The Strategic Research Agenda for Robotics in Europe

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The Industrial Activities Board has taken on the role of tracking road-mapping activities for robotics that are underway in various parts of the world, both in the public and private sectors. In this issue, we have invited European colleagues to share their road-mapping activities with our magazine's readership.

—Alex Zelinsky,
RAS Vice President for Industrial Activities

In the "Industrial Activities" column of the September 2009 issue of *IEEE Robotics and Automation Magazine,* recent world-wide road-mapping activities were compared with a focus such that the current European initiatives could only very briefly be described. This column is geared toward describing these activities in more detail.

Robotics road maps have a long tradition in the European research community. The European Robotics Research Network (EURON) devised two road map documents largely based on academic input in 2004 [1] and 2008 [2]. In 2006, the European robotics technology platform (EUROP) published a first industrially driven road map, which has recently been superseded by Robotic Visions to 2020 and Beyond—The Strategic Research Agenda (SRA) for Robotics in Europe [3]. This SRA had been in development since November 2006 with more than 130 nstitutions participating. Although the road-mapping exercise was driven by the European robotics industry, it was still backed by the commitment and endorsement of all European robotics stakeholders, including academia, and public and private investors.

As a first step, a glossary, which is also publicly available, was developed to ensure that all contributors spoke the same

