



BERKELEY LAB

Bringing Science Solutions to the World



U.S. DEPARTMENT OF
ENERGY

Office of Science

CAD in SMP

The future of SCCAD | News and Added Features from CAD / EG Division

P. Mallon

11 February 2025



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Summary, Discussion, and
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Context

- SCCAD is overloaded, and contains numerous duplicate items with hard-to-decipher names
- Traceability is becoming more important in MDP
 - Reuse of existing parts is a tradition
 - Starting/stopping/restarting projects with new team members occurs occasionally
- Necessity of change management is variable in MDP but generally increasing
- wtParts opens the door to change management and creation of BOMs for projects that need it
This feature must be activated in SCCAD

Design work in SCCAD is mostly “Sandbox” design

- “Conceptual Assembly Layouts” (Sandboxes) are critical to our work
- These mock-ups should be followed and complemented by a single “official” released assembly that serves as a reference for all of SMP
- LBNL Creo Parametric Modeling Standards EG-1000-0824A §7.1.3 provides guidance

7.1.3. Conceptual Assembly Layout (CAL)

A **CAL** (**C**onceptual **A**ssembly **L**ayout) is a user specific Assembly that the user creates to assist in his / her design process and contains reference assemblies to start with, it is regarded as a Layout Assembly where preliminary concepts can be created and interference checked. User would create their Conceptual Design Assembly and/or Part within their CAL's until they are ready to Revise or Change Released Assemblies.

- The CAL gives you the great flexibility when using **Simplified Reps** to enhance clarity and to control what you would like visible for your design.
- The CAL does not need to be “**Checked In**”, but should be **Saved and Uploaded** to prevent data loss.
- The CAL can be Checked in if you ever want to Share it with another users
- The CAL will never be Released.

- Example: A sandbox of the released 36” header model may be created exclusively to test fit CCT6 structure, and named appropriately
- Other options exist, but lead to cluttered assembly perpetually in “working” state:
 - Representations
 - Groups

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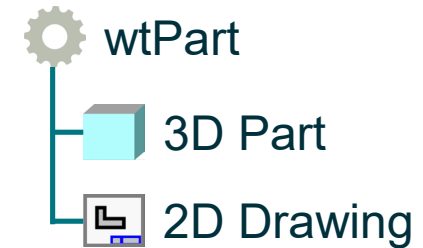
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Quick overview of wtParts (wt = Windchill Technology)

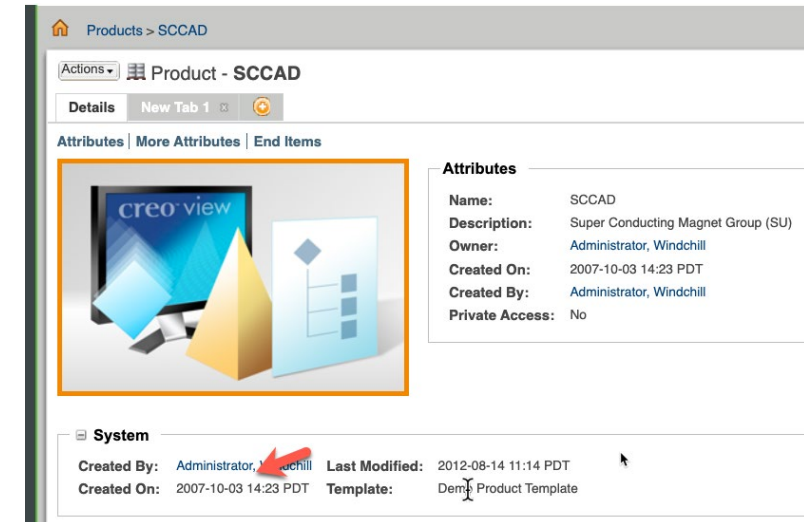
- Concept originated from Change Management II (CMII) in 1970s
- PTC implemented this concept into Windchill 7 (2000s)
- Implemented at the Lab in 2019, initially CAD-centric
 - Can also link MS Office, PDF, image, video, and zip files
- Primary benefits:
 - Allows implementation of Change Management
 - Links all related objects together
 - Offers controlled, managed BOMs, which allows reporting and serialization
 - CAD group is more likely to help us if wtParts is activated



Of the active BCMT Windchill Products, SCCAD is the only one not using wtParts by default

- SCCAD is the oldest active Windchill product at the lab (created 2007)
 - 6974 CAD objects, 4769 of which use the SU- prefix
 - 169 released CAD objects, as of 2 Dec. 2024
- *It is time to activate wtParts in SCCAD*

