ifip

APMS 2019
Conference Program

Advances in Production Management Systems

Toward Smart Production Management Systems

Contents

Welcome Message

Dear Members of the IFIP WG 5.7 and the Participants of the APMS 2019,

On behalf of the Organizing Committee, the Program Committee, and the hosting institution (Texas State University), it is our great pleasure to welcome you to Austin, Texas, for the Advances in Production Management Systems Conference. We are looking forward to inspiring presentations and fruitful discussions during this event which coincides with the 40th anniversary of IFIP WG 5.7.

APMS 2019 in Austin, Texas brings together leading international experts from academia, industry, and government in the general area of production systems to discuss globally pressing issues in smart manufacturing, operations management, supply chain management, and sustainable and reconfigurable manufacturing. The popular research topics in APMS 2019 include data-driven production management, digital twin, augmented and virtual reality, human-machine interface, and cyber-physical production systems. These are the key components of the fourth industrial revolution and the main research thrusts in smart manufacturing and Industry 4.0 research community. The core challenge is how to improve the effectiveness and efficiency of production systems and, at the same time, enhance their sustainability and intelligence. Also, redefining the role of humans in the new generation of automated production systems is a major challenge faced by researchers and practitioners.

We thank the local staff, participants, session chairs, keynote and plenary speakers for helping us build this very exciting conference program. The Local Organizing Committee made every possible effort to make sure that your participation will be scientifically rewarding and a pleasurable experience. We appreciate the generous support from our sponsors, namely, Texas State University- College of Science and Engineering, the University of Texas at Dallas - Naveen Jindal School of Management, AlphaNodus, and Penn State Service Enterprise Engineering.

Thank you all for attending APMS 2019 and welcome to Austin!

Farhad Ameri
Conference Chair

Kathryn Stecke
Program Chair

Dimitris Kiritsis
WG5.7 Chair

Gregor von Cieminski
WG5.7 Secretary

Summary

Objectives and Scopes

APMS 2019 in Austin, Texas, brings together leading international experts from academia, industry, and government in the area of production systems to discuss globally pressing issues in smart manufacturing, operations management, supply chain management, and Industry 4.0. The conference features several sessions filled with original, high-impact academic contributions, which will be published in the Springer Series ACIT. Industrial viewpoints and insights will be shared through industry keynotes by world-renowned industry leaders. High-quality papers will be fast tracked to several peer-reviewed archival journals, including Production Planning and Control (PPC). The conference is supported by the International Federation of Information Processing (IFIP) and is organized by the IFIP Working Group 5.7 on Advances in Production Management Systems which was established 1978.

Program

The program includes presentations and discussions of peer-reviewed papers, in addition to insightful keynote speeches. The program also includes a doctoral workshop that provides young researchers the opportunity to present research proposals (September 1st), special sessions that help raise visibility on focus topics in a particular scientific or applications area (September 2nd-4th), and industry tours, for participants to visit manufacturing facilities (September 5th).

General Information

Hotel Map

Red River St.

Trinity St.

San Jacinto Blvd.

Brazos St.

Iron Works BBQ

Gus's Fried Chicken

E. 2rd St.

Fogo de Chão Brazilian Steakhouse

E. 2nd St.

Sir Swante Palm Neighborhood Park

Austin Convention Center

E. 3rd St.

3rd St.

Brush Square Museum

E. 4th St.

Austin Visitor Center

Hilton Austin

Iron Cactus Mexican Restaurant

E. 5th St.

Easy Tiger Bar & Bakery

Museum of the Weird

E. 6th St.

Waller Creek Park

E. 7th St.

Highway 35
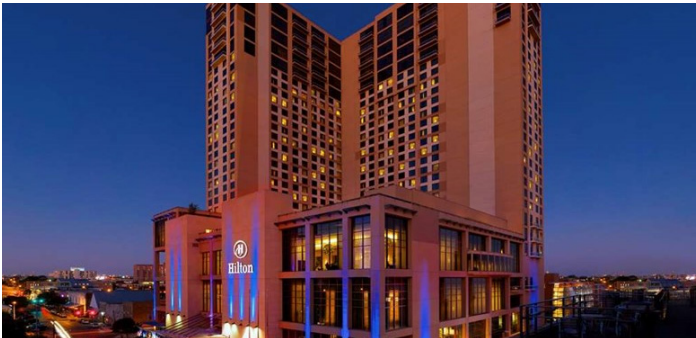
Int

Conference Dates

The APMS 2019 International Conference — Advances in Production Management Systems will be held on **September 1ˢᵗ** through the **5ᵗʰ** in Austin, Texas, USA.

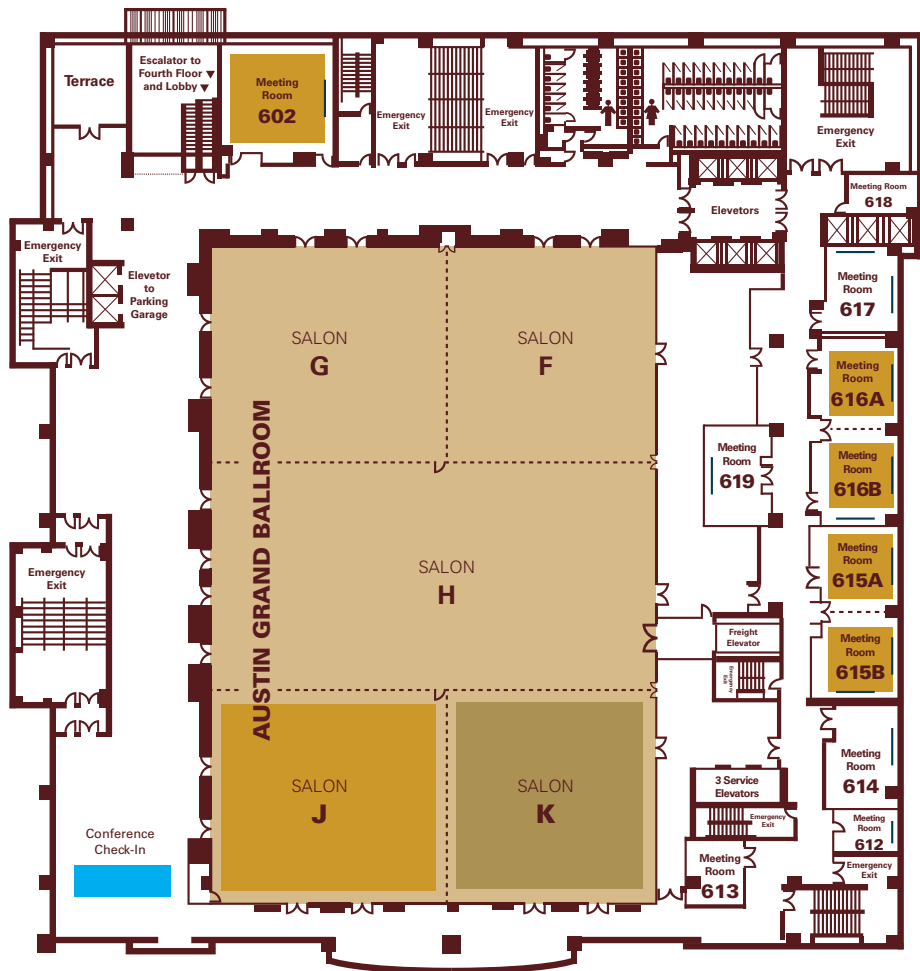**Thursday, September 5th, 8:30 a.m.-12:00 noon**

Venue

The Hilton Austin

500 East 4th Street, Austin Texas, 78701, USA

Located adjacent to the Austin Convention Center, the Hilton Austin boasts 801 modern rooms and 80,000 sq. ft. of newly renovated meeting space. Just one block away from the Austin's famed 6th Street, the hotel embodies the taste, texture, and aesthetics of "Bat City."

As a starting point or a place to round off a day of exploration, the Hilton Austin brings the flavor of the city under one roof. In addition to the full-service Starbucks, housed in the Hilton, Cannon + Belle artistically reinterprets comfort food, while Austin Taco Project redefines the boundaries of a "proper" taco.

Conference Floor Map

Sixth Floor

Terrace

Escalator to Fourth Floor ▼ and Lobby ▼

Meeting Room 602

Emergency Exit

Emergency Exit

Emergency Exit

Elevators

Meeting Room 618

Emergency Exit

Elevator to Parking Garage

Meeting Room 617

SALON G

SALON F

Meeting Room 616A

AUSTIN GRAND BALLROOM

Meeting Room 619

Meeting Room 616B

Emergency Exit

SALON H

Meeting Room 615A

Freight Elevator

Emergency Exit

Meeting Room 615B

SALON J

SALON K

Meeting Room 614

3 Service Elevators

Emergency Exit

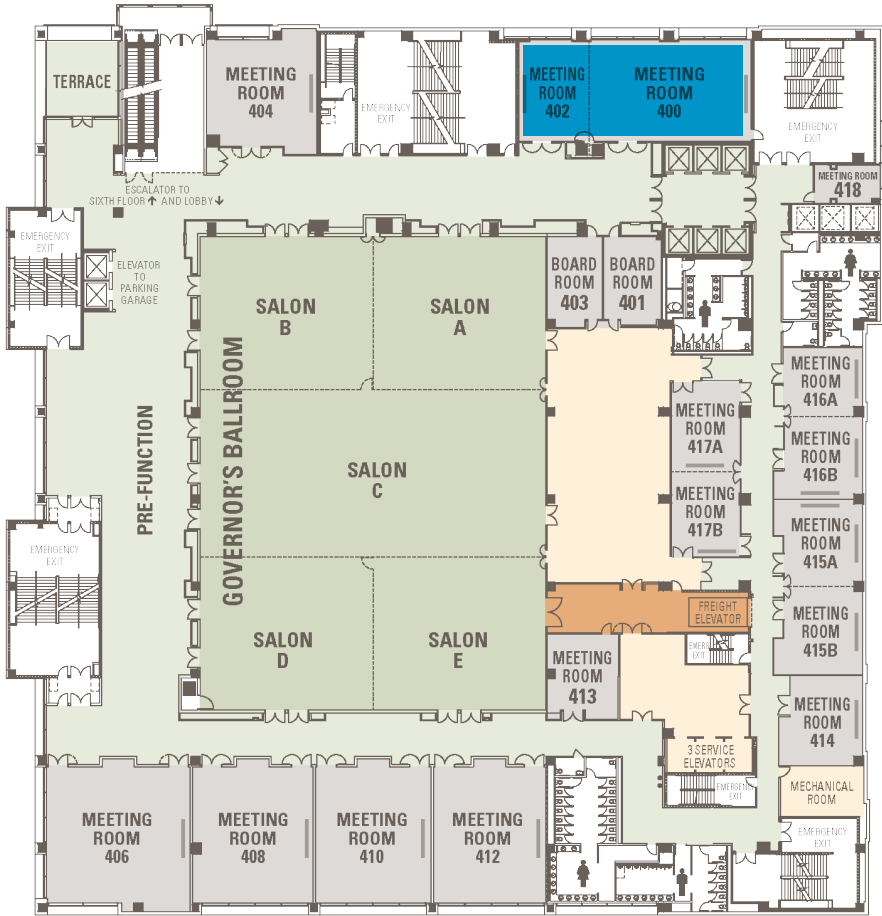Meeting Room 612

Conference Check-In

Meeting Room 613

Emergency Exit

■ Check-In
■ Conference
| = AV Screen Locations

Fourth Floor

Welcome Reception

| = **AV Screen Locations**

Conference Information

Registration Desk

The registration desk will be located on the 6th floor outside Salon J. The registration desk will be open during the following hours.

