P1873

Submitter Email: raj.madhavan@ieee.org
Type of Project: New IEEE Standard
PAR Request Date: 15-Sep-2011
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PAR Expiration Date: 31-Dec-2015
Status: PAR for a New IEEE Standard

1.1 Project Number: P1873
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Title: Standard for Robot Map Data Representation for Navigation

3.1 Working Group: Robot Map Data Representation (RAS/SC/MDR)
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   None

4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 04/2013
4.3 Projected Completion Date for Submittal to RevCom: 10/2013

5.1 Approximate number of people expected to be actively involved in the development of this project: 20
5.2 Scope: This standard provides map data representation to encode the surrounding environments for mobile robots in a format suitable for exchange between components and systems. Map data representation in this standard describes two-dimensional (2D) representation of an environment in the form of a metric map, a topological map, and/or a combination of both. This standard also describes a methodology, including software Application Programming Interfaces (APIs), for exchanging map data among robots, computers, and other compatible devices along with glossaries specific to mobile robot navigation. This standard is neither limited by geographic scale nor sensor modalities. The map representation format provided by the standard shall only consider static maps.

5.3 Is the completion of this standard dependent upon the completion of another standard: No
5.4 Purpose: The purpose of this standard is to define a common 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.

5.5 Need for the Project: One of the basic requirements of robot navigation is a map with which a mobile robot can perform localization and motion planning. In order for a mobile robot to operate properly, a map must be available a priori or constructed during operation. The benefit of this standard is that common robot map representations will be established such that developing and deploying various robotic applications based on robot navigation can be facilitated. Such applications include, but are not limited to, autonomous road navigation, robotic logistic systems, robots for defense and rescue, and service robots for personal/domestic applications such as robotic vacuum cleaners and entertainment robots. Moreover, this standard will contribute to promote development of good experimental methodologies for mobile robotics as a valuable tool for facilitating comparison and evaluation of maps obtained with different systems.

5.6 Stakeholders for the Standard: Manufacturers, service and solution providers, equipment suppliers in the robotics,
automotive, software, and construction industries.

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**Intellectual Property**

6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No
6.1.b. Is the Sponsor aware of possible registration activity related to this project?: No

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7.1 Are there other standards or projects with a similar scope?: No
7.2 Joint Development
   Is it the intent to develop this document jointly with another organization?: No

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8.1 Additional Explanatory Notes (Item Number and Explanation):