MDEP
DICWG
Programme Plan
2012 - 2013

Related to: Digital Instrumentation &Controls Working Group Activities

DICWG Programme Plan for 2012 and 2013

Multi-National Design Evaluation Programme
Digital Instrumentation & Controls Working Group (DICWG)

1. MDEP DICWG Long-Term Goals

- Develop Generic Common Positions (GCP) for the majority of digital instrumentation and control issues of significance (a total of 10-15 issue areas)
- Make a substantial influence toward harmonization of digital instrumentation and control standards of significance
- Increase collaboration, cooperation, and knowledge transfer among members and with other stakeholders to achieve the goals above

Actions to Reach Long-term Goals

- Identify, prioritize, and update issues of significance from the members and other stakeholders
- Develop common positions among members for issues of significance, which may be based on a review of the existing standards, national regulatory guidance, best practices, and group inputs
- Work jointly to formally incorporate common positions into the regulatory guidance of MDEP DICWG member states. Common positions that have been incorporated into the regulatory guidance of a majority ofDICWG member states are considered Generic Common Positions.
- Identify research needs where the working group concludes that the current level of technical knowledge is not sufficient to support establishment of a common position.
- Work closely with IAEA and standards development organisations, e.g., IEC and IEEE, for the working group's efforts to develop common positions and compare relevant requirements, guidance, and standards
- Jointly research and comment on proposed IEC, IEEE, and IAEA standards that are relevant to the regulatory review of digital I&C systems.
- Make suggestions to, and share observations and insights learned with, standards development organizations regarding harmonization and convergence of standards
- Engage a broad spectrum of utilities and equipment vendors to exchange relevant information and lessons learned relevant to the working group's efforts
- Utilize the MDEP library to facilitate the central storage and efficient exchange of information among members and other participants
- Facilitate timely and efficient mechanisms for sharing of knowledge and experience among members, thus allowing knowledge transfer and more effective safety reviews

- Interact frequently and effectively with the design-specific digital instrumentation and control working groups (EPR, AP1000, and so on) and other MDEP working groups as well as the Steering Technical Committee (STC)
- Develop and implement communication plan and problem solving model to maximize member involvement and foster regulatory cooperation.

2. Intermediate objectives (2012/2013)

- Develop Generic Common Positions for 6-8 issue areas
- Utilize a structured process, called Quick Inquiries, to efficiently share knowledge and experience among members
- Interact with and promote continued participation of IAEA, IEC and IEEE representatives in working group meetings and activities
- Communicate to IAEA and standards development organizations regarding the observations and insights learned during the working group activities (e.g., comparison of standards during development of Generic Common Positions) regarding harmonization and convergence of standards
- Interact periodically with the design-specific digital instrumentation and control working groups (e.g., EPR working group) and have a joint meeting if necessary and practical
- Invite utilities and vendors to working group meetings for presentations and information sharing
- Promote presentations by members and other participants regarding their practices, experience, and lessons learned
- Keep the working group Project Plan updated

3. MDEP DICWG Work Plan

Table 1. Generic Common Positions

1. Treatment of Common Cause Failure Caused by Software within Digital Safety Systems	Lead: US
Phase 1 Scope and Prioritization Phase 2 First Draft GCP Phase 3 Discussion within DICWG Phase 4 Final Draft GCP Phase 5 Approval from DICWG members Phase 6 Issue to STC for comments Phase 7 Resolve STC comments Phase 8 Publication	Completed – July 2013

