



ECAD Library Management

— Altium 365 Workspace —

Scope : Managed Library

Application : Components Library Management

ECAD stands for electronic computer-aided design. Libraries are containers to store components in. Components may consist of schematic symbols, PCB footprints (shapes), simulation models and a lot of other parameters, like MPN (Manufacturer Part Number), manufacturer, value, etc.

Components Library Management is to ensure every team has access to the correct component information on-demand. This helps designers to stay productive and focus on designing great new products, Components engineers to handle the up-to date list with revision history of components and Procurement team to maintain the sourcing of components based on the stock availability.



Client's situation before the project commencement

The client used multiple library files with different standards to cater to the diverse design needs of multiple design teams. They kept several spreadsheets to document details about each part and its parameters. In the beginning, there weren't any issues among different teams, such as components engineering and procurement.

Over time, managing the library became challenging as the number of files and spreadsheets increased. It became a hectic task to collaborate with multiple teams. All of the teams faced struggles in handling these files efficiently.



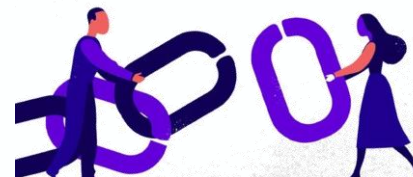
Pros:

- Ease of use
- Versatility
- Adaptability
- Customization
- Detailed Information



Cons:

- Risk of Inconsistency
- No revision control
- Complexity Over Time
- Coordination Challenges
- Increased Overhead



Managed Library - SoW



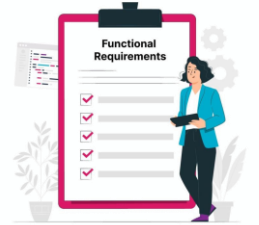
Challenges



- Multiple standalone library files
- Multiple spreadsheet for the component details
- Own variant of Library Design Standards
- BOM Management
- Part duplication
- Unapproved or Obsolete parts
- Collaboration among different teams
- Manage vendor part data and relationships
- Lacking structure



Requirements

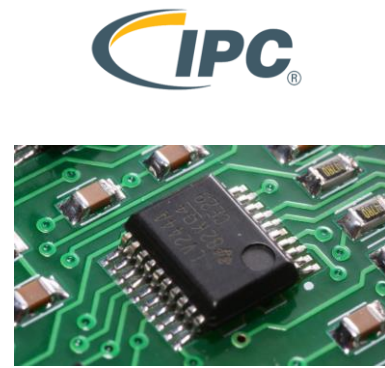
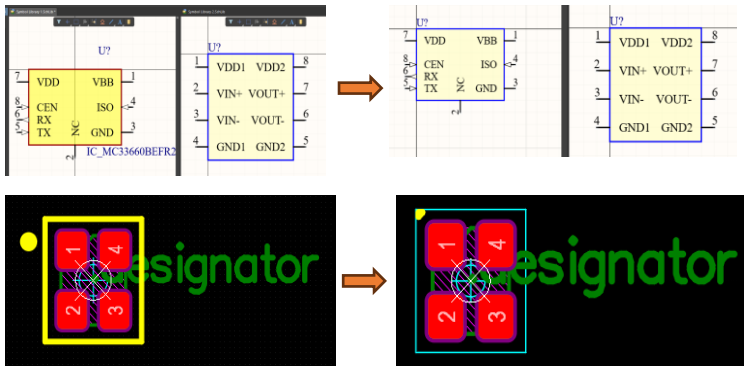


- Managed Library – Centralized Content
- Simultaneous access to Different Design teams
- Relationship between different teams
- Access to Design centres at multiple locations
- Ensure Consistency
- Revision History / Lifecycles
- Up-to-date supply chain data

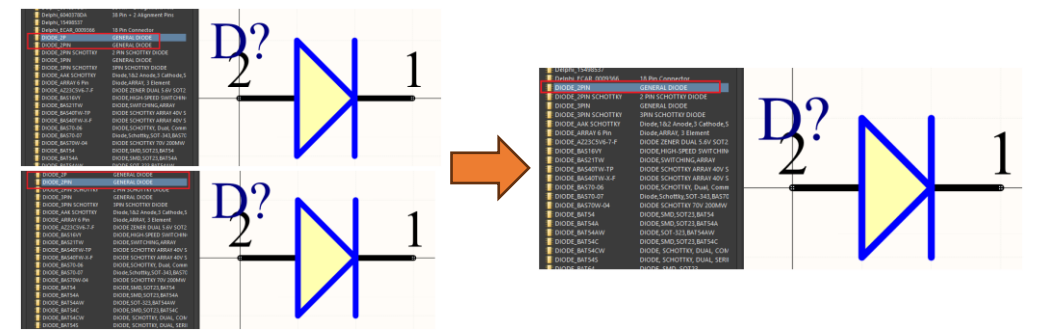


How we executed? (Cont.)

