



# CADENCE ALLEGRO TEAM DESIGN OPTION IN A WINDCHILL ENVIRONMENT

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# AGENDA



- Global Product Development Challenges
- ECAD Design Data Management
- Team Design Authoring and Data Management Challenges
- Understanding Team Design
- Benefits of TDO to Orbital Sciences
- Required Infrastructure
- **Demo**
- Summary
- Q&A



# PRESENTER INTROS



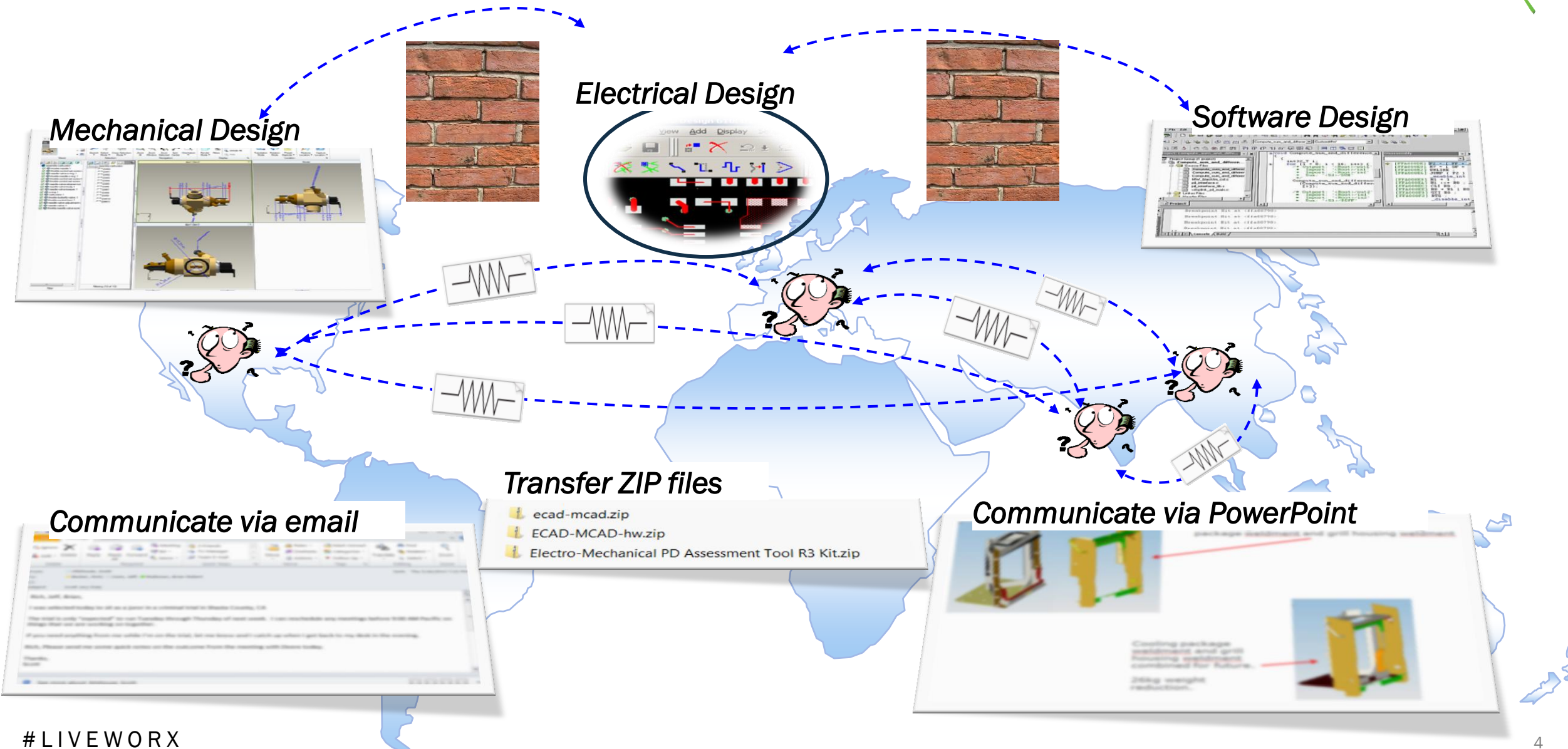
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Sandra Humphrey  
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Design Automation Analyst  
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- Linda is a principal support manager for the PTC ECAD tools including TDO, ADW Gateway, PTC Windchill Workgroup Manager, ECAD-MCAD Collaboration and Creo View ECAD
- Sandra has been with Fujitsu Network Systems for 10+ years, She is currently in charge of working on enterprise-wide data integration between Windchill, Creo, Cadence and other engineering systems.

