



# Optimized EDA Conversion for Advanced Videoscope Systems

Scope: Electronic Design Automation Conversion

Application: Manufacturing Industries

The Advanced Videoscope Systems PCB Board is a state-of-the-art solution tailored for precision inspection and quality control within manufacturing industries. Featuring high-resolution video capture and real-time processing, this board is designed to deliver exceptional performance and reliability in demanding industrial environments. With a focus on durability and advanced signal integrity, it provides robust and accurate analysis, making it a crucial component for ensuring product quality and operational efficiency in modern manufacturing processes.



# Challenges –EDA Conversion

We were tasked with converting their PCB files from **Allegro PCB** to **Altium Designer** to fulfill their requirements effectively.

## Challenges:

- Achieve 99.99% Physical Accuracy
- Achieve 100% Electrical Match
- Manage Length Matching Groups
- Accurate Footprint Libraries
- Netlist Synchronization
- Layer Mapping and Configuration (14 layer PCB)
- Design Rule Translation
- Handling Custom Components
- Manual Intervention in EDA Conversion
- Signal Routing Integrity



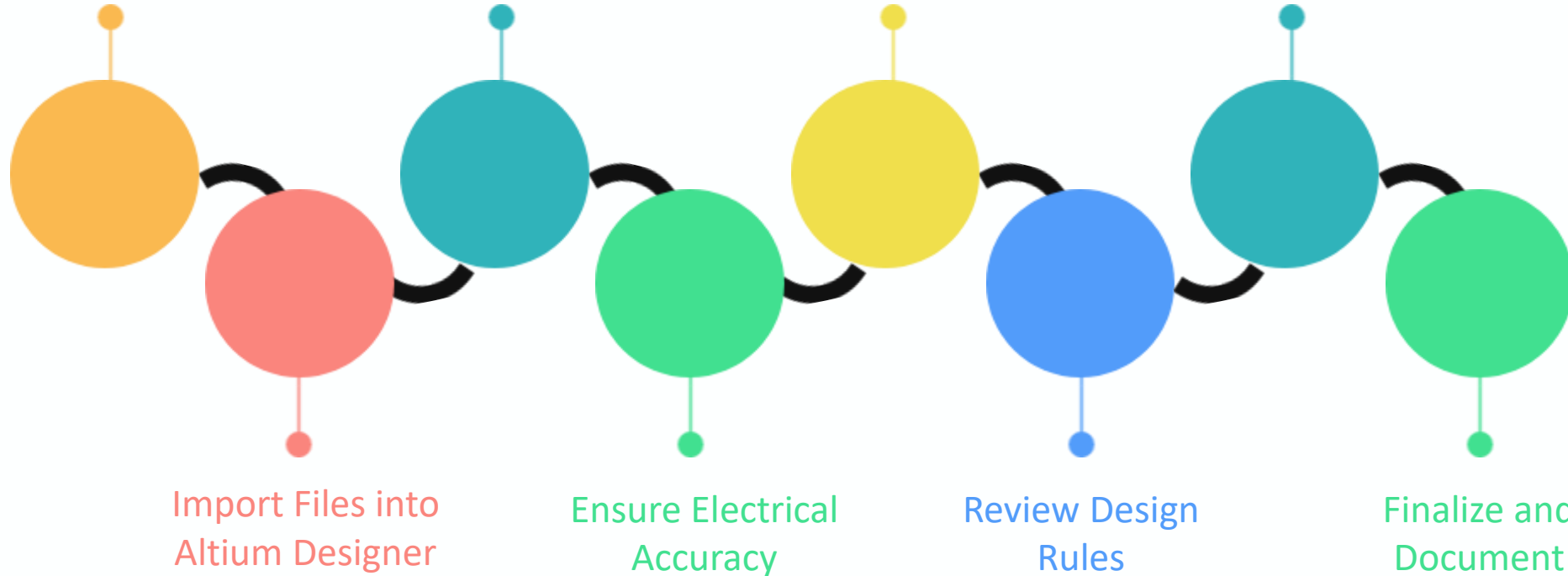
# EDA Conversion - SoW

Pre-Conversion  
process

Verify Physical  
Layout

Update Footprints  
and Libraries

Netlist  
Verification

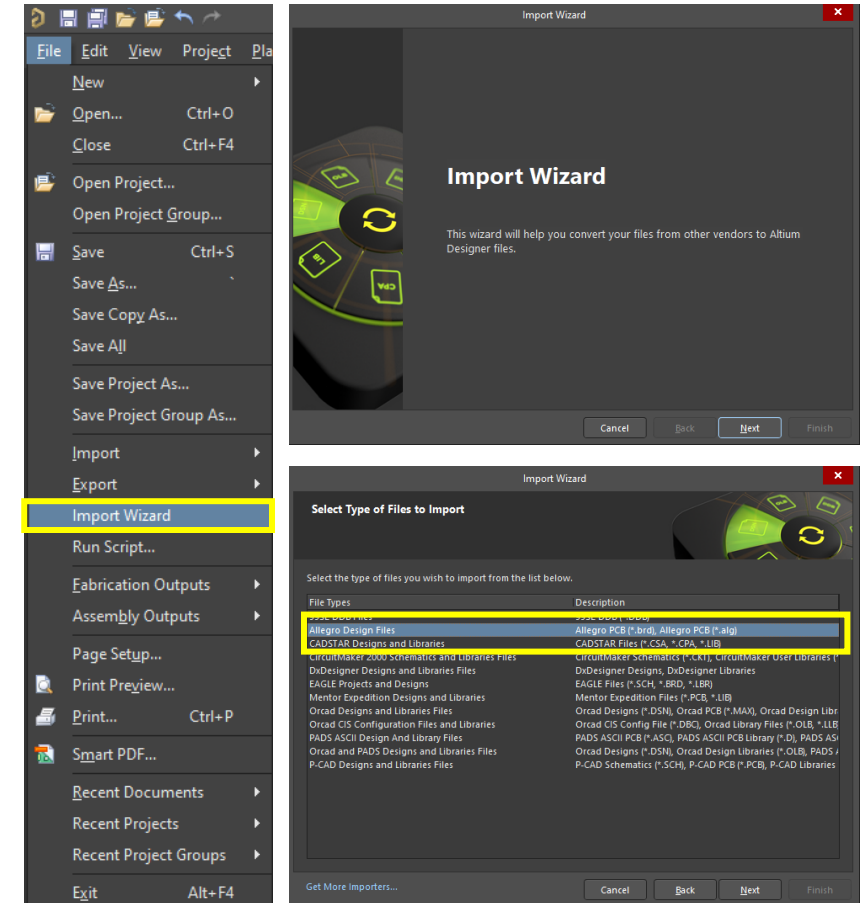


## ❑ Pre conversion verification:

- We ensured that the schematic and PCB files are in the correct formats for conversion to Altium Designer.
  - Schematics - ORCAD files to Altium files
  - PCB – Allegro PCB to Altium PCB

## ❑ Import Files into Altium Designer :

- Used Altium’s import wizard to load the exported files.
- After importing, reviewed the data to ensure that all components, traces, and design elements are accurately represented and make any necessary adjustments to fit Altium’s environment.



# Verify Physical Layout

- Checked that the physical layout in Altium Designer matches the original design from Allegro.
- This includes verifying the accuracy of layer mapping and confirming that all components are placed correctly according to the original design specifications.