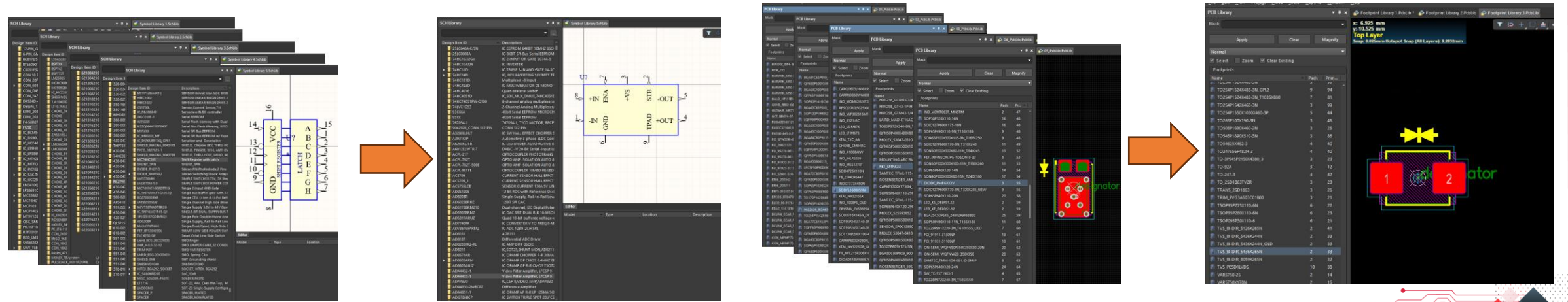
- Library standards verification



- Deletion of duplicate Parts
- Deletion of unapproved or obsolete parts

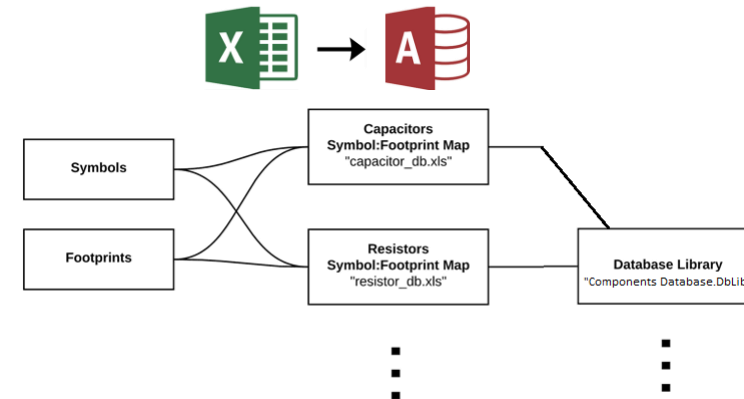


- Combine multiple libraries into organized library

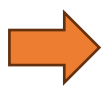



How we executed? (Cont.)

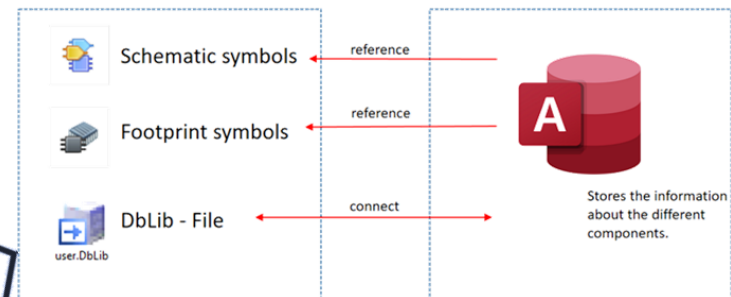
- Split the components into types (capacitor, resistor, IC, etc.)
- Added common and specific parameters for every type
- Introduced Plm Part Numbers for ease of identification of components
- Component details in the spreadsheet are converted to Access Tables
- Creation of Access database and Database Library (Altium Designer)



PLM_PartNo	Description	Type	Eng_Manufa	Eng_MFG_Par	Value	Tolerance	Voltage	Package	Tmin	Tmax	Qualifs	Symbol	Symbol_Lib1	Footprint
CAP_00001	CAP 10p 5% 50V C0G Ceramic	Capacitor	MURATA	GCMB1887H103-10	10.0p	5%	50V	0603	-55	125	AEC Q200	CAPACITOR - NO	Symbol Library.Sc\CAPC00011E	Footprint Library 2
CAP_00002	CAP 0663 10NF 10% 50V Ceramic	Capacitor	MURATA	GCMB1887H103-10	10.0nF	10%	50V	0603	-55	125	AEC Q200	CAPACITOR - NO	Symbol Library.Sc\CAPC00011E	Footprint Library 2
CAP_00003	CAP 12p 5% 50V C0G 0603 Ceramic	Capacitor	AVX	CL10C12080NNH-12	12.0p	5%	50V	0603	-55	125	AEC Q200	CAPACITOR - NO	Symbol Library.Sc\CAPC00031E	Footprint Library 1



Description	Type	Eng_Manufa	Eng_MFG_Par	Tmin
IC,SOT23-5,G	Gate	TI	SN74AUI1G08	-40
IC 74CBLV324	Switch			-40
IC SN74AHC24	Buffer/Line Dr	TEXAS	SN74AHC24	-40
IC SN74AHC14	Buffer/Line Dr	TEXAS	SN74AHC14	-40
IC,SC70-6,TRAI	Translators	TI	SN74LVC45C	-40
IC SN74LVCT24	Translators			-40
IC,SOIC14,OP+	Op Amps	ST	LM2903	-40
IC,SOIC8,COMI	Comparators	ST	LM2903	-40
IC,SOIC8,OPAI	Op Amps	TI	LM2904MX	-40
IC LPV321M5	Op Amps	NATIONAL	LPV321M5/N	-40
IC MCP6004	TS Op Amps	MICROCHIP	MCP6004T-E/S	-40
IC,SOT23-6,OP	Op Amps	ANALOG DEVI	ADA4851-1YR1	-40
IC ADCMP608B	Comparators	ANALOG DEVI	ADCMP608BKS	-40
IC NCS2200S0	Comparators	ON	NCS2200S0T2	-40
IC LM2901VQP	Comparators	TEXAS INSTRU	LM2901VQPWI	-40
IC MAX4614	4x Switch	MAXIM	MAX4614 ESD	-40
IC,LFSCP20,SW	Switch	ANALOG DEVI	ADG786BCPZ-F	-40
IC,MSOP10,D4	Switch	ANALOG DEVI	ADW54010Z-0F	-40



How we executed? (Cont.)

