



MIM 2019

Conference Program

9th IFAC Conference
on Manufacturing Modeling,
Management and Control
28/29/30 August 2019
Berlin, Germany



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MULTIMETHOD SIMULATION SOFTWARE



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Fluid library



Material handling library



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Network design & optimization



Supply chain simulation



Supply chain digital twin



Inventory optimization



Transportation planning



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— anylogistix.com



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Conference time-table

**PRE
CONF
DAY**

10:00 – 17:00	Company Tours		
18:00 – 21:00	Welcome Reception / Conference Registration		

**Aug
28th
Wed**

**DAY
1**

08:00 – 17:00		Registration	
09:00 – 09:45		Opening session	
09:45 – 10:30		Plenary session I	
10:30 – 11:00		Coffee break	
11:00 – 12:30	Technical Sessions	SupplyOn Work-shop	Doctoral Workshop
.....			
12:30 – 13:30		Lunch	
.....			
13:30 – 15:00		Plenary sessions II and III	
15:00 – 15:30		Coffee break	
15:30 – 17:20	Technical Sessions	anyLogistix Workshop	
.....			
19:00 – 22:00		Boat trip	

**Aug
29th
Thu**

**DAY
2**

08:30–10:20	Technical Sessions	Meet the Editors (starts at 9:00 AM)
10:30–11:00	Coffee break	
11:00–11:45	Plenary sessions IV and V	
12:30–13:30	Lunch	
13:30–14:15	Plenary sessions VI and VII	
15:00–15:30	Coffee break	
15:30–17:20	Technical Sessions	TC 5.2 Meeting (by invitation only)
18:30–22:30	Gala Dinner	

**Aug
30th
Fri**

**DAY
3**

08:30–10:20	Technical Sessions	Track Keynotes I and II (starts at 8:45 AM)	
10:30–11:00	Coffee break		
11:00–12:30	Technical Sessions	Track Keynote III; AnyLogic Workshop	
12:30–13:30	Lunch		
13:30–15:00	Technical Sessions	Track Keynotes IV and V	IJPR EB Meeting (by invitation only)
15:00–15:30	Coffee break		
15:30–17:20	Technical Sessions		IJISM EB Meeting (by invitation only)
17:30–18:30	Closing ceremony		

Plenary sessions, Track keynotes, and Special Events

Plenary speakers

Prof. Dr. Richard F. Hartl
(University of Vienna, Austria)

Aug 29th, Thu
13:30-14:15 (Audimax)

Solution approaches and incentive schemes in collaborative logistics planning

Collaborative planning of production and logistics operations is important for modern supply chains, where firms are forced to overcome inefficiencies in order to stay in business. The spectrum of collaborative planning goes from simple coordination of plans to centralized decision making. This might require that actors are willing to reveal parts of their business information to coalition partners. Digitalization and emerging concepts like cloud manufacturing make it possible that data can be exchanged extremely fast and in secure environments. However, firms might still not be willing to reveal critical data like their existing customers, cost structure or capacities. Auction-based mechanisms have the advantage that agents are enabled to indirectly share preference values, without having to reveal critical data. Based on a computational study, we investigate problems, where such mechanisms are powerful, but we also show their limitations. Dealing with collaborative decision making, we have to take game theoretical aspects into account. We identify desirable properties of the proposed mechanisms and elaborate on incentive compatibility and side payments.

Prof. Dr. Lenny Koh
(Scheffield University, UK)

Aug 28th, Wed
13:30-14:15 (Audimax)

What really matters today and in the future – From physical to digital to autonomous

In my talk, I will introduce some challenges and opportunities faced by society and industry, comment on the transformation of our world, and why resource sustainability and machine economy will take central stage in this transition.

Prof. Dr.-Ing. Holger Kohl
(TU Berlin, Germany)

Aug 29th, Thu
11:00-11:45 (Audimax)

Modular Shopfloor-IT – Intelligent Process Management of Customer-Specific Products

Customized processes have long become reality in traditional mass production. It is not uncommon to see production runs of 50.000 system products with an annual repetition rate of 1.4. Many clients not only call for custom product properties, but also additional tests to be conducted and recorded, making for production processes that need to be customized for every individual order. In the past, the changes to products and processes had to be laboriously integrated into every single system involved. The keynote will address a modular shop floor IT that makes such changes substantially easier

and has been developed by Fraunhofer IPK with partners from the automotive and plant engineering industries. The solution links up with the machine controllers to enable their interconnection, e.g. with the superordinate order management system. To introduce changes in a production process, all it needs is for the shop floor IT modules to be recombined, which leads to a much more efficient way to produce customer specific products.

Digitalization at Festo – Our way in digital transformation

As an innovative company and technology leader in industrial automation, Festo is embracing digitalization and Industry 4.0. This is underpinned by having an increasing product portfolio of automation components that are compatible with the Internet of Things as well as specially developed digital products and services. The objective is clear: creating added value for customers and increase efficiency and productivity. In addition, Festo is striving to provide customers with digital support as a part of its customer-oriented „Digital Customer Journey“ by offering digital tools for selection, configuration and digital support for the entire life cycle of a system. Festo has not only started undertaking numerous activities related to digitalization and Industry 4.0 for its customers, it is also doing so for its own value creation chain and business processes. As a part of the digital transformation, Festo pays particular attention to the human factors as well as Training 4.0. New digital technology requires a different way of working together, as well as new concepts for basic and further education.

Planning and scheduling by optimal control: fundamentals and applications to cyber-physical and Industry 4.0 systems

The paper is devoted to the new methodology and the techniques of optimal control applications to planning and scheduling Industry 4.0 systems, developed with a focus on the achievements of modern control theory. The paper covers fundamental principles and recent developments in the theory and application of optimal control to job shop, flow shop, hybrid discrete-continuous systems, customized service-oriented systems such as Industry 4.0, adaptive supply chains and virtual enterprises, ship building manufactory planning and scheduling, and aerospace control. The methodologi-

Andreas Oroszi
(Festo AG, Germany)

Aug 28th, Wed
14:15-15:00 (Audimax)

Prof. Dr. Boris Sokolov
(SPIIRAS, Russia)

Aug 29th, Thu
14:15-15:00 (Audimax)

cal part introduces three fundamental concepts, used in the theoretical and applied research: the concept of integrated modeling and simulation of complex objects (CO), the concept of proactive control and management, and the concept of intellectual control. The paper provides information on the developed innovative multiple-modal logical-dynamics complexes, combined methods, algorithms and techniques of solution for various classes of multi-criteria operational structural and functional synthesis of CO and their control systems' (CS) problems. The results presented were achieved via the implementation of the new applied theory of CO proactive structure dynamics monitoring and control. This theory is designed to accumulate the results of the classical control theory, operations research, artificial intelligence, as well as the system theory and the system analysis. For instance, within the framework of this theory complicated problems of Industry 4.0 systems planning and scheduling robustness analysis for severe capacity disruptions, as well as analysis of Industry 4.0 system can be performed. Moreover, the paper shows how new results of the theory of models' and multiple-model complexes' quality control can be implemented to the parametric and structure adaptations of the proposed multiple-modal logical-dynamics descriptions of Industry 4.0 systems planning and scheduling.

Prof. Dr. Srinivas Talluri
(Michigan State University,
USA)

Aug 29th, Thu
11:45-12:30 (Audimax)

Models for Evaluating and Monitoring Efficiency of Supply Chain Network Designs

In this talk, we develop and present a methodology that can be used to evaluate supply chain network design performance in a holistic manner by considering multiple factors simultaneously. To assist decision-makers in monitoring and improving network design efficiency, we develop a control chart that monitors an aggregated index generated by multi-factor methods, which simultaneously consider a variety of performance factors. The proposed approach can be used to trigger the re-evaluation of the network design. Our approach is useful in the domain of supply chain analytics as it provides new insights and understanding of business performance based on data and operations research/statistical methods. The clustering techniques used in conjunction with our models can help management focus on improvement strategies and resource allocations. We demonstrate the application of our models through case data gathered from a multi-national vertically integrated chemical corporation.

Prof. Dr. Christopher S. Tang
(University of California,
Los Angeles, USA)

Aug 28th, Wed
09:45-10:30 (Audimax)

Making Supply Chain Transparent for a Better World: Information and Analysis

Companies are gaining more supply chain visibility to reduce their supply chain risks, but few are disclosing what they know with the public. Should a firm disclose its supply chain information to the public? What are the risks and opportunities? I

plan to present some recent research and case-based studies to illustrate how supply chain transparency can improve our world: planet, people and profit.

Dr. Tang is a University Distinguished Professor and the holder of the Edward W. Carter Chair in Business Administration at the UCLAAnderson School of Management. Known as a world renowned thought leader in global supply chain management, Chris consulted with companies such as Amazon, HP, Nestlé, Accenture, etc.; taught at Stanford University, UC Berkeley, Hong Kong University of Science and Technology, London Business School, etc.; and delivered over 200 keynote speeches and seminars. He has published 6 books and over 130 research articles in various leading academic journals, and written articles for Wall Street Journal, Financial Times (UK), Fortune, etc. Dr. Tang received over 15 teaching, research, and service awards, and elected as lifetime fellow by the Institute of Operations and Management Sciences (INFORMS), the Production and Operations Management Society (POMS), and the Manufacturing and Service Operations Management Society (MSOM). Currently, he serves as Editor-in-Chief for a premier journal Manufacturing & Service Operations Management (M&SOM). Chris received his B.Sc. (First class honours in Mathematics) from King's College, London, M.A (in Statistics), M.Phil (in Administrative Science), and PhD (in Management Science) from Yale University.

Track Keynote speakers

Meta-Architectures for Cyber Manufacturing

Manufacturing systems of today are being designed for autonomy and exhibiting emergent behavior that can be visualized and production activities and facilities are evolving into cyber manufacturing systems. These systems have dynamically changing meta-architectures. Finding a series of satisfying architectures for these systems is a multi-criteria decision making problem often involving many objectives in the order of 20 or more. This creates a "Pareto Breakdown". In this talk possible approaches that can be adapted in architecting cyber manufacturing systems architectures using evolutionary approaches, complex systems modeling and model based systems engineering and digital twins will be discussed and how industry 4.0 standard can facilitate this changed will be stressed.

Prof. Dr. Cihan H. Dagli
(Missouri S&T, USA)

Aug 30th, Fri
14:15-15:00 (Audimax)

Adjacency-Clustering for Yield Prediction in Integrated Circuit Manufacturing

We introduce here an efficient combinatorial optimization approach for problems of yield prediction and detection of manufacturing problems. The approach and its effectiveness are

Prof. Dr. Dorit S. Hochbaum
(University of California, at
Berkeley, USA)

Aug 30th, Fri
09:35-10:20 (Audimax)

illustrated for the semi-conductors manufacturing industry. Accurate yield prediction in integrated circuit manufacturing enables accurate estimation of production cost and early detection of processing problems. It is known that defects tend to be clustered and a chip is likely to be defective if its neighbors are defective. This neighborhood effect is not well captured in traditional yield modeling approaches. We propose a new yield prediction model, called adjacency-clustering which addresses, for the first time, the neighborhood effect, and delivers prediction results that are significantly better than state-of-the-art methods. Adjacency-clustering (AC) model is a form of the Markov random field minimum energy model (MRF) that is primarily known in the context of image segmentation. AC model makes novel use of MRF for identifying defect patterns that enable diagnosis of failure causes in the manufacturing process.

Conflict-Free Yard Crane Routing in an Automated Container Terminal

Abstract: In this talk, we focus on a container dispatching and conflict-free yard crane routing problem that arises at a storage yard in an automated, maritime container terminal. A storage yard serves as an intermediate buffer for import/export containers and exchanges containers between water- and landside of a maritime terminal. The problem is in which order and by which crane the containers are transported in order to minimize the makespan and prevent crane interferences. First, we limit our attention to incoming containers only that are positioned by twin cranes. Containers are assigned to the cranes according to different policies. We show that some cases are polynomially solvable. Approximation algorithms with guaranteed absolute and relative deviations from the optimum are devised for others. The results translate for the case of outgoing containers. In the second part we consider two rail mounted gantry cranes of different sizes, with the possibility to cross each other, that perform inbound, outbound and housekeeping requests. We solve this problem to optimality by a branch-and-cut approach that decomposes the problem into two problem classes and connects them via logic-based Benders constraints. We assess the quality of our solution method in a computational study.

Lot Streaming

Abstract: Lot streaming is a technique that accelerates the flow of products through a production system by splitting their production lots into sublots and then processing the sublots simultaneously over the machines, thereby reducing the work-in-process and cycle time. It has been applied for the processing of jobs in a variety of machine configurations, including flow shops, job shops, open shops, parallel machines, and hybrid flow shops, even though the bulk of studies have

been devoted to flow shop scheduling problems. We will present a review of work reported in this area, and also, present the use of lot streaming in a two-stage assembly environment in which the sub-assemblies produced by vendors at the first stage are assembled into products at the second stage, which constitutes some of the latest work reported in this area. Some new results and applications of lot streaming in mass customization and wafer fabrication will also be presented.

Manufacturing Analytics

Abstract: Massive growth in several disruptive and emerging technologies like data analytics, high-performance computing, cyber-security, internet of things, and artificial intelligence have led to the transformation of manufacturing system from energy-oriented to data-driven production in the recent past. Industry 4.0 and Factory of Future are the emerging standards which manufacturing and logistics systems are aiming to observe by deploying many IoT based technologies and several data science and machine learning tools. Manufacturing analytics helps in making an efficient production system by gaining productivity along with cost minimization and quality products. The applications of data analytics are categorized in several domains of manufacturing systems such as engineering design, decision support systems, shop floor control, fault detection, machine failures, predictive maintenance, and cyber-security. To envision the goal of the fourth industrial revolution, real-time data needs to be collected by upgrading the manufacturing units with emerging technologies. In collecting real-time data, numerous IoT platforms such as Amazon Web Service, Azure IoT Suite, Bosch IoT Suite, and SAP Cloud Platform are being listed as cyber-physical infrastructural resources. Manufacturing analytics envision the manufacturing future beyond shop floor automation by deploying digital twins, sensors based technologies, and data science to achieve optimized manufacturing units and it delivers the personalized and small batch products.

SupplyOn Workshop „Big Data Analytics in Supply Chain Management: Practical Insights in Aerospace Supplier Collaboration”

Big Data has become a frequently used term. This expression is used to summarize the large amount of unstructured or semi-structured data, which are produced day by day by companies, their devices, machines, or products in use (Ivanov et al. 2019). Big data has been characterized in literature by 5Vs: volume, variety, velocity, veracity, and value (Fosso Wamba et al. 2014). These characteristics also define the challengeshow to handle big data the right way. Analytics of such big data offers a lot of potential for new business models: In the Aerospace industry the concept of big data has been started to be adopted, e.g. based on the approach of “digital twins”, where

Prof. Dr. Manoj K. Tiwari
(IIT Kharagpur, India)

Aug 30th, Fri
11:00-11:45 (Audimax)

Arvid Holzwarth MBA
(SupplyOn AG)

Aug 28th, Wed
11:00-12:30 (Audimax)

Prof. Dr. Erwin Pesch
(University of Siegen and HHL Leipzig, Germany)

Aug 30th, Fri
08:50-09:35 (Audimax)

Prof. Dr. Subhash C. Sarin
(Virginia Tech, USA)

Aug 30th, Fri
13:30-14:15 (Audimax)

a physical product is always accompanied by a corresponding digital counterpart object, including lifecycle information. A concrete example to be presented in the workshop is the lifecycle of e.g. material demand, incorporating demand generation, forecast and order collaboration, delivery, goods receipt and finally the invoice. Based on the SCOR model (Bolstorff et al. 20073), also return and repair processes can become relevant. The Aerospace industry is a good example of an industry where collaboration between business partners can contribute to better planning of such material demands, as an early warning system, to avoid foreseeable bottlenecks and stock outs. Ability to deliver needs to be combined with minimized levels of bound capital. While benefits of such a demanding supply chain are undisputable, the following theses shall be discussed, as part of this workshop:

1. "An end-to-end supply chain is only as reliable as its weakest part. This can be proven for the Tier-n level of industries like Aerospace."
2. "Good collaboration tools are not enough, even if combined with big data, if the data quality is insufficient. A good example is the Aerospace industry."
3. "Usage of big data must be secured by clear rules who owns and shares the right level of data. In industries like Aerospace, it is often the operator or the OEM who define such rules."

The goal of the workshop will therefore be to sharpen the view for structured, use-case driven, secure, meaningful, value-creating best practice approaches of big data analytics, based on concrete examples, here from collaboration in the Aerospace industry. Contributions from both scientific and business perspective are highly welcome.

**Timofey Popkov and
Sergey Suslov**
(The AnyLogic Company)

Aug 28th, Wed
15:30-17:20 (Audimax)

anyLogistix Supply Chain Simulation and Optimization for Industry 4.0 and the Digital Transformation

In today's world, the only way to stay ahead of your competitors, or even to be competitive at all, is through innovation. Supply chain is not an exception to this rule. Analytical optimization and dynamic simulation are two commonly used technologies for solving complex supply chain problems, including such issues as supply chain digital transformation. There has been, however, a lot of confusion around the terms "optimization" and "simulation" in the industry – they are often misinterpreted by people and companies offering supply chain solutions. We will share our view on these techniques, and on how to be innovative by employing both optimization and simulation to become lean and agile.

**Timofey Popkov and
Sergey Suslov**
(The AnyLogic Company)

Aug 30th, Fri
11:45-12:30 (Audimax)

The AnyLogic Material Handling Library for New Disruptive Technologies of Industry 4.0

A workshop built around the new AnyLogic Material Handling Library that simplifies the simulation of complex manufacturing systems and operations. The library can be used to de-

sign detailed models of production and storage facilities and manage material workflows inside their 'four walls'. A digital factory model, created with the material handling simulation toolkit, can help test and optimize production, transportation, and inventory policies, as well as reduce possible errors while also introducing innovations to existing operations, or integrating modern technologies. In conveyor network models, created with the Material Handling Library, users can apply default or custom routing strategies for material items, industrial robots, manufacturing machines, and operators. Simulated AGVs and other transporters automatically avoid collisions, detect possible deadlocks, and resolve them. See it in action and find out more.

Technical program time-table

Track	09:00-09:45	09:45-10:30	10:30-11:00	11:00-12:30	12:30-13:30	13:30-14:15	14:15-15:00	15:00-15:30	15:30-17:20
T1	Aug 28th Wed DAY 1 WeOS Audimax Opening Ceremony	WeP1L Audimax Plenary I - Christopher S. Tang: Making Supply Chain Transparent for a Better World: Information and Analysis	Coffee_Break Cafeteria	WeAT1 (001) - Blockchain in the Operations and Supply Chain Management	WeLunch_Break Cafeteria	WeP2L Audimax Plenary II - Lenny Koh: What Really Matters Today and in the Future - from Physical to Digital to Autonomous	WeP3L Audimax Plenary III - Andreas Oroszi: Digitalization at Festo - Our Way in Digital Transformation	Coffee_Break Cafeteria	WeBT1 (001) - Modeling and Data Analytics in Manufacturing and Supply Chain Operations
T2				WeAT2 (002) - Modeling and Optimization Methods for Energy-Efficient Manufacturing Systems - I					WeBT2 (002) - Modeling and Optimization Methods for Energy-Efficient Manufacturing Systems - II
T3				WeAT3 (004) - Lean Production in the Context of the 4th Industrial Revolution					WeBT3 (004) - SME Digitalization in the Era of Industry 4.0
T4				WeAT4 (013) - System Identification for Manufacturing Control Applications					WeBT4 (013) - System Identification for Manufacturing Control Applications - II
T5				WeAT5 (014) - Planning and Scheduling of Manufacturing Processes					WeBT5 (014) - Planning and Scheduling of Manufacturing Processes - II
T6				WeAT6 (015) - Operations Research Techniques for Complex Systems Scheduling					WeBT6 (015) - Operations Research Techniques for Complex Systems Scheduling - II
T7				WeAT7 (016) - Lean Manufacturing and Quality Management - I					WeBT7 (016) - Lean Manufacturing and Quality Management - II
T8				WeAT8 (017) - Decision-Making in Logistics and Supply Chains					WeBT8 (017) - Inventory Control, Replenishment and Lot-Sizing under Demand, Yield or Lead Time Uncertainties
T9				WeAT9 (018) - Emerging Technologies and Intelligent Maintenance Management					WeBT9 (018) - Maintenance Management
T10				WeAT10 (019) - Fractional Order Systems and Controllers for Industrial Processes: Advances and Prospects					WeBT10 (019) - Control - I
T11				WeAT11 (020) - Planning and Scheduling of Transportation and Logistics under Uncertainty Environments					WeBT11 (020) - OR Applications - I
T12				WeAT12 (101) - Doctoral Student Workshop					WeBT12 (101) - Knowledge Management - I
T13				WeAT13 (102) - Industrial Robotics: Modeling, Control and Applications - I					WeBT13 (102) - Industrial Robotics: Modeling, Control and Applications - II
T14				WeAT14 (103) - Interoperability and Information Management					WeBT14 (103) - Interoperability and Information Management - II
T15				WeAT15 (107) - Formal Modelling and Analysis of Reconfigurable Manufacturing Systems					WeBT15 (107) - Product Service Systems (servitization) in New ICTs Era
T16				WeAT16 (108) - IoT and Smart Supply Chain Management					WeBT16 (108) - Emerging Technologies in Humanitarian Supply Chain Management
T17				WeAT17 (109) - Supply Chain Risk Management - I					WeBT17 (109) - Digital, Data Driven, Sustainable and Resilient Supply Chains
T18				WeAT18 (110) - Sustainable Operations & Supply Chain Management					WeBT18 (110) - Sustainable Manufacturing Systems Design and Operation
T19				WeAT20 (Audimax) Big Data Analytics in Supply Chain Management: Practical Insights in Aerospace Supplier Collaboration					WeBT19 (Audimax) - AnyLogistix Supply Chain Simulation and Optimization for Industry 4.0 and the Digital Transformation

Track	08:30-10:20	10:30-11:00	11:00-11:45	11:45-12:30	12:30-13:30	13:30-14:15	14:15-15:00	15:00-15:30	15:30-17:20
T1	ThAT1 (001) – Intelligent Methods and Systems Supporting Supply Chain Decision Making - I	Coffee_Break Cafeteria	ThP1L Audimax	ThP2L Audimax	ThLunch_Break Cafeteria	ThP3L Audimax	ThP4L Audimax	Coffee_Break Cafeteria	ThBT1 (001) – Intelligent Methods and Systems Supporting Supply Chain Decision Making - II
T2	ThAT2 (002) – Modeling and Algorithms for New Production Modes Combining Service and Manufacturing under Uncertain Environments								ThBT2 (002) – Advanced Reconfigurable Manufacturing System
T3	ThAT3 (004) – Bio-Inspired Techniques in Future Manufacturing Enterprise Control								
T4	ThAT4 (013) – Cybersecurity of Control and Safety Systems								ThBT4 (013) – Cybersecurity of Control and Safety Systems - II
T5	ThAT5 (014) – Planning and Scheduling of Manufacturing Processes - III								ThBT5 (014) – Planning and Scheduling of Manufacturing Processes - IV
T6	ThAT6 (015) – Assembly/Disassembly/Machining Line Design and Balancing under Uncertainty								ThBT6 (015) – Production Planning and Control
T7	ThAT7 (016) – Lean Manufacturing and Quality Management - III								ThBT7 (016) – Modeling and Data Analytics for Zero Defect Manufacturing
T8	ThAT8 (017) – Inventory Control, Replenishment and Lot-Sizing under Demand, Yield or Lead Time Uncertainties - II								ThBT8 (017) – Nonstationarity in Inventory Control
T9	ThAT9 (018) – Recent Advances in Integrated Maintenance Modeling and Optimization for Manufacturing Systems								ThBT9 (018) – Modelling Assembly Design and Operations: Towards “Assembly System 4.0”
T10	ThAT10 (019) – Control - II	Coffee_Break Cafeteria	ThP1L Audimax	ThP2L Audimax	ThLunch_Break Cafeteria	ThP3L Audimax	ThP4L Audimax	Coffee_Break Cafeteria	ThBT10 (019) – Big Data Analytics in Smart Manufacturing Systems
T11	ThAT11 (020) – OR Applications - II								ThBT11 (020) – OR Applications - III
T12	ThAT12 (101) – Knowledge Modelling for Digital Transformation and Digitalization of Companies								ThBT12 (101) – Knowledge Modelling for Digital Transformation and Digitalization of Companies - II
T13	ThAT13 (102) – Industrial Robotics: Modeling, Control and Applications - III								ThBT13 (102) – Robotics and Mechanical Engineering - I
T14	ThAT14 (103) – Interoperability and Information Management - III								ThBT14 (103) – Physical Internet and Interconnected Logistics Services
T15	ThAT15 (107) – Product Service Systems (servitization) in New ICTs Era - II								ThBT15 (107) – Manufacturing and Service Operations - I
T16	ThAT16 (108) – Production and Supply Chain Planning in the Semiconductor Industry								ThBT16 (108) – Supply Chain Management - I
T17	ThAT17 (109) – Supply Chain Risk Management - II								ThBT17 (109) – Digital Technology, Supply Chain Risks and Uncertainty
T18	ThAT18 (110) – Industrial Symbioses: Design, Management, Control								ThBT18 (110) – Materials Management from a Linear to a Circular Business Models
T19	ThAT19 (Audimax) – Meet the Editors (begin: 9:00 AM)								ThBT19 (105) – TC 5.2 Meeting (by Invitation Only)

Track		08:30-10:20	10:30-11:00	11:00-12:30	12:30-13:30	13:30-15:00	15:00-15:30	15:30-17:20	17:30-18:30
Aug 30th Fri DAY 3	T1	FrAT1 (001) – Intelligent Methods and Systems Supporting Supply Chain Decision Making - III	Coffee_ Break Cafeteria	FrBT1 (001) – Simulation, Optimization, Sensor-Based State Analysis and Predictions to Support Operational Decisions in Manufacturing and Logistics	FrLunch_ Break Cafeteria	FrCT1 (001) – Simulation, Optimization, Sensor-Based State Analysis and Predictions - II	Coffee_ Break Cafeteria	FrDT1 (001) – Data-Driven Collaboration in Industrial Supply Chains	FrSE Closing Ceremony Audimax
	T2	FrAT2 (002) – The Future of Metal Processing		FrBT2 (002) – Smart Scheduling for New Logistics Modes under Uncertain Environments		FrCT2 (002) – Manufacturing Systems		FrDT2 (002) – Workforce Assignment	
	T3	FrAT3 (004) – Digital Factory and Industry 4.0 - I		FrBT3 (004) – Digital Factory and Industry 4.0 - II		FrCT3 (004) – Digital Factory and Industry 4.0 - III		FrDT3 (004) – Digital Factory and Industry 4.0 - IV	
	T5	FrAT5 (014) – Scheduling - I		FrBT5 (014) – Scheduling in Industry 4.0 and Cloud Manufacturing		FrCT5 (014) – Scheduling - II		FrDT5 (014) – Scheduling - III	
	T6	FrAT6 (015) – Human Factors in Production and Logistics Systems of the Future - I		FrBT6 (015) – Human Factors in Production and Logistics Systems of the Future - II		FrCT6 (015) – Human Factors in Production and Logistics Systems of the Future - III			
	T7	FrAT7 (016) – Lean Manufacturing and Quality Management - IV		FrBT7 (016) – Lean Manufacturing and Quality Management - V		FrCT7 (016) – Lean Manufacturing and Quality Management - VI		FrDT7 (016) – Lean Manufacturing and Quality Management - VII	
	T8	FrAT8 (017) – Logistics and Inventory Management - I		FrBT8 (017) – Integrated Spare Parts Systems		FrCT8 (017) – Logistics and Inventory Management - II			
	T9	FrAT9 (110) – Sustainable Manufacturing and Logistics - I		FrBT9 (110) – Sustainable Manufacturing and Logistics - II		FrCT9 (110) – Sustainable Manufacturing and Logistics - III			
	T10	FrAT10 (019) – Control - III		FrBT10 (019) – Supply Network Dynamics and Control - I		FrCT10 (019) – Supply Network Dynamics and Control - III			
	T11	FrAT11 (020) – OR Applications - IV		FrBT11 (020) – Extremal Routing Problems: Models, Algorithms, Bounds, and Industrial Applications - I		FrCT11 (020) – Extremal Routing Problems: Models, Algorithms, Bounds, and Industrial Applications - II			
	T12	FrAT12 (101) – [Title not available]		FrBT12 (101) – Management 4.0 in Logistics and Supply Chain Management					
	T13	FrAT13 (102) – Robotics and Mechanical Engineering - III		FrBT13 (102) – Robotics and Control Problems in Cyber-Physical Systems					
	T14	FrAT14 (103) – Interoperability and Information Management - IV		FrBT14 (103) – Product Design Based on Smart, Sensing and Sustainable Features					
	T15	FrAT15 (107) – Manufacturing and Service Operations - II		FrBT15 (107) – Manufacturing and Service Operations - III		FrCT15 (107) – Manufacturing and Service Operations - IV			
	T16	FrAT16 (108) – Supply Chain Management - II		FrBT16 (108) – Optimization, Artificial Intelligence, and Simulation Based Approaches to Make Decisions under Uncertainties in Complex System		FrCT16 (108) – Industrial Engineering in the Silver Economy			
	T17	FrAT17 (109) – Supply Network Resilience, Flexibility and Robustness		FrBT17 (109) – Supply Chain Risk Management - III		FrCT17 (109) – Structural Dynamics in Sustainable Supply Chains		FrDT17 (109) – Supply Chain Resilience and Disruption Management	
	T18	FrAT18 (105) – Teaching Optimization and Simulation in Supply Chain and Operations Courses (begin: 9:00 AM)				FrCT18 (013) – IJPR EB Meeting (by Invitation Only)			
	T19	FrAT19 (Audimax) – Track Keynote 1 - Erwin Pesch: Conflict-Free Yard Crane Routing in an Automated Container Terminal / Track Keynote 2 - Dorit Hochbaum: Adjacency-Clustering for Yield Prediction in Integrated Circuit Manufacturing		FrBT19 (Audimax) – Track Keynote 3 - Manoj Tiwari: Manufacturing Analytics / Workshop "The AnyLogic Material Handling Library for New Disruptive Technologies of Industry 4.0"		FrCT19 (Audimax) – Track Keynote 5 - Subhash Sarin: Lot Streaming / Track Keynote 6 - Cihan Dagli: Meta-Architectures for Cyber Manufacturing		FrDT19 (013) – IJISM EB Meeting (by Invitation Only)	

Registration

On August 27 starting at 6:00 p.m. at the conference venue (HWR Berlin, Campus Lichtenberg, Alt-Friedrichsfelde 60), participants will be offered the opportunity to register at the IFAC MIM 2019 conference and to receive their badges and conference bags.

Registration will be open throughout all the conference days starting at 8:00 a.m. each day. Cash payments will be accepted at the registration desk for those who have not registered in advance.

Badges required for all conference events

Conference participants will receive their badges during the on-site registration and are requested to carry it during the conference in order to access the conference sites, coffee breaks and lunches.

The badge functions as a ticket for the public transport in Berlin (Zones A and B).

Gala Dinner

Thursday, 29 August 2019

6:30 p.m. – 10:30 p.m.

bcc Berlin Congress Center GmbH,
Alexanderstr. 11,
10178 Berlin

Please bring along your Dinner Voucher in order to enter the venue.

Admittance is only possible if you have registered and paid for the Gala Dinner.

Please find more information on **page 94**.

Boat trip

Wednesday, 28 August 2019

6:30 p.m. – 10:00 p.m.

Shuttle service will be provided from the conference venue to the boat stop (Hafen Rummelsburg).

Busses leave at 5:30 p.m. Meeting Point: Conference Venue, Haus 1, Main Entrance

Please bring along your voucher for the boat trip in order to board the boat.

Admittance is only possible if you have registered and paid for the boat trip.

Please find more information on **page 95**.

Internet access

WLAN Login and Passwort will be provided during the conference.

Conference App

If you prefer to use your Smartphones to access the program and papers, the mobile app “MIM 2019” will be available from the Apple Store or the Google Play Store.

The main aim of the app is to allow attendees to browse the program of the conference and plan their attendance of the available presentations. The app does not require login for generic use, however, to import the “My Agenda” from the InfoVaya cloud service, the app must be able to identify the user. Also, login is required in order to access critical information (e.g. profiles of other conference attendees) as well as copyrighted data (i.e. proceedings papers).

Downloadable set of the MIM 2019 papers

Download the full proceedings from the cloud platform. The set comes with a HTML-based interface. Available only to MIM 2019-registered attendees.

Cloud platform

<https://events.infovaya.com/event?id=31>

This service will help you prepare for MIM 2019 using any desktop, laptop or mobile device.

If you have registered for MIM 2019, you can login after you set your own password at <https://events.infovaya.com/register>. Now you can:

- Browse through the conference sessions and use the various filter options to search for those presentations most interesting to you. For every paper, you can read the abstract, watch the spotlight video, download the associated PDF, learn more about the authors, view any author-uploaded information (e.g. slides, poster).
- Decide which papers you wish to attend and add them to your personalised Agenda. Your Agenda will automatically pass on to the mobile app, should you wish to switch to that during the conference.

General Info

- Review your own presentation and take steps to maximise its impact; you can attach your slides or poster, type in additional information, attach related supporting documents, correct any errors in your ICRA Digest slide.
- Maximise your professional exposure by taking advantage of the profile page available to you. You can add a short bio, provide contact details, upload a photo, upload your resume.
- Browse the profiles of other attendees, know who is who at MIM 2019.
- View the most popular papers of the conference overall, by category, by theme, by day.

Coffee breaks and lunches

Lunches and coffee breaks take place in the cafeteria in Haus 1.

Questions and information

The conference office welcomes you from 27 to 30 August 2019 (Campus Lichtenberg, Haus 1, First Floor).

Additionally, please talk to the helpers in orange T-shirts if you have any request.

Contact
con gressa GmbH
Silvia Dreier
Tel.: +49 176 98 26 23 15

Getting around (BVG ticket)

With your conference badge you are able to use the public transport in Berlin (Zones A and B). The ticket is valid all day for the time of the conference.

Schönefeld Airport is located outside Berlin. If you need to go there you need to buy a connection ticket for Zone C. Tegel Airport is located in Zone B.

Work Space

You can find a quiet work space in room 008 (Haus 6a).

Emergency number

112

INDUSTRY 4.0: The Researchers' Perspectives

Dear MIM 2019 Participants,

associated with the IFAC MIM 2019 conference, we would like to survey the current researchers' perspectives on Industry 4.0. The objective is to derive major research streams and research gaps to create a taxonomy of Industry 4.0 research. MIM 2019 is unique in its interdisciplinarity (Automatic Control, Industrial and Mechanical Engineering, Operations Research, Computer Science, Supply Chain Management) and therefore a great platform for such a survey.

Please help us to build up this exciting project!
This is the link:

https://docs.google.com/forms/d/e/1FAIpQLSfBQWjsJ2qaAnPd9nxz_9vRWZrli83gAZI5h7x6O0wdX4F9NQ/viewform

You can also use a QR code:



It takes only 10 minutes to respond to 12 short questions.

Thank you!

Best regards

Dmitry Ivanov (HWR Berlin, Germany)
Alexandre Dolgui (IMT Atlantique, France)
Daria Battini (University of Padova, Italy)
Ajay Das (Baruch College – CUNY, USA)

Welcome to the 9th IFAC Conference Manufacturing Modelling, Management and Control MIM 2019!

We welcome you in Berlin, at Berlin School of Economics and Law (HWR Berlin), for IFAC MIM 2019.

MIM 2019 Mission is Connect Control, Industrial Engineering, OR and Computer Science for better management decision-support systems in digital, resilient and sustainable manufacturing and supply chains in the era of Industry 4.0. The central theme of the 9th IFAC/IFIP/IFORS/IIE/INFORMS Conference on Manufacturing Modelling, Management and Control MIM 2019 is Digital, Resilient and Sustainable Manufacturing 4.0.

Digitalization, resilience, and sustainability shape current and future trends in manufacturing modelling, management, and control. The aim of MIM 2019 is to bring together researchers and practitioners in industrial engineering, manufacturing, operations research, supply chain management, and computer science to present and discuss emerging topics in modern manufacturing modeling, management, and control. MIM 2019 follows a rich tradition of previous IFAC conferences and symposia in Manufacturing and Logistics held in Germany. MIM 2019 focuses in particular on the most innovative methods proposed in the last few years in the context of digitalization, risk management, and resilience in production and logistics systems in the 21st century.

The conference covers all topics related to design, implementation and operation of modern manufacturing systems in digitalization era, including (but not limited to) the following:

- Analytics, optimization and machine learning in manufacturing and supply chains
- Control of manufacturing processes
- Digital supply chain
- Data-driven applications in manufacturing
- Design and reconfiguration of manufacturing systems
- Facility planning and materials handling
- Industry 4.0
- Blockchain applications in manufacturing and supply chains
- Digital manufacturing networks and smart operations
- Artificial intelligence applications to manufacturing
- Inventory control, production planning and scheduling
- Risk management, resilience and flexibility

- Logistics, supply chains and networks
- Supply network dynamics and control
- Control theory applications to production systems and supply chains
- Operations and supply chain simulation
- Sustainable manufacturing
- Business analytics for manufacturing systems
- Market responsive supply chains
- Enterprise modelling, integration and networking
- Information, systems, control and interoperability
- Information management for the Net-Enterprise
- Modeling, simulation, control and monitoring of manufacturing processes
- Robotics in manufacturing
- Intelligent manufacturing systems
- Intelligent transportation
- Service oriented architecture for production management and control
- Knowledge management in production
- Fostering innovation in manufacturing
- Monitoring, diagnosis and maintenance of manufacturing systems
- Complex adaptive systems and emergent synthesis in manufacturing
- Web-enabled manufacturing control and wireless automation
- Design for reusability
- Maintainability, reliability, safety and dependability of production systems
- Quality management
- Virtual reality
- Sensor networks, ubiquitous computing, active identifiers, wireless communication in manufacturing
- Distributed systems and multi-agents technologies
- Discrete event systems in manufacturing
- Simulation technologies
- Operations research
- Probabilistic models in industrial plant control
- Industrial and applied mathematics for production

MIM 2019 is a triennial conference of the IFAC Technical Committee 5.2 on Manufacturing Modeling for Management and Control, which is composed of 86 members from 22 countries organized in 7 working groups: Supply Network Engineering; Advanced Multi-criteria Applications in Manufacturing and Logistics; Design and Modeling of Flexible and Reconfigurable Manufacturing

Systems; Advances in Integrated Maintenance Management; Risk, Analytics and Operations; Intelligent Methods and Systems Supporting Supply Chain Decision Making; and Human Factors and Ergonomics in Industrial and Logistic System Design and Management.

The MIM 2019 conference is also sponsored by eight other Technical Committees of IFAC:

TC 1.3 Discrete Event and Hybrid Systems

TC 3.2 Computational Intelligence in Control

TC 4.3 Robotics

TC 5.1 Manufacturing Plant Control

TC 5.3 Enterprise integration and Networking

TC 5.4 Large Scale Complex Systems

TC 7.4 Transportation Systems

TC 9.1 Economic, Business and Financial Systems

The conference IFAC MIM 2019 is co-sponsored by

- **GOR e.V. (German Society of Operations Research)**
- **IEEE SMCS TC Cyber-Physical Cloud Systems**
- **IFIP (International Federation for Information Processing)**
- **IFORS (International Federation of Operational Research Societies)**
- **INFORMS (Institute for Operations Research and the Management Sciences)**
- **IISE (Institute of Industrial and Systems Engineers)**
- **IfL (Institute for Logistics) at Berlin School of Economics and Law**
- **National Simulation Society, Russia**

With over 3.5 Million inhabitants Berlin is the largest City of the Federal Republic of Germany. Berlin is considered the world capital of culture, politics, media and sciences. The universities, research facilities, sports events and museums of Berlin enjoy an international reputation. The metropolis carries the UNESCO title of City of Design and is one of the most visited centers on the continent. Berlin's architecture, festivals, nightlife and varied living conditions are known all over the world. Berlin School of Economics and Law is one of Berlin's largest universities of applied sciences. HWR Berlin is an academic centre specialised in business and administration skills for the public and private sector, as well as public security, the law and engineering. Over 11,000 students are registered at the HWR Berlin, enrolled on undergraduate, master and doctoral study programs.

We want to thank the national organization committee led by Prof. Dr. Harald Gleißner and deputy chair Prof. Dr. Susanne Meyer.

It is with great sadness that the hosting organizing body of MIM 2019 has to announce the sudden death of the head of the national organization committee, Deputy President of Hochschule für Wirtschaft und Recht Berlin **Prof. Dr. Harald Gleißner**. He unexpectedly passed away on July 8th, 2019. Harald Gleißner, professor of transportation and logistics and former dean of the Department of Cooperative Studies at HWR Berlin, was dedicated to making this international IFAC conference a success and of great benefit to all participants from around the world. He will be deeply missed and we shall honour his memory. We thank HWR Berlin's vice president Prof. Dr. Susanne Meyer who agreed to take over as deputy head of the national organization committee in very short term and with great personal commitment.

Specific thanks to the International Program Committee led by Prof. Dr. Alexandre Dolgui, as well as the editors: A. Dolgui, D. Ivanov and F. Yalaoui. We have received more than 850 submissions from 61 countries. Finally, after a serious peer review process 540 articles have been selected for presentation at the conference. We would like to emphasize the outstanding program of MIM 2019 with 18 tracks, 121 invited, special or regular sessions, 4 industrial sessions, several exhibitors, industrial tours at BMW, Fraunhofer IPK, Rolls Royce, Siemens, and Stadler, and outstanding plenary talks delivered by:

- **Prof. Dr. Richard Hartl** "Solution approaches and incentive schemes in collaborative logistics planning"
- **Prof. Dr. Lenny Koh** "What really matters today and in the future – From physical to digital to autonomous"
- **Prof. Dr.-Ing. Holger Kohl** "Modular Shopfloor-IT – Intelligent Process Management of Customer-Specific Products"
- **Andreas Oroszi** "Digitalization at Festo – Our way in digital transformation"
- **Prof. Dr. Boris Sokolov** "Planning and scheduling by optimal control: fundamentals and applications to cyber-physical and Industry 4.0 systems"
- **Prof. Dr. Srinivas (Sri) Talluri** "Models for Evaluating and Monitoring Efficiency of Supply Chain Network Designs"
- **Prof. Dr. Christopher S. Tang** "Making Supply Chain Transparent for a Better World: Information and Analysis"



Prof. Dr. Harald Gleißner †

Foto: Werner Hallatschek

and exciting Track keynotes delivered by Prof. Dr. Cihan H. Dalgi, Prof. Dr. Dorit S. Hochbaum, Prof. Dr. Erwin Pesch, Prof. Dr. Subhash C. Sarin, and Prof. Dr. Manoj K. Tiwari.

