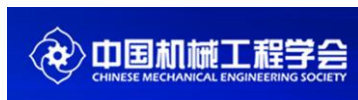


CE2014 — The 21st ISPE International Conference on Concurrent Engineering

September 8-11, 2014 Beijing, China



Welcome



Jianzhong Cha



Richard Curran

Dear Friends,

From the global financial crisis of 2008, the world has learned how important it is to build a sustainable economy. Developed countries like the US and the European Union have since established new strategies to reinforce manufacturing as an important pillar of their economy. The new manufacturing strategies, much different from before, are featured with most advanced information and communication technology such as digitalization, ubiquitous intelligence, total connectivity, cloud computing and service-oriented architecture. In addition, 3D printing, openness and crowd sourcing, social network, mobile technology and many others have stimulated the on-going manufacturing evolution. With these enabling technologies, the lifecycle of products, from conception, design, production, sales, usage, all the way to recycling can be carried out in the form of cloud services, which is capable of utilizing the most appropriate resources from the globalized and dynamic world. To implement this novel manufacturing strategy, infrastructure, resource optimization, system coordination, business models and other fundamental issues need to be addressed in great depth. In this conference, key topics permeated to this main theme--- Moving Integrated Product Development to Service Clouds in Global Economy ---will be exchanged and explored.

Beijing is the capital of Peoples Republic of China, which is the center of politics, culture, transport, tourism and international exchanges. Beijing is both a tribute to Chinas proud history and a gateway to Chinas future. Beijing has numberless scenic spots and historic sites, including the Tiananmen Square, the Great Wall, Forbidden City, Summer Palace, Beihai Park, etc. Many of these scenic areas have been listed as the World Cultural Heritage by UN and UNESO. To Beijing, what you see and feel is not only the majestic solemnity and busy life of ancient empire, but also the convenience and development of modern city. With the 29th Olympic Games in 2008, Beijing has once again demonstrated her enchanting charm in front of the whole world.

Beijing Jiaotong University (BJTU) is a national key university of China, under the direct administration of the Ministry of Education and jointly sponsored by the Ministry of Education, the Ministry of Railways and the Beijing Municipality. BJTU is one of the first universities in China authorized to confer the master and doctoral degrees autonomously. BJTU is one of the first National 211 Project universities, one of Innovation Bases of the National 985 Project, and one of the 56 universities authorized to establish a Graduate School in China. In 1997 and 2006, BJTU was ranked one of the best in National Undergraduate Education Evaluation. In 2004, BJTU hosted CE2004 with tremendous success and will host CE2014 successfully under your support and contributions.

Welcome all of you to Beijing CE2014!

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Beijing Jiaotong University,
China

Richard Curran
President, ISPE
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Keynote Speakers

Keynote Speaker 1: Bo Hu Li

He is an academican of Chinese Academy of Engineering, a professor and PhD adviser of the School of Automatic Science and Electrical Engineering in Beijing University of Aeronautics and Astronautics (BUAA).

He was the director of Beijing Institute of Computer Application & Simulation Technology and Beijing Simulation Center, as well as the dean of the School of Automatic Science and Electrical Engineering in BUAA. He was also a member of the council of directors of Society for Modeling & Simulation International (SCS) and Systems Engineering Society of China (SESC). Previously, he served as a member of editorial board of the international journal "Simulation Modeling Practice and Theory" (SIMPAT), the first president of Federation of Asian Simulation Societies (ASIASIM), and served for several international conferences as the general chair or chair of program committee/organization committee. In addition, he was a member of expert committee of Automation Area and the director of expert committee of Contemporary Integrated Manufacturing System (CIMS) Subject in Chinese National High Technology Research and Development Plan (863 Plan).

He is currently the vice president of the Second research institute of China Aerospace Science & Industry Corp., the honorary dean of the School of Automatic Science and Electrical Engineering in BUAA, and serves as the adviser of Beijing Simulation Center. In addition, he is the co-president of Chinese Association for System Simulation (CASS), the vice director of Manufacturing Committee in Chinese Society of Automation (CSA), and a Fellow of the China Computer Federation (CCF). He is the co-chief-editor of the international journal "International Journal of Modeling, Simulation, and Scientific Computing" (IJMSSC), the director of Meclod Institute of Simulation Science in BUAA.

He authored or co-authored 280 papers, 12 books and 4 translated books in the fields of modeling and simulation, concurrent engineering and manufacturing informatization. He has got 1 first class scientific award and 3 second class scientific awards from China State, and 16 scientific awards from the Chinese Ministries. In 2012, He got the SCS Life time Achievement Award(SCS Modeling and Simulation Hall of Fame) of the Society for Modeling and Simulation International (SCS).

His recent research is focused on the modeling and simulation of complex system, high performance simulation computer system, cloud simulation, cloud manufacturing, and smart city.

Keynote speech: Smart Cloud Manufacturing(Cloud Manufacturing 2.0)—— A New Paradigm and Approach of Smart Manufacturing

Abstract: This presentation is based on the works of research and applications in Cloud Manufacturing (CMfg) carried out by the authors' team*.

Our team proposed the "Cloud Manufacturing" concept in 2009, and began to conduct the research and practice of cloud manufacturing Version 1.0. Through the practice in recent years, with the development of related technologies, our team started the research and exploration of "smart cloud manufacturing" (cloud manufacturing version 2.0), it further develops the cloud manufacturing version 1.0 in manufacturing paradigm, technology approach, supporting technology, applications and other aspects.