Sunday: *September 1st, - 8:00 a.m. to 5:00p.m.*
Monday: *September 2nd, - 8:00 a.m. to 5:00p.m.*
Tuesday: *September 3rd, - 8:00 a.m. to 5:00p.m.*

Instructions for Presentations

Presenters are allotted 12-15 minutes total presentation time depending on the duration of the session. Session chairs have been instructed to retain control of the schedule.

The preferred file type for presentations is Microsoft Power Point (.pptx-Format recommended). All presenters are instructed to bring their presentation on a USB memory stick. All presenters are responsible for the correct display of their presentations. We recommend to test the presentation before the session.

Social Activities

Welcome Reception

September 1st, 2019

PLACE: The Hilton Austin | 4th Floor 400−402

TIME: 6:30 p.m.− 8:00 p.m.

DRESS: Casual

All participants and accompanying guests are cordially invited to an informal gathering at the welcome reception of APMS 2019. Drinks and snacks will be served.

Gala Dinner

September 3rd, 2019

PLACE: Fogo de Cháo Brazilian Steakhouse

TIME: 6:30 p.m.− 8:30 p.m.

DRESS: Smart Casual

ADDDRESS: 309 E 3rd St, Austin, TX 78701

Lunch Information

Monday, September 2nd, 2019

Iron Cactus
12:30 p.m.–1:45p.m.

606 Trinity St.
Austin, TX 78701
(512) 472-9240

Tuesday, September 3rd, 2019

Easy Tiger
11:45 a.m.–1:00p.m.

709 E. 6th St.
Austin, TX 78701
(512) 614-4972

Wednesday, September 4th, 2019

Easy Tiger
12:00 p.m.–1:15p.m.

709 E. 6th St.
Austin, TX 78701
(512) 614-4972

Restaurant Locations

Brazilian
Steakhouse

E. 3rd St.

Austin
Convention
Center

Brush Square
Museum

**Hilton
Austin**

Austin
Visitor
Center

Iron Cactus
Mexican
Restaurant

th St.

Easy Tiger
Bar & Bakery

Museum
of the Weird

E. 6th

hway 35

E. 2nd St.

od

e

Keynote Speakers

Dr. Asbjørn Rolstadås

Professor Emeritus, Mechanical and Industrial Engineering
Norwegian University of Science and Technology,
Faculty of Engineering

Monday, September 2nd, 9:00 a.m. Salon J

Managing Risk and Opportunities in Complex Projects

•• •

Dr. Karthik Ramani

Donald W. Feddersen Professor of Mechanical Engineering
Professor of Electrical and Computer Engineering *(by courtesy)*
Professor of Educational Studies, College of Education *(by courtesy)*
Purdue University

Tuesday, September 3rd, 10:15 a.m. Salon J

Redesigning Manufacturing Machines, Design Tools, and Robotics for Smart Human Augmented Spatial Interfaces

•• •

Dr. Chip White

Schneider National Chair of Transportation & Logistics
H. Milton Stewart School of Industrial and Systems Engineering
Georgia Institute of Technology

Tuesday, September 3rd, 11:00 a.m. Salon J

Digitalization and Cybersecurity for Trusted Next Generation Supply Chains

Industrial Tours

The conference program includes two industry tours with site visits to Amazon Fulfillment Center and EOS North America. The morning Amazon Tour will be repeated in the afternoon.

Amazon Fulfillment Center:

Amazon tours provide a broad, high-level overview of fulfillment center operations for general audiences. The one-hour walking tour will take the group through the operations process of what happens after a customer clicks "Buy" on Amazon.com. Guests must wear flat, closed-toe and closed-heel shoes (no sandals, clogs or high heels). We recommend wearing comfortable shoes or sneakers. Additionally, long hair must be pulled above the shoulders, and long-hanging jewelry, scarves and ties are not permitted. No cameras or other video equipment are allowed on the tour. Guests may bring cellphones, as long as they do not use their phones to take pictures or audio/video recordings.

Tour buses will depart from the North Entrance of the Hilton on 5th street.

EOS North America
Thursday, September 5th

Morning Tour

Departure from Hilton	8:30 a.m.-8:45 a.m.
Tour	9:30 a.m.-11:30 a.m.
Arriving at Hilton	12:00 noon

Amazon Fulfillment Center
Thursday, September 5th

Morning Tour

Departure from Hilton	8:30 a.m.
Tour	9:30 a.m.-11:30 a.m.
Arriving at Hilton	11:30 a.m.

Afternoon Tour

Departure from Hilton	12:30 p.m.
Tour	1:30 p.m.-2:30 p.m.
Arriving at Hilton	3:30 p.m.

Conference Overview

Sessions Overview

MONDAY

Time	Room	Session
9:00A.M. – 10:30A.M.	SALON J	**Opening Ceremony**
11:00A.M. – 12:30P.M.	615A	*Blockchain in Supply Chain Management*
11:00A.M. – 12:30P.M.	602	*Production Management in Food Supply Chains [1]*
11:00A.M. – 12:30P.M.	616B	*The Operator 4.0 and the Internet of Things, Services and People [1] An SM and CPPS SIG Workshop Session*
11:00A.M. – 12:30P.M.	615B	*Production Planning and Control [2]*
11:00A.M. – 12:30P.M.	616A	**Research Workshop**
1:45P.M. – 3:15P.M.	616A	*Operations Management in Engineer-to-Order Manufacturing [1]*
1:45P.M. – 3:15P.M.	602	*Production Management in Food Supply Chains [2]*
1:45P.M. – 3:15P.M.	616B	*Operator 4.0 and the Internet of Things, Services and People [2] An SM and CPPS SIG Workshop Session*
1:45P.M. – 3:15P.M.	615B	*Sustainability and Production Management*
1:45P.M. – 3:15P.M.	615A	*Variety and Complexity Management in the Era of Industry 4.0 [1]*
3:45P.M. – 5:15P.M.	616A	*Operations Management in Engineer-to-Order Manufacturing [2]*
3:45P.M. – 5:15P.M.	602	*Production Management in Food Supply Chains [3]*
3:45P.M. – 5:15P.M.	615B	*Participatory Methods for Supporting Career choices in Industrial Engineering, Management and Education*
3:45P.M. – 5:15P.M.	616B	*The New Frontiers of Service Engineering: Designing and Delivering Smart Services in The Digital Age*
3:45P.M. – 5:15P.M.	615A	*Variety and Complexity Management in the Era of Industry 4.0 [2]*

TUESDAY

Time	Room	Session
8:30A.M. – 9:45A.M.	615B	*Intelligent Diagnostics and Maintenance Solutions for Smart Manufacturing, an SM and CPPS SIG workshop*
8:30A.M. – 9:45A.M.	616B	*Smart Factory and IOT*
8:30A.M. – 9:45A.M.	602	*Product and Asset Life Cycle Management in Smart Factories of Industry 4.0 [1]*
8:30A.M. – 9:45A.M.	616A	*Production Planning and Control [1]*
8:30A.M. – 9:45A.M.	615A	*Variety and Complexity Management in the Era of Industry 4.0 [3]*
10:15A.M. – 11:45A.M.	SALON J	**Keynote Address 2 and 3**
1:00P.M. – 2:15P.M.	616B	Cyber Physical Systems
1:00P.M. – 2:15P.M.	616A	Lean Production [1]
1:00P.M. – 2:15P.M.	602	Product and Asset Life Cycle Management in Smart Factories of Industry 4.0 [2]
1:00P.M. – 2:15P.M.	615A	Sustainability and Reconfigurability of Manufacturing Systems [1]
1:00P.M. – 2:15P.M.	615B	Supply Chain Planning and Optimization [1]
2:30P.M. – 3:45P.M.	616B	Collaborative Technology [2]
2:30P.M. – 3:45P.M.	602	Data-driven Production Management
2:30P.M. – 3:45P.M.	616A	Lean Production [2]
2:30P.M. – 3:45P.M.	615A	Sustainability and Reconfigurability of Manufacturing Systems [2]
2:30P.M. – 3:45P.M.	615B	Supply Chain Planning and Optimization [2]
4:00P.M. – 5:15P.M.	SALON J	**Plenary Session 1:** Emerging Challenges and Research Opportunities in Smart Services

WEDNESDAY

Time	Room	Session
8:30AM – 10:00AM	616B	Knowledge Management in Design and Manufacturing
8:30AM – 10:00AM	615B	Collaborative Technology [1]
8:30AM – 10:00AM	616A	Industry 4.0 Implementations
8:30AM – 10:00AM	615A	Supply Chain Planning and Optimization [3]
10:30AM – 12:00PM	SALON J	**Plenary Session 2:** Towards Smart Production Management Systems: Things, Services and People
1:15PM – 2:45PM	616B	Collaborative Product Development
1:15PM – 2:45PM	616A	ICT for Collaborative Manufacturing
1:15PM – 2:45PM	615A	Machine Learning in Production Management
1:15PM – 2:45PM	615B	Workflow and Inventory Planning
3:15PM – 4:45PM	SALON J	**Closing Ceremony**

Conference Overview

	Sunday	Monday
8:30	Doctoral Workshop Intro	
8:45		
9:00		
9:15	Doctoral Workshop (Session 1 and 2)	Opening Ceremony Keynote Address 1 Paper 138
9:30		
9:45		
10:00		
10:15	Break (15 min.)	
10:30		Coffee Break (30 min.)
10:45	Doctoral Workshop (Session 3 and 4)	
11:00		
11:15		Parallel Session #1
11:30		
11:45		
12:00		
12:15	Lunch Break (60 min.)	
12:30		
12:45		Lunch Break (75 min.)
1:00	Doctoral Workshop (Session 5)	
1:15		
1:30		
1:45	Doctoral Workshop Closing	
2:00		
2:15		Parallel Session #2
2:30		
2:45		
3:00		
3:15		Coffee Break (30 min.)
3:30		
3:45		
4:00		
4:15		Parallel Session #3
4:30	WG 5.7 Meeting (Room 602)	
4:45		
5:00		
5:15		
5:30		
5:45		
6:00		
6:15		
6:30		
6:45	Welcome Reception (90 min.)	
7:00		
7:15		
7:30		
7:45		
8:00		
8:15		
8:30		

	Tuesday	Wednesday	Thursday
	Parallel Sessions #4	**Parallel Sessions #7**	**Industrial Tours Amazon Fulfillment Center (8:30–12:30) EOS Additive Manufacturing (8:30–12:30)**
	Coffee Break (30 min.)	**Coffee Break (30 min.)**	
	Keynote Address (2 and 3)	**Plenary Session #2**	
	Lunch Break (75 min.)	**Lunch Break (75 min.)**	
	Parallel Session #5	**Parallel Session #8**	**Industrial Tours Amazon Fulfillment Center (12:30–3:15)**
	Coffee Break (15 min.)		
	Parallel Session #6	**Coffee Break (30 min.)**	
	Coffee Break (15 min.)	**Closing Ceremony**	
	Plenary Session #1		

Tuesday Sessions are 75 minutes

Gala Dinner (120 min.)

