

IFAC Technical Committee (TC) 5.2

Manufacturing Modelling for Management and Control

Meeting, August 29, 2019

Meeting Aug 29, 2019; 3:30-5:00 PM

- Attended by 22 members and 4 guests
- A. Dolgui, D. Ivanov, S. Sethi, F. Yalaoui, N. Bakhtadze, E. Grosse, M. Freitag, E. Frazzon, S. Talluri, W. Chen, C. Glock, D. Battini, Y. Bukchin, J. Sousa, F. Sgarbossa, H. Allaoui, S. Cavallieri, Z. Banaszak, T. Miyamoto, S. Chaabane, L. Monostori, O. Battaia
- Invited guests: R. Pinto, J. Bendul, F. Deschamps, G. Bocewicz – interest to become new TC members

Agenda

- MIM 2019 in Berlin
- 21th IFAC World Congress in Berlin, July 12-17, 2020
- Next 10th MIM conference (MIM 2022) and MIM 2025
- Information on Working groups and CC5
- Other business

MIM 2019

TC 5.2 is main sponsor of MIM 2019

Berlin, August 28-30, 2019

Deliverables at MIM 2019 (preliminary):

Invited and Special Sessions from TC 5.2: **23** out of 52 in total

Open Invited Tracks (at least three sessions): **5** out of 9 in total

Papers in the MIM 2019 program from TC 5.2: **227** out of 540
in total

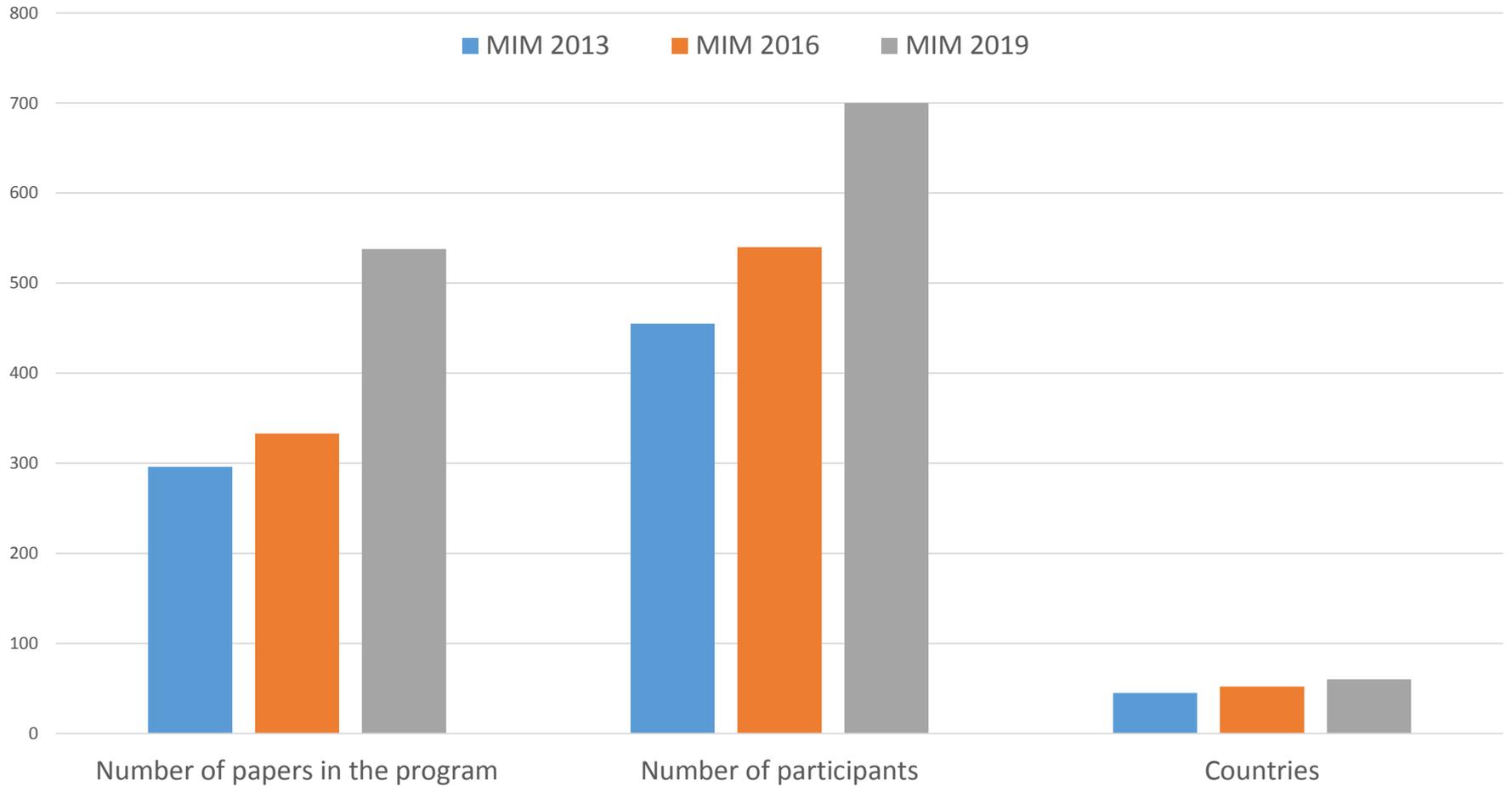
MIM 2019

Scientific Program

Number of submissions	870+ from 69 countries
Number of Track and Session Proposals	100
Accepted submissions	578
Acceptance rate	64.3%
Number of presentations	550+
Number of sessions	130+
Number of authors	1427 from 60 countries
Number of reviewers	700+ reviewers
Number of participants	750+

