

RAS Standing Committee for Standards Activities—A Status Update

By Raj Madhavan

The Standing Committee for Standards Activities (SCSA) under the Industrial Activities Board (IAB) of the IEEE Robotics and Automation Society (RAS) has been actively working with the research and industrial communities and other Standards Developing Organizations (SDOs) to identify areas in standards for robotics and automation that are ripe for standardization. The motivation is to target the *low-hanging fruit* with community participation and acceptance toward confirming and documenting the best existing practices [3]. More on the previous work of RAS-SCSA, leading up to the work reported in this column, can be found in earlier articles [1], [2].

Figure 1 shows the IEEE standards development process. The three main blocks in the development process are:

- **Project Authorization:** Each project must be supported by a technical group, which in the IEEE parlance is referred to as a *sponsor*. Once a project idea is formed and refined within the study group (SG), it is then approved through a document called *project authorization request* (PAR). An approved PAR is needed before official work can begin on a standard project. It serves as the work authorization by the IEEE-Standards Association Standards Board (IEEE-SASB) and is valid for four years.
- **Develop Draft Standard:** The official standard is written by a working

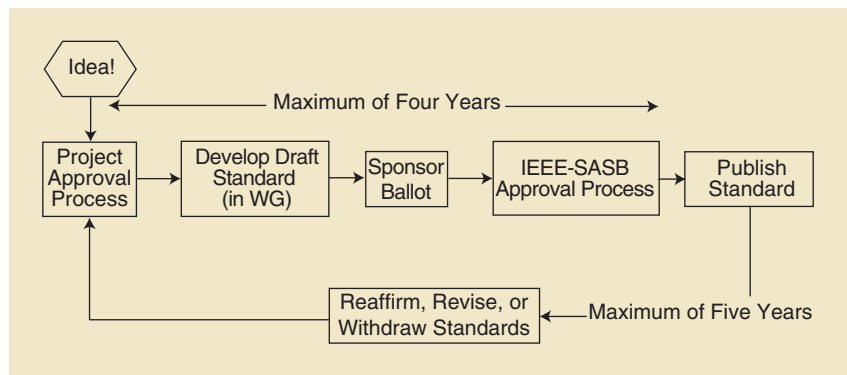


Figure 1. The IEEE Standards development process.

group (WG) consisting of developers, researchers, and anyone interested in creating the standard. The WG writes the initial draft from existing documents, specifications, and discussions among members. The draft document is refined within the WG through multiple iterations and review.

- **Consensus Process:** Consensus is determined through a ballot. Interested persons or organizations are invited to ballot on draft standards. A ballot group within the IEEE-Standards Association (IEEE-SA) receives the draft document, and after reviewing and commenting on the draft (feedback from WG is still possible at this stage), it votes yes (approve), no (disapprove), or abstain. The IEEE-SASB grants the final approval of the standard. It should be noted that once a standard is published, it is still possible to revise and update the standard or to add subparts to an existing standard as a way of keeping up with technological advances, for instance.

Following the RAS Standards meeting at the IEEE International Conference on Robotics and Automation (ICRA) 2011 in Shanghai, the two previously existing SGs, Map Data Representation (MDR) and Ontologies for Robotics and Automation (ORA), actively worked with interested members of the community toward generating the PARs. A follow-up full-day meeting took place at the IEEE International Conference on Intelligent Robots and Systems (IROS) 2011 in San Francisco (Figure 2). It was a well-attended meeting with the morning and afternoon sessions focusing on one of the two groups, respectively. The meeting also included presentations from the IEEE-SA staff that briefed the attendees on the rules and procedures involved in running successful groups.

Based on the ensuing discussions and comments from the ICRA 2011 and IROS 2011 meetings, two PARs were submitted to IEEE-SA in late October 2011. The purpose of the MDR group, as stated in the submitted PAR, is to define a common

Digital Object Identifier 10.1109/MRA.2011.2181746
Date of publication: 26 March 2012

representation for robot map data, including metric and topological maps. It is intended to facilitate interoperability among different navigating robots, extending operational range and application areas of the robots. In addition, this standard is to provide a simple, unified way of maintaining, updating, and revising robot maps while facilitating technological advancement for spatial mapping carried out by robots and/or other relevant devices. The stated purpose of the ORA group is to provide an overall ontology and associated methodology for knowledge representation and reasoning in robotics and automation, together with the representation of concepts in an initial set of application domains. The standard is to provide a unified way of representing knowledge and a common set of terms and definitions, allowing for unambiguous knowledge transfer among any group of humans, robots, and other artificial systems.

Both of the revised PARs are now available at <http://www.ieee-ras.org/industrial/standards.html> for anyone who is interested in knowing additional details. The PARs were subsequently approved by the IEEE-SA New Standards Committee (NeSCOM) in early November 2011, thus, transitioning the SGs into WGs within which the standardization efforts are now formally continuing (with RAS as the official sponsor). The WGs welcome your comments and participation in this standardization process. To be involved in the activities of the standards committee, neither RAS nor IEEE-SA memberships are mandatory.

Acknowledgments

The author thanks Wonpil Yu (Electronics and Telecommunications Research Institute, Korea), Geoffrey Biggs (National Institute of Advanced Industrial Science and Technology, Japan), Craig Schlenoff (National Institute of Standards and Technology, United States), and Edson Prestes (Universidade Federal do Rio Grande do Sul, Brazil) for serving as the WG chairs. The author also thanks the various members who have participated



Figure 2. Some of the attendees of the RAS Standards Committee meeting at IROS 2011 in San Francisco.

and provided their suggestions and comments in the standards meetings and through the discussion groups.

References

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