First of all, the meaning of Big Manufacturing is given, the challenges and countermeasures for manufacturing industries in China as well as the content and development of manufacturing informatization are introduced. Then the paradigm of smart manufacturing and the characters of smart manufacturing system of our team viewpoint are presented.

The definition, concept model, system architecture, technological system, typical technical characteristics, service objects, service type, service content and service characteristic of the smart cloud manufacturing are put forward.

Moreover, discussions are shown to prove that smart cloud manufacturing is a new paradigm and approach to realize smart manufacturing, which materializes and extends Cloud Computing in the manufacturing domain. Then the current status of the technologies, applications and industries for CMfg are briefly presented.

8 key technologies of technological system for the smart cloud manufacturing are briefly discussed, including (1) Overall technology of smart cloud manufacturing system, (2) Professional technology of smart product, (3) Supporting platform technology of smart cloud manufacturing system, (4) Smart cloud design technology, (5) Smart cloud product and equipment technology, (6) Smart cloud management technology, (7) Smart cloud simulation and experimental technology, (8) Smart cloud service technology. The research results on key technologies researched by the authors' team are indexed.

Some typical CMfg cases which have been successfully implemented in group enterprise and mid-small enterprise clusters in smart city are described. Finally, some problems worthy of attention in the further research and implementation of the smart cloud manufacturing are presented.

*Team is composed of 28 units come from Beijing University of Aeronautics and Astronautics, Second research institute of CASIC, China CNR Corporation Limited, Institute of Manufacture Engineering of Chongqing University, DG-HUST Manufacturing Engineering Institute, Beijing ND Tech Corporation Limited, Wuhan University of Technology and so on.

Keynote Speaker 2: Dr. Ram D. Sriram

Ram D. Sriram is currently the chief of the Software and Systems Division, Information Technology Laboratory, at the National Institute of Standards and Technology. Before joining the Software and Systems Division, Sriram was the leader of the Design and Process group in the Manufacturing Systems Integration Division, Manufacturing Engineering Laboratory, where he conducted research on standards for interoperability of computer-aided design systems. He was also the manager of the Sustainable Manufacturing Program. Prior to joining NIST, he was on the engineering faculty (1986-1994) at the Massachusetts Institute of Technology (MIT) and was instrumental in setting up the Intelligent Engineering Systems Laboratory. At MIT, Sriram initiated the MIT-DICE project, which was one of the pioneering projects in collaborative engineering and documented in the book entitled Distributed and Integrative Collaborative Engineering Design, Sarven Publishers, 2002.

Sriram has extensive experience in developing knowledge-based expert systems, natural language interfaces, object-oriented software development, life-cycle product and process models, geometrical modelers, object-oriented databases for industrial applications, health care informatics, bioinformatics, and bioimaging. He has consulted for several leading corporations all over the world. His client list (during his tenure at MIT) include Boeing, GE, NTT Data(Japan), NASA, Xerox Corporation, United Technologies, IIC (Spain).

Sriram has co-authored or authored nearly 250 papers, books, and reports, including several books. He has published in a wide range of journals in engineering, computer science, and health care fields. The papers he and his group wrote have won many recognitions and awards, including many best paper awards and most cited paper awards. In 1989, he was awarded a Presidential Young Investigators Award from the National Science Foundation, U.S.A. In 2011, Sriram received the ASME Design Automation Award for "pioneering contributions to design automation, particularly in developing new technologies to support distributed and integrated collaborative design."

Sriram was a founding co-editor of the International Journal for AI in Engineering (1986). Sriram served on the Executive Committee of the ASME's Computers in Engineering division for six years, including as its chair. From 2012 onwards, Sriram has been serving as a co-chair of NITRD's Software Design and Productivity group. He and his co-chairs have been

developing a strategic direction for the group, including organizing a workshop to understand the software related problems in manufacturing and health care sectors in September 2013.

Sriram is a fellow of the American Society of Mechanical Engineers, a fellow of the American Association for the Advancement of Science, a senior member of the Institute of Electrical and Electronics Engineers, a member (life) of the Association for Computing Machinery, a member of the Association for the Advancement of Artificial Intelligence, and a member (life) of the Washington Academy of Sciences.

Keynote speech: Network-Centric Manufacturing: Making it Happen

Abstract: The early part of this millennium has witnessed the emergence of an Internet-based engineering marketplace, where engineers, designers, and manufacturers from small and large companies are collaborating through the Internet to participate in various product development and marketing activities. This will be further enhanced by the next generation manufacturing environment, which will consist of a network of cooperating engineering applications, where state of the art multi-media tools and techniques will enhance closer collaboration between geographically distributed applications, virtual reality tools will allow visualization and simulation in a synthetic environment, and information exchange standards will facilitate seamless interoperation of heterogeneous applications. In this presentation, I will discuss several technologies that are being developed to make the above vision a reality.

Keynote Speaker 3: Mike Sobolewski

He is a World Class scientist at AFRL/WPAFB , a Professor of Computer Science at Polish Japanese Institute of Information Technology (PJIIT), Poland, and a Chief Science Officer at SORCERsoft.com. Mike received his Ph.D. from the Polish Academy of Sciences and D.Sc. from the Polish Japanese Institute of Information Technology, Poland. His prior experience includes being a Professor of Computer Science at Texas Tech University and Director of SORCER Lab from 2002 till 2009. From 1994-2002, he was Senior Scientist and chief architect of large-scale projects at the GE Global Research Center. Mike was also a visiting professor of Computer Science at West Virginia University (1989-1994) and has served as visiting professor and consultant in the USA, China, Russia, and most European countries. At the Polish Academy of Sciences, he was the Head of the Pattern Recognition and Image Processing Department, the Head of the Expert Systems Laboratory, and was engaged in research in the areas of knowledge representation, knowledge-based systems, pattern recognition, image processing, neural networks, object-oriented programming, and graphical interfaces.

