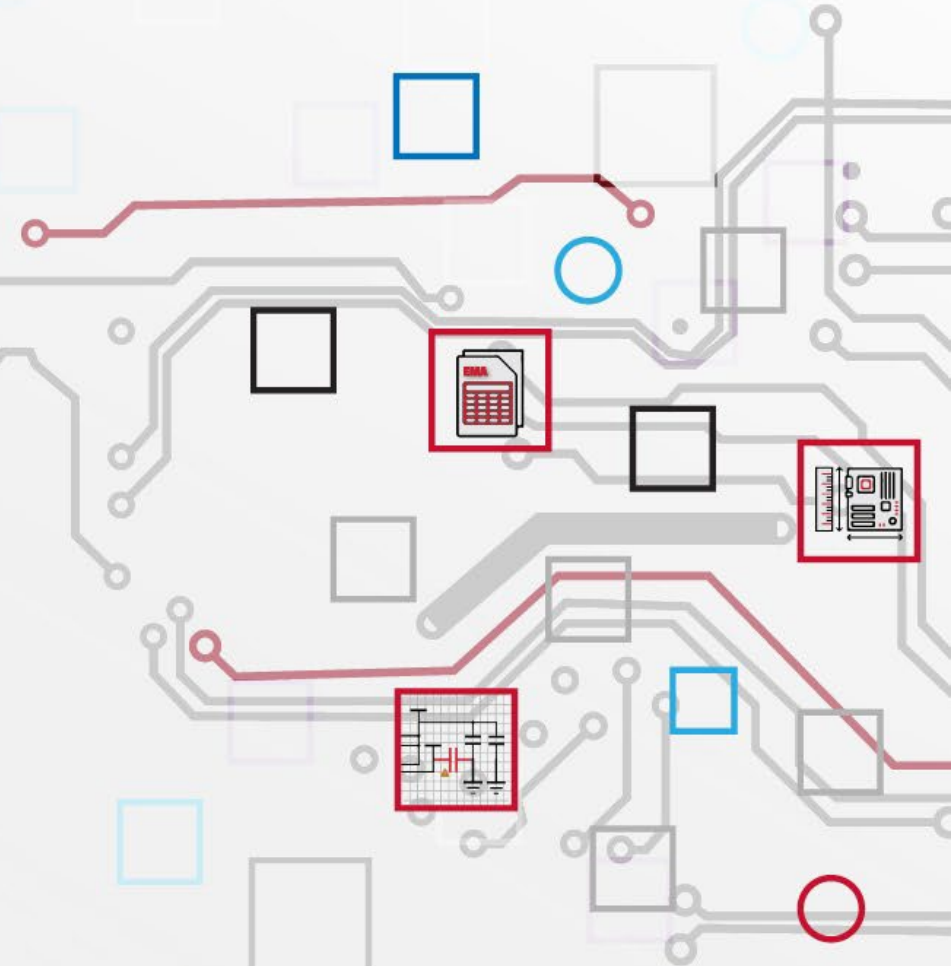


# Introduction to OrCAD X CIS

Presented by: Roger Chin



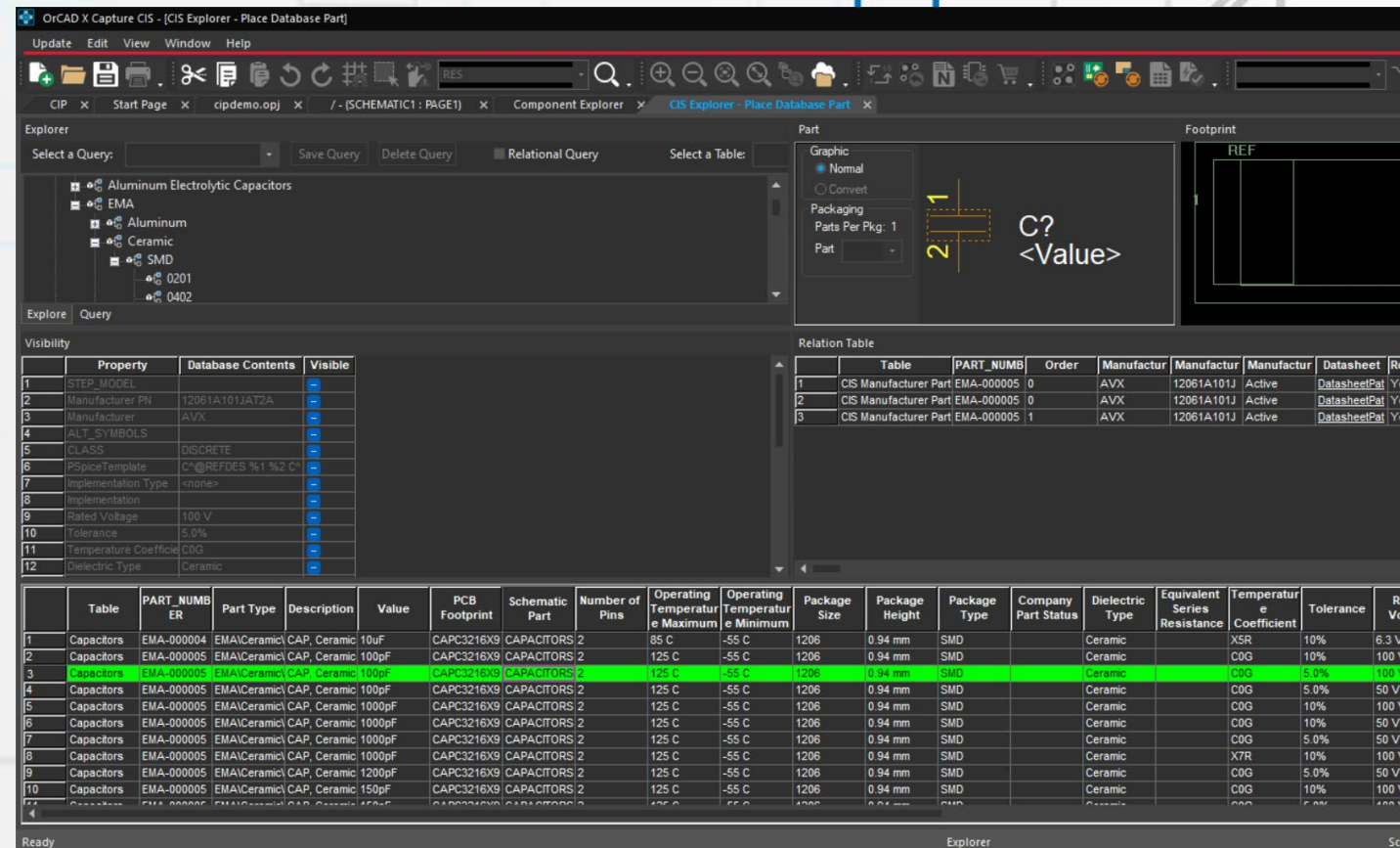
OrCAD X Capture CIS

# Now Included In OrCAD X

## CIS = Component Information System

CIS allows OrCAD to access a central database to:

- Organize and coordinate the part placement process
