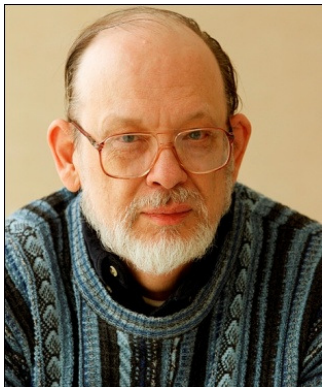


General Framework and Plenary Keynote Speakers of the Collocated Conferences
The 23rd World Multi-Conference on Systemics, Cybernetics and Informatics: WMSCI 2019
The 13th International Multi-Conference on Society, Cybernetics and Informatics: IMSCI 2019
The 18th Ibero-American Conference on Systems, Cybernetics, and Informatics
Décima Octava Conferencia Iberoamericana en Sistemas, Cibernética e Informática: CИСCI 2019

Workshops and Participatory Events – Sartuday, July 6th 2019, 9:30 AM – 6:30 PM

CONVERSATIONAL SESSION (9:30AM – 10:30 AM)
“The Intellectual Rigor of Interdisciplinary Communication”
Speaker(s) and Moderators:
Professor Thomas Marlowe, Dr. Bruce E. Peoples and Dr. Nagib Callaos



Professor Thomas Marlowe, Seton Hall University, USA,
Department of Mathematics and Computer Science Program Advisor
for Computer Science, Doctor in Computer Science and Doctor in
Mathematics

Professor Thomas J. Marlowe has been a member of the Department of Mathematics and Computer Science at Seton Hall University for almost 40 years, and has taught a wide variety of courses in both disciplines. Until he went on phased retirement in 2017, he was coordinator and advisor for the Computer Science program. Professor Marlowe enjoys working with students and with professional colleagues—almost all his research is collaborative. His professional interests include in mathematics, abstract algebra and discrete mathematics; in computer science, programming languages, real-time systems, and software engineering, and pedagogy; and in information science, collaboration and knowledge management. The connection between graphs and algebraic structures is a recurrent theme.

Professor Marlowe has Ph.D. in Computer Science, from Rutgers, The State University, and a Ph.D. in Mathematics, also from Rutgers. Professor Marlowe has many publications and academic distinctions, with over 100 publications in refereed conferences and journals in mathematics, computer science and information science. Some of the more recent and more significant include:

- T.J. Marlowe, J.R. Laracy, “Logic as a Key to Integrating the Curriculum for STEM Majors”, Journal on Systemics, Cybernetics and Informatics: JSCI Volume 15 - Number 4 - Year 2017, pp. 63-71, ISSN: 1690-4524 (Online)
- V. Kirova, T.J. Marlowe, C.S. Ku, “Monitoring and Reducing Application Fragility through Traceability and Effective Regression Testing”, Genie Logiciel, No 115, 2-9, December 2015.
- A. Rountev, S. Kagan, T. J. Marlowe, “Interprocedural Dataflow Analysis in the Presence of Large Libraries”, Proceedings of CC 2006, 216, Lecture Notes in Computer Science 3923, 2006.

- S. P. Masticola, T. J. Marlowe, B. G. Ryder, "Multisource Data Flow Problems", ACM Transactions on Programming Languages and Systems, 17 (5), 777 -803, September 1995.
- A. D. Stoyenko, T. J. Marlowe, "Polynomial-Time Program Transformations and Schedulability Analysis of Parallel Real-time Programs with Restricted Resource Contention", Journal of Real-Time Systems, 4 (4), 1992.
- T. J. Marlowe, B. G. Ryder, "Properties of data flow frameworks: A unified model", Acta Informatica, 28 (2), 121 -164, 1991.

Professor Marlowe has been a member on more than 10 Ph.D. thesis and 5 M.S. thesis committees, member of more than 25 conference program committees, and reviewer for numerous conferences, journals, and grants. He is the founder of an ongoing professional conference, and has been active with the IIS and the WMSCI multi-conference.



Dr. Bruce E. Peoples, Innovations LLC, USA, Founder and CEO
Formerly at Université Paris 8, France, Laboratoire Paragraphe
Chair Emeritus of an ISO/IEC Standards Committee, Generated over
50 Invention Disclosures, 15 Patent Applications and 11 Patent Awards

Dr. Bruce E. Peoples has over 27 years experience in researching and developing advanced complex training, performance, decision, and production support systems and has architected several advanced, “self learning” systems. His research activities led to the filing of over 50 Invention Disclosures and 15 Patent Applications. His inventions include the development of a cutting edge BCI system that controls the flight of an unmanned aerial vehicle using only thoughts. Dr. Peoples also designed and led development of the first paperless learning media production system that mass-produced digital “modular” information objects, also known as Sharable Content Objects (SCOs) that could be used standalone, as aggregations, or in Performance Support Systems and Decision Support Systems, in any delivery environment, without changing “module” code. In recognition of his past research, Dr. Peoples was awarded a Raytheon 2006 Excellence in Technology award. Dr. Peoples has been active in several International Standards Committees, developing the standards necessary for implementing “next gen” Information Communication Technologies on a global scale. He is Chair Emeritus of an ISO/IEC Standard Committee, ISO/IEC JTC1 SC 36 *Information Technology for Learning, Education and Training*. Dr. Peoples was awarded BS and MS degrees from Clarion University of Pennsylvania, and a PhD degree from Université Paris 8 Saint-Denis, France.



Dr. Nagib Callaos, International Institute of Informatics and Systemics, USA, Editor-in-Chief of the Journal of Systemics, Cybernetics and Informatics, Former Dean of Research of the University Simon Bolivar

Dr. Nagib Callaos is the Founding President of the a 32 years old Multi-Disciplinary Organization oriented 1) to solve real life problems which mostly require multi-disciplinary teams and inter-disciplinary research/communication and 2) to synergistically relate all disciplinary and inter-disciplinary departments of the University Simon Bolivar with private and public corporations. He also was the founding president of several organizations

on research, development, and technological innovation and, for many years, consultant in Information Systems.

Abstract: “*The Intellectual Rigor of Interdisciplinary Communication*”

Julie Thompson Klein (*Interdisciplinarity: history, theory, and practice*, 1990) who, up to our knowledge, wrote the most comprehensive book on Interdisciplinarity. About the 40% of the book was used to list her references. With regards to interdisciplinary rigor she wrote:

Interdisciplinary work is often attacked for lacking rigor. However, rigor is not diminished. Rather, it is shifted from disciplinary criteria to a new interdisciplinary *objective*, to what (Singleton, 1983) a core sense of “interdisciplinary rigor.” There are no scholarly defined standards for judging interdisciplinary works but Stephen Schneider’s three criteria for disciplinary excellence are quite appropriate. Excellence of interdisciplinary research can be measured in terms of (1) disciplinary clarity, (2) clarity of cross-disciplinary communications, and (3) the utilization and combination of existing knowledge from many fields to help solve a problem or to raise or advance knowledge about a new issue (Shneider, 1977).

A purpose of this conversational session is to present a very clear way to assure a higher level of rigor in interdisciplinary communication, as related to disciplinary rigor. A main reason why “Interdisciplinary work is often attacked for lacking rigor” is probably because *confusing the notions of precision and rigor*. Disciplinary rigor is fundamentally based on the respective method and semiotic system. To translate from a disciplinary semiotic system to an interdisciplinary one requires an additional *creativity* at the syntactical, semiotic and pragmatic level. This, in turn, potentially requires the *creation* of analogies (via *analogical thinking*), metaphors, and similes. These three notions are different and should not be confused or, much less, taken as synonyms. We usually are similar to our parents, but we are no metaphors or analogies of them. Metaphors are *expressive* tools while, analogies are thinking processes that usually precede and *provide input to logical thinking* (induction, deduction, abduction, etc.)

A second purpose of this conversational session is to provide a first step for a multi-author article(s), i.e. a collection of short research-essays (800-1500 words each) with the objective of generating a special issue of the journal; which, necessarily, should be based on the short essay provided to the attendees and/or on the reflections that might emerge from this conversational session.

Shneider, S. N. (1977). Climate Change and World Predicament: A case Study for interdisciplinary Research. *Climate Change*, 1, 21-43.

Singleton, R. J. (1983). Interdisciplinary Teaching with Humanists: Reflections of a Biological Scientist. *Perspectives in Biology and Medicine*, 26 (2), 304-314.

Thompson Klein, J. (1990). *Interdisciplinarity: history, theory, and practice*. Detroit: Wayne State University Press. .

PARTICIPATORY WORKSHOP (10:30 AM – 12:00 PM)
Artificial Intelligence, Interdisciplinary and/or Transdisciplinary Approaches
Dr. Bruce E. Peoples, Innovations LLC, USA (Short Bio is given above)

Abstract: Artificial Intelligence (AI) can basically be defined as a multidisciplinary field whose goal is to automate activities that presently require human intelligence. The goal requires interdisciplinary and/or transdisciplinary research approaches and communication techniques among technology domains such as Mathematics, Psychology, Philosophy, Neuroscience, Cognitive Science, Social Science, and Computer Science. The goal of this Participatory Workshop is to foster innovative interdisciplinary and/or transdisciplinary collaborations to form innovative AI implementations. To achieve this goal, the Workshop will explore what technologies and sciences are important in forming “safe and non-threatening” AI solutions that can think and act both humanly and rationally, through sensing, comprehending, acting, and learning.

PARTICIPATIVE WORKSHOP (1:00 PM – 2:00 PM)
Creating and Organizing Effective Actions to Advance the Fields of
Systems, Cybernetics and Complexity
Professor Stuart Umpleby and Professor Tatiana Medvedeva



Professor Stuart A. Umpleby, The George Washington University, USA, President of the Executive Committee of the International Academy of Systems and Cybernetics Sciences, Former President of The American Society of Cybernetics.

Professor Stuart Umpleby is one of the originators of “second order science,” an effort to expand the conception of science in the direction of a more holistic point of view. His work has been described as a contribution to the unification of science. Dr. **Stuart Umpleby** is Professor Emeritus in the School of Business at George Washington University, Washington, DC. He is a past president of the American Society for Cybernetics and Associate Editor of the journal *Cybernetics and Systems*. He is currently president of the Executive Committee of the International Academy for Systems and Cybernetics Sciences, an honor society created by the International Federation for Systems Research.



Professor Tatiana Medvedeva, Siberian State University of Transport, Russia, Department of World Economy and Law, Former Head of the Scientific and Practical Center for Business and Management.

Professor Tatiana Medvedeva is a Professor in the Department of World Economy and Law at Siberian State University of Transport, Novosibirsk, Russia. At her university, she is a former Director of the Scientific and Practical Center for Business and Management. She uses group facilitation methods in teaching and consulting with managers of Russian enterprises. She has also worked as Vice-director of the

Institute for Prospective Transport Technologies. On two occasions she was a visiting scholar at Georgetown University and George Washington University in Washington, DC. She received a diploma in economic cybernetics from Novosibirsk State University, a kandidatskaya degree (Ph.D) and a doctorate degree (Dr.Sc.) in economics from Moscow State University. Most of her scientific writings concern the economics of transitions and change management, including the changes in values, beliefs, and institutions now occurring in the post-communist countries. She has published papers in several systems and cybernetics journals and made presentations at conferences in East and West Europe, Russia, and the USA.

Abstract: “*Creating and Organizing Effective Actions to Advance the Fields of Systems, Cybernetics and Complexity*”

The International Academy for Systems and Cybernetic Sciences is an honor society for people who have made outstanding contributions to the fields of systems and cybernetics. It was created in 2010 by the International Federation for Systems Research. Two other organizations -- the European Union for Systemics and the World Organization for Systems and Cybernetics are now also involved. The Academy reviews nominations of scholars and elects some of them as academicians.

The Academy is not just an honor society. The academicians seek to advance the field through contributions to encyclopedias and handbooks, educational programs and lectures at conferences. Lately we have begun thinking about projects that require a multi-disciplinary perspective, where people with trans-disciplinary competence could be particularly helpful in aiding communication among specialists. This presentation will describe a few projects that are currently being considered.

The field of macro-economics would benefit from more use of reflexivity theory. Macro-economics uses primarily open loop influence diagrams with independent and dependent variables. There have been some experiments with agent-based models but few closed loop influence models. Although common in ecology, closed loop influence diagrams have not been widely used in macro-economics to analyze the stability or instability of economic systems. A stable system would have mostly negative feedback loops. An unstable system would have mostly positive feedback loops. In the U.S. in the 1990s a change in legislation followed by financial innovations changed a stable system into an unstable system resulting in the financial crisis of 2007 to 2008. Closed loop influence diagrams, if they had been used, could have warned of instability.

Can the present conception of science be expanded in order to more adequately encompass social systems? What assumptions have scientists been making that could be modified in order to incorporate in science purposeful systems as well as inanimate objects and designed systems as well as natural systems? The desire to remain objective has led many social scientists to neglect the role of observers who decide how a system should be described and which approach to analysis should be used. Also, in social systems theories often change the phenomenon observed. The evolution of political and economic systems are examples.