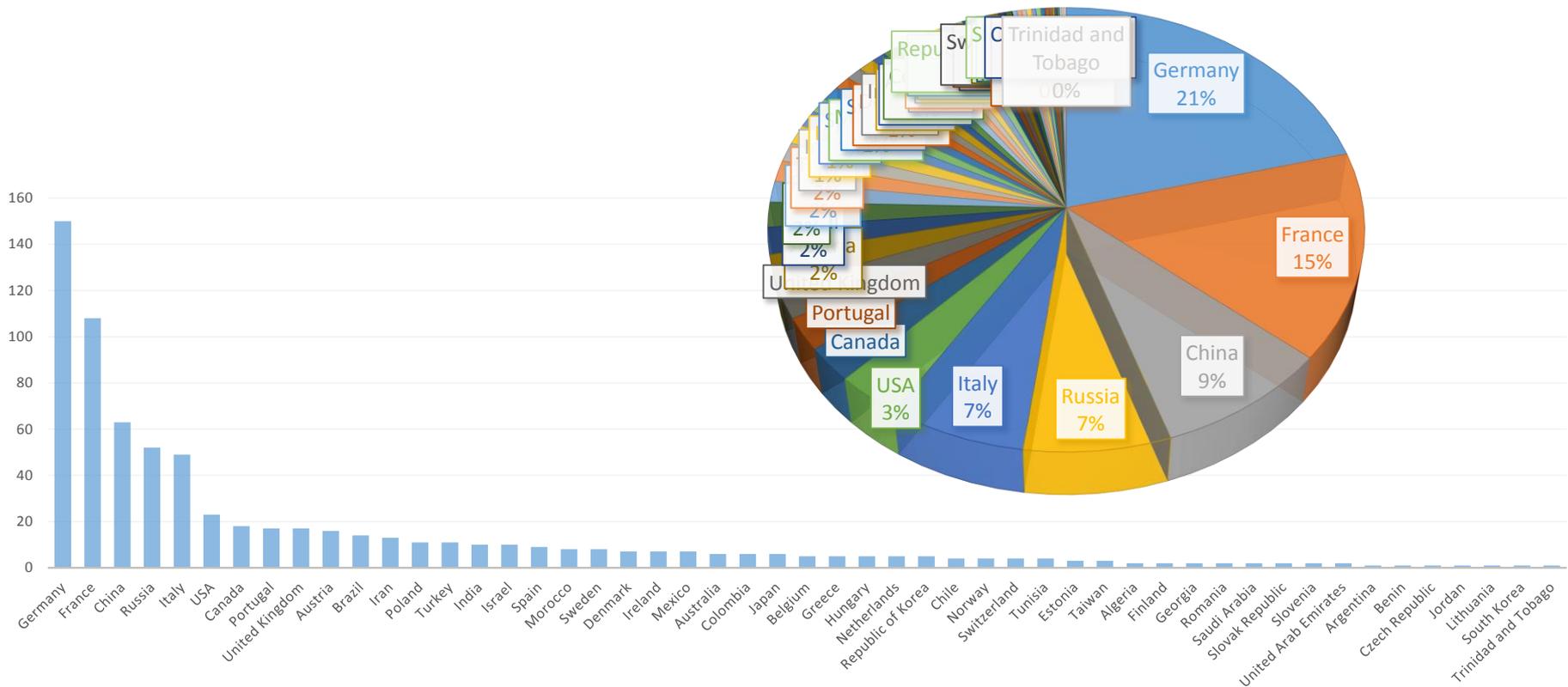
Scientific Program

MIM development in recent years



