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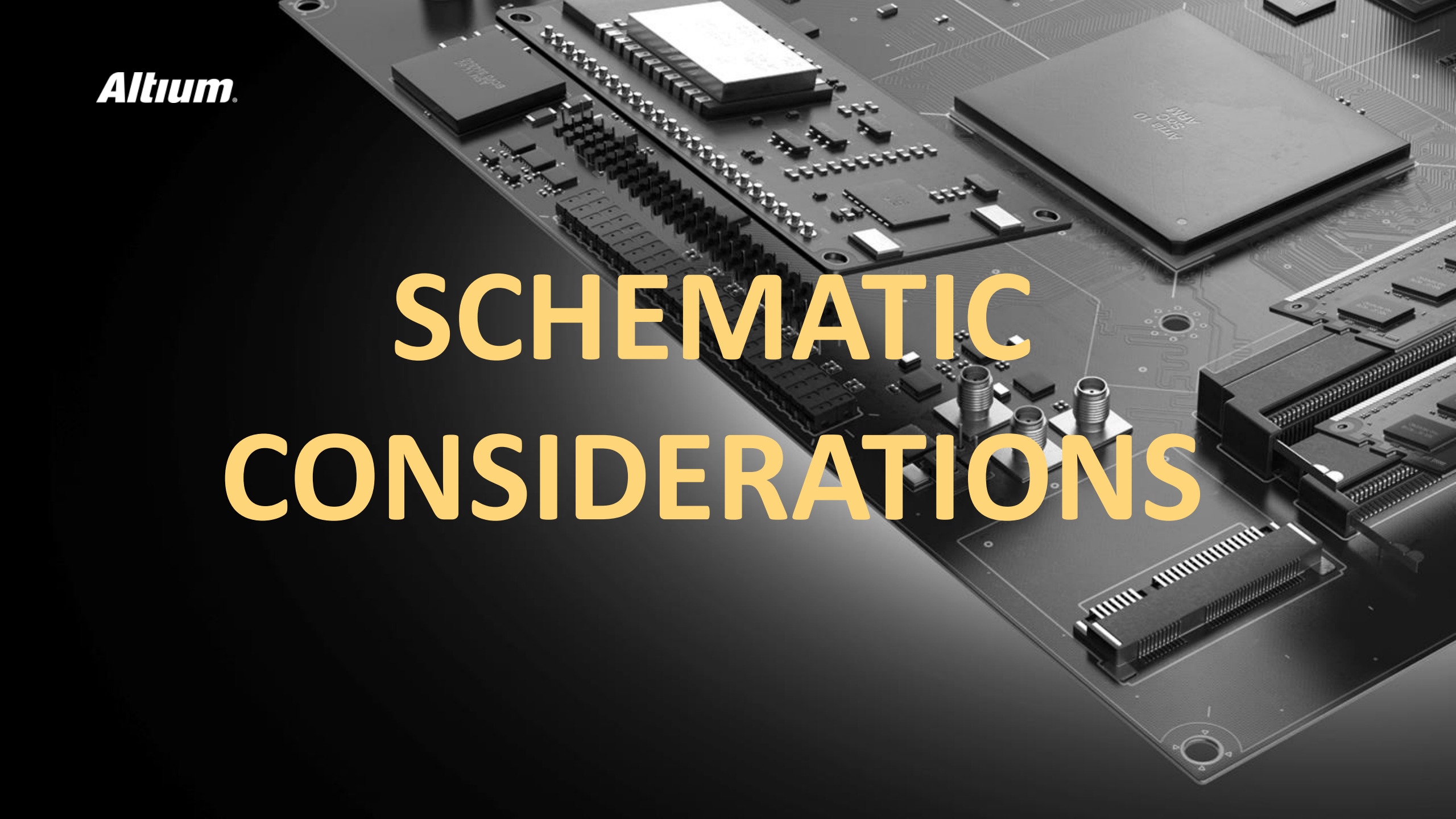
SCHEMATIC CONSIDERATIONS