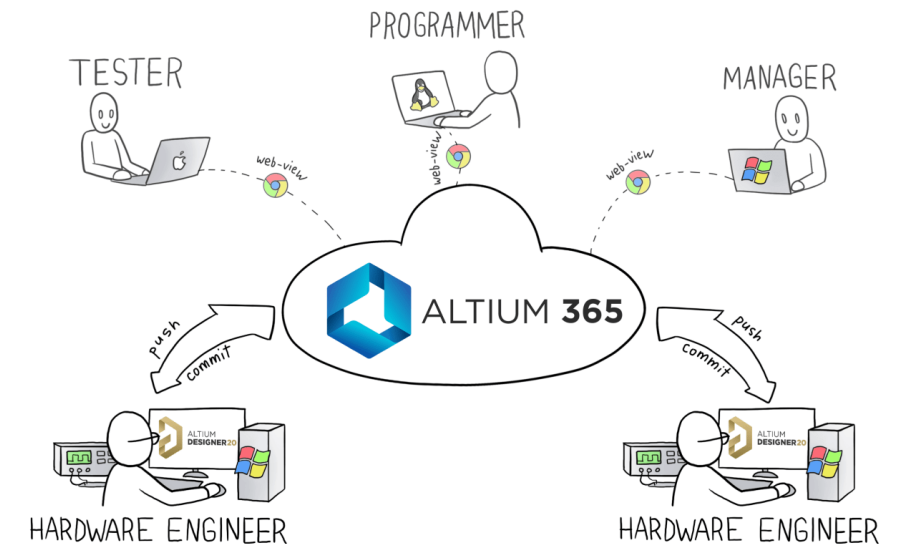
Component Library Management – (Altium 365 Workspace)

Database Library imported into centralized location (preferable – Altium 365 Workspace) for the ease of usage and application between all the teams .

- Workspace in the cloud (Altium 365 – Cost effective connected cloud based platform)
- Import the Database Library into Workspace by the Library Importer
- Validate and resolve the import issues
- Update the library details as per usage by the respective teams.
- Make the connection with Altium 365 workspace to synchronize every time before the application (to make it up-to date files)



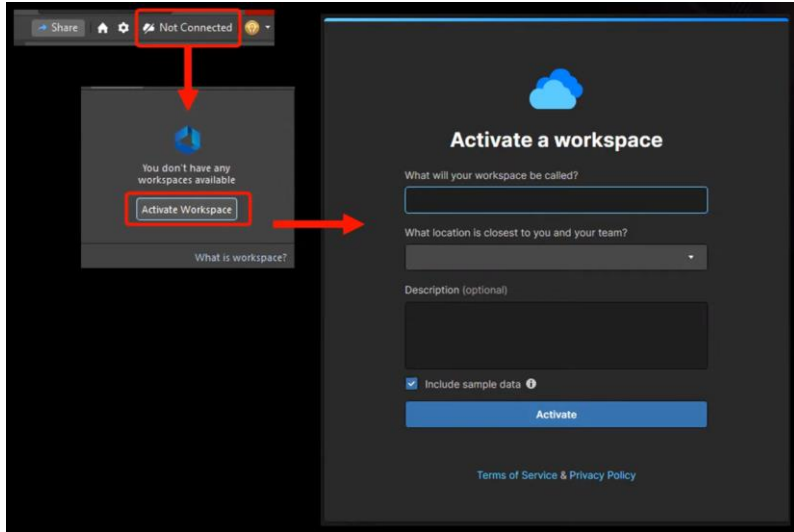
WORK FROM **ANYWHERE**
CONNECT WITH **ANYONE**



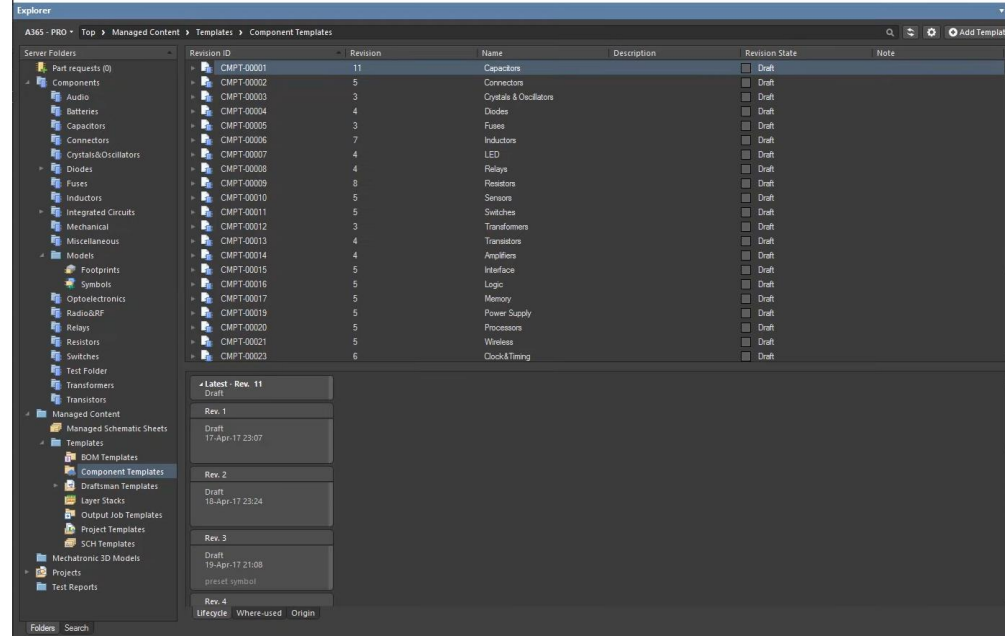
How we executed? (Cont.)