All of these exceptional contributions should interest the overall 750 attendees expected at the MIM 2019 conference.

We would like to thank the sponsors of MIM 2019: main national scientific sponsor German Research Foundation (Deutsche Forschungsgemeinschaft (DFG)), main industrial sponsor Siemens AG, lead sponsor The AnyLogic Company, and sponsor SupplyOn AG.

Finally, we want to thank Prof. Dr. Andreas Zaby, President of Berlin School of Economics and Law, for his unconditional support to organizers of the MIM 2019 conference.

We wish you a very fruitful conference with successful interactions as well as a nice stay in Berlin with its outstanding art and cultural heritage and one of the most exciting night life in the world.

Prof. Dr. Dmitry Ivanov
General Conference Chair

Prof. Dr. Alexandre Dolgui
International Program
Committee Chair

Greetings

Welcome to the vibrant city of Berlin and to the Hochschule für Wirtschaft und Recht (HWR) Berlin (Berlin School of Economics and Law) for IFAC MIM 2019!

HWR Berlin is one of Germany's large universities of applied sciences and stands out as a university specializing in business and administration competencies for the private and the public sector, as well as police and security management, legal studies, engineering and computer science. Over 11,000 students are enrolled in undergraduate and graduate programs. It is renowned for its practice-oriented teaching, applied and diverse research, high quality standards, as well as its strong international orientation. Building on a network of 179 academic partnerships around the world, HWR Berlin is dedicated to international academic exchange. Our mission states: "We live the spirit of internationality!" In our view, it is crucial to encourage cross-border collaboration and scientific debate with the goal of gaining new knowledge and contributing to the solutions to real-life problems.

Therefore, it is a great honor for HWR Berlin to host this year's IFAC MIM conference – for the first time in Germany. We are pleased that so many renowned scholars and practitioners from around the world have decided to participate in this conference.

With over 3.5 million inhabitants, Berlin is the largest city and the capital of the Federal Republic of Germany. It is home to a lively culture and arts scene. Perhaps you will have a bit of extra time to explore.

I wish you a good stay and inspiring discussions at HWR Berlin. Thank you so much for coming!

Prof. Dr. Andreas Zaby,
President of Berlin School of Economics and Law

Welcoming Remarks by the Senator for Industry, Energy and Business

Berlin has a long-established reputation for freedom, openness, cultural diversity and international flair. The city has also undergone an exciting economic development in recent years, especially in the industrial sector. An increasing number of large industrial players have settled in Berlin and its region. They have brought with them their innovation and digital departments so as to profit from the unique digital-friendly economic eco-system which the Berlin region provides. Here they can successfully develop new digital technologies with which to realize the production of the future. Berlin seeks to take an active and pioneering role in this process, developing and guiding the new forms of industrial production with which to meet the challenges of digitalization and finite resources.

Industry in Berlin has established a name for itself at the interface of Research and Development. Knowledge has become the starting point for all innovation and thus a decisive factor in production. As such, Berlin's industry needs a steady and constant supply of new ideas and stimulus from the science and technology sector.

This is provided by the high density and diversity of excellent R&D in the "Brain City Berlin." There is the cutting-edge research of our top universities and the internationally-unique form of applied research conducted at our universities of applied sciences such as the Hochschule für Wirtschaft Berlin (HWR Berlin), complemented by a thriving ecology of extramural research centres. This mix constitutes the ideal conditions for fresh and innovative research. Berlin attracts talent from all over the world eager to take their place in the uniquely creative atmosphere which is Berlin.

Industry 4.0 presents us with considerable challenges; we in Berlin are well placed to respond to them. In this spirit, I wish you a profitable and stimulating experience at the MIM 2019.

Ramona Pop

Senator for Industry, Energy and Business

General Conference Chair

Dmitry Ivanov (DE)

International Program Committee Chair

Alexandre Dolgui (FR)

Conference Co-Chair

Farouk Yalaoui (FR)

Honorary President

Andreas Zaby (DE)

International Program Committee Chair for Industry

Arvid Holzwarth (DE)

National Organizing Committee Chair

Harald Gleißner † (DE) / Susanne Meyer (DE) (Deputy Chair)

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Peter Fleming (UK)	Erwin Pesch (DE)	Farouk Yalaoui (FR)
Enzo Morosini Frazzon (BR)	Christian Prins (FR)	Candace A. Yano (US)
Michael Freitag (DE)	Jean-Marie Proth (FR)	Janan Zaytoon (FR)
Stanley Gershwin (US)	Nidhal Rezg (FR)	Noureddine Zerhouni (FR)
Christoph Glock (DE)	Antonio Barros Ruano (PT)	
Kannan Govindan (DK)	Zaki Sari (DZ)	

List of Tracks

No	Track name	Room	Chairs
1.	Analytics	001	Weiwei Chen Samuel Fosso Wamba
2.	Manufacturing Systems	002	Michael Freitag Manoj Tiwari
3.	Digital Factory and Industry 4.0	004	Enzo Frazzon Fabio Sgarbossa
4.	Identification and Cybersecurity	013	Natalia Bakhtadze Cyrill Tschernyschoff
5.	Scheduling	014	Frank Werner Farouk Yalaoui
6.	Production Planning and Control	015	Xavier Delorme Semyon Meerkov
7.	Lean Manufacturing and Quality Management	016	Zbigniew Banaszak Yuval Cohen
8.	Logistics and Inventory Management	017	Stefan Minner Eric Grosse
9.	Maintenance, Manufacturing, Control	018	Oleg Gusikhin Nidhal Rezg
10.	Control Theory and Applications	019	El-Houssaine Aghezzaf Suresh Sethi
11.	OR Applications	020	Daria Battini Olga Battaia
12.	Knowledge Management	101	Kurt Sandkuhl Alexander Smirnov
13.	Robotics and Mechanical Engineering	102	Alexandr Klimchik Anatol Pashkevich
14.	Interoperability and Information Management	103	Sergio Cavallieri Laszlo Monostori
15.	Manufacturing, Service and Retail Operations	107	Rameshwar Dubey Zhibin Jiang
16.	Supply Chain Management	108	Stephen Disney Christoph Glock
17.	Supply Chain Risk Management	109	Alexandre Dolgui Dmitry Ivanov
18.	Sustainable Manufacturing and Logistics	110	Hamid Allaoui Marcus Brandenburg

List of Sessions and Presentations MIM 2019

Technical Program for Wednesday August 28, 2019

Blockchain in the Operations and Supply Chain Management (Invited Session)

WeAT1
Room **001**

Chair: Fosso Wamba, Samuel *Toulouse Business School*
Co-Chair: Wang, Yingli *Cardiff University*

- | | | |
|----------------------|--|---------|
| 11:00 – 11:22 | Assessing the Implications of Blockchain in the Wine Supply Chain: Evidence from Three Italian Companies
Mocellin, Riccardo (University of Padova), Romano, Pietro (University of Udine), Danese, Pamela (University of Padova) | WeAT1.1 |
| 11:22 – 11:44 | Planning the Application of Blockchain Technology in Identification of Counterfeit Products: Sectorial Prioritization (I)
Modgil, Sachin (Symbiosis Institute of Operations Management (SIU, Pune), India), Sonwane, Vandana (Symbiosis Institute of Operations Management (SIU, Pune), India) | WeAT1.2 |
| 11:44 – 12:06 | Designing a Blockchain Enabled Supply Chain (I)
Wang, Yingli (Cardiff University) | WeAT1.3 |
| 12:06 – 12:28 | Leveraging Partnerships with Logistics Service Providers in Humanitarian Supply Chains by Blockchain-Based Smart Contracts (I)
Baharmand, Hossein (University of Agder), Comes, Tina (TU Delft) | WeAT1.4 |

Modeling and Optimization Methods for Energy-Efficient Manufacturing Systems - I (Invited Session)

WeAT2
Room **002**

Chair: Yalaoui, Alice *University of Technology of Troyes*
Co-Chair: Bakhtadze, Natalia *V.A. Trapeznikov Institute of Control Sciences, Russian Academy of Sciences*

- | | | |
|----------------------|---|---------|
| 11:00 – 11:22 | Single Item Lot Sizing Problem under Renewable Energy Uncertainty (I)
Rodoplu, Melek (University of Technology of Troyes), Arbaoui, Taha (ICD-LOSI, University of Technology of Troyes), Yalaoui, Alice (University of Technology of Troyes) | WeAT2.1 |
| 11:22 – 11:44 | An Analytical Model to Estimate AVS/RS Energy Consumption (I)
D'Antonio, Gianluca (Politecnico Di Torino), Bruno, Giulia (Politecnico Di Torino), Traini, Emiliano (Politecnico Di Torino), Lombardi, Franco (Politecnico Di Torino) | WeAT2.2 |
| 11:44 – 12:06 | Digital Energy Ecosystems (I)
Bakhtadze, Natalia (V.A. Trapeznikov Institute of Control Sciences, Russian Academy), Suleykin, Aleksandr (V. A. Trapeznikov Institute of Control Sciences Russian Academy), Pyatetsky, Valery (National University of Science and Technology "MISIS"), Pavlov, Boris (V.A. Trapeznikov Institute of Control Sciences, Russian Academy) | WeAT2.3 |
| 12:06 – 12:28 | Lot Sizing and Pricing Problem in a Recovery System with Returns and One-Way Substitution Option: Novel Cost Benefit Evaluation Based Approaches (I)
Zouadi, Tarik (Université Internationale De Rabat, Rabat Business School (RBS)), Yalaoui, Alice (University of Technology of Troyes), REGHIOUI, Mohamed (University Abdelmalek Essaadi) | WeAT2.4 |

Lean Production in the Context of the 4th Industrial Revolution (Invited Session)

WeAT3
Room **004**

Chair: Desgagné-Lebeuf, Alexandre *Université Laval*
Co-Chair: Gaiardelli, Paolo *University of Bergamo*

- 11:00 – Industry 4.0 and Lean Production: An Empirical Study (I)** WeAT3.1
11:22 Rossini, Matteo (Politecnico Di Milano), Costa, Federica (Politecnico Di Milano), Staudacher, Alberto (Politecnico Di Milano), Tortorella, Guilherme (Federal University of Santa Catarina)
- 11:22 – MES As an Enabler of Lean Manufacturing (I)** WeAT3.2
11:44 Perico, Paolo (Università Degli Studi Di Bergamo), Arica, Emrah (Sintef), Powell, Daryl John (Norwegian University of Science and Technology), Gaiardelli, Paolo (University of Bergamo)
- 11:44 – Extended Value Stream Mapping Method: Harmonizing Information Flows for the Control of Production Processes (I)** WeAT3.3
12:06 Busert, Timo (Helmut-Schmidt-Universität), Fay, Alexander (Helmut Schmidt Universitaet)
- 12:06 – Process Optimisation Using Collaborative Robots - Comparative Case Study (I)** WeAT3.4
12:28 Quenehen, Anthony (Arts Et Métiers ParisTech), Pocachard, Jerome (ECAM Lyon, School of Engineering), Klement, Nathalie (Arts Et Métiers)

System Identification for Manufacturing Control Applications (Open Invited Track)

WeAT4
Room **013**

Chair: Bakhtadze, Natalia **V.A. Trapeznikov Institute of Control Sciences, Russian Academy of Sciences**
Co-Chair: Chernyshov, Kirill **V.A. Trapeznikov Institute of Control Sciences**

- 11:00 – Relay Feedback Identification with Additional Integrator (I)** WeAT4.1
11:22 Hofreiter, Milan (Czech Technical University in Prague, Fac. of Mechanical Eng)
- 11:22 – Statistical Linearization of MIMO Systems by Use of Quadratic Tsallis Mutual Information (I)** WeAT4.2
11:44 Chernyshov, Kirill (V.A. Trapeznikov Institute of Control Sciences)
- 11:44 – Structural Identification of Nonlinear Dynamic Systems (I)** WeAT4.3
12:06 Karabutov, Nikolay (Moscow State University of Information Technology, Radio Engineer), Shmyrin, Anatoly (Lipetsk State Technical University)
- 12:06 – Model of the Automated Warehouse Management and Forecasting System in the Conditions of Transition to Industry 4.0 (I)** WeAT4.4
12:28 Lototsky, Vladimir (V.A. Trapeznikov Institute of Control Sciences), Sabitov, Rustem (Kazan National Research Technical University Named after A.N.Tup), Smirnova, Gulnara (Kazan National Research Technical University Named after A.N.Tup), Sirazetdinov, Bulat (Kazan National Research Technical University Named after A.N.Tup), Elizarova, Natalya (Kazan National Research Technical University Named after A.N.Tup), Sabitov, Shamil (Kazan Federal University)

Planning and Scheduling of Manufacturing Processes (Open Invited Track)

WeAT5
Room **014**

Chair: Werner, Frank *Otto-Von-Guericke-University Magdeburg*
Co-Chair: Müller, David *University of Siegen*

- 11:00 – On Scheduling Problems with Forbidden Stack-Overflows (I)** WeAT5.1
11:22 Werner, Frank (Otto-Von-Guericke-University Magdeburg), Gafarov, Evgeny R. (Institute of Control Sciences of the Russian Academy OfSciences)
- 11:22 – The Optimality Box and Region for Single-Machine Scheduling of a Set of Jobs with Uncertain Durations (I)** WeAT5.2
11:44 Sotskov, Yuri (Academy of Sciences of Belarus), Egorova, Natalja (United Institute of Informatics Problems), Werner, Frank (Otto-Von-Guericke-University Magdeburg)
- 11:44 – Mathematical Models for a Flexible Job Shop Scheduling Problem with Machine Operator Constraints (I)** WeAT5.3
12:06 Kress, Dominik (University of Siegen), Müller, David (University of Siegen)
- 12:06 – Improved Lagrangian Relaxation Based Optimization Procedure for Scheduling with Storage (I)** WeAT5.4
12:28 Gu, Hanyu (University of Technology Sydney), Memar, Julia (University of Technology, Sydney), Zinder, Yakov (University of Technology, Sydney)

Operations Research Techniques for Complex Systems Scheduling (Invited Session)

WeAT6
Room **015**

Chair: Yalaoui, Farouk *University of Technology of Troyes*
Co-Chair: Ouazene, Yassine *Université De Technologie De Troyes*

- 11:00 – Joint Pricing and Lot-Sizing Problem with Variable Capacity (I)** WeAT6.1
11:22 Couzon, Paulin (University of Technology of Troyes), Ouazene, Yassine (Université De Technologie De Troyes), Yalaoui, Farouk (University of Technology of Troyes)
- 11:22 – Prioritizing Surgical Cancellation Factors Based on a Fuzzy Best-Worst Method: A Case Study (I)** WeAT6.2
11:44 Momen, Sara (University of Tehran), Tavakkoli-Moghaddam, Reza (University of Tehran), Ghasemkhani, Ahmad (University of Tehran), Shahnejat-Bushehri, Sina (University of Tehran), Tavakkoli-Moghaddam, Haed (University of Tarbiat Modares)
- 11:44 – Home Health Care Routing and Scheduling Problem Considering Temporal Dependencies and Perishability with Simultaneous Pickup and Delivery (I)** WeAT6.3
12:06 Shahnejat-Bushehri, Sina (University of Tehran), Tavakkoli-Moghaddam, Reza (University of Tehran), Momen, Sara (University of Tehran), Ghasemkhani, Ahmad (University of Tehran), Tavakkoli-Moghaddam, Haed (University of Tarbiat Modares)
- 12:06 – A Reactive Multi-Agent Approach for Online (re)scheduling of Resources in Port Container Terminals (I)** WeAT6.4
12:28 Chargui, Kaoutar (National School of Applied Sciences of Tetouan, University of Ab), El fallahi, Abdullah (Uae), Reghioui, Mohamed (University Abdelmalek Essaadi), Zouadi, Tarik (Université Internationale De Rabat, Rabat Business School (RBS).)

Lean Manufacturing and
Quality Management - I (Regular Session)

WeAT7
Room 016

Chair: Takemoto, Yasuhiko *Kindai University*
Co-Chair: Heutmann, Timo *Fraunhofer-Institut Für Produktionstechnologie IPT*

11:00 – 11:22	A New Mathematical Model to Improve the Quality Level in Production Process Considering Feigenbaum's Quality Costs	WeAT7.1
	Mehdizadeh, Esmaeil (Islamic Azad University, Qazvin Branch), Meysam, Evazkhah (Islamic Azad University, Qazvin Science & Research Branch)	
11:22 – 11:44	Study on State Transition Tracking Method in Process Fraction Nonconforming	WeAT7.2
	Takemoto, Yasuhiko (Kindai University), Arizono, Ikuo (Okayama University)	
11:44 – 12:06	Integrated Energy Efficiency in Production	WeAT7.3
	Heutmann, Timo (Fraunhofer-Institut Für Produktionstechnologie IPT), Zhou, Beiyan (Fraunhofer-Institut Für Produktionstechnologie IPT), Schommer, Christoph (Fraunhofer-Institut Für Produktionstechnologie IPT), Schmitt, Robert (Werkzeugmaschinenlabor WZL)	
12:06 – 12:28	Optimal Supply Network with Both Vendor Managed Inventory and Direct Shipping	WeAT7.4
	Yang, Yiqin (University of Windsor), Zhang, Guoqing (University of Windsor), Shi, Jianmai (National University of Defense Technology), Li, Jian (Beijing University of Technology)	

Decision-Making in Logistics and
Supply Chains (Invited Session)

WeAT8
Room 017

Chair: Zhang, Sicheng *Beijing University of Chemical Technology*
Co-Chair: Meyer, Christoph Manuel *Berlin School of Economics and Law (HWR Berlin)*

11:00 – 11:22	Modeling Multi-Item Inventory Problem under Type-2 Fuzzy Demand (I)	WeAT8.1
	Li, Yanan (Beijing University of Chemical Technology)	
11:22 – 11:44	Optimizing Facility Location and Design	WeAT8.2
	Aboolian, Robert (California State University San Marcos), Berman, Oded (University of Toronto), Krass, Dmitry (University of Toronto)	
11:44 – 12:06	Success Factors for Supply Chain Management Projects: An Empirical Analysis	WeAT8.3
	Meyer, Christoph Manuel (Berlin School of Economics and Law (HWR Berlin)), Garcia Torres, Edna Liliana (Berlin School of Economics and Law (HWR Berlin))	
12:06 – 12:28	Critical Success Factors for Humanitarian Supply Chain Management: A Grey DEMATEL Approach (I)	WeAT8.4
	Behl, Abhishek (Indian Institute of Technology, Bombay), Dutta, Pankaj (Indian Institute of Technology Bombay), Gupta, Shivam (Montpellier Business School)	

Emerging Technologies and Intelligent
Maintenance Management (Invited Session)

WeAT9
Room 018

Chair: Romero, David *Tecnológico De Monterrey*
Co-Chair: Montes, Nicolas *University CEU Cardenal Herrera*

11:00 – 11:22	Mini-Term, a Novel Paradigm for Fault Detection (I)	WeAT9.1
	Garcia, Eduardo (Ford España S.L), Montes, Nicolas (University CEU Cardenal Herrera)	
11:22 – 11:44	Maintenance, Repair, and Operations Parts Inventory Management in the Era of Industry 4.0 (I)	WeAT9.2
	Chen, Jing (Ford Motor Company), Gusikhin, Oleg (Ford Motor Company), Finkenstaedt, William (Ford Motor Company), Liu, Yu-Ning (Ford Motor Company)	
11:44 – 12:06	Machine Learning Framework for Predictive Maintenance in Milling (I)	WeAT9.3
	Traini, Emiliano (Politecnico Di Torino), Bruno, Giulia (Politecnico Di Torino), D'Antonio, Gianluca (Politecnico Di Torino), Lombardi, Franco (Politecnico Di Torino)	
12:06 – 12:28	Study on Preventive Maintenance for Priority Standby Redundant System	WeAT9.4
	Hirata, Ryosuke (Okayama University), Arizono, Ikuo (Okayama University), Takemoto, Yasuhiko (Kindai University)	

Fractional Order Systems and Controllers for
Industrial Processes: Advances and Prospects (Invited Session)

WeAT10
Room 019

Chair: Schulte, Horst *HTW Berlin*
Co-Chair: Ladaci, Samir *National Polytechnic School of Constantine*

11:00 – 11:22	Fractional Wiener System Identification Using Heuristic Optimization Technique Based on Key Term Principle (I)	WeAT10.1
	Sersour, Lamia (University of Mouloud Mammeri, Tizi Ouzou, Algeria), Djamah, Tounsia (University Mouloud Mammeri of Tizi-Ouzou, Tizi-Ouzou, Algeria), Bettayeb, Maamar (Univ of Sharjah)	
11:22 – 11:44	Adaptive Cruise Control System for an Electric Vehicle Using a Fractional Order Model Reference Adaptive Strategy (I)	WeAT10.2
	Balaska, Hanane (University L'arbi Ben M'hidi, Oum El-Bouaghi), Ladaci, Samir (National Polytechnic School of Constantine), Schulte, Horst (HTW Berlin), Djouambi, Abdelbaki (Université Larbi Ben M'Hidi)	
11:44 – 12:06	Optimal Design of Fractional Order PI DQ Controller for an AVR System Using Ant Lion Optimizer (I)	WeAT10.3
	Bourouba, Bachir (Setif 1 University), Ladaci, Samir (National Polytechnic School of Constantine), Schulte, Horst (HTW Berlin)	
12:06 – 12:28	Fractional Hammerstein System Identification Based on Two Decomposition Principles (I)	WeAT10.4
	Hammar, Karima (University of Tizi Ouzou), Djamah, Tounsia (University Mouloud Mammeri of Tizi-Ouzou, Tizi-Ouzou, Algeria), Bettayeb, Maamar (Univ of Sharjah)	

Planning and Scheduling of Transportation and Logistics under Uncertainty Environments (Invited Session)

WeAT11
Room 020

Chair: Liu, Xin *Tongji University*

Co-Chair: Yang, Xuenan *Tongji University*

- 11:00 – Entropy Maximization Based Capability Allocation of Clothing Production Enterprises in Sharing Economy (I)** WeAT11.1
11:22 Zheng, Feifeng (Donghua Univ), Song, Qinrui (Donghua University)
- 11:22 – An Improved Heuristic for Single Machine Lot Scheduling Problem (I)** WeAT11.2
11:44 Zheng, Feifeng (Donghua Univ), Jin, Kaiyuan (Donghua University)
- 11:44 – Workforce Assignment in Assembly Line Considering Uncertain Demand (I)** WeAT11.3
12:06 Liu, Ming (Tongji University), Liu, Rongfan (Tongji University), Yang, Xuenan (Tongji University)
- 12:06 – Satisfaction-Driven Bi-Objective Multi-Skill Workforce Scheduling Problem (I)** WeAT11.4
12:28 Liu, Ming (Tongji University), Liu, Xin (Tongji University)

Doctoral Student Workshop (Special Session)

WeAT12
Room 101

Chair: Grosse, Eric *Technische Universität Darmstadt*

Co-Chair: Frazzon, Enzo Morosini *Federal University of Santa Catarina*

- 11:00 – A Multi-Objective Whale Swarm Algorithm for Energy-Efficient Distributed Permutation Flow Shop Scheduling Problem with Sequence Dependent Setup Times (I)** WeAT12.1
11:22 Wang, Guangchen (Huazhong University of Science and Technology, State Key Laborato), Li, Xinyu (Huazhong University of Science & Technology), Gao, Liang (Huazhong University of Science and Technology), Li, Peigen (Huazhong University of Science and Technology, State Key Laborato)
- 11:22 – Optimal Control of Production and Maintenance Operations in Smart Custom Manufacturing Systems with Multiple Machines** WeAT12.2
11:44 Gupta, Elluri Vignan (IIT Kharagpur), Mogale, Dnyaneshwar (Indian Institute of Technology, Kharagpur, India), Tiwari, Manoj K (Indian Institute of Technology, Kharagpur)
- 11:44 – Assembly Line Design with Tools Vibration (I)** WeAT12.3
12:06 Finco, Serena (Università Degli Studi Di Padova), Abdous, Mohammed-Amine (Mines Saint-Etienne, UMR CNRS 6158, LIMOS), Battini, Daria (University of Padua), Calzavara, Martina (University of Padua), Delorme, Xavier (Mines Saint-Etienne)

Industrial Robotics: Modeling, Control and Applications - I (Open Invited Track)

WeAT13
Room 102

Chair: Klimchik, Alexandr *Innopolis University*

Co-Chair: Pashkevich, Anatol *Ecole Des Mines De Nantes*

- 11:00 – Control of a Mobile Wheeled Robot Along Optimal Trajectories (I)** WeAT13.1
11:22 Karavaev, Yury (Kalashnikov Izhevsk State Technical University), Ardentov, Andrey (Program Systems Institute of RAS), Efremov, Kirill (Kalashnikov Izhevsk State Technical University)
- 11:22 – Development of Typical Collision Reactions in Combination with Algorithms for External Impacts Identification (I)** WeAT13.2
11:44 Mikhel, Stanislav (Innopolis University), Popov, Dmitry (Innopolis University), Mamedov, Shamil (Innopolis University), Klimchik, Alexandr (Innopolis University)
- 11:44 – Robust Energy Aware Output Controller for Uncertain Plant (I)** WeAT13.3
12:06 Dobriborsci, Dmitrii (ITMO University), Margun, Alexey (ITMO University), Kolyubin, Sergey (ITMO University)
- 12:06 – Real Time Motion Generation for Mobile Robot (I)** WeAT13.4
12:28 Gao, Jiuchun (IMT-Atlantique), Pashkevich, Anatol (Ecole Des Mines De Nantes), Claveau, Fabien (Ecole Des Mines De Nantes), Chevrel, Philippe (IMT Atlantique / LS2N)

Interoperability and Information Management (Regular Session)

WeAT14
Room 103

Chair: Gola, Arkadiusz *Faculty of Mechanical Engineering, Lublin University of Technology*

Co-Chair: Stadnicka, Dorota *Rzeszow University of Technology*

- 11:00 – Interoperability Aims in Building Information Modeling Exchanges: A Literature Review** WeAT14.1
11:22 Sattler, Léa (ENSAM), Lamouri, Samir (Arts Et Métiers ParisTech), PELLERIN, Robert (Polytechnique Montreal), Maigne, Thomas (Treegram)
- 11:22 – A General Framework for Data Uncertainty and Quality Classification** WeAT14.2
11:44 Simard, Vanessa (FORAC - Université Laval), Rönnqvist, Mikael (Université Laval), LeBel, Luc (Université Laval), Lehoux, Nadia (Université Laval)
- 11:44 – Possibility Theory and PROMETHEE II for Decision Aid in Engineering Design Process** WeAT14.3
12:06 SYLLA, Abdourahim (INP ENIT Tarbes), Coudert, Thierry (University of Toulouse), Vareilles, Elise (Toulouse University - Mines Albi), GENESTE, Laurent (Ecole Nationale d'Ingénieurs De Tarbes), Aldanondo, Michel (Toulouse University - Mines Albi), Ayachi, Rania (IMT Mines Albi)
- 12:06- Industry 4.0 Readiness in Hungary: Model, and the First Results in Connection to Data Application (I)** WeAT14.4
12:28 Nick, Gábor András (Hungarian Academy of Sciences Institute for Computer Science And), Szaller, Ádám (Hungarian Academy of Sciences Institute for Computer Science And), Bergmann, Júlia (Centre of Excellence in Production Informatics and Control, Inst), Vargado, Tamas (MTA SZTAKI)

Formal Modelling and Analysis of Reconfigurable Manufacturing Systems (Invited Session)

WeAT15
Room 107

Chair: Vareilles, Elise *Toulouse University - Mines Albi*
Co-Chair: Azevedo, Maria Manuela *INESC TEC*

- 11:00 – Industrial Services Characterization for Bidding Process (I)** WeAT15.1
11:22 Guillon, Delphine (IMT Mines Albi, ESTIA), Villeneuve, Eric (Univ. Bordeaux, Estia Institute of Technology), MERLO, Christophe (ESTIA), Vareilles, Elise (Toulouse University - Mines Albi), Aldanondo, Michel (Toulouse University - Mines Albi)
- 11:22 – Representative Benchmark for Concurrent Product and Process Configuration Problem: Definitions and Some Problem Instances (I)** WeAT15.2
11:44 Garcés Monge, Luis Ignacio (Instituto Tecnológico De Costa Rica), Pitiot, Paul (3IL-CCI Rodez), Aldanondo, Michel (Toulouse University - Mines Albi), Vareilles, Elise (Toulouse University - Mines Albi)
- 11:44 – Context-Sensitive Reconfiguration of Collaborative Manufacturing Systems (I)** WeAT15.3
12:06 Caesar, Birte (Helmut Schmidt University), Nieke, Michael (TU Braunschweig), Köcher, Aljosha (Helmut Schmidt University), Hildebrandt, Constantin (Helmut Schmidt Universitaet), Seidl, Christoph (TU Braunschweig), Fay, Alexander (Helmut Schmidt Universitaet), Schaefer, Ina (TU Braunschweig)
- 12:06 – Decision Making in Near Zero Energy Building Refurbishment: A Technology Alternatives Ranking Tool (I)** WeAT15.4
12:28 Laguna Salvadó, Laura (Univ. Bordeaux, Estia Institute of Technology), Villeneuve, Eric (Univ. Bordeaux, Estia Institute of Technology), Masson, Dimitri (Estia)

IoT and Smart Supply Chain Management (Invited Session)

WeAT16
Room 108

Chair: Zhang, Guoqing *University of Windsor*
Co-Chair: Li, Kevin W. *University of Windsor*

- 11:00 – Optimal Leasing and Selling Strategies of Durable Goods Manufacturer Considering Consumers' Capital Constraint (I)** WeAT16.1
11:22 Li, Jian (Beijing University of Technology), Deng, Zhiwen (Beijing University of Chemical Technology), Zhang, wen (Beijing University of Technology), Zhang, Guoqing (University of Windsor)
- 11:22 – Automotive Returnable Container Management with RFID: A Simulation Approach (I)** WeAT16.2
11:44 Giubilato, Benedetto (University of Windsor), Zhang, Guoqing (University of Windsor), Alfieri, Arianna (Politecnico Di Torino)
- 11:44 – Pricing Decisions in a Socially Responsible Supply Chain under Carbon Cap-And-Trade Regulation (I)** WeAT16.3
12:06 Zhang, Zhi-Chao (Anhui Science and Technology University), Li, Kevin W. (University of Windsor), Liu, Zhi (Anhui Polytechnic University), Huang, Jun (Hunan University)

Supply Chain Risk Management - I (Open Invited Track)

WeAT17
Room 109

Chair: Ivanov, Dmitry *Berlin School of Economics and Law*
Co-Chair: Dolgui, Alexandre *IMT Atlantique*

- 11:00 – New Disruption Risk Management Perspectives in Supply Chains: Digital Twins, the Ripple Effect, and Resilience (I)** WeAT17.1
11:22 Ivanov, Dmitry (Berlin School of Economics and Law), Dolgui, Alexandre (IMT Atlantique)
- 11:22 – Disruption Tails and Post-Disruption Instability Mitigation in the Supply Chain (I)** WeAT17.2
11:44 Ivanov, Dmitry (Berlin School of Economics and Law), Rozhkov, Maxim (X5)
- 11:44 – Managing Risk for E-Commerce Supply Chains: An Empirical Study** WeAT17.3
12:06 Dutta, Pankaj (Indian Institute of Technology Bombay), Suryawanshi, Pravin (Indian Institute of Technology Bombay), Gujarathi, Pallav (Indian Institute of Technology Bombay), Dutta, Arnab (Indian Institute of Technology Bombay)
- 12:06 – Intellectualization of Control: Cyber-Physical Supply Chain Risk Analytics (I)** WeAT17.4
12:28 Ivanov, Dmitry (Berlin School of Economics and Law), Dolgui, Alexandre (IMT Atlantique), Sokolov, Boris (SPIIRAS), Ivanova, Marina (HWR Berlin)

Sustainable Operations & Supply Chain Management (Invited Session)

WeAT18
Room 110

Chair: Brandenburg, Marcus *Hochschule Flensburg*
Co-Chair: Oelze, Nelly *Hochschule Flensburg*

- 11:00 – A Model for Assessing Economic and Environmental Sustainability Dimensions of a Fashion Supply Chain and a Case Study (I)** WeAT18.1
11:22 Bottani, Eleonora (University of Parma, Department of Engineering and Architecture), Tebaldi, Letizia (University of Parma), Lazzari, Isabella (Oiki Acciai Inossidabili S.p.A. Via Paradigna 95/a, Parma), Casella, Giorgia (University of Parma)
- 11:22 – Assessment of the Economic and Environmental Sustainability of a Food Cold Supply Chains (I)** WeAT18.2
11:44 Bottani, Eleonora (University of Parma, Department of Engineering and Architecture), Casella, Giorgia (University of Parma), Nobili, Majcol (Vercos Frigo Srl., Via Kennedy 82/A, 42035 Loc. Felina – Casteln), Tebaldi, Letizia (University of Parma)
- 11:44 – Cultural Aspects on 'ethical Consumerism' for Textiles: A German-Russian Comparison (I)** WeAT18.3
12:06 Oelze, Nelly (Hochschule Flensburg), Khvatova, Tatiana (Peter the Great St. Petersburg Polytechnic University), Bühler, Dorothee (Leibniz University Hannover)
- 12:06 – Green Technology Adoption in Textile Supply Chains with Environmental Taxes: Production, Pricing, and Competition** WeAT18.4
12:28 Shen, Bin (Donghua University), Li, Qingying (Donghua University)

Modeling and Data Analytics in Manufacturing and Supply Chain Operations (Invited Session)

Chair: Chen, Weiwei *Rutgers Business School - Newark and New Brunswick*
Co-Chair: Rai, Rahul *Buffalo-SUNY*

WeBT1
Room 001

15:30 – 15:52	Driven by Data or Derived through Physics? Hybrid Physics Guided Machine Learning Approach*. Rai, Rahul (Buffalo-SUNY)	WeBT1.1
15:52 – 16:14	Machine Learning in Production Planning and Control: A Review of Empirical Literature (I) Usuga Cadavid, Juan Pablo (Arts Et Metiers ParisTech), Lamouri, Samir (Arts Et Métiers ParisTech), Grabot, Bernard (ENIT France), Fortin, Arnaud (IFAKT FRANCE SAS)	WeBT1.2
16:14 – 16:36	O2O On-Demand Delivery Optimization with Mixed Driver Forces (I) Dai, Hongyan (Central University of Finance and Economics), Tao, Jiawei (Tsinghua University), Jiang, Hai (Tsinghua University), Chen, Weiwei (Rutgers Business School - Newark and New Brunswick)	WeBT1.3
16:36 – 16:58	Robust Two-Stage Packing into Designated and Multipurpose Bins (I) Al Najjar, Yacine (Paris Research Center - Huawei Technologies Co. Ltd), Goldberg, Noam (Bar-Ilan University), Karhi, Shlomo (Bar Ilan University), Poss, Michael (LIRMM)	WeBT1.4
16:58 – 17:20	Natural Frequency Prediction of FDM Manufactured Parts Using ANN Approach (I) Ali, Fahraz (The University of the West Indies, St. Augustine), Chowdary, Boppana V. (The University of the West Indies, St. Augustine)	WeBT1.5

Modeling and Optimization Methods for Energy-Efficient Manufacturing Systems - II (Invited Session)

Chair: Yalaoui, Farouk *University of Troyes*
Co-Chair: OUAZENE, Yassine *Université De Technologie De Troyes*

WeBT2
Room 002

15:30 – 15:52	Single-Machine Scheduling Problem with Total Energy Consumption Costs Minimization (I) Aghelnejad, Mohammadmohsen (University of Technology of Troyes), Ouazene, Yassine (Université De Technologie De Troyes), Yalaoui, Alice (University of Technology of Troyes)	WeBT2.1
15:52 – 16:14	Machine Group Balancing: An Industrial Case (I) Berthier, Alice (Université De Technologie De Troyes), Yalaoui, Alice (University of Technology of Troyes), Chehade, Hicham (Opta LP), Yalaoui, Farouk (University of Technology of Troyes), Amodeo, Lionel (University of Technology of Troyes), Coquelet, Guillaume (Petit Bateau)	WeBT2.2
16:14 – 16:36	A Two-Stage Assignment Strategy for the Robust Scheduling of Dual-Resource Constrained Stochastic Job Shop Scheduling Problems (I) Xiao, Shichang (Shanghai Maritime University), Wu, Zigao (Northwestern Polytechnical University), YU, Shaohua (CentraleSupélec)	WeBT2.3
16:36 – 16:58	A Reference Framework for the Holistic Evaluation of Industry 4.0 Solutions for Small and Medium-Sized Enterprises (I) Essakly, Amjed (TU Braunschweig), Wichmann, Matthias (TU Braunschweig), Spengler, Thomas S. (TU Braunschweig)	WeBT2.4
16:58 – 17:20	A Literature Review of Optimization Problems for Reconfigurable Manufacturing Systems (I) Brahimi, Nadjib (Rennes School of Business), Dolgui, Alexandre (IMT Atlantique), Gurevsky, Evgeny (Université De Nantes), Yelles-Chaouche, Abdelkrim R. (IRT Jules Verne)	WeBT2.5

SME Digitalization in the Era of Industry 4.0 (Special Session)

Chair: VILLA, Agostino *Politecnico Di Torino*
Co-Chair: Taurino, Teresa *Politecnico Di Torino*

WeBT3
Room 004

15:30 – 15:52	A Method for Applying Industry 4.0 in Small Enterprises (I) Taurino, Teresa (Politecnico Di Torino), VILLA, Agostino (Politecnico Di Torino)	WeBT3.1
15:52 – 16:14	Industrie 4.0-Scouts Programme (I) Lentes, Joachim (Fraunhofer IAO), Zimmermann, Nikolas (Fraunhofer IAO), Hertwig, Michael (Fraunhofer IAO)	WeBT3.2
16:14 – 16:36	Introducing VR Technology for Increasing Digitalization of SMEs (I) Liagkou, Vasiliki (University of Ioannina), Stylios, Chrysostomos (University of Ioannina),	WeBT3.3
16:36 – 16:58	Sustainable Operations Management for Industry 4.0 and Its Social Return (I) Ares, Enrique (Department of Engineering Design, School of Industrial Engineeri), Pe-laez, Gustavo (Department of Engineering Design, School of Industrial Engineeri), Naderi, Mehdi (Department of Engineering Design, School of Industrial Engineeri), Prieto, Daniel (Technical and Engineering Services at the SOLTEC Company), Araujo, Madale-na (University of Minho)	WeBT3.4

System Identification for Manufacturing Control Applications - II (Open Invited Track)

Chair: Chernyshov, Kirill *V.A. Trapeznikov Institute of Control Sciences*
Co-Chair: Bakhtadze, Natalia *V.A. Trapeznikov Institute of Control Sciences, Russian Academy of Sciences*

WeBT4
Room 013

15:30 – 15:52	Structure Identification of Continuous-Time Block-Oriented Nonlinear Systems in the Frequency Domain (I) Shanshiashvili, Besarion (Georgian Technical University), Prangishvili, Archil (Georgian Technical University), Tsveraidze, Zurab (Georgian Technical University)	WeBT4.1
15:52 – 16:14	Mathematical Model and Method of Analysis of the Personal and Group Competence to Complete the Project Task (I) Bakhtadze, Natalia (V.A. Trapeznikov Institute of Control Sciences, Russian Academy), Zaikin, Oleg (Warsaw School of Computer Science), Zylawski, Andrzej (Warsaw School of Computer Science), Nikulina, Irina (V.A. Trapeznikov Institute of Control Sciences), Kulba, Vladimir (Institute of Control Sciences of Russian Academy Of)	WeBT4.2
16:14 – 16:36	Non-Parametric Procedures in Evaluation of Collective Professional Skills of a Human-Operators Shift (I) Chernyshov, Kirill (V.A. Trapeznikov Institute of Control Sciences)	WeBT4.3
16:36 – 16:58	Stability Prediction Techniques for Electric Power Systems Based on Identification Models and Gramians (I) Bakhtadze, Natalia (V.A. Trapeznikov Institute of Control Sciences, Russian Academy), Yadykin, Igor (V.A. Trapeznikov Institute of Control Sciences, Russian Academy)	WeBT4.4
16:58 – 17:20	Predictor-Based Adaptive Control System with Stability Analysis (I) Denisova, Liudmila (Omsk State Technical University), Meshcheryakov, Vitalii (Siberian State Automobile and Highway University (SibADI))	WeBT4.5

Planning and Scheduling of Manufacturing Processes - II (Open Invited Track)

WeBT5
Room 014

Chair: Azevedo, Maria Manuela <i>INESC TEC</i> Co-Chair: Manzini, Massimo <i>Department of Mechanical Engineering, Politecnico Di Milano, 20156, Milan, Italy</i>		
15:30 – 15:52	A Petri Net Modeling Framework for the Control of Flexible Manufacturing Systems (I) Wenzelburger, Philipp (University of Stuttgart), Allgower, Frank (University of Stuttgart)	WeBT5.1
15:52 – 16:14	Lexicographic R* Criterion for Decision Making under Uncertainty in Reverse Logistics (I) Krug, Zoé (ISAE-SUPAERO), guillaume, romain (Irit/LGP), Battaïa, Olga (ISAE-SUPAERO)	WeBT5.2
16:14 – 16:36	A Scheduling Approach for Chemical Vapour Deposition Processes in the Production of Semiconductors (I) Manzini, Massimo (Department of Mechanical Engineering, Politecnico Di Milano, 201), Urgo, Marcello (Politecnico Di Milano)	WeBT5.3
16:36 – 16:58	Scheduling for Last-Mile Meal-Delivery Processes (I) Cosmi, Matteo (Roma Tre University), Nicosia, Gaia (Università Roma Tre), Pacifici, Andrea (Università Di Roma “Tor Vergata”)	WeBT5.4
16:58 – 17:20	A Multi-Objective Production Scheduling Case: Information-Rich Heuristics and Dead-lock Prevention Mechanisms Rotondo, Anna (Irish Manufacturing Research), Garcia, Carlos (Irish Manufacturing Research), Quilligan, Fergus (Irish Manufacturing Research)	WeBT5.5