Keynote speech: Unifying front-end and back-end federated services for integrated product development

Abstract: Improvements in the design process, and the technologies that enable them, have led to significant reductions in time-to-market and improvements in product functionality and quality, mainly through automation. However, the need for further improvements in these areas, and the increasing need to reduce product life cycle costs, require significant further improvements in product design technology. A strong development methodology, with higher fidelity models to perform the conceptual design and compute the information required for the modeling and simulation analysis, is need which can be continuously upgraded and modified. Such a methodology should lead to a significant reduction in cost and development time without scarifying any of the desired product specifications. Moreover, it should be simple to comprehend, easy to implement and easily adaptable to a diverse nature of agile product development activities.

Networked product developers may use different platforms appropriate for their tasks. In a general case, one developer can use more than one application, and there is a need to use engineering applications, tools, and utilities (resources) running in the heterogeneous and unreliable global network. On the other hand, the coordination of complex tasks involving many humans and a long series of interactions requires a homogeneous operating system - a metaoperating system. The metaoperating system enables distributed collaborative analysis and design space exploration. Creative and synergistic runtime front-end integration of resources used by a product developer directly is a key enabler for performing higher fidelity design with the same amount of resources that are allocated for traditional design.

The SORCER (Service-ORiented Computing EnviRonment) computing platform enables collaborative integrated product development across organizational boundaries and full usage of all compute resource in the network ranging from desktops to high performance computing machines. This is the key to executing the process within the same amount of time and resources as a traditional conceptual design process. This presentation describes a true service-oriented architecture that describes everything, anywhere, anytime as a service with the innovative service-oriented process expression (front-end services) and its dynamic and on-demand actualization (back-end service providers). Domain-specific languages for modeling and/or programming within its operating system are described as well.

Keynote Speaker 4: John C Hsu

Dr. Hsu has over thirty (30) years of diversified experience in Systems Engineering, Aerospace Engineering, Mechanical Engineering, Nuclear Engineering, software development and engineering management, and has worked as technical manager, project manager, principal investigator and project leader, mainly at The Boeing Company. He was among the first group of people in the world working on systems engineering at the onset of systems engineering revitalization in the middle of 1990's. He implemented the first break-through systems engineering application for the Boeing/Airlift and Tanker Programs, a pioneer in developing and establishing systems engineering process, methods, tools, and templates for the Boeing Company.

Dr. Hsu is an elected AIAA Fellow, a prestigious honor for his distinguished contributions to systems engineering, and INCOSE ESEP (Expert Systems Engineering Professional), for significant contributions to systems engineering, a past Chair of the AIAA Systems Engineering Technical Committee. He is currently the Editor-in-Chief of the AIAA Progressive Series Book on "Advances in Systems Engineering and Cost Engineering" and Associate Editor for Journal of Aircraft focusing on Systems Engineering, Chair of the INCOSE Network Centric Operations (NCO) Working Group. He has served as general chair, technical chair, conference organizer and session chair in AIAA and INCOSE, and past Regional Director and Chapter President of INCOSE.

Dr. Hsu has taught faculty members, post-graduate staff, graduate and undergraduate students in US, UK and Netherlands, and professionals worldwide. Currently, He is an Adjunct Professor at California State University at Long Beach, Board Member and instructor of the University of California at Irvine Systems Engineering Certification Program, Honorary Professor of Queens University in United Kingdoms, and Royal Academy of Engineering Visiting Professor. He also teaches professional development courses at AIAA.

He has earned Ph.D. in Mechanical & Aerospace Engineering, MS in Nuclear Engineering, MS in Mechanical Engineering, and a Registered Professional Engineer. He has received numerous honors and awards.

Keynote speech: In a Network-Centric World

Abstract: Rapid advances in Information Technology have resulted in revolutionary changes in the way we run our businesses and live our daily lives. Network Centric

Operations (NCO) recognizes that interdependence (sharing information among many) is vital to an organization's future. Information must be quickly distributed, its value understood and the desired effect created. From a commercial perspective, an enterprise is network centric when a workforce can automatically self-synchronize and function autonomously with task specific information.

Net-Centric Operations (NCO) occur when systems are linked or networked by a common infrastructure, share information across geographic borders, and dynamically reallocate resources based on operational needs. NCO is an environment where seamless collaboration between networks, systems (such as satellites, aircraft, or ships) or elements within systems (devices or components such as PDAs) is possible. The organization with the right information at the right time and right place will prevail. This network will provide decisions makers with information from thousands of cloud nodes to produce a complete picture CMfg viewed as a three-dimensional chessboard. Enabling this seamless networking capability is an information and communication Strategic Architecture Reference Model (RFM). The RFM works with both legacy and future systems and platforms to ensure interoperability with nodes that follow the same set of standards.

