

APMS 2020Conference Program



"The path to digital transformation and innovation of production management systems"

August 30 - September 3, 2020

Novi Sad, Serbia

Introduction

WELCOME MESSAGE

Dear Members of the IFIP WG5.7 and the Participants of the APMS2020,

On behalf of the Organizing Committee, the Program Committee, and the hosting institution – the University of Novi Sad, Faculty of Technical Sciences, Department of Industrial Engineering and Management – it is our great pleasure to welcome you to Novi Sad, Serbia for the 2020 IFIP International Conference on Advances in Production Management Systems (APMS2020). We are looking forward to inspiring presentations and fruitful discussions during this "mixed-media" event in its 41st Edition.

APMS2020 in Novi Sad, Serbia brings together leading international experts from academia, industry, and government in the area of digital transformation and innovation to discuss globally pressing issues in digital and smart manufacturing, operations management, and supply chain management in the Industry 4.0 era. Under the influence of COVID-19, the event was also digitally transformed and for the first time in its history, the APMS International Conference was organized in a "hybrid-mode", meaning face-to-face as well as online conference sessions. A large international panel of experts reviewed all the submitted papers and selected the best ones to be included in two volumes as part of the APMS2020 conference proceedings. The topics of interest in APMS 2020 included Digital Supply Networks; Data-Driven Production Management; Sustainable Production Management; Cloud and Collaborative Technologies; Smart Manufacturing, Industry 4.0 and the Operator 4.0, Data-Driven Services; Digital Lean Manufacturing; and Digital Transformation Approaches.

We thank the local staff, participants, session chairs, keynote and plenary speakers for helping us build this exciting conference program. The APMS2020 Organizing Committee made every possible effort to make sure that your participation, either online or face-to-face, will be scientifically rewarding and a pleasurable experience. We appreciate the generous support from both the Ministry of Education, Science and Technological Development and Provincial Secretariat for Higher Education and Scientific Research of the Republic of Serbia.

Thank you all for (e-)attending APMS2020 and welcome to Novi Sad!

Bojan Lalić

Conference Chair

Uglješa Marjanović

Organizing Committee Chair

David Romero

WG5.7 Secretary

Vidosav Majstorović

Program Chair

Gregor von Cieminski

WG5.7 Chairperson

Objectives and Scopes

APMS 2020 in Novi Sad, Serbia 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 and indexed on SCOPUS and Web of Science. Industrial viewpoints and insights will be shared through industry keynotes by world renown industry leaders. High quality papers will be fast tracked to several peer reviewed archival journals, including Production Planning & Control (PPC) and International Journal of Production Research (IJPR). 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

APMS 2020 in Novi Sad, Serbia 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 and indexed on SCOPUS and Web of Science.



3

- 2 Faculty of Technical Sciences
- 3 Danube river

CONFERENCE VENUE

Conference Dates

The APMS 2020 International Conference - Advances in

Production Management Systems will be held on August 30th

through the September 3th in Novi Sad, Serbia.



Venue

The Rectorate building of the University of Novi Sad

Dr Zorana Djindjica 1, 21102 Novi Sad, Serbia

APMS 2020 will be held at the Rectorate building of the University of Novi Sad. Rectorate building is located at the central campus on the left bank of the Danube, across the famous 18th century Petrovaradin fortress, and the walking distance from the city old town. Novi Sad, the city on the Danube, the city of European history and Balkan hospitality. It is the city of museums, galleries, and events such as EXIT Music Festival that has been awarded international rewards and that has acquired international recognizability. New creative energy brought about by youth groups and organizations has contributed, along with the already recognizable traditional platform, to turn Novi Sad into the European Capital of Culture 2021.

General Information

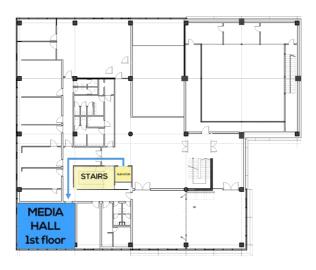
CONFERENCE FLOOR MAP

Ground Floor

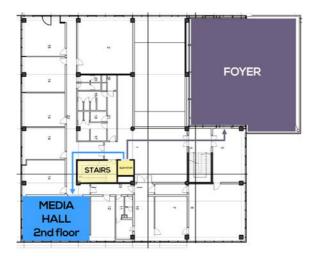


CONFERENCE FLOOR MAP

1st Floor



2nd Floor





CONFERENCE INFORMATION

Registration Desk

The registration desk will be located on the ground floor of Rectorate building.

The registration desk will be open during the following hours.

Sunday: August 30th, - 8:30 a.m. to 5:30p.m. Monday: August 31st, - 9:00 a.m. to 6:00p.m. Tuesday: September 1st, - 9:45 a.m. to 5:00p.m.

Instructions for Presentations

Presenters are allotted 15 minutes for presentation and 5 minutes more for Q&A. 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 if they present face-to-face, or to store it on their personal computer if present online. All presenters are responsible for the correct display of their presentations. We recommend to test the presentation before the session.



CONFERENCE INFORMATION

Social Activities

Welcome Reception

August 30th, 2020

PLACE: The Rectorate building, ground floor

TIME: 5:30 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 2020.

Drinks and snacks will be served.

Novi Sad city guided tour

August 31st, 2020

PLACE: Hotel Centar lobby

TIME: 7:00 p.m. 7:30 p.m.

DRESS: Casual

ADDDRESS: Uspenska 1, Novi Sad

Gala Dinner

September 1st, 2020

PLACE: Alaska Barka restaurant

TIME: 6:30 p.m. 8:30 p.m.

DRESS: Smart Casual

ADDDRESS: Turisticko naselje Ribarsko ostrvo 4, Novi Sad

Wine tour and dinner at Sremski Karlovci

September 2nd, 2020

PLACE: Sremski Karlovci

TIME: 6:30 p.m. 10:00 p.m.

DRESS: Casual

MEETING POINT: Hotel Centar lobby

LUNCH INFORMATION

Monday, August 31st, 2020



CUBO concept bar and restaurant

12:15 p.m. to 13:15 p.m. Strumička 16, Novi Sad

Tuesday, September 1st, 2020



CUBO concept bar and restaurant

12:15 p.m. to 13:15 p.m. Strumička 16, Novi Sad

Wednesday, September 2nd, 2020

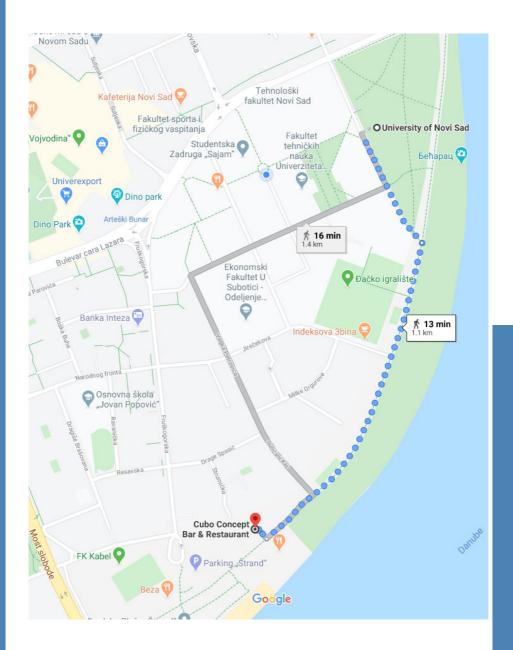


CUBO concept bar and restaurant

12:15 p.m. to 13:15 p.m. Strumička 16, Novi Sad

General Information

RESTAURANT LOCATIONS



KEYNOTE SPEAKERS



Dr. Ivanka Višnjić

Associate Professor, ESADE

Ramon Llull University, Barcelona, Spain

How to execute digital transformation? Lessons from manufacturing industry



Dr. Marco Ulrich

Head of "Software Technologies and Applications"

Department Manager of Software Technologies (DECRC/S) ABB Corporate Research Center Germany Ladenburg, Germany

Industrial digitalization - the way to autonomous systems



Dr. Jin Chen

Professor, Department of Innovation, Entrepreneurship and Strategy

Tsinghua University, Beijing, China

Innovation for industry key technologies: Evidence from China

General Information

CONFERENCE INFORMATION

Industrial Tours

The conference program includes three tours with site visits to 3Lateral, Continental, and TTTech (RT-RK).

3Lateral 1

Thursday, September 3rd, 2020

Departure from hotel Centar 9:00 a.m.

Tour 9:15 a.m. - 10:05 a.m.

Arriving at hotel Centar 11:00 a.m.



Thursday, September 3rd, 2020

Departure from hotel Centar 9:00 a.m.

Tour 9:05 a.m. - 10:05 a.m.

Arriving at hotel Centar 10:10 a.m.



