



JULY 25<sup>th</sup> - 30<sup>th</sup>, 2016  
CLUJ-NAPOCA, ROMANIA



2016 International Conference on Production Research  
Regional Conference Africa, Europe and the Middle East

4<sup>th</sup> International Conference on Quality and Innovation in  
Engineering and Management

Cluj-Napoca, Romania, 25-30 July

**Capturing Dynamics of Production Networks:  
Combining Agility, Innovation and Quality**



## ***"Capturing Dynamics of Production Networks: Combining Agility, Innovation and Quality"***

In a world constantly looking for new products and technologies, the production of goods has become strongly dependent on research and the creation of knowledge. So, the **knowledge has become today's key resource and tomorrow's main hope for a sustainable development**. In such a context, for creating economic value and social prosperity, production research has to generate knowledge sensitive to society's needs and transferable "just in time" to the economic environment by innovative solutions for products and processes. This can be achieved through **"production networks", environments where the stakeholders representing research, production and society should collaborate** together and integrate in their behavior both the concern for innovation and the ability to adapt quickly to the needs and the context at both levels, technical as well as managerial.

After the 2014 edition, **ICPR-AEM & QIEM 2016 is a special joint scientific event** organized for the second time in Cluj-Napoca by the International Foundation for Production Research (Regional Committee Africa, Europe and the Middle East) and the Technical University of Cluj-Napoca.

On behalf of the Organizing Committee, we would like to wish you a successful event and a pleasant stay in Cluj-Napoca.



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## OVERVIEW PROGRAM

### Main event

Time	26.07.2016 Tuesday	27.07.2016 Wednesday	28.07.2016 Thursday	29.07.2016 Friday
9.30-11.00		Plenary sessions <i>Vivaldi room</i>	Plenary sessions <i>Vivaldi room</i>	Parallel sessions <i>Vivaldi &amp; Verdi</i>
11.00-11.30		Coffee break <i>Foyer</i>		
11.30-12.30		Plenary session <i>Vivaldi room</i>	Plenary session <i>Vivaldi room</i>	Technical visits
12.30-14.00		Lunch <i>Venezia rest.</i>		
14.00-15.30		Parallel sessions <i>Vivaldi &amp; Verdi</i>	Parallel sessions <i>Vivaldi &amp; Verdi</i>	
15.30-16.00		Coffee break <i>Foyer</i>		
16.00-18.00		Parallel sessions <i>Vivaldi &amp; Verdi</i>	Parallel sessions <i>Vivaldi &amp; Verdi</i>	
19.00-22.00		Conference cocktail <i>Firenze rest.</i>	Gala dinner <i>Venezia rest.</i>	

### Associated events

Doctoral workshop: 25.07.2016-28.07.2016. [www.icpr-aem.com/workshop](http://www.icpr-aem.com/workshop)

Social program: 29.07.2016-30.07.2016. Ask at the Reception desk.

NoGAP project conference: 27.07.2016-28.07.2016. [www.icpr-aem.com/nogap](http://www.icpr-aem.com/nogap)

# Wednesday, 27.07.2016

## Official opening & Keynote Speakers

### 9<sup>30</sup>-11<sup>00</sup>

#### Welcoming addresses



Prof. **Vasile Țopa**, Rector of the Technical University of Cluj-Napoca

Prof. **Nicolae Burnete**, President of the Senate of the Technical University of Cluj-Napoca

Prof. **Ioan Vușcan**, Prefect of Cluj County

Prof. **Veli Matti Virolainen**, President of the International Foundation for Production Research

Prof. **Daniela Popescu**, Chair of the ICPR-AEM & QIEM 2016 Conference

Speaker	Presentation title	Room Vivaldi
<p>Prof. <b>Dieter Spath</b></p> <p>President of Wittenstein AG, Germany Fellow of IFPR</p>	<p>"Flexibility and Agility - a challenge for SME"</p>	
<p>Prof. <b>Albert Weckenmann</b></p> <p>Friedrich-Alexander University Erlangen- Nürnberg, Germany</p>	<p>"Metrology between Measurement Uncertainty and Social Responsibility" (with T. Werner)</p>	





