



**32<sup>nd</sup> CIRP Design Conference**  
**Design in a Changing World**

**PARIS**  
**SACLAY**  
**2022**

**CIRP DESIGN 2022 Full Program – Abbreviations and topics**

<b>Abbreviation</b>	<b>Topic</b>	<b>Abbreviation</b>	<b>Topic</b>
ADM	Agile Design Methodologies	DT	Digital Twin
AID	AI in Design	MBSE	Model-Based System Engineering
DdD	Data-driven Design	PDP	Product Development Process
DfAM	Design for Additive Manufacturing	PPS	Product Production System
DfM	Design for Manufacturing	PSS	Product-Service Systems
DfS	Design for Sustainability	PVM	Product Variant Management
DI4.0	Design for Industry 4.0	RDT	Robust Design and Tolerancing
DMMT	Design methodology, methods and tools	VETD	Virtual Environments and Testing in Design

Monday March 28th							
JAPAN (JST)	EUROPE (CEST)	USA (EST)					
19:00-19:20	12:00-12:20	06:00-06:20	Opening and Welcome				
19:20-20:00	12:20-13:00	06:20-07:00	Keynote 1				
20:00-20:40	13:00-13:40	07:00-07:40	Keynote 2				
21:00-21:20	14:00-14:20	08:00-08:20	DMMT-1	PSS-1	Dfs-1	DdD-1	
21:20-21:40	14:20-14:40	08:20-08:40					
21:40-22:00	14:40-15:00	08:40-09:00					
22:00-22:20	15:00-15:20	09:00-09:20					
22:30-22:50	15:30-15:50	09:30-09:50	DMMT-2	PSS-2	Dfs-2	AiD-1	Workshop
22:50-23:10	15:50-16:10	09:50-10:10					
23:10-23:30	16:10-16:30	10:10-10:30					
23:30-23:50	16:30-16:50	10:30-10:50					
00:00-00:20	17:00-17:20	11:00-11:20	ADM	RDT	Dfs-3	DT-1	
00:20-00:40	17:20-17:40	11:20-11:40					
00:40-01:00	17:40-18:00	11:40-12:00					

Tuesday March 29th							
<i>JAPAN (JST)</i>	<i>EUROPE (CEST)</i>	<i>USA (EST)</i>					
19:00-19:40	12:00-12:40	06:00-06:40	Keynote 3				
20:00-20:20	13:00-13:20	07:00-07:20	MBSE	DfAM-1	DdD-2	DT-2	
20:20-20:40	13:20-13:40	07:20-07:40					
20:40-21:00	13:40-14:00	07:40-08:00					
21:00-21:20	14:00-14:20	08:00-08:20					
21:30-21:50	14:30-14:50	08:30-08:50	PVM	DfAM-2	DMMT-3	DI4.0-1	Workshop
21:50-22:10	14:50-15:10	08:50-09:10					
22:10-22:30	15:10-15:30	09:10-09:30					
22:30-22:50	15:30-15:50	09:30-09:50					
23:00-23:20	16:00-16:20	10:00-10:20	PPS	DfM	DMMT-4	DI4.0-2	
23:20-23:40	16:20-16:40	10:20-10:40					
23:40-00:00	16:40-17:00	10:40-11:00					
00:00-00:20	17:00-17:20	11:00-11:20					

Wednesday March 30th						
<i>JAPAN (JST)</i>	<i>EUROPE (CEST)</i>	<i>USA (EST)</i>				
19:00-19:40	12:00-12:40	06:00-06:40	<b>Keynote 4</b>			
20:00-20:20	13:00-13:20	07:00-07:20	<b>AiD-2</b>	<b>DMMT-5</b>	<b>DI4.0-3</b>	
20:20-20:40	13:20-13:40	07:20-07:40				
20:40-21:00	13:40-14:00	07:40-08:00				
21:00-21:20	14:00-14:20	08:00-08:20				
21:30-21:50	14:30-14:50	08:30-08:50	<b>PDP</b>	<b>VETD</b>	<b>DI4.0-4</b>	
21:50-22:10	14:50-15:10	08:50-09:10				
22:10-22:30	15:10-15:30	09:10-09:30				
22:30-22:50	15:30-15:50	09:30-09:50				
23:00-23:30	16:00-16:30	10:00-10:30	<b>Closing</b>			

