Robotics Domain Task Force Final Agenda ver 1.1.0 robotics/2009-03-01

OMG Technical Meeting - Washington DC, USA -- Mar. 23-27, 2009

http://robotics.omg.org/

		TF/SIG				
		Host	Joint (Invited)	Agenda Item	Purpose	Room
Monday: Robotics Plenary(am) and WG activites(pm)						
9:00	12:00			Robotic Localization Services FTF (3h) - Wonpil Yu , Jaeyeong Lee, Yeon-Ho Kim and Shuichi Nishio	discussion	Tidewater 1, 2nd FL
12:00	13:00					Regency CD, Ballroom Lvl
13:00	18:00			Architecture Board Plenary		Kennedy, 3rd FL
14:00	18:00			Robotic Infrastructure WG (4h) - Noriaki Ando(AIST) and Beom-Su Seo (ETRI)	discussion	Suite 1808, 18th FL
				Services WG(4h): User Identification Service RFP Meeting - Su-Young Chi (ETRI), and Toshio Hori (AIST)	discussion	Suite 1811, 18th FL
				Robotic Localization Services FTF (4h) - Wonpil Yu , Jaeyeong Lee, Yeon-Ho Kim and Shuichi Nishio	discussion	Tidewater 1, 2nd FL
Tuesday: WG activities and Robotics Plenary						
9:00	9:45			Robotics Steering Committee	Arrangement	Suite 1808, 18th FL
10:00	12:00			**Robotic Localization Services FTF (2h)** - Wonpil Yu , Jaeyeong Lee, Yeon-Ho Kim and Shuichi Nishio	discussion	Suite 1808, 18th FL
				Services WG(2h): User Identification Service RFP Meeting - Su-Young Chi, and Toshio Hori	discussion	Suite 1811, 18th FL
12:00	13:00			**LUNCH**		Regency CD, Ballroom Lvl
13:00	13:15	Robotics		Robotics-DTF Plenary Opening Session	Robotics plenary openning	Kennedy, 3rd FL
13:15	14:00	Robotics		**RTC Directory Service for Interoperability between Robotic Software Platforms** - Kang-Woo Lee and Hyun Kim (ETRI)	potential topic presentation and discussion	
14:00	14:45	Robotics		**Modeling of Risk Assessment for Service Robots** - Yoshihiro Nakabo (AIST)	potential topic presentation and discussion	
				Break (30min)		
15:15	15:45	Robotics		**GearBox (Peer-Reviewed Open-Source Libraries for Robotics)** - Geoffrey BIGGS (AIST)	presentation and discussion	
15:45	16:45	Robotics		WG Reports and Discussion (Service WG, Infrastructure WG, Robotic Localization Service WG)	presentation and discussion	
16:45	17:15	Robotics		Contact Reports: - Makoto Mizukawa(Shibaura-IT), and Young-Jo Cho(ETRI)	Information Exchange	
17:15	17:30	Robotics		Robotics-DTF Plenary Wrap-up Session (Roadmap and Next meeting Agenda)	Robotics plenary wrap-up	
17:30				Adjourn plenary meeting		
17:30	17:45			Robotics WG Co-chairs Planning Session (Preliminary Agenda for next TM, Draft report for Friday)	planning for next meeting	Kennedy, 3rd FL
Wednesday WG activity follow-up						
9:00	12:00			Robotic Localization Services FTF (3h) - Wonpil Yu , Jaeyeong Lee, Yeon-Ho Kim and Shuichi Nishio	discussion	Suite 1808, 18th FL
12:00	14:00			**LUNCH and OMG Plenary**		Regency CD, Ballroom Lvl
14:00	18:00			Robotic Localization Services FTF (4h) - Wonpil Yu , Jaeyeong Lee, Yeon-Ho Kim and Shuichi Nishio	discussion	Suite 1808, 18th FL
18:00	20:00			**OMG Reception**		ABCD Foyer, Ballroom Lvl
Thursday						
9:00	12:00			Robotic Localization Services FTF (3h) - Wonpil Yu , Jaeyeong Lee, Yeon-Ho Kim and Shuichi Nishio	discussion	Roosevelt, 3rd FL
12:00	13:00			**LUNCH**		Regency CD, Ballroom Lvl
14:00	18:00			Robotic Localization Services FTF (4h) - Wonpil Yu , Jaeyeong Lee, Yeon-Ho Kim and Shuichi Nishio	discussion	Roosevelt, 3rd FL
13:00	18:00			Architecture Board Plenary		Kennedy, 3rd FL
Friday						
8:30	12:00			AB, DTC, PTC		Regency AB, Ballroom Lvl
12:00	13:00			**LUNCH**		Tidewater, 2nd FL

Other Meetings of Interest

Monday						
8:00	8:45	OMG		New Attendee Orientation		Prince William, 3rd FL
8:00	17:00	OMG		Strategies and Technologies for Cloud Computing Interoperability Workshop		Regency B, Ballrm Lvl
9:00	12:00	OMG		Tutorial - Introduction to OMG's Specification Tutorial		Tidewater 2, 2nd FL
15:00	17:00	OMG		OMG Certification Program Overview		Arlington, 3rd FL
17:00	18:00	OMG		OMG New Author Seminar		Prince William, 3rd FL
18:00	19:00	OMG		New Attendee Reception (by invitation only)		Tidewater 2, 2nd FL
Tuesday						
7:30	9:00	OMG		Liaison ABSC		Suite 400, 4th FL
13:00	17:30	OMG		Tutorial - Introduction to the OMG Systems Modeling Language (OMG SysML™)		Grand Peninsula C, Lobby
17:00	18:00	OMG		RTF-FTF Chair's Workshop		Arlington, 3rd FL
Wednesday						
13:00	17:00	OMG		Ontology Definition Metamodel Tutorial		Prince William, 3rd FL
17:00	18:00	OMG		OMG Authors Focus Group Meeting		Prince William, 3rd FL
9:00	17:15	OMG		SOA Consortium Quarterly Meeting		Regency B, Ballroom Lvl
Thursday						
9:00	16:30	OMG		Semantic Technology Information Day		Arlington, 3rd FL
8:30	17:00	OMG		SOA Consortium Quarterly Meeting		Regency B, Ballroom Lvl

Please get the up-to-date version from http://staff.aist.go.jp/t.kotoku/omg/RoboticsAgenda.pdf

Minutes of the Robotics DTF Plenary Meeting
December 8-12, 2008
Santa Clara, CA, USA
(robotics/2009-03-02)

Minutes Highlights

1) **Laurent Rioux (Thales) and Young-Jo Cho (ETRI) have been elected as Robotics-DTF Co-Chairs.**
2) **As the 2nd Review, the draft of Robotic User Identification Service RFP was discussed, but we decided to have more discussions to issue the RFP.**
3) **We have one invited talk of Dr. Brian Gerkey (Willow Garage).**
4) **We have 3 special talks (Tsukuba Challenge, Hitachi, AFUS).**
5) **We have 3 new work item talks (QoS, Fault-tolerance, Directory service)**

List of Generated Documents

robotics/2008-12-01 Final Agenda (Tetsuo Kotoku)
robotics/2008-12-02 Ottawa Meeting Minutes [approved] (Su-Young Chi and Geoffrey Biggs)
robotics/2008-12-03 Steering Committee Presentation (Tetsuo Kotoku)
robotics/2008-12-04 Roadmap for Robotics Activities (Tetsuo Kotoku)
robotics/2008-12-05 Opening Presentation (Tetsuo Kotoku)
robotics/2008-12-06 Review comments from AB (Hugues VINCENT and Victor Giddings)
robotics/2008-12-07 2nd review for User Recognition Service API RFP with Comments (Su-Young Chi)
robotics/2008-12-08 Resolution to Issue #13130, Error Type inconsistency (Shuichi Nishio)
robotics/2008-12-09 Topics - Robotic Localization Service FTF (Itsuki Noda)
robotics/2008-12-10 Name Mapping Rule (Itsuki Noda)
robotics/2008-12-11 RoLo Architecture (Itsuki Noda and Takeshi Sakamoto)
robotics/2008-12-12 Revised RoLo Architecture (Itsuki Noda and Takeshi Sakamoto)
robotics/2008-12-13 Special Talk: Real World Robot Challenge in Tsukuba (RWRC2008) (Takashi Tsubouchi)
robotics/2008-12-14 Special Talk: A Lightweight Message -Driven Component Framework for Robotic Systems (Saku Egawa)
robotics/2008-12-15 Invited Talk: ROS: A new development environment for a new generations of robots (Brian Gerkey)
robotics/2008-12-16 The QoS Issues on the Robot Component Execution Environment (Beon-Su SEO)
robotics/2008-12-17 Fault-tolerance Issues on the Robot Component Execution Environment (Seung-Woog Jung)
robotics/2008-12-18 The Issues on robot component directory services and repository contents (Kang-Woo Lee)
robotics/2008-12-19 Special Talk: Architecture Framework for Unmanned System (AFUS) (Laurent Rioux)
robotics/2008-12-20 Infrastructure WG Progress Report (Noriaki Ando)
robotics/2008-12-21 Robotics Functional Services Working Group Meeting Report (Su-Young Chi)
robotics/2008-12-22 Robotic Localization Service WG Report (Shuichi Nishio)
robotics/2008-12-23 Contact Report: ISO/TC211 Tsukuba Meeting (Shuichi Nishio)
robotics/2008-12-24 Contact Report: ISO/TC184/SC2 Software Standardization (Hyun Kim)
robotics/2008-12-25 ORiN: Current Status (Makoto Mizukawa)
robotics/2008-12-26 Closing Presentation (Tetsuo Kotoku)
robotics/2008-12-27 Next Meeting Preliminary Agenda - DRAFT (Tetsuo Kotoku)
robotics/2008-12-28 DTC Report Presentation (Tetsuo Kotoku)
robotics/2008-12-29 Santa Clara Meeting Minutes - DRAFT (Geoffrey Biggs and Yeonho Kim)

MINUTES
Monday, December 8, 2008, Lafayette, 2nd floor

09:00 – 09:20 Steering Committee

10:00 – 10:10 Robotics DTF Plenary Meeting, Chair: Dr Kotoku, Quorum: 3
Joined organizations: AIST, ETRI, Hitachi, JARA, Kangwon National Univ., Samsung, Shibaura-IT, Univ. of Tsukuba, Technologic Arts, Thales

- Minute takers: Geoffrey Biggs and Yeonho Kim
- Approval of minutes of Ottawa meeting
  - Approved: Shibaura-IT (motion), Thales (seconded), ETRI (white ballot).

10:10 – 12:00 User Identification Service RFP 2nd Review (Lafayette, 2nd floor)
Su-Young Chi (ETRI)

- Dr Nishio gave several comments.
- Review comments received from two Architecture Board members, to be responded to.
- Use word "identification" instead of "recognition" in title ("recognition" does not include selecting a single identity from a list of possible identities).
- More clearly define what the difference, particularly in assumptions made, between biometric systems and robotic systems.
- Issue of if tracking should be included in RFP was raised.
- Change the scope of the RFP to only the interface between the user identification module and applications.
- Significant confusion over wording around “user identification,” “user awareness” and “user recognition.” It was noted that one interpretation of Figure 1 is identical to the localization standard. Will discuss during WG sessions.

Tuesday, December 09, 2008, Lafayette, 2nd Floor

11:05 – 17:40 Robotics DTF plenary meeting continued

11:05 – 11:35 Special talk: Tsukuba Challenge 2008 report, Prof Tsubouchi, Univ. of Tsukuba

- Almost same rules as 2007 Tsukuba Challenge.
- 50 groups entered, 1 group finished.
- New route this year, more difficult than last year (straight line), involving reversing direction twice and returning to start point.

11:35 – 12:05 Special talk: A lightweight Message-Driven Component Framework for Robotic Systems, Saku Egawa, Hitachi, Ltd.

- Hitachi has developed a minimum component framework, Message-Driven Component (MDC).
  - Messages contain a command and data, are asynchronous, with no data marshalling (application is responsible for building data part of message).
  - Lightweight and fast: only 358KB of code for the middleware.
- Not currently compatible with RTC standard. Could add an MDC-based PSM. Need some extensions to RTC for MDC to become RTC-compliant:
  - Lightweight RTC needs to accept single-Execution Context, multiple-component models.

    - Execution semantics need a message-driven execution model (stimulus response execution semantics is not enough).
    - Add MDC PSM.

13:05 – 14:00 Invited talk: ROS: A new development environment for a new generation of robots, Brian Gerkey, Willow Garage

- Willow Garage's goal is an open platform: modular hardware with open interfaces, open source software. "Linux for robotics."
- PR2 robot: make 20 or so, possibly more. Not a unique robot.
- WG is privately funded, committed to open source, will spin off companies later.
- ROS: Robot Operating System (or Robot Open Source) is flagship software system.

14:00 – 14:30 The QoS and Fault-tolerance Issues on the Robot Component Execution Environment, Beom-Su Seo, ETRI

- QoS technology in distributed environment for robotics.
- QoS characteristics in consideration of robots: performance, reliability, accuracy and demand.
- OMG QoS profile is too general and broad, not sufficient for robotics. Need to enhance and update it. Establish a "QoS profile" for the robot component standard.
- Add a QoS manager to component middleware.
- Faults in robotics: faults, fault detection, fault recovery and fault tolerance. Tolerance is the ability to detect and recover, providing continuous service in spite of faults.
- Add a fault tolerance manager to component middleware. Need a Fault Tolerance profile that tells how to recover from faults.

14:30 – 15:00 Issues on RTC Directory Service, Kang-Woo Lee, ETRI

- Interoperability of RTMs. Make RT-Components of different RT-Middlewares work together to provide a robotic service. Moreover, allow them to interoperate with non-RTM systems, e.g. MSRS, Player, OPRoS, etc.
- RTC Directory service to manage the references and properties of running RTCs. (Registration/unregistration).
- No relevant specification in Robotics DTF. OpenRTM-aist provides its own directory service based on the CORBA naming service. Does not provide all desired features.
    - Related standards in OMG: CORBA naming service, CORBA trader service.

