

# PTC® Live Global

## CUST 201 - Using PTC's Workgroup Manager to Manage ECAD Data

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### Overview

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#### Using PTC's Workgroup Manager to Manage ECAD Data

- **What will be covered:**
  - Why you need to manage your ECAD Data, and what that means.
  - Our experience with rolling out PTC Workgroup Manager to manage data from the Cadence EDA Tool.
  - The benefits that GE Appliances has seen by rolling out an architected ECAD Data Management solution in PTC Windchill.
  - Some of the struggles that GE Appliances had while rolling out and starting to use the tools.
- **What will not be covered:**
  - Specifics about the data within files.
  - How to use the EDA tools.
  - How to accomplish with other EDA tools.



What ECAD or EDA tools do you use?

- Synopsys
- Cadence
- Mentor Graphics
- Altium
- Zuken
- Other



What tools do you use for Electronics Design Data Management?

- PTC Windchill PLM
- Other PLM
- Software Version Control System (e.g. GIT, SVN, CVS)
- Network Drives / File System
- None

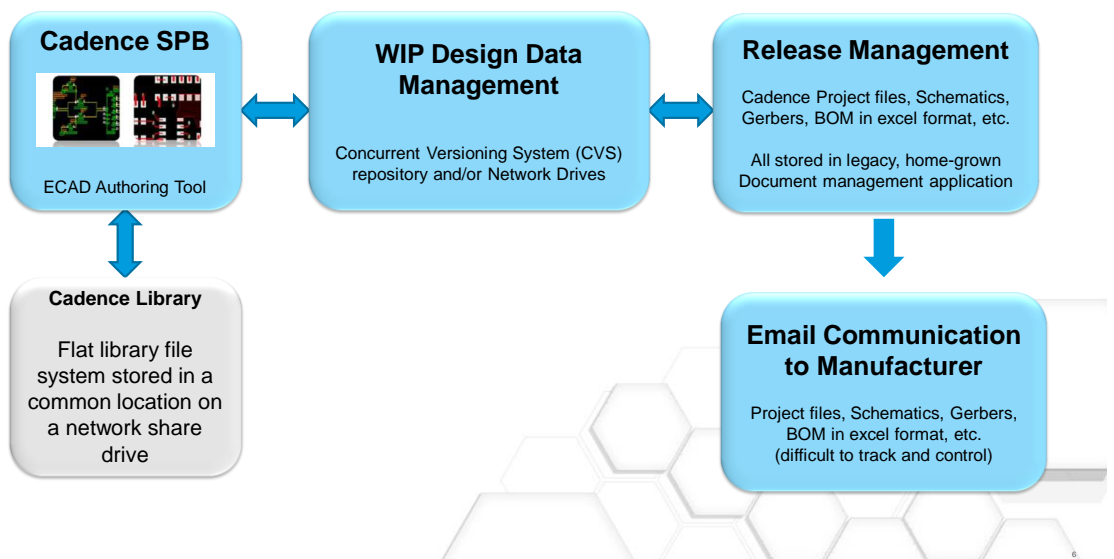


## GE Appliances ECAD landscape

- Cadence HDL tools have been in use since about 1999 for all circuit board designs.
- Used a combination of folders on network drives and software version control systems to manage our ECAD data.
- In the early days, most of the ECAD data was text-based, and the software version control systems worked well.
- Over the years, ECAD data has become less ASCII based file formats and more binary file formats.
- Data formats have changed and design files have increased in complexity. This has started causing some issues with historical ECAD Data Management.



## Old Process



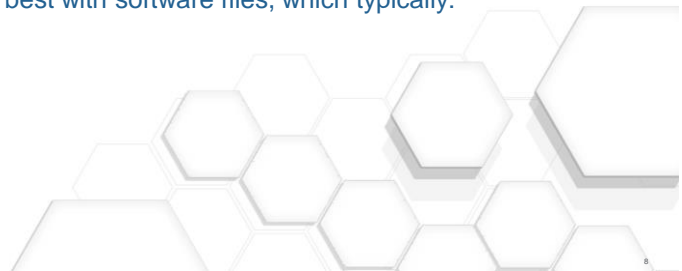
## A world with no ECAD Data Management

- Before long, designs become un-manageable.
- Which design is the latest?
- What changed in each of these?
- Which design did we order for each build?
- What's the difference between two iterations?

