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Status of Interface Requirements and how they are put together

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Outline

- Requirements Status (top-down requirements)
- Requirements Status (interface requirements)
- Guidelines on writing interface requirements

Status of top-down requirements in DOORS (slide 1 of 2)

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- L2 (ACCSYS) requirements essentially unchanged since last TB
- Over 240 L3 (linac sections) Requirements in DOORS
  - Requirements for all sections are considered complete by the Lead Engineers except for A2T and DmpL; these are being finalized
- Over 1070 L4 (disciplines) Requirements in DOORS
  - See next slide

Status of top-down requirements in DOORS (slide 2 of 2)

13-May-2015

ESS Accelerator L4 sets of requirements

Section	L4 BMD	L4 EMR	L4 PBI	L4 RFS	L4 CRYO	L4 ISS	Total
ISRC	O	O	O	O	O	23	23
LEBT	Y	O	21	O	O	O	21
RFQ	O	19	11	19	O	O	49
MEBT	54	18	Y	18	O	O	90
DTL	68	31	Y	19	O	O	118
SPK	66	30	64	15	O	O	175
MBL	66	31	64	15	16	O	192
HBL	66	31	64	15	16	O	192
HEBT	71	O	65	O	O	O	136
DmpL	Y	O	Y	O	O	O	0
A2T	83	O	Y	O	O	O	83
						Overall	1079

O	no requirement set needed
Y	requirement set needed
	requirement set exists in DOORS (but may be incomplete)
	requirement set exists in DOORS (considered complete by LE)

- Some of the “missing” requirements do exist, but are not yet in DOORS; e.g. DmpL BMD is ready for upload

Are Interface Requirements Needed?

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France's new trains too wide for old stations

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Latest update : 2014-05-21

France's SNCF rail network has ordered 2,000 trains for an expanded regional network that are too wide for hundreds of station platforms, entailing costly repairs, the national operator announced on Tuesday.

21-May-2015

In May 2014 train operator RFF stated that 1300 of 8700 platforms needed work:

- displace equipment
- modify platforms

ACC interface requirements status in DOORS (slide 1 of 2)

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Number of requirements for the interface of ACC with

- ICS: 3 (plus 12 draft in spreadsheet)
- SI (CF) : > 190 (about half have mutual agreement)
- TS: 0 (plus 17 draft in spreadsheet)
- NSS: 0 (also 0 in spreadsheet)

