

2006 IEEE International Conference on Service Operations and Logistics, and Informatics

(SOLI 2006)

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Final Program



June 21-23, 2006

Shanghai, P. R. China



IEEE

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Systems Society

Co-Sponsored by Natural Science Foundation of
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GREETINGS FROM THE GENERAL CHAIRS

Welcome to IEEE SOLI 2006 and Shanghai, China!

Recent emphasis in business services has evolved from a more traditional labor-based business to sources of innovations and value creation. Intensive competition has forced companies to seek differentiators through business and technology innovations. The role of services science as a discriminator as well as its ability to impact value and profit has increased the focus on research and education of services. However, there remains a significant research and educational gap, which a co-evolution of industry with academics would help fill. The IEEE SOLI Conference is dedicated to accelerating the most relevant research and education in this pivotal area to develop the knowledge and skills required in a services-led economy. It is one of the first international conferences that integrates and promotes services sciences, management, and engineering research and education. This conference has selected 211 papers from over 340 submissions. We would like to thank all of you for your participation at this conference to collaborate and exchange outstanding research and educational works.

We are very grateful for the support of the IEEE Intelligent Transportation Systems Society, the Natural Science Foundation of China, the National Science Foundation of the United States of America, Services Science Global, IBM, Sun Microsystems, and Shanghai Jiao Tong University. Our thanks also go to our world-renowned speakers, Prof. Roland Rust, Prof. Richard Larson, Prof. Wei Zhang, Prof. Stephen Nash, Prof. Kathryn Stecke, Mr. Daniel Berg, Prof. Rajit Gadh, and Prof. François Sainfort. We are particularly grateful to Prof. Huizhang Shen, Program Chair, for his year-round hard work and leadership in organizing, preparing, and operating this conference. We would also like to thank the students from Penn State and Shanghai Jiao Tong University who spent long hours working with us to assure a smoothly-run conference. Last but not least, many thanks to all the paper reviewers. Without their hard work, we would not have been able to select such quality papers.

Our sincere gratitude goes to all the members of the Steering and Advisory Committees of this conference. And our deep thanks go to the many volunteers and staff members for the long hours, and all the hard work they generously gave to SOLI 2006. Finally, we would like to acknowledge the invaluable help and guidance we received from the Board of Governors of the IEEE Intelligent Transportation Systems Society.

Enjoy the conference and have a great visit in Shanghai.

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Plenary Speeches

1. *Understanding the Service Revolution*, Prof. Roland T. Rust, University of Maryland



Abstract: Service is creating a paradigm shift in marketing. This presentation provides the underlying causes of this paradigm shift and identifies the central role of technology. The implications of further technological development are explored and the consequences for the future of marketing are investigated.

Brief Biography: Roland T. Rust holds the David Bruce Smith Chair in Marketing at the Robert H. Smith School of Business at the University of Maryland, where he is Chair of the Marketing Department and is Executive Director of the Center for Excellence in Service. His lifetime achievement honors include the American Marketing Association's Gilbert A. Churchill Award for Lifetime Achievement in Marketing Research, the Outstanding Contributions to Research in Advertising award from the American Academy of Advertising, the AMA's Career Contributions to the Services Discipline Award, Fellow of the American Statistical Association, the Distinguished Marketing Scholar Award from SMA, and the Henry Latané Distinguished Doctoral Alumnus Award from the University of North Carolina at Chapel Hill. He has won best article awards for articles in Marketing Science, Journal of Marketing Research, Journal of Marketing (three times), Journal of Advertising, and Journal of Retailing, as well as MSI's Robert D. Buzzell Best Paper Award (twice). His book, *Driving Customer Equity* (written with Valarie Zeithaml and Katherine Lemon) won the Berry-AMA Book Prize for the best marketing book of the previous three years. He is the founder and Chair of the AMA's annual Frontiers in Services Conference, and was founding Editor of the Journal of Service Research. He is currently Editor of the Journal of Marketing. He has consulted with many leading companies worldwide, including such companies as American Airlines, AT&T, Chase Manhattan Bank, Comcast, Dow Chemical, DuPont, FedEx, IBM, Nortel, Procter & Gamble, Sears, Unilever, and USAA.

2. *Services Research in China*, Prof. Wei Zhang, NSF, China

3. *Services: The Other 75% of the Economy!* Prof. Richard Larson, President of INFORMS, MIT



Abstract: As nations grow and develop more as knowledge-based economies, services industries become a higher and higher fraction of the GDP. In the USA and some European economies, services comprise 75% of the GDP. While those figures do not yet represent most Asian economies, some of the fastest growing businesses in China, India and elsewhere in Asia are services businesses. In this presentation we focus on how a broadly-based engineering analysis of services, buttressed by principals of social sciences and

management science, can lead to vastly improved designs and operations of services industries. We provide as illustrations various services in health care, technology-enabled education (including e-learning) and catastrophe response (including natural disasters such as hurricanes and typhoons, earthquakes and influenza pandemics).

Brief Biography: Dr. Larson received his Ph.D. from MIT where he is Mitsui Professor in the Department of Civil and Environmental Engineering (CEE) and in the Engineering Systems Division (ESD). He is founding director of the Center for Engineering System Fundamentals (CESF). Much of his career has focused on operations research as applied to services industries, primarily in the fields of technology-enabled education, urban service systems, queueing, logistics and workforce planning. He is Immediate-Past-President of INFORMS, INstitute for Operations Research and the Management Sciences. He has served as consultant to many organizations including the World Bank, the United Nations, Rand Corp., the Kuwait Foundation for the Advancement of Science, Hibernia College, Hong Kong University, the U.S. Department of Justice, the U.S. Postal Service, and the City of New York. Dr. Larson served as Co-Director of the MIT Operations Research Center. He is a member of the National Academy of Engineering, an INFORMS Founding Fellow, and a recipient of the INFORMS President's Award, Lanchester Prize and its Kimball Medal.

From 1995 to 2003, Dr. Larson served as Director of MIT's CAES, Center for Advanced Educational Services. CAES brought technology-enabled learning to students living on campus and to those living far from the university, perhaps on different continents. His center produced an ambitious point-to-point distance learning program, the Singapore MIT Alliance. He has given lectures on the future of technology-enabled education in testimony before the House Committee on Science (Washington, D.C.) and in North and South America, Asia, Africa and Europe. Four years ago he created LINC, Learning International Networks Consortium, an MIT-based international project that has held three international symposia and sponsored a number of initiatives in Africa, China and the Middle East. From 1999 through 2004, Dr. Larson served as co-director of the Forum the Internet and the University.

4. *Service Operations & Logistics: Initiatives at the US National Science Foundation, Prof. Stephen G. Nash, Program Director of NSF, USA*



Abstract: The Service Enterprise Engineer program at the US National Science Foundation focuses on enterprises in the commercial service or public service sector. Research sponsored by the program extends the range of analytical and computational techniques addressed to service enterprise synthesis, design or operations. The speaker will outline the activities and goals of this program, highlighting research projects and topics related to service operations and logistics.

Brief Biography: Stephen Nash received a B.Sc. (Honours) degree in mathematics in 1977 from the University of Alberta, Canada; and a Ph.D. in computer science in 1982 from Stanford University. He is the Program Director for the Operations Research program at the National Science Foundation, on leave from George Mason University. Dr. Nash is a Professor of Systems Engineering and Operations Research in the School of Information Technology and Engineering, and is currently on leave from his position as Associate Dean of the School of Information Technology and Engineering. Prior to coming to George Mason University, he taught at The Johns Hopkins University. He has also had professional associations with the National Institute of Standards and Technology and the Argonne National Laboratory. His research activities are centered in scientific computing, especially nonlinear programming, along with related interests in statistical computing and optimal control. He has been a member of the editorial boards of *Operations Research*, *Computers in Science & Engineering*, the *SIAM Journal on Scientific Computing*, and the *Journal of the American Statistical Association*.

5. Using Mathematics to Solve Service Operations, Industrial, and Logistics Problems, Prof. Kathryn E. Stecke, University of Texas at Dallas, USA



Abstract: Mathematics has been called the language of science. Mathematics is used to solve many real-world problems in service operations, industry, logistics, the physical sciences, economics, social and human sciences, engineering, and technology, for example. We overview the many service, industrial, and logistics problems that have been solved using fuzzy logic technology, multiobjective metaheuristics, neural networks, tabu search, genetic algorithms, simulated annealing, mathematical programming, decision analysis, Petri nets, and queueing models. This overview could be useful for new faculty and Ph.D. students in Industrial Engineering, Operations Research, and Operations Management who are looking to solve some real problems. Future applications are also described.

Brief Biography: Dr. Kathryn E. Stecke teaches in Operations Management at University of Texas at Dallas. Previously she taught for 21 years at The University of Michigan Business School. She received an M.S. in Applied Mathematics, and an M.S. and Ph.D. in Industrial Engineering from Purdue University. She has authored numerous papers on various aspects of FMS planning and scheduling in numerous journals including The FMS Magazine, Material Flow, International Journal of Production Research, European Journal of Operational Research, IIE Transactions, IEEE Transactions on Engineering Management, Annals of Operations Research, Performance Evaluation, Management Science, Operations Research and several proceedings and book contributions. She is the Editor-in-Chief of both the International Journal of Flexible Manufacturing Systems and Operations Management Education Review. She is on the Editorial Board, Area Editor, or Associate Editor of many journals. She is Co-Chairperson (with Rajan Suri) of the First, Second, and Third ORSA/TIMS Conferences on Flexible Manufacturing Systems: Operations Research Models and Applications, held in Ann Arbor, Michigan in August 1984 (and 1986) and at MIT in 1989. She was Program Chair of INFORMS New Orleans in November 1995. She is Program Chair of INFORMS Seattle in October 2007 and is Plenary Chair of INFORMS San Francisco in October 2005. She was General Chair of the International INFORMS Conference in Maui in June 2001 and Program Chair of the

Intelligent Automated Manufacturing Conference in Dubai in March 2001. She's been an Adjunct Professor of the International Graduate School at the University of South Australia, Adelaide, since 1999. She served on the Board of Directors of INFORMS as Vice President from January 2003 to December 2004 and also served on the Board of Directors of INFORMS from January 1999 to December 2001. She spent months of 1997 at the Hungarian Academy of Sciences, Universiteit Groningen, and Pontificia Universidade Catolica do Rio de Janeiro, and 1996 at the Chinese University of Hong Kong. She spent part of 1989-1990 at the Fraunhofer Insitute in Stuttgart, part of 1987-1988 at Comau in Torino, Fall of 1985 at General Motors Research Laboratories, and Fall of 1984 at the Centre d'Etudes et de Recherches de Toulouse. She is a member of INFORMS, Decision Sciences Institute, POMS, and IFIP Working Group 5.7.

In February 2004, INFORMS compiled a list of 475 papers that have 50 or more citations from all papers published in the journal Management Science in the last 50 years. All of her Management Science papers are on this list. Then INFORMS selected 50 of these as those papers that "represented the most significant research" in the last 50 years. One of her papers is on that select list.

6. *IT as a Service*, Daniel Berg, CTO, Distinguished Engineer, Vice President & CTO Sun Services, Sun Microsystems



Abstract: As CTO of Sun Microsystem, Inc.'s Services business, Berg is seeing some significant shifts in the IT world. In this talk, he presents thought provoking themes that are driving the services business and concludes with the concept of "IT as a service." He asserts that the use and function of data centers as we know them today is changing as IT evolves to be a business asset, scaling technology to meet a customer's SLAs.

Berg notes the following four trends in IT:

- * Communitas as social software builders
- * Telemetry enabled innovation
- * Infrastructure Standards for operational maturity
- * Utility and Commodity Business Models

He views IT as a service that will evolve into networked containers and notes the trends that will shape applications of the future in regard to privacy, trust, and security.

Why delivering IT as a Service matters

- * Changes software economics, in trust models with suppliers
- * Application deployed on a network
- * Standardized, partner operated
- * Manufacturing applications: application assembly

Brief Biography: Daniel J. Berg is vice president and chief technology officer for global sales and services at Sun Microsystems. In this position, Berg is responsible for the technical strategy and direction of Sun's services organization. Berg also holds the title of Distinguished Engineer. Berg has had a number of other technical and business roles at Sun, including positions in technical sales, professional services, engineering, and customer service.

Before joining Sun, Berg held positions at IBM and Honeywell. Berg is also best-selling author and has written a number of books on Sun technologies, including *Advanced Techniques for Java Developers*, *Multithreaded Programming with Java Threads*, and *Dot-Com & Beyond: Breakthrough Internet Based Architecture & Methodologies*, among others.

7. *Research on the Evaluative System of Service Quality*, Prof. Peng Tian, Shanghai Jiao Tong University



Abstract: Evaluative System of Service Quality plays an important role in Service Science. How to use the contemporary theories about human-machine interactivity, technology accept model (TAM) into study of service quality, user satisfaction and user loyalty of service field in China and combined the approaches of conceptual model construct with empirical testing, we obtain a deep insight of the formation mechanisms, antecedents and consequences of above-mentioned concepts.

Brief Biography: Tian Peng received a Ph.D. in autocontrol engineering in 1993 from China Northeastern University and completed the postdoctoral research program in 1996 from Shanghai Jiao Tong University. He is the Secretary-general for Systems Engineering Program Committee of China Automatization Association and Director of China Systems Engineering Association. Dr. Tian Peng is a Professor of Management Science & Engineering in the School of Management and is the Director of Research Center for Applied Statistics and Decision Making, and Executive Dean of Management School in Antai College of Economics & Management, Shanghai Jiao Tong University. His research activities are centered in scientific computing, optimization, applied statistics and decision making.

Visionary Panel Speeches

1. *RFID – The Wireless Internet of Artifacts*, Prof. Rajit Gadh, University of California, Los Angeles



Abstract: The last twenty-five years have marked the coming of the personal computing and communication industry. Result: Individuals now carrying devices that are personal, mobile and always connected to the Internet. It is my belief that in the next twenty-five years, such information carrying and disseminating capability will extend from the "computing/communication devices" to real-world non-computing artifacts that we use in every day life such as clothes, utensils, furniture, packages, etc. These artifacts will collectively form what I refer to as the "Internet of Artifacts", an idea whose time has come. Like with any grand challenge, these artifacts will need to be uniquely identified (using technologies such as RFID), they will need to communicate with each other (wirelessly) and will gradually have the ability to take intelligent decisions first individually and then collectively.

At UCLA's WINMEC (Wireless Internet for the Mobile Enterprise Consortium), the Wireless "Internet of Artifacts" notion is being explored via a project called WinRFID (<http://winmec.ucla.edu/rfid>) -- which is the first generation of our implementation of this idea. RFID or Radio Frequency Identification is a technology that can embody the identity and other related information of an artifact within a chip called a tag that has no power source and make such information available to an RFID transceiver when the tag receives the RF transmission and its coupled energy. RFID tags are expected to eventually be embedded into every daily-life artifact. At UCLA, we are developing the WinRFID Middleware that allows efficient, intelligent and optimized networking and management of RFID readers, tags and sensors at the edge of the network. The WinRFID middleware is currently being used for several research and industrial-led projects at UCLA-WINMEC that include securing assets, asset tracking, managing object shipments in supply chains, factory wireless networks, etc.

Brief Biography: Dr. Rajit Gadh is a Professor at the Henry Samueli School of Engineering and Applied Science at UCLA where he heads the Wireless Internet for Mobile Enterprise Consortium (<http://winmec.ucla.edu>) of which major companies including Intel, HP, Sun, Siemens, Oracle, Computer Associates, Northrop Grumman, Hughes Network Systems, Qualcomm, TCS, Satyam, ISMB-Italy and several others are supporting members. Dr. Gadh works in the areas of Mobile/Wireless Internet, multimedia/graphics, RFID-middleware, RFID-sensor interface definitions, wireless enterprise security, multi-media content distribution over the internet, and multi-media over UWB, within the Wireless Media Lab (<http://wireless.ucla.edu/wml>). He has over 100 papers in journals, conferences and technical magazines.

He has a Doctorate from Carnegie Mellon University, a Masters from Cornell University and a Bachelors from IIT Kanpur. He has taught as a visiting researcher at UC Berkeley, has been a Assistant, Associate and Full Professor at University of Wisconsin-Madison, and did his

sabbatical as a visiting researcher at Stanford University for a year. Prior to his academic career, he has worked for two software startup companies. He has won several awards from NSF (CAREER award, Research Initiation Award, NSF-Lucent Industry Ecology Award, GOAL-I award), SAE (Ralph Teetor award), ASME (Kodak Best Technical Paper award), AT&T (Industrial ecology fellow award), Engineering Education Foundation (Research Initiation Award), etc., and other accolades in his career.

2. *Transforming Healthcare: Challenges and Opportunities*, François Sainfort, Georgia Institute of Technology, Director, Institute for Health Systems Engineering, Associate Dean for Interdisciplinary Programs, College of Engineering, William W. George Professor of Health Systems, Wallace H. Coulter Department of Biomedical Engineering



Abstract: Dr. Sainfort will present challenges and opportunities related to applying systems engineering and management sciences approaches to transforming health care delivery systems from a current ineffective, reactive, disease-focused system to a future cost-effective, proactive, health- and wellness-focused system. Dr. Sainfort will provide background on the healthcare industry, present possible solution approaches and describe challenges and opportunities.

Brief Biography: François Sainfort is the Associate Dean for Interdisciplinary Research Programs in the College of Engineering, the Director of the Health Systems Institute, and the William W. George Professor of Health Systems in the Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory University School of Medicine. Dr. Sainfort holds joint faculty appointments in the School of Industrial and Systems Engineering and in the College of Management.

Dr. Sainfort's research and expertise focus on medical decision making under risk and uncertainty, health outcomes measurement and monitoring, and health-related performance measurement and analysis. Dr. Sainfort has received research funding from the federal government – the Agency for Healthcare Research and Quality, the Health Care Financing Administration, the National Institute of Aging, the National Library of Medicine, the Centers for Disease Control, the National Science Foundation, and the Department of Defense – as well as funding from industry. He served as principal investigator on more than \$12 million in contracts and grants.

Dr. Sainfort has published over 125 refereed publications, is a current or past editorial board member for several leading journals, and periodically reviews manuscripts for many other journals. He reviews research proposals for the National Science Foundation, serves on study sections and special review panels for the Agency for Healthcare Research and Quality, several programs at the National Institutes of Health, and the Department of Defense.

Dr. Sainfort is an expert consultant for the health care industry. His clients include health care delivery organizations, medical devices companies, clinical laboratories, pharmaceutical companies, insurance companies, and information technology companies.

TECHNICAL PROGRAM

2006 IEEE International Conference on Service
Operations and Logistics, and Informatics

June 21-23, 2006
Shanghai, China

2006 IEEE SOLI PROGRAM AT A GLANCE

Tuesday, June 20, 2006

3:00 PM – 6:00 PM	Registration	Crowne Plaza Club Hotel
6:30 PM – 8:30 PM	Welcome Reception	Crowne Plaza Club Hotel

Wednesday, June 21, 2006

8:00 PM – 12:00 PM 2:00 PM – 5:00 PM	Registration	Aetna Building at Aetna School
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8:30 AM – 9:00 AM	Opening Ceremony	Aetna Building at Aetna School
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9:00 AM – 9:50 AM	Plenary Lecture: Richard Larson	Aetna Building at Aetna School
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9:50 AM – 10:10 AM	Coffee/Tea/Refreshments	Aetna Building at Aetna School
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10:10 AM – 11:00 AM	Plenary Lecture: Peng Tian	Aetna Building at Aetna School
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11:00 AM – 11:50 AM	Plenary Lecture: Stephen Nash	Aetna Building at Aetna School
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12:00 PM – 1:30 PM	Lunch	North Building at Aetna School
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1:30 PM – 3:10 PM	Parallel Session	North Building at Aetna School
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Room 102	Room 103	Room 104	Room 105	Room 106	Room 107
WM01 NSF01, 03, 04, 05	WM02 (520) - 078, 081, 085, 105, 107	WM03 (520) - 027, 064, 089, 118, 287	WM04 (520) - 034, 036, 063, 082, 103	WM05 (520) - 051, 061, 104, 237, 263	WM06 (520) - 030, 066, 080, 102, 120

3:10 PM – 3:30 PM	Coffee/Tea/Refreshments	North Building at Aetna School
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3:30 PM – 5:10 PM	Parallel Session	North Building at Aetna School
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Room 102	Room 103	Room 104	Room 105	Room 106	Room 107
WP01 CNSP01, 02, 03, 04, 05	WP02 (520) - 011, 016, 069, 199, 204	WP03 (520) - 025, 031, 094, 176, 180	WP04 (520) - 212, 231, 244, 256, 268	WP05 (520) - 087, 208, 255, 278, 295	WP06 (520) - 018, 161, 197, 221, 298

Thursday, June 22 2006

8:00 PM – 12:00 PM 2:00 PM – 5:00 PM		Registration		Aetna Building at Aetna School	
8:30 AM – 9:20 AM		Plenary Lecture: Roland Rust		Aetna Building at Aetna School	
9:20 AM – 10:10 AM		Plenary Lecture: Kathryn Stecke		Aetna Building at Aetna School	
10:10 AM – 10:30 AM		Coffee/Tea/Refreshments		Aetna Building at Aetna School	
10:30 AM – 12:10 PM		Parallel Session		North Building at Aetna School	
Room 102	Room 103	Room 104	Room 105	Room 106	Room 107
TA01 NSF02, 06, 12, 520273	TA02 (520) - 035, 058, 059, 133, 135	TA03 (520) - 126, 151, 177, 198, 207	TA04 (520) - 090, 106, 178, 216, 290	TA05 (520) - 084, 179, 206, 276, 281	TA06 (520) - 175, 181, 194, 285, 300
12:10 PM – 1:30 PM		Lunch		North Building at Aetna School	
1:30 PM – 3:10 PM		Parallel Session		North Building at Aetna School	
Room 102	Room 103	Room 104	Room 105	Room 106	Room 107
TM01 IBMSP01, 03, (520) - 202, 203	TM02 (520) - 092, 217, 226, 254, 283	TM03 (520) - 234, 242, 243, 248, 259	TM04 (520) - 201, 232, 233, 236, 261	TM05 (520) - 047, 076, 083, 086, 096	TM06 (520) - 245, 250, 286, 288, 314
3:10 PM – 3:30 PM		Coffee/Tea/Refreshments		North Building at Aetna School	
3:30 PM – 5:10 PM		Parallel Session		North Building at Aetna School	
Room 102	Room 103	Room 104	Room 105	Room 106	Room 107
TP01 IBMSP02, 04, 05, CNSP06	TP02 (520) - 238, 239, 249, 251, 260	TP03 (520) - 269, 070, 272, 291, 293	TP04 (520) - 075, 210, 264, 267, 311, 227	TP05 (520) - 152, 162, 165, 170, 185	TP06 (520) - 164, 168, 222, 223, 252
6:30 PM – 9:00 PM		Banquet Banquet Speech: Wei Zhang		Crowne Plaza Club Hotel	

Friday, June 23 2006

8:00 PM – 12:00 PM 2:00 PM – 5:00 PM		Registration				Aetna Building at Aetna School
8:00 AM – 9:50 AM		Plenary Lecture: Daniel Berg				Aetna Building at Aetna School
8:50 AM – 10:10 AM		Visionary Panel: François Sainfort and Rajit Gadh				Aetna Building at Aetna School
10:10 AM – 10:30 AM		Coffee/Tea/Refreshments				Aetna Building at Aetna School
10:30 AM – 12:10 PM		Parallel Session				North Building at Aetna School
Room 101	Room 102	Room 105	Room 106	Room 107	Room 202	
FA01 NSF08, 09, 11	FA02 (520) – 071, 115, 270, 279, 312	FA03 (520) – 012, 023, 191, 205, 211	FA04 (520) – 062, 193, 213, 229, 282	FA05 (520) – 020, 246, 274, 284, 289	FA06 (520) – 048, 111, 124, 253, 296	
12:10 PM – 1:30 PM		Lunch				North Building at Aetna School
1:30 PM – 3:10 PM		Parallel Session				North Building at Aetna School
Room 101	Room 102	Room 105	Room 106	Room 107	Room 202	
FM01 SUN01, 02, 03	FM02 (520) – 044, 046, 052, 132, 153,	FM03 (520) – 079, 088, 110, 121, 140	FM04 (520) – 166, 188, 262, 265, 266	FM05 (520) – 187, 190, 218, 315	FM06 (520) – 146, 155, 160, 169, 172	
3:10 PM – 3:30 PM		Coffee/Tea/Refreshments				North Building at Aetna School
3:30 PM – 5:10 PM		Parallel Session				North Building at Aetna School
Room 101	Room 102	Room 105	Room 106			
FP01 US & Chinese NSF Meeting	FP02 (Poster Session) (520) – 033, 041, 074, 101, 113, 114, 142, 143, 144, 219, 225, 257, 277, 310	FP03 (520) – 125, 280, 299, 313	FP04 (520) – 119, 154, 316			
6:30 PM-9:00PM		Shanghai Cruise Tour				The Bund(Shanghai Waitan)

2006 IEEE SOLI
Wednesday, June 21, 2006

8:00 PM – 12:00 PM 2:00 PM – 5:00 PM	Registration	Aetna Building at Aetna School
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8:30 AM – 9:00 AM **Opening Ceremony**

Room: The Auditorium, Aetna Building at Aetna School

Chair: **Robin Qiu**, General Co-Chair, 2006 IEEE SOLI, Pennsylvania State University, USA

WELCOME: **Grace Lin**, General Chair, 2006 IEEE SOLI, Distinguished Engineer & Member, IBM Academy of Technology, CTO
Fei-Yue Wang, President of ITSS, IEEE, Professor of Systems and Industrial Engineering, University of Arizona, USA
Wei Zhang, Deputy Director of Management Sciences, NSF China
Stephen Nash, Program Director, National Science Foundation, USA

9:00 AM – 9:50 AM **Plenary Lecture**

Room: The Auditorium, Aetna Building at Aetna School

Chair: **Robin Qiu**, Pennsylvania State University, USA

Speaker: **Richard Larson**, Immediate Past President of INFORMS, MIT, USA
Title: *Services: The Other 75% of the Economy!*

9:50 AM – 10:10 AM	Coffee/Tea/Refreshments	Aetna Building at Aetna School
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10:10 AM – 11:00 AM **Plenary Lecture**

Room: The Auditorium, Aetna Building at Aetna School

Chair: **Grace Lin**, IBM

Speaker: **Peng Tian**, Shanghai Jiao Tong University
Title: *Research on the Evaluative System of Service Quality*

11:00 AM – 11:50 AM

Plenary Lecture

Room: The Auditorium, Aetna Building at Aetna School

Chair: **Robin Qiu**, Pennsylvania State University

Speaker: **Stephen Nash**, Program Director of NSF, USA

Title: *Service Operations & Logistics: Initiatives at the US National Science Foundation*

12:00 PM – 1:30 PM	Lunch	North Building at Aetna School
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1:30 PM – 3:10 PM		Parallel Session				North Building at Aetna School
Room 102	Room 103	Room 104	Room 105	Room 106	Room 107	
WM01 NSF01, 03, 04, 05	WM02 (520) - 078, 081, 085, 105, 107	WM03 (520) - 027, 064, 089, 118, 287	WM04 (520) - 034, 036, 063, 082, 103	WM05 (520) – 051, 061, 104, 237, 263	WM06 (520) – 030, 066, 080, 102, 120	

Session WM01	Room 102	Time 1:30 PM – 3:10 PM	Session Title (US NSF I) Services Networks & Education	Chair Joshi Sanjay	Co-Chair Peggy Lee
Paper ID	Paper Title		Author(s)	Affiliation(s)	
NSF01	Port Supply Chains as Social Networks		Peggy Lee	Pennsylvania State University	
NSF03	Resource and Demand Allocation in Multi-Site Service Systems with Inter-Site Customer Flows		Chao, Xiuli Liu, L. Zheng, S.	North Carolina State University	
NSF04	Role of Manufacturing as a service operation and Service Engineering Program at Penn State		Joshi, Sanjay	Pennsylvania State University	
NSF05	Production Planning Under Supply and Demand Uncertainty: A Stochastic Programming Approach		Higle, Julia Prevendoski, Tom Kempf, Karl	Ohio State University Ohio State University Intel Corporation	

NSF01 Abstract -- This paper demonstrates the use of social network theory in understanding the degree of coordination in port supply chains. Three port supply chains are used to illustrate that port supply chains are, in fact, social networks and that their success is strongly influenced by the level of coordination and cohesion in their networks. Of the three port supply chains in this study, those with higher degrees of cohesion and coordination tend to exhibit higher operational performance. While causation was not demonstrated, this paper provides the foundation and groundwork for further empirical study into the use of social network theory to study supply chain relationships and port supply chain integration.