There are a growing number of participatory methods used to include subjects in the class of experimenters and experimenters in the class of subjects. Participation in social systems requires reflexive thinking since human beings are both objects of research and observers of systems. Do our current conceptions of scientific research provide adequate instruction for research on reflexive systems? Numerous methods have been developed for leading participatory conversations for planning, problem-solving, or negotiating. The systems sciences can be helpful to the traditional sciences when transdisciplinary research is required.

CONVERSATIONAL SESSION (2:00 PM – 2:45 PM)

“Cybernetic and Synergic Relationships between Inter-Disciplinarity and Disciplinarity”

Professor Thomas Marlowe, Dr. Nagib Callaos (short bios are given above), and Professor Mohammad Ilyas



Professor Mohammad Ilyas, Florida Atlantic University, USA, Department of Computer and Electrical Engineering and Computer Science, Former Dean of the College of Engineering and Computer Science, Member of Global Engineering Deans Council.

Dr. Mohammad Ilyas has been with FAU’s College of Engineering and Computer Science since 1983. He has served there in various academic and administrative capacities including Dean of the College from 2011 to 2017.

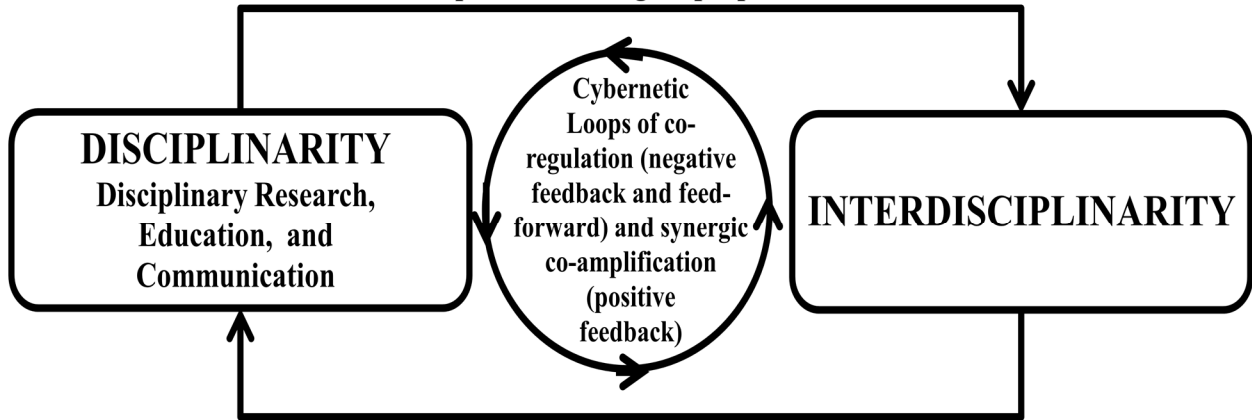
He has earned four academic degrees from four different countries; BSc in Electrical Engineering from Pakistan, MS in Electrical Engineering from Iran, PhD in Electrical Engineering from Canada, and PhD in Educational Leadership from USA.

Dr. Ilyas has over 210 publications, including one book, 26 handbooks, and over 180 research articles. He is life senior member of IEEE, member of Global Engineering Deans Council, and is Fulbright Specialist.

Abstract: *“Cybernetic and Synergic Relationships between Inter-Disciplinarity and Disciplinarity”*

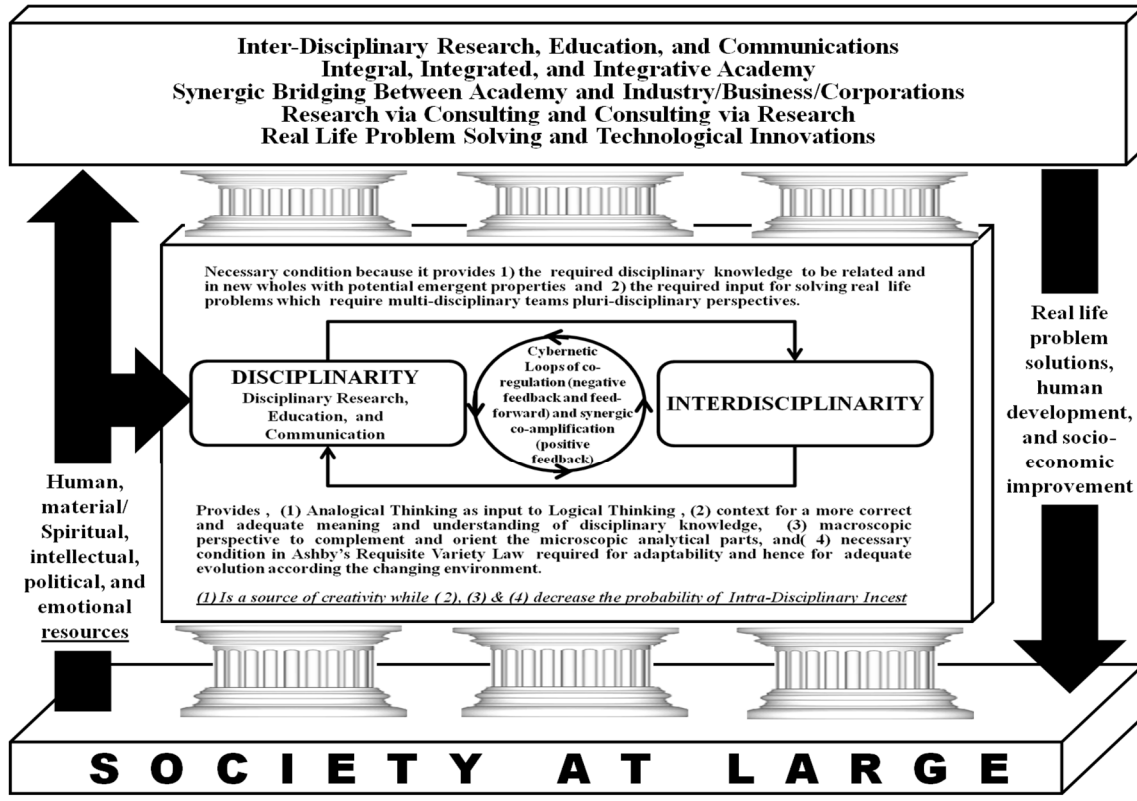
Mostly implicit relationships between disciplinarity and inter-disciplinarity will be presented. These relationships exist and are real, but they are not always perceived in order to be adequately designed and implemented. Consequently, we will try to describe and generate collective comments of the following relationships. We will also distribute among the attendees a paper draft regarding with a little bit of details regarding these relationships and the potential danger of ***Intra-Disciplinarity Incest*** if these cybernetic relationships are absent in a researcher or a research group.

Necessary condition because it provides the required disciplinary knowledge to be related and in new wholes with potential emergent properties



Provides , (1) Analogical Thinking as input to Logical Thinking , (2) context for a more correct and adequate meaning and understanding of disciplinary knowledge, (3) macroscopic perspective to complement and orient the microscopic analytical parts, and(4) necessary condition in Ashby's Requisite Variety Law required for adaptability and hence for adequate evolution according the changing environment.

(1) Is a source of creativity while (2), (3) & (4) decrease the probability of Intra-Disciplinary Incest



PARTICIPATORY WORKSHOP (2:45 PM – 3:45 PM)
***“The Concurrent Development of Leadership Abilities and Subject Matter
Knowledge in Blended Courses”***

Professor William Swart



Professor William Swart, East Carolina University, College of Business, Former Provost and Vice Chancellor for Academic Affairs, Former Dean of Engineering at New Jersey Institute of Technology

William Swart is Professor of Marketing and Supply Chain Management at East Carolina University. He received a B.S. in Industrial Engineering with Honors from Clemson University, a M.S. in Industrial and Systems Engineering and a Ph.D. in Operations Research from the Georgia Institute of Technology. Dr. Swart has reached top management positions in both industry and academia. He served as Corporate Vice President of Operations Systems at Burger King Corporation. He is credited for pioneering the use of industrial engineering in the restaurant industry and his work received a finalist award in the prestigious INFORMS Franz Edelman Competition for the best application of management science in the world. He also served as a Technical Cooperation Expert with the Organization for Economic Cooperation and Development (OECD) in Turkey and took part in the development of the tourism sector input to that country’s first five-year economic development plan.

In academia, he served as Dean of Engineering and Technology at both the New Jersey Institute of Technology and Old Dominion University (Virginia) as well as Provost and Vice President for Academic Affairs at East Carolina University. His research and consulting activities included the development of methodologies to improve the ground processing NASA’s Space Shuttle at the Kennedy Space Center, the development of Taco Bell’s Labor Management System, and research on affordable energy efficient housing sponsored by the U. S. Department of Energy. These activities have led to a second Franz Edelman finalist award, the Achievement Medal in Operations Research and Management Science from INFORMS, the IIE Operations Practice award, and a NASA/JFK Group Achievement Award. His many real-world experiences have given Dr. Swart a clear insight into *what* students should learn. His current research is focused on *how* students can most effectively learn it.

Abstract: *“The Concurrent Development of Leadership Abilities and Subject Matter Knowledge in Blended Courses”*

In this workshop, you will learn how to blend a course to systematically and purposefully improve student learning AND simultaneously develop their leadership abilities. It presents the emerging research results from a multi-year research effort that has demonstrably improved student leadership abilities which have resulted in more effective teamwork yielding better learning outcomes.

In part 1 of the workshop, the ingredients that are required to develop a blended course will be presented within the context of a continual course improvement process based on Deming's Plan-Do-Study-Act cycle. The Plan step consists of developing the blended course syllabus, the DO step consists of teaching the blended course according to the syllabus, the Study step consists of measuring the results, and the Act step consists of incorporating improvements suggested by the measurements into the next syllabus. Dr. Michael G. Moore's Theory of Transactional Distance is the basis for the use of a Revised Scale of Transactional Distance that will be used on the Study step of the cycle.

In part 2 of the workshop, we will focus on the interactive group learning activities that are an inherent part of blended learning. Effective (or high performance) teams cannot be assumed or mandated. You will learn how they can be developed as a part of any course. The role of coaching and consulting in team development will be discussed. You will also learn how increased team effectiveness will lead to better learning and how better learning will lead to enhanced teaming abilities.

In part 3 of the workshop, some unintended consequences on student psychometrics will be discussed all their implications for both individual and team performance.

PARTICIPATORY WORKSHOP (4:15 PM – 5:00 PM)

“An Interdisciplinary View of Education in the Formal and Natural Sciences: STEM to STEAMM to STECSEMCEPLIDSDRAMM?”

Professor Thomas Marlowe (short bio is given above)

Abstract: For the past 20 years or more, STEM [Science, Technology (Computers), Engineering, and Mathematics] has been an emphasis at all levels of education, primary to secondary to bachelor's to graduate programs. At earlier levels, the emphasis has been on assuring all students have substantial exposure, not just to STEM content, but to its processes and relation to problem solving and critical thinking. More recently there have been recommendations to integrate Arts into STEM instruction, and to ensure that the health sciences (Medicine) is considered, whence STEAM or STEAMM.

At bachelor's and graduate levels, general education and the education of practitioners pose two different problems. I would like us to consider the latter in particular, and to examine the body of knowledge of which a competent faculty member, graduating student, or practitioner should be aware. The emphasis in my presentation will be on the formal sciences: mathematics, computer science, logic, and data science, with some consideration of the natural sciences, but health sciences and engineering are certainly fair game for the discussion.

CONVERSATIONAL SESSION (5:00 PM – 5:45 PM)

“Integration of Intra-Disciplinary and Inter-Disciplinary Communications”

Speaker(s) and/or Moderators:

Professor Thomas Marlowe, Dr. Nagib Callaos (short bios are given above) and Professor Richard Self



Professor Richard Self, University of Derby, UK, The School of Computing and Mathematics, Senior Lecturer in Analytics and Governance.