Operations Research Techniques for Complex Systems Scheduling - II (Invited Session)

WeBT6
Room 015

Chair: Tavakkoli-Moghaddam, Reza <i>University of Tehran</i> Co-Chair: Amodeo, Lionel <i>University of Technology of Troyes</i>		
15:30 – 15:52	An Integrated Production Inventory Routing Problem for Multi Perishable Products with Fuzzy Demands and Time Windows (I) Ghasemkhani, Ahmad (University of Tehran), Tavakkoli-Moghaddam, Reza (University of Tehran), Shahnejat-Bushehri, Sina (University of Tehran), Momen, Sara (University of Tehran), Tavakkoli-Moghaddam, Haed (University of Tarbiat Modares)	WeBT6.1
15:52 – 16:14	Column Generation for the Discrete UC Problem with Min-Stop Ramping Constraints (I) Dupin, Nicolas (Université Paris-Sud, Université Paris-Saclay)	WeBT6.2
16:14 – 16:36	A Hybrid Heuristic for the Multi-Product Straight Pipeline Scheduling Problem (I) Meryem, Bamoumen (EMINES School of Industrial Management, Université Mohammed VI P), Belil, Sabah (EMINES, Mohammed VI Polytechnic University), Elfirdoussi, Selwa (EMINES UM6P), Ren, Libo (Auvergne University, CRCGM EA3849), Tchernev, Nikolay (Auvergne University, EUM)	WeBT6.3
16:36 – 16:58	A Tailored Fuzzy Simulation Integrated with a Fuzzy DEA Method for a Resilient Facility Layout Problem: A Case Study of a Refrigerator Injection Process (I) Hosseini, Zahra (University of Tehran), Navazi, Fatemeh (University of Tehran), SIADAT, Ali (Arts Et Métiers ParisTech), Memari, Pedram (University of Tehran), Tavakkoli-Moghaddam, Reza (University of Tehran)	WeBT6.4
16:58 – 17:20	Models for the Single Product Disassembly Lot Sizing Problem with Disposal (I) Pour Massahian Tafti, Meisam (UTT-LOSI), godichaud, matthieu (Université De Technologie De Troyes UTT), Amodeo, Lionel (University of Technology of Troyes)	WeBT6.5

Lean Manufacturing and Quality Management - II (Regular Session)

WeBT7
Room 016

Chair: Pastore, Erica <i>Politecnico Di Torino</i> Co-Chair: Altendorfer, Klaus <i>University of Applied Sciences Upper Austria</i>		
15:30 – 15:52	Influence of Workforce Qualification on Service Level in a Flow Shop with Two Lines Schober, Andreas (University of Applied Sciences Upper Austria, School of Management), Altendorfer, Klaus (University of Applied Sciences Upper Austria), Karder, Johannes (University of Applied Sciences Upper Austria), Beham, Andreas (University of Applied Sciences Upper Austria)	WeBT7.1
15:52 – 16:14	A Customized Two-Dimensional Warranty Menu Design for Customers with Heterogeneous Usage Rates Zhang, Zhaomin (Civil Aviation University of China), He, Zhen (Tianjin University), Shuguang, He (Tianjin University)	WeBT7.2
16:14 – 16:36	Barriers and Critical Success Factors for Implementing Lean Manufacturing in SMEs Elkhairi, Ayoub (University Hassan 1st, Faculty of Sciences and Techniques), Fedouaki, Faycal (Hassan 2 University, ENSAM Casablanca), Semma, El Alami (Faculty of Sciences and Techniques, University Hassan 1st, Setta)	WeBT7.3
16:36 – 16:58	Sustainable Open Vehicle Routing with Release Time and Time Window in Two-Echelon Distribution Systems Babagolzadeh, Mahla (School of Commerce, University of Southern Queensland, Toowoomba), Shrestha, Anup (School of Management &Enterprise, University of Southern Queensland), Abbasi, Babak (School of Business IT and Logistics Royal Melbourne Institute), Zhang, Shane (School of Commerce, University of Southern Queensland, Toowoomba), Atefi, Reza (Department of Industrial Engineering, Ferdowsi University of Mas), Woodhead, Alice (The Rural Economies Centre of Excellence (RECoE), University Of)	WeBT7.4
16:58 – 17:20	Reducing Resupply Time with Additive Manufacturing in Spare Part Supply Chain (I) Cestana, Alessandro (Politenico Di Milano), Pastore, Erica (Politecnico Di Torino), Alfieri, Arianna (Politecnico Di Torino), Matta, Andrea (Politecnico Di Milano)	WeBT7.5

Inventory Control, Replenishment and Lot-Sizing under Demand, Yield or Lead Time Uncertainties (Invited Session)

WeBT8
Room 017

Chair: Dolgui, Alexandre <i>IMT Atlantique</i> Co-Chair: Ben Ammar, Oussama <i>IMT Atlantique, Campus De Nantes</i>		
15:30 – 15:52	Applications for Smart Lighting Systems in Production and Logistics: A Structured Literature Review Füchtenhans, Marc (Institute of Production and Supply Chain Management, Department), Grosse, Eric (Technische Universität Darmstadt), Glock, Christoph (Technische Universität Darmstadt)	WeBT8.1
15:52 – 16:14	Optimal Ordering and Clearance Strategies under Demand Uncertainty (I) Mechmech, Riha (National Engineering School of Tunis), Harbi, Slim (National Engineering School of Tunis), Hadj Alouane, Atidel (Ecole Nationale d'Ingenieurs De Tunis), Sboui, Sami (SQLI Services,)	WeBT8.2
16:14 – 16:36	A Robust Capacitated Lot Sizing Problem with Setup Times and Overtime Decisions with Backordering Allowed under Demand Uncertainty (I) Abdel-Aal, Mohammad (King Fahd University of Petroleum and Minerals)	WeBT8.3
16:36 – 16:58	Scenario-Based Stochastic Linear Programming Model for Multi-Period Disassembly Lot-Sizing Problems under Random Lead Time (I) Slama, Ilhem (IMT Atlantique, Nantes, France), Ben Ammar, Oussama (IMT Atlantique, Campus De Nantes), Masmoudi, Faouzi (Ecole Nationale Des Ingénieurs), Dolgui, Alexandre (IMT Atlantique)	WeBT8.4
16:58 – 17:20	Disassembly Scheduling Problem: Literature Review and Future Research Directions (I) Slama, Ilhem (IMT Atlantique, Nantes, France), Ben Ammar, Oussama (IMT Atlantique, Campus De Nantes), Masmoudi, Faouzi (Ecole Nationale Des Ingénieurs), Dolgui, Alexandre (IMT Atlantique)	WeBT8.5

Maintenance Management (Regular Session)

Chair: Passath, Theresa *Montanistic University Leoben*
Co-Chair: Zanjani, Masoumeh *Concordia University*

WeBT9
Room 018

- | | | |
|----------------------|--|---------|
| 15:30 – 15:52 | Decision Making in Predictive Maintenance: Literature Review and Research Agenda for Industry 4.0
Bousdekis, Alexandros (Information Management Unit (IMU), Institute of Communication An), Lepenioti, Katerina (Information Management Unit (IMU), Institute of Communication An), Apostolou, Dimitris (Department of Informatics, University of Piraeus), Mentzas, Gregoris (Information Management Unit (IMU), Institute of Communication An) | WeBT9.1 |
| 15:52 – 16:14 | Integrated Workforce Training and Operations Planning for Maintenance Service Providers
Tavakoli Kafiabad, Shayan (Concordia University), Kazemi Zanjani, Masoumeh (Concordia University), Nourelfath, Mustapha (Laval University) | WeBT9.2 |
| 16:14 – 16:36 | Distributed Maintenance: A Literature Analysis and Classification
Attajer, Ali (Ecole Centrale Casablanca), Darmoul, Saber (Ecole Centrale Casablanca), Riane, Fouad (Ecole Centrale Casablanca), Bouras, Abdelghani (Laboratoire Génie Industriel - CentraleSupélec - Ecole Centrale) | WeBT9.3 |
| 16:36 – 16:58 | Risk-Based Maintenance for a Holistic Asset Management System - a Model for a Dynamic Adaption of the Maintenance Strategy
Passath, Theresa (Montanistic University Leoben) | WeBT9.4 |

Control - I (Invited Session)

Chair: Sokolov, Boris *SPIIRAS*
Co-Chair: Daduna, Joachim Rolf *Berlin School of Economics and Law*

WeBT10
Room 019

- | | | |
|----------------------|---|----------|
| 15:30 – 15:52 | Developing a Control and Management System for Reinforcement Steel-Leftover in Industrial Factories
Maher, Rami A. (Isra University), Melhem, Nadeem N. (Technical University of Munich), Almutlaq, Mohamad (Isra University) | WeBT10.1 |
| 15:52 – 16:14 | Model Predictive Control of the Weft Insertion in Air-Jet Weaving
Wu, Tong (RWTH Aachen University), Kemper, Maximilian (RWTH Aachen University), Stemmler, Sebastian (RWTH Aachen University), Abel, Dirk (RWTH-Aachen University), Gries, Thomas (RWTH Aachen University) | WeBT10.2 |
| 16:14 – 16:36 | Closed-Loop Control of Decision System and Equipment Effectiveness
Kechaou, Fatma (Quartz Laboratry), Zolghadri, marc (Supmeca-Paris), Addouche, Sid-Ali (University of Paris8) | WeBT10.3 |
| 16:36 – 16:58 | Methodology and Integrated Modeling Technologies for Synthesis of Cyber-Physical Production Systems Modernization Programs and Plans
Gnidenko, Andrey (St. Petersburg Institute for Informatics and Automation of the R), Sobolevsky, Vladislav (St. Petersburg Institute for Informatics and Automation of The), Potryasaev, Semyon (St.Petersburg Institute for Informatics and Automation of the Ru), Sokolov, Boris (SPIIRAS) | WeBT10.4 |
| 16:58 – 17:20 | Energy Efficiency Improvement through MPC-Based Peripherals Management for an Industrial Process Test-Bench
Bermeo Ayerbe, Miguel Angel (Universitat Politècnica De Catalunya), Ocampo-Martinez, Carlos (Technical University of Catalonia (UPC)) | WeBT10.5 |

OR Applications - I (Regular Session)

Chair: Menezes, Mozart *Kedge Business School*
Co-Chair: Chernonog, Tatyana *Bar Ilan University*

WeBT11
Room 020

- | | | |
|----------------------|---|----------|
| 15:30 – 15:52 | Re-Planning in Home Healthcare: A Decomposition Approach to Minimize Idle Times for Workers While Ensuring Continuity of Care (I)
Martinez, Cléa (G-SCOP), Espinouse, Marie-Laure (G-SCOP), Di Mascolo, Maria (CNRS, Institut National Polytechnique De Grenoble) | WeBT11.1 |
| 15:52 – 16:14 | Agent-Oriented Modeling and Optimization of Material Flows of Multi-Assortment Production
Nikitina, Marina (V.M. Gorbatoov Federal Research Center for Food Systems of Russia), Ivashkin, Yuri (Moscow Technical University Communication and Informatics) | WeBT11.2 |
| 16:14 – 16:36 | An Agent-Based Model of an Online Collaboration Community by Using Fuzzy Logic
Olcay, Ertug (Technical University of Munich), Lohmann, Boris (Technische Universität München), Schöttl, Claus (Technical University of Munich), Zaggli, Michael (Technical University of Munich), Khalid, Syed Ans Bin (Technical University of Munich) | WeBT11.3 |
| 16:36 – 16:58 | The K-MedianPlex Problem: A Novel Approach for Addressing Locational Complexity
Pinar-Perez, Jesus (University College for Financial Studies), Ruiz-Hernandez, Diego (Sheffield University Management School), Menezes, Mozart (NEOMA Business School) | WeBT11.4 |
| 16:58 – 17:20 | A Multi-Server Queueing-Inventory System with Stock-Dependent Demand
Hanukov, Gabi (Bar-Ilan University), Avinadav, Tal (Bar Ilan University), Chernonog, Tatyana (Bar Ilan University), Yechiali, Uri (Tel-Aviv University) | WeBT11.5 |

Knowledge Management - I (Regular Session)

Chair: Matta, Nada *UTT*
Co-Chair: Marmier, François *Université De Toulouse, Mines Albi, Centre Génie Industriel*

WeBT12
Room 101

- | | | |
|----------------------|--|----------|
| 15:30 – 15:52 | Towards a Knowledge Structuring Framework for Decision Making within Industry 4.0 Paradigm
Meski, Oussama (LS2N), BELKADI, Farouk (Ecn - Ls2n), Furet, Benoit (University of Nantes), Laroche, Florent (Ecole Centrale De Nantes) | WeBT12.1 |
| 15:52 – 16:14 | Knowledge Criteria for Making Decision in Network Partner Selection
Vaezalaei, Malihehsadat (Mines Albi Industrial Engineering Center, Toulouse University, A), Filipas Deniaud, Ioana (BETA UMR 7522 CNRS - Strasbourg University), Marmier, François (Université De Toulouse, Mines Albi, Centre Génie Industriel), Gourc, Didier (Université De Toulouse, Mines Albi, Centre Génie Industriel), Cowan, Robin (BETA Laboratory, Strasbourg University, Strasbourg, France) | WeBT12.2 |
| 16:14 – 16:36 | A Model of Placing a Liaison with Different Communication Length between Two Levels in an Organization Structure
Sawada, Kiyoshi (University of Marketing and Distribution Sciences) | WeBT12.3 |
| 16:36 – 16:58 | Identification of Territorial Resource Based on Domain Ontology (DOTK) for Sustainability
Ezoi, Amer (University of Technology of Troyes), Matta, Nada (UTT) | WeBT12.4 |

Industrial Robotics: Modeling, Control and Applications - II (Open Invited Track)

Chair: Pashkevich, Anatol *Ecole Des Mines De Nantes*
Co-Chair: Klimchik, Alexandr *Innopolis University*

WeBT13
Room 102

15:30 – 15:52	Position and Orientation Calibration of a 2D Laser Line Sensor Using Closed-Form Least-Squares Solution (I) Müller, Rainer (ZeMA Zentrum für Mechatronik und Automatisierungstechnik), Vette, Matthias (ZeMA Zentrum für Mechatronik und Automatisierungstechnik), Kanso, Ali (ZeMA Zentrum für Mechatronik und Automatisierungstechnik)	WeBT13.1
15:52 – 16:14	Interactive Robots Control Using Mixed Reality (I) Ostanin, Mikhail (Innopolis University), Yagfarov, Rauf (Innopolis University), Klimchik, Alexandr (Innopolis University)	WeBT13.2
16:14 – 16:36	Stiffness Modelling of NAVARO II Transmission System (I) Klimchik, Alexandr (Innopolis University), Pashkevich, Anatol (Ecole Des Mines De Nantes), Chablat, Damien (Institut De Recherche En Communications Et Cybernétique De Nante)	WeBT13.3
16:36 – 16:58	Input-Output Feedback Linearization for the Control of a 4 Cable-Driven Parallel Robot (I) Kumar, Atal Anil (Arts Et Métiers ParisTech, Université De Lorraine, LCFC, F-57000), Antoine, Jean-François, Olivier (University of Lorraine), Abba, Gabriel (Ecole Nationale Supérieure Des Arts Et Métiers)	WeBT13.4
16:58 – 17:20	Control of Actuators with Linearized Variable Stiffness (I) Savin, Sergei (Innopolis University), Khusainov, Ramil (University Innopolis), Klimchik, Alexandr (Innopolis University)	WeBT13.5

Interoperability and Information Management - II (Regular Session)

Chair: Elbert, Ralf *Technische Universität Darmstadt*
Co-Chair: Desgagné-Lebeuf, Alexandre *Université Laval*

WeBT14
Room 103

15:30 – 15:52	Experimental Study on User Rating of Virtual Reality Applications in Manual Order Picking Elbert, Ralf (Technische Universität Darmstadt), Knigge, Jan-Karl (Technische Universität Darmstadt), Makhlouf, Rami (Technische Universität Darmstadt), Sarnow, Tessa (Technische Universität Darmstadt)	WeBT14.1
15:52 – 16:14	Artificial Intelligence for Forecasting in Supply Chain Management: A Case Study of White Sugar Consumption Rate in Thailand (I) Kantasa-Ard, Anirut (Polytechnic University of Hauts-De-France), Bekrar, Abdelghani (Polytechnic University of Hauts-De-France), AitElCadi, Abdessamad (Polytechnic University of Hauts-De-France), Sallez, Yves (Polytechnic University of Hauts-De-France)	WeBT14.2
16:14 – 16:36	A Data-Driven Framework to Deal with Intrinsic Variability of Industrial Processes: An Application in the Textile Industry Lajoie, Patrice (Université Laval), Gaudreault, Jonathan (Universite Laval), Lehoux, Nadia (Université Laval), Ben Ali, Maha (FORAC, Université Laval)	WeBT14.3
16:36 – 16:58	Machine Learning in Predicting Demand for Fast-Moving Consumer Goods: An Exploratory Research Tarallo, Elcio (Centro Paula Souza), Akabane, Getulio (CEETEPS Brazil), Shimabukuro, Camilo (Centro Paula Souza), Mello, Jose (Centro Paula Souza), Amancio, Douglas (Centro Paula Souza)	WeBT14.4
16:58 – 17:20	Predicting and Preventing Mistakes in Human-Robot Collaborative Assembly Antonelli, Dario (Politecnico Di Torino), Stadnicka, Dorota (Rzeszow University of Technology)	WeBT14.5

Product Service Systems (servitization) in New ICTs Era (Invited Session)

Chair: Sellitto, Miguel *Universidade Do Vale Do Rio Dos Sinos - Unisinos*
Co-Chair: Cavalieri, Sergio *University of Bergamo*

WeBT15
Room 107

15:30 – 15:52	Product Service Systems for Social Manufacturing: A New Service System with Multi-Provider (I) Guo, Wei (Xi'an Jiao Tong University), Jiang, Pingyu (Xi'an Jiaotong University)	WeBT15.1
15:52 – 16:14	Optimal Inventory and Pricing Decisions for Fashion Apparel Retailer, Considering Promotional Efforts and Experiential Service (I) Chen, Qi (Glorious Sun School of Business and Management, Donghua Universi), Xu, Qi (Glorious Sun School of Business and Management, Donghua Universi)	WeBT15.2
16:14 – 16:36	Implementing a Dynamic FMECA in the Digital Transformation Era (I) Colli, Michele (Aalborg University), Sala, Roberto (University of Bergamo), Pirola, Fabiana (Università Degli Studi Di Bergamo), Pinto, Roberto (University of Bergamo), Cavalieri, Sergio (University of Bergamo), Vejrum Wæhrens, Brian (Aalborg University)	WeBT15.3
16:36 – 16:58	An ICT-Enabled Product Service System for Reuse of Building Components (I) Ness, David (University of South Australia), Xing, Ke (University of South Australia), Kim, Ki (University of South Australia), Jenkins, Adam (University of South Australia)	WeBT15.4

Emerging Technologies in Humanitarian Supply Chain Management (Invited Session)

Chair: Liu, Xiao *Shanghai Jiao Tong University*
Co-Chair: Song, Xiang *University of Portsmouth*

WeBT16
Room 108

15:30 – 15:52	Capacitated Supply Chain with Demand Uncertainty (I) Zheng, Meimei (Shanghai Jiao Tong University), Sun, Cunwu (Shanghai Jiao Tong University), Jiang, Peng (Shanghai Jiao Tong University)	WeBT16.1
15:52 – 16:14	Emergency Blood Demand Forecasting after Earthquakes (I) Jiang, Peng (Shanghai Jiao Tong University), Liu, Xiao (Shanghai Jiao Tong University), zheng, meimei (Shanghai Jiao Tong University)	WeBT16.2
16:14 – 16:36	Emergency Operations Scheduling for a Blood Supply Network in Disaster (I) Liu, Xiao (Shanghai Jiao Tong University), Song, Xiang (University of Portsmouth)	WeBT16.3
16:36 – 16:58	Robust Control of Supply Chain Networks with Multiple Lead Times and Demand Uncertainties (I) Wei, Yongchang (Zhongnan University of Economics and Law), Chen, Fangyu (Zhongnan University of Economics and Law), Zhu, Song (China University of Mining and Technology)	WeBT16.4
16:58 – 17:20	Mixed Integer Programming Formulations for the Production Planning Problems in Additive Manufacturing and 3D Printing (I) Bukchin, Yossi (Tel Aviv University), Altekin, Fatma Tevhide (Sabanci University, School of Management)	WeBT16.5

Digital, Data Driven, Sustainable and Resilient Supply Chains (Invited Session)

Chair: Allaoui, Hamid *Université D'Artois*
Co-Chair: Bendul, Julia *RWTH Aachen University*

WeBT17
Room 109

15:30 – 15:52	A New Sustainable Location-Routing Problem with Simultaneous Pickup and Delivery by Two-Compartment Vehicles for a Perishable Product Considering Circular Economy (I)	WeBT17.1
	Navazi, Fatemeh (University of Tehran), Sedaghat, Atefe (University of Tehran), Tavakkoli-Moghaddam, Reza (University of Tehran)	
15:52 – 16:14	Internet of Things Enabled Real-Time Sustainable End-Of-Life Product Recovery (I)	WeBT17.2
	Keivanpour, Samira (Universite Laval), Ait-Kadi, Daoud (Laval University)	
16:14 – 16:36	Resource Sharing As Supply Chain Disruption Risk Management Measure (I)	WeBT17.3
	Cockx, Ronald (University of Eindhoven), Armbruster, Dieter (Arizona State Univ), Bendul, Julia (RWTH Aachen University)	
16:36 – 16:58	Supply Chain Risk Intelligence with Knowledge Graphs	WeBT17.4
	Karakostas, Bill (VLTN BBVA)	
16:58 – 17:20	A Methodology to Estimate Resilience of Manufacturing Plants	WeBT17.5
	Caputo, Antonio Casimiro (University of Roma Tre), Pelagagge, Pacifico Marcello (University of L'Aquila), Salini, Paolo (University of L'Aquila)	

Sustainable Manufacturing Systems Design and Operation (Invited Session)

Chair: Banaszak, Zbigniew *Koszalin University of Technology*
Co-Chair: Nielsen, Peter *Aalborg University*

WeBT18
Room 110

15:30 – 15:52	Personalisation of the Axillary Crutch for Special Needs of a Handicapped Person (I)	WeBT18.1
	Pozgayova, Jana (Slovak Technical University Bratislava), Dulina, Luboslav (University of Zilina), Cechova, Ivana (University of Zilina), Kraj ovi , Martin (University of Zilina), Gaso, Martin (University of Zilina)	
15:52 – 16:14	A Decision Support Model for Prototyping In-Plant Milk-Run Traffic Systems (I)	WeBT18.2
	Bocewicz, Grzegorz (Koszalin University of Technology), Nielsen, Izabela (Aalborg University), Banaszak, Zbigniew (Koszalin University of Technology)	
16:14 – 16:36	Planning Deliveries with UAV Routing under Weather Forecast and Energy Consumption Constraints (I)	WeBT18.3
	Thibbotuwawa, Amila (Aalborg University), Bocewicz, Grzegorz (Koszalin University of Technology), Nielsen, Peter (Aalborg University), Banaszak, Zbigniew (Koszalin University of Technology)	
16:36 – 16:58	Model of Decision Support for Manufacturing System Configuration (I)	WeBT18.4
	Wikarek, Jaroslaw (Kielce University of Technology), Sitek, Pawel (Kielce University of Technology), Nielsen, Peter (Aalborg University)	
16:58 – 17:20	An Application for the Acquisition and Understanding of Expert Knowledge in a Maintenance Department (I)	WeBT18.5
	Patalas-Maliszewska, Justyna (University of Zielona Góra), Klos, Slawomir (University of Zielona Gora, Faculty of Mechanical Engineering)	

Technical Program for Thursday August 29, 2019

Intelligent Methods and Systems Supporting Supply Chain Decision Making - I (Open Invited Track)

ThAT1
Room 001

Chair: Frazzon, Enzo Morosini *Federal University of Santa Catarina*
Co-Chair: Freitag, Michael *University of Bremen*

08:30 – 08:52	Big Data Application for E-Commerce's Logistics: A Research Assessment and Conceptual Model (I)	ThAT1.1
	Hurtado, Paula Andrea (Federal University of Santa Catarina), Frazzon, Enzo Morosini (Federal University of Santa Catarina), Dorneles, Carina (Universidade Federal De Santa Catarina)	
08:52 – 09:14	Towards a Predictive Approach for Omni-Channel Retailing Supply Chains (I)	ThAT1.2
	Meireles Pereira, Marina (Federal University of Santa Catarina), Frazzon, Enzo Morosini (Federal University of Santa Catarina)	
09:14 – 09:36	Using Data Mining Techniques to Investigate the Correlation between Surface Cracks and Flange Lengths in Deep Drawn Sheet Metals (I)	ThAT1.3
	Heger, Jens (Leuphana University of Lüneburg), Zein El Abdine, Mazhar (Leuphana University of Lüneburg, Institute of Product and Proces)	
09:36 – 09:58	Indoor Positioning in Car Parks by Using Wi-Fi Round-Trip-Time to Support Finished Vehicle Logistics on Port Terminals (I)	ThAT1.4
	Jathe, Nicolas (BIBA - Bremer Institut Für Produktion Und Logistik GmbH), Lütjen, Michael (BIBA - Bremer Institut Für Produktion Und Logistik GmbH at the U), Freitag, Michael (University of Bremen)	
09:58 – 10:20	Towards a Conceptual Model of Structural and Behavioral Elements in Cyber-Physical Production Systems (I)	ThAT1.5
	Regal da Silva, Thiago (Universidade Federal Do Rio Grande Do Sul), Pereira, Carlos Eduardo (Federal Univ. of Rio Grande Do Sul - UFRGS)	

Modeling and Algorithms for New Production Modes Combining Service and Manufacturing under Uncertain Environments (Invited Session)

ThAT2
Room 002

Chair: Liu, Xin *Tongji University*
Co-Chair: Yang, Xuenan *Tongji University*

08:30 – 08:52	Risk Level-Driven Bi-Objective Stochastic Parallel Machine Scheduling Problem (I)	ThAT2.1
	Liu, Ming (Tongji University), Liu, Xin (Tongji University)	
08:52 – 09:14	Distributionally Robust Parallel Machine ScheLoc Problem under Service Level Constraints (I)	ThAT2.2
	Liu, Ming (Tongji University), Liu, Xin (Tongji University)	
09:14 – 09:36	Bi-Objective Optimization of Multiple-Route Job Shop Scheduling with Route Cost (I)	ThAT2.3
	Zheng, Feifeng (Donghua Univ), Sui, Yang (Donghua University)	
09:36 – 09:58	Single Machine Scheduling Considering Time Value of Money (I)	ThAT2.4
	Xu, Yinfeng (Donghua University), Zhi, Rongteng (Donghua University), Zheng, Feifeng (Donghua Univ)	
09:58 – 10:20	Bi-Objective Flexible Job Shop Scheduling with Operation Overlapping Costs (I)	ThAT2.5
	Zheng, Feifeng (Donghua Univ), Wang, Zhaojie (Donghua University)	

Bio-Inspired Techniques in Future Manufacturing Enterprise Control (Invited Session)

ThAT3
Room **004**

Chair: Caramihai, Simona Iuliana *University “Politehnica” of Bucharest*
Co-Chair: Romero, David *Tecnológico De Monterrey*

08:30 – Rethinking Jidoka Systems under Automation & Learning Perspectives in the Digital Lean Manufacturing World (I)	ThAT3.1
08:52 Romero, David (Tecnológico De Monterrey), Gaiardelli, Paolo (University of Bergamo), Powell, Daryl John (Norwegian University of Science and Technology), Wuest, Thorsten (West Virginia University), Thürer, Matthias (Institute of Physical Internet, Jinan University)	
08:52 – Lean Thinking Contributions for Industry 4.0: A Systematic Literature Review (I)	ThAT3.2
09:14 Bittencourt, Victor (University of Minho), Alves, Anabela (University of Minho), Leão, Celina (University of Minho)	
09:14 – Neuro-Inspired Framework for Cognitive Manufacturing Control (I)	ThAT3.3
09:36 Dumitrache, Ioan (University), Caramihai, Simona Iuliana (University “Politehnica” of Bucharest), Moisesescu, Mihnea Alexandru (University Politehnica Bucharest), Sacala, Ioan Stefan (University Politehnica Bucharest)	
09:36 – A Self-Adapted Swarm Architecture to Handle Big Data for “factories of the Future” (I)	ThAT3.4
09:58 GUERREIRO, GUILHERME (UNINOVA Instituto De Desenvolvimento De Novas Tecnologias), Costa, Ruben (UNINOVA - Instituto De Desenvolvimento De Novas Tecnologias), Figueiras, Paulo (UNINOVA), Graça, Diogo (Volkswagen Autoeuropa), Jardim-Goncalves, Ricardo (UNINOVA - Instituto De Desenvolvimento De Novas Tecnologias)	
09:58 – Intelligent Control Interfaces Using Extenics Multidimensional Theory Applied on VIPRO Platforms for Developing the IT INDUSTRY 4.0 Concept (I)	ThAT3.5
10:20 Vladareanu, Luige (Romanian Academy, Institute of Solid Mechanics), Vladareanu, Victor (“Politehnica” University of Bucharest), Yu, Hongnian (Bournemouth University), Mitroi, Daniel (Institute of Solid Mechanics of the Romanian Academy), Ciocirlan, Alexandra-Catalina (Institute of Solid Mechanics of the Romanian Academy)	

Cybersecurity of Control and Safety Systems (Open Invited Track)

ThAT4
Room **013**

Chair: Jharko, Elena *V.A. Trapeznikov Institute of Control Sciences*
Co-Chair: Promyslov, Vitaly *V.A. Trapeznikov Institute of Control Sciences*

08:30 – A Clustering Method of Asset Cybersecurity Classification (I)	ThAT4.1
08:52 Promyslov, Vitaly (V.A. Trapeznikov Institute of Control Sciences), Semenov, Kirill (ICS RAS), Shumov, Alexander (ICS RAS)	
08:52 – An Approach to Modeling the Decision Support Process of the Security Event and Incident Management Based on Markov Chains (I)	ThAT4.2
09:14 Kotenko, Igor (SPIIRAS), Паращук, Игорь (SPIIRAS)	
09:14 – I&C System Availability Assessment Using Upper Bound Delay Estimation (I)	ThAT4.3
09:36 Baybulatov, Artur (RAS ICS), Promyslov, Georgy (171 School), Shipilov, Dmitrii (171 Moscow State School), Poletikin, Alexey (Institute of Control Sciences)	
09:36 – Approach to Organizing of a Heterogeneous Swarm of Cyber-Physical Devices to Detect Intruders (I)	ThAT4.4
09:58 Vitkova, Lidia (SPIIRAS), Desnitsky, Vasily (SPIIRAS), Chechulin, Andrey (SPIIRAS), Kotenko, Igor (SPIIRAS)	

Planning and Scheduling of Manufacturing Processes - III (Open Invited Track)

ThAT5
Room **014**

Chair: Guizzi, Guido *University of Naples Federico II*
Co-Chair: Druetto, Alessandro *Università Di Torino*

08:30 – Algorithms for Locomotives Maintenance Schedule (I)	ThAT5.1
08:52 Lazarev, Alexander (Institute of Control Sciences, Russian Academy of Sciences), Grishin, Egor (Institute of Control Science of the Russian Academy of Sciences), Galakhov, Semyon (Institute of Control Sciences of Russian Academy of Science), Tarasov, German (Institute of Control Sciences, Moscow)	
08:52 – A Genetic Algorithm for Assigning Train Arrival Dates at a Maintenance Centre (I)	ThAT5.2
09:14 Gu, Hanyu (University of Technology Sydney), Joyce, Mark (UGL Unipart), Lam, Hue Chi (University of Technology Sydney), Woods, Mark (UGL Unipart), Zinder, Yakov (University of Technology, Sydney)	
09:14 – Heuristic Approaches for Scheduling Manufacturing Tasks While Taking into Account Accumulated Human Fatigue (I)	ThAT5.3
09:36 Berti, Nicola (University of Padova), Artigues, Christian (LAAS CNRS), Battaia, Olga (ISAE-SUPAERO), guillaume, romain (Irit/LGP), Battini, Daria (University of Padua)	
09:36 – Column Generation for Minimizing Total Completion Time on a Single Machine with Parallel Batching (I)	ThAT5.4
09:58 Alfieri, Arianna (Politecnico Di Torino), Druetto, Alessandro (Università Di Torino), Grosso, Andrea (Università Di Torino), Salassa, Fabio (DIGEP - Politecnico Di Torino)	
09:58 – An Optimal Policy for the Capacitated Lot Sizing Problem with Financing of the Working Capital Requirement (I)	ThAT5.5
10:20 Gayraud, Fabrice (Ecole Des Mines De Nantes), Lemoine, David (Ecole Des Mines De Nantes), Massonnet, Guillaume (LS2N, IMT Atlantique)	

Assembly/Disassembly/Machining Line Design and Balancing under Uncertainty (Invited Session)

ThAT6
Room **015**

Chair: Hazir, Oncu *Rennes School of Management*
Co-Chair: Lahrichi, Youssef *LIMOS CNRS*

08:30 – A Polynomial Algorithm for Balancing a Sequence of Operations in Reconfigurable Transfer Lines (I)	ThAT6.1
08:52 Lahrichi, Youssef (LIMOS CNRS), Grangeon, Nathalie (Blaise Pascal University), Norre, Sylvie (Université Blaise Pascal Clermont-Ferrand), Deroussi, Laurent (Bpclermont)	
08:52 – Complete Self-Balancing Realized by Self-Organizing Chasing-Overtaking Production Line (I)	ThAT6.2
09:14 liao, shilong (LanZhou University of Technology), Li, Jingjing (Faculty of Economics and Managemen, Lanzhou University of Techno), chen, qin (Harbin Institute of Technology), Xie, Xiaoqing (Lanzhou University of Technology), Shen, Fengping (Faculty of Economics and Managemen, Lanzhou University of Techno)	
09:14 – A Review on Robust Assembly Line Balancing Approaches (I)	ThAT6.3
09:36 Hazir, Oncu (Rennes School of Management), Dolgui, Alexandre (IMT Atlantique)	
09:36 – Type-1 U-Shaped Assembly Line Balancing under Uncertain Task Time (I)	ThAT6.4
09:58 Li, Yuchen (Beijing University of Technology), Hu, Xiaofeng (Shanghai JiaoTong University), Tang, Xiaowen (School of Economics and Management, Beijing University of Techno), Kucukkoc, Ibrahim (University of Exeter)	
09:58 – Evolutionary Dynamics of Manufacturer-Buyer Supply Chains under Different Coordination Strategies	ThAT6.5
10:20 Torres, Juan Manuel (Universidad De Los Andes), Torres, Fidel (Universidad De Los Andes)	

Lean Manufacturing and Quality Management - III (Regular Session)

ThAT7
Room 016

Chair: Meerkov, Semyon M. *Univ. of Michigan*
Co-Chair: Azevedo, Maria Manuela *INESC TEC*

08:30 – 08:52	The (alpha, Beta)-Precise Estimates of MTBF and MTTR: Definitions, Calculations, and Induced Effect on Machine Efficiency Evaluation	ThAT7.1
	Alavian, Pooya (University of Michigan), Eun, Yongssoon (DGIST), Liu, Kang (University of Michigan), Meerkov, Semyon M. (Univ. of Michigan), Zhang, Liang (University of Connecticut)	
08:52 – 09:14	Basic Structure of Lessons Learned Approach to Improve Manufacturing Processes: A Case Study,	ThAT7.2
	Bracke, Stefan (University of Wuppertal), Ulutas, Berna (Eskisehir Osmangazi University)	
09:14 – 09:36	Order Acceptance and Scheduling in Direct Digital Manufacturing with Additive Manufacturing (I)	ThAT7.3
	Li, Qiang (University of Exeter), Zhang, David (University of Exeter), Kucukkoc, Ibrahim (University of Exeter)	
09:36 – 09:58	Determining Production Systems Performance Metrics Considering Machine Downtime	ThAT7.4
	Bula, Gustavo (Universidad Nacional De Colombia), Tazi, Nacef (University of Technology of Troyes), Chatelet, Eric (Université De Technology De Troyes)	
09:58 – 10:20	An Analysis of Reconfigurability in Different Business Production Strategies	ThAT7.5
	Maganha, Isabela (University of Coimbra), Silva, Cristóvão (CEMUC, University of Coimbra), Ferreira, Luis Miguel D. (University of Coimbra)	

Inventory Control, Replenishment and Lot-Sizing under Demand, Yield or Lead Time Uncertainties - II (Invited Session)

ThAT8
Room 017

Chair: Ben Ammar, Oussama *IMT Atlantique, Campus De Nantes*
Co-Chair: Bettayeb, Belgacem *CESI Group, Campus Lille*

08:30 – 08:52	Dynamic Inventory Optimization for a Serial Supply Chain with Stochastic and Lead-Time Sensitive Demand (I)	ThAT8.1
	Dziri, Elissa (National Engineering School of Tunis, University of Tunis El Man), Ham-mami, Ramzi (ESC Rennes School of Business), Jemai, Zied (Ecole Centrale Paris)	
08:52 – 09:14	Mathematical Model for Dynamic Suppliers' Selection Strategy in Multi-Period Supply Planning with Lead-Times Uncertainty (I)	ThAT8.2
	Ben Ammar, Oussama (IMT Atlantique, Campus De Nantes), Bettayeb, Belgacem (CESI Group, Campus Lille), Dolgui, Alexandre (IMT Atlantique)	
09:14 – 09:36	Introducing a Unique Inventory Control Framework for Centralized VMI and JIT Production (I)	ThAT8.3
	Saad, Sameh M (Department of Engineering and Mathematics, Faculty of Art, Compu), Bahadori, Ramin (Faculty of Art, Computing, Engineering and Science , Sheffield H)	
09:36 – 09:58	Introducing a Unique Inventory Control Framework for Centralized VMI and JIT Production (I)	ThAT8.4
	Saad, Sameh M (Department of Engineering and Mathematics, Faculty of Art, Compu), Bahadori, Ramin (Faculty of Art, Computing, Engineering and Science , Sheffield H)	
09:58 – 10:20	Multi-Agent Simulation of the Balanced Main Parameters of the Logistics Centers	ThAT8.5
	Muravev, Dmitri (P.h.D Candidate, Shanghai Jiao Tong University), Hu, Hao (Professor of the Department of Transportation, Shipping and Logi), Rakhmangulov, Aleksandr (Nosov Magnitogorsk State Technical University), Dai, Lei (Assistant Professor of the Department of Transportation, Shippin)	

Recent Advances in Integrated Maintenance Modeling and Optimization for Manufacturing Systems (Invited Session)

ThAT9
Room 018

Chair: Venkatadri, Uday *Dalhousie University*
Co-Chair: Khatab, Abdelhakim *Lorraine University/ National School of Engineering*

08:30 – 08:52	Joint Optimization of the Selective Maintenance and Repairperson Assignment Problem When Using New and Remanufactured Spare Parts (I)	ThAT9.1
	Khatab, Abdelhakim (Lorraine University/ National School of Engineering), Diallo, Claver (Dalhousie University), Aghezzaf, El-Houssaine (Ghent University), Venkatadri, Uday (Dalhousie University)	
08:52 – 09:14	Dynamic Predictive Maintenance in Industry 4.0 Based on Real Time Information: Case Study in Automotive Industries (I)	ThAT9.2
	Einabadi, Behnam (LIRIS Laboratory, INSA Lyon), Baboli, Armand (INSA-Lyon, LIRIS Lab-oratory, F-69621, France), Ebrahimi, Mojtaba (Fpt Powertrain Technologies France S.a)	
09:14 – 09:36	Applied Risk Analysis Approaches for Maintenance of Offshore Wind Turbines; a Literature Review (I)	ThAT9.3
	Jamshidi, Afshin (Université Laval), Jamshidi, Farzad (Univercité Laval), Ait-Kadi, Daoud (Laval University), ramudhin, Amar (HULL University)	
09:36 – 09:58	Developing a Bi-Objective Imperfect Selective Maintenance Optimization Model for Multicomponent Systems (I)	ThAT9.4
	Diallo, Claver (Dalhousie University), Khatab, Abdelhakim (Lorraine University/ Nation-al School of Engineering), Venkatadri, Uday (Dalhousie University)	

Control - II (Regular Session)

ThAT10
Room 019

Chair: Sokolov, Boris *SPIRAS*
Co-Chair: Moradi, Hamed *Sharif University of Technology*

08:30 – 08:52	Control As a Service Architecture to Support Context-Aware Control Application Development	ThAT10.1
	Lyu, Minhu (University of Lyon, INSA Lyon), Benfenatki, Hind (INSA De Lyon), Biennier, Frederique (INSA-Lyon), Ghodous, Parisa (University Lyon 1)	
08:52 – 09:14	A Systematic Approach on Modeling Refinement and Regression Testing of Real-Time Distributed Systems	ThAT10.2
	Pal, Deepak (Tallinn University of Technology), Vain, Jüri (Tallinn University of Technology)	
09:14 – 09:36	Synthesis and Simulation of Biotechnical Position-Force Control System of a Robot Manipulator with Reconfigurable Structure	ThAT10.3
	Rostova, Ekaterina (St. Petersburg Institute for Informatics and Automation of the R), Rostov, Nikolay (Saint-Petersburg State Polytechnic University), Sobolevsky, Vladislav (St. Petersburg Institute for Informatics and Automation of The)	
09:36 – 09:58	Control of the Underactuated Gantry Crane for the Block Erection Operation in the Shipyard	ThAT10.4
	Lee, Hye-Won (Seoul National University), Roh, Myung-II (Seoul National University), Ham, Seung-Ho (Seoul National University)	
09:58 – 10:20	Robust Control of Regenerative Chatter in Uncertain Milling Process with Weak Non-linear Cutting Forces: A Comparison with Linear Model	ThAT10.5
	Moradi, Hamed (Sharif University of Technology), Nouriani, Ali (Sharif University of Technology), Vossoughi, Gholamreza (Sharif University of Technology)	

OR Applications - II (Regular Session)

ThAT11
Room 020

Chair: zheng, meimei *Shanghai Jiao Tong University*
Co-Chair: Liu, Xiao *Shanghai Jiao Tong University*