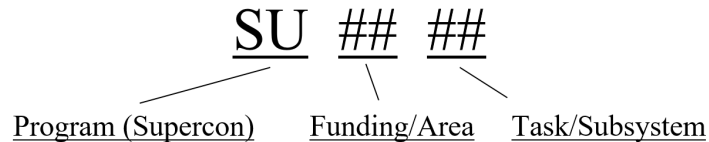
Windchill product	Unique ID / Category prefix	wtParts on?
High Field Test Facility Dipole	DF	Yes
LCLS-II	LC	Yes
MARS Demonstrator	MR	Yes
Superconducting Magnet Group (SCCAD)	SU	No
FRIB Magnets	SU	Yes
LARP QXF	SU	Yes
SC Gantry	SU	Yes
SMP Cabling Facility	SU	Yes
SCU R&D (ended 2017)	SX	No



Category code prefix is independent from Windchill product

Category Codes and DCC

- Six-digit category codes are used to organize drawings and documents (Eng'g notes, specifications, work instructions) in the DCC



- They are used as parameters in Creo Parametric that auto-fill the title blocks in drawings (as long as the template is used)

SU:

PROJECT NAME		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA			
DRW REF DOC	DRAWING UNITS	54: FRIB2 NB3SN ECR MAGNET 14: PRACTICE SEXTUPOLE COIL MIRROR MAGNET OUTER CYLINDER		Funding (Title1) Subsystem (Title2) Name (Detail_Title)	
EG-1000-0923	mm-kg-s				
SCALE	THIRD ANGLE				
1:7					
PRINT NOT TO SCALE					
SHEET SIZE	SHEET	CATEGORY CODE	LIFECYCLE STATE	ITEM NUMBER	REV
B	1 OF 1	SU5414	Released	SU-1018-5005	A

DOCUMENT CONTROL CENTER
LAWRENCE BERKELEY NATIONAL LABORATORY

SU - SUPERCONDUCTING MAGNET PROGRAM

Code	SUPERCONDUCTING MAGNET PROGRAM	Items
SU - 00	SMP - GENERAL	2 items
SU - 01	SMP - DOCUMENTATION	1 item
SU - 10	SMP - FACILITIES AND EQUIPMENT	17 items
SU - 11	SMP - LARGE MAGNETS	4 items
SU - 12	SMP - HIGH FIELD RESEARCH	4 items
SU - 20	SMP - OPERATIONS	2 items
SU - 22	SMP - CONDUCTOR AND CABLE	8 items
SU - 23	SMP - TECHNOLOGY DEVELOPMENT	4 items
SU - 24	SMP - TECHNOLOGY TRANSFER	1 item
SU - 30	SMP - LARP COLLABORATION	1 item
SU - 31	SMP - LARP MODEL MAGNETS	12 items
SU - 32	SMP - LARP CABLE DEVELOPMENT	1 item
SU - 33	LARP QXF	14 items
SU - 40	SMP - SPECIAL PROJECTS	1 item
SU - 41	SMP - ECR SOURCES	2 items
SU - 50	WORK FOR OTHERS	1 item
SU - 51	FRIB-ECR MAGNET DESIGN STUDY	5 items
SU - 52	SUPERCONDUCTING GANTRY MAGNET	12 items
SU - 53	FRIB ECR MAGNET	4 items
SU - 54	FRIB2 NB3SN ECR MAGNET	12 items
SU - 55	HIGH RIGIDITY SPECTROMETER MAGNETS	11 items
SU - 60	SMP - MAGNET TEST FACILITY UPGRADE	2 items

Category Codes and Windchill

Name ↑	Description
<input type="checkbox"/> Engineering Metrology	For the Engineering Metrology group
<input type="checkbox"/> ePIC Detector	
<input type="checkbox"/> FEL	Free Electron Laser (FEL) Light Source (FL)
<input type="checkbox"/> FRIB Magnets	FRIB Magnets (SU)
<input type="checkbox"/> GRETA	Gamma-Ray Energy Tracking Array
<input type="checkbox"/> HFTFD	High Field Test Facility Dipole
<input type="checkbox"/> HIFAR	Heavy Ion Fusion Projects (58)
<input type="checkbox"/> LARP QXF	LARP QXF (SU)
<input type="checkbox"/> LBNL	General Engineering (AA)
<input type="checkbox"/> LBNL Template Prod...	LBNL Template Product - IN PROGRESS
<input type="checkbox"/> LCLS-II	Linac Coherent Light Source II
<input type="checkbox"/> LHC	Large Hadron Collider (LH)
<input type="checkbox"/> LZ	LZ EXPERIMENT (LZ)
<input type="checkbox"/> MARS-D	
<input type="checkbox"/> Model Manager Vault	Data in this Product are Locked, they are updated in Creo Elements and Model Manager and simply Read only .
<input type="checkbox"/> Molecular Foundry	Molecular Foundry (MF)
<input type="checkbox"/> PHYSICS	PHYSICS DEPARTMENT (PH)
<input type="checkbox"/> PXIE RFQ	Project X Injector Experiment RFQ (PX)
<input type="checkbox"/> RHIC	Relativistic Heavy Ion Collider (RH)
<input type="checkbox"/> SC Gantry	SUPERCONDUCTING MAGNET DEVELOPMENT FOR PROTON AND HEAVY ION THERAPY GANTRIES (SU)
<input type="checkbox"/> SCCAD	Super Conducting Magnet Group (SU)
<input type="checkbox"/> SCU R&D	Superconducting Undulator R&D (SX)
<input type="checkbox"/> SMP Cabling Facility	SMP Cabling Facility