# GLOBAL PRODUCT DEVELOPMENT CHALLENGES



# ECAD DESIGN DATA MANAGEMENT



## WHAT IT MEANS

- **Lifecycle Managed ECAD Data**  
with secure centralized vaulting of the native design and derived content
- **Automated Import of BOM files**  
provides a consolidated source for the complete Electromechanical BOM
- **Automated Visualization**  
of PCB Layout and Schematic data
- **ECAD Design Data Comparison**  
for evaluating, managing and retaining a history of all project design changes
- **Secure Sharing of Design Data**  
with external partners

## WHY IT MATTERS

*Right people working on the Right versions of the Right data*

Eliminate ECAD-MCAD BOM data entry errors

Traceability during Partner Collaboration

Easily locate and re-use designs

Visualization and comparison reduces prototype spins



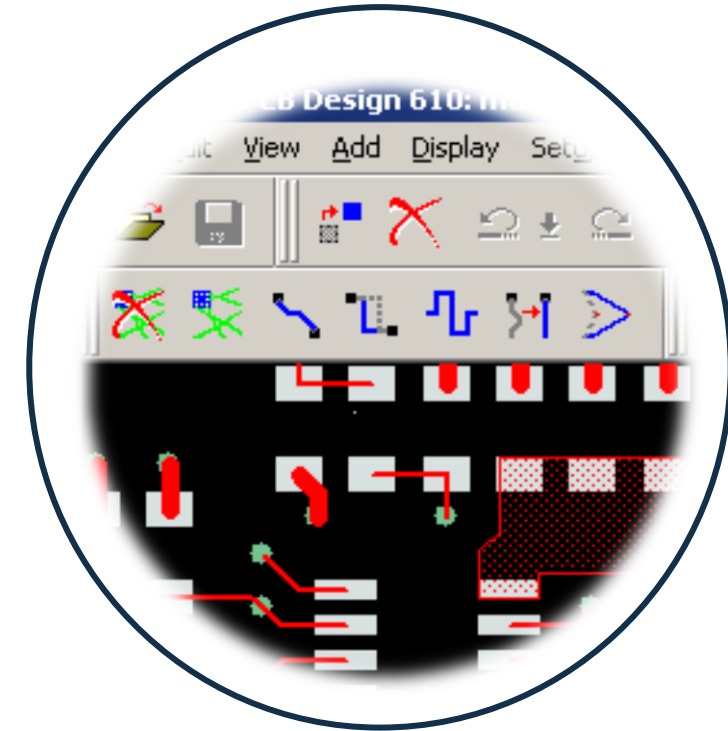
<sup>1</sup> Source: PTC survey of Electro-Mechanical Collaboration Seminar participants, January 2006

# CHALLENGES IN ECAD TEAM DESIGN AUTHORIZING



- Geographically distributed teams
- Concurrent design data management
- Block level version control
- Stable environment for individual engineers
  - Not impacted by work done by other engineers
- Access control / IP Protection
- Synchronized derived content
  - Visibility for extended teams

