



**NEN**

# **ISO/TC 299**

# **Robots and robotic devices**

## **Introduction**

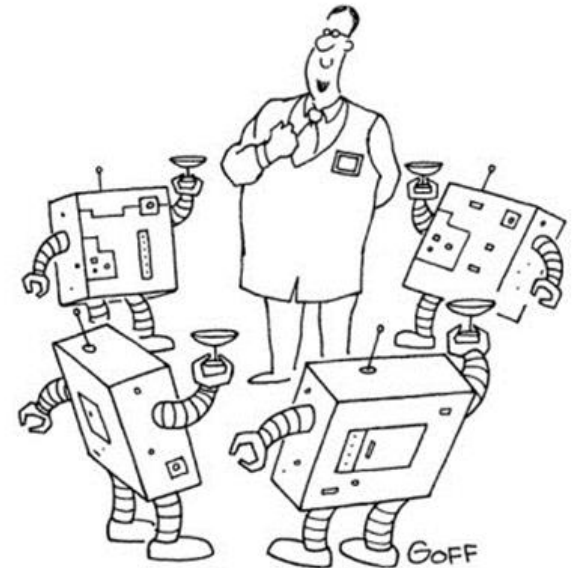
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**5 februari 2016**

# Scope & Objectives

*“Standardization in the field of automatically controlled, reprogrammable, manipulating robots and robotic devices, programmable in more than one axis and either fixed in place or mobile.”*

