area for Project NOAH.

"You are all aware Marikina City serves as a catch basin of rainwater coming from San Mateo and Montalban, Rizal and the cities of Antipolo and Quezon. During typhoons and heavy monsoon rains, Marikina river overflows, affecting 10,000 residents,"

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No evidence of health risks from cellphones radiation - NAST

By ESPIE ANGELICA A. DE LEON
S&T Media Service, DOST-STII

There is no conclusive evidence at present indicating that exposure to electromagnetic radiation (EMR) from cellular phones poses a definite risk to human health.

This finding is based on scientific studies which have already been published.

This was pointed out by Dr. Jaime C. Montoya, executive director of the Department of Science and Technology's Philippine Council for Health Research and Development (DOST-PCHRD) during the National Academy of Science and Technology's (NAST) 36th Annual Scientific Meeting held last July 10, 2014 at the Philippine International Convention Center.

Montoya, academician and chair of the Health Sciences Division of NAST, an advisory body of DOST, made this statement during a technical session on E-health which tackled topics such as telemedicine.

Everyone is exposed to EMR whether voluntary or involuntary, stressed Montoya. The average person's exposure to cellphones and their electromagnetic field falls under voluntary exposure. "You know there is that risk but you still take that risk because you have to use the cellphone," he explained.

In involuntary exposure, on the other hand, people do not know they are exposed to EMR, like those living near high-voltage areas like transmitters of cell sites, and the



cdn.phys.org/

like. Montoya pointed out that based on current literature, such kind of exposure is still within the threshold.

But whether such will translate to negative health effects in the long run, the medical community is still not sure. Montoya said that we have to wait for 50 years to determine whether an adverse event directly related to the use of cellphones will crop up in any individual.

Montoya also mentioned the idea of never holding the cellphone close to the ear. "The direct biologic effect of using cellphones close to the ear is that it gives warmth, it generates heat.

This is because the rapid movement of molecules actually transforms to heat energy and that is the biological effect," he stressed. "But biological effect is not synonymous to the disease effect." However, Montoya emphasized that these are high-intensity, short-period exposures to EMR. What is not available at present, he disclosed, is information relating to long-term, low-intensity exposures.

Project NOAH ...
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Barcinal narrated. He explained that as much as 90 percent of the city could be inundated in case of extreme flooding.

However, Project NOAH has become a saving grace for the city of Marikina, as stated by Barcinal in the presscon.

From 35 casualties when Ondoy hit the country, Marikina City recorded zero deaths when Habagat inundated the most part of Metro Manila in August 2012, a month after Project NOAH was launched.

The city government attributes their improved disaster preparedness efforts to Project NOAH and the Philippine Atmospheric, Geophysical, and Astronomical Services Administration or PAGASA – another agency under the DOST.

"With the use of internet, critical, reliable, authoritative, understandable and timely information is conveyed to us in the DRRMO," Barcinal said. "Project NOAH is our

most vital operational tool to monitor and track the typhoon."

Last June 9, 2014, Marikina City also became the pilot recipient of the MOSES (Mobile Operational System for Emergency Services) tablet, an 8-inch Internet-based, two-way communication tool between warning agencies and disaster responders. It can receive real-time weather and flood information from pre-installed mobile applications such as PAGASA, Project NOAH, and ARKO which provides detailed flood maps.

"Preparedness is the key [to minimize the harm of] any disaster. Project NOAH increases our preparedness capacity to render timely, reliable decisions," Barcinal said.

The two-year-old Project NOAH is set to launch a new version of its website with more data on hazards and disasters with a more user-friendly interface. (S&T Media Service)

Online transactions...
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with. Using PKI, the digital certificates provide an authoritative way to prove that parties to an online transaction are who they say they are," explained Rage Callao of DOST-ASTI.

Callao added that digital certificates are issued to people, organizations and systems after stringent verification of the subscriber's information. These digital certificates may then be used to authenticate oneself online, sign electronic documents and secure electronic transmissions. It also includes a verification service which allows people to verify digital certificates presented to them online by other parties.

