



## IEEE IES - Technical Committee on Industrial Agents (TConIA)

### Chair:

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### Co-Chair:

Mihaela Ulieru,  
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**The mission** of this committee is to provide a forum bringing together researchers and application sector specialists contributing to the advancement and application of industrial agent technology in distributed production (supply chain manufacturing, production planning and scheduling, assembly and continuous processes), services and infrastructure sectors. In addition we target the novel and emerging areas driving progress in the industrial sector today – such as industrial ecosystems animated by the next generation Internet. The committee will provide a continuing base to many researchers who have been participating in national and international projects building on the knowledge-base created by past and current efforts like IMS program, EU NoE. The key drivers for this effort are the benefits of agent-based industrial systems, namely: robustness, scalability, re-configurability and productivity, all of which translate to a greater competitive advantage. The experience of some of the committee members showed that agent-based automation can enable a physical production line that would be scalable in production by 70% and has a 40% greater productivity. Similar opportunities exist in supply chains, service sectors and infrastructure systems.

Within the IEEE Industrial Electronics Society the Committee aims:

1. To develop strategies for supporting systems developments using state of the art technologies and to assist in developing an integrated understanding of future systems needs for the addressed application sectors;

2. To develop strategies for generating cross-cutting activities with other TCs of the IES;
3. To provide forums and opportunities for members to exchange ideas, knowledge, experience, learning and results in this area.
4. To stimulate cross-fertilization of technical and scientific ideas for the advancement of the industrial agents field in tune with latest breakthroughs at the confluence of the ICT and intelligent manufacturing sectors.

The Technical Committee has a matrix structure, with 6 Core Technologies and 4 Key Application Sectors. The **Core Technologies** are:

- **Intelligent Components and Systems Architecture**: [José Lastra](#) (Tampere University of Technology)
- **Intelligent Supervision** : [José Barata](#) (Universidade Nova de Lisboa)
- **Web-Technology and Service-Oriented Architectures** : [François Jammes](#) (Schneider Electric)
- **Methodologies and Tools**: [Luca Ferrarini](#) (Politecnico di Milano)
- **Wireless Communication Networks**: [Carlos Cardeira](#) (Instituto Superior Técnico)
- **Control of Collaborative Systems**: [Paulo Leitão](#) (Polytechnic Institute of Bragança)

The **Key Application Sectors** are:

- **Collaborative Networks** : [Luis Camarinha-Matos](#) (UNINOVA)
- **Infrastructure (Manufacturing)** : [Jon Agirre Ibarbia](#) (Fundación Fatronik) and [Robert Harrison](#) (Loughborough University)
- **Infrastructure (Transport)**: [Michael Höpf](#) (Manufacturing Engineering & Automation FhG-IPA)
- **Infrastructure (Process)** : [Francisco Maturana](#) (Rockwell Automation) and [Pavel Vrba](#) (Rockwell Automation)

Additionally, the Technical Committee has the following sub-committees:

- **Review for Conferences and Transactions** : [Birgit Vogel-Heuser](#) (Bergische University of Wuppertal) and [Duc Pham](#) (Cardiff University)
- **Technology and R&D Roadmapping: ????**
- **Emerging Technologies Task Force**: [Mihaela Ulieru](#)
- **WebPage** : [Paulo Leitão](#) (Polytechnic Institute of Bragança)

The **planned activities for 2007** are:

- Re-organize the Technical Committee:
  - Extension of the number of technical areas covered by the Technical Committee (Initiated in June 2006 and already presented in this document).
  - Extension of the Technical Committee with new experts.

- A general meeting with the participation of all Co-chairs will take place at the IEEE-INDIN'07 Conference, where will be proposed the new structure of the technical areas and associated new experts.
- Organize activities in the IES Conferences:
  - IEEE IES ISIE'07: TPC Industrial Informatics (organization and chairing).
  - IEEE INDIN'07: Track on Service-Oriented Architectures (organization and chairing).
  - IEEE INDIN'07: Track on E-Applications (organization and chairing).
  - IEEE INDIN'07: Track on Embedded and Networked Control in Collaborative Manufacturing (organization and chairing).
  - IEEE INDIN'07: Mihaela Ulieru and Armando Colombo – Members on the International Advisory Board.
  - IEEE-IES INDIN 07: Mihaela Ulieru – Keynote Speaker
  - IEEE – IES ENF 2007 – Workshop on 'Emulating the Mind' – Mihaela Ulieru, Program Committee Member; Steering Committee Member (liaising with Cognitive Computing) and International Advisory Board Member.
  - IEEE Symposium on Industrial Embedded Systems (IES'07): Industrial Applications (organization and chairing).
  - Others workshops formed around key invited sessions, panel discussions, and tutorials.
- Revision of articles presented to IES conferences and Transactions, namely IECON'07, ISIE'07, INDIN'07, ETFA'07, Transactions on Industrial Informatics and Transactions on Industrial Electronics.
- Develop activities for generating cross-cutting activities with other groups:
  - Mihaela Ulieru will liaise between the TconIA and the Foundation for Intelligent Physical Agents (FIPA) to enable development of FIPA standards for networked embedded control systems and other emerging technologies as well as the deployment of the FIPA standards in the manufacturing industry.
- Edit a book presenting the state of the art and a R&D roadmap about the theme of this committee.
- Awards for the best papers presented in special sessions organized by the Technical Committee in IES conferences.

The **financial funding** for 2007 (adapted from the proposal for 2008) is:

- \$2000 as travel support for highly active members to attend the Technical Committee meetings.
- \$500 for the management of the web page of the Technical Committee.
- \$500 for Best Paper Awards in the area of the Technical Committee, e.g. INDIn'08, IECON'08 or special sessions organized by the Technical Committee.



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The Webpage of the Technical Committee is available at: <http://www.tcia.ipb.pt/>

