ENGN	Engineering Domain Terms of Reference	

Mission

The Engineering Domain (ENGN) shall support the Director-General (DG) of the ITER Organization (IO) to achieve the ITER Project's objectives as Design Authority and Integrator of the whole ITER Plant as a nuclear installation, to assure implementation of systems engineering and configuration management, to guarantee the overall coherence of functional and safety performances of the Project in accordance with the ITER regulations and IO rules, and the Project Requirements, with strict technical baseline management and engineering activities. This Domain has also in charge the specific responsibility for design, manufacturing and delivery of the systems to be mainly installed post First Plasma, with close collaboration and communication with other Domains and Domestic Agencies (DAs). If some captive components for these systems have to be installed before First Plasma, this domain will work with Construction Domain to ensure proper execution of their installation.

Major Responsibilities

Responsibilities of "Engineering Domain" are summarized hereafter:

- To develop the strategy for engineering activities and central integration, in close collaboration with Office of the Director-General in accordance with Project Strategy.
- To represent the ITER's "Design Authority" delegated by the DG to assure the whole Plant functional and safety performances in accordance with Project functional and safety requirements as well as with the Licensing basis;
- To implement the Technical Baseline in all Configuration Items integrated, and to control /mitigate any technical risks and issues;
- To maintain a consistent master list of ITER plant codes and standards with edition/version that has to be applied in the design phase and across all PAs and SRDs to ensure agreement with the Licensing basis;
- To establish and maintain the methodologies qualified for calculations which constitute the basis of the design justification file of the ITER Project;
- To assure implementation of the design and installation requirements of Machine and Plant as well as the design integration and systems engineering processes and implement them in the project for a coherent and functioning the ITER design;
- To coordinate/perform integral and functional analysis to verify that the project requirements are properly met in the developed design and also to address issues arising during each phase of the project, and propose / implement solutions;
- To assure properly and efficiently configuration management (identification and control) at design , procurement, installation and commissioning phases up to the final delivery of the Machine and Plant as a whole for Operation;
- To establish and control the implementation of the MQP processes, for configuration management, documents and records, design control (for systems engineering implementation), identification and control of items, software control and model development, and to provide training to the staff and audit the execution of the processes;
- To develop the technical specifications and coordinate with IT for the development of the project tools (CAD data management tool, Project Lifecycle Management (PLM) tool, ITER Document Management System (IDM)), DOORS for requirements management), to develop and maintain the procedures / instructions required for the effective implementation of these processes/tools and ensure utilization, and to provide training to the staff;

- To coordinate engineering supports in mechanical and plant areas, and define and maintain an efficient CAD strategy for the full project (processes, infrastructure, resources, production, collaboration with DAs, and QA/QC) to provide efficient CAD services based on project priority;
- To develop the corresponding design through proper systems engineering implementation, including design plans, gate reviews, and procurement documentation, technical oversight of the hardware procurement, implements technical / quality control, and prepares Engineering Work Packages (EWP) and hand-over the EWPs to the Construction Departments sfor installation, assembly, testing and commissioning of the systems, structures and components (SSCs) to ensure a successful installation and operation of the ITER Facilities including the post First Plasma configuration; such as Heating & Current Drive systems, Port Plugs & Diagnostics systems, Internal Components including Test Blanket Module Program associated activities, Remote Handling and Radwaste Management systems, Fuel Cycle systems; systems with exclusion of all those captive systems managed directly by Construction Domain; according to the selected installation sequence in close collaboration with relevant Domestic Agencies which are having in-kind procurement allocation for such systems;
- To participate with Corporate Domain in the project risk identification and mitigation approach in the implementation of transverse functions;
- To advise the DG and provide recommendations on any opportunity, risk or issue the Engineering Domain staff would consider as useful for him/her in order to improve project management for system integration and ensure the IO fulfils its mission and complies with its obligations in the best conditions;
- To prepare the final Engineering Dossier duly signed and certified, and deliver to Science & Operation Domain (together with Installation Certified final Dossier) for activating integrated commissioning of the Machine and related Auxiliaries;
- To prepare the final Integrated Dossier integrating Engineering / Fabrication / Installation and Commissioning to be delivered to the Regulatory Body to get authorization for Operation demonstrating properly full implementation of the Licensing basis.
- To support, and contribute to, the project's lifecycle cost saving / avoidance activities;

ENGN ensures that all its activities are in compliance with the requirements of the Management & Quality Program (MQP).