## *Electrical Design*

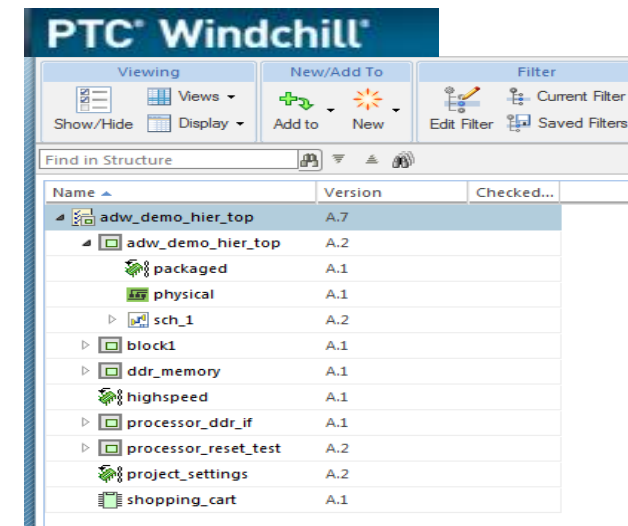
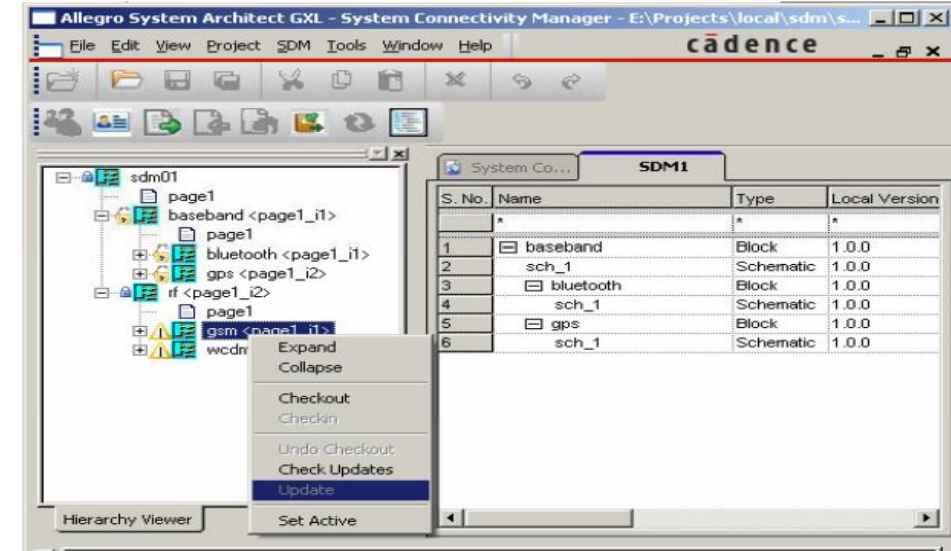