SU - SUPERCONDUCTING MAGNET PROGRAM

[Click here to view all category codes for this project](#)

Code	SUPERCONDUCTING MAGNET PROGRAM	Items
SU - 00	SMP - GENERAL	2 items
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SU - 31	SMP - LARP MODEL MAGNETS	12 items
SU - 32	SMP - LARP CABLE DEVELOPMENT	1 item
SU - 33	LARP QXF	14 items
SU - 40	SMP - SPECIAL PROJECTS	1 item
SU - 41	SMP - ECR SOURCES	2 items
SU - 50	WORK FOR OTHERS	1 item
SU - 51	FRIB-ECR MAGNET DESIGN STUDY	5 items
SU - 52	SUPERCONDUCTING GANTRY MAGNET	12 items
SU - 53	FRIB ECR MAGNET	4 items
SU - 54	FRIB2 NB3SN ECR MAGNET	12 items
SU - 55	HIGH RIGIDITY SPECTROMETER MAGNETS	11 items
SU - 60	SMP - MAGNET TEST FACILITY UPGRADE	2 items

- Category codes and Windchill products are independent
 - SU (SMP) numbers/projects are used outside of the SCCAD Windchill product
 - Therefore, SU numbers can be used in a potential new “SCCAD2” product

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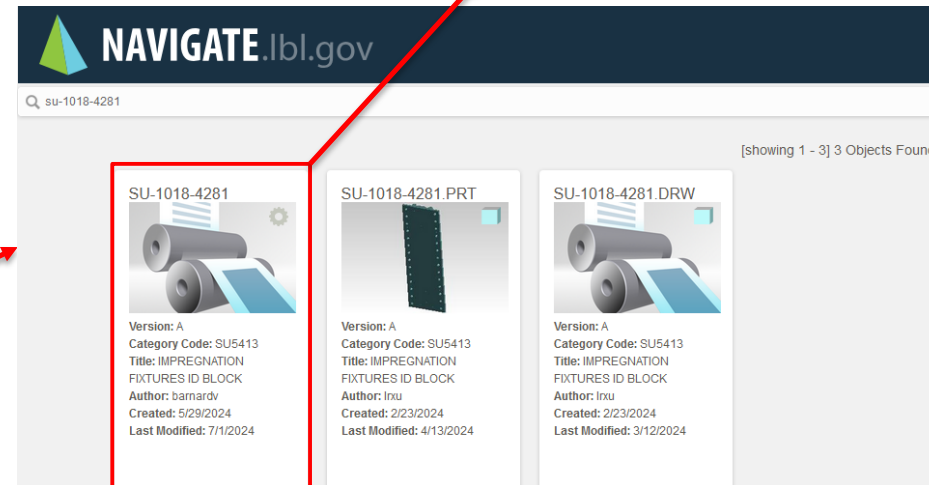
News from EG / CAD

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Summary, Discussion, and
Action Items

Navigate.lbl.gov and QR Codes

- Links to:
 - Windchill object
 - DCC page
 - .PRT and .DRW objects



PROJECT NAME SUPERCONDUCTING MAGNET PROGRAM		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA					
DRW REF DOC EG-1000-0923	DRAWING UNITS mm-k-g-s	FRIB2 NB3SN ECR MAGNET SEXTUPOLE COIL FABRICATION TOOLING IMPREGNATION FIXTURES ID BLOCK					
SCALE 1:2 PRINT NOT TO SCALE	THIRD ANGLE 						
SHEET SIZE E	SHEET 1 OF 1	CATEGORY CODE SU5413	LIFECYCLE STATE Released	ITEM NUMBER SU-1018-4281	REV A		

Navigate.lbl.gov and QR Codes

NAVIGATE.lbl.gov

SU-1018-4281 [A.5, RELEASED]

BASIC INFO	ATTRIBUTES	WJO	WHERE USED	REFERENCE	QR CODE
KEY		VALUE			
WINDCHILL CONTAINER		FRIB Magnets [Product]			
REVIEWED BY		PMALLON @ 07/08/2024			
RELEASED BY		TSHEN @ 07/08/2024			
CATEGORY CODE		SU5413			
DRAWING TYPE		DETAIL			
CREATED BY		BARNARDV @ 05/29/2024			
LAST MODIFIED		LRXU @ 07/06/2024			