NSF03 Abstract -- Healthcare management is becoming a major problem in both developed and developing countries. As living standard improves, public is increasingly demanding high customer service levels. This talk reports on a study of strategic optimal resource allocation in healthcare environment. We formulate the problem as a multi-site service systems with inter-site customer flows, and develop analytical models and from which we obtain explicit closed form optimal allocation policy. We aim at providing insights to and guidelines for resource allocation in these service systems when some service criterion, such as average waiting time, loss rate, or blocking probability,

is a major concern. Our results demonstrate that the commonly used proportional allocation rules are not optimal; instead the optimal resource allocation solution exhibits a structure of "a few large and many small". The analysis involves queuing theory, game theory, convex analysis, and mathematical program with equilibrium constraints (MPEC).

NSF05 Abstract -- Motivated by problems that arise in semi-conductor manufacturing, we consider the problem of producing lots to satisfy demand under conditions leading to supply uncertainty (e.g., throughput times and yields) as well as demand uncertainty (e.g., quantities and due dates). Using data inspired by actual operating conditions, we will discuss preliminary computational results and insights obtained.

Session WM02	Room 103	Time 1:30– 3:10 PM	Session Title Services Design, Engineering, Operations, and Innovation	Chair Emmanuel Fragnière	Co-Chair Charlie Wang
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520078	Complementing AHP with Habitual Domains Theory to Identify Key Performance Indicators for Service Industry		Chen, Tai-Liang Lin, Kuo-Liang	I-Shou University I-Shou University	
520081	A Control System Designed to Address the Intangible Nature of Service Risks		Dubosson, Magali Fragnière, Emmanuel Milliet, Bernard	Haute Ecole de Gestion Haute Ecole de Gestion Swiss Federal Banking Commission	
520085	Identifying the Key Success Factors of the TV Shopping Industries in Cross-Straits		Pan, Ming-Chuan Wu, Ji-Ting	Tatung University Skylark Device & Systems Co	
520105	Research On Loan-to-value Ratios of Inventory Financing		Li, Yixue Xu, Yu Feng, Gengzhong He, Guoliang	Xi'an Jiaotong University Xi'an Jiaotong University Xi'an Jiaotong University	
520107	Satisfaction and Service Contexts: The Mediation of Consumption Goals		Wang, Charlie C.L.	University of New Haven	

520078 Abstract—Beyond limited scope of sole financial performance evaluation, balanced scorecard (BSC) provides a comprehensive evaluation model which covers aspects of customers, learning and growth of employee, and internal business process, in addition to finance dimension. To achieve successful implementation of BSC system, selecting key performance indicators (KPIs) precisely is a critical cornerstone. Most applications select KPIs in a subjective manner, which may raise hesitation during implementation. This paper thus employees a structured approach complementing analytic hierarchy process (AHP) with Habitual Domains Theory in identifying KPIs, and weighting of each indicator objectively. Utilizing service industry as an example, the proposed model demonstrates a systematic way to achieve precise evaluation integrating both subjective and objective elements.

520081 Abstract— Due to the intangible nature of services, classical control approaches might not provide the relevant safeguards to enable the service company to reach its objectives. Typically, services results from an experience whose value and quality are complex to measure. Additional difficulties arise when the monitoring of risks is implemented in management information systems. Indeed, assuming that most prominent risks encountered in the service industries is the consequence of “invisible threats”, appropriate approaches need to be built. We must also take into account the typical chain of risks that leads to the major damage. To tackle these specific service-type risks, we have designed a qualitative control system that enables auditors to allocate their resources and monitor the sequences of risks. We believe that if properly replaced in the corporate governance context, it could represent a useful tool to manage important categories of service risks. We adopt an internal auditing perspective.

520085 Abstract — Business managers are consistently searching for best channels, displaying locations and product packaging to attract purchasing behaviors of the consumers. However, with the change of the structure of

society and industry, TV shopping has become a new and popular channel that is valued worldwide. It has become one of the major channels that consumers make their purchases. This study focuses on the key success factors (KSF) of the TV shopping industries in Cross-Straits. Using Analytical Hierarchy Process (AHP), we find the KSF in Cross-Straits. This study finds that the top ten KSF in Cross-Straits are somewhat not in the same order.

520105 Abstract—Determining appropriate loan-to-value ratios of commodity collateral can make banks mitigate credit risk of inventory financing effectively. Based on reduced-form approaches, this paper establishes a basic model on the determination of loan-to-value ratios. In this model, some factors, such as exogenous default probability, price volatility of commodity collateral, marking to market frequency and maturity time of loan, are considered synthetically, so the banks may determine the appropriate loan-to-value ratio of specific inventory financing operation to keep the level of taken risk consistent. Moreover, with the extensions for realistic implementation, this paper introduces time to capture, liquidity risk and non-zero trigger level into the basic model.

520107 Abstract -- This research examines the impact of affect (pleasure and arousal) on perceived service quality and satisfaction in different service contexts in which the major consumption motive is either task-fulfillment or pleasure-seeking. Results show that pleasure/arousal has a direct impact on service satisfaction when it is the major consumption motive. Such an effect is mediated by perceived service quality when pleasure/arousal is not the major consumption motive. Finally, pleasure/arousal has no impact on perceived service quality and satisfaction when it is not anticipated.

Session WM03	Room 104	Time 1:30– 3:10 PM	Session Title Logistics & Supply Chain Management	Chair Lothar Schulze	Co-Chair Reggie Davidrajuh
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520027	Reverse Logistics Model for Mobile Phone Industry		Chan, Felix T. S. Chan, H. K. Zhang, J.	University of Hong Kong University of Hong Kong Shanghai Jiao Tong University	
520064	Coordination and Information Sharing in a Closed-Loop Supply Chain with Two-Part Tariff		Ge, Jing-yan Huang, Pei-qing Wang, Zi-ping	Shanghai Jiaotong University Shanghai Jiaotong University Shanghai Jiaotong University	
520089	Developing a Modern Distribution Chain: A Three-Pronged Approach		Davidrajuh, Reggie Ma, Hongze	University of Stavanger Turku School of Economics and Business	
520118	A Principal-Agent Approach to Incentive Mechanisms in Supply Chains		Zhang, Ying Li, Chen	The State University of New York Huazhong University of Science and Technology	
520287	The Approach of Automated Guided Vehicle Systems		Schulze, Lothar Wüllner, Alexander	University of Hannover University of Hannover	

520027 Abstract—Reverse logistics is an important strategic operational tool in nowadays business era. This is particularly important for short-life cycle industries like mobile phone industry. In this paper, a conceptual model for reverse logistics which focuses on mobile phone industry is developed. The model incorporates both internal and external factors that affect material flows and the reverse logistics activities. The usefulness of the model is demonstrated through a case study, which indicates how a company could create values from the returns by adopting this model. The model not only provides managers a template for analyzing their own reverse logistics challenges, but also serves as a reference model for similar industries.

520064 Abstract—This paper focuses on the closed-loop supply chain where the retailer takes charge of not only retail, but also collection. The retailer always possesses more information about market than the manufacturer. Thus a key question for the manufacturer is how to provide incentives to the retailer to truthfully disclose the information about the market and to work hard. This paper deploys the contracts with which the manufacturer can coordinate the system under symmetric information and screen the type of the market to improve her profit under asymmetric information. As a result, the pooling contract can perfectly coordinate the decentralized system under asymmetric

information, but the manufacturer obtains the lower profit; nevertheless, with the separating contracts the manufacturer obtains the larger profits though the system profit is lower.

520089 Abstract— This paper presents design and development of a modern distribution chain that is capable of adapting to changing market conditions. The distribution chain development uses a three-pronged attack: 1) Iterative approach with independent modules: an iterative approach is utilized for agility (adapting to market); the distribution chain is divided into modules to support the iterations. 2) Optimal algorithms and mathematics: the individual modules are coded with the most suitable algorithm and proper mathematics; this is because, these independent modules are going to be executed independently by different collaborators in different places. 3) Service component architecture for implementation: Distribution chain consisting of modular components that are run on geographically dispersed places prompts the use of Web Services components for implementation of these modules.

520118 Abstract—A principal-agent mechanism is introduced to study the coordination in the supply chain with a dominant enterprise and other dominating ones. The incentive mechanism is taken into account to design effective contracts which can solidify the relationship between dominating and dominated enterprises in the supply chain. Firstly, a dynamic principal-agent model was set up based on a set of assumptions and common senses. By solving this model, parameters for an optimal contract are determined to maximize the total production of the supply chain as well as the profits of individual enterprises. Moreover, an analysis to mathematic solution is conducted and strategies, which can improve the performance of the supply chain, are presented.

520287 Abstract—The automation of transportation in the production, trade and service sector is a key point in the optimization of intralogistics. For this task Automated Guided Vehicle Systems (AGVS) provide special benefits. Main points of these systems are the centrally controlled Automated Guided Vehicles (AGV). In the beginning, the vehicles were guided by optical or inductive guidelines. The main disadvantages of guidelines are the inflexibility concerning the modification and changing of the routing and the necessity of installations on or in the ground. New developments result in systems without guidelines. An example of this development is the laser guidance for the AGV.

The AGVs have a high individuality. They are usually developed and constructed for the demands of a special application and are therefore unique. Due to this individuality a special problem is the wide variety of maintenance and part logistics. Research and development leads to new approaches to this question. Examples are the implementation of the modulation of AGV and the implementation of construction kits. Further points are the reduction of complexity of the modules and the establishment of compatibility between various AGVS-producers. Another main direction of the development is the supplementary automation of standard fork lift trucks. Applications of AGVS exist in all fields of industry and trade. Typical examples are the use in assembly lines, warehouses, order picking systems and production plants.

Based on the AGVS-Statistic Europe, which is created and administrated by the Department of Planning and Controlling of Warehouse and Transport Systems (PSLT), the main application of AGVS and the sectors in which they are used are analyzed. With this database developments and current trends in the AGVS-sector are identified. More and more the AGVS-producers have to offer their products in a global competition. The relevance of AGVS in the area of automation will increase in the future.

Session WM04	Room 105	Time 1:30– 3:10 PM	Session Title Services Marketing & Sustaining	Chair Mei-Fang Chen	Co-Chair Jack (Tzyy- wen) Lin
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520034	The Impact of Switching Barriers on Customer Loyalty in Professional Service Contexts		Chen, Mei-Fang Wang, Ling-Huei	Tatung University Tatung University	
520036	A Research on Improvement of Customer Service Systems in Mobile Telecommunication Enterprises: a Knowledge Classification Perspective		Wang, Keyi Qi, Liyun Zhong, Qi	Dalian University of Technology Dalian University of Technology Dalian University of Technology	

520063	Enhancing Service Quality Through Integrated Services Marketing	Maritz, Alex	Swinburne University of Technology
520082	Female Consumer Behavior in a Banking Environment	Lin, Tzyy-wen Yang, Hao-erl	Hwatai Bank Tatung University
520103	Brand Equity Management Based on Ability	Zhuang, hui Gao, song	Shanghai Jiaotong University Shanghai Jiaotong University

520034 Abstract—Customer loyalty has been treated as an important source of sustained competitive advantages to a company's continued survival and to strong future growth. Customer satisfaction is known to be the key antecedent to customer loyalty. In recent service management literature, researchers have found the impact of customer satisfaction on customer loyalty might vary under different switching barrier conditions. However, switching barriers and their importance in professional service contexts have received little in-depth attention. This paper aims to examine the impact of switching barriers as a potential moderator on the complex interrelationships among the antecedents and consequences of customer satisfaction in professional service contexts. The empirical dataset, which covers 160 life insurance accounts in Taiwan, is analyzed by moderated regression analysis to test the proposed hypotheses. The main findings of this study show that the switching barriers do have a moderating effect on customer loyalty. Therefore, in addition to customer satisfaction, switching barriers play a crucial role in winning customer loyalty.

520036 Abstract—This paper focuses on the application of the text clustering technology on the customer service records in mobile telecommunication enterprises. The classification of the customer service records is condensed from 9 to 7 through text converting and data clustering. Based on the new classification of customer service records, a knowledge-based customer service system is established. The establishment of the system uses the theories and practices of Case Based Reasoning (CBR) for reference to improve the present system, and puts more emphasis on the significance of customer knowledge classification in the operation of the system. The conclusions of this paper provide guide for mobile telecommunication enterprises to improve customers' satisfaction by the use of new system.

520063 Abstract-- Service quality is often conceptualized as the comparison of service expectations with actual performance perceptions. Emphasis is placed on the combined attitudinal construct of service quality, highlighting cognitive and affective components. The aim of this study is to evaluate these expectations and perceptions from the point of view of franchisees in a prominent home entertainment franchise system. The purpose is to identify integrated services marketing initiatives to facilitate service quality within the system. Research methodology includes a quantitative study using the Surveypro e commerce survey tool, facilitated with SPSS 2 for data analysis. Use is made of SERVQUAL and SERVPERF measurement tools, with factors incorporating the service profit chain, relationship management, best practice and service quality. Outcomes include the evaluation of the contribution of these factors toward service quality. Management implications involve the implementation of recommended integrated services marketing initiatives to enhance service quality.

520082 Abstract-- Service quality is often conceptualized as the comparison of service expectations with actual performance perceptions. Emphasis is placed on the combined attitudinal construct of service quality, highlighting cognitive and affective components. The aim of this study is to evaluate these expectations and perceptions from the point of view of franchisees in a prominent home entertainment franchise system. The purpose is to identify integrated services marketing initiatives to facilitate service quality within the system. Research methodology includes a quantitative study using the Surveypro e commerce survey tool, facilitated with SPSS 2 for data analysis. Use is made of SERVQUAL and SERVPERF measurement tools, with factors incorporating the service profit chain, relationship management, best practice and service quality. Outcomes include the evaluation of the contribution of these factors toward service quality. Management implications involve the implementation of recommended integrated services marketing initiatives to enhance service quality.

520103 Abstract—The existing literatures on brand equity are from the consumer perspective. This paper describes a more complete research framework of brand equity that is built based on not only the consumer but also the ability. This paper proposes a concept that brand equity is a function of the levels of consumer-based brand equity and ability-based brand equity. Ability-based brand equity is the comprehensive effects of four factors including innovation ability, learning ability, controlling ability and brand culture cultivating ability that determine the

evolution direction of consumer-based brand equity. This paper also put forward a CBBE-ABBE matrix for analyzing the growth mechanics of brand equity as well as the developing path of a brand.

Session WM05	Room 106	Time 1:30– 3:10 PM	Session Title Services Management & Manufacturing	Chair Fugee Tsung	Co-Chair Pi-Chuan Sun
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520051	Multi-agent Modeling and Shop-Scheduling of the Manufacturing Enterprise Logistics		Chen, Yong Lin, Feilong Bi, Na	Zhejiang University of Technology Zhejiang University of Technology Zhejiang University of Technology	
520061	Assets Specificity, Joint New Product Development and Relationship Performance		Sun, Pi-Chuan	Tatung University	
520104	The Present State of and a Suggested Inserting Point for Biodiesel Production Industrialization in China		Hou, Yong Huang, Luke H. Xu, Fuyuan	University of Shanghai for Science and Technology University of North Dakota University of Shanghai for Science and Technology	
520237	Statistical Process Control for Multistage Manufacturing and Service Operations: A Review		Tsung, Fugee Li, Yanting Jin, Ming	Hong Kong University of Science and Technology Hong Kong University of Science and Technology Hong Kong University of Science and Technology	
520263	Fuzzy Theory and AHP Based Manufacturing Execution Systems (MES) Vendor Service Quality Evaluation Method Study		Liang, Chao Li, Qing	Tsinghua University Tsinghua University	

520051 Abstract—This article has carried on Correlative degree analysis between Xi'an region industrial structure and human resources structure by grey theory and method. The findings indicated that the output of tertiary industry has an important dependence on its employed population, and the highest Correlative degree; compared with it, there is the weak Correlative degree between agriculture output and its employed population; the least Correlative degree between industry output and its employed population. Therefore, the number of employed population in the primary Industry should be cut down, and shifts the rest labor force of countryside to the tertiary Industry; or the unemployed people of the second industry could be took in the tertiary Industry. To the extent, it can increase the number of employed population in the tertiary Industry, and promote effectively industry structure to the high-level development.

520061 Abstract-- In addition to transaction cost, transaction value is also important to governance decision-making. The objective of this study is to examine the relationships among supplier's assets specificity, joint new product development, and relationship performance. It is found that the joint new product development activities positively related to the supplier's relationship performance and the supplier's assets specificity, especially domain knowledge specificity, positively influences the degree of joint new product development and relationship performance.

520104 Abstract—As China is growing up rapidly, she is facing problems of energy shortage and fuel pollution. Among many solutions, an ideal renewable clean fuel, biodiesel has great potential to replace or partially replace fossil oil. By analyzing the present state of biodiesel development world wide, the agriculture structure of China, the characteristics of China's geography, and resources distribution in China, it is concluded that moving forward biodiesel industrialization benefits China in getting one more energy resource as well as reducing air pollution, though it has to be supported by the government with proper policy. Based on the geographical conditions, the circulating economy, and the present state of economic development, it is proposed a way for Shanghai to develop biodiesel industrialization, which is growing engineering microalgae in a large scale and extracting biodiesel from it.

520237 Abstract—Manufacturing and service processes today usually involve several process stages and operations. With an emphasis on achieving satisfactory product and service quality, using statistical methods for multistage process surveillance and fault diagnosis has become a necessity. Statistical process control methods have been widely recognized as effective approaches for process monitoring and diagnosis. However, most conventional SPC methods focus on single stage monitoring without considering the multistage scenario. In this paper we attempt to offer comprehensive references and a bibliography of statistical control methods for multistage manufacturing and service operations; evaluations with respect to existing methods are also given along with suggestions for future research topics.

520263 Abstract—The service quality of Manufacturing Execution Systems (MES) vendors gains more attentions than ever before, since more manufacturers plan to purchase MES for the improvement of plant operation and financial performance, and more software companies begin to supply the software. The paper supplies both an evaluation framework and a practical approach to evaluate the service quality of MES vendors. From the process viewpoint, the evaluation framework includes not only the after-sale supports, but also the MES software itself. The evaluation approach involves Fuzzy Theory and AHP, and ranks the alternatives based on the concept of positive/negative ideal alternative. Decision-maker's confidence level and preference on the fuzzy assessment results from respondents are incorporated in the approach. Finally, we validate the approach through a test.

Session WM06	Room 107	Time 1:30– 3:10 PM	Session Title Information Technology & Systems	Chair Kang Zhang	Co-Chair Hai Wang
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520030	Quality Services Need Quality Website: An Evaluation of Three Official World Expo Home Pages Using Web Diagnostic Tools		Shi, Yuquan	University of New South Wales	
520066	The Effect of Information Technology on E-commerce and E-marketing in Iran		Sarani, Ahmad Noura, Abbas Ali Akbari, Zahra Nejad	Azad University Azad University Iran	
520080	Intelligent Anti-Money Laundering System		Gao, Shijia Xu, Dongming Wang, Huaiqing Wang, Yingfeng	University of Queensland University of Queensland City University of Hong Kong City University of Hong Kong	
520102	Towards A Unified View of Service-Oriented Web		Kumar, Pushpa Song, Guanglei Zhang, Kang	University of Texas at Dallas University of Texas at Dallas University of Texas at Dallas	
520120	A Purchasing Sequences Data Mining Method for Customer Segmentation		Wang, Hai Wang, Shouhong	Saint Mary's University University of Massachusetts Dartmouth	

520030 Abstract—Since 1993 the World Expo has embraced the advantage of Internet technologies by providing information and services on its website. In order to provide quality services and information online, the World Expo must pay attention to the quality of its website. This paper reports the results of an evaluative study of the English home pages of the official 2005, 2008, & 2010 World Expo websites. Results show that all the home pages had technical problems. Significant work needs to be undertaken in improving the quality of the official 2008 & 2010 World Expo websites in order to provide quality information and services to their users.

520066 Abstract--Due to fast changing in ICT, we see some more political, emotional and social changing in the world. Globalization is the fruit of development of ICT. As management experts say, nowadays-just companies which are familiar with function and language of ICT can compete in the marketing world. Success in e-commerce requires some marketing characteristics in the electronic world. It is clear that if they want to be successful in new century, they should try to find some new attitudes and paradigms to have a remarkable presence in competitive market. The aim of this article is to recognize the effect of IT on different dimensions of marketing activities and managing relationship with the customers. Also in this article we elaborate on the challenges of E-commerce in Iran.

520080 Abstract—Criminal elements in today’s technology-driven society are using every means available at their disposal to launder the proceeds from their illegal activities. While many anti-money laundering solutions have been in place for some time within the financial community, they cannot adapt to the ever-changing risk and methods in relation to money laundering. In order for a more adaptive, intelligent and flexible solution for anti-money laundering, the intelligent agent technology is applied in this research. Intelligent agents with their properties of autonomy, reactivity and proactivity are well suited for money laundering prevention controls. Several types of agents are proposed and a novel and open multi-agent architecture is presented for anti-money laundering. A prototype system for money laundering detection is also developed to demonstrate the advances of the proposed system architecture and business value.

520102 Abstract -- This paper discusses the current landscape of the services available over the Web and proposes a Unified view for the future service-oriented Web. Apart from the current Web services accessible by Web applications, other services are directly provided to end users through Web pages, among which the “deep Web” Provides online queries through Web pages for users to access the hidden databases. This paper presents our categorization examples to illustrate this concept, as well as the methodology used to categorize these hidden Web services. We illustrate how computational Web services can improvise supply chain management as well as delivery logistics.

520120 Abstract—Purchasing behavior serves a base for online customer segmentation. Online purchasing behavior is characterized by purchasing sequences. This paper reviews the existing three major techniques of sequence data analysis, and discusses their limitations in online purchasing sequences analysis for customer segmentation. The study proposes a new data mining method for online customer segmentation, and applies this method for an online nutrition product store. The data mining results indicate that the proposed data mining method is novel and effective for online customer segmentation.

3:10 PM – 3:30 PM	Coffee/Tea/Refreshments	North Building at Aetna School
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3:30 PM – 5:10 PM		Parallel Session			North Building at Aetna School	
Room 102	Room 103	Room 104	Room 105	Room 106	Room 107	
WP01 CNSP01, 02, 03, 04, 05	WP02 (520) – 011, 016, 069, 199, 204	WP03 (520) – 025, 031, 094, 176, 180	WP04 (520) – 212, 231, 244, 256, 268	WP05 (520) – 087, 208, 255, 278, 295	WP06 (520) – 018, 161, 197, 221, 298	

Session WP01	Room 102	Time 3:30– 5:10 PM	Session Title (Chinese NSF) Production-oriented Services & Services Research	Chair Liu Wei	Co-Chair Ming Yu
Paper ID	Paper Title		Author(s)	Affiliation(s)	
CNSP01	Role of Producer Services in Regional Economic Growth: A Study of Yangtze River Delta		Liu, Wei Cui, Aiping	Shanghai Maritime University Shanghai Maritime University	
CNSP02	The Effect of Producer Services upon Manufacturing Value Chain		Yang, Chun Li Yu, Ming	Tsinghua University Tsinghua University	
CNSP03	China’s Producer Services: Growth, Structural Changes, and Effects		Cheng, Da-zhong	Fudan University	
CNSP04	Innovation Through Technological Outsourcing Services: Performance and the Determinants		Su, Jing-qin Yu, Jing-tao Li, Zuozhi	Dalian University of Technology Dalian University of Technology Dalian University of Technology	

		Cao, Hui-ling	Dalian University of Technology
CNSP05	Symbiosis Relationship of Manufacturing and Producer Services: Multi-Cases Comparison Study of Pearl River Delta	Xu, Xuejun Zhang, Hong He, Laigang	South China University of Technology

CNSP01 Abstract -- More and more literatures have argued that producer services now show the highest growth rates of all sectors in Western economies, and have increasingly played a crucial role in competitiveness improvement and employment creation, as well as in regional economy as a whole. From a different perspective of industrial cluster, this paper is focused on the role of producer services in regional economic growth in the emerging market economies. Our findings of the paper fit into broader theoretical discussions of the effects of producer services on the manufacturing industry cluster. Through the theoretical framework for the analysis, this paper suggests that producer services generate four important multiplier effects on industrial cluster: economic base effect, innovation effect, productivity effect and investment effect, and thereby play an active and strategic role in regional economic growth. Ultimately, a case about the development of producer services in Yangtze River Delta is analyzed quantitatively and some useful conclusions are made.

