



# Component Management Shortens Design Time

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## DESIGN AUTOMATION & EMBEDDED SYSTEMS

8 OKT ←  
VAN DER VALK HOTEL  
EINDHOVEN

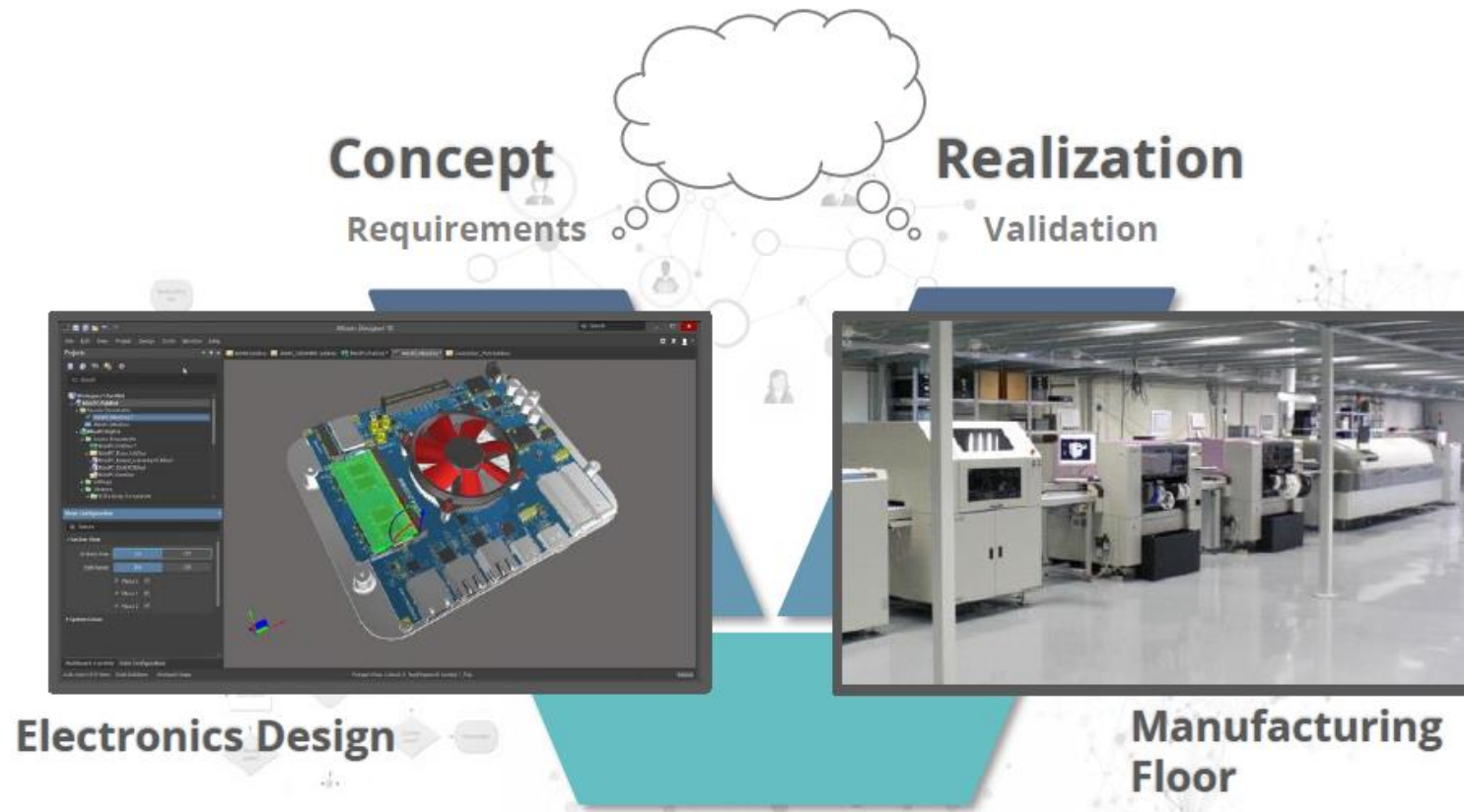
**D&E**  
event  
2019

# Agenda

- 1 Introduction
- 2 Component Management
- 3 Summary
- 4 Cooperation between disciplines
- 5 Design & Manufacturing



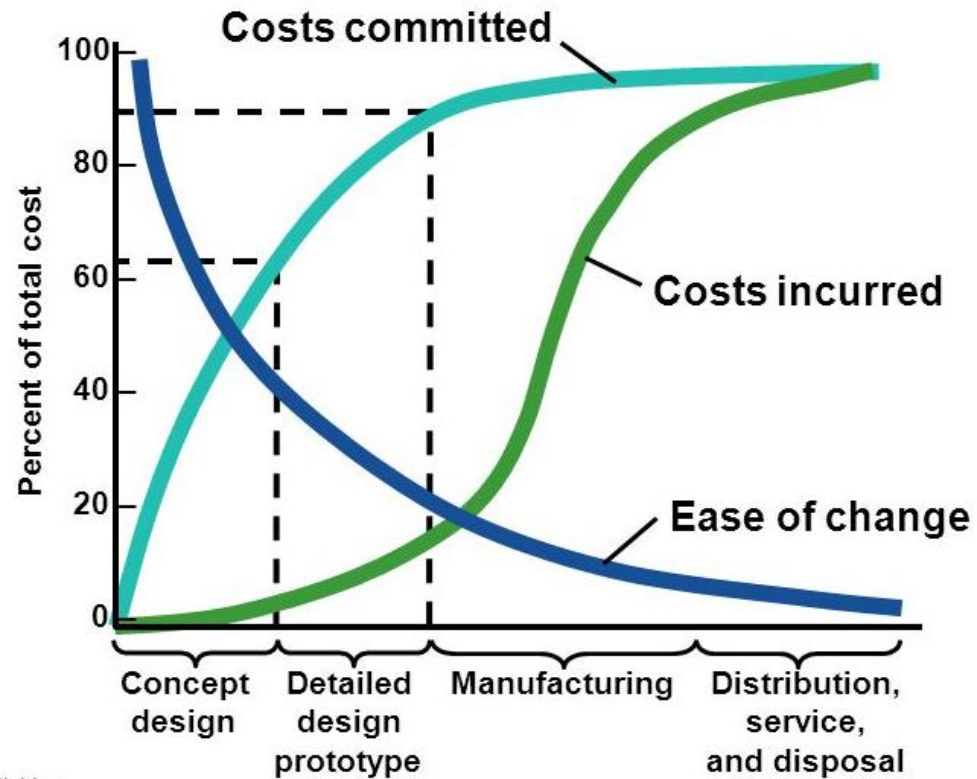
# Design Collaboration



Connecting electronics design to the manufacturing floor with bi-directional digital continuity is at the heart of transformation