Understanding System-of-Systems Engineering (SOSE) is critical to a robust architecture development of NCO systems. There are five System-of-Systems (SoS) characteristics but the dominating one is emergent behavior. This non-linear behavior will impact architecture development, risk management, verification and validation strategy, and trade study methodology. Unfortunately, we have little understanding of the principles of SOSE in which especially the dominating behavior of emergence. Proposed research including Boltzmann distribution probability theory; agent-based emergent behavior model, statistical distributions, and optimizing interoperations of network systems, etc. will be introduced. Due to the immature development and diversified opinions, there does not exist a single unified consensus for processes involved in System-of-Systems Engineering.

Keynote Speaker 5: He Ren

He is a principle research professor, and the Acting Chief Engineer and Acting Chairman of Science and Technology Committee of Shanghai Aircraft Customer Service Co. Ltd., Commercial Aircraft Corporation of China Co. Ltd.(COMAC), and his responsibilities include technology innovation, specification, engineering validation& verification, and industrial design for AJR21 and C919 aircraft.

He got his Bachelor of Aerospace Engineering at Beijing University of Aeronautics and Astronautics, China in 1987, and PhD in Aerospace Engineering at Northwestern Polytechnic University in 1997. He has 16 years of working experience within real aerospace industries internationally, and at the same time 11 universities years of teaching and research experience with postgraduate supervisions in RMIT University of Australia. His research interests and expertise include aerospace reliability, maintainability, risk assessment and project management, life cycle cost (LCC) analysis and control, etc. He is Advisor of SAE (Society of Automotive Engineers), Vice-President of The System Reliability, Maintainability, and Safety Society of China, Chief Editor of Journal of Aviation Customer Service, etc. He has published 3 academic books and over 50 international journal and conference papers as well as dozens of industrial confidential and un-confidential reports.

Keynote speech: CE Theories and Practice in C919 Aircraft Program

Keynote Speaker 6: Stephen Zhi-Yang Lu

Professor Stephen Zhi-Yang Lu is a world renowned researcher, teacher, and an education entrepreneur. His 30-year academic career spans a vast array of professional, technological, and geographical endeavors. He has excelled in both academic and business worlds, holding a permanent endowed chair professorship at University of Southern California

(USC) and serving the executive/advisory roles at multiple international organizations. He founded the IMPACT Research Laboratory, directs the Product Development Engineering, and the Viterbi iPodia (ViP) programs at USC. In 2012, he founded the iPodia Alliance - a global consortium among ten leading universities to promote the "borderless interactive learning" paradigm. Dr. Lu's academic interests and technical expertise are in design thinking, collaborative engineering, technological innovation, and education reform. He has published over 330 technical papers, books, and chapters, and served on many high-quality journals' editorial boards, including the Chief Editor of the International Journal of Collaborative Engineering. He was a visiting professor at MIT, Technical University, Berlin, Shanghai Jiao-tong University and KAIST. Dr. Lu was the Chairman of the Technical Advisory Committee of the SAVE/JAST program at Lockheed-Martin Co. which designed/developed the next generation fighter aircrafts for the U.S. military. He is a senior Fellow of ASME (American Society of Mechanical Engineers) and CIRP (International Academy of Production Engineering), and has chaired CIRP's Design Scientific and Technical Committee and Chairperson of CIRP-ECN Working Group. For his technical contributions, he has received many prestigious domestic and international awards, including honorary professorships from six foreign universities and two Presidential recognitions in the USA and Germany.

Keynote speech: Breakthrough Innovation in Higher Education

Abstract: Until recently, the higher-education institution was the only enterprise that did not see any fundamental changes for many centuries. Over the past decade, however, eLearning technologies have drastically increased the supply of education offers; while economic recessions have considerably reduced the demand of traditional degree education. The recent MOOCs (massively open online courses) movement makes many high-quality courses available online to everyone free of charge; and the current economic recession renders well-paid employment unattainable for many college graduates. Now that classroom lectures are free and university degrees are underwater, the higher-education enterprise has finally passed a strategic inflection point (SIP) where nothing short of fundamental changes will do – this is a perfect time for breakthrough innovation. It is clear that a 21st century university will have a vastly different shape and form than it does today.

This keynote presentation introduces a breakthrough innovation in global education, called iPodia where "i" stands for inverted, interactive, and international learning. iPodia uses modern technologies to eliminate the distance of peer-to-peer interactions to enrich the learning experiences of all students at multiple universities within the iPodia Alliance. As of spring 2014, the Alliance has 10 formal members from 4 Continents, enabling over 350,000 students to learn together with each other around the clock and throughout the season. While many institutions are now using MOOC technologies to replace physical classrooms, iPodia is developing new pedagogy to reinvent classrooms on campuses. While many universities are globalizing by building classrooms-across-borders, iPodia is demonstrating a new globalization strategy to create classrooms-without-borders. It explores global diversity in local classrooms as a learning resource, rather than a hindrance, for students in order to promote "education diplomacy" – students from countries that normally wouldn't talk with each other are now studying and working together in iPodia classrooms. This demonstrates the iPodia vision "learning together for a better world". This presentation introduces the iPodia pedagogy and the iPodia Alliance to demonstrate how a team of elite global universities are working together to innovate borderless interactive learning as a future paradigm of global education.

Keynote Speaker 7: Prof. Ben Koo

Prof. Ben Koo of Tsinghua University is the inventor of eXtreme Learning Process, an approach to conduct Concurrent Engineering activities in the era of Internet of Things. He has received many educational awards and published a number of papers in the area of Team-based Engineering and Collective Learning activity design. His research area focuses on formal language design for engineering specifications and the design of learning organizations. Prof. Koo holds a Master's Degree in System Design and Management, a Ph.D. degree in Engineering Systems, both from MIT.