Doctoral Workshop Program

8:30 a.m. – 10:15 a.m.
615AB

Doctoral Workshop - Opening Session
615AB

Chair: Gregor von Cieminski

Doctoral Workshop - Session 1
615AB

Chair: Boonserm Kulvatunyou

Toward Zero-Defect Manufacturing for Machine Tools Using Systematic Virtual Quality Control and Real-time Prediction and Prevention

Paul-Arthur Dreyfus
EPFL, Switzerland
Discussant: David Romero

Design and Assessment of Decision-Making Process for Data-Driven Maintenance Provision in Product-Service System

Roberto Sala
University of Bergamo, Italy
Discussant: Joao Mendes dos Reis

Doctoral Workshop - Session 2
616AB

Chair: Gregor von Cieminski

Organization of Sales for Smart Product Service Systems

Benedikt Moser
Institute for Industrial Management at RWTH Aachen University, Germany
Discussant: Paolo Gaiardelli

Learning Factory Concept for Norwegian SMEs

Kavin Kathiresh Vijayan
Norwegian University of Science and Technology, Norway
Discussant: Gregor von Cieminski

10:30 a.m. – 12:00 noon
615AB

Doctoral Workshop - Session 3
615AB

Chair: Boonserm Kulvatunyou

Asset Management in Manufacturing: How to Manage Information and Data?

Adalberto Polenghi
Politecnico di Milano, Italy
Discussant: Farhad Ameri

DOCTORAL WORKSHOP

Planning Delivery Dates in Engineer-To-Order Manufacturing

Swapnil Bhalla
Norwegian University of Science and Technology, Norway
Discussant: Paolo Gaiardelli

. . . .

Doctoral Workshop - Session 4

10:30 a.m. – 12:00 noon
615AB

616AB

Chair: Gregor von Cieminski

A Framework for Manufacturing Companies to Support Them in Undertaking a Sustainable Path by Applying Circular Economy Principles

Federica Acerbi
Politecnico di Milano, Italy
Discussant: Gregor von Cieminski

Operations Management in Hospital Laboratories

Aili Biriita Bertnum
NTNU
Discussant: Gul Kremer

. . . .

Doctoral Workshop - Session 5

1:00 a.m. – 1:45 p.m.
615AB

615AB

Chair: Boonserm Kulvatunyou

EHR-PDCA - A Framework Proposal for the Interoperability and Health Data Management

Neusa Maria Andrade
UNIP, Brazil
Discussant: David Romero

. . . .

Doctoral Workshop - Closing Session

1:45 p.m. – 2:15 p.m.
615AB

615AB

Chair: Boonserm Kulvatunyou

11:00 a.m. – 12:30 p.m.

616A

Understanding, Structuring and Configuring Engineer-To-Order Supply Chains

Jonathan Gosling
Logistics Systems Dynamics Group, Logistics and Operations Management Section, Cardiff Business School, Cardiff University, Cardiff, UK
goslingj@cardiff.ac.uk

ABSTRACT: In recent years, there has been increasing interest in research concerning engineer-to-order (ETO) systems, particularly from academics who are interested in high value, complex engineering products in sectors such as construction, maritime, and machine tools. This presentation reflects on themes of "understanding, structuring and configuring" in ETO operations and supply chains, which emerges from recently published papers by collaborations between researchers in Cardiff University (UK), Jönköping University (Sweden) and Politecnico di Milano (Italy). First, it is proposed that it is possible to understand engineer-to-order situations through the lens of customer penetration concepts. Second, and building on this understanding, it is possible to structure New Product Development (NPD) efforts by taking a holistic view that aligns NPD processes with market drivers and trade-off considerations. Third, there is a need to configure engineering and production activities, taking into account

Extending Little's Law to Single Order Throughput Times

Hermann Lödding
Hamburg University of Technology
Institute of Production Management and Technology

ABSTRACT: Little's Law probably is the most often applied equation in operations management. A simple extension of Little's Law allows to model the throughput times of individual orders opening manifold opportunities to analyze manufacturing control policies.

Detailed Agenda

9:00 a.m. – 10:30 a.m.

Opening Ceremony
SALON J

KEYNOTE 1: Managing Risk and Opportunities in Complex Projects
Asbjørn Rolstadås
Norwegian University of Science and Technology

The APMS Conference and IFIP WG5.7 in the 21st Century - A Bibliometric Study
Makenzie Keepers[1], David Romero[2], Thorsten Wuest[1]
1:West Virginia University, United States of America; 2:Tecnológico de Monterrey, México

11:00 a.m. – 12:30 p.m.

Blockchain in Supply Chain Management
615A
Chair: Volker Stich

Towards a Blockchain Based Traceability Process: A Case Study from Pharma Industry
Ferdinando Chiacchio[1], Diego D'Urso[1], Lucio Compagno[1], Marcello Chiarenza[2], Luca Velardita[2]
1:Università degli Studi di Catania, Italy; 2:SIFI SPA, Information and Communication Technology

An Architecture of IoT-based Product Tracking with Blockchain in Multi-Sided B2B Platform
Shantanoo Desai[1,2], Quan Deng[1], Stefan Wellsandt[1,2], Klaus-Dieter Thoben[1,2]
1: BIBA - Bremer Institut für Produktion und Logistik GmbH, Hocschulring 20, 28359 Bremen, Germany; 2: Faculty of Production Engineering, University of Bremen, Badgasteiner Straße 1, 28359 Bremen, Germany

Blockchain as Middleware+
David Holtkemper[1], Günther Schuh[2]
1: Institute for Industrial Management, Germany; 2: WZL at RWTH Aachen Universit, Germany

Blockchain Application Supporting the Manufacturing Value Chain
Bjorn Jager, Terje Bach, Simen Alexander Pedersen
Molde University College, Norway

Design of a Blockchain-driven System for Product Counterfeiting Restraint in the Supply Chain
Sotiris P. Gayialis, Evripidis Kechagias, Georgios A. Papadopoulos, Grigorios D. Konstantakopoulos
National Technical National Technical University of Athens, School of Mechanical Engineering, Iroon Polytechniou 9, 15780, Athens, Greece

Production Management in Food Supply Chains [1]
602
Chair: Irenilza de Alencar Nääs

Neuro-fuzzy System for the Evaluation of Soya Production and Demand in Brazilian Ports

Emerson Rodolfo Abraham[1], João Gilberto Mendes dos Reis[1], Aguinaldo Eduardo de Souza[1],

Adriane Paulieli Colossetti[2]

1: Universidade Paulista UNIP, Brazil; 2: Sunsetti Treinamentos e Serviços

Port Logistic Support Areas (PLSA) for Exporting Grains: A Case-study in the Largest Port in Latin America

Clayton Gerber Mangini[1,2], Irenilza de Alencar Nääs[1], Antônio Carlos Estender[1,3],

Meykson Rodrigues Alves Cordeiro[1], Agnaldo Vieira Silva[1]

1: Paulista University-Graduate Program in Production Engineering, Brazil; 2: FATEC Baixada Santista – Rubens Lara. 11045-908, SP, Brazil; 3: FATEC Franco da Rocha – São Paulo. 04026-002, SP, Brazil

Port Terminals Assesment: An Empirical Analysis of Requirements of Brazilian National Plan of Port Logistics

Aguinaldo Eduardo De Souza[1], João Gilberto Mendes dos Reis[2], Ataide Pereira Cardoso Junior[3],

Emerson Rodolfo Abraham[4], Oduvaldo Vendrametto[5], Renato Marcio dos Santos[6], Roberta Sobral Pinto[7]

1: Paulista University - UNIP, PPGEP, São Paulo, Brazil, UNIBR, São Vicente, Brazil; 2: Paulista University - UNIP, PPGEP, São Paulo, Brazil, UFGD, PPGA, Dourados, Brazil; 3: Paulista University - UNIP, PPGEP, São Paulo, Brazil; 4: Paulista University - UNIP, PPGEP, São Paulo, Brazil; 5: Paulista University - UNIP, PPGEP, São Paulo, Brazil; 6: Paulista University - UNIP, PPGEP, São Paulo, Brazil; 7: UNISA, Universidade Santo Amaro, São Paulo, Brazil

An Evaluation of Brazilian Ports for Corn Exportation Using Multicreteria Analisys

Aguinaldo Eduardo de Souza[1], João José Giardulli Junior[2], João Gilberto Mendes dos Reis[3],

Ataide Pereira Cardoso Junior[4], Paula Ferreira da Cruz Correia[5], Ricardo Zandonadi Schimidt[6],

José Benedito Sacomano[7], Márcia Terra da Silva[8]

1: Paulista University - UNIP, PPGEP, São Paulo, Brazil, UNIBR, São Vicente, Brazil; 2: Paulista University - UNIP, PPGEP, São Paulo, Brazil; 3: Paulista University - UNIP, PPGEP, São Paulo, Brazil, UFGD, PPGA, Dourados, Brazil; 4: Paulista University - UNIP, PPGEP, São Paulo, Brazil; 5: Paulista University - UNIP, PPGEP, São Paulo, Brazil; 6: Paulista University - UNIP, PPGEP, São Paulo, Brazil; 7: Paulista University - UNIP, PPGEP, São Paulo, Brazil; 8: Paulista University - UNIP, PPGEP, São Paulo, Brazil

CNN-based Growth Prediction of Field Crops for Optimizing Food Supply Chain

Shunsuke Iitsuka[1], Nobutada Fujii[1], Daisuke Kokuryo[1], Toshiya Kaihara[1], Shinichi Nakano[2]

1: Kobe University, Japan; 2: Hyogo Prefectual Technology Center for Agriculture, Foresty and Fisheries, Japan

• •

The Operator 4.0 and the Internet of Things, Services and People (1) An SM & CPPS SIG Workshop Session

616B

Chair: David Romero

11:00 a.m. – 12:30 p.m.

Empowering and Engaging Solutions for Operator 4.0: Acceptance and Foreseen Impacts by Factory Workers

Eija Kaasinen, Susanna Aromaa, Päivi Heikkilä, Marja Liinasuo
VTT Technical Research Centre of Finland Ltd, Finland

Process Innovation in Learning Factories: Towards a Reference Model

Maria Stoettrup Schioenning Larsen, Astrid Heidemann Lassen, Kjeld Nielsen
Aalborg University, Denmark

Investments of the Automotive Sector and the Indus-try 4.0. Brazilian Case

Sergio Miele Ruggero, Nilza Aparecida dos Santos, José Benedito Sacomano, Marcia Terra da Silv
Universidade Paulista UNIP, Brazil

Smart Service Engineering: Promising Approaches for a Digitalized Economy

Jan Kuntz, Roman Senderek, Volker Stich, Jana Frank
FIR an der RWTH Aachen, Germany

Applicability of Agile Methods for Dynamic Requirements in Smart PSS Development

Stefan Alexander Wiesner[1], Jannicke Baalsrud Hauge[1,2], Paul Sonntag[3], Klaus-Dieter Thoben[1,3]
1: BIBA - Bremer Institut für Produktion und Logistik GmbH, Germany; 2: KTH – Royal Institute of Technology, Sweden; 3: University of Bremen, Germany

• •

11:00 a.m. – 12:30 p.m.