Participants MIM 2019

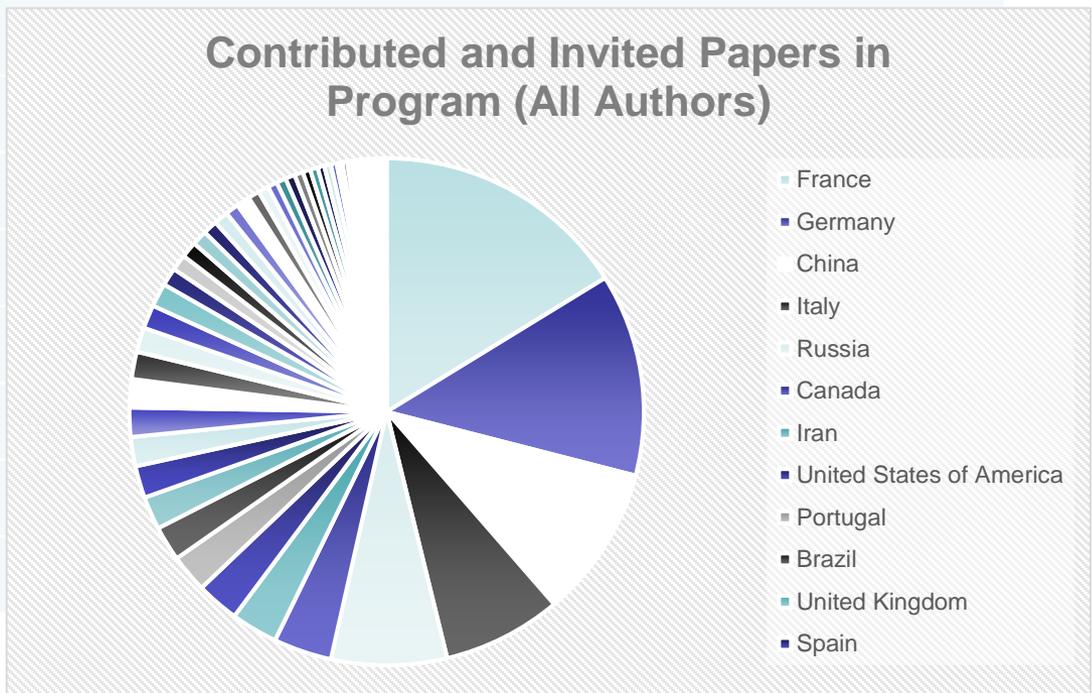
**Number of Participants:
750+ from 51 countries**