Keynote speech: Concurrent Engineering with Internet of Things: an Extreme Learning Approach

Abstract: The rapid advancement of Internet of Things (IoT) is pushing the envelop of how Concurrent Engineering is being practiced. IoT provides the pervasive real-time, and location sensitive data capabilities, forces engineered products to evolve with new communication and computational features before, during and after they are deployed to markets. To cope with this IoT-driven product development speed, this article presents a Concurrent Engineering approach, called eXtreme Learning Process,(XLP), where all engineered products and engineers are conceptualised as learning agents in agencies connected by the "Internet of Every Thing" (IoE). Instead of thinking of engineered products as concrete objects produced by distinct engineering teams, XLP-based engineering approach identifies engineering solutions as composable intellectual assets generated by decentralised learning processes. Therefore, any individual, or any organization, can participate in this incremental learning process, and collectively design and produce new products using resources connected to the IoT ecology. To demonstrate the feasibility of XLP-based concurrent engineering approach, we have conducted a number of XLP-based product development workshops in several universities. Usually, an XLP-based workshops takes 4 days to develop a product system. On average, it involves over 200 people from about 30 disciplinary fields, and located in different parts of the world. This article will report on how we orchestrate this type of concurrent engineering workshops, and what kind of IoT-based technologies and social norms are introduced to XLP participants. We will also explain the controlling mechanisms of this IoT-based product deployment microcosm, including the mechanism of crowd sourcing, and crowd funding.

Scientific Program

Locations:

Room ICH: International Conference Hall, at the second floor of the International Conference Center

Room MFH: Multi-functional Hall, at the first floor of the International Conference Center

Room A: Conference Room A, at the underground floor of the International Conference Center

Room B: Conference Room B, at the underground floor of the International Conference Center

Room C: Conference Room C, at the underground floor of the International Conference Center

Monday, Sept. 8			
8.30 - 9.30	Opening ceremony: Plenary session chair: Shuo-Yan Chou 8:30-8:40 CE2014 general chair: Prof. Cha Jianzhong 8:40-8:55 BJTU president: Prof. Ning Bin 8:55-9:10 NSFC department director: Prof. Li Ming 9:10-9:30 ISPE president: Prof. Richard Curran (Location: Room ICH)		
9.30 - 10.30	Keynote: Prof. Li Bohu: A New Paradigm and Approach of Smart Manufacturing (Location: Room ICH) Plenary session chair: Shuo-Yan Chou		
10.30 - 10.45	Group Photo (Location: at the ground in front of the Mechanical Engineering Building)		
10.45-11.00	Coffee Break		
	Track 1 (Room A)	Track 2 (Room B)	Track 3 (Room C)
	Session 1-a(Cloud Manufacturing, Service Clouds)	Session 2-a(Design Methods)	Session 3-a(Service Science, Innovation and Engineering)
	Session chair: Joao Sarraipa Session co-chair: Hongyan Zhang	Session chair: Josip Stjepandic Session co-chair: Jozef Duhovnik	Session chair: Ronald Beckett Session co-chair: Nan Li
11.00 - 12.30	(17) Ricardo Jardim-Goncalves: A Pervasive Computing Framework Supported by the Cloud for Personal Health Management	(58) Jozef Duhovnik and Milan Kljajin: Product Development Supported by MFF Application	(113) Gloria Lucia Giraldo and German Urrego: Differentiated Contribution of Context and Domain Knowledge to Products Lines Development
	(84) Ricardo Jardim-Goncalves: Automatic Detection of Harmonization Breaking in SOA-based Enterprise Networks	(4) Zhang Haibo: The Analysis of Axial Slippage of the Sleeve in Circuit Breaker Operating Mechanism	(19) Ronald Beckett: Old Stuff and New Combinations in Product-Service Bundling
	(47) Ricardo Jardim-Goncalves : A Computing Resource Selection Approach based on Genetic Algorithm for Inter-Cloud Workload Migration	(3) Josip Stjepandic: Design for Assembly in Series Production by Using Data Mining Methods	(9) Amy J.C. Trappey: Enhancing Parking Service Design by Service Blueprint Approach
12.30 - 13.30	Lunch break		
13.30 - 15.30	Session 1-b(Cloud Manufacturing, Service Clouds)	Session 2-b(Design Methods)	Session 3-b(Service Science, Innovation and Engineering)
	Session chair: Parisa Ghodous Session co-chair: Ricardo Goncalves	Session chair: Jozef Duhovnik Session co-chair: Zaifang Zhang	Session chair: Wim Verhagen Session co-chair: Ming-Chuan Chiu

	(114) Hongyan Zhang: Extending BPMN for Configurable Process Modeling	(66) Zaifang Zhang: City-Product Service System: a Multi-scale Intelligent Engineering Design Approach	(35) Ming-Chuan Chiu: Investigating the Relationship between Therapeutic Music and Emotion: A Pilot Study on Healthcare Service
	(108) Parisa Ghodous: Service-Oriented Architecture for Cloud Application Development	(74) Samuel André Managing Fluctuating Requirements by Platforms Defined in the Interface Between Technology and Product Development	(36) Ming-Chuan Chiu: A Mass Personalization Methodology Based on Co-creation
	(18) Ricardo Goncalves: Towards self-evolutionary Cyber Physical Systems	(98) Zhinan Zhang: A Closed-loop Based Framework for Design Requirement Management	(34) Yu-Ting Chen: Integrating Music Therapy and Music Information Retrieval Using Music Pattern Analysis
	Ricardo Goncalves: IMAGINE: End to End management of manufacturing networks	(106) Zhinan Zhang: The Sources and Methods of Engineering Design Requirement	(50) Wim Verhagen: Stochastic Forecasting of Lumpy-distributed Aircraft Spare Parts Demand
15.30 - 16.00	Coffee break		
16.00 - 17.00	Keynote: Dr. Ram Sriram: Network-Centric Manufacturing: Making it Happen (Location: Room ICH) Plenary session chair: Parisa Ghodous		
17:20-17:50	Fast food service		
18:00-21:30	Concert at National Center for Performance Arts		

