_ogistikWerkstatt Graz

4th INTERNATIONAL PHYSICAL INTERNET CONFERENCE



IPIC 2017 Program



Foreword

Dear Physical Internet community, Dear friends of Logistikwerkstatt Graz, Dear ladies and gentlemen,

It is an honour and privilege to welcome you all to Graz. The members of staff of the Institute of Logistics Engineering (ITL) at Graz University of Technology (TU Graz) proudly present the proceedings of the 4th International Physical Internet Conference 2017 (IPIC). Within the last years, the Physical Internet has developed more and more into a global research initiative thus completely changing the idea of logistics. But not only research is involved. More and more leading companies ranging from logistics, as well as logistic equipment producers and retailers, are focussing on this visionary approach. Dealing with actual challenges out of sustainability, efficiency, growing logistics volumes, shorter delivery times and new disruptive business models the main vision of the Physical Internet for 2050 is a truly integrated high-performative transport system. Our conference tries to power this vision.

This is where the IPIC merges with the Logistikwerkstatt Graz, where "science meets industry" is not only a mere slogan but has been living practice for four successful editions from 2012 on. Also Logistikwerkstatt Graz tries to integrate ideas and approaches from the areas of research and industry to power the technical and operational side of intralogistics out of ITL's engineering competence. Prof. Jodin established this unique type of conference here in Graz. It is our sad duty to inform you all of his passing away at the end of March 2017. To honour and remember him and his work for TU Graz and the PI in particular, we would like to dedicate this book to him posthumously.

There are many good reasons why to host IPIC 2017 in Graz, but as always it depends on the people behind the scenes to make such an event happen. Our thanks go to Prof. Montreuil and Sergio Barbarino, who developed together with us the idea of a Graz IPIC edition, prolonging a successful cooperation out of the MODULUSHCA projectlong ago. Despite all the efforts to organize such a conference, Prof. Montreuil, Fernando Liesa and Maximo Martinez Avila have always been much more than mere

supporters. Remembering the fruitful discussions and valuable insight into the PI community, it was mainly the European Technology Platform ALICE with Fernando Liesa, who largely contributed to designing an interesting and diversified program. Within 19 workshops, to be opened with a special keynote, attendees have the possibility to choose from three parallel sessions. This reflects the great interest of the community to have a more extensive conference and fuller program than ever before. The plenary lectures are general PI visions and try to level all attendees on the state-of-the-art. At least nine different topics - and mainly research directions - could be generated in advance and match the contributions by our authors. Complemented by activities for start-ups, research and funding as well as showing main impacts from ongoing PI projects, the conference tries to address a great variety of topics but even more so the specific interests of its attendees. With more than 50 scientific contributions submitted, the conference proceedings spearhead PI research and application around the globe. Around 200 attendees from more than 15 nations together with 90 speakers and workshop leaders will discuss the nine different topics in great detail.

All this can only be possible because of the researchers and their ground-breaking work and last but not least because of our generous sponsors and supporters who we would like to highly acknowledge on the following pages. We are deeply grateful to all our sponsors and supporters for this great conference.

Last but not least I want to thank you all once more for coming to Graz and wish you fruitful discussions, valuable insight into topics different from your own and empowering ideas for your daily business to take home with.

Yours sincerely,

Christian Landschützer, Assoc.Prof. DI Dr.techn. - deputy head of the ITL.