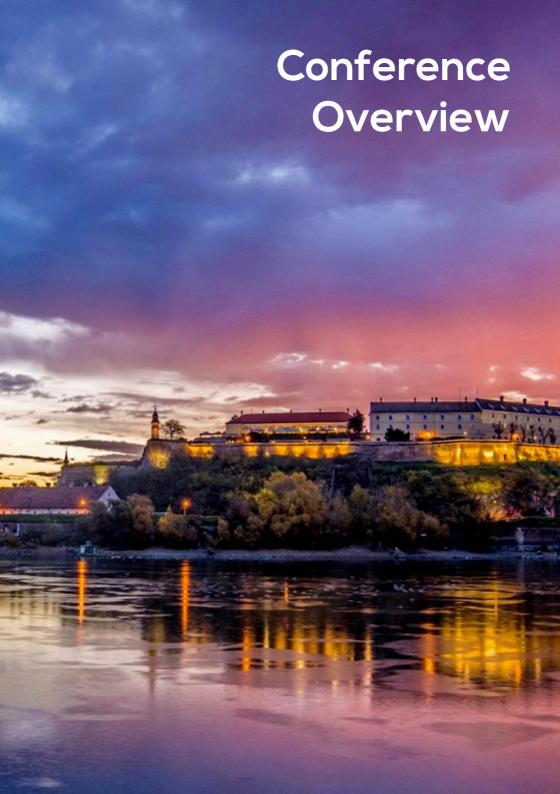


Thursday, September 3rd, 2020

Departure from hotel Centar 9:00 a.m.

Tour 9:15 a.m. - 10:15 a.m.

Arriving at hotel Centar 10:30 a.m.



SESSIONS OVERVIEW

	9:30 - 10:00	Amphitheater – ground floor
	10:15 - 12:15	Amphitheater – ground floor
	10:15 - 12:15	Multimedia Hall – 1st floor
	10:15 - 12:15	Multimedia Hall – 2nd floor
	10:15 - 12:15	Reading Room – ground floo
•	13:15 - 15:15	Amphitheater – ground floor
	13:15 - 15:15	Multimedia Hall – 1st floor
	13:15 - 15:15	Multimedia Hall – 2nd floor
	13:15 - 15:15	Reading Room – ground floo
	15:30 - 16:15	Amphitheater – ground floor
	16:30 - 18:30	Amphitheater – ground floor
	16:30 - 18:30	Multimedia Hall – 1st floor
	16:30 - 18:30	Multimedia Hall – 2nd floor
	16:30 - 18:30	Reading Room – ground floo

Opening ceremony Digital Transformation - Part I Data-Driven Services - Part I Digital Twins & Shadows - Part I **Production Ramp-up Strategies** Digital Transformation - Part II Data-Driven Services - Part II Digital Twins & Shadows - Part II Reconfig., Flex. & Agile Mfg. - Part I Kevnote Address 1 Digital Transformation - Part III **Data-Driven Applications Collaborative Robotics Applications** Reconfig., Flex. & Agile Mfg. - Part II

Amphitheater - ground floor Multimedia Hall - 1st floor Multimedia Hall - 2nd floor Reading Room - ground floor Amphitheater - ground floor Amphitheater - ground floor Amphitheater - ground floor Multimedia Hall - 1st floor Multimedia Hall – 2nd floor Reading Room - ground floor

Digital Lean Manufacturing Gastronomic Service System Design Product & Assets Lifecycle Mgmt. Blockchain & Logistics 4.0 Keynote Address 2 Panel I: Women in Production Management Smart Manufacturing & Industry 4.0 Schedulina Methods The Operator 4.0 **Production Logistics 4.0**

monday

10:15 - 12:15	Multimedia Hall – 1st floor
10:15 - 12:15	Multimedia Hall – 2nd floor
10:15 - 12:15	Reading Room - ground flo
13:15 - 14:00	Amphitheater – ground floo
14:00 - 14:45	Amphitheater – ground floo
15:00 - 17:00	Amphitheater – ground floo
15:00 - 17:00	Multimedia Hall – 1st floor
15:00 - 17:00	Multimedia Hall – 2nd floor
15:00 - 17:00	Reading Room – ground flo
17:15 - 17:45	Amphitheater – ground floo

10:15 - 12:15

Multimedia Hall – 2nd floor		
Reading Room – ground floor		
Amphitheater – ground floor		
Amphitheater – ground floor		
Amphitheater – ground floor		
Multimedia Hall – 1st floor		
Multimedia Hall – 2nd floor		
Reading Room – ground floor		

Amphitheater - ground floor

Human Resources Management
Food Supply Chains - Part I
Keynote Address 3
Panel II: Digital Transformation and the Social Factory of Things, Services and People
Circular Manufacturing
Assembly Systems 4.0
ETO Manufacturing
Food Supply Chains - Part II
Closing Ceremony

Sustainable Manufacturing

Quality & Risk Management

Conference Overview

	Sunday August 30, 2020	Monday August 31, 2020
8:30		
8:45	Doctoral Workshop Intro	
9:00		Depistuation
9:15		Registration
9:30	Doctoral Workshop	On online, coronacia,
9:45	(Session 1 and 2)	Opening ceremony
10:00		Coffee Break (15 min.)
10:15	Break (15 min.)	
10:30		
10:45		Parallel Session #1
11:00	Doctoral Workshop	
11:15	(Session 3 and 4)	
11:30		
11:45		
12:00		
12:15		
12:30	Lunch Break (75 min.)	Lunch
12:45		(60 min.)
13:00		

CONFERENCE OVERVIEW

Tuesday September 1, 2020	Wednesday September 2, 2020	Thursday September 3, 2020
2		
Registration		
Parallel Session #4	Parallel Sessions #6	Industrial tours
Lunch (60 min.)	Lunch (60 min.)	

13:15	Doctoral Workshop	
13:30	Closing	
13:45		
14:00		Parallel Session #2
14:15		Parallet Session #2
14:30	_	
14:45	_	
15:00		
15:15	_	Coffee Break (15 min.)
15:30	WG5.7 Meeting (Multimedia Hall - 1st floor;	
15:45	Online: Cisco WebEx)	Keynote 1
16:00	_	
16:15		Coffee Break (15 min.)
16:30	_	
16:45		
17:00	Registration	
17:15	Registration	Parallel Session #3
17:30	_	Farallet Session #3
17:45	_	
18:00		
18:15	_	
18:30	Welcome reception	
18:45	(150 min.)	
19:00	_	Novi Cad city guided tour
19:15		Novi Sad city guided tour
19:30		
19:45		
20:00		
20:15		
20:30		

— CONFERENCE OVERVIEW ——			
— CONFERENCE OVERVIEW —			
Keynote 2	Keynote 3		
Plenary Session #1	Plenary Session #2		
Coffee Break (15 min.)	Coffee Break (15 min.)		
Parallel Session #5	Parallel Session #7		
	Coffee Break (15 min.)		
	Closing Ceremony		
Gala dinner (Alaska barka)	Wine tour and Dinner (Sremski Karlovci)		

DOCTORAL WORKSHOP PROGRAM

Sunday, August 30, 2020

8:45 - 10:15

Doctoral Workshop - Opening Session

Multimedia Hall - 1st floor (Online: Cisco WebEx) Chair: David Romero

Doctoral Workshop - Session 1 (Sustainable and Circular Manufacturing)

Multimedia Hall - 2nd floor (Online: Cisco WebEx)

Chairs: Milan Delic

Data and information valorisation towards Circular Manufacturing adoption

Federica Acerbi

Politecnico di Milano, Italy

Discussant: Mélanie Despeisse

Design and Management of Assembly 4.0 Systems

Marco Simonetto

Norwegian University of Science and Technology,

Norway

Discussant: Duck Young Kim

Doctoral Workshop - Session 2 (Smart and Digital Manufacturing)

Multimedia Hall - 1st floor (Online: Cisco WebEx)

Chairs: David Romero

The impact of digital servitization on manufacturing firm performance in transition countries

Slavko Rakic

University of Novi Sad, Serbia

Discussant: Paolo Gaiardelli

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DOCTORAL WORKSHOP PROGRAM

Sunday, August 30, 2020

Implementation of a direct and highly flexible mesh-contour coupling for shape optimization of flow dynamic profiles

Stephan Trautsch

Otto-von-Guericke-Universität Magdeburg, Germany

Discussant: Marco Macchi

10:30 - 12:00

Doctoral Workshop - Session 3 (Sustainable and Circular Manufacturing)

Multimedia Hall – 2nd floor (Online: Cisco WebEx)

Chairs: Milan Delic

Sustainable deployment of lean within producing corporate groups

Sara Linderson

KTH Royal Institute of Technology, Sweden

Discussant: Milan Delic

Integrating the human factors at the human level with the system level in an order picking process

Vivek Vijayakumar

Norwegian University of Science and Technology,

Norway

Discussant: Jorn Mehnen

A Tool for the Selection of Process Mining Perspectives, Types, Algorithms and Techniques

Dusanka Dakic

University of Novi Sad, Serbia

Discussant: Bruno Vallespir

DOCTORAL WORKSHOP PROGRAM

Sunday, August 30, 2020

Doctoral Workshop – Session 4 (Smart and Digital Manufacturing)

Multimedia Hall - 1st floor (Online: Cisco WebEx)

Chairs: David Romero

Industrial Asset Management in manufacturing: how to manage data and information in Maintenance?