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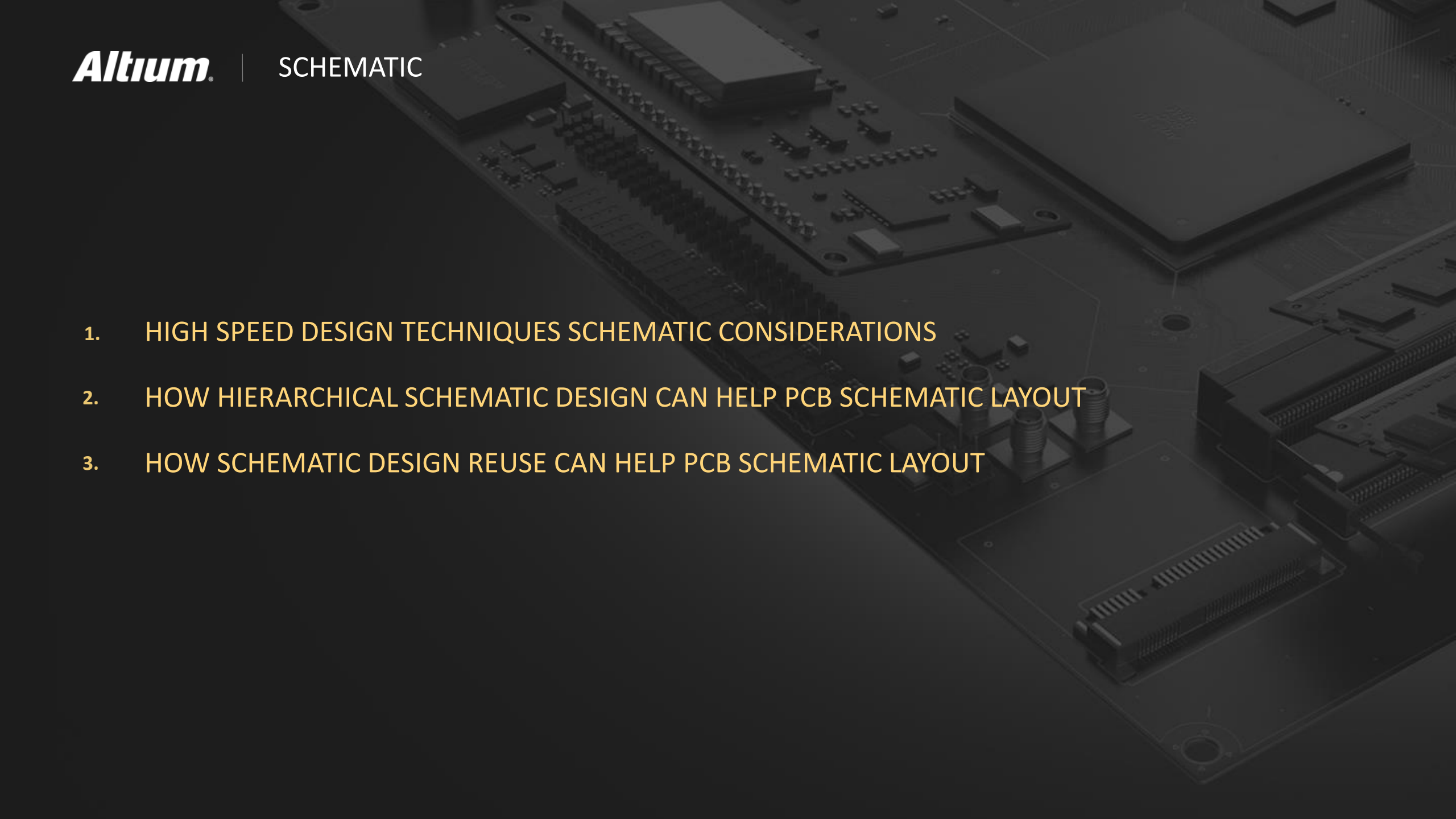

1. HIGH SPEED DESIGN TECHNIQUES SCHEMATIC CONSIDERATIONS
2. HOW HIERARCHICAL SCHEMATIC DESIGN CAN HELP PCB SCHEMATIC LAYOUT
3. HOW SCHEMATIC DESIGN REUSE CAN HELP PCB SCHEMATIC LAYOUT

1

High Speed Design Techniques
Schematic Considerations

High Speed Design Techniques
Schematic Considerations

Board materials, layer stackup planning, or even component placement are all aspects of high speed design that need to be considered that it better represents the high speed circuitry before the board goes to layout.