Production Planning and Control [(2)]

Location: 615B

Chair: Johan Oppen

Postponement Revisited – A Typology for Displacement

Fredrik Tiedemann, Joakim Wikner
Jönköping University, School of Engineering, Sweden

Efficient Heuristic Solution Methodologies for Scheduling Batch Processor with Incompatible Job-Families, Non-Identical Job-Sized and Non-Identical Job-Dimensions

Muthu Mathirajan[1], M Ramasubramanian[2]
1: Indian Institute of Science, Bangalore, India; 2: Loyola Institute of Business Administration, Chennai, India

Increasing the Regulability of Production Planning and Control Systems

Günther Schuh, Philipp Wetzchewald
Institute for Industrial Management (FIR) at RWTH Aachen University, Germany

Optimizing Workflow in Cell-based Slaughtering and Cutting of Pigs

Johan Oppen
Møreforsking Molde, Norway

Research Workshop

11:00 a.m. – 12:30 p.m.

616A
Chair: Hans-Hermann Wiendahl

· ·

Operations Management
in Engineer-to-Order Manufacturing [1]

1:45 p.m. – 3:15 p.m.

616A
Chair: Erlend Alfnes

Aspects for Better Understanding of Engineering Changes in Shipbuilding Projects: In-depth Case Study

Natalia Iakymenko, Marco Semini, Jan Ola Strandhagen
Norwegian University of Science and Technology, Norway

IPD Methodology in Shipbuilding

Hajnalka Vaagen, Lucky M. Masi
Norwegian University of Science and Technology, Department of Ocean Operations and Civil
Engineering, Ålesund, Norway

Exploring Logistics Strategy in Construction

Martin Rudberg[1], Duncan Maxwell[2]
1: Linköping University, Sweden; 2: Monash University, Australia

Practical Guidelines for Production Planning and Control in HVLV production

Erik Gran[1], Erlend Alfnes[2]
1: SINTEF, Norway; 2: Norwegian university of science and technology

APS Feasibility in One-Of-a-Kind ERP Environments

Erlend Alfnes[1], Hans-Henrik Hvolby[1,2]
1: Norwegian University of Science and Technology, Trondheim; 2: Aalborg University, Denmark

· ·

Production Management in Food Supply Chains [2]

1:45 p.m. – 3:15 p.m.

602
Chair: Irenilza de Alencar Nääs

Horizontal Integration in Fresh Food Supply Chain

Flemming Max Møller Christensen[1], Soujanya Mantravadi[2], Iskra Dukovska-Popovska[1],

Hans-Henrik Hvolby[1], Kenn Steger-Jensen[1], Charles Møller[2]
1: Centre for Logistics (CELOG), Materials & Production, Aalborg University, Denmark; 2: Centre for
Industrial Production (CIP), Materials & Production, Aalborg University, Denmark

Reverse Logistics and Waste in the Textile and Clothing Production Chain in Brazil

Solimar Garcia[1], Irenilza de Alencar Nääs[2], Pedro Luiz de Oliveira Costa Neto[3],

João Gilberto Mendes dos Reis[4]
Paulista University, Brazil

1:45 p.m. – 3:15 p.m.

CO2 Gas Emissions of Soybean Production and Transportation in the Different Macro-regions of Mato Grosso State-Brazil

Marley Nunes Vituri Toloi[1,2], Rodrigo Carlo Toloi[1,2], Helton Raimundo Oliveira Silva[1],

João Gilberto Mendes dos Reis[1], Silvia Helena Bonilla[1]
1: Paulista University, São Paulo, Brazil; 2: Federal Institute of Mato Grosso Campus Rondonópolis, Mato Grosso, Brazil

Asymmetrical Evaluation of Forecasting Models through Fresh Food Product Characteristics

Flemming Max Møller Christensen, Iskra Dukovska-Popovska, Casper Solheim Bojer, Kenn Steger-Jensen
Aalborg University, Denmark

Brazilian Coffee Export Network: An Analysis Using SNA

Paula Ferreira da Cruz Correia[1], João Gilberto Mendes dos Reis[2], Aguinaldo Eduardo de Souza[3],

Ataíde Pereira Cardoso Junior[4]
1: Paulista University - UNIP, PPGEP, São Paulo, Brazil; 2: Paulista University - UNIP, PPGEP, São Paulo, Brazil, UFGD, PPGA, Dourados, Brazil; 3: Paulista University - UNIP, PPGEP, São Paulo, Brazil, UNIBR, Sao Vicente, Brazil; 4: Paulista University - UNIP, PPGEP, São Paulo, Brazil

· ·

1:45 p.m. – 3:15 p.m.

The Operator 4.0 and the Internet of Things, Services and People [2] An SM and CPPS SIG Workshop Session

616B
Chair: David Romero

Task-Technology Fit in Manufacturing: Examining Human-Machine Symbiosis through a Configurational Approach

Patrick Mikalef, Hans Torvatn, Emrah Arica
SINTEF, Norway

Augmented Reality for Humans-Robots Interaction in Dynamic Slotting "Chaotic Storage" Smart Warehouses

Peter Papcun[1], Jan Cabadaj[1], Erik Kajati[1], David Romero[2], Lenka Landryova[3], Jan Vascak[1], Iveta Zolotova[1]
1: Technical University of Kosice, Faculty of Electrical Engineering and Informatics, Slovak Republic; 2: Tecnológico de Monterrey, Mexico; 3: VSB – Technical University of Ostrava Ostrava, Czech Republic

Analyzing Human Robot Collaboration with the Help of 3D Cameras

Robert Gloeckner[1], Lars Fischer[2], Arne Dethlefs[2], Hermann Lödding[1]
1: Hamburg University of Technology, Germany; 2: Garz & Fricke GmbH

Strategies for Implementing Collaborative Robot Applications for the Operator 4.0

Åsa Fast-Berglund[1], David Romero[2]
1: Chalmers University of Technology, Sweden; 2: Tecnológico de Monterrey, Mexico

Situation Awareness for Effective Production Control

Andreas D. Landmark, Emrah Arica, Birgit Kløve, Pål Furu Kamsvåg, Eva Amdahl Seim, Manuel Oliveira
SINTEF, Norway

Sustainability and Production Management

1:45 p.m. – 3:15 p.m.

615B
Chair: Bjorn Jager

Configuring the Future Norwegian Macroalgae Industry Using Life Cycle Analysis

Jon Halfdanarson[1], Matthias Koesling[2], Nina Pereira Kvadsheim[1], Jan Emblemsvåg[1], Celine Rebours[3]
1: Møreforsking Molde AS, Norway; 2: NIBIO; 3: Møreforsking Ålesund AS, Norway

Business Model Innovation for Eco-Efficiency: An Empirical Study

YAN LI[1], Steve Evans[2]
1: University of Greenwich, United Kingdom; 2: Univerisity of Cambridge, United Kindom

Atmospheric Water Generation (AWG): Performance Model and Economic Analysis

Faraz Moghimi[1], Hamed Ghoddusi[2], Bahram Asiabanpour[1], Mahdi Behroozikhah[3]
1: Texas State University; 2: Stevens Institute of Technology; 3: University of California, San Diego

Life Cycle Assessment for Ordinary and Frost-resistant Concrete

Ramin Sabbagh, Paria Esmatloo
The University of Texas at Austin, United States of America

Operationalizing Industry 4.0: Understanding Barriers of Industry 4.0 and Circular Economy

Lise Lillebrygfjeld Halse, Bjørn Jæger
Molde University College, Norway

● ●

Variety and Complexity Management in the Era of Industry 4.0 [(1)]

1:45 p.m. – 3:15 p.m.

615A
Chair: Khaled Medini

Bringing Advanced Analytics to Manufacturing: A Systematic Mapping

Hergen Wolf[1,2], Rafael Lorenz[1], Mathias Kraus[1], Stefan Feuerriegel[1], Torbjörn H. Netland[1]
1: ETH Zurich, Switzerland; 2: TU Dresden, Germany

Impact of Modeling Production Knowledge for a Data Based Prediction of Transition Times

Günther Schuh, Jan-Philipp Prote, Philipp Hünnekes, Frederick Sauermann, Lukas Stratmann
Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University, Germany

5G-Ready in the Industrial IoT-Environment - Requirements and Needs for IoT Applications Fom an Industrial Perspective

Kay Burow[1], Marco Franke[1], Klaus-Dieter Thoben[2]
1: BIBA - Bremer Institut für Produktion und Logistik GmbH, Germany; 2: University of Bremen, Institute for Integrated Product Development, Germany

Computer-aided Selection of Participatory Design Methods

3:45 p.m. – 5:15 p.m.

Michael Bojko, Ralph Riedel, Mandy Tawalbeh
Chemnitz University of Technology, Germany

Customization and Variants in Terms of Form, Place and Time

Joakim Wikner, Fredrik Tiedemann
Jönköping University, School of Engineering, Sweden

· ·

3:45 p.m. – 5:15 p.m.

Operations Management in Engineer-to-Order Manufacturing [2]

616A
Chair: Erlend Alfnes

Digitalized Manufacturing Logistics in Engineer-to-Order Operations

Jo Wessel Strandhagen, Sven-Vegard Buer, Marco Semini, Erlend Alfnes
Norwegian University of Science and Technology, Trondheim, Norway

Architecture for a Digital Spare-Parts Library: Effective Use of Additive Layer Manufacturing in Petroleum Industry

R.M. Chandima Ratnayake[1], Arvind Keprate[2], Roman Wdowik[3]
1: Department of Mechanical and Structural Engineering and Materials Science, University of Stavanger, N4036, Stavanger, Norway.; 2: DNVGL, Høvik, 1363, Norway.; 3: Rzeszów University of Technology, The Faculty of Mechanical Engineering and Aeronautics, 35-959 Rzeszów, Poland

Purchasing Strategies, Tactics, and Activities in Engineer-to-Order Manufacturing

Mikhail Shlopak, Espen Rød, Gabriele Hofinger Jünge
Møreforsking Molde AS, Norway

Examining Circular Economy Business Models for Engineer-To-Order Products

Nina Pereira Kvadsheim[1], Deodat Mwesiumo[1], Jan Emblemsvåg[2]
1: Møreforsking Molde AS, Norway; 2: Molde University College

Changing Markets: Implications for the Planning Process in ETO Companies

Kristina Kjersem[1], Marte F. Giskeødegård[2]
1: Møreforsking Molde AS, Norway; 2: NTNU Ålesund

· ·

3:45 p.m. – 5:15 p.m.

Participatory Methods for Supporting Career Choices in Industrial Engineering and Management and Education

615B
Chair: Nick B. Szirbik

Teaching of Engineers Focused on Innovative Entrepreneurship

Danielle Miquilim, Marcia Terra Da Silva
Universidade Paulista, Brazil

3:45 p.m. – 5:15 p.m.

Production Management in Food Supply Chains [(3)]

602
Chair: Joao Gilberto Mendes Dos Reis

3:45 p.m. – 5:15 p.m.