08:30 – 08:52	Robust Trading Strategies for a Waste-To-Energy Combined Heat and Power Plant in a Day-Ahead Electricity Market	ThAT11.1
	Hu, Chenlian (Shanghai Jiao Tong University), Liu, Xiao (Shanghai Jiao Tong University), Lu, Jie (University of Technology, Sydney)	
08:52 – 09:14	Stochastic Location-Allocation Modelling for Emergency Mobile Blood Collection (I)	ThAT11.2
	Zhang, Xilin (Shanghai Jiao Tong University), Liu, Xiao (Shanghai Jiao Tong University), Song, Xiang (University of Portsmouth), zheng, meimei (Shanghai Jiao Tong University)	
09:14 – 09:36	Grouping-Matching-Greedy Heuristic for the Single-Machine Flow-Rack AS/RS with Duration-Of-Stay Storage Policy	ThAT11.3
	Chen, Zhuxi (Yangzhou University), Gupta, Jatinder N. D. (University of Alabama in Huntsville)	
09:36 – 09:58	Manufacturing and Supply Chain Financing: Leveraging Machine Learning Techniques to Track Collateral Asset Price Change for Operational Decision Support (I)	ThAT11.4
	Luo, Zongwei (SUSTECH), He, Ruizhi (SUSTECH), Khan, Imran (SUSTECH)	
09:58 – 10:20	A Bi-Level Bi-Objective Mathematical Model for Stop Location in a School Bus Routing Problem	ThAT11.5
	Seyed Parsa, Parvasi (University of Tehran), Tavakkoli-Moghaddam, Reza (University of Tehran), Ata Allah, Taleizadeh (University of Tehran), Mohammad, Soveizy (K.N. Toosi University of Technology)	

Knowledge Modelling for Digital Transformation and Digitalization of Companies (Invited Session)

ThAT12
Room 101

Chair: Zdravkovic, Jelena *Stockholm University*
Co-Chair: Stirna, Janis *Stockholm University*

08:30 – 08:52	Towards Data-Driven Capability Interface (I)	ThAT12.1
	Zdravkovic, Jelena (Stockholm University), Stirna, Janis (Stockholm University)	
08:52 – 09:14	Fuzzy Logic Based Modelling of Cast Component Properties (I)	ThAT12.2
	Tan, He (Jönköping University), Tarasov, Vladimir (Jönköping University), Jarfors, Anders (Jönköping University), Seifeddine, Salem (Jönköping University)	
09:14 – 09:36	Ontology-Based Reconfigurable DSL for Planning Technical Services (I)	ThAT12.3
	Ulitin, Boris (National Research University Higher School of Economics, Nizhny), Babkin, Eduard (National Research University Higher School of Economics, Nizhny)	
09:36 – 09:58	Exploring Opportunities for Artificial Emotional Intelligence in Service Production Systems (I)	ThAT12.4
	Amorim, Marlene (University of Aveiro), Cohen, Yuval (Afeka Tel Aviv College of Engineering), Reis, João (Academia Militar), Rodrigues, Mário (University of Aveiro)	
09:58 – 10:20	Knowledge Net: Model and System for Accumulation, Representation, and Use of Knowledge (I)	ThAT12.5
	Tushkanova, Olga (SPIIRAS), Samoylov, Vladimir (Info Wings LLC)	

Industrial Robotics: Modeling, Control and Applications - III (Open Invited Track)

ThAT13
Room 102

Chair: Abba, Gabriel *Ecole Nationale Supérieure Des Arts Et Métiers*
Co-Chair: Klimchik, Alexandr *Innopolis University*

08:30 – 08:52	Error Analysis in Solving the Inverse Problem of the Cable-Driven Parallel Underactuated Robot Kinematics and Methods for Their Elimination (I)	ThAT13.1
	Maloletov, Alexander (Innopolis University), Klimchik, Alexandr (Innopolis University), Fadeev, Mikhail (Innopolis University)	
08:52 – 09:14	Path Planning for Robotic Grinding on a Large Forged Workpiece (I)	ThAT13.2
	Didi Chaoui, Mohamed (Université De Lorraine), Leonard, Francois (ENIM), Abba, Gabriel (Ecole Nationale Supérieure Des Arts Et Métiers)	
09:14 – 09:36	Experimental Dynamic Identification of a YuMi Collaborative Robot (I)	ThAT13.3
	Taghbalout, Meryem (Université De Lorraine), Antoine, Jean-François, Olivier (University of Lorraine), Abba, Gabriel (Ecole Nationale Supérieure Des Arts Et Métiers)	
09:36 – 09:58	Methods and Tools of Improving Steel Manufacturing Processes: Current State and Future Methods	ThAT13.4
	Backman, Jere (VTT Technical Research Centre of Finland Ltd), Kyllönen, Vesa (VTT Technical Research Centre of Finland Ltd), Helaakoski, Heli (VTT Technical Research Centre of Finland Ltd)	
09:58 – 10:20	Pre-Optimizing Tools Positions for Turrets-Based CNC Machines When Facing Arbitrary Sequences of Production	ThAT13.5
	Ménard, Marc-André (Université Laval), Quimper, Claude-Guy (Université Laval), Gaudreault, Jonathan (Université Laval)	

Interoperability and Information Management - III (Regular Session)

ThAT14
Room 103

Chair: Tiwari, Manoj K *Indian Institute of Technology, Kharagpur*
Co-Chair: Deshpande, Varun *Université Paris-Est, France*

08:30 – 08:52	Analysis of Digital Transformation Strategies with an Integrated Fuzzy AHP Axiomatic Design Methodology	ThAT14.1
	Güler, Merve (Galatasaray University), Buyukozkan, Gulcin (Galatasaray University)	
08:52 – 09:14	Modeling for Deployment of Digital Technologies in the Cold Chain	ThAT14.2
	Gupta, Vishal Kumar (Indian Institute of Technology, Kharagpur), Chaudhuri, Atanu (Department of Materials and Production, Aalborg University), Tiwari, Manoj K (Indian Institute of Technology, Kharagpur)	
09:14 – 09:36	Formal Methods Based Security for Cloud-Based Manufacturing Cyber-Physical Systems (I)	ThAT14.3
	Muniasamy, Kandasamy (BlueJeans), Srinivasan, Seshadhri (University of Sannio), Vain, Jüri (Tallinn University of Technology), M, Sethumadavan (Amrita Vishwapetam)	
09:36 – 09:58	PulSec: Secure Element Based Framework for Sensors Anomaly Detection in Industry 4.0	ThAT14.4
	Deshpande, Varun (Université Paris-Est, France), George, Laurent (ESIEE Paris), Badis, Hakim (UPEM, France)	
09:58 – 10:20	Collaboration Evaluation Methodology for Experience Reuse in Industrial Processes	ThAT14.5
	Gonzalez, Diana Sofia, Melendez (Axsens), Coudert, Thierry (University of Toulouse), Geneste, Laurent (Ecole Nationale d'Ingénieurs De Tarbes), De Valroger, Aymeric (AX-SENS SAS)	

Product Service Systems (servitization) in New ICTs Era - II (Invited Session)

ThAT15
Room 107

Chair: Jiang, Zhibin *Shanghai Jiao Tong University*
Co-Chair: Wang, Kangzhou *Lanzhou University*

- 08:30 – Competitiveness of Servitization with New Transaction Base (I)** ThAT15.1
08:52 Wang, Kangzhou (Lanzhou University), Huang, Tushan (Lanzhou University), Jiang, Zhibin (Shanghai Jiao Tong University)
- 08:52 – Exploring Servitization from Value Creation Path: A Systematic Review on Empirical Investigation (I)** ThAT15.2
09:14 Niu, Yimeng (Shanghai Jiaotong University), Jiang, Zhibin (Shanghai Jiao Tong University), Wang, Kangzhou (Lanzhou University)
- 09:14 – Facilitating Consistency of Business Model and Technical Models in Product-Service-Systems Development: An Ontology Approach (I)** ThAT15.3
09:36 Zou, Minjie (Technical University of Munich), Basirati, Mohammadreza (Technical University Munich), Bauer, Harald (Technical University Munich), Kattner, Niklas (Technical University Munich), Reinhart, Gunther (Fraunhofer Institute for Machine Tools and Forming Technology), Lindemann, Udo (Technische Universität München), Böhm, Markus (Technical University of Munich), Krcmar, Helmut (Technische Universität München), Vogel-Heuser, Birgit (Technical University of Munich)
- 09:36 – Contributions of Industry 4.0 to Quality Management – a SCOR Perspective (I)** ThAT15.4
09:58 Müller, Julian Marius (Logistics and Operations Management, Salzburg University of Applied Sciences)

Production and Supply Chain Planning in the Semiconductor Industry (Invited Session)

ThAT16
Room 108

Chair: Reiner, Gerald *Vienna University of Economics and Business*
Co-Chair: Wichmann, Matthias *TU Braunschweig*

- 08:30 – Application of a FMEA Method Combining Interval 2-Tuple Linguistic Variables and Grey Relational Analysis in Preoperative Medical Service Process (I)** ThAT16.1
08:52 Shi, Suxia (Shanghai Pulmonary Hospital), Fei, Hongying (Shanghai University), Xu, Xueguo (Shanghai University)
- 08:52 – Application of Machine Learning on Plan Instability in Master Production Planning of a Semiconductor Supply Chain (I)** ThAT16.2
09:14 Lauer, Tim (Infineon Technologies AG), Legner, Sarah (Infineon Technologies AG), Henke, Michael (Technical University of Dortmund)
- 09:14 – A Survey of Model-Based System Engineering Methods to Analyse Complex Supply Chains: A Case Study in Semiconductor Supply Chain (I)** ThAT16.3
09:36 Alizadeh Mousavi, Behrouz (University of Limerick), Azzouz, Radhia (University of Limerick), Heavey, Cathal (University of Limerick), Ehm, Hans (Infineon Technologies AG)
- 09:36 – Optimizing Lot Priority Rules in Semiconductor Production Systems (I)** ThAT16.4
09:58 Oberegger, Bernhard (Vienna University of Economics and Business), Rabta, Boualem (University of Klagenfurt), Reiner, Gerald (Vienna University of Economics and Business)
- 09:58 – Horizontal Bullwhip Effect - Empirical Insights into the System Dynamics of Automotive Supply Networks** ThAT16.5
10:20 Gruchmann, Tim (Westcoast University of Applied Sciences), Neukirchen, Thomas (FOM University of Applied Sciences)

Supply Chain Risk Management - II (Open Invited Track)

ThAT17
Room 109

Chair: Lucker, Florian *Cass Business School*
Co-Chair: Allaoui, Hamid *Université D'Artois*

- 08:30 – Using Inventory to Mitigate the Ripple Effect (I)** ThAT17.1
08:52 Lucker, Florian (City, University of London)
- 08:52 – Bullwhip Effect of Weighted Moving Average Forecast under Stochastic Lead Time (I)** ThAT17.2
09:14 Nakade, Koichi (Nagoya Institute of Technology), Aniyama, Yuta (Nagoya Institute of Technology)
- 09:14 – Possible Ways of Assessing the Resilience of Supply Chain Networks in Conditions of Unpredictable Disruptions (I)** ThAT17.3
09:36 Pavlov, Alexander (Mozhaisky Military Aerospace Academy), Pavlov, Dmitry (Mozhaisky Military Aerospace Academy), Zakharov, Valerii (St. Petersburg Institute for Informatics and Automation of the RAS)
- 09:36 – Manufacturer's Strategic Risk Temperature Assessment with Convergent Approach, Cognitive Modelling and Blockchain Technology (I)** ThAT17.4
09:58 Raikov, Alexander (Institute of Control Sciences RAS)
- 09:58 – Risk Budget Planning through Assessing the Criticality and Vulnerability of Supply Network Entities Facing Disruption Risks (I)** ThAT17.5
10:20 Bugert, Niels (TU Dresden)

Industrial Symbioses: Design, Management, Control (Invited Session)

ThAT18
Room 110

Chair: Roy, Daniel *Ecole Nationale D'ingénieurs De Metz*
Co-Chair: Gola, Arkadiusz *Faculty of Management, Lublin University of Technology*

- 08:30 – Prediction of Variable Technological Operation Times in Production Jobs Scheduling (I)** ThAT18.1
08:52 Sobaszek, Lukasz (Lublin University of Technology), Gola, Arkadiusz (Faculty of Management, Lublin University of Technology), Kozłowski, Edward (Lublin University of Technology)
- 08:52 – Decision Variables for Inbound Transportation Redesign in a Chemical Manufacturing Supply Chain (I)** ThAT18.2
09:14 Andreassen, Ninni Kristina (Norwegian University of Science and Technology), Oluyisola, Olumide Emmanuel (Norwegian University of Science and Technology (NTNU), Trondheim), Strandhagen, Jan Ola (Norwegian University of Science and Technology), Semini, Marco (Norwegian University of Science and Technology)
- 09:14 – Supply Chain and Eco-Industrial Park Concurrent Design (I)** ThAT18.3
09:36 Castiglione, Claudio (Istituto Italiano Di Tecnologia), Alfieri, Arianna (Politecnico Di Torino)
- 09:36 – Mathematical Modelling for Flows Optimization within an Industrial Symbiosis (I)** ThAT18.4
09:58 Nouinou, Hajar (Université De Technologies De Troyes (UTT)), Roy, Daniel (Ecole Nationale D'ingénieurs De Metz), Hennequin, Sophie (ENIM)
- 09:58 – Collaborative Lot-Sizing Problem for an Industrial Symbiosis (I)** ThAT18.5
10:20 Daquin, Cécilia (Université D'Artois), Allaoui, Hamid (Université D'Artois), Gonçalves, Gilles (Université D'Artois), HSU, tienté (Université D'Artois)

Intelligent Methods and Systems Supporting Supply Chain Decision Making - II (Open Invited Track)

ThBT1
Room 001

Chair: Bendul, Julia *RWTH Aachen University*
Co-Chair: Burinskiene, Aurelija *Vilnius Gediminas Technical University*

15:30 – 15:52	Simulation-Based Analysis of the Interaction of a Physical and a Digital Twin in a Cyber-Physical Production System (I) Ait Alla, Abderrahim (BIBA – Bremer Institut Für Produktion Und Logistik GmbH at the U), Kreutz, Markus (BIBA – Bremer Institut Für Produktion Und Logistik GmbH), Rippel, Daniel (BIBA – Bremer Institut Für Produktion Und Logistik GmbH at the U), Lütjen, Michael (BIBA – Bremer Institut Für Produktion Und Logistik GmbH at the U), Freitag, Michael (University of Bremen)	ThBT1.1
15:52 – 16:14	A Review on the Planning Problem for the Installation of Offshore Wind Farms (I) Rippel, Daniel (BIBA – Bremer Institut Für Produktion Und Logistik GmbH at the U), Jathe, Nicolas (BIBA – Bremer Institut Für Produktion Und Logistik GmbH), Becker, Matthias (University Hannover, FG Simulation), Lütjen, Michael (BIBA – Bremer Institut Für Produktion Und Logistik GmbH at the U), Szczerbicka, Helena (University Hannover, FG Simulation), Freitag, Michael (University of Bremen)	ThBT1.2
16:14 – 16:36	Towards a Data-Driven Predictive-Reactive Production Scheduling Approach Based on Inventory Availability (I) Ledoux Takeda Berger, Satie (Universidade Federal De Santa Catarina), Mariani Zanel-la, Renata (Universidade Federal De Santa Catarina), Frazzon, Enzo Morosini (Federal University of Santa Catarina)	ThBT1.3
16:36 – 16:58	Evolution of Global Manufacturing Networks and xKD Supply Chains: A Cross Case Study of Six Global Automotive Manufacturers (I) Bendul, Julia (RWTH Aachen University), Erfurth, Toni (Jacobs University Bremen)	ThBT1.4
16:58 – 17:20	The Sustainability and Reduction of Waste in Freight Delivery Using Simulation Study (I) Burinskiene, Aurelija (Vilnius Gediminas Technical University)	ThBT1.5

Advanced Reconfigurable Manufacturing System (Invited Session)

ThBT2
Room 002

Chair: Delorme, Xavier *Mines Saint-Etienne*
Co-Chair: Haddou Benderbal, Hichem *LIS Research Laboratory, Aix Marseille University*

15:30 – 15:52	Adaptation of Manufacturing Machines by the Use of Multiple-Domain-Matrices and Variability Models (I) Hoang, Xuan-Luu (Helmut Schmidt Universitaet), Caesar, Birte (Helmut Schmidt Univer-sity), Fay, Alexander (Helmut Schmidt Universitaet)	ThBT2.1
15:52 – 16:14	Hybrid Optimisation Approach for Sequencing and Assignment Decision-Making in Reconfigurable Assembly Lines (I) Maganha, Isabela (University of Coimbra), Silva, Cristóvão (CEMUC, University of Coim-bra), Klement, Nathalie (Arts Et Métiers), Beauville dit Eynaud, Amélie (Arts Et Métiers ParisTech (LSIS)), Durville, Laurent (PSA Groupe), Moniz, Samuel (University of Coim-bra Faculty of Sciences and Technology)	ThBT2.2
16:14 – 16:36	Integrated Decision Process to Design Manufacturing Systems towards Industry 4.0 (I) El Alaoui El Abdellaoui, Mahdi (Mines Saint-Etienne), Grimaud, Frédéric (Ecole Des Mines De Saint-Etienne), Gianessi, Paolo (Mines Saint Etienne), Delorme, Xavier (Mines Saint-Etienne)	ThBT2.3
16:36 – 16:58	A New Hybrid Approach for Machine Layout Design under Family Product Evolution for Reconfigurable Manufacturing Systems (I) Haddou Benderbal, Hichem (LIS Research Laboratory, Aix Marseille University), Benyoucef, Lyes (Aix-Marseille University)	ThBT2.4

Cybersecurity of Control and Safety Systems - II (Open Invited Track)

ThBT4
Room 013

Chair: Promyslov, Vitaly *V.A. Trapeznikov Institute of Control Sciences*
Co-Chair: Jharko, Elena *V.A. Trapeznikov Institute of Control Sciences*

15:30 – 15:52	Safety Functions and Software Verification of NPP Safety Important Systems (I) Jharko, Elena (V.A. Trapeznikov Institute of Control Sciences)	ThBT4.1
15:52 – 16:14	“Safety Management System” and Significant Plants of Critical Information Infrastructure (I) Kalashnikov, Andrey (V. A. Trapeznikov Institute of Control Sciences of Russian Acade-), Sakrutina, Ekaterina (V.A. Trapeznikov Institute of Control Sciences of Russian Academ)	ThBT4.2
16:14 – 16:36	Method of Verification of Robotic Group Agents in the Conditions of Communication Facility Suppression (I) Iskhakova, Anastasia (V. A. Trapeznikov Institute of Control Sciences of Russian Acade-), Iskhakov, Andrey (V. A. Trapeznikov Institute of Control Sciences of Russian Acade-), Meshcheryakov, Roman (V. A. Trapeznikov Institute of Control Sciences of Russian Acade-), Jharko, Elena (V.A. Trapeznikov Institute of Control Sciences)	ThBT4.3

Planning and Scheduling of Manufacturing Processes - IV (Open Invited Track)

ThBT5
Room 014

Chair: Müller, David *University of Siegen*
Co-Chair: Vieira, Susana M. *Technical University of Lisbon, Instituto SuperiorT´ecnico, CIS/IDMEC -LAETA*

15:30 – 15:52	A Permutation-Based Heuristic Method for the Blocking Job Shop Scheduling Problem (I) Lange, Julia (Otto-Von-Guericke University Magdeburg), Werner, Frank (Ot-to-Von-Guericke-University Magdeburg)	ThBT5.1
15:52 – 16:14	A Hybrid Optimization Algorithm with Genetic and Bacterial Operators for the Design of Cellular Manufacturing Systems (I) Mejia-Moncayo, Camilo (Universidad EAN), Battaia, Olga (ISAE-SUPAERO)	ThBT5.2
16:14 – 16:36	Batch Scheduling with Deadlines on a Single Machine to Minimize the Total Setup Cost Pesch, Erwin (University of Siegen), Barketau, Maksim (UIIP NAS), Kress, Dominik (Uni-versity of Siegen), Müller, David (University of Siegen)	ThBT5.3
16:36 – 16:58	Practical Reinforcement Learning - Experiences in Lot Scheduling Application Rummukainen, Hannu (VTT Technical Research Centre of Finland), Nurminen, Jukka K. (VTT Technical Research Centre of Finland; Aalto University)	ThBT5.4
16:58 – 17:20	Dual Resource Constrained Scheduling for Quality Control Laboratories (I) Cunha, Mariana (IDMEC, Instituto Superior Técnico, Universidade De Lisboa), Viegas, Joaquim (IDMEC, Instituto Superior Técnico, Universidade De Lisboa, Portu), Martins, Miguel S. E. (IDMEC, Instituto Superior Técnico, Universidade De Lisboa, Portu), Coito, Tiago (Instituto Superior Técnico, Universidade De Lisboa), Costigliola, Andrea (Hovi-one Farmaciência, S.A), Figueiredo, Joao Manuel (Universidade Evora), Sousa, Joao M. C. (Technical Univ of Lisbon, Instituto Superior Tecnico), Vieira, Susana M. (Technical University of Lisbon, Instituto SuperiorT´ecnico, CIS/I)	ThBT5.5

Production Planning and Control
(Regular Session)

ThBT6
Room 015

Chair: Modrak, Vladimir *Technical University of Kosice, Faculty of Manufacturing Technologies with Seat in Presov*
Co-Chair: Perlman, Yael *Bar-Ilan University, Ramat Gan, Israel*

15:30 – 15:52	POLCA: Centralised vs. Decentralised Job Release Fernandes, Nuno O. (Instituto Politécnico De Castelo Branco), Thüerer, Matthias (Institute of Physical Internet, Jinan University), Ferreira, Luis Pinto (ISEP – School of Engineering, Polytechnic of Porto), Carmo-Silva, Sílvia (University of Minho)	ThBT6.1
15:52 – 16:14	Balancing Non-Bottleneck Stations Using Simple Assembly Line Balancing Models Lingitz, Lukas (Fraunhofer Austria Research GmbH), Gallina, Viola (Fraunhofer Austria Research GmbH), Kardos, Csaba (Computer and Automation Research Institute, HungarianAcademy Of), Koltai, Tamas (Budapest University of Technology and Economics), Sihh, Wilfried (Vienna University of Technology, Fraunhofer Austria Research Gmb)	ThBT6.2
16:14 – 16:36	An Interactive DSS to Improve Decision-Making in the (r, Q) Policy Molinaro, Margherita (University of Udine), Romano, Pietro (University of Udine), Battistutta, Marco (Novalia Srl), Da Re, Giulia (University of Udine)	ThBT6.3
16:36 – 16:58	Exploring the Complexity Levels of Discrete Manufacturing Processes (I) Modrak, Vladimir (Technical University of Kosice, Faculty of Manufacturing Technol), Soltysova, Zuzana (University of Kosice, Faculty of Manufacturing Technologies With)	ThBT6.4
16:58 – 17:20	Inventory Levels of Two Stockout-Based Substitutable Products under Centralized and Competitive Settings Perlman, Yael (Bar-Ilan University, Ramat Gan, Israel)	ThBT6.5

Modeling and Data Analytics for Zero Defect Manufacturing (Invited Session)

ThBT7
Room 016

Chair: Magnanini, Maria Chiara *Politecnico Di Milano*
Co-Chair: Zörrer, Helmut *Profactor GmbH*

15:30 – 15:52	Flow Network Control Via Substituted Flows Determining the Ratio of Parallel Flows (I) Neifer, Alexander Manuel (Universität Stuttgart, Robert Bosch GmbH), Appel, Marcus Werner (TU Darmstadt), Walther, Michael (Robert Bosch GmbH), Konigorski, Ulrich (Technische Universität Darmstadt)	ThBT7.1
15:52 – 16:14	Using Business Analytics for Decision Support in Zero Defect Manufacturing of Composite Parts in the Aerospace Industry (I) Zörrer, Helmut (Profactor GmbH), Steringer, Robert (Profactor GmbH), Zambal, Sebastian (Profactor GmbH), Eitzinger, Christian (Profactor GmbH)	ThBT7.2
16:14 – 16:36	Using Discrete Event Simulation in Multiple System Life Cycles to Support Zero-Defect Composite Manufacturing in Aerospace Industry (I) Steringer, Robert (Profactor GmbH), Zörrer, Helmut (Profactor GmbH), Zambal, Sebastian (Profactor GmbH), Eitzinger, Christian (Profactor GmbH)	ThBT7.3
16:36 – 16:58	A Control Model for Downstream Compensation Strategy in Multi-Stage Manufacturing Systems of Complex Parts (I) Magnanini, Maria Chiara (Politecnico Di Milano), Eger, Florian (University of Stuttgart), Reiff, Colin (University of Stuttgart), Colledani, Marcello (Politecnico Di Milano), Verl, Alexander (University of Stuttgart)	ThBT7.4
16:58 – 17:20	The Maturity of Business Partners in the Supply Logistics for Manufacturing Enterprises within the Sector of Agricultural Machinery – Original Concept and Application (I) Niewiadomski, Przemysław (Uniwersytet Zielonogórski), Kułyk, Piotr (University of Zielona Góra)	ThBT7.5

Nonstationarity in Inventory Control
(Invited Session)

ThBT8
Room 017

Chair: Rossi, Roberto *University of Edinburgh Business School*
Co-Chair: Prestwich, Steve *University College Cork*

15:30 – 15:52	A Cash Constrained Single Item Stochastic Lot-Sizing Problem (I) Chen, Zhen (Southwest University), Rossi, Roberto (University of Edinburgh Business School)	ThBT8.1
15:52 – 16:14	On Computational Procedures for Value Iteration in Inventory Control (I) Hendrix, Eligius MT (Universidad De Málaga), Kortenhorst, Cleo (Wageningen University), Ortega, Gloria (Universidad De Málaga)	ThBT8.2
16:14 – 16:36	Stochastic Inventory Control: A Literature Review (I) Ma, Xiyuan (University of Edinburgh), Rossi, Roberto (University of Edinburgh Business School), Archibald, Thomas (University of Edinburgh)	ThBT8.3
16:36 – 16:58	An Efficient Method for Solving Stochastic Inventory Lot-Sizing Problem Tarim, S. Armagan (University College Cork), Kilic, Onur A. (Hacettepe University)	ThBT8.4
16:58 – 17:20	Tuning Forecasting Algorithms for Black Swan Events (I) Prestwich, Steve (University College Cork)	ThBT8.5

Modelling Assembly Design and Operations:
Towards “Assembly System 4.0” (Invited Session)

ThBT9
Room 018

Chair: Cohen, Yuval *Afeka Tel Aviv College of Engineering*
Co-Chair: Pilati, Francesco *University of Bologna*

15:30 – 15:52	Multi-Manned Assembly Line Synchronization with Compatible Mounting Positions, Equipment Sharing and Workers Cooperation (I) Ferrari, Emilio (University of Bologna), Faccio, Maurizio (University of Padova), Gamberi, Mauro (University of Bologna, Department of Industrial Engineering), Margelli, Silvia (University of Bologna), Pilati, Francesco (University of Bologna)	ThBT9.1
15:52 – 16:14	Hierarchy of Smart Awareness in Assembly 4.0 Systems (I) Cohen, Yuval (Afeka Tel Aviv College of Engineering), Faccio, Maurizio (University of Padova), Elaluf, Amir (Bar-Ilan University)	ThBT9.2
16:14 – 16:36	Towards Assembly 4.0: Graduation Intelligent Manufacturing System for Fixed Position Assembly Islands (I) Guo, Daqiang (The University of Hong Kong & Southern University of Science And), Lin, Peng (Univerisity of Hong Kong), Lyu, Zhongyuan (The University of Hong Kong), Ling, Shiquan (The University of Hong Kong, Southern University of Science And), Li, Mingxing (The University of Hong Kong), Huang, George Q. (The University of Hong Kong), Rong, Yiming (Southern University of Science and Technology)	ThBT9.3
16:36 – 16:58	Strategic View on Cobot Deployment in Assembly 4.0 Systems (I) Cohen, Yuval (Afeka Tel Aviv College of Engineering), Shoval, Shraga (Ariel University), Faccio, Maurizio (University of Padova)	ThBT9.4
16:58 – 17:20	Conceptualising Assembly 4.0 through the Drone Factory (I) Fast-Berglund, Aasa (Chalmers University of Technology), Åkerman, Magnus (Chalmers), Li, Dan (Chalmers University of Technology), Salunkhe, Omkar (Chalmers University of Technology)	ThBT9.5

Big Data Analytics in Smart Manufacturing Systems (Invited Session)

ThBT10
Room 019

Chair: Jiang, Zhibin *Shanghai Jiao Tong University*
Co-Chair: Qin, Wei *Shanghai Jiao Tong University*

15:30 –	A Self-Learning Classification Framework for Industrial Time Series Streams (I)	ThBT10.1
15:52	Ma, Zhenjie (Huazhong University of Science and Technology), Shi, Ke (Huazhong University of Science and Technology), Feng, Kang (Huazhong University of Science and Technology)	
15:52 – 16:14	Control Chart Pattern Recognition Method Based on Improved One-Dimensional Convolutional Neural Network (I)	ThBT10.2
	Xu, Jie (Shanghai Jiao Tong University), Lv, Huichun (Shanghai JiaoTong University), Zhuang, Zilong (Shanghai Jiao Tong University), Lu, Zhiyao (Shanghai Jiao Tong University), zou, dewei (Shanghai Jiao Tong University), Qin, Wei (Shanghai Jiao Tong University)	
16:14 –	An Intelligent Recommendation Method for Service Personalized Customization (I)	ThBT10.3
16:36	Li, Qi (Shanghai Jiao Tong University), Miao, Rui (Shanghai Jiao Tong University), Zhang, Jie (Donghua University), Deng, Xiaoxu (Shanghai Jiao Tong University)	
16:36 –	Tool Breakage Detection of Milling Cutter Insert Based on SVM (I)	ThBT10.4
16:58	Sun, Shixu (Shanghai Jiao Tong University), Hu, Xiaofeng (Shanghai JiaoTong University), Cai, Weili (Shanghai Jiao Tong University), Zhong, Jin (Shanghai Jiao Tong University)	
16:58 – 17:20	Application and Research on Online Evaluation for Service Capability of Cloud Manufacturing Supplier (I)	ThBT10.5
	Wei, Jian (Tongji University), Lu, Jianfeng (Tongji University), Han, Tiaojuan (Tongji University)	

OR Applications - III (Regular Session)

ThBT11
Room 020

Chair: Chernonog, Tatyana *Bar Ilan University*
Co-Chair: Foropon, Cyril *Montpellier Business School*

15:30 –	Recalculating the Length of the Longest Path in Perturbed Directed Acyclic Graph	ThBT11.1
15:52	Madraki, Golshan (Clarkson University), Judd, Robert (Ohio Univ)	
15:52 – 16:14	Metaheuristics for Energy-Efficient No-Wait Flowshops: A Trade-Off between Makespan and Total Energy Consumption (I)	ThBT11.2
	Tasgetiren, Mehmet Fatih (Yasar University), Gao, Liang (Huazhong University of Science and Technology), Pan, Quan (Northwestern Polytechnical University), Li, Xinyu (Huazhong University of Science & Technology)	
16:14 – 16:36	Application of Differential Evolution with Selective Pressure to Economic Dispatch Optimization Problems	ThBT11.3
	Stanovov, Vladimir (Reshetnev Siberian State University of Science and Technology), Akhmedova, Shakhnaz (Reshetnev Siberian State University of Science and Technology), Eugene, Semengin (Reshetnev Siberian State University of Science and Technology)	
16:36 – 16:58	A Branch and Price Algorithm for the Electric Capacitated Profitable Tour Problem with Mandatory Stops	ThBT11.4
	Cortés-Murcia, David L. (Université De Technologie De Troyes), Afsar, Murat (University of Technology of Troyes), Prodron, Caroline (Université De Technologie De Troyes)	
16:58 – 17:20	Revenue Sharing Contracts in a Supply Chain: A Literature Review (I)	ThBT11.5
	Bart, Nelly (Bar Ilan University), Chernonog, Tatyana (Bar Ilan University), Avinadav, Tal (Bar Ilan University)	

Knowledge Modelling for Digital Transformation and Digitalization of Companies - II (Invited Session)

ThBT12
Room 101

Chair: Smirnov, Alexander *St.Peterburg Institute for Informatics andAutomationoftheRussian Academy of Sciences*
Co-Chair: Sandkuhl, Kurt *The University of Rostock*

15:30 –	Framework to Support Models for Manufacturing (MfM) Methodology (I)	ThBT12.1
15:52	Mas, Fernando (Airbus), Arista Rangel, Rebeca (Airbus), Morales-Palma, Domingo (Universidad De Sevilla), Oliva Olvera, Manuel (AIRBUS), Racero, Jesus (University of Seville)	
15:52 – 16:14	Capability-Based Semantic Interoperability of Manufacturing Resources: A BaSys 4.0 Perspective (I)	ThBT12.2
	Perzylo, Alexander Clifford (Fortiss GmbH - An-Institut Technische Universitaet Muenchenforti), Grothoff, Julian (RWTH Aachen University), Lucio, Levi (Fortiss GmbH), Weser, Michael (KUKA Deutschland GmbH), Malakuti, Somayah (ABB Corporate Research Center), Venet, Pierre (Corporate Research KUKA Deutschland GmbH), Aravanti-nos, Vincent (Fortiss GmbH), Deppe, Torben (RWTH Aachen University)	
16:14 – 16:36	Knowledge Management 4.0: Theoretical and Practical Considerations in Cyber Physical Production Systems (I)	ThBT12.3
	Ansari, Fazel (Vienna University of Technology (TU Wien))	
16:36 –	Task Model Representation: The Approach and Case Study (I)	ThBT12.4
16:58	Smirnov, Alexander (St.Peterburg Institute for Informatics AndAutomationoftheRussian), Shilov, Nikolay (St.Peterburg Institute for Informatics And), Shchekotov, Maxim (SPIIRAS)	
16:58 – 17:20	Facilitating Digital Transformation by Multi-Aspect Ontologies: Approach and Application Steps (I)	ThBT12.5
	Sandkuhl, Kurt (The University of Rostock), Shilov, Nikolay (St.Peterburg Institute for Informatics And), Smirnov, Alexander (St.Peterburg Institute for Informatics AndAutomationoftheRussian)	

Robotics and Mechanical Engineering - I (Regular Session)

ThBT13
Room 102

Chair: Haeussler, Stefan *University of Innsbruck*
Co-Chair: Desgagné-Lebeuf, Alexandre *Université Laval*

15:30 –	Optimal Synchronization of the Hot Rolling Stage in Steel Production	ThBT13.1
15:52	Ilmer, Quirin (University of Innsbruck), Haeussler, Stefan (University of Innsbruck), Missbauer, Hubert (University of Innsbruck)	
15:52 – 16:14	A Simulation Analysis of Impact of Design and Storage Policy on Performance of Single-Crane Multi-Aisle AS/RS	ThBT13.2
	Singbal, Vishwesh (IIT BOMBAY), Adil, Gajendra K (Indian Institute of Technology Bombay)	
16:14 – 16:36	Layout Configuration, Maintenance Planning and Simulation of AGV Based Robotic Assembly Systems	ThBT13.3
	Nemeth, Istvan (Budapest University of Technology and Economics), Puspoki, Janos (Budapest University of Technology and Economics), Viharos, Andor Bálint (Budapest University of Technology and Economics), Zsoka, Levente (Budapest University of Technology and Economics), Pirka, Benjamin (Budapest University of Technology and Economics)	
16:36 – 16:58	Assembly 4.0: Wheel Hub Nut Assembly Using a Collaborative Robot	ThBT13.4
	Salunkhe, Omkar (Chalmers University of Technology), Stensöta, Olivia (Chalmers University of Technology), Åkerman, Magnus (Chalmers), Fast-Berglund, Aasa (Chalmers University of Technology), Alveflo, Per-Anders (Volvo Group Truck Operations)	
16:58 – 17:20	Task-Based Programming and Sequence Planning for Human-Robot Collaborative Assembly	ThBT13.5
	Antonelli, Dario (Politecnico Di Torino), Bruno, Giulia (Politecnico Di Torino), Aliiev, Khurshid (Politecnico Di Torino)	

Physical Internet and Interconnected Logistics Services (Invited Session)

ThBT14
Room 103

Chair: Park, Ji Soo *Georgia Institute of Technology*
Co-Chair: Pan, Shenle *MINES ParisTech, PSL Research University*

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|----------------------|---|----------|
| 15:30 – 15:52 | A Simulation-Optimization Approach for Two-Way Scheduling/Grouping in a Road-Rail Physical Internet Hub (I) | ThBT14.1 |
| | Chargui, Tarik (Polytechnic University of Hauts-De-France, Le Mont Houy), Bekrar, Abdelghani (University of Valenciennes), Reghioui, Mohamed (University Abdelmalek Essaadi), trentesaux, damien (LAMIH UMR CNRS 8201, SurferLab, University of Valenciennes and H) | |
| 15:52 – 16:14 | Showcasing Optimization Model for Hyperconnected Showcasing Centers (I) | ThBT14.2 |
| | Park, Ji Soo (Georgia Institute of Technology), Dayarian, Iman (University of Alabama), MONTREUIL, Benoit (Georgia Institute of Technology, ISYE School, Physical Internet) | |
| 16:14 – 16:36 | The Price of Anarchy for Centralising or Decentralising Freight Transport Organisation through Serious Gaming (I) | ThBT14.3 |
| | Lafkihi, Mariam (MINES ParisTech - PSL Research University), Pan, Shenle (MINES ParisTech, PSL Research University), Ballot, Eric (Mines ParisTech) | |
| 16:36 – 16:58 | Dynamic Pricing for Carriers in Physical Internet with Peak Demand Forecasting (I) | ThBT14.4 |
| | Qiao, Bin (Mines ParisTech), Pan, Shenle (MINES ParisTech, PSL Research University), Ballot, Eric (Mines ParisTech) | |
| 16:58 – 17:20 | Digital Twin Driven Self-Organizing Production a Machine Learning Approach | ThBT14.5 |
| | Cao, Quanyao (Xi'an Jiaotong University, Xi'an, China), Xiao, zhongdong (Xi'an Jiaotong University) | |

Manufacturing and Service Operations - I (Regular Session)

ThBT15
Room 107

Chair: Amodeo, Lionel *University of Technology of Troyes*
Co-Chair: godichaud, matthieu *Université De Technologie De Troyes UTT*

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|----------------------|---|----------|
| 15:30 – 15:52 | A Kernel Search for a Patient Satisfaction-Oriented Nurse Routing Problem with Time-Windows | ThBT15.1 |
| | Gobbi, Alessandro (Università Degli Studi Di Brescia), Manerba, Daniele (Department of Control and Computer Engineering and ICT for City), Mansini, Renata (University of Brescia), Zanotti, Roberto (University of Brescia) | |
| 15:52 – 16:14 | Bi-Objective Framework for Planning a Supply Chain Process in Reconfigurable Manufacturing Systems (I) | ThBT15.2 |
| | Belaiche, Leila (University of Biskra, Algeria), Kahloul, Laid (Laboratoire LINFI, Computer Science Department, Université De Bi), Benharzallah, Saber (University of Biskra, Algeria), Hafidi, Yousra (University of Tunis El Manar) | |
| 16:14 – 16:36 | EOQ Models with Stockouts for Disassembly Systems (I) | ThBT15.3 |
| | Godichaud, Matthieu (Université De Technologie De Troyes UTT), Amodeo, Lionel (University of Technology of Troyes) | |
| 16:36 – 16:58 | Intuitionistic Fuzzy AHP Based Strategic Analysis of Service Quality in Digital Hospitality Industry (I) | ThBT15.4 |
| | Buyukozkan, Gulcin (Galatasaray University), Feyzioglu, Orhan (Galatasaray University), Havle, Celal Alpay (Galatasaray University) | |
| 16:58 – 17:20 | Network Design for a Milk Collection Problem with Accumulation Centers and Vehicle Routing | ThBT15.5 |
| | Paredes-Belmar, Germán (Universidad Andres Bello), Leonardini, Omar (Universidad Andres Bello) | |

Supply Chain Management - I (Regular Session)

ThBT16
Room 108

Chair: Menezes, Mozart *Kedge Business School*
Co-Chair: Ruiz-Hernandez, Diego *Sheffield University Management School*

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|----------------------|---|----------|
| 15:30 – 15:52 | Last Mile Logistics in Fast Fashion Supply Chains: A Case Study (I). | ThBT16.1 |
| | Alfieri, Arianna (Politecnico Di Torino), De Marco, Alberto (Politecnico Di Torino), Pas-tore, Erica (Politecnico Di Torino) | |
| 15:52 – 16:14 | Complexity Measurement in Two Supply Chains with Different Competitive Priorities (I) | ThBT16.2 |
| | Sellitto, Miguel (Universidade Do Vale Do Rio Dos Sinos - Unisinos), Lolli, Francesco (University of Modena and Reggio Emilia), Rimini, Bianca (Universita' Di Modena E Reggio Emilia), Balugani, Elia (University of Modena and Reggio Emilia) | |
| 16:14 – 16:36 | Towards an Alternative Cost-Allocation Scheme Based on a Measure for Structural Complexity | ThBT16.3 |
| | Ruiz-Hernandez, Diego (Sheffield University Management School), Menezes, Mozart (NEOMA Business School) | |
| 16:36 – 16:58 | Designing Supply Chains Via Locating Knapsacks in a Business-To-Business Environment (I) | ThBT16.4 |
| | Menezes, Mozart (NEOMA Business School), Ruiz-Hernandez, Diego (Sheffield University Management School) | |
| 16:58 – 17:20 | Optimal Financing Strategy for a Green Supply Chain with a Capital-Constrained Manufacturer (I) | ThBT16.5 |
| | Yang, haoxiong (Beijing Technology and Business University), Duan, weiyu (Beijing Technology and Business University) | |

Digital Technology, Supply Chain Risks and Uncertainty (Invited Session)

