
SAFE HUMAN ROBOT INTERACTION WITH INDUSTRIAL AND SERVICE ROBOTS

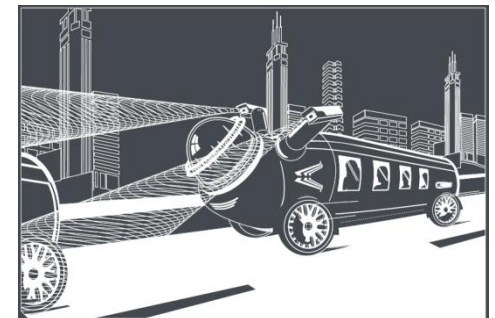
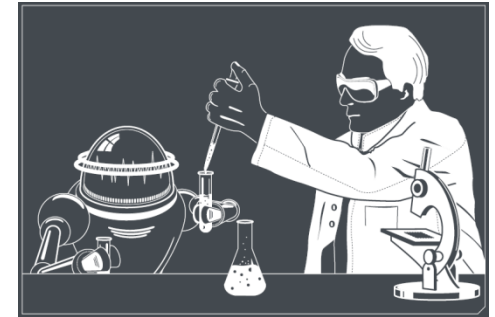
euRobotics Forum 2012

Tuesday, 6th March, 11am – 12.30am



Safety as a key factor for future industrial and service robot applications

- Product visions of industrial and service robots include close human robot interaction in dynamic environments
 - Robotic co-workers
 - Household/personal assistants
 - Person transport robots
- Performing complex tasks in dynamic environments makes high demands on safe interaction
 - Maintaining safety distances
 - Reducing velocity, force and impacts to an acceptable level
- Demand for safety standards providing instructions for safe design
- Demand for research on concepts to ensure safety