Collaborative Production Chain:
A Case-Study of Two Agri-Food Companies in Brazil

Yuri Claudio C. de Lima[1,2], Silvia Piva R. de Morais[2], Luis A. Mendes de M. Araujo[2],

Daiane da S. A. Castelo Branco[2], Irenilza de Alencar Nääs[2]
1: FACID/WYDEN, Teresina, Piaui, Brazil; 2: Paulista University-Graduate Program in Production Engineering, Brazil

Broiler meat production in Piaui State: A Case Study

Eldelita A. Franco, Lilane Brandão, José A. Luz, Kelly Gonçalves, Irenilza Nääs
Paulista University, Brazil

Global Warming Impact in a Food Distribution System:
A Case-study in an Elementary School in Piaui

Genyvana Criscya Garcia Carvalho, Ivonalda Brito de Almeida Morais, Manoel Eulálio Neto,

Raimundo Nonato Moura Rodrigues, Francisco Canindé Dias Alves, Irenilza de Alencar Nääs,

Oduvaldo Vendrametto
UNIP- Paulista University, Brazil

Sustainability of Meat Chain:
The Carbon Footprint of Brazilian Consumers

Raquel Silva[1], João Gilberto Reis[1], Thayla Curi[2], Nilsa Lima[3], Solimar Garcia[1], Irenilza Naas[1]
1: University Paulista, Brazil; 2: Anhanguera Educacional College, Brazil; 3: University of Campinas, Brazil

Scenarios for the Development and Use of Data Products within
the Value Chain of the Industrial Food Production

Volker Stich[1], Lennard Holst[1], Philipp Jussen[1], Dennis Schiemann[2]
1: FIR an der RWTH Aachen, Germany; 2: Lindt & Sprüngli Germany GmbH

The New Frontiers of Service Engineering: Designing and Delivering Smart Services in The Digital Age

616B
Chair: Paolo Gaiardelli

3:45 p.m. – 5:15 p.m.

The Impact of Digital Technologies on Services Characteristics:
Towards Digital Servitization

David Romero[1], Paolo Gaiardelli[2], Giuditta Pezzotta[2], Cavalieri Sergio[2]
1: Tecnológico de Monterrey; 2: University of Bergamo, Italy

Digital Servitization:

3:45 p.m. – 5:15 p.m.

The Next "Big Thing" in Manufacturing Industries

Ugljesa Marjanovic, Slavko Rakic, Bojan Lalic
University of Novi Sad, Serbia

Organization of Sales for Smart Product Service Systems

Benedikt Moser, Achim Kampker, Philipp Jussen, Jana Frank
Institute for Industrial Management at RWTH Aachen University, Germany

Capability-based Implementation of Digital Service Innovation in SMEs

David Görzig[1,2], Susann Kärcher[2], Thomas Bauernhansl[1,2]
1: IFF University of Stuttgart, Germany; 2: Fraunhofer IPA

A Dual Perspective Workflow to Improve Data Collection for Maintenance Delivery: An Industrial Case Study

Roberto Sala, Fabiana Pirola, Emanuele Dovere, Sergio Cavalieri
University of Bergamo, Italy

• •

3:45 p.m. – 5:15 p.m.

Variety and Complexity Management in the Era of Industry 4.0 [(2)]

615A
Chair: Ann-Louise Andersen

A Framework for Identification of Complexity Drivers in Manufacturing Companies

Rasmus Andersen, Thomas Ditlev Brunoe, Kjeld Nielsen
Aalborg University, Denmark

A DSM Clustering Method for Product and Service Modularization

Omar Ezzat[1], Khaled Medini[1], Maria Stoettrup Schioenning Larsen[2], Xavier Boucher[1],

Thomas D Brunoe[2], Kjeld Nielsen[2], Xavier Delorme[1]
1: Mines Saint-Etienne, Univ Clermont Auvergne, CNRS, UMR 6158 LIMOS, Institut Henri Fayol, 42023 Saint- Etienne, France; 2: Department of Materials and Production, Aalborg University, Aalborg, Denmark

Identification of Platform Candidates through Production System Classification Coding

Daniel G.H. Sorensen[1], Hoda A ElMaraghy[2], Thomas Ditlev Brunoe[1], Kjeld Nielsen[1]
1: Aalborg University, Denmark; 2: University of Windsor, Canada

Intelligent Diagnostics and Maintenance Solutions for Smart Manufacturing, an SM and CPPS SIG Workshop session

8:30 a.m.– 9:45 a.m.

615B

Chair: Farhad Ameri

A Thesaurus-guided Method for Smart Manufacturing Diagnostics

Farhad Ameri, Reid Yoder
Texas State University, United States of America

A Study on the Diagnostics Method for Plant Equipment Failure

Minyoung Seo[1], HongBae Jun[2]
1: Puzzle systems co., Data Business Unit, Korea, Republic of (South Korea); 2: Hongik University, Korea, Republic of South Korea

Modeling the Maintenance Time Considering the Experience of the Technicians

Hyunjong Shin, Kai-Wen Tien, Vittaldas Prabhu
The Pennsylvania State University, United States of America

Detailed Performance Diagnosis Based on Production Timestamps: A Case Study

Johannes Cornelis de Man, Felix Mannhardt
SINTEF Digital, Norway

● ●

Product and Asset Life Cycle Management in Smart Factories of Industry 4.0 [1]

8:30 a.m.– 9:45 a.m.

602

Chair: Irene Roda

Risk Sources Affecting the Asset Management Decision-making Process in Manufacturing: A Systematic Review of the Literature

Adalberto Polenghi, Irene Roda, Marco Macchi, Paolo Trucco
Politecnico di Milano, Italy

A Method for Converting Current Data to RDF in the Era of Industry 4.0

Marlene Hildebrand, Ioannis Tourkogiorgis, Foivos Psarommatis, Damiano Arena, Dimitris Kiritsis
École polytechnique fédérale de Lausanne, Switzerland

Ontology-based Resource Allocation for Internet of Things

Zeinab Nezami[1,2], Kamran Zamanifar[1], Damiano Arena[2], Dimitris Kirtisis[2]
1: University of Isfahan, Iran, Islamic Republic of; 2: École Politechnique Fédérale de Lausanne (EPFL), Switzerland

Semantic Model-Driven PLM Data Interoperability: An Application for Aircraft Ground Functional Testing with Eco-design Criteria

Damiano Arena[1], Manuel Oliva[2], Ignacio Eguia[3], Carmelo Del Valle[3], Dimitris Kiritsis[1]
1: École Politechnique Fédérale de Lausanne, Switzerland; 2: AIRBUS, Spain; 3: University of Seville, Spain

8:30 a.m.– 9:45 a.m.

Variety and Complexity Management in the Era of Industry 4.0 [3]

615A

Chair: Stefan Alexander Wiesner

Reconfigurable Manufacturing: A Classification of Elements Enabling Convertibility and Scalability

Alessia Napoleone[1], Ann-Louise Andersen[2], Alessandro Pozzetti[1], Marco Macchi[1]
1: Department of Management, Economics and Industrial Engineering, Politecnico di Milano, Milano, Italy; 2: Department of Materials and Production, Aalborg University, Aalborg, Denmark

Complexity Management in Production Systems: Approach for Supporting Problem Solving Through Holistic Structural Consideration

Samuel Horler, Ralph Riedel, Egon Müller
Chemnitz University of Technology, Germany

Reconfigurable Manufacturing: A Case-Study of Reconfigurability Potentials in the Manufacturing of Capital Goods

Bjørn Christensen[1], Ann-Louise Andersen[1], Khaled Medini[2], Thomas Ditlev Brunoe[1]
1: Aalborg University, Denmark; 2: Mines Saint-Etienne University, France

8:30 a.m.– 9:45 a.m.

Smart Factory and IOT

616B

Chair: Thorsten Wuest

Virtualisation of Sea Trials for Smart Prototype Testing

Moritz von Stietencron[1], Shantanoo Desai[1,2], Klaus-Dieter Thoben[1,2]
1: BIBA - Bremer Institut für Produktion und Logistik GmbH at the University of Bremen, Hochschulring 20, 28359 Bremen, Germany; 2: University of Bremen, Faculty of Production Engineering, Badgasteiner Straße 1, 28359 Bremen, Germany

IoH Technologies into Indoor Manufacturing Sites

Takeshi Kurata[1], Takashi Maehata[1], Hidehiko Hashimoto[1], Naohiro Tada[1], Ryosuke Ichikari[2], Hideki Aso[3], Yoshinori Ito[3]
1: SEI, Japan; 2: AIST, Japan; 3: JPS, Japan

Study on 3D Visualization of the Production History and Simulation Results for an Automotive Parts Supplier

Hwang Dahye, Noh Sang Do
Sungkyunkwan University, Korea, Republic of South Korea

Opportunites of Industry 4.0 in SMES: A Sectorial Analysis

Javier Luco, Sara Mestre, Ludovic Henry, Simon Tamayo, Frédéric Fontane
Mines ParisTech, France

8:30 a.m.– 9:45 a.m.

Production Planning and Control [1]

616A

Chair: Eiji Morinaga

Simulation-Based Optimization of Lot Sizes for Opposing Logistic Objectives

Janine Tatjana Maier, Thomas Voss, Jens Heger, Matthias Schmidt
Leuphana University Lueneburg, Germany

A Proposal of Order Planning Method with Consideration of Multiple Organizations in Manufacturing System

Ken Yamashita[1], Toshiya Kaihara[1], Nobutada Fujii[1], Daisuke Kokuryo[1], Toyohiro Umeda[2], Rihito Izutsu[2]
1: Kobe University, Japan; 2: Kobe Steel, Ltd., Japan

Decision-making Process for Buffer Dimensioning in Manufacturing

Lisa Hedvall, Joakim Wikner
School of Engineering, Jönköping University, Sweden

Reduction of Computational Load in Robust Facility Layout Planning Considering Temporal Production Efficiency

Eiji Morinaga[1], Komei Iwasaki[1,2], Hidefumi Wakamatsu[1], Eiji Arai[1]
1: Osaka University, Japan; 2: Currently, NEC Corporation, Japan

Keynote Address 2 and 3

SALON J

10:15 a.m. – 11:45 a.m.

Redesigning Manufacturing Machines, Design Tools, and Robotics for Smart Human Augmented Spatial Interfaces

Karthik Ramani
Purdue University

Digitalization and Cybersecurity for Trusted Next Generation Supply Chains

Chip White
Georgia Institute of Technology

Cyber Physical Systems

616B

1:00 p.m. – 2:15 p.m.

Chair: Duck Young Kim

Blockchain as an Internet of Services Application for an Advanced Manufacturing Environment

Benedito Cristiano Aparecido Petroni[1], Jacqueline Zonichenn dos Reis[1], Rodrigo Franco Gonçalves[1,2]
1: Paulista University, Brazil; 2: Politecnic School, University of Sao Paulo, Brazil

Development of a Modeling Architecture Incorporating the Industry 4.0 View for a Company in the Gas Sector

Nikolaos A. Panayiotou, Konstantinos E. Stergiou, Vasileios P. Stavrou
National Technical University of Athens, Greece

Process for Enhancing the Production System Robustness with Sensor Data: A Food Manufacturer Case Study

Sofie Bech, Thomas Ditlev Brunoe, Kjeld Nielsen
Aalborg University, Denmark

In-process Noise Detection Methods for Product Quality Monitoring: Sensor Technologies and Acoustic Signal Analytics

Woonsang Baek, Duck-Young Kim
UNIST, Korea, Republic of South Korea

1:00 p.m. – 2:15 p.m.