CNSP02 Abstract -- With more and more producer services participating in manufacturing activities, producer services gradually become indispensably value-adding nodes in manufacturing value chain. Compared with the traditional manufacturing value chain, the new one including producer services is based on the new business commerce and information technologies (IT), and its constituents are not limited to the interior activities of one firm any more, but come from many different kinds of firms. Due to the development and improvement of the new manufacturing value chain, it will become value net. Therefore, it is necessary to analyze the constituent elements of the new manufacturing value chain, which is the basis for further optimizing the manufacturing value chain. In this paper, we focus on analyzing producer services, their relationships with the manufacturing industry, and their effect on the manufacturing value chain.

CNSP03 Abstract -- Producer Services, which are used as intermediate inputs for the production of other goods or services, have important economic functions and implications. However, it is difficult to identify producer services from the already existing service sector classification. So, in order to overcome the analytical obstacles, and according to the intrinsic sense of producer services, but not from the perspective of specific service sectors, this paper employs the input-output method to conduct an empirical study of the growth and structural changes of China's producer services as well as their influences on China's economy and industries. Some conclusions and policy implications are drawn.

CNSP04 Abstract -- This study presents an empirical study to examine the performance and the determinants of technology outsourcing service in manufacturing firms in the Northeastern China. Using data collected in 94 large or medium-sized firms, we find that there existed a deep gap between the providers and the users of technology outsourcing services. The analysis also says that three factors which influence the outsourcing performance most in the process of innovation should be paid more attention to.

CNSP05 Abstract -- During the progress of China's new emerging industrialization, manufacturing has become the engine of China's economy, but manufacturing couldn't be flourishing without the support of the industrial circumstance. Producer services are the glue of national economy. Manufacturing and producer services depend on each other. In this context, the study on relationship between manufacturing and producer services is important. At first, This paper probes the modes and influencing factors of Symbiosis relationship between manufacturing and producer services according to the theory of symbiosis. The symbiosis mode of manufacturing and producer services is influenced by such factors as stratagem, scale, competence, trade and context, and so on. Secondly, this paper studied five cases of manufacturing enterprises, which are chosen according to their location, scale and trade. Then, the paper compares the examples in symbiosis motivation, symbiosis mode, and the width-depth of symbiosis. At last, some conclusions are made.

Session WP02	Room 103	Time 3:30– 5:10 PM	Session Title Services Design, Engineering, Operations, and Innovation	Chair Kathryn Stecke	Co-Chair Simon Wu
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Paper ID	Paper Title	Author(s)	Affiliation(s)
520011	Reliable Description and Interactive Management of User Preferences in MPEG-21	Chen, Qiang Chen, Hexin Moussa, M. Bello Liu, Shao Sang, Aijun	Jilin University Jilin University Jilin University Jilin University Jilin University
520016	E-policy Making : A System Approach Based on Evaluating ICT's Impacts	Mohamadian, Ayoob Elahi, Shaban Ghasemzadeh, Fereidoun	Iran Telecom Research Center Tarbiat Modares University Sharif University of Technology
520069	The Quality of Design Team Factors on Software Effort Estimation	Wu, Simon I. K.	University of Macau
520199	A Cargo Transportation Security Tool	Zhang, Ruijian	Purdue University
520204	Differentiated Lead Time and Price Quotation Management for Service Providers	Zhao, Xuying Stecke, Kathryn Prasad, Ashutosh	University of Texas at Dallas University of Texas at Dallas University of Texas at Dallas

520011 Abstract—MPEG-21 describes for us the future blueprint of multimedia application with the diversity of user preferences and environments. In fact, it is very necessary to form normative description of user preferences for multimedia application; however, there is no accepted model to provide formal and reliable representation. The method by Statistical Vector Matrix (SVM) and interactive management is presented in this paper. The experimental results show that the method will be active in the utilization and management of user preferences.

520016 Abstract—Information and Communication Technologies (ICTs) are now widely accepted by developing countries as a critical tool in their efforts, so policy makers should develop ICT policies or e-policies in order to monitor and evaluate political, socio-economic and cultural impacts of ICT and also measure progress in the use of ICTs to achieve the development strategies and policies. The paper focuses on the ICT's impacts as an important part in developing e-policies, including a comprehensive model based on system approach, appropriate frameworks for determining affecting and affected elements of ICT and a conceptual framework for analyzing and prioritizing different dimensions of the society. The paper will be helpful to development planners because their concern is the use of ICTs for the community and they measure the benefits and outcomes of using ICTs in development terms.

520069 Abstract---Over the past ten couple of years, there is a variety of effort models proposed by academicians and practitioners at early stage of software development life cycle. Some addressed that efforts could be predicted Using Lines of Codes (LOC) and COCOMO, others emphasized that it could be made using Function Point Analysis (FPA) or others. The study seeks to develop a model that estimates software effort by studying and analyzing small and medium scale application software. To develop such a model, 50 completed software projects are collected from a software company. With the sample data, design team factors are identified and extracted. By applying them to simple regression analyses, a prediction of software of effort estimates with accuracy of MMRE = 9% was constructed. The results give several benefits. First, the estimation problems are minimized due to the simple procedure used in identifying those factors. Second, the predicted software projects are only limited to a specific environment rather than being based upon industry environment. We believe the accuracy of effort estimates can be improved. According to the results analyzed, the work shows that it is possible to build up simple and useful prediction model based on data extracted at the early stage of software development life cycle. We hope this model can provide valuable ideas and suggestions for project designers for planning and controlling software projects in near future.

520199 Abstract— United States border security has become a major concern in the recent past. In order to enhance border security, a system must be put in place to allow the tracking of shipments from origin to destination. Researchers at Purdue University, USA have developed a centralized, internet based security tool which utilizes barcodes, RF technology, etc. to identify drivers and track the load integrity. This technology's two main focuses are

private companies and the government. It can be used by a company to expedite the shipment and receiving process, streamline the billing /invoicing process, and to automate potential Federal Government container tracking requirements. The government can utilize this technology for shipping container validation, verification of load integrity, and potential notification of special scenarios such as late or lost shipments, and as a tool to interact with the U.S. Customs and Border Protection's ACE database for border control.

520204 Abstract— Lead-time, in addition to price, has become a dominant factor in competition in the service industry. A service provider often provides lead-time and price quotations to customers before customers place orders. A short lead time may enable a service provider to charge a high price, but it also requires a certain capacity level to maintain a short lead time. We analyze the interrelationship among lead time, price, and capacity to decide an optimal value for each of them simultaneously. When a firm offers a menu of lead times and prices for customers to choose from, it is called differentiated quotation mode. There exists a cannibalization issue among the options in the differentiated quotation mode. Our model takes care of the cannibalization issue and provides insights to help managers design an optimal differentiated lead time and price quotation menu.

Session WP03	Room 104	Time 3:30– 5:10 PM	Session Title Logistics & Supply China Management	Chair Felix Lee	Co-Chair Cunlu Zhang
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520025	An Integrated JIT Inventory Model for Supply Chain Management: Single Supplier-Single Buyer with Multiple Product		Mehdizadeh, Esmail Tarokh, Mohammad J.	Islamic Azad University K.N.Toosi University of Technology	
520031	Supply Chain Risk by Structure		Zhang, Cunlu Huang, Peiqing	Xiamen University Shanghai Jiaotong University	
520094	Logistics Outsourcing in China: A Supplier Perspective		Wu, Yen-Chun Jim Peng, Yiu-Ming	National Kaohsiung First University of Science & Technology National Kaohsiung First University of Science & Technology	
520176	A Set-based Scheduling Problem for Square Rack Automated Storage and Retrieval Systems		Lee, H. Felix Chung, Eunyong	Southern Illinois University DongHae University	
520180	Exact and Approximation Algorithms for the Loader Problem		Chen, Feng Tang, Guochun	Shanghai Jiao Tong University Shanghai Second Polytechnic University	

520025 Abstract -- This paper focused on a buyer–supplier coordination model to improve deliveries in a manufacturing supply chain. The proposed model based on the integrated total relevant costs of both buyer and supplier and determines optimal order quantity, the number of deliveries/setups, and quantity of deliveries over a finite planning horizon in a relatively simple JIT (single buyer single supplier) with multiple products scenario and under deterministic conditions. It will be shown that the use of JIT purchasing reduces relevant logistics costs for both suppliers and buyers and the optimal delivery policy adopted by both buyer and supplier in a cooperative manner can be economically beneficial to both parties.

520031 Abstract—A number of trends have made the supply chain more vulnerable and supply chain risk management has become a research area of its own. The aim of this paper is to describe the effect of supply chain structure to supply chain risk transfer and risk control. According to the characteristics of supply chain structure, the risk transfer processes can be sorted into series process, parallel process, distribution process, assembly process, and switch process. The formulas of risk value for every process are given. Based on the researches on risk transfer processes, the relation between supply chain structure and total supply chain risk level is discovered. The conclusions would be applied to supply chain total risk assessment and supply chain structure optimization based on risk control.

520094 Abstract—After its admission to the WTO, China has attracted an increasing number of investing foreign enterprises. The local enterprises in China are facing a more complicated environment. Robust logistics infrastructures in China will be the key to successful operations for the local enterprises. Our research discusses logistics services provided by outsourced suppliers in China for domestic and foreign customers and how the need to serve different customers affects their organization. This study is from the viewpoint of outsourced suppliers in China in an attempt to understand customer logistic service criteria, satisfaction rate, customer selection criteria, and the difficulties and future challenges facing Chinese enterprises.

520176 Abstract—Many researchers have studied AS/RS scheduling problems that sequence the storage and retrieval requests to maximize the system throughput. These studies assume that each retrieval request is fixed with a pre-determined bin position in the AS/RS rack. However, in reality, a retrieval request is associated not with a specific bin position but with a specific product item which is available in various bin locations. In this paper, we address a generalized sequencing problem that determines both specific bin locations for the retrieval requests and sequencing with the chosen bin locations. To solve this new complex combinatorial problem, we introduce heuristic Methods and present their computational results. We also derive the cycle time distributions and their mean values for the single command under both squared and non-squared rack shapes.

520180 Abstract—The paper considers the loader problem that is commonly faced by a 3PL company. Based on the linear programming relaxation of the integer linear programming model for the problem, an approximation algorithm is first present for the loader problem using the random rounding techniques, and then its performance is analyzed. Secondly, a simple upper rounding algorithm is present for a special case of the loader problem without labor constraint with its performance analysis. Thirdly, a branch and bound algorithm is proposed by observing the upper bounds, lower bounds, and branch rules and dominate rules. Finally, computational experiments are given to show the efficiency of these algorithms.

Session WP04	Room 105	Time 3:30– 5:10 PM	Session Title Services Marketing & Sustaining	Chair Chih-Ping Chiang	Co-Chair Chih-Young Hung
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520212	The CRM Model Design Based On Rough Sets And Cluster		Guan, Hongbo Yang, Baoan	Donghua University Donghua University	
520231	An Operational Model of Closed-loop Logistics Based on the End-customer's Willingness		Ji, Jianhua Gu, Qiaolun	Shanghai Jiaotong University, Tianjin University of Technology and Education	
520244	Why Customers Stay: An Analysis of Service Quality and Switching Cost on Choice Behavior using a Catastrophe Model		Feng, Cheng- Min Huang, Yu-Kai	National Chiao Tung University National Chiao Tung University	
520256	The Fixed Routes Assignment Considering Fluctuant Customer Demand		Chiang, Chih- Ping	Cheng Shiu University	
520268	Evaluation of Account Receivable Collection Alternatives with Fuzzy MCDM Methodology		Hung, Chih- Young Li, Yiming Chang, Yi-Hui	National Chiao Tung University National Chiao Tung University National Chiao Tung University	

520212 Abstract—To raise the effective and efficiency of the quality-improvement, the Customer-Enterprise Interacting Mechanism for the Quality-Improvement oriented to the customer loyalty should be built. As a complex nonlinear system composed by suppliers, manufacturers and customers, this Mechanism's state is very uncertain & unpredictable. It makes that the optimization of the Mechanism has significance. To resolve the problem of optimizing this system, the GA-WNN optimization method that combining Genetic Algorithm (GA) with Wavelet Neural Network (WNN) has been proposed in this paper. In the GA-WNN method, Wavelet Neural Network has been applied to identify and model on the system according the high approximation ability of WNN for identifying the complex nonlinear system, then Genetic Algorithm as a kind of overall search optimization methods has been used to the system optimization of this system. To accelerate the convergence speed and learning speed of GA-WNN method, the parameters of the wavelet networks are trained by using hybrid algorithm, and the mixed GA

modified by selected strategy and combined local search algorithms is adopted. It has been proved by simulation results and practices in enterprises that the GA-WNN method can optimize the Customer-Enterprise Interacting Mechanism effectively and make this system tend to the optimum operation point so as to raise the effective and efficiency of the quality-improvement.

520231 Abstract—In a closed-loop logistics, the reverse logistics is a supply-driven flow. The amount of returned products is affected by the end-customer’s willingness, and the end-customer’s willingness is affected by the reclaiming price. This supply-driven flow creates a great deal of uncertainty of the quantity, timing and quality of used-products. This paper presents a new operational model (Model-I) of closed-loop logistics to minimize the total operational cost. In this model, the end-customer’s willingness to return used-products and the uncertainty of used-products quality are taken into account. An illustration is presented to demonstrate the feasibility of the proposed approach. Comparing with the Model-II, numerical results indicate that the operational cost can be saved about 10,000~25,000 \$ a year by using the proposed Model-I, and the recoverable ratio higher, the amount of saved-cost larger.

520244 Abstract—Convenience stores in Taiwan have had remarkable successes with retailing delivery services by integrating e-Commerce and logistics systems to form a new retail delivery model: “On-line shopping with pick-ups at convenience stores.” Though ingenious, intensified competition and increasingly complex customer behavior, it has become increasingly difficult for marketing practitioners to maintain customer loyalty. To help solve this problem, this study explores the relationships between the service quality and switching cost on choice behavior using a catastrophe model. It also applies GEMCAT II to actual market data to demonstrate the model’s use in choice behavior. The present analysis shows that, service quality and switching cost are the two major factors that influence choice behavior, and that a catastrophe phenomenon can occur with a high switching cost.

520256 Abstract—A variant VRP problem is introduced by considering available multi-period customer demand and split delivery, where the split delivery strategy is used to cope the periodic fluctuation of customer demand, that the demand exceeded the vehicle capacity may be fulfilled by the identical fixed route traveled in different period. The objective is to minimize the total operational cost including the traveling cost, the split delivery cost, and the fixed cost of fleet size. A Genetic Algorithm-based approach augmented with the dynamic programming is developed to solve the described problem. This paper is unique in considering multi-period demand of customers and addressing the reduction of workload variation by the split delivery strategy. Computational results find the proposed approach significantly outperforms in the reduction of total distance traveled and the number of vehicles utilized over the planning horizon.

520268 Abstract—In this paper, we present a fuzzy multiple criteria decision-making (FMCDM) approach to evaluation of account receivable (A/R) collection instruments. By considering the prepayment, the letter of credit (L/C), the documentary collection (including D/A and D/P), and the open account (O/A), the FMCDM approach is for the first time applied to investigate the A/R collection for the microelectronics and optoelectronics industries in Taiwan. According to our results, difference of the ranking preference between the two industries is observed. The ranking in the microelectronics industry is the prepayment, the L/C, the O/A and the documentary collection (D/A,D/P). The preference in the optoelectronics industry is the prepayment, the O/A, the L/C, and the documentary collection (D/A,D/P), respectively. International collection in modern unpredictable global market could be difficult unless firms have taken appropriate collection strategies. We believe that our study provides an alternative for making critical decisions during selecting A/R collection instruments.

Session WP05	Room 106	Time 3:30– 5:10 PM	Session Title Services Management & Manufacturing	Chair Shigeki Sugiyama	Co-Chair Cheng-Liang Yang
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520087	Using Genetic Algorithm for Better Route Arrangement - A Case of Taiwan Pelican Express Company		Yang, Cheng-Liang Chen, Yu-Kun	University of Tatung University of Tatung	
520208	Fundamental Behavior of Holonic System		Sugiyama,	Research Institute of Manufacturing	

		Shigeki Tharumarajah, Ambalavanar	Information Technology CSIRO Manufacturing Science & Technology
520255	Scheduling Unrelated Parallel Machines to Minimize Total Weighted Tardiness	Na, Dong-Gil Kim, Dong-Won Jang, Wooseung Chen, F. Frank	Electronics and Telecommunications Research Institute Chonbuk National University University of Missouri-Columbia Virginia Polytechnic Institute and State University
520278	Analysis on the Costs of IT-Outsourcing	Gan, Weihua	Nanchang University
520295	A Novel Embedded Conductive Detection System for Intelligent Conveyor Belt Monitoring	Pang, Yusong Lodewijks, Gabriel	Delft University of Technology Delft University of Technology

520087 Abstract—A real case of route arrangement problem caused by the needs of delivering goods directly to home is discussed in this paper. Normally a driver according to his experience arranges the route. However, this arrangement may not be appropriate. For preciseness, an accurate distance matrix is established by performing geographical information software, Power Map. Adopting a Genetic Algorithm (GA), which is carried out by using commercial software, Evolver, solves the problem. The result shows that the best route given by GA will be better than the driver's experience, and will save about 9% of original distance every day. 520208 Abstract – Nowadays there are so many huge, complex, and chaotic systems in this world, compared with the situation of several years ago, waiting to be managed intelligently in order to behave as they are expected. But it is quite hard even to find a method for describing such systems clearly and precisely. Because they consist of many parts with the parts having many common and differentiating factors while exhibiting characteristics of dependence as well as independence with added complications of having to deal with a changing environment and the consequent changes in their spatial and temporal arrangements. This makes it the most difficult to represent those using conventional techniques of description. As a consequence, the systems do not easily lend themselves to be described with conventional controls, Fuzzy, Neural, artificial Intelligence (AI), soft computing, and other new methods in engineering fields. This paper introduces a new idea of HOLON that is able to represent huge and complex systems clearly and precisely in order that they can be designed and controlled intelligently and flexibly.

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520255 Abstract—This paper addresses the batch scheduling problem of unrelated parallel machines attempting to minimize the total weighted tardiness. Identical or similar jobs are typically processed in batches to decrease setup and/or processing times. Local dispatching rules such as the earliest weighted due date, the shortest weighted processing time, and the earliest weighted due date with a process utilization spread are tailored to the batch scheduling requirements. Based on the features of batch scheduling, a two-level batch-scheduling framework is suggested. Existing heuristics, which show excellent performance in terms of total weighted tardiness for the single machine scheduling, such as the modified earliest due date rule and the modified cost over time rule, are extended for the problem. The simulated annealing algorithm as a meta-heuristic is also presented to obtain near optimal solutions. The proposed heuristics are compared through computational experiments with data from the dicing process of a compound semiconductor manufacturing facility

520278 Abstract—Outsourcing is regarded as a new strategy to gain more competence under the condition of limited resources. Especially offshore outsourcing has been popular since 2001 in the developed countries. More often than not, outsourcing models and methods have been the focus of discussion during the past decade, the cost of outsourcing is underestimated. This paper tries to discuss the cost issues when engaged in business process outsourcing for information technology (IT) service companies. Firstly, this paper presents the incentives and contents of outsourcing, then analyzes the dilemma of outsourcing, following presents the transaction costs theory. Lastly, this paper finds the solution to save the costs of outsourcing for IT service companies from the different points of view, such as returns from scale, returns from skill, returns from relationship, returns from models, etc.

520295 Abstract—Continuous transport systems such as belt conveyor systems are playing an important role nowadays in industrial fields of logistics, transportation, storage, etc. Condition monitoring has been an established tool and widely applied to transportation management systems. However intelligent monitoring of belt conveyor systems is still in an early stage. This paper introduces an Embedded Conductive Detection (ECD) technology that uses a magnet matrix embedded into the conveyor belt carcass and outside sensors to detect and monitor most of the conveyor belt parameters simultaneously. As a novel Nondestructive Test (NDT) technology, it overcomes drawbacks of traditional conveyor belt monitoring technologies and it has characteristics of absolutely maintenance free, long lifetime, non-contact monitoring and passive measurement. In this paper, applications of the main principle of the ECD technology have also been extended to the field of automatic guided vehicles (AGVs).

Session WP06	Room 107	Time 3:30– 5:10 PM	Session Title Information Technology & Systems	Chair Michael Imburgia	Co-Chair Kazuto Nakajima
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520018	SCM Security Solution Based on SSL Protocol		Liu, Lanjuan	Shanghai University of Finance & Economics	
520161	Knowledge Procurement Strategy of Firms: Collaboration with Public R&D Institutes		Shichijo, Naohiro Shimizu, Satoshi Nakajima, Kazuto Baba, Yasunori	The University of Tokyo The University of Tokyo The University of Tokyo The University of Tokyo	
520197	The association ends at the basis of a formal validation		Bouabana-Tebibel, Thouraya Belmesk, Mounira	National Institute of Computer Science Edouard MonPetit College	
520221	Reliability of RFID in Logistic Systems		Lodewijks, G. Veeke, H.P.M. L'opez De La Cruz, A. M.	Delft University of Technology Delft University of Technology Delft University of Technology	
520298	The Role of RFID within EDI: Building a Competitive Advantage in the Supply Chain		Imburgia, Michael J.	The Pennsylvania State University	

520018 Abstract—SCM requires to ensure security and reliability of information interchange. After we discussed the security needs of SCM system and advantages of SSL protocol, we found that the SCM system security solution based on SSL can meet the above information security needs among enterprises, which greatly benefits for SCM.

520161 Abstract— The majority of new services are provided to the consumer through several coordinated and contributing agents acting together. This paper is concerned with improving our understanding of firms' knowledge procurement that involves several contributing and coordinated agents. The “distributedness” of knowledge procurement varies in physical proximity and takes a variety of organizational arrangement, and their analysis brings to the fore the significance of firms' strategy tailored to the collaboration with a specific economic agent. Based on our empirical research, the analysis opens up considerations on how firms can effectively procure knowledge from public R&D institutes. In contrast to the case of collaboration with universities, the paper concludes that firms can

benefit from collaborating with capable public R&D institutes irrespective of the physical proximities between firms and their partnering institutes.

520197 Abstract—The Object Constraint Language OCL is an extension of the UML notation for the expression of restrictions over the static and dynamic diagrams. We propose to take advantage of its formal capabilities for validating whether the UML model matches with the system properties. For this purpose, we develop an approach based on Petri nets and temporal logics. This approach allows the non-trivial integration of the temporal logic properties translated from the OCL invariants with the Petri nets obtained from the UML modeling. A case study is given throughout the paper to illustrate the approach.

520221 Abstract—The objective of this research work is to investigate the reliability of RFID in logistics systems. Starting from a general introduction of passive UHF RFID systems, the application of these systems in logistic systems and the technical challenges that are faced during application are discussed. Based on these discussions the set-up of RFID performance test is discussed and performance indicators are given. Finally typical results of readability tests are presented and conclusions are drawn on how to determine the reliability of the application of RFID systems in logistic systems.

520298 Abstract - Radio Frequency Identification will provide the services to gather and process product data at a rate that is unprecedented. When integrated as a component of Electronic Data Interchange it can be a powerful resource to those that harness its potential. Unlike the profit-driven retail industry the underlying supply chain revolves around meeting service levels and reducing costs at the bottom line. Operating costs are either incurred or reduced according to how efficiently inventory is moved. Limited visibility and lack of flexibility are often factors, which cause opportunities for time reduction across the pipeline to go unrecognized. The services gained through integration of RFID will contribute to better pipeline management, visibility, improved forecasting, and flexibility and bottom line reduction thus providing the means to gain a competitive advantage. RFID is both flexible and scalable and can therefore be implemented and integrated according to needs of the user. RFID is also a subset Radio Frequency technology that enables Smart Shelves and Environment Sensors. By creating a ubiquitous data gathering environment, which can be in close proximity to consumers, it simultaneously taps the need for data management, data sharing relationships and concerns over customer privacy.

2006 IEEE SOLI
Thursday, June 22 2006

8:00 PM – 12:00 PM 2:00 PM – 5:00 PM	Registration	Aetna Building at Aetna School
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8:30 AM – 9:20 AM **Plenary Lecture**

Room: The Auditorium, Aetna Building at Aetna School

Chair: **Robin Qiu**, Pennsylvania State University, USA

Speaker: **Roland Rust**, University of Maryland, USA

Title: *Understanding the Service Revolution*

9:20 AM – 10:10 AM **Plenary Lecture**

Room: The Auditorium, Aetna Building at Aetna School

Chair: **Grace Lin**, IBM

Speaker: **Kathryn Stecke**, University of Texas at Dallas, USA

Title: *Using Mathematics to Solve Service Operations, Industrial, and Logistics Problems*

9:50 AM – 10:10 AM	Coffee/Tea/Refreshments	Aetna Building at Aetna School
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10:30 AM – 12:10 PM		Parallel Session				North Building at Aetna School
Room 102	Room 103	Room 104	Room 105	Room 106	Room 107	
TA01 NSF02, 06, 12, 520273	TA02 (520) - 035, 058, 059, 133, 135	TA03 (520) - 126, 151, 177, 198, 207	TA04 (520) - 090, 106, 178, 216, 290	TA05 (520) - 084, 179, 206, 276, 281	TA06 (520) - 175, 181, 194, 285, 300	

Session TA01	Room 102	Time 10:30 AM– 12:10 PM	Session Title (US NSF II) Information Technology As a Service	Chair Michael Piovoso	Co-Chair Jia Zhang
Paper ID	Paper Title		Author(s)	Affiliation(s)	
NSF02	Fault Injection-based Test Case Generation for SOA-oriented Software		Zhang, Jia Qiu, Robin	Northern Illinois University Pennsylvania State University	
NSF06	Information Technology As a Service		Qiu, Robin	Pennsylvania State University	
NSF12	Trilinear Methods and Multiblock PCA for Improved Data Understanding		Michael Piovoso	Pennsylvania State University	

520273	An On-line Probabilistic Paradigm for Optimal Disassembly Planning	Tang, Ying Renner, Peter	Rowan University Rowan University
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NSF02 Abstract -- The concept of Service Oriented Architecture (SOA) implies a rapid construction of a software system with components as published Web services. How to effectively and efficiently test and assess available Web services with similar functionalities published by different service providers remains a challenge. In this paper, we present a step-by-step fault injection-based automatic test case generation approach. Preliminary test results are also reported.