ThBT17
Room 109

Chair: Kinra, Aseem *CBS*
Co-Chair: Chutani, Anshuman *University of Nottingham*

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| 15:30 – 15:52 | Big Data Analysis in Social Networks for Managing Risks in Clothing Industry (I) | ThBT17.1 |
| | Blekanov, Ivan (St. Petersburg State University), Krylatov, Alexander (St. Petersburg State University), Ivanov, Dmitry (Berlin School of Economics and Law), Bubnova, Yulia (SIEMENS) | |
| 15:52 – 16:14 | The Role of Social Influence in Blockchain Adoption: The Brazilian Supply Chain Case (I) | ThBT17.2 |
| | Fosso Wamba, Samuel (Toulouse Business School), Maciel, Queiroz (University of São Paulo) | |
| 16:14 – 16:36 | Complementing Decision Support and Forecasting Risk in Supply Chain with Unstructured Data (I) | ThBT17.3 |
| | Beheshti-Kashi, Samaneh (Universität Bremen), Pannek, Juergen (University of Bremen), Kinra, Aseem (CBS) | |
| 16:36 – 16:58 | Exploring the Challenges with Applying Tracking and Tracing Technology in the Dairy Industry (I) | ThBT17.4 |
| | Ruiz Høyer, Madeleine (Norwegian University of Technology and Science), Oluyisola, Olumide Emmanuel (Norwegian University of Science and Technology (NTNU), Trondheim), Strandhagen, Jan Ola (Norwegian University of Science and Technology), Sem-ini, Marco (Norwegian University of Science and Technology) | |
| 16:58 – 17:20 | Supply Chain Financing with Advance Selling under Disruption | ThBT17.5 |
| | Gupta, Varun (Penn State University Erie), Chutani, Anshuman (University of Nottingham) | |

Materials Management from a Linear to a Circular Business Models (Invited Session)

ThBT18
Room 110

Chair: Paulina, Golinska-Dawson *Poznan University of Technology*
Co-Chair: Pawlewski, Pawel *Poznan University of Technology*

15:30 – How Manage Waste from End-Of-Life Vehicles? – Method Proposal (I)	ThBT18.1
15:52 kosacka-olejnik, monika (Poznan Univeristy of Technology)	
15:52 – Materials Management in Remanufacturing of Automotive Components – a Small Re-manufacturers Perspective (I)	ThBT18.2
16:14 Paulina, Golinska-Dawson (Poznan University of Technology)	
16:14 – Relational Database Template in the Simulation Modelling of Manufacturing Systems (I)	ThBT18.3
16:36 Pawlewski, Pawel (Poznan University of Technology), Anholcer, Marcin (Pozna University of Economics and Business)	
16:36 – Closed-Loop Supply Chain Structure in Presence of Multiple Products	ThBT18.4
16:58 Jalali, Hamed (NEOMA Business School), Ansaripoor, Amir Hossein (School of Management, Curtin Business School), De Giovanni, Pietro (Operations Management Department, ESSEC Business School)	
16:58 – A Sequence-Based Metaheuristics for Tactical Distribution Problems in Closed-Loop Supply Chains	ThBT18.5
17:20 Desport, Pierre (Université De Tours), Lardeux, Frederic (Université D'Angers), Lesaint, David (Université D'Angers), Di Cairano-Gilfedder, Carla (British Telecom), Liret, Anne (British Telecom), Owusu, Gilbert (British Telecom)	

Technical Program for Friday August 30, 2019

Intelligent Methods and Systems Supporting Supply Chain Decision Making - III (Open Invited Track)

FrAT1
Room 001

Chair: Freitag, Michael *University of Bremen*
Co-Chair: Frazzon, Enzo Morosini *Federal University of Santa Catarina*

08:30 – Supply Chain Risks in Times of Industry 4.0: Insights from German Cases (I)	FrAT1.1
08:52 Zimmermann, Manuel (Chair of the Management of Digitalization and Automation, RWTH A), Rosca, Eugenia (Tilburg University), Antons, Oliver (Chair of the Management of Digitalization and Automation, RWTH A), Bendul, Julia (Jacobs University Bremen)	
08:52 – An Approach to Designing Supply Chain Networks Considering the Occurrence of Disruptive Events (I)	FrAT1.2
09:14 Papakostas, Nikolaos (University College Dublin), Hargaden, Vincent (University College Dublin), Schukraft, Susanne (BIBA - Bremer Institut Für Produktion Und Logistik GmbH at the U), Freitag, Michael (University of Bremen)	
09:14 – A Model-Driven Approach for Transforming GRAFCET Specification into PLC Code Including Hierarchical Structures	FrAT1.3
09:36 Julius, Robert (Helmut-Schmidt-University), Trenner, Thomas (Siemens AG), Neidig, Jörg (Siemens AG), Fay, Alexander (Helmut Schmidt Universitaet)	
09:36 – Approach to Adapt Manufacturing Process Parameters Systematically Based on Machine Learning Algorithms	FrAT1.4
09:58 Radetzky, Max (University of Wuppertal), Rosebrock, Christoph (University of Wuppertal), Bracke, Stefan (University of Wuppertal)	
09:58 – Blockchain-Based Platform for Cloud Service Composition Problems: An Analysis of Reward Function Policy (I)	FrAT1.5
Aghamohammadzadeh, Ehsan (Sharif University of Technology), Fatahi Valilai, Omid (Industrial Engineering Department, Sharif University of Technolo)	

The Future of Metal Processing (Invited Session)

FrAT2
Room 002

Chair: Abel, Dirk *RWTH-Aachen University*
Co-Chair: Schwenzer, Max *RWTH Aachen University*

08:30 – Model Predictive Force Control in Grinding Based on a Lightweight Robot (I)	FrAT2.1
08:52 Husmann, Sonja (RWTH Aachen University), Stemmler, Sebastian (RWTH Aachen University), Hähnel, Sebastian (Fraunhofer-Institut Für Produktionstechnologie), Vogelgesang, Simon (RWTH Aachen University), Abel, Dirk (RWTH-Aachen University), Bergs, Thomas (Fraunhofer-Institut Für Produktionstechnologie)	
08:52 – Predicting Path Inaccuracies in Robot-Based Machining Operations Using Inverse Kinematics (I)	FrAT2.2
09:14 Lienenlücke, Lars (Laboratory for Machine Tools and Production Engineering (WZL) Of), Storms, Simon (Laboratory for Machine Tools and Production Engineering (WZL) Of), Brecher, Christian (Laboratory for Machine Tools and Production Engineering (WZL) Of)	
09:14 – Continuous Identification for Mechanistic Force Models in Milling (I)	FrAT2.3
09:36 Schwenzer, Max (RWTH Aachen University), Stemmler, Sebastian (RWTH Aachen University), Ay, Muzafer (RWTH Aachen University), Bergs, Thomas (Fraunhofer-Institut Für Produktionstechnologie), Abel, Dirk (RWTH-Aachen University)	
09:36 – Model Predictive Control in Milling Based on Support Vector Machines (I)	FrAT2.4
09:58 Ay, Muzafer (RWTH Aachen University), Stemmler, Sebastian (RWTH Aachen University), Schwenzer, Max (RWTH Aachen University), Abel, Dirk (RWTH-Aachen University), Bergs, Thomas (Fraunhofer-Institut Für Produktionstechnologie)	
09:58 – Productivity Increase – Model-Based Optimisation of NC-Controlled Milling Processes to Reduce Machining Time and Improve Process Quality (I)	FrAT2.5
10:20 Brecher, Christian (Laboratory for Machine Tools and Production Engineering (WZL) Of), Wiesch, Marian (Laboratory for Machine Tools and Production Engineering (WZL) Of), Wellmann, Frederik (Laboratory for Machine Tools and Production Engineering (WZL) Of)	

Digital Factory and Industry 4.0 - I (Regular Session)

FrAT3
Room 004

Chair: Facchini, Francesco *Politecnico Di Bari*
Co-Chair: Sprock, Timothy *National Institute of Standards and Technology*

08:30 – Model to Evaluate the Industry 4.0 Readiness Degree in Industrial Companies	FrAT3.1
08:52 Lucato, Wagner Cezar (Universidade Nove De Julho), Pacchini, Athos Paulo Tadeu (Universidade Nove De Julho), Facchini, Francesco (Politecnico Di Bari), Mummolo, Giovanni (Polytechnic of Bari)	
08:52 – Integration of Automatic Generated Simulation Models, Machine Control Projects and Management Tools to Support Whole Life Cycle of Industrial Digital Twins	FrAT3.2
09:14 Garrido Campos, Julio (Vigo University), Juan, Sáez López (University of Vigo, Automation and Systems Engineering Departmen)	
09:14 – Internet of Things (IOT): First Steps in Digital Transformation in SCM and IT (I)	FrAT3.3
09:36 okano, Marcelo (CEETEPS), Oliveira, Giovana (CEETEPS), Inoue, Patricia (CEETEPS), Nascimento, Samira (CEETEPS), Simões, Eliane (Centro Paula Souza), Langhi, Celi (CEETEPS)	
09:36 – Integrated Operations Management for Distributed Manufacturing	FrAT3.4
09:58 Sprock, Timothy (National Institute of Standards and Technology), Sharp, Michael (National Institute of Standards and Technology), Bernstein, William Z. (National Institute of Standards and Technology), Brundage, Michael P. (National Institute of Standards and Technology), Helu, Moneer (National Institute of Standards and Technology), Hedberg, Thomas (National Institute of Standards and Technology)	
09:58 – A Novel Framework for Intelligent Automation	FrAT3.5
10:20 Coito, Tiago (Instituto Superior Técnico, Universidade De Lisboa), Viegas, Joaquim (IDMEC, Instituto Superior Técnico, Universidade De Lisboa, Porto), Martins, Miguel S. E. (IDMEC, Instituto Superior Técnico, Universidade De Lisboa, Porto), Cunha, Mariana (IDMEC, Instituto Superior Técnico, Universidade De Lisboa), Figueiredo, Joao Manuel (Universidade Evora), Vieira, Susana M. (Technical University of Lisbon, Instituto SuperiorTécnico, CIS/I), Sousa, Joao M. C. (Technical Univ of Lisbon, Instituto Superior Tecnico)	

Scheduling - I
(Open Invited Track)

Chair: Battaia, Olga *ISAE-SUPAERO*
Co-Chair: Battini, Daria *University of Padua*

FrAT5
Room 014

08:30 – 08:52	Scheduling Elective Surgeries with Markov Decision Process and Approximate Dynamic Programming Zhang, Jian (Université Bourgogne-Franche-Comté), Dridi, Mahjoub (UTBM), El Moudni, Abdellah (UTBM)	FrAT5.1
08:52 – 09:14	Scheduling of a Consumer Goods Production Plant with Intermediate Buffer by Decomposition and Mixed-Integer Linear Programming Yfantis, Vassilios (TU Dortmund University), Corominas, Francesc (Procter & Gamble), Engell, Sebastian (TU Dortmund)	FrAT5.2
09:14 – 09:36	Computer-Assisted Scheduling Tools in the Construction Industry: A Systematic Literature Review Desgagné-Lebeuf, Alexandre (Université Laval), Lehoux, Nadia (Université Laval), Beauregard, Robert (Université Laval), Desgagné-Lebeuf, Guillaume (Services Linguistiques Langlo)	FrAT5.3
09:36 – 09:58	A Genetic Algorithm for Scheduling a Semi-Continuous Process Industry: A Case Study Jalalian, Mohammad (University of Guelph), Defersha, Fantahun (University of Guelph)	FrAT5.4
09:58 – 10:20	A Design of a Scheduling System for an Unmanned Aerial Vehicle (UAV) Deployment Sung, Inkyung (Aalborg University), Danancier, Kevin (Polytech Engineering School of Aix-Marseille University), Ruvio, Delphine (Polytech Engineering School of Aix-Marseille University), Guillemet, Alexandre (Polytech Engineering School of Aix-Marseille University), Nielsen, Peter (Aalborg University)	FrAT5.5

Human Factors in Production and Logistics Systems
of the Future - I (Open Invited Track)

Chair: Sgarbossa, Fabio *Norwegian University of Science and Technology - NTNU*
Co-Chair: Weckenborg, Christian *TU Braunschweig*

FrAT6
Room 015

08:30 – 08:52	Modelling Production Costs from Physical and Psychosocial MSD Risk Factor Levels Sobhani, Ahmad (Oakland University), Neumann, W. Patrick (Human Factors Engineering Lab, Department of Mechanical and Indu), Mohamed Ismail, Mohamed Wahab (Ryerson University)	FrAT6.1
08:52 – 09:14	Assembly Line Balancing with Collaborative Robots under Consideration of Ergonomics: A Cost-Oriented Approach (I) Weckenborg, Christian (TU Braunschweig), Spengler, Thomas S. (TU Braunschweig)	FrAT6.2
09:14 – 09:36	Potentials of IT-Supported Assistive Systems: Comparison of Two User Studies in the Manufacturing Industry (I) Kubenke, Johanna (ETH Zurich, Switzerland), Kunz, Andreas (ETH Zurich)	FrAT6.3
09:36 – 09:58	Perceived Work Autonomy in Order Picking Systems: An Empirical Analysis (I) Cragg, Tony (Ecole Supérieure De Logistique Industrielle), Loske, Dominic (FOM, Ild, Essen)	FrAT6.4
09:58 – 10:20	Kit Preparation with Cobot-Supported Sorting in Mixed Model Assembly (I) Fager, Patrik (Chalmers University of Technology), Calzavara, Martina (University of Padua), Sgarbossa, Fabio (Norwegian University of Science and Technology - NTNU)	FrAT6.5

Lean Manufacturing and Quality Management - IV
(Regular Session)

Chair: Jeunet, Jully *CNRS*
Co-Chair: Haeussler, Stefan *University of Innsbruck*

FrAT7
Room 016

08:30 – 08:52	CUSUM Control Charts for the Coefficient of Variation with Measurement Errors Tran, Phuong Hanh (HEC - Management School, University of Liège), Heuchenne, Cédric (HEC - Management School, University of Liège)	FrAT7.1
08:52 – 09:14	Adaptive Order Release Planning with Dynamic Lead Times Haeussler, Stefan (University of Innsbruck), Schneckenreither, Manuel (University of Innsbruck), Gerhold, Christoph (University of Innsbruck)	FrAT7.2
09:14 – 09:36	A Dynamic Multiobjective Model for Designing Machine Layouts Azevedo, Maria Manuela (INESC TEC), Crispim, José António (University of Minho, School of Economics and Management), Sousa, Jorge Pinho de (University of Porto, INESC TEC))	FrAT7.3
09:36 – 09:58	A Markovian Approach for Time Series Prediction for Quality Control (I) Şahin, Ahmet (Ozyegin University), Sayımlar, Ayşe Dilara (Ozyegin University), albey, erinc (Ozyegin University), Teksan, Zehra Melis (Ozyegin University)	FrAT7.4
09:58 – 10:20	Heuristic Solution Methods for the Selective Disassembly Sequencing Problem under Sequence-Dependent Costs Jeunet, Jully (CNRS), Della Croce, Federico (Torino Ploytechnic), Salassa, Fabio (DIGEP - Politecnico Di Torino)	FrAT7.5

Logistics and Inventory Management - I
(Regular Session)

Chair: Witczak, Marcin *University of Zielona Gora*
Co-Chair: Tarim, S. Armagan *University College Cork*

FrAT8
Room 017

08:30 – 08:52	Multiple AGV Fault-Tolerant within an Agile Manufacturing Warehouse Witczak, Marcin (University of Zielona Gora), Majdzik, Pawel (University of Zielona Góra), Stetter, Ralf (Hochschule Ravensburg Weingarten), Lipiec, Bogdan (University of Zielona Góra)	FrAT8.1
08:52 – 09:14	A Modified Monte-Carlo Tree Search Algorithm for Two-Sided Assembly Line Balancing Problem (I) Wu, Chuanxun (School of Mechanical Engineering, Shanghai Jiao Tong University), Hu, Xiaofeng (Shanghai JiaoTong University), Zhang, Yahui (Shanghai JiaoTong University), Wang, Pengfei (Shanghai JiaoTong University)	FrAT8.2
09:14 – 09:36	Multi-Criteria Inventory ABC Classification Gaussian Mixture Model (I) Zowid, Fauzi (University of Bordeaux), Babai, Mohamed Zied (BEM Bordeaux Management School), Doussia, M. Radhouane (University of Tunis), Ducq, Yves (Bordeaux University)	FrAT8.3
09:36 – 09:58	A Hierarchical Approach for Solving Simultaneous Lot Sizing and Scheduling Problem with Secondary Resources (I) Şafak, Cevdet Utku (Vestel Electronics), Yilmaz, Gorkem (Özyeğin University), albey, erinc (Ozyegin University)	FrAT8.4
09:58 – 10:20	Multi-Product Multi-Period Fixed Charge Transportation Problem: An Ant Colony Optimization Approach (I) V Panicker, Vinay (National Institute of Technology Calicut), I V, Sarin (National Institute of Technology Calicut)	FrAT8.5

Sustainable Manufacturing and Logistics - I
(Regular Session)

FrAT9
Room 018

Chair: Gola, Arkadiusz *Faculty of Mechanical Engineering, Lublin University of Technology*
Co-Chair: Nguyen, Thi Lan Anh *University of Rennes 1*

08:30 – 08:52	Expert Selection for Humanitarian Projects Development: A Group Decision Making Approach with Incomplete Information Relations (I) Mediouni, Abderrahmen (Geneva School of Business Administration, University of Applied), Cheikhrouhou, Naoufel (University of Applied Sciences Western Switzerland (HES-SO))	FrAT9.1
08:52 – 09:14	CSR Implementation for the Sustainable Supply Chain Performance: A System Dynamic Approach Nguyen, Thi Lan Anh (University of Rennes 1), Vo, Thi Le Hoa (University of Rennes 1)	FrAT9.2
09:14 – 09:36	Proposition of a Framework for Classifying Returnable Transport Items Closed-Loop/ Reverse Logistics Issues Lakhmi, Najoua (CentraleSupélec), Sahin, Evren (Ecole Centrale Paris Laboratoire Génie Industriel), Dallery, Yves (Ecole Centrale Paris)	FrAT9.3
09:36 – 09:58	End-To-End Farm Management Technology Selection for Smart Agriculture Buyukozkan, Gulcin (Galatasaray University), Uzturk, Deniz (Galatasaray University), Negus, A. Fahri (Assistant Professor (Galatasaray University)), oztek, M. Yaman (Professor (Galatasaray University))	FrAT9.4
09:58 – 10:20	Emerging Trends from Advanced Planning to Integrated Business Planning Willms, Philipp (University of Kassel), Brandenburg, Marcus (Hochschule Flensburg)	FrAT9.5

Control - III
(Regular Session)

FrAT10
Room 019

Chair: Stadnicka, Dorota *Rzeszow University of Technology*
Co-Chair: Roh, Myung-II *Seoul National University*

08:30 – 08:52	Evaluation of Control Approaches for Capacity Adjustment in Job Shop Systems (I) Liu, Ping (University of Bremen), Zhang, Qiang (University of Bremen), Pannek, Juergen (University of Bremen)	FrAT10.1
08:52 – 09:14	A Crane Movement Control for Stability of Block Erection Based on Deep Reinforcement Learning Chun, Do-Hyun (Seoul National University), Roh, Myung-II (Seoul National University), Lee, Hye-Won (Seoul National University), Ham, Seung-Ho (Seoul National University)	FrAT10.2
09:14 – 09:36	A Deep Neural Network Model for Automobile Demand Prediction Sema, Kayapinar (Munzur University), Yildirim, Ozal (Munzur University)	FrAT10.3
09:36 – 09:58	Economic Model Predictive Control for Optimal Operation of Combined Heat and Power Systems Diaz, Jenny (Universitat Politècnica De Catalunya), Weber, Thomas (PTW TU-Darmstadt), Panten, Niklas (Technische Universität Darmstadt, Institute of Production Manage), Ocampo-Martinez, Carlos (Technical University of Catalonia (UPC)), Abele, Eberhard (Technische Universität Darmstadt, Institute of Production Manage)	FrAT10.4
09:58 – 10:20	Modification of Multiple-Model Description and Planning and Update Control Algorithms of Supply Chain Trofimova, Inna (St. Petersburg State University), Sokolov, Boris (SPIIRAS), Nazarov, Dmitry (St.Petersburg Institute for Informatics and Automation of the Ru), Zakharov, Valerii (St. Petersburg Institute for Informatics and Automation of the R)	FrAT10.5

OR Applications - IV
(Regular Session)

FrAT11
Room 020

Chair: Ribault, Alnour *Université Lyon 2*
Co-Chair: Farias, Katyanne *Grenoble INP*

08:30 – 08:52	Comparison of Path Planning Algorithms for an Unmanned Aerial Vehicle Deployment under Threats Danancier, Kevin (Polytech Engineering School of Aix-Marseille University), Ruvio, Delphine (Polytech Engineering School of Aix-Marseille University), Sung, Inkyung (Aalborg University), Nielsen, Peter (Aalborg University)	FrAT11.1
08:52 – 09:14	Impact of Uncertainties of Lead Times and Expiration Dates on the Stability of Inventory Levels in a Distribution System (I) Bou Farraa, Berna (Ecole Centrale De Nantes), Abbou, Rosa (LS2N University/ IUT of Nantes), Loiseau, Jean Jacques (Lab. Sciences Du Numérique De Nantes - LS2N CNRS)	FrAT11.2
09:14 – 09:36	The Impact of Subsidies in Asymmetric Procurement Auctions: A Comparison of Theoretical and Experimental Results Cho, Sanghoon (University of South Carolina), donohue, Joan (Department of Management Science; University of South Carolina), fry, timothy (University of South Carolina), Wooten, Joel (University of South Carolina)	FrAT11.3
09:36 – 09:58	Mathematical Formulations for a Two-Echelon Inventory Routing Problem Farias, Katyanne (Grenoble INP), Hadj-Hamou, Khaled (INSA Lyon), Yugma, Claude (Ecole Des Mines De Saint Etienne)	FrAT11.4
09:58 – 10:20	Economically Optimal Control of a Cold Room Using an Artificial Neural Network and Dynamic Programming Ribault, Alnour (Université Lyon 2), Vercraene, Samuel (INSA Lyon), Henry, Sébastien (DISP Laboratory, University of Lyon, University Lyon 1), Ouzrout, Yacine (DISP Laboratory, University of Lyon, University Lyon 2), Peguet, Lucie (Energy Pool)	FrAT11.5

Robotics and Mechanical Engineering - III
(Regular Session)

FrAT113
Room 102

Chair: Bettayeb, Belgacem *CESI Group, Campus Lille*
Co-Chair: Martinez, Carol *Pontificia Universidad Javeriana*

08:30 – 08:52	Safety Protocol for Collaborative Human-Robot Recycling Tasks Medina, Angie (Pontificia Universidad Javeriana), Mora, Juan Felipe (Pontificia Universidad Javeriana), Martinez, Carol (Pontificia Universidad Javeriana), Barrero, Nicolás (Pontificia Universidad Javeriana), Hernandez, Wilson (Pontificia Universidad Javeriana)	FrAT13.1
08:52 – 09:14	3D Irregular Packing in an Optimized Cuboid Container (I) Litvinchev, Igor (Nuevo Leon State University (UANL)), Pankratov, Alexandr (Institute for Mechanical Engineering Problems of the National Ac), Romanova, Tatiana (Institute for Mechanical Engineering Problems of the National Ac)	FrAT13.2
09:14 – 09:36	Task Allocation Based on Shared Resource Constraint for Multi-Robot Systems in Manufacturing Industry (I) Zaidi, Lazher (CESI LINEACT), Sahnoun, M'hammed (CESI LINEACT), Bettayeb, Belgacem (LINEACT CESI, Lille Campus)	FrAT13.3
09:36 – 09:58	Meta-Model for Estimating Throughput in an Automotive Body Shop Considering Mixed-Models and Reconfiguration Moon, Dug Hee (Changwon National University), Lee, Young Hoon (Changwon National University), Kim, Dong Ok (Changwon National University), Shin, Yang Woo (Changwon National University), Ko, Chang Seong (Kyungsung University)	FrAT13.4

Interoperability and Information Management - IV (Regular Session)

FrAT14
Room 103

Chair: Savino, Matteo *University of Sannio*
Co-Chair: Behdani, Behzad *Wageningen University*

08:30 –	A Machine Learning Based Branch-And-Price Algorithm for Coil Batching Problem	FrAT14.1
08:52	He, Baiyang (Northeastern University), Meng, Ying (Northeastern University), Tang, Lix-in (Northeastern Univ)	
08:52 –	Towards a Multi-Method Multi-Scale Simulation Platform for Supply Chain Modeling	FrAT14.2
09:14	Reza, Hesam (Delft University of Technology), Behdani, Behzad (Wageningen University)	
09:14 –	Modeling Service-demand Matching Hyper-Network in Cloud Manufacturing by Considering QoS Parameters	FrAT14.3
09:36	Rezapour Niari, Maryam (Sharif University of Technology), Eshghi, Kourosh (Industrial Engineering Department, Sharif University of Technology), Fatahi Valilai, Omid (Industrial Engineering Department, Sharif University of Technology)	
09:36 –	Forecasting of Silicon Content in Hot Metal Using Machine Learning Techniques	FrAT14.4
09:58	Parihar, Manendra Singh (Tata Consultancy Services), Kumar, Vivek (Tata Consultancy Services), Kumar, Rajan (Tata Consultancy Services), Runkana, Venkataramana (Tata Consultancy Services), Raj, Sristy (Tata Steel Limited)	
09:58 –	Investigating the Role of QMS Implementation on Customers' Satisfaction: A Case Study of SMEs (I)	FrAT14.5
10:20	Usman, Muhammad (University of Engineering and Technology Taxila), Shafiq, Muhammad (University of Sannio), Savino, Matteo (University of Sannio), Rashid, Zahid (University of Engineering and Technology Taxila), Yehya, Muhammad Irshad (University of Engineering and Technology Taxila), Naqvi, Ali Akbar (University of Engineering and Technology Taxila), Shahid, Iqbal (University of Engineering and Technology Taxila), menanno, Marialuisa (University of Sannio)	

Manufacturing and Service Operations - II (Regular Session)

FrAT15
Room 107

Chair: Grosse, Eric *Technische Universität Darmstadt*
Co-Chair: Chou, Yon-Chun *National Taiwan University*

08:30 –	Effects of Competition on Product Recovery Decisions	FrAT15.1
08:52	Bayindir, Zeynep Pelin (Middle East Technical University), Cetin, Can Baris (HEC Montreal), Bakal, Ismail Serdar (Middle East Technical University)	
08:52 –	Fixed Funding or Flexible Funding? an Economic Analysis of Co-Created Product in Reward-Based Crowdfunding Mechanisms	FrAT15.2
09:14	Cao, Yiyin (Xi'an Jiaotong University), Xiao, Zhongdong (Xi'an Jiaotong University)	
09:14 –	On the Way to Logistics 4.0 - a Systematic Review and Outlook	FrAT15.3
09:36	Winkelhaus, Sven (TU Darmstadt), Grosse, Eric (Technische Universität Darmstadt)	
09:36 –	Improving the Efficiency in a Cold Chain Distribution Center by Synchronizing Multi-Temperature Setup Operations	FrAT15.4
09:58	Su, Teng-Sheng (Chaoyang University of Technology)	
09:58 –	Designing Two-Part Tariff Supply Contracts of a Fixed or Quasi-Fixed Fee	FrAT15.5
10:20	Chou, Yon-Chun (National Taiwan University)	

Supply Chain Management - II (Regular Session)

FrAT16
Room 108

Chair: Chen, Zhixiang *Sun Yat-Sen University*
Co-Chair: Li, Zishuo *Beijing Technology and Business University*

08:30 –	Research on Transnational Dual-Source Procurement Strategy with Suppliers' Different Supply Lead-Time	FrAT16.1
08:52	Chen, Chongping (South China Normal University), Chen, Zhixiang (Sun Yat-Sen University)	
08:52 –	A Supply Chain Maturity Model for Automotive SMEs: A Case Study	FrAT16.2
09:14	Yahiaoui, Sanae (Hassan 2 University, ENSAM Casablanca), Fedouaki, Faycal (Hassan 2 University, ENSAM Casablanca), Mouchtachi, Ahmed (Hassan 2 University, ENSAM Casablanca)	
09:14 –	Negotiation Decision between Manufacturer and System Operator on the Electric Energy Demand Response Program	FrAT16.3
09:36	ZHANG, Yunrong (Sun Yat-Sen University), Chen, Zhixiang (Sun Yat-Sen University)	
09:36 –	Game Model for Green Products Supply Chain with Government Price Adjustment (I)	FrAT16.4
09:58	Yang, haoxiong (Beijing Technology and Business University), Fu, PengXia (Beijing Technology and Business University), Li, Zishuo (Beijing Technology and Business University)	
09:58 –	Game Model for Implementing Agricultural Products Traceability System Using Revenue-Sharing Contract (I)	FrAT16.5
10:20	Yang, haoxiong (Beijing Technology and Business University), Li, Danlian (Beijing Technology and Business University), Ma, Jiaji (Beijing Technology and Business University)	

Supply Network Resilience, Flexibility and Robustness (Regular Session)

FrAT17
Room 109

Chair: OZKAN, Omer *National Defense University, Turkish Air Force Academy*
Co-Chair: Mackay, Jonathon *University of Wollongong*

08:30 –	Operationalising and Evaluating Redundancy and Flexibility-Based Management Strategies within a Queuing System (I)	FrAT17.1
08:52	Mackay, Jonathon (University of Wollongong), Munoz, Albert (University of Wollongong), Pepper, Matthew (University of Wollongong), Ryan, Emily (University of Wollongong)	
08:52 –	Origins of Disruptions Sources Framework to Support the Enterprise Resilience Analysis	FrAT17.2
09:14	Sanchis, Raquel (Universitat Politècnica De Valencia), Poler, Raul (Universitat Politècnica De Valencia)	
09:14 –	Co-Op Advertising in a Dynamic Supply Chain When Supply Is Disrupted	FrAT17.3
09:36	Ma, Shigui (Southeast University), He, Yong (Southeast University), Yu, Yanan (Southeast University), Gu, Ran (Columbia University), Lyu, Hongjiang (Southeast University)	
09:36 –	Criticality Analysis for Network Utilities Asset Management	FrAT17.4
09:58	Martínez-Galán Fernández, Pablo (University of Seville), Gomez Fernandez, Juan F. (University of Seville. School of Engineering), Crespo Marquez, Adolfo (University of Seville. School of Engineering), guillen, antonio (University of Seville), De La Fuente Carmona, Antonio (University of SEVILLE, School of Engineering), Candon, Eduardo (University of Seville)	
09:58 –	A Monte Carlo Simulation for Reliability Estimation of Logistics and Supply Chain Networks	FrAT17.5
10:20	Ozkan, Omer (National Defense University, Turkish Air Force Academy), Kilic, Sezgin (National Defense University, Turkish Air Force Academy)	

Simulation, Optimization, Sensor-Based State Analysis and Predictions to Support Operational Decisions in Manufacturing and Logistics (Open Invited Track)

Chair: Reggelin, Tobias *Otto Von Guericke University Magdeburg*
Co-Chair: Zammori, Francesco *University of Parma*

FrBT1
Room 001

- | | | |
|----------------------|--|---------|
| 11:00 – 11:22 | Deep Learning and WLC: How to Set Realistic Delivery Dates in High-Variety Manufacturing Systems (I) | FrBT1.1 |
| | Mezzogori, Davide (University of Parma), Romagnoli, Giovanni (University of Parma), Zammori, Francesco (University of Parma) | |
| 11:22 – 11:44 | Data-Based Services for Smart Load Carriers: Functional Design and Requirements Analysis for Internet of Things Technologies (I) | FrBT1.2 |
| | Romer, Martina (Landshut University of Applied Sciences), Meißner, Sebastian (Technology Centre for Production and Logistics Systems) | |
| 11:44 – 12:06 | Implementation of an IoT and Cloud-Based Digital Twin for Real-Time Decision Support in Port Operations (I) | FrBT1.3 |
| | Hofmann, Wladimir (Lufthansa Industry Solutions), Branding, Fredrik (Lufthansa Industry Solutions) | |
| 12:06 – 12:28 | Analysis of Real-Time Tour Building and Scheduling Strategies for In-Plant Milk-Run Systems with Volatile Transportation Demand (I) | FrBT1.4 |
| | Klenk, Eva (SALT Solutions AG), Galka, Stefan (OTH - Ostbayerische Technische Hochschule Regensburg) | |

Smart Scheduling for New Logistics Modes under Uncertain Environments (Invited Session)

Chair: Yang, Xuenan *Tongji University*
Co-Chair: Liu, Xin *Tongji University*

FrBT2
Room 002

- | | | |
|----------------------|--|---------|
| 11:00 – 11:22 | Machine Scheduling with Stochastic Release and Processing Times under Industry 4.0 (I) | FrBT2.1 |
| | Liu, Ming (Tongji University), Liu, Xin (Tongji University) | |
| 11:22 – 11:44 | Profit-Driven Stochastic Scheduling Considering Discounted Cash Flows under Industry 4.0 (I) | FrBT2.2 |
| | Liu, Ming (Tongji University), Liu, Xin (Tongji University) | |
| 11:44 – 12:06 | Bi-Objective Optimization for Scheduling and Multi-Skilled Worker Assignments in the Hybrid Flow Shop (I) | FrBT2.3 |
| | Liu, Ming (Tongji University), Yang, Xuenan (Tongji University) | |
| 12:06 – 12:28 | A Risk-Averse Employee Scheduling with Uncertainty Demand (I) | FrBT2.4 |
| | Liu, Ming (Tongji University), Liang, Bian (Tongji University), Yang, Xuenan (Tongji University) | |

Digital Factory and Industry 4.0 - II (Regular Session)

Chair: Meerkov, Semyon M. *Univ. of Michigan*
Co-Chair: Lentes, Joachim *Fraunhofer IAO*

FrBT3
Room 004

- | | | |
|----------------------|---|---------|
| 11:00 – 11:22 | A Survey on Digitalization for SMEs in Brandenburg, Germany | FrBT3.1 |
| | Kilimis, Panagiotis (Brandenburg University of Technology Cottbus-Senftenberg), Zou, Wenchao (Brandenburg University of Technology Cottbus-Senftenberg), Lehmann, Marlon (Brandenburg University of Technology Cottbus-Senftenberg), Berger, Ulrich (Brandenburg University of Technology Cottbus) | |
| 11:22 – 11:44 | Programmable Manufacturing Advisor for Smart Production Systems: Architecture, Analytics, Software, and Performance Demonstration | FrBT3.2 |
| | Achram, Larry (Smart Production Systems LLC), Alavian, Pooya (University of Michigan), Eun, Yongssoon (DGIST), Meerkov, Semyon M. (Univ. of Michigan), Zhang, Liang (University of Connecticut) | |
| 11:44 – 12:06 | Applying Machine Learning to AHP Multicriteria Decision Making Method to Assets Prioritization in the Context of Industrial Maintenance 4.0 | FrBT3.3 |
| | Lima, Erick (Pontifical Catholic University of Parana), Gorski, Ewerton Gusthavo (Pontificia Universidade Católica Do Paraná), Santos, Eduardo Alves Portela (Pontifical Catholic Univ of Parana), Deschamps, Fernando (Pontifical Catholic University of Parana), Rocha Loures, Eduardo (Pontifical Catholic University of Paraná) | |
| 12:06 – 12:28 | Exploring Smart Factory for New Product Development | FrBT3.4 |
| | Malik, Ali Ahmad (University of Southern Denmark), Bilberg, Arne (University of Southern Denmark) | |

Scheduling in Industry 4.0 and Cloud Manufacturing (Invited Session)

Chair: Vespola, Silvestro *Università Degli Studi Di Napoli “Federico II”*
Co-Chair: Rossit, Daniel Alejandro *Universidad Nacional Del Sur*

FrBT5
Room 014

- | | | |
|----------------------|---|---------|
| 11:00 – 11:22 | Production Planning in the Fourth Industrial Revolution: A Literature Review (I) | FrBT5.1 |
| | Tobon Valencia, Estefania (Arts Et Métiers ParisTech, LAMIH), LAMOURI, Samir (Arts Et Métiers ParisTech), Pellerin, Robert (Polytechnique Montreal), Dubois, Patrice (Arts Et Métiers ParisTech, LCPI), Moeuf, Alexandre (Exxelia Group) | |
| 11:22 – 11:44 | Designing a Scheduling Logic Controller for Industry 4.0 Environments (I) | FrBT5.2 |
| | Rossit, Daniel Alejandro (Universidad Nacional Del Sur), Tohmé, Fernando (Universidad Nacional Del Sur), Frutos, Mariano (Universidad Nacional Del Sur) | |
| 11:44 – 12:06 | Evaluating the Advantages of a Novel Decentralised Scheduling Approach in the Industry 4.0 and Cloud Manufacturing Era (I) | FrBT5.3 |
| | Vespola, Silvestro (Università Degli Studi Di Napoli “Federico II”), Grassi, Andrea (Università Degli Studi Di Napoli “Federico II”), Guizzi, Guido (University of Naples Federico II), Santillo, Liberatina Carmela (Università Degli Studi Di Napoli “Federico II”) | |
| 12:06 – 12:28 | A Multi-Objective Scheduling Model for a Cloud Manufacturing System with Pricing, Equity, and Order Rejection (I) | FrBT5.4 |
| | Vahedi-Nouri, Behdin (School of Industrial Engineering, College of Engineering, Univer), Tavakkoli-Moghaddam, Reza (University of Tehran), Rohaninezhad, Mohammad (Shahed University) | |

Human Factors in Production and Logistics Systems of the Future - II (Open Invited Track)

FrBT6
Room 015

Chair: Glock, Christoph *Technische Universität Darmstadt*
Co-Chair: Grosse, Eric *Technische Universität Darmstadt*

- 11:00 – Exploring Human Factors in Logistics 4.0: Empirical Evidence from a Case Study (I)** FrBT6.1
11:22
Cimini, Chiara (University of Bergamo), Lagorio, Alexandra (University of Bergamo), Pirola, Fabiana (University of Bergamo), Pinto, Roberto (University of Bergamo)
- 11:22 – Assessing the Barriers to Industry 4.0 Implementation from a Workers' Perspective (I)** FrBT6.2
11:44
Müller, Julian Marius (Logistics and Operations Management, Salzburg University of Appl)
- 11:44 – The Effect of Worker Fatigue on the Performance of a Bucket Brigade Order Picking System (I)** FrBT6.3
12:06
Fontana Granotto, Giovanni (University of Padova), Sgarbossa, Fabio (Norwegian University of Science and Technology - NTNU), Glock, Christoph (Technische Universität Darmstadt), Grosse, Eric (Technische Universität Darmstadt)
- 12:06 – Understanding the Meaning of Human Perception and Cognitive Biases for Production Planning and Control (I)** FrBT6.4
12:28
Bendul, Julia (RWTH Aachen University)

Lean Manufacturing and Quality Management - V (Regular Session)

FrBT7
Room 016

Chair: Tiwari, Manoj K *Indian Institute of Technology, Kharagpur*
Co-Chair: Hajej, Zied *Université De Metz*

- 11:00 – Order Release in ETO Systems - a Basic Optimization-Based Approach** FrBT7.1
11:22
Goessinger, Ralf (University of Dortmund), Plitt, Jana (University of Dortmund)
- 11:22 – An Optimal Planning for a Laundromat System with a Multiple Linen Type in a Hospital Supply Chain under Subcontractor Consideration** FrBT7.2
11:44
ndhaief, nadia (Université De Lorraine), Hajej, Zied (Université De Metz), REZG, Nidhal (Metz Univ)
- 11:44 – Instance Scale, Numerical Properties and Design of Metaheuristics: A Study for the Facility Location Problem** FrBT7.3
12:06
Chalupa, David (Aalborg University), Nielsen, Peter (Aalborg University)
- 12:06 – Digital Twin Driven Inclusive Manufacturing Using Emerging Technologies** FrBT7.4
12:28
Singh, Sube (Indian Institute of Technology Kharagpur), Barde, Ankit (Indian Institute of Technology Kharagpur), Mahanty, Biswajit (Indian Institute of Technology Kharagpur), Tiwari, Manoj K (Indian Institute of Technology, Kharagpur)

Integrated Spare Parts Systems (Invited Session)

FrBT8
Room 017

Chair: Miranda, Pablo A. *Universidad Andres Bello*
Co-Chair: Durán, Orlando *Pontifical Catholic University of Valparaiso - Chile*

- 11:00 – A Simulation Based Modelling Approach to Jointly Support and Evaluate Spare Parts Supply Chain and Maintenance Systems (I)** FrBT8.1
11:22
Miranda, Pablo A. (Universidad Andres Bello), Tapia-Ubeda, Francisco J. (Pontifical Universidad Católica De Valparaíso), Hernandez, Valentina (Pontificia Universidad Católica De Valparaíso), Cardenas, Hugo (Pontificia Universidad Católica De Valparaíso), Lopez-Campos, Monica (Universidad Técnica Federico Santa María)
- 11:22 – Supplier Selection for Spare Parts Supply Chain Networks (I)** FrBT8.2
11:44
Tapia-Ubeda, Francisco J. (Pontifical Universidad Católica De Valparaíso), Miranda, Pablo A. (Universidad Andres Bello), Gutiérrez, Gabriel (Pontifical Catholic University of Valparaiso), Durán, Orlando (Pontifical Catholic University of Valparaiso - Chile)
- 11:44 – Evolutionary Optimization of Spare Parts Inventory Policies: A Life Cycle Costing Perspective (I)** FrBT8.3
12:06
Durán, Orlando (Pontifical Catholic University of Valparaiso - Chile), Afonso, Paulo (University of Minho), Duran, Paulo (Universidad Tecnológica De Chile-IN-ACAP), Carrasco Espinoza, Arturo Esteban (Pontificia Universidad Católica De Valparaíso)
- 12:06 – Integrating Electric Energy Cost in Lumber Production Planning** FrBT8.4
12:28
B. Dumont, Laurence (Université Laval), Marier, Philippe (FORAC, Université Laval), Lehoux, Nadia (Université Laval), Gosselin, Louis (Université Laval), Fortin, Hugues (Hydro-Quebec Research Institute (IREQ))

Sustainable Manufacturing and Logistics - II (Regular Session)

FrBT9
Room 018

Chair: Dubey, Rameshwar *Montpellier Business School*
Co-Chair: Walker, Jonathan *University of Plymouth*

