



MCS - DCS Interface Standardization

CHARTER

Introduction

MDIS is an international joint industry network successfully launched in February 2010 in Amsterdam. MDIS's vision:

'To optimize the Master Control System (MCS) and Distributed Control System (DCS) communications of topside systems, by defining and establishing a standard for the interface, in order to simplify implementation of data communication links, whilst increasing the data quality' (ref. ISO 13628-6)

The standardization will aim to provide:

- Simplified implementation and testing of the interface
- Reduction in the risk of interface failures resulting in system faults and the cost of implementation due to delays and rework
- Ensure clear logic and control and status interface boundaries (aids future MCS/DCS logic development/implementation)
- Repetition of data use within objects is avoided
- Operator perspective i.e. to enable safe control and monitoring via the DCS
- To ensure flexibility for future vendor specific development and maintenance of subsea products

The MDIS group is formed through involvement of key industry players in the subsea controls area, topsides specialists and end user operators. Membership to MDIS is open to organisations active in developing, interfacing with and deploying MCS and DCS data communication links. MDIS meetings will be held up to four times each year along with SEAFOM and SIIS – similar initiatives in this industry, with the venues split between the US and Europe.

MDIS is a formal organisation, with defined vision, scope of work, Steering Committee, and professional project management by OTM Consulting Ltd.

Background

Following the success of the SIIS JIP in developing a standard interface between the subsea control module (SCM) and subsea sensors, the concept of an MCS-DCS network originated. This network aims at streamlining the MCS and DCS communications on topside systems, by developing a standard for interface including a standard protocol. Standardization of this interface will simplify implementation of data communication links on topside systems involving both DCS and Subsea hardware vendors, and therefore reduce time and costs in the industry. Standardization will also increase the data quality on topsides. Using the network group as a collaborative resource to the industry, it is able to facilitate knowledge and ideas exchange in furthering the development of the standard interface.

The group, consisting of 3 types of Member Groups (Oil and gas operating companies, Subsea controls vendors, and Topside controls vendors) will develop an industry standard and take other steps that it believes will facilitate the desired development of this standard.

The group will not develop recommended practices that would in any way inhibit innovation nor address issues already in the domain of other related industry groups, like SEAFOM, SIIS and IWIS.



MCS - DCS Interface Standardization

Scope

Activities in order to streamline the MCS and DCS interface focus on:

1. Generating typical control system architectures and location of functionality within the system in order to facilitate development of the standard objects and protocol selection
2. Identifying the most suitable interface protocol:
 - a) Collecting and priority ranking interface protocol requirements from Oil and gas operating companies, Subsea controls vendors and Topside controls vendors
 - b) Evaluating and testing (suitable) protocols
3. Defining standard subsea objects: To devise and implement a vendor independent industry standard subsea control system interface to the DCS for providing operator control and monitoring functionality, simplified common objects and sequence interactions between the MCS and DCS need to be defined. A user specified object will enable extensions based upon defined generic objects to be implemented whilst generally adhering to the above principles. In addition the standard shall endeavor to accommodate future objects.
4. Conformance testing of the developed standard
5. Other: safety systems, remote access, data/network security

In order to progress these areas, initially 3 functional Work Groups (WG) with specific tasks have been defined, each including representatives from each of the 3 Member Groups:

1. 'Architectures & functionalities' WG
 - a) Generate network architecture diagrams to clearly identify the interface between the MCS and DCS, considering two primary models: integrated (Case 1) and interfaced (Case 2) (see Figure 1)
 - b) Identify primary functional components of the control system and their location relative to the MCS-DCS interface; i.e., within subsea
2. 'Protocols' WG
 - a) Define requirements of the protocol(s) to support interfaces (Case 1 and Case 2)
 - b) Review industry standard protocols and establish list of candidate protocols for detailed evaluation
 - c) Evaluate candidate protocols to MDIS requirements
 - d) Define test requirements to validate evaluation results and coordinate testing
 - e) Compile and present evaluation results and recommendations to MDIS group
3. 'Objects' WG
 - a) Define a list of objects to be implemented to provide a generic interface
 - b) Detail required generic object properties
 - c) Define data object model method and components to develop future objects
 - d) Define sequence diagrams to describe interface interactions
 - e) Object testing / verification
 - f) Define functional system & process logic interfaces

Other possible future objectives of MDIS may include:

- o Standardize on the interface protocol with subsea-located equipment

Deliverables

The final output of the MDIS network effort will be a 'Recommended practice', consisting of among others a set of objects embedded in the format of the chosen protocol, and guiding principles for new objects. Writing the 'Recommended practice' will be started as early as possible, and will help also in documenting network progress.

