Base Load Power Hub (BLPH)

INFORMATION TECHNOLOGY PLAN & PROCEDURES

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None

1 PROJECT OVERVIEW

1.1 THE HOLLANDSE KUST NOORD WIND PARK

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

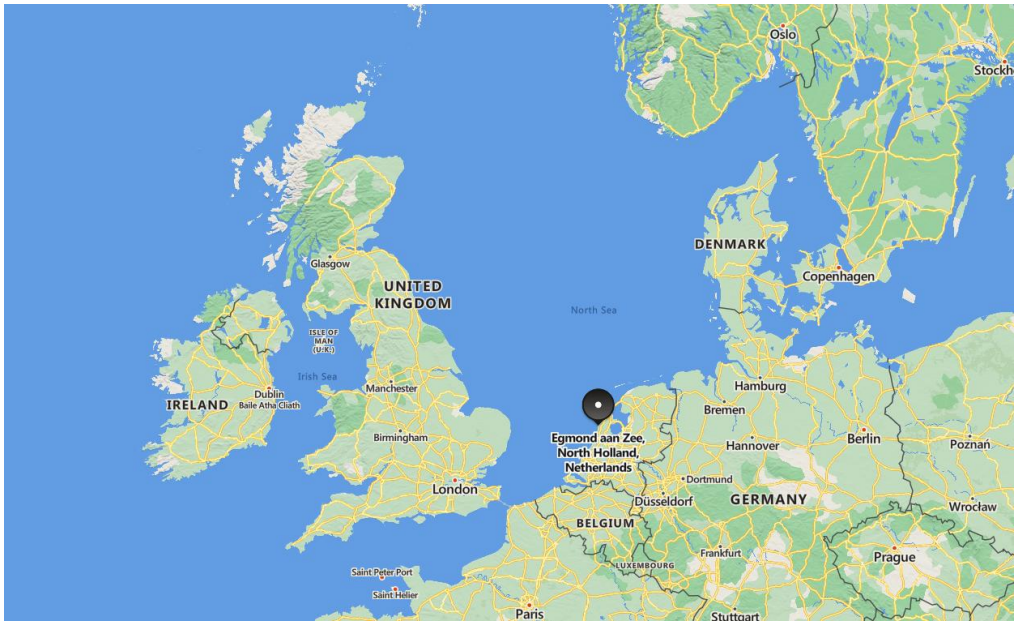


Figure 1 - HOLLANDSE KUST NOORD WIND PARK Location Map

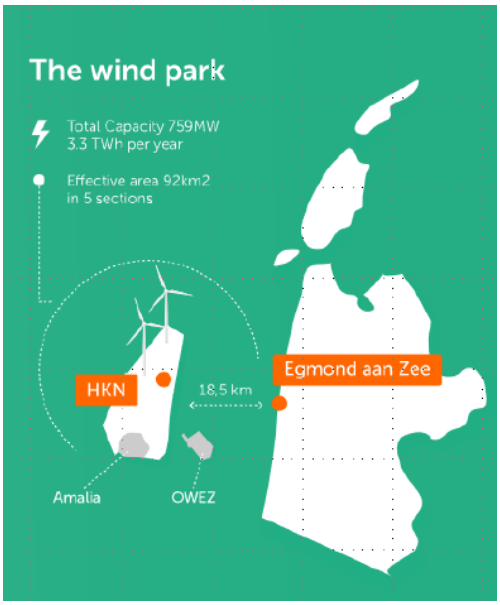


Figure 2 - Wind Park Details

The wind farm will consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile to be located on coordinates E 590719.1, N 5841602.3 will be reserved for installing the platform accommodating the BLPH. The monopile structure will be designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

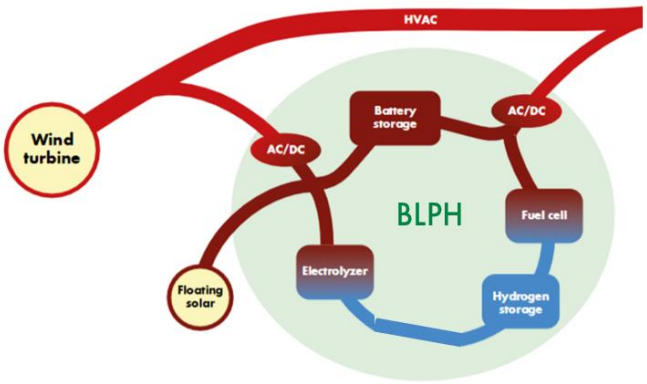


Figure 3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH is to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

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2 DOCUMENT SCOPE

Purpose of IT Plan is to describe the IT (Information Technology) and IM (Information Management) solutions Contractor wants to adopt during execution phase, as per Company requirements.

The document is structured in four main sections, that cover the following topics:

- Contractor Information Technology (IT) solutions.
- Contractor Information Management (IM) solutions.
- Project IT and IM solutions, selected for the SCOPE.
- IT Risk Management procedure.

The content of this document refers to and is based on Contractor IT best practices and IM framework, identified during its experience as a main EPC Contractor.

It must be remarked that the content of the document could be changed after Project assignment with detailed Company specification issue.

3 GENERAL OVERVIEW

According to Contractor operating model, the three main phases of a typical EPC Project are:

- Start-up, consists in all activities aimed at analyzing Company requirements, detailing Project Execution strategy and scheduling and performing all set-up activities preliminary for the Execution phase
- Execution, consists in all activities aimed at performing and finalizing the Engineering, Procurement and Construction phases, oriented to develop and build Plant design and Model
- Handover, consists in all activities aimed at delivering the EPC scope of work and related Information to Company

During Project lifecycle, IM supports the following seven processes, as described by the scheme here below:

1. Company requirements analysis and Information mapping.
2. Applications set-up.
3. Information collection, management and monitoring.
4. Information storage management.
5. Information exchange management.
6. Information issues and needs management.
7. Information delivery to internal audience (e.g., Project site) and external audience (e.g., Company).

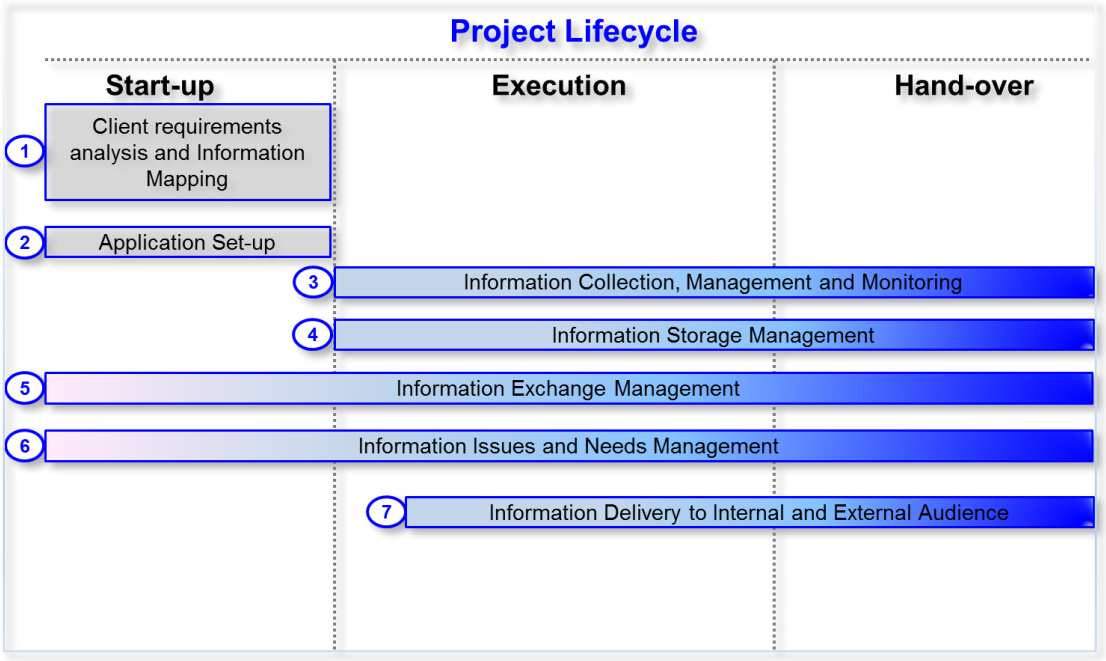


Figure 4 - IM processes in EPC value chain

In order to manage and monitor IM processes, a set of instruments has been identified and can be organized into the following typologies:

- Procedural instruments: they consist in the set of Corporate and Project documents that provide IM guidelines (e.g., procedures)
- Operative instruments: they include a set of applications, reports and methodologies that supports day by day activities

For example, starting from the contractual documentation, Contractor generates an IM matrix, composed by all Company IM requests, oriented to understand and analyze Company requirements. This matrix is shared, analyzed and discussed with all Project Task-force members, identifying the most suitable IM solutions to put in place, according to Company requirements, Project ad-hoc features and Project Task-force experience. During Project execution phase, in addition, Contractor monitors and tracks Project IM requirements adoption and possible evolution with another matrix.

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4 CONTRACTOR IT ARCHITECTURE

The approach to business Projects for Contractor is to guarantee availability of facilities and applications in all Project locations, since normally the Project team is geographically distributed: Headquarters offices, Engineering centers, Construction sites, Fabrication yards, Floaters, Client offices, Partner offices, so on.

Enterprise applications, such as Document Management System, Correspondence Management System, Procurement System, Project Control System, etc., can be accessed from Project locations and local infrastructures are developed to guarantee documents and data distribution throughout Project team, management of users, roles, and access rights for the entire Project lifecycle.

4.1 IT FACILITIES AT CORPORATE HQ

The IT infrastructures of Contractor are located in different countries and are characterized by size and role.

The Internet Datacenter (IDC) in Rozzano (Milan) hosts and delivers most of the services for the whole group; there is a gigabit CAMPUS solution between the main company buildings/datacenters, one of the two is considered the main site for its size and number of services provided; however between the buildings has been extended network connectivity and storage in such a way that they can logically be considered as a single datacenter [Metrocluster].

Contractor architectures are based almost exclusively on industry-standard Intel systems; operating systems are essentially windows provided exclusively through virtualized environments. No exception for the Corporate ERP environment (SAP R3): the database component is provided by SQL server Enterprise systems clustered between the two Datacenters.

Access control to resources and the authentication system is based on Active Directory. There is a unique domain that contains objects Server, Workstation, Groups and Users for a centralized policy management.

The e-mail service is configured in hybrid mode, distributed between the on-prem / Microsoft Azure Exchange Online Service and integrate a content archiving product. The mail service is used through a traditional mail client, via browser (Outlook Web Access) and mobile devices such as Apple Iphone/Ipad. In addition, there is also a fully deployed collaboration solution based on Microsoft Teams.