Adalberto Polenghi

Politecnico di Milano, Italy

Discussant: Åsa Fast-Berglund

Industry 4.0 – The crucial role of Quality 4.0 and Quality management in the context of Serbian transitional economy

Stana Vasic

University of Novi Sad, Serbia

Discussant: David Romero

Sustainable, Data-Driven Food Production Planning and Control

Maggie Bresler

Norwegian University of Science and Technology,

Norway

Discussant: Gyu Lee

13:15 - 13:45

Doctoral Workshop - Closing Session

Multimedia Hall – 2nd floor

(Online: Cisco WebEx)

Chair: Milan Delic



Monday, August 31, 2020

9:30 - 10:00

Opening ceremony

Amphitheater - ground floor

10:15 - 12:15

Digital Transformation - Part I

Amphitheater – ground floor

Chairs: Bahrudin Hrnjica & Egon Lüftenegger

A conceptual model for deploying digitalization in SMEs through capability building

Zuhara Chavez, Jannicke Baalsrud Hauge, Monica Bellgran

KTH Royal Institute of Technology, Sweden

Towards the definition of an Impact Level factor of SME features over Digital Transformation

Melissa Liborio Zapata^{1,2}, Lamia Berrah²,

Laurent Tabourot¹

1: Laboratoire Systèmes et Matériaux pour la

Mécatronique (SYMME), Université Savoie Mont Blanc;

2: Laboratoire d'Informatique, Systèmes, Traitement de

l'Information et de la Connaissance (LISTIC),

Université Savoie Mont Blanc

Industry 4.0 on demand: a value driven methodology to implement Industry 4.0

Deborah Leone, Andrea Barni

SUPSI. Switzerland

Scientific Progran

DETAILED AGENDA

Monday, August 31, 2020

Technology Adoption in the Industry 4.0 Era: Empirical Evidence from Manufacturing Companies

Nenad Medić¹, Zoran Anisic¹, Nemanja Tasic¹,

Nikola Zivlak², Bojan Lalic¹

1: University of Novi Sad, Faculty of Technical Sciences,

Serbia; 2: Emlyon Business School, Écully, France

ERP in Industry 4.0 Context

Vidosav Majstorovic¹, Slavenko Stojadinovic¹,

Bojan Lalic², Ugljesa Marjanovic²

1: University of Belgrade, Faculty of Mechanical

Engineering, Belgrade, Serbia; 2: University of Novi Sad,

Faculty of Technical Sciences, Novi Sad, Serbia

General readiness assessment of Industry 4.0: Evidence from Serbian manufacturing industry

Tanja Todorovic¹, Bojan Lalic¹, Vidosav Majstorovic²,

Ugljesa Marjanovic¹, Nemanja Tasic¹

1: Faculty of Technical Sciences,

University of Novi Sad, Serbia;

2: Faculty of Mechanical Engineering,

University of Belgrade, Serbia

10:15 - 12:15

Data-Driven Services - Part I

Multimedia Hall – 1st floor

Chairs: Paolo Gaiardelli & Shaun West

Industry 4.0 data-related technologies and servitization: a systematic literature review

Michela Zambetti, Roberto Pinto, Giuditta Pezzotta

Department of Management, Information and

Production Engineering, University of Bergamo, Italy

Monday, August 31, 2020

Engineering of data-driven Service Systems for Smart Living: Application and Challenges

Henrik Kortum¹, Laura Sophie Gravemeier¹, Novica Zarvic¹, Thomas Feld², Oliver Thomas^{1,2,3}

- 1: DFKI German Research Center for Artificial Intelligenz, Germany;
- 2: Strategion GmbH;
- 3: Universität Osnabrück, Informationsmanagement und Wirtschaftsinformatik

Impact of platform openness on ecosystems and value streams in Platform-based PSS exemplified using RAMI 4.0

Michela Zambetti¹, Till Blüher², Giuditta Pezzotta¹, Konrad Exner³, Roberto Pinto¹, Rainer Stark^{2,3}

- 1: Department of Management, Information and Production Engineering, University of Bergamo, Italy;
- 2: Technische Universität Berlin, Germany;
- 3: Fraunhofer Institute for Production Systems and Design Technology, Germany

Towards a Comparative Data Value Assessment Framework for Smart Product Service Systems

Lennard Phillip Holst, Volker Stich, Jana Frank, Günther Schuh Institute for Industrial Management at RWTH

Institute for Industrial Management at RWTH Aachen University, Germany

The Data-Driven Product-Service Systems Design and Delivery (4DPSS) methodology

Roberto Sala¹, Alessandro Bertoni², Fabiana Pirola¹, Giuditta Pezzotta¹

- 1: University of Bergamo, Italy;
- 2: Blekinge Institute of Technology, Sweden

Scientific Program

DETAILED AGENDA

Monday, August 31, 2020

Agile guideline for development of smart services in manufacturing enterprises with support of artificial intelligence

Mike Freitag¹, Oliver Hämmerle²

- 1: Fraunhofer IAO, Germany;
- 2: University of Stuttgart, Germany

10:15 - 12:15

Digital Twins & Shadows - Part I

Multimedia Hall - 2nd floor

Chairs: Erik Flores-García & Sabine Waschull

The transformation towards smart(er) factories: integration requirements of the digital twin
S. Waschull, J.C. Wortmann, J.A.C. Bokhorst
University of Groningen, Department of Operations

Systems Engineering Approach to Identify Requirements for Digital Twins Development

Ali Gharaei¹, Jinzhi Lu¹, Oliver Stoll², Xiaochen Zheng¹, Shaun West², Dimitris Kiritsis¹

- 1: EPFL. Switzerland:
- 2: HSLU. Switzerland

Analyzing the Characteristics of Digital Twin and Discrete Event Simulation in Cyber Physical Systems

Erik Flores-García¹, Goo-Young Kim², Jinho Yang²,

Magnus Wiktorsson¹, Sang Do Noh²

- 1: KTH Royal Institute of Technology, Sweden;
- 2: Sungkyunkwan University

Monday, August 31, 2020

A Digital Twin modular framework for Reconfigurable Manufacturing Systems

Hichem Haddou Benderbal¹, Abdelkrim R. Yelles-Chaouche^{1,2}, Alexandre Dolgui¹ 1: IMT Atlantique, LS2N-CNRS, Nantes, France; 2: IRT Jules Verne, Bouquenais, France

Business Process Management for Manufacturing Execution System deployment: some lessons from a bearings manufacturer experience

Hervé Verjus, Vincent Clivillé, Lamia Berrah, Romain Gandia, Claude Chapel Université Savoie Mont-Blanc, France

Identifying Key Business Processes that Can Benefit from Industry 4.0 in the Gas Sector, The Public Gas

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

10:15 - 12:15

Production Ramp-up Strategies

Reading Room – ground floor

Chairs: Stefan Wiesner & Jannicke Baalsrud

Key factors on utilizing the production system design phase for increasing operational performance

Md Hasibul Islam, Zuhara Chavez, Seyoum Eshetu Birkie, Monica Bellgran KTH Royal Institute of Technology, Sweden

Monday, August 31, 2020

Part Selection for Freeform Injection Molding: framework for development of a unique methodology

Elham Sharifi1. Atanu Chaudhuri1.

Brian Vejrum Wæhrens¹, Lasse G. Staal²,

Saeed D. Farahani³

- 1: Aalborg university, Denmark;
- 2: Addifab company, Denmark;
- 3: Maersk Mc-Kinney Moller Institute,

Southern Denmark University

Business Model Development for a Dynamic Production Network Platform

Stefan Alexander Wiesner¹, Larissa Behrens²,

Jannicke Baalsrud Hauge^{1,3}

- 1: BIBA Bremer Institut für Produktion und Logistik GmbH. Germanv:
- 2: Karlsruher Institut für Technologie (KIT), Institut für Fördertechnik und Logistiksysteme, Germany;
- 3: KTH Royal Institute of Technology, Sweden

A Model for Cost-Benefit Analysis of Production Ramp-up Strategies

Khaled Medini¹, Antoine Pierné²,

John Ahmet Erkoyuncu³, Christian Cornet⁴

- 1: Mines Saint-Etienne, Univ Clermont Auvergne, CNRS,
- UMR 6158 LIMOS, Henri Fayol Institute,
- F 42023 Saint-Etienne France;
- 2: Mines Saint-Etienne, F 42023 Saint-Etienne France;
- 3: Through-life Engineering Services Centre, School of

Aerospace, Transport and Manufactur-ing, Cranfield University, Cranfield, MK43 OAL, UK;

4: Centre Technique des Industries Mécaniques, 42000

Saint - Etienne. France

Monday, August 31, 2020

Machine Learning-Supported Planning of Lead Times in Job Shop Manufacturing

Kathrin Julia Kramer¹, Carsten Wagner²,

Matthias Schmidt¹

1: PPI, Leuphana University Lueneburg, 21335

Lueneburg, Germany;

