



POLITECNICO  
DI TORINO

# IFIP

15<sup>th</sup> International  
Conference on

# Product Lifecycle Management



1 • 4 July 2018  
Torino, Italy



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## welcome message

The rise of the Industry 4.0 paradigm is disruptively changing manufacturing environments: the increasing need for integration across value chains is highlighting the need for smart, powerful information systems. In this field, Product Lifecycle Management (PLM) plays a key role: heterogeneous information concerning product ideation, design, manufacturing, support, recycling and many other trades has to be properly managed. Further, novel approaches such as Product-Service Systems and Circular Economy are posing new challenges to be dealt.

PLM2018 welcomes the international community in Turin, Italy, for 3 dense days of scientific and technical exchange: the Conference aims to foster discussion among researchers and practitioners on the latest advances in PLM methodologies and tools. More than 100 delegates are taking part to the discussion; 75 papers will be presented and around 15 industrial presentations are planned.

Among the conference topics, a special emphasis has been placed on the maturity models for technology integration in small, medium and large companies, as well as on the educational approaches necessary to train the class of professionals that will daily deal the Industry 4.0 technologies.

Moreover, the role of Lean organization in supporting an efficient adoption of the Industry 4.0 paradigm as well as the support provided by Building Information Modeling in construction industry will be widely discussed.

In the next pages you will find more details on the program. Keynote lectures will be held by internationally acknowledged experts, and you will have the possibility to visit two out of the Piemonte industrial excellences: the Baladin brewery - an example of Handicraft 4.0 capable to brew 30+ varieties of beer, for an overall amount of 25,000+ hl/year - and the SKF plant in Airasca, exhibiting high levels of integration between manufacturing and intra-logistics processes, and serving customers all over the world.

We hope you will enjoy the Conference.

Sincerely,

*The PLM 2018 Organizational Committee*



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## keynotes

Keynote**Integrated digital delivery of major infrastructure projects**

Speaker: Jennifer Whyte

*Time: 02.07.2018 • 9:45 - 10:30 • Aula Magna*Abstract

Digital information is increasingly pervasive in delivery, and it is transforming project delivery models. Fifteen years of industry/government initiatives and infrastructure megaprojects in London, such as the London 2012 Olympics, Crossrail, High Speed 2 and Tideway, are drawn on to explore the lessons for integrated digital delivery.

There are new forms of integration in digitally-enabled project delivery models. In these, digital information is transforming deliverables, supply-base interactions and relationships with owners/operators and end-users. Digital workflows and analytics, rather than documents, become central to project organizing.

Bio

Jennifer Whyte is a Professor in the Department of Civil and Environmental Engineering at Imperial College London. Her research focus is on systems integration in civil infrastructure; in particular in the integrated digital delivery of major infrastructure projects. Such projects are organizationally complex, delivering both physical assets and digital asset information. Her ambition is to develop next-generation methods and tools that enable project practitioners to make better decisions. Recent interests include the use of structured asset information in the digital twin, and the potential of rich digital data in design for manufacture, assembly, predictive maintenance, etc.

At Imperial College London, she is Director of the Centre for Systems Engineering and Innovation and Royal Academy of Engineering / Laing O'Rourke Professor in Systems Integration.

She also leads the 'Data-driven Design under Uncertainty' Grand Challenge in the Lloyds Register Foundation/Alan Turing Institute 'Data-Centric Engineering' Programme. She teaches on innovation in civil engineering. She is a Fellow of the Institution of Civil Engineers; and co-curator of the World Economic Forum 'Engineering and Construction' transformation map. She recently co-authored the book *Virtual Reality and the Built Environment* (2nd Edition, with Dragana Nikolic, Routledge, 2018).



### Keynote

## On the convergence of volumetric modelling, simulation and 3D printing

Speaker: André Stork

Time: 02.07.2018 • 14:00 - 14:45 • Aula Magna

### Abstract

Geometric modelling, simulation and 3D printing traditionally work on different representation schemes and data/file formats (BRep-NURBS, finite elements, STL). They all have their history, strengths and weaknesses. Working with different incompatible and - when mapped to each other - lossy representation schemes, hinders smooth integration along the work flow and, today, requires a lot of user intervention and tweaking to master this process in manufacturing value chains.