15:30 – 16:10 Architecture framework for unmanned systems (AFUS), Laurent Rioux, Thales

- Principles: Clear semantics, orthogonality and separation of concerns, independence from technology, platform, mission, compute capability, operator use, communications, autonomy level.
- Supports dynamic discovery and access control to remote entities.
- AFUS in OMG:
    - Can make AFUS conceptual view UML data types, capability could be UML sequence diagrams, interoperability could be UML composite structure.
    - AFUS Common Services could be reused in RTC.

16:10 – 16:20 Infrastructure WG report

- Restart WG after two new topics proposed by ETRI.

- Confirmed purpose of Infrastructure WG.
- New co-chair: Beom-Su Seo (ETRI).
  - Approved: AIST (motion), Thales (second), Shibaura-IT (white ballot).
- Proposed issues by ETRI:
  - QoS and fault-tolerance
  - Directory service
- Next step is to make an RFI for deployment and configuration, a roadmap for RFP for new specifications, and RTF for improvements to the RTC model.

16:25 – 16:55 Robot Functional Services WG report

- Had discussion on what trying to do, to clear up misunderstandings from Monday's discussions.
- Clarified why URS is needed rather than using the localization service or the BioAPI standard.
- Still significant disagreement over wording.

16:55 – 17:05 Localization WG report

- 48 issues raised so far, most typos, and most solved.
- Two remaining issues to be discussed (on Wednesday morning):
  - Definition of orientation in common data formats.
  - XML-PSM definition and RoLo Element local naming issue (new issue).
- Planned schedule presented.
- Dr. Lee has volunteered to be the report editor.

17:05 – 17:15 Contact report by Shuichi Nishio

- ISO/TC211 Tsukuba Meeting, 2008/12/01
- Two invited talks on RLS activity.

17:15 – 17:25 Contact report by Hyun Kim

- ISO/TC184/SC2 Software Standardization meeting, Seoul.

17:25 – 17:30 Contact report by Makoto Mizukawa

- ORiN project current status:
  - Offer from ISO/TC184/SC5, 24 June 2007
  - Japan domestic committee, 14 Nov 2008, of the SC5 approved to add ORiN specification to ANNEX of ISO20242 Part 4.
- Conferences:
  - IROS 2008, Nice, France
  - ICCAS 2008, Seoul, Korea
  - IFR International Conference on Robotics, Seoul, Korea
  - ROBOT WORLD 2008, Seoul, Korea
  - RoboDevelopment, Santa Clara, CA, Nov 19-20 2008
- Tsukuba Real World Robot Challenge, Nov 20-22, 2008
- Coming conferences:
  - ICRA 2009, Kobe, Japan

Closing presentation and next meeting agenda by Tetsuo Kotoku

- Call for volunteers
  - Election of new DTF co-chairs: Luarent Rioux (Thales) and Young-Jo Cho (ETRI)
    - Approved: AIST (motion), Kangwon National Univ. (second), Thales (white ballot).
  - Kyuseo Han no longer Localization WG co-chair.
  - Election of Localization WG co-chair: Dr. Lee
    - Approved: JARA (motion), Thales (second), ETRI (white ballot).
- Next meeting: March 23-27, Washington DC, USA
- Special talk candidates
  - Gearbox Project, Geoffrey Biggs, AIST, Japan
  - Robotics Project in Japan, Prof. Sato, Univ. of Tokyo, Japan
  - RUPI Project, Dr. Hyun Kim, ETRI, Korea

Adjourned plenary meeting at 17:40

Attendee: 29 Participants

- Akihiko Ikezoe (SEC)
- Beom-Su Seo (ETRI)
- Brian Gerkey (Willow Garage)
- Geoffrey Biggs (AIST)
- Hong-Seong Park (KNU)
- Hugues Vincent (Thales)
- Hyun Kim (ETRI)
- Hyun-Soo Kim (Samsung)
- Itsuki Noda (AIST)
- Jeong-Seok Kang (KNU)
- Kenichi Wada (Hitachi)
- Kim Siman (Tobesoft)
- Kyuseo Han (ETRI)
- Laurent Rioux (Thales)
- Makoto Mizukawa (Shibaura-IT)
- Miwako Doi (Toshiba)
- Noriaki Ando (AIST)
- Saku Egawa (Hitachi)
- Seung –Woog Jung (ETRI)
- Shuichi Nishio (JARA/ATR)
- Soo-Hee Han (KNU)
- Sung-Soo Kang (KOSTA)
- Su-Young Chi (ETRI)
- Takashi Suehiro (AIST)
- Takashi Tubouchi (Univ. of Tsukuba)
- Takeshi Sakamoto (Technologic Arts)
- Tetsuo Kotoku (AIST)
- Toshio Hori (AIST)
- Yeon-Ho Kim (Samsung)

Prepared and submitted by Geoffrey Biggs (AIST) and Yeon-Ho Kim (Samsung).

Robotics Domain Task Force Steering Committee Meeting

24th March, 2009

Washington DC, USA

Hyatt Regency Cristal City

Santa Clara Meeting Summary

Robotics-DTF Co-chair election
Laurent Rioux (Thales) and Young-Jo Cho (ETRI)

Robotics Plenary: (29 participants)

- **2nd review of Robotic User Identification RFP**
- **4 Special Talk [robotics/2008-12-13,-14,-15, -19]**
  - **ROS: A new development environment for a new generation of robots (Brian Gerkey) [robotics/2008-12-15]**
- **3 New work item Talk [robotics/2008-12-16,-17,-18]**
- **3 WG Reports [robotics/2008-12-20,-21,-22]**
- **3 Contact Report [robotics/2008-12-23,-24,-25]**
- **Preliminary Agenda for upcoming meeting [robotics/2008-12-27]**

Agenda

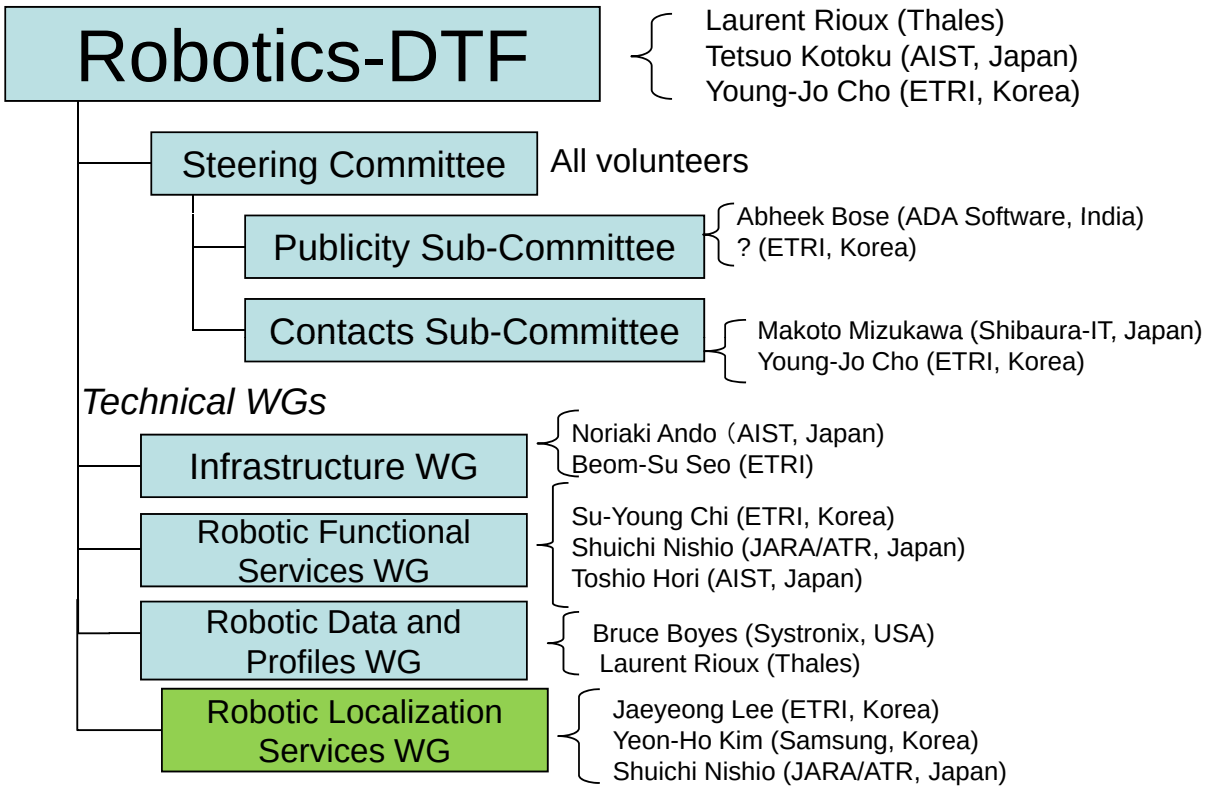
- Agenda Review
- Minutes and Minutes Taker
- Roadmap Discussion
- Next meeting Schedule

Minutes and Minutes Taker

- Process:
  - Make a draft with in 5days
  - Send the initial draft to robotics-chairs@omg.org
  - Post the draft to the OMG server within a week
  - Make an announcement to robotics@omg.org
  - Send comments to robotics@omg.org
  - Approve the revised minutes at the Next meeting
- Volunteers for this Meeting
  - Beom-Su Seo
  - Geoffrey Biggs

We have to post our meeting minutes within a week!

Organization



Next Meeting Agenda

June 23-27 (San Jose, Costa Rica)

Monday:

Localization FTF (AM)
Service (PM)
Infrastracture (PM)

Tuesday:

Steering Committee (morning)
WG activity [Parallel WG Session] (am)
- **Localization FTF**
- **Infrastructure**

Robotics-DTF Plenary Meeting (pm)
- Guest and Member Presentation
- Contact reports

Wednesday:

Localization FTF
WG activity follow-up [if necessary]

Roadmap for Robotics Activities

robotics/2009-03-04

Item	Status	Santa Clara Dec-2008	Washington DC Mar-2009	San Jose, Costa Rica Jun-2009	San Antonio, TX Sep-2009	Long Beach, CA Dec-2009	TBA Mar-2010	POC / Comment
Flyer of Robotics-DTF [Publicity Sub-Committee]	**In Process**							Abheek(ADA Software)
User Identification Service RFP [Robotic Functional Services WG]	**In Process**			**1st review RFP**	**2nd Review & RFP issue**		**Initial Submittion**	Su-Young Chi (ETRI)
RTC Container RFP(tentative) [Robotic Infrastructure WG]	**In Process**			**discussion**	**1st review RFP**	**2nd Review & RFP issue**		
UML profile for Archtecture Framework for Robotics/Unmanned Systems [Robotic Data and Profiles WG]	**Planned**							
The QoS and Fault-tolerance Issues on the Robot Component Execution Enviornment [Robotic Infrastructure WG]	**Planned**							
The issues on robot component directory service and repository Contents [Robotic Infrastructure WG]	**Planned**							
Hardware-level Resources: define resource profiles RFP [Profile WG]	**Future**							
etc…	**Future**							
Robotics Information Day [Technology Showcase]	**Future**							
Robotic Localization Service RFP [Robotic Localization Service WG]	**done Sep-2006**							Shuichi Nishio (JARA/ATR) Kyuseo Han (ETRI) Yeon-Ho Kim (Samsung)
RLS Finalization Task Force	**In Process**			Report				

Related Events

Robotics-DTF Plenary Meeting
Opening Session

24th March, 2009

Washington DC, USA

Hyatt Regency Cristal City

Approval of the Santa Clara Minutes

Meeting Quorum : 4

AIST, ETRI, JARA, Samsung, Shibaura-IT, Univ. of Tsukuba, Technologic Arts,

Minutes taker(s):

- Geoffrey Biggs
- BeomSu Seo

Minutes review

Robotics-DTF Co-chair election
Laurent Rioux (Thales) and Young-Jo Cho (ETRI)

Robotics Plenary: (29 participants)

- **2nd review of Robotic User Identification RFP**
- **4 Special Talk** [robotics/2008-12-13,-14,-15, -19]
  - **ROS: A new development environment for a new generation of robots (Brian Gerkey)** [robotics/2008-12-15]
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- **3 WG Reports** [robotics/2008-12-20,-21,-22]
- **3 Contact Report** [robotics/2008-12-23,-24,-25]
- **Preliminary Agenda for upcoming meeting** [robotics/2008-12-27]

Agenda Review

Mon(Mar. 23):

- **RLS-FTF**
- **WG activities[Service WG, Infrastructure WG] (PM)**

Tue(Mar. 24):

- **Steering Committee (AM)**
- **WG activities[Service WG, RLS-FTF] (AM)**
- **Robotics-DTF Plenary(PM)**

Wed(Mar. 25):

- **WG activities [RLS-FTF, Service WG]**

Thu(Mar.26):

- **RLS-FTF**

please check our up-to-date agenda
http://staff.aist.go.jp/t.kotoku/omg/RoboticsAgenda.pdf

AIST

Agenda Review

Tue:

13:00-13:15 Opening Session
13:15-14:00 New Work Item Talk
14:00-14:45 New Work Item Talk

15:15-15:45 Special Talk
15:45-16:45 WG Reports and Roadmap Discussion
16:45-17:15 Contact Reports
17:15-17:30 Wrap-up Session
17:30 Adjourn

please check our up-to-date agenda
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NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY (AIST)

RTC Directory Service for Interoperability between Robotic Software Platforms

Kang-Woo Lee

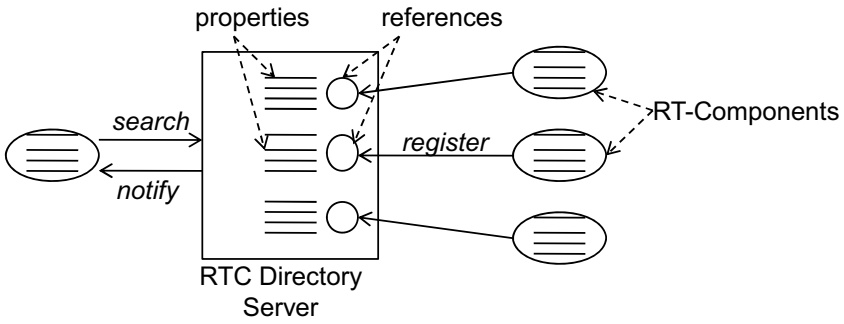
Network Robot Research Team
ETRI, Korea

Interoperability of RTCs

- What is it?
  - The RT-components of *different RT-Middlewares* can work together to provide robotic services
- Why is it important?
  - Basic infrastructure for “Multi-Robot Collaboration”
  - More advanced and intelligent robotic services
    - Services by combining multiple robots (of different capabilities)
    - Ubiquitous robotic services (RT + Ubiquitous devices)
- Key considerations
  - *How to search right RTCs from diverse RTMs?*
  - How to combine them into an robot application
- The second one is partially covered by RTC specification