Component Library Management – (Altium 365 Workspace)

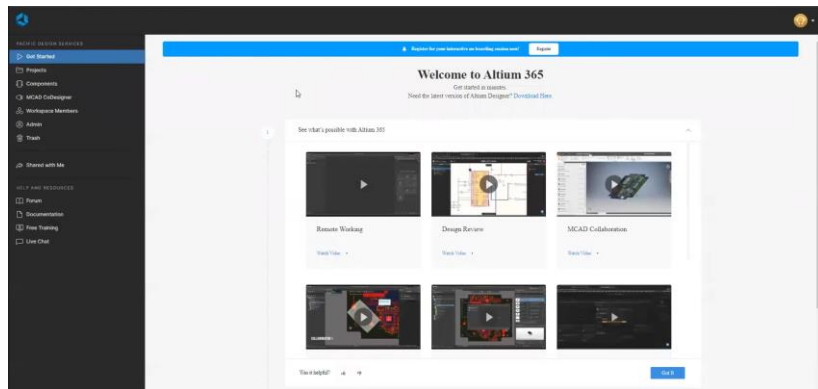
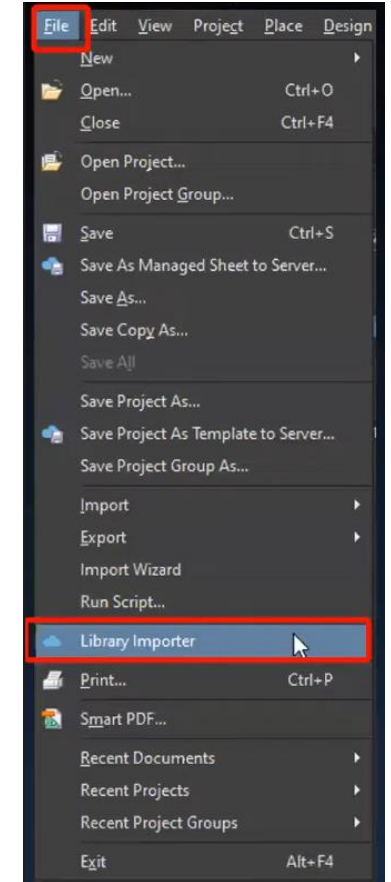
Altium 365 Workspace



Connected in Altium Designer – Explorer Panel