## Product Life Cycle Costs



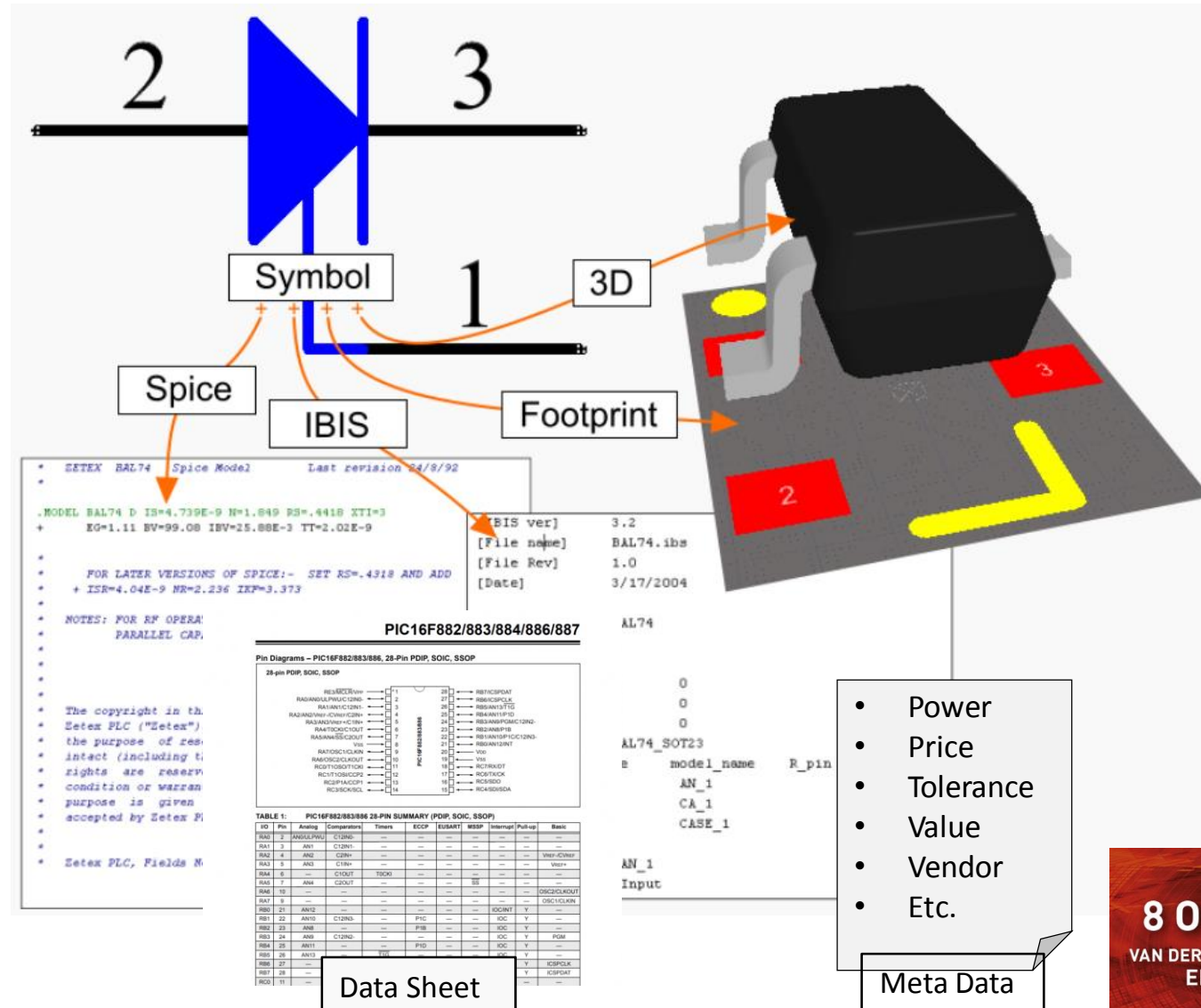
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- 1 Introduction
- 2 **Component Management**
- 3 Summary
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# Component Elements



- The Part
  - Schematic Symbol
  - PCB Footprint
  - PCB 3D Model
  - Meta Data
- Simulation Models
  - Functional
  - Signal Integrity
- Data Sheets