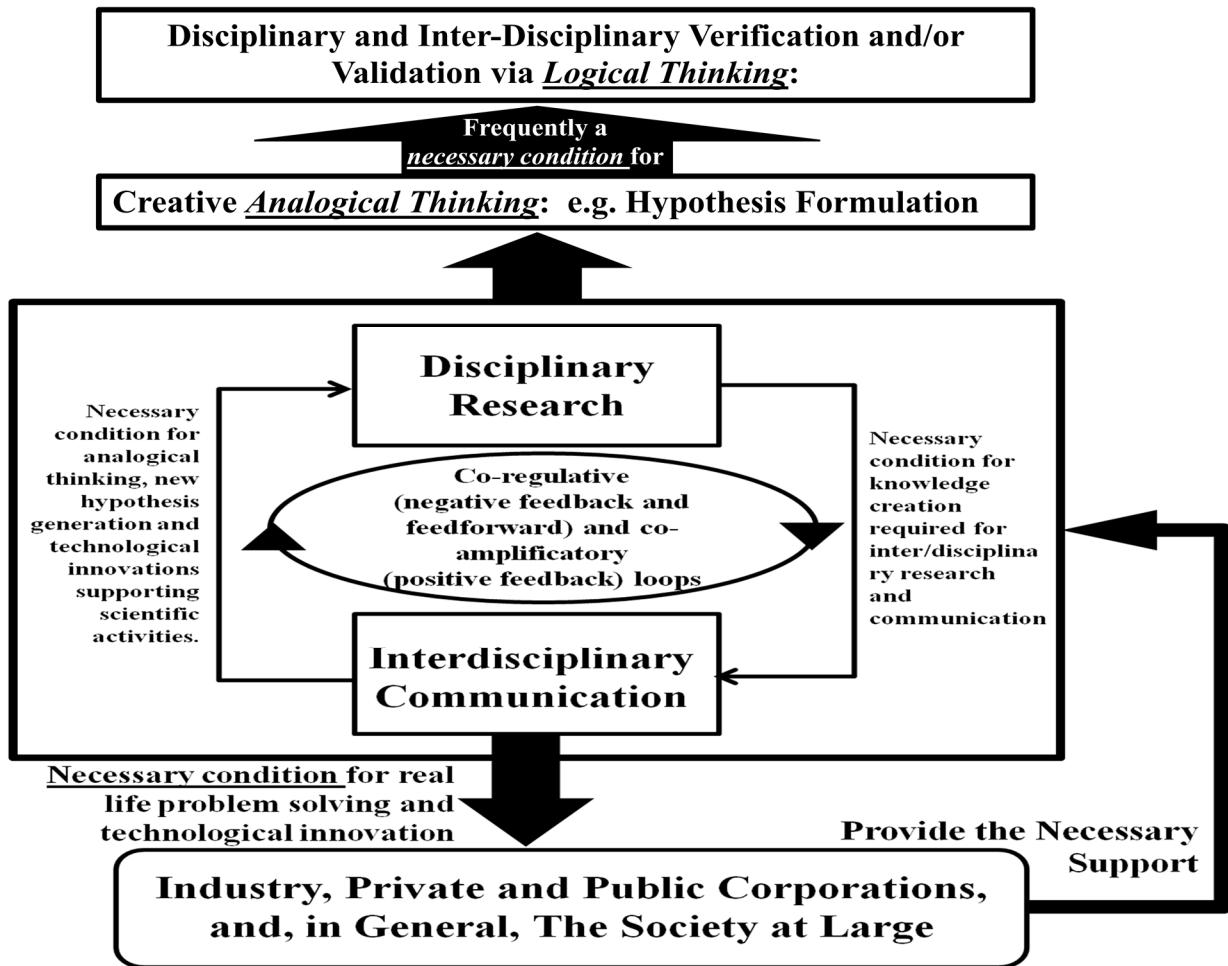
Richard Self is a Senior Lecturer in Governance of Advanced and Emerging Technologies at the University of Derby in the UK. He gained his business background during 30 years at Rolls-Royce before changing to academia in 2002.

His approach to students is not to teach answers, rather he inspires, challenges, mentors and guides his students to find important questions and then how to research to find relevant answers for the specific context.

He guides the students into their own experiences in order to find the insightful questions that motivates them to their best work.

Abstract: “Integration of Intra-Disciplinary and Inter-Disciplinary Communications”

Nobel Laureate, Murray Gell-Mann affirmed that “The philosopher F. W. J. von Shelling introduced the distinction (made famous by Nietzsche) between ‘*Apollonians*,’ who favor logic, the analytical approach, and a dispassionate weighing of evidence, and ‘*Dionysians*,’ who lean more toward intuition, synthesis and passion. These traits are sometimes described as correlating very roughly with emphasis on the use of the left and right brain respectively. But some of us - asserts Gell-Mann - seem to belong to another category: the ‘*Odysseans*,’ who combine the two predilections in their quest for connections among ideas. Such people often feel lonely in conventional institutions.” (1994, *The Quark and the Jaguar: Adventures in the Simple and the Complex*; New York: W. H. Freeman and Company; p. xiii) [italics and bold fonts added]. We will try to show that the integration between intra- and inter-disciplinary communication 1) relates them synergistically by means of different kinds of cybernetic loops, and, consequently, 2) relate both of them to industry, business and society at large. These relationships are summarized in the following figure



CONVERSATIONAL SESSION (5:45 PM – 6:30 PM)

“Toward Inter-National Networks and Meta-Networks for Inter-Disciplinary Communication, Collaborative Learning, and Meta-Education Support”

Speaker(s) and/or Moderators:

Professor Mohammad Ilyas, Dr. Nagib Callaos (short bios are given above) and Dr. Andrés Tremante



Dr. Andrés Tremante, Florida International University, USA Department of Mechanics, Director of the “Center for Diversity and Student Success in Engineering and Computing” (CD-SSEC).

Professor Andres Tremante is the new director of the Center for Diversity and Student Success in the College of Engineering and Computing (CD-SSEC). In this position, Dr. Tremante is responsible for all aspects of the College’s K-12 programs and pre-college STEM

activities, working closely with the college advisors and associate deans to improve student success, graduation & retention rates and in advancing the mission of the college. He will also support the Industry-University Cooperative Programs and the ERC's Diversity and Inclusion areas for PATHS-UP and CELL-MET. He is also the deputy director of the CELL-MET Culture of Inclusion Thrust Area.

Professor Tremante received his bachelor's degree in mechanical engineering from Universidad Simon Bolivar and his doctoral degree from Arts et Métiers Paris Tech. He joined FIU in 2008 after 25 years of experience in Europe and Latin America, mostly in academia and the oil industry. He brings forward a long record of teaching, scholarly research, academic service and strong credentials for leadership as the director of CD-SSEC.

Abstract: “*Toward Inter-National Networks and Meta-Networks for Inter-Disciplinary Communication, Collaborative Learning, and Meta-Education Support*”

The purpose of this Conversational panel is to describe the incremental Action-Design e Incremental Implementation of *Inter-National Networks and a Meta-Network for Inter-Disciplinary Communication (NmNIC), for Collaborative Learning, and Meta-Education Support*. A more detailed draft will be delivered to this conversational panel in order to keep collecting data and information with regards to its Action-Design e incremental Implementation.

A first approximation to what would be as follows. We encourage the attendees and/or panelist to apply their ***critical thinking oriented to improve this initial idea or to comment on its potential unfeasibility***.

Because of the incremental approach recommended, via Action-Design and Action-Learning, the initial step in the implemetation of (NmNIC), will be through a highly flexible, versatile and diversified organization, which might be *substituted or complemented* with international multidisciplinary societies and/or associations with less flexibility/diversity and with more specific purposes and means to achieve them.

Initially, (NmNIC) will be constituted by founding individual members who might later recommend:

- organizational/institutional members,
- local members (department, divisions, etc. of larger organizations)
- national members: national associations or societies
- regional members: geographical regions which might include cities in larger countries.

The recommended architecture for (NmNIC), is a federated network of networks ***where each node may be associated to both: individuals or groups***. It is estimated that the initial nodes will be basically associated with individuals and later group/organizational/institutional nodes would be gradually included. Each individual may work toward the creation of a network, hence the name od Meta-Network or Network of Networks. (NoNIC)

The International Institute of Informatics and Systemics (IIS) could provide the organizational support for the implementation and consolidation of NoNIC through the following means:

- Hosting NoNIC's meetings in the context of conferences organized by the IIS
- Including NoNIC's publications in the context of the proceedings produced by IIS and/or the Journal of Informatics and Systemics (JSCI)
- Including information about NoNIC's activities in the IIS web page and in its conferences web pages.
- Including informational material regarding NoNIC's plans and activities to be delivered at the registration desks of the conferences organized by IIS
- Distributing informational content among the IIS's members via emails.
- Using specific projects to be implemented by the IIS in a synergic way with NoNIC. An example of these projects might be the one related to the *Inter-National, Inter-Disciplinary, Integration Groups: IIIG. IIIGs might be an adequate bridge between the IIS and NoNIC*
- Identifying synergic relationships between both organizations: IIS and NoNIC
- Other means on which both organizations might agree.

As we said above, a potential *organizational bridge* between the International Institute of Informatics and Systemics (IIS) and the (NoNIC) might be the Inter-National, Interdisciplinary, and Integration Groups (IIIG).

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Décima Octava Conferencia Iberoamericana en Sistemas, Cibernética e Informática: CISCi 2019

Plenary Session – Sunday July 7th, 2019, 7:45 AM – 10:10 AM

7:55 AM – 8:25 AM



Dr. Matthew E. Edwards, Alabama A&M University, USA, Professor of Physics and Former Dean, School of Arts and Sciences

Since January 2002, Dr. Edwards has been a Professor of Physics at Alabama A&M University (AAMU) and served as the Dean of the School of Arts and Sciences from 2007 to 2011. Prior to 2002, academic positions he held included associate professorships at Spelman College and Fayetteville State University, and a visiting associate professorship and adjunct faculty position at the University of Pittsburgh, and an assistant professorship at the University of Arkansas at Pine Bluff. He has held several summer-faculty-research positions at Government Labs: the ROME Air Force Research Lab, NASA Langley Research Lab, and the Naval Research Lab. Dr. Edwards is a Condensed Matter physicist with expertise in (1) Density Functional Theory/Solitons Wave Theory, (2) the materials of electrooptics, (3) pyroelectric, resistivity, and dielectric properties of crystals and nano-particles doped organic thin films, and (4) STEM Education. Dr. Edwards has more than 48-refereed papers and journal proceedings and has made at least 60 professional and administrative presentations. He has guided six students to advanced degrees: four to the Ph.D., and two to the Master's degree, has served on more than 20 dissertation and thesis committees, and has peer-reviewed numerous research manuscripts. Currently, he is guiding two Ph.D. degree students and has obtained many grants, honors and awards. Dr. Edwards received the Ph.D. and Master's degrees in condensed matter physics from Howard University, Washington, D.C., and the B.S. Degree in engineering physics from North Carolina A&T State University. He is the founding Director of IHSEAR: Institute of Higher Science Education Advancements and Research. Moreover, in 2015, he was a guest editor for the American Journal of Materials Science. Additionally, he sits on the Board of Directors of three science journals and one science education journal, and served on the executive committee of the Alabama Academy of Science from 2012 - 2018.

Plenary Keynote Address: *“Achieving Critical Thinking and Sustained Academic Success in the Physical Sciences Via Our Five Educational Utilities and Activity Compartmentalization”*

Abstract: In academia, critical thinking occurs effortlessly for a large number of students. Yet, it develops slowly, if at all, for many other students. To a great extent, a student's success in a given subject is linked directly to critical thinking and his/her ability to compartmentalize ongoing activities—a behavior that we call activity compartmentalization. Previously, we have

concluded that the onset of cognitive thinking begins with simple memorizing, recording, valuing, comparing, and contrasting events and knowledge that can be implemented from one or more of five educational utilities that are given as: the contextualization of information, Bloom's taxonomy usage, Jean Piaget's and Karl Popper's constructivism, Lev Vygotsky's cognitive development adaptation, and individualized mental mind structures, all discussed under the umbrella of mental capacity. In the physical sciences, once contextualization of a concept occurs and the components of Bloom's taxonomy are added, the higher achieving student, using constructivism or cognitive development adaptation with mental structures, develops critical thinking while other students remain languishing in ineffective mental understanding. Additionally, higher achieving students can sustain academic success if their ongoing activities are compartmentalized in a manageable fashion. In this regard, we have developed the important relationship between critical thinking and sustained academic success in the physical sciences. With the advent and integration of the aforementioned five utilities, we give evidence of their usage and how both critical thinking and sustained success are achieved. Finally, all students who desire critical thinking ability and sustained success, including the higher achieving ones and the lesser adept ones, can benefit from these techniques and strategies.

8:25 AM – 8:55 AM



Professor Stuart A. Umpleby, The George Washington University, USA, President of the Executive Committee of the International Academy for Systems and Cybernetics Sciences, Former President of The American Society of Cybernetics

Professor Stuart Umpleby is one of the originators of “second order science,” an effort to expand the conception of science in the direction of a more holistic point of view. His work has been described as a contribution to the unification of science. Dr. **Stuart Umpleby** is Professor Emeritus in the School of Business at George Washington University, Washington, DC. He is a past president of the American Society for Cybernetics and Associate Editor of the journal *Cybernetics and Systems*. He is currently president of the Executive Committee of the International Academy for Systems and Cybernetics Sciences, an honor society created by the International Federation for Systems Research.

Plenary Keynote Address: *“Some Multi-Disciplinary Projects that Would Benefit from Systems and Cybernetics”*

Abstract: Since they were founded in the mid-twentieth century the fields of systems science and cybernetics have worked to create more general theories for existing fields, to define theories of control and communication to complement theories of matter and energy, and to aid existing fields by using helpful knowledge from other fields. This paper will describe a few examples of how systems and cybernetics have in the past and are currently contributing ideas to traditional disciplines. The traditional disciplines taken as examples are management, the social sciences, and philosophy of science.