- 11:00 – Evaluation of the Sustainable Efficiency of Two Manufacturing Processes Using Life-Cycle Assessment and Efficiency Analysis** FrBT9.1
11:22
Rosebrock, Christoph (University of Wuppertal), Bracke, Stefan (University of Wuppertal)
- 11:22 – Digital Society As a Driving Force for Sustainable Manufacturing** FrBT9.2
11:44
Verzilin, Dmitry (Russian Academy of Science, Saint Petersburg Institute of Informatics), Maximova, Tatyana (Saint Petersburg National Research University of Information Technology), Sokolova, Irina (Saint Petersburg State University), Skorykh, Sergey (Peter the Great St. Petersburg Polytechnic University)
- 11:44 – Game Theory-Based Research in Green Supply Chain Management: A Review** FrBT9.3
12:06
AGI, Maher (Rennes School of Business), Hazir, Oncu (Rennes School of Management)
- 12:06 – Analysing Manufacturing Enterprises to Identify Opportunities for Automation and Guide Implementation - a Review (I)** FrBT9.4
12:28
Walker, Jonathan (University of Plymouth), Childe, Stephen (Plymouth University), Wang, Yi (University of Plymouth)

Supply Network Dynamics and Control - I (Open Invited Track)

FrBT10
Room 019

Chair: Disney, Stephen *Cardiff University*
Co-Chair: Kinra, Aseem *CBS*

- 11:00 – A Multi-Layer Congested Facility Location Problem with Consideration of Impatient Customers in a Queuing System (I)** FrBT10.1
11:22 Eshaghi Chaleshtori, Amir (K.N.Toosi University of Technology), Jahani, Hamed (School of Business, IT & Logistics, RMIT University), Abdollah, Aghaie (K. N.Toosi University of Technology), Ivanov, Dmitry (Berlin School of Economics and Law)
- 11:22 – Strategic Decision-Making in Global Supply Chain Network Design - How a Decision Support System Combining MILP and AHP on a Pareto Front Can Alleviate Decision-Making (I)** FrBT10.2
11:44 Reich, Juri (Vienna University of Economics and Business), Kinra, Aseem (CBS), Kotzab, Herbert (Department of Logistics Management, University of Bremen)
- 11:44 – The Nonlinear Dynamics of Order-Up-To Inventory Systems with Lost Sales (I)** FrBT10.3
12:06 Disney, Stephen (Cardiff University), Ponte, Borja (The Open University), Wang, Xun (Cardiff University)
- 12:06 – When the Bullwhip Effect Is an Increasing Function of the Lead Time (I)** FrBT10.4
12:28 Gaalman, Gerard (Faculty of Economics, University of Groningen - Netherlands), Disney, Stephen (Cardiff University), Wang, Xun (Cardiff University)

Extremal Routing Problems: Models, Algorithms, Bounds, and Industrial Applications - I (Invited Session)

FrBT11
Room 020

Chair: Khachay, Daniel *Ural Federal University*
Co-Chair: Petunin, Alexander *Ural Federal University*

- 11:00 – Towards a Relaxation of the Pursuit-Evasion Differential Game (I)** FrBT11.1
11:22 Chentsov, Alexander (Institute of Mathematics and Mechanics UrB RAS), Khachay, Daniel (Ural Federal University)
- 11:22 – A Novel Arc-Routing Problem of Electric Powered Street Sweepers with Time Windows and Intermediate Stops (I)** FrBT11.2
11:44 GOKCE, Mahmut Ali (Yasar University), Yurtseven, Cansu (Yasar University)
- 11:44 – The Variable Neighborhood Search for a Consistent Vehicle Routing Problem under the Shift Length Constraints (I)** FrBT11.3
12:06 Kulachenko, Igor (Novosibirsk State University), Kononova, Polina (Sobolev Institute of Mathematics), Kochetov, Yuri (Sobolev Institute of Mathematics), Kurochkin, Alexandr (Sobolev Institute of Mathematics)
- 12:06 – On the New Algorithm for Solving Continuous Cutting Problem (I)** FrBT11.4
12:28 Petunin, Alexander (Ural Federal University), Ukolov, Stanislav (Ural Federal University), Polishchuk, Efim (Ural Federal University)

Management 4.0 in Logistics and Supply Chain Management (Invited Session)

FrBT12
Room 101

Chair: Henke, Michael *TU Dortmund University*
Co-Chair: Besenfelder, Christoph *Chair of Enterprise Logistics, TU Dortmund University*

- 11:00 – Management 4.0 in Logistics and Supply Chain Management*.** FrBT12.1
11:22 Henke, Michael (Fraunhofer-Institut für Materialfluss und Logistik IML)
- 11:22 – Servitization of Small and Medium-Sized Manufacturing Enterprises: Facing Barriers through the Dortmund Management Model (I)** FrBT12.2
11:44 Michalik, Alexander (TU Dortmund University), Besenfelder, Christoph (Chair of Enterprise Logistics, TU Dortmund University), Henke, Michael (TU Dortmund University)
- 11:44 – Mastering Fourth Industrial Revolution through Innovative Personnel Management – a Study Analysis on How Game-Based Approaches Affect Competence Development (I)** FrBT12.3
12:06 Kaczmarek, Sandra (TU Dortmund University, Chair of Enterprise Logistics)
- 12:06 – Conceptual Development of Supply Chain Digitalization Framework** FrBT12.4
12:28 Ehie, Ike (Kansas State University), Ferreira, Luis Miguel D. (University of Coimbra)
- 12:28 – The Effect of “Internet of Things” on Aircraft Spare Parts Inventory Management** FrBT12.5
12:50 Keivanpour, Samira (Universite Laval), Ait-Kadi, Daoud (Laval University)

Robotics and Control Problems in Cyber-Physical Systems (Invited Session)

FrBT13
Room 102

Chair: Montazeri, Allahyar *Lancaster University*
Co-Chair: Nemati, Hamidreza *Lancaster University*

- 11:00 – Event-Triggered Based State Estimation for Autonomous Operation of an Aerial Robotic Vehicle (I)** FrBT13.1
11:22 Sadeghzadeh Nokhobberiz, Nargess (Islamic Azad University Tehran Central Branch), Nemati, Hamidreza (Lancaster University), Montazeri, Allahyar (Lancaster University)
- 11:22 – A Data-Driven Statistical Approach for Monitoring and Analysis of Large Industrial Processes (I)** FrBT13.2
11:44 Montazeri, Allahyar (Lancaster University), Ansarizadeh, Mohammad Hossein (Shiraz University), Arefi, Mohammad Mehdi (Shiraz University)
- 11:44 – A Fuzzy Paradigmatic Clustering Algorithm (I)** FrBT13.3
12:06 Amirjavid, Farzad (University of Toronto), barak, sasan (Technical University of Ostrava), Nemati, Hamidreza (Lancaster University)
- 12:06 – A Fuzzy Data-Driven Paradigmatic Predictor (I)** FrBT13.4
12:28 Amirjavid, Farzad (University of Toronto), Nemati, Hamidreza (Lancaster University), barak, sasan (Technical University of Ostrava)

Product Design Based on Smart, Sensing and Sustainable Features (Invited Session)

FrBT14
Room 103

Chair: Guo, Wei *Xi'an Jiao Tong University*
Co-Chair: Ponce, Pedro *ITESM-CCM*

- 11:00 – 11:22** **Lifetime Improved in Power Electronics for BLDC Drives Using Fuzzy Logic and PSO (I)** FrBT14.1
Manuel, Garcia (Instituto Politécnico Nacional), Ponce, Pedro (Tecnologico De Monterrey), Soriano, Luis Arturo (Tecnologico De Monterrey), Molina, Arturo (Tecnologico De Monterrey), MacCleery, Brian (National Instruments), Romero, David (Instituto Politécnico Nacional)
- 11:22 – 11:44** **Sensing, Smart and Sustainable Product Analysis Methodology through EEG Evaluation (I)** FrBT14.2
Ponce, Pedro (Tecnologico De Monterrey), Baltazar Reyes, Germán Eduardo (Tecnologico De Monterrey), Castillo, Barbara (Universidad De Huelva), Miranda, Jhonattan (ITESM), Molina, Arturo (Tecnologico De Monterrey), Pérez Rodríguez, María Amor (Universidad De Huelva)
- 11:44 – 12:06** **Taxonomy of Levels of Sensing, Smart and Sustainable Products to Support New Product Development (I)** FrBT14.3
Miranda, Jhonattan (ITESM), Ponce, Pedro (Tecnologico De Monterrey), Molina, José Martín (Tecnologico De Monterrey), Molina, Arturo (Tecnologico De Monterrey)
- 12:06 – 12:28** **The Next Generation of Social Products Based on Sensing, Smart and Sustainable (S3) Features: A Smart Thermostat As Case Study (I)** FrBT14.4
Ponce, Pedro (ITESM-CCM), Meier, Alan (University of California, Berkeley), Miranda, Jhonattan (ITESM), Molina, Arturo (Tecnologico De Monterrey), Pfeffer, Therese (University of California, Berkeley)

Manufacturing and Service Operations - III (Regular Session)

FrBT15
Room 107

Chair: KUCCHARAVY, Dmitry *EM Strasbourg Business School, Université De Strasbourg*
Co-Chair: Monostori, Judit *MTA SZTAKI*

- 11:00 – 11:22** **Using Map of Contradiction for Decision Support within Warehouse Design Process** FrBT15.1
Kucharavy, Dmitry (EM Strasbourg Business School, Université De Strasbourg), Damand, David (Humanis, EM Strasbourg), Barth, Marc (Humanis, EM Strasbourg), Derrouiche, Ridha (EM-Strasbourg-School of Management, Strasbourg University), Gamoura, Samia (EM Strasbourg Business School, Université De Strasbourg, HuManiS)
- 11:22 – 11:44** **Balancing the Aspects of Robustness, Complexity and Efficiency in Distribution Networks – a Case Study** FrBT15.2
Monostori, Judit (MTA SZTAKI)
- 11:44 – 12:06** **An Hybrid DATC-Simulated Annealing Approach for Just-In-Time Open-Shop Scheduling Problem with Earliness and Tardiness Penalties (I)** FrBT15.3
Azouz, Meddourène (CDTA), Brahim, Bouzouia (CDTA), Abbou, Rosa (LS2N University/ IUT of Nantes), Achour, Noura (Houari Boumediene University of Sciences and Technology), Bou Farraa, Berna (Ecole Centrale De Nantes)

Optimization, Artificial Intelligence, and Simulation Based Approaches to Make Decisions under Uncertainties in Complex System (Invited Session)

FrBT16
Room 108

Chair: Chaabane, Soudes *Université Polytechnique Hauts-De-France*
Co-Chair: Tchernev, Nikolay *Auvergne University, EUM*

- 11:00 – 11:22** **Simulation Based Optimization Decision Support Tool for Production Planning (I)** FrBT16.1
BELIL sabah, bendaoud (Université Clermont Auvergne Université Mohammed VI Polytechnique), Tchernev, Nikolay (Auvergne University, EUM), Kemmoe, Sylvérin (Crcgm Ea 38 49)
- 11:22 – 11:44** **Anomaly Detection Using Long Short Term Memory Networks and Its Applications in Supply Chain Management (I)** FrBT16.2
Tran, Kim Phuc (Ensait - Gemtex), Nguyen, Huu Du (Faculty of Information Technology, Vietnam National University O), Thomassey, Sébastien (Ensait - Gemtex)
- 11:44 – 12:06** **Coping with Disruptions in Complex Systems: A Framework (I)** FrBT16.3
Chaabane, Soudes (Université Polytechnique Hauts-De-France), trentesaux, damien (LAMIH UMR CNRS 8201, SurferLab, University of Valenciennes and H)
- 12:06 – 12:28** **An Analysis of the Bullwhip Effect in Multi-Echelon Hybrid Supply Chain (I)** FrBT16.4
Lin, Wenjin (Commercial Aircraft Corporation of China Ltd), Ren, He (Shanghai Aircraft Customer Service Co., Ltd), Peng, Qiyun (Shanghai Aircraft Customer Service Co., Ltd), Ye, Song (Shanghai Aircraft Customer Service Co., Ltd), Jiang, Zhibin (Shanghai Jiao Tong University), Wang, Kangzhou (Lanzhou University)

Supply Chain Risk Management - III (Open Invited Track)

FrBT17
Room 109

Chair: Giannoccaro, Ilaria *Politecnico Di Bari*
Co-Chair: Jahani, Hamed *School of Business, IT & Logistics, RMIT University*

- 11:00 – 11:22** **Enhancing the Partner Selection Process in a Sustainable Partner Network (I)** FrBT17.1
Shevtshenko, Eduard (Tallinn University of Technology), Mahmood, Kashif (Tallinn University of Technology), Karulova, Tatjana (Tallinn University of Technology)
- 11:22 – 11:44** **Managing the Risk of Supply Chain Bankruptcy in Supply Chain Network Redesign (I)** FrBT17.2
Jahani, Hamed (School of Business, IT & Logistics, RMIT University), Alavifard, Farzad (Australian Centre of Quantitative Research), Ivanov, Dmitry (Berlin School of Economics and Law), Ghasemishabankareh, Behrooz (School of Science, RMIT University)
- 11:44 – 12:06** **Is Network Trust Beneficial for Supply Network Resilience? a Simulation Analysis (I)** FrBT17.3
Giannoccaro, Ilaria (Politecnico Di Bari), Iftikhar, Anas (University of Salento)
- 12:06 – 12:28** **Trust, Pricing and Resilience in Production Networks -- a Simulation Model** FrBT17.4
Egri, Peter (MTA SZTAKI (Institute for Computer Science and Control, Hungary)), Szaller, Ádám (Hungarian Academy of Sciences Institute for Computer Science And), Monostori, Judit (MTA SZTAKI), Váncza, József (MTA SZTAKI)

Simulation, Optimization, Sensor-Based State Analysis and Predictions - II (Open Invited Track)

FrCT1
Room 001

Chair: Reggelin, Tobias *Otto Von Guericke University Magdeburg*
Co-Chair: Tolujew, Juri *Fraunhofer Institute for Factory Operation and Automation IFF Magdeburg*

- 13:30 – Modeling and Simulation of Air France Baggage Handling System with Colored Petri Nets (I)** FrCT1.1
13:52 Hafilah, Dina (ITB Bandung), Cakravastia, Andi (ITB Bandung), Lafdail, Younsse (Air France, Roissy CDG), Rakoto-Ravalontsalama, Naly (IMT Atlantique)
- 13:52 – Methodology for the Planning of IoT Use Cases in Smart Logistics Zones (I)** FrCT1.2
14:14 Poenicke, Olaf (Fraunhofer IFF), Groneberg, Maik (Fraunhofer IFF), Richter, Klaus (Fraunhofer IFF)
- 14:14 – State of the Art - Automated Micro-Vehicles for Urban Logistics (I)** FrCT1.3
14:36 Baum, Leonard (Otto-Von-Guericke-University Magdeburg), Assmann, Tom (Fraunhofer Institute for Factory Operation and Automation IFF), Strubelt, Henning (Otto-Von-Guericke-University Magdeburg)
- 14:36 – Towards Virtual Commissioning of Image-Based Information Systems for State Detection in Logistics (I)** FrCT1.4
14:58 Borstell, Hagen (Otto-Von-Guericke Universität Magdeburg), Reggelin, Tobias (Otto Von Guericke University Magdeburg)

Manufacturing Systems (Regular Session)

FrCT2
Room 002

Chair: Yang, Taho *National Cheng Kung University*
Co-Chair: Kitaeva, Anna *National Research Tomsk State University*

- 13:30 – A Method of Cutting Power Monitoring for Feed Axes in Milling by Power Measurement Device (I)** FrCT2.1
13:52 Miura, Kazumasa (RWTH Aachen University), Bergs, Thomas (Fraunhofer-Institut Für Produktionstechnologie)
- 13:52 – Makespan Optimization in a Flow Shop System with Time-Lag Constraints[†].** FrCT2.2
14:14 Samarghandi, Hamed (University of Saskatchewan, Edwards School of Business)
- 14:14 – A Simulation Study on CONWIP System Design for Bicycle Chain Manufacturing** FrCT2.3
14:36 Yang, Taho (National Cheng Kung University), Hung, Yu-Hsiu (National Cheng Kung University), Huang, Kuan-Cheng (National Cheng Kung University)
- 14:36 – Zero Ending Inventory Dynamic Pricing Model under Stochastic Demand, Fixed Lifetime Product, and Fixed Order Quantity** FrCT2.4
14:58 Kitaeva, Anna (National Research Tomsk State University), Stepanova, Natalya (Altai Economics and Law Institute), Zhukovskaya, Alexandra (National Research Tomsk State University)

Digital Factory and Industry 4.0 - III (Regular Session)

FrCT3
Room 004

Chair: Lentes, Joachim *Fraunhofer IAO*
Co-Chair: Prause, Gunnar *Tallinn University of Technology (TalTech University)*

- 13:30 – Implementing Intelligent Asset Management Systems (IAMS) within an Industry 4.0 Manufacturing Environment** FrCT3.1
13:52 Candon, Eduardo (University of Seville), Martínez-Galán Fernández, Pablo (University of Seville), De La Fuente Carmona, Antonio (University of Seville, School of Engineering), Gonzalez-Prida Diaz, Vicente (Uned & University of Seville, Spain), Crespo Marquez, Adolfo (University of Seville. School of Engineering), Gomez Fernandez, Juan F. (University of Seville. School of Engineering), Sola Rosique, Antonio (University of Seville. School of Engineering), Macchi, Marco (Politecnico Di Milano)
- 13:52 – Identification and Design of Industry 4.0 Opportunities in Manufacturing: Examples from Mature Industries to Laboratory Level Systems** FrCT3.2
14:14 Menezes, Brenno (Technological Research Institute), Industrial Algorithms, Sophia (Industrial Algorithms Limited), Galindo Leal, Adriano (IPT - Institute for Technological Research)
- 14:14 – Smart Contracts for Smart Supply Chains (I)** FrCT3.3
14:36 Prause, Gunnar (Tallinn University of Technology (TalTech University))

Scheduling - II (Regular Session)

FrCT5
Room 014

Chair: Tchernev, Nikolay *Auvergne University, EUM*
Co-Chair: Defersha, Fantahun *University of Guelph*

- 13:30 – Comparison between Two Approaches to Solve the Job Shop Scheduling Problem with Routing** FrCT5.1
13:52 Gondran, Matthieu (LIMOS), Huguet, Marie-José (INSA), Lacomme, Philippe (Univ Blaise Pascale), Tchernev, Nikolay (Auvergne University, EUM)
- 13:52 – An Efficient Two-Stage Genetic Algorithm for Flexible Job-Shop Scheduling** FrCT5.2
14:14 Rooyani, Danial (University of Guelph), Defersha, Fantahun (University of Guelph)
- 14:14 – Rescheduling Production on Identical Parallel Machines Upon New Jobs Arrivals** FrCT5.3
14:36 Silva, Nathália (Instituto Federal Do Rio Grande Do Sul, Erechim, RS), Scarpin, Casius T. (Grupo De Tecnologia Aplicada à Otimização, Universidade Federal), Ruiz, Angel (Faculté Des Sciences De l'Administration, Université Laval), Pecora, Jose Eduardo (Grupo De Tecnologia Aplicada à Otimização, Universidade Federal)
- 14:36 – Concurrent Optimization of Shared Location Assignment and Storage/retrieval Scheduling in Multi-Shuttle Automated Storage and Retrieval Systems** FrCT5.4
14:58 Kazemi, Morteza (Shiraz University of Technology), Asef-vaziri, Ardavan (California State University, Northridge), Shojaei, Tahereh (Shiraz University of Technology)

Human Factors in Production and Logistics Systems of the Future - III (Open Invited Track)

FrCT6
Room 015

Chair: Battini, Daria *University of Padua*
Co-Chair: Battaia, Olga *ISAE-SUPAERO*

- 13:30 – Prospective ISO 22400 for the Challenges of Human-Centered Manufacturing (I)** FrCT6.1
13:52 Bonci, Andrea (Università Politecnica Delle Marche), Longhi, Sauro (Università Politecnica Delle Marche), Pirani, Massimiliano (Università Politecnica Delle Marche)
- 13:52 – Human Diversity Factors in Production System Modelling and Design: State of the Art and Future Researches (I)** FrCT6.2
14:14 Katiraei, Niloofar (University of Padova), Battini, Daria (University of Padua), Battaia, Olga (ISAE-SUPAERO), Calzavara, Martina (University of Padua)
- 14:14 – Ergonomic and Performance Factors for Human-Robot Collaborative Workplace Design and Evaluation (I)** FrCT6.3
14:36 Costa Mateus, João (UGent), Claeys, Dieter (Ghent University), Limère, Veronique (Ghent University), Cottyn, Johannes (Ghent University), Aghezzaf, El-Houssaine (Ghent University)

Lean Manufacturing and Quality Management - VI (Regular Session)

FrCT7
Room 016

Chair: Hazir, Oncu *Rennes School of Management*
Co-Chair: Antomarchi, Anne-Lise *UCA / SIGMA Clermont / Institut Pascal*

- 13:30 – Capacity Planning in Additive Manufacturing** FrCT7.1
13:52 Antomarchi, Anne-Lise (UCA / SIGMA Clermont / Institut Pascal), guillaume, ro-main (Irit/LGP), Durieux, Séverine (SIGMA Clermont), thierry, caroline (Irit/UTM), Duc, Emmanuel (SIGMA Clermont)
- 13:52 – A Problem Specific Heuristic for Smoothing the Workload in Simple Assembly Lines** FrCT7.2
14:14 Hazir, Oncu (Rennes School of Management), AGI, Maher (Rennes School of Business), Guérin, Jérémy (University of Nantes)
- 14:14 – Quality Analysis of Urban Transit System in Megacities** FrCT7.3
14:36 Mikhailova, Elena (ITMO University), Grafeeva, Natalia (Saint Petersburg State University), Tretyakov, Innokenty (Sait Petersburg State University)
- 14:36 – Build a Bayesian Network from FMECA in the Production of Automotive Parts: Diagnosis and Prediction** FrCT7.4
14:58 Ben Brahim, Imen (University of Paris8), Addouche, Sid-Ali (University of Paris8), El Mhamdi, Abderrahman (University of Paris8), Boujelbene, Younes (Fseg Sfax)

Logistics and Inventory Management - II (Regular Session)

FrCT8
Room 017

Chair: Mangano, Giulio *Politecnico Di Torino - Department of Management and Production Engineering*
Co-Chair: GODART, Alexis *Université Bourgogne Franche-Comté, Femto-ST Institute*

- 13:30 – Planning and Design of a Chassis Container Terminal** FrCT8.1
13:52 Basallo-Triana, Mario José (Universidad Del Valle Sede Buga), Vidal Holguín, Carlos Julio (Universidad Del Valle), Bravo Bastidas, Juan José (Universidad Del Valle)
- 13:52 – Hybrid Metaheuristic for the Pickup and Delivery Problem Designed for Passengers and Goods Transportation** FrCT8.2
14:14 Godart, Alexis (Université Bourgogne Franche-Comté, Femto-ST Institute), Manier, Herve (University of Technology of Belfort-Montbéliard), Bloch, Christelle (Université De Franche-Comté), Manier, Marie-Ange (University of Technology of Belfort-Montbéliard)
- 14:14 – The Value Proposition of Innovative Last-Mile Delivery Services from the Perspective of Local Retailers (I)** FrCT8.3
14:36 Mangano, Giulio (Politecnico Di Torino - Department of Management and Production), Zenezini, Giovanni (Politecnico Di Torino)
- 14:36 – Bin Packing Problem with Priorities and Incompatibilities Using PSO: Application in a Health Care Community (I)** FrCT8.4
14:58 Laurent, Arnaud (LIMOS), Klement, Nathalie (Arts Et Métiers)

Sustainable Manufacturing and Logistics - III (Regular Session)

FrCT9
Room 018

Chair: Gokce, Mahmut Ali *Yasar University*
Co-Chair: Gola, Arkadiusz *Faculty of Mechanical Engineering, Lublin University of Technology*

- 13:30 – Development of Vehicle Routing Model in Urban Solid Waste Management System under Periodic Variation: A Case Study** FrCT9.1
13:52 Sarmah, S P (IIT Kharagpur), Yadav, Raushan (IIT Kharagpur), Rathore, Pradeep (IIT Kharagpur)
- 13:52 – An Improved Tabu Search Algorithm for the Multi-Period Bid Generation Problem with the Consideration of Delivery Lead Times** FrCT9.2
14:14 jelodari, elham (Industrial Systems Optimization Laboratory, Charles Delaunay Ins), Chen, Haoxun (Technology Univ of Troyes), Prins, Christian (University of Technology of Troyes), Demir, Emrah (Panalpina Centre for Manufacturing and Logistics Research, Cardi)
- 14:14 – A GRASPxILS for the Shared Customer Collaboration Vehicle Routing Problem (I)** FrCT9.3
14:36 Torres-Ramos, A. Felipe (Universidad De Los Andes), Labadie, Nacima (University of Technology of Troyes), Velasco, Nubia (Universidad De Los Andes), Montoya-Torres, Jairo R. (Universidad De La Sabana)
- 14:36 – Multi-Period Vehicle Routing & Replenishment Problem of Neighbourhood Disaster Stations for Pre-Disaster Humanitarian Relief Logistics (I)** FrCT9.4
14:58 Gokce, Mahmut Ali (Yasar University), Ercan, Elif (Dokuz Eylul University)

Supply Network Dynamics and Control - III (Invited Session)

FrCT10
Room 019

Chair: Marmolejo-Saucedo, Jose Antonio *Universidad Panamericana*
Co-Chair: Wikner, Joakim *Jönköping University*

- 13:30 – Hierarchical Adaptive Control of Safety Buffers in Manufacturing** FrCT10.1
13:52 Wikner, Joakim (Jönköping University), Hedvall, Lisa (Jönköping University), Mattsson, Stig-Arne (Jönköping University)
- 13:52 – Models and Algorithms of Group Planning, Coordination and Control for Complex Transport and Logistics Systems** FrCT10.2
14:14 Gnidenko, Andrey (St. Petersburg Institute for Informatics and Automation of the R), Okhtilev, Mikhail (St. Petersburg Institute for Informatics and Automation of the R), Zelentsov, Vyacheslav (St. Petersburg Institute for Informatics and Automation of the R)
- 14:14 – Integration of Order Release and Output Control with Worker's Allocation in a Pure Flow Shop** FrCT10.3
14:36 Costa, Federica (Politecnico Di Milano), Staudacher, Alberto (Politecnico Di Milano), Nisi, Davide (Politecnico Di Milano), Rossini, Matteo (Politecnico Di Milano)
- 14:36 – Simulation-Based Optimization Approach with Scenario-Based Product Sequence in a Reconfigurable Manufacturing System (RMS): A Case Study (I)** FrCT10.4
14:58 Hashemi Petroodi, Seyyed Ehsan (IMT Atlantique), Beauville dit Eynaud, Amélie (Arts Et Métiers ParisTech (LSIS)), Klement, Nathalie (Arts Et Métiers), Tavakoli-Moghaddam, Reza (University of Tehran)

Extremal Routing Problems: Models, Algorithms, Bounds, and Industrial Applications - II (Invited Session)

FrCT11
Room 020

Chair: Makarovskikh, Tatiana *South Ural State University*
Co-Chair: Stylios, Chrysostomos *University of Ioannina*

- 13:30 – Towards an Efficient Approximability for the Euclidean Capacitated Vehicle Routing Problem with Time Windows and Multiple Depots (I)** FrCT11.1
13:52 Khachay, Michael (Krasovsky Institute of Mathematics and Mechanics, Ural Federal Un), Ogorodnikov, Yuri (Krasovsky Institute of Mathematics and Mechanics)
- 13:52 – Software for Constructing \$A\$-Chains with Ordered Enclosing for a Plane Connected 4-Regular Graph (I)** FrCT11.2
14:14 Makarovskikh, Tatiana (South Ural State University), Panyukov, Anatoly (South Ural State University)
- 14:14 – Application of a Generalized Bottleneck Routing Problem to the Task of Adhering to Acceptable Doses of Radiation During the Dismantling of Radiation Hazardous Objects (I)** FrCT11.3
14:36 Chentsov, Alexander (Institute of Mathematics and Mechanics UrB RAS), Chentsov, Alexei (Institute of Mathematics and Mechanics UB RAS), Sesekin, Alexander (Institute of Mathematics and Mechanics UB RAS), Tashlykov, Oleg (Ural Federal University)
- 14:36 – General Model of Tool Path Problem for the CNC Sheet Cutting Machines (I)** FrCT11.4
14:58 Petunin, Alexander (Ural Federal University)

Manufacturing and Service Operations - IV (Regular Session)

FrCT15
Room 107

Chair: Klinkert, Andreas *Zurich University of Applied Sciences*
Co-Chair: Darvish, Maryam *Laval University*

- 13:30 – On Event-Aware Manufacturing Systems** FrCT15.1
13:52 Eirinakis, Pavlos (University of Piraeus), Mourtos, Ioannis (Athens University of Economics and Business), Zampou, Eleni (Athens University of Economics and Business)
- 13:52 – Symmetry Breaking in Inventory-Routing Problems** FrCT15.2
14:14 Coelho, Leandro Callegari (Laval University), Darvish, Maryam (Laval University), Jans, Raf (HEC Montréal)
- 14:14 – A Business Software for Airport Staff Optimization** FrCT15.3
14:36 Klinkert, Andreas (Zurich University of Applied Sciences)

Industrial Engineering in the Silver Economy (Invited Session)

FrCT16
Room 108

Chair: Bogataj, David *Department of Management and Engineering, University of Padova*
Co-Chair: Dimovski, Vlado *Faculty of Economics, University of Ljubljana*

- 13:30 – Modelling the Industrial Workforce Dynamics and Exit in the Ageing Society (I)** FrCT16.1
13:52 Dimovski, Vlado (Faculty of Economics, University of Ljubljana), Grah, Barbara (Faculty of Economics, University of Ljubljana), Colnar, Simon (Faculty of Economics, University of Ljubljana)
- 13:52 – Taxation and Revenues of Central Places As the Regulator of Available Human Resources in Manufacturing - Related to the Bid Rent Curve (I)** FrCT16.2
14:14 Drobne, Samo (University of Ljubljana, Faculty of Civil and Geodetic Engineeri), Janež, Petra (Institute INRISK), Bogataj, Marija (CERRISK INRISK), Bogataj, David (Department of Management and Engineering, University of Padova)
- 14:14 – Social Infrastructure of Silver Economy: Literature Review and Research Agenda (I)** FrCT16.3
14:36 Rogelj, Valerija (Faculty of Organisation Studies, Novo Mesto), Bogataj, David (Department of Management and Engineering, University of Padova)

Structural Dynamics in Sustainable Supply Chains
(Invited Session)

FrCT17
Room 109

Chair: Marmolejo, Jose Antonio *Universidad Panamericana*
Co-Chair: Rodriguez-Aguilar, Roman *Universidad Panamericana, Escuela De Ciencias Económicas Y Empresariales*

13:30 – 13:52	Structural Dynamics and Disruption Events in Supply Chains Using Fat Tail Distributions (I) Rodriguez-Aguilar, Roman (Universidad Panamericana, Escuela De Ciencias Económicas Y Empre), Marmolejo, Jose Antonio (Universidad Panamericana)	FrCT17.1
13:52 – 14:14	Technical Evaluation of the Opening of Facilities in the Pharmaceutical Industry: Optimization to Supply Chain in Mexico (I) Marmolejo, Jose Antonio (Universidad Panamericana), Rodriguez-Aguilar, Roman (Universidad Panamericana, Escuela De Ciencias Económicas Y Empre), Manuell Barrera, Ofelia S.G. (Universidad Anáhuac. Facultad De Ingeniería)	FrCT17.2
14:14 – 14:36	The Supply Chain Event Management Application: A Case Study (I) Palma, Fanny (Universidad Autónoma De Nuevo León), Martínez, Jania Astrid (Universidad Autónoma De Nuevo León), Marmolejo, Jose Antonio (Universidad Panamericana), Rodriguez-Aguilar, Roman (Universidad Panamericana, Escuela De Ciencias Económicas Y Empre)	FrCT17.3
14:36 – 14:58	Structural Dynamics of Logistic Networks: A Sustainable Approach (I) Marmolejo, Jose Antonio (Universidad Panamericana), Niembro, Joaquina (Universidad Panamericana), Alva, Luis Felipe (Universidad Panamericana)	FrCT17.4

Data-Driven Collaboration in Industrial Supply Chains (Invited Session)

FrDT1
Room 001

Chair: Dolgui, Alexandre *IMT Atlantique*
Co-Chair: Reggelin, Tobias *Otto Von Guericke University Magdeburg*

15:30 – 15:52	Blockchain for Child Labour Decrease in Cocoa Production in West and Central Africa (I) Senou, Rosaire Brice (Institute of Mathematics and Physical Sciences, African Center O), Degila, Jules Richard (Institute of Mathematics and Physical Sciences, African Center O), Chabi Adjobo, Esther (Institute of Mathematics and Physical Sciences, African Center O), Djossou, Abigail Priscilla Mahugnon (AIMS South Africa, Cape Town, SA)	FrDT1.1
15:52 – 16:14	Towards Learning and Knowledge-Based Methods of Artificial Intelligence for Short-Term Operative Planning Tasks in Production and Logistics: Research Idea and Framework (I) Lang, Sebastian (Fraunhofer Institute for Factory Operation and Automation IFF), Schenk, Michael (Fraunhofer Institute for Factory Operation and Automation IFF Ma), Reggelin, Tobias (Otto Von Guericke University Magdeburg)	FrDT1.2
16:14 – 16:36	Horizontal Collaboration in Agri-Food Logistics: A Simulation Study of Capacity Sharing in a Dutch Horticultural Supply Chain (I) Yuan, Yaxing (Wageningen University), Nguyen, Viet (Wageningen University), Behdani, Behzad (Wageningen University)	FrDT1.3
16:36 – 16:58	Modelling Food Supply Chain Traceability Based on Blockchain Technology Casino, Fran (University of Piraeus), Kanakaris, Venetis (Department of Computer and Informatics Engineering, TEI of Easte), Dasaklis, Tom (University of Piraeus), Moschuris, Socrates (University of Piraeus), Rachaniotis, Nikolaos (Department of Industrial Management and Technology, University O)	FrCT11.4

Workforce Assignment
(Invited Session)

FrDT2
Room 002

Chair: Dolgui, Alexandre *IMT Atlantique*
Co-Chair: Hashemi Petroodi, Seyyed Ehsan *IMT Atlantique*

15:30 – 15:52	Solving a Real Bi-Objective Skilled Agent Assignment Problem in the Service-To-Business Domain, Considering Both Economic Efficiency and Agent Satisfaction (I) Doan, Minh-Phuoc (Univ Lyon, INSA-Lyon, DISP, EA4570), Fondrevelle, Julien (Laboratoire Decision Et Information Pour Les Systemes De Product), Botta-Genoulaz, Valérie (INSA Lyon), Ribeiro, Jose (University of Sao Paulo)	FrDT2.1
15:52 – 16:14	Manufacturing-Uber: Intelligent Operator Assignment in a Connected Factory (I) Greis, Noel (North Carolina State University), Nogueira, Monica (North Carolina State University), Schmitz, Tony (University of North Carolina at Charlotte), Dillon, Michael (University of North Carolina at Chapel Hill)	FrDT2.2
16:14 – 16:36	Planning of Teacher Staff Competence Structure Robust to Unexpected Personnel Absence (I) Szwarc, Eryk (Koszalin University of Technology), Bocewicz, Grzegorz (Koszalin University of Technology), Bach-Dabrowska, Irena (WSB Universities)	FrDT2.3
16:36 – 16:58	Workforce Planning and Assignment in Mixed-Model Assembly Lines As a Factor of Line Reconfigurability: State of the Art (I) Dolgui, Alexandre (IMT Atlantique), Hashemi Petroodi, Seyyed Ehsan (IMT Atlantique), Kovalev, Sergey (INSEEC), Kovalyov, Mikhail Y. (United Institute of Informatics Problems), Thevenin, Simon (IMT Atlantique)	FrDT2.4
16:58 – 17:20	Self-Organizing Chasing-Overtaking Production Lines to Maximize Worker Capabilities (I) liao, shilong (LanZhou University of Technology), Xie, Xiaoqing (Lanzhou University of Technology), chen, qin (Harbin Institute of Technology), Li, Jingjing (Faculty of Economics and Managemen, Lanzhou University of Techno), Wang, ZongGuang (Faculty of Economics and Management, Lanzhou University of Techn)	FrDT2.5

Digital Factory and Industry 4.0 - IV
(Regular Session)

FrDT3
Room 004

Chair: Prause, Gunnar *Tallinn University of Technology (TalTech University)*
Co-Chair: Prof. Dr. Daduna, Joachim Rolf *Professor*

15:30 – 15:52	Optimal Packing in Additive Manufacturing (I) Romanova, Tatiana (Institute for Mechanical Engineering Problems of the National Ac), Stoyan, Yuri (Institute for Mechanical Engineering Problems of the National Ac), Pankratov, Alexandr (Institute for Mechanical Engineering Problems of the National Ac), Litvinchev, Igor (Nuevo Leon State University (UANL)), Yanchevsky, Ihor (National Technical University of Ukraine "Igor Sikorsky Kyiv Po), Mozgova, Irina (Institute of Product Development, Leibniz University of Hannover)	FrDT3.1
15:52 – 16:14	A Modeling Approach for Cyber-Physical Systems Based on Collaborative Processes Bruno, Giorgio (Politecnico Di Torino)	FrDT3.2
16:14 – 16:36	Disruptive Effects on Logistics Processes by Additive Manufacturing Dr. Daduna, Joachim Rolf (Professor)	FrDT3.3
16:36 – 16:58	Smart Factory Reference Architecture Based on CPS Fractal Wu, Wei (Tongji University), Lu, Jianfeng (Tongji University), Zhang, Hao (Tongji University)	FrDT3.4

Scheduling - III (Regular Session)

FrDT5
Room 014

Chair: Pesch, Erwin *University of Siegen*
Co-Chair: Müller, David *University of Siegen*

- 15:30 – Mathematical Modeling the Dynamic Scheduling Problems with Multiple Objectives for FMS Control** FrDT5.1
15:52 Shnits, Boris (Ort Braude College)
- 15:52 – Rescheduling and Co-Simulation of a Multi-Period Multi-Model Assembly Line with Material Availability Restrictions** FrDT5.2
16:14 Kasapidis, Grigoris (Athens University of Economics and Business), Mourtos, Ioannis (Athens University of Economics and Business), Repoussis, Panagiotis (Athens University of Economics and Business & Stevens Institute), Spieckermann, Sven (SimPlan AG), Tarantilis, Christos (Athens University of Economics and Business)
- 16:14 – Smart Scheduling in Industry 4.0** FrDT5.3
16:36 Li, Yuanyuan (LINKS Foundation), Goga, Klodiana (LINKS Foundation), Tadei, Roberto (Turin Polytechnique)
- 16:36 – Can a Branch and Bound Algorithm Solve All Instances of SALBP-1 Efficiently?** FrCT15.4
16:58 Dolgui, Alexandre (IMT Atlantique), Gafarov, Evgeny R. (Institute of Control Sciences of the Russian Academy OfSciences)

Lean Manufacturing and Quality Management - VII (Regular Session)

FrDT7
Room 016

Chair: Benkalai, Imene *Université Du Québec à Chicoutimi*
Co-Chair: AlDurgam, Mohammad *King Fahd University of Petroleum & Minerals*

- 15:30 – An Integrated Inventory and Workforce Planning Markov Decision Process Model with a Variable Production Rate** FrDT7.1
15:52 AlDurgam, Mohammad (King Fahd University of Petroleum & Minerals)
- 15:52 – On the Impact of the Number of Operators in a Flow Shop Environment** FrDT7.2
16:14 Benkalai, Imene (Université Du Québec à Chicoutimi), Rebaine, Djamal (Université Du Québec à Chicoutimi - UQAC), Baptiste, Pierre (Ecole Polytechnique De Montréal)
- 16:14 – A Versatile Generalized Simulated Annealing Using Type-2 Fuzzy Controller for the Mixed-Model Assembly Line Balancing Problem** FrDT7.3
16:36 Lalaoui, Mohamed (ENSIAS - Mohammed V University), EL Afia, Abdellatif (ENSIAS - Mohammed V University)
- 16:36 – Schedule Instability in Automotive Production Networks: The Development of a Network-Oriented Resequencing Method** FrCT7.4
16:58 Moetz, André (Volkswagen AG), Stylos-Duesmann, Philipp (Universität Duisburg-Essen), Otto, Boris (TU Dortmund University)

Supply Chain Resilience and Disruption Management (Regular Session)

FrDT17
Room 109

Chair: Marcucci, Giulio *Università Politecnica Delle Marche*
Co-Chair: Dutta, Pankaj *Indian Institute of Technology Bombay*

- 15:30 – Designing Profitable and Responsive Supply Chains under Uncertainty** FrDT17.1
15:52 Azaron, Amir (University College Dublin), Venkatadri, Uday (Dalhousie University)
- 15:52 – Supply Chain Resilience Research Trends: A Literature Overview** FrDT17.2
16:14 Bevilacqua, Maurizio (Università Politecnica Delle Marche), Ciarapica, Filippo Emanuele (Politecnical University of Marche), Marcucci, Giulio (Università Politecnica Delle Marche)
- 16:14 – Increasing Supply Chain Resilience through an Efficient Redundancy Allocation in Logistics Systems** FrDT17.3
16:36 Aldrighetti, Riccardo (University of Padua), Battini, Daria (University of Padua), Ivanov, Dmitry (Berlin School of Economics and Law), Persona, Alessandro (University of Padua)
- 16:36 – Integration of Supplier Selection and Inventory Management under Disruptions** FrDT17.4
16:58 Saputro, Thomy Eko (INESC TEC, Faculty of Engineering, University of Porto), Figueira, Gonçalo (INESC-TEC, Faculdade De Engenharia, Universidade Do Porto), Almada-Lobo, Bernardo (INESC-TEC, Faculdade De Engenharia, Universidade Do Porto)
- 16:58 – Mitigation Proposal for the Enhancement of Enterprise Resilience against Supply Disruptions** FrDT17.5
17:20 Sanchis, Raquel (Universitat Politecnica De Valencia), Poler, Raul (Universitat Politecnica De Valencia)



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Thursday, 29 August 2019

6:30 p.m. – 10:30 p.m.

**bcc Berlin Congress Center GmbH,
Alexanderstr. 11, 10178 Berlin**

Admittance is only possible if you have registered and paid for the Gala Dinner.

