

## System engineering and configuration control management in ITER

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The construction of ITER will represent a major challenge for the fusion community at large, because of the intrinsic complexity of the tokamak design, the large number of different systems which are all essential for its successful operation, the worldwide distribution of the design activities and the unusual procurement scheme based on a combination of in-kind and directly funded deliverables.

Past experience from similar large science projects and from the authors' direct experience in managing the design activities during the ITER Transitional Activities phase, has shown that key requirements for the success of such a large project are the establishment of effective project management methods, the deployment of tools and working practices that facilitate the communication and collaboration among several institutions, and a strong focus of the Central Team on the integration activity.

During the Transitional Activities phase the ITER Central Team has made a large effort to ensure that appropriate tools and design methods are fully deployed at the start of the construction. In particular, the selection of the design, drawing and documentation management software has been critically reviewed and substantial upgrades have been introduced.

A detailed breakdown structure of the plant has been completed and the design activities and information management system has been organized around it.

Configuration management procedures in line with industry standards have been introduced in the project and are currently applied to keep track of all changes and for the management of requirements and interfaces.

The authors have been involved in the definition and practical implementation of the design integration and configuration control structure inside ITER. Here they describe the experience gained in recent years, explain the drivers behind the selection of the CAD and document management systems, and illustrate what they believe will be the future needs for a successful completion of ITER.