The research community has recognized these challenges and is working towards integration of *a*) modelling and simulation on the one hand and *b*) designing for 3D printing on the other hand. One of the preferred approaches is the so-called iso-geometric analysis (IGA) approach.

Although theoretically not bound to any particular representation scheme, the majority of research and development done in this field is directed towards tri-variate spline volumes.

This talk will present an alternative approach to representing volumetric shapes for manufacturing including 3D printing of parts with graded material properties and its simulation based on subdivision schemes. Challenges, opportunities, current state-of-the-art, limitations and future research directions are being presented and discussed to converge to the vision of seamlessly integrating modelling and simulating for the design of additive manufacturing parts

### Bio

André Stork is head of the Competence Center for Interactive Engineering Technologies and honorary professor at Technische Universität Darmstadt. He studied computer science and received his doctoral degree from the TU Darmstadt in 2000 with a dissertation entitled “3D interaction and visualization techniques for user centered modelling applications”. In 1992 he received his diploma in computer science. From 1992 to 1994, he worked as a researcher at the Computer Graphics Center (ZGDV e.V.), Darmstadt, in image classification, neuronal networks, image analysis and animation. Since 1994 he has been working in the department for Interactive Engineering Technologies (former: Industrial Applications), first as a researcher and since 2002 as head of the department.

His major research interests are geometry modelling, design for AM, 2D/3D interaction and user interface techniques, simulation algorithms, knowledge management and information retrieval, collaboration support and scientific visualization. André Stork has authored and co-authored more than 200 papers in the field of his various interests. In many international conferences, workshops, and journals he has been a member of the program committees or acted as a reviewer.

He has lectured “Computer Graphics III” and “Geometric Methods in CAD/CAE” at TU Darmstadt. Further, he is a member of IEEE, Eurographics, ACM, Gesellschaft für Informatik (GI), and VDI.



### Keynote

## European digital innovation

Speaker: Maurizio Gattiglio

Time: 03.07.2018 • 9:00 - 9:45 • Aula Magna

### Abstract

Global market competitiveness in the era of the “Digital Revolution” is a challenge which involves several important issues for businesses. In the speech the author will present the recent digital developments particularly on A.I. and robotics and the relevant concerns, strategies and policies around the world with a specific focus on the European initiatives in innovation to create high value-added products and processes.

### Bio

Maurizio Gattiglio is Executive Vice-President and Board Director of Prima Electro S.p.A., parent company of Prima Industrie S.p.A. a leading engineering corporation operating worldwide in the field of industrial lasers, sheet metal machinery and electronics.

He is actually Chairman and CEO of Convergent Photonics LLC, MA USA, high power laser Company of Prima Group, General Manager of Prima Electro China Co. Ltd, Board Director and Past-Chairman of EFFRA European Factories of the Future Research Association and member of MANUFUTURE European Technology Platform High Level Group.

He has worked within the Prima Group since 1986 where he has occupied a number of different positions in R&D&I, customer support, manufacturing and management. He holds a number of patents of invention in the area of high power laser technology.

Maurizio Gattiglio obtained a degree in mechanical engineering in 1984 from the Polytechnic of Turin.



### Keynote

## Towards PLM 4.0

Speaker: Alberto Codrino

Time: 03.07.2018 • 14:00 - 14:45 • Aula Magna

### Abstract

In a changing as fast as ever business scenario, today's "mantras" are Digital Transformation and Industry 4.0; these are not just trendy "buzzwords" but the root of another discontinuity in the way we think, design, sell, produce and retire products (and now related services as well).

This presentation explores the impact of these key trends on Product Lifecycle Management (PLM) and, on the other hand, the way PLM may become the cornerstone of a Digital Transformation program for manufacturing companies.

To accommodate this change, PLM platforms are rapidly evolving by providing new functionalities (ability to "connect" with communities of potential customer through the social media "world", more accurate monitoring of design and production processes, support for sustainability and Corporate Social Responsibility, materials and finished products quality, ...), new architectures (availability on smart devices through APPs, cloud, ability to work "off line"), resilience (ability to quickly adapt to processes and IT infrastructure changes), better customer experience ("excel like" interfaces, highly customized user interface, support for big data analysis, ...), different purchasing models.