	2017						-	IPIC 20	
1.50	view Day 1 (Tuesd	ay, July 04, 2017)	Ť.	Overv	view Day 2 (Wednes	sday, July	X		
08:30	Regi	stration and welcome o	offee	08:30	Morning coffee				
	Opening ceremony				Opening and greeting address				
10:00	Plenary: Logistic Challenges of CPG Companies - Point of View of the Consumer Goods Forum Keynote speaker: Ruediger Hagedorn Senior Manager, End-to-End Value Chain & Standards Pillar The Consumer Goods Forum Plenary: Sustainability and competitiveness - is the Physical Internet an answer? Keynote speaker: Benoit Montreuil Coca-Cola Material Handling & Distribution Chair Professor Georgia Tech			09:00	Plenary: Role of Intralogistics in the Physical Internet Keynote speaker: Rod Franklin Adjunct Professor of Logistics Academic Director of Executive Education Kühne Logistics University - KLU				
					Second I Session 4: Intralogistics and hub design Keynote speaker: René de Koster Professor of Logistics and Operations		breakfast Session 5: City logistics Keynote speaker: Ulrich Mueller-Steinfahrt Professor for Applied Logistics		
12:15	Lunch Session 1: Session 2: Session 3:				Erasmus University Rotte Rotterdam School of Mana RSM	erdam -	University of Applied Sciences Wuerzburg-Schweinfurt - FHWS		
13:15	E-Commerce Keynote speaker: Pierre G. Bélanger Board MemberKeynote speake Andreas Pichle Head of R&D and Innovation	IT and Digitalization Keynote speaker:	PI systems Keynote speaker: Carlo Borghini Executive Director	13:15	Lunch				
		Head of R&D and		14:30	Session 4: Intralogistics and hub design	Sessio PI activ		Session 7: PI fundamentals	
16:15	Austrian coffee with cakes			16:00	Session 8: Start-ups & Ventures elevator pitch				
16:45	Plenary: CEOs´best of			17:30	Refreshments				
	Evening reception (presented by Logistics Research Austria - LRA)			17:45	Guided walk through Graz - UNESCO World Heritage				
18:15	Knowledge exchange & Poster presentation			19:00	GALA event @ Alte Universität Graz 1 Reception City of Graz 2 Reception State of Styria 3 PI-Visions - Prof. Eric Ballot 4 PI Awards Ceremony - powered by KNAPP AG				

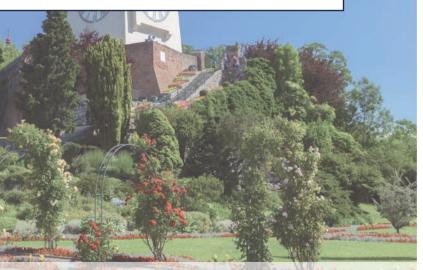


PIC 2017

Day 1 (Tuesday, July 04, 2017) Overview Day 3 (Thursday, July 06, 2017) Topic 08:30 Morning coffee **Registration and welcome coffee** Plenary: Physical Internet - Challenges and opportunities for a 3PL Keynote speaker: Pablo Gomez 09:00 Innovation Director and Iberia General Manager **Opening ceremony:** FM Logistic Session 9: Session 11: Session 10: · Christian Landschuetzer, TU Graz - IPIC 2017 Organizing committee Supply chain and Distribution Horizontal collabora-Harald Kainz, Rector of Graz University of Technology, Austria Industry 4.0 networks tion & modularization - Joerg Leichtfried - Federal Minister for Transport, Innovation and Technology, Austria (video message) Keynote speaker: Keynote speaker: Keynote speaker: - Fernando Liesa - ALICE, General Secretary, Belgium **Kurt Leidinger** Alex Van Breedam Michael Henke 09:45 CEO and Chairman of the CEO Director of the section Enterprise Logistics Board **TRI-VIZOR NV** Plenary keynote: Logistic Challenges of CPG Companies -Fraunhofer Institute for Schenker Deutschland AG Point of View of the Consumer Goods Forum Material Flow and Keynote speaker: Ruediger Hagedorn Logistics Senior Manager, End-to-End Value Chain & Standards Pillar The Consumer Goods Forum 12:45 Lunch Plenary keynote: Sustainability and competitiveness -Session 12: is the Physical Internet an answer? Session 13: 30 13:45 **Project contribution -**Keynote speaker: Benoit Montreuil **Blockchain in logistics** Cluster 2.0 Coca-Cola Material Handling & Distribution Chair Professor Passion 8000 - dream of a lifetime 15:15 Georgia Tech Keynote speaker: Gerlinde Kaltenbrunner Lunch 16:00 **Closing ceremony** 16:30 Refreshments

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Room: HS I



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Session 1: Retail and E-Commerce

Room: HS I 3:15 Keynote 1: Flow of goods in a future supply chain Keynote speaker: Pierre G. Bélanger - Board Member, Clear Destination Inc, Canada

Workshop 1.1: New Opportunities for supply chains in the FMCG sector Leader: Sergio Barbarino - Research Fellow of Procter & Gamble Research & Development organization, Chairman of ALICE, Belgium

