#### Session title: Human-centred design for adaptive manufacturing

#### system (HDAM)

**Organizers**:

* Hind Bril El Haouzi, University of Lorraine, France (hind.el-haouzi@univ-lorraine.fr)
* Marie-Pierre Pacaux-Lemoine, University of Valenciennes, France

(marie-pierre.lemoine@univ-valenciennes.fr)

* André Thomas, University of Lorraine, France (Andre.Thomas@univ-lorraine.fr)

**Short presentation**:

The 4th industrial revolution involves major changes in our factories and supply chains. In particular, the emergence of Cyber Physical System (CPS), which can be seen as interacting networks of physical and computational components, will provide the foundation of many new factories infrastructure and improve the quality of both products and processes. These new industrial infrastructures will dramatically impact the use of traditional centralized systems that manage and control manufacturing activities. In addition, the Industry 4.0 vision promotes new ways to assess the manufacturing system performance including environmental and social aspects. The design and control of such socio-technical ecosystems capable to adapt their behaviour to the changing environment is still a challenging issue.

The modelling approaches used to design such complex-adaptable systems are usually technology-centred. In fact, since several decades the human factors were neglected and with the increase of automation, the human and control interactions where reduced. The reason was to decrease the risk of errors, non-value-added tasks, and the risk of accidents (according to the French Ministry of Ecology, Sustainable Development and Energy, Directorate General of Prevention 60% of accidents are related to humans). However, industrial approaches coming from Toyota System, such as LEAN philosophy, encourage the use of human capital skills throughout product and process lifecycle. The human errors are source of understanding the system and improvement. For instance Shingo, the founder of TPS, says "Do not ask your staff for solutions; ask them to bring you problems."

Human-centred design is defined in ISO 9241-210:2100 as *“an approach to interactive systems development that aims to make systems usable and useful by focusing on the users, their needs and requirements, and by applying human factors/ergonomics, usability knowledge, and techniques. This approach enhances effectiveness and efficiency, improves human well-being, user satisfaction, accessibility and sustainability”.*

# The main purpose of this special session is to identify research works and challenges on human centred design approach of manufacturing control and to evaluate them using new social and environmental metrics throughout life-cycle.

# This session will focus on (but not limited to):

# Social lifecycle assessment and adaptive manufacturing system

* Human centred design for intelligent manufacturing system
* Computers in the Human Interaction Loop
* Human-in-loop control
* Cooperative approach to manage self-organized system
* Interactive scheduling approaches

**Keywords**: Human centred design, Human-in-loop simulation, S-LCA, Manufacturing control architecture.

**Important dates**:

* Proposals of Special Sessions: **February 23, 2018**
* Full paper submission: **March 12, 2018**
* Notification of acceptance: **March 26, 2018**
* Final, camera-ready paper submission: **April 16, 2018**
* Early registration and fee payment: **May 7, 2018**