Altium Designer – Library Importer

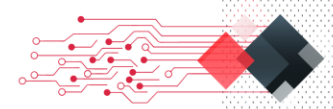
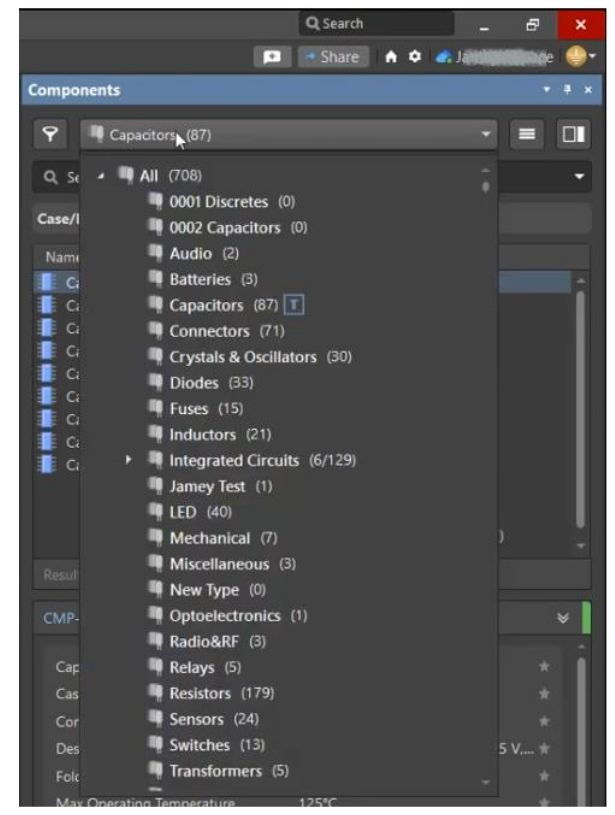
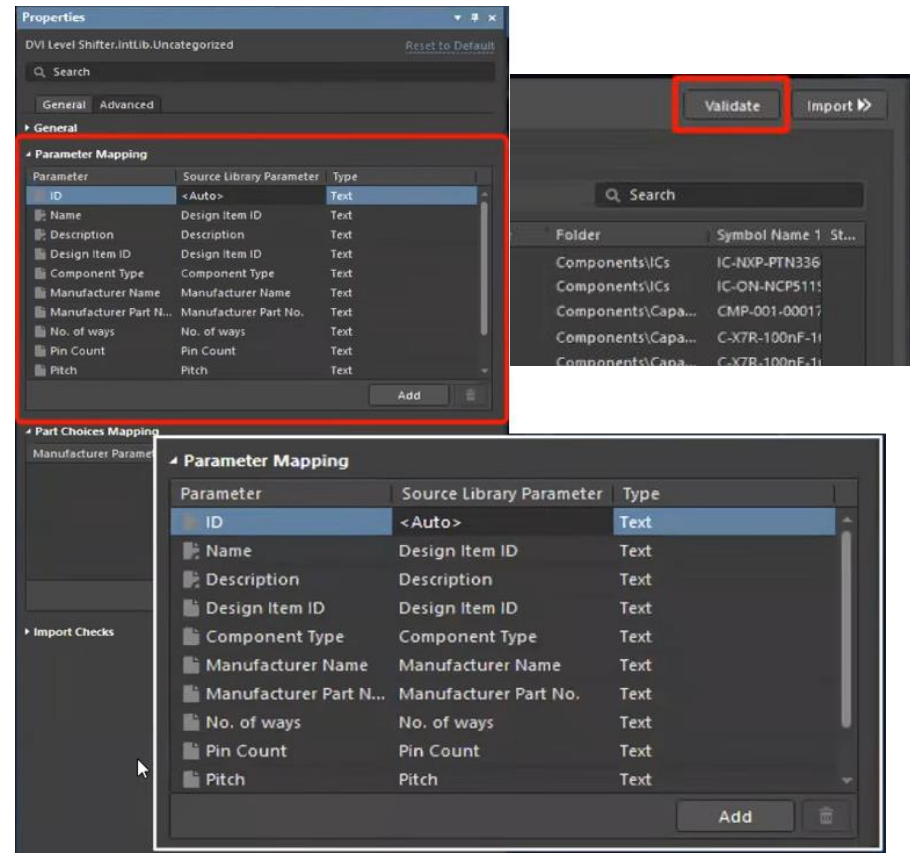
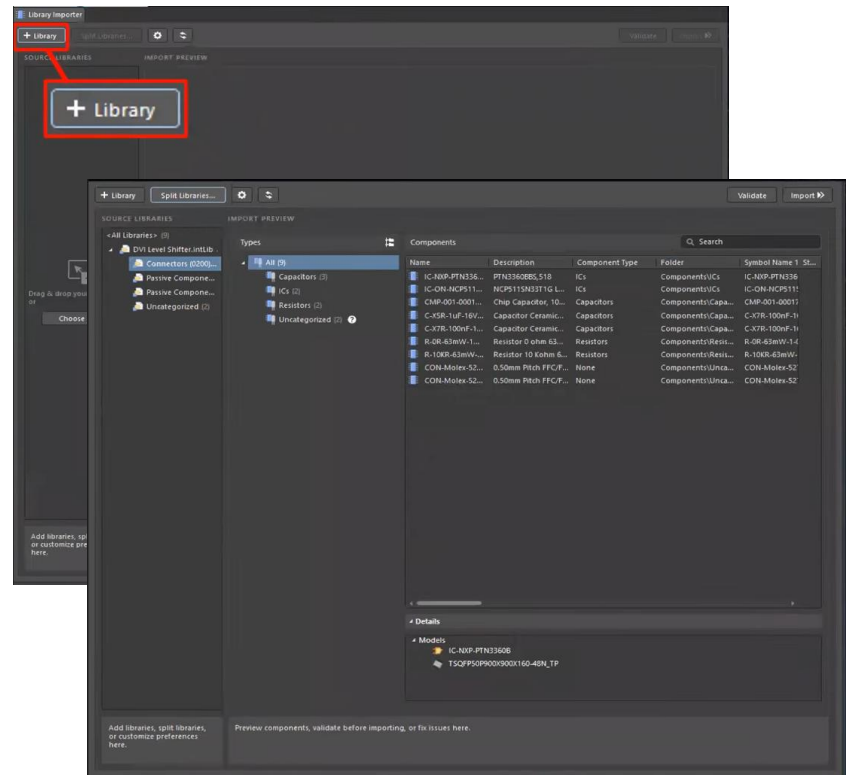