- Provides access to parametric and MFR data
- Streamlines searching and sorting



OrCAD X Capture CIS

# Centralized Library

With a centralized library you can:

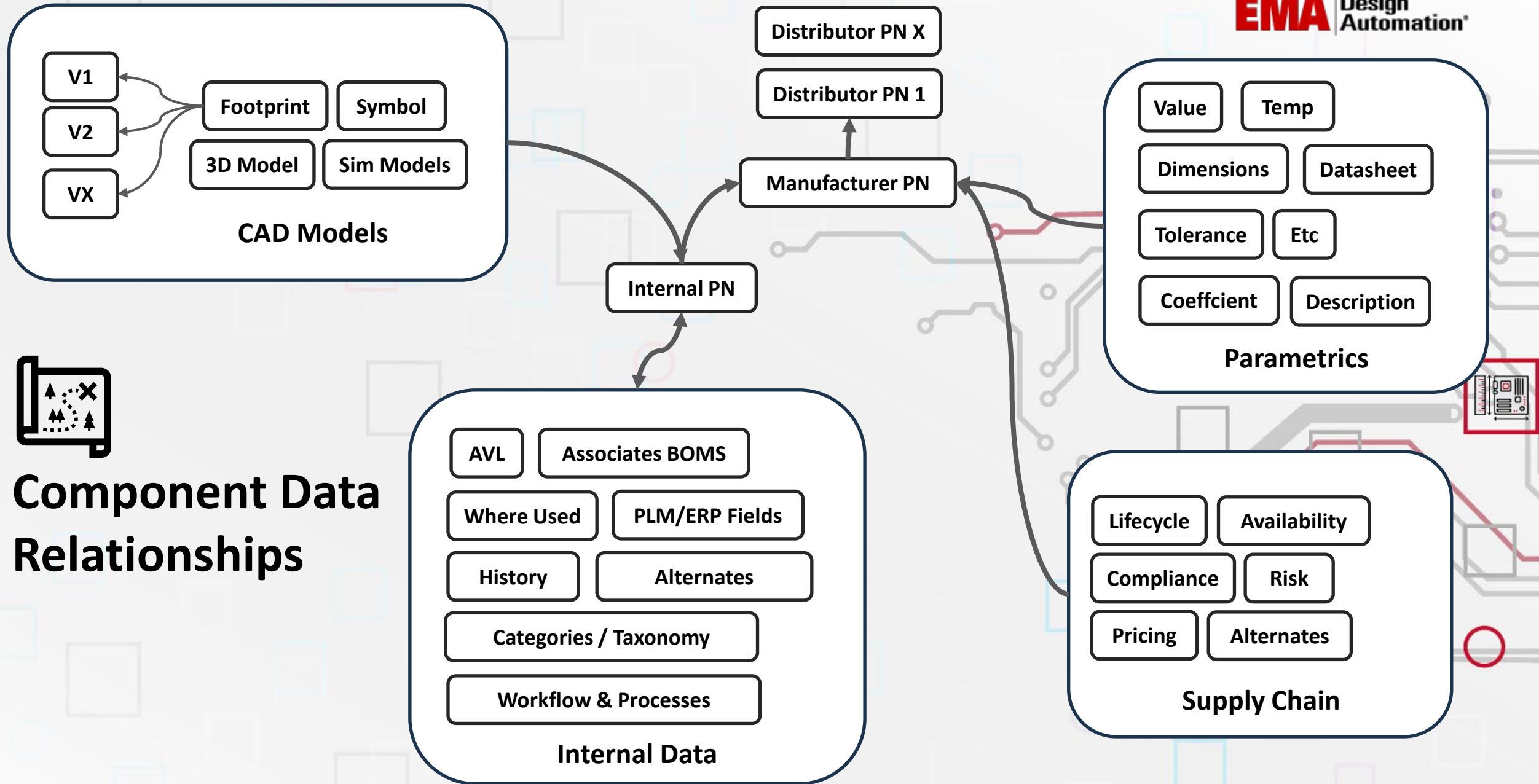
- Improve efficiency
- Promote reuse
- Implement supply chain resilience
- Automate BOM generation
- Connect with data sources (internal/external)