In recent years, concerns over unreliable network security have popped up. According to reports, from the years 2003 to 2012, the Anti-Transnational Crime Division of the Criminal Investigation and Detection Group of the Philippine National Police handled 2,778 cases of computer crimes from various government agencies and private individuals. (S&T Media Service)

DOST's 2014 Best SETUP adoptor turns threat into a sweet opportunity

By MARIA LUISA S. LUMIOAN
S&T Media Service, DOST-STII



Sec. Mario G. Montejo hands the plaque and certificate of recognition to Alejandro Florian Alcantara, president and chief executive officer of Raw Brown Sugar Milling Company Inc., which was chosen as this year's Best SETUP adoptor during the recent National Science and Technology Week from July 24-28, 2014. SETUP or Small Enterprise Technology Upgrading Program is an initiative of DOST which supports micro, small, and medium enterprises to increase their efficiency, productivity, and product quality, make them more competitive, and contribute to the upliftment of the nation's economy. (S&T Media Service)

The Department of Science and Technology (DOST) has awarded Raw Brown Sugar Milling Company Inc. in Pamplona, Negros Oriental as this year's National Best SETUP (Small Enterprise Technology Upgrading Program) adoptor during the Smart Innovation for SMEs program of the National Science and Technology Week held last July 25 at the SMX Convention Center.

The award is given annually by the DOST to recognize the efforts of outstanding entrepreneurs who availed assistance from SETUP – a DOST project which aims to boost small and medium enterprises' productivity and competitiveness by assisting them in adopting technological innovations to improve their operations, boost product quality and productivity, and make them more competitive in the market.

"From the technology, the choice of lot, the layout of the plant, the training of our personnel and staff and marketing of our products, we owe everything to DOST," said Atty. Alejandro Florian O. Alcantara, president and chief executive officer of the Raw Brown Sugar Milling Company Inc.

Atty. Alcantara revealed that he was once a legal counsel for a sugar association in Negros Oriental. He was invited by the board of directors to become a member of the association, but that would require him to become a sugar planter. Thus, he acquired a few hectares of land and got started in the sugar business.

"I didn't have any knowledge about cultivating sugarcane," he said. "My fellow directors mentored me until I became knowledgeable about the business." From a few hectares, Atty. Alcantara now has more than a hundred hectares of sugar plantation.

In 2007, after almost 20 years in the sugar industry, he learned about the ASEAN integration which will be implemented by 2015, under which tariffs on sugar and other commodities will be reduced or totally eliminated to facilitate a free flow of goods in the Southeast Asian region.

"I think Thailand is the biggest threat to the Philippines when it comes to sugar production," Atty. Alcantara said. "Its industry is highly subsidized; their sugar mills are very efficient," he added.

After learning about ASEAN integration, he thought it was time to decide: Should he give up his plantation or should he innovate to add value to his product and be able to compete in the market? He chose the latter.

His first step towards innovation was establishing his own sugar mill. It was then that he came across DOST through its regional office. In 2009, his staff underwent training for cleaner production technology of muscovado (raw brown sugar) with the Industrial Technology Development Institute, another agency under the DOST.

Another assistance from DOST came through SETUP. He was able to acquire equipment for the improvement of their production namely: a cube sugar making machine, a band sealer for the hygienic and efficient packaging of assorted muscovado products in plastic pouches, and a form fill sealing machine for the hygienic and efficient packaging of powdered muscovado in conveniently sized sachets.

With the help of these interventions, Raw Brown Sugar Milling Company Inc. was able to penetrate the foreign market with their products which are organic certified by certifiers from Italy and South Korea. Among these are muscovado powder, muscovado rocks, and muscovado cubes. Specifically 90 percent of these products are exported.

His advice to fellow entrepreneurs: "Choose products with raw materials that can be sourced locally, ensure the quality of the products and make them affordable so that they can compete in the market."

With science, technology and innovation, Atty. Alcantara was able to successfully turn a threat into an opportunity.