Traditional schematic creation - A printed circuit board begins with a schematic. The methodology has evolved from paper schematics to schematic driven netlist generators, to fully connected schematic and layout applications.

Organizing the schematic for the circuitry flow of a high speed design – An accurate depiction of the circuitry flow is much more important than the total sheet count. When the PCB is being laid out, the designers need to see which components are required to be grouped together.

Additional high speed information on a schematic - High speed design schematics can also be made more helpful to the layout of the board by adding circuit groupings and keepout information.

A more detailed schematic is the first step to a better design - Showing an organized circuit flow in schematic and including necessary design information is the best way to ensure the design laid out is the high speed design that was expected .

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2

How Hierarchical Schematic Design can help PCB Schematic Layout

How Are Hierarchical Schematic Designs Created and Managed?

There are two ways to create a block of schematic hierarchy in a design:

Create a child design from a new block symbol. Create a block symbol on top sheet, and then start a new design from the block symbol. The new design is saved as a separate schematic, but its block symbol incorporates the new schematic into the main design.

Pull in an existing design into your main design. Pull in a design schematic that already exists, and associate it with a block symbol that is created on the top sheet of main design.

How a Hierarchical Schematic Layout Can Help You

A hierarchical schematic enables to see system level functions of the design from the top sheet, and then descend down into those functional areas through the individual block symbols. Here are the following benefits:

Hierarchy reduces the workload for identical blocks of circuitry. Create one schematic of channel circuitry, and place eight block symbols that point to the same channel design with hierarchy. The schematic editor will rename nets and references to avoid conflicts.

Hierarchy encourages team design. With the ability to easily add block symbols that point to different schematic designs, multiple engineers can work on separate areas of the design.

Hierarchy enables design reuse. It helps store separate designs, such as the power supply, externally so that they are ready to be added to any new design that requires them.

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3

How Schematic Design Reuse can Help PCB Schematic Layout

How Schematic Design Reuse Can Help PCB Schematic Layout

Schematic design reuse is using existing circuitry in a new design through the same schematic editor. Here are some potential problems that can happen:

Copying too much or too little. Carefully select *exactly* what circuitry is needed to get the copy .It is really easy to miss important details of circuitry due to a mistake in selecting, or if it resides on another sheet. It is also possible to select circuitry that doesn't belong to the circuit that is copied.

Copying circuitry will also copy unwanted attributes. When copying and pasting circuitry into a new schematic, there may be unintentional attributes that come along . These can include old reference designators, or design specific attributes such as unique values, design variants, or even physical board parameters.

How Design Teams an Reuse To Help Your Next Schematic Layout

Block designs can be saved like library parts. If your design needs include using the same functional blocks over and over again, saving those designs out as reusable library parts will help reduce everyone's workload.

Design reuse with hierarchical blocks will help organize the schematic. When you place reused design blocks on the top sheet of the design, that top sheet will give you a snapshot of the overall functionality of the design. This will give you a much more organized schematic flow than the traditional flat design will.

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How Design Teams an Reuse To Help Your Next Schematic Layout

Design reuse encourages team design. Instead of one person creating a whole schematic, several people can create the different functional areas concurrently. This will shorten the design time by a considerable amount.

Saved block designs will help commonality. The same circuitry created by different people can look different and cause confusion for those who use the schematic for test or field work. On the other hand, schematics that use reusable block designs will have the same appearance and format.