NSF06 Abstract -- In this information era both business and living communities are truly information technology (IT) driven and service-oriented. As the globalization of the world economy gets accelerated with the fast advance of networking and computing technologies, IT plays more and more critical role in assuring the real time collaborations of delivering needs across the world. Nowadays the world-class enterprises are eagerly embracing the service-led business models aimed at creating highly profitable service-oriented businesses. They take advantage of their own unique and years marketing, engineering, and application expertise and shift gears towards creating superior outcomes to best meet their customers' needs in order to stay competitive. IT has been considered as one of the high value services areas. In this talk, the discussion will focus on IT as a service. We present IT development, research, and outsourcing as a knowledge service; on the other hand, we argue IT as a service helping enterprises align their business operations, workforce, and technologies to maximizing their profits by continuously improving their performances. Numerous research and development aspects of service enterprise engineering from a business perspective will be briefly explored, and then computing methodologies and technologies to enable adaptive enterprise service computing in support of service enterprise engineering will be simply studied and analyzed. Finally, future development and research avenues in this emerging interdisciplinary field will also be highlighted.

NSF12: Abstract -- Trilinear data occur where data are collected for a system over a fixed time interval. Examples include parts manufacturing and chemical batch processes. These data are three dimensional in nature; there are variables over time over parts or batches. Traditional techniques for analysis include multiway PCA whereby the data are unfolded into a two-dimensional structure and then a standard PCA is applied. Trilinear methods involve a PCA like decomposition of the three-dimensional data. Two different approaches are most common: PARAFAC (Parallel factors) and Tucker-3 decomposition. PARAFAC finds n factors in each of the dimensions and approximates the three dimensional matrix into the sum of the outer products of these factors. Tucker-3 is a decomposition in which different numbers of factors are possible for each dimension. This decomposition also includes a smaller three-dimensional weighting matrix.

Hierarchical and Consensus PCA are multiblock techniques that are useful when data come from different subunits and the effects of the subunits are of interest. For example, if in the manufacturing of a part there are various stages that must be executed before the product is completed, one may wish to understand the effects of each subunit on the product. Multiblock PCA may prove helpful. Hierarchical and Consensus produce a PCA-like models of the data for each subunit and a supermodel for the combined effects.

This talk will introduce the trilinear and multiblock concepts and illustrate their application with an example from data on a batch chemical process. The purpose of this study was to determine the utility of trilinear and hierarchical methods for automatic outlier identification of process data.

520273 Abstract—Disassembly is of growing importance in material and product recovery. However, the deployment of this process is complicated due to the lack of a priori information necessary for its control and planning. This paper develops a predictive model to tackle this problem.

Session TA02	Room 103	Time 10:30 AM– 12:10 PM	Session Title Services Design, Engineering, Operations, and Innovation	Chair Gabriel Lodewijks	Co-Chair Ying-Hsiu Chen
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520035	Detail Service the necessary path for re-		Liu, Weihua	Shanghai Jiao Tong University	

	engineering the Chinese logistic enterprises' competitive advantage in the low margin age	Ji, Jianhua Li, Lu	Shanghai Jiao Tong University Shanghai Jiao Tong University
520058	Study on Inventory in Supply Chain of South-to-North Water Transfer under Asymmetric Information	Wang, Huimin Zhu, Jiulong Chen, Junfei	Hohai University Shandong Business & Technology Institute Hohai University
520059	Study of Hospital Management Based on Hospitalization Process Improvement	Qi, Ershi Xu, Gang Huo, Yanfang Xu, Xia	Tianjin University Tianjin University Tianjin University Shandong University
520133	Applying Rough Sets Theory to Corporate Credit Ratings	Wang, Tien-Chin Chen, Ying-Hsiu	I-Shou University I-Shou University
520135	Prognostics in the control of logistics systems	L'opez De La Cruz, Adriana M. Veeke, Hans P.M. Lodewijks, Gabriel	Delft University of Technology Delft University of Technology Delft University of Technology

520035 Abstract -- The low margin age is coming to the logistics service industry in China. How to re-engineer enterprise's competitive advantage in this low margin age becomes a most concerned topic for the logistics service providers in China. In this paper, we point out that the detail service is one of the new competitive advantages for the Chinese logistics service providers. The concept of "detail service" and its importance are expounded. We provide a four phases mechanism for re-engineering the logistics service providers' competitive advantage based on the detail service. For the further research on the relationship between the logistics detail service and the competitive advantage, a survey is realized. The result shows that detail service is accepted by most people working in the logistics industry. This paper also discusses how to execute the detail service from the four important aspects (the operational resources, the customers, the external environment and the human resources). The framework of detail service innovation is also provided. Finally, the conclusion is summarized and some further research directions are suggested.

520058 Abstract—Water inventory control plays an important role in the research of supply chains of water resources of South-to-North Water Transfer. Based on the practical conditions of water resources allocation in China, the article chooses the node lake of water resources supply chains of South-to-North Water Transfer as the research object and uses water ordering quantity raised by the downstream district as the decision-making variable. It also establishes a central control decision-making model of water resources supply chains under the conditions of asymmetrical information. Finally, thorough the positive analysis of Dongping Lake, it proves the validity of the model.

520059 Abstract—This paper first introduces the problems in most Chinese hospitals, and points out the main reason that the hospitalization process is complicated and some papers which concern hospital problems. Then it discusses the problem based on Industrial Engineering methods according ECRS principle and IE working procedure analysis. Finally a resolution is put forward and an expectation is given.

520133 Abstract—Risk assessment and credit rating are primary criteria to investigate the repayment ability of borrower for financial institution. The amount of corporate bond has increased rapidly in recent years. Bond market in Taiwan has also developed actively. Bond market is thus an indispensable risk index for developing the credit rating mechanism. This study utilizes the rough sets theory and the financial ratios of credit evaluation of TCRI as criteria. Using the semiconductor industry of Taiwan stock market as models, this research finds out several important reference factors that sway enterprise credit rating. The credit rating evaluating criteria are grouped into the following three kinds: good, probably good, probably bad. Results of this study show that the interest expense ratio, debt ratio, receives months, sale months play important roles for overall assessment of enterprises.

520135 Abstract—The use of technological tools in logistics has the intention of increasing visibility, capacity and control in the supply chain. Decrease of uncertainties due to asymmetric data has been the constant challenge of management. Misdiagnosis of situations and equipment, inaccurate production planning, shrinkage and counterfeiting are some of the common problems as a consequence of erroneous information. The idea of prognostic logistics is to use real time information and an intelligent system to diagnose and predict early failures and hazardous situations. The automatic capture of information in prognostic logistics has the intent to reduce human errors. Automatic identification technologies enable the creation of a prognostic logistic network where real time information is used to make accurate forecasting, pushing a proactive supply chain instead of a reactive one.

Session TA03	Room 104	Time 10:30 AM– 12:10 PM	Session Title Logistics & Supply China Management	Chair Albert Veenstra	Co-Chair Mohammad Tarokh
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520126	Key Determinants of Performance Assessment for U.S. TPL: DEA and Cluster Analysis		Cheng, Ming-Jen Wu, Yen-Chun Jim	National Kaohsiung First University of Technology and Science National Kaohsiung First University of Technology and Science	
520151	Modeling and Simulating for A Distribution System Based on Fuzzy Systems to Forecast Demand		Gao, Jun-jun Wang, Ying-jun Hu, Le-jiang	Shanghai University Shanghai University Shanghai University	
520177	Integrated facility location and supplier selection decisions in a distribution network design		Tanonkou, Guy A. Benyoucef, Lyès Xie, Xiaolan	INRIA INRIA Ecole Nationale Supérieure des Mines de Saint-Etienn	
520198	Supply Chain Management Information Systems Critical Failure Factors		Tarokh, Mohammad Jafar Soroor, Javad	K. N. Toosi University of Technology K. N. Toosi University of Technology	
520207	Maintenance Logistics in the Dutch Dredging Industry		Veenstra, Albert W. Zuidwijk, Rob Geerling, Bart	RSM Erasmus University Rotterdam RSM Erasmus University Rotterdam RSM Erasmus University Rotterdam	

520126 Abstract—Based on empirical data of twenty third-party logistic providers in America, this study adopts DEA and cluster analysis to evaluate the key factors in performance assessment. It was found that returns of scale of DMUs' status influenced efficiency ranking. The A&P model is shown useful in distinguishing efficient DMUs, while for inefficient DMUs the cross efficiency model is excellent. Empirical analysis in classification shows consistent results for factors directly correlated with logistics in both DEA and cluster analysis. While past research emphasized the importance of financial performance, this paper argues that it should take another perspective in performance assessment. This study indicates that important factors generally used in financial studies do not exhibit significant influence as expected, demonstrating a critical approach is to achieve operations efficiency rather than financial efficiency. Finally, this paper makes some recommendations to improve the operations' efficiency for logistics firms.

520151 Abstract—A logistics cost model based on demand forecasting is proposed for a two-echelon distribution system with a central warehouse and multiple retailers in this paper. The retailers and the central warehouse all use periodic control policy to review their inventory level. First, we attempt to develop a fuzzy system-forecasting model capable of learning the IF-THEN rules obtained from demand data and experience of marketing experts with respect to promotions. Then we build a comprehensive model to combine demand forecasts with inventory decision and distribution system cost model. Finally, fuzzy system-forecasting model is compared to conventional regression method by a numerical example and its results indicate that the proposed fuzzy system-forecasting model performs more accurately than the conventional regression method. The computational results also show that substantial cost savings and improved service level can be realized through applying fuzzy systems to forecast demand.

520177 Abstract—This paper deals with the integration of facility location and supplier selection decisions for the distribution network design problem. More specifically, the distribution network under consideration is composed of a set of suppliers serving a set of retailers through a set of Distribution Centers (DCs). To manage its inventory, the EOQ policy is used by each DC, and a safety stock level is maintained to ensure a given retailer service level. In this study, we assume that each retailer faces a random demand of a single product type, the supply lead-time from each supplier to each DC is constant, and no supply lead-time between DCs and retailers. The problem concerns the selection of suppliers, the location of DCs, the allocation of suppliers to DCs, and the allocation of retailers to DCs, where the goal is to minimize inventory and safety stock costs at the DCs, ordering costs and transportation costs across the network, and fixed DCs location costs. The introduction of inventory and safety stock costs leads to an NP-hard non-linear optimization problem. A Lagrangian relaxation approach is proposed to generate efficient solutions. Some numerical experiments are presented and analyzed showing the effectiveness of the proposed approach.

520198 Abstract—Effectively integrating the information and material flows within the demand and supply process is what Supply Chain Management is all about. A supply chain management information system (SCMIS) is user-interfaced and designed to provide information and information processing capability to support the strategy, operations, management analysis, and decision-making functions in an organization’s supply network. SCMIS provides high quality, relevant and timely information flow that effectively supports decision-making for inventory replenishment, capacity activation, and for synchronizing material flows at all tiers within the supply chain. In recent years, there have been some efforts on designing an efficient information system for supply chain management; but many of them have led to failure. The three main purposes of this paper are to (1) identify SCMIS and its characteristics, (2) introduce and categorize critical failure factors (CFFs) for SCM and SCMIS, and (3) investigate the explanatory power of these CFFs on the performance of supply channel processes performed through SCMIS.

520207 Abstract -- This paper explores the benefits of supply chain collaboration in the dredging industry. More specifically, it looks at maintenance management in the dredging industry and the logistic consequences of different maintenance policies. The research uses a simulation model of a clearly identifiable component in a dredging vessel and the related spare parts supply chain. Various maintenance policies, such as predictive maintenance and condition based monitoring are analyzed for their impact on the spare part supply chain in terms of stock keeping, order fulfillment and productivity of the dredging vessel. The model shows that both parties could indeed benefit from more collaboration as this would result in reduced costs and increased production output.

Session TA04	Room 105	Time 10:30 AM– 12:10 PM	Session Title Services Marketing & Sustaining	Chair Si-hyun Paik	Co-Chair Lei Wangi
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520090	Relationship Marketing in Virtual Community: Antecedents and Consequences		Chen, Liang Jiang, Ling	Remin University of China Capital University of Economics and Business	
520106	Consumer Choice of Digital Music Services from Quality Perceptions		Kwong, SzeWan Park, JungKun Yang, Sujin	Purdue University Purdue University Purdue University	
520178	Demand Control Chart		Paik, SiHyun Rim, SukChul	YanBian University of Science & Technology Ajou University	
520216	An Equilibrium Analysis of Distribution Channel with Consideration of Advertising Competition		Wang, Lei Dai, Gengxin Yu, Qingdong	Qingdao University Qingdao University	
520290	Brand Equity and CRM: The Dual Roles of Corporate Reputation in Chinese Context		Wang, Yonggui Kandampully, Jay Shi, Guicheng	Nanjing University Ohio State University Macau University of Science and Technology	

520090 Abstract—This study propounds a theoretical model of relationship marketing in virtual community in China and the authors testify the model through structural equation modeling. The authors find that the sponsor’s effort to foster member embeddedness has a significantly positive effect on community members’ trust in the sponsor and loyalty to the sponsor. Meanwhile, the sponsor’s efforts to provide quality content and keep the community website safe have a significantly positive effect on community members’ trust in the sponsor, but the effort to encourage member interaction does not. The hypotheses that member loyalty and cooperation are outcomes of trust are also supported, and meanwhile, member loyalty has positive effect on member cooperation in virtual community. Marketing implications and further research directions are also discussed in the last section.

520106 Abstract – Recently, the popular channel for record albums has shifted from purchasing Compact Discs to downloading MP3 files. In fact, Digital Music Service has seen tremendous successes, making hundreds of millions of dollars every year. However, few attempts have been made to understand the consumption behavior of this newly emerging market because of its unique characteristics that have made other behavioral models inapplicable. In this study, we surveyed college students, who are the most active in this market, concerning their Digital Music Service subscription behavior. A modified Theory of Planned Behavior model was used as the framework incorporating the Technology Acceptance Model and a new construct, the perceived service quality. The present study depicts that the model explaining subscription behavior indicates that subjective norm has the most significant effect on the intention to subscribe. The results provide marketing implications for Digital Music Service provider, and indicate possible direction for future studies.

520178 Abstract— The existing inventory managements bear a relation to forecasting or assumptions. So these methods become more complicated and more expensive systems as time goes. This paper developed a practical inventory system which is called DCC(demand control chart). DCC does not ‘forecast’ but ‘control’ the trend of demand without assumptions. According to the trend of sales, DCC adjusts an order quantity considering the capacity of shelf in a store. Besides, this paper introduces EPFR(Every Period Full Replenishment) policy for reducing stocks.

520216 Abstract—A distribution system including a manufacturer and two independent retailers, who use advertisement to compete for end customers, was studied in this paper. The retailer’s commodity demand volume is influenced by competitor’s advertising input as well as by his own. Then in the new situation, how are the retailers’s advertising input policy? How do manufacturers make the replenishing policy to different retailers? Which factors influence and how to influence the choice of marketing channel? These questions are the main research contents of this paper.

520290 Abstract -- This paper explores the relationship between brand equity and customer relationship management by examining the roles of corporate reputation and hypotheses are proposed and tested in the context of an empirical study among customers of financial institutions in China. The empirical findings confirm the validity of the framework and afford various insights into the dual roles of corporate reputation in the proposed relationships.

Session TA05	Room 106	Time 10:30 AM– 12:10 PM	Session Title Services Management & Manufacturing	Chair James Lin	Co-Chair Jiling Hu
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520084	Balance of Product Greening Cost and Benefit		Hu, Jiling	East China University of Science and Technology	
520179	A Hierarchical Planning and Scheduling Framework for TFT-LCD Production Chain		Lin, James T. Chen, Tzu-Li Lin, Yen-Ting	National Tsing-Hua University	
520206	Single Machine Scheduling with Common Due Date Based on PSO Integrated with Heuristics		Wu, Xue-Jing Zhou, Hong Tan, Xiao-Wei	Beihang University Beihang University Beihang University	
520276	Influence of Different Forecasting Modes on Automobile Manufacturing Supply Chain		Wang, Juxiang Ren, Lijuan Chen, Changju	Qingdao University Qingdao University Qingdao University	

		Li, Guozheng	Qingdao University
520281	An Equivalent Condition of Two-Machine System Scheduling With Robustness Under A Class of Linear Perturbation	Ma, Jun Yang, Qiu	Wuhan university of Science and engineering China University of Geosciences

520084 Abstract—Nowadays, the natural resources are becoming scarcer and scarcer and the environmental pressure is increasing day by day, product greening has become one of the most important factors that affect the survival and development of an enterprise. This paper discusses the composition of product greening cost and benefit, taking a two-stage supply chain as an object of study makes a quantitative analysis on the manufacturer’s and retailers’ benefit variation after product greening, respectively from the angles of manufacturer, retailer and entire supply chain analyzes the measures of balancing the product greening cost and benefit. It also points out that the government should adopt some incentive measures to externalize the product greening cost and internalize the product greening benefit so as to arouse the enterprise’s enthusiasm for product greening.

520179 Abstract—This paper presents a hierarchical planning and scheduling framework for Thin Film Transistor Liquid Crystal Display (TFT-LCD) production chain in an assembly-to-order (ATO) environment. The TFT-LCD manufacturing process comprises three sequential steps, namely TFT-LCD production chain: Array, Cell and Module process. Many special characteristics and constraints, such as product grade constraint, site-eligibility constraint and key material available constraint, are inherited in this production chain. The globally distributed nature of production planning and scheduling activities of TFT-LCD production also leads to an urgent need of an integrated planning and scheduling framework to balance supply and demand problems. The hierarchical framework divides planning hierarchies into three planning levels, identifying planning modules in each level in attempt to balance the supply and demand of the TFT-LCD production chain. Finally, an example is illustrated to demonstrate the relationship among the planning modules in the framework.

520206 Abstract—The classical Particle Swarm Optimization (PSO) is a powerful method to find the minimum of for a function optimization problem, especially with a continuous solution space. So far, it has not been widely applied to solving those problems with discrete features. We attempt to deal with the problem of scheduling jobs on a single machine against common due dates with respect to earliness and tardiness penalties in this paper. A PSO strategy integrated with a kind of heuristic algorithm is proposed, where the heuristic information is composed of the processing time and tardiness penalty for each job. It is indicated that such strategy can significantly improve the performance of the solutions. Furthermore, we demonstrate by numerical benchmark examples from OR-Library that our algorithm is both effective and efficient in achieving satisfied solutions for scheduling problems with earliness and tardiness penalties.

520276 Abstract—This article expounds systematically the application of different forecasting techniques in three different automobile distribution logistics modes in automaker companies. The three distribution logistics modes include traditional mode used in Shanghai-Volkswagen and Tianjin Faw Xiali Automobile Co. Ltd, GM mode used mainly in Shanghai GM and BENZ mode adopted in German automobile manufacturing system. Automobile manufacturing supply chain is the most complex supply chain in all manufacturing systems. How to make distribution forecast and Main Production Scheduling (MPS) is one of the main factors affecting the running of the whole automobile supply chain. There are many differences between the forecasting techniques and can make different results on lead time, reliability, part demand fluctuation and so on. Simultaneously, different forecasting modes of long-term, medium-term, short-term and discontinuous point forecasting in final assemble company affect the part supplier on their Safety Inventory Quantity, Out of Stock loss, Just In Time (JIT) performance, and so on.

520281 Abstract—The equivalent conditions of two-machine system scheduling problem with robustness is studied by using a property of Abelian semi-group which containing identity element on the real set. According to the practical problem, we construct a class of linear perturbation system model, propose the system output expression, and give its some properties. Finally, by the definition of optimal robust scheduling, we prove that the condition of the optimal scheduling robustness criterion of referential system is equivalent to the condition of its optimal scheduling criterion.

Session TA06	Room 107	Time 10:30 AM–	Session Title Information Technology & Systems	Chair Jin, Tao	Co-Chair Wang,
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		12:10 PM		Hongwei
Paper ID	Paper Title	Author(s)	Affiliation(s)	
520175	Reward-based Peer-to-Peer Digital Cinema Distribution Model	Nakaizumi, Takuya Sonehara, Noboru	Kanto Gakuin University National Institute of Informatics	
520181	Feature Selection and Weighting Method Based on Similarity Rough Set for CBR	Jin, Tao Shen, Huizhang	Shanghai Jiao Tong University Shanghai Jiao Tong University	
520194	The Coordination Mechanism of Inter-Organizational Transaction in Electronic Commerce Environments	Liu, Zhenyu Yu, Yongjun	Xiamen University Xiamen University	
520285	Implementation of a Knowledge-Based System for Automatic Part Numbering in a Logistics Information System	Hsu, Pang-Yen Ma, Shao-Ping Sun, Fu-Chun Chung, Yun-Kung	Yuan-Ze University Yuan-Ze University Yuan-Ze University Yuan-Ze University	
520300	A New Classification Algorithm for Large Scale of Chinese Texts	Wang, Hongwei Wang, Jianhui Yi, Lei	Tongji University Fudan University Fudan University	

520175 Abstract—We propose making use of Peer-to-Peer Technology to distribute Electrical Contents. The conventional Peer-to-Peer (P2P) Technology encounters the problem that each peer has no incentive to advertise or sell other peers the content. We propose a reward-based P2P content distribution model, in which peers obtain rewards according to their selling activities. In addition, we compare two systems: one is a perfectly traceable system in which each peer has a complete knowledge regarding the peers who have already been introduced by other peers and who have not yet been introduced. The other is an imperfectly traceable system in which each peer does not know completely. We conclude that perfectly traceable system is efficient and all the peers in the market should be introduced, while imperfectly traceable system is not because of double counting effects. Thus original distributor should terminate the introduction activity before all the peers in the market are introduced.

520181 Abstract—Case-based Reasoning systems retrieving cases is an n-ary task. Most researches resolve this problem with a similarity function based on KNN rules or some derivatives. But the result of this method is sensitive to those irrelevant or noisy features. Standard rough set has been used in feature reduct and selection in various domains. But the indispensable discretization ruins the objectivity and the usually used post approximation based weighting method costs lots of computing capacity. This paper proposes a feature selection and weighting method based on similarity rough set theory. It avoids discretizing continuous attributes and keeps the objectivity and quality of datasets. Based on the indiscernibility relation, this method reducts and weighs attributes at the same time. It is easy to realize and can generate accurate results.

520194 Abstract—This article has explored the concepts of coordination and inter-organizational coordination mechanisms. Based on a case of automobile procurement, the evolutionary issue of coordination mechanisms in Electronic Commerce has been studied. We establish a framework, which describes how IT impacts on inter-organizational transactions coordination mechanisms according to system science. We conclude that inter-organizational coordination in EC environment includes not only the innovation of coordination mechanisms, but also the improvement of inter-organizational relationships. To explain the transactions coordination mechanisms, we integrate both economic and political organization management perspectives. But which theory is more feasible depends on the transactions' nature and inter-organizational relationship's environment, the latter includes trust factor. Our theory can further direct study on the impact of IT on inter-organizational relationships.

520285 Abstract—High-tech small and medium enterprise (SMEs) have played a vital role in sci-tech innovation and development of national economy throughout the world. A sound information service help high-tech SMEs gain competitive edge in keen global competition. This paper presents a framework of integrated information service solution for high-tech SMEs using advanced information service conception and technology. The electronic service

platforms designed in this framework can provide efficient and convenient information support for overall business operation of high-tech SMEs. This paper presents a new perspective to theory and practice of information service and e-service for high-tech SMEs.

520300 Abstract—Most of classifying methods are based on VSM in the current classification research, of which the widely-used method is kNN. But most of them are highly complicated on computation, and could hardly be used for classifying a large number of samples. Moreover, to them, the classifier must be rebuilt when adding or deleting the training samples, which make them poor in scalability. In this paper, two new concepts, Mutual Dependence and Equivalent Radius, are presented, based on which a new classifying method (called MDER) is offered. MDER can be used to classify a large number of samples and has good scalability. After a series of experiments of classifying Chinese documents, the conclusion are drawn that MDER outperforms kNN and CCC method, and can be used online to classify a large number of samples while keeping higher precision and recall.

12:10 PM – 1:30 PM	Lunch	North Building at Aetna School
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1:30 PM – 3:10 PM		Parallel Session				North Building at Aetna School
Room 102	Room 103	Room 104	Room 105	Room 106	Room 107	
TM01 IBMSP01, 03, (520) - 202, 203	TM02 (520) – 092, 217, 226, 254, 283	TM03 (520) – 234, 242, 243, 248, 259	TM04 (520) – 201, 232, 233, 236, 261	TM05 (520) – 047, 076, 083, 086, 096	TM06 (520) – 245, 250, 286, 288, 314	

Session TM01	Room 102	Time 1:30 PM– 3:10 PM	IBM Special Session I Workforce & Value Nets	Chair Grace Lin	Co-Chair Zongwei Luo
Paper ID	Paper Title		Author(s)	Affiliation(s)	
IBMSP01	A SCOR-Based Framework for Supply Chain Performance Management		Ren, Changrui Dong, Jin Ding, Hongwei Wang, Wei	IBM China Research Lab IBM China Research Lab IBM China Research Lab IBM China Research Lab	
IBMSP03	Workforce Management and Optimization using Stochastic Network Models		Lu, Yingdong Radovanović, Ana Squillante, Mark S.	IBM Thomas J. Watson Research Center IBM Thomas J. Watson Research Center IBM Thomas J. Watson Research Center	
520202	Intelligent Middleware Service Framework		Luo, Zongwei Li, Jenny S. Tan, C.J. Tong, F. C.H. Kwok, A Wong, E. C. Wang, H.B.	The University of Hong Kong IBM System and Technology Group The University of Hong Kong The University of Hong Kong The University of Hong Kong The University of Hong Kong The University of Hong Kong	
520203	The Case for the Business Process Engineer		Leung, Ying Tat Caswell, Nathan Kamath, Manjunath	IBM Almaden Research Center IBM Thomas J. Watson Research Center Oklahoma State University	

IBMSP01 Abstract—The importance of performance management in supply chains has long been recognized from a variety of functional disciplines. But much of the work has focused on designing performance measures with less concern for the other stages of the entire performance management process. The supply chain operations reference (SCOR) model, developed by the Supply-Chain Council (SCC), is widely accepted as the only cross-industry standard for supply chain management, which not only provides a standard description of supply chain processes, but standard metrics to measure supply chain performance. Based on the SCOR model, a comprehensive framework for supply chain performance management is presented in this paper, which includes all aspects of performance management from performance measurement to performance improvement. The methods for performance model design and performance analysis are mainly discussed.