Contractor uses Enterprise storage devices SAN and NAS. The SAN architectures are physically located in both datacenters and the data contained on them are partially (ex.: SAP, custom applications) duplicated on the two sites by a storage virtualization solution; NAS infrastructures are Enterprise systems (Hitachi), they deliver, among others, some Corporate file sharing service configured in Metrocluster mode with a synchronous replication between the buildings. Project file sharing is typically deployed on Sharepoint Online with additional backup strategy on-prem based on Veeam O365 backup Enterprise.

4.2 BUSINESS CONTINUITY, BACKUP AND DISASTER RECOVERY, CAPACITY PLANNING

All the possibilities allowed by virtualization are implemented, for critical applications is available a "service continuity" configuration that makes possible the proper delivery of the applications also in the event of complete loss of one of the two datacenters. Moreover some application rely on hybrid architecture or leverage on SaaS enterprise solutions such as EDMS.

Both datacenters are equipped with redundant power systems and air conditioning, to manage any critical situations such as, for example, the lack of electric power.

A double anti-virus system is managed centrally and protects all workstations and servers. The Patch Management service is done through enterprise-class platforms.

The file-sharing backup is carried out directly on the SAN using Snapshot technologies provided by HW vendors enforced by software backup offered by Veeam.

The servers, physical or virtual, are backed up in a datacenter, which is under UPS and properly conditioned.

For all the backups, in accordance with the minimum retention requirements established by the standard Corporate business, there is a minimum retention period of 1 month with guaranteed execution of at least 30 daily backup, incremental or complete depending on the application requirements.

Data cloning as well as very long-term retention data, are typically moved in the cloud (AWS glacier) to end the data lifecycle and ensure additional off-site protection.

For all critical applications, Contractor adopts a Disaster Recovery Solution, according to internal procedures, copying their backups in a third-part datacenter, that guarantees RTO 48 hrs. and RPO 4 hrs.

To complete the IT infrastructure, there are various Monitoring tools, "end user experience" systems, Configuration Management Database for infrastructure asset discovery.

4.3 IT FACILITIES AT OTHER CONTRACTOR PROJECT LOCATIONS

Contractor is present in a dozen of countries abroad. The typical configuration of the site/vessel (Engineering centers, Construction sites, Fabrication yards, etc.) provides, depending on the type of the link bandwidth, a set of centralized (in the HQ) services but typically leverage on cloud services. Local services are avoided wherever possible moreover in case of unmanned sites.

There are also Contractor offices (ex. In Aktau KZ), of large dimension (more than 500 users) where there are more complex IT infrastructures similar to those found in the Italian HQ.

5 CONTRACT NETWORK

Contractor operates a telecommunication Corporate network to provides data, voice and video communication services among all the Contractor worldwide locations and people. By using best of breed telecommunication technologies, Contractor network has also the flexibility to extend into and interoperate with every other location of interest, including Clients, Partners, and Subcontractors offices according to the Projects' needs. LAN networks, geographical circuits and Internet links, data centers, centralized and peripheral telephony and video systems, all contribute to create an homogeneous converged network where IT and telecommunication services can be delivered. Thus all office locations can maintain a strong local capability while is able to access the Corporate applications and services, and task force can be geographically distributed yet still able to operate as a single entity.

5.1 CAMPUS, DATA CENTERS AND OFFICE LANS

In the Contractor network architecture, the Rozzano IDC in Milan is the main hub to which most part of remote sites and Project offices are directly connected. In the above IDC network is located the Contractor's main data center that delivers IT services and business applications to every other location. The data center network can guarantee high service availability and best performances, offering high density gigabit connectivity and architectural support for servers virtualization. Redundancy of WAN links and network appliances is always implemented.

In any other location, LAN networks are in general designed and deployed with multilayer hierarchical architectures providing both wired and wireless high-speed connection to Contractor, Client and third-party users, and to guarantee reliable and secure access to Corporate business applications.

5.2 WAN NETWORK

Geographical connectivity requirements among the sites can be met by Contractor through a number of WAN technologies (CDN, Dark fiber, Satellite links, Internet VPN, …), where traffic management features (QoS, WAN acceleration, admission control) are implemented in order to assure quality of service for mission-critical applications and voice/video communications. Following are the WAN infrastructures in place to deliver connectivity among Contractor offices and Project locations:

- Giga network (Dark fiber): Contractor is provided by a national Carrier with a private geographic fiber, that connects to the Corporate network the most of terrestrial remote locations. Access data circuits can vary in technology, depending on the bandwidth requirements, from Metro Ethernet or Fiber Optic. Contractor Headquarter is connected with redundant circuits for high availability, as well as other main offices.
- Satellite network: satellite links based on VSAT technology are typically deployed by Contractor on his offshore works or in locations where wired circuits are not available or not quite reliable. WAN accelerator appliances are typically deployed on these sites to mitigate the impact of high propagation latency on applications' user experience, making even possible the delivery of voice and video services as in any other site

- Internet VPN: locally provided Internet links can be used to setup secure tunnels through the public network to the Contractor Corporate network, assuring a private and easy to deploy connectivity for remote locations. Clients, Partners, and Subcontractors, typically make use of this kind of connection for interoperation with Contractor

5.3 TELEPHONE SYSTEMS

Contractor Corporate telephony services are delivered through a distributed Voice over IP telephony system based on the H.323 architecture.

Each site normally constitutes a zone, where a complete and redundant IPT architecture is implemented with the following items:

- Call agent servers (Cisco Call Manager), for base services as registration and call routing:
- Voice Gateways for local integration with the PSTN network
- End-users' IP phones

Each zone system is integrated via H.323 trunk to the centralized systems, which enable easy zone interoperability making possible for end-users to place inter-company phone calls through the Corporate network.

5.4 VIDEO CONFERENCING SYSTEMS

Contractor operates the latest video conferencing technology. Videoconference end-point systems are generally deployed in offices and Project locations; equipped with large screens, hi-fi sound, cameras and PC interfaces: these facilities are leading hi-tech audio-visual communication systems.

Moreover, the video infrastructure is completely based on Microsoft Teams that in the last years rises as the worldwide standard for video communication systems providing a full and easy interoperability among the remote stations, and enabling video communications between multiple sites over the Corporate network or through the public Internet and mobile network.

5.5 TYPICAL PROJECT INFRASTRUCTURE

Contractor commitment is to ensure integration of data and information by all user applications, among all Project locations, in order to reduce Project schedules, improve reliability and quality of the produced documents, avoid duplicates and manual inputs.

The following schema illustrates the typical multisite Project network:

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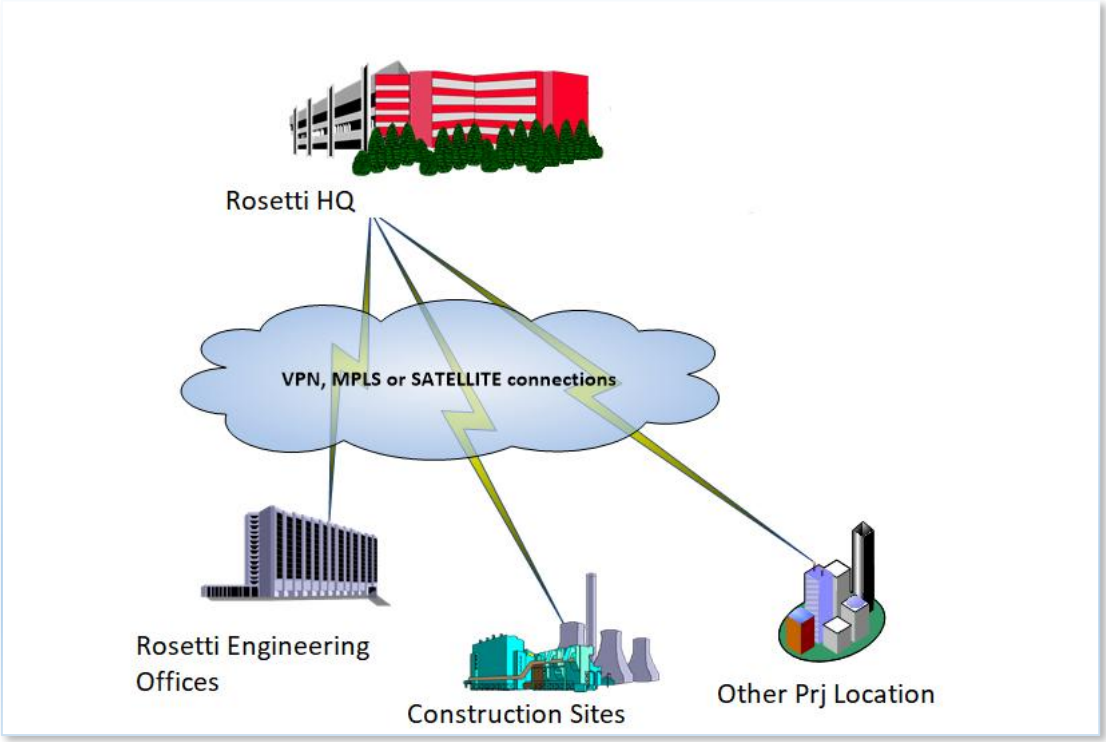


Figure 5 - Typical Project network

The following scheme illustrates the typical Site configuration:

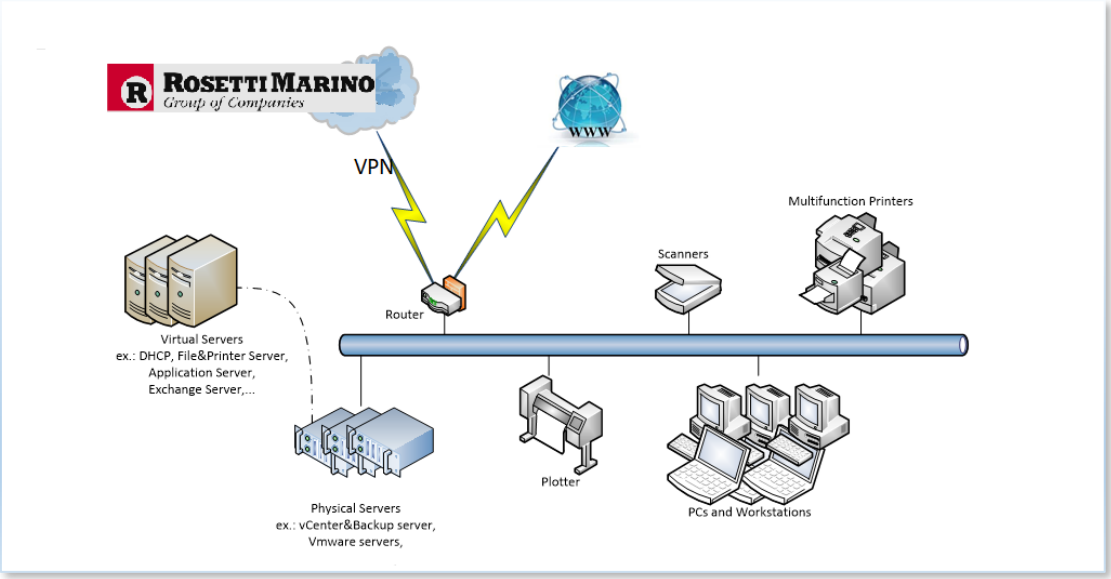


Figure 6 - Typical Site Configuration

6 CONTRACTOR IT SECURITY MANAGEMENT

Contractor handles the IT Security and compliance following the most common security standards and best practices. Primary goal is to ensure the achievement and maintenance of high levels of security of data, applications, systems and infrastructure. This is necessary both to meet effectively the new and ever more frequent Cyber threats, and to protect adequately the assets that have value and are critical for Contractor and for its clients.

