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Working with PLM/CAD in the In-Kind collaboration at ESS

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Scope for working with In-Kind CAD/PLM integration at ESS

- The need for integrating the In-Kind partners in the ESS PLM platform was identified early in the project
- The CAD/PLM tools chosen at ESS was evaluated also for their ability to facilitate this
- Different levels of integration for In-Kind was defined early in the project
- The strategy for how to integrate with In-Kind is dependent on a number of variables more or less unique for each In-Kind partner

Early strategies for integrating In-Kind in ESS PLM

It was the intention at ESS to get the In-Kind partners integrated in the PLM work at an early stage for a number of reasons:

- Early 3D design coordination enables early detection of clashes and critical design areas
- Using same tools when possible enables better and faster design iterations
- Maintaining parametric design data enables traceability in all changes and saves large amounts of time on design changes. Minimises risks for ”lost in translation”
- Using one database for components and materials enables ESS to align components used, and save on stocks and materials management

ESS CAD/PLM tools for integration

ESS is using 3DExperience from Dassault Systémes as CAD/PLM platform, the ESS PLM ”flavour” is called CHESS(Collaboration Home ESS)

- Very suitable for distance/multi site design work
- Smart management of cache in off-site CAD workstations reduces data volume in design data transfers
- Web based PLM interface enables access from almost every where
- Works well with VPN or remote desktop
- After 4 years still no need for replication servers (may still happen if we are good)
- >1200 registered users at ESS and In-Kind today
- Back office support for In-Kind and suppliers that are not working in CHESS

Setting up In-Kind collaboration

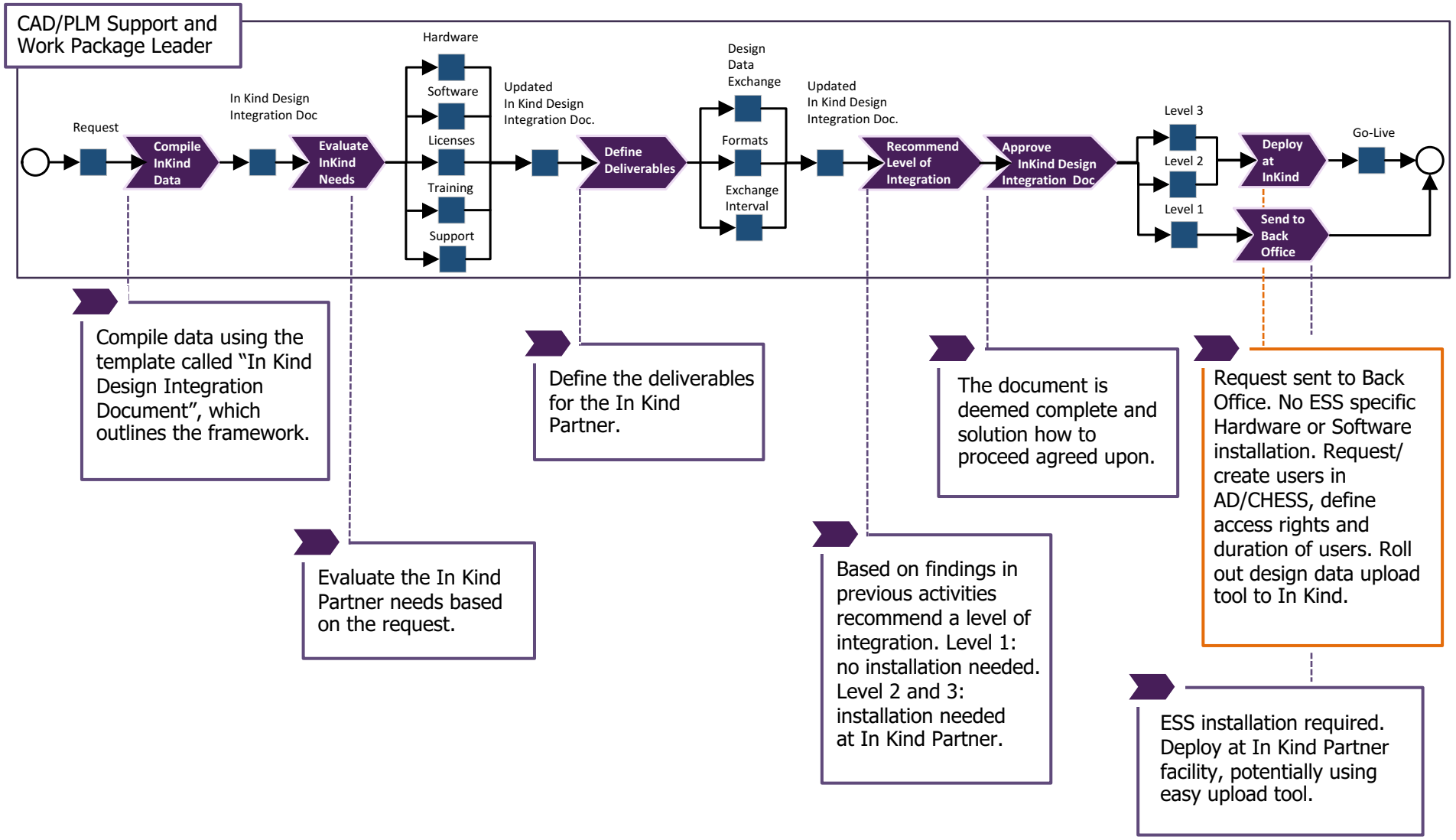
There is a workflow for how the work packages at ESS can get help with setting up the In-Kind exchange (in review).