View selected objects include empty components

Object Kind	Designator	Layer	X1 (mil)	Y1 (mil)	Bottom	Height (mil)	Lock
Component	C145	Bottom Layer	1921.882	862.895	135.000	23.622	
Component	C175	Bottom Layer	1921.882	2045.303	135.000	23.622	
Component	C155	Bottom Layer	1949.779	710.794	135.000	23.622	
Component	C162	Bottom Layer	1949.779	2072.442	135.000	23.622	
Component	104	Bottom Layer	1965.736	842.793	135.000	0	
Component	125	Bottom Layer	1965.736	2205.201	135.000	0	
Component	C143	Bottom Layer	1978.779	737.794	135.000	23.622	
Component	C173	Bottom Layer	1978.779	2302.442	135.000	23.622	
Component	C144	Bottom Layer	2011.274	772.289	135.000	23.622	
Component	C174	Bottom Layer	2011.274	2134.697	135.000	23.622	
Component	C152	Bottom Layer	2037.471	796.495	135.000	23.622	
Component	C162	Bottom Layer	2037.471	2161.693	135.000	23.622	
Component	C130	Top Layer	1948.881	1057.51	135.000	55.118	
Component	C160	Top Layer	1948.881	2419.917	135.000	55.118	
Component	C131	Top Layer	1948.479	966.765	135.000	23.622	
Component	C141	Top Layer	1948.48	2331.933	135.000	23.622	
Component	F80	Top Layer	2004.003	1066.332	135.000	136.220	
Component	F81A	Top Layer	2004.004	2450.339	135.000	136.220	
Component	C150	Top Layer	2022.579	877.533	135.000	23.622	
Component	C160	Top Layer	2022.58	2009.841	135.000	23.622	
Component	R01	Top Layer	2101.723	853.132	135.000	0	
Component	R06	Top Layer	2101.724	2215.52	135.000	0	
Component	R03	Top Layer	2100.532	2095.152	135.000	0	
Component	R25	Top Layer	2115.125	733.825	135.000	0	
Component	R27	Top Layer	2178.652	958.868	135.000	0	
Component	R04	Top Layer	2178.654	2121.276	135.000	0	
Component	R1	Bottom Layer	1049.387	4341.266	90.000	0	
Component	R12	Bottom Layer	105.95	1897.232	90.000	0	
Component	R121	Bottom Layer	1087.185	3007.346	90.000	0	
Component	R138	Bottom Layer	1133.406	3007.346	90.000	0	
Component	R33	Bottom Layer	1154.253	1897.879	90.000	0	
Component	R02	Bottom Layer	1177.507	3005.239	90.000	0	
Component	R162	Bottom Layer	1287.531	3910.534	90.000	0	
Component	R41	Bottom Layer	1303.588	3147.346	90.000	0	
Component	C226	Bottom Layer	1344.062	2080.523	90.000	0	
Component	C215	Bottom Layer	1315.623	1315.623	90.000	0	
Component	R17	Bottom Layer	1372.049	4031.39	90.000	0	
Component	R14	Bottom Layer	1403.873	4396.311	90.000	0	
Component	C223	Bottom Layer	1412.787	2072.281	90.000	0	

File Edit Format View Help  
Altium PCB File and Place Locations  
File > Design Information

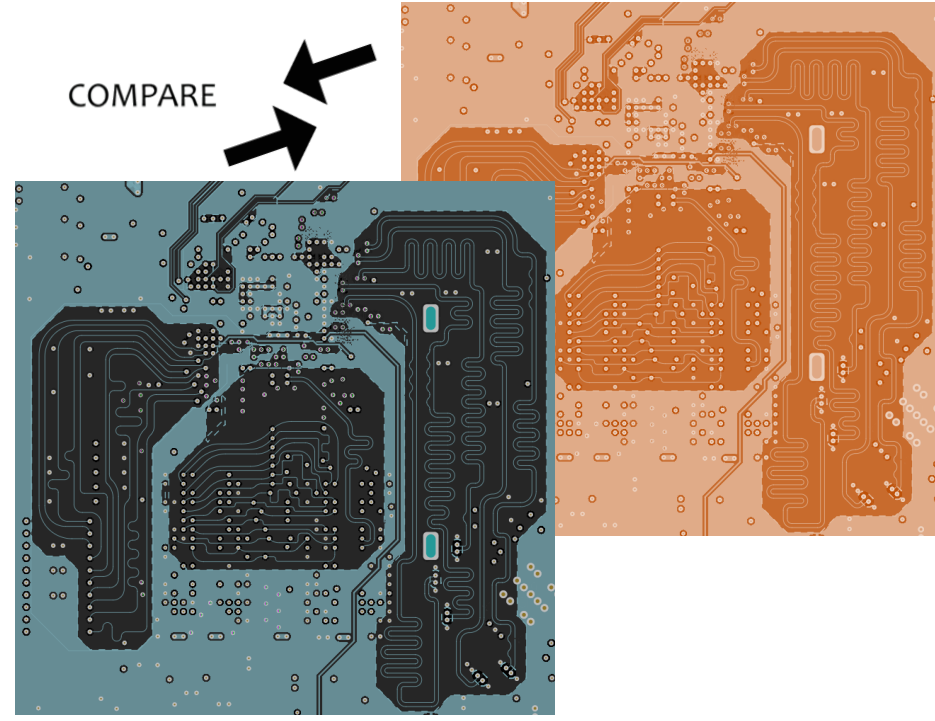
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Date: 11/11/15
Revision: 001 (in version control)
User: m...
Units used: mil
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Designator Comment Layer Footprint Center-X(mil) Center-Y(mil) Rotation Description
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```