RTC Directory

- Manage the references and properties of running RTCs
  - RTC registration and unregistration
- A Client can search the reference of RTCs having appropriate properties from the directory and combine them to build a robotic application



Benefits from RTC Directory (1/2)

- Content-based component addressing
  - Searching components not only by their id, but also by their properties
  - Query expressions are declarative
  - Save unnecessary communications to remote components during the query evaluations

query string:
`location='Room L89' && type='Camera'`

means:
All camera components located at the 'Room L89'

Benefits from RTC Directory (2/2)

- Content-based component tracking
  - If a client is able to define a condition and register it on the directory
  - Then he will be notified whenever any matching components are registered or unregistered
- Used in component assembly, it enables an application to be more reconfigurable

matcher expression:
`location='Room L89' && type='Camera'`

means:
Notify me whenever a camera component at 'Room L89' becomes available

Issues on RTC Directory Service

- Reconsideration on the properties in the RTC model
  - Support for container types (e.g. array, list, etc.)
- RTC registration protocol
  - Support for disconnection (planned or unplanned) on both sides
  - Consistency between Directory server and RTCs
- Data coherency protocol
  - Prevent clients from looking up inconsistent property values
  - An update on a property of a component should be propagated to the RTC Directory

Issues on RTC Directory Service (Cont'd)

- Search interface using RTC properties
  - SQL-like query approach
- Tracking RTCs
  - Property expression to identify the target RTCs
  - Notification protocol
- Inter-RTC Directory search protocol

Current Status

- No relevant specification in Robotic DTF
- OpenRTM-aist provides its own directory service
  - Dependent on the CORBA naming service
  - Only RTC references are registered (cf. properties are kept in RTC itself)
  - Property-based search is not directly supported
  - Unlikely to interoperate with other RTC implementations, though they are also based on CORBA
- Related standard specifications in OMG
  - CORBA naming service
  - CORBA trader service

Summary

- Two considerations on “Interoperability of RTCs”
  - Searching right RTCs from diverse RTMs
  - Combining them into a robot application
- We proposed “*RTC Directory*” in order to address the first consideration
  - Manage the references to RTCs along with their properties
  - Provide a property-based component search and component tracking

Modeling of Risk Assessment for Service Robots

Safety Intelligence Research Group(SIRG),

National Institute of Advanced Industrial Science and Technology (AIST)

Yoshihiro Nakabo

robotics/2009-03-07

Contents

- Objective: Safe Robots
- International safety standards (ISO/IEC)
- Proposal
  - Object oriented approach to robot safety
  - Models for risk identification
  - Model for overall risk assessment
- Conclusion

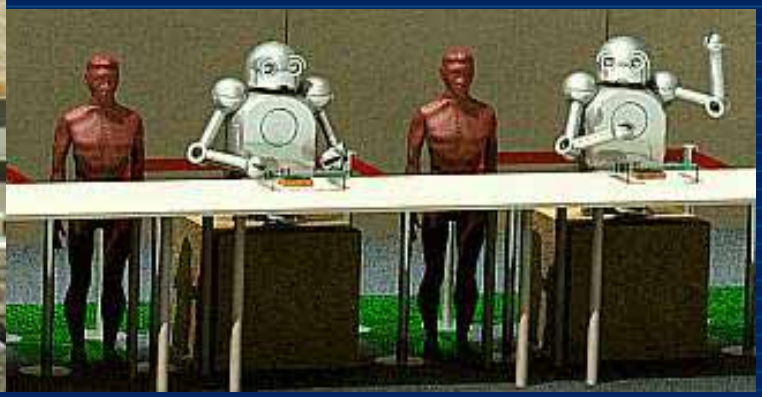
Next generation service robots

- For Business: Cleaning, Welfare, Security, Guidance
- Home: House keeping, Hobby, Security

- Service robot
  = close proximity with human
  -> Safety issue should be clarified

Next generation industrial robots

- Power assisting robot: already used in some motor companies
- Next generation cell production robots

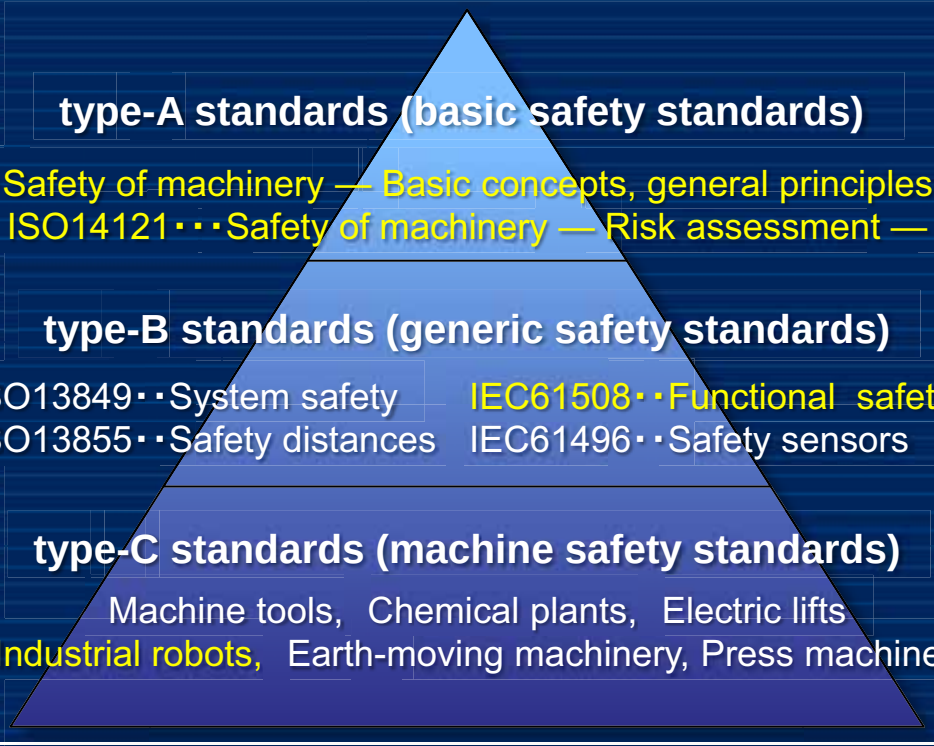


Safety of next generation robots

- Socially accepted safety technology required (unless almost zero risk for unknown new products)
- Previously:
  - Industrial robots -> separation of human and robots
  - Service robots -> no fundamental principles
- Recently:
  - "Collaborative operation" included in International Standard for safety of industrial robots (ISO10218)
  - New ISO standardization in progress for service robots
  - "Safety guidelines for next-generation robots" in Japan

Int. Standards for Safety of Machinery

ISO/IEC Guide 51 determines hierarchical structure



ISO12100 Safety of Machinery

- Safety:

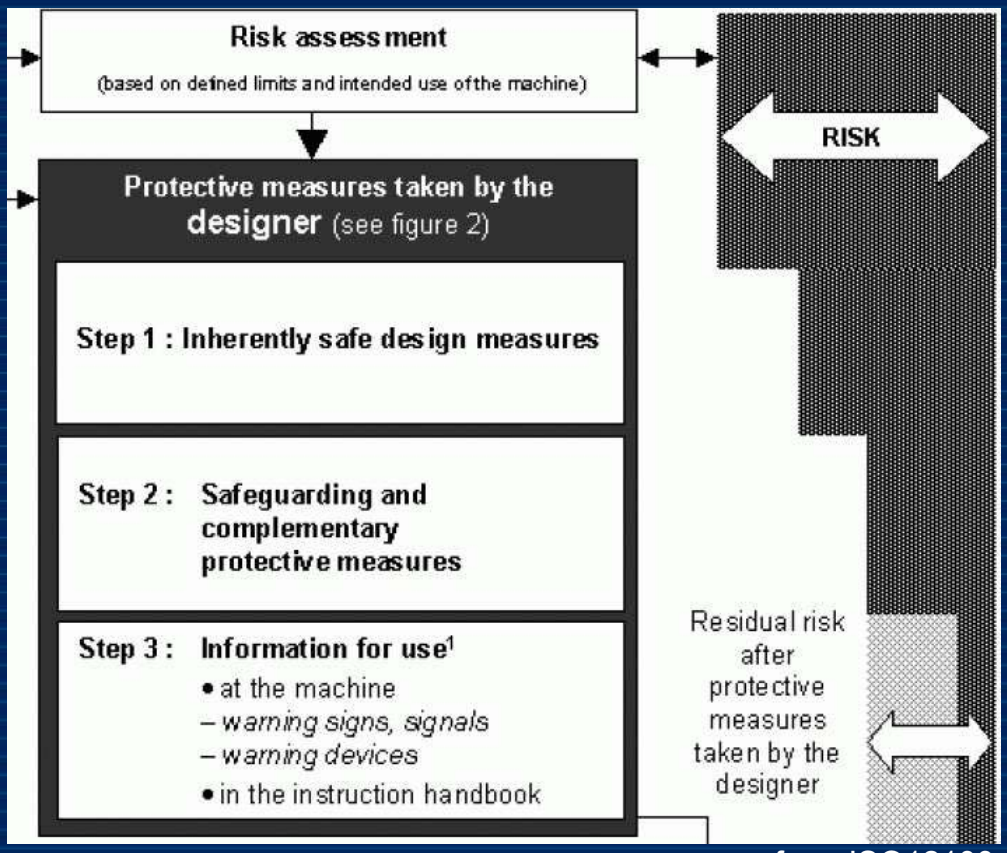
freedom from unacceptable risk

- Risk:

combination of the probability of the occurrence of harm and the severity of that harm

- Harm:

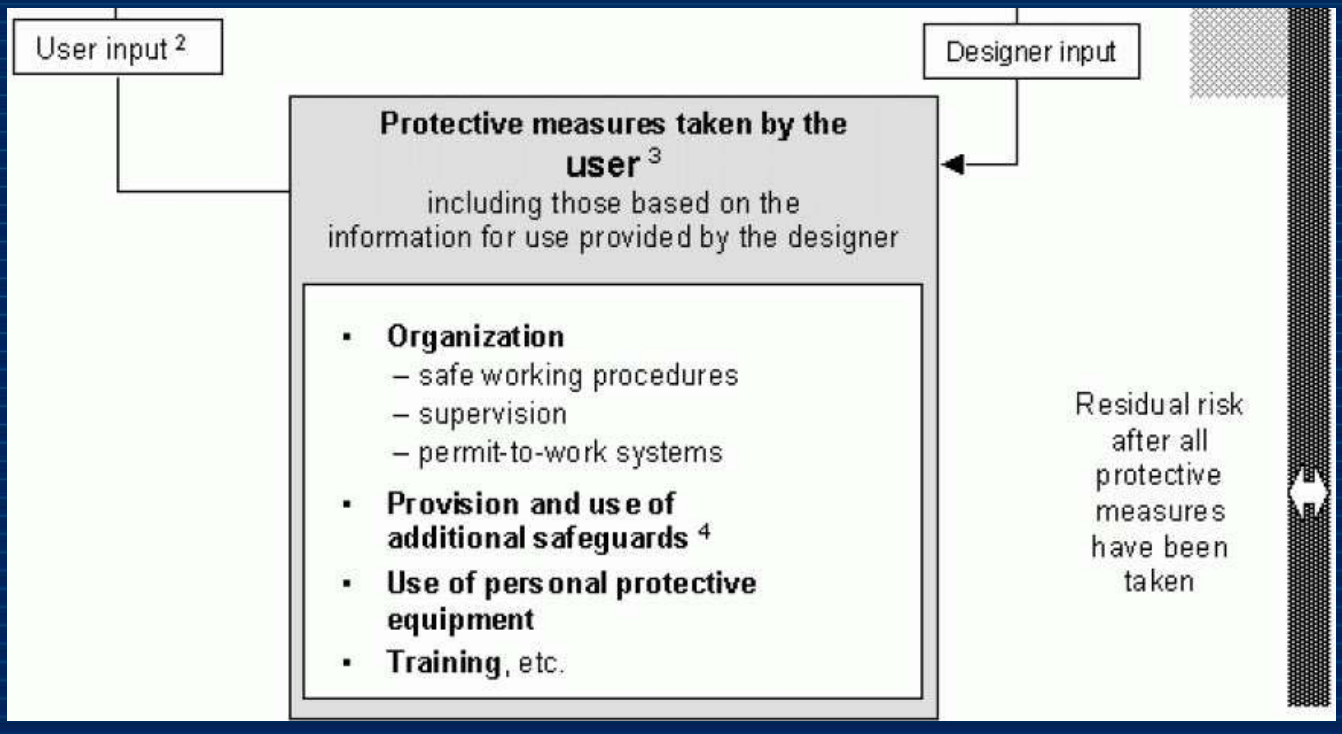
physical injury or damage to the health of people, or property or the environment