1. Request made at ESS to PLM & Process Support for set up
2. Evaluation of work package /scope together with WP/WU leader at ESS with regards to size/scope/complexity of work package
3. Investigation of In-Kind partner(tools used today, allowed to use VPN, etc.)
4. Recommendation to level of integration(1,2 or 3, next slide) based on scope and discussions also with In-Kind
5. Practical integration set up (register users, VPN, licenses, training planning etc.)
6. Roll out to In-Kind partner/contacts at ESS and support

3 Levels of In-Kind integration

- ESS defines In-Kind connection to the CHESS PLM database in three different levels:
- Level 1:
  - Entry level of exchange where the IKC's is not connected to the PLM system, design data is delivered in native + neutral format to ESS and ESS Back office is point of contact for the actual exchange, and updates.
- Level 2:
  - Typically used for collaborators/suppliers with design responsibilities of a more complex or longer term nature. A limited number of users at the IKC, are connected to the PLM database and responsible for updating the design information and design coordination.
- Level 3:
  - For collaborators with the need to work concurrently with integration to the ESS design over a longer period of time. These will need to be connected to the CAD database or a replica database (multisite) to work directly connected, the same way as users at the ESS office in Lund.

In-Kind CAD/PLM set up procedure



Lessons learned on setting up PLM for In-Kind

Investigate the project prerequisites

- Requirements (scope)
  - Scope for CAD/PLM, what is appropriate to do in the PLM system, what can be managed outside
  - Organisational maturity / Mandate and support from management for PLM also in the Collaboration
  - Regulatory requirements
  - Size of organisations
  - Quality and other requirements
- Schedule
  - What if there is no In-Kind contracts in place? Ability to define deliverables in time etc.
  - When is the functions defined by the scope needed in the In-Kind exchange?
- Cost
  - Who is paying for what, when and for how long.

Challenges setting up PLM for In-Kind

- ”Political”
  Negotiating without contracts, influence on project scope etc.
- Technical
  Distance
  Infrastructure
  Etc.
- User related
  Tools already trained and used at In-Kind partner
  In-Kind’s supply chain
- Project related
  Schedule, is there time to set up.
  Cost, is there a budget at In-Kind for software/training/support etc.
  Scope, has deliveries been agreed upon?

History and decisions

2012

2014

2015

- 2012: ESS management decision for CATIA v6 and Enovia (CHESS) R2011x
  … Lack of adoption/progressive expansion of alternative tools…
- Extensive Review in November 2014
- December 2014: formal confirmation that **CATIA v6 and CHESS (ENOVIA v6) are <u>the</u> supported and standard ESS tools** for design and PLM.
- Jan 2015 go live with R2014x
- January 2015: CHESS update and instructions/organization for improved ease of use of design tools.
- February 2015: launch of Task Forces on "**PLM strategy**" and "**New Document Management System**" + "**Definition of PLM frontier**".
- May 2015: publication of Task Forces' recommendations (**ESS-0028997, -0032771, -0031676, -0033208)** + public seminar on June 12.
- June 2015: nomination of P. Rådahl as Leader for PLM + 2nd mandate to the PLM Task Force for refining scope, resources and plan.
- September 2015: Decision for FBS/LBS and a common ESS-tag, using RDS (**ESS-003652)**
- November 2015: Presentation of PLM Task Force recommendations to the ETB.
- November 2015: EMT decision-support to launch **Project Information Management** (PIM) and approval of Road-map (**ESS-0052040**).
- November 2015 Nomination of P. Rådahl as **ESS Project Information Manager**
- November 2015: Decision to complement PIM standard tools with the **Atlassian based collaboration tool** as standard for ESS.