The field of management has benefited from Ashby's theory of adaptive behavior and his Law of Requisite Variety, which provides a quantitative relationship between information and selection. Management has also benefited from Beer's Viable System Model, which is based on the structure of the human nervous system. Other contributions to management have been group decision-making methods such as Beer's concept of syntegrity and Ackoff's Interactive Planning.

The fields of psychology, economics, and political science have benefited from Vladimir Lefebvre's theory of reflexive control and George Soros's theory of reflexivity. Lefebvre's theory describes two systems of ethical cognition. The theory is helpful in making a transition from confrontation and conflict to the rule of law. George Soros's theory of reflexivity explicitly includes the decisions and actions of observers. It places the social scientist inside the system observed and makes clear the difficulty of forecasting in social systems since they include thinking participants.

The philosophy of science has had, at least since Plato and Aristotle, more than one epistemology or theory of knowledge. Warren McCulloch suggested resolving different views of epistemology by investigating how the brain works. The strategy was to study cognition by conducting neurophysiological experiments. These ideas are embodied in the literature on second order cybernetics, which has taken up the challenge of criticizing the development of science, an interest earlier practiced by the philosophy of science.

8:55 AM – 9:25 AM



Professor Richard Self, University of Derby, UK, The School of Computing and Mathematics, Senior Lecturer in Analytics and Governance.

Richard Self is a Senior Lecturer in Governance of Advanced and Emerging Technologies at the University of Derby in the UK. He gained his business background during 30 years at Rolls-Royce before changing to academia in 2002.

His approach to students is not to teach answers, rather he inspires, challenges, mentors and guides his students to find important questions and then how to research to find relevant answers for the specific context.

He guides the students into their own experiences in order to find the insightful questions that motivates them to their best work.

Plenary Keynote Address: “Celebrating “Difference” and “The Other””: Students Achieving their Potential”

Abstract: We are unique individuals with unique experiences and history. This requires an understanding of individuality and differences and the elimination of the bias of stereotypes (sameness).

Understanding our students’ individuality in any and all ways can be used to guide and coach them to achieve the limits of their potential and to use their own unique, experiential insights and challenges to focus their studies for good.

Too often we are too scared to explore their uniqueness with our students from fear of accusations of discrimination on grounds of race, gender, disability etc. when in reality, such a discussion can result in exceptional achievement.

9:25 AM – 9:55 AM



Dr. Pawel Poszytek, Poland, General Director of the Foundation for the Development of the Education System, Poland, Member of working groups of the European Commission and the Ministry of National Education of Poland.

Paweł Poszytek, PhD, Paweł Poszytek, PhD, Director General of the Polish National Agency of Erasmus+ Programme. Member of several working groups by the European Commission and the Ministry of National Education of the Republic of Poland, coordinator of the Country profile Project implemented by the Council of Europe. Reviewer of the national core curriculum in foreign language teaching in 2008 and co-author of 2016/2017 curriculum update. Former member of the executive board of the European Association of Language Teaching and Assessment. Former coordinator of Lingua, European Language Label and eTwinning programmes in Poland and member of the board of the Polish National Agency of Lifelong Learning Programme. Currently, general director of the Foundation for the Development of Education System – Polish National Agency for European Union’s educational programmes and official delegate of the Republic of Poland to the Worldskills Organization.

Plenary Keynote Address: “From Steam Engine to Blockchain – How Technological Progress has been Influencing the Competences We Need”

Abstract: The aim of the presentation is to reflect on what current industrial revolution, often called economy 4.0, requires from educational systems, especially at university level. The presenter will discuss the determinants of this revolution and its consequences for the education of the future. The main stress will be put on what quantities and features this education must have to meet the demands of the new digitalized world and to equip students with suitable competences needed both at work and in social life.

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Décima Octava Conferencia Iberoamericana en Sistemas, Cibernética e Informática: CISCI 2019

Plenary Session in Spanish/Portuguese – Sunday July 7th, 2019, 10:10 AM – 12:10 PM

Plenaria Participativa Mediante Panel Participatorio sobre el Tópico General
“Comunicación Inter-Disciplinaria: ¿Qué Es? ¿Para Qué Es? y/o ¿Cómo se Puede Fomentar o Facilitar?.

Las ponencias serán sobre, y en el contexto del mismo tópico general. La plenaria se inicia con 1) un planteamiento general, procede 2) con resumen de proyectos ejemplos de cómo se intenta y se puede fomentar la comunicación inter-disciplinaria, sigue con 3) la importancia de la comunicación inter-disciplinaria en la Cuarta Revolución Industrial y su importancia para Latinoamérica, y finaliza 4) en caso específico que se lleva a cabo en Perú.

Ponentes y Moderadores

Dr. Nagib Callaos, International Institute of Informatics and Systemics, EE.UU.,

Dr. Andrés Tremante, Florida International University, EE.UU.,

Dr. Alejandro Hossian, Universidad Tecnológica Nacional, Argentina,

Profesora Maritza Placencia Medina, Departamento Académico de Ciencias Dinámicas de la Universidad Nacional Mayor de San Marcos, Perú.



Dr. Nagib Callaos, Presidente del International Institute of Informatics and Systemics, EE.UU., Ex-Decano de Investigación y Desarrollo de la Universidad Simón Bolívar, Venezuela, Editor-en-Jefe Fundador de las Revistas Journal of Systemics, Cybernetics and Informatics y Revista Ibero-Americana de Sistemas, Cibernética e Informática.

El Dr. Callaos ha sido profesor por más de 40 años y durante 30 años ha fundado organizaciones que relacionan la universidad con la industria, la investigación con la consultoría, la investigación con la innovación, todo lo cual ha requerido de investigación y comunicación interdisciplinarias. La mayoría de esas organizaciones (universitarias y empresariales) se han mantenido operativas por 15-30 años, y aún se mantienen activas. En los últimos 24 años se ha dedicado casi a tiempo completo a fomentar la comunicación inter-disciplinaria.

Resumen Corto: “Relaciones Sistémico-Cibernéticas entre Disciplinaridad e Inter-Disciplinaridad”

Es evidente que no puede haber inter-disciplinaridad sin disciplinas. Lo que no parece ser evidente, para muchos profesores y autoridades universitarias, es que la Investigación, Educación y Comunicación Inter-Disciplinaria son *necesarios* para 1) resolver problemas de la vida real, 2) subir el nivel *educativo* de manera que no se reduzca a la *instrucción* disciplinaria, 3) evitar el posible *incesto intra-disciplinario*, 4) dar soporte a la preparación de estudiantes y profesores para acelerar el desarrollo personal, social y nacional de los países en vías de desarrollo



Dr. Andrés Tremante, Florida International University, EE.UU., Departamento de Mecánica, Director del “Center for Diversity and Student Success in Engineering and Computing” (CD-SSEC).

El Dr. Andrés Tremante Profesor titular Jubilado de la Universidad Simón Bolívar, Venezuela. Da clases y hace investigación y desarrollo actualmente en el departamento de mecánica de la Florida Institute University y Director del “Center for Diversity and Student Success in Engineering and Computing” (CD-SSEC). Fue Presidente de la Fundación de Investigación y Desarrollo de la misma universidad, jefe del laboratorio de Conversión de Energía Mecánica. Los cursos que dio en la Universidad Simón Bolívar fueron en las áreas de Termodinámica, Mecánica de Fluidos y Transferencia de Calor, Sistemas Energéticos, Generación de Energía Hidráulica y Térmica, Energía Renovable y Fósil, Producción Petrolera y Flujo Multifase. Recibió el título de Ingeniero Mecánico, y de maestría en la Universidad Simón Bolívar. Así mismo obtuvo su doctorado en ENSAM en Paris, Francia, donde permaneció para estudios post-doctorales. Actualmente enseña cursos de mecánica de fluidos en el programa BSME (Bachelor of Science in Mechanical Engineering). En el pasado reciente ha sido miembro editorial de 23 revistas y ha publicado más de 125 artículos en sus áreas de experiencia. Es co-autor del libro “¿Norte o Sur?: Una historia de ficción basada en hechos reales.” Y co-editor, desde el año 2000, de memorias de conferencias organizadas por el International Institute of Informatics and Systemics (IIS), de las cuales ha sido co-presidente de sus respectivos Comité de Organización.

Resumen Corto: “Importancia de la Comunicación Inter-Disciplinaria y su Potencial Necesidad para Acelerar el Desarrollo de Latino-América”

Cuando abordamos un tema transcendental para la Sociedad como el de la “Comunicación Interdisciplinaria”, empezaremos por compartir la definición de “Interdisciplinariedad” según la RAE: “Dicho de un estudio o de otra actividad: que se realiza con la cooperación de varias disciplinas”.

Por lo tanto, con dicho punto de partida en común, veremos como ha ocurrido esta comunicación en el pasado, y como ocurre en el presente de cara al futuro. El término normalmente aplica cuando distintas disciplinas convergen y cooperan para resolver un problema en común y de esta forma, poder impactar más efectivamente y eficientemente a la Sociedad.

De hecho, hay varios ejemplos a compartir y estudiar en diferentes ambientes y sociedades. La Fundación de Investigación y Desarrollo de la Universidad Simón Bolívar es un buen ejemplo

iniciado en 1986, donde destaca una exitosa relación Universidad – Empresa. Actualmente en los EE.UU., la “National Science Foundation” (NSF) promueve en sincronización con la industria, dos poderosos programas interdisciplinarios conocidos como “Engineering Research Center” (ERC) y los “Industry – University Collaborative Research Center” (IUCRC), donde los fondos se otorgan y se evalúan de forma mancomunada entre NSF y la Industria.



Dr. Alejandro Hossian, Universidad Tecnológica Nacional, Facultad Regional Neuquén, Argentina. Profesor Titular - Director del Grupo Robótica Aplicada.

El profesor Alejandro Hossian es doctor en Ciencias Informáticas (Universidad Nacional de La Plata - Argentina), Especialista en Ingeniería de Sistemas Expertos, Magister en Ingeniería del Software por el Instituto Tecnológico de Buenos Aires y Master en Ingeniería del Software por la Universidad Politécnica de Madrid, siendo su Tesis de Master Sistema de Asistencia para la Selección de Estrategias y Actividades Instruccionales. Ingeniero Civil por la Facultad de

Ciencias Físico Matemáticas e Ingeniería de la Universidad Católica de Argentina, Especialista en Ingeniería de Sistemas Expertos - Profesor Titular Regular de la Universidad Tecnológica Nacional (Unidad Académica Confluencia) y Director del Grupo de Investigación en Robótica Cognitiva y Tecnologías Inteligentes en dicha casa de altos estudios. Miembro del Laboratorio de Sistemas Inteligentes (LSI) de la Facultad de Ingeniería de la Universidad de Buenos Aires desarrollando tareas en carácter de Investigador Adscripto en el área de Sistemas Inteligentes en Educación (desde Agosto 2001 a la fecha).

El Dr. Alejandro Hossian es coautor del libro: Britos, P., Hossian, A., García Martínez, R. y Sierra, E. 2005. *Minería de Datos Basada en Sistemas Inteligentes*. 876 páginas. Editorial Nueva Librería. ISBN 987-1104-30-8.

Resumen Corto: *“Reflexiones acerca de la Comunicación Inter-Disciplinaria requeridos para Vincular los Aspectos Sociales y Tecnológicos en la Cuarta Revolución Industrial: Su Importancia para Latinoamérica”.*

Estas reflexiones se sustentan en la necesidad de abordar desde un punto de vista vinculante aspectos centrales de carácter social y tecnológico, los cuales impactan de forma directa en la matriz productiva de América Latina y el Caribe. Esto requiere necesariamente de comunicación inter-disciplinaria y la genera, al menos en forma verbal.

En este sentido, estas discusiones encuentran sólidos vasos comunicantes con el proceso de robotización y automatización en el marco de la Cuarta Revolución Industrial del siglo XXI; la cual está generando cambios estructurales en el comercio y el empleo, como históricamente ha sucedido con las revoluciones tecnológicas de los siglos XIX y XX. La Robótica es en sí un campo de investigación y educación inter-disciplinaria, al igual que los diseños e implementación de tecnologías en el ámbito de la robótica. La innovación tecnológica en ese ámbito, requiere quizás más que otro tipo de innovaciones tecnológicas mas comunicación inter-

disciplinaria, porque habría que agregar las disciplinas y experiencias del ámbito del mercadeo, finanzas, emprendedora, estudio de mercado, etc.

En el contexto latinoamericano, se destacan tres aristas de análisis: I) la importancia de reconvertir la matriz productiva para América Latina y el Caribe, procurando que los cambios tecnológicos se orienten a promover la igualdad social, II) avanzar en la concreción de un acuerdo tecnológico – social que considere la posibilidad de una renta básica universal para la región; tratando así de disminuir la amplia brecha existente entre las economías emergentes y las más avanzadas y III) fomentar el acceso universal a una educación de calidad que desarrolle la capacidad de pensar diferente; cualidad fundamental para los trabajos del futuro, las cuales permitirán a los trabajadores una mejor transición hacia nuevas ocupaciones. Estas tres aristas requieren y generan aun más intensa y frecuentemente comunicaciones inter-disciplinarias, y muy posiblemente investigación e incluso educación inter-disciplinaria, las cuales, ambas, requieren a su vez de comunicación inter-disciplinaria tanto, ESCRITA Y VERBAL.