Capability	Individual Files	CIS
Data Reuse	None/Manual	Yes
Library Sharing	Error Prone Manual	Yes (automated)
Supply Chain data	Manual (properties on each symbol)	Reusable fields in database
Data Consistency	No (each engineer names their files)	Yes (based on schema)
Parametric Search	No	Yes
Alt Part Support	No	Yes
Variant Support	Manual	Yes
BOM Templates	No	Yes
Connect with enterprise systems (PLM, MRP, ERP)	No	Yes

# CIS UI

The screenshot displays the CIS UI interface with several key components highlighted by yellow callout boxes:

- Explore and Query Window:** Located at the top left, it features a tree view under 'SMD' with sub-items like 0201, 0402, 0603, 0805, 1206, and 1210. It includes buttons for 'Select a Query', 'Save Query', and 'Delete Query'.
- Schematic Symbol Window:** Located in the center, it shows a schematic symbol for a capacitor with a value 'C?' and '<Value>'. It includes a 'Part' section with options for 'Graphic' (Normal, Convert), 'Packaging', and 'Parts Per Pkg: 1'.
- PCB Footprint Window:** Located at the top right, it shows a reference 'REF' and a callout to a PCB footprint.
- Relational Manufacturing Window:** Located in the middle left, it displays a 'Relation Table' with columns for PART\_NUMBER, Order, Manufactur, Manufacturer PN, Manufacturer PN, Datasheet, RoHS Comp, and Image.
- Properties Window:** Located in the middle right, it displays a 'Visibility' table with columns for Property, Database Contents, and Visible.
- Database Part Window:** Located at the bottom, it displays a large table with columns for Table, PART\_NUMBER, Part Type, Description, Value, PCB Footprint, Schematic Part, Number of Pins, and Operati Temperature Maxim.

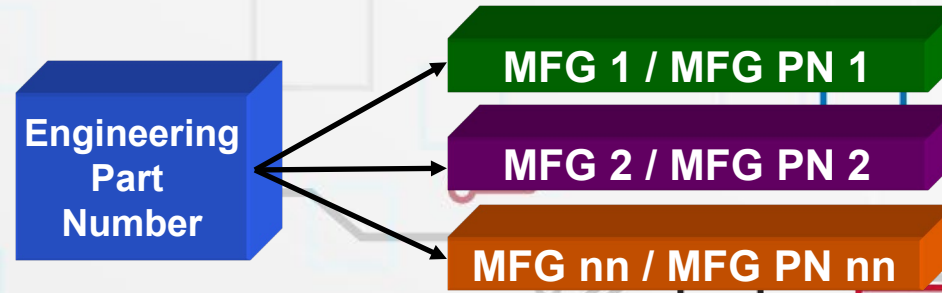


# Component Data Relationships

Architecture

# Relational Database

Supports a one-to-many database relationship between part information tables and related tables



Select a Table:  Save Query Delete Query  Relational Query Select a Table: All

	Property	Compare	Value
1	Manufacturer	=	AVX
2			

Query for data across the part and vendor tables/views

Explore Query

Relation Table

	Table	PART NUMBER	Order	Manufacturer	Manufacturer PN	Manufacturer PN Status	Datasheet	RoHS Co
1	CIS Manufacturer Parts	EMA-00000374V22	0	AVX	0603YC103MAT2A	Active	C:\Cadence\C	Yes
2	CIS Manufacturer Parts	EMA-00000374V22	0	AVX	0603YC103MAT4A	Active	C:\Cadence\C	Yes
3	CIS Manufacturer Parts	EMA-00000374V22	0	AVX	0603YC103MAT7A	Active	C:\Cadence\C	Yes
4	CIS Manufacturer Parts	EMA-00000374V22	3	KEMET Corporation	C0603C103M4RACTU			
5	CIS Manufacturer Parts	EMA-00000374V22	4	Vishay	VJ0603Y103MXBAC31			

	Table	PART_NUMBER	Part Type	Description	Value	PCB Footprint	Schematic Part	Number of Pins	Operating Temperature Maximum	Operating Temperature Minimum
1	Capacitors	EMA-00000372V22	EMA\Ceramic\SMDV0603	CAP, Ceramic, SMD, 0.01 uF,	0.01uF	CAPC1608X86N	CAPACITORS\CAP	2	125 C	-55 C
2	Capacitors	EMA-00000374V22	EMA\Ceramic\SMDV0603	CAP, Ceramic, SMD, 0.01 uF,	0.01uF	CAPC1608X86N	CAPACITORS\CAP	2	125 C	-55 C
3	Capacitors	EMA-00000375V22	EMA\Ceramic\SMDV0805	CAP, Ceramic, SMD, 0.01 uF,	0.01uF	CAPC2012X71N	CAPACITORS\CAP	2	125 C	-55 C