2: HAWK University of Applied Sciences and Art

Hildesheim/Holzminden/Goettingen, Buesgenweg

1a, 37077 Goettingen, Germany

Backlog Oriented Bottleneck Management – Practical Guide for Production Managers

Roman Ungern-Sternberg, Christian Fries,

Hans-Hermann Wiendahl

Fraunhofer-Institute for Manufacturing Engineering and

Automation IPA, Germany

13:15 - 15:15

Digital Transformation - Part II

Amphitheater - ground floor

Chairs: Ioan Turcin & Selver Softic

Challenges in Data Life Cycle Management for Sustainable Cyber-Physical Production Systems

Mélanie Despeisse, Ebru Turanoglu Bekar Chalmers University of Technology, Sweden

Applying contextualization for data-driven transformation in manufacturing

Sonika Gogineni1, Kai Lindow¹, Jonas Nickel², Rainer Stark^{1,3}

1: Fraunhofer Institute for Production Systems and Design Technology IPK, Berlin, Germany;

2: Rolls-Royce Deutschland, Eschenweg 11, 15827 Blankenfelde-Mahlow, Germany;

Monday, August 31, 2020

3: Technische Universität Berlin, Chair Industrial Information Technology, Berlin, Germany

Concept of PLM application integration with VR and AR techniques

Jan Duda, Sylwester Oleszek Cracow University of Technology, Poland

Organizational enablers for digitalization in manufacturing industry

Lars Harald Lied, Daryl John Powell, Maria Flavia Mogos SINTEF Manufacturing AS, Norway

Explainable AI in Manufacturing: A Predictive Maintenance Case Study

Bahrudin Hrnjica², Selver Softic¹ 1: CAMPUS 02 University of Applied Sciences, Austria; 2: University of Bihac, Bosnia and Herzegovina

The big potential of Big Data in manufacturing: evidence from emerging economies

Marko Pavlović, Uglješa Marjanović, Slavko Rakić, Nemanja Tasić, Bojan Lalić University of Novi Sad, Faculty of Technical Sciences, Novi Sad, Serbia

13:15 - 15:15

Data-Driven Services - Part II

Multimedia Hall - 1st floor

Chairs: Xavier Boucher & Giuditta Pezzotta

A novel value driven co-creation framework

Geir Ringen, Halvor Holtskog, Torgeir Welo NTNU, Norway

Monday, August 31, 2020

A framework to support value co-creation in PSS development

Martha Orellano¹, Xavier Boucher², Gilles Neubert³

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: emlyon business school, CNRS, UMR 5600 EVS,

F-42009, Saint-Etienne, France

Value chain integration - a framework for assessment

Inger Gamme¹, Bjørn Andersen², Håkon Raabe¹,

Daryl Powell^{1,2}

- 1: SINTEF Manufacturing, Norway;
- 2: Norwegian University of Science and Technology, Norway

Using Service Dominant logic to assess the value co-creation of Smart Services

Oliver Stoll¹, Shaun West¹, Cosimo Barbieri²

- 1: Lucerne University of Applied Sciences and Arts, Switzerland:
- 2: Università degli Studi di Firenze, Viale G. Morgagni 40
- 50134, Italy

The role of service business models in the manufacturing of transition economies

Slavko Rakic, Nenad Simeunovic, Nenad Medic,

Marko Pavlovic, Ugljesa Marjanovic

University of Novi Sad, Faculty of Technical Sciences,

Novi Sad. Serbia

Scientific Program

DETAILED AGENDA

Monday, August 31, 2020

Reshoring of service operations: evidence from a Delphi study

Paolo Gaiardelli, Albachiara Boffelli, Matteo Kalchschmidt, Daniel Bellazzi, Simone Orom Samorani University of Bergamo, Italy

13:15 - 15:15

Digital Twins & Shadows - Part II

Multimedia Hall - 2nd floor

Chairs: Dimitris Kiritsis & Frederick Birtel

Digital Shadows as an enabler for the internet of production

Günther Schuh, Andreas Gützlaff, Frederick Sauermann, Judith Maibaum Werkzeugmaschinenlabor WZL der RWTH Aachen, Germany

Digital and physical testbed for production logistics operations

Jannicke Baalsrud Hauge^{1,2}, Masoud Zafarzadeh¹, Yongkuk Jeong¹, Yi Li³, Wajid Ali Khilji¹,

Magnus Wiktorsson¹

1: KTH Royal Institute of Technology, Sustainable production system, Södertälje, Sweden;

2: Bremer Insitut fur Produktion und Logistik GmbH (BIBA), Bremen, Germany;

3: Fraunhofer-Chalmers Centre for Industrial Mathematics Gothenburg, Sweden

First Steps to the Digital Shadow of Maintenance Services' Value Contribution

Frederick Birtel¹, Achim Kampker², Volker Stich¹

Monday, August 31, 2020

1: Research Institute for Industrial Management (FIR) at

RWTH Aachen University, Germany;

2: Chair Production Engineering of E-Mobility

Components at RWTH Aachen University, Germany

Process Mining in Manufacturing: Goals, Techniques and Applications

Darko Stefanovic, Dusanka Dakic,

Branislav Stevanov, Teodora Lolic

University of Novi Sad, Serbia, Faculty of Technical

Sciences

Integrated Platform and Digital Twin Application for Global Automotive Part Suppliers

Jinho Yang¹, Sangho Lee¹,

Yong-Shin Kang¹,

Sang Do Noh¹, Sung Soo Choi², Bo Ra Jung²,

Sang Hyun Lee², Jeong Tae Kang²,

Dae Yub Lee³, Hyung Sun Kim³

- 1: Sungkyunkwan University, Republic of Korea;
- 2: Yura, Republic of Korea;
- 3: DEXTA Inc., Republic of Korea

The successful commercialization of a digital twin in an industrial product service system

Oliver Stoll¹, Shaun West¹, Paolo Gaiardelli²,

David Harrison³, Fintan Corcoran⁴

1: Lucerne University of Applied Sciences and Arts,

Switzerland:

2: Università degli studi di Bergamo,

24129 Bergamo, Italy;

3: Glasgow Caledonian University,

Glasgow G4 oBA, Scotland UK;

4: Mebag, Planungs- und Bauträger AG,

Cham CH-6330, Switzerland

Scientific Program

DETAILED AGENDA

Monday, August 31, 2020

13:15 - 15:15

Reconfig., Flex. & Agile Mfg. - Part I

Reading Room - ground floor

Chairs: Alexandre Dolgui & Xavier Delorme

A computational method for identifying the optimum buffer size in the era of Zero Defect Manufacturing

Foivos Psarommatis, Ali Boujemaoui,

Dimitris Kiritsis

École polytechnique fédérale de Lausanne,

Switzerland

A Bi-objective Scheduling Model for Additive Manufacturing with Multiple Materials and Sequence-dependent

Setup Time

Reza Tavakkoli-Moghaddam, Shadi Shirazian,

Behdin Vahedi-Nouri

University of Tehran

A Method of Distributed Production Management for Highly-Distributed

Flexible Job Shops

Daiki Yasuda¹, Eiji Morinaga²,

Hidefumi Wakamatsu¹

1: Osaka University, Japan;

2: Osaka Prefecture University, Japan

Dynamic Distributed Job-Shop Scheduling Problem Consisting of Reconfigurable Machine Tools

Mehdi Mahmoodjanloo,

Reza Tavakkoli-Moghaddam¹,

Armand Baboli², Ali Bozorgi-Amiri¹

1: University of Tehran;

2: INSA of Lyon

Scientific Program

DETAILED AGENDA

Monday, August 31, 2020

Towards a Non-Disruptive System for Dynamic Orchestration of the Shop Floor

Milan Pisarić¹, Vladimir Dimitrieski²,

Marko Vieštica²,

Goran Krajoski¹

1: Industrial Automation, KEBA AG, Linz, Austria;

2: University of Novi Sad,

Faculty of Technical Sciences, Novi Sad, Serbia

Balancing and configuration planning of RMS to minimize energy cost

Audrey Cerqueus, Paolo Gianessi,

Damien Lamy,

Xavier Delorme

Mines Saint-Etienne.