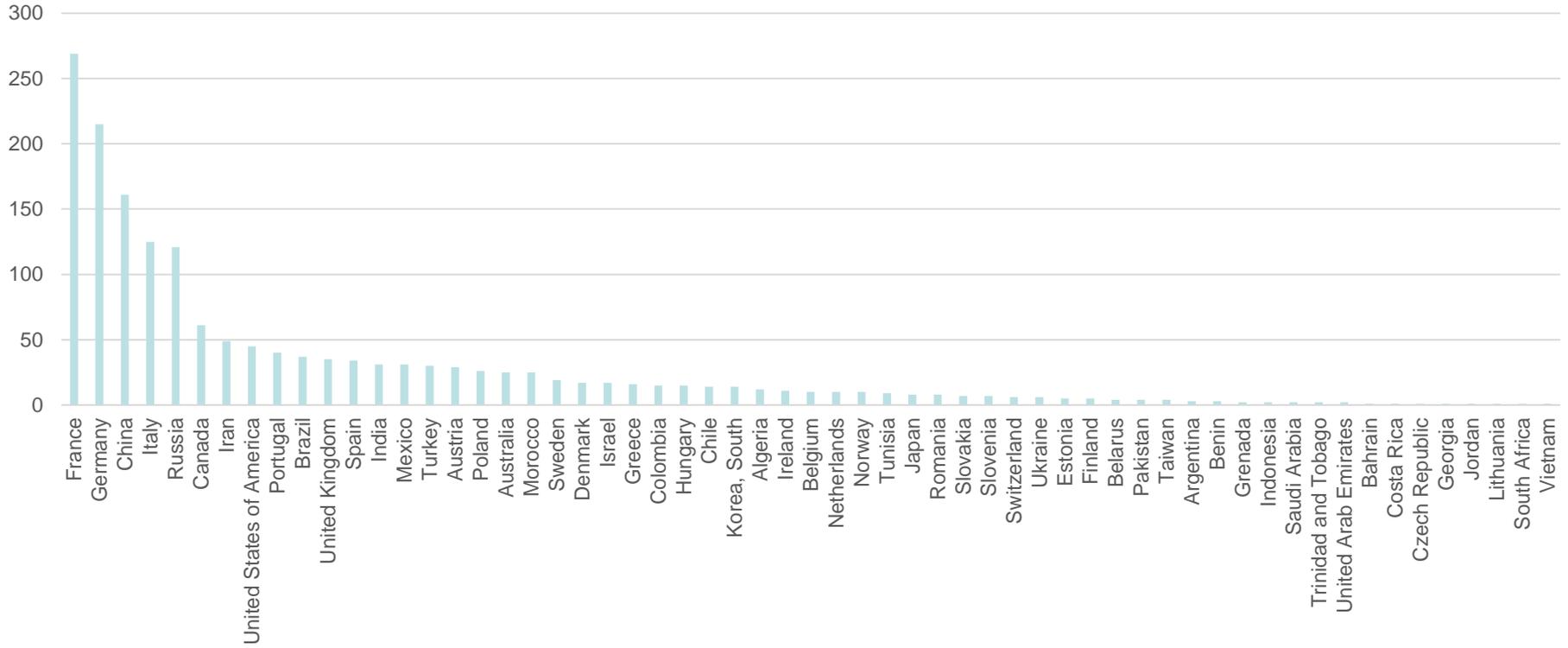
Papers in the program

Contributed and Invited Papers in Program (All Authors)

Country	Count
France	269
Germany	215
China	161
Italy	125
Russia	121
Canada	61
Iran	49
United States of America	45



Papers in the program – 60 countries



Keywords

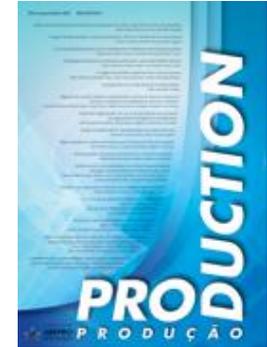
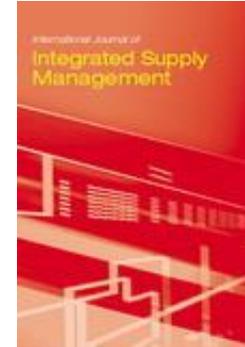
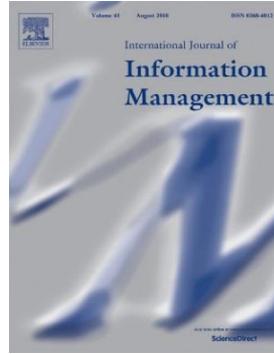
Keyword breakdown