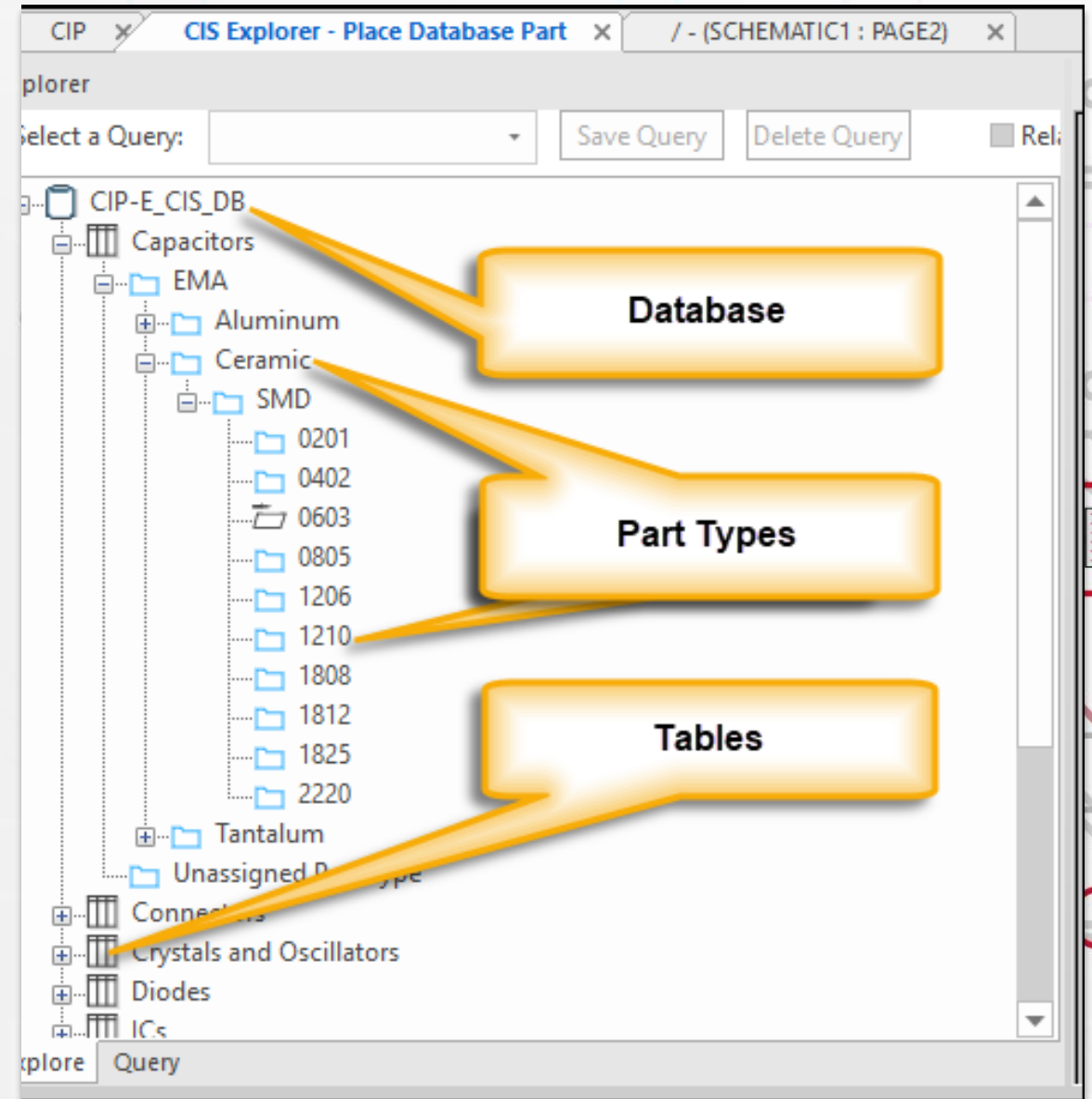
UI Elements

# Explorer Window

Contains two tabs:

Explore – navigate through tables and sub tables

Query – search and sort based on parametric data

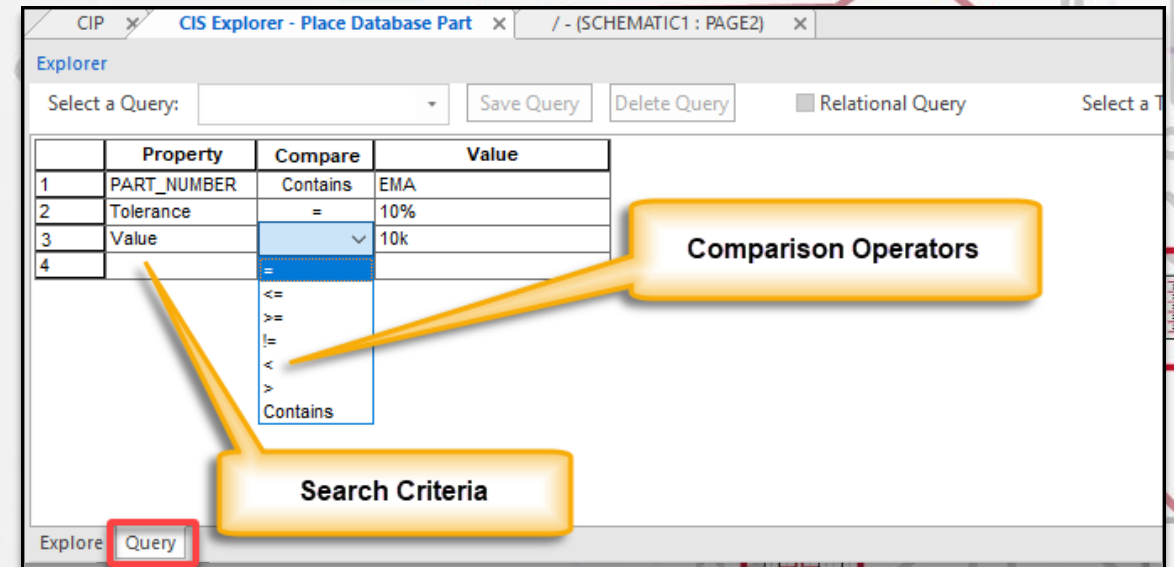


## UI Elements

# Explorer Window

## Query tab

- Provides an efficient way to find parts
- Returns a list of parts based on the search criteria
- Three configurations for search – Property, Compare, and Value
- Allows for multiple conditions searched together
- Save queries for future reuse