	Tuesday, Sept. 9		
8.30-9.30	Keynote: Dr. Mike Sobolewski: Unifying Front-end and Back-end Federated Services for Integrated Product Development (Location: Room ICH) Plenary session chair: John Mo		
9.30-10.15	Keynote: Prof. Stephen Lu: Breakthrough Innovation in Higher Education (Location: Room ICH) Plenary session chair: John Mo		
10.15-10.30	Coffee break		
	Session 4-a(Product Lifecycle Management)	Session 5 (Simulation of Complex Systems)	Session 3-c (Service Science, Innovation and Engineering)
	Session chair: Ricky Curran Session co-chair: Guo Wei	Session chair: Roger Jiao Session co-chair: Wim Verhagen	Session chair: John Mo Session co-chair: Yangjian Ji
10.30 - 12.30	(52) João Sarraipa: A Requirements Engineering Methodology for Technological Innovations Assessment	(10) Danny Y.C. Wang: Intelligent and Concurrent Analytic Platform for Renewable Energy Policy Assessment Using Open Data Resources	(55) Eugenia Marilungo: Addressing Product-Services Manufacturing in Globalised Markets: an Industrial Case Study
	(1) João Adalberto Pereira: Product Development Model for Application in R&D Projects of the Brazilian Electricity Sector	(64) Xiaochao Ma: A Concurrent Simulation Framework of Power Plant for Online Fuel Analysis Based on GRNN Neural Network	(91) John P.T. Mo: Critical Factors in Successful Performance Based Contracting Environment

	(111) Guo Wei and Zheng Qing: A Closed-loop PLM Model for Lifecycle Management of Complex Product	(109) Yitao Liu and Roger J. Ji: Energy Utilization Modeling and Simulation for Pulp and Paper Manufacturing Processes	(92) John P.T. Mo and Marcus Zeuschner: Maintaining High Reliability Service in the Transformation to a Service Dominant Product Service System
	(37) Yu-Ting Chen: A Value Creation Based Business Model for Customized Product Service System Design	(65) Zenglei Zhang: Stability Analysis and Optimal Design of Super-power Hydraulic Operating System	(107) Chunlong Wu and Yangjian Ji: The Modular Affordance Deployment Method for Module Clustering Process of the Integrated Service Generalized Product
12.30-13.30	Lunch break		
13.30 - 14.30	Keynote: Dr. John Hsu: In a Network-Centric World (Location: Room ICH) Plenary session chair: Shuo-Yan Chou		
14.30- 16.30	Session 4-b(Product Lifecycle Management)	Session 6 (Sustainable system)	Session 7-a (Cloud Manufacturing Applications)
	Session chair: Kazuo Hiekata Session co-chair: John Mo	Session chair: Amy J.C. Trappey Session co-chair: Fabien Pfaender	Session chair: Hongyan Zhang Session co-chair: Derrick Tate
	(40) Richard Curran: Composite Aircraft Components Maintenance Cost Analysis	(39) Shuo-Yan Chou: Selecting Renewable Energy Technology via a Fuzzy MCDM Approach	(112) Margherita Peruzzini, Eugenia Marilungo and Michele Germani. Functional and Ecosystem Requirements to Design Sustainable Product-Service
	(89) Kazuo Hiekata: Case Studies for Concurrent Engineering Concept in Shipbuilding Industry	(83) Fabien Pfaender: Intelligent Engineering Design of Complex City: a Co-evolution Model	(46) Morteza Poorikiany: Design rationale management – a proposed cloud solution
	(57) John P.T. Mo: Assessing the Requirements and Viability of Distributed Electric Vehicle Supply Chain	(81) He Ren: Synchronizing Structural Health Monitoring with Scheduled Maintenance of Aircraft Composite Structures	(23) Josip Stjepandic: Intelligent Utilization of Digital Manufacturing Data in Modern Product Emergence Processes
	(80) John P.T. Mo: Life Cycle Costing for Alternative Fuels	(62) Yancai Xiao: Short Time Forecast of Wind Speed Based on EMD and SVM	(100) Essam Shehab: Uncertainties in Cloud Manufacturing
16.30 - 16.45	Coffee break		
16.45 - 18.45	Session 4-c(Product Lifecycle Management)	Session 8-a (Systems Engineering)	Session 7-b (Cloud Manufacturing Applications + 3D printing)
	Session chair: Wei Guo Session co-chair: Nozomu Mishima	Session chair: Jozsef Tóth Session co-chair: Giuliani Garbi	Session chair: Derrick Tate Session co-chair: Wensheng Xu
	(75) Denis Tsygankov: A Model for Storing and Presenting Design Procedures in a Distributed Service-oriented Environment	(54) Ana ĩ Ottino: Interoperability of Simulation Applications for Dynamic Network Enterprises Based on Cloud Computing – Aeronautics Application	(99) Bai Ao: A Lean Manufacturing Implementation Strategy and its Model for Numerical Control Job Shop under Single-piece and Small-batch Production Environment