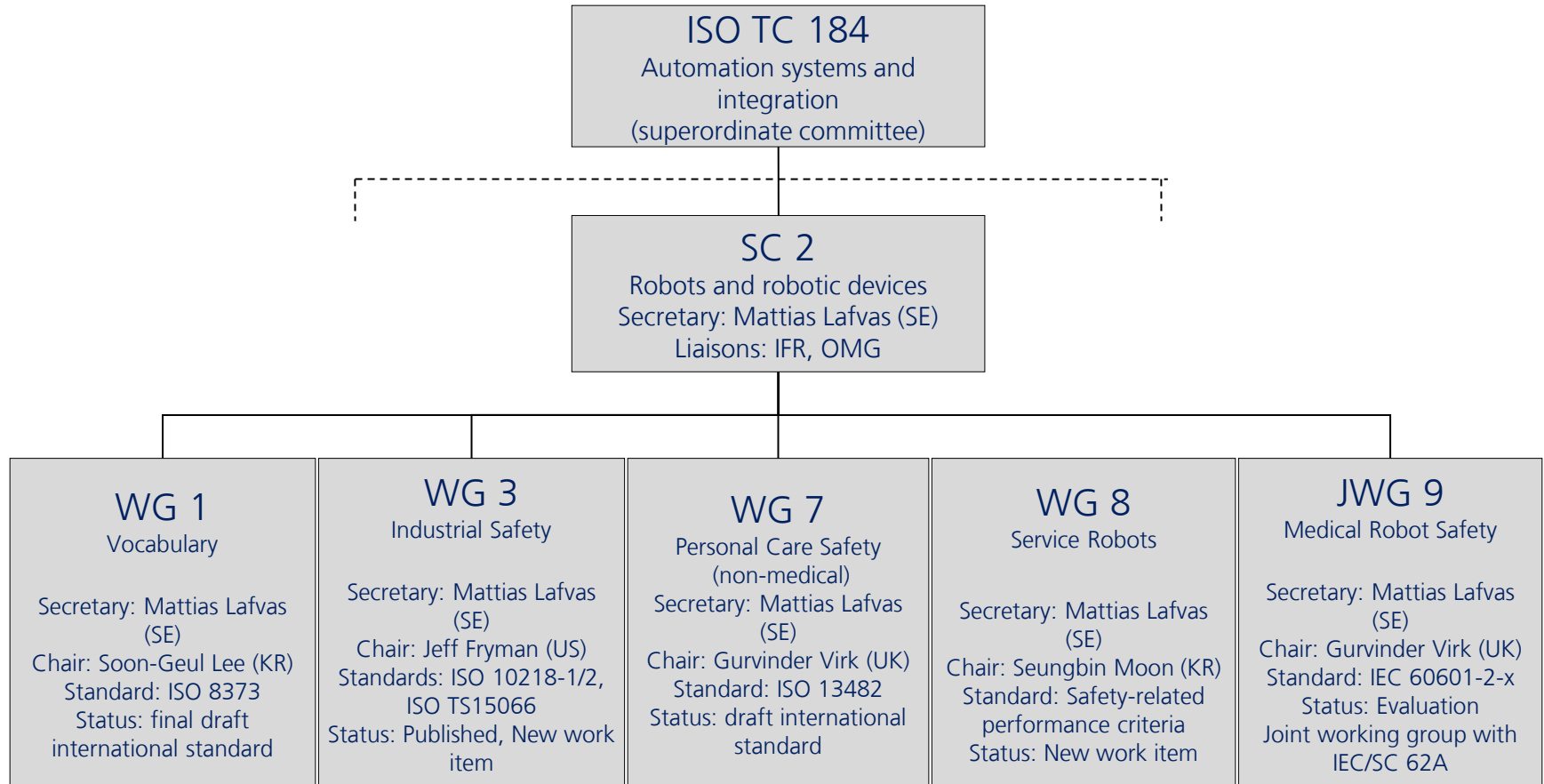


© Strategic Research Agenda for Robotics in Europe

Agenda

- **Possibilities to contribute to ISO standardisation**
Theo Jacobs, Fraunhofer IPA, Stuttgart
- **Current Activities in International Robotics Standardisation**
Dr Chris Harper, Avian Technologies, Bristol
- **New Safety Paradigm in Human-Robot-Cooperation**
Susanne Oberer-Treitz, Fraunhofer IPA, Stuttgart
- **Understanding Soft-tissue Injury in Robotics**
Dr Sami Haddadin, German Aerospace Center, Munich
- **Active Control of Safety: the ROSETTA Approach**
Prof. Paolo Rocco, Politecnico di Milano, Milan

Standardization at ISO committee TC 184/SC2



ISO Standardization on service robots needs more contribution from Europe

- Working groups meet three times a year at changing locations (US, Europe, Asia)
 - Draft documents are distributed to each nation standardization organization after a meeting
 - National experts propose changes in the document through comments
 - Processing of all comments in the regular meetings
- European experts have the chance to influence future (safety) standards
 - Provide our expertise from research projects, robot platforms, product visions
 - Communicate our demands for standards, safety regulations, etc.
 - Ensure European competitiveness through quick adoption of standards
- Despite the large number of European service robotics researchers and manufacturers, currently only five European countries are involved in service robot standardization (France, Germany, Italy, Netherlands, UK)

Possibilities to contribute to the development of standards

- Next meetings of ISO TC184/SC2
 - 2012/04/23-27: Meeting of WG 7 (personal care safety) in Tokyo, Japan
 - 2012/06/11-15: Meeting of WG 3 (industrial safety) in Mainz, Germany
 - 2012/07/02-13: Meeting of WG 1, 7, 8, 9 (service robots) in Milan, Italy
 - 2012/10/08-10: Meeting of WG 3 (industrial safety)in Montreal, Canada
- Visiting a meeting as an observer
 - Contact conveners to register and get information
- Joining working groups as a technical expert
 - Contact your national standardization organization to be appointed as a technical expert
- Possible financial support to reduce travel costs by the FP7-project euRobotics
 - Decision on case-to-case bases for interested first-time-visitors

Thank you for your attention!

Contact addresses:

- Soon Geul Lee, Convenor of WG1 (Vocabulary, Coordinate systems)
sglee@khu.ac.kr
- Jeff Fryman, Convenor of WG3 (Industrial robot safety)
Jfryman@robotics.org
- Gurvinder Virk, Convenor of WG7, JWG9 (Service robot safety)
gsvirk@clawar.org
- Seungbin Moon, Convenor of WG8 (Service robots, Performance criteria)
sbmoon@sejong.ac.kr
- Theo Jacobs, FP7 project euRobotics
theo.jacobs@ipa.fraunhofer.de