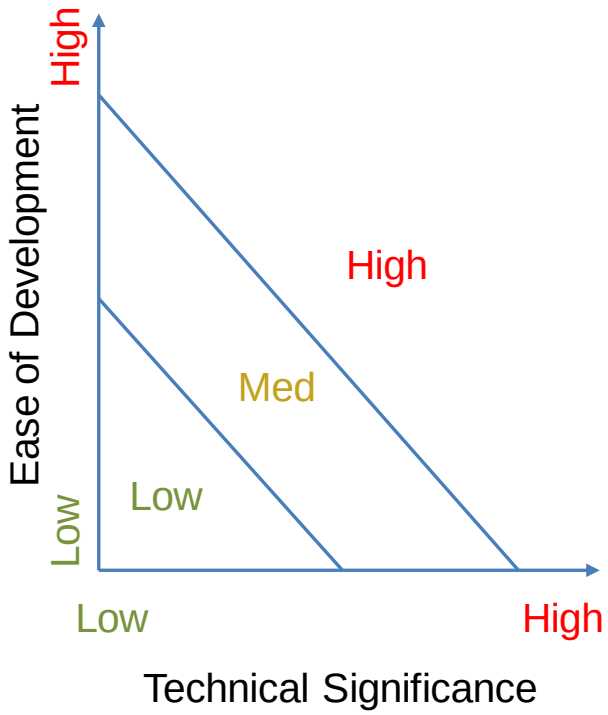
2. Software Tools The use of appropriate software tools can increase the integrity of thesoftware development process, and hence software product reliability,by reducing the risk of introducing faults in the process.	Lead: U.K.
Phase 1 Scope and Prioritization Phase 2 First Draft GCP Phase 3 Discussion within DICWG Phase 4 Final Draft GCP Phase 5 Approval from DICWG members Phase 6 Issue to STC for comments Phase 7 Resolve STC comments Phase 8 Publication	Completed – December 2010
3. Verification and Validationthroughout the Life Cycle of Safety Systems Using Digital Computers For software-based safety systems an independent assessment of the system is essential to provide the degree of confidence in the design process, in the product and in the personnel involved.	Lead: Japan
Phase 1 Scope and Prioritization Phase 2 First Draft GCP Phase 3 Discussion within DICWG Phase 4 Final Draft GCP Phase 5 Approval from DICWG members Phase 6 Issue to STC for comments Phase 7 Resolve STC comments Phase 8 Publication	Completed – February 2012
4. Data Communication Independence One of the more significant regulatory implications is maintaining not only physical and electrical independence but also data communication independence between different safety systems, thereby guaranteeing that errors in one channel or division or lower class systems will not cause the failure of another channel or division or higher class systems.	Lead: Korea
Phase 1 Scope and Prioritization Phase 2 First Draft GCP Phase 3 Discussion within DICWG Phase 4 Final Draft GCP Phase 5 Approval from DICWG members Phase 6 Issue to STC for comments Phase 7 Resolve STC comments Phase 8 Publication	Completed– March 2011

5. Treatment of Hardware Description Language (HDL) Programmed Devices for Use in Nuclear Safety Systems	Lead: France
Phase 1 Scope and Prioritization Phase 2 First Draft GCP Phase 3 Discussion within DICWG Phase 4 Final Draft GCP Phase 5 Approval from DICWG members Phase 6 Issue to STC for comments Phase 7 Resolve STC comments Phase 8 Publication	Completed–June 2013
6. Simplicity in Design Selected architecture should demonstrate a balance between simplicity in concept and the capacity to satisfy performance requirements.	Lead: U.S.
Phase 1 Scope and Prioritization Phase 2 First Draft GCP Phase 3 Discussion within DICWG Phase 4 Final Draft GCP Phase 5 Approval from DICWG members Phase 6 Issue to STC for comments Phase 7 Resolve STC comments Phase 8 Publication	Completed – March 2011
7. Qualification of Industrial Digital Devices of Limited Functionality for Use in Safety Applications	Lead: IAEA
Phase 1 Scope and Prioritization Phase 2 First Draft GCP Phase 3 Discussion within DICWG Phase 4 Final Draft GCP Phase 5 Approval from DICWG members Phase 6 Issue to STC for comments Phase 7 Resolve STC comments Phase 8 Publication	2015
8. Impact of Cyber Security Features on Digital I&C Safety Systems The general understanding is that, independent of the specific implementation, the cyber security program shall not adversely impact the performance and reliability of safety functions.	Lead: U.S.
Phase 1 Scope and Prioritization Phase 2 First Draft GCP Phase 3 Discussion within DICWG Phase 4 Final Draft GCP Phase 5 Approval from DICWG members Phase 6 Issue to STC for comments Phase 7 Resolve STC comments Phase 8 Publication	Completed– February 2012

