

Standardisation Efforts on Robotics

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Introduction

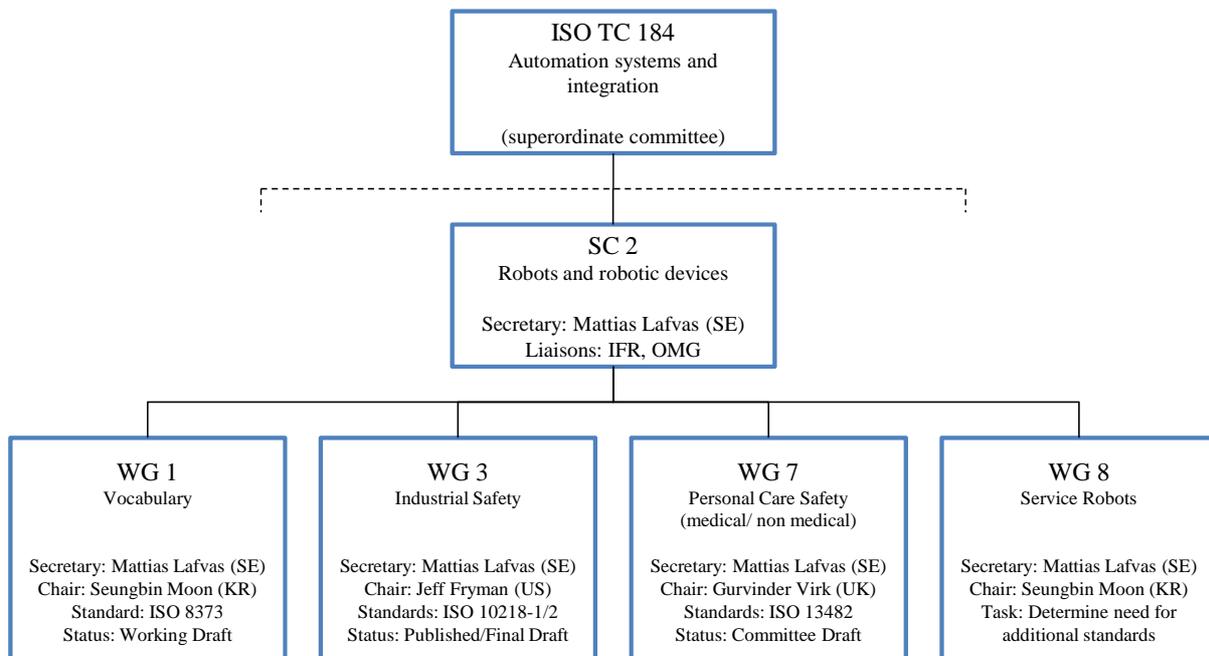
Industrial robots have been part of industrial automation for a long time and are thus covered by several international standards such as ISO 10218. As tasks for industrial robots have gotten more complex, e.g. cooperation with a worker, new standards are currently being developed. New standardisation efforts have also been started on service robots in order to specify general safety requirements before serial products enter the market.

Within the EU-funded project euRobotics (<http://www.eurobotics-project.eu>), standardisation efforts on robot safety are promoted. EUROP members will be informed about current developments in ISO standardisation committee TC 184/SC2 "Robots and robotic devices" on a regular basis.

Organisation of Standardisation Committees

All relevant standard development takes place in ISO TC184/SC2 committee and is organised in several working groups. WG3 deals with industrial robot safety. WG7 works on personal care safety. The standard on non-medical personal care robots has reached the status of a Committee Draft (CD). The work on medical personal care robots has just been started by a study group within WG7. The task of WG1 is to compile all definitions from the mentioned standards in ISO 8373 (Vocabulary). WG8 coordinates the work of the other working groups within the service robotics area and determines the need for additional standards in the non-industrial robotics sector.

Nations that are currently actively participating in developing these standards are France, Germany, Japan, Korea, United Kingdom and the United States. WG3 gets additional contributions from Canada, Italy, Sweden and Switzerland.



Progress in WG1

The standard ISO 8373 has recently passed official voting and has now entered working draft status. As this standard compiles definitions from other standards that are currently under development some definitions had to be updated, exchanged or deleted. A great improvement has been made on the precise definition of a service robot which is now defined as “robot that performs useful tasks for humans, society or equipment excluding industrial automation applications”. The clause now states, that the distinction between industrial robots and service robots depends on the task the robot is performing: “While a painting robot used to paint automobiles on a production line is an industrial robot, a painting robot used to paint a structural wall is a service robot.”

Progress in WG3

The new international robot safety standard ISO 10218 consists of two parts: Part 1 specifies requirements and provides guidance for the assurance of safety in design and construction of the robot. This part – ISO 10218-1:2006 - was published by ISO in June 2006, and was subsequently harmonized as a European standard and adopted as a national standard in different countries like the USA, Canada and the European countries. It cancels and replaces the old edition of ISO 10218 dating from 1992 as well as EN 775:1992. Currently part 1 is again under revision due to the New Machinery Directive. It passed the DIS-balloting in January 2010 and will probably be published in the second half year of 2010.

Since safety in the application of industrial robots is influenced by the design and application of the particular robot system integration, Part 2 of the new standard ISO 10218 will provide guidance for the safeguarding of personnel during robot integration, installation, functional testing, programming, operation, maintenance and repair. Part 2 is also expected to be published in the second half-year of 2010.

In addition to ISO 10218-1 and ISO 10218-2 WG 3 is ready to prepare a Technical Specification for Collaborative Robots

Progress in WG7

The standard ISO 13482 on non-medical personal care robots has passed official voting and has now entered committee draft status. As this standard was trying to include a wide range of future robot applications that might not even been thought of, a long discussion was held to identify and specify the scope and to redirect the formal structure of the document. It has now been agreed, that the scope will possibly be limited to a certain set of personal care tasks related to the robot types “mobile servant robot”, “person carrier robot” and “physical assistant robot”. These tasks are to be identified for the next meeting. Narrowing the scope will enable the working group to write a C-type standard with concrete instructions for every task. The alternative could be to write a B-type standard dealing with general requirements for personal care robots, later followed by C-type standards for certain subsets of personal care tasks.

The experts working on the standard for medical robots have now met for the second time. As this study group tries to cover a wide range of medical robots and applications it was tried to find common hazards and requirements for all “medical robots” on the market. There also were clarifications about the definition of a medical robot, the distinction to elderly care robots and the structure of the new standard.

Progress in WG8

During the meeting in Tokyo in 2009-10 the working group had identified three topics that might be interesting for future standardisation efforts. These are “coordinate systems”, “performance” and “robot contents”. With regard to the limited number of national experts it has been decided not to start with these new work items immediately. The experts will concentrate on the safety standards instead. Nevertheless the development in the newly identified areas will be watched. Apart from that Japan and Korea have started to create national standards on some of the identified topics.

The next meetings

For service robots (WG1, WG7, WG8) the next meetings will take place in Paris (June 21-25) and in Budapest (October 25-29). As these meetings both take place in Europe, this is a unique opportunity for interested European observers to attend the meeting without spending too much for travelling. The meeting in January 2011 will then be held in New Zealand.

The standardisation group on industrial robots (WG3) will continue their work in Stockholm (June 16-18) after the international conference Safety of Industrial Automated Systems (SIAS) in Tampere. Future meeting dates and venues will be determined there.

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