IBMSP03 Abstract—We develop a model based on stochastic loss networks to characterize the dynamics and uncertainty in general workforce management and optimization. We formulate profit maximization problems with serviceability constraints under different assumptions on demand and supply. Though these optimization problems are in general nonlinear programming problems, we are able to observe some intrinsic properties of the functions that facilitate efficient computation of the optimal solution. Numerical results demonstrate that our model provides capacity planning decisions that yield better results than available in current practice.

520202 Abstract— In this paper, we present a service oriented intelligent middleware service framework that enables integrated e-logistics infrastructure and networks. Service oriented architecture (SOA) represents a new concept of computing that allows diverse and distributed resources to communicate with each other based upon a set of standards. We will discuss what values the SOA can bring to the middleware service framework, as well as how intelligence could further enhance the service framework to support dynamic interconnections among existing heterogeneous middleware systems today for e-logistics application development and integration.

520203 Abstract — Despite a decade of business process reengineering, we do not find a professional discipline of business process engineering today. We argue for the need for such a discipline by comparing a typical practice of designing a manufacturing process and a business process, and discuss why the need for a professional business process engineer is urgent.

Session TM02	Room 103	Time 1:30 PM– 3:10 PM	Session Title Services Design, Engineering, Operations, and Innovation	Chair Su, Qiang	Co-Chair Ping Yu
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520092	Simulation and Optimization of the Hospital Registration Process Using MedModel		Su, Qiang Yao, Xiaoyun	Shanghai Jiaotong University Shanghai Jiaotong University	
520217	Analysis of One Hospital Using Simulation		Ju, Yanbing Wang, Aihua Zhu, Fengchun	Beijing Institute of Technology Peking University Shandong University of Science and Technology	
520226	The Challenges for The Adoption of M-Health		Yu, Ping Wu, Ming X. Yu, Hui Xiao, Guo Q.	The University of Wollongong Central Queensland University Chongqing Institute of Technology Southwest University	
520254	Information Service Systems for Visually Impaired People		Jiang, Zhe Zhu, Xiaoyan	Tsinghua University Tsinghua University	
520283	Development of Hospital Information System Based on .Net Platform		Rong, Zhijun Xiao, Jinsong Feng, Jie Shi, Xinzhu	Wuhan University of Science and Technology Shanghai E-cares company Huadong Hospital Wuhan University	

520092 Abstract—In many Chinese hospitals, especially in big hospitals, it is a common phenomenon for patients to stand in a long queue and wait a considerable time for registration. In this paper, a field study is conducted in a Shanghai public hospital. The hospital's registration process is investigated and the data of the inter-arrival time and

every procedure's service time are collected. Based on the realistic workflow and the operation data, a simulation model is set up and analyzed using MedModel, a kind of simulation software designed for healthcare industry. Through simulation and process redesign, some improvement approaches are studied and compared with one another. Finally, an optimized registration process is achieved that can shorten the average cycle time from 17.24 minutes to 3.15 minutes.

520217 Abstract—This paper presented a discrete event simulation model for one hospital. This model was used to evaluate the current performance of the hospital, to perform bottleneck analysis of the patient process and to verify, base on simulation outputs, expanding alternatives that the hospital authority proposed. Different expanding alternatives were simulated and the simulation outputs obtained were used to provide the basis for selecting the best alternative. The implementation of the expanding alternative could decrease the waiting time of patients, increase patient throughput, and improve the service level of the hospital.

520226 Abstract—The potential benefit of mobile and wireless information technology for healthcare service delivery, improving patient safety and reducing cost is increasingly recognized and emphasized. To contributing to the knowledge about critical factors determining the success of mobile health (m-Health) solutions, this study researched the driving force for the advancement of m-health solutions. The current advancement of m-health was reviewed. The challenges for developing and deploying m-health applications were addressed. The paper concluded in suggesting the most critical factor for the success of m-health. The method used for the study was literature research, market scan and analysis.

520254 Abstract—There are about 10 million visually impaired people in China nowadays. They desiderate helps from the community. This paper will discuss some key technologies to implement accessible information services and systems for visually impaired people. Shanghai will hold 2010 World Expo. This is a good opportunity to show modern Chinese civilization to the world. Information accessibility is very important, indicating civilized level for a country. This paper will give some useful advices from technical points.

520283 Abstract—This paper describes a hospital information system (HIS) based on world wide web technologies so that its operations located in geographically distant regions can be integrated. The recent information technology would enable operations such as exchanging, standardizing and sharing hospital information through the hierarchical distributed environment. In this paper, we present a coordinated multi-layer architecture for HIS based on the Microsoft.net platform. The paper outlines some key design principles for a framework for HIS, supporting the development and application of web service-oriented HIS.

Session TM03	Room 104	Time 1:30 PM– 3:10 PM	Session Title Logistics & Supply China Management	Chair Xiaobei Liang	Co-Chair Xiaojun Wang
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520234	Modeling and Values of Vendor Managed Inventory in the Retail Supply Chain		Xie, Meiping Olson, David L.	Shanghai University of Finance and Economics University of Nebraska	
520242	Large-System's Harmonious Control and Applications of Supply Chain Operation		Liang, Xiaobei Zhu, Daoli Tang, Bingyong	Shanghai Business School Fudan University Dong Hua University	
520243	A Heuristic Algorithm Based on DBR and MAS for Solving Container Loading Problem		Liu, Yuan Tian, Yajie Sawaragi, Tetsuo	Kyoto University Network Informatics Laboratories Kyoto University	
520248	Analyzing Institutions related to the Logistics Enterprises		Chen, Xiangdong Juan, Zhicai	Jilin University ShangHai Jiao Tong University	
520259	Value Added on Food Traceability: a Supply Chain Management Approach		Wang, Xiaojun Li, Dong	University of Liverpool University of Liverpool	

520234 Abstract—Vendor managed inventory (VMI) is one of the most widely discussed partnering initiatives for improving multi-firm supply chain efficiency. VMI became one of the key programs in the grocery industry’s pursuit of “efficient consumer response” and garment industry’s “quick response”. And at present, we know that many companies have successfully improved their supply chain performance by implementing the approach of VMI. With VMI, vendors specify delivery quantities sent to customers through the distribution channel using data obtained from Electronic Data Interchange (EDI). A model for a VMI system is constructed where vendors can manage stock at the retailers’ locations. A supply chain system in this model has been constructed which is composed of m vendors and n identical retailers. Vendors’ and retailers’ profits can be calculated for different retailer order batch policies. In this model, we use several parameters because the distances between the vendors and retailers are not same; the stock costs of vendors can vary; the kinds, prices and quantities of retailers’ ordering can vary; stock-out contributions of retailers to the vendors can vary. The objective of the model is to minimize total inventory costs for vendors. The model also can analyze how alternative policies can minimize vendor and retailer profits. A simulation example is given.

520242 Abstract -- In this paper, using the theories of large system control synthetically, beginning with the fact of supply chain operation, a new idea of large system’s multi-channel control of supply chain harmonious operation is discussed, in addition presents the case analysis of the rag trade supply chain operation.

520243 Abstract—The container loading problem, a real hard problem, is usually difficult to obtain even a suboptimal solution because of not only multiple complicated restrictions but also of multiple objectives. In this paper, a heuristic algorithm is proposed for solving the container loading problem in real world. The algorithm is based on Drum-Buffer-Rope presented in the Theory of Constraints and the multi-agent cooperation negotiation model. A particular attention is focused on improving the constrained agent by striving for the trade-off of restrictions and cooperated negotiations, so that the final solution can arrive its biggest profit.

520248 Abstract—The impacts of the extra- and intra-institution elements on transaction costs of logistics firms are analyzed by the firm theories in neo-institutional economics. And the methods of economizing the costs in order to increase benefits of logistics firms are discussed in this paper. After the firm theories in neo-institutional economics are summarized, the economic reasons for the existence of logistics firms are explained by transaction costs theory. The analyzing model is put forward for discussing the factors influencing logistics enterprises. The allocation of the departments in the logistics firms is specified from following aspects: transaction costs, the regulation, the production factor market, and credit institutions. The effects of taxation system, information technology with its related policies, investing and financial institutions on transaction costs of logistics firms are analyzed in the paper. Some propositions are presented for authorities and logistics firms. Applying the theories to analyzing the logistics firms is very effective for management improvement and benefits increase.

520259 Abstract—After recent food scandals and incidents, the design and implementation of traceability systems from farms to forks has become an important task for the food industry. For many food businesses, traceability is seen as a daunting task with few financial benefits. However, traceability can create competitive advantages. The key issue to add values on traceability is to integrate the traceability system with the supply chain management processes and use the traceability data to manage the business process and improve its performance. Beyond traditional understanding of traceability values, more potential benefits can be achieved. An illustrative case study is presented with proposed integration frameworks.

Session TM04	Room 105	Time 1:30 PM– 3:10 PM	Session Title Services Design, Engineering, Operations, and Innovation	Chair Zijiang Yang	Co-Chair Enrique Espinosa
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520201	Inventory Classification Enhancement with Demand Associations		Liiv, Innar	Tallinn University of Technology	
520232	Research on an Evaluation Model of Technique Innovation		Zheng, Jinrong Xu, Fuyuan Hou, Yong	Shanghai Fisheries University University of Shanghai for Science and Technology University of Shanghai for Science	

			and Technology
520233	Identifying Environmental Factors Affecting Bank Branch Performance using Data Envelopment Analysis	Yang, Zijiang	York University
520236	Modeling Business Diagnosis with Dynamic Workflow Construction	Espinosa, Enrique Bueno, Abel Molina, Martín Muñoz, Jesús	Monterrey Institute of Technology in Mexico City
520261	Measuring Customer Satisfaction based on Neural Networks Partial Least Squares Approach	Liu, Yan Zhou, Changfeng Chen, Yingwu	National University of Defense Technology National University of Defense Technology National University of Defense Technology

520201 Abstract—The most common method for classifying inventory items is the annual dollar usage ranking method (ABC classification), which assumes, accordingly to the Pareto principle, that a small number of items account for a large share of the cost-volume, an intermediate category of moderate cost-volume items and a large number of low cost or usage items. However, using only one criterion for decision making, in some cases, may lead to mismanaging the assets. To reconcile these conflicts, instead of using multiple criteria with analytic hierarchy process, we look at the alternative options available for improving the classification performance. The intent of this paper is to discuss several aspects of well-known inventory classification strategies, and to propose a demand associate on criterion for classification enhancement. Experimental results for two warehouse datasets are included and analyzed.

520232 Abstract -- There is no strict definition of technique innovation that has been agreed upon in the world nowadays. How to define technique innovation has become the focus of controversies in the field of theory. The divergence, in particular, arises concerning the defining of technology, the definition and criterion of the successful realization of technique innovation. In order to better the understanding of technique innovation and push forward the socialization of it, this paper discusses firstly whether technique innovation is successful or not, then, based upon the comparison of economical returns and social effect between before and after technique innovation, puts forward the evaluation model for technique innovation, taking advantage of SAVAGE's theory and method of expectation utility. With the help of this model, a quantitative evaluation of the definition of technique innovation can be established so as to evaluate and define any simple technological advancement and improved method, and further, propel the development of technique innovation.

520233 Abstract—In today's economy and society, the banking industry is of great importance to every one of us. We all depend on the efficiency and quality of services that the banking industry provides. With the improvement in technology, the competition in the banking industry has become increasingly intense. Therefore, performance analyses in the banking industry attract more and more attention. This paper presents an evaluation of 1097 branches of one big Canadian bank nationwide using Data Envelopment Analysis. Findings from this study show that branches have a high level of operational efficiency. However, there is still some room for improvements. Special emphasis was placed on discussing the environmental factors that affect the branch performance. The potential management uses of the DEA results were also presented. All the findings are discussed in the context of the Canadian banking market.

520236 Abstract— Mapping workflow (WF) modeling with real-life business process management has become key problem on today's service-based economy. Such real time delivery would give them a competitive lead, and is considered an asset on most scenarios. For the most part, small and medium sized businesses lack the resources to achieve this goal. We propose that a first step to achieving the desired realism is to build global knowledge on businesses. This may be achieved through Interactive Diagnosing of Small and Medium Sized Companies. Such diagnosis must be equivalent to the business it wants to model. For this purpose, we propose a Model for Dynamic Construction of a Workflow (DCW), describes the diagnosis process as a workflow that is built dynamically as an entrepreneur answers an online questionnaire. We propose that semantic actions within context-free grammars will enable the dynamic construction process. The model serves as the foundation for true interdisciplinary work.

520261 Abstract—Customer satisfaction measurement is an important part of marketing research in industrial organizations since it is the key to formulating customer value strategies and to continuously improving implementation of these strategies. Traditional techniques for modeling the network such as partial least squares (PLS) lack the capability of fitting the nonlinear and asymmetric relationships. This article presents a new technique of neural networks partial least squares (NNPLS) to measure customer satisfaction. The details of NNPLS are discussed. The results show that the NNPLS gives the smaller prediction errors compared with linear PLS. Therefore a robust model expressed by NNPLS succeeds in correlating the relations between customer satisfaction, customer loyalty and their drivers.

Session TM05	Room 106	Time 1:30 PM– 3:10 PM	Session Title Services Management & Manufacturing	Chair Lei Liu	Co-Chair Wen, Tao
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520047	The Chinese Commercial Bank's Operational Risk Measurement Model on IE's Continuous Improvement		Hu, Dan Zhang, Chen	HeFei University of Technology HeFei University of Technology	
520076	Study on Integrated logistics Network Model and Network Design for Waste Electrical and Electronic Equipment		Chang, Xiangyun Huo, Jiazhen Chen, Shiang	East China University of Science and Technology Tongji University Tongji University	
520083	Service Delivery Lead Time Model Based on Customer Demand Characteristics		Liu, Lei Luo, Hua Tang, Xiaowo	Southwest Jiaotong University Sichuan University University of Electronic Science and Technology	
520086	Study on Service Styles and Payoff Pattern of Listed Park Companies		Huo, Yanfang Qi, Ershi Xu, Gang Yang, Xiaofeng He, Shuguang	Tianjin University Tianjin University Tianjin University Tianjin University Tianjin University	
520096	An Analysis of Optimal Capacity under Three Different Scenarios		Wen, Tao Huang, Peiqing	Shanghai Jiaotong University Shanghai Jiaotong University	

520047 Abstract - Operational risk is one of the primary risks that the commercial banks need to meet. Using the quantitative and qualitative measurement are taking place of the manage methods though operational handbook or risk bill. This is the result on the development of IT and improvement of the bank's operational automatization. This paper introduces the New Basel Committee's methods and some scholars' studies on operational risk. Then it constructs the commercial bank's operational risk measurement model making use of the IE's continuous improvement and Wolfe method. It shows that this model is able to measure the operational risk though the demonstration.

520076 Abstract—Since the waste electrical and electronic equipment (WEEE) is increased rapidly, the disposition of WEEE has caused tremendous attention in China. The government is drafting regulation which will makes Original Equipment Manufacturers formally responsible for taking back their products. Logistics network design becomes vital for cost efficient managing WEEE in coming day. The aim of this paper is to take a detailed look at logistics network design for WEEE. Firstly, From the point of resource's re-use, Integrated logistics network for WEEE is presented taking into account all problems about reuse of entire products, parts of products, and reclaimed materials decomposed from WEEE. Secondly, a mixed integer programming (MIP) model is presented for designing logistics network of WEEE, its objective is to optimize the logistics network infrastructure of WEEE and minimize the total costs. Finally, an illustration is given through a hypothetical example.

520083 Abstract— Many service facilities are adopting the strategy of advertising a uniform delivery lead time to attract customers in Time Based Competition. Different kinds of customers have different sensitivities to price and time. How many money are prepared to pay for the service is also different to the customers with the same time or

price sensitivity. In this typical guaranteed delivery time strategy, customer demand characteristics based on time sensitivity and reservation payment determine the relationship between demand and delivery lead time. Considering customer consume behavior facing price and lead time, a service delivery lead time model is presented. Based on the model, the impact of price and customer time sensitivity as well as differentiation in customer reservation payment on delivery time decision is analyzed. Finally, a numerical example is given to illustrate the model and gain some useful managerial insights.

520086 Abstract—Listed park companies are special colony of Chinese economic structure after reform and opening up. This paper takes listed park companies into account and studies the service styles and payoff patterns in listed companies. At the beginning, the listed park companies and their characteristics are analyzed by taking Company X as example. Then the main service styles are brought forward after a contrast analysis between ten of main companies. At the end, a payoff pattern for listed companies currently is discussed by research on Company X.

520096 Abstract—Consider two independent supply chains, each consists of a manufacturer and a retailer. The distribution of demand in one supply chain is determined and known by both manufacturers. The distribution of demand in the other supply chain changes with time. We consider 3 different scenarios. In the first scenario, the two manufacturers do not cooperate. They assemble their products exclusively. In the second scenario, the two manufacturers cooperate partly, which means that they must make capacity decisions independently. But they can share their excess capacities. In the last scenario, the two manufacturers cooperate completely. They can exchange their information before installing their capacities and share their excess capacities after demands are observed. We specify the optimal capacities for both manufacturers and analyze factors affecting them in those scenarios mentioned above.

Session TM06	Room 107	Time 1:30 PM– 3:10 PM	Session Title Information Technology & Systems	Chair Wu Chou	Co-Chair Yu, Ming
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520245	Architecting Information-sharing Platforms for Supply Chain Management		Cai, Haohai Zhang, Luning Chen, Jingxian	Donghua University Donghua University Donghua University	
520250	Design and Implementation of Shipping Operation Intelligent Decision Support System		Chu, Liang-yong Xie, Xin-lian	Jimei Univeristy Dalian Maritime University	
520286	Web Service for Distributed Communication Systems		Liu, Feng Wang, Gesan Li, Li Chou, Wu	Avaya Labs Research Avaya Labs Research Avaya Labs Research Avaya Labs Research	
520288	Implementation of a Back-Propagation Neural Network for Demand Forecasting in a Supply Chain – A Practical Case Study		Cheng, Yun-Hui Liao, Hai-Wei Chen, Yun-Shiow	Yuan-Ze University Yuan-Ze University Yuan-Ze University	
520314	A Decision-Support Model for Technology Roadmapping		Yu, Jian Yu, Ming	Tsinghua University Tsinghua University	

520245 Abstract— This paper addresses an issue on leaning supply chains via architecting open and flexible information-sharing platforms. Two basic ideas of this paper are: (1) such a platform should be developed based on information necessarily shared for companies to make right decisions from supply chain management perspective, and (2) such a platform should be open and flexible because the supply chains are open, time-variant, loosely organized. Hence, the paper proposes architecture of an information-sharing platform.

520250 Abstract -- On the basis of the analysis of the characteristics of shipping operation and combination of AI with DSS, the realized objective, basic structure and functions of shipping operation intelligent decision support system are put forward in the paper. The expression of its core optimal model and realization mechanism of knowledge base and methods base are also given here.

520286 Abstract—In this paper, we present an approach for web service based distributed communication systems. Unlike conventional one-way web service, which is based on a stateless request/response interaction pattern, communication systems typically require stateful, two-way, full duplex interaction, and in many cases, it needs to establish certain association or context in the form of “session” before any message can be exchanged. We describe a system level architecture for distributed communication systems based on two-way, full duplex web service interaction that supports stateful and session based web service transactions. In addition, we address the issue of enabling two-way web service interaction to cross enterprise domains and firewalls, and the approach of two-way web service router gateway, TARGET, is described. TARGET is a generic solution for two-way web service interaction to traverse legitimately through NATs and strictly configured firewalls. Different from conventional web service access gateway, TARGET is based on a novel combination of two-way SOAP message tunneling, service local registry, and service routing to enable two-way web services for distributed communication systems. A research web service based distributed communication system has been developed that supports web service based conferencing services crossing enterprise domains and firewalls. Our experimental service results indicate that a full web service based distributed communication system is not only feasible but also desirable.

520288 Abstract—Demand forecasting is a key way to the efficient management of SCM (supply chain management) in a logistics information system. A poor forecasting approach for the product demands in marketing must cause to decrease competitive capability, lose customers and increase costs. A real case of the product demand forecasting was studied by an artificial neural network (ANN) approach demonstrated in this paper. The studied case is a medium-scale electrical connectors production corporation in Taiwan, which manufactures a variety of the connectors to supply marketing needs of diverse assembly products including mobile telephone, TFT, PDA, CD-ROM, CD-RW, DVD-ROM, DVD-player, notebook computer, digital camera, etc.. The types of the connectors produced by the studied firm are over 50. Owing to the insufficient experimental data provided by the studied corporation, a simulation tool called AweSim was used to simulate the orders of the various types of connectors, according to the historical received orders, and a set of the simulated data was used to train the proposed back-propagation network (BPN) so as to offer a proper demand forecasting tool to the studied firm. Four BPN structures were trained and tested and the best one was determined by ANOVA analysis. The BPN demand forecasting has been used by the studied corporation.

520314 Abstract— This paper presents a decision-support model for technology roadmapping, with a analysis of functions and design of operation process. It also presents a general index system for comprehensive evaluation of technology. This research helps to achieve the formalization and informationization of technology forecasting management.

3:10 PM – 3:30 PM	Coffee/Tea/Refreshments	North Building at Aetna School
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3:30 PM – 5:10 PM		Parallel Session			North Building at Aetna School	
Room 102	Room 103	Room 104	Room 105	Room 106	Room 107	
TP01 IBMSP02, 04, 05, CNSP06	TP02 (520) – 238, 239, 249, 251, 260	TP03 (520) – 269, 070, 272, 291, 293	TP04 (520) – 075, 210, 264, 267, 311	TP05 (520) – 152, 162, 165, 170, 185,227	TP06 (520) – 164, 168, 222, 223, 252	

Session TP01	Room 102	Time 3:30 PM– 5:10 PM	Session Title IBM Special Session (II)	Chair Jin Dong	Co-Chair Robin Qiu
Paper ID	Paper Title		Author(s)	Affiliation(s)	
IBMSP002	A Comparison of Business Process Modeling		Wang, Wei Ding, Hongwei	IBM China Research Lab IBM China Research Lab	

	Methods	Dong, Jin Ren, Changrui	IBM China Research Lab IBM China Research Lab
IBMSP004	Services Sciences, Management, and Engineering	Maglio, Paul	IBM Almaden Research Center
IBMSP005	A Practical Approach to Enabling Service-Oriented Value Nets: An IBM SUR Project Overview	Qiu, Robin G. Dong, Jin	Nanjing University of Aeronautics and Astronautics and Pennsylvania State University IBM China Research Lab
CNSP06	Effectiveness Evaluation Services for Small to Medium-Sized Manufacturing	Ahmad, Norita Qiu, Robin	Pennsylvania State University Pennsylvania State University and Nanjing University of Aeronautics and Astronautics

IBMSP02 Abstract—Business process modeling is the basis of business process management. The target of business process modeling is to get an abstract representation of the actual business processes. Although there are many business modeling methods, no well established modeling standard is available in this area. This paper reviews major business process modeling methods. Important aspects of these methods are discussed, including meta-model, graphical notation, serial representation, and tool support.

IBMSP04 Abstract—This talk will describe the emerging discipline of Services Sciences, Management, and Engineering (SSME), which is the application of scientific, management, and engineering principles to tasks that one organization beneficially performs for and with another ("services"). There are many reasons for focusing on services and interdisciplinary approaches to it. First, the economies of most developed countries are dominated by services (70% of the labor, GDP, etc.). Second, even traditional manufacturing companies such as GE (70% services revenue) and IBM (50% services revenue) need to add high values services to grow their businesses. Third, information services and business services are two of the fastest growing segments of the service economy -- the rise of web services, service oriented architectures, and self-service systems suggest a strong relationship between the emerging disciplines related to service science and the more established discipline of computer science. Finally, improving productivity often required combining technical, social, and business innovations and effective combinations of these often develop naturally together. In the end, our goal is to encourage research aimed at solving unique problems of services business and to encourage development of courses and programs aimed at producing graduates who are ready to work in the service sector, particularly in areas of knowledge-intensive business services.

IBMSP05 Abstract— Nowadays the world-class enterprises are eagerly embracing the service-led business models by taking advantage of their own unique and years marketing, engineering, and application expertise. They shift gears towards creating superior outcomes to best meet their customers' needs, aimed at creating highly profitable service-oriented businesses. Different from the traditional value chains enabling product-driven transactional type collaborations, a more scientifically rigorous approach is needed for the future value networks delivering strategically collaborative business based on Services Science for service-oriented practices. A comprehensive study relies on a variety of research on business modeling, design, monitoring, and optimization by accounting for business partnerships, collaboration, and organic integration using the synergistic methodology of business and technology. As a groundbreaking study, this IBM SUR (Shared University Research) project focuses on the exploration of a practical approach to enabling a platform to demonstrate the concept of service-oriented value nets. This paper gives an overview and status report of the sponsored project. The sponsored project ultimately will showcase service-oriented value networks established using IBM WebSphere solutions.