There will be more of that in the future: the rapid emergence of technologies such as the Internet of Things will eventually allow to "close the loop" of Product Lifecycle on a different level with platforms that integrates Product Portfolio Management, Product Lifecycle Management, Internet of Things and Enterprise Resource Planning.

### Bio

Alberto Codrino is CEO of PLM Systems (Altea Federation) and Altea FedBoard Member; formerly Temporary Professor at the Business Management School of the Politechnic of Torino (teaching Product Development and Innovation Management). Mr. Codrino has been working since more than 30 years with global companies and SMEs to support their improvement initiatives in lean product development. Specific expertise includes process reengineering and design and delivery of IT systems supporting the NPD process (Product Lifecycle Management, Business Process Management systems and Part Variety Reduction programs).

Mr. Codrino has been chairman, member of the technical board or speaker at major Italian and international PLM events (IFIP, IT4fashion, PDT/Cimdata, ...) and contributor of Sole 24 Ore (ICT&Tech), ComputerWorld (Italian edition) and Automazione Industriale.



**Program**

[For detailed information on the Scientific Program](#)

Download  
the app  
of the Conference  
**PLM2018**

Time	Monday 02.07			Tuesday 03.07
8:00	Registration			Registration
8:30				Industrial Day Opening
9:00	<b>AULA MAGNA</b> Conference Opening			<b>AULA MAGNA</b> <u>Keynote lecture: Maurizio Gattiglio</u> European Digital Innovation
9:45	<b>AULA MAGNA</b> <u>Keynote lecture: Jennifer Whyte</u> Integrated Digital Delivery of Major Infrastructure Projects			<b>AULA MAGNA</b> <u>Session 2.1</u> Management of Product Data in Aerospace & Rail industry
10:30	Coffee break			Coffee break
11:00	<b>AULA MAGNA</b> <u>Session 1.1</u> SS: Building Information Modeling Part I	<b>ROOM 201</b> <u>Session 1.2</u> Collaborative Environments and New Product Development	<b>ROOM 202</b> <u>Session 1.3</u> PLM for Digital Factories & Cyber Physical Systems	<b>AULA MAGNA</b> <u>Session 2.2</u> Digital Transformation to Support Industry 4.0 Processes and Products
13:00	Lunch & Networking			Lunch & Networking
14:00	<b>AULA MAGNA</b> <u>Keynote lecture: André Stork</u> On the Convergence of Volumetric Modelling, Simulation and 3D Printing			<b>AULA MAGNA</b> <u>Keynote lecture: Alberto Codrino</u> Towards PLM 4.0

Time	Monday 02.07			Tuesday 03.07
14:45	<b>AULA MAGNA</b> <u>Session 1.4</u> SS: Building Information Modeling Part II	<b>ROOM 201</b> <u>Session 1.5</u> Ontologies and Data Models	<b>ROOM 202</b> Workshop CAxMan Part I	<b>AULA MAGNA</b> <u>Session 2.3</u> ICT Solutions for Enhanced Data Exchange
15:45				<b>AULA MAGNA</b> <u>Session 2.4</u> BIM Approach for Smart Buildings
16:15	Coffee break			Coffee break
16:45	<b>AULA MAGNA</b> <u>Session 1.6</u> SS: Education in the Field of Industry 4.0	<b>ROOM 201</b> <u>Session 1.7</u> Product Service Systems and Smart Products	<b>ROOM 202</b> Workshop CAxMan Part II	<b>AULA MAGNA</b> <u>Session 2.5</u> Product and Process Data Management in Automotive Industry
17:15				<b>AULA MAGNA</b> <u>Session 2.6</u> Industry 4.0 Technologies in Beverage Processes
18:15				
20:00	<p><i>Welcome Aperitivo</i></p> <p><i>Sala delle Colonne, Castello del Valentino</i></p>			<p><i>Social Dinner</i></p> <p><i>National Car Museum</i></p>