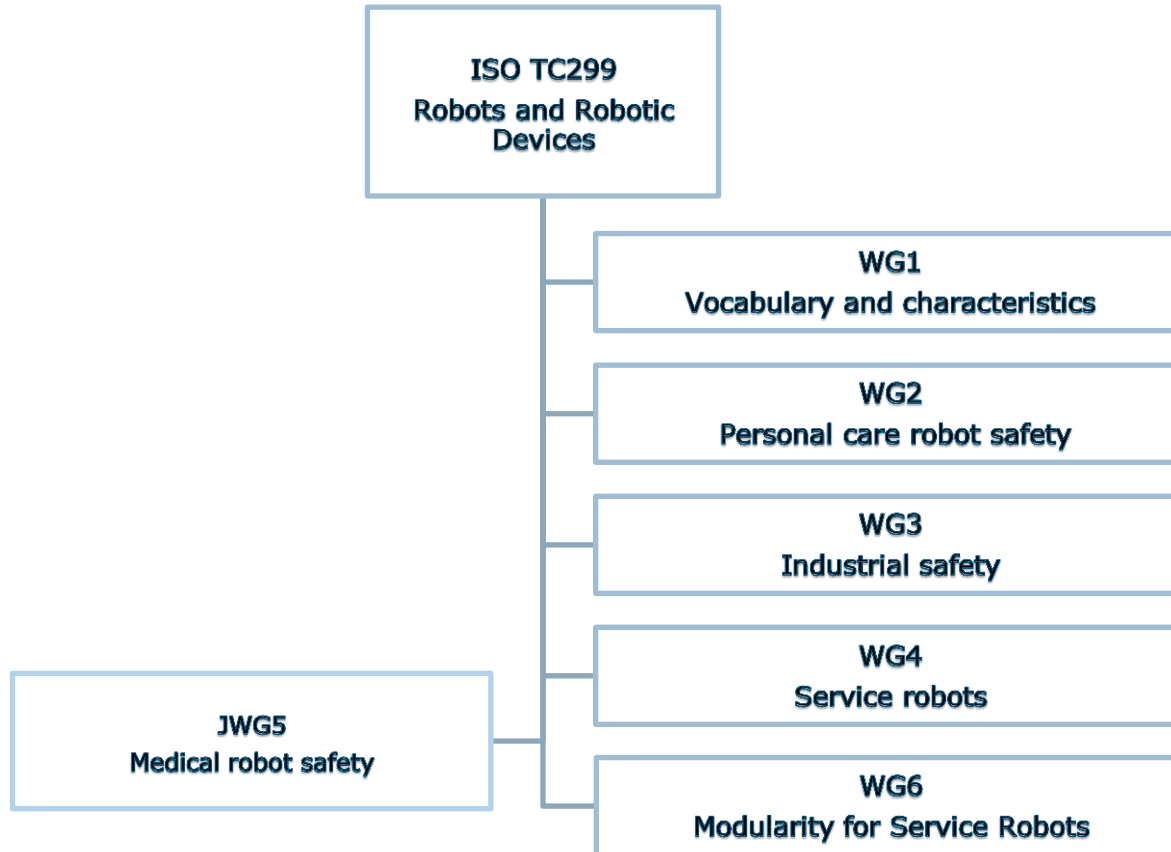
Excluding  
Toys, Military



**“A toast! To a robotics genius!  
Dr. Heisenmeyer!”**

Starting date ISO/TC 299: 1st of January 2016

# Structure



# WG1

- **Vocabulary**

- necessary to facilitate for both new applications in industrial environments, and the service robot development.

- **Developing consistent vocabulary:**

- new service robots;

- revision of the existing vocabulary for traditional robots (ISO 8373).

Next Meetings:

\* 22-24 February 2016, Nagoya, Japan;

\* 14-16 November 2016, Orlando, Florida, USA;

# WG2

- **Safety**

- *Service Robots*

- > Improving quality of life

- *Personal Care Robots*

- > Mobile servant robot

- > Physical assistant robot (fastened to a human during use such as exoskeletons) or restraint-free that are not fastened to a human during use.

- > Person carrier robot

- *ISO 13482: Safety of Personal Care Robots*

- Working on:

- Guidance to ISO 13482

- Safety related test methods for ISO 13482

Excluding  
medical applications

Next Meetings:

- \* 22-24 February 2016, Nagoya, Japan;
- \* 27-29 June 2016, Oxford, UK;
- \* 14-16 November 2016, Orlando, Florida, USA;

# WG3

## Safety

- applications of *industrial robots*:

- ISO 10218-1 Robots for industrial environments - Safety requirements - Part 1: Robot, published in 2006 and updated in 2011.
- ISO 10218-2, Robots for industrial environments - Safety requirements - Part 2: Robot system and integration, was published in 2011.

Under development:

- ISO/TS 15066 – Safety of collaborative robots

Relation to:

CEN/TC 310 „Advanced Automation technologies and their applications“ Standardization in the field of automation systems and technologies and their application and integration to ensure the availability of the standards required by industry for design, sourcing, manufacturing and delivery, support, maintenance and disposal of products and their associated services; (NL involvement)

Next Meetings:

\* 7-10 March 2016, Quebec, Canada

\* 14-16 November 2016, Orlando, Florida, USA;

# WG4 and WG6

## WG4

- investigates standardization needs for service robots.

Examples of applications could be transportation, healthcare, rehabilitation, entertainment or inspection.

## WG6

- explores the standardization modularity needs for service robots covering
  - software modularity;
  - hardware modularity;with safety aspects, integrated design approach and interoperability.

Next Meetings:

- \* 22-24 February 2016, Nagoya, Japan;
- \* 27-29 June 2016, Oxford, UK;
- \* 14-16 November 2016, Orlando, Florida, USA;

# JWG5

- A joint group with IEC/SC 62A – IEC/SC 6D
  - experts in the fields of machine safety and medical device safety.
  - has been investigating the fundamental difference between ME equipment as defined in IEC 60601-1, Medical electrical equipment, and the emerging medical robots so as to find a common basis for the standardization work on medical robots.
  - assesses the need for particular standards for the 3 types of medical robots identified (radiotherapy, surgery and rehabilitation robots) with reference to ISO 13482

Next Meetings:

- \* 13 October 2016, Frankfurt, Germany;
- \* 14-16 November 2016, Orlando, Florida, USA;