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## A step forward: ECAD Data Management with tools not intended to manage ECAD data

- One example is to use tools meant for software code management.
- In early 2000's, we started with Concurrent Versioning System (CVS), but others are available.
  - Git
  - Apache Subversion (SVN)
  - Visual Source Safe (VSS)
- Each revision control software mentioned has it's own set of benefits and drawbacks.
- At the core, they are all meant for and do the best with software files, which typically:
  - Are ASCII or text-based files
  - Files with the filenames not changing very often
  - Fairly consistent folder structures



## Development and Rollout of Windchill Workgroup Manager

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Developing a World-Class ECAD Data Management System

An ECAD Data Management System should:

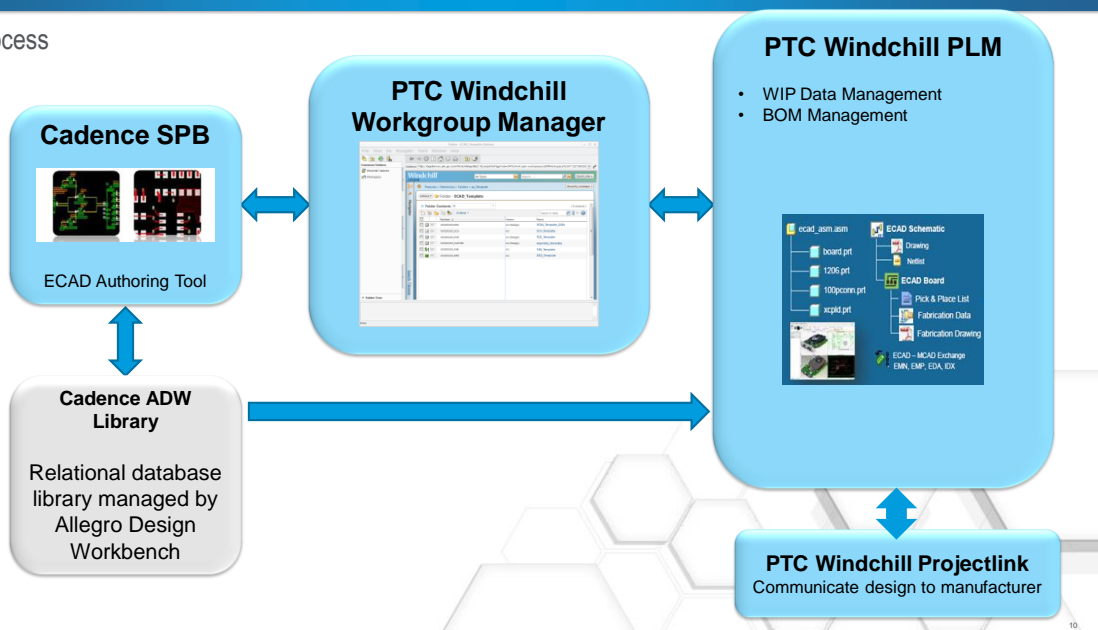
- Work with the ECAD tools you are using.
  - Understand file structures
  - Be able to extract or inject information to your ECAD design as needed
- Keep track of all design changes, with design comments.
- Manage design data from inception through production and into post-production support.
- Allow engineers to work around the globe, around the clock on the same designs.



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Current Process

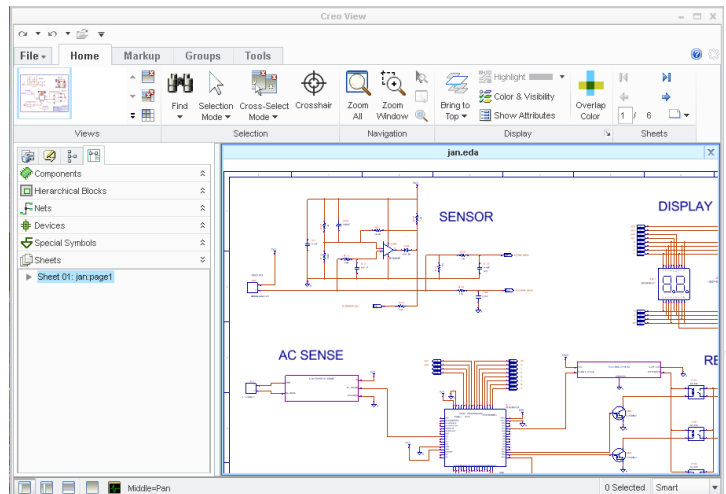


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What you can do with Schematics:

- Create a PTC Creo Viewable of the schematic that can be used in design reviews and by other engineers without tying up a license of Cadence.
- All part information is passed, to PTC Windchill, so parts can be interrogated, Bill of Materials built, etc.
- You have the ability to cross-probe between the layout and the schematic.
- Engineers can analyze design differences with PTC Creo Design Compare tools.

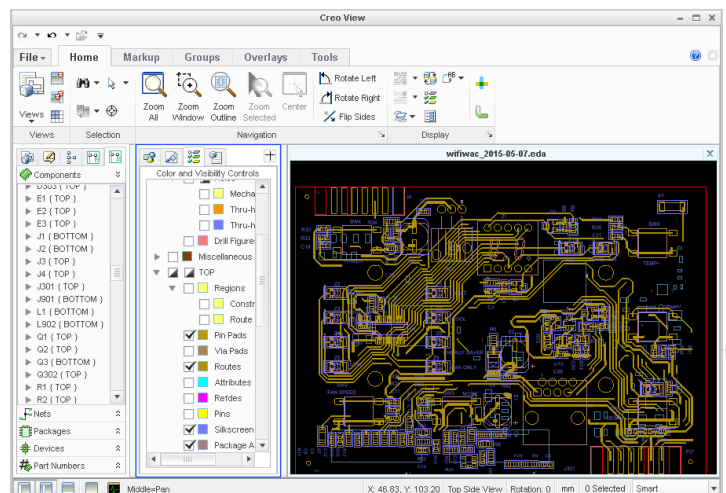


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What you can do with Layout

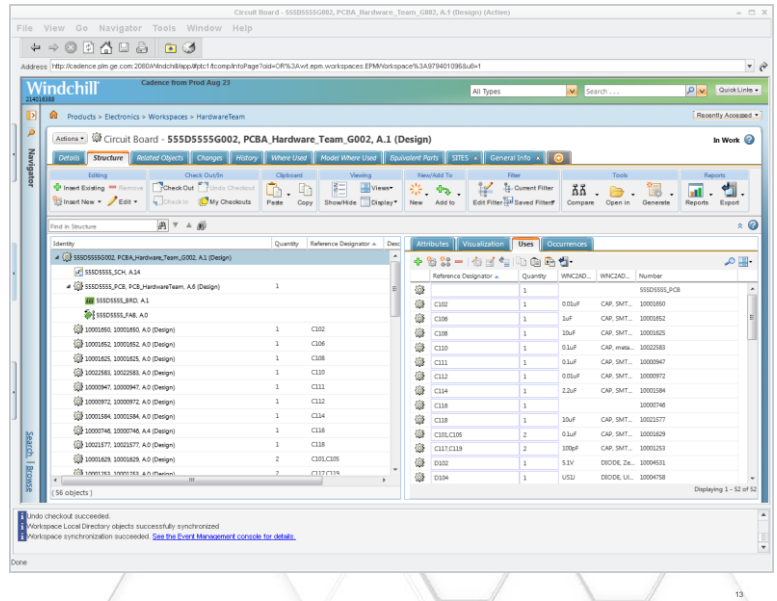
- Create a PTC Creo Viewable of the layout that can be used in design reviews and by other engineers without tying up a license of Cadence.
- You have the ability to cross-probe between the layout and the schematic.
- Engineers can analyze design differences with PTC Creo Design Compare tools.