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## Wednesday, 27.07.2016

### Keynote Speakers




11<sup>30</sup>-12<sup>30</sup>

Speaker	Presentation title	Room Vivaldi
<p>Read. <b>Rob Dekkers</b></p> <p>University of Glasgow, UK Chair, IFPR Doctoral Training and Early Career Researchers Committee</p>	<p>„Capturing Dynamics of Production Networks: What’s (Theoretical) Evolutionary Biology Got To Do With Agility and Innovation”</p>	
<p>Prof. <b>Anthony SF Chiu</b></p> <p>De La Salle University, Manila, Philippines</p>	<p>“Production Research Leading to SDG 2030 in Asia Pacific”</p>	

## Thursday, 28.07.2016

### Keynote Speakers



9<sup>30</sup>-11<sup>00</sup>

Speaker	Presentation title	Room Vivaldi
<p>Prof. <b>Adrian Curaj</b></p> <p>Chair holder Unesco Chair on science and innovation policies at SNSPA, Bucharest, Romania</p>	<p>"Smart Specialization and ecosystems"</p>	
<p>Prof. <b>Norbert Höptner</b></p> <p>Commissioner for Europe of the Minister of Economics of Baden-Württemberg, Germany Director, Steinbeis-Europa-Zentrum, Stuttgart</p>	<p>"Enhancing Innovation using International Cooperation"</p>	
<p>Prof. <b>Wilhelm Bauer</b></p> <p>Director, Fraunhofer Institute for Industrial Engineering IAO, Stuttgart, Germany</p>	<p>"Industry 4.0 - an Economy based on the Internet of Things"</p>	

## Thursday, 28.07.2016

### Keynote Speakers

11<sup>30</sup>-12<sup>30</sup>

Speaker	Presentation title	Room Vivaldi
<p>Prof. <b>Numan Durakbasa</b></p> <p>Vienna University of Technology, Austria</p>	<p>„Novel Developments in Advanced Manufacturing and Multi Functional Intelligent Factories (MFIF) towards Production in the Future - Challenges of Automation in Industry 4.0”</p> <p>(with J. Bauer, L. Kräuter and G. Bas)</p>	
<p>Dr. <b>Carmen Constantinescu</b></p> <p>Fraunhofer Institute for Industrial Engineering IAO, Stuttgart, Germany</p>	<p>“Optimisation of Advanced Manufacturing Environments with Integrated Intelligent Exoskeletons”</p> <p>(with D. Popescu, P. Mureşan and O. Todorovic)</p>	



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## PRODUCTION RESEARCH THEMATIC SESSIONS

<b>Wednesday</b> <b>27.07.2016</b> <b>14<sup>00</sup> - 15<sup>30</sup>hrs</b>		<b>Chair: Veli Matti Virolainen, Doina Pîslă</b> <b>Vivaldi Room</b>
Robert Refflinghaus, Matthias Roth and Johanna Witte	Machine capability analysis in the body shop environment	
Vesa Salminen, Heikki Ruohomaa and Tapani Poykko	From supply chain to digital circular value chain	
Jörg Niemann, Claudia Fussenecker and Martin Schlösser	Benefiting from users view - improving work environments with eye tracking technology	
Veli Matti Virolainen, Miia Pirttilä, Lea Hannola and Timo Kärri	The finance of supply chain in the Russian automotive industry	
Rob Dekkers	An engineering perspective on the design of manufacturing organisations	
Simina Fulga, Alexandru Marin, Alexandra Hadăr, Laura Boanță and Anca Alexandra Purcărea	Developing a business model instrument for ReNITT organisations	