For this reason, Contractor has implemented several Projects, activities and tools that refer mainly to the aspects of Network, System, Application, Data and Enterprise Security.

Contractor considers these layers important in view of the strong evolution that these areas are having and the potential consequences that might have on security. Evidence of this is the Project of Scada and DCS Security with the aim to make a specific Risk Assessment to verify the State of security and the level of risk infrastructure, to identify the most appropriate mitigation and remediation plan.

The execution of these activities and Projects responds to a precise strategy that Contractor defines in accordance with best industry practice and standards (COBIT, ISO 27001, ISO 27002, NIST, …).

6.1 NETWORK SECURITY INFRASTRUCTURE

Contractor Network Security Infrastructure is composed by main different layers:

- Distributed Denial of Services DDoS attacks protection provided by the Internet provider that is able to identify traffic anomaly, eliminating bad traffic and forwarding to Contractor Network only the legitimate one
- Dedicated network firewalls that controls the incoming and outgoing network traffic through a specific and advanced rules set to handle NAT and PAT functionality to all internal resource like clients or server, manage security policies to DMZ connected
- Next Generation Firewalls (NGF) that performs most of the advanced security checks on users, applications and flow security controls. In fact, NGF provides dedicated next generation network security features such as Web Filtering and Application Control, user authentication, Threats Protection and APT (Advanced Persistent Threat) and antivirus
- Intrusion Prevention System (IPS) infrastructure assures the inspection of the traffic and prevention against malicious traffic on 2 different layers:
  - The first Intrusion Prevention System acts on inbound/outbound Internet traffic and assure a first level of inspection and prevention against malicious traffic from “external” sources
  - An additional level of IPS is installed at the barrier of the datacenter. This platform adds an additional protection layer for the “core” of the Contractor assets (servers, applications, databases)

In addition to the previous layers, a secure remote access provides to employees and suppliers access to Corporate network through a secure dedicated VPN platform; remote access allows to use Corporate resources such intranet portal, web mail, file shares and so on. Remote access is designed to fulfill security

standards using strong authentication features (two factors authentication) like virtual token One Time Password that can be installed on standard laptop/PC.

6.2 APPLICATION SECURITY LAYER

Contractor adopts specific countermeasures, methodology and platform to mitigate sophisticated application layer threats against its applications or Web Services.

In particular Contractor application security infrastructure is based on:

- Application Delivery Networks (ADN) that is based on three modules:
  - Web Application Firewalls that applies specific controls and protection on application level threats (most common Web Application attacks like Cross Site Scripting, SQL Injection, Parameter manipulation, Application buffer overflow, OWASP Top Ten) that cannot be performed by typical Network Security Infrastructure (ex. Network firewall or IPS)
  - Internet Access Management that applies Access Management policy for public exposed Contractor applications and services through strong authentication mechanism (SSL-VPN Network Access, SSL Portal Access, Authentication, Authorization and Accounting)
  - Secure Application Exposition that exposes protected resources through reverse proxy functionalities and provide SSL inspection, SSL offloading and load balancing for inbound managed traffic.
- User Authentication and Access management through a dedicated Authentication Layer platform that is able to manage user-based authentication, Enterprise Single Sign On and Web Access management for critical Contractor Web Applications. This platform assures centralized strong password policies, centralized access management controls and related authorization process.

6.3 DATABASE SECURITY LAYER

Contractor Database Security Infrastructure is based on dedicated and best of breed technology that offer these main functionalities:

- Database Activity Monitoring monitors and audits all privileged user access to sensitive data across heterogeneous database platforms used by the "core" Contractor applications.
- Database Firewall, Contractor Database Firewall (DBF) effectively protects "core" databases from attacks. With real-time monitoring, alerting and blocking, pre-built security policies and audit rules DBF protect the most valuable Contractor database resources and ensure data integrity against specific Database Attacks.
- Virtual Patching through proprietary detection technology the database firewall adopted by Contractor can detect and virtually patch database software vulnerabilities, reducing the window of exposure and impact of ad-hoc application fixes.
- Data Masking solution and process to minimize the risk of data breaches by masking test and development environments created from production database.

6.4 ENTERPRISE SECURITY LAYER

In addition to network, application and database security infrastructure, Contractor has been developed specific countermeasures for the following fields:

- Industrial Control System Security: Contractor adopts a reference risk assessment model to govern DCS & SCDA Cyber Security in order to assess, manage and control cyber security threats, supported by implementation recommendation based upon similar experiences in IT sector
- Mobile Security: Contractor adopts a Mobile Device Management platform to deploy and automatically configure Contractor services (ex. email, Wi-fi, etc) on the mobile devices ensuring at the same time security measures in line with Contractor Corporate policies and data protection requirements
- Data Protection: Contractor adopts an additional "security layer" in order to assure an improvement of Data Protection countermeasures used by Contractor during the data exchange workflow used by its employees. In particular, the Data Protection framework prevents unauthorized data leakage on external devices (like USB keys), provides Client tool for secure data exchange between employees, business Partners or Clients and assures data confidentiality for Company data stored on Corporate laptop through full disk encryption
- Mail Security: Contractor has a distributed mail infrastructure with multiple security layer available. For internal traffic and for a dedicated protection on mail infrastructure against virus/malware a dedicated antivirus engine provides real time and periodical scanning for every email message managed by email infrastructure. In addition to this layer, a dedicated antispam infrastructure has been deployed to detect and block spam before it reaches the internal mail infrastructure.
- Corporate AntiMalware/Antivirus: All Contractor systems (servers/workstations/laptops) are equipped with an updated and advanced double antivirus engine that assures the protection against client/server side malware or threats. The antivirus signatures are distributed through a centralized platform that is able to monitor and detect an updated client. This infrastructure it is also managed through a centralized console that can control, update and report the status of the Contractor protected assets.
- Patch Management: Contractor adopts a patch management process to control the deployment and maintenance of Operating System and software releases on its environments (servers or clients). Contractor patch management process assures the management of security vulnerabilities and reduce related risk, maintaining the stability of the production environment.
- Access Control List (ACL): Through a centralized authentication infrastructure based on Active Directory domain, user credentials are created and assigned following well defined authorization process that involves the approval of the Corporate IT Security. The access to Contractor resources is defined following the specific needs and roles of a user.

6.5 CORPORATE SECURITY CONTROLS

Finally, Contractor has been developed the following controls:

- Vulnerability Management: Contractor performs periodical Vulnerability Assessment campaigns against its infrastructure, systems, applications and databases. The main goal of this activity is to identify the

vulnerability on Contractor systems, applications and database and to identify a detailed remediation plan to mitigate the identified vulnerabilities. Contractor IT Security monitors the application of the remediation plans identified during this kind of activities and manages an internal process that assures a constant management of vulnerabilities and risks on its assets.

- Log Management and SIEM: With a dedicated Log Management and Security information and event management infrastructure, Contractor ensures real-time analysis of security alerts generated by security layers .
- Network Security Monitoring: monitoring and event correlation of the Contractor's systems in order to identify, in a proactive way, any kind of security incidents and to apply immediately the related countermeasures.

7 INFORMATION MANAGEMENT STRATEGY

7.1 IM DEFINITION, SCOPE AND OBJECTIVES

Realizing the focal role that Information plays in Project success during EPC Project lifecycle and Plant operations start-up, Contractor has been developing a specific and proper **IM methodology**, exploiting the chance to improve IM processes and optimize the Information lifecycle across the whole EPC value chain, saving time and effort and giving value also to the Company in terms of Information Quality during Handover phase.

The following schema depicts the main **Project areas** that involve **Information exchange** to be monitored within IM scope:



Figure 7 - Information flows between internal areas

IM is defined as the framework that **rationalizes and regulates** all the Information exchange, from Project Start-up phase to the Project Handover one.

As per definition, Information includes:

- Data, composed by all the elementary metadata (e.g., Process design Data, Engineering design Data) that have to be elaborated in order to produce Documents and Models
- Documents, represents Project deliverables, according to Company requirements and Project features
- Models, consists in graphic representation of Data (e.g., Process simulation, Engineering 3D model).