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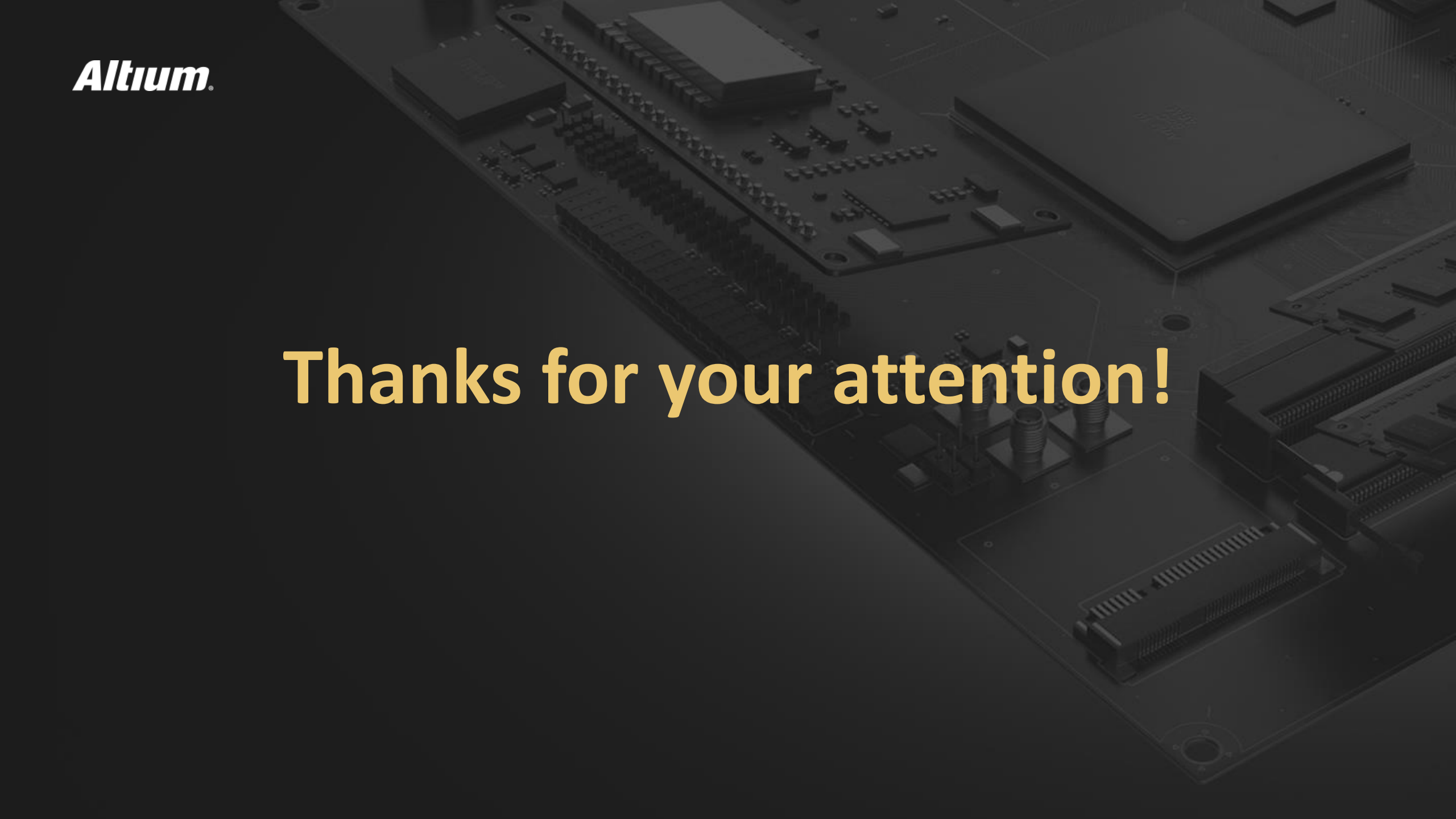

Thanks for your attention!