Profesora Maritza Placencia Medina, Perú. Departamento Académico de Ciencias Dinámicas de la Universidad Nacional Mayor de San Marcos, Facultad de Medicina, Centro de Investigaciones Tecnológicas.

Profesional Químico Farmacéutico, con 25 años de experiencia en la docencia en la UNMSM, en el área de Ciencias Básicas Química, Bioquímica y Farmacología. Con estudios de posgrado en Maestrías en Bioquímica y Farmacología en la UNMSM en el 2000 y con el Doctorado en Farmacia y Bioquímica 2010. He realizado investigación experimental en Farmacología básica durante los primeros años del 95 al 2002 y actualmente estoy trabajando en el área de educación utilizando las TICs como herramientas de gestión docente tanto en pregrado, como en posgrado mediante metodologías activas de aprendizaje como ABP, Aprendizaje orientado a proyectos, método de casos mediante una evaluación por competencias. Mi orientación hacia la bioequivalencia de fármacos genéricos se inicia en el 2000 y he realizado consultorias y capacitaciones en este tema desde el 2002 a la fecha, tanto a DIGEMID, MINSA, como ONG. En el país tenemos medicamentos que deben de pasar la certificación de bioequivalencia como son los de estrecho margen terapéutico entre ellos los anticonvulsivantes: Carbamacepina, Valproato, Fenitoina, inmunomoduladores: Ciclosporina, Micofenolato de mofetilo, también levotiroxina, ácido clavulánico, entre otros. Estoy trabajando incorporando la investigación -acción para mejorar los procesos de educación superior en Ciencias Básicas en la Facultad de medicina de UNMSM contando con los actores principales de nuestro quehacer; los estudiantes a quienes solicitamos mediante entrevistas individuales y focus groups como aprendieron en nuestras asignaturas y qué nivel de aprendizaje han logrado. Hacemos la planificación para la intervención de mejora con ellos y luego validamos esta implementación, soy parte de un equipo de investigación y hemos obtenido en el 2010 y el 2013 el Segundo Premio a nivel nacional en educación médica mediante esta metodología de investigación empleando metodologías activas y las TICs para mejorar los procesos de aprendizaje y elevar su calidad.

Resumen Corto: Reflexiones sobre la Comunicación Inter-Disciplinaria en la Intervención Educativa Blended-Learning para Fortalecer Habilidades Quirúrgicas Básicas en Estudiantes de Medicina Humana de una Universidad Nacional en Perú.

Estas reflexiones están basadas en una primera experiencia de Blended-Learning para fortalecer habilidades quirúrgicas básicas en estudiantes de Medicina Humana de una Universidad Nacional en Perú. El realizar investigación educativa con ingenieros, educadores, economistas y profesionales de salud, con diálogos Inter-Disciplinarios y multidisciplinarios; fortalecimos las capacidades de pensamiento crítico, respetando las singularidades y la rigurosidad de los aspectos metodológicos. Usamos las TIC tanto para el diseño y la intervención, mejorando las oportunidades de comunicación interdisciplinaria con la actitud de compartir conocimientos y experiencias motivadoras en el proceso educativo, incorporando la tolerancia como eje conciliador para aprender y desaprender, en un continuo diálogo asincrónico o presencialmente con principios éticos y con valores en la intervención educativas, facilitando la demostración de las habilidades quirúrgicas en los futuros profesionales.

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Décima Octava Conferencia Iberoamericana en Sistemas, Cibernética e Informática: CISCI 2019

Plenary Session – Sunday July 7th, 2019, 1:00 – 3:15 PM

1:00 PM – 1:30 PM



Professor William Swart, East Carolina University, USA, College of Business, Former Provost and Vice Chancellor for Academic Affairs, Former Dean of Engineering at New Jersey Institute of Technology

William Swart is Professor of Marketing and Supply Chain Management at East Carolina University. He received a B.S. in Industrial Engineering with Honors from Clemson University, a M.S. in Industrial and Systems Engineering and a Ph.D. in Operations Research from the Georgia Institute of Technology. Dr. Swart has reached top management positions in both industry and academia. He served as Corporate Vice President of Operations Systems at Burger King

Corporation. He is credited for pioneering the use of industrial engineering in the restaurant industry and his work received a finalist award in the prestigious INFORMS Franz Edelman Competition for the best application of management science in the world. He also served as a Technical Cooperation Expert with the Organization for Economic Cooperation and Development (OECD) in Turkey and took part in the development of the tourism sector input to that country's first five-year economic development plan.

In academia, he served as Dean of Engineering and Technology at both the New Jersey Institute of Technology and Old Dominion University (Virginia) as well as Provost and Vice President for Academic Affairs at East Carolina University. His research and consulting activities included the development of methodologies to improve the ground processing NASA's Space Shuttle at the Kennedy Space Center, the development of Taco Bell's Labor Management System, and research on affordable energy efficient housing sponsored by the U. S. Department of Energy. These activities have led to a second Franz Edelman finalist award, the Achievement Medal in Operations Research and Management Science from INFORMS, the IIE Operations Practice award, and a NASA/JFK Group Achievement Award. His many real-world experiences have given Dr. Swart a clear insight into *what* students should learn. His current research is focused on *how* students can most effectively learn it.

Plenary Keynote Address: *Online vs Face to Face - Which is Better?*

Abstract: Enrollments in universities have steadily declined over the last several years. Simultaneously, the number of students taking online courses has steadily increased. University administrators agree that online programs are an essential component of their strategic plans.

Yet, they acknowledge that most of their faculty agree that online teaching is inferior to face to face. Many also feel that there is a lack of acceptance of online degrees by potential employers.

The above reflect the feelings of providers of higher education. These feelings are diametrically opposite to those of the consumers of higher education. While some argue that students take online courses because they do not have access to a traditional campus, many students on a traditional campus choose the online option when the same course is taught both online and face to face. Likewise, employers with tuition reimbursement plans continue to support their employee requests for tuition refunds for online programs.

In this keynote plenary address we will examine ways to effectively bridge the gap of perceived quality of online and face to face learning and show analytical results indicating that one form is not necessarily better than the other.

1:30 PM – 2:00 PM



Professor Christian Greiner, Munich University of Applied Sciences, Germany, Associate Dean Applied Research, Professor at the Department of Business Administration

Professor Christian Greiner received his masters degree and his PH.D. in mathematics from the University of Ulm, Germany with a focus on decision-making processes. He has more than ten years experience as a professional manager and as consultant for knowledge and information management. Dr. Greiner has been Professor for information systems and management since joining Munich University of Applied Sciences in 2003. At the moment, he serves in his faculty as the associate dean for applied research and he is the program director for the bachelor and master degree program Information Systems & Management. Dr Greiner's research interest include intelligent information systems in business applications and entrepreneurship education. He has published related to his field.



Professor Thomas Peisl, Munich University of Applied Sciences, Germany, Professor of International Management and Strategy, Former Marketing Director at General Electric Europe.

Dr Thomas C. Peisl received his Ph.D. from the Technical University Chemnitz with a concentration in organizational change and management. He has more than ten years experience as a professional manager in corporate strategy and mergers & acquisitions. Dr. Peisl has been Professor for international management and strategy since joining Munich University of Applied Sciences in 2000. He has published in several books and refereed journals and proceedings of professional organizations related to his field.

Plenary Keynote Address: “*Entrepreneurship Education in IT-Degree Programs: From Requirements to Reality*”

Abstract: Various scholars contributed extensively to the area of entrepreneurial education. Nevertheless our key findings in assessing successful entrepreneurs is that strategic partnerships are very important in the daily practice of entrepreneurial companies but these partnerships are almost completely ignored in entrepreneurship courses and business models. These courses and models seem to focus on standalone products and services. It appears that the question of partnerships and system thinking is not fully understood and supported by applied research. The authors argue that using a qualitative as well as a quantitative approach helps to verify a potential deficit in entrepreneurial education. In particular, the propositions were piloted in analyzing 86 business plans at bachelors and masters level in courses delivered by the authors. The initial conclusion shows that entrepreneurial education has to shift its own paradigm – from business planning to business modeling including partnerships with established firms. In addition, an empirical qualitative study on sixteen entrepreneurship textbooks in German and English was conducted. Finally, the authors propose an innovative teaching approach that is centered around a structured analysis of campaigns on crowdfunding platforms. Student learning includes cognitive/rational analysis as well as emotional/trust engagement, in particular with the invest/not invest question as the tangible outcome. This concept has been applied in academic teaching for six semesters with more than 150 business and non-business students.

2:00 PM - 2:30 PM



Dr. Paul Page, Queen's University Belfast, UK, School of Electronics, Electrical Engineering & Computer Science, High Performance and Distributed Computing, Lecturer(Education) – Society & Community.

Dr Paul Sage has worked as a lecturer in Computer Science at Queen’s University Belfast for over 15 years with a further 10 years as a research fellow and senior software engineer within industry. Previous research interests include distributed processing and high performance computing. Much of his current activities focus on software engineering education and associated pedagogical issues related to retention and

progression.

Plenary Keynote Address: “*UAV (Drones) in Archaeology - a Help or Hindrance?*”

It’s true to say that technology has a part to play in all modern aspects of life and therefore represents a significant vehicle for inter-disciplinary activities. This presentation reviews some personal experiences as a Computer Scientist in terms of collaborative opportunities in research, education and industry. Consideration is given towards how novel technologies can provide a gateway to the promotion of shared interest and examines some recent proposals for joint work with the department of Archaeology at Queen’s University Belfast in utilising drones for data collection and analysis.

2:30 PM - 3:00 PM



Dr. Yaping Gao, Quality Matters, USA, Senior Academic Director, 25 years experience in higher education both in China and in USA as faculty and online education manager and administrator.

With a doctoral degree in curriculum and instruction and concentration on instructional design and educational technology, Dr. Yaping Gao has over 25 years' experience in higher education both in China and in USA as faculty, instructional designer, LMS manager, and online education administrator. In her current position as Senior Academic Director of Quality Matters, USA, Dr. Gao oversees and leads member services, external collaborations and international partnerships. Dr. Gao earned her doctoral degree from Baylor University, Texas, USA, and her Master and Bachelor degrees from Shanghai International Studies University, Shanghai, China.

Quality Matters (QM) is an international, US-based non-profit organization specializing in standards, processes and professional development for quality assurance in online and blended learning. QM tools and resources are regularly revised to reflect current research and best practices. When you see QM Certification Marks on courses or programs, it means they have met QM Course Design Standards or QM Program Review Criteria in a rigorous review process.

Plenary Keynote Address: *“Internationalizing US-Based Research-Supported Quality Standards for Online and Blended Learning for Culturally and Pedagogically Different Educational Environments”*

Abstract: Can a USA-based and research-supported approach to quality assurance in online and blended learning, adopted by over 1100 institutions, be adapted to educational environments outside of USA and in non-English speaking regions? What adaptations are needed in order for the quality assurance approach to be applicable to international education communities that are vastly different culturally and pedagogically?

The speaker will share their experience working with various higher education institutions in non-English speaking communities and highlight strategies and considerations in establishing collaborations to internationalize USA-based standards and contribute to quality assurance for online and blended learning globally.

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Plenary Session – Monday July 8th, 2019, 7:45 AM – 10:10 AM

7:55 AM – 8:25 AM



Professor Shigehiro Hashimoto, Kogakuin University, Japan, Councilor and Dean, Faculty of Engineering, Former Associate to the President, Doctor of Engineering and Doctor of Medicine, Research Area: Biomedical Engineering.

Dr. Shigehiro Hashimoto now is a professor of Biomedical Engineering, Councilor, and Dean, Faculty of Engineering of Kogakuin University, Tokyo, Japan. He got his Bachelor of Engineering in Mechanical Physics (1979), and Master of Engineering at Tokyo Institute of Technology (1981), Tokyo, Doctor of Medicine at Kitasato University (1987), Sagamihara, and Doctor of Engineering at Tokyo Institute of Technology (1990), Tokyo.