## Monday 28/03/2022 – Day 1

CET	JAPAN(JST)	EUROPE(CET)	USA(EST)	
	19:00-19:20	12:00-12:20	06:00-06:20	<b>Opening ceremony and welcome</b>
12:00-13:40	19:20-20:00	12:20-13:00	06:20-07:00	<i><b>Keynote 1: Research and Innovations in Virtual Product Creation and beyond</b></i> R. Stark, TU Berlin
	20:00-20:40	13:00-13:40	07:00-07:40	<i><b>Keynote 2: Science-based Virtual Twin Experiences for Sustainability</b></i> Ph. Laufer & P. Johnson, Dassault Systemes
13:40-14:00	20:40-21:00	13:40-14:00	07:40-08:00	Break
				<b>Session 1.1 Design methodology, methods and tools (DMMT-1)</b>
14:00-15:20	21:00-21:20	14:00-14:20	08:00-08:20	<b>Design as an echo of complexity in a designed world - A reflection on</b> Pedro Pinheiro, Goran D. Putnik*, Zlata Putnik, Catia Alves
	21:20-21:40	14:20-14:40	08:20-08:40	<b>Knowledge Visualization: A Design centered Framework</b> Aymane Sahli*, Eujin Pei, Arthi Manohar, Richard Evans
	21:40-22:00	14:40-15:00	08:40-09:00	<b>An open science platform for benchmarking engineering design researches</b> Romain Pingué*, Julien Le Duigou, Lou Grimal, Lionel Roucoules
	22:00-22:20	15:00-15:20	09:00-09:20	<b>Supporting Collaborative Innovation Processes in Smart Product Value Creation Networks</b> Damun Mollahassani*, Jonas Gries, Sven Forte, Jens C. Göbel
				<b>Session 1.2 Product-Service Systems (PSS-1)</b>
14:00-15:20	21:00-21:20	14:00-14:20	08:00-08:20	<b>Extracting the relationship between product-service system features and their implementation barriers based on a literature review</b> Yutaka Inagaki*, Yuya Mitake, Saeko Tsuji, Salman Alfarisi, Hanfei Wang, Yoshiki Shimomura
	21:20-21:40	14:20-14:40	08:20-08:40	<b>Towards Ecosystems with Smart Product-Service Systems</b> Serdar Bulut*, Reiner Anderl
	21:40-22:00	14:40-15:00	08:40-09:00	<b>A study of the rebound effect on the product-service system: Why should it be a top priority?</b> Salman Alfarisi* Yuya Mitake, Yusuke Tsutsui, Hanfei Wang, Yoshiki Shimomura
	22:00-22:20	15:00-15:20	09:00-09:20	<b>Towards a correct by construction design of complex systems: The MBSS approach</b> Pierre-Alain Yvars*, Laurent Zimmer

## Monday 28/03/2022 – Day 1

CET	JAPAN(JST)	EUROPE(CET)	USA(EST)	
14:00-15:20				<b>Session 1.3 Design for Sustainability (DfS-1)</b>
	21:00-21:20	14:00-14:20	08:00-08:20	<b>Environmental emissions and cost vs. intermodal transportation technological development trade-off for the design of woody biomass supply chain</b> Seyed Mojib Zahraee*, Nirajan Shiwakoti, Peter Stasinopoulos
	21:20-21:40	14:20-14:40	08:20-08:40	<b>Combining life cycle assessment and online customer reviews to design more sustainable products – Case study on a printing machine</b> Michael Saidani*, Junegak Joung, Harrison Kim, Bernard Yannou
	21:40-22:00	14:40-15:00	08:40-09:00	<b>Exploring the applicability of circular design criteria for electric vehicle Batteries</b> Aitor Picatoste*, Daniel Justel, Joan Manuel F. Mendoza*
	22:00-22:20	15:00-15:20	09:00-09:20	<b>For an upscaling assessment integration in product design</b> Lucas Riondet*, Maud Rio, Véronique Perrot-Bernardet, Peggy Zwolinski
14:00-15:20				<b>Session 1.4 Data-driven Design (DdD-1)</b>
	21:00-21:20	14:00-14:20	08:00-08:20	<b>An ontology-based product usage context modeling method for smart customization</b> Xingzhi Wang, Ang Liu*, Sami Kara
	21:20-21:40	14:20-14:40	08:20-08:40	<b>Concept for the identification of product innovation potentials by the application of text mining</b> Michael Riesener, Maximilian Kuhn, Hendrik Lauf*, Sathish Manoharan, and Günther Schuh
	21:40-22:00	14:40-15:00	08:40-09:00	<b>Information mining of customers preferences for product specifications determination using big sales data</b> Jian Zhang*, Peihuang Lin, Alessandro Simeone
	22:00-22:20	15:00-15:20	09:00-09:20	<b>Semantic knowledge management system for design documentation with heterogeneous data using machine learning</b> Jack Gammack, Haluk Akay, Ceylan Ceylan, Sang-Gook Kim*
15:20-15:30	22:20-22:30	15:20-15:30	09:20-09:30	Break

