

# ECAD data in PLM

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**CLAESdotBIZ**  
integrating ECAD into PLM

# Agenda

- What is PLM?
- ECAD Challenges
- What can a good PLM system do for you?
- High level goals
- MCAD vs. ECAD
- ECAD data map in PLM
- Takeaways
- Discussion



# What is PLM ?

## Product Lifecycle Management

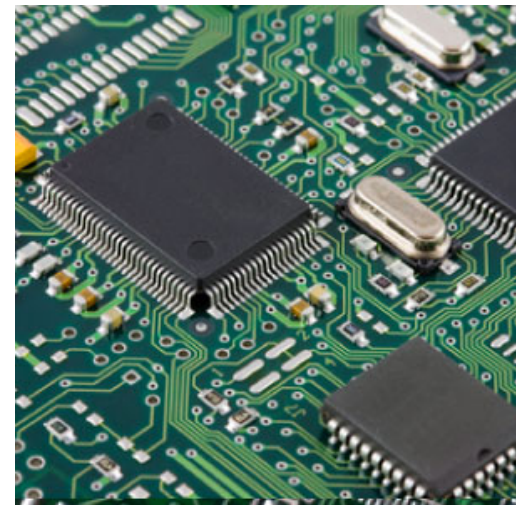
WIKIPEDIA definition:

In industry, product lifecycle management (PLM) is the process of managing the entire lifecycle of a product from inception, through engineering design and manufacture, to service and disposal of manufactured products.

PLM integrates people, data, processes and business systems and provides a product information backbone for companies and their extended enterprise.

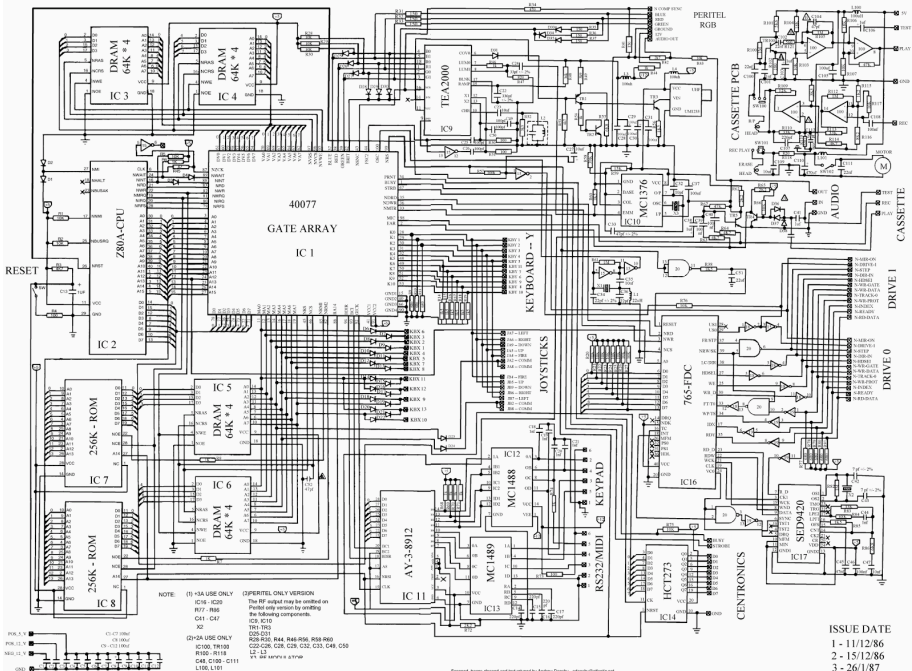
# For the ECAD design world:

- Inception and Design with a handoff to Manufacturing and Purchasing
- Datasets are more complex than what MCAD has to manage
- Additional workload – Process Change



# ECAD Challenges

- Dataset complexity
- Library management
- Lots of part numbers in assembly
- Variants



# What can a good PLM system do for you?

- Data Storage
  - Workflows
  - Version Control
  - Visualization
  - Library access
  - BOM creation
  - ECAD / MCAD Collaboration
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- Everything we have always done, but differently  
– in a way that anyone can access it