# Published Standards

## Standards and projects under the direct responsibility of ISO/TC 299 Secretariat and its SCs

↕ Standard and/or project	↕ Stage	↕ ICS	↕ TC
✓ ISO 8373:2012 Robots and robotic devices -- Vocabulary	60.60	25.040.30 01.040.25	ISO/TC 299
✓ ISO 9283:1998 Manipulating industrial robots -- Performance criteria and related test methods	90.93	25.040.30	ISO/TC 299
✓ ISO 9409-1:2004 Manipulating industrial robots -- Mechanical interfaces -- Part 1: Plates	90.93	25.040.30	ISO/TC 299
✓ ISO 9409-2:2002 Manipulating industrial robots -- Mechanical interfaces -- Part 2: Shafts	90.93	25.040.30	ISO/TC 299
✓ ISO 9787:2013 Robots and robotic devices -- Coordinate systems and motion nomenclatures	60.60	25.040.30	ISO/TC 299
✓ ISO 9946:1999 Manipulating industrial robots -- Presentation of characteristics	90.93	25.040.30	ISO/TC 299
✓ ISO 10218-1:2011 Robots and robotic devices -- Safety requirements for industrial robots -- Part 1: Robots	60.60	25.040.30	ISO/TC 299
✓ ISO 10218-2:2011 Robots and robotic devices -- Safety requirements for industrial robots -- Part 2: Robot systems and integration	60.60	25.040.30	ISO/TC 299
✓ ISO 11593:1996 Manipulating industrial robots -- Automatic end effector exchange systems -- Vocabulary and presentation of characteristics	90.93	01.040.25 25.040.30	ISO/TC 299
✓ ISO/TR 13309:1995 Manipulating industrial robots -- Informative guide on test equipment and metrology methods of operation for robot performance evaluation in accordance with ISO 9283	60.60	25.040.30	ISO/TC 299
✓ ISO 13482:2014 Robots and robotic devices -- Safety requirements for personal care robots	60.60	25.040.30	ISO/TC 299
✓ ISO 14539:2000 Manipulating industrial robots -- Object handling with grasp-type grippers -- Vocabulary and presentation of characteristics	90.93	01.040.25 25.040.30	ISO/TC 299

# Standards under development

## Standards and projects under the direct responsibility of ISO/TC 299 Secretariat and its SCs

◆ Standard and/or project	◆ Stage	◆ ICS	◆ TC
✍ ISO/TS 15066 Robots and robotic devices -- Collaborative robots	60.00	25.040.30	ISO/TC 299
✍ ISO/DIS 18646-1 Robots and robotic devices -- Performance criteria and related test methods for service robot -- Part 1: Locomotion for wheeled robots	40.99	25.040.30	ISO/TC 299
✍ ISO/WD 18646-2 Robots and robotic devices -- Performance criteria and related test methods for service robot -- Part 2: Navigation	20.20		ISO/TC 299
✍ ISO/DIS 19649 Robots and robotic devices -- Vocabulary for mobile robots	40.20	01.040.25 25.040.30	ISO/TC 299
✍ ISO/NP TR 20218-1 Robots and robotic devices -- Safety requirements for industrial robots -- Part 1: Industrial robot system end of arm tooling (end-effector)	10.99		ISO/TC 299
✍ ISO/NP TR 20218-2 Robots and robotic devices -- Safety requirements for industrial robots -- Part 2: Industrial robot system manual load stations	10.99		ISO/TC 299
✍ IEC/NP 80601-2-77 Medical electrical equipment -- Part 2-77: Particular requirements for the basic safety and essential performance of medical robots for surgery	10.99		ISO/TC 299
✍ IEC/NP 80601-2-78 Medical electrical equipment -- Part 2-78: Particular requirements for the basic safety and essential performance of medical robots for rehabilitation, compensation or alleviation of disease, injury or disability	10.99		ISO/TC 299

# Announced Meetings



ISO/TC 299/WG 1	<a href="#">1st meeting</a>	2016-02-17	Japan	Nagoya
ISO/TC 299/WG 6	<a href="#">1st meeting</a>	2016-02-17 to 2016-02-19	Japan	Nagoya
ISO/TC 299/WG 4	<a href="#">1st meeting</a>	2016-02-18 to 2016-02-19	Japan	Nagoya
ISO/TC 299/WG 2	<a href="#">1st meeting</a>	2016-02-22 to 2016-02-24	Japan	Nagoya
ISO/TC 299/WG 3	<a href="#">1st meeting</a>	2016-03-07 to 2016-03-10	Canada	Quebec City
ISO/TC 299	<a href="#">1st meeting</a>	2016-11-17 to 2016-11-18	USA	Orlando



# Take-away



*"One cannot play a symphony alone, it takes an orchestra to play it."*

*Join the ISO/TC 299 standardization orchestra  
and have your n(v)otes count in a robotic symphony.*