## Monday 28/03/2022 – Day 1

CET	JAPAN(JST)	EUROPE(CET)	USA(EST)	
15:30-16:50				<b>Session 2.1 Design methodology, methods and tools (DMMT-2)</b>
	22:30-22:50	15:30-15:50	09:30-09:50	<b>Business-to-Analytics Canvas – Translation of Product Planning -Related Business Use Cases into Concrete Data Analytics Tasks</b> Melina Panzner*, Maurice Meyer, Dr. Sebastian von Enzberg Prof. Dr.-Ing. Roman Dumitrescu,
	22:50-23:10	15:50-16:10	09:50-10:10	<b>Why to design modular products?</b> Jarkko Pakkanen*, Tero Juuti, Timo Lehtonen, Janne Mämmelä
	23:10-23:30	16:10-16:30	10:10-10:30	<b>Integrated Multilayer Architecture with Multi Interface Entity Model for Risk Management in Modular Product Design</b> Roberto Riascos*, Tomislava Majic, Egon Ostrosi, Jean-Claude Sagot and Josip Stjepandic
	23:30-23:50	16:30-16:50	10:30-10:50	<b>Why make it hard? - Usage of aggregated statistical data for risk assessment of damage scenarios in the context of ISO/SAE 21434</b> Sergej Japs*, Frank Kargl, Harald Anacker, Roman Dumitrescu
<b>Session 2.2 Product-Service Systems (PSS-2)</b>				
15:30-16:50	22:30-22:50	15:30-15:50	09:30-09:50	<b>Value Creation Framework and Roles for Smart Services</b> Jannik Reinhold*, Christian Koldewey, Roman Dumitrescu
	22:50-23:10	15:50-16:10	09:50-10:10	<b>A conceptual framework for through-life services in industrial machinery</b> Elaheh Maleki, Farouk Belkadi*, Alain Bernard
	23:10-23:30	16:10-16:30	10:10-10:30	<b>Understanding the relationship between Product-Service System value and operational data using network graphs</b> Carl Nils Konrad Toller*, Raj Jiten Machchhar, Alessandro Bertoni, Marco Bertoni, Taylor Sorgini
	23:30-23:50	16:30-16:50	10:30-10:50	<b>Design for excellence to explore complex product service systems: A case study</b> Geir Ringen*, Kristin L. Landsem, Halvor Holtskog

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CET	JAPAN(JST)	EUROPE(CET)	USA(EST)	
15:30-16:50				<b>Session 2.3 Design for Sustainability (DfS-2)</b>
	22:30-22:50	15:30-15:50	09:30-09:50	<b>Design rules for environmental sustainability: the case of refrigeration blocksystems</b> Manes Francesca, Rossi Marta*, Germani Michele
	22:50-23:10	15:50-16:10	09:50-10:10	<b>Proposal of a strategic model to unlock the circular potential in industrial practice</b> Luca Benini*, Yann Leroy, Tullio Tolio, Maria Chiara Magnanini
	23:10-23:30	16:10-16:30	10:10-10:30	<b>Developing circular business models: LCA and strategic choice</b> Oda Ellingsen*, Sigurd Sagen Vildåsen
	23:30-23:50	16:30-16:50	10:30-10:50	<b>SyProLei – A systematic product development process to exploit lightweight potentials while considering costs and CO2 emissions</b> Jerome Kaspar*, Kristian König, Johannes Scholz, Steven Quirin, Sven Kleiner, Jürgen Fleischer, Hans-Georg Herrmann, Michael Vielhaber
15:30-16:50				<b>Session 2.4 AI in Design (AiD-1)</b>
	22:30-22:50	15:30-15:50	09:30-09:50	<b>Model Building for better Transfer of AI Systems using Reinforcement Learning from Simulation to the Physical World</b> Till Blüher*, Harold Billiet, Rainer Stark
	22:50-23:10	15:50-16:10	09:50-10:10	<b>AI based geometric similarity search supporting component reuse in engineering design</b> Carmen Krahe*, Milan Marinov, Theresa Schmutz, Yannik Hermann, Mike Bonny, Marvin May, Gisela Lanza
	23:10-23:30	16:10-16:30	10:10-10:30	<b>Simplified Learning of CAD Features Leveraging a Deep Residual Autoencoder</b> Raoul Schönhof*, Jannes Elstner, Radu Manea, Steffen Tauber, Ramez Awad, Marco F. Hubera
	23:30-23:50	16:30-16:50	10:30-10:50	<b>Adhesive selection via an interactive, user-friendly system based on Symbolic AI</b> Jeroen Jordens*, Simon Vandeveldel, Bart Van Doninck, Maarten Witters, Joost Vennekens
16:50-17:00	23:50-24:00	16:50-17:00	10:50-11:00	Break



## Monday 28/03/2022 – Day 1

CET	JAPAN(JST)+1d	EUROPE(CET)	USA(EST)	
17:00-18:00				<b>Session 3.1 Agile Design Methodologies (ADM)</b>
	00:00-00:20	17:00-17:20	11:00-11:20	<b>Method for direct end customer integration into the agile product development</b> Lynn Humpert*, Benjamin Röhm, Harald Anacker, Roman Dumitrescu, Reiner Anderl
	00:20-00:40	17:20-17:40	11:20-11:40	<b>Linking Testing Activities with Success in Agile Development of Physical Products</b> Martin Batliner*, Stefan Boës, Johannes Heck, Mirko Meboldt
	00:40-01:00	17:40-18:00	11:40-12:00	<b>Systematic derivation of customized development sprints for an agile development of wind turbines</b> Michael Riesener, Maximilian Kuhn, Hendrik Lauf, Gereon C. Bönsch*, Günther Schuh
17:00-18:00				<b>Session 3.2 Robust Design and Tolerancing (RDT)</b>
	00:00-00:20	17:00-17:20	11:00-11:20	<b>Concurrent Machine and Batch Size Selection in Sampling-based Tolerance-Cost Optimization</b> Martin Roth*, Benjamin Schleich, Sandro Wartzack
	00:20-00:40	17:20-17:40	11:20-11:40	<b>Data-driven deviation design for non-ideal surfaces of Skin Model Shapes</b> Yifan Qie*, Nabil Anwer
	00:40-01:00	17:40-18:00	11:40-12:00	<b>Geometric Variability in Parametric 3D Models: Implications for Engineering Design</b> Aritz Aranburu*, Daniel Justel, Manuel Conterob Jorge D. Camba