13:50 **Contributions:**

- Towards Hyperconnected Distribution: the Retail Supply Chain Reengineering; Walid Klibi - The Centre of Excellence in Supply Chain (CESIT), Kedge Business School, France
- Potentials and key drivers of a cross-company reusable modular secondary packaging system in E2E FMCG chains; Yanyan Yang, MINES ParisTech, PSL Research University, France

Workshop 1.2: Interconnected E-Commerce logistics Leader: Jaco Voorspuij - Senior Manager Transport & Logistics, GS1 Global Office, Belgium

Contributions:

5:05

- GLN standard as a facilitator of physical location identification within
- hyperconnected logistics; Martyna Zdziarska, Institute of Logistics and Warehousing (ILiM), Poland
- Smart geocoding for accurate and reliable delivery planning and execution; Michael Nutto - Solution Director, PTV Group, Germany
- Delivering transport flexibility in Last Mile by harmonising identification and labelling of parcels in Last Mile; Jaco Voorspuij - Senior Manager Transport & Logistics, GS1 Global office, Belgium





Keynote 2: Collaboration in freight transportation - IT and digitalization as an enabler Keynote speaker: Andreas Pichler - Head of R&D and Innovation, Gebrüder Weiss GmbH. Austria

Workshop 2.1: Digital platforms enabling hyperconnected logistics Leader: Bartosz Piekarz - Head of logistics - engineering, i-LOG Integrated Logistics GmbH, Schachinger Logistik-Gruppe, Austria

Contributions:

- protoPI - an Austrian project to create a prototype of a regional Physical Internet Austria - Logistikum, Austria / Martin Schwaiger - CEO, SATIAMO GmbH, Austria eTA: Digital platform for interconnected truck freight transport; Gözde Aydin -Project Manager, Borusan Logistics, Turkey SELIS digital platform for next generation logistics applications; Nikos Tsampieris - Project and Dissemination Manager, SELIS Project / Pat O'Sullivan - Technical Coordinator, SELIS Project

Workshop 2.2: Open protocols and interconnection models enabling hyperconnected logistics

Leader: Eric Ballot; MINES ParisTech, PSL Research University, France

Contributions:

5:05

- Applying blockchain technology for hyperconnected logistics; Wout Hofman -Senior Research Scientist, TNO, The Netherlands Towards the Physical Internet with Coloured Petri Nets; Davide Giglio, DIME, University of Genova, Italy
- NOLI, A Proposal for an Open Logistics Interconnection Reference Model for a Physical Internet; Nakechbandi Moustafa, Université du Havre, France



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Room: Aula

web platform; Hans-Christian Graf - Professor, University of Applied Sciences Upper



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Session 3: Synchromodality and PI systems

Keynote 3: Rail in the Physical Internet - perspective of the EC for synchromodality Keynote speaker: Carlo Borghini - Executive Director, Shift2rail, Belgium

Workshop 3.1: Synchromodality

Leader: Oliver Schauer - Professor, University of Applied Sciences Upper Austria -Logistikum, Austria

Contributions: 3:50

- Optimized and flexible railway logistics; Hannes Pichler, INNOFREIGHT Speditions GmbH
- · Inducing a new paradigm shift: A different take on Synchromodal transport modelling; Tomas Ambra - Research Group MOBI, Free University of Brussels, Belgium
- Business Models in Physical Internet Systems Findings from the ATROPINE project; Patrick Brandtner, University of Applied Sciences Upper Austria, Austria

Workshop 3.2: PI systems

Leader: Oliver Schauer - Professor, University of Applied Sciences Upper Austria -Logistikum, Austria

Contributions:

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- PI and its impact on the emission calculation standardization of transport chains
- are we there yet?; Verena Charlotte Ehrler DLR Institute of Transport Research, Germany
- ProKapa: Dynamic capacity management to support the development of Physical Internet's framework conditions; Georg Brunnthaller - Fraunhofer Austria Research GmbH. Austria
- Simulation-Based Optimization in the Field of Physical Internet; Christian Haider -Heuristic and Evolutionary Algorithms Laboratory, Austria