How we executed?

Component Library Management – (Altium 365 Workspace)

Altium Designer – Library Importer – Steps to import the database library

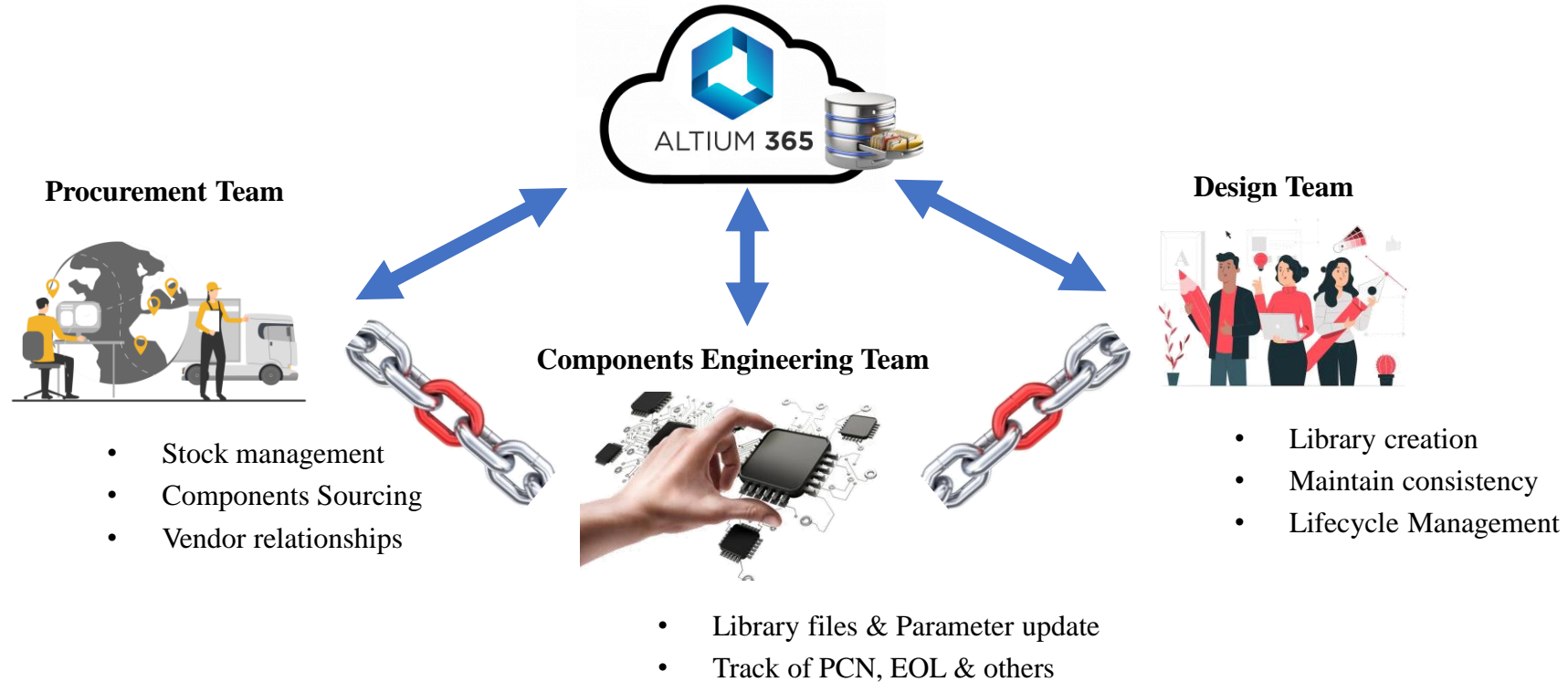
Altium Designer – Components Panel



Managed Library among different Teams

The usage of managed library between different teams

Managed Library – Altium 365 Workspace



*Guidelines are advised to each team member to make “Components Library Management” as a smoother and more streamlined process.

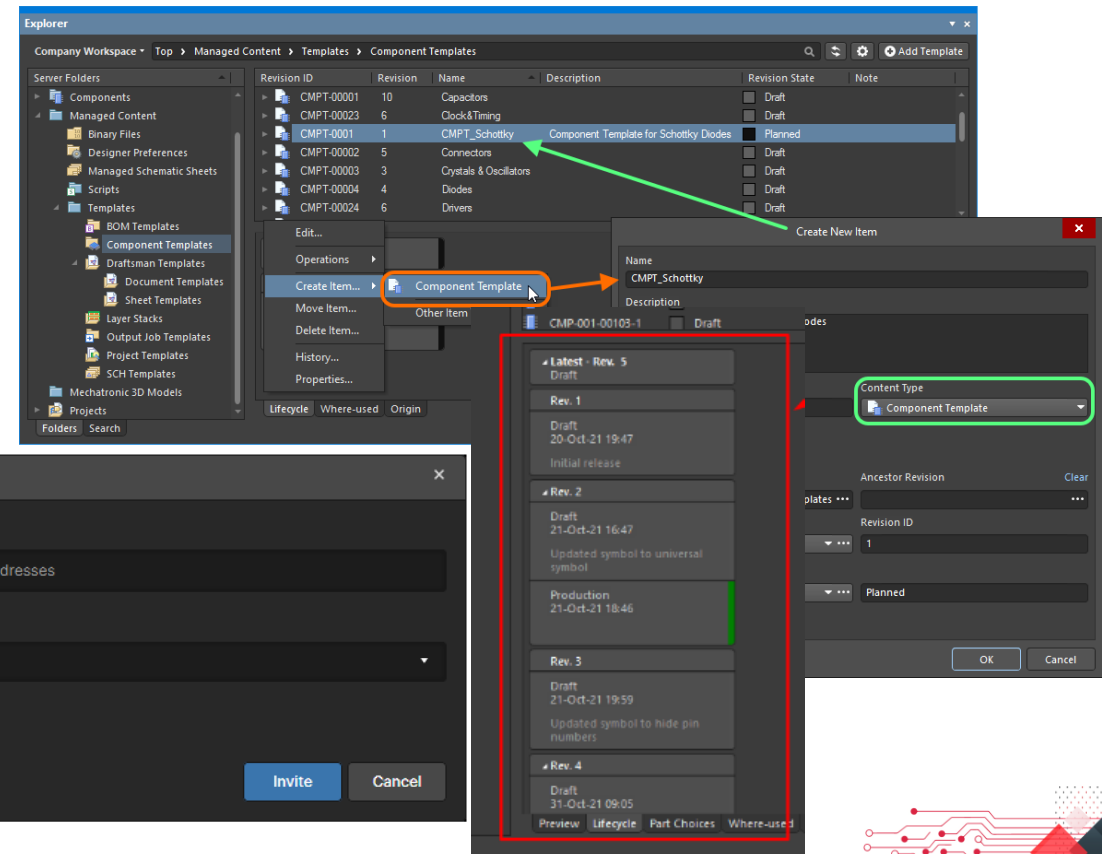


Workspace - Administrator Process

Workspace administrator can have control over providing accessibility for the respective team members, and who can invite the team members through mail and provide controls to them. Everyone in different team, should provide details – release notes related to the task carried on during saving the file to the server, it will provide the revision history of files and ease for traceability.

Workspace Administrator

- Have control over the library architecture – Component Types, Folder structures and Template files, etc.,
- Invite and provide access to the different team members.
- Templates management.
- Revision history check.
- Lifecycle management of component.



The screenshot displays the PTC Creo software interface with several key components highlighted:

- Explorer Panel:** Shows the 'Component Templates' folder structure. A table lists various templates with their revision IDs, names, and states.