## PRODUCTION RESEARCH THEMATIC SESSIONS

**Wednesday**

**27.07.2016**

**16<sup>00</sup> - 18<sup>00</sup>hrs**

**Chair: Marek Fertsch, Liana Hancu  
Vivaldi Room**

Monika Janssen and Jörg Niemann	Development of modern lecture materials for the subject of Product Lifecycle and Service Management
Grigore Cocian, Cătălin Popa and Vlad Marțian	Flux load direct measurement determination
Mohammed Aldossary, Rob Dekkers and Christian Hicks	Regional contingencies for lean production: looking beyond organisational culture
Codruța Jaliu, Radu Săulescu and Daniela Ciobanu	Hybrid system for a stand-alone application
Joanna Denmer, Jörg Niemann and Wilfried Werner	A business tool to measure industrial service performance -the total care index-
Vasile Merticaru, Laurențiu Slătineanu, Andrei Mihalache and Oana Dodun	Procedurally programmed engineering solution for a machining process accuracy assessment
Anca Drăghici, Daniel Paschek, Adrian Mateescu and Hugo Weinschrott	A proposed model for university-industry collaboration to support synergies in RIS3
Benedikt Reich, Carsten Stoehr, Jörg Niemann and Adrian Pîslă	Process analysis for a Romanian automotive manufacturer
Carmen Mureșan and Laura Bacali	About the role of marketing research in making investment decisions
Florin Popișter, Daniela Popescu, Monica Steopan and Grigore Pop	Approach of direct milling toolpath generation method for different cutter geometries





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## PRODUCTION RESEARCH THEMATIC SESSIONS

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**14<sup>00</sup> - 15<sup>30</sup>hrs**

**Chair: Ivan Kuric, Nicolae Bălciș**  
**Vivaldi Room**

Făt Raluca, Mic Liana, Santa Maria Magdalena and Leția Tiberiu	Behavioural models for the capital market
Rob Dekkers	Lean Production: Merely an application of the Learning Curve?
Bogdan Mocan, Călin Oșan, Mircea Fulea, Ionuț Chiș, Sanda Timoftei and Anca Sârb	An integrated model for solving cell formation problem and robot scheduling using timed Petri nets
Michał Fertsch	The use of two levels of the master schedule for the supply and production planning
Adrian Mateescu, Anca Drăghici, Alin Găureanu and Daniel Paschek	Competition - an essential market feature. Debate on market structures and business incubators
Alin Găureanu, Anca Drăghici, Adrian Mateescu and Hugo Weinschrott	Gaps and directions to improve OSH trainings in Romania

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**Thursday**  
**28.07.2016**  
**16<sup>00</sup> - 18<sup>00</sup>hrs**

**Chair: Anca Drăghici, Codruța Jaliu**  
**Vivaldi Room**

Marek Fertsch and Agnieszka Stachowiak	Production research areas and solutions emerging from contemporary management paradigms and challenges for production research
Ilknur Cavusoglu and Eva Maria Walcher	The optimisation of life cycle of GFRP product
Aurel Tulcan, Felicia Banciu and Ion Grozav	Reactions of the locating pins calculation based on force and moment's separation method using a software program
Ali Serdar Vanli, Anil Akdogan and M. Numan Durakbasa	Integrated die casting manufacturing system for sustainable high quality of magnesium alloy products
Rob Dekkers, Scott Sinclair, Susie Mitchell, Maria Ioanna Koukou, Qijun Zhou and Mohammed Aldossary	Engaging with Open Innovation: A Scottish perspective on its opportunities, challenges and risks
Francisco Xavier Pujol, Attila Turi, Marian Mocan and Larisa Ivașcu	How to adapt a failed project into an unexpected success?
Ryan Jeffrey Curbano	Improvement of manpower utilization in subline and mainline 2 of company X using assembly line balancing
Laura Bacali, Elena Simina Lakatoș, Răzvan Vaida and Ania Ioana Pașcalău	Knowledge management and cluster affiliation in creative industries
Francisco Xavier Pujol, Marian Mocan and Cristina Fenișer	World Class Manufacturing plant in Timișoara