from ISO12100

ISO12100 Safety of Machinery

- Communication with users



from ISO12100

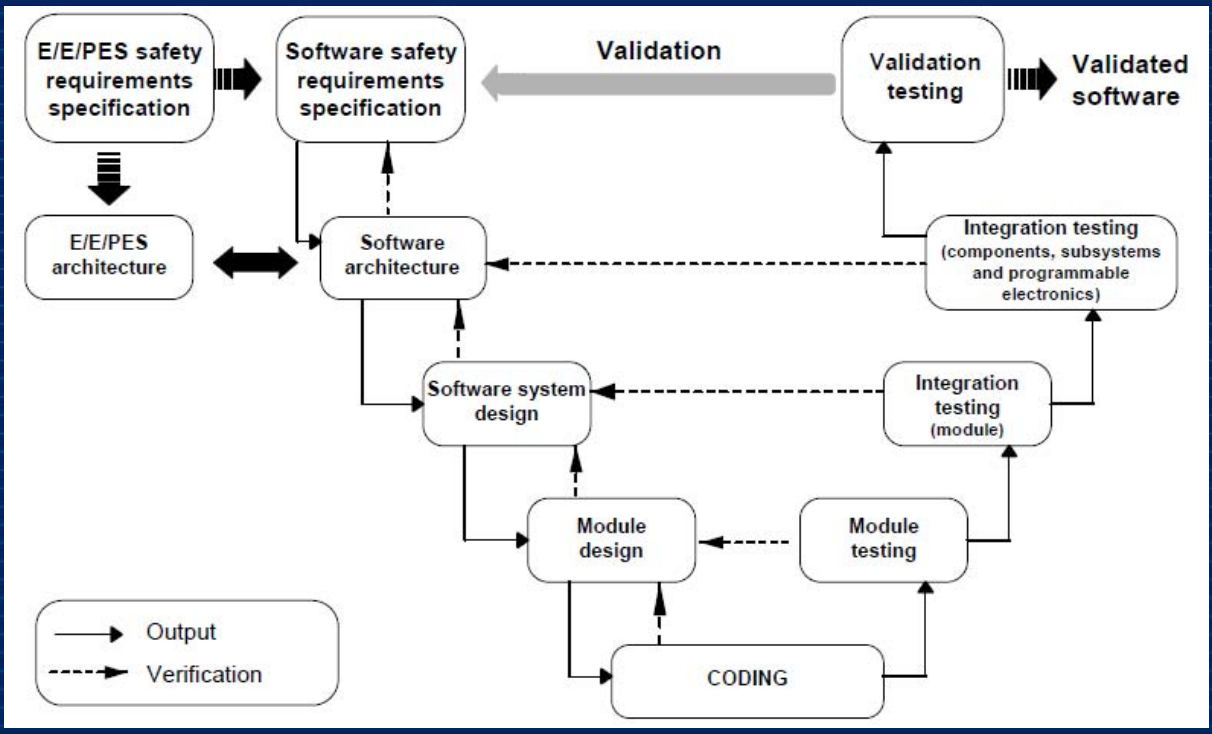
ISO 14121 Risk Assessment

- Risk assessment:

  Systematic analysis and evaluation of the risks associated with machinery.
- Should be executed by safety assessors, robot designers and engineers
- Details are explained latter…

IEC 61508 Functional Safety

- **The V Model: software safety integrity and the development lifecycle**



from IEC61508-3

Example of recommended technologies

- Depends on SIL(Safety Integrity Level)
- Validation for safety requirements
- Example :

R: Recommended
HR: Highly recommended

Table A.1 – Software safety requirements specification (see 7.2)

	Technique/Measure*	Ref.	SIL1	SIL2	SIL3	SIL4
1	Computer-aided specification tools	B.2.4	R	R	HR	HR
2a	Semi-formal methods	Table B.7	R	R	HR	HR
2b	Formal methods including for example, CCS, CSP, HOL, LOTOS, OBJ, temporal logic, VDM and Z	C.2.4	---	R	R	HR

NOTE 1 – The software safety requirements specification will always require a description of the problem in natural language and any necessary mathematical notation that reflects the application.

NOTE 2 – The table reflects additional requirements for specifying the software safety requirements clearly and precisely.

* Appropriate techniques/measures shall be selected according to the safety integrity level. Alternate or equivalent techniques/measures are indicated by a letter following the number. Only one of the alternate or equivalent techniques/measures has to be satisfied.

from IEC61508-3

Problems

- Many individual processes and large amount of documentation
- Frequent communication between users, designers and safety assessors
- Waterfall instead of Agile

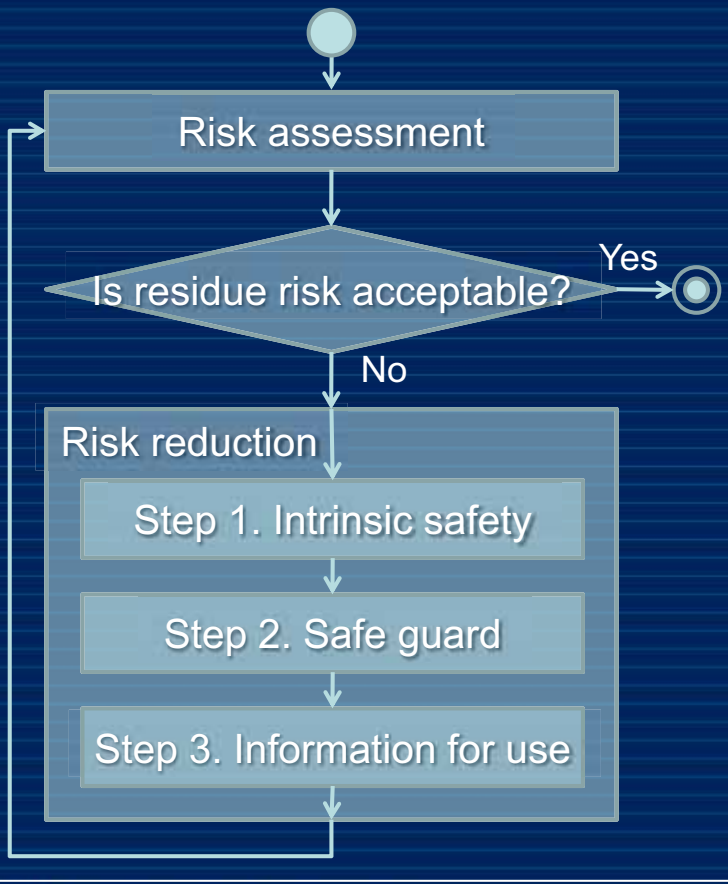
- Could be solved by modeling and CAD related tool assistance

Proposal

- Object Oriented modeling for robot safety
  - Definitions of safety, risk and other terms
  - Include processes for risk assessment, risk reduction and evaluation
  - Construct framework through UML profiling

- Accelerate development of safe service robots
- Change process from waterfall to agile

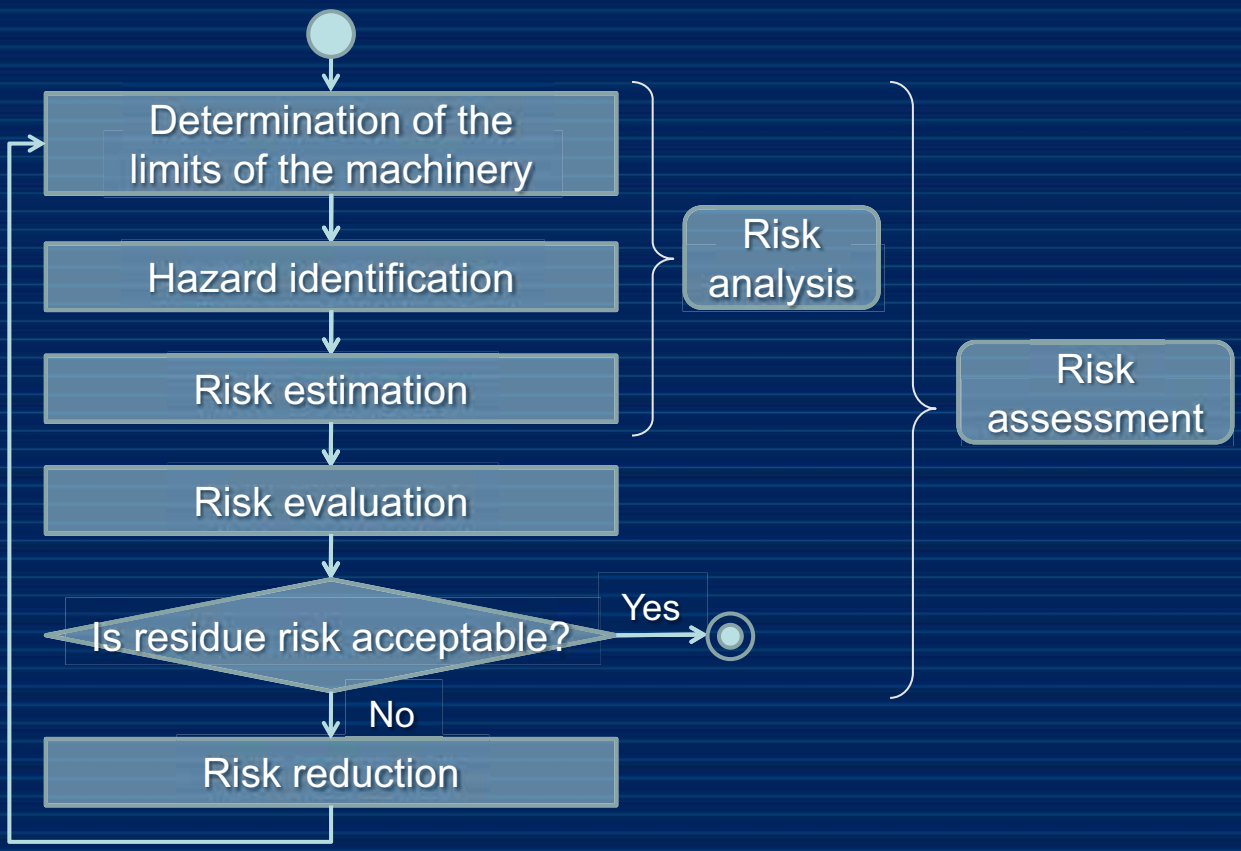
Risk reduction process



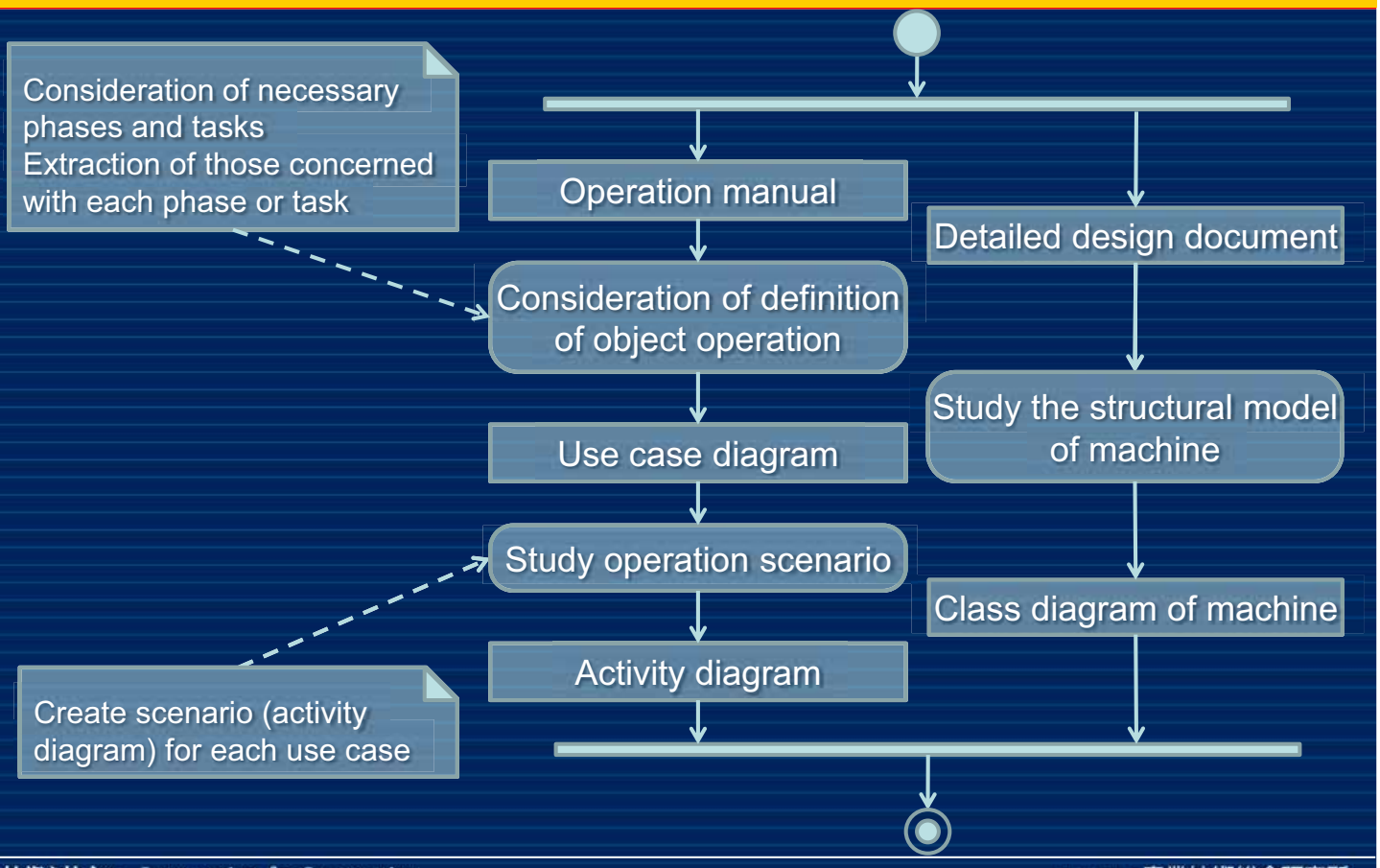
Concepts for safety of machinery:

- No zero risk
- Start from risk assessment (determining requirements)
- Three step risk reduction
- Judge residue risk
- Safeguards = Functional safety

Risk assessment process



Limits of machinery

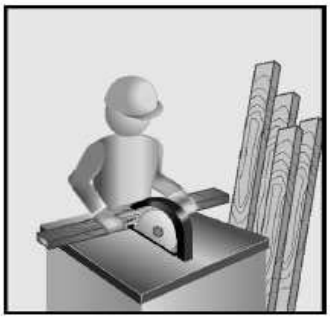
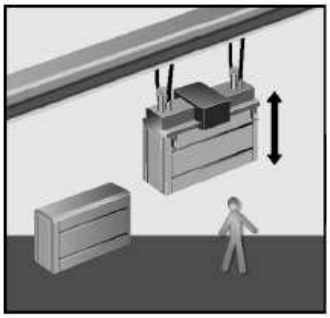
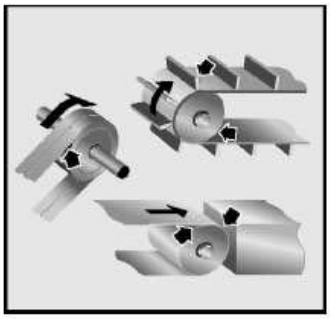