# WHAT IS TEAM DESIGN?

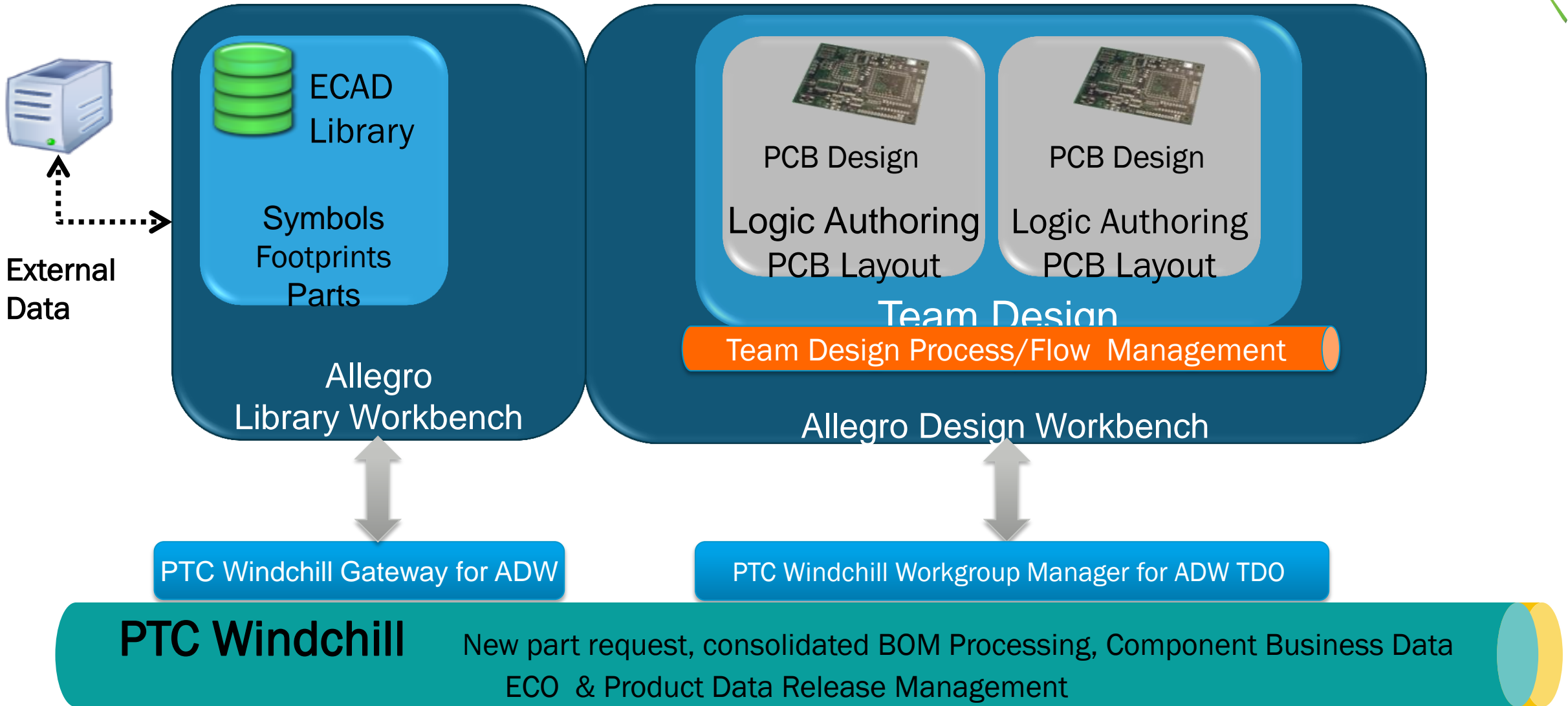


- Cadence® Allegro® Team Design Option (TDO)
  - Team based ECAD Design Environment
  - System level design approach
  - Complex hierarchical design projects
  - Block level IP reuse
  - Enables design authors to work completely within the Cadence environment
- Data managed directly in Windchill enables
  - Enables global team design for ECAD
  - Early visibility to ECAD design modules
  - Earlier & easier creation of consolidated BOM
  - Robust and secure management of IP
  - Handoff of Derived Content to MFG (IPC-2581)
  - Available in PTC Windchill 10.2 M010



# ECAD TEAM DESIGN IP MANAGEMENT

## WORK IN PROGRESS LIBRARY AND DESIGN IP DATA MANAGEMENT





# CAPABILITIES OF PTC WINDCHILL WORKGROUP MANAGER FOR CADENCE TEAM DESIGN OPTION



- PTC ECAD Workgroup Manager for Cadence OrCAD and Allegro
- PTC Windchill Workgroup Manager for Cadence Team Design Option

| Feature                              | WGM for Allegro                     | TDO with Windchill                  |
|--------------------------------------|-------------------------------------|-------------------------------------|
| Concurrent Hierarchical Block Design |                                     | <input checked="" type="checkbox"/> |
| Design Level Access Control          |                                     | <input checked="" type="checkbox"/> |
| Native Cadence UI                    |                                     | <input checked="" type="checkbox"/> |
| CAD tools open during check-in       |                                     | <input checked="" type="checkbox"/> |
| Native File Data Management          | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| BOM Structure Generation             | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Source Data Viewable Generation      | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Derived Data Content Management      | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Lifecycle Management                 | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

# TEAM MEMBER OWNERSHIPS AND ASSIGNMENTS

- Create hierarchal design structure within Cadence Allegro Design Authoring
- Assign specific team members to individual blocks and tasks

| Name                  | Local Version | Shared Version | Checked Out To | Owners | Check In Comment |
|-----------------------|---------------|----------------|----------------|--------|------------------|
| <b>Working Design</b> |               |                |                |        |                  |
| adw_demo_hier_top     | 6.0           |                |                |        |                  |
| processor_ddr_if      | 3.0           |                |                |        |                  |
| processor_reset_test  | 3.0           |                |                |        |                  |
| ddr_memory            | 3.0           |                |                |        |                  |
| ddr_memory            | 3.0           |                |                |        |                  |
| ddr_memory            | 3.0           |                |                |        |                  |
| <b>Other Blocks</b>   |               |                |                |        |                  |
| block1                | 3.0           |                |                |        |                  |

**Project Team**

Choose the team members who will work on this project.