	(21) Nozomu Mishima: A Proposal on a Remote Recycling System for Small-sized E-waste	(14) Giuliani Garbi: Shared Management of Product Portfolio	(12) Nan Li: A Hierarchical Method for Coupling Analysis of Design Services
	(15) Jingyu Sun: A Knowledge-Based Approach for Facilitating Design of Curved Shell Plates' Manufacturing Plans	(41) Christoffer Levandowski and Dag Raudberget: Set-Based Concurrent Engineering for Early Phases in Platform Development	(101) Qi Na: Opportunities and Challenges of Industrial Design Brought by 3D Printing Technology
	(61) Shi Yan : Simulation on the Combustion System Work Process for Internal Combustion Engine by Using KIVA-3V	(56) Yu-Ting Chen: Configuration Optimization of Additive Manufacturing Based Supply Chain Using Simulation Approach	(63)Wensheng Xu: Research on Software Resource Sharing Management in Collaborative Design Based on Remote Virtual Desktop
20:00 - 22:00	ISPE board meeting (Location: Room No.3, International Conference Center)		

Wednesday, Sept. 10			
8.30 - 9.30	Keynote: Dr. Ben Koo: Concurrent Engineering with Internet of Things: an Extreme Learning Approach (Location: Room ICH) Plenary session chair: Ricardo Goncalves		
9.30-10.00	Coffee break		
10.00- 12.00	Session 9-a (Knowledge-based Engineering) Session chair: Fredrik Elgh Session co-chair: Gang Shen	Session 11: Concurrent Engineering Education Session chair: J P Tollenboom Session co-chair: Ben Koo	Session 10-a(Open Innovation) Session chair: Roger Jiao Session co-chair: Lin Zhang
	(42) Ky-Phuc Phan: Greedy Dynamic Programming for Scheduling the Advanced Reservation Parking Demands	(25) Joze Tavcar: Tools and Methods Stimulate Virtual Team Co-operation at Concurrent Engineering	(11) Lynn W.L. Chen: Strategic Development of LTE Mobile Communication Technology Based on Patent Map Analysis
	(22) Gang Shen: A Multi-agent Approach to the Maximum Weight Matching Problem	(38) Derrick Tate: Educating for Transcultural Design	(77) Yongxin Liao: Classification of the Open Innovation Practices: the Creativity Level
	(31) Wen jiafu: Application of Knowledge-based Engineering in the Automobile Panel Die Design	(82) Dajun Xu: Framework of Concurrent Design Facility for Aerospace Engineering Education Based on Cloud Computing	(103) Roger Jiao : Predicting Product Adoption in Large Social Networks for Demand Estimation
	(76) Evelina Dineva: Human Expertise as the Critical Challenge in Participative Multidisciplinary Design Optimization - An Empirical Approach	(96) Jean Pierre Tollenboom: Experience with Master theses ran as projects	(16)Pin-Chen Kuo: Using Patent Co-Citation Approach to Explore Blu-ray Technology Classifications
	12.00 - 13.00	Lunch break	
13.00 - 14.00	Keynote: Dr. He Ren: CE Theories and Practice of C919 Aircraft Program (Location: Room MFH) Plenary session chair: Ricky Curran		

14.00 - 15.00	ISPE annual meeting (All conference participants are welcome. Topics include: ISPE business; Promotion of CE2015; New book announcement: “ <i>Concurrent Engineering in the 21st Century Foundations, Developments and Challenges</i> ”, etc.) (Location: Room MFH)		
15.00-15.30	Coffee break		
15.30- 17.30	Session 9-b (Knowledge-based Engineering) Session chair: Gang Shen Session co-chair: Fredrik Elgh	Session 8-b (Systems Engineering) Session chair: Essam Shehab Session co-chair: Kazuo Hiekata	Session 10-b(Open Innovation) Session chair: Chun-Hsien Chen Session co-chair: Shih-Wei Lin
	(45) Fredrik Elg: Knowledge Object - a Concept for Task Modelling Supporting Design Automation	(78) Yitao Liu: SysML-based Model Driven Discrete-Event Simulation	(44) Shih-Wei Lin: Applying Simulated Annealing to the Nurse Rostering Problem in an Emergency Department
	(2) Josip Stjepandic: Readiness for Operation during Transition in Global Enterprise	(115) Kazuo Hiekata: Risk Management in the Design of Engineering as Sociotechnical Systems	(68) Danni Chang: Exploration of a Concept Screening Method in a Crowdsourcing Environment
	(85) Duo Yao: Word Segmentation Algorithm on Procedure Blueprint	(53) Josip Stjepandic: Standardized Approach to ECAD/MCAD Collaboration	(102) Chen Zhao: Security Model and Analysis of Digital Products Online Logistics
	(95) Daning Wang: Sensors and Simulation Cooperative Module Based Information Management Command System in Mine Dynamic Disaster Prevention	(24) Lin Zhang: An FPGA Based Architecture for Concurrent System Design applied to Human-robot Interaction Applications	(20) Jianjun Qin: Research of Context Requirement Analysis Method for Customer Collaborative Design
18:00-20:30	Conference Banquet (Award ceremony) Plenary session chair: Jianzhong Cha		

Thursday, Sept. 11	
8.30 - 11.00	Workshops, Tutorials Prof. Michael Sobolewski (Location: Room MFH)

Information for Conference Participants

MEETING VENUE

The 21st ISPE International Conference on Concurrent Engineering will be held at the International Conference Center, Mechanical Engineering Building, Beijing Jiaotong University (BJTU), in Haidian District, Beijing, China.