## Monday 28/03/2022 – Day 1

CET	JAPAN(JST)+1d	EUROPE(CET)	USA(EST)	
17:00-18:00				<b>Session 3.3 Design for Sustainability (DfS-3)</b>
	00:00-00:20	17:00-17:20	11:00-11:20	<b>Design for Reuse: residual value monitoring of power electronics'components</b> Boubakr RAHMANI*, Maud RIO, Yves LEMBEYE, Jean-Christophe CREBIER
	00:20-00:40	17:20-17:40	11:20-11:40	<b>A model for long-distance mobility with battery electric vehicles: a multiperspective analysis</b> Julien Baltazar*, Flore Vallet, Julien Garcia
	00:40-01:00	17:40-18:00	11:40-12:00	<b>Ecodesign with topology optimization</b> Edouard Duriez*, Joseph Morlier, Catherine Azzaro-Pantel, Miguel Charlotte
17:00-18:00				<b>Session 3.4 Digital Twin (DT-1)</b>
	00:00-00:20	17:00-17:20	11:00-11:20	<b>Digital Twins of Operational Scenarios in Mining for Design of Customized Product-Service Systems Solutions</b> Alessandro Bertoni*, Raj Jiten Machchhar, Tobias Larsson, Bobbie Frank
	00:20-00:40	17:20-17:40	11:20-11:40	<b>Digital infrastructures as the basis for implementing digital twinning</b> Maaïke Slot*, Maikel Fraikin, Roy Damgrave, Eric Lutters
	00:40-01:00	17:40-18:00	11:40-12:00	<b>A Digital Twin Design for Maintenance Optimization</b> Oliver Davies, Abhishek Makkattil, Ce Jiang, Maryam Farsi*
15:30-18:00	22:30-01:00	15:30-18:00	09:30-12:00	<b>Workshop: Product-Production-Co-Design</b> Karlsruhe Institute of Technology (KIT) – Institute of Product Engineering (IPEK)

## Tuesday 29/03/2022 – Day 2

CET	JAPAN(JST)	EUROPE(CET)	USA(EST)	
12:00-12:40	19:00-19:40	12:00-12:40	06:00-06:40	<b>Keynote 3: Digital Twins for Human System Integration</b> G.A. Boy, CentraleSupélec/ESTIA
12:40-13:00	19:40-20:00	12:40-13:00	06:40-07:00	Break
13:00-14:20				<b>Session 4.1 Model-Based System Engineering (MBSE)</b>
	20:00-20:20	13:00-13:20	07:00-07:20	<b>Approach for model-based requirements engineering for the planning of engineering generations in the agile development of mechatronic systems</b> Emily Windisch, Constantin Mandel*, Simon Rapp, Nikola Bursac, Albert Albers
	20:20-20:40	13:20-13:40	07:20-07:40	<b>Heterogeneous models to Support Interdisciplinary Engineering – Mapping Model Elements of SysML and CAD</b> Thomas Schumacher*, David Inkermann
	20:40-21:00	13:40-14:00	07:40-08:00	<b>Security- and Safety-Driven Functional Architecture Development Exemplified by Automotive Systems Engineering</b> Aschot Kharatyan*, Matthias Günther, Harald Anacker, Sergej Japs, Roman Dumitrescu
	21:00-21:20	14:00-14:20	08:00-08:20	<b>Classification of Simulation Models for the Model-based Design of Plastic-Metal Hybrid Joints</b> Kathrin Spütz*, Julius Berges, Georg Jacobs, Joerg Berroth, Christian Konrad
13:00-14:20				<b>Session 4.2 Design for Additive Manufacturing (DfAM-1)</b>
	20:00-20:20	13:00-13:20	07:00-07:20	<b>Deep Learning for Additive Manufacturing-driven Topology Optimization</b> Waad Akmasri*, Florence Danglede, Dimitri Bettebghor, Faouzi Adjed, Fakhreddine Ababsa
	20:20-20:40	13:20-13:40	07:20-07:40	<b>Lightweight design of automotive components using generative design with fiber-reinforced additive manufacturing</b> Stefan Junk*, Nils Rothe
	20:40-21:00	13:40-14:00	07:40-08:00	<b>A method for design for additive manufacturing rules formulation Through Spatio-temporal process discretization</b> Chloe Douin, Elise Gruhier*, Robin Kromer, Olivier Christmann, Nicolas Perry
	21:00-21:20	14:00-14:20	08:00-08:20	<b>A two-step parametric generative method for heat exchangers design in additive manufacturing</b> Ning Li, Jean-Michel Hugo, Damien Serret, Yicha Zhang*, Samuel Gomes

