STFC Daresbury Experience Delivering International Collaborative Accelerator Projects

Paul Aden









ESS

Elliptical Cavities Beam Transport Modules RF Distribution System Hot Cells **NSS** Detector systems **ESS** Labs LOKI FREIA **Director General**





ESS

Elliptical Cavities Beam Transport Modules RF Distribution System Hot Cells NSS Detector systems ESS Labs LOKI FREIA





Collaborative Projects at DL*

* Within talking distance of my desk



In Kind Contribution



Biggest In Kind Contribution to date





ESS IKC

Elliptical Cavities Beam Transport Modules RF Distribution System Hot Cells NSS Detector systems ESS Labs LOKI FREIA





ESS IKC

Elliptical Cavities Daresbury **Beam Transport Modules RF** Distribution System Hot Cells **NSS** Detector systems ESS Labs LOKI **FREIA**





BTMs & RFDS



Specified, Designed, Assembled and Delivered



Small Amount of Design, Otherwise delivered to specification.



Different Challenges

- BTMs
 - Multiple design partners
 - Fixed interfaces to design within
 - Well defined partner designs
- RFDS
 - Single design partner (ESS)
 - Complicated space envelopes no defined interfaces
 - Unknown partner designs
 - Many other stakeholders





Beam Transport Modules

Vacuum Specs, Vacuum Group

Flange/Space Constraints BI Group







Work package specific



Allows for a well defined scope





RFDS Support Structure Design



Some areas still unknown and not designed, means design is a shifting target (especially in the stubs).





A well defined scope





Defining Scope

- Having unknown interfaces means we need a solid scope
- Scope management starts with scope definition
- The types of deliverables that are in scope and out of scope





Importance of a well defined scope

- It defines the boundaries of our project
- It ensures a common understanding of the project among stakeholders
- It helps manage scope creep





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What tools do we use?





Defining Specifications & Scope

Initial Document

Atlassian

Detailed scope/ spec File

Final Chess Document





Design Sheet







Atlassian



Science & Technology Facilities Council



Defining Specifications & Scope

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A Pages /... / Vacuum System LWU 🔒 🛽

Spoke I WU

Create •••

LWU Configurations

Created by Thomas Grandsaert, last modified on Sep 30, 2016 14:05

Calendars

- Accelerator
 Ion Source
 LEBT
- > REQ
- > MEBT
- > DTI
- > Spokes
- Medium-β
- > High-β
- LWU
 Doc_LWU
- Vacuum Control_LWU
- Vacuum System LWU

Spaces - People

- Install Dates for BI Sy
- LWU Configurations
- LWU Configurations
- > A2T
- > Dog Leg
- > Dump
- CHESS Numbers of 3D Mc
- > HEBT
- Target
- Neutron Instruments
- WP12
- Presentations
- Framework agreement
- Meeting notes
- 3D model exchange
- Internships
- Motion Control in Vacuum applic



EUROPEAN SPALLATION SOURCE

Specification	2D Drawing	CONFIGURATION	STP	Catia ESS#	CHESS Link	TOTAL	
<u>S1</u>	S1		10012	ESS-0008811	<u>S1</u>	1	
<u>S2</u>	S2		10010	ESS-0008881	<u>S2</u>	2	
<u>S3</u>	S3		10011	ESS-0051802	<u>S3</u>	1	
<u>S4</u>	S4		10018	ESS-0063811	<u>S4</u>	3	
<u>S5</u>	S5		10018	ESS-0008203	<u>S5</u>	5	
<u>S6</u>					<u>S6</u>	1	
Total						13	

- <u>DgLg LWU</u>
- CHESS LINK CONFIGURATION TOTAL





🖋 Edit h Save for later 🔹 Watching 🖆 Share 🚥

Design Sheet









3D Models / Drawings









CAD

- CREO 2.0 (pro Engineer)
- PTCs Windchill 11, pdmlink (PLM)
- Certified ISO9001
- Solid Edge, Inventor, AutoCAD
- No Catia 😕









CAD Tools



- Data Exchange overheads
- Possible loss of data during conversion
- Converted data isn't always useable.
- Dumb model





CAD Tools



CAD Tools







Online Tools

- Skype
- email
- Vidyo
- BlueJeans
- Truview
- Atlassian
- CHESS









Online Tools

- Skype
- email
- Vidyo
- BlueJeans
- Trueview
- Atlassian
- 🙁 CHESS



• Project Online / Office 365





Communication

- Almost Daily email exchange
- Weekly Skype Calls



- Face-to-Face vs Skype Ratio?
- Visit around once every 6 weeks.
- Technical Meetings require more frequent face to face meetings



Part of the schedule



Communication



Figure 3. Probability of Weekly Technical Communication as a Function of Separation Between Work Stations. Data From Seven Laboratories. REF. Thomas J. Allen, Sept 97 MITSolan





Communication



Figure 3. Probability of Weekly Technical Communication as a Function of Separation Between Work Stations. Data From Seven Laboratories. REF. Thomas J. Allen, Sept 97 MITSolan





Visualisation



Future of Communication?













Traveller Documents







130 Beam Transport Modules





Traveller Documents

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- Paper based system has been converted to database
- Will be starting to investigate best online database





Traveller Documents











Summary

- Having well defined interfaces makes life a lot easier
- Defining an agreed scope is key
- Flexibility & Collaboration
- Shared Risk
- Atlassian is a very useful tool
- Incorporating data exchange overheads
- Moving from design to production stage
- Long Term File Storage
 - Is Chess really the answer?