Interaction/Interface with other Domains/Departments/Offices

ENGN shall guide, advise, and collaborate closely with all other domains, departments and units in carrying out its required responsibilities, as Design Authority and Integrator of the Project.

Delegated Authorities for the Engineering Domain

ENGN has the following delegated authority as defined in ITER Organization Delegation of Authority (4AFC6R) and Roles and Responsibilities of Line Manager (9FTXRG):

- Line management within ENGN, including technical and managerial decisions on;
    - Managing technical Baseline as described under its major responsibilities, within the boundary conditions defined in the Baseline.
    - Engineering design activities for post-First Plasma as described under its major responsibilities, within the boundary conditions defined in the Baseline.

Direct Supervisor
Reports to the DG as line manager.

Organization Structure of the Engineering Domain
The ENGN is composed of the following subordinates: one Office, one Departments and one Division as Chart 1.

- *Central Integration Office (CIO)*:
  - To manage technical baseline consistency, configuration management, design control and documents & records.
  - To manage design and construction physical and functional integration, systems engineering, and engineering analysis.

- *Engineering Design Department (EDD)*:
  - To plan and ensure the design, procurement, acceptance of the ITER systems of post First Plasma.
  - To follow up remaining DAs' in kind procurement activities which are necessary for First Plasma configuration of systems of Heating & Current Drive and Diagnostic, and support the Machine Construction Department within the Construction Domain for the implementation for the captive parts of this systems to be installed in the Tokamak Complex Building before First Plasma.
  - To follow up DA's in kind procurement activities which are required post First Plasma.

- *Design Office Division (DO)*:
  - To provide mechanical and plant CAD design activities to transversally contribute to all technical area across Domains.
  - To manage CAD data and its infrastructure (including CAD system development, deployment, maintenance / update and training throughout the project, data & resources)

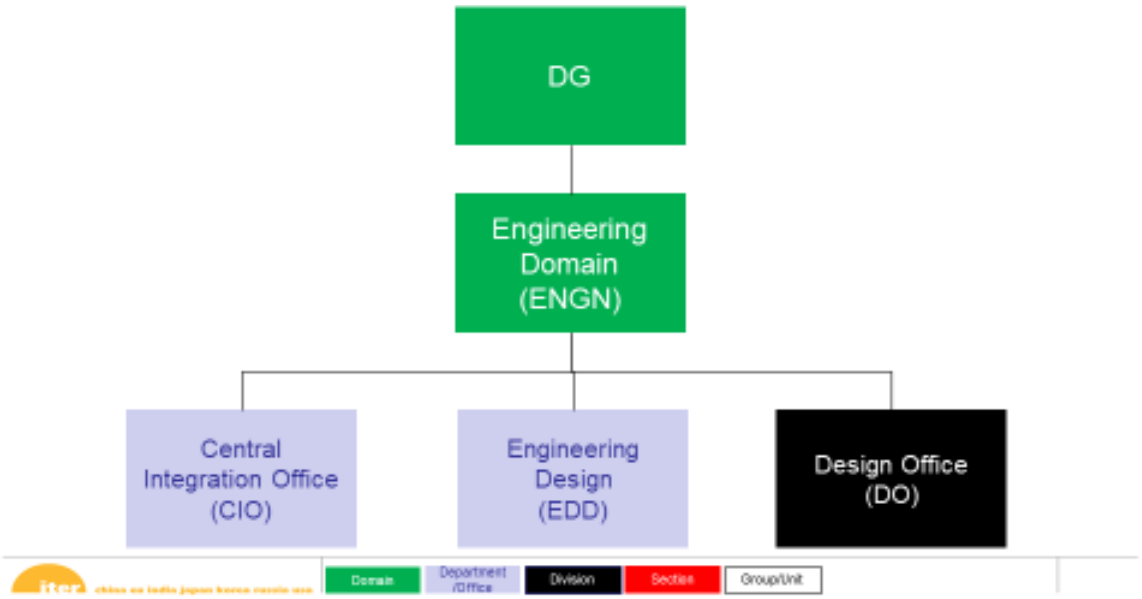

Chart 1: Organization Structure of the Engineering Domain