## Tuesday 29/03/2022 – Day 2

CET	JAPAN(JST)	EUROPE(CET)	USA(EST)	
13:00-14:20				<b>Session 4.3 Data-driven Design (DdD-2)</b>
	20:00-20:20	13:00-13:20	07:00-07:20	<b>Natural Language Processing in assistance to Inventive Design activities</b> Daria Berdyugin*, Denis Cavallucci
	20:20-20:40	13:20-13:40	07:20-07:40	<b>A data-driven adaptive design for achieving sustainable product</b> Hui Sun, Wei Guo, Lei Wang *, Mao Lin
	20:40-21:00	13:40-14:00	07:40-08:00	<b>Exploiting patent knowledge in engineering design: a cognitive basis for remodeling patent documents</b> Chris McTeague*, Anna Chatzimichali
	21:00-21:20	14:00-14:20	08:00-08:20	<b>Knowledge and engineering parameter mapping technology supporting product conceptual design</b> Zhenchong Mo, Lin Gong*, Fan Ye, Tie Fu, Degang Zhu, Haoran Cui, Jian Xie
<b>Session 4.4 Digital Twin (DT-2)</b>				
13:00-14:20	20:00-20:20	13:00-13:20	07:00-07:20	<b>Manufacturing Service Network of Digital Twin Systems Under Cloud Computing Environment</b> Feng Xiang, Ping Zhou, Ying Zuo*, Fei Tao, Dashun Zhang
	20:20-20:40	13:20-13:40	07:20-07:40	<b>A Conceptual Model-based Digital Twin Platform for Holistic Large-scale Railway Infrastructure Systems</b> Shiyang Zhou *, Stefan Dumss, Rebecca Nowak, Rainer Riegler, Ozan Kugu, Martin Krammer, Manfred Grafinger
	20:40-21:00	13:40-14:00	07:40-08:00	<b>A digital twin framework for product to-be-designed analysis based on operation data</b> Siqi Li, Junfeng Wang*, Jin Rong, Wei Wei
	21:00-21:20	14:00-14:20	08:00-08:20	<b>Personalized PSS Design Optimization based on Digital Twin and Extended Reality</b> Dimitris Mourtzis*, John Angelopoulos, Nikos Panopoulos
14:20-14:30	21:20-21:30	14:20-14:30	08:20-08:30	Break

## Tuesday 29/03/2022 – Day 2

CET	JAPAN(JST)	EUROPE(CET)	USA(EST)	
14:30-15:50				<b>Session 5.1 Product Variant Management (PVM)</b>
	21:30-21:50	14:30-14:50	08:30-08:50	<b>Productization as a link to combining product portfolio management and product family development</b> Janne Mämmelä*, Erno Mustonen, Janne Härkönen, Jarkko Pakkanen, Tero Juuti
	21:50-22:10	14:50-15:10	08:50-09:10	<b>How to manage vehicle platform variants?</b> <b>A method to assess platform variance through competitive analysis</b> C. Frank*, L. Holsten, T. Şahin, T. Vietor
	22:10-22:30	15:10-15:30	09:10-09:30	<b>Where variants and familiarity meet: portfolio management in companies that design and produce</b> Laura Nieuwmeijer, Eric Lutters*
	22:30-22:50	15:30-15:50	09:30-09:50	<b>Methodology for identifying and increasing order-neutral components</b> Thomas Bauernhansl, Philipp Moessner*, Philipp Busch, Timmo Hansla
14:30-15:50				<b>Session 5.2 Design for Additive Manufacturing (DfAM-2)</b>
	21:30-21:50	14:30-14:50	08:30-08:50	<b>Approach to optimize the interlayer waiting time in additive manufacturing with concrete utilizing FEM modeling</b> Virama Ekanayaka*, Lukas Lachmayer, Annika Raatz, André Hürkamp
	21:50-22:10	14:50-15:10	08:50-09:10	<b>Design guidelines for the separation of components to combine the potentials of additive and conventional manufacturing processes</b> Jannik Reichwein*, Johannes Geis, Kris Rudolph, Eckhard Kirchner
	22:10-22:30	15:10-15:30	09:10-09:30	<b>A powder delivery system for large-scale DED machines</b> Panagiotis Stavropoulos*, Harry Bikas, Theodoros Bekiaris
22:30-22:50	15:30-15:50	09:30-09:50	<b>Experimental investigation of the impacts of fibre routing strategy on the properties of composite printing</b> Valentin Marchal, Yicha Zhang*, Nadia Labed, François Peyraut	