9. System Architecture Considerations for Systems Classified at the Highest Safety Level	Lead: IAEA
Phase 1 Scope and Prioritization Phase 2 First Draft GCP Phase 3 Discussion within DICWG Phase 4 Final Draft GCP Phase 5 Approval from DICWG members Phase 6 Issue to STC for comments Phase 7 Resolve STC comments Phase 8 Publication	2015
10. Configuration Management for Software	Lead: Finland
Phase 1 Scope and Prioritization Phase 2 First Draft GCP Phase 3 Discussion within DICWG Phase 4 Final Draft GCP Phase 5 Approval from DICWG members Phase 6 Issue to STC for comments Phase 7 Resolve STC comments Phase 8 Publication	2015
11. Digital I&C System Pre-installation and Pre-operational Testing	Lead: Russian Federation
Phase 1 Scope and Prioritization Phase 2 First Draft GCP Phase 3 Discussion within DICWG Phase 4 Final Draft GCP Phase 5 Approval from DICWG members Phase 6 Issue to STC for comments Phase 7 Resolve STC comments Phase 8 Publication	Early2014
12. Use of Digital I&C Systems to Perform Built-in Automatic Tests	Lead: Korea
Phase 1 Scope and Prioritization Phase 2 First Draft GCP Phase 3 Discussion within DICWG Phase 4 Final Draft GCP Phase 5 Approval from DICWG members Phase 6 Issue to STC for comments Phase 7 Resolve STC comments Phase 8 Publication	Early 2014

Prioritization of Common Position Development

Relative Prioritization Scheme



The relative prioritization scheme provides criteria for prioritizing the development of planned generic common positions. The priority for developing each common position is assessed through 1) the ease of development of the common position, based on the scope of the guidance and the perceived or actual consensus of the position, and 2) the technical significance of the common position, based on the significance of the regulatory need for the common position.

Table 2. Priority of Common Position Development

Common Position	Priority
1. Treatment of Common Cause Failure Caused by Software within Digital Safety Systems	Complete
2. Software Tools	Complete
3. Verification and Validationthroughout the Life Cycle of Safety Systems Using Digital Computers	Complete
4. Data Communication Independence	Complete

5. Treatment of Hardware Description Language (HDL) Programmed Devices for Use in Nuclear Safety Systems	Complete
6. Simplicity in Design	Complete
7. Qualification of Industrial Digital Devices of Limited Functionality for Use in Safety Applications	Low
8. Impact of Cyber Security Features on Digital I&C Safety Systems	Complete
9. System Architecture Considerations for Systems Classified at the Highest Safety Level	Medium
10. Configuration Management for Software	Low
11. Digital I&C System Pre-installation and Pre-operational Testing	High
12. Use of Digital I&C Systems to Perform Built-in Automatic Tests	Medium

Outputs of the DICWG

- Project Communication Plan[Completed; Update as needed]
- Problem Solving Model[Completed; Update as needed]
- Programme Plan [Completed; Update as needed]
- Final position document [See the table above]
- Quick Inquires Table [Update after each meeting in MDEP Library]
- Suggestions to standards development organizations (IEC/IEEE) and IAEA for harmonization and convergence [Add them to MDEP library as issued]

Key Stakeholders with whom the DICWG members will interact

- DICWG Members
- MDEP Steering Technical Committee (STC)
- NEA Secretariat
- MDEP Design-Specific Working Groups
- Standards development organizations (IEC, IEEE, etc)
- IAEA
- Utilities and vendors
- DICWG Members' Home Organization
- Public are stakeholders, however, the national regulators involved in DICWG activities should takethe lead in communicating with the public.