# CIS Part Manager Bulk Operations

Ensures design is in sync with your component database

- Uses your Part Number field to check each symbol against its current database state.
- Any differences between the schematic parts and its database properties are flagged.
- You have the option to update each symbol to match the database or to leave as is.
- Can check if symbol in cache is outdated compared to source library

The Link Database Part command allows you to swap out part data for multiple symbols without touching the schematic

Update Part - Instance

	Company Part Status	PART_NUMBER	Part Type	Des
DB Props	Obsolete	EMA-00007180V22	EMA\SMD\Memory	IC, Mem
Sch Props U2		EMA-00007180V22		IC, Mem














Yes Yes All No No All Cancel

8	J2	15-24-7240	EMA-00005995	Approved: Current
9	.C7	0.1uF	EMA-00000405V22	Approved: Current
10	.C8	0.1uF	EMA-00000405V22	Approved: Current
11	.C9	0.1uF	EMA-00000405V22	Approved: Current
12	.C10	0.1uF	EMA-00000405V22	Approved: Current
13	.C11	0.1uF	EMA-00000405V22	Approved: Current
14	.C12	0.1uF	EMA-00000405V22	Approved: Current
15	.C13	0.1uF	EMA-00000405V22	Approved: Current
16	.C14	0.1uF	EMA-00000405V22	Approved: Current
17	.R2	41.2kOhm	EMA-00002890V22	Approved: Current
18	.P1	53261-0819	EMA-00006083V22	Approved: Current
19	.U4	EPCS4	EMA-00006523	Approved: Current
20	.R1	41.2kOhm	EMA-00002890V22	Approved: Current
21	.R3	41.2kOhm	EMA-00002890V22	Approved: Current
22	.R4	41.2kOhm	EMA-00002890V22	Approved: Current
23	.U5	LT1763	EMA-00006788V22	Approved: Current
24	.U2	27C801	EMA-00007180V22	Approved: Not Current

Architecture

# Placed Part Status

Part manager keeps track of part status and synchronization to ensure current data is used

Status Dot Color	Placed Status Part	Description
	Approved: Current	The part number property value on the placed part matches the database part, and all of the transferrable properties match
	Approved: Defined	The placed part has a defined part number property but it has not yet been checked against the database part
	Approved: Undefined part reference	The placed part has an undefined part reference (such as "R?")
	Temporary: Current	The placed part has temporary part number and transferrable properties match the database part
	Temporary: Defined	The placed part has a temporary part number but has not yet been checked against the database part
	Approved: Package out of date	The symbol in the schematic does not match the symbol in the database
	Approved: Not Current	A part number property exists in the database or more of the transferrable properties of the schematic symbol do not match the database part
	Approved: Duplicate	The part number on the placed part occurs more than once in the parts database. This status only occurs if your configuration file does not allow duplicate part numbers
	Approved: Not Found	The part number property on the placed part does not exist in the parts database
	Undefined	The placed part does not have a part number property
	Temporary: Not Current	One or more of the transferrable properties of the schematic symbol on the temporary part do not match the database part
	Temporary: Duplicate	This status only occurs if you intentionally duplicate a temporary part number
	Temporary: Not Found	The part number property value on the placed temporary part does not exist in the parts database

Automation

# Bill of Materials (BOM)

Create report templates for different manufacturing and engineering requirements

Relational data, such as

- multiple manufacturing numbers,
- Distributor identification
- costs
- Create BOMs for variants

The screenshot shows the 'Standard Bill of Materials' configuration window. It includes a 'Template Name' dropdown set to 'New Template'. Under 'Report Properties', a list of properties is shown on the left, with 'Implementation Path' and 'REUSE\_MODULE' selected. The 'Output Format' section on the right lists 'Item Number', 'Quantity', 'Part Reference', 'PART\_NUMBER', 'Value', 'Description', and 'Device Type'. Below this, there are checkboxes for 'Keyed', 'Allow Saving Title Block Prop', and 'List Relational Data Fields'. The 'Part Reference Options' section has 'Standard' selected, with a 'List Separator' of 'Space(' ')'. The 'Output Mechanical Part Data' section has 'Mechanical parts only' selected, and 'Relational Data Displayed' is checked with 'Max Rows' set to 5. The 'Scope' section has 'Process Entire Design' selected. At the bottom, there are options for 'Export BOM report to Excel' and 'Merge BOM Reports', and a 'Variants' section with a dropdown set to '<Core Design>'. Three yellow callout boxes point to specific features: 'Properties to be output in the BOM' points to the 'Output Format' list; 'Specify the order of the properties in the BOM' points to the up/down arrows; and 'Output relational data to the BOM' points to the 'List Relational Data Fields' checkbox.