CNSP06 Abstract— Small to Medium-Sized Manufacturing Enterprises (SMEs) are considered to be the supplier base for domestic manufacturing in all industrialized nations. The SME has reliably demonstrated the ability to innovate and bring to the market new technologies in manufacturing. As businesses are moving in the direction of globalization, SMEs confront a new challenge in competing in the competitive global market. Therefore, the question investigated in this research is, given the globalization of manufacturing, how can SMEs reposition themselves for competitive advantage? Answer to this question obviously relies on a solid model of evaluating the effectiveness of SMEs' current business practices. An integrated model by combining the Analytical Hierarchy Process (AHP) and Data Envelopment Analysis (DEA) is developed, aimed at linking both qualitative and quantitative factors of multiple manufacturing input/output to accurately assess the operations and performance of

SMEs. The analytical results hence can be used to help SMEs better understand the problems and opportunities confronting their operations. This study is validated using the data collection of over 1500 SMEs.

Session TP02	Room 103	Time 3:30 PM– 5:10 PM	Session Title Services Design, Engineering, Operations, and Innovation	Chair Gide, Ergun	Co-Chair Ning Su
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520238	Developing a Practical Competency Curriculum for Department of Marketing and Logistics Management in Technical University		Chen, Su-Chang	National Penghu University	
520239	Evaluation of Public Service Maturity of E-government: A Case in Chinese Cities		Li, Ying	East China University of Science and Technology	
520249	Software as Service Pricing: a Game Theory Perspective		Tian, Chunhua Zheng, Yan Jiang, Zhongbo Cao, Rongzeng Sun, Wei Ding, Wei	IBM China Research Lab Tsinghua University IBM China Research Lab IBM China Research Lab IBM China Research Lab IBM China Research Lab	
520251	Service Innovation in Organizational Contexts: An Agent-Oriented Methodology		Su, Ning Levina, Natalia	New York University New York University	
520260	A Study of E-Commerce Business Satisfaction Model to Measure E-Commerce Success in Service SMEs		Gide, Ergun Wu, Ming X.	Central Queensland University Central Queensland University	

520238 Abstract—The purpose of this study is to develop a practical competency curriculum model for department of Marketing and Logistics Management (MLM) in the technical university in Taiwan. The study firstly discusses the linking problems between business and technical university in Taiwan. Then, the practical competency curriculum developing model for the department of MLM in the technical university is proposed. In this model, there are seven steps that are to collect relative documents and interview with senior business experts, to find industry requirements, to determine competencies profiles, to develop curriculum framework, to confirm faculty and Equipment requirements, to determine course flow and to evaluate and make an experimental teaching for this program. The above process has been used in National Penghu University (NPU) and got a sound result.

520239 Abstract— Since the late 1990s, governments at all levels have launched electronic government projects, albeit at different speeds, aimed at providing electronic information and services to citizens and businesses. How Web sites allow interaction with citizens, and the breath and depth with which citizens can receive services through the Internet are important issues for simplifying relationships with public administrations. In this paper, we study the degree of implementation of online services through the identification of which services are currently offered online by local governments in China. And the web sites of the capital cities of Chinese provinces are studied and evaluated. The survey indicates that the common service maturity of the e-government of Chinese cities is not high, and the service maturity is considerably related with the economic status of the city.

520249 Abstract—Software as Service (SaS) is an emerging business model for software sales and distribution. How pricing mechanism will be changed under such new business model is analyzed in this paper with principle-agent model. The analysis shows that cost structure and externality are two key differences between product and service pricing. Due to low marginal cost of SaS, consumers' affordability will become a key determinant in SaS pricing. There may be free even pay-for-consuming service if externality is large enough. Consumer heterogeneity is also a key factor in software pricing. But numeric experiments show that the impact is heavily dependent on consumer type distribution.

520251 Abstract—Service innovation is critical to today's businesses. Unfortunately, the formulation and development of innovative service concepts have been impeded by the "semantic gap" between abstract business strategies and specific organizational and informational structures. To address this challenge, this paper explores the

intersecting territories of service innovation, strategic management, and agent-oriented organization modeling, and proposes an integrated methodology that can systematically guide the creation and concretization of new service strategy into agent- and service-oriented specifications. This methodology is illustrated with a real-life based case study, and evaluated with a small behavioral experiment.

520260 Abstract— For the last ten years, while many e-commerce systems have been successfully adopted in businesses across different industries, a significant numbers have failed, especially in small to medium enterprises (SMEs). Most research-to-date on adoption of e-commerce systems is based on customer satisfaction in literature review. No previous studies have been found in the area of business satisfaction with e-commerce systems. This research aims to fill this gap by developing an effective measure of e-commerce success from a business point of view, termed e-commerce business satisfaction (EBS). This study entails the analysis of various critical success factors (CSFs) in e-commerce success with the aim of using them as benchmark performance indicators to underpin a comprehensive framework for measuring EBS in services SMEs. This paper describes the existing knowledge on satisfaction with e-commerce systems, gives the definition of EBS, and provides a research model for analyzing EBS based on Gide & Wu's proposed EBS model. Finally, a number of CSFs based on the initial research are provided for the further research stages.

Session TP03	Room 104	Time 3:30 PM– 5:10 PM	Session Title Logistics & Supply China Management	Chair Marcel Ludema	Co-Chair Ting Li
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520070	Modeling and Analysis of Container Terminal Logistics System by Extended Generalized Stochastic Petri Nets		Zhang, Hailin Jiang, Zhibin	Shanghai Jiao Tong University Shanghai Jiao Tong University	
520269	Analysis of Mobile Agents considering the Fan Out --Mobile Agents for Autonomous Logistics		Becker, Markus Sayyed, Gulshanara Wenning, Bernd-Ludwig Görg, Carmelita	University Bremen University Bremen University Bremen University Bremen	
520272	Improve Yield in Public Transport -- A Focus on ICT Capability		Li,Ting Heck, Eric van Vervest, Peter Rooijmans, Paul	Erasmus University Erasmus University Erasmus University Erasmus University	
520291	Reliable and Invulnerable Supply Networks		Ludema, Marcel W.	Delft University of Technology	
520293	Facility Layout Optimization with Stochastic Logistic Flows		Liu, Fei Dong, Ming Hou, Forest Chen, Feng	Shanghai Jiao Tong University Shanghai Jiao Tong University Intel Products (Shanghai) Ltd Shanghai Jiao Tong University	

520070 Abstract—In this paper, an extended Generalized Stochastic Petri Net (e-GSPN) was proposed for effective modeling of complex container terminal logistics systems (CTLS). To cope with their complexity and implement rule based dynamic scheduling of CTLS, a special type of place called rule place and a special type of transition called decision transition are integrated in GSPN using object oriented approaches. Guided by this e-GSPN method, a simulation model was built as an example to illustrate the modeling approaches. According to actual operations in one container terminal of Shanghai port in China, we give a case study to analyze the relationships between decision rules and collisions.

520269 Abstract—The current trends and recent changes in logistics lead to new, complex and partially conflicting requirements for logistic planning and control systems. Due to the distributed nature of logistics the usage of agent technology is promising. Due to the mobile nature of logistics the usage of mobile agent technology is promising as well. Scenarios of usage of mobile agents in logistics are presented, a notation for those scenarios is defined and it is

shown analytically in which cases the usage of mobile agent is superior to conventional communication. The main variable under study is the fan out, which is the number of partners a mobile agent needs to communicate with.

520272 Abstract—Critical to a public transport operation is the effective use of its inventory (e.g., seat capacity). However, so far most of the public transport operators have difficulties in bringing more yield into reality, while the airlines are enjoying the tremendous success with revenue management. What makes the difference? How can the public transport operators approach revenue management in an innovative way? Using the case of smart card adoption in Dutch public transport, this article makes an attempt to answer this question. Our finding suggests that the customer heterogeneity and the product heterogeneity alone do not qualify public transport operators for a revenue management. Instead, we argue that enhanced ICT capability and flexible pricing policies play an important role. The objective is to demonstrate the viability of revenue management and furthermore to advocate the yieldimprovement for the service operation and management, focusing on the customer-centric viewpoint.

520291 Abstract-- Structural supply chain characteristics like reliable network structures and supply chain partnership are vital elements for the functionality of supply chains. Dependencies between supply chain partners are formed by the way supply chain partners relate to each other. To really understand these dependencies new approaches may prove useful. After giving a broad overview of supply network representations, that show “traditional” dependencies, partnerships within supply networks are investigated as sources of reliability and invulnerability. Furthermore systems dependency is discussed, where seeing and experiencing the whole picture instead of seeing only your own business is focused on. Next to this hierarchical dependency is discussed, based on the concept of Nearly Decomposable Systems. The final approach discussed is (free-scale) network dependency, discussing supply chains in respect to clusters and networks. Each of these dependency approaches may be evaluated by means of reliability (failure) and robust (vulnerability) both in respect to the type of partnership that can be distinguished.

520293 Abstract—With the changing technology, market requirements vary quickly. Manufacturing facilities must be able to exhibit high levels of flexibility and robustness despite significant changes in their operating requirements. This paper discusses the facility layout problem with stochastic product demand and logistic flows. The shape of the department is fixed, but the rotation is allowed. Criteria considered in this paper include not only the traditional material handling cost but also the shape ratio factor and the operational performance such as WIP value. Material handling cost is formulated by the mean value and the standard deviation. A hybrid algorithm based on Tabu search and simulated annealing is constructed to solve this problem. Experimental results illustrate the effectiveness of the proposed algorithm.

Session TP04	Room 105	Time 3:30 PM– 5:10 PM	Session Title Logistics & Supply China Management	Chair Kang, Shiying	Co-Chair Mohammad Tarokh
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520075	Supply Chain Coordination Using Role Based Mobile Agent		Tarokh, M.J. Bagherzadeh, M. Kahani, N.	K.N.Toosi University of technology K.N.Toosi University of technology Azad University	
520210	Third Party Logistics Services Usage: A Case Study of Medium and Large Scale Chinese Firms		Yan, Xiu-xia Wang, Kan- chang Sun, Lin-yan	Shandong University of Technology Shandong University of Technology Xian Jiaotong University	
520264	Reverse Logistics of China’s Publishing Industry- AHP Analysis		Wu, Yen-Chun Jim Cheng, Wei- Ping	National Kaohsiung First University of Science & Technology National Kaohsiung First University of Science & Technology	
520267	Bullwhip Effect in Supply Chain System based on Traditional Internet /WSRF in Grid Environment		Kang, Shiying Kang, Yan Li, Yongxiang	ChongQing Technology and Business University ChongQing Technology and Business University	

			ChongQing Technology and Business University
520311	Applications of Workflow in Supply Chain Management: A Case Study	Sun, Dapeng Zhang, Xiaoping Yu, Ming	Tsinghua University Tsinghua University Tsinghua University
520227	The Logistics Cost of Two Distribution Patterns: A Case Study	Li, Yanhui Tang, Jianyu Ma, Shihua	Huazhong Normal University Huazhong Normal University Huazhong University of Science and Technology

520075 Abstract - Supply Chain Management is now vital part of competitive in all type of markets. Role based mobile agents can be proper for SCM coordination and improve it. In this work first we have studied the SC, SCM, Software Agent, Mobile Agent and Mobile Agent Environment. Then we have offered the conceptual model for Supply Chain Coordination. In this model we rationally have divided the Supply Chain to virtual segment corresponds with works that have been done in these segments. Every segment considered Mobile Agent Environment. Mobile Agents that are representative from participant exist in these segments and do their duty with use of roles provided in virtual segments. Finally we explain the virtual segments, provided roles in environment , representative agent and benefit of this model.

520210 Abstract--This paper examines the usage of third party logistics services in China. Foci was made on four constructs that we believe are the primary determinants of the future usage of third party logistics service. These constructs are: extent of use of the third party logistics services in the manufacturing and the trading enterprises; decision making process for choosing a contract logistics services provider; impact on the usage of contract logistics services on the organization; and different types of demands in different industries. An empirical research was carried out to study the impact of these four factors on the future usage of third party logistics services. Results based on the analysis of data relating to 156 firms in China indicate that the extent of use of the third party logistics services between manufacturing enterprises and trading enterprises differ greatly. Most of these users are satisfied with the services providers and have largely seen positive developments within the organization. With a high current level of satisfaction, most firms surveyed indicated a moderate to substantial increase in usage of their services.

520264 Abstract—As Asia is expected to play a very importance role in the future global economy and China has become one of the most powerful economies after its admission to WTO, the use of Chinese will surely wield a very significant impact on the world. Research on reverse logistics of China’s publishing industry is still in its infancy. This research, based on the AHP analysis, is an attempt to explore the key factors of the reverse logistics of Chinese book publishing and the preferred solution.

520267 Abstract—Establishing the supply chain resources share system based on network and strengthening the information share extent is the important measure to weaken “bullwhip effect”. Every development stage of supply chain information resource share system based on traditional network and its limited reduction effect to “bullwhip effect” is expounded. By taking the example of supply chain management platform in WSRF (Web Service Resource Framework) in Grid, the great effect of the platform to weaken “bullwhip effect” is analyzed theoretically and technologically. Appearance of WSRF symbolizes that web service integration technology in Grid has been developed to a new stage. From this stage on, supply chain management platform can technologically have the condition to realize target of resources share.

520311 Abstract—Supply chain management is increasingly important in modern enterprises. Various information systems have been developed in the domain of services-oriented supply chain management. But as the complexity of supply chain, there are still two big problems. On the one hand, most of the traditional supply chain management systems can not really achieve integration among different organizations. On the other hand, few systems can adapt the changes of supply chain very quickly. In this paper, we attempted to achieve the combination of workflow management and supply chain management. Based on the theories of workflow, we developed a process-oriented and event-driven supply chain management system which could be much more flexible, quickly and efficient.

Session	Room	Time	Session Title	Chair	Co-Chair
TP05	106	3:30 PM– 5:10	Services Management &	Tijun Fan	Wei Liu

	PM	Manufacturing	
Paper ID	Paper Title	Author(s)	Affiliation(s)
520152	Optimization of Planning and Scheduling for Phosphor-Chemical Enterprises	Fan, Tijun Li, Hongyu Xi, Daizhao	Fudan University Fudan University East China University of Science and Technology
520162	AHP based Research on Segmentation Method of Customer's Value in Aviation Cargo Transportation	Huang, Jianwei Li, Cheng	Shanghai University of Engineering Science Shanghai University of Engineering Science
520165	Study on Producer logistics service and Logistics Outsourcing from Manufacturing Firms a Perspective of Industrial Cluster	Liu, Wei Cui, Aiping	Shanghai Maritime University Shanghai Maritime University
520170	A Research into the Recycling System of Waste Electrical and Electronic Equipment in China	Zhong, Yongguang Yu, Qingdong Wu, Peng Wang, Guohong	Qingdao University Qingdao University Qingdao University Qingdao University
520185	Research on Information Service System for High-Tech SMEs	Song, XinPing Ding, YongSheng Cao, RuZhong	Dong Hua University Dong Hua University Dong Hua University

520152 Abstract—The decision of planning and scheduling for phosphor-chemical enterprise is very complex and difficult, which is a research area that needs to be studied thoroughly. In this paper, a model optimizing planning and scheduling for a phosphor-chemical enterprise is presented in consideration of the operation processes, including mining, mineral processing and chemical fertilizer producing. Also, some numerical examples for the model are computed and analyzed for the purpose of illustration. The results show that it is very useful for an enterprise to optimize production planning and scheduling.

520162 Abstract—With limited resource, enterprises have to invest the resource into those profitable customers. Therefore, it is necessary for enterprises to segment customers, especially for the aviation cargo transportation enterprises in the severe competition. This paper is mainly focus on the segmentation theory on the customer's value, on the basis of customer's current value and customer's potential value to segment and put forward of the Analytic Hierarchy Process based research on segmentation method of customer's value in aviation cargo transportation.

520165: Abstract—Today's business success to a great extent depends on logistics and supply chain performance. More and more companies, especially manufacturing firms, obtain their competitive advantages through creating successful logistics outsourcing alliances to optimize value and performance. This paper put forward a conception of producer logistics service, analyzes its positive effect on manufacturing firms from the perspective of the function of producer services in industrial clusters whose core firm is manufacturing firms, furthermore, discusses logistics outsourcing between manufacturing firm as a logistics outsourcing party and third part logistics (TPL)enterprise as a logistics service provider through building cooperative game models, and finally proposes further research in the field of logistics outsourcing.

520170 Abstract—All the countries in the world have done enormous work on lawmaking, technical problems of recycling engineering, managerial problems of recycling and the building of recycling plants, which has played an active role in regulating and promoting the recycling of waste electrical and electronic equipment. However, our country is still studying such system in the phase of a trial run, without considering recycling and processing as an entire system. Although the processing plants have been introduced, a recycling system is urgently needed to be set up. This thesis has analyzed the differences in methods of recycling and disposing waste electrical and electronic equipment between China and other developed countries and the difficulty our nation thus is confronted with in this

field, and furthermore has put forward three applicable basic models in dealing with the recycling waste electrical and electronic equipment.

520185 Abstract— High-tech small and medium enterprises (SMEs) have played a vital role in sci-tech innovation and development of national economy throughout the world. A sound information service help high-tech SMEs gain competitive edge in keen global competition. This paper presents a framework of integrated information service solution for high-tech SMEs using advanced information service conception and technology. The electronic service platforms designed in this framework can provide efficient and convenient information support for overall business operation of high-tech SMEs. This paper presents a new perspective to theory and practice of information service and e-service for high-tech SMEs.

Session TP06	Room 107	Time 3:30 PM– 5:10 PM	Session Title Information Technology & Systems	Chair Tong, Lixin	Co-Chair Zhao, Hui
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520164	E-business and Information Integration in Supply Chain Management		Zhao, Xiaofeng Zhao, Hui Hou, Jianrong	University of Tennessee East China Normal University Shanghai Jiaotong University	
520168	Image Semantics Segmentation Using Watershed Algorithm		Miao, Chengliang Xie, Shengli Yu, Weiyu	South China University of Technology South China University of Technology South China University of Technology	
520222	Mobile Agent Based Layered Spatial Service Architecture for Mobile GIS		Fang, Zhi-xiang Li, Qing-quan	Wuhan University Wuhan University	
520223	Modeling E-government Administrative Processes Using Unified Modeling Language		Yang, Dong Tong, Lixin	Shanghai Jiao Tong University Shanghai Jiao Tong University	
520252	Intelligent Transportation System (ITS) Information Fusion: Concept, Analysis and Implementation		Wang, Zhengyou Guan, Chunhua	Jiangxi University of Finance and Economics Jiangxi University of Finance and Economics	

520164 Abstract--The central theme of supply chain management is integration. General System Theory provides the theoretical framework of integration, whereas information integration is the foundation of broader supply chain integration. E-business opens up communication and enlarges networking opportunities and thus tremendously affects information integration. By analyzing one recent trend of e-business, the e-hub, we explore the mechanism of information integration as well as managerial and technical limitations. Although there are many challenges, e-hubs create value by aggregating buyers and sellers, creating marketplace liquidity, and reducing transaction cost. E-hubs also provide exchange information on transportation and logistics. Therefore, E-hubs could be a crucial solution to supply chain management.

520168 Abstract--In this paper a novel image semantics segmentation algorithm is proposed, which combines edge and region-merged based techniques. First, an edge-preserving statistical noise reduction approach is used as a preprocessing stage in order to compute an accurate estimate of an image gradient. Second, we segment image into primitive regions by applying watershed algorithm on the image gradient magnitude. The watersheds computation algorithm used is based on immersion simulations, that is, on the step of the recursive detection and fast labeling of the different catchments basins using queues. At the end, we merge neighboring region into homologous region using morphological erosion and dilation. Some experiments are presented to illustrate availability and effectiveness of our approach.

520222 Abstract—The mobile information age has emerged from the combination of the Internet and wireless communication technology. Location based service, booms all over the world for the moment, are potential

applications in public information service, navigation system in intelligent transportation system, government service, and people's routine life. The "layer agent" concept based layered spatial service architecture of mobile GIS is designed in this paper, which make use of several current mobile agent technical system, aims at simplifying the analysis and solution process by clear division. This model not only can be used in the application of mobile spatial information service, but also can be adopted in grid computing. This architecture can extend agent's action features and auto-learning intelligent processing mechanism via layered agent LOD strategy. Several experiments are tested on this architecture, and their results are illustrated in this paper to verify the rationality, feasibility of this architecture.

520223 Abstract— Process modeling plays a crucial role in the analysis, optimization and automation of administrative processes in the e-government domain. In this paper, we present the UML activity diagram to model e-government administrative processes. Based on this, a case study about applying for social security cards in Shanghai is illustrated. A prototype for workflow-supported e-government management system is implemented in terms of the proposed approach.

520252 Abstract—As to ITS information fusion (ITSIF), the paper studies from three aspects: concept, analysis and implementation. Firstly on the basis of present research and practice, the paper gives ITSIF concept and content. Secondly, the paper uses formal approach to ITSIF analysis. The approach is based on category theory and Object-Oriented method and Specare. With the support of Specware, the formal specification can be refined into final executable code step by step. On the basis of analysis, an information fusion system model is developed. Lastly, the paper introduces ITSIF implementation.

6:30 PM – 9:00 PM	Banquet Banquet Speech: Wei Zhang	Crowne Plaza Club Hotel
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**2006 IEEE SOLI
Friday, June 23 2006**

8:00 PM – 12:00 PM 2:00 PM – 5:00 PM	Registration	Aetna Building at Aetna School
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8:00 AM – 8:50 AM **Plenary Lecture**

Room: The Auditorium, Aetna Building at Aetna School

Chair: **Robin Qiu**, Pennsylvania State University, USA

Speaker: **Daniel Berg**, CTO, [Sun Microsystems](#)' Services Division, USA
Title: *IT as a Service*

8:50 AM – 10:10 AM **Visionary Panel Lecture**

Room: The Auditorium, Aetna Building at Aetna School

Chair: **Ming Yu**, Tsinghua University, China

NSF07	RFID – The Wireless Internet of Artifacts	Gadh, Rajit	University of California, Los Angeles
NSF10	Transforming Healthcare: Challenges and Opportunities	Sainfort, François	Georgia Institute of Technology

9:50 AM – 10:10 AM	Coffee/Tea/Refreshments	Aetna Building at Aetna School
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10:30 AM – 12:10 PM		Parallel Session		North Building at Aetna School	
Room 101	Room 102	Room 105	Room 106	Room 107	Room 202
FA01 NSF08, 09, 11	FA02 (520) – 071, 115, 270, 279, 312	FA03 (520) – 012, 023, 191, 205, 211	FA04 (520) – 062, 193, 213, 229, 282	FA05 (520) – 020, 246, 274, 284, 289	FA06 (520) – 048, 111, 124, 253, 296

Session FA01	Room 101	Time 10:30 AM– 12:10 PM	Session Title (US NSF III) Health Systems and Services Modeling	Chair Suvrajeet Sen	Co-Chair Leyuan Shi
Paper ID	Paper Title		Author(s)	Affiliation(s)	
NSF08	Data Mining, Forecasting, and Activity Monitoring		Tsui, Kwok-Leung Jiang, Wei	Georgia Institute of Technology Steven Institute of Technology	
NSF09	Using Nested Partitions for Beam Angle		Shi, Leyuan	University of Wisconsin – Madison	

	Selection in Intensity-Modulated Radiation Therapy		
NSF11	Stochastic Decomposition for Transshipment Modeling	Sen, Suvrajeet Wei Zhao	University of Arizona Tsinghua University

NSF08 Abstract -- This talk discusses strategies and techniques in data mining, forecasting, and activity monitoring. Data Mining refers to non-trivial extraction of knowledge from large volume of data. Activity monitoring refers to detection of interesting events that require actions (e.g., detection of customer churn, credit card or insurance fraud, and computer intrusion). Forecasting refers to predicting future activities based on historical data and other variables (e.g., demand forecasting, sales forecasting, stock price forecasting). We will propose a general strategy for modeling, monitoring, and forecasting of dynamic systems. In particular, we will discuss a statistical process control approach for business activity monitoring. We will also proposal a churn detection procedure for customer profile modeling. Several examples and case studies in telecom and service industries will be used to illustrate the proposed methods.

NSF09 Abstract -- Modern treatment technologies allow clinicians to develop complex treatment plans for a wide array of illnesses, including many forms of cancer. While expert judgment may lead to good treatment plans in many cases, computer automated decision support tools provide a mechanism by which enormous numbers of alternative plans can be automatically generated and compared, and thus yield treatments that are often significantly better. In this talk, we describe results obtained by applying the Nested Partitions (NP) metaheuristic to the problem of selecting beam angles for radiation delivery in Intensity Modulated Radiation Therapy.

NSF11 Abstract -- Transshipment problems deal with situations in which demand at distributed locations can be met by balancing the distribution of supply among network nodes where there is a mismatch between supply and demand. Such mismatch usually results from demand uncertainty at each node of the network. This problem has been traditionally solved using simulation- optimization methods. We will show that stochastic decomposition provides a very powerful approach for such problems because of the ability to use the network structure of the problem, and to use stopping rules that yield reliable solutions.

Session FA02	Room 102	Time 10:30 AM– 12:10 PM	Session Title Services Design, Engineering, Operations, and Innovation	Chair Eric Olsen	Co-Chair Farookh Hussain
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520071	Study on Methods of Interest Allocation for Participant Enterprises in Joint Distribution		Juan, Zhicai Fu, Zhongning Wu, Fang	Shanghai Jiao Tong University Jilin University Lanzhou Jiaotong University	
520115	Improvement to One Company’s Outsourcing Glass Bulb In-warehouse Logistics and its Revelations		Liu, Shulin Ju, Zhihua Liu, Xuejun Liu, Jin	Xi’an Jiaotong University Henan Ancai CPT glass bulb group Co. Ltd Xi’an Jiaotong University Xi’an Jiaotong University	
520270	A Surgical Management Information System Driven by Workflow		Qi, Jianhua Jiang, Zhibin Zhang, Guotong Miao, Rui Su, Qiang	Shanghai Jiao Tong University Shanghai Jiao Tong University Shanghai No 7 People’s Hospital Shanghai Jiao Tong University Shanghai Jiao Tong University	
520279	Comparative Analysis of Trust and Security		Hussain, Farookh Khadee Chang, Elizabeth Dillon, Tharam	Curtin Business School Curtin Business School University of Technology, Sydney	
520312	Transitioning to Software as a Service: Realigning Software Engineering Practices with the New Business Model		Eric R. Olsen	DePaul University	

520071 Abstract—Joint distribution is a cooperative distribution mode. It has become a trend of logistics distribution due to its inherent characteristics and advantages. In practice, the participant enterprises are quite concerned about the allocation of income and cost caused by their cooperation. So the allocation method will play an important role in the successful implementation of joint distribution. This paper applies the theory of cooperation game and bargaining game to calculate the cost shares that the investigated logistics firms should undertake. By comparing and analyzing the algorithm hypotheses and allocation results of Nash bargaining solution, simple proration, and evaluation approach of cooperation game, it can be concluded that evaluation approach of cooperation game can better reflect the principle of equity and rationality than the other two methods. In the end, this paper considers evaluation approach as the rule of interest allocation in joint distribution.