PLM / PIM

The scope for PLM at ESS has been modified to include Project Information Management (PIM). This means site-wide design and operations data managment for all disciplines in all phases.

- Peter Rådahl is PIM Project Information Manager
- There is a team working with implementing PIM at ESS, lead by Karen Jonsdottir who is the Program Manager
- There is a PIM Content Manger, Joakim Meyer, who is tasked with helping the projects consolidating their design data in PIM
- There is a support team ready to help and train all users on how to work in the tools, also for the In-Kind partners

PIM Software's in use @ ESS

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PIM Tools		
Tool name	Purpose	User analysis
3D Experience platform / CHESS	PLM tool, used for lifecycle management and structuring all the different design data and documentation from the authoring tools and other inputs as well.	All ESS users involved in the design work of the machine or the facility. Users with both authoring reviewing and approving tasks in the different specifying describing or requirement disciplines.
3D Experience platform / Catia V6	Mechanical 3D design tool, used for design models & drawings, design coordination of 3D model of complete plant lay out EPL. Also for schematic pipe routing and cable ways space allocation.	Is used at ESS and in collaboration to, by all mechanical designers, lead engineers, work package managers and project leaders. Main tool for integration work of machine internal interfaces and machine-building interfaces as well.
Dymola	Simulation/Analysis tool, used for flow and systems simulation for different types of media and purposes in several divisions	System Engineers and designers working on media and distribution systems like cooling circuits
Ansys	Analysis tool for strength and stress simulations for the proper dimensioning of critical components and systems in the machine design primarily.	Used by mechanical engineers responsible for analysis and calculations on single components or complete systems.
ePLAN	Electrical design tool use for electrical circuits and systems design, electrical drawings and installations.	Electrical design engineers, lead engineers and work package managers responsible for electrical systems design.
Doors NG	Requirements mgmt. tool, used to coordinate align review, revise and manage the requirements on ESS on all appropriate levels.	All ESS users that are writing, gathering, reviewing or approving requirements and their lifecycles.
Cf design data software's (Navis works, Revit)	Buildings design done in other tools than machine design disciplines, it will be necessary to upkeep these tools also in operations to have building data under control for changes/repairs.	CF design coordinators and building maintenance, repair staff.
P&ID + Isometric drawings tools Aveva E3D	A tool for making piping and instrumentation diagrams and translating them into isometric drawings that can be used for installation of pipes and pipe systems.	System design engineers, lead engineers or lead scientists with responsibility for media systems design and installation.
(MRO system)	Used for tracking planning and performing maintenance, repair and overhauls of the facility.	All engineers and maintenance / operational staff needing to plan, perform and document MRO activities

CHESS We’re not done yet...

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As the ESS project progresses so does the tools

Keep in mind, the software platform configuration is just as green field as the rest of the project

Coming additions/features:

-New release 2016x

-Easy upload tool for In-Kind

-Functional / Location break down structures

-As built structures

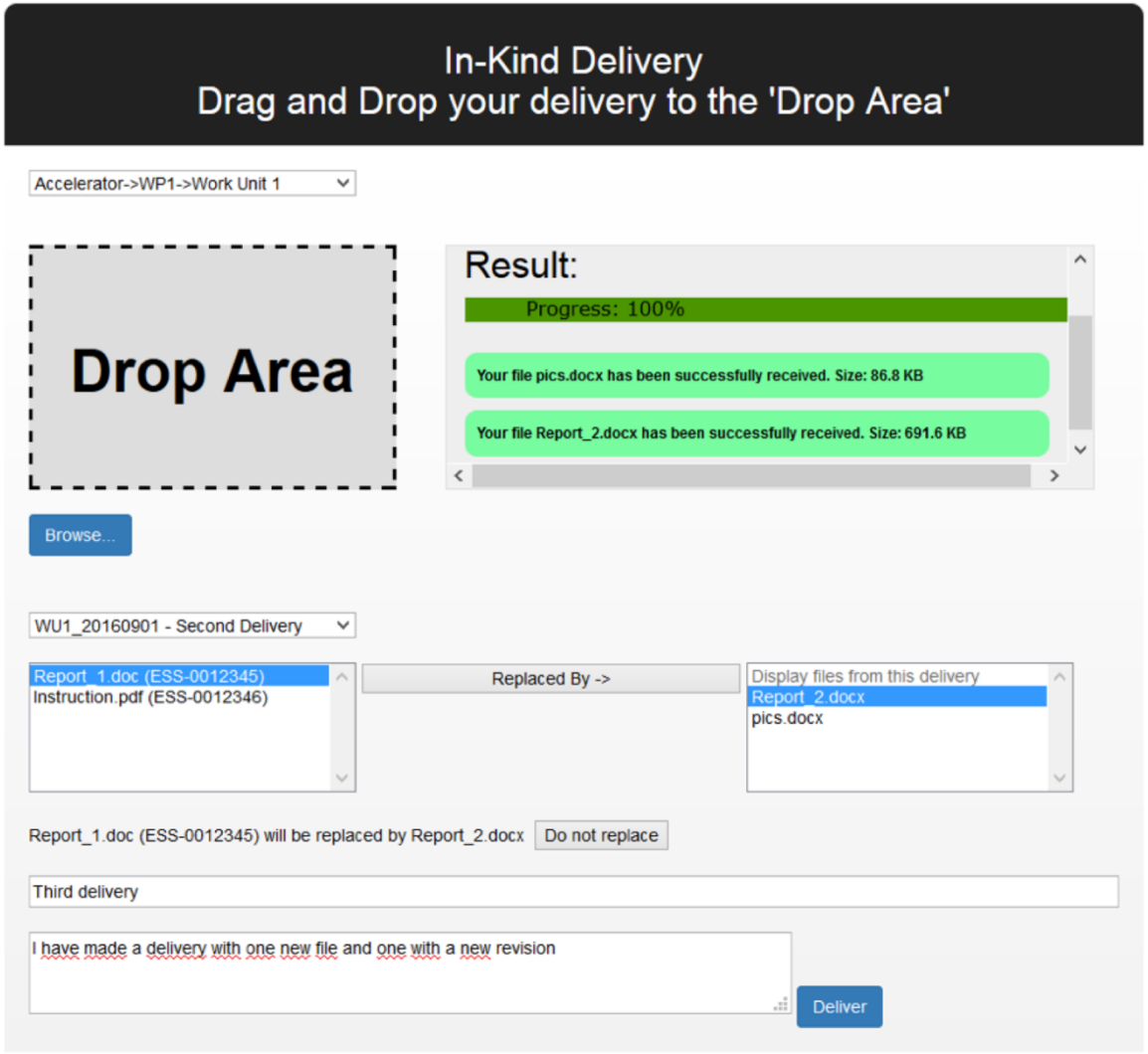
-User interface

-Embedded viewer

-And much more?

In-Kind are stakeholders, we want your contact and your input!

Easy upload tool, conceptual design



Easy upload tool, conceptual design

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Accept In-Kind Delivery
Choose appropriate type of document and destination for the delivered files

