Session title: **Recent advances in control for the Physical Internet and interconnected logistics - PIIL**

Organisers:

- Yves Sallez, University of Valenciennes, France (yves.sallez@univ-valenciennes.fr)
- Shenle Pan, Mines ParisTech, France (shenle.pan@mines-paristech.fr)
- Eric Ballot, Mines ParisTech, France (eric.ballot@mines-paristech.fr)
- Benoit Montreuil, Georgia Tech, USA (Benoit.Montreuil@isye.gatech.edu)

Short presentation:

Context:

The Physical Internet (PI) was presented by B. Montreuil as a response to the inefficiency and unsustainability of today's logistics systems, indeed of the way that physical objects are moved, stored, realized, supplied and used all across the world (www.physicalinternetinitiative.org). The aim is to reverse the actual situation from three points of view:

- From an economical perspective, the goal is to unlock significant sustainable gains in global logistics, production, supply chain and transportation.
- From an environmental point of view, an important reduction of the logistics induced global energy consumption, greenhouse gas emission and pollution is expected.
- From a societal perspective, the goal is to enhance the quality of life of the different actors (e.g. truckers, logistic workers...) implied in the logistic systems as well as to society at large through improved goods accessibility and mobility.

The term Physical Internet exploits a metaphor from the Digital Internet, which is based on routers transmitting standard data packets under the TCP-IP protocol. A core enabling technology to make the PI a reality is the encapsulation of goods in modular, reusable and smart containers, called PI-containers. The PI-containers range in modular dimensions from the size of a large cargo container to the size of a small box. The ubiquitous usage of PI-containers will make it possible for any company to handle and store any company's products because they will not be handling and storing products per se.

Aims of the session:

Numerous research issues are addressed in the innovative Physical Internet domain. The aim of this session is to present key recent advances in control for the Physical Internet and more globally for interconnected logistics.

Subjects addressed:

- Design of smart PI-containers able to support decisional activities via embedded intelligence;
- Design and control of PI-facilities, allowing quick, cheap, seamless and flexible transfer of PI-containers; taking into account the scheduling of the resources (e.g. trucks, conveying systems) and the routing of PI-containers subject to potential perturbations;
- Study and design of open distributed information systems to monitor and manage PI-containers flows;
- Traceability and tracking of freight in Physical Internet enabled Logistics Web;
- Proposal, modelling and investigation of decentralized interconnected approaches for logistics;
- Control of Physical Internet enabled urban logistics and e-commerce last-km delivery;
- Simulation of freight flows through logistics networks;
- Emerging ICT concepts and technologies for interconnecting logistics, notably for controlling and piloting intelligence of PI assets.

Adequacy with respect to the Workshop's topics:

This session is clearly relevant of the workshop's topic and addresses numerous issues in the field of intelligent, safe and sustainable logistics services and processes.

Keywords:

Physical Internet, Interconnected Logistics, Simulation, Control, Traceability, Intelligent products, Holonic and multi-agents systems.

Important dates:

- Special Session Proposal: June 30, 2015
- Full Paper Submission: August 31, 2015
- Notification of Acceptance: September 22, 2015
- Final Paper Submission: October 25, 2015