Within Contractor business, **Information** is generated, collected, and managed across the **EPC value chain**, as illustrated by the scheme below:

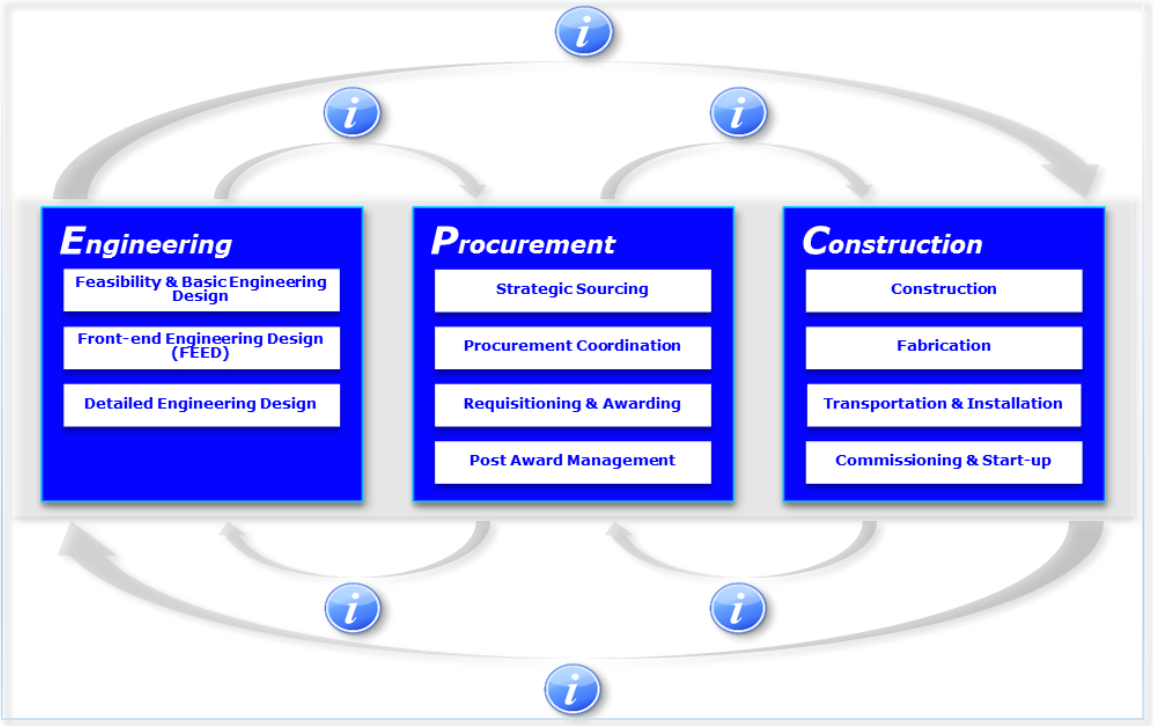


Figure 8 - Information flows across EPC value chain

In accordance with introduced scope, IM has the main target in reaching and ensuring **Information Quality**, guaranteeing:

- **Integrity**, it means that Information is in compliance with Project requirements and features (e.g., Tag Numbering Procedure).
- **Consistency**, it means that Information content is compliant across all the adopted tools and Project documents.
- **Traceability,** it means that Information is monitored and tracked during its lifecycle from source system to target location.

IM reaches its mission when Information satisfies these characteristics.

In detail, based on IM strategy, after Project Assignment, Contractor defines a detailed IM specification in order to deepen properly IM topics.

8 INFORMATION MANAGEMENT TEAM

Based on Contractor experience and best practices, during Project execution phase, IM processes are proficiently managed and monitored by **IM team**.

IM Team is dedicated to Project and is usually composed, as illustrated by the schema below:

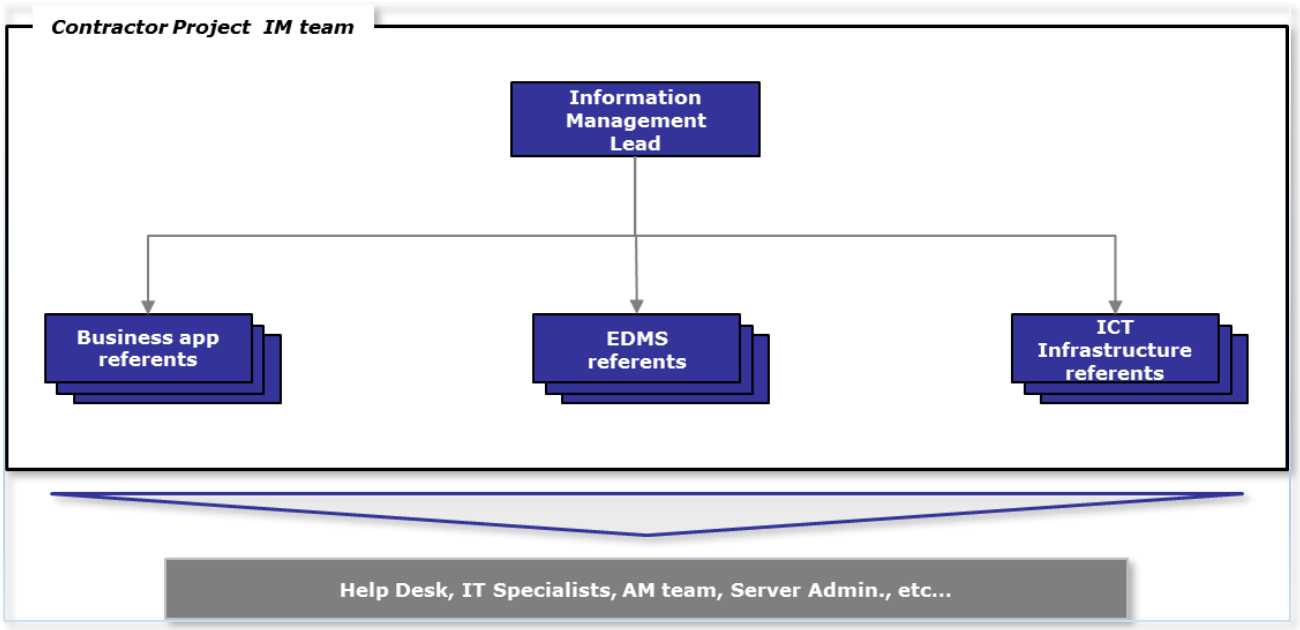


Figure 9 - IM team organization chart

During Project lifecycle, IM Team provides a consulting service based on IM standards, procedures and guidelines, to **Project Management roles** (Project Manager, Project Engineer Manager, Procurement referent and Construction referent) and **Project task-force**, as a proactive Project team member. IM team is in charge to provide the ad-hoc Project IT and IM solutions and anticipate IT and IM issues and criticalities.

In detail, **Information Management Lead** acts for IT and IM topics as:

- The **focal point** for Project Management roles and Project task-force.
- The **single point** of contact with Company, on behalf of Contractor.

IM Team is also composed by **several key referents**, dedicated to Project, that are in charge to manage key IT and IM topics:

- Business Applications referents.
- EDMS referents.
- ICT infrastructure referents.

IM team is supported by a **well-mixed operating staff**, that provides operating service to all Project s (e.g., Application Maintenance (AM) team), according the identified Project solutions, procedures and guidelines.

8.1 FOCAL POINTS FOR INFORMATION TECHNOLOGY

During Project lifecycle, IT/IM Team provides full support across both technologies and applications following the below responsibility matrix:

Name	Role	Responsibility	Email address	Phone number
Francesco Santini	Chief of Technology	Infrastructure and networks	Francesco.Santini@rosetti.it	+390544878053
Marco Vitale	IT Support manager	HD support (*) @ HQ and fab. yard	Marco.Vitale@rosetti.it	+390544878040
Luca Cicorella	Application Manager	Project Application & Interfaces	Luca.Cicorella@rosetti.it	+390544878177
Marco Zampighi	Application Manager	EDMS FusionLive	Marco.Zampighi@rosetti.it	+390544878073
Vincenzo Aiello	IT Support Manager	HD support @ engineering office	Vincenzo.Aiello@rosetti.it	+393409835235
Francesco Naldi	Incident Response Manager	Risk Management	Francesco.naldi@rosetti.it	+392292886659
Fabio Sirigu	Automation Specialist	PDC IT Security	Fabio.Sirigu@rosetti.it	+393802478159
Antonio Pinza	Network Specialist	Filed Telecommunication	Antonio.Pinza@rosetti.it	+393801260706

Table 1- IT/IM Rosetti Focal Points

(*) Please, note that any support request can be addressed through the Contractor support portal available at the following reference:

WEB Support Portal	http://servicedesk.rosetti.it

Table 2 - User support portal

Since the high relevance of the cybersecurity matter, Rosetti Marino co-operate with an external SOC (Security Operating Center) ensuring full H24x7 support coverage to the entire organization.

Name	Cybersec. role	Email address
Francesco Naldi	Responsible for Rosetti Marino	Francesco.Naldi@rosetti.it
Francesco Santini	Chief of technology	Francesco.Santini@rosetti.it
CybergON Service H24x7 NOC	Incident Mng. & Response	*To be managed from RM*

Table 3 - Cybersecurity Rosetti focal point

9 INFORMATION MANAGEMENT SOLUTION OVERVIEW

9.1 ENGINEERING APPLICATIONS

9.1.1 Process plant design software

Contractor has experienced the adoption of the main plant design software (AVEVA suite) allowing the production of following deliverables:

- intelligent Piping & Instrumentation Diagrams (P&ID)
- Fluid List,
- Process Equipment List,
- Process Instrument List,
- Etc.

The adoption of generic Process plant design software allows the production of

- Process plant design simulation
- Process Flow Diagram (PFD)

9.1.2 Instrumentation plant design software

Contractor has a large experience with AVEVA Instrumentation plant design software, replaced recently by Aveva Engineering 15.7.

The adoption of AVEVA Engineering design software enables:

- Instrument index
- I/O and control system configuration lists
- Instrumentation and Telecom Cable List
- Telecom Equipment List

9.1.3 Electrical plant design software

Contractor has experienced the adoption of AVEVA Engineering 15.7 design software.

The adoption of the Aveva Engineering design software enables the production of:

- Electrical load list
- Electrical load summary report
- Electrical cable list
- Electrical cable drumming report

Moreover, for the electrical studies a specific SW is used, i.e. ETAP, to perform:

- Short Circuit calculations
- Load Flow Analysis

- Harmonic studies

9.1.4 3D plant design software

Contractor has a large experience with AVEVA E3D plant design software.

The adoption of E3D plant design software enables:

- Detailed 3D plant modeling with the electronic representation of all disciplines plant components, such as equipment, foundations, structures, piping lines, instrumentation, raceways, etc…
- Isometrics extraction
- Material take-off and Bill of Quantities (B.O.Q.) generation
- Interference detection and electronic walk-through performing, oriented to reduce interference, prior to Construction activities, and avoid rework cost.

The main 3D plant design software deliverables are:

- Isometrics
- Plant lay out drawings
- Bill of Quantities (B.O.Q.)
- Power and Instrumentation cables routing information

9.1.5 3D plant review software

Contractor has a large experience with Autodesk Navisworks plant review software.

The adoption of Navis plant review software enables:

- 3D plant navigation. All Engineering data, such as Equipment numbers and line sizes, are available walking through the model.
- 3D plant electronic walk-through performing, oriented to reduce interference, prior to Construction activities, and avoid rework cost.

The main 3D plant review software deliverable is:

- 3D plant review sessions files

9.1.6 Structural 3D model software

Contractor has a large experience with Trimble Tekla software which allows the realization of the 3D model of the structural parts of the project:

- Primary Structures
- Secondary Structures
- Joints
- Tertiary Structures

Moreover the tool has a native functionality to interface with Aveva E3D, so called "Tekla Interoperability" that permits the import of the model highlighting the differences between the existing and new/modified parts.

9.2 MATERIAL MANAGEMENT SOFTWARE

During Project lifecycle, **Material management** is aimed at providing **Material Requisition (M.R.)** to Procurement department in order to buy materials for Construction activities, ensuring their consistency with Engineering department outputs, in term of specifications and quantities.

