

Integrated Approach to the Development of the ITER Control System Configuration Data

D. Stepanov, L. Abadie, ITER Organization

J. Bertin, G. Bourguignon, G. Darcourt, Sopra Group

O. Liotard, Tata Consultancy Services

MOMAU005

Control System Design Support Database: Project Goal

Problem:

- Instrumentation and control (I&C) is present in more than 200 procurements packages → design maturity widely differs; many people involved; data does not belong solely to the central organization;
- Other databases exist in the project which have pieces of information important for I&C (system analysis, 2-D / 3-D models, volume allocation, radiation maps, administrative, ...);
- Since the information is scattered and not aligned, it is difficult to understand the current status of I&C design / implementation.


Answer:

- Create a syndicated database dedicated to I&C;
- Import / refer to third-party I&C-relevant data, keep master copies of I&C data.

Database Web-Application

Support entry of the key information for the moment:

- System breakdown trees (physical, functional, geographical, ...)
- Components and signals;
- Controllers and variables;
- Administrative data;
- ...



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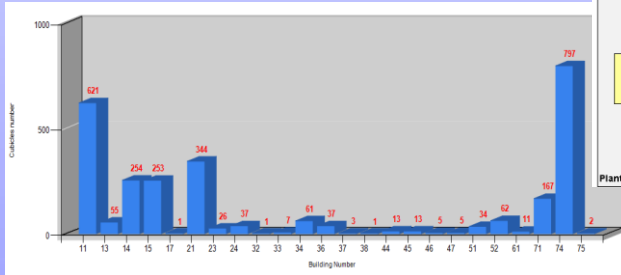
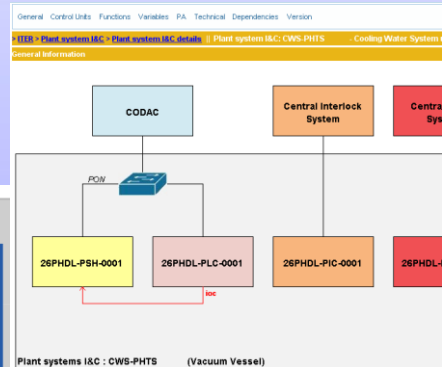
I&C Report
IC H&CD system (PBS 51)

PA Breakdown		
ID	Description	DA
5.1.P1.EU.01	IC Antenna	EU
5.1.P1.IO	IC Antenna	IO
5.1.P2.IO	IC Transmission Lines	IO
5.1.P2.US.01	IC Transmission Lines	US
5.1.P3.IN.01	IC RF Power Sources	IN
5.1.P3.IO.01	IC RF Power Sources	IO
5.1.P4.IN.01	IC RF HV Power Supply	IN

I&C Technical specifications status		
Deliverables	Status	Comment
D1A	Approved	Automatic updating
D1B	Under review	In progress
D1C	Not yet ready	Automatic updating

Events / Milestones		
Date	Type	What
15/11/2011	PDR	5.1.P4.IN.01 IC RF HV Power Supply
15/06/2012	PDR	5.1.P2.US.01 IC Transmission Lines
06/12/2012	Signature	5.1.P1.IO IC Antenna
15/06/2013	PDR	5.1.P3.IN.01 IC RF Power Sources
12/09/2013	Signature	5.1.P1.EU.01 IC Antenna
09/02/2015	FDR	5.1.P4.IN.01 IC RF HV Power Supply
15/03/2016	FDR	5.1.P3.IN.01 IC RF Power Sources

Plant system I&C :		
Deliverables	Type	Value / Estimation
D6	Signal	0 / 4997
D7	Variables	
D8	Cubicles	77
D9	State machine	not given



Technology: Java, Tomcat, PrimeFaces, Hibernate, MS SQL Server + MS SSRS, Web Services, XML

Conclusion

- The first version of the application was put in production;
- Data entry / import / consolidation started;
- Future areas of interest:
 - Support of remote CODAC Core System databases;
 - Support of the 2-D I&C diagrams tool (SEE System Design);
 - Component life cycle management and inventory control;
 - Support for safety and interlocks functional analysis;
 - Data quality / consistency checks;
 - Improved metrics and reports.