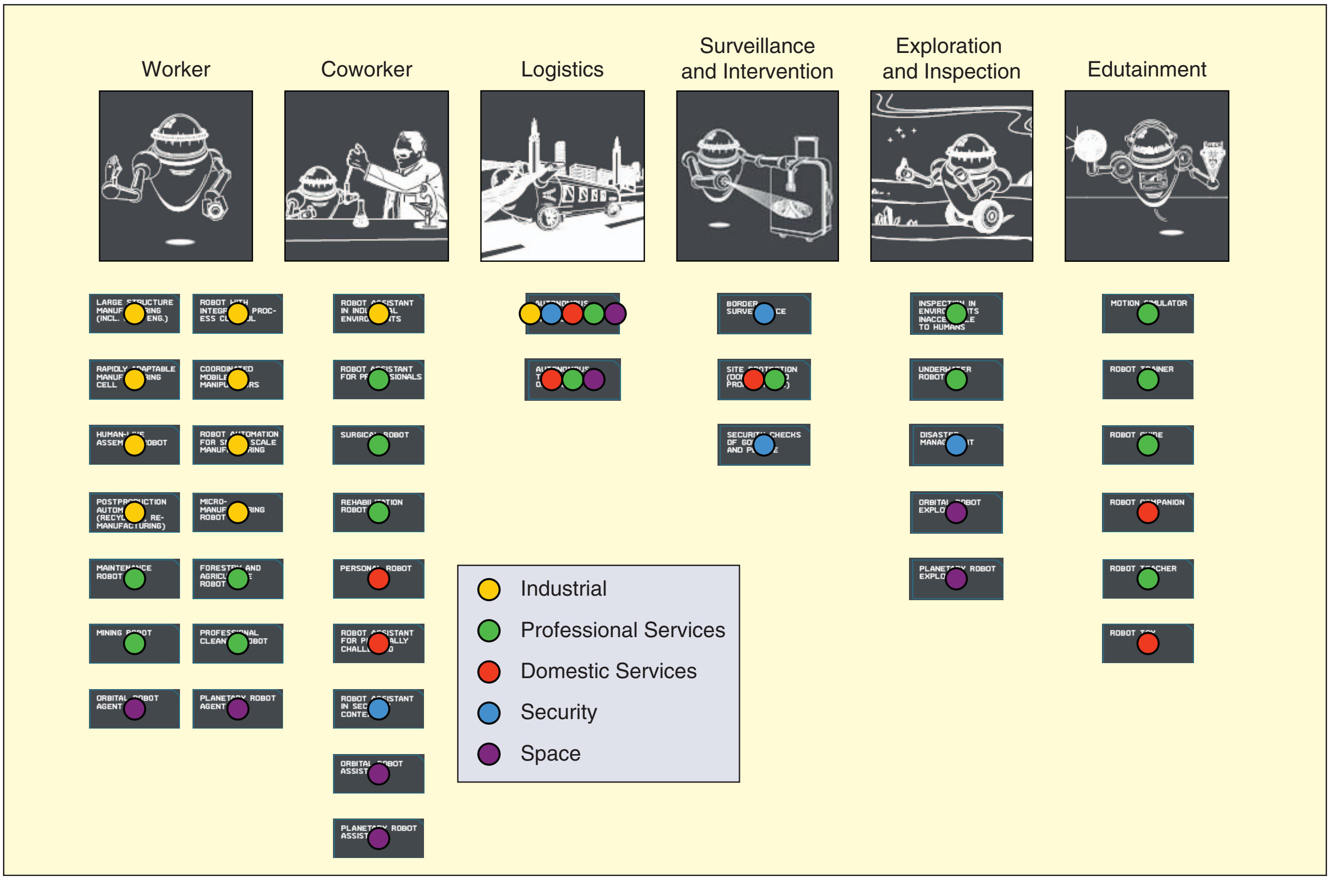

Figure 1. *Relating the six application scenarios to the 39 product visions and five robotic sectors.*

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language. Then, to achieve a common vision, a mix of forward and backward prospective analysis was used, thereby combining the application-driven view of industry and market (market pull) with the technology-driven view of science and academia (technology push). First, the companies from different sectors of the robotics business (industrial, professional service, domestic service, security, and space robotics) considered possible future products. Although each of the 39 identified product visions has specific requirements, further investigation highlighted that many visions faced very similar challenges and could, therefore, be grouped into six sector-overarching application scenarios (Figure 1). This approach helped to consolidate a distinct set of application requirements and made it possible to identify, group, and assess the key technologies required to fulfill these requirements.

Robotics is, to a large extent, the science of integrating a broad spectrum of technologies. To describe the technology road maps, the input from technology experts was sought from academia and industry. They described the technology development status (2010) and the technological potential in the mid (2015) and long term (2020+). The technology experts were also asked to comment on the European strengths and weaknesses in these areas. Furthermore, the drivers behind the different aspects of the technologies were identified. Good examples of the robotics-driven technologies are navigation and perception. Batteries are a good example of a technology where advances will benefit robotics, but where, for now, robotics will not be a driving force.

The European robotics road map summarizes its recommendations for the interested stakeholders in eight objectives:

- take advantage of robotics technology in all aspects of life
- master the challenge of system integration
- create a European robotics supply chain
- focus on the right research and technologies
- create new markets through SME support and technology transfer
- support cross-fertilization to maximize the impact of R&D
- enhance robotics training and education
- avoid ethical, legal, and societal issues becoming barriers.

The SRA for robotics in Europe is publicly available. Besides a 40-pages glossy brochure, numerous more detailed appendices to the individual chapters are also available online [3].

References

[1] Available: http://www.cas.kth.se/euron/euron-deliverables/ka1-3-Roadmap.pdf

[2] Available: http://www.euron.org/miscdocs/docs/year4/DR.1.4.pdf

[3] Available: http://www.robotics-platform.eu/sra

NEWS AND VIEWS

(continued from page 6)

Department of Agriculture acceptance for primary food applications. Harpak, a packaging solutions provider, demonstrated the new system in its booth last Fall at Worldwide Food Expo, Chicago.

Research Robots

Meet the First Arabic-Speaking Robot

Roboticists frustrated by humanoid's inability to say marhaban or ma salama will welcome Ibn Sina, said to be the world's first Arabic-speaking telepresence robot. Named after an esteemed 11th century Muslim doctor, scientist, and philosopher, Ibn Sina was designed by a team from the Interactive Robots and Media Laboratory at United Arab Emirates University led by Dr. Nikolaos Mavridis. The laboratory hosts scientists from Pakistan, Iran, and Greece. The group plans to make Ibn Sina more responsive with additional sensors and more advanced dialog abilities. Voice technology for Ibn Sina is Nizar from Acapela, France.

Jeanne Dietsch is the CEO of MobileRobots Inc., where she has led the development of autonomous robotic platforms, cores, and other foundation technologies used by AGV and service robot manufacturers. She serves on the Industrial Activities Board (IAB) of IEEE's Robotics and Automation Society (RAS), as well as editorial boards of various robotics journals. She helped in founding the Robotics Technology Consortium.›

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