The delivery has been made to the work package/unit named **Work Package 1**

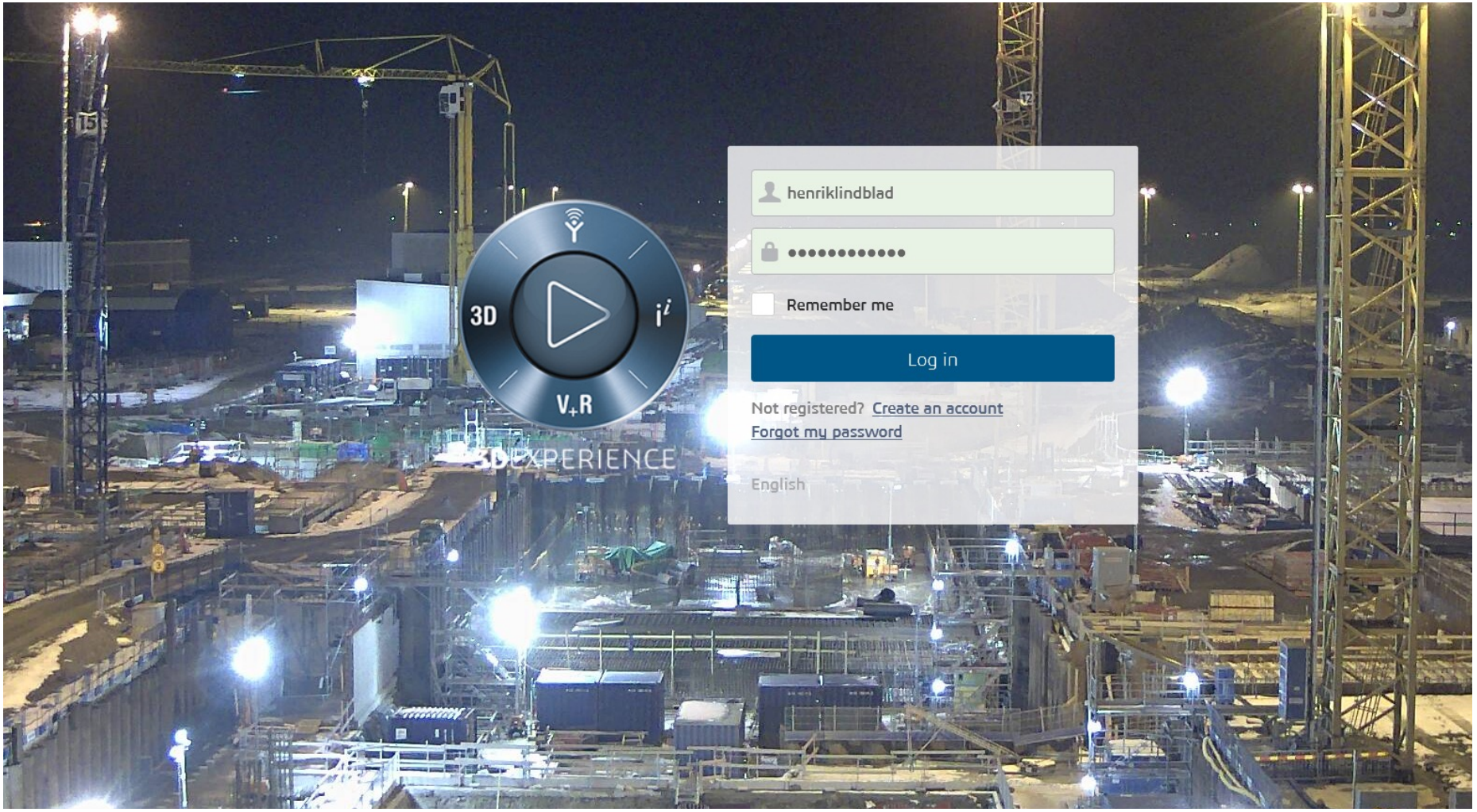
The delivery has been made by **Richard Smith** from **STFC Daresbury Laboratory**

ESS Document Id	Delivered file name	Document type	Policy	Delivery location
ESS-0012345	Report_2.docx	Report	Open	FBS: 1013 - Helium Injection System
-- NEW ---	pics.docx	Document type ▾	Policy ▾	Delivery location ▾