# CIS BOM Template

Item Number	PART_NUMBER	Part Reference	Quantity	Value	Description	CIS Manufacturer Parts : Manufacturer	CIS Manufacturer Parts : Manufacturer PN	CIS Manufacturer Parts : Distributor	CIS Manufacturer Parts : Distributor PN
1	EMA-00000491V22	C1	1	100pF	CAP, Ceramic, SMD, 100 pF, 10 %, 50 V, 0603	AVX	06035A101KAT2A	Digi-Key	478-3717-2-ND
						AVX	06035A101KAT2A	SiliconExpert	24623444
2	EMA-00000401	C2 C3 C6	3	0.1uF	CAP, Ceramic, SMD, 0.1 uF, 5.0 %, 16 V, 0603	AVX	0603YC104JAT9A	SiliconExpert	47980510
						AVX	0603YC104JAT4A	SiliconExpert	24626736
						AVX	0603YC104JAT2A	SiliconExpert	24813811
3	EMA-00000517	C4 C5	2	100uF	CAP, Tantalum, SMD, 100 uF, 10 %, 6.3 V, 6032-28	AVX	TPSC107K006S0150	Digi-Key	478-1764-2-ND
						AVX	TPSC107K006S0150	SiliconExpert	60523358
						AVX	TPSC107K006R0150	Digi-Key	478-1764-2-ND
4	EMA-00000405V22	C7 C8 C9 C10 C11 C12 C13 C14	8	0.1uF	CAP, Ceramic, SMD, 0.1 uF, 10 %, 50 V, 0805	AVX	08055C104KA74A	SiliconExpert	42983039
						AVX	08055C104KA72A	SiliconExpert	24598764
5	EMA-00005995	J2	1	15-24-7240	CONN, Header, 15-24-7240, 24, TH	Molex Inc	15-24-7240	Digi-Key	WM1025-ND
						Molex Inc	15-24-7240	SiliconExpert	46298256
6	EMA-00006083V22	P1	1	53261-0819	CONN, Header, 53261-0819, 8, SMD	Molex Inc	53261-0819	SiliconExpert	50153492
7	EMA-00002890V22	R1 R2 R3 R4	4	41.2kOhm	RES, Thin Film, 41.2 kOhm, 0.1 %, 1/16 W, SMD, 0603	Koa Speer	RN731JTTDD4122B25	SiliconExpert	36027643
						Koa Speer	RN731JTTD4122B25	SiliconExpert	26988139
8	EMA-00007180V22	U2	1	27C801	IC, Memory Devices, EEPROM, 27C801, PLCC-32	STMicroelectronics	M27C801-100K1	SiliconExpert	18763305
9	EMA-00007402	U3	1	XC18V01	IC, Memory Devices, PROM, XC18V01, SOIC-20	Xilinx	XC18V01SOG20C	SiliconExpert	19400039
						Xilinx	XC18V01SOG20C	Digi-Key	122-1464-ND
10	EMA-00006523	U4	1	EPCS4	IC, Programmable Devices, Config Device, EPCS4, SOIC-8	Altera Corporation	EPCS4SI8N	SiliconExpert	21883537
						Altera Corporation	EPCS4SI8N	Digi-Key	544-1379-5-ND
						Altera Corporation	EPCS4SI8N	Digi-Key	544-1379-5-ND
11	EMA-00006788V22	U5	1	LT1763	IC, Voltage Regulator, Linear-LDO, LT1763, SOIC-8	Linear Technology	LT1763CS8-3#TRPBF	Digi-Key	LT1763CS8-3#TRPBF-ND
						Linear Technology	LT1763CS8-3#TRPBF	SiliconExpert	19924516
						Linear Technology	LT1763CS8-3#PBF	SiliconExpert	20092587

Architecture

# Design Variants

- Variants are different assembly configurations of the core design
- Use Part Manager to create and maintain variants

**Part Manager - VARIANTS.DSN**

#	Schem...	Part Reference	Value	Part Number	Part Status
1	SCH...	U4	XC18V01	EMA-00007402	Approved: Cu
2	SCH...	U1	LT1763	EMA-00006786	Approved: Cu
3	SCH...	U6	EPCS4	EMA-00006523	Approved: Cu
4	SCH...	R2	4.75kOhm	EMA-00003690	Approved: Cu
5	SCH...	R1	4.75kOhm	EMA-00003690	Approved: Cu
6	SCH...	U5	27C801	EMA-00007179	Approved: Cu

**CIS manages design variants in the Part Manager. Core design parts are shown when clicking on the top folder in the folder view. The list view reflects the core part values and core part numbers.**

