Education

PhD in Software Engineering, 2011, University of Macau, Macau
MS in Computer Engineering, 1990, University of Louisiana
BS in Electrical Engineering, 1988, University of Louisiana, Lafayette, Louisiana, USA

Honors and Awards

IEEE Senior Membership received on 2008APR26
ACM Senior Membership received on 2008AUG30
Distinguished Merit Award received on 2004NOV06, ISECON2004, 2004 Information Systems Education Conference, Nov. 4-7, Newport, Rhode Island, USA.

Professional Editorship and Service

Former Editor, *Journal of Information Technology Education* (ISSN: 1539-3585) (http://jite.org), Informing Science Institute, USA.

Member of the Editorial Advisory Board of:

Campus Wide Information Systems: The International

Faculty of Science & Technology
Department of Computer & Information Science
Senior Instructor

Dr. Kam Hou Vat

Email: fstkhv@umac.mo
Office: E11-4087, FST, University of Macau, Macau
Phone: 853-8822-4476; Fax: 853-8822-2426
Website: http://www.fst.umac.mo/en/staff/fstkhv.html

Research Summary

In the area of *Technical Leadership*, Dr. Kam Hou Vat has demonstrated his achievements in teaching and research. He is among the pioneers and leaders among faculty members at the University of Macau to introduce student-centered teaching, constructivism, and problem-based learning (PBL) approaches in computing education. He has actively disseminated his innovative pedagogical approaches through conference presentations and publications. In 2000, Dr. Vat developed a Web-based collaborative learning environment called REAL (Rich Environment for Active Learning), which led to a number of publications widely received with positive feedback from both students and colleagues. In 2008, Dr. Vat rejuvenated REAL in the context of modern Web technologies, and initiated *REALSpace* as a project responding to the call for virtual spaces of learning.

In the area of *Technical Contributions*, Dr. Kam Hou Vat has been an active and productive researcher and highly effective educator. Since 2000, he has published more than ten refereed journal articles, numerous encyclopedia contributions, book chapters, case studies and handbook-of-research works, as well as numerous refereed conference papers. In addition, Dr. Vat had involved in several innovative e-Learning projects in the integration of physical and virtual learning spaces with collaboration from the *Centre for Teaching and Learning Enhancement* (CTLE) at the University of Macau (UM). As a member of UM's *NCP* (new campus project) *Task Force on Faculties and Learning Facilities*, Dr. Vat's contributions were instrumental to the design of the Learning Commons at UM's old campus at Taipa and her current campus in Hengqin Island, completed respectively in the springs of 2012 and of 2014.

Research Descriptions

Soft Systems Methodology, Scenario-Based Design, and Human Activity Systems (SSM, SBD, HAS) in Systems Architecting (Organizational Modeling + Software Development)

The engineering of software has long been associated with the *scientific* paradigm of computing, as the term 'software engineering' was first coined in the 1968 NATO conference, along the line of traditional branches of engineering, based on the scientific method of investigation whose power lies in the repeatability of its results which are often used in the context of engineering applications. Yet, the repeatability of experimental results stems mainly from the fact that the phenomena investigated must be homogeneous through time. This point highlights many a difficulty for those human phenomena which could not match that strong criterion, making complete repeatability impractical, especially in the context of organizational development. When applied in the setting of organizational software development, it is no secret to witness the inadequacy of the conventional engineering approach consisting of the following stages, with stages 2 and 3

Journal of Information and Learning Technology (ISSN 1065-0741) (http://www.emeraldinsight.com/cwis.htm), published by Emerald, England (2004-2006).

Handbook of Research on E-Government Readiness for Information and Service Exchange: Utilizing Progressive Information Communication Technologies (ISBN 978-1-60566-671-6) edited by Hakikur Rahman, and published by Information Science Reference (Hershey, PA, USA) in 2009.

Cases on Adoption, Diffusion and Evaluation of Global E-Governance Systems: Impact at the Grass Roots (ISBN 978-161692-814-8) edited by Hakikur Rahman, and published by Information Science Reference Inc. (Hershey, PA, USA) in 2010.

Research Interests

Fundamental

Virtual Organizing, Soft Systems Methodology, Scenario-Based Design, Design of Learning Spaces, Constructivist Design of Learning-Centered Education

Applications

Systems Architecting of Information Systems for Learning Organization or Learning Communities, Virtual Spaces for Learning, Rationale Management Support in Software Engineering

Areas of Expertise

Soft Systems Analysis, Software Prototyping, Learning Management Systems (LMS) Development.

being plausibly iterative: 1) define the problem, 2) assemble the appropriate techniques, 3) use techniques to derive possible solutions, 4) select most suitable solution, and 5) implement the solution. This structured approach to conceiving software solutions for organizational knowledge work, often assumes the objectives are undisputed, so that problems are confined to 'how to do it' type. Yet, it is very unlikely for human phenomena to be homogeneous through time.

Indeed, in many an organizational context, what usually makes the situations problematic is the difficulty to define precisely the objectives, or rather what the problem is, given the changing, multiple, ambiguous, and conflicting alternatives abounding. Typically, if there will be a number of people concerned with or involved in the problem situation, it is not surprising that there will be a number of legitimate problem definitions. Therefore, the method of solution, unlike the structured approach above, has to start by defining, not a problem but a situation that is problematic, namely, such a situation may not present a well-defined problem to be solved out of existence. Yet, its stages of development could be characterized as follows with plausible iterations in stages 3, 4, and 5: 1) define the situation that is problematic, 2) express the situation with different sets of concerns, 3) select concepts that may be relevant, 4) assemble concepts into an intellectual structure, 5) use this structure to explore the situation, 6) define changes to the situation as the problems to be tackled, and 7) implement the change processes.

What this means for software development in an organizational context for IT (information technology) or IS (information systems) support, today, especially in an age of Internet-enabled knowledge society, is that we need a *social* paradigm of computing that could fit into the human situation of concerns. The investigation of soft systems methodology (SSM) originated from Professor Peter Checkland in Lancaster University in England, and scenario-based design (SBD) popularized by Professor John Carroll of PSU in the US, fits into the big picture of this paradigm of software development. The use of human activity system (HAS) as an intellectual construct to hook up SSM with SBD in the context of systems architecting (organizational modeling and software development) has been the continuing research interest of Dr. Kam Hou Vat.

Selected Publications

1. Vat, K.H. (2009). Developing REALSpace - Discourse on a student-centered creative knowledge environment for virtual communities of learning. *International Journal of Virtual Communities and Social Networking* (ISSN: 1942-9010), *1*(1): 43-74 (http://www.igi-global.com/journals/details.asp?id=7954).
2. Vat, K.H. (2006). Teaching a collaborative model of IS development through problem-based learning. *Information Systems Education Journal (ISSN: 1545-679x)*, *4*:102, October (http://isedj.org/4/102/).
3. Vat, K.H. (2006). Developing a learning organization model for problem-based learning: The emergent lesson of education from the IT trenches. *Journal of Cases on Information Technology (ISSN 1548-7717)*, *8* (2): 82-109.
4. Vat, K.H. (2005). Systems architecting of IS support for learning organizations: The scenario-based design challenge in human activity systems. *Information Systems Education Journal (ISSN: 1545-679x)*, 3:2, July (http://isedj.org/3/2/).