NAVIGATE.lbl.gov

Q su-1018-4281

[showing 1 - 3] 3 Objects Found

SU-1018-4281

Version: A
Category Code: SU5413
Title: IMPREGNATION FIXTURES ID BLOCK
Author: barnardv
Created: 5/29/2024
Last Modified: 7/1/2024

SU-1018-4281.PRT

Version: A
Category Code: SU5413
Title: IMPREGNATION FIXTURES ID BLOCK
Author: lrxu
Created: 2/23/2024
Last Modified: 4/13/2024

SU-1018-4281.DRW

Version: A
Category Code: SU5413
Title: IMPREGNATION FIXTURES ID BLOCK
Author: lrxu
Created: 2/23/2024
Last Modified: 3/12/2024

PROJECT NAME		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY					
SUPERCONDUCTING MAGNET PROGRAM		UNIVERSITY OF CALIFORNIA					
DRW REF DOC	DRAWING UNITS	FRIB2 NB3SN ECR MAGNET SEXTUPOLE COIL FABRICATION TOOLING IMPREGNATION FIXTURES ID BLOCK					
EG-1000-0923	mm - k g - s						
SCALE	THIRD ANGLE						
1 : 2							
PRINT NOT TO SCALE							
SHEET SIZE	SHEET	CATEGORY CODE	LIFECYCLE STATE	ITEM NUMBER	REV		
E	1 OF 1	SU5413	Released	SU-1018-4281	A		

Navigate.lbl.gov and QR Codes

BASIC INFO	ATTRIBUTES	WJO	WHERE USED	REFERENCE	QR CODE
Order Number	Ordered By	Ordered At	Status	Cost Not to Exceed	Estimate
J30359	Philip Mallon	2024-07-08 16:11:42	ACTIVE	9999.00	


Q su-1018-4281 [showing 1 - 3] 3 Objects Found

Object Name	Version	Category Code	Title	Author	Created	Last Modified
SU-1018-4281	A	SU5413	IMPREGNATION FIXTURES ID BLOCK	barnardv	5/29/2024	7/1/2024
SU-1018-4281.PRT	A	SU5413	IMPREGNATION FIXTURES ID BLOCK	lrxu	2/23/2024	4/13/2024
SU-1018-4281.DRW	A	SU5413	IMPREGNATION FIXTURES ID BLOCK	lrxu	2/23/2024	3/12/2024

PROJECT NAME		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA			
SUPERCONDUCTING MAGNET PROGRAM					
DRW REF DOC	DRAWING UNITS	FRIB2 NB3SN ECR MAGNET			
EG-1000-0923	mm-k g-s	SEXTUPOLE COIL FABRICATION TOOLING			
SCALE	THIRD ANGLE	IMPREGNATION FIXTURES ID BLOCK			
1:2					
PRINT NOT TO SCALE					
SHEET SIZE	SHEET	CATEGORY CODE	LIFECYCLE STATE	ITEM NUMBER	REV
E	1 OF 1	SU5413	Released	SU-1018-4281	A

Navigate.lbl.gov and QR Codes

NUMBER	VERSION	NAME	LAST MODIFIED	STATE
SU-1018-4281	A.5	IMPREGNATION FIXTURES ID BLOCK	2023-06-13 12:06 PDT	RELEASED
SU-1014-4282	A.6 (Design)	FRIB2 REACTION FIXTURES ASSEMBLY	08/12/2024	WORKING
SU-1018-4282	A.15 (Design)	FRIB2 IMPREGNATION FIXTURES ASSEMBLY	08/07/2024	WORKING

PROJECT NAME SUPERCONDUCTING MAGNET PROGRAM		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA			
DRW REF DOC EG-1000-0923	DRAWING UNITS mm - kg - s	FRIB2 NB3SN ECR MAGNET SEXTUPOLE COIL FABRICATION TOOLING IMPREGNATION FIXTURES ID BLOCK			
SCALE 1:2	THIRD ANGLE 	CATEGORY CODE SU5413	LIFECYCLE STATE Released	ITEM NUMBER SU-1018-4281	REV A
SHEET SIZE E	SHEET 1 OF 1				

Q su-1018-4281 [showing 1 - 3] 3 Objects Found

Object Name	Version	Category Code	Title	Author	Created	Last Modified
SU-1018-4281	A	SU5413	IMPREGNATION FIXTURES ID BLOCK	barnardv	5/29/2024	7/1/2024
SU-1018-4281.PRT	A	SU5413	IMPREGNATION FIXTURES ID BLOCK	lrxu	2/23/2024	4/13/2024
SU-1018-4281.DRW	A	SU5413	IMPREGNATION FIXTURES ID BLOCK	lrxu	2/23/2024	3/12/2024