6:30 p.m. Admittance and Reception

7:00 p.m. Welcome Address / Prof. Dr. Andreas Zaby, President of the Berlin
School of Economics and Law

7:10 p.m. Dinner and Award Ceremony

9:30 p.m. Get together

10:30 p.m. End of Gala Dinner

The bcc building: a brief history

Located in the Eastern part of Berlin – the capital of the communist German Democratic Republic for the duration of its existence from 1949 to 1990 – the bcc Berlin Congress Center is one of the most notable landmarks of German Socialist architecture of the 1960s. It was conceived by Hermann Henselmann, a Bauhaus-influenced star architect of the German Democratic Republic, and built from 1961 to 1964. From 1964 to 1990, one part of the futuristic architectural complex was home to the “Haus des Lehrers” (House of the Teacher), a GDR state institution dedicated to teacher training. Today, it is a research library of the German Institute of International Education Research. The other part, today's bcc, was used for international congresses and cultural events, and on multiple occasions between 1964 and 1968, it also hosted the national parliament of the German Democratic Republic.



Boat trip

Wednesday, 28 August 2019

6:30 p.m. – 10:00 p.m.

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Shuttle service will be provided from the conference venue to the boat stop (Hafen Rummelsburg).

Busses leave at 5:30 p.m. Meeting Point: Conference Venue, Haus 1, Main Entrance

Please bring along your voucher for the boat trip in order to board the boat.

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5:30 p.m. Shuttle service

From Campus Lichtenberg to the boat stop (Hafen Rummelsburg)

7:00 p.m. Boat trip

Live guided tour through the city center

10:00 p.m. Return

Boat stop: Hafen Märkisches Ufer (close to Alexanderplatz)

Food will be provided. Additionally, the voucher you received during your registration functions as a coupon for a free drink.

We kindly ask accompanying persons to use the shuttle service as well.



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WeBT6.5, ThBT15 (C),
ThBT15.3
Amorim, Marlene
ThAT12.4
Andreassen, Ninni Kristina
ThAT18.2
Anholcer, Marcin
ThBT18.3
Aniyama, Yuta
ThAT17.2
Ansari, Fazel
ThBT12.3
Ansariipoor, Amir Hossein
ThBT18.4
Ansarizadeh, Mohammad Hossein
FrBT13.2
Antoine, Jean-François, Olivier
WeBT13.4, ThAT13.3
Antomarchi, Anne-Lise
FrCT7 (CC), FrCT7.1
Antonelli, Dario
WeBT14.5, ThBT13.5
Antons, Oliver
FrAT1.1
Apostolou, Dimitris
WeBT9.1
Appel, Marcus Werner
ThBT7.1
Araujo, Madalena
WeBT3.4
Aravantinos, Vincent
ThBT12.2
Arbaoui, Taha
WeAT2.1
Archibald, Thomas
ThBT8.3
Ardentov, Andrey
WeAT13.1
Arefi, Mohammad Mehdi
FrBT13.2
Ares, Enrique
WeBT3.4
Arica, Emrah
WeAT3.2
Arista Rangel, Rebeca

ThBT12.1
Arizono, Ikuo
WeAT7.1, WeAT9.4
Armbruster, Dieter
WeBT17.3
Artigues, Christian
ThAT5.3
Asef-vaziri, Ardavan
FrCT5.4
Assmann, Tom
FrCT1.3
Ata Allah, Taleizadeh
ThAT11.5
Atefi, Reza
WeBT7.4
Attajer, Ali
WeBT9.3
Avinadav, Tal
WeBT11.5, ThBT11.5
Ay, Muzaffer
FrAT2.3, FrAT2.4
Ayachi, Rania
WeAT14.3
Azaron, Amir
FrDT17.1
Azevedo, Maria Manuela
WeAT15 (CC), WeBT5 (C),
ThAT7 (CC), FrAT7.3
Azouz, Meddourene
FrBT15.3
Azzouz, Radhia
ThAT16.3
B
B. Dumont, Laurence
FrBT8.4
Babagolzadeh, Mahla
WeBT7.4
Babai, Mohamed Zied
FrAT8.3
Babkin, Eduard
ThAT12.3
Baboli, Armand
ThAT9.2
Bach-Dabrowska, Irena
FrDT2.2
Backman, Jere
ThAT13.4
Badis, Hakim
ThAT14.4
Bahadori, Ramin
ThAT8.3

Baharmand, Hossein WeAT1.4	Bayindir, Zeynep Pelin FrAT15.1	Bergs, Thomas FrAT2.1, FrAT2.3, FrAT2.4, FrCT2.1	Bourouba, Bachir WeAT10.3	Cao, Yiyin FrAT15.2	Chen, Fangyu WeBT16.4	Coelho, Leandro Callegari FrCT15.2	Daduna, Joachim Rolf WeBT10 (CC)
Bakal, Ismail Serdar FrAT15.1	Beauregard, Robert FrAT5.3	Berman, Oded WeAT8.2	Bousdekis, Alexandros WeBT9.1	Caputo, Antonio Casimiro WeBT17.5	Chen, Haoxun FrCT9.1	Cohen, Yuval ThAT12.4, ThBT9 (C), ThBT9.2, ThBT9.4	Dagli, Cihan FrCT19.2
Bakhtadze, Natalia WeAT2 (CC), WeAT2.3, WeAT4 (C), WeBT4 (CC), WeBT4.2, WeBT4.4	Beauville dit Eynaud, Amélie ThBT2.2, FrCT10.4	Bermeo Ayerbe, Miguel Angel WeBT10.5	Bracke, Stefan ThAT7.2, FrAT1.4, FrBT9.1	Caramihai, Simona Iuliana ThAT3 (CC), ThAT3.3	Chen, Jing WeAT9.2	Coito, Tiago ThBT5.5, FrAT3.5	Dai, Hongyan WeBT1.3
Balaska, Hanane WeAT10.2	Becker, Matthias ThBT1.2	Bernstein, William Z. FrAT3.4	Brahim, Bouzouia FrBT15.3	Cardenas, Hugo FrBT8.1	Chen, Qi WeBT15.2	Colledani, Marcello ThBT7.4	Dai, Lei ThAT8.5
Ballot, Eric ThBT14.3, ThBT14.4	Beham, Andreas WeBT7.1	Berthier, Alice WeBT2.2	Brahimi, Nadjib WeBT2.5	Carmo-Silva, Sílvio ThBT6.1	Chen, Qin ThAT6.2, FrDT2.4	Colli, Michele WeBT15.3	Dallery, Yves FrAT9.3
Baltazar Reyes, Germán Eduardo FrBT14.2	Behdani, Behzad FrAT14 (CC), FrAT14.2, FrDT1.3	Berti, Nicola ThAT5.3	Brandenburg, Marcus WeAT18 (C), FrCT9.4	Carrasco Espinoza, Arturo Esteban FrBT8.3	Chen, Weiwei WeBT1 (C), WeBT1.3	Colnar, Simon FrCT16.1	Damand, David FrBT15.1
Balugani, Elia ThBT16.2	Beheshti-Kashi, Samaneh ThBT17.3	Besenfelder, Christoph FrBT12 (CC), FrBT12.2	Branding, Fredrik FrBT1.3	Casella, Giorgia WeAT18.1, WeAT18.2	Chen, Zhen ThBT8.1	Comes, Tina WeAT1.4	Danancier, Kevin FrAT5.5, FrAT11.1
Banaszak, Zbigniew WeBT18 (C), WeBT18.2, WeBT18.3	Behl, Abhishek WeAT8.4	Bettayeb, Belgacem ThAT8 (CC), ThAT8.2, FrAT13 (C), FrAT13.3	Bravo Bastidas, Juan José FrCT8.1	Casino, Fran FrDT1.4	Chen, Zhixiang FrAT16 (C), FrAT16.1, FrAT16.3	Coquelet, Guillaume WeBT2.2	Danese, Pamela WeAT1.1
Baptiste, Pierre FrDT7.2	Bekrar, Abdelghani WeBT14.2	Bettayeb, Maamar WeAT10.1, WeAT10.4	Brecher, Christian FrAT2.2, FrAT2.5	Castiglione, Claudio ThAT18.3	Chen, Zhuxi ThAT11.3	Corominas, Francesc FrAT5.2	Daquin, Cécilia ThAT18.5
Barak, Sasan FrBT13.3, FrBT13.4	Bekrar, Abdelghani ThBT14.1	Bevilacqua, Maurizio FrDT17.2	Bruno, Giorgio FrDT3.2	Castillo, Barbara FrBT14.2	Chentsov, Alexander FrBT11.1, FrCT11.3	Cortés-Murcia, David L. ThBT1.4	Darmoul, Saber WeBT9.3
Barde, Ankit FrBT7.4	Belaiche, Leila ThBT15.2	Biennier, Frederique ThAT10.1	Bruno, Giulia WeAT2.2, WeAT9.3, ThBT13.5	Cavalieri, Sergio WeBT15 (CC), WeBT15.3	Chentsov, Alexei FrCT11.3	Cosmi, Matteo WeBT5.4	Darvish, Maryam FrCT15 (CC), FrCT15.2
Barketau, Maksim ThBT5.3	Belil, Sabah WeBT6.3	Bilberg, Arne FrBT3.4	Bubnova, Yulia ThBT17.1	Cechova, Ivana WeBT18.1	Chernonog, Tatyana WeBT11 (CC), WeBT11.5, ThBT11 (C), ThBT11.5	Costa, Federica WeAT3.1, FrCT10.3	Dasaklis, Tom FrDT1.4
Barrero, Nicolás FrAT13.1	Belil Sabah, Bendaoud FrBT16.1	Bittencourt, Victor ThAT3.2	Bugert, Niels ThAT17.5	Cestina, Alessandro WeBT7.5	Chernyshov, Kirill WeAT4 (CC), WeAT4.2, WeBT4 (C), WeBT4.3	Costa, Ruben ThAT3.4	Dayarian, Iman ThBT14.2
Bart, Nelly ThBT11.5	Belkadi, Farouk WeBT12.1	Blekanov, Ivan ThBT17.1	Bühler, Dorothee WeAT18.3	Cetin, Can Baris FrAT15.1	Chevrel, Philippe WeAT13.4	Costa Mateus, João FrCT6.3	De Giovanni, Pietro ThBT18.4
Barth, Marc FrBT15.1	Ben Ali, Maha WeBT14.3	Bloch, Christelle FrCT8.2	Bukchin, Yossi WeBT16.5	Chabi Adjobo, Esther FrDT1.1	Childe, Stephen FrBT9.4	Costigliola, Andrea ThBT5.5	De La Fuente Carmona, Antonio FrAT17.4, FrCT3.1
Basallo-Triana, Mario José FrCT8.1	Ben Ammar, Oussama WeBT8 (CC), WeBT8.4, WeBT8.5, ThAT8 (C), ThAT8.2	Bocewicz, Grzegorz WeBT18.2, WeBT18.3, FrDT2.2	Bula, Gustavo ThAT7.4	Chablat, Damien WeBT13.3	Chou, Sanghoon FrAT11.3	Cottyn, Johannes FrCT6.3	De Marco, Alberto ThBT16.1
Basirati, Mohammadreza ThAT15.3	Ben Brahim, Imen FrCT7.4	Bogataj, David FrCT16 (C), FrCT16.2, FrCT16.3	Burinskiene, Aurelija ThBT1 (CC), ThBT1.5	Chalupa, David FrBT7.3	Chou, Yon-Chun FrAT15 (CC), FrAT15.5	Coudert, Thierry FrAT14.3, ThAT14.5	De Oliveira, Luiz Eduardo FrCT3.4
Battaña, Olga WeBT5.2, ThAT5.3, ThBT5.2, FrAT5 (C), FrCT6 (CC), FrCT6.2	Bendul, Julia WeBT17 (CC), WeBT17.3, ThBT1 (C), ThBT1.4	Bogataj, Marija FrCT16.2	Busert, Timo WeAT3.3	Chargui, Kaoutar WeAT6.4	Chowdary, Boppana V. WeBT1.5	Couzon, Paulin WeAT6.1	De Valroger, Aymeric ThAT14.5
Battini, Daria WeAT12.3	Bendul, Julia FrAT1.1	Böhm, Markus ThAT15.3	Buyukozkan, Gulcin ThAT14.1, ThBT15.4, FrAT9.4	Chargui, Tarik ThBT14.1	Chun, Do-Hyun FrAT10.2	Cowan, Robin WeBT12.2	Defersha, Fantahun FrAT5.4, FrCT5 (CC), FrCT5.2
Battini, Daria ThAT5.3, FrAT5 (CC), FrCT6 (C)	Bendul, Julia FrBT6.4	Bonci, Andrea FrCT6.1		Chatelet, Eric ThAT7.4	Chutani, Anshuman ThBT17 (CC), ThBT17.5	Crespo Marquez, Adolfo FrAT17.4, FrCT3.1	Degila, Jules Richard FrDT1.1
Battini, Daria FrCT6.2, FrDT17.3	Benfenatki, Hind ThAT10.1	Borstell, Hagen FrCT1.4		Chaudhuri, Atanu ThAT14.2	Ciarapica, Filippo Emanuele FrDT17.2	Crispim, José António FrAT7.3	Della Croce, Federico FrAT7.5
Battistutta, Marco ThBT6.3	Benharzallah, Saber ThBT15.2	Botta-Genoulaz, Valérie FrAT13.5		Chechulin, Andrey ThAT4.4	Cimini, Chiara FrBT6.1	Cunha, Mariana ThBT5.5, FrAT3.5	Delorme, Xavier WeAT12.3, ThBT2 (C), ThBT2.3
Bauer, Harald ThAT15.3	Benkalai, Imene FrDT7(C), FrDT7.2	Bottani, Eleonora WeAT18.1, WeAT18.2		Chehade, Hicham WeBT2.2	Ciocirlan, Alexandra-Catalina ThAT3.5		Demir, Emrah FrCT9.1
Baum, Leonard FrCT1.3	Benyoucef, Lyes ThBT2.4	Bou Farraa, Berna FrAT11.2, FrBT15.3		Cheikhrouhou, Naoufel FrAT9.1	Claeys, Dieter FrCT6.3	D'Antonio, Gianluca WeAT2.2, WeAT9.3	Deng, Xiaoxu ThBT10.3
Baybulatov, Artur ThAT4.3	Berger, Ulrich FrBT3.1	Boujelbene, Younes FrCT7.4		Chen, Chao WeAT16.1	Claveau, Fabien WeAT13 (CC), WeAT13.4, WeBT13 (C)	Da Re, Giulia ThBT6.3	Deng, Zhiwen WeAT16.2
	Bergmann, Júlia WeAT14.4	Bouras, Abdelghani WeBT9.3		Chen, Chongping FrAT16.1	Cockx, Ronald WeBT17.3	Daduna, Joachim FrDT3.3	Denisova, Liudmila WeBT4.5

Deppe, Torben
ThBT12.2

Deroussi, Laurent
ThAT6.1

Derouiche, Ridha
FrBT15.1

Deschamps, Fernando
FrBT3.3

Desgagné-Lebeuf, Alexandre
WeAT3 (C), WeBT14 (CC), ThBT13 (CC), FrAT5.3

Desgagné-Lebeuf, Guillaume
FrAT5.3

Deshpande, Varun
ThAT14 (CC), ThAT14.4

Desnitsky, Vasily
ThAT4.4

Desport, Pierre
ThBT18.5

Di Cairano-Gilfedder, Carla
ThBT18.5

Di Mascolo, Maria
WeBT11.1

Diallo, Claver
ThAT9.1, ThAT9.4

Díaz, Jenny
WeAT7.4

Didi Chaoui, Mohamed
ThAT13.2

Dillon, Michael
FrDT2.1

Dimovski, Vlado
FrCT16 (CC), FrCT16.1

Disney, Stephen
FrBT10 (C), FrBT10.3, FrBT10.4

Djamah, Tounsia
WeAT10.1, WeAT10.4

Djossou, Abigail Priscilla Mahugnon
FrDT1.1

Djouambi, Abdelbaki
WeAT10.2

Doan, Minh-Phuoc
FrAT13.5

Dobriborsci, Dmitrii
WeAT13.3

Dolgui, Alexandre
WeOS (CC), WeAT17 (CC), WeAT17.1, WeAT17.4, WeBT2.5, WeBT8 (C), WeBT8.4, WeBT8.5, ThAT6.3, ThAT8.2, ThBT19 (CC), FrCT18 (C) FrDT2 (C), FrDT2.3, FrDT5.4, FrSE (C)

Donohue, Joan
FrAT11.3

Dorneles, Carina
ThAT1.1

Doussia, M. Radhouane
FrAT8.3

Dridi, Mahjoub
FrAT5.1

Drobne, Samo
FrCT16.2

Druetto, Alessandro
ThAT5 (CC), ThAT5.4

Duan, Weiyu
ThBT16.5

Dubey, Rameshwar
FrBT9 (C)

Dubois, Patrice
FrBT5.1

Duc, Emmanuel
FrCT7.1

Ducq, Yves
FrAT8.3

Dulina, Luboslav
WeBT18.1

Dumitrache, Ioan
ThAT3 (C), ThAT3.3

Dupin, Nicolas
WeBT6.2

Durán, Orlando
FrBT8 (CC), FrBT8.2, FrBT8.3

Duran, Paulo
FrBT8.3

Durieux, Séverine
FrCT7.1

Durville, Laurent
ThBT2.2

Dutta, Arnab
WeAT17.3

Dutta, Pankaj
WeAT8.4, WeAT17.3, FrDT17 (CC)

Dziri, Elissa
ThAT8.1

E

Ebrahimi, Mojtaba
ThAT9.2

Efremov, Kirill
WeAT13.1

Eger, Florian
ThBT7.4

Egorova, Natalja
WeAT5.2

Egri, Peter
FrBT17.4

Ehie, Ike
FrBT12.4

Ehm, Hans
ThAT16.3

Einabadi, Behnam
ThAT9.2

Eirinakis, Pavlos
FrCT15.1

Eitzinger, Christian
ThBT7.2, ThBT7.3

EL Afia, Abdellatif
FrDT7.3

El Alaoui El Abdellaoui, Mahdi
ThBT2.3

El fallahi, Abdellah
WeAT6.4

El Mhamedi, Abderrahman
ThAT8.4, FrCT7.4

El Moudni, Abdellah
FrAT5.1

Elaluf, Amir
ThBT9.2

Elbert, Ralf
WeBT14 (C), WeBT14.1

Elfirdoussi, Selwa
WeBT6.3

Elizarova, Natalya
WeAT4.4

Elkhairi, Ayoub
WeBT7.3

Engell, Sebastian
FrAT5.2

Ercan, Elif
FrCT9.3

Erfurth, Toni
ThBT1.4

Eshaghi Chaleshtori, Amir
FrBT10.1

Eshghi, Kourosh
FrAT14.3

Espinouse, Marie-Laure
WeBT11.1

Essakly, Amjed
WeBT2.4

Eugene, Semenkin
ThBT11.3

Eun, Yongssoon
ThAT7.1, FrBT3.2

Ezoji, Amer
WeBT12.4

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Facchini, Francesco
FrAT3 (C), FrAT3.1

Faccio, Maurizio
ThBT9.1, ThBT9.2, ThBT9.4

Fadeev, Mikhail

ThAT13.1

Fager, Patrik
FrAT6.5

Farias, Katyanne
FrAT11 (CC), FrAT11.4

Fast-Berglund, Aasa
ThBT9.5, ThBT13.4

Fatahi Valilai, Omid
FrAT1.5, FrAT14.3

Fay, Alexander
WeAT3.3, WeAT15.3, ThBT2.1, FrAT1.3

Fedouaki, Faycal
WeBT7.3, FrAT16.2

Fei, Hongying
ThAT16.1

Feng, Kang
ThBT10.1

Fernandes, Nuno O.
ThBT6.1

Ferrari, Emilio
ThBT9.1

Ferreira, Luis Miguel D.
ThAT7.5, FrBT12.4

Ferreira, Luis Pinto
ThBT6.1

Feyzioglu, Orhan
ThBT15.4

Figueira, Gonalo
FrDT17.4

Figueiras, Paulo
ThAT3.4

Figueiredo, Joao Manuel
ThBT5.5, FrAT3.5

Filipas Deniaud, Ioana
WeBT12.2

Finco, Serena
WeAT12.3

Finkenstaedt, William
WeAT9.2

Fondrevelle, Julien
FrAT13.5

Fontana Granotto, Giovanni
FrBT6.3

Foropon, Cyril
ThBT11 (CC)

Fortin, Arnaud
WeBT1.2

Fortin, Hugues
FrBT8.4

Fosso Wamba, Samuel
WeAT1 (C), ThBT17.2

Frazzon, Enzo Morosini
WeAT12 (CC), ThAT1 (C), ThAT1.1, ThAT1.2, ThBT1.3, FrAT1 (CC)

Freitag, Michael
ThAT1 (CC), ThAT1.4, ThBT1.1, ThBT1.2, FrAT1 (C), FrAT1.2

Frutos, Mariano
FrBT5.2

Fry, Timothy
FrAT11.3

Fu, PengXia
FrAT16.4

Füchtenhans, Marc
WeBT8.1

Furet, Benoit
WeBT12.1

G

Gaalman, Gerard
FrBT10.4

Gafarov, Evgeny R.
WeAT5.1, FrDT5.4

Gaiardelli, Paolo
WeAT3 (CC), WeAT3.2, ThAT3.1

Galakhov, Semyon
ThAT5.1

Galindo Leal, Adriano
FrCT3.2

Galka, Stefan
FrBT1.4

Gallina, Viola
ThBT6.2

Gamberi, Mauro
ThBT9.1

Gamoura, Samia
FrBT15.1

Gao, Jiuchun
WeAT13.4

Gao, Liang
WeAT12.1, ThBT11.2

Garcés Monge, Luis Ignacio
WeAT15.2

Garcia, Carlos
WeBT5.5

Garcia, Eduardo
WeAT9.1

Garcia Torres, Edna Liliana
WeAT8.3

Garrido Campos, Julio
FrAT3.2

Gaso, Martin
WeBT18.1

Gaudreault, Jonathan
WeBT14.3, ThAT13.5

Gayraud, Fabrice
ThAT5.5

Geneste, Laurent

WeAT14.3, ThAT14.5

George, Laurent
ThAT14.4

Gerhold, Christoph
FrAT7.2

Ghasemishabankareh, Behrooz
FrBT17.2

Ghasemkhani, Ahmad
WeAT6.2, WeAT6.3, WeBT6.1

Ghodos, Parisa
ThAT10.1

Gianessi, Paolo
ThBT2.3

Giannoccaro, Ilaria
FrBT17 (C), FrBT17.3

Giubilato, Benedetto
WeAT16.3

Glock, Christoph
WeBT8.1, FrBT6 (C), FrBT6.3

Gnidenko, Andrey
WeBT10.4, FrCT10.2

Gobbi, Alessandro
ThBT15.1

Godart, Alexis
FrCT8 (CC), FrCT8.2

Godichaud, Matthieu
WeBT6.5, ThBT15 (CC), ThBT15.3

Goessinger, Ralf
FrBT7.1

Goga, Klodiana
FrDT5.3

Gokce, Mahmut Ali
FrBT11.2, FrCT9 (C), FrCT9.3

Gola, Arkadiusz
WeAT14 (C), ThAT18 (CC), ThAT18.1, FrAT9 (C), FrCT9 (CC)

Goldberg, Noam
WeBT1.4

Gomez Fernandez, Juan F.
FrAT17.4, FrCT3.1

Goncalves, Gilles
ThAT18.5

Gondran, Matthieu
FrCT5.1

Gonzalez , Diana Sofia,
Melendez
ThAT14.5

Gonzalez-Prida Diaz,
Vicente
FrCT3.1

Gorski, Ewerton Gusthavo
FrBT3.3

Gosselin, Louis
FrBT8.4

Gourc, Didier
WeBT12.2

Grabot, Bernard
WeBT1.2

Graça, Diogo
ThAT3.4

Grafeeva, Natalia
FrCT7.3

Grah, Barbara
FrCT16.1

Grangeon, Nathalie
ThAT6.1

Grassi, Andrea
FrBT5.3

Greis, Noel
FrDT2.1

Gries, Thomas
WeBT10.2

Grimaud, Frédéric
ThBT2.3

Grishin, Egor
ThAT5.1

Groneberg, Maik
FrCT1.2

Grosse, Eric
WeAT12 (C), WeBT8.1, FrAT15 (C), FrAT15.3, FrBT6 (CC), FrBT6.3

Grosso, Andrea
ThAT5.4

Grothoff, Julian
ThBT12.2

Gruchmann, Tim
ThAT16.5

Gu, Hanyu
WeAT5.4, ThAT5.2

Gu, Ran
FrAT17.3

Guérin, Jérémy
FrCT7.2

Guerreiro, Guilherme
ThAT3.4

Guillaume, Romain
WeBT5.2, ThAT5.3, FrCT7.1

Guillemet, Alexandre
FrAT5.5

Guillen, Antonio
FrAT17.4

Guillon, Delphine
WeAT15.1

Guizzi, Guido
ThAT5 (C), FrBT5.3

Gujarathi, Pallav
WeAT17.3

Güler, Merve
ThAT14.1

Guo, Daqiang
ThBT9.3

Guo, Wei
WeBT15.1, FrBT14 (C)

Gupta, Elluri Vignan
WeAT12.2

Gupta, Jatinder N. D.
ThAT11.3

Gupta, Shivam
WeAT8.4

Gupta, Varun
ThBT17.5

Gupta, Vishal Kumar
ThAT14.2

Gurevsky, Evgeny
WeBT2.5

Gusikhin, Oleg
WeAT9.2

Gutiérrez, Gabriel
FrBT8.2

H

Haddou Benderbal, Hichem
ThBT2 (CC), ThBT2.4

Hadj Alouane, Atidel
WeBT8.2

Hadj-Hamou, Khaled
FrAT11.4

Haeussler, Stefan
ThBT13 (C), ThBT13.1, FrAT7 (CC), FrAT7.2

Hafidi, Yousra
ThBT15.2

Hafilah, Dina
FrCT1.1

Hähnel, Sebastian
FrAT2.1

Hajej, Zied
FrBT7 (CC), FrBT7.2

Ham, Seung-Ho
ThAT10.4, FrAT10.2

Hammami, Ramzi
ThAT8.1

Hammar, Karima
WeAT10.4

Han, Tiaojuan
ThBT10.5

Hani, Yasmina
ThAT8.4

Hanukov, Gabi
WeBT11.5

Harbi, Slim
WeBT8.2

Hargaden, Vincent
FrAT1.2

Hartl, Richard F.
ThP3L.1

Hashemi Petroodi, Seyyed Ehsan
FrCT10.4, FrDT2 (CC), FrDT2.3

Havle, Celal Alpaly
ThBT15.4

Hazir, Oncu
ThAT6 (C), ThAT6.3, FrBT9.3, FrCT7 (C), FrCT7.2

He, Baiyang
FrAT14.1

He, Ruizhi
ThAT11.4

He, Yong
FrAT17.3

He, Zhen
WeBT7.2

Heavey, Cathal
ThAT16.3

Hedberg, Thomas
FrAT3.4

Hedvall, Lisa
FrCT10.1

Heger, Jens
ThAT1.3

Helaakoski, Heli
ThAT13.4

Helu, Moneer
FrAT3.4

Hendrix, Eligius MT
ThBT8.2

Henke, Michael
WeAT16.2

Henke, Michael
FrBT12 C

Henke, Michael
FrBT12.1

Henke, Michael
FrBT12.2

Hennequin, Sophie
ThAT18.4

Henry, Sébastien
FrAT11.5

Hernandez, Valentina
FrBT8.1

Hernandez, Wilson
FrAT13.1

Hertwig, Michael
WeBT3.2

Heuchenne, Cédric
FrAT7.1

Heutmann, Timo
WeAT7 (CC), WeAT7.3

Hildebrandt, Constantin
WeAT15.3

Hirata, Ryosuke
WeAT9.4

Hoang, Xuan-Luu
ThBT2.1

Hochbaum, Dorit
FrAT19.2, FrBT19 (C)

Hofmann, Wladimir
FrBT1.3

Hofreiter, Milan
WeAT4.1

Holzwarth, Arvid
WeAT19 (C), WeAT19.1

Hosseini, Zahra
WeBT6.4

Hsu, Tienté
ThAT18.5

Hu, Chenlian
ThAT11.1

Hu, Hao
ThAT8.5

Hu, Xiaofeng
ThAT6.4, ThBT10.4, FrAT8.2

Huang, George Q.
ThBT9.3

Huang, Jun
WeAT16.4

Huang, Kuan-Cheng
FrCT2.3

Huang, Tushan
ThAT15.1

Huang, Zuqing
WeAT16.1

Huguet, Marie-José
FrCT5.1

Hung, Yu-Hsiu
FrCT2.3

Hurtado, Paula Andrea
ThAT1.1

Husmann, Sonja
FrAT2.1

Hussain, Matloub
FrDT7.5

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I V, Sarin
FrAT8.5

Iftikhar, Anas
FrBT17.3

Ilmer, Quirin
ThBT13.1

Industrial Algorithms, Sophia

FrCT3.2

Inoue, Patricia
FrAT3.3

Iskhakov, Andrey
ThBT4.3

Iskhakova, Anastasia
ThBT4.3

Ivanov, Dmitry
WeOS (C), WeAT17 (C), WeAT17.1, WeAT17.2, WeAT17.4, ThAT19 (C), ThBT17.1, ThBT19 (C), FrAT18 (C), FrAT18.1, FrBT10.1, FrBT17.2, FrDT17.3, FrDT19 (C), FrSE (CC)

Ivanova, Marina
WeAT17.4

Ivashkin, Yuri
WeBT11.2

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Jahani, Hamed
FrBT10.1, FrBT17 (CC), FrBT17.2

Jalali, Hamed
ThBT18.4

Jalalian, Mohammad
FrAT5.4

Jamshidi, Afshin
ThAT9.3

Jamshidi, Farzad
ThAT9.3

Janež, Petra
FrCT16.2

Jans, Raf
FrCT15.2

Jardim-Goncalves, Ricardo
ThAT3.4

Jarfors, Anders
ThAT12.2

Jathe, Nicolas
ThAT1.4, ThBT1.2

Jelodari, Elham
FrCT9.1

Jemai, Zied
ThAT8.1

Jenkins, Adam
WeBT15.4

Jeunet, Jully
FrAT7 (C), FrAT7.5

Jharko, Elena
ThAT4 (C), ThBT4 (CC), ThBT4.1, ThBT4.3

Jiang, Hai
WeBT1.3

Jiang, Peng
WeBT16.1, WeBT16.2

Jiang, Pingyu
WeBT15.1

Jiang, Zhibin
ThAT15 (C), ThAT15.1, ThAT15.2, ThBT10 (C), FrBT16.4

Jin, Kaiyuan
WeAT11.2

Joyce, Mark
ThAT5.2

Juan, Sáez López
FrAT3.2

Judd, Robert
ThBT11.1

Julius, Robert
FrAT1.3

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Kaczmarek, Sandra
FrBT12.3

Kahloul, Laid
ThBT15.2

Kalashnikov, Andrey
ThBT4.2

Kanakaris, Venetis
FrDT1.4

Kanso, Ali
WeBT13.1

Kantasa-Ard, Anirut
WeBT14.2

Karabutov, Nikolay
WeAT4.3

Karakostas, Bill
WeBT17.4

Karaulova, Tatjana
FrBT17.1

Karavaev, Yury
WeAT13.1

Karder, Johannes
WeBT7.1

Kardos, Csaba
ThBT6.2

Karhi, Shlomo
WeBT13.3, WeBT13.5, ThAT13 (CC), ThAT13.1

Kasapidis, Grigoris
FrDT5.2

Katirae, Niloofar
FrCT6.2

Kattner, Niklas
ThAT15.3

Kazemi, Morteza
FrCT5.4

Kazemi Zanjani, Masoumeh
WeBT9.2

Kechaou, Fatma
WeBT10.3

Keivanpour, Samira
WeBT17.2, FrBT12.5

Kemmoe, Sylvérin
FrBT16.1

Kemper, Maximilian
WeBT10.2

Khachay, Daniel
FrBT11.1

Khachay, Michael
FrBT11 (C), FrCT11.1

Khalid, Syed Ans Bin
WeBT11.3

Khan, Imran
ThAT11.4

Khatab, Abdelhakim
ThAT9 (CC), ThAT9.1, ThAT9.4

Khusainov, Ramil
WeBT13.5

Khvatova, Tatiana
WeAT18.3

Kilic, Onur A.
ThBT8.4

Kilic, Sezgin
FrAT17.5

Kilimis, Panagiotis
FrBT3.1

Kim, Dong Ok
FrAT13.4

Kim, Ki
WeBT15.4

Kinra, Aseem
ThBT17 (C), ThBT17.3, FrBT10 (CC), FrBT10.2

Kitaeva, Anna
FrCT2 (CC), FrCT2.4

Klement, Nathalie
WeAT3.4, ThBT2.2, FrCT8.4, FrCT10.4

Klenk, Eva
FrBT1.4

Klimchik, Alexandr
WeAT13 (C), WeAT13.2, WeBT13 (CC), WeBT13.2, WeBT13.3, WeBT13.5, ThAT13 (CC), ThAT13.1

Klinkert, Andreas
FrCT15 (C), FrCT15.3

Klos, Slawomir
WeBT18.5

Knigge, Jan-Karl
WeBT14.1

Ko, Chang Seong
FrAT13.4

Köcher, Aljosha
WeAT15.3

Kochetov, Yuri
FrBT11.3

Koh, Lenny
WeP2L.1

Kohl, Holger
ThPIL.1

Koltai, Tamas
ThBT6.2

Kolyubin, Sergey
WeAT13.3

Konigorski, Ulrich
ThBT7.1

Kononova, Polina
FrBT11.3

Kortenhorst, Cleo
ThBT8.2

Kosacka-Olejnik, Monika
ThBT18.1

Kotenko, Igor
ThAT4.2, ThAT4.4

Kotzab, Herbert
FrBT10.2

Kovalev, Sergey
FrDT2.3

Kovalyov, Mikhail Y.
FrDT2.3

Kozłowski, Edward
ThAT18.1

Kraj ovi , Martin
WeBT18.1

Krass, Dmitry
WeAT8.2

Krcmar, Helmut
ThAT15.3

Kress, Dominik
WeAT5.3, ThBT5.3

Kreutz, Markus
ThBT1.1

Krug, Zoé
WeBT5.2

Krylatov, Alexander
ThBT17.1

Kutyk, Piotr
ThBT7.5

Kubenke, Johanna
FrAT6.3

Kucharavy, Dmitry
FrBT15 (C), FrBT15.1

Kucukkoc, Ibrahim
ThAT6.4, ThAT7.3

Kulachenko, Igor
FrBT11.3

Kulba, Vladimir
WeBT4.2

Kumar, Atal Anil
WeBT13.4

Kumar, Rajan
FrAT14.4

Kumar, Vivek
FrAT14.4

Kunz, Andreas
FrAT6.3

Kurochkin, Alexandr
FrBT11.3

Kyllönen, Vesa
ThAT13.4

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Labadie, Nacima
FrCT9.2

Lacomme, Philippe
FrCT5.1

Ladaci, Samir
WeAT10 (CC), WeAT10.2, WeAT10.3

Lafdail, Yونسse
FrCT11.1

Lafkihi, Mariam
ThBT14.3

Lagorio, Alexandra
FrBT6.1

Laguna Salvadó, Laura
WeAT15.4

Lahrichi, Youssef
ThAT6 (CC), ThAT6.1

Lajoie, Patrice
WeBT14.3

Lakhmi, Najoua
FrAT9.3

Lalaoui, Mohamed
FrDT7.3

Lam, Hue Chi
ThAT5.2

Lamouri, Samir
WeAT14.1, WeBT1.2, FrBT5.1

Lang, Sebastian
FrDT1.2

Lange, Julia
ThBT5.1

Langhi, Celi
FrAT3.3

Lardeux, Frederic
ThBT18.5

Laroche, Florent
WeBT12.1

Lauer, Tim
ThAT16.2

Laurent, Arnaud
FrCT8.4

Lazarev, Alexander
ThAT5.1

Lazzari, Isabella
WeAT18.1

Leão, Celina
ThAT3.2

LeBel, Luc
WeAT14.2

Leadoux Takeda Berger, Satie
ThBT1.3

Lee, Hye-Won
ThAT10.4, FrAT10.2

Lee, Young Hoon
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Legner, Sarah
ThAT16.2

Lehmann, Marlon
FrBT3.1

Lehoux, Nadia
WeAT14.2, WeBT14.3, FrAT5.3, FrBT8.4

Lemoine, David
ThAT5.5

Lentes, Joachim
WeBT3.2, FrBT3 (CC), FrCT3 (C)

Leonard, Francois
ThAT13.2

Leonardini, Omar
ThBT15.5

Lepeniotti, Katerina
WeBT9.1

Lesaint, David
ThBT18.5

Li, Dan
ThBT9.5

Li, Danlian
FrAT16.5

Li, Ivan
FrCT15.4

Li, Jian
WeAT7.2, WeAT16.2

Li, Jingjing
ThAT6.2, FrDT2.4

Li, Kevin W.
WeAT16 (CC), WeAT16.4

Li, Mingxing
ThBT9.3

Li, Peigen
WeAT12.1

Li, Qi
ThBT10.3

Li, Qiang
ThAT7.3

Li, Qingying
WeAT18.4

Li, Xinyu
WeAT12.1, ThBT11.2

Li, Yanan
WeAT8.1

Li, Yuanyuan
FrDT5.3

Li, Yuchen
ThAT6.4

Li, Zishuo
FrAT16 (CC), FrAT16.4

Liagkou, Vasiliki
WeBT3.3

Liang, Bian
FrBT2.4

Liao, Shilong
ThAT6.2, FrDT2.4

Lienenlücke, Lars
FrAT2.2

Lima, Erick
FrBT3.3

Limère, Veronique
FrCT6.3

Lin, Peng
ThBT9.3

Lin, Wenjin
FrBT16.4

Lindemann, Udo
ThAT15.3

Ling, Shiquan
ThBT9.3

Lingitz, Lukas
ThBT6.2

Lipiec, Bogdan
FrAT8.1

Liret, Anne
ThBT18.5

Lissane Elhaq, Saâd
ThAT8.4

Litvinchev, Igor
FrAT13.2, FrDT3.1

Liu, Kang
ThAT7.1

Liu, Ming
WeAT11.3, WeAT11.4, ThAT2.1, ThAT2.2, FrBT2.1, FrBT2.2, FrBT2.3, FrBT2.4

Liu, Ping
FrAT10.1

Liu, Rongfan
WeAT11.3

Liu, Xiao
WeBT16 (C), WeBT16.2, WeBT16.3, ThAT11 (CC) ThAT11.1, ThAT11.2

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FrBT2.1, FrBT2.2

Liu, Yao
WeAT16.1

Liu, Yu-Ning
WeAT9.2

Liu, Zhi
WeAT16.4

Liu, Zhong
WeAT16.1

Lohmann, Boris
WeBT11.3

Loiseau, Jean Jacques
FrAT11.2

Lolli, Francesco
ThBT16.2

Lombardi, Franco
WeAT2.2, WeAT9.3

Longhi, Sauro
FrCT6.1

Lopez-Campos, Monica
FrBT8.1

Loske, Dominic
FrAT6.4

Lototsky, Vladimir
WeAT4.4

Lu, Jianfeng
ThBT10.5, FrDT3.4

Lu, Jie
ThAT11.1

Lu, Zhiyao
ThBT10.2

Lucato, Wagner Cezar
FrAT3.1

Lucio, Levi
ThBT12.2

Lucker, Florian
ThAT17 (C), ThAT17.1

Luo, Zongwei
ThAT11.4

Lütjen, Michael
ThAT1.4, ThBT1.1, ThBT1.2

Lv, Huichun
ThBT10.2

Lyu, Hongjiang
FrAT17.3

Lyu, Minhu
ThAT10.1

Lyu, Zhongyuan
ThBT9.3

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M, Sethumadavan
ThAT14.3

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Ma, Shigui
FrAT17.3

Ma, Xiyuan
ThBT8.3

Ma, Zhenjie
ThBT10.1

Macchi, Marco
FrCT3.1

MacCleery, Brian
FrBT14.1

Maciel, Queiroz
ThBT17.2

Mackay, Jonathon
FrAT17 (CC), FrAT17.1

Madraki, Golshan
ThBT11.1

Maganha, Isabela
ThAT7.5, ThBT2.2

Magnanini, Maria Chiara
ThBT7 (C), ThBT7.4

Mahanty, Biswajit
FrBT7.4

Maher, Rami A.
WeBT10.1

Mahmood, Kashif
FrBT17.1

Maigne, Thomas
WeAT14.1

Majdzik, Pawel
FrAT8.1

Makarovskikh, Tatiana
FrCT11 (C), FrCT11.2

Makhlouf, Rami
WeBT14.1

Malakuti, Somayeh
ThBT12.2

Malik, Ali Ahmad
FrBT3.4

Maloletov, Alexander
ThAT13.1

Mamedov, Shamil
WeAT13.2

Manerba, Daniele
ThBT15.1

Mangano, Giulio
FrCT8 (C), FrCT8.3

Manier, Herve
FrCT8.2

Manier, Marie-Ange
FrCT8.2

Mansini, Renata
ThBT15.1

Manuel, Garcia
FrBT14.1

Manuell Barrera, Ofelia S.G.
FrCT17.2

Manzini, Massimo
WeBT5 (CC), WeBT5.3

Marcucci, Giulio
FrDT17 (C), FrDT17.2

Margelli, Silvia
ThBT9.1

Margun, Alexey
WeAT13.3

Mariani Zanella, Renata
ThBT1.3

Marier, Philippe
FrBT8.4

Marmier, François
WeBT12 (CC), WeBT12.2

Marmolejo, Jose Antonio
FrCT17 (C), FrCT17.1, FrCT17.2, FrCT17.3, FrCT17.4

Marmolejo-Saucedo, Jose Antonio
FrCT10 (C)