He was Research Associate in School of Medicine (1981-1989), and Assistant Professor in School of Medicine (1989 -1994), at Kitasato University, Associate Professor in the Department of Electronics (1994- 2001), and Professor at Osaka Institute of Technology (2001-2011). He also was the Creator of the first Department of Biomedical Engineering in Japan at Osaka Institute of Technology (2005) and Director of its Medical Engineering Research Center (2005-2011). He was Associate to President and Dean of Admissions Center at Kogakuin University, Tokyo (2012-2018). He experienced internship in Research Center for Artificial Heart in Free University in Berlin (1977). He is the author of the books of “Introduction to Biosystems Engineering (1996)”, “Introduction to Biomedical Measurement Engineering (2000)”, and “Introduction to Biomechanical Engineering (2013)”. His present researches focus on bio-cellular mechanics study using micro-machined flow channel. shashimoto@cc.kogakuin.ac.jp
<http://www.mech.kogakuin.ac.jp/labs/bio/>

Plenary Keynote Address: “Communication Training in Multidisciplinary Field: Biomedical Engineering and Symbiosis Engineering”

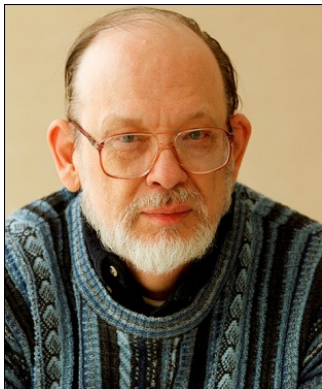
Abstract: The biological term of “Symbiosis” is used for the situation of “living together”. The internet system has made a global society with data bases. The global society includes many kinds of variations: culture, language, generation. In the global society, symbiosis between systems gave us a lot of topics. Communication skill is necessary to handle the topics. The term of “Biomedical Engineering”, on the other hand, is used for the multidisciplinary academic field combining several fields: Biology, Medicine, and Engineering. The field relates to various

academic fields. In these field, many topics are picked up for collaboration between the biological systems and engineered systems.

Communication is necessary not only between biological systems, but also between biological system and engineered system. Several multidisciplinary learning- programs have been practiced as cross- cultural seminars of students. The effectiveness of the cross-cultural seminar on multidisciplinary learning has been discussed in relation to “Biomedical Engineering” and “Symbiotic engineering”.

Keywords: Multidisciplinary Field, Biomedical Engineering, Symbiosis Engineering, Communication Training, and Cross-cultural Seminar.

8:25 AM – 8:55 AM



Professor Thomas Marlowe, Seton Hall University, USA, Department of Mathematics and Computer Science Program Advisor for Computer Science, Doctor in Computer Science and Doctor in Mathematics

Professor Thomas J. Marlowe has been a member of the Department of Mathematics and Computer Science at Seton Hall University for almost 40 years, and has taught a wide variety of courses in both disciplines. Until he went on phased retirement in 2017, he was coordinator and advisor for the Computer Science program. Professor Marlowe enjoys working with students and with professional colleagues—almost all his research is collaborative. His professional interests include in mathematics, abstract algebra and discrete mathematics; in computer science, programming languages, real-time systems, and software engineering, and pedagogy; and in information science, collaboration and knowledge management. The connection between graphs and algebraic structures is a recurrent theme.

Professor Marlowe has Ph.D. in Computer Science, from Rutgers, The State University, and a Ph.D. in Mathematics, also from Rutgers. Professor Marlowe has many publications and academic distinctions, with over 100 publications in refereed conferences and journals in mathematics, computer science and information science. Some of the more recent and more significant include:

- T.J. Marlowe, J.R. Laracy, “Logic as a Key to Integrating the Curriculum for STEM Majors”, Journal on Systemics, Cybernetics and Informatics: JSCI Volume 15 - Number 4 - Year 2017, pp. 63-71, ISSN: 1690-4524 (Online)
- V. Kirova, T.J. Marlowe, C.S. Ku, “Monitoring and Reducing Application Fragility through Traceability and Effective Regression Testing”, Genie Logiciel, No 115, 2-9, December 2015.
- A. Rountev, S. Kagan, T. J. Marlowe, “Interprocedural Dataflow Analysis in the Presence of Large Libraries”, Proceedings of CC 2006, 216, Lecture Notes in Computer Science 3923, 2006.
- S. P. Masticola, T. J. Marlowe, B. G. Ryder, "Multisource Data Flow Problems", ACM Transactions on Programming Languages and Systems, 17 (5), 777 -803, September 1995.

- A. D. Stoyenko, T. J. Marlowe, "Polynomial-Time Program Transformations and Schedulability Analysis of Parallel Real-time Programs with Restricted Resource Contention", *Journal of Real-Time Systems*, 4 (4), 1992.
- T. J. Marlowe, B. G. Ryder, "Properties of data flow frameworks: A unified model", *Acta Informatica*, 28 (2), 121 -164, 1991.

Professor Marlowe has been a member on more than 10 Ph.D. thesis and 5 M.S. thesis committees, member of more than 25 conference program committees, and reviewer for numerous conferences, journals, and grants. He is the founder of an ongoing professional conference, and has been active with the IIS and the WMSCI multi-conference.

Abstract: “*Interdisciplinarity, Diversity, and Soft Skills: Graduate-Level Transitions for Computing and Data Science?*”

While technology, computing, and “big data” seem to be ubiquitous, transforming, and sometimes more than a bit invasive, many problems confront both the computing and data science (and more generally, the STEM) workforce, on the one hand, and the academic and societal development of those disciplines, on the other. Among these are (1) a true shortage of well-rounded and skilled workers, (2) a lack of “soft skills”, ethical and philosophical understanding, broad background, and deep context among those workers, (3) a lack of both social and demographic diversity in the workforce, and (4) a difficulty in carrying out interdisciplinary efforts, both in research and commercially.

In this presentation, I present a step toward a solution: a certificate transitioning between Bachelor’s and Master’s level studies, offered to students from all undergraduate backgrounds, with an emphasis on background skills, understanding, and context. As these courses are completed by an academically and socially diverse cohort, students will develop an interdisciplinary view as well as a conceptual understanding of computing and data science; enhance communication, teamwork and problem-solving skills; and appreciate the philosophical and ethical issues involved. I then discuss costs, benefits, risks and tradeoffs, plus possible other uses and extensions, and ramifications for the stakeholders.

8:55 AM - 9:25 AM



Fr. Dr. Joseph Laracy, Seton Hall University, USA, College of Arts and Sciences, Department of Mathematics and Computer Science, Complex Systems, Differential Equations, and Dynamical Systems. Faculty member in the Department of Systematic Theology at Immaculate Conception Seminary.

Father Laracy is a priest of the Archdiocese of Newark and member of the Seton Hall University Priest Community. He holds a doctorate from the Pontifical Gregorian University in Rome. His principal technical interests are in systems science: systems theory (e.g., cybernetics), applied dynamical systems, and systems engineering. He also enjoys teaching topics in applied statistics, logic, and the history of mathematics and science. Father Laracy’s principal theological interests are in the intersection of faith & reason and empirical science & Christianity. In

addition, Father Laracy is interested in pastoral applications of Viktor Frankl's existential analysis—logotherapy. Father Laracy's work at the Complex Systems Research Laboratory at MIT concentrated on uncertainty and dynamics in large-scale, complex engineering systems and looked at key sources of uncertainty, ways to model and quantify uncertainty, and ways to maintain properties such as safety and resilience as systems change over time. His master's degree research at that time was supported in part by NASA Ames Research Center (Model-Based Hazard Analysis Research) and National Science Foundation (A Socio-Technical Approach to Internet Security). As a student at the University of Illinois, he pursued research activities to architect a scalable RSA cryptographic co-processor, supported in part by the National Science Foundation. Laracy also worked on a software pattern-based fly-by-wire aircraft control system. In the course of his studies, he held engineering positions with Lucent Technologies (Wireless Terminal Interoperability Laboratory), Ball Aerospace and Technologies (NASA Deep Impact Mission), and Light Source Energy Services.

Plenary Keynote Address: “*Epistemology and Metaphysics in Interdisciplinary Communication: Insights from Ian Barbour and Bernard Lonergan, SJ*”

Abstract: In light of the persistent problem of “academic silos” in the contemporary university, Nagib Callaos and others have demonstrated the importance of interdisciplinary communication for those engaged in the advancement of scientific research. Two twentieth century scholars, Ian Barbour (1923–2013) and Bernard Lonergan, SJ (1904–1984), offer a concrete approach to interdisciplinary communication by advocating a common epistemology and metaphysics for integrating traditional academic disciplines. Barbour, an experimental physicist and theologian, and Lonergan, a philosopher, theologian, and economist, both suggest a “critical realist” epistemology. Barbour’s preferred metaphysical framework for a systematic synthesis between disciplines, e.g., natural science and theology, is the process thought of Alfred North Whitehead. Lonergan, on the other hand, develops his own generalized empirical method (GEM) in which the being investigated is that which occurs within consciousness. We compare and contrast these two approaches as well as critically engage them.

9:25 AM – 9:55 AM



Professor Wen-Chen Hu, University of North Dakota, USA, School of Electrical Engineering & Computer Science, former (2010-2017) editor-in-chief of the International Journal of Handheld Computing Research (IJHCR).

Wen-Chen Hu received a BE, an ME, an MS, and a PhD, all in Computer Science, from Tamkang University, Taiwan, the National Central University, Taiwan, the University of Iowa, Iowa City, and the University of Florida, Gainesville, in 1984, 1986, 1993, and 1998, respectively. He is currently an associate professor in the School of Electrical Engineering and Computer Science of the University of North Dakota, Grand Forks. He was an assistant professor in the Department of Computer Science and Software Engineering at the Auburn University, Alabama, for years. He is the general chairs of about 20 international conferences such as the

2018 International Conference on Engineering, Technology, and Applied Science (ICETA 2018), and associate editors of several journals like Journal of Information Technology Research (JITR). In addition, he has acted more than 100 positions as editors and editorial advisory/review board members of international journals/books, and track/session chairs and program committee members of international conferences. He has also won a couple of awards of the best papers, best reviewers, and community services. Dr. Hu has been teaching for more than 20 years at the US universities and over 10 different computer/IT-related courses, and advising/consulting more than 100 graduate students. He has published over 100 articles in refereed journals, conference proceedings, books, and encyclopedias, edited more than 10 books and conference proceedings, was the editor-in-chief of the International Journal of Handheld Computing Research (IJHCR) from 2010 to 2017, and solely authored a book entitled “*Internet-enabled handheld devices, computing, and programming: mobile commerce and personal data applications.*” He is a member of ACM (Association of the Computing Machinery). His current research interests include handheld/mobile/smartphone/spatial computing, location-based services, web-enabled information system such as search engines and web mining, electronic and mobile commerce systems, and web technologies.

Plenary Keynote Address: “*Contemporary Issues of Smartphone Computing Research*”

Abstract: Smartphones have become ubiquitous in today’s society. People use them at any time and from anywhere to enrich or enhance their daily living activities such as staying connected with their friends and family, and shopping and paying fees. Though smartphones are an indispensable part of our lives, most people are not familiar with their internal structures, let alone mobile app development. This talk tries to fill the gap by giving an insight on smartphones including three themes: (i) smartphone structures, (ii) mobile computing, and (iii) current issues of smartphone computing research. Finally, information about other smartphone topics of interest to researchers will also be given.

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Plenary Session – Monday July 8th, 2019, 1:00 – 3:15 PM

1:00 PM – 1:30 PM



Dr. Mario LaManna, Italy/USA, Evoelectronics (Italy), and Selex-SI (USA), Senior Scientist and Project Leader, Projects in the fields of Defense and Security.

Mario LaManna received the degree in Electronic Engineering (summa cum laude) from the University of Pisa, Italy. He is working with EVOELECTRONICS in Rome, Italy as Senior Scientist and Project Leader. He has taken part in a number of projects in the fields of defense and security. He is leader of a number of international cooperative projects and has participated in more than 100 international conferences as paper author, session chairman and forum moderator. He is a Member of the IEEE and IIS and a CapTech Expert of the EDA IAP02 (Sensor Systems).

Plenary Keynote Address: “*An Interdisciplinary Approach to Machine Learning for Critical Infrastructure Protection*”

Abstract: Critical infrastructure protection faces increasing challenges, both in quality and in quantity. Most of the present security systems fully rely on automated mechanisms, which replace human operators, in order to perform computation intensive tasks and/or to work in extreme conditions. However, this solution presents some drawbacks with respect to the system performance. In order to provide effective measures against the pressure of new and sophisticated threats, an interdisciplinary approach, based on suitably coupling machine learning with human judgment, results as the right choice. In fact, this solution is particularly helpful for implementing efficient solutions capable of controlling critical scenarios and reacting effectively towards sophisticated threats. The practical application of this approach in different case studies demonstrates its efficiency for the effective protection of critical infrastructures.

1:30 PM – 2:00 PM



Professor Redkin Oleg I. , Saint Petersburg State University, Russia, Head of the Arabic Chair, Faculty of African and Asian Studies.

Dr. Oleg Redkin is working as a professor (full) of Arabic Studies, Head of the Arabic Chair, Faculty of African and Asian Studies, Saint Petersburg State University, St. Petersburg, Russia. He was born in 1959 in Vilnius. Dr. Redkin received his Ph. D. degree in Arabic linguistics in 1984 and Doctor Habit Degree in 1999. His research interests include linguistics, Arabic and Islamic studies, computer text processing, ICT in Arabic learning. He published one monograph, three text books and more than 100 papers. He is one of the authors of two online courses on the Arabic language and he is one of the authors of two patented inventions. He is the member of editorial board of several periodicals in Arabic and Islamic Studies.