## Tuesday 29/03/2022 – Day 2

CET	JAPAN(JST)	EUROPE(CET)	USA(EST)	
14:30-15:50				<b>Session 5.3 Design methodology, methods and tools (DMMT-3)</b>
	21:30-21:50	14:30-14:50	08:30-08:50	<b>Engineering is Design and only Design – Part I: The value of making a distinctive sign</b> Goran D. Putnik *, Zlata Putnik, Pedro Pinheiro, Cátia Alves
	21:50-22:10	14:50-15:10	08:50-09:10	<b>The EDiT method guideline - enabling distributed teams through situation-adequate method application</b> Albert Albers, Katharina Duehr*, Katharina Zech, Simon Rapp
	22:10-22:30	15:10-15:30	09:10-09:30	<b>Automated Design Workflow for Structural Nodes of Space Frame Structures</b> Patrick Beutler*, Manuel Biedermann, Urs Hofmann, Ralph Rosenbauer, Mirko Meboldt
	22:30-22:50	15:30-15:50	09:30-09:50	<b>Requirements analysis for an intelligent workforce planning system: a socio-technical approach to design AI-based systems</b> Stefan Gabriel*, Dominik Bentler, Eva-Maria Grote, Caroline Junker, David Meyer zu Wendischhoff, Michael Bansmann, Benedikt Latos, Daniela Hobscheidt, Arno Kühn, Roman Dumitrescu
<b>Session 5.4 Design for Industry 4.0 (DI4.0-1)</b>				
14:30-15:50	21:30-21:50	14:30-14:50	08:30-08:50	<b>Situational Risk Assessment Design for Autonomous Mobile Robots</b> Manuel Müller, Golsa Ghasemi*, Nasser Jazdi, Michael Weyrich
	21:50-22:10	14:50-15:10	08:50-09:10	<b>Designing a digitalized cell for remanufacturing of automotive frames</b> Panos Stavropoulos*, Alexios Papacharalampopoulos, Lydia Athanasopoulou, Konstantinos Kampouris, Panagiotis Lagios
	22:10-22:30	15:10-15:30	09:10-09:30	<b>Overcoming the Sim-to-Real Gap in Autonomous Robots</b> Pascalis Trentsios, Mario Wolf*, Detlef Gerhard
	22:30-22:50	15:30-15:50	09:30-09:50	<b>Toward designing an integration architecture for a mobile manipulator In production systems: Industry 4.0</b> Nooshin Ghodsian* , Khaled Benfriha, Adel Olabi, Varun Gopinath , Aurelien Arnou, Chawki El zant, Quentin Charrier, Marwan El helou
15:50-16:00	22:50-23:00	15:50-16:00	09:50-10:00	Break

## Tuesday 29/03/2022 – Day 2

CET	JAPAN(JST)	EUROPE(CET)	USA(EST)	
16:00-17:20				<b>Session 6.1 Product Production System (PPS)</b>
	23:00-23:20	16:00-16:20	10:00-10:20	<b>Synchronization of car body requirements for the design of new product and production modules: A multi-methodological approach</b> Eduard Wagner*, Bernd Keller, Hans-Friedrich Jacobi, Dieter Spath
	23:20-23:40	16:20-16:40	10:20-10:40	<b>Product-Production-CoDesign: An Approach on Integrated Product and Production Engineering Across Generations and Life Cycles</b> Albert Albers, Gisela Lanza, Monika Klippert*, Louis Schäfer, Alex Frey, Fynn Hellweg, Philip Müller-Welt, Moritz Schöck, Carmen Krahe, Konstantin Nowoseltschenko, Simon Rapp
	23:40-24:00	16:40-17:00	10:40-11:00	<b>Product Design for Matrix-Structured Manufacturing Systems</b> Christian P. Nielsen*, Fei Yu
	00:00-00:20	17:00-17:20	11:00-11:20	<b>Analysis of Factors Influencing Knowledge Transfer between the Product and Production System Development as well as Production</b> Monika Klippert*, Alexandra Preißner, Hendrik Rust, Albert Albers
16:00-17:20				<b>Session 6.2 Design for Manufacturing (DfM)</b>
	23:00-23:20	16:00-16:20	10:00-10:20	<b>Considering Manufacturing in Functional Modelling – Case Study on Combination of Simulation-Driven Design with Design-for-Manufacture</b> Patric Grauburger*, Tim Bruchmüller, Sebastian Zimprich, Sven Matthiesen
	23:20-23:40	16:20-16:40	10:20-10:40	<b>Adaptive CAM Planning to Support Co-Design</b> Alexander Reichle, Carsten Ellwein*, Alexander Verl
	23:40-24:00	16:40-17:00	10:40-11:00	<b>Knowledge graph for manufacturing cost estimation of gear shafts – a case study on the availability of product and manufacturing information in practice</b> Fynn Hellweg*, Harry Brückmann, Thomas Beul, Constantin Mandel, Albert Albers
	00:00-00:20	17:00-17:20	11:00-11:20	<b>Implementation of Surface Interpolators for Compound Surfaces without C2-continuity</b> Anja Elser*, Armin Lechler, Alexander Verl