# Supply Chain Info

- Manufacturer info
- Supplier info

Reset Supply Chain												Refresh	Search
Item Details					Primary Solution								
	Name	Description	Designator	Quantity	Manufacturer 1	Manufacturer PN	Manufacturer Lifecycle	Supplier 1	Supplier PN	Supplier Price	Supplier		
1	220nF	Capacitor, C...	C1, C51, C...	6	Kyocera AVX	0603ZC224KAT2A	Volume Production	Digi-Key	478-1243-6-ND	0.1738	✓		
2	10uF	Capacitor, Ta...	C2, C3, C1...	20	KEMET	T491B106K016ZT	Obsolete	Digi-Key	495-2239-6-ND	0.00	⚠		
3	0.1uF	Capacitor, C...	C4, C5, C1...	41	Walsin Techn...	0402YD104KAT2A		Newark	96M1113	0.01023	⚠		
4	10nF	Capacitor, C...	C6, C7, C8,...	58	Kyocera AVX	0402YC103KAT2A		Digi-Key	478-1114-6-ND	0.00631	⚠		
5	220uF	Capacitor, Ta...	C126, C12...	8	Kyocera AVX	TAJD227K004RNJ	Not Recommended...	Digi-Key	478-3064-1-ND	0.00	⚠		
6	200mA 30V	Schottky Dio...	D1	1	ON Semicond...	BAT54A	Volume Production	Digi-Key	BAT54AFSDKR-...	0.00	⚠		
7	54075-1009	Connector,...	HDR1, HDR2	2	Hirose	FX6-100S-0.85V(71)	Not Recommended...	Digi-Key	H10808-ND	4.71	⚠		
8	RED	LED, Red 080...	LED1, LED3	2	Vishay Lite-On	LTST-C170KRKT	Volume Production	Mouser	859-LTST-C170K...	0.29272	✓		
9	GREEN	LED, Green 0...	LED2	1	Vishay Lite-On	LTST-C171GKT	Volume Production	Mouser	859-LTST-C171G...	0.23784	✓		
10	1x2 HEADER	Header, 2 x 1...	P1	1	TE Connectivity	640452-2	Volume Production	Digi-Key	A1911-ND	0.30975	⚠		
11	2x10 IDC HEADER	Header, Box...	P2	1	TE Connectivity	6-102567-1	Volume Production	Digi-Key	A34283-ND	3.05	✓		
12	4.7K	Resistor, 4K7...	R1, R15, R...	45	Vishay	CRCW04024K70FKED	Volume Production	Digi-Key	541-4.70KLDKR-...	0.01409	✓		
13	100	Resistor, 100...	R2, R3, R4,...	14	Vishay Dale	CRCW0805100RFKEA	Volume Production	Digi-Key	541-100CDKR-ND	0.06037	✓		
14	270	Resistor, 270...	R5, R37, R...	6	Vishay	CRCW0805270RFKEA	Volume Production	Digi-Key	541-270CDKR-ND	0.09148	✓		
15	10M	Resistor, 10...	R38, R47	2	Vishay	CRCW080510M0FKEA	Volume Production	Digi-Key	541-10.0MCDK...	0.09148	✓		
16	120	Resistor, 120...	R68	1	Vishay	CRCW0805120RFKEA	Volume Production	Digi-Key	541-120CDKR-ND	0.09148	✓		
17	53.6	Resistor, 53...	R69	1	Vishay	CRCW080553R6FKEA	Volume Production	Digi-Key	541-53.6CDKR-...	0.09148	✓		
18	XC3S1000-4FGG...	FPGA, Xilinx...	U1	1	Xilinx	XC3S1000-4FG(G)456C		Digi-Key	122-1333-ND		⚠		
19	SN74LVC1G04DBV	SN74LVC1G0...	U2	1	Texas Instrum...	SN74LVC1G04DBVR	Volume Production	Digi-Key	296-11599-6-ND	0.35051	⚠		
20	SRAM-256Kx16	256K x 16-Bit...	U3, U4	2	Cypress	CY7C1041DV33-1025XI	Volume Production	Digi-Key	428-1921-ND	0.00	⚠		
21	LH79520N0M00...	32-Bit ARM7...	U5	1	NXP Semicon...	LH79520N0Q000B1;55	End of Life	Digi-Key	568-4331-ND	0.00	⚠		
22	74LCX157	74LCX157, Q...	U6	1	ON Semicond...	74LCX157MTCX	Volume Production	Digi-Key	74LCX157MTCX...	0.43908	✓		
23	SDRAM-16Mx16	256 Mbit Hig...	U7, U9	2	Micron Techn...	MT48LC16M16A2FG-...	Obsolete	Digi-Key	557-1226-6-ND	0.00	⚠		
24	FLASH-4Mx16	Flash Memor...	U8	1	Spansion	S29GL064N90TFI010	Volume Production	Mouser	797-S29GL064N...	4.00	⚠		
25	LM317LD	Low Current...	U10	1	STMicroelectr...	LM317LD13TR	Volume Production	Digi-Key	497-1572-6-ND	0.45738	⚠		

- 2<sup>nd</sup> sources

Add Solution

Manufacturer Part

PRIMARY

Stock: 3930

€0.01023 min

No solution info

Walsin Technologies 0402YD104KA...

Datasheet

★★★★★

1 SPN(s) available

Favorite Suppliers

Newark

96M1113

Stock: 3930

Unit: €0.01023

Order qty: 41

Order: €0.41929

1 @ €0.08522

25 @ €0.01023

100 @ €0.00511

Show more

SECONDARY

Stock: 0

No prices

Volume Production

Kyocera AVX 0402YD104KAT2A

CAP CER 0.1UF 16V X5R 0402

Datasheet

★★★★★

Newark

96M1113

Stock: 0

Unit: 0.00

Order qty: 41

Order: 0.00

# Component Management





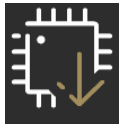
# 5 Pillars in Component Management



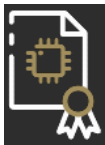
Security



Find



Apply



Release



Correct



Who is allowed to do What?