Material management is **cross-departments process** that involves Engineering, Procurement and Construction phases. In fact, Material management process starts during Engineering phase and it proceeds during the entire Project lifecycle, involving also Construction and Procurement departments. Material management process, in addition, involves both Tagged items and Bulk Materials.

All the phases of the Material management process is carried out using integrated information systems, made up by several program modules, both in house and commercial ones. Due to the materials specificity, each Engineering discipline is in charge to manage its materials and quantities and use specific tools, as described by the following paragraphs.

9.2.1 Piping Material management software

Due to the relevant role **Piping materials** play in plant design and erection, Contractor adopts for Piping Material management the Cadmatic dedicated application suite (ELENA/PUMA/COSMO licensed before as Computer Line Associates).

The adoption of custom programs for Piping Material management enables:

- Catalogue and Prices List management.
- Piping Material Specification creation and management.
- Materials counting and M.R. sending to Procurement department.

An interface between procurement system such as SAP ERP aimed to follow up the entire process managing the updated requirement coming from piping constructability (COSMO).

In detail, **Catalogue management** macro-process has the following objective:

- Structure Catalogue (List of items) in compliance with project spec.

As described, Catalogue management macro-process is covered by ELENA Cadmatic tool.

For what concern **Piping Material Specification creation and management macro-process**, its main objectives are:

- Structure and fill in Piping Material Specifications.
- Assign Marks (one to one code) to Piping Material Specifications items.

As illustrated by the schema above, Piping Material Specification creation and management macro-process is covered by **PUMA**.

Finally, **Materials counting and M.R. sending to Procurement department macro-process** has the following main objectives:

- Count and organize Project Marks to purchase relative items.
- Provide M.R. to Procurement department.

Materials counting and M.R. sending to Procurement department macro-process is a batch interface versus SAP ERP.

9.2.2 Structural Material management.

The MTO's of the structural parts are directly exported from Tekla and managed by the construction engineering team..

9.2.3 Electrical and Instrumentation Material management tools

For Material management, Contractor **Electrical and Instrumentation** departments adopt AVEVA Engineering suite

The adoption of AVEVA E/I Material management enables:

- Materials counting and M.R. sending to Procurement department.

As described for Piping Materials, **Materials counting and M.R. sending to Procurement department macro-process** has the following main objectives:

- Count and organize Project items to purchase them.
- Provide M.R. to Procurement department.

For Electrical and Instrumentation materials, Materials counting and M.R. sending to Procurement department macro-process is covered by **AVEVA Engineering**.

In detail, in order to create M.R. and send them to Procurement department, after performing each Material Take Off (three M.T.O.s, distributing during the entire Project lifecycle), after the check of Material Take Off results, in accordance with the identified Purchase Strategy and previously purchased materials, approve and send it to SAP for Material management finalization and Procurement activities.

10 PROCUREMENT APPLICATIONS

During the entire Project lifecycle, Contractor adopts for the **main Procurement activities**, from planning to site delivery, **SAP modules** (e.g., SAP MM, etc.).

A recent adoption is the new supplier portal SupplHI (SaaS) that implement both vendor qualification and rating.

Please, note that Rosetti Marino adopted **Docusign** (SaaS) as PO digital signature and also for tracking the whole process approval between the purchase dept. and suppliers.

As described by the schema below, **Procurement key macro-processes** are based on:

A Corporate DB, including Suppliers and Contractors master data, that is updated on a continuous basis to reflect the current Suppliers and Vendors performance by periodic reassessment.

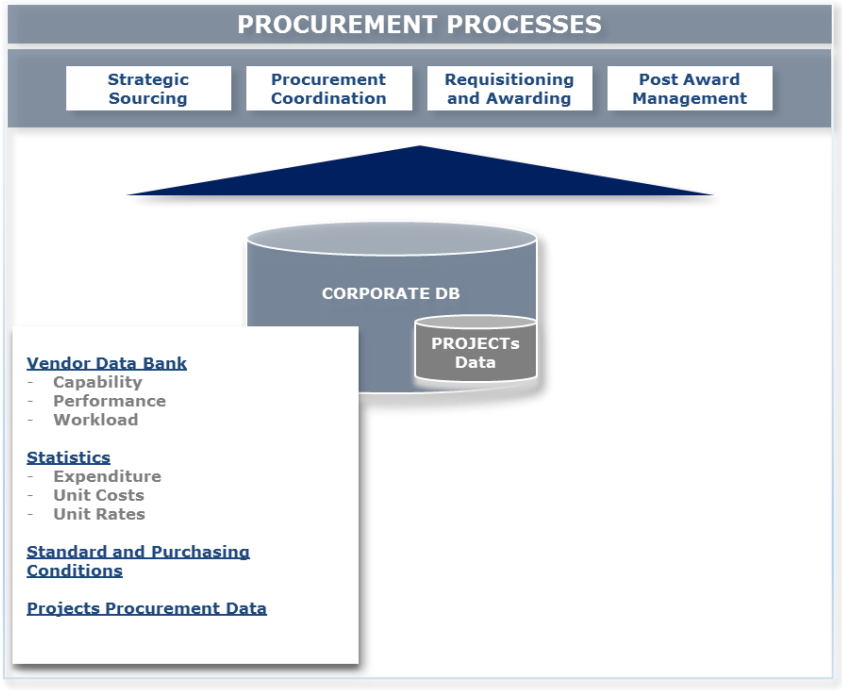


Figure 10 - Procurement Corporate DB

The adoption of SAP modules allows:

- **Strategic sourcing**, that includes all activities oriented to Procurement strategy definition, category management and market intelligence, in order to define the proper strategy to achieve the maximum value from goods and services for Project.
- **Procurement coordination**, that consists in the coordination of the activities related to Vendor management, Project Procurement planning and Project Procurement master data management.
- **Requisitioning and awarding**, that includes all activities oriented to Material management work-flow finalization, in order to purchase materials and services for Projects.

- **Post award management**, that consists in all activities oriented at supporting order follow-up phase and materials arrival at final site destination, (e.g., Expediting activities, Inspection activities, Transportation activities, etc…).

In detail, Material management workflow during Requisitioning and Awarding consists in:

- Once M.R.s are received from Material management systems, SAP modules enable Purchase Requisitions (P.R.) preparation and send them to the selected Supplier.
- Following the receipt of the Supplier's Offer, SAP modules allow Purchase Order (P.O.) generation, integrating M.R. technical data and quantities with prices, delivery data, standard and specific purchase conditions. In addition, P.O. commitment data are integrated with Cost Control and Accounts systems.
- Technical / Economical evaluation (Athena web portal).

All SAP modules, involved in Material management, are integrated with other Engineering and Construction information systems, adopted to support this process.

10.1 CONSTRUCTION APPLICATIONS

10.1.1 Construction Management System

Due to the relevant and critical role **Construction** plays during the entire Project life cycle, Contractor adopts a **custom suite**, called **Item Trace**, to support Construction activities at site together with the tool **Welding Register (IWM 2.0),** an application dedicated to full tracking of welding production and certification.

The adoption of custom suite for Construction activities enables:

- Activities planning and progress monitoring.
- Accounting.
- Quality & system completion.

In addition, Contractor adopts a set of commercial tool to enables:

- 4D Construction.
- Spools generation.

The table below summarizes the list of Construction activities covered by commercial tools:

Macro-activity	Tool	Module high-level description
Construction simulation	E-Share	Tool for constructability studies related to Construction works at site
Spools generation	SPOOLGEN	Tool for Isometrics spooling, ensuring Piping fabrication optimization and welding map creation
Mechanical Completion	Proverlis	Tool for Completion and Commissioning management phase

Table 4 - Construction tools

Finally, in the last year, thanks to Mobile devices availability at market, Contractor has begun to adopt them (e.g., industrial Tablets, RFIDs, etc ..) to support Construction activities at site with positive feed-backs.

In detail, Contractor adopts Industrial Tablets for SubCos works progress monitoring and for drawings/documents visualization at site, commissioning check sheets at the construction site.

The adoption of Mobile devices at site has provided these benefits:

- Time saving (time to enter manually collected values).
- Manual errors reduction.
- Data and documents up to date and available for all involved actors.
- Spools traceability from warehouse materials releases to site erection.
- Completed spools management and erection at site (Spools completeness).

10.1.2 Fabrication Management System

Project activities executed in the Fabrication Yards are managed by a permanent organization with a multi-project view, which is responsible to fulfill projects requirements in term of time, cost and quality.

The Corporate work model and software tool to manage Production and Control and Quality Control in Fabrication Yards is Item Trace (custom tool), and Welding Register:

1. **Data upload from other systems:** MTO, Weld Lists, Schedule, Purchase Orders, Post-Order Info, etc.
2. **Project Material Management**: feasibility, warehouse receiving, inspection, nesting, reservation, withdrawal, utilization monitoring, traceability
3. Preparation and estimation of **work packs** to feed production
4. Collection and validation of **production feedback**: executed tasks, used materials, spent hours
5. **Quality Control**: material inspection, weld, non-destructive controls, paint
6. **Feedback to Projects**: progress, material utilization
7. **Production Analysis and Reporting**: material utilization / need / reconciliation, workload, productivity, weld process utilization, etc.
8. **Storage of historical data**, consistent among Yards / Projects

Item Trace is a web-based application with central installation and multi-site architecture, running on SQL Server DB, supported by Corporate ICT, integrated with Project and Corporate systems through manual or automatic batch procedures or through defined interchange files.

10.2 PROJECT MANAGEMENT AND CONTROL APPLICATIONS

10.2.1 Project Electronic Document Management System

The systems architecture enables integrated management of process and Engineering design data, through a common repository of Project documents.

To support design processes, Contractor implements and maintains an Electronic Document Management System (EDMS) for the full length of the Project.

Project information related to documents, plant structure and items, are managed allowing links with other information systems such as: Equipment and Piping Engineering, Project control, Procurement and Construction.

Process, Engineering and Construction data are managed by specific applications and maintained in different databases, whereas document production feeds the companywide EDMS.

For each Project, during the initial phase, a job hierarchy is created with the relevant plant structure components. The item list and the document list are loaded in the system and linked with the related plant objects.

The system, available only to authorized users, ensures the necessary operating flexibility; moreover, specific contract requirements can be easily configured. Management of document issues, revisions and comments can be monitored via controlled workflows and transmittals.

10.2.2 Contractor EDMS: FusionLive (IDOX ltd.)

Contractor EDMS is named FusionLive. It is based on the integration of industry standard, non-proprietary, commercially available software application (Oracle suite).

FusionLive ensures that all deliverables needed to develop the Project are electronically registered. The information contained in these deliverables are easily, readily, and reliably available to Contractor, Company, any nominated Partner and Site, throughout the course of the Project.