Martinez, Carol
FrAT13 (CC), FrAT13.1

Martinez, Cléa
WeBT11.1

Martínez, Jania Astrid
FrCT17.3

Martínez-Galán Fernández, Pablo
FrAT17.4, FrCT3.1

Martins, Miguel S. E.
ThBT5.5, FrAT3.5

Mas, Fernando
ThBT12.1

Masmoudi, Faouzi
WeBT8.4, WeBT8.5

Masson, Dimitri
WeAT15.4

Massonnet, Guillaume
ThAT5.5

Matta, Andrea
WeBT7.5

Matta, Nada
WeBT12 (C), WeBT12.4

Mattsson, Stig-Arne
FrCT10.1

Maximova, Tatyana
FrBT9.2

Mechmech, Rihab
WeBT8.2

Medina, Angie
FrAT13.1

Mediouni, Abderrahmen
FrAT9.1

Meerkov, Semyon M.
ThAT7 (C), ThAT7.1, ThPIL (C), ThP2L (C), FrBT3 (C), FrBT3.2

Meier, Alan
FrBT14.4

Meireles Pereira, Marina
ThAT1.2

Meißner, Sebastian
FrBT1.2

Mejia-Moncayo, Camilo
ThBT5.2

Melhem, Nadeem N.
WeBT10.1

Meliani, Youssef
ThAT8.4

Mello, Jose
WeBT14.4

Memar, Julia
WeAT5.4

Memari, Pedram
WeBT6.4

Menanno, Marialuisa
FrAT14.5

Ménard, Marc-André
ThAT13.5

Menezes, Brenno
FrCT3.2

Menezes, Mozart
WeBT11 (C), WeBT11.4, ThBT16 (C), ThBT16.3, ThBT16.4

Meng, Ying
FrAT14.1

Mentzas, Gregoris
WeBT9.1

Merlo, Christophe
FrBT14.3

Meryem, Bamoumen
WeBT6.3

Meshcheryakov, Roman
ThBT4.3

Meshcheryakov, Vitalii
WeBT4.5

Meski, Oussama
WeBT12.1

Meyer, Christoph Manuel
WeAT8 (CC), WeAT8.3, FrDT1 (C)

Mezzogori, Davide
FrBT1.1

Miao, Rui
ThBT10.3

Michalik, Alexander
FrBT12.2

Mikhailova, Elena
FrCT7.3

Mikhel, Stanislav
WeAT13.2

Miranda, Jhonattan
FrBT14.2, FrBT14.3, FrBT14.4

Miranda, Pablo A.
FrBT8 (C), FrBT8.1, FrBT8.2

Missbauer, Hubert
ThBT13.1

Mitroi, Daniel
ThAT3.5

Miura, Kazumasa
FrCT2.1

Mocellin, Riccardo
WeAT1.1

Modgil, Sachin
WeAT1.2

Modrak, Vladimir
ThBT6 (C), ThBT6.4

Moetz, André
FrDT7.4

Moeuf, Alexandre
FrBT5.1

Mogale, Dnyaneshwar
WeAT12.2

Mohamed Ismail, Mohamed
Wahab FrAT6.1

Mohammad, Soveizy
ThAT11.5

Moiscescu, Mihnea Alexandru
ThAT3.3

Molina, Arturo
FrBT14.1, FrBT14.2, FrBT14.3, FrBT14.4

Molina, José Martín
FrBT14.3

Molinaro, Margherita
ThBT6.3

Momen, Sara
WeAT6.2, WeAT6.3, WeBT6.1

Moniz, Samuel
ThBT2.2

Monostori, Judit
FrBT15 (CC), FrBT15.2, FrBT17.4

Monostori, Laszlo
WeP2L (C), WeP3L (C)

Montazeri, Allahyar
FrBT13 (C), FrBT13.1, FrBT13.2

Montes, Nicolas
WeAT9 (CC), WeAT9.1

Montoya-Torres, Jairo R.
FrCT9.2

Montreuil, Benoit
ThBT14.2

Moon, Dug Hee
FrAT13.4

Mora, Juan Felipe
FrAT13.1

Moradi, Hamed
ThAT10 (CC), ThAT10.5

Morales-Palma, Domingo
ThBT12.1

Moschuris, Socrates
FrDT1.4

Mouchtachi, Ahmed
FrAT16.2

Mourtos, Ioannis
FrCT15.1, FrDT5.2

Mozgova, Irina
FrDT3.1

Müller, David
WeAT5 (CC), WeAT5.3, ThBT5 (C), ThBT5.3, FrDT5 (CC)

Müller, Julian Marius
ThAT15.4, FrBT6.2

Müller, Rainer
WeBT13.1

Mummolo, Giovanni
FrAT3.1

Muniasamy, Kandasamy
ThAT14.3

Munoz, Albert
FrAT17.1

Muravev, Dmitri
ThAT8.5

Naderi, Mehdi
WeBT3.4

Nakade, Koichi
ThAT17.2

Naqvi, ALI Akbar
FrAT14.5

Nascimento, Samira
FrAT3.3

Navazi, Fatemeh
WeBT6.4, WeBT17.1

Nazarov, Dmitry
FrAT10.4

Ndhaief, Nadia
FrBT7.2

Negus, A. Fahri
FrAT9.4

Neidig, Jörg
FrAT1.3

Neifer, Alexander Manuel
ThBT7.1

Nemati, Hamidreza
FrBT13 (CC), FrBT13.1, FrBT13.3, FrBT13.4

Nemeth, Istvan
ThBT13.3

Ness, David
WeBT15.4

Neukirchen, Thomas
ThAT16.5

Neumann, W. Patrick
FrAT6.1

Nguyen, Huu Du
FrBT16.2

Nguyen, Thi Lan Anh
FrAT9 (CC), FrAT9.2

Nguyen, Viet
FrDT1.3

Nick, Gábor András
WeAT14.4

Nicosia, Gaia
WeBT5.4

Nieke, Michael
WeAT15.3

Nielsen, Izabela
WeBT18.2

Nielsen, Peter
WeBT18 (CC)

Nielsen, Peter
WeBT18.3

Nielsen, Peter
WeBT18.4, FrAT5.5, FrAT11.1, FrBT7.3

Niembro, Joaquina
FrCT17.4

Niewiadomski, Przemysław
ThBT7.5

Nikitina, Marina
WeBT11.2

Nikulina, Irina
WeBT4.2

Nisi, Davide
FrCT10.3

Niu, Yimeng
ThAT15.2

Nobili, Majcol
WeAT18.2

Nogueira, Monica
FrDT2.1

Norre, Sylvie
ThAT6.1

Nounou, Hajar
ThAT18.4

Nourelfath, Mustapha
WeBT9.2

Nouriani, Ali
ThAT10.5

Nurminen, Jukka K.
ThBT5.4

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Oberegger, Bernhard
ThAT16.4

Ocampo-Martinez, Carlos
WeAT7.4, WeBT10.5

Oelze, Nelly
WeAT18 (CC), WeAT18.3

Ogorodnikov, Yuri
FrCT11.1

Okano, Marcelo
FrAT3.3

Okhtilev, Mikhail
FrCT10.2

Olcay, Ertug
WeBT11.3

Oliva Olvera, Manuel
ThBT12.1

Oliveira, Giovana
FrAT3.3

Oluyisola, Olumide Emmanuel
ThAT18.2, ThBT17.4

Oroszi, Andreas
WeP3L.1

Ortega, Gloria
ThBT8.2

Ostanin, Mikhail
WeBT13.2

Otto, Boris
FrDT7.4

Ouazene, Yassine
WeAT6 (CC), WeAT6.1,
WeBT2 (CC), WeBT2.1

Ouzrout, Yacine
FrAT11.5

Owusu, Gilbert
ThBT18.5

Ozkan, Omer
FrAT17 (C), FrAT17.5

Oztek, M. Yaman
FrAT9.4

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Паращук, Игорь
ThAT4.2

Pacchini, Athos Paulo Tadeu
FrAT3.1

Pacifici, Andrea
WeBT5.4

Pal, Deepak
ThAT10.2

Palma, Fanny
FrCT17.3

Pan, Quan
ThBT11.2

Pan, Shenle
ThBT14 (CC), ThBT14.3,
ThBT14.4

Pankratov, Alexandr
FrAT13.2, FrDT3.1

Pannek, Juergen
ThBT17.3, FrAT10.1

Panten, Niklas
WeAT7.4

Panyukov, Anatoly
FrCT11.2

Papakostas, Nikolaos
FrAT1.2

Paredes-Belmar, Germán
ThBT15.5

Parihar, Manendra Singh
FrAT14.4

Park, Ji Soo
ThBT14 (C), ThBT14.2

Pashkevich, Anatol
WeAT13.4, WeBT13.3

Passath, Theresa
WeBT9 (C), WeBT9.4

Pastore, Erica
WeBT7 (C), WeBT7.5,
ThBT16.1

Patalas-Maliszewska, Justyna
WeBT18.5

Paulina, Golinska-Dawson
ThBT18 (C), ThBT18.2

Pavlov, Alexander
ThAT17.3

Pavlov, Boris
WeAT2.3

Pavlov, Dmitry
ThAT17.3

Pawlewski, Pawel
ThBT18 (CC), ThBT18.3

Pecora, Jose Eduardo
FrCT5.3

Peffer, Therese
FrBT14.4

Peguet, Lucie
FrAT11.5

Pelaez, Gustavo
WeBT3.4

Pelagagge, Pacifico Marcello
WeBT17.5

Pellerin, Robert
WeAT14.1, FrBT5.1

Peng, Qiyun
FrBT16.4

Pepper, Matthew
FrAT17.1

Pereira, Carlos Eduardo
ThAT1.5

Pérez Rodríguez, María Amor
FrBT14.2

Perico, Paolo
WeAT3.2

Perlman, Yael
ThBT6 (CC), ThBT6.5

Persona, Alessandro
FrDT17.3

Perzylo, Alexander Clifford
ThBT12.2

Pesch, Erwin
ThBT5.3, FrAT19.1, FrCT19
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Petunin, Alexander
FrBT11 (CC), FrBT11.4,
FrCT11.4

Pilati, Francesco
ThBT9 (CC), ThBT9.1

Pinar-Perez, Jesus
WeBT11.4

Pinto, Roberto
WeBT15.3, FrBT6.1

Pirani, Massimiliano
FrCT6.1

Pirka, Benjamin
ThBT13.3

Pirola, Fabiana
WeBT15.3, FrBT6.1

Pitiot, Paul
WeAT15.2

Plitt, Jana
FrBT7.1

Pocachard, Jerome
WeAT3.4

Poenicke, Olaf
FrCT1.2

Poler, Raul
FrAT17.2, FrDT17.5

Poletikin, Alexey
ThAT4.3

Polishchuk, Efim
FrBT11.4

Ponce, Pedro
FrBT14 (CC), FrBT14.1,
FrBT14.2, FrBT14.3, FrBT14.4

Ponte, Borja
FrBT10.3

Popkov, Timofey
WeBT19 (C), WeBT19.1,
FrBT19.2

Popov, Dmitry
WeAT13.2

Poss, Michael
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Complex adaptive systems and emergent synthesis in manufacturing FrCT6.1, ThAT4.4, ThBT16.2, WeAT10.2, WeBT4.5

D

Decision Support System FrAT1.2, FrAT14.2, FrAT14.5, FrAT5.3, FrAT5.5, FrAT9.1, FrAT9.2, FrAT9.4, FrBT10.2, FrBT11.1, FrBT15.2, FrBT16.2, FrBT16.3, FrBT3.2, FrBT3.3, FrBT6.4, FrBT8.3, FrBT8.4, FrCT1.2, FrCT15.1, FrCT15.3, FrCT15.4, FrCT16.2, FrCT16.3, FrCT7.1, FrCT7.4, FrCT8.1, FrCT9.4, FrDT17.3, FrDT2.2, FrDT5.3, ThAT1.1, ThAT1.2, ThAT1.4, ThAT11.4, ThAT12.3, ThAT14.1, ThAT14.5, ThAT15.3, ThAT16.1, ThAT16.2, ThAT17.4, ThAT18.4, ThAT3.5, ThAT4.2, ThAT7.3, ThAT9.2, ThAT9.3, ThBT1.2, ThBT10.1, ThBT10.3, ThBT12.4, ThBT14.2, ThBT15.4, ThBT16.3, ThBT17.3, ThBT18.5, ThBT2.2, ThBT6.3, ThBT7.2, WeAT14.3, WeAT15.4, WeAT7.4, WeAT8.4, WeBT1.3, WeBT11.2, WeBT12.1, WeBT12.2, WeBT14.2, WeBT14.4, WeBT15.3, WeBT18.2, WeBT18.3, WeBT18.4, WeBT18.5, WeBT2.4, WeBT3.1, WeBT9.1

Decision-support for human operators FrAT6.1, FrAT6.3, FrAT9.1, FrBT13.2, FrBT3.3, FrBT6.1, FrBT6.3, FrCT6.2, FrDT1.1, FrDT1.2, ThAT5.3, ThBT10.5, ThBT16.5, ThBT7.2, ThBT7.3, ThBT9.1, WeAT11.3, WeAT12.3, WeAT14.2, WeAT15.1, WeAT16.2, WeAT2.2, WeAT8.4, WeBT18.5, WeBT5.3

Design and reconfiguration of manufacturing systems FrAT13.4, FrAT5.2, FrAT6.2, FrAT7.3, FrAT8.1, FrAT8.2, FrBT12.1, FrBT3.4, FrBT9.4, FrCT10.4, FrCT17.4, FrCT6.2, FrCT6.3, FrCT7.2, FrDT2.3, FrDT3.3, FrDT3.4, FrDT7.2, ThAT1.5, ThAT10.2, ThAT4.3, ThAT6.1, ThAT7.5, ThBT1.1, ThBT1.4, ThBT10.3, ThBT12.1, ThBT12.2, ThBT12.5, ThBT13.3, ThBT18.3, ThBT2.1, ThBT2.3, ThBT2.4, ThBT5.2, ThBT6.2, ThBT7.5, ThBT9.2, WeAT15.3, WeAT5.3, WeBT18.4, WeBT2.2, WeBT2.4, WeBT2.5, WeBT3.3, WeBT7.3, WeBT7.5

Discrete event systems in manufacturing FrAT1.3, FrBT16.1, FrBT8.1, FrCT10.3, ThAT7.4, ThBT11.1, ThBT6.4, ThBT7.3

Distributed systems and multi-agents technologies	FrDT3.4, ThAT10.2, WeAT1.3, WeAT6.4, WeBT11.2, WeBT11.3, WeBT9.3
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E

Enterprise modelling, integration and networking	FrAT14.3, FrAT3.4, FrBT12.2, FrBT171, FrCT3.2, ThAT1.5, ThAT12.1, ThAT12.5, ThAT14.5, ThAT15.2, ThAT15.3, ThAT3.3, ThBT12.1, ThBT12.5, ThBT2.3, WeAT14.4, WeAT2.3, WeBT17.4, WeBT3.1
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F

Facility planning and materials handling	FrAT3.2, FrAT7.3, FrBT1.4, FrBT10.1, FrBT6.3, FrBT7.3, FrCT8.1, ThAT3.4, ThAT7.2, ThAT8.5, ThBT13.2, ThBT13.3, ThBT2.4, ThBT5.2, WeBT11.4, WeBT14.1, WeBT17.5, WeBT6.4
Fuzzy logic control	FrAT9.1, FrBT13.3, FrBT13.4, FrBT14.1, FrDT7.3, ThAT12.2, WeBT11.3, WeBT6.1

H

Heuristic and Metaheuristics	FrAT1.5, FrAT7.5, FrAT8.4, FrAT8.5, FrBT10.1, FrBT11.3, FrBT11.4, FrBT16.3, FrBT7.3, FrBT8.3, FrCT2.2, FrCT5.2, FrCT8.2, FrCT8.4, FrCT9.1, FrCT9.2, FrDT7.2, FrDT7.3, ThAT11.3, ThAT11.5, ThAT2.3, ThAT2.5, ThAT5.1, ThAT5.2, ThAT5.3, ThAT5.4, ThBT11.2, ThBT14.1, ThBT15.1, ThBT2.4, ThBT5.1, ThBT5.2, ThBT8.4, ThBT9.1, WeAT10.1, WeAT12.1, WeAT16.1, WeAT2.4, WeAT5.4, WeAT6.1, WeAT6.3, WeAT6.4, WeBT11.1, WeBT2.3, WeBT5.5, WeBT6.3
Human-Automation Integration	FrAT13.1, FrAT6.1, FrAT6.3, FrAT6.4, FrAT6.5, FrBT6.1, FrBT6.2, FrCT6.1, FrCT6.3, ThAT3.1, ThBT13.4, ThBT13.5, ThBT9.4, ThBT9.5, WeAT13.3, WeAT3.1, WeAT3.4, WeBT4.3

I

Industrial and applied mathematics for production	FrAT1.4, FrAT13.4, FrAT15.5, FrCT11.2, FrCT11.3, FrCT11.4, FrDT7.3, ThAT13.5, ThAT7.1, ThAT8.2, ThAT9.1, WeAT11.4, WeAT13.1, WeAT2.2, WeAT4.2, WeAT5.2, WeAT9.2, WeAT9.4, WeBT13.1, WeBT14.3, WeBT4.3, WeBT6.2, WeBT7.2, WeBT8.5
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Industry 4.0	FrAT1.1, FrAT1.5, FrAT10.2, FrAT10.3, FrAT13.1, FrAT13.3, FrAT14.4, FrAT15.3, FrAT17.4, FrAT2.1, FrAT2.4, FrAT2.5, FrAT3.1, FrAT3.2, FrAT3.5, FrAT6.3, FrAT6.5, FrAT7.4, FrAT9.4, FrBT1.3, FrBT12.1, FrBT12.2, FrBT12.3, FrBT12.4, FrBT12.5, FrBT13.1, FrBT14.3, FrBT14.4, FrBT2.1, FrBT2.2, FrBT3.1, FrBT3.4, FrBT5.1, FrBT5.3, FrBT5.4, FrBT6.1, FrBT6.2, FrBT7.4, FrCT1.2, FrCT1.4, FrCT15.1, FrCT3.1, FrCT3.2, FrCT3.3, FrCT6.1, FrDT1.4, FrDT2.1, FrDT3.2, FrDT3.3, FrDT3.4, FrDT5.3, ThAT1.2, ThAT1.4, ThAT1.5, ThAT10.1, ThAT12.2, ThAT12.4, ThAT14.1, ThAT14.3, ThAT14.4, ThAT15.2, ThAT15.3, ThAT15.4, ThAT3.1, ThAT3.2, ThAT3.4, ThAT3.5, ThAT7.4, ThAT9.2, ThBT1.1, ThBT1.3, ThBT10.1, ThBT10.3, ThBT12.2, ThBT12.3, ThBT12.4, ThBT12.5, ThBT13.4, ThBT15.4, ThBT17.2, ThBT17.4, ThBT2.3, ThBT7.1, ThBT7.5, ThBT9.2, ThBT9.4, ThBT9.5, WeAT1.1, WeAT11.1, WeAT14.4, WeAT16.3, WeAT17.4, WeAT3.1, WeAT3.3, WeAT3.4, WeAT4.4, WeAT9.1, WeAT9.2, WeBT1.2, WeBT10.2, WeBT10.5, WeBT12.1, WeBT14.1, WeBT14.3, WeBT14.5, WeBT15.3, WeBT15.4, WeBT17.2, WeBT18.1, WeBT2.4, WeBT3.1, WeBT3.2, WeBT3.3, WeBT5.1, WeBT7.5, WeBT8.1, WeBT9.1
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Inventory control, production planning and scheduling	FrAT11.2, FrAT11.5, FrAT8.3, FrAT8.4, FrAT9.5, FrBT1.3, FrBT10.3, FrBT10.4, FrBT12.5, FrBT5.3, FrBT7.2, FrCT10.1, FrCT5.3, FrCT8.4, FrCT9.3, FrDT7.1, ThAT1.4, ThAT10.4, ThAT16.5, ThAT17.2, ThAT18.5, ThAT8.1, ThAT8.3, ThBT1.3, ThBT1.4, ThBT15.3, ThBT16.1, ThBT18.2, ThBT5.4, ThBT6.3, ThBT6.5, ThBT8.1, ThBT8.2, ThBT8.3, ThBT8.4, ThBT8.5, WeAT12.2, WeAT13.3, WeAT2.1, WeAT2.4, WeAT4.4, WeAT5.2, WeAT6.1, WeAT7.4, WeAT9.2, WeBT11.2, WeBT15.2, WeBT16.1, WeBT6.1, WeBT6.3, WeBT6.5, WeBT7.5, WeBT8.3
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K

Knowledge management in production	FrAT3.1, FrBT14.2, ThAT12.2, ThAT12.4, ThAT12.5, ThAT14.5, ThAT7.2, ThBT12.3, ThBT2.1, ThBT9.5, WeAT14.1, WeAT15.1, WeAT15.3, WeAT15.4, WeAT18.3, WeAT2.3, WeBT12.4, WeBT18.5, WeBT4.2
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L

Line Design and Balancing	FrAT6.2, FrAT8.2, FrCT6.2, FrCT7.2, FrDT2.3, FrDT2.4, ThAT6.2, ThAT6.3, ThAT6.4, ThBT9.1, ThBT9.2, WeAT11.3, WeAT12.3, WeAT3.4, WeBT2.2
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M

Modeling, simulation, control and monitoring of manufacturing processes	FrAT1.3, FrAT10.1, FrAT10.2, FrAT10.4, FrAT10.5, FrAT13.4, FrAT2.1, FrAT2.2, FrAT2.3, FrAT2.4, FrAT3.1, FrAT6.5, FrAT7.2, FrBT1.1, FrBT1.4, FrBT11.4, FrBT13.1, FrBT17.4, FrBT9.4, FrCT1.1, FrCT10.3, FrCT11.2, FrCT11.4, FrCT2.1, FrCT2.3, FrCT5.3, FrCT7.2, FrDT3.2, FrDT5.1, ThAT10.2, ThAT10.4, ThAT10.5, ThAT13.1, ThAT13.2, ThAT13.4, ThAT14.3, ThAT16.1, ThAT17.1, ThAT2.1, ThAT4.1, ThAT4.2, ThAT5.2, ThAT6.4, ThAT7.1, ThBT1.1, ThBT10.2, ThBT10.4, ThBT11.1, ThBT12.1, ThBT14.5, ThBT15.2, ThBT18.3, ThBT5.4, ThBT6.4, ThBT7.1, ThBT7.2, ThBT7.3, WeAT1.2, WeAT13.1, WeAT2.2, WeAT2.3, WeAT3.3, WeAT4.1, WeAT4.3, WeAT4.4, WeAT7.3, WeAT9.1, WeBT1.5, WeBT10.2, WeBT10.3, WeBT11.3, WeBT12.1, WeBT14.1, WeBT17.2, WeBT3.4, WeBT4.1, WeBT4.4, WeBT4.5, WeBT6.4, WeBT8.4
Modelling Supply Chain Dynamics	FrAT10.5, FrAT11.2, FrAT16.3, FrAT17.3, FrBT10.3, FrBT10.4, FrBT16.4, FrCT17.1, FrCT17.2, FrCT17.3, FrCT8.3, ThAT17.5, ThAT18.3, ThAT6.5, ThAT8.5, ThBT1.2, ThBT11.5, ThBT6.1, WeBT10.3, WeBT14.2
Monitoring, diagnosis and maintenance of manufacturing systems	FrAT14.4, FrAT2.5, FrAT8.1, FrBT13.2, FrBT3.2, FrBT3.3, FrBT8.1, FrBT9.4, FrCT2.1, FrCT3.1, FrCT7.4, FrDT2.1, ThAT1.3, ThAT14.3, ThAT3.3, ThAT4.4, ThAT7.4, ThAT9.2, ThAT9.3, ThAT9.4, ThBT10.1, ThBT10.4, ThBT4.1, ThBT4.2, ThBT4.3, WeAT12.2, WeAT9.1, WeAT9.3, WeBT15.3, WeBT15.4, WeBT9.1, WeBT9.3

O

Operations Research	FrAT11.1, FrAT11.4, FrAT11.5, FrAT13.2, FrAT13.5, FrAT14.1, FrAT14.5, FrAT15.1, FrAT16.3, FrAT17.1, FrAT5.1, FrAT6.1, FrAT9.5, FrBT10.1, FrBT11.1, FrBT11.2, FrBT2.4, FrBT5.4, FrBT8.2, FrBT9.3, FrCT10.4, FrCT11.1, FrCT15.2, FrCT15.3, FrCT15.4, FrCT5.1, FrCT8.2, FrCT8.4, FrCT9.1, FrCT9.3, FrDT17.1, FrDT2.3, FrDT3.1, FrDT5.4, FrDT7.2, FrDT7.4, ThAT11.1, ThAT11.2, ThAT11.3, ThAT11.5, ThAT16.4, ThAT2.3, ThAT2.4, ThAT2.5, ThAT5.4, ThAT6.1, ThAT7.3, ThAT8.4, ThAT9.1, ThBT1.5, ThBT11.4, ThBT13.1, ThBT14.4, ThBT15.1, ThBT15.5, ThBT16.4, ThBT5.5, ThBT6.2, ThBT6.4, ThBT8.2, ThBT8.5, WeAT11.1, WeAT11.2, WeAT12.3, WeAT16.1, WeAT3.2, WeAT5.1, WeAT5.3, WeAT6.2, WeAT6.3, WeAT7.1, WeAT8.2, WeAT8.4, WeBT10.1, WeBT11.1, WeBT11.5, WeBT12.3, WeBT15.2, WeBT17.1, WeBT2.1, WeBT5.2, WeBT5.3, WeBT5.4, WeBT6.1, WeBT6.2, WeBT6.5, WeBT7.2, WeBT8.3, WeBT8.5, WeBT9.2
Optimisation Methods and Simulation Tools	FrAT13.5, FrAT17.5, FrAT2.2, FrAT2.3, FrAT5.1, FrAT5.2, FrAT5.3, FrAT5.5, FrAT7.1, FrAT7.3, FrAT8.2, FrBT1.3, FrBT10.2, FrBT16.1, FrBT17.2, FrBT8.3, FrCT10.4, FrCT11.1, FrCT11.3, FrCT15.3, FrCT2.3, FrCT7.1, FrDT1.3, FrDT5.2, ThAT13.1, ThAT13.3, ThAT16.4, ThAT6.1, ThAT6.3, ThBT1.5, ThBT11.3, ThBT11.4, ThBT13.1, ThBT14.3, ThBT5.4, ThBT5.5, ThBT6.2, WeAT10.3, WeAT10.4, WeAT15.2, WeAT5.1, WeBT10.4, WeBT12.3, WeBT13.5, WeBT16.2, WeBT2.1, WeBT2.5, WeBT3.4, WeBT6.2, WeBT6.4, WeBT8.4

Optimization and Control	FrAT1.4, FrAT10.1, FrAT10.2, FrAT10.4, FrAT10.5, FrAT11.1, FrAT11.5, FrAT16.5, FrAT17.4, FrAT2.5, FrBT11.1, FrBT11.2, FrBT11.4, FrBT14.1, FrBT7.3, FrCT10.2, FrCT11.2, FrCT11.3, FrCT11.4, FrCT2.4, FrCT8.2, FrDT5.2, FrDT5.4, ThAT10.3, ThAT10.4, ThAT10.5, ThAT11.1, ThAT13.2, ThAT13.3, ThAT13.4, ThAT13.5, ThAT3.5, ThAT4.1, ThAT5.1, ThAT5.2, ThBT11.1, ThBT11.3, ThBT13.1, ThBT15.1, ThBT8.2, WeAT10.1, WeAT10.2, WeAT10.3, WeAT10.4, WeAT13.4, WeAT17.4, WeAT4.2, WeBT1.4, WeBT1.5, WeBT10.1, WeBT10.5, WeBT12.3, WeBT13.4, WeBT13.5, WeBT18.4, WeBT2.3, WeBT4.1, WeBT4.4, WeBT4.5, WeBT7.4, WeBT9.4
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P

Pricing and outsourcing	FrAT15.2, FrAT15.5, FrAT16.4, FrCT2.4, ThAT11.4, ThBT14.4, WeAT15.1, WeAT16.4, WeAT2.4, WeAT6.1
Probabilistic & statistical models in industrial plant control	FrAT1.4, FrAT10.3, FrAT7.4, FrBT1.1, FrBT16.2, FrBT2.1, FrCT7.4, FrDT1.2, FrDT17.1, ThAT18.1, ThAT6.4, ThAT7.1, ThAT8.2, ThAT9.1, ThBT8.4, WeAT2.1, WeAT4.2, WeAT9.4, WeBT11.5, WeBT14.3, WeBT4.3, WeBT8.4
Production Control, Control Systems	FrAT10.1, FrAT10.4, FrAT11.2, FrAT15.4, FrAT17.3, FrAT2.4, FrAT3.4, FrAT7.1, FrAT7.2, FrBT1.1, FrBT1.4, FrBT10.4, FrBT13.1, FrBT16.3, FrBT5.2, FrBT5.3, FrBT6.4, FrCT10.1, FrCT2.3, FrDT5.1, FrDT7.1, ThAT13.5, ThAT2.2, ThAT3.4, ThBT13.5, ThBT5.3, ThBT7.1, ThBT7.4, ThBT9.3, WeAT10.3, WeAT3.1, WeAT3.2, WeBT10.2, WeBT10.3, WeBT13.4, WeBT4.4
Production planning and scheduling	FrAT13.5, FrAT14.1, FrAT15.4, FrAT5.2, FrAT5.4, FrAT7.2, FrAT7.5, FrAT8.1, FrAT8.4, FrBT14.2, FrBT16.1, FrBT2.1, FrBT2.2, FrBT2.3, FrBT5.1, FrBT5.4, FrBT6.4, FrBT7.1, FrBT8.4, FrCT10.1, FrCT2.2, FrCT5.1, FrCT5.2, FrCT9.4, FrDT1.2, FrDT5.1, FrDT5.2, FrDT7.1, FrDT7.4, ThAT11.1, ThAT15.1, ThAT16.2, ThAT18.1, ThAT2.1, ThAT2.2, ThAT2.4, ThAT5.3, ThAT5.5, ThAT7.3, ThBT11.2, ThBT11.3, ThBT15.2, ThBT16.5, ThBT2.1, ThBT2.2, ThBT5.1, ThBT5.3, ThBT5.5, WeAT11.1, WeAT11.2, WeAT11.3, WeAT14.1, WeAT14.2, WeAT3.2, WeAT3.3, WeAT5.3, WeAT5.4, WeAT6.2, WeAT6.3, WeAT7.3, WeBT1.2, WeBT10.4, WeBT16.2, WeBT16.3, WeBT16.5, WeBT2.3, WeBT2.5, WeBT5.1, WeBT5.4, WeBT5.5, WeBT6.5, WeBT9.2

Q

Quality management	FrAT14.5, FrAT7.1, FrAT7.4, FrBT15.1, FrDT2.2, ThAT1.3, ThAT15.4, ThAT16.1, ThAT4.2, ThAT4.3, ThAT7.2, ThBT10.2, ThBT4.1, ThBT4.2, ThBT7.4, WeAT7.1, WeAT7.2, WeBT7.2
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R

Risk Management	FrAT1.1, FrAT1.2, FrAT17.1, FrAT17.2, FrAT17.4, FrBT17.1, FrBT17.2, FrBT17.3, FrBT2.4, FrCT17.1, FrCT17.2, FrCT17.3, FrCT3.1, FrDT17.2, FrDT17.3, FrDT17.5, ThAT17.1, ThAT17.4, ThAT17.5, ThAT18.2, ThAT2.1, ThAT4.1, ThAT4.3, ThAT9.3, ThBT17.1, ThBT17.3, ThBT17.5, ThBT4.1, ThBT4.2, WeAT1.2, WeAT17.3, WeAT6.2, WeAT9.4, WeBT1.4, WeBT12.2, WeBT14.5, WeBT17.3, WeBT17.5, WeBT5.2, WeBT9.4
Robotics in manufacturing	FrAT13.1, FrAT13.3, FrAT2.1, FrAT2.2, FrAT6.2, FrCT3.3, FrCT6.3, ThAT10.3, ThAT13.1, ThAT13.2, ThAT13.3, ThBT13.3, ThBT13.4, ThBT13.5, ThBT4.3, ThBT9.4, WeAT12.2, WeAT13.1, WeAT13.2, WeAT13.3, WeBT13.1, WeBT13.2, WeBT13.3, WeBT13.4, WeBT13.5, WeBT14.5
Robustness analysis	FrBT17.4, FrCT10.2, FrDT2.2, ThAT10.5, ThAT14.4, ThAT2.2, ThAT6.3, ThBT14.1, WeBT8.3

S

Scheduling	FrAT11.1, FrAT5.1, FrAT5.3, FrAT5.4, FrAT5.5, FrBT11.3, FrBT2.3, FrBT2.4, FrBT5.1, FrBT5.2, FrCT2.2, FrCT5.1, FrCT5.2, FrCT5.3, FrDT5.3, FrDT5.4, ThAT16.5, ThAT18.1, ThAT2.3, ThAT2.5, ThAT5.1, ThAT5.4, ThBT1.3, ThBT14.1, ThBT14.5, ThBT2.2, ThBT5.1, ThBT5.3, WeAT11.4, WeAT12.1, WeAT2.1, WeAT5.1, WeAT5.2, WeAT5.4, WeAT6.4, WeBT1.4, WeBT10.4, WeBT16.3, WeBT18.2, WeBT18.3, WeBT2.1, WeBT5.3, WeBT5.4, WeBT5.5, WeBT6.3
Simulation technologies	FrAT14.2, FrAT17.1, FrAT3.2, FrBT13.4, FrBT14.1, FrBT17.3, FrCT1.4, ThAT10.3, ThAT16.3, ThAT8.5, ThBT18.3, ThBT6.1, WeAT16.3, WeAT17.2, WeBT18.1, WeBT3.3, WeBT4.1
Smart manufacturing systems	FrAT1.1, FrAT13.3, FrAT14.1, FrAT14.4, FrAT15.3, FrAT2.3, FrAT3.4, FrBT3.5, FrBT13.2, FrBT14.2, FrBT14.4, FrBT2.2, FrBT2.3, FrBT3.2, FrBT5.2, FrBT7.4, FrCT15.1, FrCT3.2, FrDT2.1, ThAT10.1, ThAT11.4, ThAT12.4, ThAT15.2, ThAT3.1, ThAT3.3, ThAT4.4, ThBT10.2, ThBT10.4, ThBT12.2, ThBT12.3, ThBT12.4, ThBT14.5, ThBT17.4, ThBT4.3, ThBT7.4, ThBT9.3, WeAT11.4, WeAT14.4, WeAT15.3, WeAT17.4, WeBT1.1, WeBT1.2, WeBT5.1, WeBT8.1, WeBT9.3, WeBT9.4
Smart transportation	FrCT1.3, FrCT10.2, FrCT7.3, FrCT8.3, ThAT12.3, ThAT14.2, WeBT18.3

Supply Chain Management

FrAT1.5, FrAT10.3, FrAT11.3, FrAT11.4, FrAT15.1, FrAT15.3, FrAT15.4, FrAT15.5, FrAT16.1, FrAT16.2, FrAT16.3, FrAT16.4, FrAT16.5, FrAT17.3, FrAT17.5, FrAT3.3, FrAT9.2, FrAT9.3, FrAT9.5, FrBT1.2, FrBT10.3, FrBT12.1, FrBT12.3, FrBT12.4, FrBT15.2, FrBT15.3, FrBT16.2, FrBT16.4, FrBT7.2, FrBT8.2, FrBT9.3, FrCT17.4, FrCT3.3, FrCT8.3, FrCT9.2, FrCT9.4, FrDT1.1, FrDT1.3, FrDT1.4, FrDT17.2, FrDT17.4, FrDT3.3, ThAT1.1, ThAT1.2, ThAT11.3, ThAT14.2, ThAT15.4, ThAT16.2, ThAT17.1, ThAT17.2, ThAT17.4, ThAT18.2, ThAT18.3, ThAT18.5, ThAT5.5, ThAT6.5, ThAT8.2, ThBT1.5, ThBT10.5, ThBT11.5, ThBT15.2, ThBT16.1, ThBT16.2, ThBT16.3, ThBT16.4, ThBT16.5, ThBT17.2, ThBT17.3, ThBT17.4, ThBT17.5, ThBT18.4, ThBT18.5, ThBT7.5, WeAT1.1, WeAT1.2, WeAT1.3, WeAT1.4, WeAT16.1, WeAT16.2, WeAT16.3, WeAT16.4, WeAT17.1, WeAT17.2, WeAT17.3, WeAT18.1, WeAT18.2, WeAT8.1, WeAT8.3, WeBT11.4, WeBT14.2, WeBT14.4, WeBT15.2, WeBT16.1, WeBT16.2, WeBT16.3, WeBT17.1, WeBT17.3, WeBT7.4, WeBT8.2, WeBT8.5

Supply chains and networks

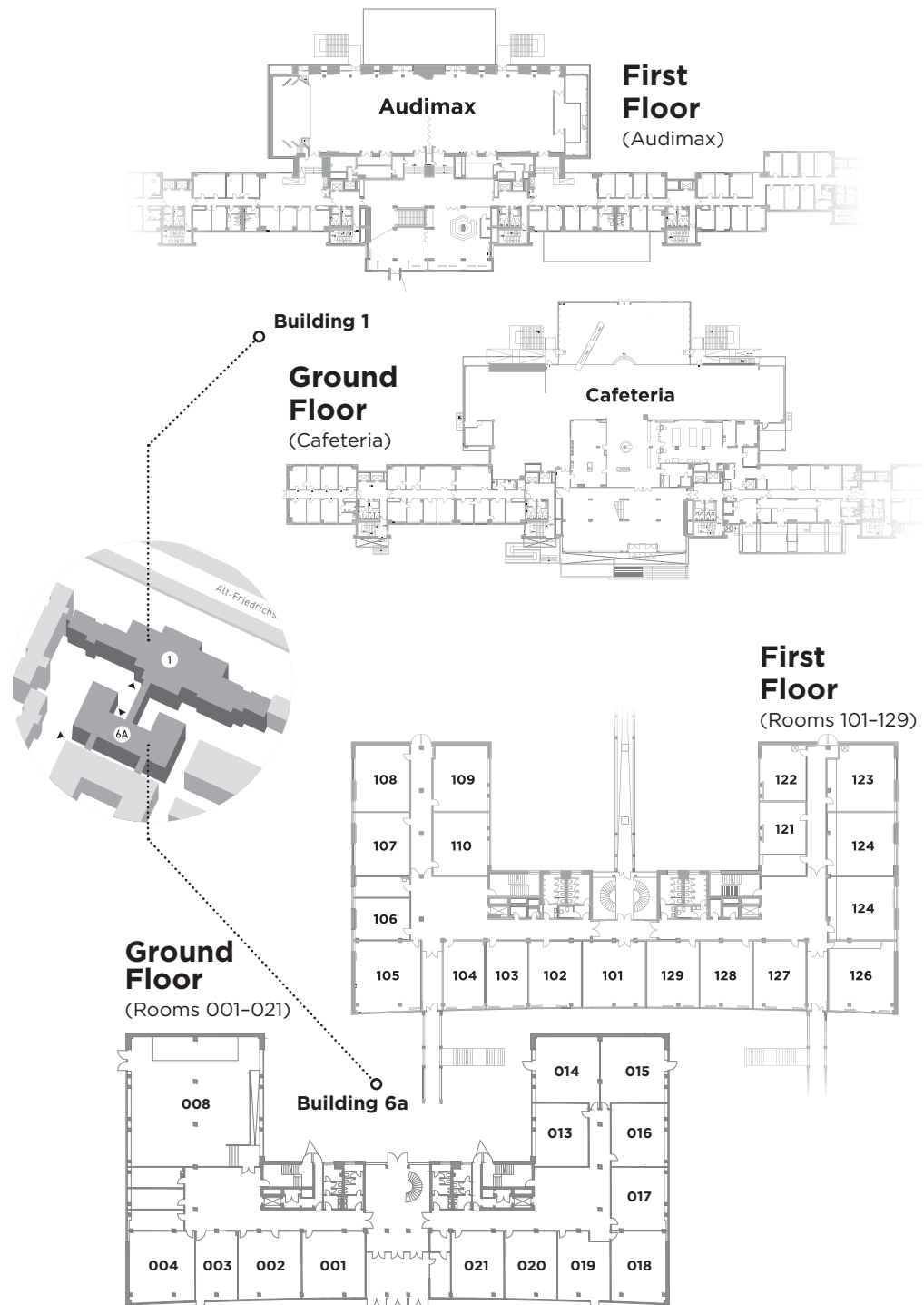
FrAT1.2, FrAT14.2, FrAT16.5, FrAT17.5, FrAT3.3, FrAT8.5, FrBT1.2, FrBT10.2, FrBT15.2, FrBT15.3, FrBT16.4, FrBT17.2, FrBT17.3, FrBT17.4, FrBT7.2, FrBT8.1, FrBT8.2, FrCT1.2, FrCT1.3, FrCT17.1, FrCT17.2, FrCT17.3, FrCT9.2, FrDT1.1, FrDT1.3, FrDT1.4, FrDT17.1, FrDT17.2, FrDT17.3, FrDT17.4, FrDT7.4, ThAT11.2, ThAT16.3, ThAT16.5, ThAT17.2, ThAT17.3, ThAT17.5, ThAT18.3, ThAT18.4, ThAT8.3, ThBT1.2, ThBT1.4, ThBT10.5, ThBT14.2, ThBT14.3, ThBT15.5, ThBT16.1, ThBT16.2, ThBT16.3, ThBT16.4, ThBT17.1, ThBT18.4, ThBT18.5, WeAT1.3, WeAT14.2, WeAT18.1, WeAT18.2, WeAT7.4, WeAT8.2, WeAT8.3, WeBT11.4, WeBT15.4, WeBT16.4, WeBT17.1, WeBT17.3, WeBT17.4, WeBT17.5, WeBT5.2

Sustainable Manufacturing

FrAT16.4, FrAT9.2, FrAT9.4, FrBT12.2, FrBT14.4, FrBT3.1, FrBT6.2, FrBT7.4, FrBT9.1, FrBT9.2, FrBT9.3, FrCT16.1, FrCT2.4, ThAT13.4, ThAT15.1, ThAT18.4, ThAT18.5, ThBT18.1, ThBT18.2, ThBT18.4, WeAT12.1, WeAT15.4, WeAT18.1, WeAT18.2, WeAT18.3, WeAT18.4, WeBT12.4, WeBT15.1, WeBT17.2, WeBT3.4, WeBT8.1

T

Transportation Systems	FrAT11.4, FrBT1.2, FrBT11.2, FrBT11.3, FrCT1.3, FrCT11.1, FrCT15.4, FrCT7.3, FrCT8.1, FrCT9.1, FrCT9.3, ThAT11.5, ThAT12.3, ThAT14.2, ThAT18.2, ThAT8.4, ThBT14.3, ThBT14.4, ThBT15.5, WeAT10.2, WeBT1.3, WeBT18.1, WeBT18.2, WeBT7.4
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From Supply Chain Processes
to **Supply Chain Intelligence**



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