Address:

International Conference Center
Mechanical Engineering Building
No.3 ShangYuanCun, Haidian District
Beijing, 100044, China



1- HongGuoYuan Hotel. 2- International Conference Center (ICC), Mechanical Engineering Building.
3-HongGuoYuan Restaurant. 4-East Gate of Main Campus.5-West Gate of Main Campus.6-South Gate of Main Campus.7-East Campus

REGISTRATION and GET TOGETHER

Registration takes place on Sunday, Sept. 7, 15:00 to 19:00, and Monday, Sept. 8, 8:00 to 10:00 at ICC, Mechanical Engineering Building, BJTU.

Get together takes place on Sunday, Sept. 7, 17:00 to 19:00 at MFH, Mechanical Engineering Building, BJTU. (Soft drink and Snack are served).

NOTES ON PRESENTATION

Equipment

The conference room is equipped with an overhead projector, and a laptop computer will be provided. We suggest that you bring your own computer and/or transparencies as a backup.

Length of Presentation

30 minutes for each talk, including discussion. Please note that we are running on a very tight schedule.

Therefore, it is essential that you limit your presentation to the time which has been assigned to you. Session chairpersons are asked to ensure that speakers observe the time limits.

INTERNET

Further details on how to access wireless network at the conference venue will be given at registration. The HongGuoYuan Hotel provides cable connection only.

CONFERENCE LUNCH, SUPPER AND BANQUET

LUNCH: Lunches are provided from Monday, Sept. 8 to Thursday, Sept. 10, at HongGuoYuan Restaurant.

PACKED SUPPER: Fast food is provided on Monday, Sept. 8, 17:20 at HongGuoYuan Restaurant.

BANQUET: Takes place at HongGuoYuan Restaurant on Wednesday, Sept. 10, 18:00-20:00

TOUR TO

Tour to the National Center for the Performing Arts (NCPA) starts 18:00 on Monday, Sept. 8. Bus leaves at 18:00 from the front gate of HongGuoYuan Hotel.

THE NATIONAL CENTER FOR THE PERFORMING ARTS

The NCPA is located to the west of the Tiananmen Square and is said to be a major achievement of the reform and opening up, which reflects the enhanced comprehensive national strength in the cultural field and highlights the confidence and determination for the party and the country to vigorously promote advanced socialist culture and promote social harmony.

The architecture of the NCPA is a grand building combining post-modern style with traditional Chinese culture in harmony and prosperity, and creating a unique space that transcend time and pace, filled with delicate artistic nature. Its appearance is a “Pearl on Water” ---a bright pearl containing passionate melody with graceful chapters flowing and charming dances moving gently, passing forces across culture, language and customs. It serves as a palace of performing arts shouldering the mission of cultural revival with inter-resonating world arts and culture.

MOVING AROUND

Busses

Bus routes that have stops near the east gate are 87, Yuntong 103, 438, and 651.

Bus routes that have stops near the west gate and south gate are 16, 26, Yuntong 103 and Yuntong 105.

Subway

The nearest subway station is the Xizhimen station. Although crowded in rush hours, Beijing subway system is an efficient and practical transportation utility. Bus 87, 651, 438, 16, 26, Yuntong 105 have stops at Xizhimen. The distance is about 20 to 25 minutes by walk.

Airport

The Beijing International Airport is located to the northeast of Beijing city. The distance to the meeting venue is about 35 kilometers. Taxi fee is around CNY120 (about USD 20) and may go up to CNY 150 (about USD 25) according to different routing because of traffic etc., please change your money in advance in case taxi driver does not accept foreign currency. The airport subway links to the city subway system. If you take the airport subway, please change to line 2 at the Dongzhimen station. And, by subway line 2 you can reach the Xizhimen station, where you can take a taxi or a bus to reach the meeting venue.

If you live in HongGuoYuan Hotel on the BJTU campus, the following note can help you communicate with the taxi driver. It reads “Please take me to the HongGuoYuan Hotel, which is located on the campus of Beijing Jiaotong University. The hotel’s telephone number is 51685100”:

请送我到红果园宾馆（地址：北京交通大学校园内）
需从北京交通大学西门进入
宾馆电话：51685100

Social Program

Registration

Sunday, Sept. 7, 15:00 to 19:00
Monday, Sept. 8, 8:00 to 10:00
ICC, Mechanical Engineering Building
No.3 ShangYuanCun, Haidian District
Beijing, 100044, China

Get-together

Sunday, Sept. 7, 17:00 to 19:00
MFH, Mechanical Engineering Building
No.3 ShangYuanCun, Haidian District
Beijing, 100044, China

Conference banquet

Wednesday, Sept. 10, 18:00-20:30
HongGuoYuan Restaurant
Beijing Jiaotong University
No.3 ShangYuanCun, Haidian District
Beijing, 100044, China

Tour to the National Center for the Performing Arts (NCPA)

Monday, Sept. 8, 18:00.
Bus leaves at 18:00 from the front gate of HongGuoYuan Hotel
Beijing Jiaotong University
No.3 ShangYuanCun, Haidian District
Beijing, 100044, China

Contact Us

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