Univ Clermont Auvergne, CNRS,

UMR 6158 LIMOS, Institut Henri Fayol,

F - 42023 Saint-Etienne France

15:30 - 16:15

KEYNOTE I: How to execute digital transformation? Lessons from manufacturing industry

Amphitheater - ground floor

Prof. Dr. Ivanka Visnjic

ESADE, Ramon Llull University, Spain

16:30 - 18:30

Digital Transformation - Part III

Amphitheater - ground floor

Chairs: Vlad Bocanet & Bahrudin Hrnjica

Scientific Program

DETAILED AGENDA

Monday, August 31, 2020

Achieving Business Model Innovation with the Personalized Product Business Model Radar Template

Egon Lüftnegger^{1,2}

1: BusinessModelRadar.com;

2: CAMPUS 02

University of Applied Sciences, Austria

Integrating electronic components into 3D printed parts to develop a digital manufacturing approach

Ioan Turcin^{1,2}, Ali Abdallah¹, Cosmin Cosma²,

Manfred Pauritsch¹, Nicolae Balc²

1: CAMPUS 02

University of Applied Sciences in Graz, Austria;

2: Technical University of Cluj-Napoca, Romania

The Application of ICT Software Solutions in Manufacturing Sector in Serbia

Danijela Ciric, Teodora Lolic, Danijela Gracanin, Darko Stefanovic, Bojan Lalic University of Novi Sad,

Faculty of Technical Sciences, Serbia

Retrofit Concept for Textile Production

Felix Franke, Susanne Franke, Ralph Riedel TU Chemnitz, Germany

Smart contract-based blockchain solution to reduce supply chain risks

Fabian Dietrich^{1,2}, Ali Turgut³, Daniel Palm^{1,4}, Louis Louw²

Monday, August 31, 2020

1: ESB Business School, Reutlingen University,

Alteburgstr. 150, 72762 Reutlingen, Germany;

2: Department of Industrial Engineering, University of Stellenbosch, 145 Banghoek Rd., 7600, South Africa;

3: Steinbeis-Innovationszentrum Transferplattform Industrie 4.0, Alteburgstr. 150, 72762 Reutlingen, Germany;

4: Fraunhofer Institute for Manufacturing Engineering and Automation, Alteburgstr. 150, 72762 Reutlingen, Germany

The Potential of Game Development Platforms for Digital Twins and Virtual Labs: Case Study of an Energy Analytics and Solution Lab

Ali Abdallah, Matthias Primas, Ioan Turcin,

Udo Traussnigg

CAMPUS 02, University of Applied Sciences,

Graz 8010. Austria

16:30 - 18:30

Data-Driven Applications

Multimedia Hall - 1st floor

Chairs: Magnus Wiktorsson & Sang Do Noh

Smart Factory Competitiveness based on real time Monitoring and Quality predictive model applied to multi-stages Production lines

Nicola Gramegna¹, Fabrizio Greggio¹,

Franco Bonollo²

1: EnginSoft SpA, Italy;

2: Università di Padova - DTG, Italy

Scientific Progran

DETAILED AGENDA

Monday, August 31, 2020

A framework of data-driven dynamic optimisation for smart production logistics

Sichao Liu¹, Lihui Wang¹, Xi Vincent Wang¹, Magnus Wiktorsson²

1: Department of Production Engineering, KTH Royal Institute of Technology, 1044 Stockholm, Sweden;

2: Department of Sustainable Production Develoment,

KTH Royal Institute of Technology,

15181 Södertälje, Sweden

Workforce Assignment with a Different Skill Level for Automotive Parts Assembly Lines

Hyungjoon Yang¹, Je-Hun Lee², Hyun-Jung Kim¹

- 1: KAIST;
- 2: Sungkyunkwan University

A New Application of Coordination Contracts for Supplier Selection in a Cloud Environment

Reza Tavakkoli-Moghaddam, Mohammad Alipour-Vaezi, Zahra Mohammad-Nazari University of Tehran

Decentralized Industrial IoT Data Management Based on Blockchain and IPFS

Xiaochen Zheng¹, Jinzhi Lu¹, Shengjing Sun², Dimitris Kiritsis¹

1: École polytechnique fédérale de Lausanne, Switzerland:

2: ETSII, Universidad Politécnica de Madrid, Spain

SKOS Tool: A Tool for Creating Knowledge Graphs to Support Semantic Text Classification

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

Monday, August 31, 2020

16:30 - 18:30

Collaborative Robotics Applications

Multimedia Hall - 2nd floor

Chairs: Åsa Fasth-Berglund & Jan Ola

A Literature review on the Level of Automation and new approach proposal

Hasnaa Ait Malek^{1,2}, Alain Etienne²,

Ali Siadat², Thierry Allavena¹

1: PSA Groupe, France;

2: LCFC. France

Framework for identifying gripper requirements for collaborative applications in manufacturing

Omkar Salunkhe, Patrik Fager, Åsa Fast-Berglund Chalmers University of Technology, Gothenburg Sweden

Gripper types and components in robotic bin picking Patrik Fager¹, Stefano Rossi², Robin Hanson¹,

Lars Medbo¹, Omkar Salunkhe¹, Mats Johansson¹,

Åsa Fasth-Berglund¹

1: Chalmers University of Technology, Sweden;

2: University of Padova, Italy

A Simulation Analysis of Part Feeding to Assembly Stations with Vertical Robotic Storage and Retrieval Systems

Elena Tappia, Emilio Moretti, Marco Melacini Politecnico di Milano, Italy

Monday, August 31, 2020

Autonomous mobile robots in hospital logistics

Giuseppe Fragapane, Hans-Henrik Hvolby, Fabio Sgarbossa, Jan Ola Strandhagen Norwegian University of Science and Technology, Norway

Planning environments of hospital laboratories: An exploratory study

Aili Biriita Bertnum, Marco Semini, Jan Ola Strandhagen Norwegian University of Science and Technology, Norway

16:30 - 18:30

Reconfig., Flex. & Agile Mfg. - Part II

Reading Room – ground floor

Chairs: Xavier Delorme & Alexandre Dolgui

Towards a reference model for configuration of reconfigurable manufacturing system (RMS)

Erica Capawa Fotsoh^{1,2}, Nasser Mebarki², Pierre Castagna², Pascal Berruet³, Francisco Gamboa¹

- 1: IRT jules Verne/LS2N, France;
- 2: Nantes University, IUT of Nantes, LS2N;
- 3: Lab-STICC Research Center, University

of South-Brittany

Towards an Industry-Applicable Design Methodology for Developing Reconfigurable Manufacturing

Alessia Napoleone¹, Ann-Louise Andersen¹, Ditlev Brunoe¹, Kjeld Nielsen¹, Simon Boldt², Carin Rösiö², David Grube Hansen³

Monday, August 31, 2020

- 1: Aalborg University, Denmark;
- 2: Jönköping University;
- 3: University of Southern Denmark

Reconfigurable Digitalized and Servitized Production Systems: Requirements and Challenges

Magdalena Paul¹, Audrey Cerqueus²,

Daniel Schneider¹.

Hichem Haddou Benderbal³,

Xavier Boucher², Damien Lamy⁴,

Gunther Reinhart¹

- 1: Technical University of Munich, Germany;
- 2: Mines Saint-Etienne, Univ Clermont Auvergne,

CNRS. France:

- 3: IMT Atlantique, France;
- 4: Mines Saint-Etienne, Institut Henri Fayol, France

Reconfigurable Manufacturing: Lesson Learnt from the COVID-19 Outbreak

Alessia Napoleone¹, Lorenzo Bruno Prataviera²

- 1: Aalborg University, Denmark;
- 2: Politecnico di Milano, Italy

Assembly process design: performance evaluation under ergonomics consideration using several robot collaboration modes

Anthony Quenehen, Stephane Thiery, Nathalie Klement, Lionel Roucoules, Olivier Gibaru

Arts et Metiers Institute of Technology, France

The impact of dynamic tasks assignment in paced mixed-model assembly line with moving workers

Seyyed Ehsan Hashemi-Petroodi¹, Simon Thevenin¹,

Sergey Kovalev², Alexandre Dolgui¹

- 1: IMT-Atlantique, Nantes, France;
- 2: INSEEC Business School, Lyon, France

Scientific Progran

DETAILED AGENDA

Tuesday, September 1, 2020

10:15 - 12:15

Digital Lean Manufacturing

Amphitheater - ground floor

Chairs: Daryl Powell & David Romero

A Learning Roadmap for Digital Lean Manufacturing

Anja Bottinga Solheim, Daryl John Powell

SINTEF Manufacturing, Norway

New Forms of Gemba Walks and their Digital Tools in the Digital Lean Manufacturing World

David Romero¹, Paolo Gaiardelli², Thorsten Wuest³,

Daryl Powell⁴, Matthias Thürer⁵

- 1: Tecnológico de Monterrey, Mexico;
- 2: University of Bergamo, Italy;
- 3: West Virginia University, USA;
- 4: SINTEF Manufacturing AS, Norwa;
- 5: Jinan University, China

Investigating the Challenges and Opportunities for Production Planning and Control in

Digital Lean Manufacturing

Daryl Powell^{1,2}, Eirin Lodgaard¹, Heidi Dreyer²

- 1: SINTEF Manufacturing, Norway;
- 2: Norwegian University of Science and Technology, Norway

Lean Thinking: from the shop floor to an organizational culture

Paulo Amaro, Anabela C. Alves, Rui M. Sousa University of Minho, Portugal

Utilizing Lean Thinking as a Means to Digital Transformation in Service Organizations

Felix Preshanth Santhiapillai, Chandima Ratnayake University of Stavanger, Norway

Tuesday, September 1, 2020

Assessing the Value of Process

Improvement Suggestions

Torbjørn Netland¹, Hajime Mizuyama², Rafael Lorenz¹

1: ETH Zurich. Switzerland:

2: Aoyama Gakuin University, Japan

10:15 - 12:15

Gastronomic Service System Design

Multimedia Hall - 1st floor

Chairs: Tomomi Nonaka & Nobutada Fujii

Human-Robot Hybrid Service System Introduction for Enhancing Labor and Robot Productivity