| Role | Id    | Name  |
|------|-------|-------|
| *    | *     | *     |
|      | doug  | doug  |
|      | peter | peter |
|      | scott | scott |

Project Team: peter

Buttons: Add ->, <- Remove, < Back, Next >, Cancel

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**Assign Sub-Designs**

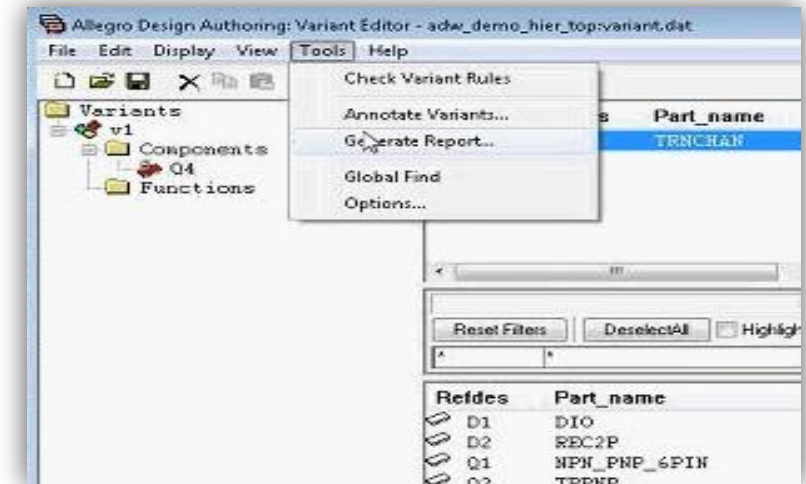
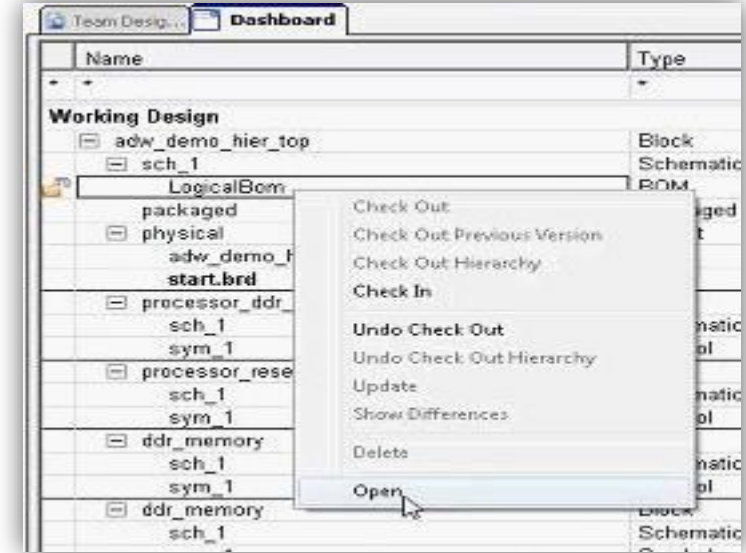
| Sub-Design            | Assigned To |
|-----------------------|-------------|
| <b>Working Design</b> |             |
| adw_demo_hier_top     |             |
| sch_1                 |             |
| packaged              |             |
| physical              | peter       |
| processor_ddr_if      |             |
| sch_1                 |             |
| sym_1                 |             |
| processor_reset_test  | scott       |
| sch_1                 | scott       |
| sym_1                 | scott       |
| ddr_memory            |             |
| sch_1                 |             |
| sym_1                 |             |
| ddr_memory            |             |

Assign team members at implementation level  
 Manage files under physical view as separate objects