Revision ID	Revision	Name	Description	Revision State	Note
CMPT-0001	10	Capacitors		Draft	
CMPT-00023	6	Clock&Timing		Draft	
CMPT-0001	1	CMPT_Schottky	Component Template for Schottky Diodes	Planned	
CMPT-00002	5	Connectors		Draft	
CMPT-00003	3	Crystals & Oscillators		Draft	
CMPT-00004	4	Diodes		Draft	
CMPT-00024	6	Drivers		Draft	

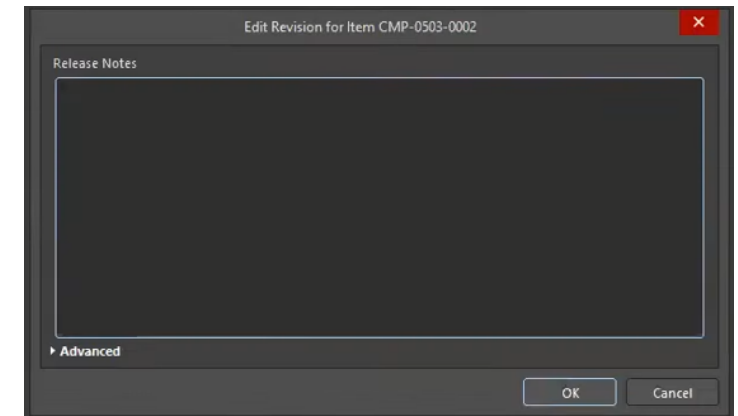
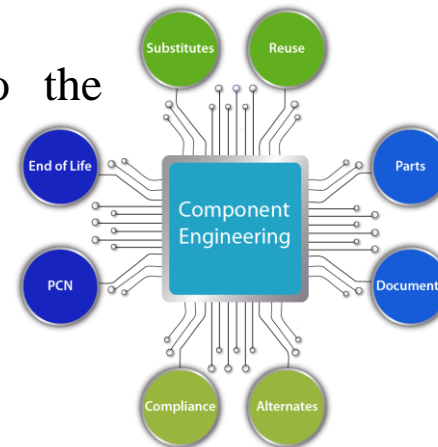
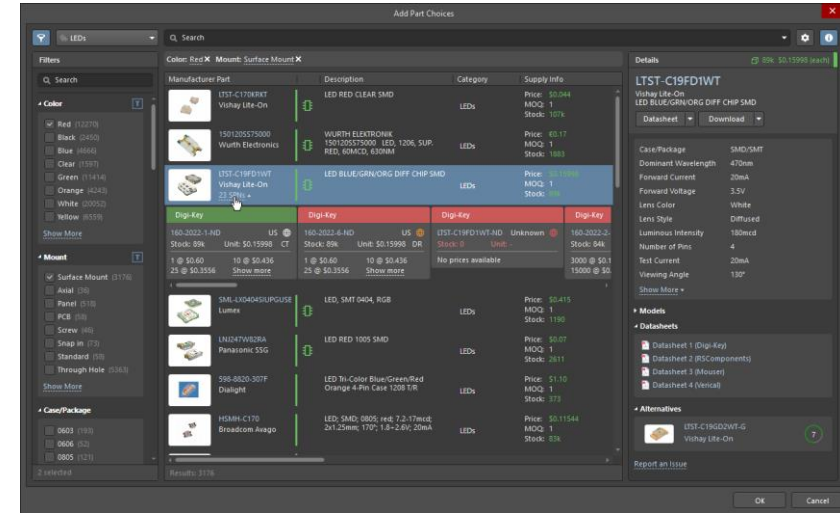
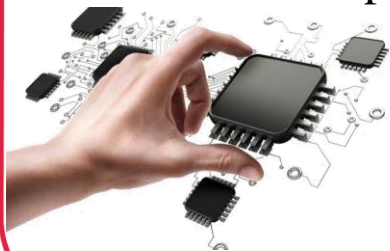
- Create Item Dialog:** Shows the 'Component Template' option selected in the 'Create Item...' menu. The 'Name' field is set to 'CMPT_Schottky'.
- Revision History Dialog:** Displays a detailed revision history for 'CMP-001-00103-1'. It lists revisions from 1 to 5, including their dates, states (Draft, Production), and descriptions.
- Invite Workspace Members Dialog:** Shows the 'Add Members' section with an email address 'rupert@...' entered. It also includes fields for 'Add Roles' and 'Add a Note'.



Components Engineering Team Process

Components Engineering Team

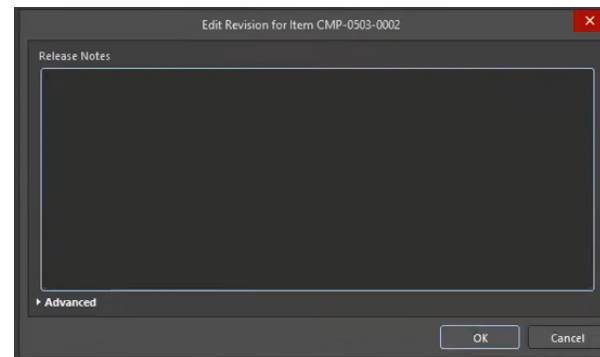
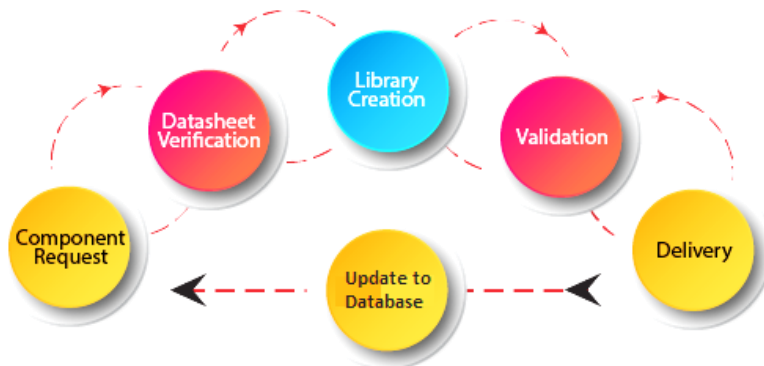
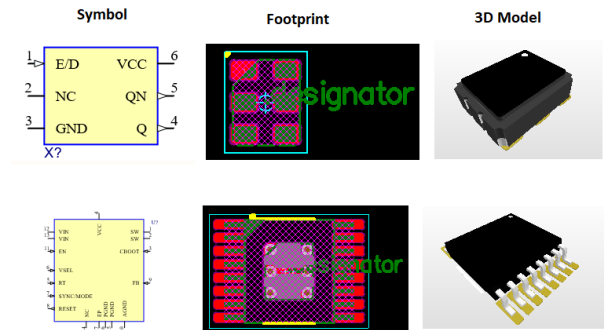
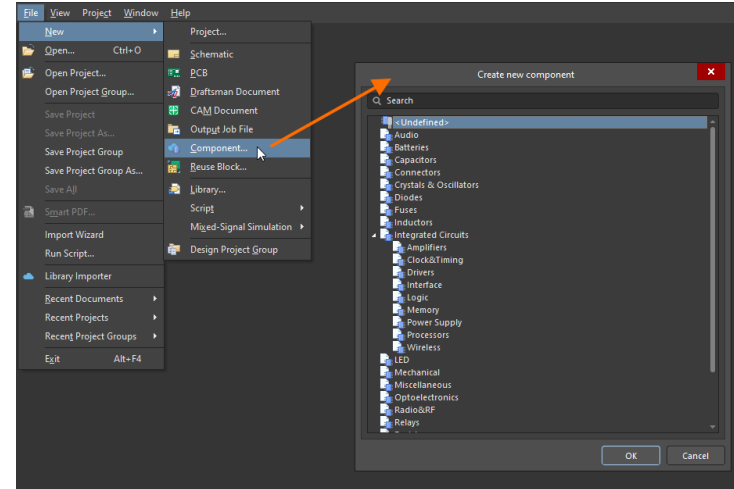
- Rise a new request to the design team to create the Library, for the mapping of symbol, footprint and other files to the respective component.
- Keep track of PCN, EOL, redundancy, obsolete information and compliance status for the components in the database.
- Update the part choice details for the parts.
- Manage vendor part data and relationships.
- Add release notes while saving the files to the workspace (server).