Takeshi Shimmura¹, Ryosuke Ichikari²,

Takashi Okuma²

- 1: Ritsumeikan University, Japan;
- 2: National Institute of Advance Industrial

Science and Technology

Forecasting Customers Visiting using Machine Learning and Characteristics Analysis with Low Forecasting Accuracy Days

Takashi Tanizaki¹, Yuta Hanayama¹, Takeshi Shinmura²

1: Graduate School of Systems Engineering,

Kindai University, Japan;

2: Ritsumeikan University, Japan

A study on menu planning method for managed meal -Consideration of the cost of ordering ingredients

Kyohei Irie, Fuji Nobutada, Daisuke Kokuryo,

Toshiya Kaihara

Graduate School of System Informatics,

Kobe University, Japan

Scientific Progran

DETAILED AGENDA

Tuesday, September 1, 2020

Service system design considering employee satisfaction through introducing service robots

Tomomi Nonaka¹, Takeshi Shimmura¹, Nobutada Fujii²

- 1: Ritsumeikan University, Japan;
- 2: Kobe University, Japan

Effectiveness of Vendor Managed Inventory [VMI] in

Explosive Inventory Management

Alexandre Formigoni¹, Joao Gilberto Mendes Dos Reis², Roberto Moia¹, Caio Stettiner¹,

Joan Maiellaro¹

- 1: Centro Paula Souza:
- 2: Universidade Paulista, Brazil

10:15 - 12:15

Product & Assets Lifecycle Mgmt.

Multimedia Hall - 2nd floor

Chairs: Irene Roda & Adalberto Polenghi

Exploring synergies between Circular

Economy and Asset

Management

Federica Acerbi, Adalberto Polenghi, Irene Roda,

Marco Macchi, Marco Taisch

Politecnico di Milano, Italy

A conceptual model of the IT ecosystem for

Asset Management in the global

manufacturing context

Adalberto Polenghi, Irene Roda, Marco Macchi,

Alessandro Pozzetti

Politecnico di Milano, Italy

Tuesday, September 1, 2020

Data-driven maintenance delivery framework: test in an Italian company

Roberto Sala, Fabiana Pirola, Giuditta Pezzotta University of Bergamo, Italy

Information flows supporting Circular Economy adoption in the manufacturing sector

Federica Acerbi, Marco Taisch Politecnico di Milano, Italy

Bayesian Modelling for Product Testing and Release

John Wilson Ivey Business School, Canada

Agent-Based Modeling and Analysis of Dynamic Slab Yard Management in a Steel Factory

Hajime Mizuyama Aoyama Gakuin University, Japan

10:15 - 12:15

Blockchain & Logistics 4.0

Reading Room – ground floor

Chairs: Ugljesa Marjanovic & Chiara Cimini

Identifying the opportunities for enhancing the digital readiness level of the supply chain

Chiara Cimini, Fabiana Pirola, Sergio Cavalieri Department of Management, Information and Production Engineering,

University of Bergamo, Italy

Scientific Progran

DETAILED AGENDA

Tuesday, September 1, 2020

Evaluating a Blockchain-based supply chain purchasing process through simulation

Geraldo Jose Dolce Uzum Martins¹.

Jacqueline Zonichenn Reis²,

Benedito Cristiano Petroni².

Rodrigo Franco Gonçalves^{1,2}, Berislav Andrlić³

- 1: Politecnic School, University of Sao Paulo;
- 2: Universidade Paulista, Brazil:
- 3: Polytechnic in Pozega, Croatia

Blockchain-based secured collaborative model for supply chain resource sharing and visibility

Tarun Kumar Agrawal¹, Ravi Kalaisrasan^{1,2},

Magnus Wiktorsson¹

1: KTH Royal Institute of Technology,

Södertälje, Sweden;

2: Scania CV AB, Södertälje, Sweden

A Robust Multi-Commodity Rebalancing Process in

Humanitarian Logistics

Xuehong Gao¹, Xuefeng Jin²

- 1: Pusan National University, Busan, Korea;
- 2: Alibaba (China) Co., Ltd, Alibaba Supply Chain

Platform, Hangzhou, China

Travel-Times Analysis and Passenger Transport

Disutilities in Congested

American Cities:

Los Angeles, New York, Atlanta,

Austin, and Chicago

Helcio Raymundo, Joao Gilberto Mendes Dos Reis RESUP/PPGEP - Universidade Paulista, Brazil

Tuesday, September 1, 2020

The Role of Last-Mile Delivery in the Future of E-commerce

Fernanda Alves De Araujo¹.

Joao Gilberto Mendes Dos Reis^{1,2},

Paula Ferreira Da Cruz Correia¹

1: Universidade Paulista, Brazil:

2: Universidade Federal da Grande Dourados, Brazil

13:15 - 14:00

KEYNOTE II: Industrial digitalization – the way to autonomous systems

Amphitheater - ground floor

Dr. Marco Ulrich

ABB Corporate Research Center, Germany

14:00 - 14:45

Panel I: Women in Production Management

Amphitheater - ground floor

Chair: Irene Roda

15:00 - 17:00

Smart Manufacturing & Industry 4.0

Amphitheater - ground floor

Chairs: Thorsten Wuest & Boonserm (Serm) Kulvatunyou

Smart Products in Smart Manufacturing Systems: An Opportunity to Utilize AR?

Thorsten Wuest, Joshua Gross

West Virginia University, United States of America

Tuesday, September 1, 2020

Manufacturing Operations Management for Smart Manufacturing – A Case Study

Oliver Lohse¹, Michael Meyer-Hentschel¹,

Subba Rao², Raffaello Lepratti³

- 1: Siemens AG, Corporate Technology, Germany;
- 2: Siemens Industry Software Inc., Digital Industries,

USA; 3: Siemens AG, Digital Industries, Germany

Industry 4.0: maturity of automotive companies in Brazil for the digitization of processes

Sergio Miele Ruggero, Nilza Aparecida Santos,

José Benedito Sacomano,

Antonio Carlos Estender, Marcia Terra

Universidade Paulista Unip, Brazil

The impact of Industry 4.0 connectivity on the collaboration along Brazilian automotive supply chain

Nilza Aparecida Dos Santos^{1,2}, Sergio Miele Ruggero¹,

Jose Benedito Sacomano¹.

Antonio Carlos Estender¹, Marcia Terra¹

- 1: Universidade Paulista Unip, Brazil;
- 2: Fatec Cotia

An Application of a DSML in Industry 4.0

Production Processes

Marko Vještica¹, Vladimir Dimitrieski¹,

Milan Pisarić², Slavica Kordić¹,

Sonja Ristić¹, Ivan Luković¹

1: University of Novi Sad,

Faculty of Technical Sciences, Novi Sad, Serbia;

2: Industrial Automation.

KEBA AG. Linz. Austria

Tuesday, September 1, 2020

Digital transformation and its potential effects on future management:

Insights from an ETO context

Antoni Vike Danielsen

Norwegian University of Science and Technology,

Norway

15:00 - 17:00

Scheduling Methods

Multimedia Hall - 1st floor

Chair: Toshiya Kaihara

Automatic Design of Dispatching Rules with Genetic Programming for Dynamic Job Shop Scheduling

Shady Salama, Toshiya Kaihara, Nobutada Fujii,

Daisuke Kokuryo

Graduate School of System Informatics,

Kobe University

A basic study on scheduling method for electric power saving of production machine

Masayuki Yabuuchi¹, Toshiya Kaihara¹,

Nobutada Fujii¹, Daisuke Kokuryo¹,

Satoko Sakajo², Yoshito Nishita²

- 1: Kobe University;
- 2: Mitsubishi Electric Corporation

A dynamic hybrid Berth Allocation Problem with routing constraints in bulk ports

Hamza Bouzekri^{1,2}, Gülgün Alpan^{1,2},

Vincent Giard^{1,3}

- 1: EMINES School of Industrial Management, Mohammed VI Polytechnic University;
- 2: Univ. Grenoble Alpes, Grenoble INP, CNRS, G-SCOP;

Scientific Program

DETAILED AGENDA

Tuesday, September 1, 2020

3: Université Paris-Dauphine, PSL Research University

Towards inter-operable enterprise systems – graph-based validation of a context-driven approach for message profiling

Elena Jelisic¹, Nenad Ivezic², Boonserm Kulvatunyou²,

Scott Nieman³, Hakju Oh², Sladjan Babarogic¹,

Zoran Marjanovic¹

- 1: Faculty of organizational sciences, Belgrade, Serbia;
- 2: National Institute of Standards and Technology,

Gaithersburg, MD, USA;

3: Land O'Lakes, Shoreview, MN, USA

15:00 - 17:00

The Operator 4.0

Multimedia Hall - 2nd floor

Chairs: David Romero & Johan Stahre

Challenges for the Operator 3.0 Addressed Through the Enabling Technologies of the Operator 4.0

Malin Tarrar¹, Peter Thorvald^{1,2},

Åsa Fasth-Berglund¹, David Romero³

- 1: Chalmers University of Technology, Sweden;
- 2: University of Skövde, Sweden;
- 3: University of Monterrey, Mexico