# Development and Rollout of PTC Windchill Workgroup Manager

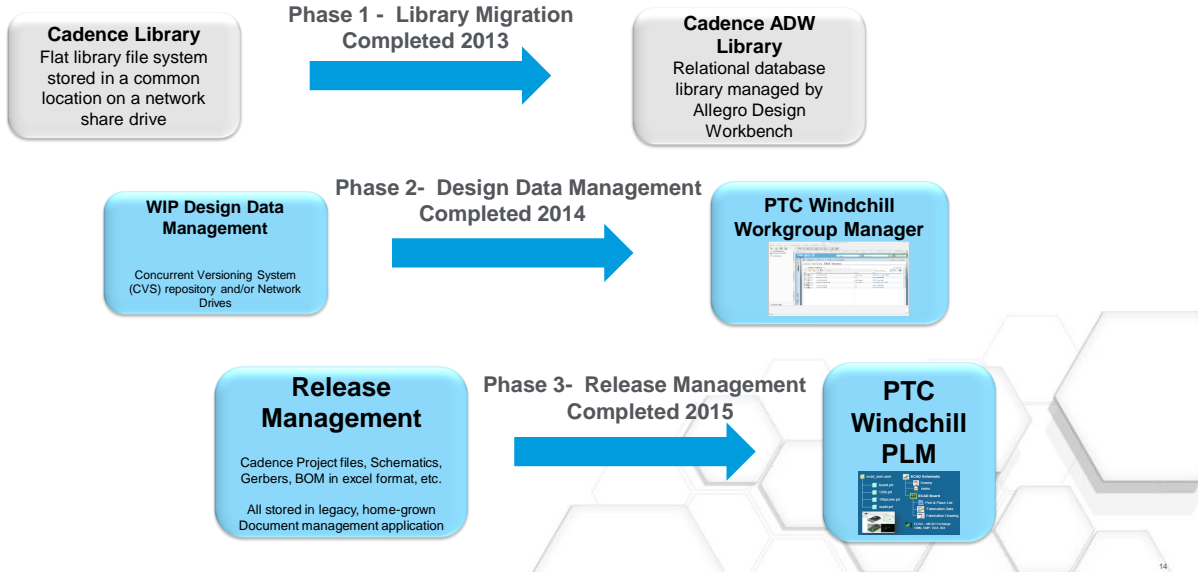
## Additional Data

- Create structured view of the circuit board assembly, with part information, Design Data, Fabrication Data, etc.
- Additional CAD Document types for Fabrication data (i.e. gerber files) or IDX data are available.
  - We use a CAD Doc for Fabrication data which contains a zip file from our gerber generation utility.
  - Typically a hook is required for each additional CAD Document that you want data automatically loaded into.



# Development and Rollout of PTC Windchill Workgroup Manager

## Phased Implementation



Where did GE Appliances run into roadblocks?

- **Check-in/Check-out has many file transfers.**
  - There are a lot of files being transferred during a normal check-in/check-out procedure. In our environment, there were interactions with external applications that slowed these file transfers down.
  - Issues are very hard to identify and you need to make sure that all parties, internal and external are working together.
- **Designs had extraneous data being checked in.**
  - Engineers were keeping many copies of designs and/or Cadence was keeping crash information inside directory structure.
  - When importing with PTC Windchill Workgroup Manager, the Workgroup Manager does not filter those types of files out, so some custom scripts were created to “clean-up” designs before checking -in.
  - The standard PTC Hooks were used in order to achieve this clean-up process.
- **Work with your project team to identify and escalate issues to PTC R&D in a timely manner.**
  - Don't let issues hang-around or lie dormant for a while. Stay on top of issues until full closure is achieved.
- **Post-production support is necessary.**
  - There will always be those few things that you didn't find during testing and implementation.
  - Our specific case had < 10% of users using the new process, so it took a while to find all issues and get resolved.

Business Benefits

- Everyone can now see the design data, not just Electrical Engineers.
- Reduced Release Management Process by 400% from 1 Hour to less than 15 minutes.
- Releasing and managing designs in PTC Windchill has eliminated the need to create and release 5 documents into home grown system.
- Standardized Design process across product platforms.
- Preferred Part list resulting in 30% reduction in Parts library driving consistency in all designs across all products.



### What's Next

- Integrate the UI in with Cadence
- Add functionality to create IDX files with check-ins
- Synchronize revision numbers between Cadence and PTC Windchill
- And More!



- Your feedback is valuable
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