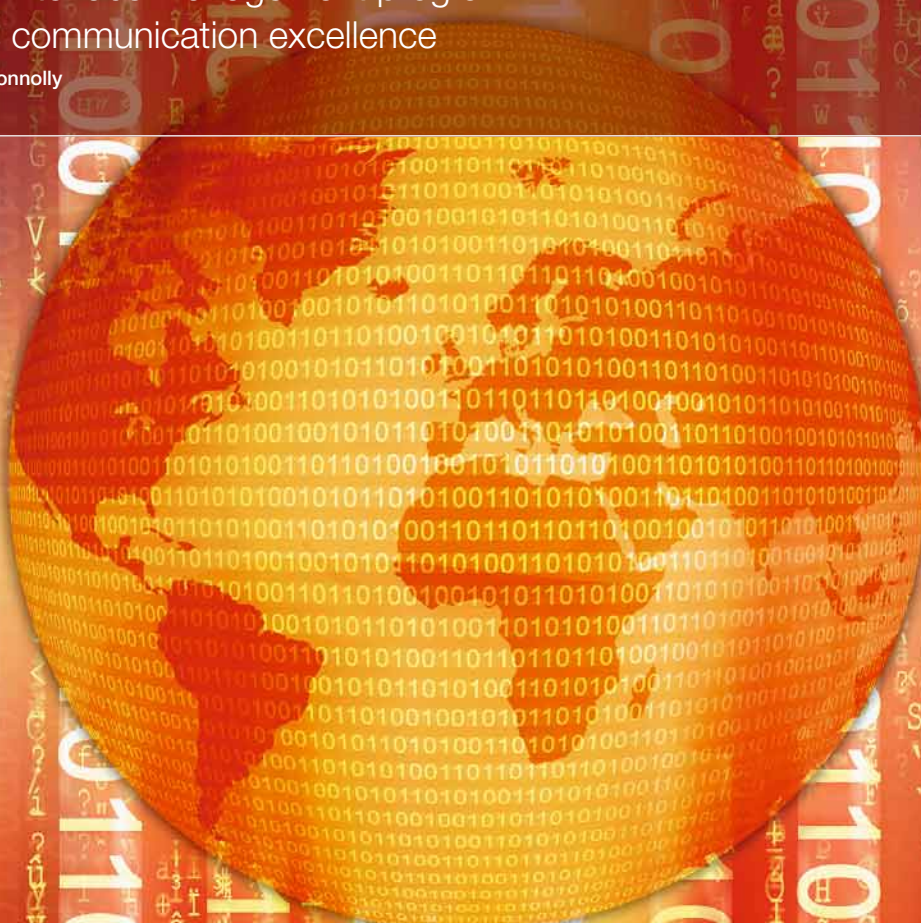# Information exchange

An effective interface management program
that creates communication excellence

Josh Caglar, Mike Connolly

Large industrial projects usually involve a multitude of companies from all over the world
who have to collaborate across several different time zones and cross cultural and language
boundaries. As a leading automation and electrical contractor for oil and gas projects, ABB
has developed an interface management system to ensure that communication and data
exchange between suppliers is fast and efficient, and that the ultimate objective of flawless
project execution is achieved.

In today's flat world, many major oil and gas projects involve multiple project participants from different geographic locations. A typical project would include one or more engineering, procurement and construction (EPC) companies performing process and facilities design, a variety of third-party suppliers providing products and services, and a broad array of external and internal customers needing to exchange information between themselves and other project stakeholders.

Critical elements in the successful operation of major oil and gas facilities are the automation, control and electrical power systems. For these systems to have a common "look and feel" throughout the facility, owner-operators are increasingly adopting the concept of main automation contractor (MAC) and main electrical contractor (MEC), where major vendor/equipment suppliers take on an expanded role in the design, manufacture, installation, commissioning and initial operation of the facilities. An important aspect of the MAC/MEC role is to promote effective and timely communication and the exchange of information between participants, since this is a prerequisite for the ultimate success of a project **1**.