Buttons: Assign..., < Back, Next >, Cancel

# VARIANT BOM SUPPORT

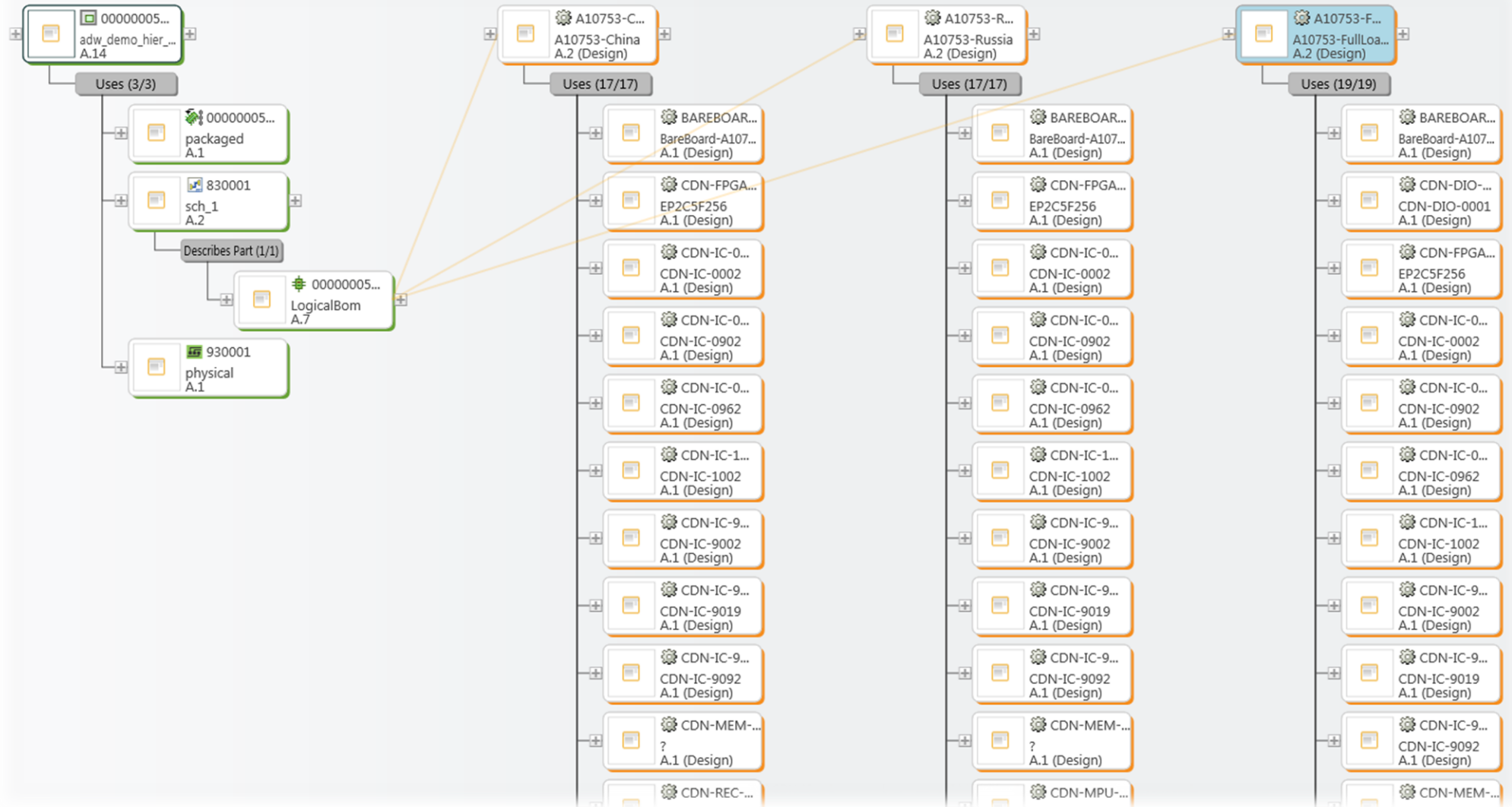
- From the Cadence Variant Editor the *Generate Reports* action is used to launch BOM-HDL
  - Each variant is exported to a CSV format with a \*.rpt extension
- Automatic collection of multiple BOMs occurs during TDO check-in
  - BOM report is shown for each Variant
- These BOMs can be iterated independently from the Schematic or PCB
  - Allows for check-in of a new Variant or alteration of an existing one without needing to iterate the schematic



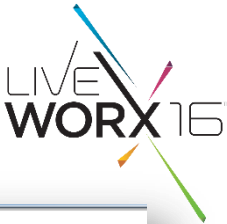
# PTC WINDCHILL STRUCTURE (RELATIONSHIP EXPLORER)