Roles

- Read /Write
- Initiate new Components
- Control Revisions
- Control Lifecycle



Librarian



Engineer



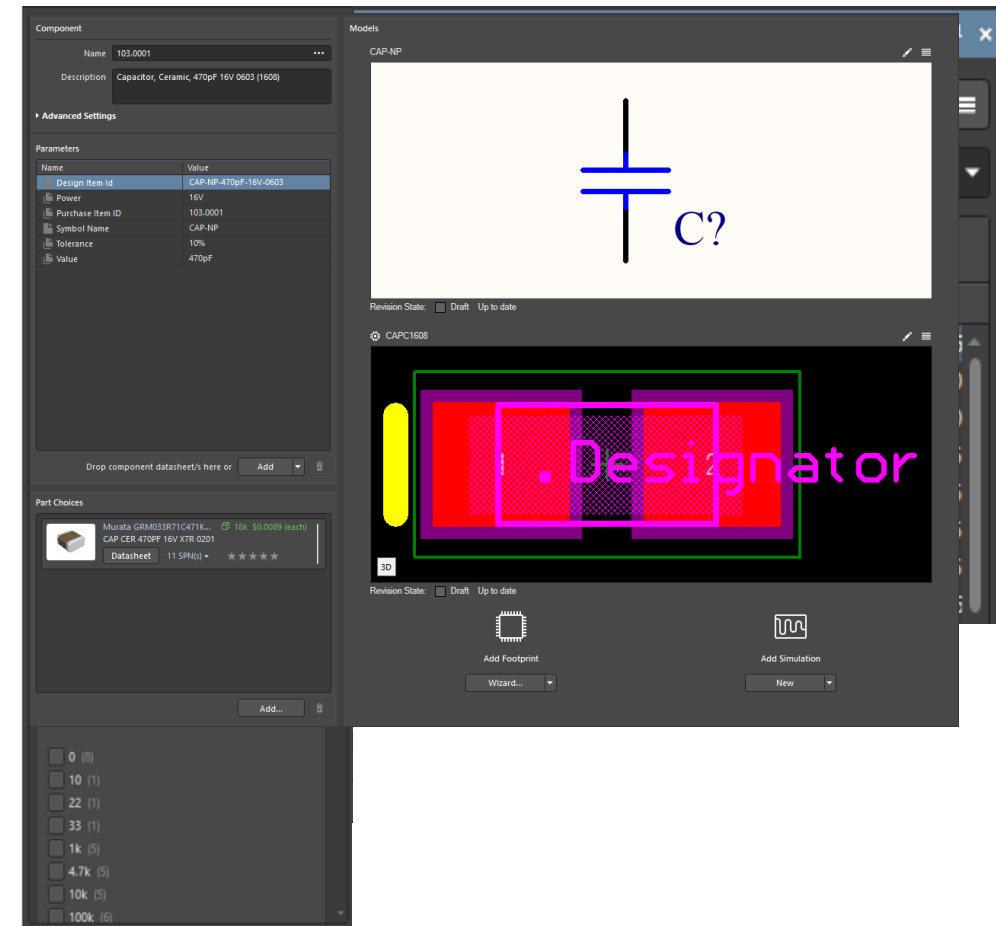
Purchase

Checklist before releasing

- Components Available in Numbers
- Cost Frame Met

# Find

- Single source of information
- Parametric Search
- Predefined Searches
  - Global
  - Individual
- Unified Component appearance
  - Class Dependent Parameter Set
- Ease of reusing Symbols & Footprints





# Apply

- Component Creation
  - Templates

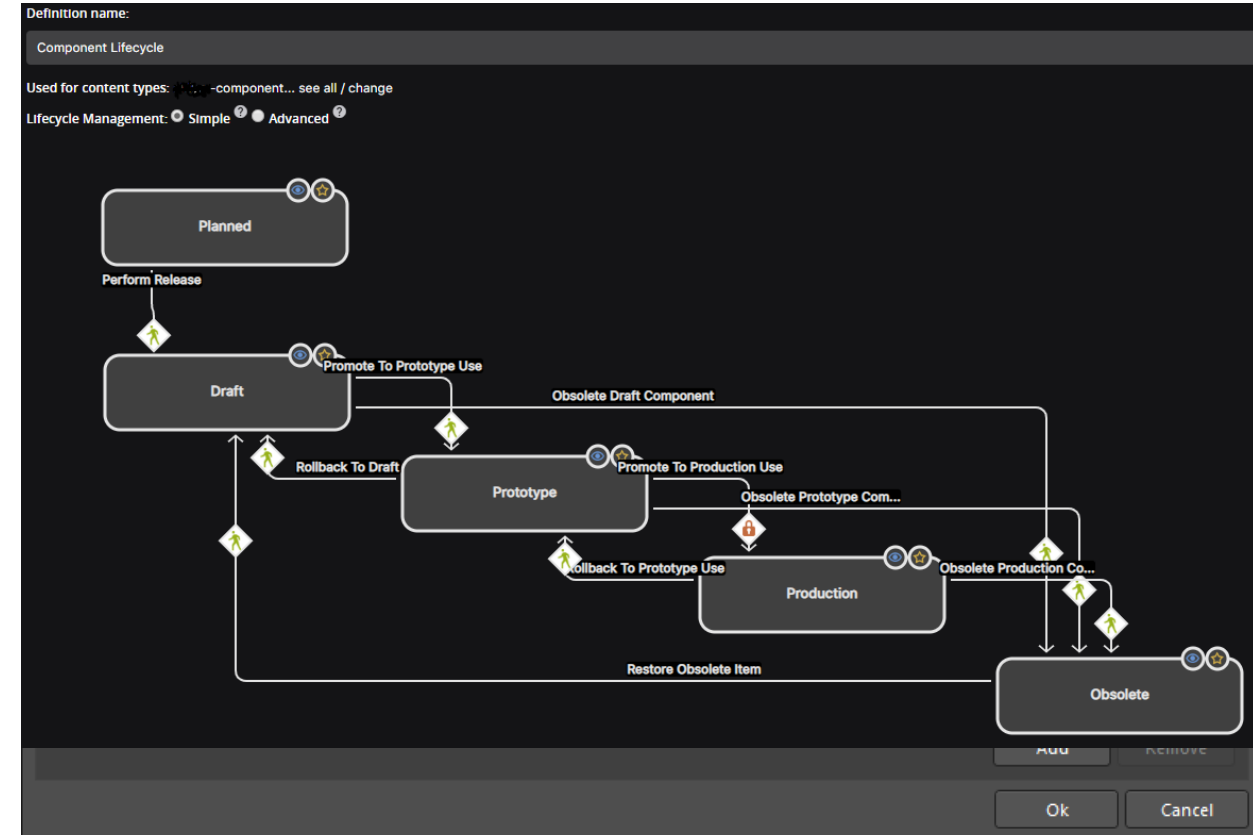
- Component Usage Info Non-Adequate Component
  - Obsolescence
  - Not Up-To-Date