**Altium PCB  
Details**

**Allegro PCB  
Details**



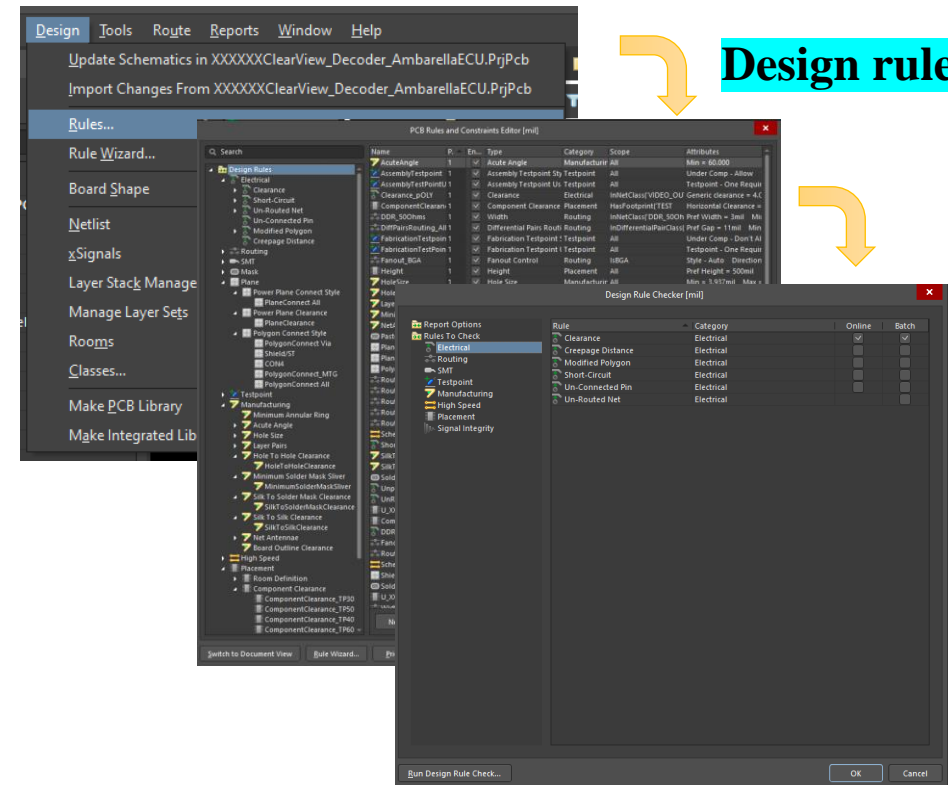
**Components location's Verification**

**Highspeed Signals routing Verification**

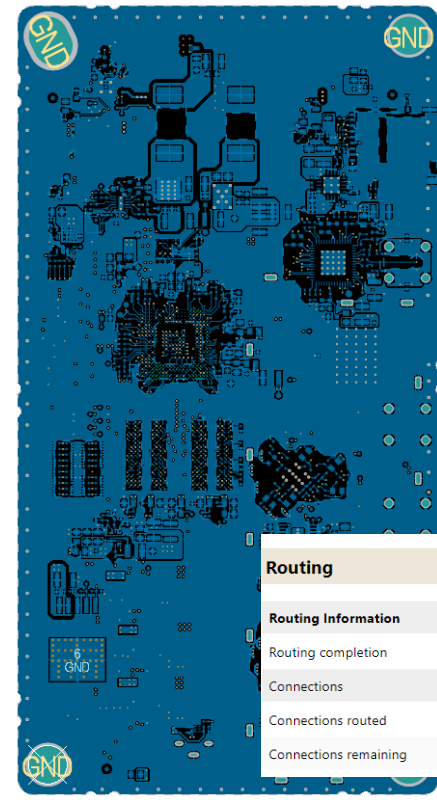


# Ensure Electrical Accuracy

- Electrical connectivity and signal integrity are maintained by synchronizing the netlists from Allegro with those in Altium Designer.
- Validated that high-speed signals and critical electrical connections are correctly represented to avoid performance issues.