16:1

Room: HS VIII

Networking break: Coffee with cakes

CEOs' best of

- Moderator: Christian Landschuetzer Institute of Logistics Engineering, Graz University of Technology, Austria
- Speaker:
- · Gerald Hofer, CEO KNAPP AG, Austria - Vincent Kwaks, CTO - VANDERLANDE INDUSTRIES B.V, The Netherlands

10 Evening reception and poster session 8:1



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Wuerzburg-Schweinfurt - FHWS Professor for applied logistics Department of Economics and Business Administration - Institute

and head of the Department of International Management, MODUL University, Austria

Session 4: Intralogistics and hub design

Workshop 4.3: PI readiness of warehouse technology Leader: Max Winkler - Vice President Solutions & Technology. SSI SCHÄFER Automation GmbH, Austria

Contributions:

Wearable solutions for efficient manual logistics processes - RFID Wristband and Smart-Glasses; Olaf Poenicke, Fraunhofer IFF, Germany

Workshop 4.4: PI and airport logistics

Leader: Vincent Kwaks - CTO, VANDERLANDE INDUSTRIES B.V. The Netherlands

Contributions:

5:05

- RTI-Capabilities of Air Cargo Transport Chains by evaluating processing interfaces and actor's responsibilities: Andreas Romstorfer - Researcher and Consultant, arp-planning.consulting.research, Austria
- A Survey of Freight Transportation Service Procurement Mechanisms; Shenle Pan, MINES ParisTech, PSL Research University, France

Room: HS I





Keynote 6: The Austrian approach in supporting a sustainable transport system by **RTI** funding activities Keynote speaker: Sarah Bittner-Krautsack - Programme Officer in the Department for Mobility and Transport Technologies, Austrian Federal Ministry of Transport, Innovation and Technology, Austria

Workshop 6.1: Funding programs to support the Physical Internet (PI) Leader: Fernando Liesa - Secretary General, ALICE - General Secretary, Belgium

Contributions:

Session 6: PI activities

- The Horizon 2020 approach on cooperative Research and Innovation -An outlook; Maria-Cristina Marolda - Policy Officer, European Commission (EC) -DG MOVE, Belgium
- Close-to-market support activities under the European Clean Transport Facility; Valerio Recagno, D'Appolonia Belgium NV, Belgium
- Bas van Bree Program Manager, TKI DINALOG, The Netherlands
- Experiences from a research partner in transnational R&D cooperation within University of Natural Resources and Life Sciences, Austria

Session 7: PI fundamentals

Leader: Rod Franklin - Adjunct Professor of Logistics, Academic Director of Executive Education, Kühne Logistics University – KLU, Germany

Contributions:

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- Patrick Fahim PhD Candidate, Section of Transport & Logistics,
- ITAINNOVA Technological Institute of Aragon, Spain





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· Results from the Era-net Transport call on Sustainable Logistics and Supply Chains;

Era-net Transport - Manfred Gronalt - Head of Institute of Production and Logistics,

Room: HS VIII

Jon Sleeman - Director - UK Logistics & Industrial Research, JLL, United Kingdom PI and Ports (PI&P): A Conceptual Framework and Future Development Paths;

Faculty of Technology, Policy and Management, Delft University, The Netherlands A Multi Simulation approach to develop Physical Internet; David Ciprés - Technican,



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Innovation Director and Iberia General Manager

Room: VIII

Room: HS I

Keynote 9: How to successfully manage Industry 4.0 along the supply chain and what

Fraunhofer Institute for Material Flow and Logistics, Germany

Leader: Martin Tschandl - Professor and head of department for Industrial Management,

Ph.D. Candidate, Industrial Engineering Center, Mines Albi, Toulouse University, France Lean thinking to foster the transition of the traditional logistics towards the Physical - Industry 4.0 and IoT: enabling technologies and approach for fast and efficient door to door supply chain; Simone Siria - Analyst and Consultant, Log@Sea - Circle srl, Italy

Session 10: Distribution networks

Keynote 10: Hyperconnected distribution - Solutions towards sustainable networks 09:45 Keynote speaker: Kurt Leidinger - CEO and Chairman of the Board, Schenker Deutschland AG. Germany

Workshop 10.1: PI Hubs and networks

Leader: Chiara Lepori - R&D Coordinator, Interporto Bologna Group, Itlay

Contributions:

- Optimal ordering and transporting of inventory in small PI-networks; Gerlach Van der Heide - Postdoctoral Researcher, University of Groningen, The Netherlands
- Simulation-based Assessment of Hyperconnected Distribution Center Capacity Requirements and Service Capabilities; Nayeon Kim - Phd student, Georgia University of Technology, USA
- A Simulation Based Study of the Effect of Competition on the Operations of Hyperconnected Crossdocking Hubs; Shannon Buckley - Graduate Student Researcher, Georgia University of Technology, USA
- Towards hyperconnected PI-Hubs linking supply chain operations; Tomasz Dowgielewicz - Managing Director, Marlo Poland, Poland

Workshop 10.2: Project contribution: CORE - Data sharing for seamless trade flows Leader: Nik Delmeire - Secr. General, European Shippers' Council -ESC, Belgium

Contributions:

- Introduction to CORE and CORE video; Nik Delmeire Secr. General, European Shippers' Council -ESC, Belgium
- Data sharing concepts for supply chain visibility; Wout Hofman Senior Research Scientist, TNO, The Netherlands
- Data sharing with community nodes; Antonis Mygiakis Technical Manager, CLMS (UK) Limited, Greece
- Secure and resilient supply chains based on visibility; Sergio Barbarino Research Fellow of Procter & Gamble Research & Development organization, Belgium

Session 11: Horizontal collaboration and modularization



Room: Aula

Keynote 11: Horizontal collaboration - possibilities and roadblocks Keynote speaker: Bart Vannieuwenhuyse - Partner, TRI-VIZOR NV, Belgium

Workshop 11.1: Horizontal collaboration Leader: Dirk't Hooft - Senior Advisor Logistics Collaboration, Argusi, The Netherlands

Contributions:

- Synchronization of intermodal freight shipments in the sharing economy; Joren Gijsbrechts - KU Leuven, Belgium
- Zaragoza Logistics Center, Spain
- · Microzoning: A grid based approach to facilitate Last-Mile delivery; Boukje Schellens - Analyst, Argusi, The Netherlands

Workshop 11.2: Modularization for the PI Leader: Maximo Martinez Avila - Global Transportation BPX Platform Manager, Procter & Gamble, Belgium

Contributions:

- 11:35
 - Doctoral Researcher, Georgia University of Technology, USA
 - Kedge Business School, France · Modular Solutions for Mobile Hospitals; Grainne Lynch - Vice President (elect),

Lunch



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Room: HS I

Facilitating Horizontal Collaboration in Transportation; Maria Jesus Saenz - Director,

Physical Internet Handling Containers as Pickup & Delivery Lockers; Louis Faugere -- Transport and packaging optimization using a three-tier modular encapsulation; Sihem Ben Jouida - Post doc, The Centre of Excellence in Supply Chain (CESIT),

Chartered Institute of Logistics and Transport and Lynchpin Innovation, Ireland



Session 12: Project contribution - Cluster 2.0

Room: Aula

Leader: Marcel Huschebeck - Manager Logistics Research, PTV Group, Germany

Contributions:

- Introduction of Clusters 2.0; Dirk`t Hooft Senior Advisor Logistics Collaboration, Argusi, The Netherlands
- CargoStream; Marc Verelst Commercial Engineer, Procter & Gamble, Belgium - Connecting flows between European Clusters; Frans Cruijssen -
- Partner, Argusi, The Netherlands
- Rail massification: challenges and opportunities for Physical Internet; Elvina Nowak -Chargée de mission partenariats et projets européens, Euralogistic, France

Session 13: Blockchain in logistics

Room: HS I

Workshop 13.1: Beyond the hype: what blockchain really brings to transport & logistics

Leader: Ignacio López del Moral - Digital Regulation Tech Responsible, EVERIS and Roberto Fernández Hergueta - Head of Emerging Digital Business, EVERIS

Contributions:

13:45

15:15

16:00

- Blockchain Regulation: Is Europe Getting It Right?
- Our experience: Tokio Marine & Nichido Fire Insurance.
- Lyra Network: Spain's first multisectoral consortium.

Passion 8000 - dream of a lifetime Keynote speaker: Gerlinde Kaltenbrunner Room: Aula

Closing ceremony

Refreshments

N. C.

NOTES:

dditional material to the conference proceedings are presented at www.pi.events after the event