## PRODUCTION RESEARCH THEMATIC SESSIONS

<b>Friday</b> <b>29.07.2016</b> <b>9<sup>30</sup> - 11<sup>30</sup>hrs</b>		<b>Chair: Nicoale Ungureanu, Claudiu Rațiu</b> <b>Bernini Room</b>
Sorin-Dumitru Grozav, Vasile Adrian Ceclan and Ivan Kuric	The mechanism of deformation process in case of orbital deformation	
Miroslav Císar, Ivan Kuric and Štefan Vlček	Design of monitoring system for CNC machine tools	
Nicolae Ungureanu, Miorița Ungureanu and Gabriela Lobonțiu	Management of scheduled maintenance intervention for industrial equipments, using kanban system	
Popan Ioan Alexandru, Bâlc Nicolae, Popan Alina Ioana, Alexandru Cărean and Vasile Ceclan	Analysis on the abrasive water-jet milling process on titanium alloys	
Răzvan Vaida and Laura Bacali	Literature review on neuromarketing	
Mircea Murar, Stelian Brad, Mircea Fulea, Ionut Chiș and Ștefan Crăciun	Industrial equipment enhancement using cyber physical systems towards Smart equipment	
Hannelore Ileşan and Mihai Dragomir	Mathematical models applicable to offshoring decision	
Monica Steopan, Cornel Ciupan, Răzvan Curta and Emanuela Pop	The identification of weaknesses and optimization of the sheet metal manufacturing process using Six Sigma methodology	
Mihai Ciupan and Emilia Ciupan	Comparison of machine-tool structures made of cast iron or mineral casting	
Diana Rusu, Mihai Dragomir, Diana Dragomir and Daniela Chiran	Exploring innovation practices in the renewable energy sector in countries from the Eastern Partnership	



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## QUALITY AND INNOVATION RESEARCH THEMATIC SESSIONS

<b>Wednesday</b> <b>27.07.2016</b> <b>14<sup>00</sup> - 15<sup>30</sup>hrs</b>		<b>Chair: Robert Refflinghaus, Stelian Brad</b> <b>Verdi Room</b>
M. Mert Egilmez, Jong Min Park, A. Emrah Bayrak, Bogdan Epureanu and Panos Papalambros	Effects of supply route characteristics on modular military fleet operations	
Mihail Aurel Tițu, Constantin Oprean, Oana Elena Negoită, Andreea Simina Raulea and Ștefan Tițu	The impact of Kaizen management evolution in the Romanian economic and social environment	
Pinar Demircioglu, Ismail Bogrekci and Numan Durakbasa	Image processing techniques for surface engineering	
Laurentiu Slătineanu, Oana Dodun, Margareta Coteață, Gheorghe Nagiț, Vasile Merticaru, Traian Gramescu, Alexandru Epureanu and Irina Beșliu	Disparities among states in the field of patenting activities	
Ahmed El Melegy, Tino Hausotte, Mohammad Younes, Mohamed Amer, Benedict Weinert and Youssef Sabbani	Investigation on the approach behaviour of self-sensing AFM cantilevers	
Mihail Aurel Tițu, Constantin Oprean, Oana Elena Negoită, Ștefan Tițu and Andreea Simina Răulea	Obstacles and solutions in Kaizen management in knowledge based organization and economy	