MAC/MEC brings value to the end user by providing advanced technology solutions and integrated products. In order for the solutions and integration to be implemented successfully, it is essential that a common framework of communication is established to permit the timely exchange of relevant and accurate data between the parties involved. To achieve this, ABB employs interface management, a key process within its project execution model and an essential element in delivering flawless project execution.

Project requirements
A major factor impacting the exchange of information is the contracting structure employed on the project. There are a variety of different contracting models that can be used, ranging from direct contracts with the owner to various prime contractor/subcontractor/supplier relationships between the owner, engineers and other project participants.

Owner-operators are increasingly adopting the concept of main automation contractor (MAC) and main electrical contractor (MEC).

Irrespective of the contracting model used, large projects usually involve multiple participants who are based in different geographical locations, do not share the same culture or language, and have to collaborate over multiple time zones. In situations like this, it is essential for the MAC/MEC to be able to interface with others and coordinate information in order to minimize risk during design development and prevent the delivery of late or erroneous data. This requires the creation of a process to coordinate activities directly with other project participants to ensure an effective exchange of critical information.

The process must be robust and it must be managed. It requires a management structure that can cross the relevant participant boundaries without impacting contractual relationships. The nomination of an interface representative within each participant's project organization achieves this. The project interface manager has overall responsibility for implementation and maintenance of the interface management process throughout the project's lifecycle. This is achieved by developing and implementing project-specific interface

management work processes, as well as by capturing the necessary interface agreements, monitoring progress, ensuring that schedule requirements are maintained and identifying or initiating any requests for change that may arise from the interface requirements. Depending on the size of the project, the MAC/MEC project interface manager may also assign a project interface contact (technical liaison) to each of the other participants. That person is the interface liaison officer with the owner and the EPC's interface representative, as well as other persons or departments stipulated by the owner.

Defining roles and responsibilities
The objective of the interface management process is to facilitate agreement between stakeholders regarding roles and responsibilities, the provision and timing of interface information and the identification of critical interfaces early in the project. The overall goals are to quickly identify issues that have the potential to impact costs or schedules and to minimize or eradicate their impact; and, to promote the clear, accurate, timely and consistent communication and exchange of interface information with other participants.

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Interface agreements enable the exchange of project information that is generated by one party and needed by another party for it to implement its scheduled project tasks. This may include, but is not limited to, engineering drawings, specifications, design reports and calculations, equipment details and project schedule information. There is no limitation on the source of interface agreements. They can be initiated by members of the project team or by contractual requirements, responsibility matrices,

1 Interface management
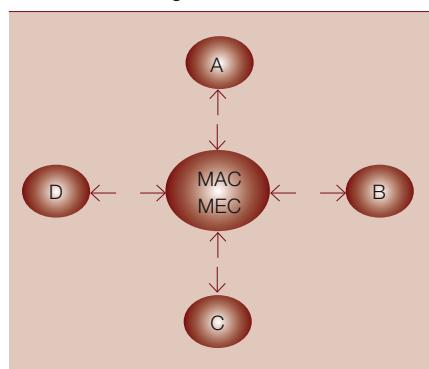
customer requirements, third-party vendors/suppliers or project stakeholders.

Whatever the source, requests for information in an interface agreement should follow two basic rules:
1. They should be very specific and not open to further breakdown into additional items.
2. They should be given a specific date for completion.

To simplify the process and make tracking and monitoring efficient, all interface agreements should be unidirectional from the first party (receiver) to the second party (supplier) **2**. If the second party requires the data to be returned, it should be the subject of a separate interface agreement from the second party to the first party.

The receiver is the party that initiates the request for information and the supplier is the party that is responsible for providing the requested information. During project execution all participants are likely to adopt the role of receivers and suppliers at some point in time.

The interface management process
The interface management process is a method for formally documenting and tracking the exchange of information between project participants and for monitoring their performance in supplying the required information. The process involves:
■ Identifying and recording an interface
■ Creating an interface agreement
■ Agreeing/resolving conflict
■ Monitoring the status
■ Reporting the status
■ Closing the interface agreement **3**

Information required by the receiving party is identified and the interface manager is informed of the request. The information manager creates an electronic register of all identified interfaces, usually in a database. Each interface agreement is given its own identification code to enable easy identification of the receiver and supplier. For example, in the case of an external party, MAC/MEC-EPC1-001 reveals an interface agreement that MAC/MEC is requesting from EPC1.