Knowledge Strategies for

Organisation 4.0

Magnus Gerdin¹, Adam Palmkvist¹, Dan Li²,

Åsa Fast-Berglund²

- 1: Insert Coin:
- 2: Chalmers

Tuesday, September 1, 2020

Production Management as-a-Service:

A Softbot Approach

Brunno Abner Machado¹, Ricardo J. Rabelo¹,

Saulo Popov Zambiasi², David Romero³

- 1: Federal University of Santa Catarina, Brazil;
- 2: University of Southern Santa Catarina, Brazil;
- 3: Tecnológico de Monterrey, Mexico

Improving the Safety of Using Didactic Setups by Augmented Reality

Srdjan Tegeltija, Vule Reljić, Ivana Šenk,

Laslo Tarjan, Branislav Tejić

University of Novi Sad, Faculty of Technical Sciences,

21000 Novi Sad. Serbia

Facilitating Operator Participation in Continuous Improvement: An Investigation of

Organizational Factors

Eirin Lodgaard, Silje Helene Aschehoug, Daryl Powell SINTEF Manufacturing, Norway

Agent- and Skill-based Process Interoperability for Socio-Technical Production Systems-of-Systems

Åsa Fast-Berglund¹, David Romero²,

Magnus Åkerman¹, Björn Hodig³, Anderas Pichler⁴

- 1: Chalmers University of Technology, Sweden;
- 2: Tecnológico de Monterrey, Mexico;
- 3: PTC, Sweden;
- 4: PROFACTOR GmbH, Austria

Scientific Program

DETAILED AGENDA

Tuesday, September 1, 2020

15:00 - 17:00

Production Logistics 4.0

Reading Room - ground floor

Chairs: Jannicke Baalsrud & Gregor von Cieminski

Tools for Evaluating Human Factor Aspects in Production and Logistics System

Vivek Vijayakumar, Fabio Sgarbossa Norwegian University of Science and Technology, Norway

Supporting the Decision of the Order Processing Strategy by using Logistic Models: A Case Study

Janine Tatjana Maier¹, Tammo Heuer²,

Peter Nyhuis², Matthias Schmidt¹

1: Institute of Product and Process Innovation, Leuphana

University of Lüneburg, Universitätsallee 1,

21335 Lüneburg, Germany;

2: Institute of Production Systems and Logistics, Leibniz

Universität Hannover, An der Universität 2,

30823 Garbsen, Germany

Towards a unified reliability-centered information logistics model for production assets

Florian Defèr, Günther Schuh, Volker Stich FIR e.V. an der RWTH Aachen, Germany

Streaming Analytics in Edge-Cloud Environment for Logistics Processes

Moritz von Stietencron¹, Marco Lewandowski¹,

Katerina Lepenioti², Alexandros Bousdekis²,

Karl Hribernik¹, Dimitris Apostolou^{2,3},

Gregoris Mentzas²

1: BIBA - Bremer Institut für Produktion und Logistik GmbH;

Tuesday, September 1, 2020

- 2: ICCS Institute of Communications and Computer Systems;
- 3: Department of Informatics, University of Piraeus

Order acceptance and scheduling with a throughput diagram

Christopher Mundt, Hermann Lödding University of Technology Hamburg, Germany

Production-storage and transport integrated planning for a multi-site mining industry

Asma Rakiz^{1,2}, Pierre Fenies^{1,2}

- 1: Université Mohammed VI Polytechnique;
- 2: Université Paris II Panthéon Assas

Scientific Progran

DETAILED AGENDA

Wednesday, September 2, 2020

10:15 - 12:15

Sustainable Manufacturing

Amphitheater - ground floor

Chairs: Ralph Riedel & Bojan Lalić

Towards sustainability: The manufacturers' perspective

Olena Klymenko, Lise Lillebrygfjeld Halse,

Bjørn Jæger

Molde University College, Norway

A methodology to integrate sustainability evaluations into vendor rating

Alessandro Fontana, Silvia Menato, Andrea Barni SUPSI. Switzerland

Application of Virtual Reality Technologies for Achieving Energy Efficient Manufacturing: Literature Analysis and Findings

E. G. Nabati¹, M. T. Alvela Nieto¹,

A. Decker², K.-D. Thoben¹

1: University of Bremen, Faculty of Production

Engineering, BIK-Institute for Integrated Product

Development, 28359 Bremen, Germany;

2: BIBA - Bremer Institut für Produktion und Logistik

GmbH at the University of Bremen, 28359 Bremen,

Germany

Characterization of energy consumers in production systems with renewable on-site power generation

Julia Schulz, Felix Rosenberg, Valerie M. Scharmer,

Michael F. Zaeh

Institute of Machine Tools and Industrial Management (iwb), Technical University of Munich, Germany

Wednesday, September 2, 2020

Sustainable Business Model Innovation in Furniture Supply Chain: A Case Study

Mikhail Shlopak, Bella B. Nujen, Jon Halfdanarson Møreforsking Molde AS, Norway

10:15 - 12:15

Quality & Risk Management

Multimedia Hall - 1st floor

Chairs: Milan Delic & Ugljesa Marjanovic

Questionnaire model for paraconsistent quality assessment of software developed in Sales Force

Luiz Roberto Forçan, Jair Minoro Abe, Luiz Antonio de

Lima, Samira Sestari Nascimento

Paulista University, Brazil

An Improvement in Master Surgical Scheduling using Artificial Neural Network and Fuzzy Programming Approach

Ahmad Ghasemkhani, Reza Tavakkoli-Moghaddam, Mehdi Hamid, Mehdi Mahmoodjanloo University of Tehran

Insights from a top-down lean subprogram deployment in a corporate group:

The use of deployment tactics

Sara Victoria Linderson, Monica Bellgran, Seyoum Eshetu Birkie

KTH Royal Institute of Technology, Sweden

On the Necessity for Identifying Waste in Knowledge Work Dominated Projects: A Case Study from Oil & Gas-Related Product Development Projects

Felix Preshanth Santhiapillai, Chandima Ratnayake University of Stavanger, Norway

Scientific Program

DETAILED AGENDA

Wednesday, September 2, 2020

De-risking investments in industrial systems using Real Options Analysis:

Case of chemical industry

Imane Essaadi¹, Richard de Neufville²

1: EMINES - Mohammed VI Polytechnique University; 2:

Institute for Data, Systems and Society,

Massachusetts Institute of Technology

On the Need of Functional Priority and Failure Risk

Assessment to Optimize Human Resource

Allocation in Public Service Organizations

Felix Preshanth Santhiapillai, Chandima Ratnayake

University of Stavanger, Norway

10:15 - 12:15

Human Resources Management

Multimedia Hall - 2nd floor

Chairs: David Romero & Johan Stahre

Gamification of Operational Tasks in Manufacturing -

A Literature Review

Makenzie Keepers¹, David Romero²,

Jannicke Baalsrud Hauge³, Thorsten Wuest¹

1: West Virginia University,

United States of America;

- 2: Tecnológico de Monterrey, Mexico;
- 3: Bremer Institut für Produktion und Logistik GmbH at

the University of Bremen, Germany

Evaluation of Augmented Reality in Industry

Tone Lise Dahl, Manuel Oliveira, Emrah Arica SINTEF, Norway

Wednesday, September 2, 2020

Virtual and Augmented reality as a digital support to HR systems in production management

Danijela Lalić, Dunja Bošković, Bojana Milić,

Sara Havzi, Jelena Spajić

University of Novi Sad, Faculty of Technical Sciences,

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The interdependencies of Quality Management,

Knowledge Management and Innovation

Performance. A literature review

Marina Žižakov. Stana Vasić. Milan Delić.

Marko Orošnjak, Srđan Vulanović

Faculty of Technical Sciences, University of Novi Sad,

Serbia

The Use of Organizational Innovation Concepts in Manufacturing Companies

Iztok Palčič, Simon Klančnik, Robert Ojsteršek, Tone

Lerher, Borut Buchmeister, Mirko Ficko

University of Maribor,

Faculty of Mechanical Engineering, Slovenia

Interorganizational learning in manufacturing networks

Geir Ringen¹, Frode Paalsrud¹, Eirin Lodgaard²

1: NTNU, Norway;

2: Sintef Manufacturing

10:15 - 12:15

Food Supply Chains - Part I

Reading Room - ground floor

Chairs: Irenilza de Alencar Nääs & João Mendes

Wednesday, September 2, 2020

Food Bank: A Proposal for Short Agri-Food Chains

Aguinaldo Eduardo de Souza,

João Gilberto Mendes dos Reis, Antonio

Carlos Estender, Jorge Luiz Dias Agia,

Oduvaldo Vendrametto, Luciana Melo Costa,

Paula Ferreira da Cruz Correia

Paulista University - UNIP, PPGEP, Sao Paulo, Brazil

The New Frontiers in

World Soybean Production:

An Analysis of Savanna in Piaui, Brazil

José Alberto Alencar Luz^{2,1}.

João Gilberto Mendes Dos Reis^{1,2},

Alexandre Formigoni^{3,4}

1: RESUP/PPGEP - Universidade Paulista.