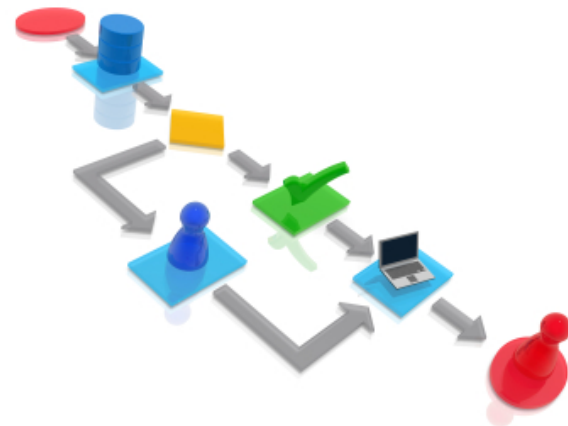
# Data Storage

- Collection and Storage of design data in a consistent and standard manner for every design
- Collect business requirements, document, implement, test



# Workflow

- Allows standardization of processes across the team
- Especially important if the team spans multiple design centers





# Version Control

- Check In / Check Out assists in keeping updates to work in process straight
- Introduces the concept of States, in addition to Version

## **C.3 PRODUCTION RELEASED**

# Visualization

- At least access for anyone with permissions, to an intelligent PDF
- Better – A viewer that allows data query on all attributes in the database
- Potential for analysis tool and comparison tool linkage

# Library Access

- Replication of data is sometimes simplest
- Linking of databases from PLM to ECAD tools library is sometimes possible
- Disperse teams should consider a complete New Part Introduction workflow



# BOM Creation

- Optimally – driven from the CAD data, usually the Schematic
- Allows for manual edits of hardware and consumables
- Linkage to 3-D representation in the MCAD tools

	A	B	C	D	E	F
1	<div>Bill of Materials</div> <div>Bill of Materials For Project [4 Port Serial Interface.PRJPCB]</div>					
2						
3	Source Data From:		4 Port Serial Interface.PRJPCB			
4	Project:		4 Port Serial Interface.PRJPCB			
5	Variant:		None			
6						
7	Creation Date:		17/11/2005	7:07:20 PM		
8	Print Date:		17-Nov-05	7:07:23 PM		
9						
10						
11	Footprint	Comment	LibRef	Designator	Description	Quantity
12	RAD0.2	0.1uF	CAP 2M	C1, C2, C3, C4, C5, C8, C9, C10, C11,	Capacitor 0.2 pitch	10
13	RAD0.2	20pF	CAP 2M	C13	Capacitor 0.2 pitch	1
14	RAD0.2	50pF	CAP 2M	C14	Capacitor 0.2 pitch	1
15	TANT 2M2M	10uF	ELECTR01, ELE	C15, C16, C17	Electrolytic Capacitor RB mount	3
16	DIODE0.4	1N4004	DIODE	D1, D2		2
17	DB37RA/F	DB37	DB37	J1		1
18	ECN-IBMXT	CON AT62B	CON AT62B	P1		1
19	AXIAL0.4	1M	RES1	R1		1
20	AXIAL0.4	1K5	RES1	R2		1
21	SIP9	10K	RESPACK 8CON	RP1	RESISTOR NETWORK 8 COMMON RESIS	1
22	DIP16	BASE ADDRESS SW DIP-8		S1		1
23	DIP8	INTERUPT SELE SW DIP-4		S2		1

# ECAD / MCAD Collaboration

- IDF is old school
- IDX is much more current
  - Allows bi-directional incremental updates
  - Additional definitions not in IDF
  - Defines ownership of data sections
- “Top of the Pyramid” activity, meaning all other pieces are setup – requires a pristine library process

# High level goals

- “Single source of Truth”
- ECAD driven BOM attaching into the complete Product BOM



# What ME is used to handling

- A Part that holds multiple definition items
  - CAD model
  - IGES model
  - DWG file
  - Etc.



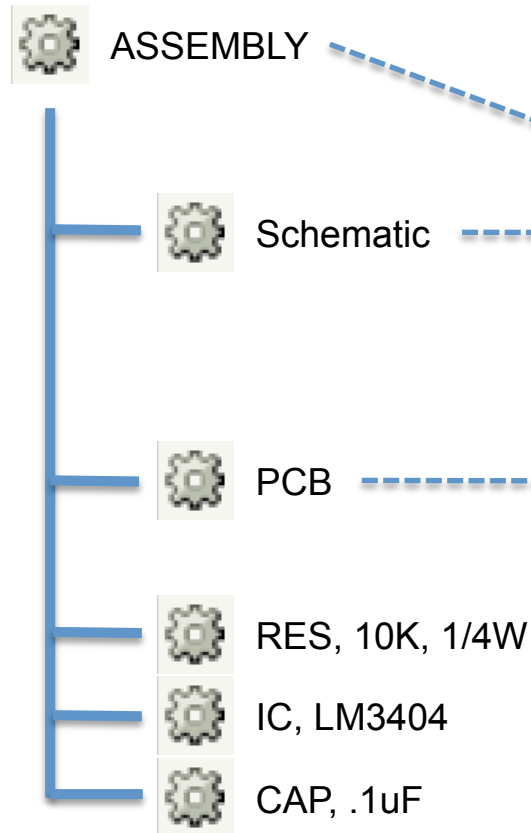
# The EE & Designer have this:

- Top Assembly Part
  - BOM driven from Schematic
  - Additional Hardware
  - Assembly Files
- Schematic
  - Simulation Data
  - Design files
- PCB Part
  - ECAD model
  - IGES model
  - Fab files

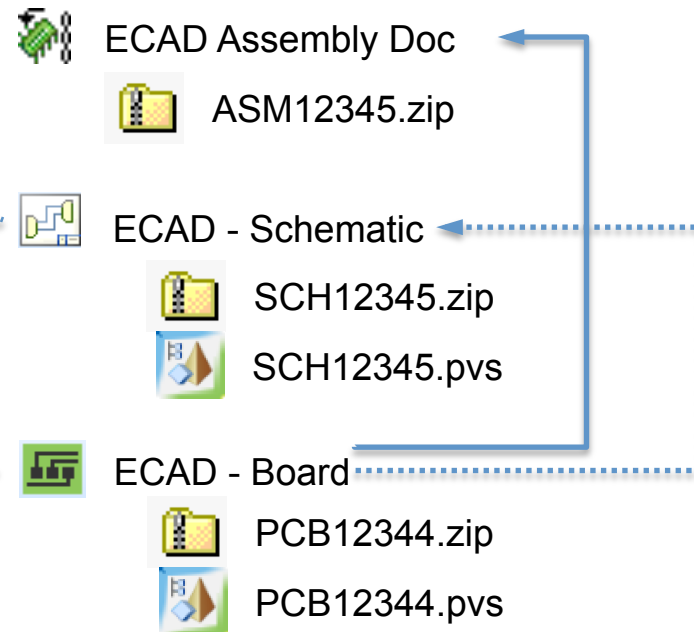


# ECAD Data "Map"

## BOM

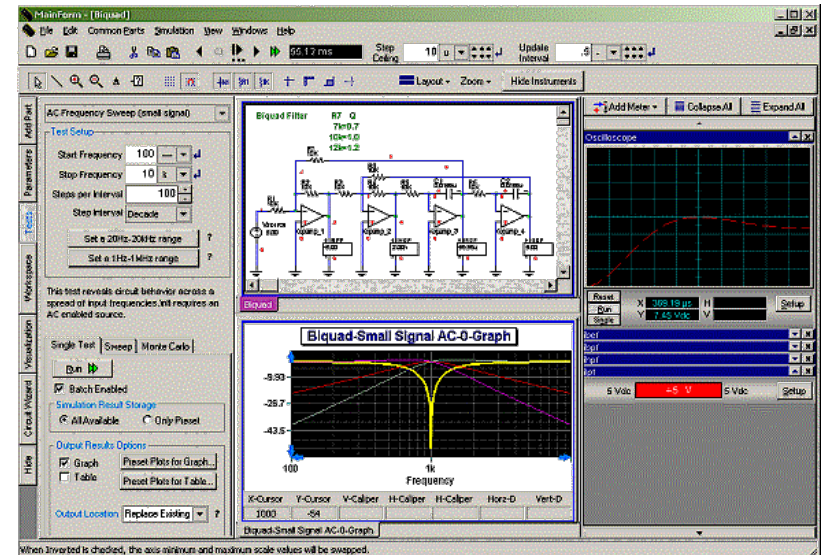


## CAD Data



# And that doesn't even address ...

- Variants
- MCAD Model
- Simulation data
- Firmware
- Libraries
- Part Values configured on test



# Takeaways

- It's not as simple as the MCAD system
- Requires standardization of
  - Libraries
  - Processes
  - Systems

# More Takeaways

- Provides downstream visibility to design data
- Start with one or two implementation goals and complete them
- Some onsite expertise will be valuable and should be developed

# And Finally ...

- PLM is an Enterprise System
- It isn't something you want to do with low end CAD design tools
- You will eventually find functionality lacking

# Discussion



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# References

<http://www.prostep.org/en/projects/ecadmcad-implementor-forum.html>

[www.claes.biz](http://www.claes.biz)