#	Keyword	First keyword count	Second keyword count	Third keyword count	Total count
1	Industry 4.0*	85	47	75	207
2	Supply Chain Management*	79	60	36	175
3	Modeling, simulation, control and monitoring of manufacturing processes*	54	49	45	148
4	Operations Research*	30	59	51	140
5	Supply chains and networks*	73	35	19	127
6	Decision Support System*	38	36	45	119
7	Production planning and scheduling*	50	36	24	110
8	Optimization and Control*	29	32	34	95
9	Smart manufacturing systems*	28	36	27	91
10	Inventory control, production planning and scheduling*	46	27	16	89

Post-Conference Publications

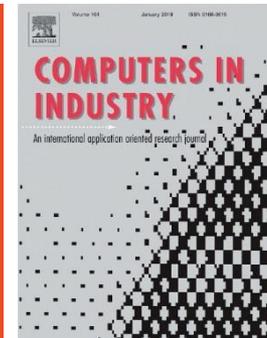


Post-Conference Publications



Many thanks to:

- Prof. Ajay Das (IJISM)
- Prof. Alexandre Dolgui (IJPR)
- Prof. Rameshwar Dubey (IJIM)
- Prof. Enzo Morosini Frazzon (PROD)
- Prof. Bernard Grabot (COMIND)
- Prof. Andrew Kusiak (JIM)
- Prof. Andrea Matta (FSMJ)
- Prof. Erwin Pesch (AOR)
- Prof. Frank Werner (Mathematics)



MIM 2019

WG1 (Dolgui / Ivanov):

Open invited Track: Supply Chain Risk Management

Open invited Track: Supply Network Dynamics and Control

Invited session: The Ripple Effect in Supply Chains

Invited session: Digital Technology, Supply Chain Risks and Uncertainty

Invited session: Scheduling in Industry 4.0 and cloud manufacturing

Invited session: Digital and Data Driven Sustainable Supply Chains

Invited session: Assembly/Disassembly/Machining Line Design and Balancing under Uncertainty

Invited session: Workforce Assignment

Invited session: Inventory control, replenishment and lot-sizing under demand, yield or lead time uncertainties

Invited session: Data-driven Collaboration in Industrial Supply Chains

Invited session: New Perspectives in Supply Chain and Operations Simulation (jointly with WG 6)

Invited session: Emerging Technologies and Intelligent Maintenance Management (jointly with WG 2)

WG2 (Benyoucef / Hernan / Yalaoui):

Invited session: Operations research techniques for complex systems scheduling

Invited session: Emerging Technologies and Intelligent Maintenance Management (jointly with WG 1)

Invited session: Advanced Reconfigurable Manufacturing System (RMS) Applications (jointly with WG 3)

WG3 (Battaïa / Delorme / Gamberini / Tiwari):

Open invited Track: Planning and Scheduling of Manufacturing Processes

Invited session: Advanced Reconfigurable Manufacturing System (RMS) Applications (jointly with WG 2)

WG5 (Wu / Tapiero):

Invited session: Operations Management and Risk Analysis

MIM 2019

WG6 (Freitag / Frazzon):

Open Invited Track: Intelligent Methods and Systems Supporting Supply Chain Decision Making

Invited session: Lean Production in the context of the 4th Industrial Revolution – challenges, implications and opportunities

Invited session (jointly with WG1): New Perspectives in Supply Chain and Operations Simulation

WG7 (Battini / Sgarbossa / Glock / Grosse):

Open Invited Track: Human Factors in Production and Logistics Systems of the Future

Other events outside WG activities:

Open Invited Track: System Identification for Manufacturing Control Applications

Open Invited Track: Industrial robotics: modeling, control and applications

Invited session: Modeling and Data Analytics in Manufacturing and Supply Chain Operations

Invited session: Modeling and Optimization Methods for Energy-Efficient Manufacturing Systems

Invited session: Sustainable Manufacturing Systems Design and Operation

Invited session: Recent advances in integrated maintenance modeling and optimization for manufacturing systems

Invited session: Extremal Routing Problems: Models, Algorithms, Bounds, and Industrial Applications

Special session: SME Digitalization in the era of Industry 4.0

21st IFAC World Congress 2020



[Calls](#) [Program](#) [Events](#) [Organizers](#) [Sponsors](#) [Venue & Travel](#) [Contact](#) 



21st IFAC World Congress 2020

Objectives:

- Each TC organizes 1 Track
- Each WG - at least one session
- Deadlines for Track / Session Proposals and Papers:

15 September 2019

Open invited track proposals

15 October 2019

Invited session proposals

31 October 2019

Draft manuscript submission

MIM 2022

Proposal of Prof. Alexandre Dolgui to organize MIM 2022 in Nantes, France has been approved

MIM 2025

Proposal of Prof. Fabio Sgarbossa to organize MIM 2025 in Trondheim, Norway has been discussed positively. The TC members found this proposal interesting. The final decision about MIM 2025 will be done at MIM 2022.