520115 Abstract—This paper describes the background, improvement project and actual results of a logistics problem in one company, and then expatiates the revelations after analyzing the case. Also, the paper illustrates its meaning and effect in teaching as well as scientific research.

520270 Abstract— Surgical healthcare service involves various interrelated activities performed from the beginning of surgical application to the completion of all producers after operation. A surgical process is finished jointly by at least three departments. It is necessary to provide an appropriate method to automate and manage this process. Hopefully, workflow technology can enhance the collaboration and cooperation by automatically routing the surgical process. This paper presents a surgical process model. Based on the optimized surgical process a prototype surgical management information system driven by workflow (SMISDW) is developed.

520279 Abstract— In the literature, there is a lot of confusion regarding the relationship between the ‘trust’ and ‘security’. Most of the times, these terms are regarded as being synonymous with each other. The existing literature does not draw a clear line how and when the terms of ‘trust’ and ‘security’ are synonymous and when they are not synonymous. In this paper we address this issue and discuss when the distinct terms of ‘trust’ and ‘security’ can be regarded as being synonymous with each other and when they could be regarded as not being synonymous with each other.

520312 Abstract—Transitioning from software as a good to software as a service is not simply a matter of developing appropriate protocols, adopting new service-oriented technologies, and writing code. Instead, software companies that seek to adapt to a market based on software, as a service need to examine how they approach very basic business tasks like marketing and engineering. This paper focuses on the implications a particular software paradigm has on software engineering. It concludes that some traditional software engineering practices in the goods paradigm related to planning, versioning, and maintenance are simply not appropriate in the service paradigm. To be successful as a service-oriented business, a software company needs to realign its base software engineering practices to fit the new business model.

Session FA03	Room 105	Time 10:30 AM– 12:10 PM	Session Title Logistics & Supply China Management	Chair Xiaoli Lin	Co-Chair Herui Cui
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520012	Analysis on Purchase Expenses Based on E-business and Sole Supplier		Cui, Herui Zheng, Jiangbo	North China Electric Power University Jinan University	
520023	Optimization of Fuzzy Inventory Model with Backorder		Li, Qunxia Zhang, Qun Shen, Haifeng	University of Science and Technology Beijing University of Science and Technology Beijing Beijing University of Posts and Telecommunications	
520191	Supplier as a Newsvendor: An Analysis of Pull Contract		Chang, Shiyan Wu, Qizong	Beijing Institute of Technology Beijing Institute of Technology	
520205	Investigating Supplier Selection using Repertory Grid Technique		Lin, Xiaoli Purchase, Sharon	Central Queensland University University of Western Australia	

520211	Supply Chain Simulation Methods	Tarokh, M. J. Golkar, M.	K. N. Toosi University of Technology K. N. Toosi University of Technology
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520012 Abstract—Supplier problem is a hotspot in the field of supply chain management. This paper makes hypotheses on suppliers’ delivery and the course of customers’ ordering with the mode of e- business trade. Based on the existing (S, Q) model, this paper proposes the purchase expense model with a sole supplier under the situation of e-business, and analyzes the solving scheme in detail. This paper has not only established (t, S) model based on stochastic lead-time, but also provided a foundation for further research on supply chain cost problem based on Mass Customization.

520023 Abstract—Based on the generalized defuzzifying approach derived in this paper, we establish the fuzzy economic order quantity (EOQ) model with backorder. When the order quantity is a crisp number, we use the direct derivation method to obtain the optimal solution. When the order quantity is a fuzzy number, we use the extension of the lagrangean method to solve the inequality constraints. The results indicate that the optimal decision-making is determinate. In addition, if all fuzzy parameters are crisp numbers or the backorder cost is extremely large, this model will degrade into the classical inventory model with backorder and the simple inventory model without backorder, respectively.

520191 Abstract—Supply chain coordination with contract has played an important role in achieving optimal performance. Unlike traditional push contract, pull contract allows a retailer to stock nothing through pulling inventory risk to supplier who in turn takes in charge of inventory. The paper developed an analysis of pull contract model, and explored some characteristics of optimal quantity and supply chain performance. It was found that the pull contract subsidized by buy back contract can coordinate supply chain, and the buy back price can serve as the key parameter to achieve the cooperative coordination.

520205 Abstract—Supplier selection is an important part of supply chain management, as suppliers tend to play as strategic roles for most organizations. This study investigates the supplier selection criteria in Chinese textile industry using repertory grid technique. Twenty-one purchasing employees from textile industry in China were interviewed. Thirty-three constructs were elicited from the twenty-one interviews. Respondents used counts and frequency to identify the most mentioned criteria. Variability index was used to determine the constructs’ differentiation power among three supplier groups. Eight constructs were identified to be the criteria used by purchasers and they are: guanxi, problem-solving methods, service, term of payment, creditability (known as Xinyong in Chinese), delivery, quality and price in ranking order.

520211 Abstract—One of the most costly and difficult parts of a business to manage is the supply chain. Effectively managing a complex, global supply chain has a positive impact on a company’s financial performance. By using simulation, managers are able to create a model of their supply chain systems and test various levels of input that can emulate real life inconsistencies. This paper mentions different types of simulation for supply chain management and describes main characteristics of them. Each simulation type should be applied, depends on the type of managerial question to be answered by the model. This paper explain how different types can answer different questions in SCM or may have better results in some special conditions.

Session FA04	Room 106	Time 10:30 AM– 12:10 PM	Session Title Services Management & Manufacturing	Chair Yang Qiu	Co-Chair Hong Zhou
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520062	An Improved Algorithm of the Optimization Control Problem of Loss Systems		Cai, Huaiping Bu, XianJin Chen, Yingwu	National Univ. of Technology Defense National Univ. of Technology Defense National Univ. of Technology Defense	

520193	An Application Based on K-Means Algorithm for Clustering Companies Listed	Ye, Qian	Zhejiang University of Finance & Economics
520213	Management System of Outsourcing: Protection of Core Competence Perspective	Wu, F. Liu, C. Li, P.P.	Xi'an Jiaotong University Xi'an Jiaotong University Xi'an Jiaotong University
520229	A Cooperative Coevolutionary Algorithm with Application to Job Shop Scheduling Problem	Zhou, Hong Wang, Jian	Beihang University Beihang University
520282	On Periodic Stability For A Class Of Process Perturbation And Non-Blocking Control System	Yang, Qiu Ma, Jun	Wuhan university of Science and engineering China University of Geosciences

520062 Abstract—The optimization control problem of GI/M/n loss systems could be modeled with Markov decision processes (MDP); however, there have been no effective algorithms to solve the optimal policies of such large-scale problems by now. The model characteristic of the optimization control problem of GI/M/n loss systems is well analyzed, and the improved algorithm to solve optimal policies of the problem is proposed correspondingly. The algorithm is mainly improved in the selection rule of initial policy, the improvement rule of policy and the evaluation criterion of optimal policies, so both the storage space and computing time are reduced. Meanwhile the optimal solution of the MDP problem could be obtained by the improved algorithm. Finally, a simple comparison between the improved algorithm and conventional algorithm is given through an example. It can be concluded that the improvement algorithm is suitable to solve the large-scale optimization control problem of GI/M/n loss systems.

520193 Abstract--There exist many customers in credit market that needs to be classified into distinct groups. K-Means Algorithm are presented, which based on the historical financial ratios, utilizing the cluster analysis technology to analyze the listed enterprises in Zhejiang province. Some indicators related to financial attributes are analyzed, and nine finance indicators are chosen. According to better valuation on the companies listed, we apply to "try and error" and choose 4 as the number of clustering. 81 samples are divided into two groups :one training group with 60 firms and other testing group with 21 samples. Testing results shows that the model trained can be available for clustering companies listed in Zhejiang province.

520213 Abstract: It is required to take a consideration of combining long and short term performance of enterprises when outsourcing, which is a complex processes and system engineering. In this paper, management system of outsourcing decision was built for strategic and operational aim. Criteria of strategic outsourcing was confirmed based on core degree and technology losing degree of outsourcing parts, and criteria of operational outsourcing was given involved in cost, quality and delivery. Subjects of decision were analyzed which included strategic and operational committees. Finally, decision models of strategic and operational outsourcing were dealt with.

520229 Abstract—An improved cooperative co evolutionary algorithm, which aims at solving job shop scheduling problem, is proposed in this paper. According to the number of machines, population is naturally divided into some subpopulations whose individuals encode the preference list of jobs. The proposed algorithm introduces steady-state reproduction to crossover and mutation operators, and inserts some new individuals to the subpopulation at some other generations, and uses the improved preference-list-based G&T algorithm to decode the whole solutions to calculate fitness by three types of cooperative partners, and adopts an innovative updating technique to speed up the convergence. The optimization results of numerical experiments have shown that, the proposed algorithm has outperformed traditional genetic algorithms and showed strong competition with other heuristics.

520282 Abstract—The non-linear state space model which containing multiple perturbation parameters under ordinary max-algebra was linearized in the sense of generalized max-algebra. Based on this method, researching to the periodic stable robustness for a class of process perturbation and non-blocking control system, and the analytic expression of eigen-input and period of non-blocking feedback control system without transitional process is proposed.

Session FA05	Room 107	Time 10:30 AM–	Session Title Services Design, Engineering,	Chair Yinhua	Co-Chair Zhigao Chen
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		12:10 PM	Operations, and Innovation	Zhou	
Paper ID	Paper Title	Author(s)	Affiliation(s)		
520020	Application of Data Warehouse Technique in Educational Decision Support System	Dong, Ping Dong, Junjun Huang, Tiansheng	University of Science and Technology Beijing University of Science and Technology Beijing University of Science and Technology Beijing		
520246	Relational Analysis of Causes of Bullwhip Effect in a Multi-layer Model	Fan, Lu Zhou, Yinhua	South China University of Technology South China University of Technology		
520274	Knowledge Deployment and Knowledge Network: Critical Factors in Building Advantage of Business Incubator Knowledge Service	Chen, Zhigao Ma, Ling Chang, Xiangyun	East China University of Science & Technology East China University of Science and Technology East China University of Science and Technology		
520284	A Network-Based Framework and Its Operation Model of Archival Knowledge Management and Service System	Chen, Zhigao Li, Ying Li, Liqiao	East China University of Science & Technology East China University of Science & Technology East China University of Science & Technology		
520289	Container Berth Expansion Planning with Dynamic Programming and Fuzzy Set Theory	Jin, Chun Gao, Peng	Dalian University of Technology Dalian University of Technology		

520020 Abstract--This paper introduces techniques of data warehouse and online analyzing processing and provides a solution to decision-making support system based on an education-related case study. The paper also discusses how to collect business data, transform and integrate these data to analyze the state of education based on OLAP and how the end user can get the information easily.

520246 Abstract—Based on the beer game experiment, this paper aimed to investigate the impact of demand forecasting, order batching and shortage gaming on the supply chain, which involves retailers, distributors and manufacturers being subject to the bullwhip effect. Relational analysis based on the grey system theory is employed to measure the impacts on causes of the bullwhip effect in the presence of both rigid and flexible production technology. In all cases, lead time account for the largest impact to the bullwhip effect at the retailer and distributor layers. At the manufacturer layer, lead times are also most accountable for the bullwhip effect under rigid production technology, but the weight for actual demand in the current period is the most accountable under flexible production technology. The conclusions of this paper provide valuable guidelines for improving supply chain efficiency.

520274 Abstract—Most business incubators have the problem of being lack of knowledge service. By studying the critical factors in knowledge service advantage of incubator, we could better understand and grasp incubator, and enhance the advantage of incubator knowledge service. The paper firstly analyzes the contents and characteristics of incubator knowledge service, and then studies the effect of knowledge deployment and knowledge network in the knowledge service advantages building of incubator. The paper obtains the follow conclusions: 1) theoretical explanation of facility for knowledge integration and deployment from incubator industrial cluster, 2) incubator knowledge network dynamical and smooth network, hence it is a demand-matched can effectively transfer and transmit enterprise incubation knowledge, 3) knowledge deployment and knowledge network are two critical factors in knowledge service advantage building of incubator.

520284 Abstract—Archives, as a special resource, has specific effect on many fields of countries or regions. It's an inevitable trend for archives organization to proceed archival knowledge management and provide socialized service.

With the intention of proposing some new suggestion in this area, a network-based framework of archival knowledge management and service system is constructed based on views of knowledge process and characteristic analysis of archival knowledge. And, networked archives organizing modes are probed to support knowledge generation. Then, a knowledge generation and operation mode for special topics is conducted based on the techniques of knowledge mining, reasoning, externalizing and absorbing. Finally, the content of archival knowledge service is discussed. 520289 Abstract— An optimization method is proposed for optimal berth system expansion planning on container terminals to improve operation performance along with the growing container quantity. This planning problem is attributed to a multi-stage decision-making problem and its solution method is divided into two parts: (1). For the decision-making sequence in the long period, dynamic programming is used to determine the total optimal plan; (2). For a given time point, nonlinear search programming combined with discrete event simulation model is used for the local optimal berth system decision. The minimum total waiting time of ships is used as the objective function of performance evaluation. Fuzzy set theory is applied to deal with the uncertainty in performance judgments made by terminal management. With a case study, the optimal decision sequence on berth system expansion plan is determined, and the validity and feasibility of the proposed method is illustrated.

520289 Abstract— An optimization method is proposed for optimal berth system expansion planning on container terminals to improve operation performance along with the growing container quantity. This planning problem is attributed to a multi-stage decision-making problem and its solution method is divided into two parts: (1). For the decision-making sequence in the long period, dynamic programming is used to determine the total optimal plan; (2). For a given time point, nonlinear search programming combined with discrete event simulation model is used for the local optimal berth system decision. The minimum total waiting time of ships is used as the objective function of performance evaluation. Fuzzy set theory is applied to deal with the uncertainty in performance judgments made by terminal management. With a case study, the optimal decision sequence on berth system expansion plan is determined, and the validity and feasibility of the proposed method is illustrated.

Session FA06	Room 202	Time 10:30 AM– 12:10 PM	Session Title Information Technology & Systems	Chair Clare Tang	Co-Chair Daiping Hu
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520048	A Method to Evaluate Security Performance of Mobile Agent System		Wang, Suzhen Wang, Jiazhen Peng, Deyun	HeBei University of Economics and Business Shijiazhuang Mechanical Engineering College	
520111	Data Clustering using Hybridization of Clustering Based on Grid and Density with PSO		Shan, Shi M. Deng, Gui S. He, Ying H.	Dalian University of Technology Dalian University of Technology Dalian University of Technology	
520124	Utilizing Mobile Web Services for Supply Chains		Luo, Jianhong	Zhejiang Sci-Tech University	
520253	Study on A Vocabulary Learning System Based on Semantic Network		Li, Mengyu Hu, Daiping Li, Zongming Lei, Aizhong	Shanghai Xiandai Vocational & Technical School Shanghai JiaoTong University Shanghai JiaoTong University Shanghai JiaoTong University	
520296	Web Services for Production Planning and Optimization		Tang, (Clare) Xueqing Knox, Malcolm Martinez, Jose	Governors State University Governors State University Governors State University	

520048 Abstract--- The security performance of mobile agent system has an important influence on the real applications. This paper gives a new idea of “enough security” fitting to real application, proposes an integrated security architecture based on component technology, comes up with a security performance evaluation framework, defines a set of metrics and offers a method to realize the measurement and evaluation of security level of mobile agent platform. The main intention of this work is to provide a scaleable security environment and a chosen security

grade for mobile agents in real applications according to their real and different security requirements and different security requirements.

520111 Abstract—The purpose of this paper is to present a new clustering algorithm based on grid and density combined with Particle Swarm Optimization (PSO). The algorithm is referred as Hybridization of Clustering Based on Grid and Density with PSO (HCBGDPSO). Inspired by the influence function introduced in DENsity-based CLUstEring (DENCLUE) algorithm, a novel method for computing the density of grid cells is adopted in HCBGDPSO to achieve better precision instead of the method used in common grid-based clustering algorithm. Furthermore, PSO is combined in the algorithm to search the arbitrary-shape clusters. Finally, the results of the experiments indicate the effectiveness of the algorithm.

520124 Abstract—In today’s supply chain management, organizations need to address complex interdependencies and create an extended enterprise that looks beyond its manufacturing plants, and customers increasingly expect companies, suppliers and distributors to provide real time information about their orders. These escalating customer demands are forcing corporations to adopt mobile technology to optimize and streamline the information, product and financial flows in the supply chain. But supply chain processes in companies today are desktop-centric. The focus of this paper is on the opportunities web services can offer to improve supply chain efficiencies in the mobile environment. Three-tier architecture is described to utilize web services for users with handheld devices in supply chains. With this architecture a mobile solution is specified to develop the next generation supply chains.

520253 Abstracts -- A semantic network is made up of a number of circles or nodes which represent objects and description information about those objects. Nodes can be physical items, concepts, events, actions or attributes. The nodes are interconnected by links or arcs. These arcs show the relationships between the various objects and descriptive factors. Knowledge can be represented through using semantic networks. Lexical item learning from contexts of texts is an efficient way better than memorizing many single words. In this paper, we propose a semantic network based vocabulary learning system (SNVLS) which is a knowledge based system. It can analyze the contexts of texts to parse lexical items as objects and relationships for semantic networks and draw the visual graphic networks to improve vocabulary learning efficiency and effect. We study how to use semantic networks to represent contexts for texts. And then we study the architecture and implementation of the SNVLS. At last we present an experiment of using this SNVLS to demonstrate the difference of efficiency and effect in vocabulary learning between two groups who using SNVLS or not.

520296 Abstracts -- Optimization theories and algorithms such as linear programming have long been used to find the best solutions in production planning and scheduling. Web services are software functions that can be accessed and called over the Internet. The Network Enabled Optimization System (NEOS) has been developed at Argonne National Laboratory. NEOS consists of next generation optimization servers as web services. Most current users of NEOS are researchers and scientists. We are building a production planning and optimization web services for manufacturing planners to be able to leverage the state of the art NEOS and generate globally optimized cross supply chain network, real time, and flexible plans.

12:10 PM – 1:30 PM	Lunch	North Building at Aetna School
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1:30 PM – 3:10 PM		Parallel Session			North Building at Aetna School
Room 101	Room 102	Room 105	Room 106	Room 107	Room 202
FM01 SUN01, 02, 03	FM02 (520) – 044, 046, 052, 132, 153,	FM03 (520) – 079, 088, 110, 121, 140	FM04 (520) – 166, 188, 262, 265, 266	FM05 (520) – 187, 190, 218, 315	FM06 (520) – 146, 155, 160, 169, 172

Session FM01	Room 101	Time 1:30– 3:10 PM	Session Title (SUN) SUN Special Session	Chair Dan Berg	Co-Chair Peter Gratzer
Paper ID	Paper Title		Author(s)	Affiliation(s)	
SUN01	Special Talk		Gratzer, Peter L.	Sun Microsystems, Inc.	
SUN02	Special Talk		Lilli, John D.	Sun Microsystems, Inc.	
SUN03	Using a Service Oriented Architecture for Implementing IT Services		Gionfriddo, Mike	Sun Microsystems, Inc.	

SUN01 Abstract—In today's IT business automated Services provide the highest value add. Services collecting or consuming system-specific telemetry data play a vital role. In this context data is either processed directly via automated system interfaces or through highly manual processes. Results may trigger actions ranging from providing informative system reports, through automatic patch submissions, and even up to preventive engagements where a site visit would occur.

The fast pace of innovation and the continuously increasing variety of services introduced over time have led to siloed solutions. This presentation provides a snapshot of the challenges an IT organization is faced with and presents the Sun Connection, a portfolio of Service offerings providing a highly cost-effective level of IT automation. An overview of the currently available Service offerings concludes the presentation.

SUN02 Abstract—Continuous streams of customer data serve as the lifeblood of automated services in IT. The data streams may include a mix of telemetry data and personal data, and may originate from customers located in other countries or across the globe. In our Information Age, this data has value not only to the customer and to the service provider, but also to those with malicious intent. Service providers therefore have an obligation to create and implement policies and practices that safeguard their customers' data.

Safeguarding customer privacy builds trust and serves as a competitive differentiator. Failing to be a responsible data steward puts a company at risk, both legal risk and reputational risk. This presentation provides an overview of the current legal landscape for data privacy. The discussion includes specific challenges for companies with a global presence and it provides concrete steps service providers can take to bolster their data privacy practices.

SUN03 Abstract -- According to a newly published IDC Corp. study, the acceptance of Software as a Service (SaaS) delivery models, which includes software on-demand and hosted application management (hosted AM), continued gathering momentum and customer mind share in 2005 and the trend is expected to continue in 2006. In addition, the economics of the computer industry is driving more support and service functionality to be delivered over the Internet. The above factors are driving customers to demand a portfolio of management services, from which they can best tailor a management solution for their business needs.

The systems management space is both mature and evolving. As a result, there are today at least two kinds of customers -- those who want a comprehensive in-the-box management application, and those who want to create a custom-mix of management services based on their unique needs, since they often have a systems management solution of some kind in place covering all but a significant minority of their requirements.

For the former group, the primary virtue is completeness; for the latter, it's flexibility of selection. Traditional system management platforms have been constructed in such a manner that they considered themselves to have the complete management model for a customer. In many ways, these systems and ERP systems have many similarities in complexity and cost to deploy. As customers look to obtain certain management capabilities as a service, a management platform will need to orchestrate discrete services in such a way that it can operate as a comprehensive solution.

In addition, many companies have already begun to use managed service organizations to provide system management services. This paper describes an approach that allows management solutions to be constructed using enterprise middleware and integration technologies and how these solutions can be delivered as services.

Session FM02	Room 102	Time 1:30– 3:10 PM	Session Title Services Design, Engineering, Operations, and Innovation	Chair Yanhui Li	Co-Chair Gengzhong Feng
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520044	Hurst Exponent Estimation based on Modified Aggregated Variance Method		Bao, Guo-ping Ying, Yi-rong	Shanghai University Shanghai University	
520046	Service Reliability Analysis on Logistics Network		Yi, Chun-guang Ju, Song-dong	Beijing Jiaotong University Beijing Jiaotong University	
520052	The Design of Distribution System in the Environment of Time-based Competition		Li, Yanhui Shen, Dan Ma, Shihua	Huazhong Normal University Huazhong Normal University Huazhong University of Science and Technology	
520132	Analysis of Logistics Financing Business Innovation in China		Feng, Gengzhong Su, Xiao	Xi'an Jiaotong University Xi'an Jiaotong University	
520153	A Game Theoretical Approach to Production Competition in a Duopoly Market		Li, Chen Zhang, Ying	Huazhong University of Science and Technology The State University of New York at Buffalo	

520044 Abstract -- Hurst exponent is an important index to describe the fractional Brownian motion, many paper got the result based on big data sample. To small sample we designed a Modified Aggregated Variance Method to evaluate the Hurst exponent based on the Aggregated Variance Method. We found that the new method could improve the R-squared when the sample data relatively small.

520046 Abstract—Logistics system, being one of the most important sectors that offer substantial supports to national economy, its reliability and stability has a direct impact on the healthy development of national economy. With demand of modern integrated logistics service upgraded, the traditional chain-like structure of logistics system is being developed into a networked one. Taking the perspective of logistics service, the research conducts a deep analysis on the connotation of logistics network service and the basic structure of logistics network based on service relationship. Then the reliability of service provider/demander of logistics network is calculated. The research puts an emphasis on calculation of integrated logistics service reliability offered by logistics network with network-optimizing functions to fulfill optimal allocation of resources and concludes with some research suggestions.

520052 Abstract—The design of distribution system is required to minimize the expectation of total responding time and expectation value of delivery cost under the time-based-competitive stochastic demands environment. Therefore, the multi-objective stochastic programming model for time-based-competitive distribution system with multi-source and multi-product was built when certain assumptions were given. Then, the stochastic model was tendered as the problem of certain type through the equivalent transform, and a heuristic algorithm was designed according to the specific structure of the model's decision space. A numerical calculation was performed in the model to solve an arithmetic problem in practical investigation. It showed that the decision model was practical and the algorithm was valid.

520132 Abstract—In recent years, the booming business innovation activities of logistics financing have been effective solutions that address SMB financing problems in China. In this paper, the legal characteristics, the business model, and the future development of the business innovation are investigated and analyzed.

520153 Abstract—In this paper, the production game between two duopolists is studied under market uncertainty. This game can be represented as a dynamic decision problem on production strategies in a duopoly market. In the game, two players simultaneously choose their strategies during each period to maximize their expected utilities. Each duopolist can observe the change of the market price of their products, but cannot judge directly whether the other one is cooperative or not because of the existence of other influence factors. To give the optimal cooperation

agreement for these enterprises, the “stir-up” pricing strategy is proposed based on a mathematical approach. Moreover, the computational result is presented and a detailed analysis is conducted.