Professor Olga Bernikova, Saint Petersburg State University, Russia, Research Laboratory for Analysis and Modeling of Social Process.

Dr. Olga Bernikova is working as the Associate Professor at the Arabic Philology Department of Saint Petersburg State University, Russia. She is member of the Research Laboratory for Analysis and Modelling of Social Process and member of editorial board of the journals “Islam in the modern world”, "Arabic Studies in Eurasia". Dr. Bernikova received her Ph. D. degree in the Dialects of the Arabian Peninsula in 2002. Her current research interests include Arabic Linguistics, Corpus Linguistics, ICT in Arabic Learning and Research, Islamic Studies. She published 4 textbooks and more than 80 papers. She is one of the authors of the online courses on the Arabic language and has two inventions.

Plenary Keynote Address: “*Digital Humanities Vs Human Sciences: Rivalry or Harmonious Relationship?*”

Abstract: Research methodologies and analysis as well as interpretation of results in humanities and arts for centuries were dependent on researcher's subjective evaluations and attitudes. Invention of the first computers in the forties of the last century and Georgetown experiment, that proved the possibility of machine translation, and later on, development of computer technologies in general, marked the beginning of the use digital technologies in the field of humanities. Recent developments, especially the introduction of the Internet have radically changed the scholarly landscape. As for humanities, they do not always use all the advantages of digital data processing, giving preference to the traditional methods of classical research. Meanwhile, on the one hand, implementation of digital technologies could enhance the effectiveness of research, but on the other – use of digital methods should not negatively affect the key idea of humanities, which are based on man and his self-knowledge, ensuring the existence of cultural continuum worldwide. This presentation examines the scope of adaptation of humanities to the challenges of the present world. General trends in the co-existence of digital humanities and human sciences are considered on the example of Arabic and Islamic Studies.

2:00 PM – 2:30 PM



Dr. David Cutting, Queen's University Belfast, UK, School of Electronics, Electrical Engineering and Computer Science, Course Director: BSc Software, Engineering with Digital Technology Partnership, Fellow of the Higher Education Academy.

Dr. David Cutting is a Lecturer (Education) at Queen's University Belfast. He holds a PhD in Software Engineering, an MSc in Advanced Computing Science and is a full member of the IEEE, IET, BCS, and a fellow of the Higher Education Academy. His educational interests include making better admissions decisions beyond exam grades, engaging STEM students who are reluctant to participate, and communicating dry technical ideas through art. In his spare time he's involved in the QUB rocket programme and can be found launching high altitude balloons

Plenary Keynote Address “*Flying our Own Dog Food – Extra-Curricular Approaches to Building Interdisciplinary Engagement and Awareness in Students*”

Abstract: We talk a good talk about the importance of interdisciplinary learning and work for our students, but how often do we actually practice what we preach? Traditional academic structures rarely encourage interdisciplinary working, often they actively stand in the way creating silos. In fact the higher you progress up the educational ladder the less you may know about the world outside – I call this the hierarchy of ignorance. In this talk I explore ways to engage learners beyond academic credit in interdisciplinary activities and the benefits it can bring to staff and students alike.

2:30 PM – 3:00 PM



Bruce Leybourne, MSc., International Earthquake and Volcano prediction Center (IEVPC), USA – CEO, Institute for Advanced Studies on Climate Change (IASCC), Research Director & PI Former Navy tenure at the U.S. Naval Oceanographic Office, Stennis Space Centre (Geophysics Department).

Bruce is an experienced geologist with extensive fieldwork worldwide with over 30-years of operational and managerial experience in the use of state-of-the-art data acquisition and analysis technology. He was invited to be CEO of International Earthquake and Volcano Prediction Center. He is the Principal Investigator, Research Director and Founder of Institute for Advanced Studies on Climate Change. And owner operator of Climate-Stat Inc. and Geostream Consulting. His specialty includes global gravity and marine magnetic data acquisition with offshore experience on-board seismic vessels acquiring gravity/magnetic data for oil and gas exploration. He has performed field investigations all over the globe. Recent ongoing field investigations occurs within the Southwest United States, which reveal electric geologic events of the past.

During his Navy tenure he worked at the U.S. Naval Oceanographic Office, Stennis Space Centre, in the Geophysics Department acquiring and analysing gravity, magnetic, seismic, bathymetric, and oceanographic datasets. This has included multi-beam seafloor mapping, oceanography, side scan sonar, gravity cores, current meter and tide-gauge deployments. Unique characteristics of these datasets began to reveal global tectonic and regional structural interpretations that were unknown to academic research institutions. His follow on research began noting interesting links to climate change instigating a series of related publications considering a *Tectonic Forcing Function for Climate Modelling* in 1996.

Plenary Keynote Address: “North American Solar ElectroMagnetic Induction Detection Network”

Abstract: A Radio Finding Detection Network is proposed to detect *Solar ElectroMagnetic (EM) Induction* effects producing an electromotive force, or voltage, across ancient electrical conducting volcanic rock complexes underlying North America. ElectroMagnetic Pulse (EMP), climate change, hurricanes, tornadoes, lightning, earthquakes, volcanism, and certain types of wildfire outbreaks may be stimulated during a weakening of the solar magnetic field especially during the upcoming solar minimum, increasing Earth’s internal inductance power capable of driving much more violent events. This experimental testing is aimed at globally monitoring geophysical EM events to develop new forecasting methods. North American focus is on the New Madrid Fault, Florida hurricanes, and California wildfire and earthquakes, improving the science of natural disaster forecasting, management, investment, and governance, contributing to better resource-related negotiations and policy debates affecting fiscal/tax policies.

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Plenary Session – Tuesday July 9th, 2019, 7:45 AM – 10:10 AM

7:55 AM – 8:25 AM



Dr. Russell Jay Hendel, USA. Towson University, Dept of Mathematics, doctoral program at the Spertus Institute for a degree in Jewish studies.

Russell Jay Hendel holds a doctorate in theoretical mathematics from M.I.T., an associateship from the Society of Actuaries, and is in a doctoral program at the Spertus Institute for a degree in Jewish studies. He is currently an Adjunct III faculty member at Towson University, which has recently become a Center of Actuarial Excellence. His research and publication interests include discrete number theory, actuarial science, biblical exegesis, the theory of pedagogy, applications of technology to pedagogy, and the interaction of mathematics and the arts. He regularly reviews books for the Mathematical Association of America.

Plenary Keynote Address: “A Vocational Approach to Universal Design in Learning (UDL)?”

Abstract: The US Congress has passed four public laws each one addressing the universal right of access to education by all citizens. The Universal Design in Learning (UDL) movement responds to the need for universal educational access by focusing on the different ways different people learn. However, America still holds the belief that certain competencies in language and mathematics must be met by everyone. This presentation explores expanding UDL: Each person has a right to excel in a respectable vocation with possibly minimal Mathematics-English requirements. The i) Israeli High School system, ii) the use of vocational placement to minimize mental-illness relapse, and iii) the interpretation of the Biblical sacrificial code as vocational harmonization, illustrate this approach.

8:25 AM – 8:55 AM



Dr. Robert Cherinka, MITRE Corporation, USA, Chief Engineer, Software Engineering Technical Center at MITRE.

Dr. Robert Cherinka is the Chief Engineer of the Software Engineering Technical Center for the MITRE Corporation. His expertise is in software, systems and process engineering, with a focus toward software quality and agile development technologies. Bob earned a Ph.D. and M.S. in computer science from Old Dominion University, Norfolk, Virginia, and a B.S. in computer science in 1987 from the University of Pittsburgh. Bob served 6 years as a software engineer in the US Air Force, before joining MITRE in 1993.



Eng. Joseph Prezzama, Msc. MITRE Corporation, USA, Co-Department Head for the Joint Operations Southeast, Tampa office of the MITRE Corporation, MS Software Engineering.

Eng. Joseph Prezzama, MSc. is currently the Associate Department Head for the MITRE Corporation, Tampa Operations Office. In 1996 he earned a Master of Science in Software Engineering from Monmouth University, Eatontown, New Jersey. Prior to that, he earned a Bachelor of Science in Electrical Engineering from Trenton State College, Ewing, New Jersey.

Plenary Keynote Address: “*Tapping the Power of the “DARQ-Side” to Enhance Business Intelligence in a Digital World*”

Abstract: The digital world as we know it today is providing access to vast amounts of information that if properly understood and leverage could significantly enhance business intelligence and operations. Over the past several years, advancements in and the adoption of social media, artificial intelligence, mobile computing and cloud technologies have provided a digital platform to enable new research in data science, AI/ML, realistic and immersive virtual reality and visualization, as well as quantum computing. This talk will provide a perspective on this journey, and discuss potential value and challenges associated this DARQ power.

8:55 AM – 9:25 AM



Professor Mohammad Ilyas, Florida Atlantic University, USA, Department of Computer and Electrical Engineering and Computer Science, Former Dean of the College of Engineering and Computer Science, Member of Global Engineering Deans Council.

Dr. Mohammad Ilyas has been with FAU's College of Engineering and Computer Science since 1983. He has served there in various academic and administrative capacities including Dean of the College from 2011 to 2017. He has earned four academic degrees from four different countries; BSc in Electrical Engineering from Pakistan, MS in Electrical Engineering from Iran, PhD in Electrical Engineering from Canada, and PhD in Educational Leadership from USA. Dr. Ilyas has over 210 publications, including one book, 26 handbooks, and over 180 research articles. He is life senior member of IEEE, member of Global Engineering Deans Council, and is Fulbright Specialist.

Plenary Keynote Address: “*Internet of Things (IoT) and Emerging Applications*”

Abstract: Internet of Things (IoT) provides an environment where everything around us is connected and is uniquely identifiable. This pervasive and ubiquitous environment of connectivity can be very conveniently used for collecting information enabling intelligent decision-making. Use of appropriate sensors in IoT provides capability of sensing any desired type of information from the surroundings including temperature, light, humidity, seismic vibrations, and more. Recent advancements have made it possible to make things (as in IoT) or components small in size, powerful in processing, and energy efficient for operational longevity. These aspects of IoT are prompting many emerging applications of IoT including in the fields of health, transportation, agriculture, energy, and environment. This talk will capture the current state of IoT, and emerging application in a variety of fields.

9:25 AM – 9:55 AM



Professor Margit Scholl, Technical University of Wildau, Germany, Faculty of Economics, Computer Science, Law. Built up a research-based and specific analog IT-Security Arena for people (employees, students, pupils) to raise information security awareness.

Professor Margit Scholl, PhD, is Professor for Business Informatics and Administrative IT in the Faculty of Business, Computing, and Law at the Technical University of Applied Sciences Wildau (TH Wildau) situated to the southeast of Berlin. Her research and teaching work centers on process and project management, (mobile) business applications, information security and privacy protection including baseline protection and awareness, multimedia approaches, and learning methods. Prof. Scholl has assembled a team for research projects in the area of innovation in teaching and learning. The team is completely

supported by external funding, in line with the fact that the TH Wildau has a strong focus on the combination of research and teaching. The team has been carefully chosen to bring together a broad range of interdisciplinary approaches, application-oriented research, and modern teaching experience.

She has developed a “Certified Further Training Course for IT Security Officers in Public Administration and SMEs” and a “Certified Further Training Course for Data Protection Officers in Accordance with the EU GDPR for Public Administration and SMEs.” In addition, she offers trainings and examinations for the European Computer Driving License (ECDL), with the prospect of further trainings in the future for practitioners and consultants in IT baseline protection (IT-Grundschutz) in line with ISO/IEC 27001. A parallel certification hierarchy has also been put in place for students.

Plenary Keynote Address: “*Participative Dialogue with Schools: Raising Information Security Awareness through Gamification*”

Abstract: Two different research projects run by the TH Wildau on information security awareness—titled “Security” and “SecAware4school” for short—are primarily aimed at sensitizing pupils to the issue of information security in everyday school life using experience-oriented scenarios geared to teaching awareness. At the same time, their teachers will be trained and the parents kept informed about specific measures. The learning scenarios were developed in creative workshops by means of participative dialogue and are based on the integration of three learning methods: Game-Based Learning, Accelerated Learning, and Authentic Learning. The article introduces the game-based learning scenarios for schools implemented to date.

Questions were:

- *The warm-up question about secure passwords*
- *The question “Do you know how you can protect your own private sphere online?”*
- *The question “How often do you use images from the Internet, e.g. for presentations?”*
- *The question “Have you ever been the victim of data theft (e.g. your log-in data was stolen)?”*
- *The question “To what extent are you interested in the following topics?”*
- *The question “What other topics are you interested in?”*

The topic of *fake news* is of similar interest to all respondents from the pilot schools (who find the issue *very* to moderately interesting).

The results of the survey, the information events, and the prototypes in “SecAware4school” as well as the final versions in “Security” of learning scenarios confirmed the assumption that sensitization and training is needed on the topic of information security in everyday school life.