Example of hazards

Type of group	Examples of hazards	
	Origin	Potential consequences
Mechanical hazards	- Acceleration, deceleration (kinetic energy) - Angular parts - Approach of a moving element to a fixed parts - Cutting parts ⋮ - Falling objects ⋮	- Being run over - Being thrown - Crushing - Cutting or severing ⋮
Electrical hazards	- Arc ⋮	- Burn ⋮

- Example of hazards listed in ISO 14121
- Any combination of origin and potential consequences should be considered
- Hazards classified by group type

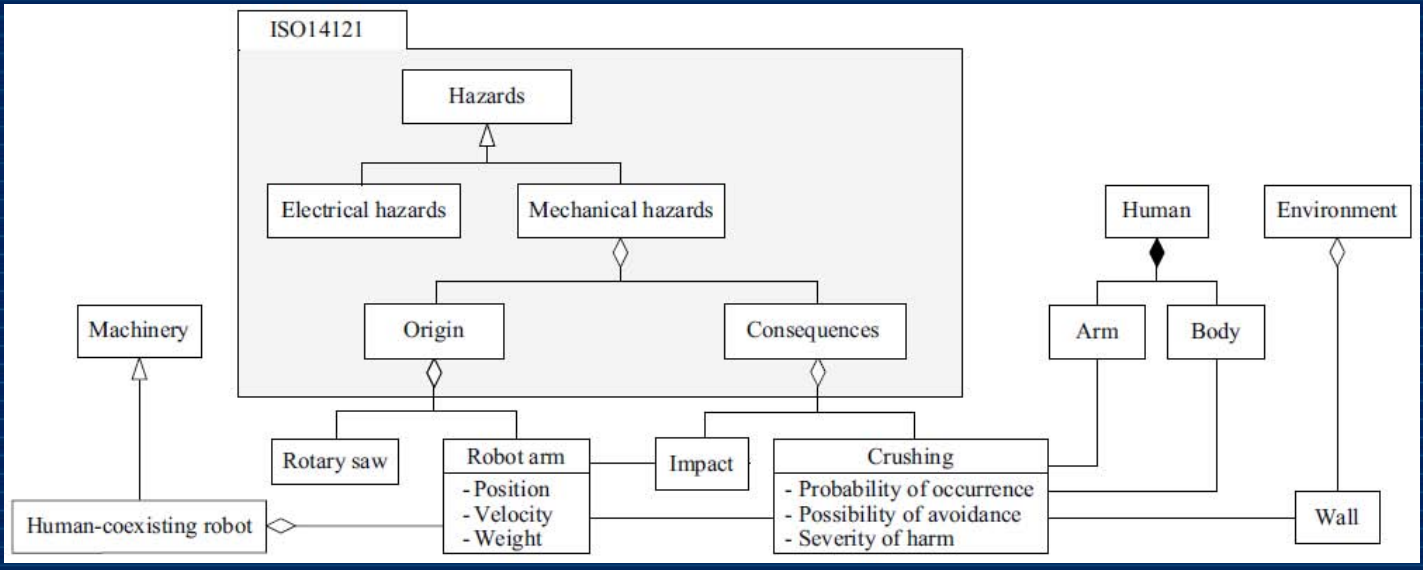
Example of typical hazards

Hazard		Hazard	
	**Origin** cutting parts **Potential consequences** — cutting — severing		**Origin** falling objects **Potential consequences** — crushing — impact
	Origin moving elements **Potential consequences** — crushing — impact — shearing		Origin moving elements (three examples) **Potential consequences** — drawing-in — friction, abrasion — impact

from ISO14121

- Subset of the hazard table

Class diagram



- UML diagram can be used for modeling ISO hazard description (includes humans and environment as elements of risk)

Example of hazardous situations

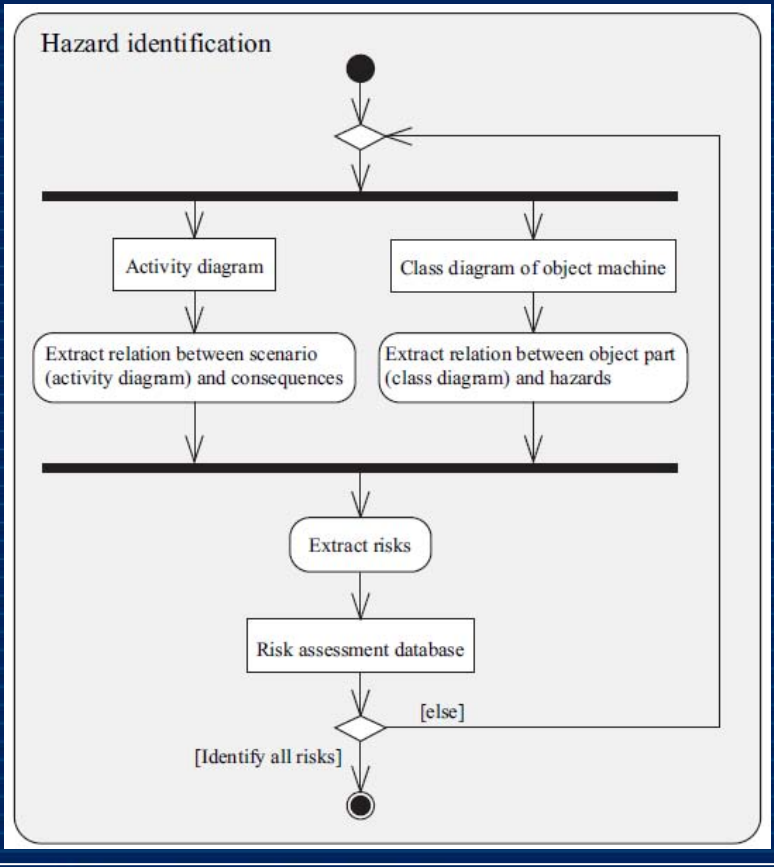
Phase of machine life cycle	Examples of tasks
Transport	- Lifting - Loading - Packing - Transportation ⋮
Assembly and installation Commissioning	- Adjustments of the machine and its components - Assembly of the machine ⋮
Setting Teaching/programing and/or process changeover	- Adjustment and setting of protective device and other components ⋮

Listed life cycle:

- Transport
- Assembly and installation, Commissioning
- Setup, Teaching/programming and/or process changeover
- Operation
- Cleaning, Maintenance
- Fault finding/Troubleshooting
- Decommissioning, Dismantling

- All phases of machine life cycle should be taken into account
- Each phase consists of separate tasks

Hazard Identification



Hazard identification by:

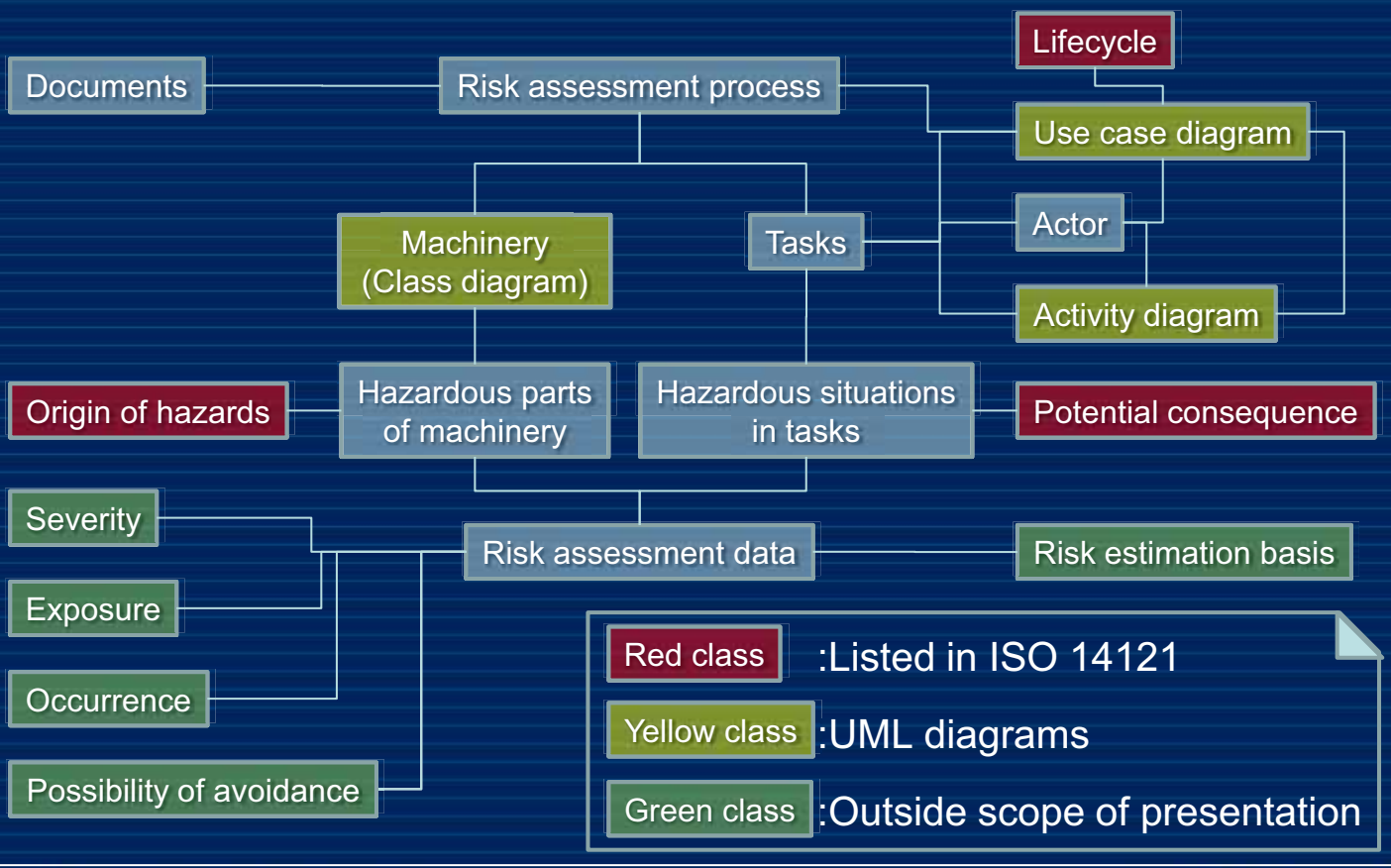
- Extracting risks from activity diagrams and class diagram of object machine
- Considering potential consequences and origin of hazards

Process to be continued until all risks indentified

Rest of Processes in Risk Assessment

- Risk estimation (quantitative analysis)
  - Severity of harm
  - Probability of occurrence
    - Exposure of person to the hazards
    - Occurrence of hazardous events
    - Possibility of avoiding or limiting the harm
- Risk evaluation (if the risk has been adequately reduced)
- Documentation

UML model of risk assessment



Conclusion

- Proposed an object oriented modeling of ISO based risk assessment
- All processes and safety related concepts can be modeled by using UML models
- Standardization of proposed UML should be useful for the propagation of known safety principles, development of CAD-based risk assessment and design of safety related robot modules
- Future work will be focused on developing UML profile, implementing risk estimation and evaluation

Gearbox

Reusable robot software

Geoffrey Biggs

Software reusability

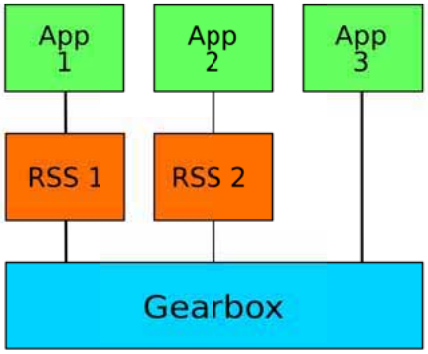
- Reusability must occur on more than one level.
- Monolithic components restrict implementation details to a single system.
- Current robot software is not truly reusable.
  - Restricted to the framework it is written for.
  - Using a component that is written for a different framework requires considerable work (porting, framework bridges, etc.).

Gearbox

- Separate function and integration to solve the usability problem.
- Collection of libraries of robot software.
  - Hardware driver implementations.
  - Algorithm implementations.
  - Utility libraries.
- Individual libraries.
  - No framework connecting the libraries together.
  - No required global dependencies.

Reusable libraries

- Gearbox libraries are used by frameworks.
  - RT-Middleware: create components that provide interface(s) for Gearbox libraries' functionality.
  - Player: write drivers that interact use Gearbox libraries to provide functionality.
  - Orca: wrap Gearbox libraries in Orca interfaces.



Reusable libraries

- Can use the same implementation in many frameworks.
- Code changes in the implementation are available to all frameworks immediately.
  - No need to merge code changes manually between different frameworks.
  - Maintenance for one framework is maintenance for all.

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Reusable libraries

- Unix-like model of development.
  - Many programs and libraries, few common APIs, no integration.
  - Massive reuse of implementation.

Gearbox concepts

- Freedom of implementation.
  - Developers are not restricted in language, API, programming style, etc.
  - No requirement for consistency between libraries.
- Importance of ease-of-use.
  - Easy to install.
  - Software works, does what it claims to do.
  - Well-documented.

AIST

Gearbox concepts

- Libraries are subjected to a peer-review process before acceptance into Gearbox.
  - Similar to Boost.
  - Allows other Gearbox developers and users to comment on library's design, suitability, and implementation.
  - Can help catch usability issues and bugs in the source.