**Part Manager - VARIANTS.DSN**

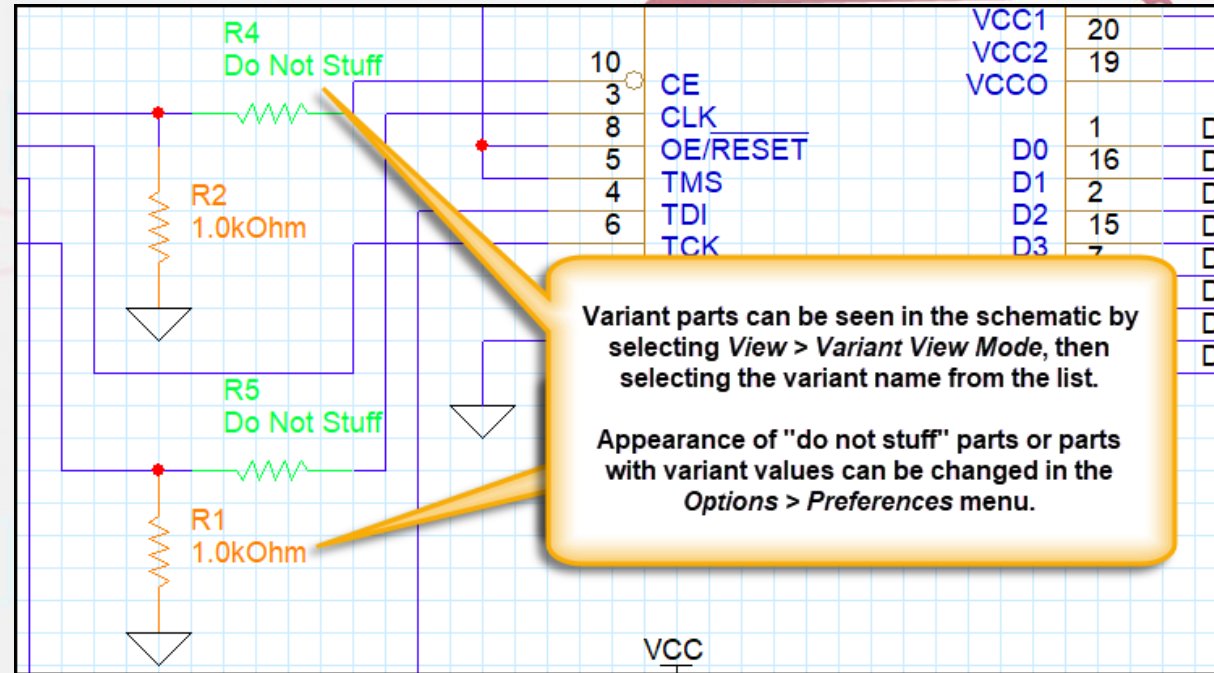
#	Schem...	Part Reference	Value	Part Number	Part Status
1	SCH...	U6	EPCS4	EMA-00006523	Approv
2	SCH...	U5	27C801	EMA-00007179	Approv
3	SCH...	U4	XC18V01	EMA-00007402	Approv
4	SCH...	U1	LT1763	EMA-00006786	Approv
5	SCH...	R5	Do Not Stuff	Do Not Stuff	Approv
6	SCH...	R4	Do Not Stuff	Do Not Stuff	Approv
7	SCH...	R2	1.0kOhm	EMA-00002609V22	Approv
8	SCH...	R1	1.0kOhm	EMA-00002609V22	Approv
9	SCH...	J3	15-24-/240	EMA-00005995	Approv
10	SCH...	J2	22-15-2086	EMA-00006006	Approv
11	SCH...	C14	0.1uF	EMA-00000403	Approv

**Variant Parts**

UI Elements

# Viewing Variants

- Use the Variant View Mode to display variant information on a schematic page
- Customize variant colors in the Capture Preferences



UI Elements

# Variant Reports

- Variant BOM shows the core design part numbers and their variants
- Here, R4 and R5 are *Do Not Stuff* on the variant, and R1 and R2 have a different value and part number

CIP x Start Page x VARIANTS.VRT\* x

Capture CIS - Variant Report  
Report Created on Friday Apr 24 07:00:58 2020

Item Number	Part Reference	<Core Design>	NV	PART_NUMBER	Value	PCB Footpr
8	C8	EMA-0000403				
9	C9	EMA-0000403				
10	C10	EMA-0000403				
11	C11	EMA-0000403				
12	C12	EMA-0000403				
13	C13	EMA-0000403				
14	C14	EMA-0000403				
15	J2	EMA-00006006				
16	I3	EMA-00005005				
17	R1	EMA-00003690	EMA-00002609V22	[ EMA-00003690 ] EMA-00002609V22	[ 4.75kOhm ] 1.0kOhm	RESC1608
18	R2	EMA-00003690	EMA-00002609V22	[ EMA-00003690 ] EMA-00002609V22	[ 4.75kOhm ] 1.0kOhm	RESC1608
19	R4	EMA-00003600	Do Not Stuff	Do Not Stuff	Do Not Stuff	Do Not Stu
20	R5	EMA-00003600	Do Not Stuff	Do Not Stuff	Do Not Stuff	Do Not Stu
21	U1	EMA-00006786				
22	U4	EMA-00007402				
23	U5	EMA-00007179				
24	U6	EMA-00006523				

Relational DB

# What About the Actual Database?

CIS opens up a whole new world connected to one standardized central database, **but** CIS is itself not an actual database

Capability	Individual Files	CIS
Data Reuse	None/Manual	Yes
Library Sharing	Error Prone Manual	Yes (automated)
Supply Chain data	Manual (properties on each symbol)	Reusable fields in database
Data Consistency	No (each engineer names their files)	Yes (based on schema)
Parametric Search	No	Yes
Alt Part Support	No	Yes
Variant Support	Manual	Yes
BOM Templates	No	Yes
Connect with enterprise systems (PLM, MRP, ERP)	No	Yes



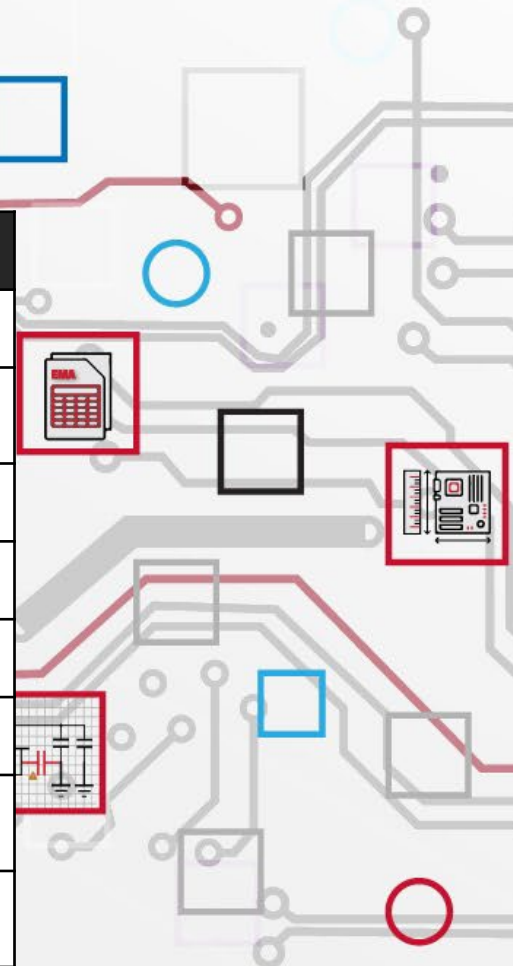
Relational DB

# Database Setup Considerations

Setting up a database schema of tables and fields is no trivial task and requires:

- Creating tables and subtables (called Part Types in CIS)
- Setting up field names per table
- Determining which field need to map to schematic

Capability	OrCAD X CIS
Setup	Required
Making Updates / Changes	Difficult / Manual (done in Access, SQL, etc)
Data Tracking / History	Manual
Schema	User must define schema
Role Management	None
Change Notifications	Manual
Direct access to part distributor parametric data	Manual update required
Connect with enterprise systems (PLM, MRP, ERP)	Manual



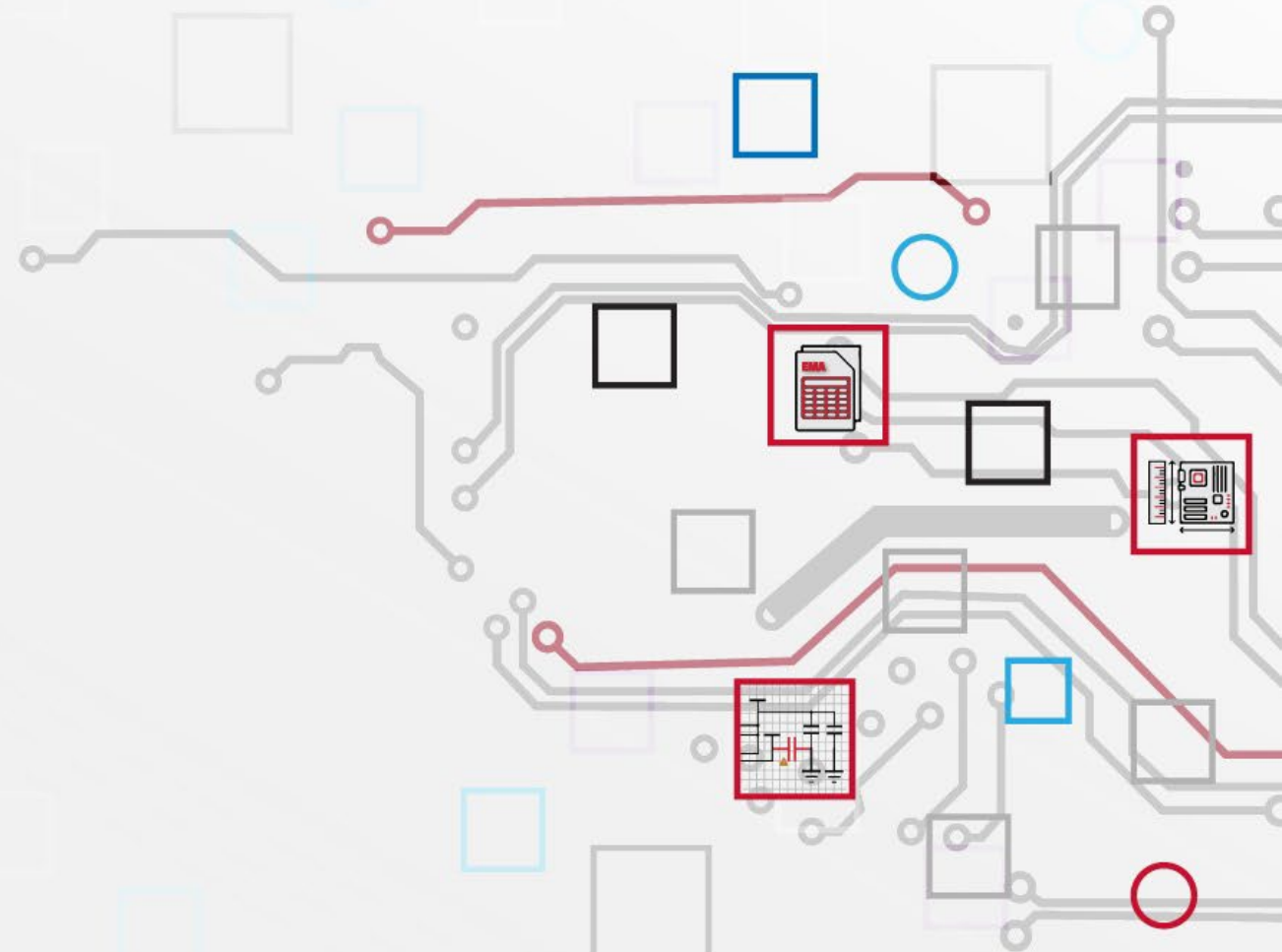
Relational DB

# Database Setup Considerations

OrCAD CIP was designed to help automate these processes and add additional capabilities leveraging your managed data.

Capability	OrCAD X CIS	OrCAD X CIP
Setup	<b>Required</b>	Minimal (automated configuration)
Making Updates / Changes	Manual (done in Access, SQL, etc)	Easy/Automated (web-based forms)
Data Tracking / History	Manual	Automated
Schema	User must define schema	Standard schema provided
Role Management	None	Yes
Change Notifications	Manual	Yes
Direct access to part distributor parametric data	Manual update required	Automated
Connect with enterprise systems (PLM, MRP, ERP)	Manual	Automatable

# Demo



# Thank You