Group by Add new Reset Supply Chain Refresh Search										
Item Details					Primary Solution					
Line #	Name	Description	Designator	Quantity	Manufacturer 1	Revision State	Revision Status	Manufacturer Part Number 1	Manufacturer Lifecycle 1	
1	Capacit...	Chip Capacitor,...	C3.4, C3.5, C4.5,...	5	KEMET	Production	Up to date	C0402C104J4RACTU	Volume Production	⚠
2	Capacit...	Chip Capacitor,...	C1.3, C2.3	2	Murata	Production	Up to date	G1M1555C1HR50B01D	Volume Production	✓
3	Capacit...	Chip Capacitor,...	C2.6	1	Murata	Production	Up to date	GRM31MR71E105KA01L	Volume Production	✓
4	Capacit...	Chip Capacitor,...	C1.4, C2.4, C4.4	3	Kyocera AVX	Production	Up to date	Q4023C682KAT2A	Volume Production	⚠
5	Resisto...	Chip Resistor, 0...	R1.3, R2.3	2	Yageo	Production	Up to date	RC0402JR-070RL	Volume Production	✓
6	Resisto...	Chip Resistor, 1...	R1.4, R2.4, R3.4	3	Yageo	Production	Up to date	RC0402JR-0710RL	Volume Production	⚠
7	Resisto...	Chip Resistor, 1...	R2.7	1	Yageo	Production	Up to date	RC0402FR-0715KL	Volume Production	✓
8	Resisto...	Chip Resistor, 3...	R1.2, R1.7	2	Yageo	Production	Out of date	RC0402JR-0733KL	Volume Production	⚠
9	Resisto...	Chip Resistor, 3...	R1.5, R2.5, R3.5,...	7	Yageo	Production	Up to date	RC0402JR-0733RL	Volume Production	⚠
10	Resisto...	Chip Resistor, 5...	R4.4	1	Vishay Dale	Production	Out of date	CRCW040251K0JNED	Volume Production	⚠
11	MPMS0...	Copper Pillar, M...	MH1.1, MH2.1,...	3	B&F Fastener	Production	Up to date	MPMS0020012PH	Volume Production	⚠
12	XH414...	Electric Double...	C1.5	1	Seiko	Production	Up to date	XH414HG-IV01E	Volume Production	⚠
13	MW-10...	Flexible Micro B...	J1.1	1	Samtec	Production	Up to date	MW-10-03-G-D-245-065-P	Volume Production	⚠
14	SPX293...	Highly Accurate...	U1.6	1	Exar	Production	Up to date	SPX29302T5-L/TR	Volume Production	⚠
15	JUMPER	JUMPER	J2.1	1		Production	Up to date			⚠
16	734120...	Microcoaxial RF...	J1.3	1	Molex	Production	Up to date	73412-0110	Volume Production	✓
17	MAX23...	Multichannel R...	U?	1		Production	Up to date			⚠
18	SIM900	Quad-Band GS...	U1.5, U?	2	Simcom	Production	Up to date	SIM900B	Unknown	⚠
19	CAF98...	SIM Card Socket...	J1.4	1		Production	Up to date			⚠
20	TAJB10...	Tantalum Capaci...	C2.5, C3.6	2	Kyocera AVX	Production	Up to date	TAJB106M016RNJ	Volume Production	✓
21	TPSD22...	Tantalum Capaci...	C1.6, C4.6	2	Kyocera AVX	Production	Up to date	TPSD227K010R0150	Volume Production	⚠
Min Operating Temperature		Celsius(C)		✓						
Max Operating Temperature		Celsius(C)		✓						
Capacitor Type		Text		✓						
Voltage Rating		Volt(V)		✓						
Capacitance		Farad(F)		✓						
Tolerance		Percent(%)		✓						

# Release

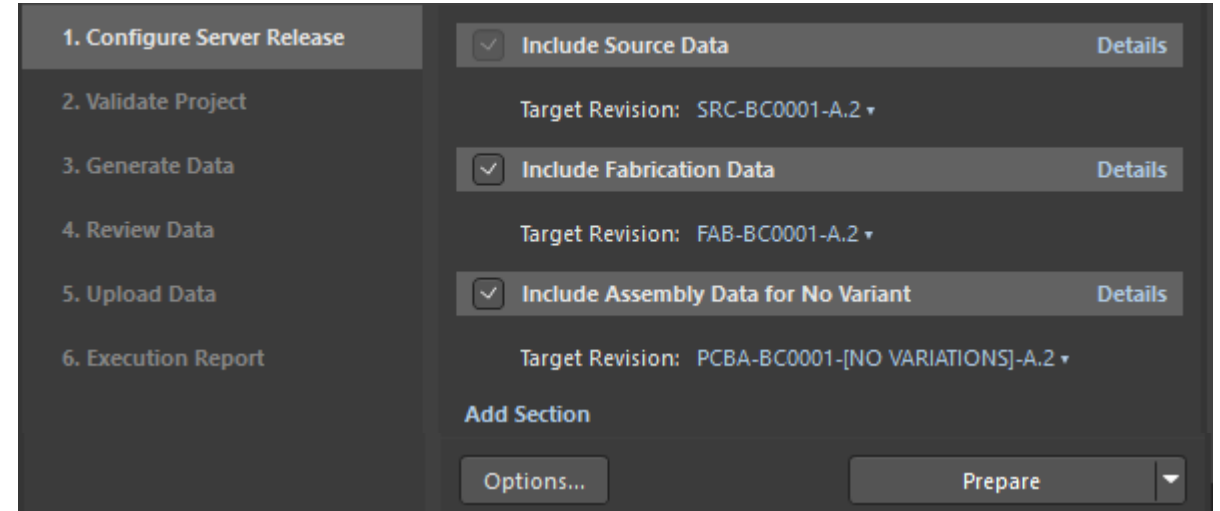
## New Component

- Request
  - Parameters
  - Datasheets
  - Supplier Information
- Process
- Component Change
  - Edit Children/Parents
  - Edit Multiple Parts



# Correct

- Up-To-Date
  - In Design Process
  - In Documentation
- Still Useable - Lifecycle
  - In Design Process
  - In Documentation



The screenshot shows a software interface for configuring a server release. On the left is a vertical sidebar with six steps: 1. Configure Server Release (highlighted), 2. Validate Project, 3. Generate Data, 4. Review Data, 5. Upload Data, and 6. Execution Report. The main area on the right contains three expandable sections, each with a checked checkbox and a 'Details' link. The first section is 'Include Source Data' with a 'Target Revision' of 'SRC-BC0001-A.2'. The second is 'Include Fabrication Data' with a 'Target Revision' of 'FAB-BC0001-A.2'. The third is 'Include Assembly Data for No Variant' with a 'Target Revision' of 'PCBA-BC0001-[NO VARIATIONS]-A.2'. Below these sections is an 'Add Section' link. At the bottom are two buttons: 'Options...' and 'Prepare'.