## QUALITY AND INNOVATION RESEARCH THEMATIC SESSIONS

<b>Wednesday</b> <b>27.07.2016</b> <b>16<sup>00</sup> - 18<sup>00</sup>hrs</b>		<b>Chair: Jörg Niemann, Călin Munteanu</b> <b>Verdi Room</b>
H. Saygin Sucuoglu, Ismail Bogrekci, Pinar Demircioglu and Mert Acel	Optimization of robotic arm structure for human rescue	
Darina Kumičáková, Alexander Rengevič and Lucie Drahorádová	Design and prototyping of a 3-Finger robotic gripper	
Adrian Pîslă, Tudor Irimiaș and Melania Gherasim	Lifecycle management as technological culture	
Cornel Ciupan and Emilia Ciupan	A case study related to the repair or reconstruction of a patented product	
Pinar Demircioglu, Ismail Bogrekci, Mine Gegelen Cesur, Torun Ozer and Baris Kayhan	Conceptual design of orthodontic biomedical imaging and sensing systems	
Emanuela Pop and Cornel Ciupan	Mathematical modeling of the flow processes for wind turbines	
Vasile Tompa, Dan Hurgoiu, Daniela Popescu and Călin Neamtu	Image acquisition platform for Dacian Koson coins	
Jörg Niemann and Joanna Dehmer	A life cycle oriented evaluation and optimisation of mobile production machines on the example of a forage harvester	
Mircea Fulea, Emilia Brad, Bogdan Mocan and Daniel Homorodean	Designing the usability of an innovation management assessment software platform	
Adrian Pîslă and Florin Covaciu	Alternative solutions for economic actuation of the paralel kinematics robots	
Marius C. Dan, Alexandrina Filip and Sorin Popescu	Mistakes in the application of 8D methodology and their impact on customer satisfaction in the automotive industry	
Marius C. Dan, Maria M. A Mureșan, Cristina D. Prică and Alexandrina Filip	Lean Six Sigma projects and their contribution to the improvement of interface relationships between the organization processes	



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## QUALITY AND INNOVATION RESEARCH THEMATIC SESSIONS

<b>Thursday 28.07.2016 14<sup>00</sup> - 15<sup>30</sup>hrs</b>		<b>Chair: Ioan Bondrea, Liviu Crişan Verdi Room</b>
Sergiu Ştefan Nicolaescu, Claudiu Vasile Kifor, Ilie Receu and Lucian Lobont	Integrated model of knowledge management concepts and design for Six Sigma methodology - Case study inside R&D center of automotive industry	
Ismail Bogrekci and Pinar Demircioglu	Surface roughness determination using signal processing techniques	
Ovidiu Gavriş	Dynamic analysis bridge-vehicle system for sustainable dimensioning road deck bridge	
Alexandru Creţu, Radu Munteanu Jr., Dan Iudean, Petros Karaisas and Victor Vladareanu	Quality of modern products - a case study on smartphones	
Jan Kiehne, Marieta Olaru, Joachim Irmer Sven and Dorin Maier	Does globalization drive innovation? Evidence from the European Union	
Dorin Maier, Mihaela Maftei, Joachim Irmer Sven and Nina Golowko	Challenges regarding innovation management in the current global competition	
Aurel Tulcan and Liliana Tulcan	Design of experiments in CMM probe configuration study	

## QUALITY AND INNOVATION RESEARCH THEMATIC SESSIONS

<b>Thursday</b> <b>28.07.2016</b> <b>16<sup>00</sup> - 18<sup>00</sup>hrs</b>	
<b>Chair: Claudiu Vasile Kifor, Radu Adrian Munteanu</b> <b>Verdi Room</b>	
Grigore Pop, Liviu Adrian Crişan, Mihai Steopan and Florin Popişter	Mathematical modeling of roughness parameter Ra when milling carbon fibre reinforced composites using a $\varnothing 8\text{mm}$ mill
Doina Pislă, Huţa Marius, Călin Vaida, Gabriel Batin, Cătălin Popa, Florin Graur, Cristina Fenişer and Nicolae Plitea	Development of an innovative needle insertion module used in transperineal robotic-assisted biopsy
Ján Stanček, Ivan Kuric, Juraj Uríček and Vladimír Bulej	Design of the battery swapping station
Clăudia Păcurar, Vasile Ţopa, Adina Răcăşan, Călin Munteanu, Claudia Constantinescu, Flaviu Pop, Sergiu Andreica and Mihaela Cislariu	High frequency multilayer spiral inductors modeling
Ştefan Bodi, Radu Comes, Albert Weckenmann and Sorin Popescu	Assistive augmented environment for quality inspection and statistical process control
Anca Sârb, Daniel Filip, Ştefan Ionuţ Crăciun, Mircea Murar and Cristina Fenişer	Decisional support system used in estimating life-cycle costs in buildings
Flaviu Pop, Călin Munteanu, Claudia Păcurar, Adina Răcăşan, Silvan Prusu, Alexandru Avram and Cătălin Chiorean	Pre compliance test for conducted emissions
Alina Bălu, Laura Bacali and Elena Simina Lakatos	Chocolate brands influence on students consumer behavior: an emotional approach
Elham Dadfar, Mojtaba Ramezani Ahmadabadi, Marc Sommer, Ilie Constantin Florea and Roxana Sârbu	Study on the impact of marketing planning on economic parameters