Time scheduling

The network aims to deliver the final product within 3 years of the official start of the project in January 2010.



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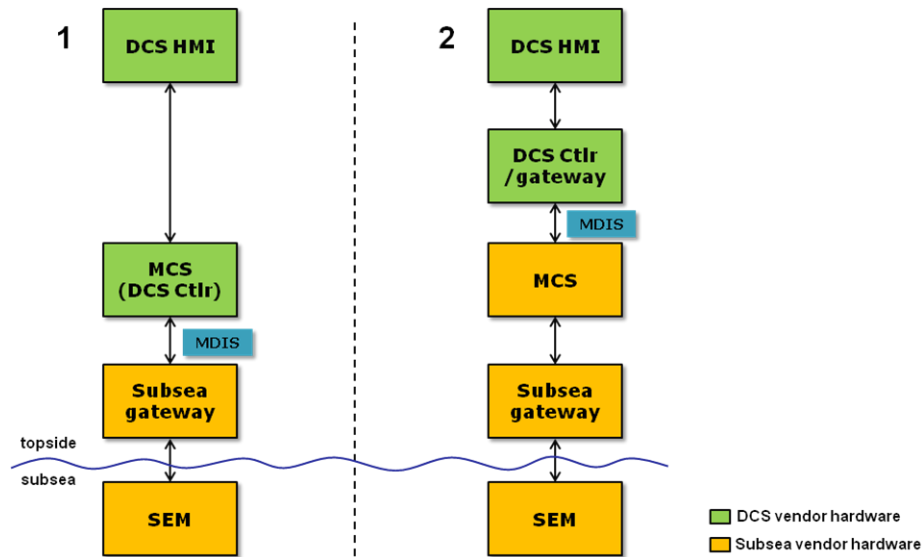


Figure 1: Block diagram of the different communication architectures on topsides involving MCS and DCS (based on the revised ISO 13628-6)

Steering Committee

The Steering Committee is formed by 3 chosen representatives from each of the 3 organization type groups / Member Groups: Oil and gas operating companies, Subsea controls vendors, and Topside controls vendors.

The Steering Committee will work with OTM in developing the network, providing instruction and direction, and advising OTM on management and logistical matters, and is, together with OTM, responsible for maintaining the MDIS Charter.

Each Steering Committee member will serve for one year, voted in by the members. The voting process is further described in the MDIS membership agreement (MDIS Membership Application form including Membership Terms and Conditions), and also applies to the general decision making process handled within the MDIS work.

Membership

Membership is open to those operators and service / research companies developing, interfacing with, and deploying MCS and DCS communication systems required for subsea well applications. Each member will be expected to contribute to the activities of the project and participate in knowledge sharing and provision of technical expertise. Members' rights, intellectual property, and other important areas including confidentiality are managed by OTM via a comprehensive membership agreement (MDIS Membership Application form including Membership Terms and Conditions).

Each member company may send a maximum of two representatives to each meeting, and request a third attendee in advance of the meeting at the discretion of OTM and the Steering Committee, dependent on numbers and venue size.

MDIS membership will run on a yearly basis from January.

Fees

The MDIS fee is initially set at £3,250 excluding UK VAT for the first 12 months. This fee may alter depending on the number of participants and expectations of the group. In addition there is a one-off joining fee of £1,250, making the total for all first time members in year 1 £4,500.



MCS - DCS Interface Standardization

Documentation

The workings of MDIS are described in this Charter, the MDIS Membership Application form including Terms and Conditions, and the Competition Law Compliance 2010, available on the MDIS website (www.mdis-network.com > 'Membership'). The website provides all members with meeting presentations, working documents and updates. Decisions and final products will be clearly posted on this website.

Organizing company

OTM Consulting Ltd. is granted ownership of the MDIS network on trust for the members, and will manage the network.

OTM Consulting is a leading firm of technology management consultants, specialising in the upstream oil and gas sector. OTM clients include more than 35 oil companies around the world, as well as more than 80 of the major service companies and suppliers, and numerous technology providers / universities. Formed in 1993, OTM now has 25 staff, who have primary expertise in technology management (e.g. market analysis, facilitation, project management, roadmapping, strategy consulting, technology commercialization / product development), coupled to a predominantly engineering or science based background. Staff are primarily based in Guildford (near London, UK), with field offices in Houston and Aberdeen. Further information can be found at:



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The approach to network management taken by OTM is outlined in Figure 2, depicting the three key network delivery areas. Each network is individual and the exact services are tailored to the requirements of the group. For MDIS, there is a clear focus on Procedures and Standards, supported by Knowledge Sharing and, perhaps, with Training and Education becoming a future requirement.