Step	Section	Target Revision
1. Configure Server Release	<input checked="" type="checkbox"/> Include Source Data	SRC-BC0001-A.2
2. Validate Project	<input checked="" type="checkbox"/> Include Fabrication Data	FAB-BC0001-A.2
3. Generate Data	<input checked="" type="checkbox"/> Include Assembly Data for No Variant	PCBA-BC0001-[NO VARIATIONS]-A.2
4. Review Data		
5. Upload Data		
6. Execution Report		



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# Summary

- One consistent Library for all Engineers
  - Search for Replacement Parts
  - Part Version Compare
  - Enables Team Design
  - Enables Design Reuse
  - Unapproved Part Validation
- Optimized Library Creation Effort
- Parts qualified for downstream Processes
  - MFG & Documentation
- PLM Meta Data Integration



# Agenda

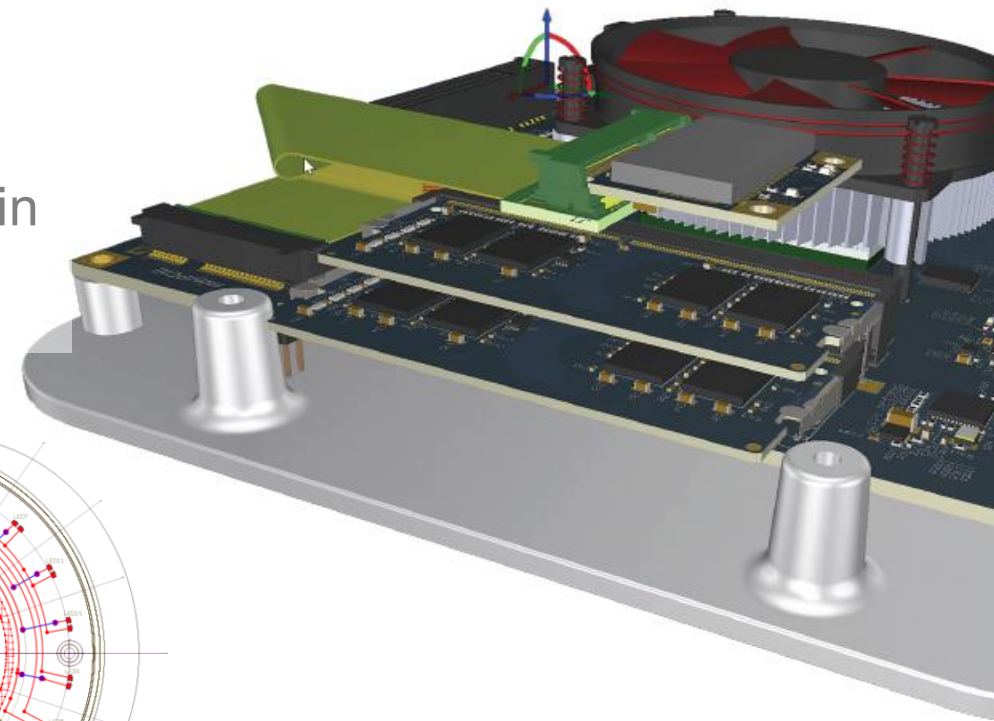
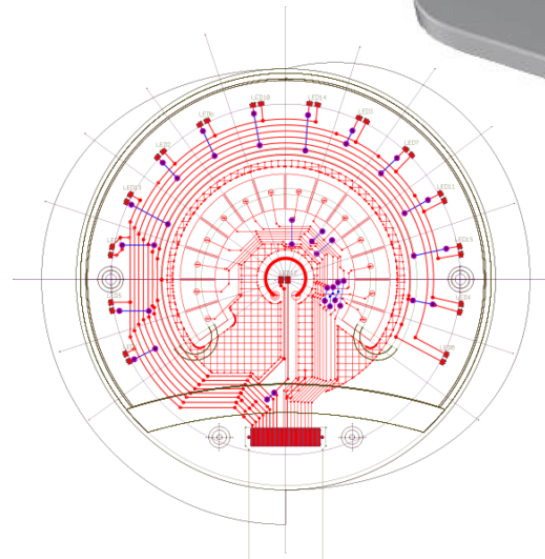
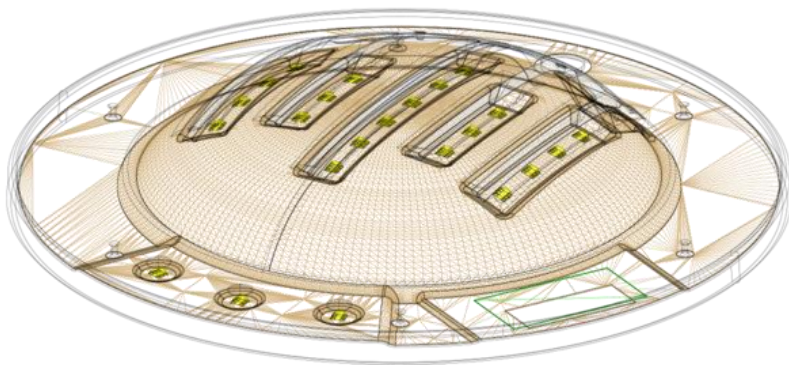
- 1 Introduction
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# ECAD – MCAD Collaboration

## Current High-Tech Designs

- Complex Multi-Board Designs
- Flex PCB
- 3D-printing
- Injection Molded Structural Electronics and Designing in a 3D Space



