

The conceptual design of the ITER CODAC system

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The Control Data Access and Communication (CODAC) system for ITER is presently under conceptual design, revising the previous design dating from 1998. The design concentrates on the major perceived challenges: 35-year life of the project for maintenance and evolution; harmonizing strict access security with world-wide participation in the exploitation of ITER; the complexity of CODAC which has to control a large number of disparate procurements systems, 24 hours/365 days; the particular “in-kind” procurement of all Plant Systems.

The design has so-far concentrated on appropriate methods for combating these challenges. Concepts include: strict application and enforcement of standards for interfacing procured systems at a high “black-box” level; reliance on standard high performance networks; reliance on the self-description of the procured systems; maximizing the use of data-driven applications, rather than device-specific coding.

The interfacing and procurement specifications will be presented, especially the self-description of “black-box” systems, and the boundaries of CODAC will be defined. The breakdown of CODAC into a number of manageable systems and their interfaces will be outlined. The data volumes and data rates will be estimated, suggesting an appropriate conceptual design of the various parts of the CODAC network.

There are no required CODAC features which could not be provided with today’s tools. However, one element of this conceptual design is to identify areas where ideal solutions are not clearly available for which appropriate R&D will be proposed.