## Base and Variant BOMs linked to the LogicalBom CAD document



# FULL VARIANT BOM STRUCTURE IN PTC WINDCHILL FROM TDO



PTC Windchill  
mark

Part, Document, CAD D... Search ... Quick Links

Products > TDO > Folders > Motodemo Recently Accessed

Actions Electrical Part - **ASM\_MOTO, ASM\_Moto, A.2 (Design)** In Work

Details Structure Related Objects Changes History Where Used Traceability AML/AVL Product Analytics Relationship Explorer

Editing: Insert Existing, Remove, Insert New, Edit  
Check Out/In: Check Out, Revise, Check In, My Checkouts  
Clipboard: Paste, Copy  
Viewing: Show/Hide, Views, Display  
New/Add To: New, Add to  
Filter: Edit Filter, Current Filter, Saved Filters  
Tools: Compare, Open in  
Reports: Reports, Export

Find in Structure

| Identity  | Quantity  | Unit        | Reference Designator | Build Status     |
|---|-----------|-------------|----------------------|------------------|
| ASM_MOTO, ASM_Moto, A.2 (Design)                  |           |             |                      |                  |
| CDN-DIO-0001, CDN-DIO-0001, A.1 (Design)          | 1         | each        | D1                   | Completed        |
| CDN-FPGA-CYCLONE2-001, CDN-FPGA-CYCLONE2-001, A.1 | 1         | each        | U14                  | Completed        |
| CDN-IC-0002, CDN-IC-0002, A.1 (Design)            | 1         | each        | U20                  | Completed        |
| CDN-IC-0902, CDN-IC-0902, A.1 (Design)            | 1         | each        | U18                  | Completed        |
| CDN-IC-0962, CDN-IC-0962, A.1 (Design)            | 1         | each        | U19                  | Completed        |
| CDN-IC-1002, CDN-IC-1002, A.1 (Design)            | 1         | each        | U21                  | Completed        |
| CDN-IC-9002, CDN-IC-9002, A.1 (Design)            | 1         | each        | U17                  | Completed        |
| CDN-IC-9019, CDN-IC-9019, A.1 (Design)            | 1         | each        | U15                  | Completed        |
| CDN-IC-9092, CDN-IC-9092, A.1 (Design)            | 1         | each        | U16                  | Completed        |
| <b>CDN-MEM-0031, CDN-MEM-0031, A.1 (Design)</b>   | <b>12</b> | <b>each</b> | <b>U2-U13</b>        | <b>Completed</b> |
| CDN-MPU-000010, CDN-MPU-000010, A.1 (Design)      | 1         | each        | U1                   | Completed        |
| CDN-REC-0001, CDN-REC-0001, A.1 (Design)          | 1         | each        | D2                   | Completed        |
| CDN-RES-0305, CDN-RES-0305, A.1 (Design)          | 1         | each        | R2                   | Completed        |
| CDN-RES-0313, CDN-RES-0313, A.1 (Design)          | 1         | each        | R1                   | Completed        |
| CDN-TR-0001, CDN-TR-0001, A.1 (Design)            | 1         | each        | Q3                   | Completed        |
| CDN-TR-0002, CDN-TR-0002, A.1 (Design)            | 1         | each        | Q2                   | Completed        |
| CDN-TR-0003, CDN-TR-0003, A.1 (Design)            | 1         | each        | Q1                   | Completed        |
| CDN-TR-0005, CDN-TR-0005, A.1 (Design)            | 1         | each        | Q4                   | Completed        |
| MOTO_BOARD5_BARE, Moto_BOARD5_BARE, A.1 (Design)  | 1         | each        |                      | Completed        |

( 20 objects )

Attributes Uses Occurrences

**Part Attributes**

Number: CDN-MEM-0031  
Name: CDN-MEM-0031  
Version: A.1 (Design)  
State: In Work - Released - Canceled  
Status: Checked in  
Modified By: mark  
Last Modified: 2014-01-10 12:08 EST

**Usage Attributes**

Quantity: 12  
Unit: each  
Trace Code: Untraced  
Line Number:  
Find Number:  
Reference Designator: U2-U13