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event  
2019

# 3D Multi-Board Modelling & Collaboration



Object mating with MCAD-like editing functionality

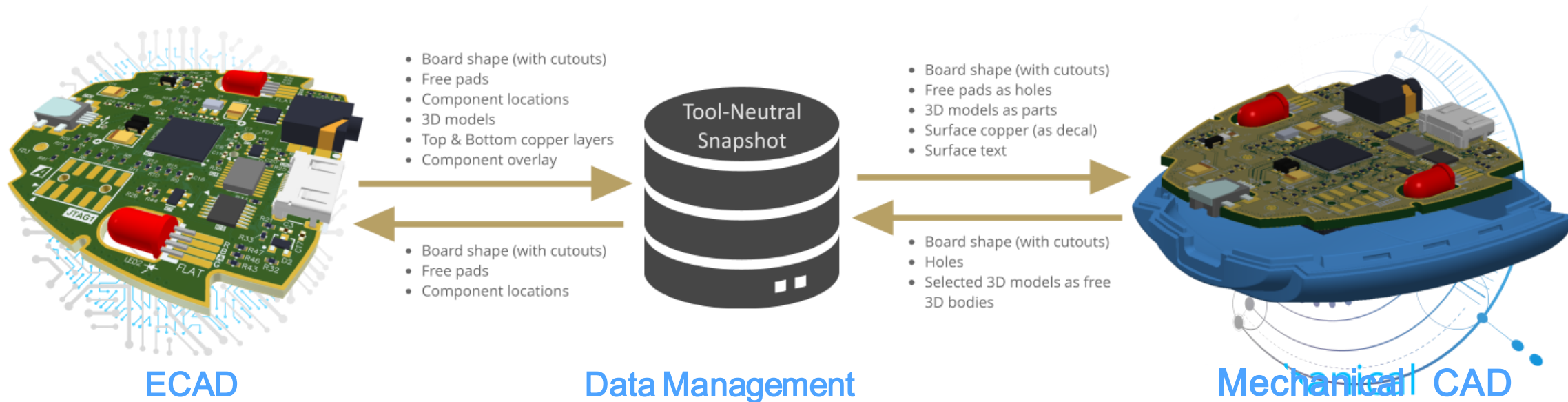


- True links between objects
- Full import and export of STEP and Parasolid models
- Support of Flex and Rigid-Flex boards in Multi-Board Assemblies and Any-Angle Section Views.

# ECAD – MCAD Collaboration



## Streamlined design collaboration with your MCAD





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# Design with Manufacturing

## Design WITH Manufacturing **vs.** Design FOR Manufacturing (DFM)

Traditional “DFM” provides a set of design guidelines to help ensure manufacturability.

Need for a bidirectional communication and exchange of information.

Ultimately connecting the engineering desktop directly to the manufacturing floor



# Output Generation

## Assembly Documents

The screenshot displays the 'Assembly Documents' interface, which is divided into two main panels. The left panel shows a hierarchical list of output categories, and the right panel provides a detailed view of the selected 'Assembly Outputs' container.

**Left Panel: Outputs**

Name	Data Source	Output Description	Enabled
Netlist Outputs			
[Add New Netlist Output]			
Simulator Outputs			
[Add New Simulator Output]			
Documentation Outputs			
Draftsman	BC0001.PCBDwf	Draftsman	
[Add New Documentation Output]			
Assembly Outputs			
Assembly Drawings	[PCB Document]	Assembly Drawings	
Generates pick and place file	[PCB Document]	Generates pick and place files	
Test Point Report	[PCB Document]	Test Point Report	
IPC-D-356 Netlist	[PCB Document]	Test Point Report	
[Add New Assembly Output]			
Fabrication Outputs			
[Add New Fabrication Output]			
Report Outputs			
Bill of Materials	[Project]	Bill of Materials	
Copy of Bill of Materials	BOM1.BomDoc	Bill of Materials	
[Add New Report Output]			
Validation Outputs			
[Add New Validation Output]			
Export Outputs			
[Add New Export Output]			
PostProcess Outputs			
[Add New PostProcess Output]			

**Right Panel: Output Containers**

The right panel shows the 'Assembly Outputs' container, which is currently selected. It displays a list of output containers and their details.

Container	Release management	Available to PCB	PCB Re
Assembly Drawing	Release management	Available to PCB	PCB Re
Path in server	...		
Local Path	C:\...\		
Bill Of Materials	Release management	Available to PCB	
Path in server	...		
Local Path	C:\...\		
Assembly Fi	Change or Remove		
Release	Generate content →		
Path in :	Generate and publish →		
Local Pa			
Bill Of Materials xls			
Hard Copy			
Job Name			
Print To \\CLDFS01\Supply Room B&W			
Printer	Default Printer		

Three green arrows point from the 'Assembly Outputs' container in the left panel to the 'Assembly Outputs' container in the right panel, indicating the selection and expansion of the container.

# Product Documentation



Release Bluetooth\_Sentinel \*

1. Configure Vault Release

2. Validate Project

3. Generate Data

4. Review Data

5. Upload Data

6. Execution Report

Include Assembly Data for No Variant PCBA-Bluetooth\_Sentinel-[NO VARIATIONS]-A.2

Bluetooth\_Sentinel.pdf ✓ View

Pick Place

Generates pick and place files ✓ View

Test Points

Test Point Report ✓ View

BOM

Bill of Materials ✓ View

Validation.PDF ✓ Passed

Include Assembly Data for No Variant PCBA-Bluetooth\_Sentinel-[NO VARIATIONS]-A.2

Bluetooth\_Sentinel.pdf ✓ View

Pick Place

Generates pick and place files ✓ View

Test Points

Test Point Report ✓ View

BOM

Bill of Materials ✓ View

Validation.PDF ✓ Passed

Include Assembly Data for Lite\_Version PCBA-Bluetooth\_Sentinel-LITE\_VERSION-A.1

Bluetooth\_Sentinel.pdf ✓ View

Pick Place

Generates pick and place files ✓ View

Test Points

Test Point Report ✓ View

BOM

Bill of Materials ✓ View

Validation.PDF ✓ Passed

Include Assembly Data for Deluxe\_Version PCBA-Bluetooth\_Sentinel-DELUXE\_VERSION-A.1