Product and Asset Life Cycle Management in Smart Factories of Industry 4.0 [2]

602
Chair: Irene Roda

Conceptual Framework for a Data Model to Support Asset Management Decision-making Process

Adalberto Polenghi, Irene Roda, Marco Macchi, Alessandro Pozzetti
Politecnico di Milano, Italy

Identification of the Inspection Specifications for Achieving Zero Defect Manufacturing

Foivos Psarommatis, Dimitris Kiritsis
École polytechnique fédérale de Lausanne, Switzerland

Total Cost Of Ownership Driven Methodology For Predictive Maintenance Implementation In Industrial Plants

Irene Roda[1], Simone Arena[2], Marco Macchi[1], Pier Francesco Orrù[2]
1: Politecnico di Milano, Italy; 2: University of Cagliari, Italy

Hybrid Approach Using Ontology-supported Case-based Reasoning and Machine Learning for Defect Rate Prediction

Bongjun Ji[1,2], Farhad Ameri[1], Junhyuk Choi[2], Hyunbo Cho[2]
1: Texas State University, United States of America; 2: Pohang University of Science and Technology, Republic of South Korea

1:00 p.m. – 2:15 p.m.

Lean Production [1]

616A
Chair: Christoph Roser

Lean Leadership in Production Ramp-Up

Uwe Dombrowski, Jonas Wullbrandt
Technical University Braunschweig, Germany

Total Quality Management and Quality Circles in the Digital Lean Manufacturing World

David Romero[1], Paolo Gaiardelli[2], Daryl Powell[3], Thorsten Wuest[4], Matthias Thürer[5]
1: Tecnológico de Monterrey, Mexico; 2: University of Bergamo, Italy; 3: Norwegian University of Science and Technology, Norway; 4: West Virginia University, USA; 5: Jinan University, China

Using Prescriptive Analytics to Support the Continuous Improvement Process

Günther Schuh[1], Jan-Philipp Prote[1], Thomas Busam[2], Rafael Lorenz[3], Torbjörn H. Netland[3]
1: Laboratory for Machine Tools and Production Engineering (WZL), RWTH Aachen University, 52074 Aachen, Germany; 2: Schuh & Co. GmbH, 52074 Aachen, Germany; 3: Department of Management, Technology, and Economics, ETH Zurich, 8092 Zurich, Switzerland

No Lean Without Learning: Rethinking Lean Production as a Learning System

Daryl John Powell[1], Eivind Reke[2]
1: Norwegian University of Science and Technology, Norway; 2: Los Norge, Norway

The Effect of Team Size on the Performance of Continuous Improvement Teams: Is Seven Really the Magic Number?

Daryl John Powell[1], Rafael Lorenz[2]
1: Norwegian University of Science and Technology, Norway; 2: ETH Zurich, Switzerland

• •

1:00 p.m. – 2:15 p.m.

Sustainability and Reconfigurability of Manufacturing Systems [(1)]

615A
Chair: Xavier Boucher

Towards Reconfigurable Digitalized and Servitized Manufacturing Systems: Conceptual Framework

Xavier Boucher[1], Audrey Cerqueus[1], Xavier Delorme[1], Clemens Gonnermann[2], Magdalena Paul[2], Gunther Reinhart[2], Julia Schulz[2], Fabian Sippl[2]
1: Mines Saint-Etienne, Université Clermont Auvergne, LIMOS; 2: Institute for Machine Tools and Industrial Management (iwb), Technical University of Munich

Decision Support System for Joint Product Design and Reconfiguration of Production Systems

Seyyed Ehsan Hashemi Petroodi[1], Clemens Gonnermann[2], Magdalena Paul[2], Simon Thevenin[1], Alexandre Dolgui[1], Gunther Reinhar[2]
1: IMT-Atlantique, Nantes, France; 2: Technical University Munich, Germany

Classification of Optical Technologies for the Mapping of Production Environments

Marius Greger[1], Daniel Palm[1], Louis Louw[2], Konrad von Leipzig[2]
1: Reutlingen University, Germany; 2: University of Stellenbosch, South Africa

A Competence-Based Description of Employees in Reconfigurable Manufacturing Systems

Svenja Korder, Barbara Tropschuh, Gunther Reinhart
Technical University of Munich, Germany

1:00 p.m. – 2:15 p.m.

Supply Chain Planning and Optimization [1]

615B
Chair: Jan Frick

Price Decision Making in a Centralized/decentralized Solid Waste Disposal Supply Chain with One Contractor and Two Disposal Facilities

Iman Ghalehkhondabi, Reza Maihami
Our lady of the lake university, United States of America

Understanding the Impact of User Behaviours and Scheduling Parameters on the Effectiveness of a Terminal Appointment System Using Discrete Event Simulation

Mihai Neagoe[1], Hans-Henrik Hvolby[2,3], Mohammad Sadegh Taskhiri[1], Paul Turner[1]
1: ARC Centre for Forest Value, Discipline of ICT, College of Sciences and Engineering, University of Tasmania, Hobart, AustraliaUniversity of Tasmania, Australia; 2: Centre for Logistics, Department of Materials & Production, Aalborg University, Aalborg, Denmark; 3: Department of Mechanical and industrial Engineering, Norwegian University of Science and Technology, Trondheim, Norway

Full-Scale Discrete Event Simulation of an Automated Modular Conveyor System for Warehouse Logistics

Alireza Ashrafian[1], Ole-Gunnar Pettersen[1], Kristian N Kuntze[1], Jacob Franke[1], Erlend Alfnes[1], Knut F. Henriksen[2], Jakob Spone[3]
1: Norwegian University of Science and Technology, Norway; 2: Swisslog, Norway; 3: ASKO, Norway

Handling Uncertainties in Production Network Design

Günther Schuh, Jan-Philipp Prote, Andreas Gützlaff, Sebastian Henk
Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University

● ●

2:30 p.m. – 3:45 p.m.

Collaborative Technology [2]

616B
Chair: Marcia Terra da Silva

Managing Knowledge in Manufacturing Industry -University Innovation Projects

Irina-Emily Hansen[1], Ola Jon Mork[1], Torgeir Welo[2]
1: Department of Ocean Operations and Civil Engineering, Norwegian University of Science and Technology; 2: Department of Mechanical and Industrial Engineering, Norwegian University of Science and Technology

Technology Companies in Judicial Reorganization

Ricardo Zandonadi Schmidt, Márcia Terra
Paulista University, Brazil

Multiscale Modeling for Social Systems: Bridging Scales via Decision Making

Nursultan Nikhanbayev, Toshiya Kaihara, Fujii Nobutada, Daisuke Kokuryo
Kobe university, Japan

e-Health: A Framework Proposal for Interoperability and Health Data Sharing A Brazilian Case

2:30 p.m. – 3:45 p.m.

Neusa Maria Andrade[1,2], Pedro Luiz de Oliveira Costa Neto[1], Jair Gustavo de Mello Torres[1], Irapuan Glória Júnior[1], Cláudio Guimarães Scheidt[1,2], Welleson Gazel[1,2]
1: UNIP, Brazil; 2: SPDM, Associação Paulista para o Desenvolvimento da Medicina

Lean Production [(2)]

616A

Chair: Christoph Roser

2:30 p.m. – 3:45 p.m.

Practical Boundary Case Approach for Kanban Calculation on the Shop Floor Subject to Variation

Christoph Roser[1], Daniel Nold[2]
1: Karlsruhe University of Applied Science, Germany; 2: Dr. Ing. h.c. F. Porsche AG

Sketching the Landscape for Lean Digital Transformation

Alireza Ashrafian[1], Daryl J. Powell[1], Jonas A. Ingvaldsen[1], Heidi C. Dreyer[1], Halvor Holtskog[1], Peter Schütz[1], Elsebeth Holmen[1], Ann-Charlott Pedersen[1], Eirin Lodgaard[2]
1: Norwegian University of Science and Technology, Norway; 2: SINTEF Raufoss Manufacturing, Norway

Options for Maintaining Weakened FIFO in Parallel Queues

Kalkanci Kaan, Christoph Roser
Karlsruhe University of Applied Science, Germany

Cyber-Physical Waste Identification and Elimination Strategies in the Digital Lean Manufacturing World

David Romero[1], Paolo Gaiardelli[2], Matthias Thürer[3], Daryl Powell[4], Thorsten Wuest[5]
1: Tecnológico de Monterrey, Mexico; 2: University of Bergamo, Italy; 3: Jinan University, China; 4: Norwegian University of Science and Technology, Norway; 5: West Virginia University, USA

Lean and Digitalization: Contradictions or Complements?

Rafael Lorenz[1], Paul Buess[2], Julian Macuvele[2], Thomas Friedli[2], Torbjörn H. Netland[1]
1: ETH Zurich, 8006 Zurich, Switzerland; 2: University of St. Gallen, 9000 St. Gallen, Switzerland

Data-driven Production Management

602

Chair: Jonas Wullbrandt

2:30 p.m. – 3:45 p.m.

From a Theory of Production to Data-based Business Models

Günther Schuh[1], Malte Brettel[2], Jan-Philipp Prote[1], Andreas Gützlaff[1], Frederick Sauermann[1], Katharina Thomas[1], Mario Piel[2]
1: Laboratory for Machine Tools and Production Engineering (WZL) of RWTH Aachen University, Germany; 2: Innovation and Entrepreneurship Group (WIN) – TIME Research Area, RWTH Aachen University, Germany

Real-time Data Sharing in Production Logistics: Exploring Use Cases by an Industrial Study

Masoud Zafarzadeh[1], Jannicke Baalsrud Hauge[1], Magnus Wiktorsson[1], Ida Hedman[2], Jasmin Bahtijarevic[2]
1: KTH Royal Institute of Technology, Sweden; 2: AstraZeneca, Sweden

SCIENTIFIC PROGRAM

39

2:30 p.m. – 3:45 p.m.

Open Access Digital Tools' Application Potential in Technological Process Planning: SMMEs Perspective

Roman Wdowik[1], R.M. Chandima Ratnayake[2]
1: Rzeszów University of Technology; The Faculty of Mechanical Engineering and Aeronautics, 35-959 Rzeszów, Poland; 2: Department of Mechanical and Structural Engineering and Materials Science, University of Stavanger, Norway

Bidirectional Data Management Between Factory Planning and Production

Uwe Dombrowski, Jonas Wullbrandt, Alexander Karl
Technische Universität Braunschweig, Germany

2:30 p.m. – 3:45 p.m.