# BENEFITS OF TEAM DESIGN MANAGEMENT TO FUJITSU





# REQUIRED TDO INFRASTRUCTURE



# REQUIRED TDO INFRASTRUCTURE



# WHAT YOU WILL SEE IN THE DEMO TODAY



- Integrator:
  - Initial PTC Windchill Set-Up and Check-in
  - Assign new team member to a Block
- Member
  - Joins Project
  - Checks out Block and makes changes
  - Adds BOM variant
  - Checks in Block
- Integrator
  - Sees update on Block
  - Variant BOM Check-in
- PTC Windchill data review
  - BOM Structure

| Name                  | Local Version | Shared Version | Checked Out To | Owners       |
|-----------------------|---------------|----------------|----------------|--------------|
| <b>Working Design</b> |               |                |                |              |
| sdm01                 | 1.0           | 1.0            |                |              |
| sch_1                 | 1.0           | 1.0            |                |              |
| packaged              | 1.0           | 1.0            |                |              |
| physical              | 1.0           | 1.0            |                |              |
| fulladd_placed.brd    |               |                |                |              |
| [Modules]             |               |                |                |              |
| HALFADD_HA...         |               |                |                |              |
| HALFADD_HA...         |               |                |                |              |
| [Partitions]          |               |                |                |              |
| PARTITION_2           | 1.0           | 1.0            |                | anuja        |
| PARTITION_3           | 1.0           | 1.0            |                | rgoel        |
| PARTITION_4           | 1.0           | 1.0            |                | vikass       |
| sdm01_brd             |               |                |                |              |
| test_brd              |               |                |                |              |
| unnamed_brd           |               |                |                |              |
| baseband              | 1.0           | 1.0            |                |              |
| sch_1                 | 1.0           | 1.0            |                | anuja        |
| sym_1                 | 1.0           | 1.0            |                |              |
| bluetooth             | 1.0           | 1.0            |                |              |
| sch_1                 | 1.0           | 1.0            |                |              |
| sym_1                 | 1.0           | 1.0            |                |              |
| gps                   | 1.0           | 1.0            |                | grudra, sood |

| Sub-Design | Assigned To |
|------------|-------------|
| baseband   |             |
| sch_1      | anuja       |
| sym_1      |             |
| bluetooth  |             |
| sch_1      |             |
| sym_1      |             |
| gps        |             |
| sch_1      |             |
| sym_1      |             |
| rf         |             |
| sch_1      |             |
| sym_1      |             |
| physical   |             |
| gsm        |             |
| sch_1      |             |

Choose Team Member(s)

Choose the team member(s) who will work on the currently selected sub-design.

Selected Object(s): baseband(sch\_1)

Owners

- anuja
- dpatil
- grudra
- rgoel
- shally
- sood
- vikass

Assign Close

Assign team members at implementation level Assign...

< Back Next > Cancel

DEMO

# CADENCE TEAM DESIGN AND PTC WINDCHILL: BEST IN CLASS FOR STRUCTURED ECAD TEAM DESIGN AUTHORING



**c a d e n c e**<sup>®</sup>

**PTC**<sup>®</sup>

## ECAD Design Environment

- Efficient, structured ECAD work in progress team design authoring shortens design cycle
- Concurrent block based team design *all within the Cadence environment*
- Predictable and stable environment for engineers to author their designs
- Access control and block-level IP reuse and protection

A central graphic consisting of a blue, faceted sphere with a glowing green and blue aura radiating from it. The words "Combined Value" are written in bold black text across the center of the sphere.

**Combined  
Value**

## Enterprise PLM Data Management

- System-level design approach provides a single source of truth for *all* product design data
- Global ECAD team design access and management
- Facilitates secure “design anywhere” requirements
- Automated variant BOM generation
- Automated revision control and viewable generation

# QUESTIONS





The image features several colorful geometric shapes, primarily triangles and lines, scattered across the background. A large, multi-colored triangular shape is prominent on the right side, composed of various shades of blue, green, yellow, orange, pink, and purple. Several thin, colored lines (blue, pink, green, orange) radiate from the center of the text area. The text 'LIVE WORX 16' is the central focus, with 'LIVE' in a thin, outlined font and 'WORX 16' in a bold, solid black font. A small 'TM' trademark symbol is positioned to the upper right of the '6'.

LIVE  
WORX 16™

TAKE A FRESH LOOK AT THINGS

[liveworx.com](http://liveworx.com)