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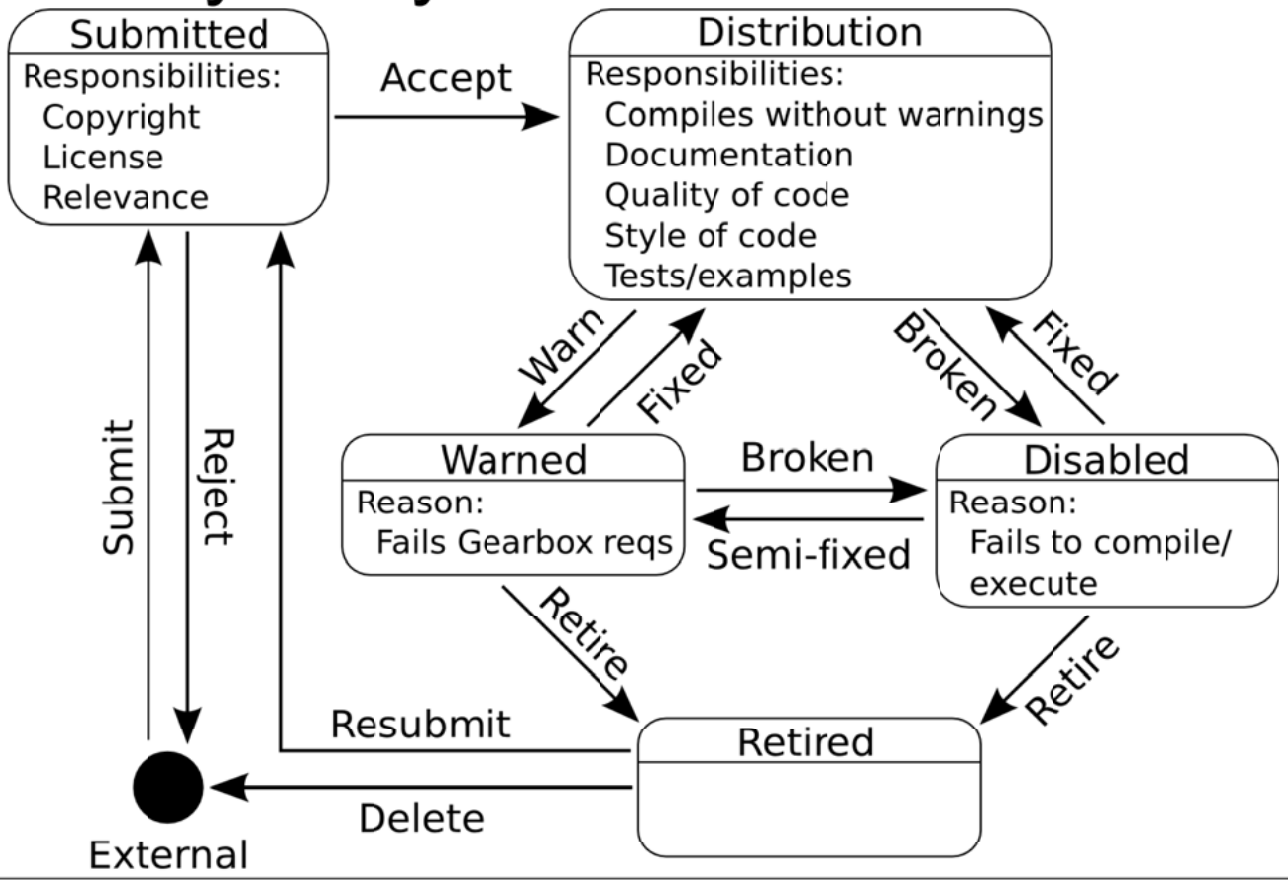
Library lifecycle



Build system

- CMake-based unified build system.
- All libraries built using a single set of build scripts.
  - Makes what used to be a painful process simpler.
- Users can easily select which libraries should or shouldn't be compiled and installed.
- CTest support provides automated testing of libraries with CDash integration to display results.

Advantages of Gearbox

- Wider, easier reuse of functional robot software.
- Easier maintenance – test libraries without the framework getting in the way.
- Easy installation of a variety of robot functionality.
- Freedom to use software in any way desired – with or without a framework.
- Ease development of new frameworks – gain lots of functionality rapidly.

AIST

Disadvantages

- Difficult to convince people to develop independent libraries.
  - More work initially to design and implement an API.
  - May need to integrate the library with a framework before it can be used.
- Writing libraries for a wider audience can be difficult.
- Must write documentation.

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Gearbox

- Advantages outweigh the disadvantages.
  - Modular software design is best practice anyway.
  - Everyone benefits from a single piece of software with little extra work.
- Number of libraries rapidly increasing.
  - Now have 9 libraries
  - Data communications libraries, laser scanner drivers, GPS drivers, battery information drivers, ...

User Identification Service Interface

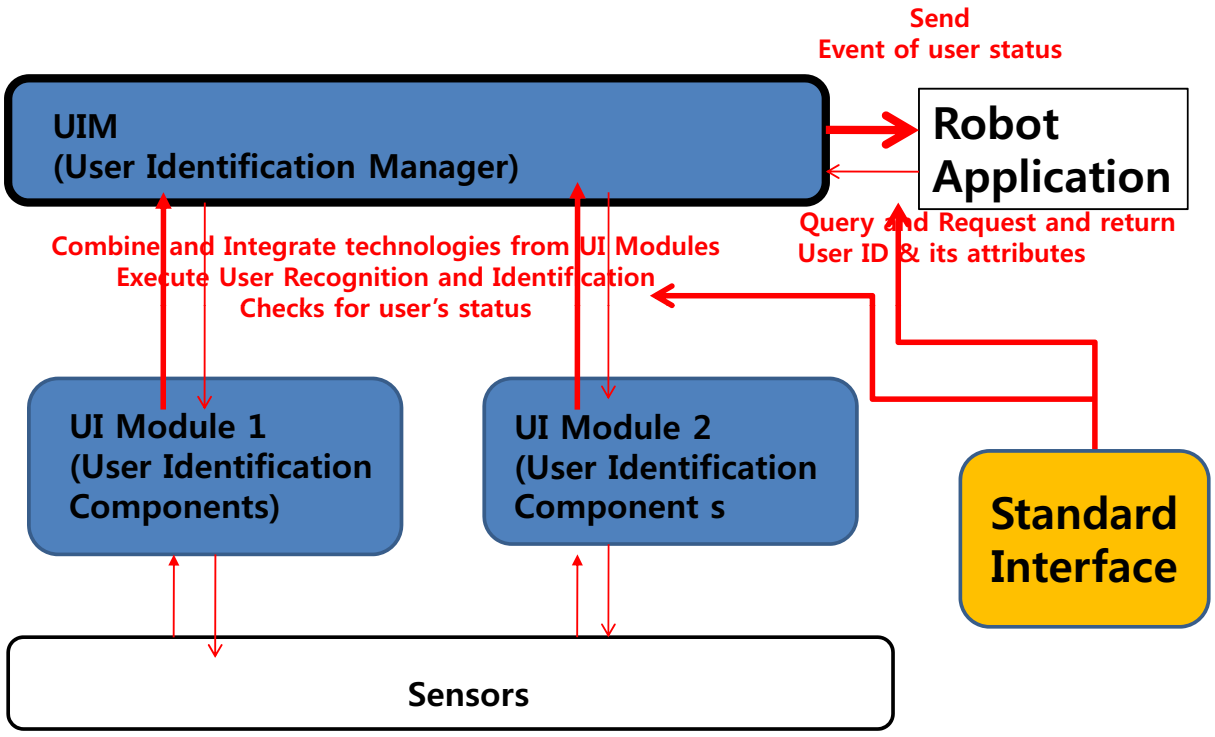
2009-03-24

Su Young Chi, Ph.D.
Toshio Hori, Ph.D.
Hyun Soo Kim, Ph.D.
Hyun Kim, Ph.D.
Young Jo Cho, Ph.D.

Motivation

- User Identification Service has an important role for intelligent robots
  - Owner recognition
  - Intruder detection
  - User Location Tracking
  - Access Control
  - Searching watching-list
  - User Preference Services
  - …
- It is different from Localization Service as well as Biometrics
  - BioAPI
  - RLS

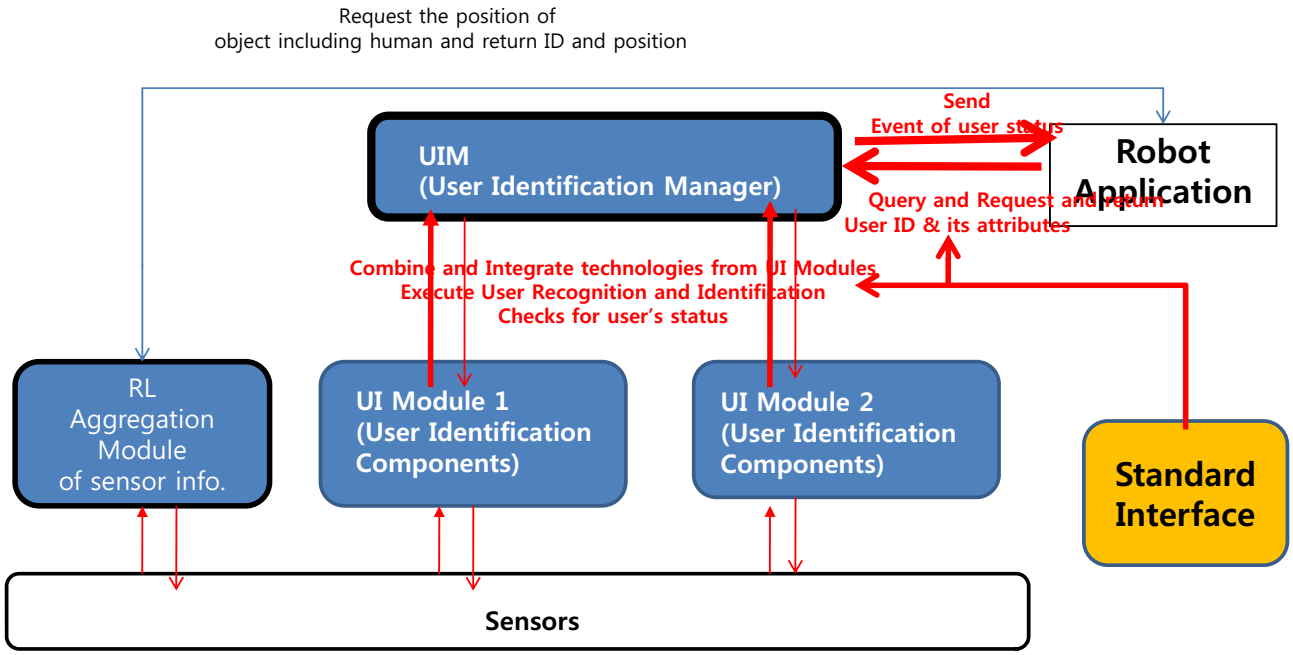
The Structure of Proposal Standard



Differences to BioAPI

BioAPI	Robot UIS
Single Time Operation User identification is a one-time event. Once a user is authorized, the intended transaction starts, and the authentication module no longer intervenes.	**Continuous Operation** Interacting users change continuously. Thus the process should be able to track the users appropriately. For keeping the user's identity, It should be acts tracking, re-recognition, verification
Single User Recognize single user	**Multi-user** In many cases, more than one user exists and the robot should be aware
Controlled Environment The capturing process is strictly regulated and the users are extremely cooperative because the failure in authentication results in inconvenience or even a danger for that user.	**Uncontrolled Environment** The robot must recognize the users continuously. Thus, it is unrealistic to expect users to cooperate constantly for the robots.
User ID Answer the question "Who is the person?"	**User ID and Position** Answer not only "Who is the person?" but also "Where is that person?"
Passive The authentication function is called when it is needed.	**Active** The authentication function should be running continuously. The function not only responds to the request of the application to identify a certain user, but also raises events when a new user appears or disappears.

Differences to RLS



How can we communication between User Identification Manager and Robot Application?

- Query from Application Service to User Identification Manager
  - "Identify the person who have just asked to play a music"
  - "Where is your mother?"
  - "Who is calling me from the right hand side?"
  - "Who is that person visible from the camera image?"
- Event from User Identification Manager to Application Service
  - "We have found (possible person's ID with likelihood list) from the 60 degree direction"
  - "(possible person's ID with likelihood list) is calling you from 130 degree direction"
  - "(possible person's ID with likelihood list) has disappeared from our camera view"
- Request from Application Service to User Identification Manager
  - **Following the father**
  - **Approaching the person appears 60 degree left**

User Identification Manager to Application Service(1)

Event List

- SoundDetected
  - The direction of the sound is detected
- MotionDetected
  - The position of the motion is detected
- PersonFound
  - A user is found, but not identified
- UserIdentified
  - The user is identified
- UserProbabilityChanged
  - The likelihood of the user ID has been changed
- SpecificUserAppeared
  - The specific user that Applciaton has requested, has appeared.

User Identification Manager to Application Service(2)

- User Identification Manager needs events for user disappearance, since it has the user tracking feature.

- PersonDisappeared
  - A user has disappeared (including multiple user cases)
- SpecificUserDisappeared
  - Specific user that Application requested, has disappeared.

- Separate Event may be needed according to the relative position between the user and the robot
- PersonInsideArea
  - When somebody approached within certain distance from the robot.

User Identification Manager to Application Service(3)

Events more specific than "PersonFound", may be needed.

- FaceDetected
  - The user's face is detected, but not identified (including the position information)
- VoiceDetected
  - The user's voice is detected, but not identified (including the position information) – this is when the speech/non-speech discrimination is possible.

Auxiliary information of the user recognition

- UserGenderClassified
  - User is not identified, but the gender is classified.
- UserAgeClassified
  - User is not identified, but the age is classified.

Application Service to User Identification Manager (1)

Enumeration

- int GetNumberOfUAM();
- UAMInfo GetUAMInfo(int nth);
  - Function for UAM Enumeration in the HRI Demon System
- UAMInfo {
  - Int UAMID;
  - Int Media; (such as image, sound, distance, human sensor)
  - BOOL NeedEnrollment;
  - };
- BOOL Initialize()
- BOOL Destroy()
- Void SetProperties(UAMID, Properties p)
  - Property is used when certain information is to be set for a specific UAM
- Properties GetProperties(UAMID)
  - Get property information assigned for a specific UAM.