The system's key-feature allows Contractor, after Project completion, to hand-over to the Company all deliverables loaded into FusionLive itself and to make them available to the Owner/Operator to support all document activities relevant to Operation and Maintenance of the plant.

One of the main advantages of FusionLive system is the capability to reproduce all structured Document Lists inherent the project/plant structure, arranged according to the EPC phases and several disciplines involved.

FusionLive can:

- link documents to the relevant electronic files and store them in a document repository on a dedicated Server.
- create and manage relationship between documents, documents and Project plant components, to allow document retrieval through plant component and item navigation.
- automatic transfer of document files between Contractor sites for viewing, redlining, printing or editing activities on documents.
- support user document issue activities through pre-defined workflow pattern.
- support document internal distribution through pre-set distribution Matrix.
- support document search by using Full Text Retrieval techniques.
- automatic Tag registry (relation Tag to document/Tag to Tag/Document to Tag).

- Tag validation.
- interface the EDMS with other Project Information Systems, such as Primavera P6, Procurement and Project Control, to import data and documents.
- manage document transmittals.
- manage progress measurement of Project deliverables (external reports).

For confidentiality reasons FusionLive allows access to the document management system only to authorized users, having privileges relevant to their role in the Project organization. Any user can access the system through a personal user-ID and password, assuring clear user identification and traceability of all actions performed on the system.

FusionLive works in accordance with Contractor's QA Manuals, internal Procedures and Company Norms.

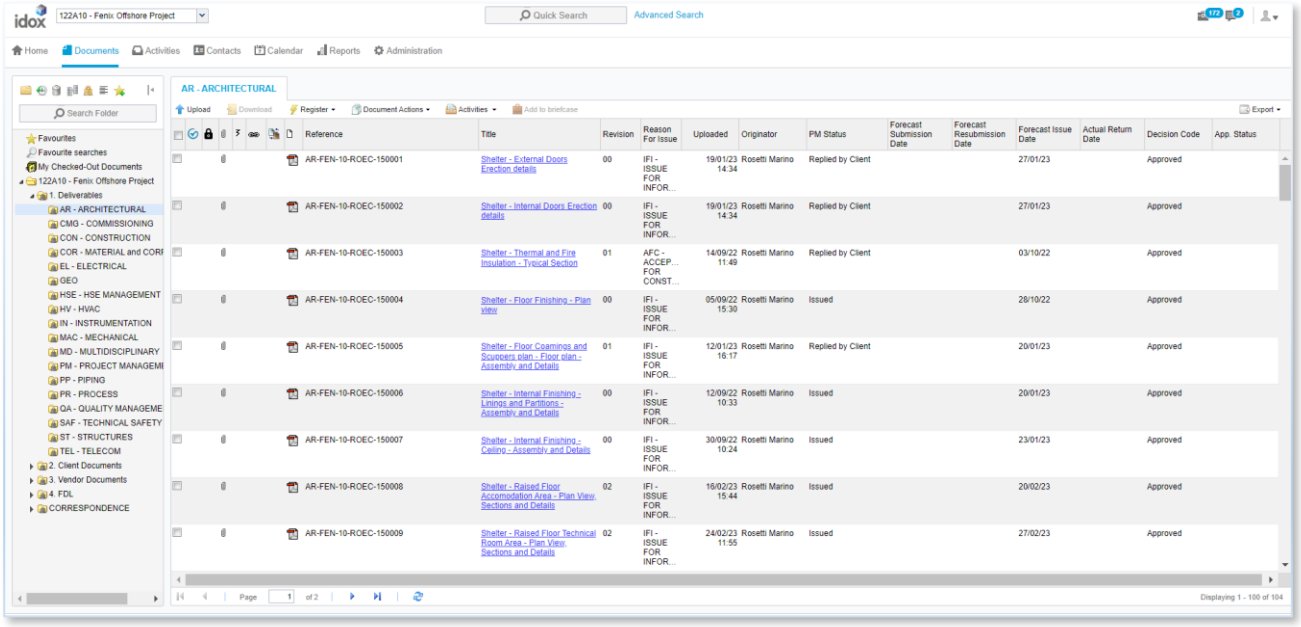


Figure 11 - FusionLive sample form

10.2.3 RVA workflow

A typical workflow is based on steps matching the work process activities. These steps are called "Processes". FusionLive manages several document states: Planned, Draft, Issued, Verified, Approved, Cancelled, etc.

The Distribution matrix ensure the correct information dispatch for every kind of document/role across the project.

10.2.4 Main system capabilities

FusionLive is the application supporting the document Management System of a Project. This tool manages the following main activities:

- Organize documents to be issued both internally and towards the Client or any third party;

- Collect the documents files/source to organize the next revision;
- Consult documents received by the Client, or towards the Client or any third party and relevant comments, verify document received by the Vendor, manage the project management and construction engineering documents of a Project;
- Carry out specific contract activities such as work progress control, documents transmission, etc.
- Monitor the issuance of project documents according to the planned scheduled dates.
- Support the reporting system

The documents to manage within the Workspace in FusionLive may be of different types and have different distribution and/or approval flows. First of all, you must distinguish the documents according to the responsibility to release a document (Originator)

1. Deliverables: The engineering, Project Management and Fabrication documents, whose emission is in charge to Rosetti Marino (or Sub-contractors)
2. Client Documents: Standard or project documents whose emission is in charge to the Client
3. Vendor Documents: the project documents related to supplies, whose emission is in charge to the Vendors

The documents can be uploaded to FusionLive directly by the persons in charge for the issuance (where applicable).

The Deliverables, documents to distribute to the Client and/or to Third Parties, that once uploaded by Rosetti Marino (or Sub-Contractors) are subjected to a Formal Review (RVA) and transmitted to the Client and/or Third Parties by Transmittals (where applicable)

The Vendor Documents, that once uploaded by the Vendor, they are sent via Submittal to Rosetti Marino, submitted to a Vendor Review and transmitted to the Client and/or Third Parties by Transmittal (where applicable).

Below a scheme of the macro-process described above is reported, which develops in FusionLive:

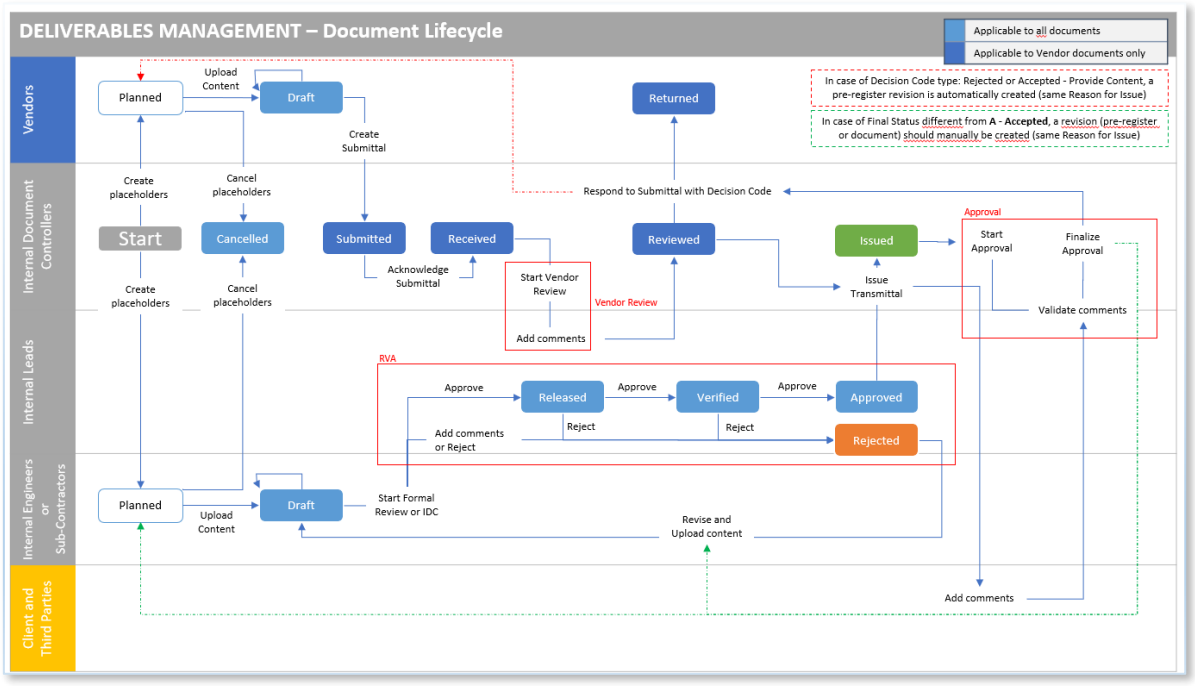


Figure 12 - FusionLive Docs Lifecycle

The image below shows the Formal Review process in more detail, framed above in red:

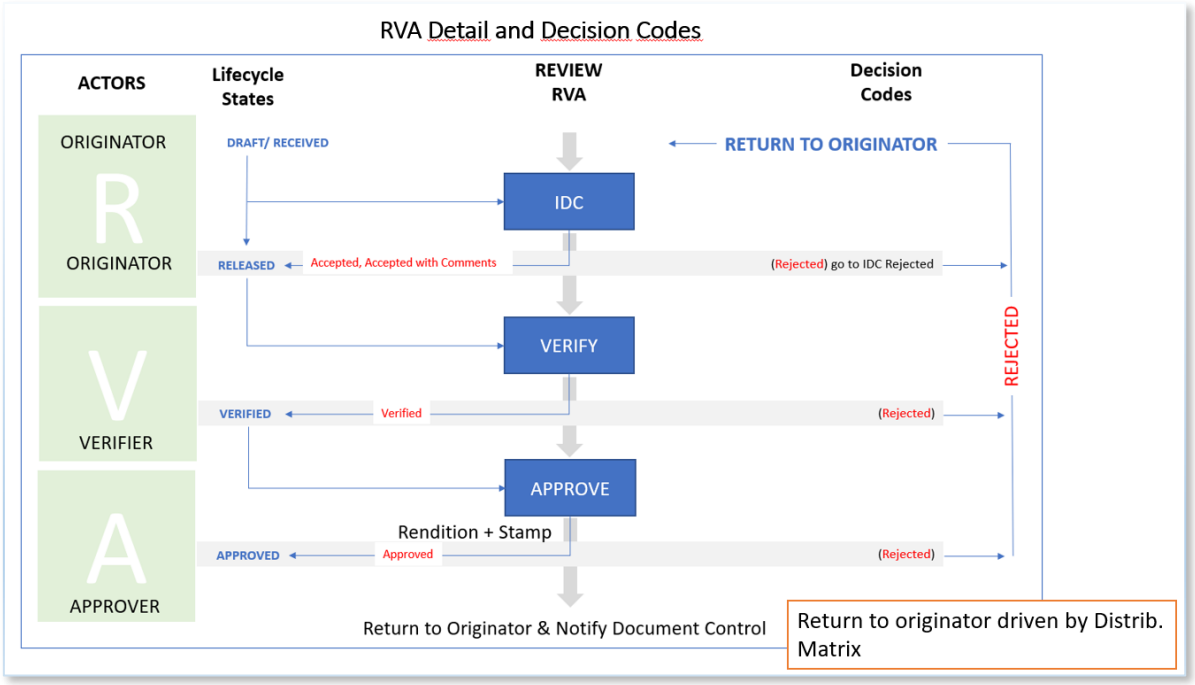


Figure 13 - FusionLive workflow

10.2.5 Remote use of EDMS

FusioLive repositories can be accessed from remote construction sites as well as Partners and Clients premises.