Time	Wednesday 04.07		
8:00	Registration		
8:30	<b>AULA MAGNA</b> <u>Session 3.1</u> SS: Lean Organization for Industry 4.0	<b>ROOM 201</b> <u>Session 3.2</u> Knowledge Management & Information Sharing	<b>ROOM 202</b> <u>Session 3.3</u> PLM Infrastructure & Implementation
10:30	Coffee break		
11:00	<b>AULA MAGNA</b> <u>Session 3.4</u> SS: PLM Maturity, Implementation and Adoption	<b>ROOM 201</b> <u>Session 3.5</u> 3D Printing & Additive Manufacturing	<b>ROOM 202</b> <u>Session 3.6</u> Modular Design and Products and Configuration & Change Management
12:30	<b>AULA MAGNA</b> Conference Closing and Awards		
13:00	Lunch & Networking		
14:00	Industrial Visits		

## workshop CAxMan

### Workshop

# CAxMan: computer-aided technologies for additive manufacturing - challenges and new perspectives

**Monday 2<sup>nd</sup> July 2018**, 14:15 - 18:15 • ROOM 202

### Keynote

14:15 - 14:45 **On the Convergence of Volumetric Modelling, Simulation and 3D Printing**  
*Prof. André STORK, Fraunhofer IGD*

### Workshop

14:45 - 14:55 **Introduction “CAxMan: Computer-Aided Technologies for Additive Manufacturing - Challenges and New Perspectives**  
*Chairman: Prof. André STORK, Fraunhofer IGD*

14:55 - 15:25 **Automatic Process Planning Solutions for Additive Manufacturing**  
*Marco Attene, CNR-IMATI*

15:25 - 15:35 **Questions & Answers session**

15:35 - 16:05 **Isogeometric Analysis and Coating Optimization for 3D Printing**  
*Lorenzo Tamellini, CNR-IMATI*

16:05 - 16:15 **Questions & Answers session**

16:15 - 16:45 *Coffee break*

16:45 - 17:15 **The Use Cases of CAxMan: Industrial Validation of the Developed Technologies**  
*Stefano Ellero, STAM*

17:15 - 17:30 **Questions & Answers session**

17:30 - 18:00 **How to Improve the Efficiency of AM Processes with Cloud Solutions**  
*Sebastian Peña Serna, CLESGO*

18:00 - 18:15 **Questions & Answers session**

18:15 **Workshop closure**

## social events

### Welcome aperitivo

*July 2<sup>nd</sup> 2018 - Time: 20:00 • Sala delle Colonne, Castello del Valentino*

The welcome aperitivo will be held at the Castello del Valentino (Valentino Castle) Viale Mattioli 39, a 16th century royal residence of impressive external architecture and beautiful interior spaces, now housing the Politecnico's Faculty of Architecture.

This ice-breaking cocktail reception will be a good occasion to meet old and new friends in a relaxed atmosphere.

The welcome aperitivo will be free of charge for all regularly enrolled participants.

Invitations will be handed in at the conference registration desk.

#### How to get to the welcome cocktail venue

The welcome cocktail venue is located at 5 minutes' walking distance from the closest subway stop (Marconi) which can be reached in a few minutes both from the conference venue and the city centre.

The venue is also connected by tramway to the city centre (line No 9, stop in front of the castle).



### Social dinner

*July 3<sup>th</sup> 2018 - Time: 20:00 • Museo dell'Automobile (National Car Museum)*

The social dinner will take place at the amazing Museo dell'Automobile (National Car Museum).

This fascinating interactive museum, housed in a real jewelry of architecture, was totally renovated a few years ago and it is now one of the most visited locations in Torino.

Attendees will have the opportunity to visit the museum and taste the world-famous local cuisine.

Dinner participation is included in the conference full registration fee.

Invitations will be handed in at the conference registration desk.

#### How to get to the welcome cocktail venue

The dinner venue is located at 15 minutes' walking distance from the conference venue and the closest subway stop (Lingotto).

A bus shuttle service from the Museum to the city centre after dinner will be arranged.



## industrial visits

### **SKF Airasca Plant**

*Time: Wednesday, July 4<sup>th</sup>  
14:30 - 18:30*

Website: [www.skf.com](http://www.skf.com)



The **SKF Airasca plant** has been active since 1962 and the surface currently occupied is close to 70,000 square meters.