A formal interface agreement document is generated from the interface management database by the interface manager and is signed by the receiver. It is issued to the supplier via a formal document management process that contains essential data such as the interface agreement identification number, priority (whether it is highly critical or information only), date raised, supplier organization and interface contact, the date the information is needed by the receiver, the date agreed by the supplier and the status of the interface agreement as either "open" or "closed."

Interface management allows early identification of critical interfaces through a structured process leading to the definition of issues that have the potential to impact costs and schedules.

Once the created interface agreement is issued by the receiver, the supplier will either accept it or ask for further clarification. The interface agreement is then discussed with the supplier and is accepted, modified, or deleted. If there is a dispute over the legitimacy of an interface, the interfacing parties will make every effort to resolve the issue. The customer may intervene to provide final arbitration of any unsettled issues. The supplier then signs the interface agreement and returns it to the receiver. The database is updated as required. To keep the process as simple as possible, an interface agreement may be revised only once.

Each project interface manager monitors the status of the interface agreements on a regular basis by holding periodic meetings or teleconferences

with the relevant parties to review progress on the interface registers. Interface agreements with "critical" status are prioritized and contingency plans are developed by the respective project managers to minimize the impact of critical data that is not delivered on time.

The interface manager is responsible for producing regular reports on interface progress from the electronic log. The frequency of status reports will depend on project reporting requirements, but should at least be generated once a month and included in the monthly project progress report. Reports are made in either tabular format as an interface register or in statistical format as a high-level report.

When the receiver receives the requested information by the required date and judges it acceptable, the interface agreement can be signed off as "closed" and returned to the supplier. In turn, the supplier also signs off the interface agreement as "closed" and the document is recorded as such in both the supplier's and the receiver's interface databases. "Closed" interfaces are omitted from future interface agreement reporting.

The benefits
The interface management process has many advantages, particularly when there are numerous participants and stakeholders involved in a project. A structured process for the exchange of information means that performance in satisfying requirements can be monitored in detail and any shortcomings highlighted and addressed immediately, should they become apparent. A secondary benefit of implementing the process is that it encourages meaningful communication between the supplier and receiver. The requirement to provide specific, detailed requests that cannot be

2 Interface agreements are unidirectional

MAC/MEC   EPC1
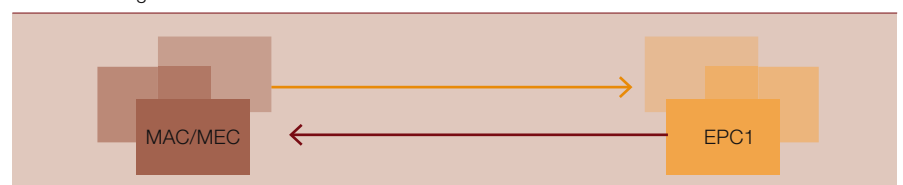
broken down into smaller parts means that the party making the request must give careful thought to the detail of the information requested and to the timing of its delivery. The requirement that both parties sign a formal agreement means that a dialogue regarding the information and its delivery must take place between the parties for agreement to be reached. If the receiving party asks for too much too soon in the data generation cycle, agreement with the supplier party is unlikely to result. The supplier party will require the data to be broken down into more precisely defined parts, resulting in detailed discussions between the parties regarding the information required. The formal interface agreements are the product of this communication process.