Session FM03	Room 105	Time 1:30– 3:10 PM	Session Title Logistics & Supply China Management	Chair Zheng, Yujun	Co-Chair Jianyuan Yan
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520079	A Refined Multi-path Traffic Assignment Method Considering Delayed Response		Ma, Junlai Wang, Wei Zhu, Haidong Bian, Yang	Southeast University Southeast University Maricopa Association of Governments Southeast University	
520088	Supply Chain Sub-Coordination with Options in Two Different Markets with Transaction Cost Considered		Wang, Ziping Huang, Peiqing Yao, Dong-Qing	Shanghai Jiaotong University Shanghai Jiaotong University Towson University	
520110	A Multi-Period Inventory Model of Component Commonality with Lead Time		Lin, Yong Ma, Shihua Liu, Liming	Huazhong University of Science and Technology Huazhong University of Science and Technology Hong Kong University of Science & Technology	
520121	A Grammar-Based Modeling of Supply Chain Process		Yan, Jianyuan Qin, Fan Yang, Jian An, Liping You, Dapeng	Nankai University Nankai University	
520140	DISPDESK: A Logistic Constraint Programming System for Construction Machinery		Zheng, Yujun Yang, Junwei Zhu, Yuling Xue, Jinyun	Systems Engineering Research Institute of Engineer Equipment, Beijing, The National Key Laboratory for Remanufacturing, Beijing Systems Engineering Research Institute of Engineer Equipment, Beijing Jiangxi Normal University	

520079 Abstract—Under unrestricted traffic conditions, some information in the road network causes travelers have delayed response when making route choices. Consequently some travelers have to adjust their route choices more than once en route. But existing assignment methods failed to take into account this phenomenon. This paper analyzes the characteristics of the information causing delayed response (DRI) and the travel patterns under its influence. To quantitatively represent the influence, a study region is stratified to various regular or irregular rings as sub-areas where possible change in route choice may happen. And the traffic volume between an OD pair is segmented to reflect the possibilities of the travelers who adjust their route choices in the rings. Then a refined multi-path traffic assignment method is presented and some relevant issues are discussed as well.

520088 Abstract—The traditional definition of supply chain coordination will be violated if the transaction cost is considered in a supply chain channel. In this paper, we reconsider the decisions of both a retailer and a manufacturer to propose a new definition of sub-coordination. Options contract is presented to analyze the supply chain sub-coordination mechanisms in two different markets, general market and electronic market, respectively. The characteristics of transaction cost in different markets is discussed in detail, and further comparison between the performances of two supply chain models is highlighted to show the possible flexibility and profit improvement offered by the electronic market.

520110 Abstract—Component commonality is highly emphasized and widely used as a method to lower inventory level and higher customization level. Based on the single-period inventory model, this paper set up a multi-period model of component commonality with lead time. From the analysis on the effects of lead time on the inventory system, this paper get some useful results which rectify the prejudice that the results derived from single-period model can be applied widely.

520121 Abstract—This paper proposed a modeling method applied to representation of the supply chain process which is prerequisite to supply chain process performance measurement and optimization. This method integrates the grammatical approach with some models that can represent dynamic supply chain process. The design of the modeling method includes four parts: the lexicon, the grammar elements, the graphical symbols and the connection rules of the grammar elements and their graphical symbols. Especially, modeling supply chain process in this way can make it possible to measure performance of supply chain process using standard performance metrics in SCOR (Supply Chain Operations Reference) model. An example is illustrated to verify the practicability of the proposed method.

520140 Abstract—Logistic planning and programming of construction machinery involves complex sets of objectives and constraints; therefore traditional approaches typically result in a large monolithic model that is difficult to solve, understand, and maintain. In order to tackle large, particularly combinatorial, problems in logistic support for construction machinery, we design a constraint programming system, namely DISPDESK, which comprises a specification generator and its underlying domain-specific architecture, an algorithm library and its selector, a pre-defined solution library and a problem solver. The system features separation of concerns in specifications, little requirements for programming skills, domain-specific optimization, and semi-automatic generation of high-performance and reliable problem solvers.

Session FM04	Room 106	Time 1:30– 3:10 PM	Session Title Services Design, Engineering, Operations, and Innovation	Chair Wei Liu	Co-Chair Ren De Feng
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520166	Analysis of the Dynamic Relation between Logistics Development and GDP Growth in China		Liu,Wei Li, Wenshun Huang, Wendy	Shanghai Maritime University Shanghai Maritime University Lakehead University	
520188	FMEA Based Potential Risk Analysis of Lower Cost Region Sourcing		Zhang, Jie Zhu, Qiong	Shanghai Jiao Tong University Shanghai Jiao Tong University	
520262	The Key Strategies for E-Commerce Success in Service SMEs in China		Gide, Ergun Wu, Ming X.	Central Queensland University Central Queensland University	
520265	Research on the Innovation of Supply Chain Management Based on the Enterprise's Strategic Alliance		Feng, Ren De Liu, Ze Jun	Chongqing Technology and Business University Chongqing Technology and Business University	
520266	Improvement of Government Organization Service Management		Liu, Gang	East China University of Science and Technology	

520166 Abstract-As an important link of national economy, logistics usually changes accordingly with the developing of economy, and reversibly puts its influence on economy developing at the same time. Whether logistics can meet the demand of the economy development is a severe problem worthy to be considered. It is necessary to study the relation between logistics and the macroeconomy and, according to their relation and the rule of change, make adjustment to reach the harmony between the logistics development and the present high-rate developing economy of China. By cointegration analysis and error correction model, this paper investigates the long run and dynamic relation between logistics development and GDP growth in main land of China from the data of traffic turnover volume increment and GDP growth increment from 1952 to 2004. The result shows that there is a reliable cointegration relationship between GDP increment and logistics volume increment. The finding indicates

that logistics development plays an important role to GDP growth and it is important to keep the balance between both of them.

520188 Abstract—Lower cost region sourcing (LCRS) is becoming one of the important activities of the sourcing manager in many enterprises in the higher cost region, such as America, Japan, etc. When Supply chain managers are facing the lower price products from the LCR, they must consider how to analyze the risks of LCRS to control these risks and take the relate measures. A risk analysis and assessment approach is proposed which applied failure mode effect analysis methodology to layout the potential risks of lower cost region sourcing. The approach of risks identification, risk analysis and risk assessment is discussed to control and mitigate potential risks associated with lower cost region sourcing activities. The proposed approaches can help enterprise to know clearly the risks in LCRS and to determine the corresponding actions and their priority sequence to cope with the risks so as to avoid the damages caused by blindness actions.

520262 Abstract—Although China’s economy still keeps the growth rapidly for a decade, it has to increase its service sector to sustain this growth in the long run. Since China became a member of the World Trade Organization (WTO), China’s industries have faced the multitudinous challenges. In the meantime, China’s service sector also gets the chances to learn many valuable successful experiences from the developed countries. The development of electronic commerce (e-commerce) in service industries will promote the China’s service sector to stay competitive at the global level. Therefore, how to use Internet and communication technologies (ICTs) to facilitate the future development of service industries will be one of the most important research topics for e-commerce researchers in China. This paper provides four reasons why to study on e-commerce success in small and middle-sized enterprises (SMEs) and describes four critical issues for e-commerce success in China. Finally, this paper recommends three key strategies for e-commerce success in service SMEs in China.

520265 Abstract—The strategic alliance of enterprise is a kind of important strategy for the growth of enterprise as an important organization innovation, studying the strategic alliance of enterprise counts for much meaning to supply chain management (SCM) developed between enterprises. This article describes the formation of the management organization of supply chain based on the strategic alliance, it puts forward that the management organization of supply chain should follow the principles of relaxation, common-sharing, common-bearing, equality etc., in order to adapt to the demands of SCM , it puts forward the innovative methods for the reconstruction of enterprise organization, human resources management, the application of information technology and risk management etc..

520266 Abstract—It is essential to establish a responsible, service government in modern social and economic development. In this paper, firstly, we researched a service system of a government organization, including the sector structures, resource elements, internal service activities, service quality and public service affairs. Then unit management, module management and element management of government organization services are presented based on the elementary characteristics of a government organization and its service activities.

Session FM05	Room 107	Time 1:30– 3:10 PM	Session Title Logistics & Supply China Management	Chair Gengui Zhou	Co-Chair Liu,Liping
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520187	Study of Inventory Strategies for Recyclable Parts of Aviation Material with Limited Inventory Capacity		Xie, Chunxun Yao, Hongguang	Shanghai of Science Technology, Shanghai University of Engineering Science	
520190	Risk Management in Chemical Industry Supply Chain		Liu,Liping Ji, Jianhua Fan,Tijun Qi, Lili Wu, Zhe	Shanghai Jiao Tong University Shanghai Jiao Tong University East China University of Science and Technology Shanghai Jiao Tong University Shanghai Jiao Tong University	
520218	DEA-Based Measures on the Operational		Zhou, Gengui	Zhejiang University of Technology	

	Efficiency of the Third-party Logistics Providers in China	Xu, Chao Cao, Zhenyu Cao, Jian	Zhejiang University of Technology Zhejiang University of Technology Zhejiang University of Technology
520315	Design and Implementation of a Comprehensive Evaluation System Based on Workflow	Wang, Hui Yu, Ming Zhang, Ao Luo, Qian	Tsinghua University Tsinghua University Tsinghua University Tsinghua University

520187 Abstract—Aviation recyclable parts account for 70%-80% of the aviation material inventory fund, and they have been viewed as an emphasis of the aviation material management before. Because mostly the former study of recyclable parts of aviation material ignore the real inventory capacity of the warehouse, it failed to comprehensively reflect the real condition of the aviation material management of the airline’s recyclable parts. Focus on this problem, this article discusses the issue that how to best confirm order quantity of the aviation recyclable parts with limited inventory capacity and a relevant mathematic model is also set up to minimize total cost of the airline’s inventory.

520190 Abstract—In this paper, we present literature review of risk management. Then we develop a conceptual model for risk management in chemical industry supply chain. Finally a case study is presented. In this case, we study a chemical industry supply chain, which consists of palm plantation, oils Corporation, fine chemical plant, daily chemical plant, distributor, retailer, and customer. After visiting a fine chemical plant and a daily chemical plant in Shanghai, we identify five risks (environment risk, inventory risk, supply risk, capacity risk, and information risk) and their drivers. Moreover we use AHP to assess and rank three key risks—environment risk, inventory risk and supply risk. We find environment risk is the most important risk to be managed. In the end we present corresponding risk control measures such as reinforcing the management of safe production, setting up appropriate safety stock, and contacting with more than one large-scale suppliers etc.

520218 Abstract—In an era of downsizing and financial cutbacks the operational efficiency of third party logistics provider dictates their competitiveness and/or survival, In order to help the third party logistics providers in China to enhance their productivity and price leverage in the increasingly competitive third party logistics market, this paper proposes a data envelopment analysis to measure the operational efficiency of 10 large third party logistics providers in the stock market of China. Combined with the multiple variable regression analysis technique, it further analyzes the factors to affect the operational efficiency of those 10 third party logistic providers.

520227 Abstract—It is a new approach to obtain the time-based competitive advantage for enterprises through the third party logistics (TPL) providing distribution service. But a more important question that has to be considered is that the pattern of distributing by TPL whether will increase the logistics cost. A comparison of logistics costs of TPL agential distribution pattern and self-operation distribution pattern is presented in this case study. The study results showed that TPL agential distribution can reduce the logistics cost as well as form time-based competitive advantage; three parts of logistics costs are all affected and decreased; furthermore, there is a trend of cutting down both the number of warehouses and warehouse’s managers after the TPL agential distribution pattern is brought into effect.

520315 Abstract—Comprehensive evaluation method is a very useful method to evaluate complicated systems. This paper discussed the development on a web-based comprehensive evaluation system. It is built on workflow software, Cordys BCP. We construct a workflow model of the evaluation process. With the workflow technology, the evaluation process can be executed automatically. And the process can be changed and rearranged easily. Using the system, people can carry out the comprehensive evaluation tasks online and the evaluation result can be calculated by computer and published on the website.

Session FM06	Room 202	Time 1:30– 3:10 PM	Session Title Information Technology & Systems	Chair Weiyu Yu	Co-Chair Shajulin Benedict
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520146	Rule-based Reasoning in Onboard Devices: An Intelligent Route Guidance System		Guo, Wu B. Hu, Xiang P. Liu, Jia	Dalian University of Technology Dalian University of Technology Dalian University of Technology	
520155	IT Organizational Integration : Innovation for E-Business		Huang, Jie	Zhongnan University of Economics and Law	
520160	Scheduling of Scientific Workflows using Niche Pareto GA for Grids		Benedict, Shajulin Vasudevan, V.	Arulmigu Kalasalingam College of Engineering Arulmigu Kalasalingam College of Engineering	
520169	A Model of Structural Semantics of Image		Yu, Weiyu Jiang, Yuanjiao Yu, Yinglin	South China University of Technology South China University of Technology South China University of Technology	
520172	Study on Multistage Decision-Making Problem with Transiently Chaotic Neural Network for Dynamic Selection of Composite Web Services		Gao, Yan Dai, Yu Zhang, Bin Yang, Lei	Northeastern University Northeastern University Northeastern University Northeastern University	

520146 Abstract—This paper described an intelligent route guidance system that implements rule-based reasoning according to integrated information in onboard devices. A knowledge base of rules is built, and a control method is designed to overcome deficiencies of embedded systems, such as small available storage and limited computing speed. A prototype system is developed and the experimental evaluation shows that it makes reasoning effective in onboard devices. This work will improve the intelligence level of route guidance in vehicle location and navigation systems.

520155 Abstract -- E-business changes everything and makes deep impact on the organization and management of enterprise. As an important strategic choice of enterprise in the age of information, E-business challenges the design of IT organization. In order to achieve transformation, integration is an important and effective method. Through investigating the theory of integration along with the relevant researches on the design of IT organization, this paper discusses the basic applicable ideas of integration for redesigning IT organization and expounds the model of IT organizational integration, and more explores the frameworks of IT organizational integration respectively from the views of competence, activity and structure.

520160 Abstract—In a grid computing environment, many resources (compute, data, I/O, instruments, etc) are involved to solve a single large problem that could not be performed on any one resource. It is possible that the job submission for the resource request by resource consumers can be large owing to wide area distribution of grid. Key services such as resource discovery, monitoring and scheduling are inherently more complicated in a grid environment. In this paper, we approach the problem of grid workload scheduling by employing a Niche Pareto based Genetic Algorithm (NPGA) to generate near to optimal solution. In addition, evaluation of other scheduling mechanisms like First Come First Serve (FCFS), Earliest Deadline First (EDF) are compared. The results reveal that the proposed Niche Pareto Genetic Algorithm performs well compared to the other scheduling mechanisms when considering the workflow completion within the deadline.

520169 Abstract--In this paper, a model of structure semantics of image is proposed. We describe the detailed process of mathematical inference for the whole system. The model applies the knowledge of topology, neural networks, and psychology. The system first builds a structure space T using the structure parameters extracted from an image or video segment, Then T is mapped to a structure information space I_T a transformation function set φ which is based on psychometric functions. The model introduces a new regulation based on psychology and

neural networks for semantic analysis of image or video databases, and we call it psychological response neural network.

520172 Abstract—For the widely use of multistage decision-making problem in our normal life such as in the new research area of dynamic selection of composite web services, this paper exerts all its effort on proposing a new approach to solve such problem. Motivated by transiently chaotic neural networks’ high parallel performance and powerful computation, a novel transiently chaotic neural network is proposed in this paper for this task. In order to make this algorithm more adaptable for multistage decision-making problem, a new neural network structure for implementing the algorithm is proposed which is a modification to the one used by Thomopoulos or Rauch and Winarske.

3:10 PM – 3:30 PM	Coffee/Tea/Refreshments	North Building at Aetna School
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3:30 PM – 5:10 PM	Parallel Session		North Building at Aetna School
Room 101	Room 102	Room 105	Room 106
FP01 US & Chinese NSF Meeting	FP02 (Poster Session) (520) – 033, 041, 074, 101, 113, 114, 142, 143, 144, 219, 225, 257, 277, 310	FP03 (520) – 125, 280, 299, 313	FP04 (520) – 119, 154, 316

Session FP03	Room 105	Time 3:30– 5:10 PM	Session Title Information Technology & Systems	Chair Fei Xu	Co-Chair Geng Gu
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520125	Research and Realization of Information Exchange and Share Platform for Municipal Government		Li, Huaiming Wang, Yanzhang Ding, Feng Ma, Tian	Dalian University of Technology Dalian University of Technology Dalian University of Technology Dalian University of Technology	
520280	Trust Issues in Service Oriented Environment		Hussain, Farookh Khadee Chang, Elizabeth Dillon, Tharam	Curtin Business School Curtin Business School University of Technology, Sydney	
520299	Research on Key Factor Method and Application of Brand Structure Selection		Gu, Feng Huang, Xiaohe	Shanghai Jiao Tong University Shanghai Jiao Tong University	
520313	Identification and Promotion Strategy of Core Competency of Non-state-owned High-tech Enterprises based on Innovative SWOT Matrix——A Case Study on Shanghai Garlen Environment Protection Company		Xu, Fei Chen, Jie Hou, Jianrong	Shanghai Jiao Tong University Shanghai Jiao Tong University Shanghai Jiao Tong University	

520125 Abstracts -- With the development of more than ten years, E-government is now in its extending step form the originally simple application to business system. Meanwhile, many isolated business application systems have been set up because of the relative isolation of the different departments and businesses, and the “information isolated island” comes up one by one. One of the basic ways to solve the problem is information exchange. The authors, with many years of experience in research and development of application system for E-government, propose and develop a software platform about information exchange and share for the city governments of China.

520280 Abstracts -- Service Oriented Environment (SOE) is new paradigm for carrying out business activities on the internet. In this paper I give an introduction to the concept of service oriented environment and discuss the different activities carried out in the SOE and different entities involved in SOE. The issues related to trust in service oriented environment and proposed and explained.

520299 Abstracts -- To moderate the price competition, enterprises have to decide on a brand structure to make the differences among competitive products for sales increase. This paper first states the background and theoretical basis of the research, and then investigates the related factors that influence brand structure selection directly. Further, paper discusses the method of finding the key factors for brand structure selection based on market segmentation. At last, using the data from market survey, paper illustrates the application of the method and verifies its feasibility. The paper provides a mathematic way for enterprise to make a proper decision on the brand structure.

520313 Abstracts -- Based on the analysis of connotation and characteristic and behavior, the core technological sources of Shanghai Garlen Environment Protection Company is identified by innovative SWOT matrix. After the establishment and analysis of difference matrix is carried on, promotion strategy of core competency for the enterprise is proposed in this paper.

Session FP04	Room 106	Time 3:30– 5:10 PM	Session Title Services Design, Engineering, Operations, and Innovation	Chair Daiping Hu	Co-Chair Yu, Ming
Paper ID	Paper Title		Author(s)	Affiliation(s)	
520119	Collaboration E-business Model for the Dealer		Zhang, Ding An, Jingwen Cheng, Zhongqing	China University of Mining & Technology China University of Mining & Technology Naval University of Engineering	
520154	An Agent Based Fault Diagnosis Support System and Its Application		Hu, Daiping Xu, Weiguo Dou, Huiming Qian, Wei	Shanghai Jiaotong University Shanghai Jiaotong University Shanghai Jiaotong University Air force Engineering University	
520316	Evaluating the Efficiency of Hospital's Departments Using DEA		Wang, Ronggui Yu, Ming	Tsinghua University Tsinghua University	

520119 Abstract—The model presented in this paper is a Collaboration E-Business system connected with the outside world through Extranet and Internet. And it is mainly designed to establish a database-based workflow management for the dealer. The system consists of four parts, namely Customer level, Web service level, application program level and the data level. Relevant technology is employed to achieve information sharing, information instant feedback and the collaboration E-Business process from customers to producers and from suppliers to retailers, thus speeding up the turnover process of logistics, fund circulation and information flow. The model will help to better inter-relationship between dealers and suppliers, retailers and customers, and thus make customers more satisfied and the marketing more competitive.

520154 Abstracts -- The efficiency and the effect of fault diagnosis are increasingly important for airplane flying on timetable and flight security. But the Fault diagnosis within airplane is a complex and time consuming task. In this paper, an agent based fault diagnosis support system (AFDSS) is proposed to support ground crew in process of airplane fault diagnosis. This AFDSS consists of four kinds of agents: management agent, interface agent, diagnosis agent and data agent. Management agent serves as an agent name server and keeps the all agents' information, such as name, location, capabilities. Interface agent is the interface of AFDSS. Fault diagnosis user and expert have their own interface agent to interact with the AFDSS. Diagnosis agent encapsulates a diagnosis method. Data agent gets the required signals for fault diagnosis. All agents have the capabilities of communication and cooperation with each other. We study the AFDSS architecture, and discuss the development technology of AFDSS.

520316 Abstracts -- Departments are the fundamental structural units in hospital. The efficiency of departments is the key purpose in running a hospital. The article presents a way via data envelopment analysis (DEA) to identify

relative performance efficiency of several departments based on source data from the hospital. The result of the article can be used to aid in resource allocation decision, such as hiring and beds relocation among different departments.

6:30 PM-9:00PM	Shanghai Cruise Tour	The Bund(Shanghai Waitan)
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SOLI'2006 Shanghai Travel Guide

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2. I want to go to the Crowne Plaza Hotel. Thanks.
我要去番禺路 400 号银星皇冠假日酒店, 谢谢。
3. I want to go to the New World Mayfair Hotel. Thanks.
我要去定西路 1555 号上海巴黎春天大酒店, 谢谢。

From the hotel to the airport:

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我要去虹桥国际机场, 谢谢。

Detailed addresses

I . The address of Antai College of Economics & Management, Shanghai Jiao Tong University in both English and Chinese:

**535 Fahua Zhen Road,
Changning District,
Shanghai, P. R. China**

地址: 上海市长宁区法华镇路 535 号上海交通大学安泰经济与管理学院

II . The address of Crowne Plaza Hotel (Shanghai) in both English and Chinese:

**400 Pan Yu Road,
Changning District,
Shanghai, P. R. China**

地址: 上海市番禺路 400 号银星皇冠假日酒店

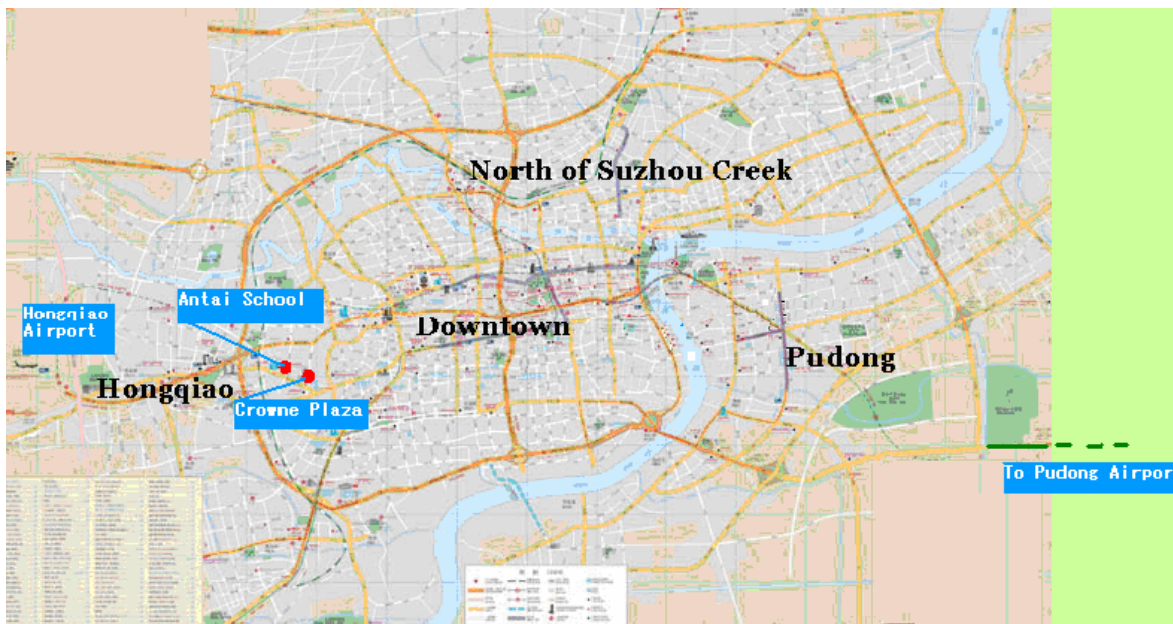
III. The address of New World Mayfair Hotel (Shanghai) in both English and Chinese:

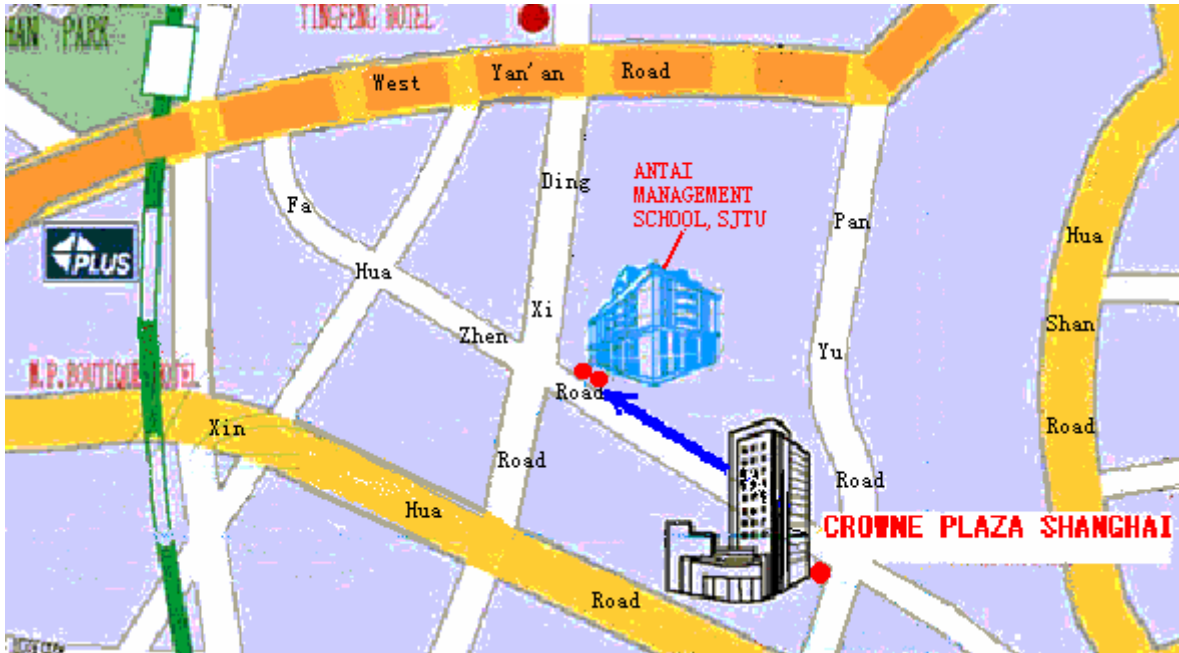
1555 Ding Xi Road,
Changning District,
Shanghai, P. R. China

地址：上海市长宁区定西路 1555 号上海巴黎春天大酒店

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Maps





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