Navigate.lbl.gov and QR Codes

NUMBER	VERSION	NAME	ASSOCIATION	LAST MODIFIED	STATE
SU-1018-4281	A.5	IMPREGNATION FIXTURES ID BLOCK		06-JUL-24	RELEASED
SU-1018-4281.DRW	A.7	IMPREGNATION FIXTURES ID BLOCK	CALCULATED	2024-07-05T17:42:55-07:00	RELEASED
SU-1018-4281.PRT	A.11	IMPREGNATION FIXTURES ID BLOCK	OWNER	2024-07-05T17:42:55-07:00	RELEASED

Q su-1018-4281 [showing 1 - 3] 3 Objects Found

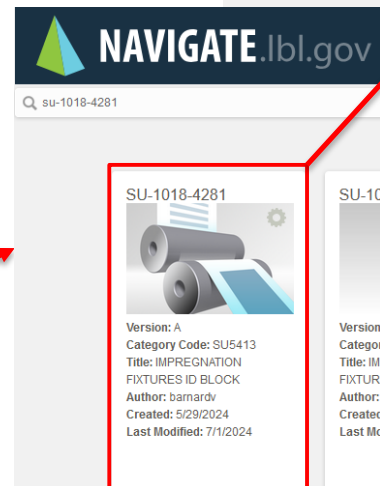
Object ID	Thumbnail	Version	Category Code	Title	Author	Created	Last Modified
SU-1018-4281		A	SU5413	IMPREGNATION FIXTURES ID BLOCK	barnardv	5/29/2024	7/1/2024
SU-1018-4281.PRT		A	SU5413	IMPREGNATION FIXTURES ID BLOCK	lrux	2/23/2024	4/13/2024
SU-1018-4281.DRW		A	SU5413	IMPREGNATION FIXTURES ID BLOCK	lrux	2/23/2024	3/12/2024

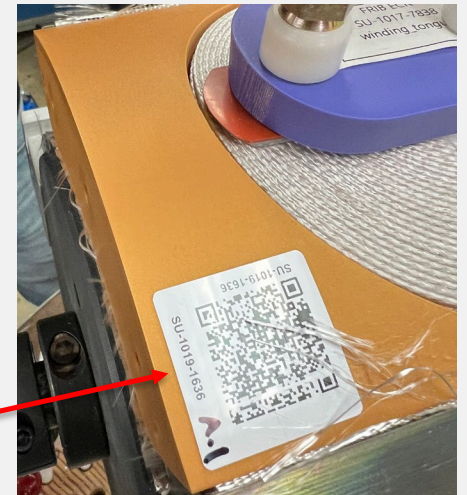
PROJECT NAME		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA			
SUPERCONDUCTING MAGNET PROGRAM					
DRW REF DOC	DRAWING UNITS	FRIB2 NB3SN ECR MAGNET SEXTUPOLE COIL FABRICATION TOOLING IMPREGNATION FIXTURES ID BLOCK			
EG-1000-0923	mm-k g-s				
SCALE	THIRD ANGLE				
1:2					
PRINT NOT TO SCALE					
SHEET SIZE	SHEET	CATEGORY CODE	LIFECYCLE STATE	ITEM NUMBER	REV
E	1 OF 1	SU5413	Released	SU-1018-4281	A

Navigate.lbl.gov and QR Codes

- Code can be printed with label maker or laser-etched on physical part

PROJECT NAME SUPERCONDUCTING MAGNET PROGRAM		ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY UNIVERSITY OF CALIFORNIA					
DRW REF DOC EG-1000-0923	DRAWING UNITS mm - kg - s	FRIB2 NB3SN ECR MAGNET SEXTUPOLE COIL FABRICATION TOOLING IMPREGNATION FIXTURES ID BLOCK					
SCALE 1:2 PRINT NOT TO SCALE	THIRD ANGLE 						
SHEET SIZE E	SHEET 1 OF 1	CATEGORY CODE SU5413	LIFECYCLE STATE Released	ITEM NUMBER SU-1018-4281	REV A		





Google Drive integration into Windchill

The screenshot displays the Windchill Administrator interface. On the left, the 'Details' tab is active for a document titled 'Document - AL-1700-1360, Jan 2025 User Meeting Demo of'. The 'General' section shows document metadata, and the 'System' section shows configuration details. A modal window titled 'Google Doc Check-IN' is overlaid on the right, featuring a green 'Google Doc Check-IN' button and a yellow 'Google Doc UNDO Check-OUT' button. Below these buttons is a 'LOADING' indicator and the text 'Checking In Document ...'. An 'Action log' section is visible, listing document permissions and Windchill/Google actions. A blue bar at the bottom of the modal contains a help link: 'Help with Google Docs & Windchill Integration'.