Application Service to User Identification Manager (2)

Enrollment

- BOOL EnrollUser(UAMID, UserInfo);
  - Enrol process is assigned to the UAM, including user interface for enrollment.
  - The result indicates success or fail, using BOOL.
  - The registered data is managed by the UAM itself.

- EnrollInfo GetEnrollmentData(UAMID, UserInfo);
- EnrollInfoArray GetEnrollmentData(UAMID);
  - These two functions are used when the registered data is needed for backup etc.
  - The first one is used for separate data, and the second one is used for all user's data registered at the UAM.
- BOOL DeleteEnrollment(UAMID, UserInfo);
  - This is used to delete the registered data.

Application Service to User Identification Manager (3)

Matching

- BOOL AddCandidate(UserInfoArray);
  - To pre-set the specific users as the matching candidate. In this case, the users need to be pre-registered.
- BOOL RemoveCandidate(UserInfoArray);
  - To remove the specific user from the matching candidate list.
- UserInfoArray GetCandidateList();
  - To get the user list, registered as the matching candidate.
- UserInfoArray MatchUser(UAMID);
- UserInfoArray MatchUser();
  - To perform the user identification.
  - This can give command for user identification to a specific UAM.
  - This can also give command to all UAM available to UIC, and get the combined results.
  - When the user is more than one person, the return value is UserInfoArray (User ID with likelihood list and the position information may be transmitted.).

Application Service to User Identification Manager (4)

- PositionInfo FindUser(UserInfo);
  - To find the specific user (if the user can be found, the position of that user can be returned) – even if the user is not found, the system may return the previous history of that user, such as “your mother has moved into the main bedroom five minutes ago”.
- UserInfoArray GetUserMap();
  - This returns the list of visible users, including the position info.

Event Control

- Void SetEvent(UAMID, EventInfo, CallBack, OnOff);
  - This set or reset a certain Event.
  - This is the self-controlled Event of UIC to Application, without the request of Application.
  - It should be noted that only the pre-set Event may happen
    (pre-set Event : Events that was set by Application by “SetEvent”.)
- Void RaiseEvent(EventInfo);

Infrastructure WG Progress Report

Beom-Su Seo (ETRI)
Noriaki Ando (AIST)

Discussion in this meeting

- Confirming RFP process
  - "RTC Container RFP"
- Confirming WG process
  - Picking up keywords for our RFP scope
  - Use case discussion to define scope of RFP
  - Survey for collecting information
- Use case discussion
- Assignment of survey topic
- Next meeting and private meeting

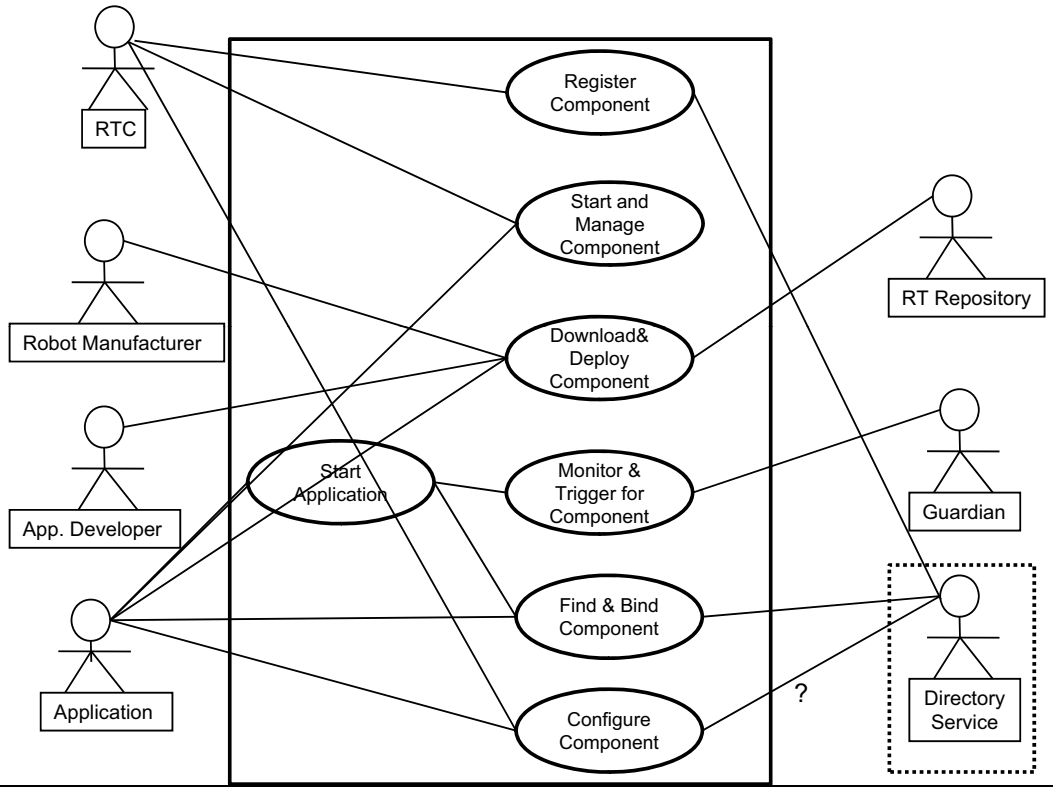
Keywords

- Deployment
- Configuration
- QoS
- Fault tolerance
- Directory service

Related Technologies Survey

- About
  - Directory and discovery
  - Deployment and configuration
- OMG related standard
  - CCM (Dr. Ando)
  - Software radio (Dr. Ando)
- Other
  - Web service (Dr. Lee)
  - Ice Box (Dr. Biggs)
  - OSGi (Dr. Lee)
  - EJB (Dr. Soo)
- What is robotic specific functionality?
- Mailing list discussion.
- Presentations will be made in the next meeting.

Use case for infrastructure



Use case

- Subject is middleware or platform
- Middleware provides the following functionality
  - RTC registration
  - RTC lifecycle management
  - Download and deployment RTC
  - Monitoring and triggering RTC
  - Find and bind component
  - Configure component
- More concrete use case will be proposed and discussed in the next meeting

Next step

- Survey for directory service, D&C related technologies
  - Presentation in the next meeting
- Use case discussion
  - More concrete use case
  - Make clear scope of our RFP
- Roadmap
  - RFP for new specification (Title is needed)
  - RTF for RTC specification (if needed)
  - 1st review RFP in San Antonio
  - 2nd Review and issue RFP in Long Beach

Robotic Localization Service WG Report

2009.03.24

Shuichi Nishio
Yeon-Ho Kim
Jaeyeong Lee

Washington DC meeting

- 23 Mar. 9:00-12:00, 14:00-18:00
- 24 Mar. 10:00-12:00
- 25 Mar. 9:00-12:00, 14:00-18:00
- 26 Mar. 9:00-12:00, 14:00-18:00

Progress

- Comment deadline has passed (2009.2.23)
- So far, we have 76 issues raised
  - 51 issues: raised until 2008.12
  - 25 issues: newly raised after Santa Clara meeting
- First revision & voting
  - Vote for 47 issues with proposed resolution (2009.2.6)
  - 32 issues were passed but 15 issues not.
- Washington DC meeting (2009)
  - We have discussed on the resolution of
    - 15 issues not passed at 1st voting
    - 29 issues (excluded at 1st voting or newly raised)
  - two remaining issues to be discussed
    - Sequence diagram
    - Hierarchical relationship for CRS & RoLo Data Spec instances
- Continue discussion tomorrow morning

Planned Schedule

- 2009.04: Revised specification & second report
- 2009.04: Second vote
- 2009.05: Document upload to OMG server (due: 5.25)
- 2009.06: Architecture Board (Costa Rica meeting)

Contact Report

- Korea Intelligent Robot Standard Forum -

March, 2009

Young-Jo Cho, Ph.D.

Chair, Steering Committee of KIRSF
Co-chair, Robotics DTF, OMG
Research Fellow , IT Convergence Technology Research Laboratory, ETRI

Introduction to Korea Intelligent Robot Standard Forum(KIRSF)

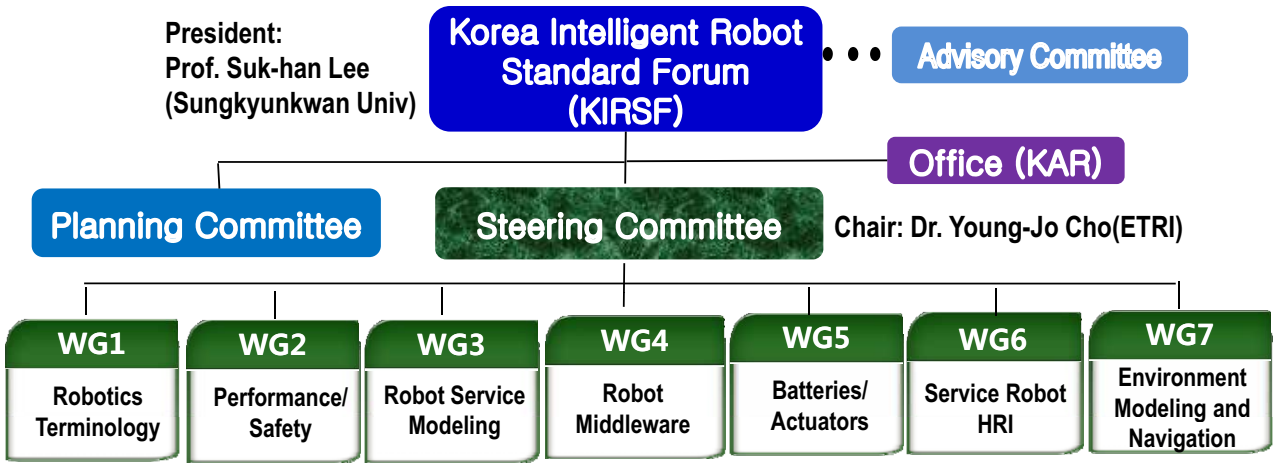
Vision We help pave the way for country's leap into a Northeast Asian hub of the intelligent robotics industry

PURPOSE & ACTIVITIES

To activate Korea intelligent robot industry thru research and enactment of standards.

- ☐ Research on standardization of intelligent robot technologies.
- ☐ Enactment of KIRSF standards.
- ☐ Promotion of public standards(nation's standards or international standards) with the forum standards.
- ☐ Information gathering and analysis related to intelligent robot standard technologies.
- ☐ Enhancement of mutual collaboration and understanding of standards thru seminar, workshop, exhibitions, etc.

Organization and Status of KIRSF



- KIRSF was founded at 8th of September 2005, gathering the standardization efforts had been managed separately by two ministries(MOCIE and MIC) for about 2 years.
- We have currently 97 members mainly from Korea robot industry
- KIRSF Standards: 24(2007), 25(2008)

Steering Committee of KIRSF

- Adopts the standardization items, enacts, modifies and withdraws forum standards.
- Enacts, revises, and withdraws operating rules, and establishes business plans.
- Decides the organization subcommittees/working groups and operating policies.
- Resolves other major issues concerned with the business and operation for the forum

#	Affiliation	Name	Title
1	ETRI	Y.-J. Cho	Chair
2	Kyunghee Univ.	S.K. Lee	V-Chair
3	KATS	Y.D. Kim	-
4	Dasa Robot	H.C. Kim	-
5	Daewoo Elec.	H.S. Chung	-
6	Robotech	Y.G. Hong	-
7	Microrobot	D.H. Lee	-
8	KTL	H.C. Park	-
9	Samsung Elec.	Y.T. Oh	-
10	KAITECH	K.W. Yang	-
11	LG Elec.	H.J. Kim	-
12	KAERI	S.H. Kim	-

#	Affiliation	Name	Title
13	Yujin Robot	S.J. Park	-
14	Innometal Izirobot	C.S. Park	-
15	KT	S.T. Chung	-
16	KIST	B.J. You	-
17	Sejong Univ.	S.B. Moon	-
18	KETI	J.B. Lee	-
19	Robotever	S.C. Kee	-
20	ED	S.J. Kim	-
21	Kangwon Univ.	H.S. Park	-
22	Hyundai Rotem	J.B. Lee	-
23	SKT	K.H. Lee	-
24	KAR	Y.H. Cho	Secretary

Contact Report:
ISO/TC184/SC2

Tetsuo Kotoku
AIST, Japan

Schedule

	Mon. , 23 Feb.	Tue., 24 Feb.		Wed, 25 Feb.	Thu. 26 Feb.	Fri. 27 Feb.
Boardroom 1	WG3					
Boardroom 4	WG1	WG8	WG7			

- WG1 : Vocabulary on robots and robotic devices
- WG3 : Industrial Safety
- WG7 : Personal care safety
- WG8 : Service Robots

WG1（Vocabulary on robots and robotic devices）

Korea: 4, Japan：3, UK: 3, USA: 1, France: 1, Germany: 1

WG1 Roadmap

1. CD proposal by the end of June, 2009.
2. Review on CD voting results in Nov, 2009 and Mar, 2010 meetings
3. DIS by the end of March, 2010.
4. Review on DIS voting results in July, 2010 and Nov, 2010 meetings.
5. FDIS by then end of Nov, 2010.
6. IS publication by the beginning of 2011.

WG8 （Service Robots）

Korea：6, **Japan:** 5, **UK:** 3, **France:** 1

Resolutions

55.(Appointment of experts) by each country

60.(Workshop Organization – Following Res. 49-) by everyone .

62.(Characteristics of mobile robot) by each country .