The entire production is performed by 13 integrated lines operating in a continuous flow; material handling takes place via integrated systems.

The ball bearings produced in this plant are mainly intended for automotive applications, in particular, for automobiles wheel hub; recently, the production of wheel hubs for trucks and bearings for agricultural applications has been started. Today, the world's leading car manufacturers are customers of this plant.

In 2017, The Airasca plant has received a Highly Protected Risk (HPR) certification from the insurance company, rewarding the implementation of a "best in class" risk prevention system, based on an international scale.

*A bus travel from/to the conference location will be organized.*

### **Baladin**

*Time: Wednesday, July 4<sup>th</sup>  
14:30 - 20:30*

Website: [www.baladin.it/en](http://www.baladin.it/en)



The **Baladin** brewery was originally created in 1996 as a brewpub (production and bar) in Piozzo - a small village in the Langhe area in the province of Cuneo - by its founder and master brewer Teo Musso. The brewery has been totally renewed in 2016 in cooperation with Siemens and is now a great example of Handicraft 4.0 capable to brew 30+ varieties of beer, for an overall amount of 25,000+ hl/year.

*A bus travel from/to the conference location will be organized.*

### **FCA**

*Time: Wednesday, July 4<sup>th</sup>  
14:30 - 17:00*

Website: [www.fca.com](http://www.fca.com)



The **FCA** Mirafiori plant has been opened in 1939 as the capacity of the Lingotto plant (the Conference location) had become insufficient.

The site has been further extended in the late 1950s to face the disruptive economic growth and the consequent demand of cars. The surface currently occupied is close to 2,000,000 square meters. Today, the production is focused on two models: Alfa Romeo MiTo and Maserati Levante.

The visit is focused on the assembly process of Maserati Levante, a luxury SUV released in 2016. The plant has recently obtained the Silver medal in World Class Manufacturing.

*A bus travel from/to the conference location will be organized.*

## industrial visit

### Ferrari

*Time: Thursday, July 5<sup>th</sup>  
6:30 - 22:00*

Website: [www.ferrari.com](http://www.ferrari.com)



**Ferrari** is hosting the PLM2018 delegates for an exclusive tour throughout the Maranello plant, where GT and Formula 1 design and production take place.

#### Agenda:

- 06:30 Departure from Turin
- 10:00 Maranello Factory tour
- 15:15 Visit to Maranello museum
- 16:30 Driving simulation
- 17:30 Pit stop
- 22:00 Arrival in Turin

*A bus travel from/to the conference location will be organized.*

**Please, note that the cost of the visit (€ 130,00) is not included in the conference registration fee.  
For more information please apply to the secretariat dek.**

## information

### **The conference venue**

The conference will be held at the Lingotto site of the Politecnico di Torino. Conference rooms are both at the ground floor (Main Hall, plenary sessions) and at the second floor (parallel session rooms).

Coffee breaks and lunches will be served in the catering area at the first floor.

The Politecnico site of Lingotto can be easily reached by metro (Lingotto metro station). It takes about 9 minutes from the city centre (Porta Nuova metro station). Get off at Lingotto Metro station.

### **Instructions for speakers**

Presentations (.ppt or .pdf) must be handed in on a USB stick at the conference staff in the meeting room where your presentation is scheduled during coffee breaks or lunches. Sessions are tightly scheduled and it is important that the allotted time be strictly observed. For organisational reasons, speakers are asked to inform the conference staff in the meeting room if they have no audiovisual material. Computers equipped with PowerPoint 2010 are available in every room. For any further information on the audiovisual means, please apply to the conference secretariat in good time.

### **Registration**

Pre-registered participants can collect their conference kit and personal name badge at the organizing secretariat desk located at the second floor.

### Opening times:

• Monday, July 2: 08:00 - 18:00 • Tuesday, July 3: 08:00 - 18:00 • Wednesday, July 4: 08:00 - 13:00

### Registration fees:

On site registration	€ 750
Industrial day registration (includes Gala Dinner)	€ 250
Students* registration	€ 350
Gala dinner - additional ticket	€ 90
Welcome dinner - additional ticket	€ 30

Italian VAT 22% included

\* N.B.: a certificate proving the student status will be required.