Sustainability and Reconfigurability of Manufacturing Systems [2]

615A

Chair: Khaled Medini

Simulation of Reconfigurable Assembly Cells with Unity3D

Magdalena Paul, Daria Leiber, Julian Pleli, Gunther Reinhart
Institute for Machine Tools and Industrial Management, Technical University of Munich, Germany

Modular Robot Software Framework for the Intelligent and Flexible Composition of its Skills

Lisa Heuss[1], Andreas Blank[2], Sebastian Dengler[1], Georg Lukas Zikeli[2], Gunther Reinhart[1], Jörg Franke[2]
1: Institute for Machine Tools and Industrial Management (iwb), Technical University Munich, Germany; 2: Institute for Factory Automation and Production Systems (FAPS), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

Simple Assembly Line Balancing Problem with Power Peak Minimization

Paolo Gianessi[1], Xavier Delorme[1], Oussama Masmoudi[2]
1: Mines Saint-Étienne, Saint-Étienne, France; 2: University of Technology of Troyes, Troyes, France

A DRC Scheduling for Social Sustainability: Trade-off between Tardiness and Workload Balance

Muhammad Akbar[1,2], Takashi Irohara[1]
1: Department of Information and Communication Sciences, Sophia University, Japan; 2: Department of Industrial Engineering, Bandung Institute of Technology, Indonesia

2:30 p.m. – 3:45 p.m.

Supply Chain Planning and Optimization [2]

615B

Chair: R.M. Chandima Ratnayake

Supply Chain Scenarios for Logistics Service Providers in the Context of Additive Spare Parts Manufacturing

Daniel Pause, Svenja Marek
FIR at Aachen University, Germany

2:30 p.m. – 3:45 p.m.

Collaborative Exchange of Cargo Truck Loads: Approaches to Reducing Empty Trucks in Logistics Chains

Hans-Henrik Hvolby[1], Kenn Steger-Jensen[1], Mihai Neagoe[2], Sven Vestergaard[1], Paul Turner[2]
1: Aalborg University, Denmark; 2: University of Tasmania, Hobart

An Integrated Approach for Supply Chain Tactical Planning and Cash Flow Valuation

Asma Rakiz[1,2], Kawtar Retmi[1], Sabah Belil[1,3]
1: Emines-Mohammed VI Polytechnic University; 2: PARIS II Panthéon-Assas University; 3: Limos Clermont Auvergne University

Supply Chain Optimization in the Tire Industry: State-of-the-art

R.M. Chandima Ratnayake[2], Kartika Nur Alfina[1]
1: University of Indonesia, Depok, Indonesia; 2: Department of Mechanical and Structural Engineering and Materials Science, University of Stavanger, Stavanger, Norway

•• •

4:00 p.m. – 5:15 p.m.

Plenary Session 1: Emerging Challenges and Research Opportunities in Smart Services

SALON J

Chair: Vittaldas Prabhu

8:30 a.m. – 10:00 a.m.

Knowledge Management in Design and Manufacturing

616B

Chair: Melissa Demartini

Modeling Manual Assembly System to Derive Best Practice from Actual Data

Susann Kärcher[1], David Görzig[2], Thomas Bauernhansl[1,2]
1: Fraunhofer IPA, Nobelstrasse 12, 70569 Stuttgart, Germany; 2: IFF University of Stuttgart, Nobelstrasse 12, 70569 Stuttgart, Germany

Application of a Controlled Assembly Vocabulary: Modeling a Home Appliance Transfer Line

E. Chase Wentzky, Chelsea Spence, Apurva Patel, Nicole Zero,

Adarsh Jeyes, Alexis Fiore, Joshua D. Summers, Mary E. Kurz, Kevin Taaffe
Clemson University, United States of America

What the Product Developer Really Needs to Know - Capturing the Major Design Elements

Bjørnar Henriksen, Andreas Landmark, Carl Christian Røstad
SINTEF, Norway

Closed-Loop Manufacturing for Aerospace Industry: PLM and MOM Solutions Support the Wing Box Assembly Process

Islam Abusohyon[1], Melissa Demartini[1], Federico Galluccio[2], Raffaello Lepratti[3], Paolo Mattis[2], Flavio Tonelli[1]
1: University of Genoa, via Opera Pia 15, 16145, Genoa, Italy; 2: Siemens Italy S.p.A., Via Enrico Melen 83, 16152, Genoa, ITALY; 3: Siemens AG., Gleiwitzerstr. 555, 90475 Nuremberg, GERMANY

8:30 a.m. – 10:00 a.m.

Industry 4.0 Implementations

616A
Chair: Vidosav Majstorovic

Implementation of Industry 4.0 in Germany, Brazil and Portugal: Barriers and Benefits

Walter C. Satyro[1], Mauro de Mesquita Spinola[1], Jose Benedito Sacomano[2], Márcia Terra da Silva[2], Rodrigo

Franco Gonçalves[1,2], Marcelo Pessoa[1], Jose Celso Contador[3], Jose Luiz Contador[4], Luciano Schiavo[1]
1: Polytechnic School of USP – Universidade de Sao Paulo, Brazil; 2: UNIP – Universidade Paulista, Postgraduate Program in Production Engineering; 3: UNIP – Universidade Paulista, Postgraduate Program in Administration; 4: FACCAMP - Faculdade Campo Limpo Paulista, Postgraduate Program in Administration

Planning Guideline and Maturity Model for Intralogistics 4.0 in SME

Knut Krowas[2], Ralph Riedel[1]
1: Chemnitz University of Technology, Germany; 2: TUCed Affiliated Institute for Transfer and Continuing Education

Self-Assessment of Industry 4.0 Technologies in Intralogistics for SME's

8:30 a.m. – 10:00 a.m.

Martina Schiffer, Hans-Hermann Wiendahl, Benedikt Saretz
Fraunhofer Institute for Manufacturing Engineering and Automation IPA, Germany

Industry 4.0 Visions and Reality-Status in Norway

Hans Torvatn, Pål Kamsvåg, Birgit Kløve
SINTEF Digital

The Impact of Energy Management Systems on Industry 4.0 Concepts: Evidence from Serbian Manufacturing Companies

Milovan Medojevic[1], Nenad Medic[1], Ugljesa Marjanovic[1], Bojan Lalic[1], Vidosav Majstorovic[2]
1: University of Novi Sad, Serbia; 2: University of Belgrade, Serbia

• •

Collaborative Technology [(1)]

8:30 a.m. – 10:00 a.m.

615B

Chair: Volker Stich

Approach for Detecting and Anticipating Collaboration Opportunities

Ibrahim Koura[1], Frederick Benaben[1], Juanqiong Gou[2]
1: IMT Mines Albi, France; 2: Beijing Jiaotong University,China

Systematic Integration of Stakeholders in Factory Planning, Construction and Factory Operations to Increase Acceptance and Prevent Disruptions

Uwe Dombrowski, Alexander Karl, Colette Vogeler, Nils Bandelow
Technische Universität Braunschweig, Germany

Design and Simulation of an Integrated Model for Organisational Sustainability Applying the Viable System Model and System Dynamics

Sergio Gallego García, Manuel García García
UNED National Distance Education University, Spain

Service Engineering Models: History and Present-Day Requirements

Jan Kuntz, Roman Senderek, Volker Stich, Jana Frank
FIR an der RWTH Aachen, Germany

• •

Supply Chain Planning and Optimization [(3)]

8:30 a.m. – 10:00 a.m.

615A

Chair: JOAO GILBERTO MENDES DOS REIS

UAV Set Covering Problem for Emergency Network

Young Soo Park[1], Ilkyeong Moon[1,2]
1: Department of Industrial Engineering, Seoul National University, Korea, Republic of (South Korea); 2: Institute for Industrial Systems Innovation, Seoul National University, Korea, Republic of (South Korea)

8:30 a.m. – 10:00 a.m.

A Stochastic Optimization Model for Commodity Rebalancing under Traffic Congestion in Disaster Response

Xuehong Gao
Pusan National University, Busan, Republic of (South Korea)

Optimal Supplier Selection in a Supply Chain with Predetermined Loading/unloading Time Windows and Logistics Truck Share

Alireza Fallahtafti[1], Iman Ghalehkhondabi[2], Gary R. Weckman[1]
1: OHIO UNIVERSITY, United States of America; 2: School of Business and Leadership, Our Lady of the Lake University, San Antonio

Passenger Transport Disutilities in The US: An Analysis Since the 90's

Helcio Raymundo, João Gilberto Mendes dos Reis
Universidade Paulista, Brazil

Port Efficiency to Commodities Transportation: An Analysis in Port of Santos, Brazil

Renato Marcio dos Santos, João Gilberto Mendes dos Reis, Júlio Cesar Raymundo, Emerson

Rodolfo Abraham, Ataíde Pereira Cardoso Júnior, Aguinaldo Eduardo de Souza
Paulista University - UNIP, Brazil

10:30 p.m. – 12:00 noon

Plenary Session 1: Towards Smart Production Management Systems: Things, Services and People

SALON J

Chair: David Romero, Boonserm (Serm) Kulvatunyou

1:15 p.m. – 2:45 p.m.

Collaborative Product Development

Location: 616B

Chair: Boonserm (Serm) Kulvatunyou

Knowledge Management Environment for Collaborative Design in Product Development

Shuai Zhang
University of Greenwich, United Kingdom

A Multi-criteria Approach to Collaborative Product-Service Systems Design

Martha Orellano[1], Khaled Medini[2], Christine Lambey-Checchin[3], Maria-Franca Norese[4], Gilles Neubert[5]
1: Mines Saint-Etienne, Univ Lyon, Univ Jean Moulin, Univ Lumire, Univ Jean Monnet, ENTPE, INSA Lyon, ENS Lyon, CNRS, UMR 5600 EVS, Institut Henri Fayol, F-42023, Saint-Etienne, France.; 2: Mines Saint-Etienne, Univ Clermont Auvergne, CNRS, UMR 6158 LIMOS, Institut Henri Fayol, F 42023, Saint-Etienne, France; 3: Univ Clermont Auvergne, EA3849 CleRMa, F-63008, Clermont-Ferrand, France; 4: Politecnico di Torino, DIGEP, Torino, Italy; 5: emlyon business school, CNRS, UMR 5600 EVS, F-42009, Saint-Etienne, France

Design-for-Cost – An Approach for Distributed Manufacturing Cost Estimation

Minchul Lee, Boonserm Kulvatunyou
National Institutes of Standard and Technology, United States of America

1:15 p.m. – 2:45 p.m.

•• •

Machine Learning in Production Management

615A

Chair: Kenn Steger-Jensen

1:15 p.m. – 2:45 p.m.

Enabling Energy Efficiency in Manufacturing Environments through Deep Learning Approaches: Lessons Learned

M.T. Alvela Nieto, E. G. Nabati, D. Bode, M. A. Redecker, A. Decker, K.-D. Thoben
University of Bremen (Germany), Department of Production Engineering, BIK- Institute for Integrated Product Development

A Data Mining Approach to Support Capacity Planning for the Regeneration of Complex Capital Goods

Melissa Seitz, Maren Sobotta, Peter Nyhuis
Leibniz University Hannover, Germany

Developing Smart Supply Chain Management Systems Using Google Trend's Search Data: A Case Study

Ramin Sabbagh, Dragan Djurdjanovic
The University of Texas at Austin, United States of America

Retail Promotion Forecasting: A Comparison of Modern Approaches

Casper Solheim Bojer[1], Iskra Dukovska Popovska[1], Flemming Max Møller Christensen[1], Kenn Steger-Jensen[1,2]
1: Aalborg University, Denmark; 2: University College of Southeast Norway, Norway

• •

ICT for Collaborative Manufacturing

616A

Chair: Daryl John Powell

1:15 p.m. – 2:45 p.m.