**Design rules Defining**



**Signals routing Verification**

Routing	
<b>Routing Information</b>	
Routing completion	100.00%
Connections	2056
Connections routed	2056
Connections remaining	0





# Review Design Rules

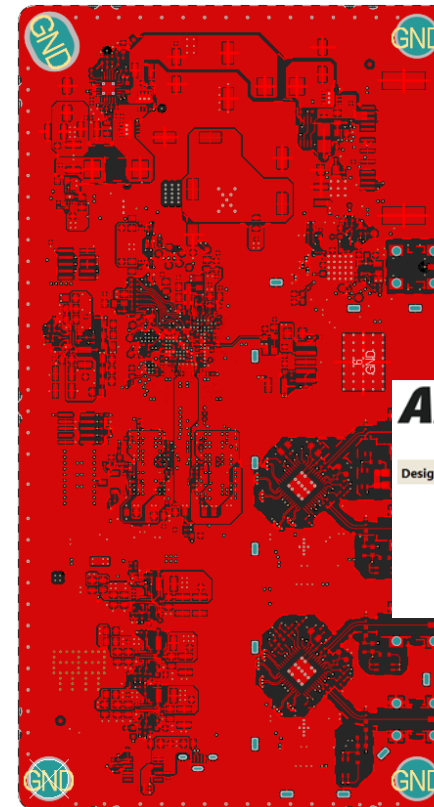
- Reconfigured the design rules and constraints from Allegro to fit the Altium Designer environment.
- Performed a comprehensive Design Rule Check (DRC) to identify and resolve any issues that may arise from the conversion, ensuring the design adheres to all necessary rules and constraints



**Altium  
Designer**

Design Rule Verification Report

Warnings: 0  
Rule Violations: 141



**Altium  
Designer**

Design Rule Verification Report

Warnings: 0  
Rule Violations: 0

- Both Electrical (Cu Layers) and Non electrical layers (Overlay, Assembly, etc.) are also verified and cleaned up.

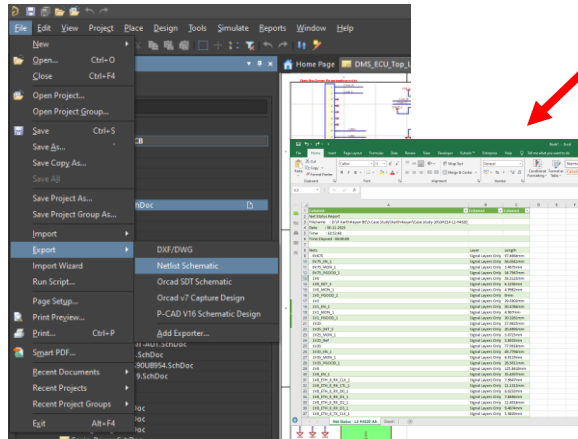




# Netlist Verification

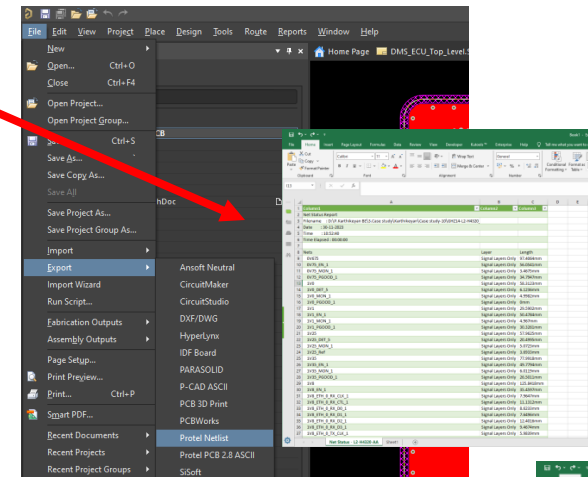
➤ Generated a netlist in Altium Designer and then proceed to compare it with the netlist provided by the client.

