

## INNOVATUS 2021

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## ABOUT INNOVATUS

Innovatus is the official research journal of the University of Asia and the Pacific (UA&P), Department of Information Science and Technology. 'Innovatus' is the past participle of the Latin word 'innovare' or innovate. The research journal is a compilation of double-blind peer-reviewed research articles from the Yearly International Research Conference on Emerging Information Technology Trends in Asia and the Pacific and best research papers of UA&P Information Technology students. The journal accepts original scholarly works in the areas of Information Technology, Computer Science, Information System, Computer Engineering, and allied disciplines.

## ABOUT THE CONFERENCES

Time and again, the academic community has critiqued and analyzed the process of developing and implementing a customized detail oriented system for business entities. Successfully, with the empowering guidance of the information technology industry, information technology educators have shortened the gap between the academe and industry despite being in the confines of a class session. Capstone Projects is an attestation and visual proof that the bridge between academe and industry has been reduced.

However, as both education and industry synergize, information technology rapidly changes and grows because of the need to INNOVATE. Technology Integration has become a fundamental process of innovation coupled with precision and efficiency. It has become therefore a need to collaborate ideas in order to overcome the roadblock brought about by technological advancement

Among the questions and issues the conference seeks to examine and explore are: What are the different database design strategies that will enhance internet and information security standards? How can we practice and exercise Data Privacy during data gathering and project development? What are the issues pertaining to the use of Internet of Things (IoT), Virtual Reality, Artificial Intelligence, implementation of Information Systems?

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# from the Editorial Board

Welcome to the 2020-21 Pandemic Issue of Innovatus!

As you can see, the phenomenal events of the past year (and probably for another year or two) are a real game changer that could be perceived either way, but we at Innovatus see it as another great opportunity to highlight the myriad ways that advances in the sciences, in and of information technology, provide the glimmer of hope that this situation in which the whole world (and, we can be sure, the whole universe) finds itself is for the common good and that it, too, shall pass. However, as educators and chroniclers of knowledge, we likewise see what is happening as an excellent opportunity to preserve for future generations the efforts of many to address our collective problems by sharing the lessons learned and the ideas and innovations that (in some way) mitigate the depressing consequences of the global crisis.

This, at its root, is what Innovatus means for us: to encourage the generation and sharing of ideas, to preserve these bright vestiges of the human spirit for future generations, and to learn from the lessons of history so we avoid repeating its mistakes. As the innovative educators that we aim to be, we owe to future generations our duty to share this meaning, so that the torch of hope would be ready when the gloom of the next global crisis descends once again on our world.

Enrique M. Ligot, DComm.  
*Innovatus 2021 Editorial Board*

# from the Program Director

This issue of *Innovatus* comes after more than a year of being affected by the coronavirus pandemic. If there is anything that can be learned from this once-in-a-century experience, it's that we need to learn to take advantage of things that we even consider as problematic.

Research, especially in the field of information technology, is born from problems. Nothing great or enduring comes out from "obvious" things. And yet, if we are to surpass any of the persistent pricks and potholes that come our way, we need to face these problems and work towards solving them. What makes this face-the-problem task tricky is that most of the time, *we are not even clear on what the problem actually is, which was pretty much the world's experience last year when it faced the coronavirus crisis for the very first time.*

Even before the pandemic, the field of information technology has been described as VUCA - originally a military term that stands for *volatile, uncertain, complex and ambiguous*. In fact, we can ascribe this VUCA adjective to every other domain in today's world, but the protagonists of the IT industry should not be strangers to VUCA. If the story of the IT industry is to avoid becoming a tragedy, especially during these days of the pandemic, an important heroic virtue that is expected of all leaders is clarity.

Simple in idea but difficult in practice, clarity is the vaccine that can immunize the practitioners of information technology from the rabid, destructive nature of VUCA in today's world. Without a clear vision on where to go, without a clear plan on how to execute things, without a clear mind on why we should change our course in light of new data, we will not be able to arrive at the happy ending of our story.

With all the problems that we are tackling in the course of IT research, we will need to have a clear idea of what the problem is, a clear approach on how to investigate and solve the problem, and a clear set of results to evaluate the work that we have done. Once we achieve this sense of clarity in the course of our work in IT research, yes, even in IT research, there can be a happy ending.

It is my hope that this issue of *Innovatus* contributes to the "happy endings" of the IT industry. And as more and more people read about these "happy endings", we hope to inspire more and more practitioners and researchers to persevere and help one another achieve their own "happy endings". Naturally, we hope we can be the ones to publish those "happy endings" in the future issues of *Innovatus*.

Cyrus Paolo Buenafe  
*Department Chair, Information Science and Technology*

# from the Editor in Chief

In my first release of **Innovatus** as editor-in-chief, I must admit being at awe at the role thrust upon me, perfectly aware of the many milestones that have been reached by my predecessors. It would be easy to stay the course, only attempting to preserve the work laid down already. This path, however, would be a betrayal of which its name had been conceived.

**Innovatus** aspires to blaze a trail and shine the spotlight on areas that may not have found its voice yet. In this trying time, innovation is more important than it has ever been. As the editor-in-chief, I believe it is my duty to paint my vision for the future of **Innovatus**. From this message, I would like to lay down the important changes I have instated that form three vital cornerstones.

**Industry Involvement.** We intend to attract experienced members of the industry to share insights based on their experience in industry work. By tapping the real-world experience of such an expert, the academic community can spearhead future research and push the bounds established by actual pragmatic feedback.

**Scientific Innovation.** In pushing the boundaries of science, the journal highlights the innovative work by our colleagues in harnessing mobile technology and E-jeepneys in this new world shaped by the global crisis we are currently facing. As we brave this so-called ‘new normal’, it is imperative that we not only adapt but also create solutions that serve our community.

**Research Culture Growth.** Towards cultivating the research community, this publication champions the scientific work of students who become the future, not only of our workforce, but also of our community. Instilling and exhibiting the scientific discipline while also contributing back to the industry through their developed information systems are important in paving the path for other students who may eventually embark on this journey.

These changes are but the first steps as **Innovatus** evolves towards creating a synergy between the industry and the academe. In giving our own industry a clear voice in the conversation, it is my hope that the journal can spearhead new research directions. In cultivating the research work by students of all educational institutes, the scientific community can only grow and benefit from this. From these two areas, we can blaze a trail towards breakthroughs where the scientific work can make its way back to the industry, completing the cycle of innovation. This, I believe, is what **Innovatus** is about.

To all those who submitted and were accepted, I wish to pass upon thee my heartfelt appreciation and gratitude in sharing my vision and supporting this cause. Thank you and may you continue to shine a light where it needs to be.

**Giuseppe Ng**

*Editor-in-Chief, Innovatus 2021*