About us

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DOST to boost goat milk production

By MARIA LUISA S. LUMIOAN
S&T Media Service, DOST-STII

The Department of Science and Technology (DOST) through the Philippine Council for Agriculture, Aquatic, and Natural Resources Research and Development is set to spur the local dairy goat industry via its National Dairy Goat Science and Technology (S&T) Program.

Compared to cow's milk, goat milk is said to have higher nutritional value, is highly digestible, and causes less allergic reaction because it lacks alpha-s1-casein protein. Found in cow's milk, alpha-s1-casein protein is linked to allergic response in some individuals. Goat milk is also popular as an ingredient in beauty products because of its naturally occurring alpha-hydroxyacids—a good skin exfoliant.

To maximize these benefits, the National Dairy Goat S&T Program will address the issues that hinder the full growth of the dairy goat industry in the Philippines, namely, limited access of smallholders to good dairy goat breeds, absence of feeding guides for milking goats, increased prevalence of mastitis or intra-mammary infections in dairy goats, and the lack of standards on the production of goat milk-based products.

By selecting the best performing dairy breeds suited to the country and by providing appropriate nutrition for them, the program aims to increase milk production to 150% by 2017. Smallholders shall be given access to these breeds via artificial insemination to local goats and buck loan program.

In addition, an effective control protocol against mastitis will be developed. Considered as one of the greatest problems faced by the industry, mastitis can reduce milk volume and



GOAT TO BELIEVE IN GOAT MILK. Goat milk is said to have higher nutritional value, is highly digestible, and causes less allergic reaction compared to cow's milk. (S&T Media Service)

alter its composition, lower its hygienic value, and impair the processing of quality milk.

In three years, the program is expected to result to an initial increase of 60% in does that can be milked, a reduction of 37% in subclinical mastitis incidence, and herd build-up of at least 58% from the deliberate infusion of good breeds in the countryside.

Program Leader Dr. Emilio Cruz of Central Luzon State University revealed that for an initial capital of P40,000, a dairy goat farmer

can buy 3 breeder goats and earn P223,440 for 7 lactations in 5 years. In contrast, a cattle/carabao entrepreneur with the same amount of money can only buy one animal and earn less than P200,000 for the same period.

If one goat dies, the farmer can still continue earning for the two remaining stocks, while if the carabao dies, the owner loses all of his investment, he added.

Moreover, goat milk has higher commercial value than cattle or carabao milk. In Region 3, raw milk is sold at P70 per liter to processors who will pasteurize, bottle, label and sell them in commercial stands at P150 per liter.

"All these advantages make goat production and goat dairying nowadays popular, propelling farmers to venture into such business and giving impetus for us at DOST to pour in investments to address the gaps in goat research and development," said Secretary Mario G. Montejo in his message during the Memorandum of Agreement signing between DOST and its partner institutions. These are Isabela State University, Central Luzon State University, Bohol Island State University, Department of Agriculture-Regional Field Office-8, and University of the Philippines Mindanao.

"Ultimately, this will propel an increase in milk production in backyard and commercial farms and the availability of healthier milk in the market," Montejo said.

In 2012, the country imported 1,995,410 metric tons of milk. Meanwhile, local production was merely 18,400 metric tons, of which only 1.4% was produced by goats. On the other hand, the National Dairy Authority 2013 data show that there are around 3.67 M goats, with dairy goat population at only 6,379 heads. (S&T Media Service)



An out of the RxBox experience

A female student has her blood pressure checked through the RxBox during the recent National Science and Technology Week at SMX Convention Center. Rx Box has built-in medical sensors for monitoring blood pressure and blood oxygen levels, assessing the strength of contraction of the mother's uterus, as well as electrocardiogram and fetal heart monitor. The device is capable of storing and transmitting patient data to allow health workers in remote communities to consult with medical experts in urban areas. Developed by University of the Philippines Manila-National Telehealth Center and DOST, the Rx Box aims to provide better access to life-saving healthcare service in isolated and disadvantaged communities nationwide. (S&T Media Service)