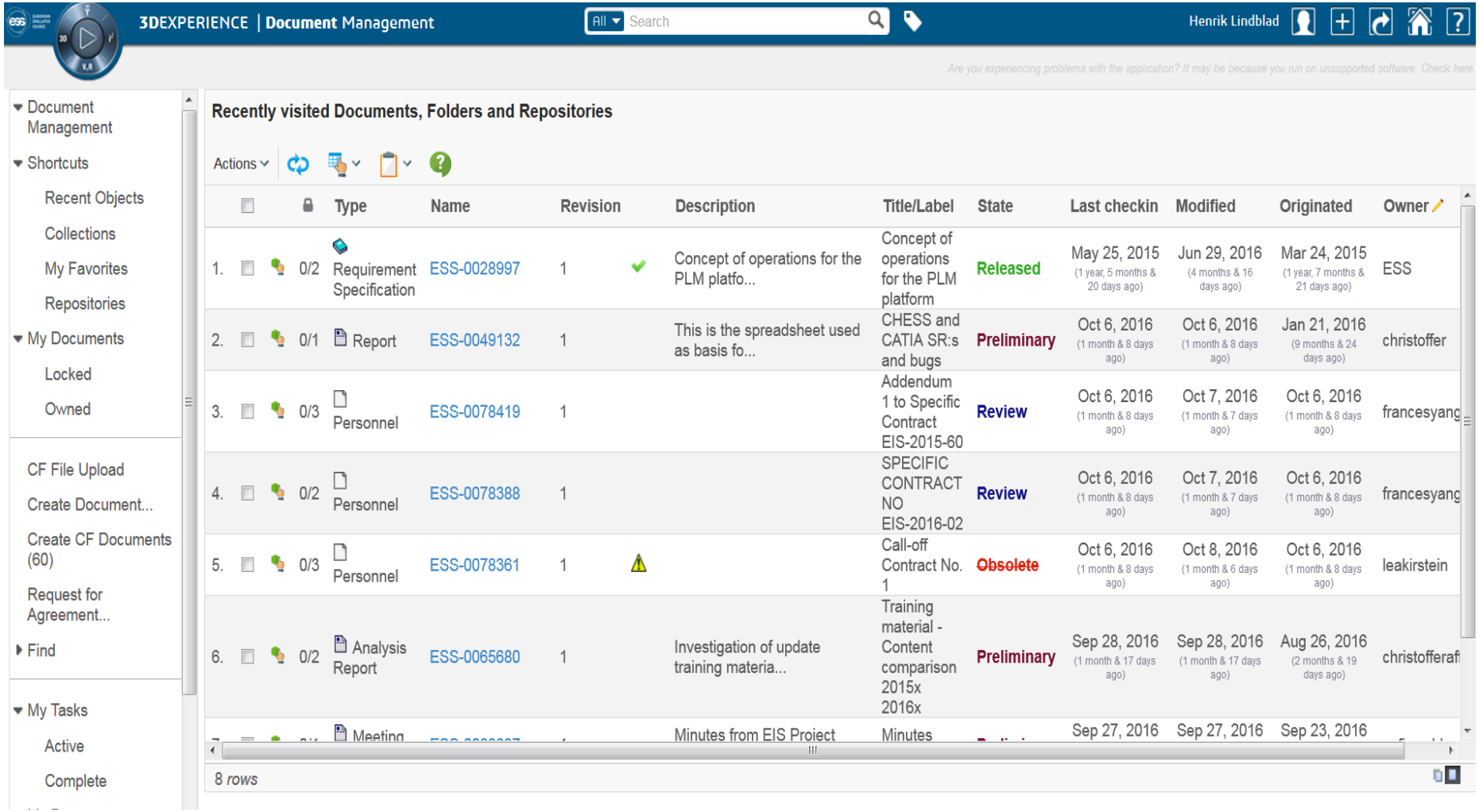
Write an accept/decline comment

Accept | Decline

New version 2016x



New version 2016x



		Type	Name	Revision	Description	Title/Label	State	Last checkin	Modified	Originated	Owner
1.	0/2	Requirement Specification	ESS-0028997	1	Concept of operations for the PLM platfo...	Concept of operations for the PLM platform	Released	May 25, 2015 (1 year, 5 months & 20 days ago)	Jun 29, 2016 (4 months & 16 days ago)	Mar 24, 2015 (1 year, 7 months & 21 days ago)	ESS
2.	0/1	Report	ESS-0049132	1	This is the spreadsheet used as basis fo...	CHESS and CATIA SR:s and bugs	Preliminary	Oct 6, 2016 (1 month & 8 days ago)	Oct 6, 2016 (1 month & 8 days ago)	Jan 21, 2016 (9 months & 24 days ago)	christoffer
3.	0/3	Personnel	ESS-0078419	1		Addendum 1 to Specific Contract EIS-2015-60	Review	Oct 6, 2016 (1 month & 8 days ago)	Oct 7, 2016 (1 month & 7 days ago)	Oct 6, 2016 (1 month & 8 days ago)	francesyang
4.	0/2	Personnel	ESS-0078388	1		SPECIFIC CONTRACT NO EIS-2016-02	Review	Oct 6, 2016 (1 month & 8 days ago)	Oct 7, 2016 (1 month & 7 days ago)	Oct 6, 2016 (1 month & 8 days ago)	francesyang
5.	0/3	Personnel	ESS-0078361	1		Call-off Contract No. 1	~~Obsolete~~	Oct 6, 2016 (1 month & 8 days ago)	Oct 8, 2016 (1 month & 6 days ago)	Oct 6, 2016 (1 month & 8 days ago)	leakirstein
6.	0/2	Analysis Report	ESS-0065680	1	Investigation of update training materia...	Training material - Content comparison 2015x 2016x	Preliminary	Sep 28, 2016 (1 month & 17 days ago)	Sep 28, 2016 (1 month & 17 days ago)	Aug 26, 2016 (2 months & 19 days ago)	christofferaf
		Meeting			Minutes from EIS Project	Minutes		Sep 27, 2016	Sep 27, 2016	Sep 23, 2016	

Thank you for listening!

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