FusionLive can be accessed from a last generation web browser such as Chrome/EDGE client with strong authentication based on client/server certificates.

This architecture represents an efficient solution to get straight on-line information from FusionLive database and to download files from the EDMS to the local user work location when the Internet link to the central repository is active.

At transmission completion an automatic (can be disabled by owner) e-mail will be addressed to a pre-defined list of site users, notifying that documents included in the received transmittal are available..

The Site users will be enabled to access the transmitted files, directly clicking hyperlinks inside the e-mail or using a web inquiry selection menu or through a directory file system.

10.2.6 Collaboration System

Contractor uses MS Teams as its internal collaborative environment for information sharing among its employees, business Partners, Suppliers, and Clients, accordingly to its internal information sharing and collaboration policies. The tool manage a set of co-operation layers such as, chat, audio-video call, document sharing, co-editing.

Depending on permissions given, authenticated users can access to the individual Team established for individual Projects and they will be able to read, add, copy, revise, or delete documents.

Access to a Team workspace is password-protected so the access to individual files within the workspace can be controlled and the transmission of data is encrypted.

Permission to use a Team will be granted by the IT Support and will be confirmed by an e-mail to the user, giving an hyperlink to the workspace. The Team workspace will then display all Project-related information that the user may access.

10.2.7 Project Control System

The activities related to Project Planning & Progress Control, Budget/Forecast/Cost Controlling and Project Risk Management are performed through the following list of main applications, grouped into different roles sections:

- Project Planning & Progress Control
  - Oracle Primavera Enterprise Project Management
  - MS Project
  - Item Trace (construction progress)
  - Athena (Procurement Progress Log)
- Budget/Forecast/Cost Controlling
  - SAP PS (Project System Module)

- SAP MM (Cost Progress)
- Business Object (Project Cost Reports)
- Timesheet ()
- Project Risk Management
- Oracle Primavera Risk Analysis (Schedule Risk Analysis)

All the applications above mentioned have the target to establish and maintain a deep Project Planning & Control Information System during the complete Project lifecycle.

10.3 IM SYSTEM INTEGRATION

Contractor has established **integrated Information flows** between the tools previously described, in order to manage and guarantee Information quality across the EPC phases.

The actual Information flow between Contractor systems and the relative interface are shown in the following high-level schema (include both staff and operation processes):

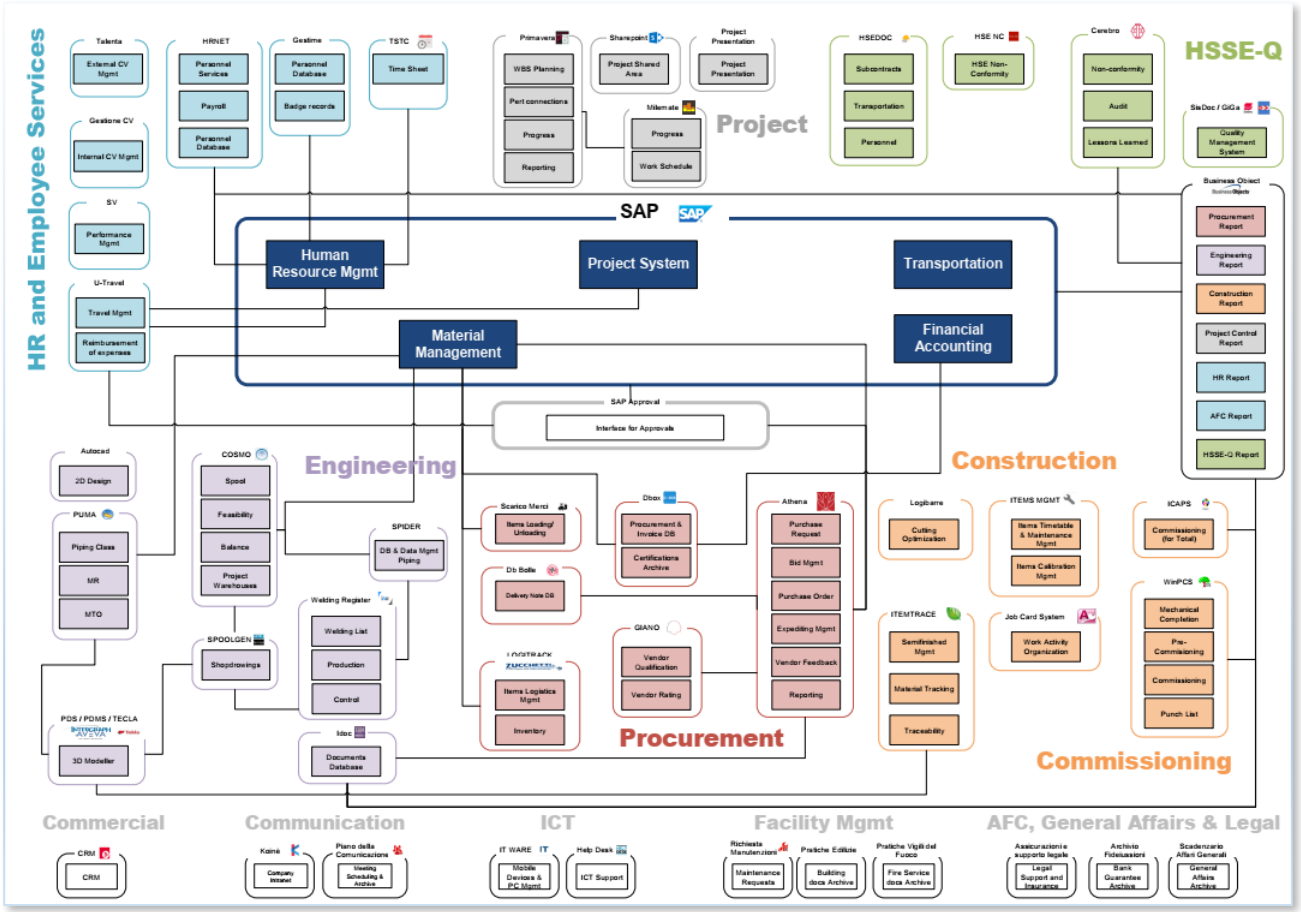


Figure 14 - IM systems high-level integration scheme

11 PROJECT EXECUTION

The purpose of this chapter is to describe the ad-hoc Project IM and IT solutions, selected by Project Task-force, to be adopted during execution phase.

11.1 MAIN PROJECT APPLICATIONS

Contractors activities will be performed using the software reported in the following table:

Software name	Software vendor	High-level description
Autocad	Autodesk	Tool for Process design activities
Diagram	AVEVA	Tool for Process design activities
Engineering	AVEVA	Tool for project Data Management
E3D	AVEVA	Tool for 3D modeling activities
Navisworks	Autodesk	Tool for 3D plant model review activities
PUMA/COSMO/ELENA	Cadmatic	Tools for PP Material management activities
SAP	SAP	Tool for Procurement activities
Item Trace	In-house program	Tool for Construction activities
Item Trace / Welding Register	In-house program	Tool for Fabrication activities
FusionLive	IDOX	Tool for Document management activities
Primavera P6	Oracle Corporation	Tool for Project Control activities

Table 5 - Project main application list

11.2 SPECIFIC PROJECT APPLICATIONS

11.2.1 Operating system, desktop software and other application

The table below reports the list of general PC software, including operating system, general desktop software and database, selected for CrossWind execution phase:

Software name	Software vendor	High-level description
KOFAX Advanced PDF	KOFAX	Professional tool for PDF documents editing
Apex One / Cynet	McAfee	Endpoint protection
MS Windows	Microsoft	Operating system

Software name	Software vendor	High-level description
MS Office 365	Microsoft	General desktop tools
MS Outlook	Microsoft	E-mail management tool
MS Edge / Chrone	Microsoft / Google	Admitted Internet browsers
MS Visio	Microsoft	Tool for diagrams/schemas drafting
MS Access	Microsoft	Database
SQL	Microsoft	Database
WinZip	WinZip Computing	Tool for file compression

Table 6 - General desktop Software

11.2.2 Project Management software

During the entire project lifecycle, the main project management activities, including also project risks and issues management and project documents/deliverables management, will be supported by the adoption of the following software:

Software name	Software vendor	High-level description
MS Project / Planner	Microsoft	Scheduling tool
FusionLive	IDOX	Tool for documents management
Primavera	Oracle Corporation	Tool for project planning and scheduling activities
Primavera Risk Analysis	Oracle Corporation	Tool for project risk management
Business Object	SAP	Ent. Reporting tool
Power BI	Microsoft	Dashbord & report

Table 7 - : Project management software

11.2.3 Plant design software

The general plant design activities for CrossWind project will be carried on, using the software listed in the table below:

Software name	Software vendor	High-level description
AutoCAD	Autodesk	2D CAD System

Software name	Software vendor	High-level description
Microstation	Bentley	2D CAD System
Navisworks	Autodesk	Tool for 3D model viewing

Table 8 - General plant design software

11.2.4 Process plant design software

Process plant design activities, mainly based on process simulation with issuing of PFDs, Heat and Material Balances, Process Data Sheets (Equipment and Instrument) and Item Lists, will be performed using the software reported in the following table:

Software name	Software vendor	High-level description
AutoCAD	AutoDesk	2D CAD System. Tool for P&ID drawings production
AUTOPIPE	Bentley	Piping & Vessel stress analysis
COMPRESS	In house program	Tool for compressors process design and for production of relevant process calculation sheets
FLARENET	Aspen Technology INC.	Tool for flare and vent network simulation
FLARESIM	Softbis	Tool for evaluation of thermal radiation and noise from flare systems
HYSYS	Aspen Technology INC.	Tool for steady and dynamic state simulation for refining, petrochemical and chemical industries
OLGA	ScandPower	Tool for hydraulic studies for single and multiphase transport systems
PIPENET	Sunrise Systems Limited	Tool for: - calculation of pressure drop velocity and line sizing, for a single fluid system - design of piping systems experiencing single phase steady flow of liquids or gases and fluidodinamic analysis - fluid networks sizing to match flowrate or pressure constraints - analysis of transient flow in all types of network employing a liquid, used to

Software name	Software vendor	High-level description
		foresee pressure surge values and location, calculating hydraulic transient forces - design of fire protection systems (deluge, ringmain or sprinkler) in accordance with NFPA rules

Table 9 - Process plant design software

11.2.5 Engineering plant design software

Engineering plant design activities are performed by several engineering disciplines, supported by specific software, that are reported in the sections below, organized by single discipline.