General			
Name:		Checked By:	
Status:		Released By:	
Primary Content:		Obsolleted By:	
Modified By:			
Last Modified:			
PRINT_NUM:			
State:			
Change Management Enabled:			
Google Link:			

System			
Description:		State:	Working - Locked - Checked Out
Format Name:	NONE	Location:	/ALS-U
Context:	ALS-U	Life Cycle Template:	Default
Life Cycle Template:	LBNL Standard	Team Template:	Default
Created By:	Administrator, Windchill	Modified By:	Administrator, Windchill
Created On:	2025-01-13 14:21 PST	Last Modified:	2025-01-13 14:23 PST

- Check in/check out and promotion features are in development
- Documents retain the usual Google features
 - Simultaneous editing
- Templates under development include Windchill cover sheets

Commercial off-the-shelf (COTS) part library is becoming well developed

- This allows us to keep our own products (SCCAD, SC Gantry, FRIB Magnets, HFTFD, etc.) free of COTS parts by keeping them in the Windchill “Hardware” library
- This is largely hardware, but can be any commercially available part
- We can add to the library quickly (Ryan is our COTS expert)
- A search utility exists

The screenshot displays the Windchill software interface. On the left, the 'Libraries' section shows a list of libraries, with 'Hardware' highlighted in red. The 'Hardware' library is described as 'Windchill Hardware Library' and was last modified on 2017-10-27 14:57 PDT by Administrator, Windchill. A red arrow points from this library entry to the main content area.

The main content area shows the 'Folder Contents' for the 'CAD DOCUMENTS' folder. The table below lists the contents of this folder:

Template	Name	Number	Version	File Name	State	Last Modified
	BASELINES					2024-10-14 11:42 PDT
	UNISTRUT.SLOTTED.SGL.TALL, 1-5/8 X 2-7/16, ...	HW-1001-5102	A.4 (Design)		Released	2024-12-02 12:46 PST
	UNISTRUT.SLOTTED.SGL.TALL, 1-5/8 X 2-7/16, ...	HW-1001-5102.PRT	A.2	hw-1001-5102.prt	Released	2024-12-02 12:46 PST
	DATASHEET FOR ATKORE P5500 WT PG	HW-1001-5102	A.2	DATASHEET FOR ATKORE P5500 WT PG...	Released	2024-12-02 12:40 PST
	RACEWAY, 4" X 4" X 120", STEEL	HW-1001-0902	A.9 (Design)		Released	2024-11-27 12:02 PST
	RACEWAY, 4" X 4" X 120", STEEL	HW-1001-0902.PRT	A.6	hw-1001-0902.prt	Released	2024-11-27 12:02 PST
	DATASHEET FOR MCMMASTER-CARR 93475A230	HW-1001-5094	A.1	DATASHEET FOR MCMMASTER-CARR 934...	Released	2024-11-26 13:48 PST
	WASHER, FLAT, M4 X 0.9MM THK, 18-8 SST	HW-1001-5094	A.3 (Design)		Released	2024-11-26 13:48 PST
	WASHER, FLAT, M4 X 0.9MM THK, 18-8 SST	HW-1001-5094.PRT	A.1	hw-1001-5094.prt	Released	2024-11-26 13:46 PST
	SCREW, SHCS, PT, M4X0.7 X 40MM LG, 316 SS...	HW-1001-5091	A.3 (Design)		Released	2024-11-26 13:37 PST
	DATASHEET FOR MCMMASTER-CARR 92290A184	HW-1001-5091	A.1	DATASHEET FOR MCMMASTER-CARR 922...	Released	2024-11-26 13:36 PST
	SCREW, SHCS, PT, M4X0.7 X 40MM LG, 316 SS...	HW-1001-5091.PRT	A.1	hw-1001-5091.prt	Released	2024-11-26 13:31 PST
	SCREW, SHCS, PT, M8X1.25 X 85MM LG, 18-8 S...	HW-1001-5088	A.3 (Design)		Released	2024-11-26 13:19 PST
	DATASHEET FOR MCMMASTER-CARR 91292A281	HW-1001-5088	A.1	DATASHEET FOR MCMMASTER-CARR 912...	Released	2024-11-26 13:18 PST
	SCREW, SHCS, PT, M8X1.25 X 85MM LG, 18-8 S...	HW-1001-5088.PRT	A.1	hw-1001-5088.prt	Released	2024-11-26 13:13 PST
	WASHER, FLAT, M8 X 1.8MM THK, 18-8 SST	HW-1001-5085	A.4 (Design)		Working	2024-11-26 13:05 PST
	DATASHEET FOR MCMMASTER-CARR 93475A270	HW-1001-5085	A.1	DATASHEET FOR MCMMASTER-CARR 934...	Working	2024-11-26 13:04 PST
	WASHER, FLAT, M8 X 1.8MM THK, 18-8 SST	HW-1001-5085.PRT	A.2	hw-1001-5085.prt	Working	2024-11-26 13:02 PST
	DATASHEET FOR MCMMASTER-CARR 91292A085	HW-1001-5082	A.1	DATASHEET FOR MCMMASTER-CARR 912...	Released	2024-11-26 12:50 PST
	SCREW, SHCS, PT, M8X1.25 X 75MM LG, 18-8 S...	HW-1001-5082	A.3 (Design)		Released	2024-11-26 12:50 PST
	SCREW, SHCS, PT, M8X1.25 X 75MM LG, 18-8 S...	HW-1001-5082.PRT	A.1	hw-1001-5082.prt	Released	2024-11-26 12:46 PST
	WIRE, GROUNDING, 2 GAUGE, COPPER, ASTM...	HW-1001-5065	A.3 (Design)		Released	2024-11-25 12:46 PST