## Tuesday 29/03/2022 – Day 2

CET	JAPAN(JST)	EUROPE(CET)	USA(EST)	
16:00-17:20				<b>Session 6.3 Design methodology, methods and tools (DMMT-4)</b>
	23:00-23:20	16:00-16:20	10:00-10:20	<b>Engineering is Design and only Design – Part II: Exploration through the inverse problem</b> Goran D. Putnik *, Zlata Putnik, Pedro Pinheiro, Cátia Alves
	23:20-23:40	16:20-16:40	10:20-10:40	<b>Improving distributed collaboration at Porsche Engineering Services GmbH through the application of the EDiT Method</b> Katharina Duehr*, Maximilian Burkhardt, Sebastian Endepols, Thomas Machauer, Albert Albers
	23:40-24:00	16:40-17:00	10:40-11:00	<b>A flexible approach for design rule formalization and evaluation</b> Rob Salaets*, Bieke Decraemer, Philip Eyckens, Wim Boudewyns, Ward Van Houdt, Koen Beyers
	00:00-00:20	17:00-17:20	11:00-11:20	<b>Introducing readiness scales for effective reuse of open source hardware</b> Robert Mies*, Martin Häuer, Mehera Hassan
<b>Session 6.4 Design for Industry 4.0 (DI4.0-2)</b>				
16:00-17:20	23:00-23:20	16:00-16:20	10:00-10:20	<b>Cross-industry methods for strategic planning of the digital transformation of small and medium sized enterprises</b> Magdalena Förster*, Christian Kürpick, Daniela Hobscheidt, Dr. Arno Kühn, Prof. Dr.-Ing. Roman Dumitrescu
	23:20-23:40	16:20-16:40	10:20-10:40	<b>Implementation of Artificial intelligence for maintenance operation in the rail industry</b> Ilesanmi Daniyan*, Khumbulani Mpofo, Rumbidzai Muvunzi, Ikenna Damian Uchegbu
	23:40-24:00	16:40-17:00	10:40-11:00	<b>Knowledge-Based Integration of Product Data in IoT-Platforms to Optimize Resource Efficiency</b> Niklas Quernheim*, Stefan Kugler, Reiner Anderl
	00:00-00:20	17:00-17:20	11:00-11:20	<b>Developing circular business models: LCA and strategic choice</b> Oda Ellingsen*, Sigurd Sagen Vildåsen
14:30-17:20	21:30-00:20	14:30-17:20	08:30-11:20	<b>Workshop: Design for Remanufacturing: State-of-the-art Tools and Industrial Applications</b> Paris-Saclay University, Centrale Supélec – University of Illinois at Urbana-Champaign



### Wednesday 30/03/2022 – Day 3

CET	JAPAN(JST)	EUROPE(CET)	USA(EST)	
12:00-12:40	19:00-19:40	12:00-12:40	06:00-06:40	<p><b>Keynote 4: Some solutions and applications for simulation or experimental data based real-time predictive modelling and manufacturing process monitoring</b> K. Kayvantash, Hexagon Manufacturing Intelligence</p>
12:40-13:00	19:40-20:00	12:40-13:00	06:40-07:00	Break
				<b>Session 7.1 AI in Design (AiD-2)</b>
13:00-14:20	20:00-20:20	13:00-13:20	07:00-07:20	<p><b>The Evolution, Framework, and Future of Cognitive Intelligence-enabled Product Design</b> Wang Zuoxu*, Liu Jihong, Zheng Lianyu</p>
	20:20-20:40	13:20-13:40	07:20-07:40	<p><b>A kernel transfer learning based multi-sensor surface reconstruction framework for reverse engineering</b> Gengxiang Chen, Yingguang Li*, Charyar Mehdi-Souzani, Xu Liu</p>
	20:40-21:00	13:40-14:00	07:40-08:00	<p><b>A Knowledge Discovery Method of Product Design Requirements Based on Pattern Matching</b> Wei Wei*, Chenliang Hao</p>
	21:00-21:20	14:00-14:20	08:00-08:20	<p><b>AI-Based Failure Management: Value Chain Approach in Commercial Vehicle Industry</b> Robin Guenther*, Sebastian Beckschulte, Martin Wende, Hendrik Mende, Robert H. Schmitt</p>
				<b>Session 7.2 Design methodology, methods and tools (DMMT-5)</b>
13:00-14:20	20:00-20:20	13:00-13:20	07:00-07:20	<p><b>A combination forecasting method of grey neural network based on genetic algorithm</b> WEI Wei*, JIANG Chuan</p>
	20:20-20:40	13:20-13:40	07:20-07:40	<p><b>Gaining insights through qualitative modelling – industrial project analysis with focus on derived hypotheses based on the contact and channel approach</b> Patric Grauberger*, Frank Bremer, Felix Pfaff, Peter Tröster, Thomas Nelius, Matthias Eisenmann, Thorsten Stöberl, Albert Albers, Sven Matthiesen</p>
	20:40-21:00	13:40-14:00	07:40-08:00	<p><b>Research on user demand evolution model based on online product community</b> Bo Rong, Wei Guo, Cong Cong*</p>
	21:00-21:20	14:00-14:20	08:00-08:20	<p><b>Spine pathologies detections: users' requirements, technological development and first results</b> Hugo Villi, Nicolas Pinsault, Guillaume Thomann*</p>