Identifying the Role of Manufacturing Execution Systems in the IS Landscape: A Convergence of Multiple Types of Application Functionalities

Sabine Waschull, J.C. Wortmann, J.A.C. Bokhorst
University of Groningen, Netherlands

A Generic Approach to Model and Analyze Industrial Search Processes

Philipp Steenwerth, Hermann Lödding
Hamburg University of Technology, Germany

A Methodology to Assess the Skills for an Industry 4.0 factory

Federica Acerbi, Silvia Assiani, Marco Taisch
Politecnico di Milano, Italy

1:15 p.m. – 2:45 p.m.

MES Implementation: Critical Success Factors and Organizational Readiness Model

Daniela Invernizzi[1], Paolo Gaiardelli[1], Emrah Arica[2], Daryl Powell[3]
1: University of Bergamo, Italy; 2: Sintef Digital, Norway; 3: Norwegian University of Science and Technology, Norway

• •

1:15 p.m. – 2:45 p.m.

Workflow and Inventory Planning

615B

Chair: Hans-Henrik Hvolby

Possibilities and Benefits of Using Material Flow Information to Improve the Internal Hospital Supply Chain

Giuseppe Ismael Fragapane, Aili Biriita Bertnum, Jan Ola Strandhagen
Norwegian University of Science and Technology, Norway

Combining the Inventory Control Policy with Pricing and Advertisement Decisions for a Non-instantaneous Deteriorating Product

Reza Maihami, Iman Ghalehkhondabi
Our lady of the Lake University, United States of America

Inventory Control at the Point-Of-Use in Hospitals

Giuseppe Fragapane, Aili Biriita Bertnum, Hans-Henrik Hvolby, Jan Ola Strandhagen
Norwegian University of Science and Technology, Norway

Assessing Fit of Capacity Planning Methods for Delivery Date Setting: An ETO Case Study

Swapnil Bhalla[1], Erlend Alfnes[1], Hans-Henrik Hvolby[1,2]
1: Department of Mechanical and Industrial Engineering, Norwegian University of Science and Technology, Trondheim, Norway; 2: Department of Materials and Production, Centre for Logistics, Aalborg University, Aalborg, Denmark

Scheduling Auction: A New Manufacturing Business Model for Balancing Customization and Quick Delivery

Shota Suginouchi, Hajime Mizuyama
Aoyama Gakuin University, Japan

• •

3:15 p.m. – 4:45 p.m.

Closing Ceremony

SALON J

Conference Chairs

Farhad Ameri
Conference Chair— Texas State University, U.S.A.

Dimitris Kiritsis
Conference Co-Chair— École polytechnique fédérale de Lausanne, Switzerland

Kathryn Stecke
Program Chair— University of Texas at Dallas, U.S.A

Gregor Von Cieminski
Program Co-Chair— ZF Friedrichshafen AG, Germany

Event Planning Team

Monica Jeffs
Office of Distance and Extended Learning, Texas State University, U.S.A.

Joshua Book
Office of Distance and Extended Learning, Texas State University, U.S.A.

David Cummings
Office of Distance and Extended Learning, Texas State University, U.S.A.

George Charles
Office of Distance and Extended Learning, Texas State University, U.S.A.

Program Committee

Albert Jones
National Institute of Standards and Technology (NIST), U.S.A.

Boonserm Kulvatunyou
National Institute of Standards and Technology (NIST), U.S.A.

Vital Prabhu
The Pennsylvania State University, U.S.A.

Kathryn Stecke
Committe Chair—University of Texas at Dallas, U.S.A.

Thorsten Wuest
West Virginia University, U.S.A.

Gregor Von Cieminski
Program Co-Chair— ZF Friedrichshafen AG, Germany

Scientific Committee

Erry Yulian Triblas Adesta
International Islamic University Malaysia
Malaysia

Erlend Alfnes
Norwegian University of Science and Technology
Norway

Thecle Alix
IUT Bordeaux Montesquieu
France

Susanne Altendorfer-Kaiser
Montanuniversitaet Leoben
Austria

Farhad Ameri
Texas State University
USA

Bjørn Andersen
Norwegian University of Science and Technology
Norway

Eiji Arai
Osaka University
Japan

Frédérique Biennier
INSA Lyon
France

Umit S Bititci
Heriot Watt University
UK

Adriana Giret Boggino
Universidad Politécnica de Valencia
Spain

Magali Bosch-Mauchand
Université de Technologie de Compiègne
France

Abdelaziz Bouras
Qatar University
Qatar

Jim Browne
University College Dublin
Ireland

Luis Camarinha-Matos
Universidade Nova de Lisboa
Portugal

Sergio Cavalieri
University of Bergamo
Italy

Stephen Childe
Plymouth University
UK

Hyunbo Cho
Pohang University of Science & Technology
Korea

Gregor von Cieminski
ZF Friedrichshafen AG
Hungary

Catherine Da Cunha
Ecole Centrale de Nantes
France

Frédéric Demoly
Université de Technologie de Belfort-Montbéliard
France

Shengchun Deng
Harbin Institute of Technology
China

Melanie Despeisse
Chalmers University of Technology
Sweden

Alexandre Dolgui
IMT Atlantique Nantes
France

Slavko Dolinšek
University of Ljubljana
Slovenia

Sang Do Noh
Sungkyunkwan University
Korea

Heidi Carin Dreyer
Norwegian University of Science and Technology
Norway

Eero Eloranta
Helsinki University of Technology
Finland

Soumaya El Kadiri
Texelia AG
Switzerland

Christos Emmanouilidis
Cranfield University
UK

Åsa Fasth-Berglund
Chalmers University
Sweden

Jan Frick
University of Stavanger
Norway

Paolo Gaiardelli
University of Bergamo
Italy

Bernard Grabot
INP-ENIT
France

Samuel Gomes
Belfort-Montbéliard University of Technology
France

Gerhard Gudergan
FIR Research Institute for Operations Mngt.
Germany

Thomas R. Gulledge Jr
George Mason University
USA

Hironori Hibino
Tokyo University of Science
Japan

Hans-Henrik Hvolby
Aalborg University
Denmark

Dmitry Ivanov
Berlin School of Economics and Law
Germany

Harinder Jagdev
National University of Ireland at Galway
Ireland

John Johansen
Aalborg University
Denmark

Toshiya Kaihara
Kobe University
Japan

Dimitris Kiritsis
Ecole Polytechnique Fédérale de Lausanne
Switzerland

Tomasz Koch
Wroclaw Universit of Science and Technology
Poland

Pisut Koomsap
Asian Institute of Technology
Thailand

Gül Kremer
Iowa State University
USA

Boonserm Kulvatunyou
National Institute of Standards and Technology
USA

Thomas R. Kurfess
Georgia Institute of Technology
USA

Andrew Kusiak
University of Iowa
USA

Lenka Landryova
Technical University of Ostrava
Czech Republic

Jan-Peter Lechner
First Global Liaison
Germany

Ming K. Lim
Chongqing University
China

Hermann Lödding
Hamburg University of Technology
Germany

Marco Macchi
Politecnico di Milano
Italy

Vidosav D. Majstorovich
University of Belgrade
Serbia

Adolfo Crespo Marquez
University of Seville
Spain

Gökan May
Ecole Polytechnique Fédérale de Lausanne
Switzerland

Jörn Mehnen
Strathclyde University Glasgow
UK

Hajime Mizuyama
Aoyama Gakuin University
Japan

Ilkyeong Moon
Seoul National University
Korea

Dimitris Mourtzis
University of Patras
Greece

Irenilza de Alencar Naas
UNIP Paulista University
Brazil

Masaru Nakano
Keio University
Japan

Torbjörn Netland
ETH Zürich
Switzerland

Gilles Neubert
EMLYON Business School Saint-Etienne
France

Manuel Fradinho Duarte de Oliveira
SINTEF
Norway

Jinwoo Park
Seoul National University
Korea

François Pérès
Université de Toulouse
France

Fredrik Persson
Linköping Institute of Technology
Sweden

Selwyn Piramuthu
University of Florida
USA

Alberto Portioli-Staudacher
Politecnico di Milano
Italy

Vittaldas V. Prabhu
Pennsylvania State University
USA

Ricardo José Rabelo
Federal University of Santa Catarina
Brazil

Mario Rapaccini
Florence University
Italy

Joao Gilberto Mendes dos Reis
UNIP Paulista University
Brazil

Ralph Riedel
TU Chemnitz
Germany

Asbjörn Rolstadås
Norwegian University of Science and Technology
Norway

David Romero
Tecnologico de Monterrey University
Mexico

Christoph Roser
Karlsruhe University of Applied Sciences
Germany

Martin Rudberg
Linköping University
Sweden

Thomas E. Ruppli
University of Basel
Switzerland

Krzysztof Santarek
Warsaw University of Technology
Poland

John P. Shewchuk
Virginia Polytechnic Institute and State University
USA

Dan L. Shunk
Arizona State University
USA

Riitta Smeds
Aalto University
Finland

Vijay Srinivasan
National Institute of Standards and Technology
USA

Johan Stahre
Chalmers University
Sweden

Kathryn E. Stecke
University of Texas at Dallas
USA

Kenn Steger-Jensen
Aalborg University
Denmark

Volker Stich
FIR Research Institute for Operations Management
Germany

Richard Lee Storch
University of Washington
USA

Jan Ola Strandhagen
Norwegian University of Science and Technology
Norway

Stanislaw Strzelczak
Warsaw University of Technology
Poland

Shigeki Umeda
Musashi University
Japan

Marco Taisch
Politecnico di Milano
Italy

Kari Tanskanen
Aalto University School of Science
Finland

Ilias Tatsiopoulos
National Technical University of Athens
Greece

Sergio Terzi
Politecnico di Milano
Italy

Klaus-Dieter Thoben
Universität Bremen
Germany

Jacques H. Trienekens
Wageningen University
Netherlands

Mario Tucci
Universitá degli Studi di Firenze
Italy

Gündüz Ulusoy
Sabancı University
Turkey

Bruno Vallespir
University of Bordeaux
France

Agostino Villa
Politecnico di Torino
Italy

Hans-Hermann Wiendahl
University of Stuttgart
Germany

Joakim Wikner
Jönköping University
Sweden

Hans Wortmann
Groningen University
Netherlands

Thorsten Wuest
West Virginia University
USA

Iveta Zolotová
Technical University of Košice
Slovakia

International Advisory Committee

Dragan Djurdjanovic
University of Texas at Austin, USA

Gül Kremer
Iowa State University, USA

Ilkyeong Moon
Seoul National University, Korea

David Romero
Tecnologico de Monterrey University, Mexico

Sponsors

AlphaNodus

THE UNIVERSITY OF TEXAS AT DALLAS
Naveen Jindal School of Management

PennState
Service Enterprise Engineering
Engineering the 21st Century Economy

TEXAS STATE
COLLEGE OF
SCIENCE AND ENGINEERING

INFONEER
Engineering
Informatics Research Group