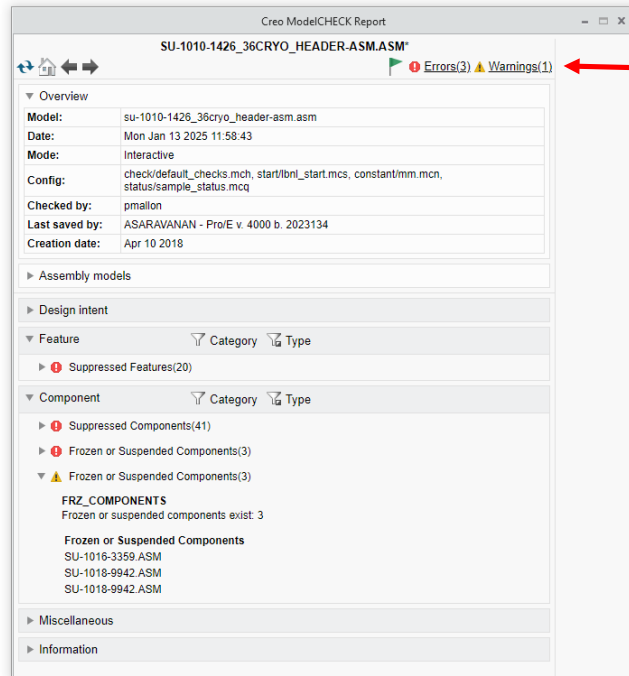
CAD group at LBNL has been “promoted” to department level entity

- Drawing “Checkers” Bill Holmquist & Gordon Lyall provide last check in all ALS-U drawings
 - This could become a required part of promotion process for the entire lab
- We could go either of two ways:
 - Stop releasing parts/drawings
 - Embrace the opportunity to create models/drawings that reflect what we need



CAD Department enforcing compliance with modeling standards effective Feb. 2025

- Creo Parametric and Windchill BOM performance issues in ALS-U are prompting this change, which will affect Creo Parametric users Lab-wide.



[level1-engineering] Action Required: CAD Modeling Issues & ModelCHECK Compliance Inbox x



LBNL Engineering Division <engineering@lbl.gov>

3 Jan 2025, 09:37 (10 days ago)



to level1-engineering ▾

Sent on behalf of:

Samantha Gholba
CAD Department Head

Fabrice Matichard
ME Department Head & ALS-U Chief Engineer

Dear CAD users,

We have been experiencing Creo Parametric performance issues and Windchill Bill of Material [BOM] issues due to CAD modeling standards & rules not being followed. This was discussed at our [CAD User meeting on 12/09/2024](#), during which we requested to not ignore ModelCHECK warnings and errors. The CAD team and I would like to thank all of you who are already addressing these ModelCheck warnings promptly.

In addition to this communication and training effort, we are also going to implement more rigorous rules:

- It will soon NOT be possible to promote any data if it has any ModelCHECK errors. This shall become effective in February 2025, and we'll send a notification with the exact date.

- We will implement a transition period of about four weeks, starting the first week of January.

- During that transition period, we ask everyone to take the habit to address any issues that they see while working on objects.

- Note: it's possible that the last person who modified a part did not create the issue, BUT the issue must be addressed, so if you modify an object, SAVE it and ModelCHECK points out an issue, you need to fix it before you check it back into Windchill.

- To further facilitate the transition period, we are pulling Reports weekly on Windchill objects to ensure resolution of modeling issues.

- [Here](#) is a table report that shows only data with errors from 12/09/2024 - 12/18/2024

- Please check for your name and address the corresponding errors

- We will add a new tab to this Report every week

- Finally, we have created a [general help page on EPG](#) to provide guidance and help on how to address these modeling issues. We will continually add to this resource until we have good examples of all the relevant topics. Please reach out to the CAD team if there are some modeling issues that you can't resolve.