Roster 2017-2020

Chair:

Prof. Dmitry Ivanov (Germany)

Vice-Chairs:

Prof. Alexandre Dolgui (France)

Prof. Natalia Bakhtadze (Russia)

Prof. Farouk Yalaoui (France)

VC for Education: Prof. Daria Battini (Italy)

VC for Publication Prof. Enzo Morosini Frazzon (Brazil),

VC for Industry Dr. Oleg Gusikhin (Ford, USA)

VC for Social Media Dr. Eric Grosse (Germany)

Members:

86 members from 22 countries

Several colleagues expressed their interest to join the TC in near future and organize new working groups, e.g., R. Pinto (IT), J. Bendul (DE), G. Bocewicz (PL), S. Fosso-Wamba (FR)

TC Roster 2017-2020

Members

Aghezzaf El-Houssaine	Guschinsky Nikolai	Talluri Srinavas
Allaoui Hamid	Gusikhin Oleg	Tang Lixin
Alpan Gülgün	Grubbström Robert W	Tiwari Manoj K.
Askin Ron	Hartl Richard	Vernadat Francois
Bakhtadze Natalia	Hnaien, Faicel	Villa Agostino
Banaszak Zbigniew	Ivanov Dmitry	Werner Frank
Bard Jonathan	Khachay, Michael	Weyrich Michael
Bartholdi John	Koh Lenny	Wu Desheng Dash
Battaia Olga	Kotov Vladimir	Xie Xiaolan
Battini Daria	Kovacs George	Yalaoui Farouk
Benyoucef Lyes	Kovacs Andras	Yano Candace
Bidanda Bopaya	Kovalyov Mikhail Y	Zaremba Marek
Bukchin Yossi	Kusiak Andrew	Zerhouni Noredine
Chaabane, Sondes	Lee Seokcheon	
Chelbi Anis	Levin Genrikh	
Chen, Weiwei	Li Jingshan	
Choi, Tsan-Ming	Machado Jose Mendes	
Chryssolouris George	Meerkov Semyon M"	
Dahane Mohammed	Minzu Viorel	
Delorme Xavier	Miyamoto, Toshiyuki	
Disney Stephen	Monostori Laszlo	
Dolgui Alexandre	Mourtzis Dimitris	
Duta Luminita	Nof Shimon Y.	
Elhafsi Mohsen	Pashkevich Anatol	
Engin Seref Naci	Rezg Nidhal	
Eremeev Anton	Rossi André	
Fay Alexander	Sarin Subhash	
Ferrarini, Luca	Sawik Tadeusz	
Frazzon, Enzo	Sethi Suresh	
Freitag Michael	Sgarbossa Fabio	
Gamberini Rita	Siadat Ali	
Gharbi Ali	Simchi-Levi David	
Glock Christoph	Smutnicki Czeslaw	
Gershwin Stanley B	Sokolov Boris	
Grosse Eric	Sousa Joao	
	Sormaz Dusan	
	Stecke Kathryn E.	