11.2.6 Structural

The table below lists the specific software to be used by Structural discipline during engineering plant design of Crosswind project:

Software name	Software vendor	High-level description
ANSYS	ANSYS Inc.	Ansys is a general purpose finite element analysis software that offers a full depth of analysis from concept simulation to advanced analysis; its breadth of simulation capabilities ranges from linear to nonlinear coupled physics analysis.
SACS	Bentley	SACS, Structural Analysis Computer System, is an integrated structural analysis software package offered to both the offshore and the general structure design industries.
Tekla Structure	Trimble	Tool for 3D modeling and construction design of steelwork & concrete. Tekla Structures software is a building information modeling tool that streamlines the delivery process of design, detailing, manufacture, and construction organizations.

Table 10 - Structure design software

11.2.7 Piping

The table below lists the specific software to be used by Piping discipline during engineering plant design:

Software name	Software vendor	High-level description
AutoCAD	Autodesk	2D CAD System. Tool for P&ID drawings production
CAESARII	Intergraph	Tool for piping stress analysis
NAVISWORKS	Autodesk	3D Model visualization
ORTHOGEN	3DS Net, Inc.	Tool for plant orthographic sections production
E3D	Aveva	Tool for 3D plant modeling
ISOGEN / SPOOLGEN	Intergraph	Isometric extraction
PUMA	Computer Line Associates	Tool for piping material management
SUMO5	Computer Line Associates	Tool for support material management.
Tekla Structure	Trimble	Tool for Structures 3D modelling

Table 11 - Piping plant design software

11.2.8 Instrumentation

The table below lists the specific software to be used by Instrumentation discipline during engineering plant design:

Software name	Software vendor	High-level description
Engineering	AVEVA	Tool for the management of all tagged instrument items with operating conditions, P&ID information and instrument specifications

Table 12 - Instrumentation plant design software

11.2.9 Electrical

The table below lists the specific software to be adopted by Electrical discipline during engineering plant design:

Software name	Software vendor	High-level description
AutoCAD	Autodesk	2D CAD System
ETAP Power Station	Operation Technology Inc.USA	Tool for electrical networks analysis. Calculation and sizing of the grounding

Software name	Software vendor	High-level description
		networks. Coordination of protection systems
MICROSTATION	BENTLEY	2D CAD System
ENGINEERING	AVEVA	Tool for Electrical data management

Table 13 - Electrical plant design software

11.2.10 Consequence analysis and risk calculation/mapping

Software name	Software vendor	High-level description
PHAST	DNV Software	Tool for consequence analysis of process plants

Table 14 - Consequence analysis and risk calculation for aggregate packages software

11.2.11 Fire fighting calculations

Software name	Software vendor	High-level description
PIPENET	Sunrise Systems Limited	Design of fire protection systems (deluge, ringmain or sprinkler) in accordance with NFPA rules.

Table 15 - Fire Fighting calculation software

11.2.12 Construction software

The main construction, pre-commissioning and commissioning activities will be supported by the following software:

Software name	Software vendor	High-level description
ITEM TRACE	In house program	Tool for construction progress management
NAVISWORKS	Autodesk	3D/4D model review
WELDING REGISTER	In house program	Welding production DB
PROVERLIS	Entelekia	Mech. Completion & Commissioning
PROVERLIS	Entelekia	Onshore Integrated Testing

Software name	Software vendor	High-level description
CRANEBEE	CRANIMaX	Lift planning management
SACS Offshore	Bentley	Structural analysis

Table 16 - Construction Software

Punch items raised during Construction, mechanical completion, pre-commissioning & commissioning including the onshore integrated test will be registered on the CCMS system Entelekia Proverlis.

12 INFORMATION RISK MANAGEMENT PROCEDURES (ABSTRACT)

12.1 PURPOSE

Information that is collected, analysed, stored, communicated and reported upon may be subject to theft, misuse, loss and corruption. However, the implementation of controls to protect information must be based on an assessment of the risk posed to the Company and must balance the likelihood of negative business impact against the resources required to implement the mitigating controls, and any unintended negative implications of the controls.

This policy abstract sets out the principles that Rosetti uses to identify, assess and manage information risk, in order to support the achievement of its planned objectives, and aligns with the overall management framework and approach.

This high-level Information Risk Management Policy sits alongside the Information Security Policy, the Data Protection Policy and the Disaster Recovery Plan to provide the high-level outline and justification for the contractor risk-based information security controls.

12.2 OBJECTIVES

The Rosetti information risk management objectives are the following:

- information risks identification, management and treatment according to the risk tolerance
- Physical, procedural and technical controls are agreed by the information asset owner
- Physical, procedural and technical controls balance user experience and security rules
- Physical, procedural and technical controls are cost-effective and proportionate.

12.3 SCOPE

The Information Risk Management Policy and its supporting controls, processes and procedures apply to all information used at Rosetti Marino, in all formats.

This can include information processed by other organizations in their dealings with the company.

The Information Risk Management Policy and its supporting controls, processes and procedures apply to all individuals who have access to Rosetti information and technologies, including external parties that provide information processing services to the company.

12.4 COMPLIANCE

Compliance with the controls in this policy will be monitored by the internal Information Security team and reported to the company Board. Annual audit is conducted by both QA or Internal Audit departments as well as external auditor (such as, for the current example Deloitte Risk Advisory)

12.5 REVIEW

As a result of the compliance check, a review of this policy will be undertaken by the Information Security team annually or more frequently as required, and material changes will be approved by the company CEO

12.6 POLICY STATEMENT

Information Risk Assessment is a formal and repeatable method for identifying the risks facing an information asset. The Rosetti Marino Procedure implements a simplified version inspired to ISO27001 standard and It is used to determine their impact, and identify and apply controls that are appropriate and justified by the risks.

The policy works in the three dimensions of cybersecurity risk defined as the following:

Confidentiality – information will be accessible only to authorised individuals.

Integrity – the accuracy and completeness of information will be maintained.

Availability – information will be accessible to authorised users and processes when required.

The recursive process is described by the steps below:

1) RISK ASSESSMENT

Risk assessments must be completed with access to and an understanding of business processes:

- the impact of risks to business assets.
- the technical systems in place supporting the business.
- the legislation to which Rosetti operates.
- up-to-date threat and vulnerability assessments.

The periodic risk assessment exercise should be completed:

- for every business function.
- for every information-processing system.
- following modification to systems or processes.
- following the introduction of a new information asset.
- following changes to the threat environment or detection of new vulnerabilities.

A systems or processes risk score is calculated from Likelihood x Impact Level, and classified in the risk matrix consistent with the Rosetti company Risk Management approach as in below figure:

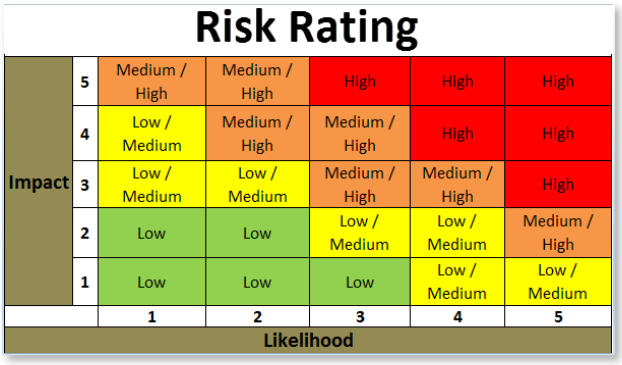


Figure 15 - Cyber Risk Ranking Matrix

2) THREATS

Rosetti will consider all potential threats applicable to a particular system, whether natural or human, accidental or malicious.

Threat information will be obtained from specialist security consultancies, local and national law enforcement agencies and security services, and contacts across the sector and region. It is the responsibility of the Information Security team to maintain channels of communication with appropriate specialist organisations.

3) VULNERABILITIES

Rosetti will consider all potential vulnerabilities applicable to a particular system, whether intrinsic or extrinsic.

Vulnerability information will be obtained from specialist security consultancies, local and national law enforcement agencies and security services, technology providers and contacts across the sector and region. It is the responsibility of the Information Security team to maintain channels of communication with appropriate specialist organizations.

4) RISK REGISTER

The calculations listed in the risk assessment process will form the basis of a risk register.

All risks will be assigned an owner and a review date. The risk register is held in the Information Security document store, with access controlled by the Information Security team.

5) RISK TREATMENT

The risk register will include a risk treatment decision. The action will fall into at least one of the following categories:

Pending – where a potential risk has been identified but needs more investigation

Tolerate the risk – where the risk is already below the Rosetti's risk appetite and further treatment is not proportionate.

Treat the risk – where the risk is above the Rosetti's risk appetite and treatment is proportionate; or where the treatment is simple and cost effective.

Transfer the risk – where the risk cannot be brought below the Rosetti's risk appetite with proportionate treatment, but a cost-effective option is available to transfer the risk to a third party

Terminate the risk – where the risk cannot be brought below the Rosetti's risk appetite with proportionate effort/resource and no cost-effective transfer is available

The Information Security team will review Medium and Low risks and recommend suitable action.

The Rosetti CEO supported by the top management committee will review High risks and recommend suitable action.

6) ROLES AND RESPONSIBILITIES

The Group Chief corporate Officer has accountability to the Executive Group managing information risk.

They will direct the information risk appetite for Rosetti and review the information risk register. They will be involved in assessing and reviewing High risks.

The Group Chief corporate Officer is responsible to the company Board for managing the risk assessment process and maintaining an up-to-date risk register. The Information Security team will conduct risk assessments and recommend action for Medium and Low risks, where these can be clearly defined in terms of the Rosetti's risk appetite.

The CEO is responsible for assessing and reviewing High risks and will have visibility of the risk register.

7) RISK APPETITE AND TOLERANCE

Rosetti has agreed a series of risk appetite statements.

While not exhaustive, these give a good overview of the Rosetti's desire to pursue or tolerate risk in pursuit of its business objectives/projects.

The risk appetite statements give the Information Security team, a framework within which to conduct risk assessments and make recommendations for appropriate treatments.