Design Team Process

Design Team

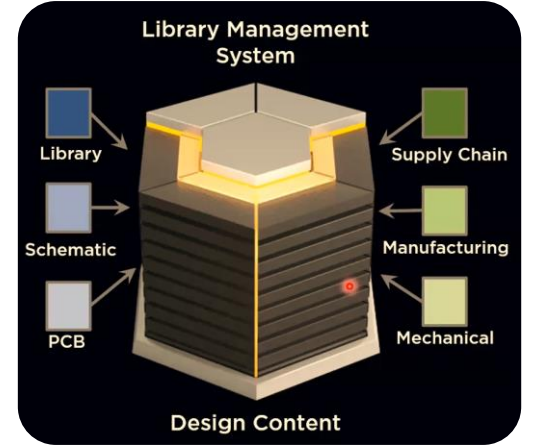
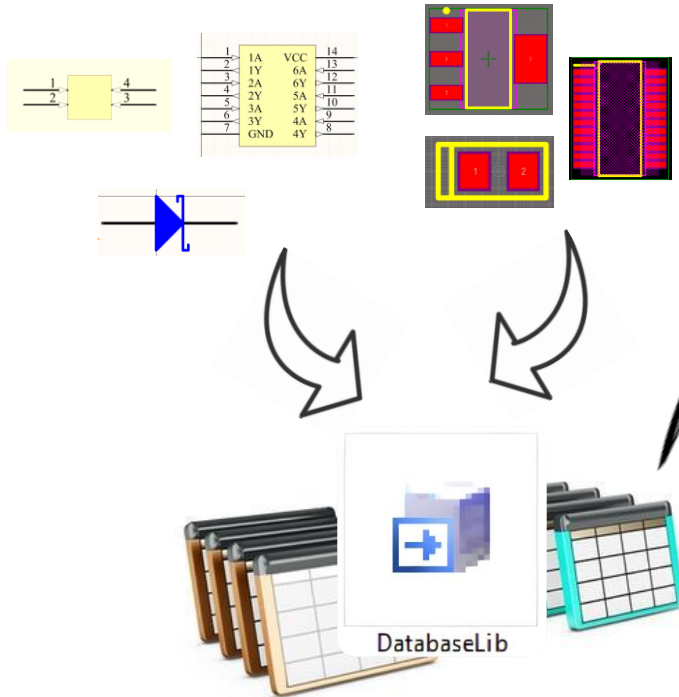
- Check for the existing Symbol & Footprint, that can match with the requested component.
- Create required Library files – Symbol and Footprint.
- Use Library design standards with best practices and IPC.
- Add release notes while saving the files to the workspace (server) with respective task details as a log.
- Ensures data consistency across multiple ECAD tools



Component Library Management with Altium 365

Individual library files are converted into Database Library (consolidated)

Imported into Altium 365 workspace To make it as managed library



Customer Testimonial

Delighted to share a satisfied client's testimonial that serves as strong evidence of success and impact of the Components Library Management.

“We asked them to take care of managing multiple libraries, deals with many spreadsheets full of details about components, and libraries with different library standards. They not only fulfilled our requirements, went beyond our expectations. They adeptly optimized our Library Management processes in cost-effective way, that minimized errors, and ensured consistency across our projects. The seamless ability to update and share components across the team has resulted in substantial time savings. Furthermore, their commitment to on-time deliveries has made us trust them to oversee challenging projects.”



Conclusion

We provided the client with a Managed Library (Components Library Management) that exactly fit their requirements. Displayed our strong commitment to delivering high-quality work and our technical expertise.

Our collaboration extends beyond technical aspects; it involves optimizing the Library Management process by combining our expertise with a thorough understanding of the client's requirements.

We're dedicated to providing excellent Library Management services, which proves our skill and trustworthiness in achieving outstanding results.