<https://tc.ifac-control.org/5/2/members>

Working groups

WG 1 'Digital Supply Network Engineering and Management',

chairs: Prof. Alexandre Dolgui (France) and Prof. Dmitry Ivanov (Germany)

WG 2 'Advanced multi-criteria applications in manufacturing and logistics',

chairs: Prof. Lyes Benyoucef (France), Dr. Aguirre Hernan (Japan) and Prof. Farouk Yalaoui (France)

WG 3' Design and Control of Reconfigurable Manufacturing Systems',

chairs: Prof. Olga Battaïa, Dr. Xavier Delorme (France), Dr. Rita Gamberini (Italy) and Prof. Manoj Kumar Tiwari (India)

WG 4 'Advances in Integrated Maintenance Management',

chairs: Prof. Anis Chelbi (Tunisia), Prof. Ali Gharbi (Canada) and Prof. Nidhal Rezg (France)

WG 5 'Risk, analytics and operations',

chairs: Prof. Desheng Dash Wu (Sweden) and Prof. Charles S. Tapiero (USA)

WG 6 'Intelligent methods and systems supporting supply chain decision making',

chairs: Prof. Michael Freitag (Germany) and Prof. Enzo Morosini Frazzon (Brazil)

WG 7 'Human factors and ergonomics in industrial and logistic system design and management',

chairs: Prof. Daria Battini (Italy), Prof. Fabio Sgarbossa (Italy), Prof. Christoph Glock (Germany), Dr. Eric Grosse (Germany)

Working groups

Working groups 4 and 5 were not visible at MIM 2019 nor at INCOM 2018 or IFAC WC 2017.

New Working Groups?

Potential topics: Sustainability, Lean, Digital twins, Blockchain, Industry 4.0, Cyber-Physical systems, Cloud manufacturing, Artificial intelligence applications in Manufacturing and Logistics

Chairs??:

Several colleagues expressed their interest to organize new working groups.

CC 5 evolution

CC5 Chair Prof. Panetto suggests to facilitate the CC5 evolution and asks to discuss within TCs: to re-name the CC5: his suggestion is "Smart manufacturing and logistics systems"

TC 5.2 position:

- Preference is to continue with the existing name and to adjust the scope of TCs.

TC 5.2 evolution

CC5 Chair Prof. Panetto suggests to facilitate the CC5 evolution and asks to discuss within TCs: to re-name the TCs and include new topics (WGs) within TCs.

TC 5.2 position:

- Preference is to continue with the existing TC 5.2 name and to adjust the scope (e.g., manufacturing as a service, cyber-physical manufacturing, digital twins, resilience, sustainability, cloud manufacturing, Industry 4.0, human factors); also add new Working Groups and adjust the name and scopes of the existing ones
- Reason: to maintain identity at the level of TC title and to keep the TC updated by adjusting the scope/working groups from time to time according to the TC evolution
- At CC 5 level – the TCs should be self-contained in their singularity and mutually enhance each other in their integrity. Dialog with TC 5.1 to make a more distinctive differentiation in the scope and topics (Two keywords are important for us: Modelling (for design and operations management) and Management. We consider neither real time control at floor shop level (TC 5.1) nor information system modelling and interoperability (TC 5.3). The keyword control is common for all IFAC. The word manufacturing is common for all TCs of our CC.
- If we should change the name (e.g., all other IFAC TCs change their names), possible options could be, but not limited to: Operations Modeling of Management and Control; Management and Control of Operations and Supply Networks; Production Modelling, Management and Control

Other business

New book project from TC 5.2:



Springer's International Series in Operations Research and Management Science

Call for Chapters in the **Scheduling in Cloud Manufacturing and Industry 4.0**

Editors

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Prof. Dr. habil. Dmitry Ivanov
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Prof. Dr. habil. Alexandre Dolgui
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This book offers an introduction and advanced techniques of scheduling applications to cloud manufacturing and Industry 4.0 systems for larger audience. The Industry 4.0 technology and cloud manufacturing are enabling flexible production, particularly through the use of cyber-physical systems and highly customized assemblies in order to deliver manufacturing services on-demand to consumers. Another

Deadline is **September 30, 2019 (1 month extension is possible)**. Expected publication date - summer 2020.

Next meetings

The rule: One meeting an year

Next TC 5.2 meetings:

- At IFAC WC 2020 in Berlin, Germany, July 12-17, 2020
- At IFAC INCOM 2021 in Budapest, Hungary, June 7-9, 2021
- At IFAC MIM 2022 in Nantes, France, June 22-24, 2022
- At IFAC WC 2023 in Yokohama, Japan

MIM 2022

Nantes, France, June 22-24 (tentative dates)

Organized by Prof. Alexandre Dolgui / IMT Atlantique