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Plenary Session – Tuesday July 9th, 2019, 1:00 PM – 3:15 PM

1:00 PM – 1:30 PM



Dr. Tilia Stingl De Vasconcelos, Business Consultant, Austria, Member of the European Society for Education and Communication, Previously, University of Applied Sciences Austria, Information Management and Cross Cultural Communication.

Dr. Tilia Stingl de Vasconcelos Guedes is currently an autonomous Organizational Consultant and a former lecturer at Universities of Applied Sciences in Austria (academia nova GmbH, FH-Wiener Neustadt) in the area of Business Administration and Change Management. Tilia has bachelor's and master's degrees in Computer Science and Business Administration from the Vienna University of Technology, is post-graduated in Magazine Journalism and earned her doctorate in Communication Science from the University of Vienna, working in the field of Knowledge Management and Organizational Communication. She has also worked in the financial sector and later in management consulting. Today her research interests are in the field of organizational communication and systemic approaches.



Mag. Philipp Belcredi, Comparative-Systemic Intervention, Austria.

Mag. Philipp Belcredi, MBA, is a biologist and economist (master's degree from University of Vienna, Austria). He played professional ice hockey during college and was an internationally successful regatta sailor. Philipp earned an MBA from the University of Economics and Business Administration HEC, Lausanne, Switzerland, with a focus on strategy and marketing. He did long-term training at SySt Institute Munich (Germany) and other systemic formations such as hypnotherapy with Gunther Schmidt at the Milton Erickson Institute of Heidelberg, Germany. Philipp has several years of experience as a project manager, manager, and CEO (OMV, Compass Group, Pewag). He works as a management consultant for companies and organizations in challenging strategic development- and change processes. Philipp has developed and introduced a number of practical applications and methods to organizations he has worked with, based on second-order cybernetics and system theories.

Plenary Keynote Address: “Distinction-Based Consulting: Social-Systems Theory and Second-Order Cybernetics as Premise for Powerful Decisions”

Abstract: If you travel or interact with big companies, you have probably noticed some novel practices:

- The banking sector is in transition. The number of branches and employees is declining; business is increasingly taking place on the internet and smartphones.
- The next step in automation for travelers has transpired: For the past while, air passengers have been able to check in not only themselves but also their luggage.
- “Robot lawyers” that support or automate legal processes are the new trend in legal technology.

They are expected to offer efficient alternatives to legal services.

The above-mentioned examples illustrate a trend that seems to be unstoppable: Automated processes and even artificial intelligence are taking over the services sector, namely, the economic sector, where the human workforce was once an indispensable source of added value. Such developments may lead to further questions about our future. From a social system-theoretical point of view, for instance, organizations are built through the communication of decisions. However, many of the current trends in business are based on creating machines or procedures that make decisions for people. If machines decide for humans, how can we validate humans as decision makers?

In this keynote address, we want to focus on this question using premises of social system theory and ideas of second-order cybernetics as guides for (a) a better understanding of dynamics, (b) self-reflection, and (c) adapted perspectives and solutions for upcoming challenges.

1:30 PM – 2:00 PM



Professor Tatiana Medvedeva, Siberian State University of Transport, Russia, Department of World Economy and Law, Former Head of the Scientific and Practical Center for Business and Management.

Professor Tatiana Medvedeva is a Professor in the Department of World Economy and Law at Siberian State University of Transport, Novosibirsk, Russia. At her university, she is a former Director of the Scientific and Practical Center for Business and Management. She uses group facilitation methods in teaching and consulting with managers of Russian enterprises. She has also worked as Vice-director of the Institute for Prospective Transport Technologies. On two occasions she was a visiting scholar at Georgetown University and George Washington University in Washington, DC. She received a diploma in economic cybernetics from Novosibirsk State University, a kandidatskaya degree (Ph.D) and a doctorate degree (Dr.Sc.) in economics from Moscow State University. Most of her scientific writings concern the economics of transitions and change management, including the changes in values, beliefs, and institutions now occurring

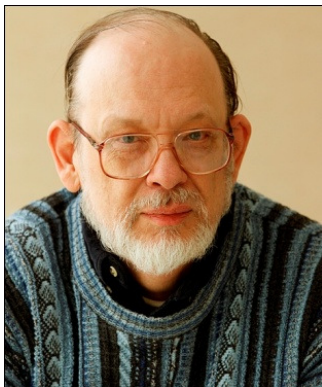
in the post-communist countries. She has published papers in several systems and cybernetics journals and made presentations at conferences in East and West Europe, Russia, and the USA.

Plenary Keynote Address: "*Cultural Foundations of Different Approaches to Cybernetics*"

Abstract: In Russia, difficulties with implementing market reforms have increased interest in understanding the unique Russian philosophical heritage with the goal of understanding what Russia is, what Russian culture and civilization are, and what the similarities and differences are between Russia and the West. Such thinking necessarily requires us to attempt "to look at the root" of the problem: to see the similarities and differences in the Russian and Western intellectual traditions; to try to determine not the geographical, but the intellectual place of Russia between the East and the West. Such attempts are particularly valuable when they lead to finding ways of integrating Western and Eastern intellectual traditions, partly in order to solve global problems. Such integration is needed at this time in history. The Russian style of scientific thinking, due to its history and culture, includes elements of Eastern and Western intellectual traditions. The Russian intellectual experience may provide the basis for a synthesis of Western and Eastern knowledge.

This Plenary Keynote Address presents cultural foundations of the Russian approach to cybernetics from three perspectives. First, it describes the peculiarities of the Russian style of scientific thinking in comparison with Western and Eastern approaches. Second, it suggests that cybernetics as "the most Eastern of the Western sciences" may benefit from Russian ideas such as the noosphere, the necessity to develop man's nature, Russian cosmism, active evolution, tektology, etc. Third, it compares Vladimir E. Lepskiy's and Stuart A. Umpleby's theories of cybernetics looking at them through the prism of Russian and American intellectual traditions.

2:00 PM – 2:30 PM



Professor Thomas Marlowe, Seton Hall University, USA, Department of Mathematics and Computer Science Program Advisor for Computer Science, Doctor in Computer Science and Doctor in Mathematics

Professor Thomas J. Marlowe has been a member of the Department of Mathematics and Computer Science at Seton Hall University for almost 40 years, and has taught a wide variety of courses in both disciplines. Until he went on phased retirement in 2017, he was coordinator and advisor for the Computer Science program. Professor Marlowe enjoys working with students and with professional colleagues—almost all his research is collaborative. His professional interests include in mathematics, abstract algebra and discrete mathematics; in computer science, programming languages, real-time systems, and software engineering, and pedagogy; and in information science, collaboration and knowledge management. The connection between graphs and algebraic structures is a recurrent theme.

Professor Marlowe has Ph.D. in Computer Science, from Rutgers, The State University, and a Ph.D. in Mathematics, also from Rutgers. Professor Marlowe has many publications and academic distinctions, with over 100 publications in refereed conferences and journals in mathematics, computer science and information science. Some of the more recent and more significant include:

- T.J. Marlowe, J.R. Laracy, "Logic as a Key to Integrating the Curriculum for STEM Majors", Journal on Systemics, Cybernetics and Informatics: JSCI Volume 15 - Number 4 - Year 2017, pp. 63-71, ISSN: 1690-4524 (Online)
- V. Kirova, T.J. Marlowe, C.S. Ku, "Monitoring and Reducing Application Fragility through Traceability and Effective Regression Testing", Genie Logiciel, No 115, 2-9, December 2015.
- A. Rountev, S. Kagan, T. J. Marlowe, "Interprocedural Dataflow Analysis in the Presence of Large Libraries", Proceedings of CC 2006, 216, Lecture Notes in Computer Science 3923, 2006.
- S. P. Masticola, T. J. Marlowe, B. G. Ryder, "Multisource Data Flow Problems", ACM Transactions on Programming Languages and Systems, 17 (5), 777 -803, September 1995.
- A. D. Stoyenko, T. J. Marlowe, "Polynomial-Time Program Transformations and Schedulability Analysis of Parallel Real-time Programs with Restricted Resource Contention", Journal of Real-Time Systems, 4 (4), 1992.
- T. J. Marlowe, B. G. Ryder, "Properties of data flow frameworks: A unified model", Acta Informatica, 28 (2), 121 -164, 1991.

Professor Marlowe has been a member on more than 10 Ph.D. thesis and 5 M.S. thesis committees, member of more than 25 conference program committees, and reviewer for numerous conferences, journals, and grants. He is the founder of an ongoing professional conference, and has been active with the IIS and the WMSCI multi-conference.



Fr. Dr. Joseph Laracy, Seton Hall University, USA, College of Arts and Sciences, Department of Mathematics and Computer Science, Complex Systems, Differential Equations, and Dynamical Systems. Faculty member in the Department of Systematic Theology at Immaculate Conception Seminary.

Father Laracy is a priest of the Archdiocese of Newark and member of the Seton Hall University Priest Community. He holds a doctorate from the Pontifical Gregorian University in Rome. His principal technical interests are in systems science: systems theory (e.g., cybernetics), applied dynamical systems, and systems engineering. He also enjoys teaching topics in applied statistics, logic, and the history of mathematics and science. Father Laracy's principal theological interests are in the intersection of faith & reason and empirical science & Christianity. In addition, Father Laracy is interested in pastoral applications of Viktor Frankl's existential analysis—logotherapy. Father Laracy's work at the Complex Systems Research Laboratory at MIT concentrated on uncertainty and dynamics in large-scale, complex engineering systems and looked at key sources of uncertainty, ways to model and quantify uncertainty, and ways to maintain properties such as safety and resilience as systems change over time. His master's degree research at that time was supported in part by NASA Ames Research Center (Model-Based Hazard Analysis Research) and National Science Foundation (A Socio-Technical Approach to Internet Security). As a student at the University of Illinois, he pursued research activities to architect a scalable RSA cryptographic co-processor, supported in part by the National Science Foundation. Laracy also worked on a software pattern-based fly-by-wire

aircraft control system. In the course of his studies, he held engineering positions with Lucent Technologies (Wireless Terminal Interoperability Laboratory), Ball Aerospace and Technologies (NASA Deep Impact Mission), and Light Source Energy Services.

Plenary Keynote Address: “*Philosophy and Second-Order Cybernetics as a Second-Order Loop: Lonergan’s Epistemology, Ontology, and Methodology*”

Abstract: First-order cybernetics arose from and grew with a desire to understand control processes and iterative/recursive behavior in engineering, physics, and biological systems, which second-order cybernetics generalized, in particular noting that in social systems the observer, the subject, and the process become entwined in a larger metasystem, itself reflective and recursive. From there, the connections to philosophy, mathematics, and theoretical computer science become obvious. Those connections are apparent in the work of Bernard Lonergan, SJ, a contemporary of the founders of second-order cybernetics. We explore those connections, and parallels to and differences with second-order cybernetics in Lonergan’s approach to theology, epistemology, ontology and teleology, and mathematics and logic.

2:30 PM – 3:00 PM



Dr. Bruce E. Peoples, Innovations LLC, USA, Founder and CEO Formerly at Université Paris 8, France, Laboratoire Paragraphe. Chair Emeritus of an ISO/IEC Standards Committee, Generated over 50 Invention Disclosures, 15 Patent Applications and 11 Patent Awards

Dr. Bruce E. Peoples has over 27 years experience in researching and developing advanced complex training, performance, decision, and production support systems and has architected several advanced, “self learning” systems. His research activities led to the filing of over 50 Invention Disclosures and 15 Patent Applications. His inventions include the development of a cutting edge BCI system that controls the flight of an unmanned aerial vehicle using only thoughts. Dr. Peoples also designed and led development of the first paperless learning media production system that mass-produced digital “modular” information objects, also known as Sharable Content Objects (SCOs) that could be used standalone, as aggregations, or in Performance Support Systems and Decision Support Systems, in any delivery environment, without changing “module” code. In recognition of his past research, Dr. Peoples was awarded a Raytheon 2006 Excellence in Technology award. Dr. Peoples has been active in several International Standards Committees, developing the standards necessary for implementing “next gen” Information Communication Technologies on a global scale. He is Chair Emeritus of an ISO/IEC Standard Committee, ISO/IEC JTC1 SC 36 *Information Technology for Learning, Education and Training*. Dr. Peoples was awarded BS and MS degrees from Clarion University of Pennsylvania, and a PhD degree from Université Paris 8 Saint-Denis, France.

Plenary Keynote Address: “Reflections on Inter-Disciplinary Communications-Metaperspectives; Exploring the Affective Domain”

Abstract: Innovation and/or research performed by Inter, Cross, and Trans disciplinary teams requires individuals to develop an understanding of how their discipline relates to other disciplines. Such understanding is obtained primarily by effective verbal, non-verbal, and written communications. However, due to each domain’s institutional and psychological complexities, gaining adequate understandings of multiple disciplines can be problematic and at times seemingly impossible. This can lead to failures of the intents and goals of Inter, Cross, and Trans disciplinary teams. This reflection paper will propose an approach to ease gaining of understanding between individuals from different disciplines in an affective domain context, and possibly lay a foundation for applying affective domain rigor to how understanding between individuals occurs over time.