Thank you for your help and attention in this matter,

The Engineering CAD Team
Fabrice Matichard, ME Dept Head & ALS-U Chief Engineer


CAD Department enforcing compliance with modeling standards effective Feb. 2025

Model Check Errors this Week 02/10/2025 Inbox x

Summarise this email

 **cad@lbl.gov**
to me, cad

13:43 (29 minutes ago) ☆ ↶ ⋮

 ENGINEERING CAD

Model Check Errors this Week 02/10/2025

Mallon, Philip has 4 model(s) with a combined 11 error(s), please look at the models below. Please know that you will NOT be able to promote the following objects that contain ModelCheck errors, and in the future models with errors will be restricted from Check In until they are rectified.

Type	Number	Version	Name	Product	State	# Errors	Last Modified
Assembly	SU-1017-2981.ASM	A.39	PROTOTYPE IMPREGNATED SEXTUPOLE COIL	FRIB Magnets	Working	3	2025-02-06 17:15 PST
CAD Part	SU-1017-8824_GUIDE-BLK0_COPY.PRT	A.1	GUIDE-BLK0_SANDBOX-COPY.PRT	FRIB Magnets	Working	3	2025-02-06 16:32 PST
Assembly	SU-1019-2964.ASM	A.1	SU-1017-2981_SANDBOX-COPY	FRIB Magnets	Working	3	2025-02-06 16:32 PST
CAD Part	SU-1017-3162_COPY.PRT	A.1	SU-1017-3162_SANDBOX-COPY.PRT	FRIB Magnets	Working	2	2025-02-06 16:32 PST

Why am I receiving this notice? The Engineering division, the CAD Dept and our strategic scientific partners have committed to raising the model quality standards to ensure future performance, model fidelity and BOM accuracy. We need *your* help to ensure this commitment to quality is realized.

For information on how to fix / rectify these model errors, please review the following resources:

- Link to EPG Resources on [How to resolve Model Check conflicts](#)
- Link to [User Meeting Training Series Recordings](#) which cover a lot of these topics
- Or email cad@lbl.gov for any questions on how to resolve

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Summary, Discussion, and
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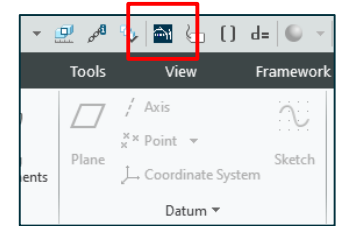
Summary: Impacts and Action to Take

- Using wtParts and releasing more parts is a natural progression
 - It may not be applicable/desirable for all projects
 - We will not use all aspects of wtParts – this is too heavy for MDP
 - Our designers are already taking advantage of this system in other contexts
- Formally releasing parts for fabrication:
 - Enforces rigor and helps catch mistakes
 - Helps us trace our property and what's been purchased
 - Protects us during procurement
 - Reduces the risk of needing rework
- **Actions:**
 - Turn on wtParts in SCCAD
 - Be more deliberate and organized with our use of sandboxing
 - Release parts before fabrication and revise before re-work
 - Consider requesting a “SCCAD2” product for new MDP projects, keeping SU- numbers and category codes

Thank You

Bonus: best practice reminders for efficient promotion

- Always use the LBNL template (either metric or imperial) when creating new parts
 - Always create a new drawing using the LBNL parameters button from the .prt file
- Part numbers must conform to the SU-XXXX-XXXX format, and names must be names
- External references are not allowed and will prevent promotion starting in February
- Do not use duplicate assemblies (only one “official” assembly)
 - “Sandbox” assembly copies for mockup should be labeled as such and are not meant to be released (see EG-1000-0824A §7.1.3)
 - In check-in comments, note which version of original was used (e.g. A.37, B.17)
- wtPart must created if it doesn’t already exist, and must be in promotion package
- Use custom check-in to log your changes in the comment box
- Use commercial off-the-shelf (COTS) parts from the HW- library to keep our Windchill products uncluttered
- In assembly drawings, use mfr./vendor BOM to cross-reference vendor part with HW- number



4	6	HW-1001-4645	NUT, HEX, M10X1.5 X 8MM THK, 18-8 SST, DIN 934, ISO 4032	SSTL_18-8	MCMaster-CARR	91828A415
3	6	HW-1001-4642	WASHER, FLAT, M10 NOM. ID X 20MM OD X 2.2MM THK, 18-8 SST	SSTL_18-8	MCMaster-CARR	93475A280
2	3	SU-1018-5018	MIRROR MAGNET YOKE TIE ROD, M10 X 949	SSTL_316	MCMaster-CARR	94185A165
1	9	SU-1018-5001	MIRROR MAGNET BOTTOM YOKE	STEEL_1018_CARBON		
ITEM	QTY	ITEM NO.	DESCRIPTION	MATERIAL	MANUFACTURER	MANUFACTURER PART NO