Fostering this communication between project participants early in the design cycle is an important factor in achieving execution excellence. Very often, the information a participant requires is either ill-defined (resulting in confusion and lack of focus) or is all-encompassing (resulting in non-delivery). This leads to conflict within the team and gives rise to unproductive finger-pointing instead of cooperation to ensure that work progresses to meet the scheduled objectives. Examples of this are the MAC requesting delivery of the AFC P & IDs (approved for construction piping and instrumentation diagrams) from the process designer by a certain date. This is an ideal situation, but in today's fast-track projects the process designer is often unable to deliver all P & IDs at the same time. By focusing on the actual data needed, the MAC and the process designer can reach agreement on an acceptable timeframe for delivery of the data. The use of the interface process captures the details of

3 Process flow for interface management (IM)
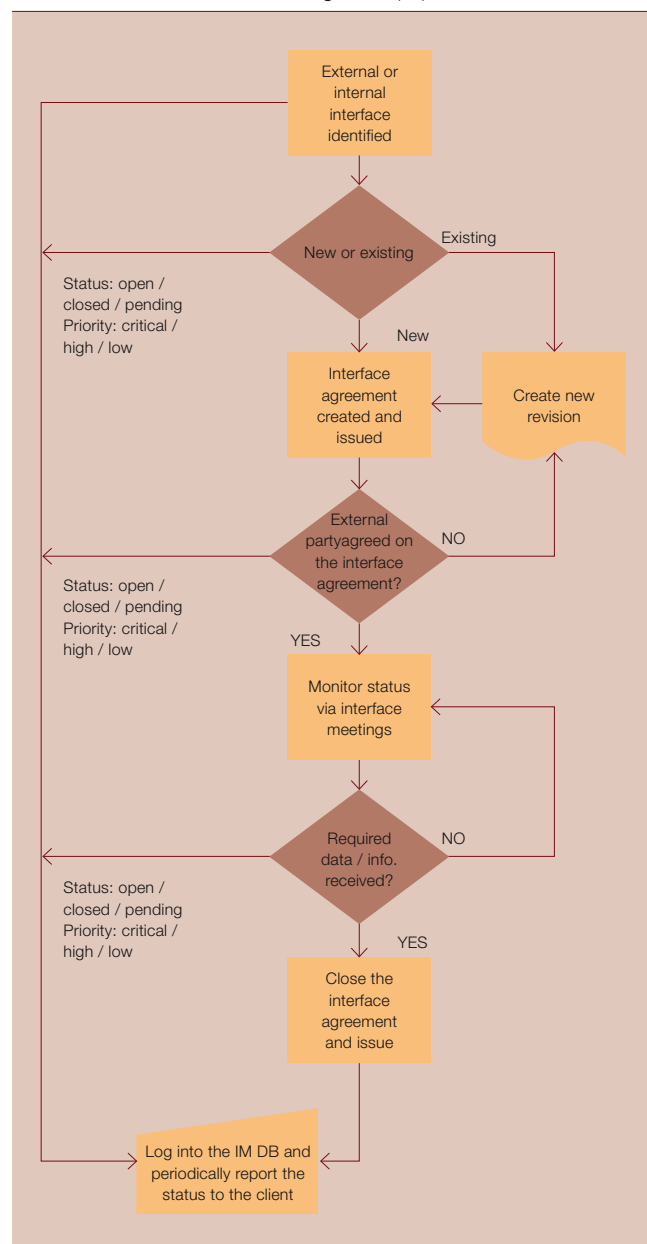
these agreements, makes them visible to all participants and tracks them to a successful conclusion.

Fostering communication between project participants early in the design cycle is an important factor in achieving execution excellence.

Flawless project execution
Effective exchange of information is crucial to the successful execution of

any project. The larger the project and the more participants there are, the more difficult it is to achieve this. Interface management allows early identification of critical interfaces through a structured process leading to the definition of issues that have the potential to impact costs and schedules. Once identified, action can be taken to minimize impact and, through constant monitoring, any critical areas that deviate from the plan can be quickly addressed and brought under control.

Interface management also encourages communication between the participants. It provides each participant with an understanding of the constraints inherent in their respective data generation cycles. Identifying specific data requirements and understanding the importance of the requirement leads to more effective cooperation, and thus an improvement in execution performance.

The interface management process can only be effective if all project participants embrace the concept and incorporate it into their work processes, making it a formal method of project communication that benefits everyone in their efforts to achieve flawless execution.

To learn more about MAC/MEC, see "Flawless project execution" on page 66 of this *ABB Review Special Report*.

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