63.(Environments for the service robot) by UK

64.(Halal food processing by robot) by UK

Evening Event

Proposal

ISO/TC184/SC2

- Until now:
  local liaison to AG1(WG8)
- Future:
  official liaison to SC2

Robotics-DTF Plenary Meeting
Wrap-up Session

24th March, 2009

Washington DC, USA

Hyatt Regency Cristal City

Document Number

robotics/2009-03-01 Final Agenda (Tetsuo Kotoku)
robotics/2009-03-02 Santa Clara Meeting Minutes [approved] (Geoffrey Biggs and Yeon-Ho Kim)
robotics/2009-03-03 Steering Committee Presentation (Tetsuo Kotoku)
robotics/2009-03-04 Roadmap for Robotics Activities (Tetsuo Kotoku)
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robotics/2009-03-08 GearBox: (Geoffrey Biggs)
robotics/2009-03-09 Robotic Functional Services WG Report (Su-Young Chi)
robotics/2009-03-10 Infrastructure WG Progress Report (Noriaki Ando)

Document Number (cont.)

robotics/2009-03-11 Robotic Localization Service FTF Report (Jaeyeong Lee)

robotics/2009-03-12 Contact Report: Korea Intelligent Robot Standard (Young-Jo Cho)

robotics/2009-03-13 Contact Report: ISO/TC184/SC2 (Tetsuo Kotoku)

robotics/2009-03-14 Wrap-up Presentation (Tetsuo Kotoku)

robotics/2009-03-15 Next Meeting Preliminary Agenda - DRAFT (Tetsuo Kotoku)

robotics/2009-03-16 DTC Report Presentation (Young-Jo Cho)

robotics/2009-03-17 Washington Meeting Minutes - DRAFT (Geoffrey Biggs and Beom-Su Seo)

Organization

Robotics-DTF
- Laurent Rioux (Thales)
- Tetsuo Kotoku (AIST, Japan)
- Young-Jo Cho (ETRI, Korea)

Steering Committee — All volunteers

Publicity Sub-Committee
- Abheek Bose (ADA Software, India)
- Call for Volunteer

Contacts Sub-Committee
- Makoto Mizukawa (Shibaura-IT, Japan)
- Call for Volunteer

Technical WGs

Infrastructure WG
- Noriaki Ando (AIST, Japan)
- Beom-Su Seo (ETRI)

Robotic Functional Services WG
- Soo-Young Chi (ETRI, Korea)
- ~~Hyunsoo Kim (Samsung, Korea)~~
- Shuichi Nishio (JARA/ATR, Japan)
- Toshio Hori (AIST, Japan)

Robotic Data and Profiles WG
- Bruce Boyes (Systronix, USA)
- Laurent Rioux (Thales)

Robotic Localization Services WG
- Jaeyeong Lee (ETRI, Korea)
- Yeon-Ho Kim (Samsung, Korea)
- Shuichi Nishio (JARA/ATR, Japan)

Next Meeting Agenda

June 22-26 (San Jose, Costa Rica)

Monday:

Localization FTF (AM)
WG activity [Parallel WG Session] (am)

Tuesday:

Steering Committee (morning)
WG activity [Parallel WG Session] (am)
Robotics-DTF Plenary Meeting (pm)
- **Guest and Member Presentation**
- **Contact reports**

Wednesday:

Localization FTF
WG activity follow-up [if necessary]

Related Events

- Organized Session on Standardization at ICCAS-SICE2009 in Fukuoka, Japan Aug. 18(Tue.)-21(Fri.), 2009 http://www.sice.or.jp/ICCAS-SICE2009/
- Workshop on standardization at CLAWAR 2009 in Istanbul, Turkey Sep. 9-11, 2009 http://www.clawar2009.org/en/

Attendee (15 participants)

- Beom-Su Seo (ETRI)
- Geoffrey Biggs (AIST)
- Hyun Kim (ETRI)
- Itsuki Noda (AIST)
- Makoto Mizukawa (Shibaura-IT)
- Noriaki Ando (AIST)
- Shuichi Nishio (JARA/ATR)
- Su-Young Chi (ETRI)
- Takashi Tubouchi (Univ. of Tsukuba)
- Takeshi Sakamoto (Technologic Arts)
- Tetsuo Kotoku (AIST)
- Toshio Hori (AIST)
- Yeon-Ho Kim (Samsung)
- Young-Jo Cho (ETRI)
- Yoshihiro Nakabo (AIST)

Robotics Domain Task Force Preliminary Agenda ver0.0.1 robotics/2009-03-15

OMG Technical Meeting - San Jose, Costa Rica -- June. 22-26, 2009

http://robotics.omg.org/

		TF/SIG				
		Host	Joint (Invited)	Agenda Item	Purpose	Room
Monday: Robotics Plenary(am) and WG activites(pm)						
9:00	12:00			Robotic Localization Services FTF (3h) - Jaeyeong Lee(ETRI), Yeon-Ho Kim(Samsung) and Shuichi Nishio(JARA/ATR)	discussion	
12:00	13:00					
13:00	18:00			Architecture Board Plenary		
13:00	13:45			Robotics Steering Committee	Arrangement	
14:00	18:00			Robotic Infrastructure WG (4h) - Noriaki Ando(AIST) and Beom-Su Seo (ETRI)	discussion	
				Services WG(4h): User Identification Service RFP Meeting - Su-Young Chi (ETRI), and Toshio Hori (AIST)	discussion	
Tuesday: WG activities and Robotics Plenary						
9:00	12:00			Robotic UML Profiling Meeting (3h) - Laurent Rioux (Thales)	discussion	
				Robotic Localization Services FTF (3h) - Jaeyeong Lee(ETRI), Yeon-Ho Kim(Samsung) and Shuichi Nishio(JARA/ATR)	discussion	
				Services WG(3h): User Identification Service RFP Meeting - Su-Young Chi, HyunSoo Kim, and Toshio Hori	discussion	
12:00	13:00			**LUNCH**		
13:00	13:15	Robotics		Robotics-DTF Plenary Opening Session	Robotics plenary openning	
13:15	14:00	Robotics		**Special Talk: <Call for Presentation>** **- TBA**	presentation and discussion	
14:00	14:45	Robotics		**Special Talk: <Call for Presentation>** - **TBA**	presentation and discussion	
				Break (30min)		
15:15	16:30	Robotics		WG Reports and Discussion (Service WG, Infrastructure WG, Robotic Localization Service WG)	presentation and discussion	
16:30	17:00	Robotics		Contact Reports: - Makoto Mizukawa(Shibaura-IT), and Young-Jo Cho(ETRI)	Information Exchange	
17:00	17:15	Robotics		Robotics-DTF Plenary Wrap-up Session (Roadmap and Next meeting Agenda)	Robotics plenary wrap-up	
17:15				Adjourn plenary meeting		
17:30	17:45			Robotics WG Co-chairs Planning Session (Preliminary Agenda for next TM, Draft report for Friday`	planning for next meeting	
Wednesday WG activity follow-up						
9:00	12:00			Robotic Localization Services FTF (3h) - Jaeyeong Lee, Yeon-Ho Kim and Shuichi Nishio	discussion	
				Services WG(3h): User Identification Service RFP Meeting - Su-Young Chi, Hyunsoo Kim, and Toshio Hori	discussion	
12:00	14:00			**LUNCH and OMG Plenary**		
14:00	18:00			Robotic Localization Services FTF (4h) - Jaeyeong Lee, Yeon-Ho Kim and Shuichi Nishio	discussion	
				Services WG(4h): User Identification Service RFP Meeting - Su-Young Chi, Hyunsoo Kim, and Toshio Hori	discussion	
18:00	20:00			**OMG Reception**		
Thursday						
12:00	13:00			**LUNCH**		
13:00	18:00			Architecture Board Plenary		
Friday						
8:30	12:00			AB, DTC, PTC		
12:00	13:00			**LUNCH**		

Other Meetings of Interest

Monday						
8:00	8:45	OMG		New Attendee Orientation		
18:00	19:00	OMG		New Attendee Reception (by invitation only)		

Please get the up-to-date version from http://staff.aist.go.jp/t.kotoku/omg/RoboticsAgenda.pdf

Robotics-DTF

Date: Friday, 27th March, 2009
Chair: T. Kotoku, L. Rioux, and Y. –J. Cho
URL: http://robotics.omg.org/
email: robotics@omg.org

➢Highlights from this Meeting:

Robotics Plenary: (15 participants)

- 2 New Work Item Talks
  - RTC directory service for interoperability between robotic software platforms(Kang-Woo Lee) [robotics/2009-03-06]
  - Modeling of risk assessment for service robots(Yoshihiro Nakabo) [robotics/2009-03-07]
- 1 Special Talk
  - GearBox: Peer-reviewed open-source libraries for robotics(Geoffrey Biggs) [robotics/2009-03-08]
- 3 WG Reports [robotics/2009-03-09,-10,-11]
- 2 Contact Reports [robotics/2009-03-12,-13]
- Preliminary agenda for upcoming meeting [robotics/2009-03-15]

Robotics-DTF

Date: Friday, 27th March, 2009
Chair: T. Kotoku, L. Rioux, and Y. –J. Cho
URL: http://robotics.omg.org/
email: robotics@omg.org

➢Deliverables from this Meeting:

- Nothing Special

➢Future deliverables (In-Process):

- Robotic Localization Service FTF Report
- Robotic User Identification Service RFP
- Potential RFP of Robot Technology Component(RTC) Container

➢Next Meeting (San Jose, Costa Rica):

- Review of User Identification Service RFP
- Guest presentations
- Roadmap discussion
- Contact reports

Minutes of the Robotics DTF Plenary Meeting - DRAFT
March 23-27, 2009
Washington DC, USA
(robotics/2000-03-17)

Minutes Highlights

- **2 New Work Item Talks**
  - RTC directory service for interoperability between robotic software platforms(Kang-Woo Lee) [robotics/2009-03-06]
  - Modeling of risk assessment for service robots(Yoshihiro Nakabo) [robotics/2009-03-07]
- **1 Special Talk**
  - GearBox: Peer-reviewed open-source libraries for robotics(Geoffrey Biggs) [robotics/2009-03-08]
- **3 WG Reports [robotics/2009-03-09,-10,-11]**
- **2 Contact Reports [robotics/2009-03-12,-13]**
- **Preliminary agenda for upcoming meeting [robotics/2009-03-15]**

List of Generated Documents

robotics/2009-03-01 Final Agenda (Tetsuo Kotoku)
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robotics/2009-03-17 Washington Meeting Minutes - DRAFT (Geoffrey Biggs and Beom-Su Seo)

MINUTES
Tuesday, March 24, 2009, Suite 1808, 18th Floor
09:00 – 09:45 Steering Committee

Tuesday, March 24, 2009, Kennedy, 3rd Floor
13:05 – 13:15 Robotics DTF Plenary Meeting, Chair: Dr Kotoku, Quorum: 4
Joined Organizations: AIST, ETRI, JARA, Shibaura-IT, Technologic Arts, Univ. of Tsukuba

- Minutes takers: Geoffrey Biggs and BeomSu Seo
- Approval of minutes of Santa Clara meeting
  Approved: AIST (motion), Shibaura-IT (second), Technologic Arts (white ballot) .

13:15 – 13:55 RTC Directory Service for Interoperability between Robotic Software Platforms,

Kang-Woo Lee, ETRI

- Benefits of RTC Directory:
- Content-based component addressing
- Content-based component tracking
- Used in component assembly, it enables an application to be more reconfigurable
- Current status
- No relevant specification in Robotics DTF
- OpenRTM-aist uses CORBA naming service
- Related OMG standards are CORBA naming service and CORBA trading service
- Two considerations for interoperability of RTCs:
- Searching for the right RTC from diverse RTMs
- Combining them into a robot application

13:55 – 14:45 Special talk: Modelling of Risk Assessment for Service Robots, Yoshihiro Nakabo, AIST

- Socially-accepted safety technology is required (new products may need almost zero risk).
- No fundamental safety principles for service robots, unlike industrial robots.
- ISO/IEC Guide 51 standard for safety of machinery.
- ISO12100 Safety of Machinery
- ISO14121 Risk Assessment
- IEC61508 Functional Safety
- Propose object-oriented modelling robot safety.
- Model all processes and safety-related concepts using UML.
- Propose standardising the UML model in OMG.

15:15 – 15:45 Special talk: GearBox: Peer-reviewed open-source libraries for robotics , Geoffrey Biggs, AIST

- Software reusability on more than one level.
- GearBox: a collection of libraries of functional robot software.
- GearBox libraries can be used by frameworks.
- Reusable libraries – Unix-like model of development

15:50 – 16:30 User Recognition Service WG report

- Structure of proposed standard
- Differences from BioAPI
- Continuous operation vs single time operation
- Multi-user vs single user
- Uncontrolled environment vs controlled environment
- User ID and position vs User ID
- Active vs passive
- Still disagreement from Dr Nishio about the need for this standard and if it is sufficiently different from the localization standard.

16:30 – 16:45 Infrastructure WG report

- Chose keywords for RFP scope.
- Deployment, configuration, QoS, fault tolerance, directory service.

- Title: "RTC Container RFP"
- Use case discussion.
- Will perform a Related Topics Survey for directory and deployment services.
- Roadmap: Aiming for 1st review of RFP in San Antonio, 2nd review in Long Beach.

16:45 – 16:55 Robotic Localization Service WG report
- So far, 76 issues raised. 2 issues still unresolved.
- Aiming for Architecture Board at Costa Rica meeting.

16:55 – 17:05 Contact report by Young-Jo Cho
- Korea Intelligent Robot Standard Forum

17:05 – 17:20 Contact report by Tetsuo Kotoku
- ISO/TC184/SC2 working group meeting in Orlando.
- Motion to create official liason with SC2 .
  ETRI (second), Shibaura-IT (white ballot), motion passed.

Closing presentation and next meeting agenda by Tetsuo Kotoku
- Call for volunteers
- Next meeting: June 23-27, San Jose, Costa Rica

Adjourned plenary meeting at 17:30

ATTENDEE (15 Participants)
- Beom-Su Seo (ETRI)
- Geoffrey Biggs (AIST)
- Hyun Kim (ETRI)
- Itsuki Noda (AIST)
- Makoto Mizukawa (Shibaura-IT)
- Noriaki Ando (AIST)
- Shuichi Nishio (JARA/ATR)
- Su-Young Chi (ETRI)
- Takashi Tubouchi (Univ. of Tsukuba)
- Takeshi Sakamoto (Technologic Arts)
- Tetsuo Kotoku (AIST)
- Toshio Hori (AIST)
- Yeon-Ho Kim (Samsung)
- Young-Jo Cho (ETRI)
- Yoshihiro Nakabo (AIST)

Prepared and submitted by Geoffrey Biggs (AIST) and Beom-Su Seo (ETRI).