São Paulo, Brazil:

- 2: Postgraduate Program in Production Engineering UNIP/UNIFSA:
- 3: Universidade Federal da Grande Dourados, Brazil;
- 4: Postgraduate Program in Gestão Tecnologia em Sistemas Produtivos, Brazil

Prediction of cold chain transport conditions using data mining

Clayton Mangini, Nilsa Lima, Irenilza de Alencar Nääs Paulista University-Graduate Program in Production Engineering, Brazil

A Digital Twin modular framework for Reconfigurable Manufacturing Systems

Hichem Haddou Benderbal¹.

Abdelkrim R. Yelles-Chaouche^{1,2}, Alexandre Dolqui¹

- 1: IMT Atlantique, LS2N-CNRS, Nantes, France;
- 2: IRT Jules Verne, Bouguenais, France

Wednesday, September 2, 2020

Managing Perishable Multi-Product Inventory with Supplier Fill-Rate,

Price Reduction and Substitution Flemming Max Møller Christensen, Kenn Steger-Jensen, Iskra Dukovska-Popovska Aalborg University, Denmark

Potential benefits of Reverse Blending in the fertilizer industry

Latifa Benhamou¹, Pierre Fenies², Vincent Giard³

- 1: Mohammed VI Polytechnic University, Morocco;
- 2: Panthéon Assas Paris II University, France;
- 3: Paris-Dauphine University, France

13:15 - 14:00

KEYNOTE III: Innovation for industry key technologies: Evidence from China

Amphitheater – ground floor **Prof. Dr. Jin Chen Tsinghua University, China**

14:00 - 14:45

Panel II: Digital Transformation and the Social Factory of Things, Services and People

Amphitheater – ground floor Chair: Gregor Von Cieminski

Scientific Progran

DETAILED AGENDA

Wednesday, September 2, 2020

15:00 - 17:00

Circular Manufacturing

Amphitheater – ground floor

Chairs: Mélanie Despeisse & Federica Acerbi

Economy and its symbiosis with Circularity

Abelino Reis Guimarães Neto,

Jacqueline Zonichenn Reis, Julio Cesar Raymundo,

Rodrigo Franco Gonçalves, Rodrigo Rodrigues

UNIP. Brazil

Knowledge and practices towards sustainability and circular economy transitions:

A Norwegian manufacturing perspective

Jon Halfdanarson¹, Nina Pereira Kvadsheim^{1,2}

- 1: Møreforsking Molde AS, Norway;
- 2: Molde University College, Norway

Finding and Capturing Value in e-Waste for Refrigerators Manufacturers & Recyclers

Clarissa A. González Chávez¹, Mélanie Despeisse¹,

Björn Johansson¹, David Romero²

- 1: Chalmers University of Technology, Sweden;
- 2: Tecnológico de Monterrey, Mexico

Changeable Closed-Loop Manufacturing Systems:

A Case Study of Challenges in Product Take-Back

Markus Thomas Bockholt¹, Ann-Louise Andersen¹,

Thomas Ditlev Brunoe¹, Jesper Hemdrup Kristensen¹,

Michele Colli¹, Peter Meulengracht Jensen²,

Brian Vejrum Wæhrens¹

1: Department of Materials and Production, Aalborg

University, Aalborg, Denmark;

2: Group Environment CoE, Group EHS, GRUNDFOS

Holding A/S, Bjerringbro, Denmark

Wednesday, September 2, 2020

The Potential for Purchasing function to Enhance Circular Economy Business Models for ETO production

Deodat Mwesiumo¹, Nina Pereira Kvadsheim^{1,2}, Bella Belerivana Nuien^{2,3}

- 1: Molde University College, Norway;
- 2: Molde University College, Norway, Møreforsking Molde AS;
- 3: Møreforsking Molde AS, Norwegian University of Science and Technology

Sustainability in fabric chains and garments for a circular economy

Solimar Garcia¹, Irenilza de Alencar Nääs¹,

Pedro Luiz de Oliveira Costa Neto¹,

João Gilberto Mendes dos Reis¹,

Valdice Neves Pólvora¹. Luiz Antonio de Lima¹.

Angel Antonio Gonzalez Martinez¹,

Vanessa Santos Lessa²

- 1: Paulista University, Brazil;
- 2: Universidade Presbiteriana Mackenzie, Brazil

15:00 - 17:00

Assembly Systems 4.0

Multimedia Hall – 1st floor

Chairs: Vidosav Majstorovic & Åsa Fasth-Berglund

Assembly issue resolution system using machine learning in aero engine manufacturing

Jörg Brünnhäußer¹, Sonika Gogineni¹, Jonas Nickel², Heiko Witte². Rainer Stark^{1,3}

Wednesday, September 2, 2020

- 1: Fraunhofer IPK, Pascalstraße 8-9, 10587 Berlin, Germany;
- 2: Rolls-Royce Deutschland, Eschenweg 11, 15827 Blankenfelde-Mahlow, Germany;
- 3: Technische Universität Berlin, Pascalstraße 8-9, 10587 Berlin, Germany

A simulation model supporting the production optimization for high-precision machines assembly

Andrea Monti, Donatella Corti, Dario Pietraroia Scuola universitaria professionale della Svizzera Italiana (SUPSI), Switzerland

Cycle Time Estimation Model for Hybrid Assembly Stations based on Digital Twin Concept

Dimitris Mourtzis, John Angelopoulos, Vasileios Siatras Laboratory for Manufacturing Systems and Automation, Department of Mechanical Engineering and Aeronautics, University of Patras, Greece

A stochastic model for a two-level disassembly lot-sizing problem under random lead time!

Lhem Slama¹, Oussama Ben-Ammar², Alexandre Dolqui¹, Faouzi Masmoudi³

- 1: IMT Atlantique, France;
- 2: Mines Saint-Etienne, France;
- 3: Engineering School of Sfax, Tunisia

Introduction to Material Feeding 4.0: strategic, tactical, and operational impact

Marco Simonetto, Fabio Sgarbossa Norwegian University of Science and Technology (NTNU), Norway

Wednesday, September 2, 2020

Data-driven Replenishment Method Choice in a Picking System

Simon Hummelshøj Sloth, Magnus Abildsten Bøgh,

Christian Møller Nielsen,

Konstantinos Panagiotis Konstantinidis, Inkyung Sung Aalborg University, Denmark

15:00 - 17:00

ETO Manufacturing

Multimedia Hall - 2nd floor

Chairs: Erlend Alfnes & Martin Rudberg

Factors affecting shipyard operations and logistics:

A framework and comparison of shipbuilding approaches

Jo Wessel Strandhagen¹, Yongkuk Jeong²,

Jong Hun Woo³, Marco Semini¹, Magnus Wiktorsson²,

Jan Ola Strandhagen¹, Erlend Alfnes¹

1: NTNU – Norwegian University of Science and

Technology, Norway;

- 2: KTH Royal Institute of Technology;
- 3: Seoul National University

Exploring the Path Towards Construction 4.0:

Collaborative Networks &

Enterprise Architecture Views

Ovidiu Noran^{1,3}, David Romero²,

Sorin Burchiu³

- 1: Griffith University, Australia;
- 2: Tecnológico de Monterrey, Mexico;
- 3: Technical University of Constructions Bucharest,

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DETAILED AGENDA

Wednesday, September 2, 2020

Using the Smartphone as an Augmented Reality Device in ETO Industry

Niklas Jahn, Axel Friedewald, Hermann Lödding Hamburg University of Technology, Hamburg, Germany

Planning procurement activities in ETO projects

Kristina Kjersem¹, Marte F. Giskeødegård²

- 1: Møreforsking Molde AS, Norway;
- 2: NTNU Ålesund

Maturity model for successful cost transformation in ETO companies

Johann Gregori, Ralph Riedel Chemnitz University of Technology, Germany

Cross-functional coordination before and after the CODP: an empirical study in the machinery industry

Margherita Pero¹, Violetta Giada Cannas²

- 1: Politecnico di Milano, Italy;
- 2: Carlo Cattaneo University LIUC

15:00 - 17:00

Food Supply Chains - Part II

Reading Room – ground floor

Chairs: João Mendes & Irenilza de Alencar Nääs

Principles and Research Agenda for Sustainable, Data-Driven Food Production Planning and Control

Maggie Bresler, Anita Romsdal,

Jan Ola Strandhagen, Olumide E. Oluyisola

Norwegian University of Science and Technology,

Norway

Wednesday, September 2, 2020

Digital Technology Enablers for Resilient and Customer Driven

Food Value Chains

Christos Emmanouilidis¹, Serafim Bakalis²

- 1: Cranfield University, United Kingdom;
- 2: University of Nottingham, United Kingdom

Software-based Assistance System for Decision Support on Supply Chain Level

Maria Linnartz, Volker Stich Institute for Industrial Management at RWTH Aachen University, Germany

Insights from a top-down lean subprogram deployment in a corporate group:

The use of deployment tactics

Sara Victoria Linderson, Monica Bellgran, Seyoum Eshetu Birkie KTH Royal Institute of Technology, Sweden

17:15 - 17:45

Closing Ceremony

Amphitheater – ground floor

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