## Wednesday 30/03/2022 – Day 3

CET	JAPAN(JST)	EUROPE(CET)	USA(EST)	
13:00-14:20				<b>Session 7.3 Design for Industry 4.0 (DI4.0-3)</b>
	20:00-20:20	13:00-13:20	07:00-07:20	<b>Complexity-oriented design for cyber-physical systems</b> Michael Riesener, Maximilian Kuhn, Alexander Keuper*, Jan Schuhmacher and Guenther Schuh
	20:20-20:40	13:20-13:40	07:20-07:40	<b>Towards design guidance for the digitalisation of work instructions by focusing on technological possibilities and industrial requirements</b> Rieke Leder*, Hendrik Stern, Michael Freitag
	20:40-21:00	13:40-14:00	07:40-08:00	<b>Recommender systems for Personalized Work Instructions</b> Jeroen Zegers*, Vasilios Zogopoulos, Dries Verhees
	21:00-21:20	14:00-14:20	08:00-08:20	<b>Social Network-based Education and Education 3.0: Application for education on Design and teaching of Industry 4.0 concepts</b> Goran Putnik*, Cátia Alves
14:20-14:30	21:20-21:30	14:20-14:30	08:20-08:30	Break
14:30-15:50				<b>Session 8.1 Product Development Process (PDP)</b>
	21:30-21:50	14:30-14:50	08:30-08:50	<b>Improving engineering change management by introducing a standardised description for engineering changes for the automotive wiring harness</b> Moritz Altner*, Hans Redinger, Benjamin Valeh, Eder Kevin, Jonas Neckenich, Simon Rapp, Roland Winter, Albert Albers
	21:50-22:10	14:50-15:10	08:50-09:10	<b>Construction and Implementation of Matter-Element Matching Model for Research and Development Tasks and Resources</b> Zhizhong Cheng, Daming Li, Yuhu Li*, Zhicheng Huang, Lihong Qiao
	22:10-22:30	15:10-15:30	09:10-09:30	<b>Methodical approach for manufacturing-oriented concept development for Tailored Textiles</b> Sebastian Stein*, Georg Jacobs, Ricarda Riedel, Julius Steinlein, Kathrin Spütz, Christian Konrad
	22:30-22:50	15:30-15:50	09:30-09:50	<b>Using Lean to Transform the Product Development Process in a Marine Company: A Case Study</b> Elisabeth Lervåg Synnes*, Torgeir Welo

## Wednesday 30/03/2022 – Day 3

CET	JAPAN(JST)	EUROPE(CET)	USA(EST)	
14:30-15:50				<b>Session 8.2 Virtual Environments and Testing in Design 4.0 (VETD)</b>
	21:30-21:50	14:30-14:50	08:30-08:50	<b>Comparing design review outcomes in immersive and non-immersive collaborative virtual environments</b> Nikola Horvat*, Tomislav Martinec, Marija Majda Perišić, Stanko Škec
	21:50-22:10	14:50-15:10	08:50-09:10	<b>FEM as a Package Design Tool for Corrugated Paperboard</b> Susanna Heposalmi, Sami Matthews, Ville Leminen, Juha Varis, Amir Toghyani*
	22:10-22:30	15:10-15:30	09:10-09:30	<b>VR in Distributed Product Development – Approach for a Heuristic Profitability Assessment</b> Hans-Patrick Balzerkiewitz*, Carsten Stechert
	22:30-22:50	15:30-15:50	09:30-09:50	<b>A virtual testing methodology for the identification of optimal parametric concept models in multi-bolted composite applications</b> Carlos Lopez*, Jan Stroobants
14:30-15:50				<b>Session 8.3 Design for Industry 4.0 (DI4.0-4)</b>
	21:30-21:50	14:30-14:50	08:30-08:50	<b>Integration of Communication using OPC UA in MBSE for the Development of Cyber-Physical Systems</b> Johannes Olbort, Benjamin Röhm*, Vladimir Kutscher, Reiner Anderl
	21:50-22:10	14:50-15:10	08:50-09:10	<b>Integrating deep learning and rule-based systems into a smart devices decision support system for visual inspection in production</b> Hendrik Mende*, Alexander Peters, Faruk Ibrahim, Robert H. Schmitt
	22:10-22:30	15:10-15:30	09:10-09:30	<b>Increased efficiency in virtual commissioning with automated model generation based on component libraries</b> Nicolas Pyschny, Ben Rudat*, Eike Permin
	22:30-22:50	15:30-15:50	09:30-09:50	<b>In-Situ Condition Monitoring in Timing Belts for Automation Purposes – Challenges and Opportunities</b> Yanik Koch*, Raphael Weller, Peter Welzbacher, Eckhard Kirchner
16:00-16:30	23:00-23:30	16:00-16:30	10:00-10:30	<b>Closing</b>