Bluetooth\_Sentinel.pdf ✓ View

Pick Place

Generates pick and place files ✓ View

Test Points

Test Point Report ✓ View

BOM

Bill of Materials ✓ View

Validation.PDF ✓ Passed

Explore Details

Explore Hide Details

File Name	Source	Status
BOM		
Bill of Materials	[Project]	Up To Date
Bill of Materials-Bluetooth_Sentinel.xlsx	[Project]	Up To Date
Pick Place		
Generates pick and place files	[PCB Document]	Up To Date
Pick Place for Bluetooth_Sentinel.txt	[PCB Document]	Up To Date
Test Points		
Test Point Report	[PCB Document]	Up To Date
Assembly Testpoint Report for Bluetooth_Sentinel.csv	[PCB Document]	Up To Date
Validation.PDF		Passed
Bluetooth_Sentinel.pdf		Up To Date

Release

Cancel

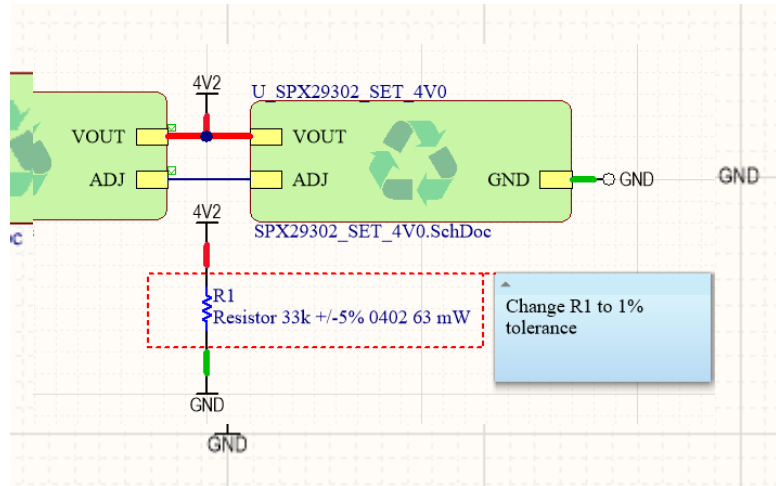
8 OKT

VAN DER VALK HOTEL  
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D&E  
event  
2019



# Reviewing



Comments

ACTIVE COMMENTS

12-Sep-2019 13:46  
admin admin

Change R1 to 1% tolerance

Edit Delete

Reply

Ctrl+W

Cut Ctrl+X

Copy Ctrl+C

Paste Ctrl+V

Pin Mapping...

Project Options...

Preferences...

Sheet Entry

Device Sheet Symbol

Harness

Directives

Text String

Text Frame

Note

Drawing Tools

Comment for Area... Ctrl+Alt+A

Comment for Point... Ctrl+Alt+P

Freehand comment Ctrl+Alt+R

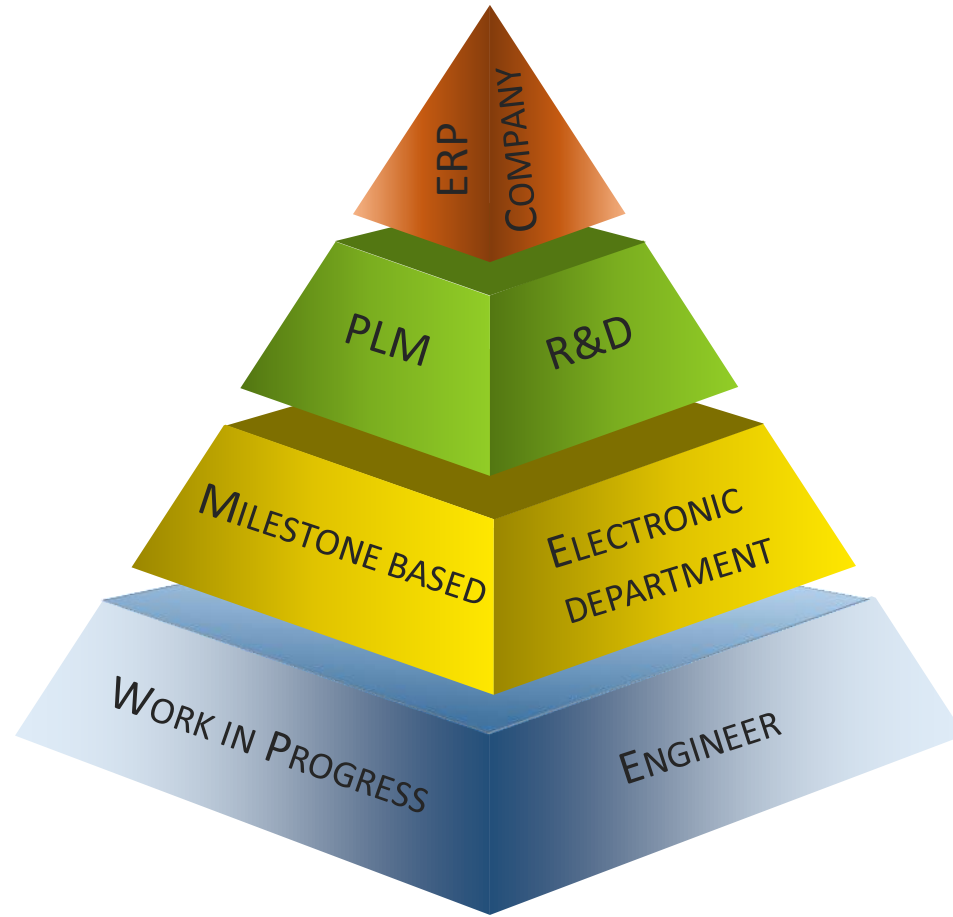
# Connected Platforms



- Dynamic conditions
  - difficult to keep everyone and everything in sync.
- Cloud-based platform
  - seamless access from all over the world
  - environment for effortless, multi-domain collaboration
  - real-time information sharing to ensure
    - synchronization,
    - accuracy and
    - reliable manufacturability.



# Data Management



# 4 Reasons for Data Management

- Right & Ready for Production
- Accelerated- or on Time Product Release
- Increased Design Quality
- Easy to find the right Parts







- Adres:  
Goorseweg 5  
7475 BB Markelo  
The Netherlands  
+31 547 33 40 45  
[www.altium.com](http://www.altium.com)
- Stand: 17
- Jan Grooten
- [jan.grooten@altium.com](mailto:jan.grooten@altium.com)