## Schematic Netlist



## Altium PCB Netlist

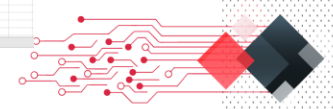
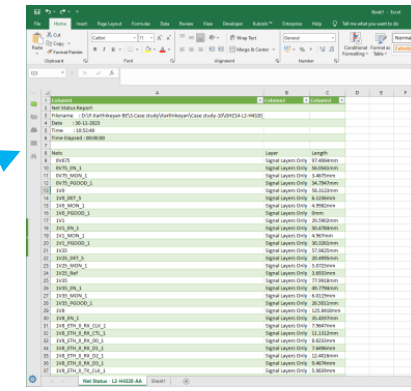
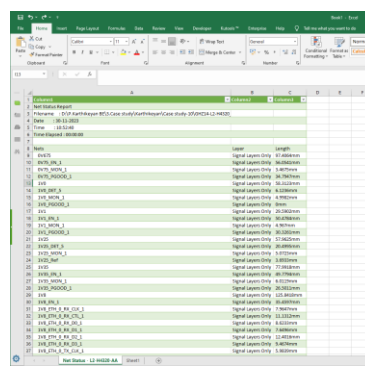
## PCB Netlist



COMPARE

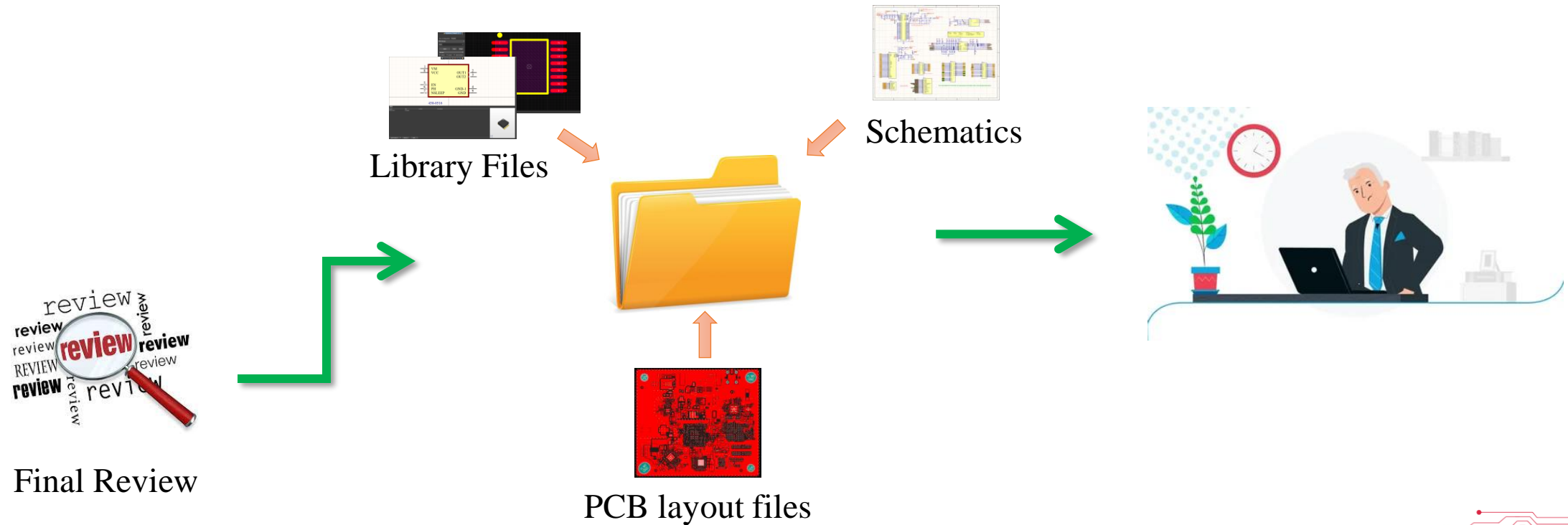
COMPARE

## Allegro PCB Netlist



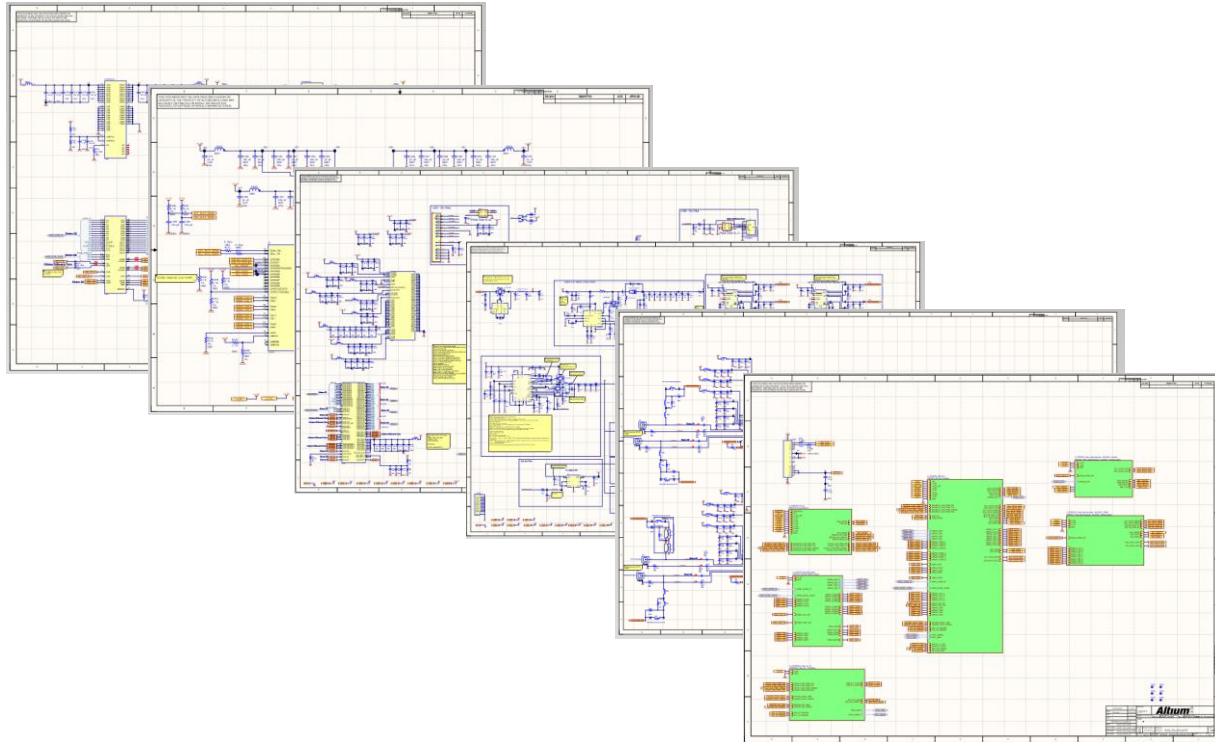
# Finalize and Document

- Updated documentation for the PCB design, including schematics, layout files, and design notes, has been generated.
- Final design files are saved and backed up properly to provide a complete record of the converted design.



# Results-In Altium Designer

## Schematics



## PCB Layout



"EDA conversion from Allegro PCB to Altium Designer resulted in 100% electrical accuracy and 99.99% physical precision."



# Client Testimonial

Presented below is a testimonial from a satisfied client, providing compelling evidence of the effectiveness of our EDA conversion services,

*"Working with GigHz was a game-changer for us. Their expert conversion of our PCB design files from Allegro to Altium Designer was marked by remarkable efficiency, precision, and dedication. They met our deadlines and provided cost-effective solutions that fit perfectly within our expectation. The quality of their work, characterized by exceptional attention to detail and flawless execution, exceeded all our expectations. GigHz exemplifies an ideal blend of time efficiency, cost-effectiveness, and unparalleled quality, making them an invaluable partner in navigating the complexities of electronic design and PCB development."*



# Conclusion

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We demonstrated our dedication to excellence and technical expertise by delivering EDA conversion results that perfectly matched the client's requirements.

Our collaboration merges deep technical knowledge with personalized service, showcasing our proficiency and attention to client needs.

We provide high-quality EDA conversion PCB layouts that reduce costs while highlighting our capability and dependability in achieving outstanding results.

Emphasizing quality and strict adherence to timelines is central to our approach, ensuring consistent and exceptional performance.