### Badges

All delegates and exhibitors are kindly requested to always wear their name badge.

Entrance to meeting rooms will be limited to delegates only.

Badge colours:

- **Blue:** DELEGATES • **Red:** EXHIBITORS
- **Yellow:** LOCAL ORGANIZING COMMITTEE AND ORGANIZING SECRETARIAT STAFF

### Language

Official language will be English. No simultaneous translation will be provided.

### Coffee breaks and lunches

Refreshments will be served in the catering area located at the first floor.

See conference program for coffee break and lunch times.

### Tourist information

The main tourist information point is located in the city centre (Piazza Castello) and it is open from Monday to Sunday from 9:00 to 19:00. Phone: +39 011 535181.

For more information, please also see [www.turismotorino.org/index.aspx](http://www.turismotorino.org/index.aspx)

### Liability

Registered conference participants agree that neither the Organizing Committee nor the conference Secretariat are liable or assume any responsibility for damage or injuries to persons or property during the conference. Participants are advised to arrange for their own health, travel and personal insurances.

The conference organization does not cover individuals against cancellation of bookings, theft or damage to belongings.

### Disclaimer

All best endeavours will be made to present the conference programme as published. However, the conference Organizing Committee and the Secretariat reserve the right to alter or cancel, without prior notice, any arrangements, timetables, plans or other items relating directly or indirectly to the conference, for any cause beyond our reasonable control. The conference Organizing Committee and the Secretariat are not liable for any loss or inconvenience caused as a result of such alteration.

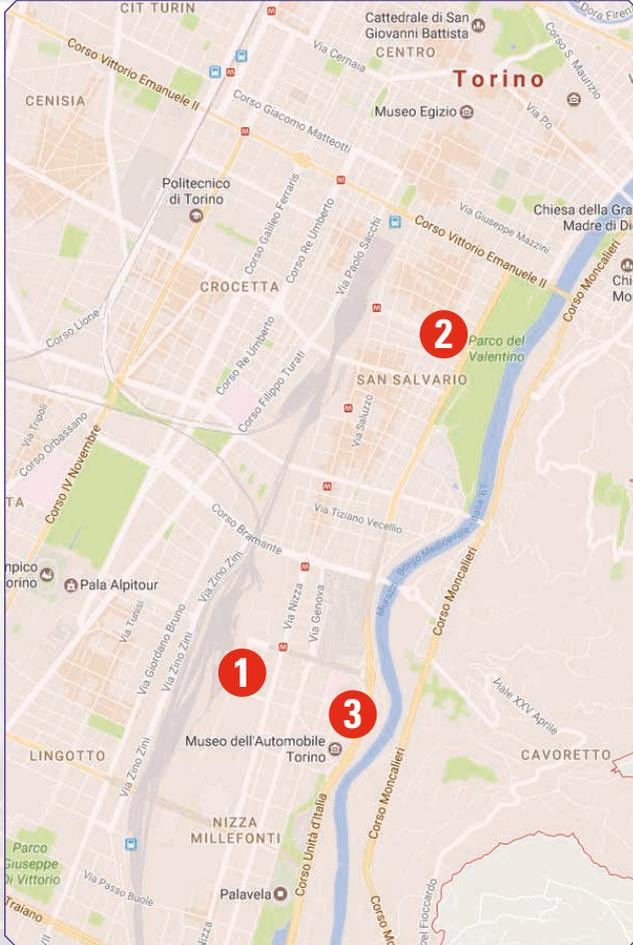
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city map



**1. LINGOTTO SITE  
OF THE POLITECNICO  
DI TORINO**

Via Nizza, 230

**Congress venue**

**2. CASTELLO  
DEL VALENTINO**

Viale Mattioli, 39

**Welcome Aperitivo  
venue**

**3. MUSEO  
DELL'AUTOMOBILE  
(National Car Museum)**

Corso Unità d'Italia, 40

**Social Dinner venue**



Welcome  
to  
Torino!





**IFIP**  
15<sup>th</sup> International  
Conference on  
**Product Lifecycle  
Management**

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