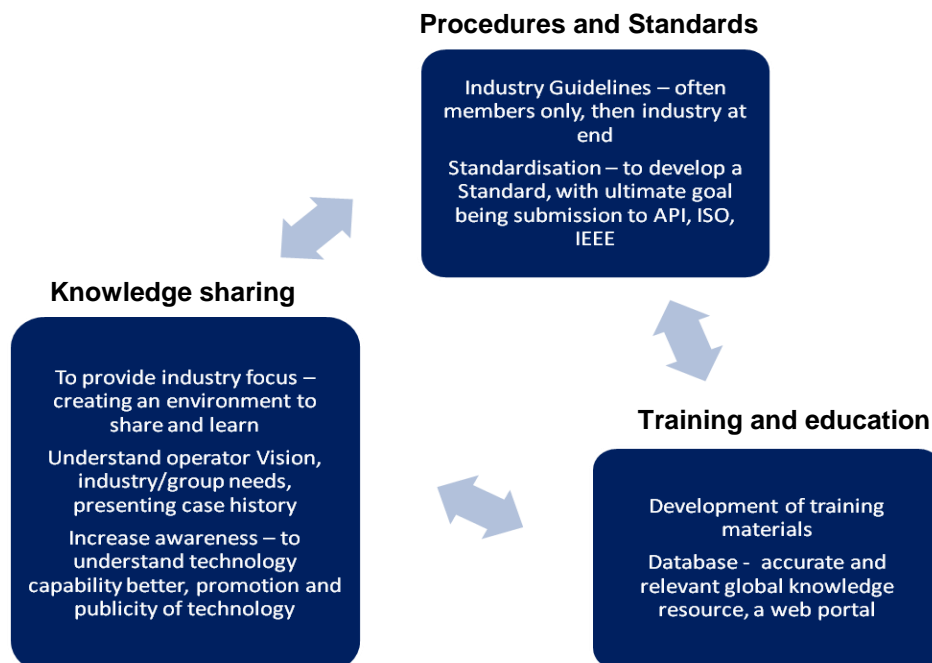


Figure 2: Industry group approaches & deliverables





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The services OTM will undertake in order to successfully manage the MDIS network group are the following:

1. Secretariat and administrative function

OTM will provide a comprehensive secretariat for the network that will manage the relationship with members and the finances for the group. Activities will include the following:

- Establishing network membership, provision of membership documentation – membership agreement including IP and confidentiality issues (the membership Terms & Conditions)
- Ensuring members' rights are protected by putting in place a state-of-the-art agreement
- Resolving contractual membership issues with network members
- Providing a single point of focus for queries
- General liaison with, and assistance to, the Steering Committee
- Network brand development, with acronym, logo and identity particular to the network. Promotion of the network and its activities to prospective members and the industry at large.

2. Meeting management

The network will hold four meetings per year, with the venues split between the US and Europe. The meeting length can vary from one to two days in duration. The meeting format will include presentations and facilitated discussions, with the agenda set by the Steering Committee. The facilitated discussions will include subjects such as case studies, lessons learnt, technology needs, technical standards, etc. To aid the network objectives, a number of working groups (running in parallel) may be set up.

- Administration: OTM will prepare meeting materials such as an agenda, name badges, attendee list, maps and joining instructions and will produce minutes, including the presentation slides. Minutes will be drafted by OTM and approved by the Steering Committee, distributed to members within two weeks of meetings and located on the website along with the presentations from the meetings and any other relevant documents.
- Facilitation: A chairman may be appointed from amongst the members of the Steering Committee and OTM will work with the chairman during the meetings. Alternatively, and when appropriate, the OTM project manager will chair the meeting. OTM's facilitation of the meetings will include break-out group discussions, plenary sessions and other activities where appropriate and as suggested by the Steering Committee. OTM will work closely with the Steering Committee to maximise the opportunities presented to the group. This may be in the form of invited guest presentations at meetings and by developing links with professional bodies. Information collated or generated by the network will be amalgamated into a database and stored on the website's members' only area.

3. Website and documentation management

A dedicated network website with a public-access area and a member's only area protected by password will be developed by OTM. The website will be maintained by OTM and provide:

- Provision and maintenance of a network specific website, with private members areas
- All meeting details – presentations, notes, working documents and minutes (members only)
- Case histories (members only)
- Promotion of the MDIS network, membership details (public access)
- Calendar of events and links to other relevant bodies and sites (public access)
- Q&A discussion group – as required by the group (members only)

OTM will be responsible for ongoing website design and maintenance as required by the members. OTM will distribute passwords to users and respond to IT queries.

4. Coordinate knowledge management and sharing

Collect and coordinate lessons learned from participating parties (database management), including development and maintenance of a secure website-based members only database of technologies and field applications.