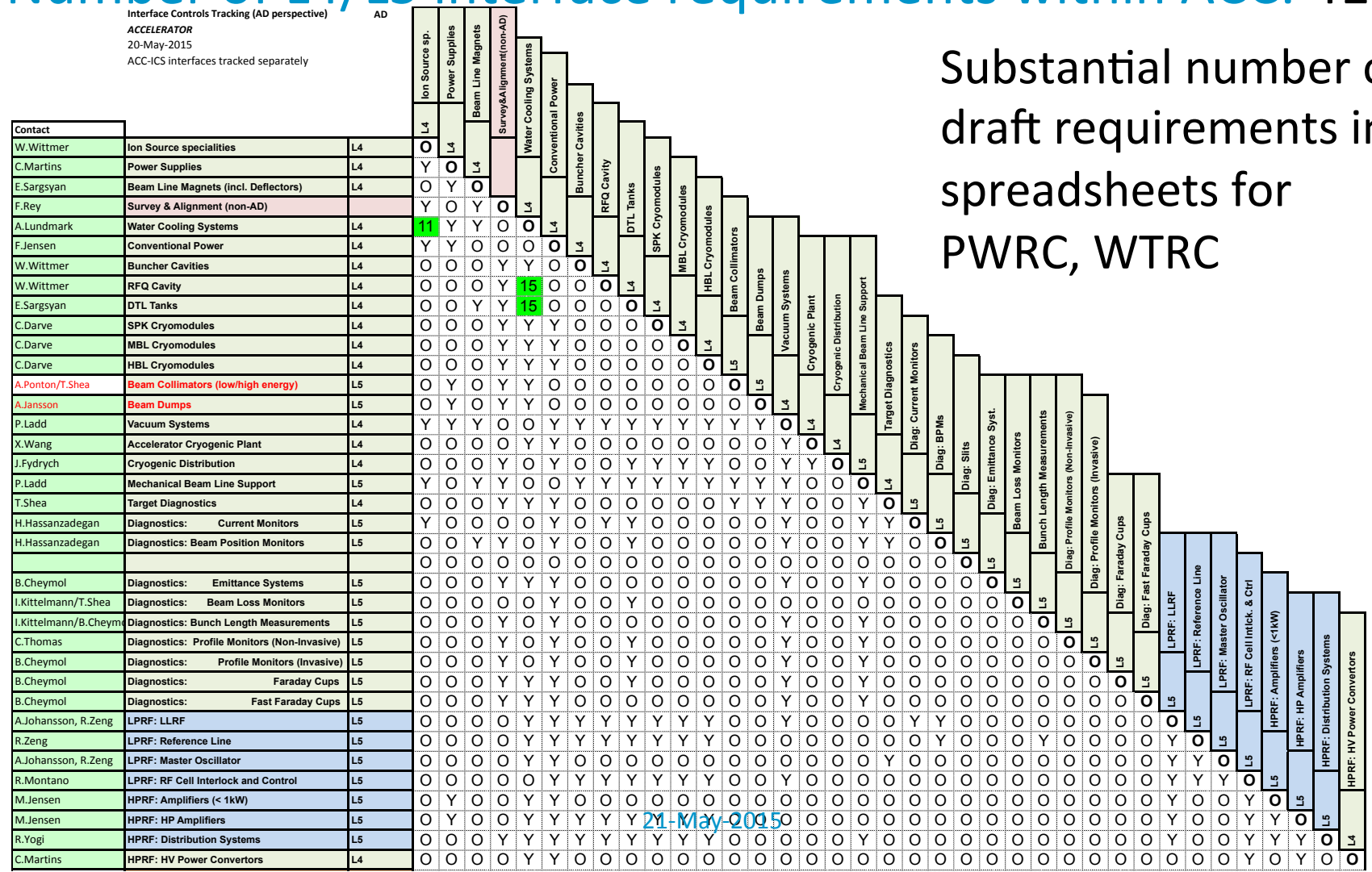
Number of L3 ACC internal interface requirements: 62

- Supplied by Lead Engineers and VAC group
- Currently covers L3 sections from ISrc to SPK

ACC interface requirements status in DOORS (slide 2 of 2)

- Number of L4/L5 interface requirements within ACC: 41

Substantial number of draft requirements in spreadsheets for PWRC, WTRC



Interface requirement example: magnet cooling water interlock to PS

- The magnet shall be protected from overheating by a clixon mounted on the magnet cooling, whereby the clixon is interlocked with the Magnet Power Supply (PS). The connection on the PS supply serves as interface, with a LEMO 00 chassis connector on the PS side and a LEMO 00 cable connector on the magnet side of this interface
  - Interface itself is defined (interlock)
  - Interface location is defined (on PS)
  - Interface type is defined (LEMO 00 connectors)
  - Cable owner is implicitly defined
- Other interface requirements will be needed here to describe the signal type and the action (switching to off or standby of PS)

Aspects related to Interface Requirements

- Interface requirements need to be looked at in the broader sense of the term, e.g.
  - Space (the Cryo Distribution Systems have an interface with DTL!)
  - Mechanical
  - Electrical
  - (Electrical Safety)
  - (Radiation Safety)
  - …..
- It is good practice to have interface requirements defined in time for the **Preliminary Design Review**
  - "We discovered the problem a bit late…." said the RFF spokesman in view of the issue with the train platforms
  - Platform repair work had already cost 80 million euros by May 2014

Thank you for your attention!