## QUALITY AND INNOVATION RESEARCH THEMATIC SESSIONS

<b>Friday</b> <b>29.07.2016</b> <b>9<sup>30</sup> - 11<sup>30</sup>hrs</b>		<b>Chair: Heikki Ruohomaa, Constantin Oprean</b> <b>Caravaggio Room</b>
Yulia Lashyna, Inna Maliukova, Liudmyla Rusina and Sergiy Shukayev	Development of a university's innovation ecosystem: importance of international collaboration	
Mihai Steopan, Florin Popișter, Edgard Steckel and Monica Steopan	Competitive design of a two wheeled mobile platform for indoor use	
Gabriela Vica Olariu and Stelian Brad	Efficiency analysis with DEA method of the support services in universities: A case study	
Emanuela Pop, Cornel Ciupan and Monica Steopan	Reconfigurable gearbox for didactic purpose	
Sanda Timoftei, Emilia Brad, Călin Vaida, Cristina Fenișer and Daniel Filip	Integration of industrial robots in fine arts applications: Algorithms and a case study with ABB robot technology	
Călin Neamțu, Camelia Achelăriței, Mihai Dragomir, Vasile Tompa and Anton Popa	Develop an immersive virtual reality environment for training system operators for critical infrastructure	
Claudius A. Peleskei, Daniel Negriță Mezei, Radu A. Munteanu, Vasile Dorca and Sorin Popescu	Simulating copula-based distribution of prices for construction projects	
Mihai Dragomir, Sorin Popescu, Zsolt Buna and Ioan Zăbală	Enhanced hospital bed with smart functions	
Adrian Pugna, Marian Mocan and Cristina Fenișer	Using Six Sigma methodology to improve complex processes performance	
Dan Opruța, Daniel Banyai and Ioana Sfârlea	Flow rate coefficient and critical Reynolds number for control valves	





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### **Networking in knowledge and production - technical, managerial and social issues**

- Collaborative research, design and production;
- IT and the Internet as global research & production facilitators;
- Regional production and innovation collaboration networks;
- Global supply chains and product mobility issues;
- Production and research offshoring and backshoring;
- Cultural, social and educational issues for transnational knowledge and production networking.

### **Agile and flexible solutions for future products and production processes**

- Production in the age of the new industrial revolution, internet of things and big data;
- Digital solutions and virtual environments for products and production;
- Smart products and production processes;
- Low costs solutions for products and production;
- Advances in production engineering;
- Production automation and robotics;
- Multidisciplinary convergence in products and production solutions;
- Sustainable and inclusive products and production processes.

### **Quality - at the age of system thinking and responsible action**

- Quality - from customer orientation to long term responsibility to society;
- Lean and system thinking in quality engineering and management;
- Advances in industrial metrology and quality control;
- Metrology - between measurement uncertainty and social accountability;
- Digital and virtual solutions in quality engineering and management;
- Quality in the context of advanced precision and intelligent manufacturing;
- Education and training as well as cultural issues concerning quality.

### **Innovation - an integrated approach to products, organizations and regions**

- Creating new products - innovation types, tools and methods;
- Knowledge management, creativity and innovation in organizations and networks;
- Innovation, entrepreneurship and business;
- Innovation and regional development: quadruple helix and synergies in RIS3.



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## NOTES



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