



MCAD/ECAD with Non-Electrical Layers on Flex/Rigid Designs

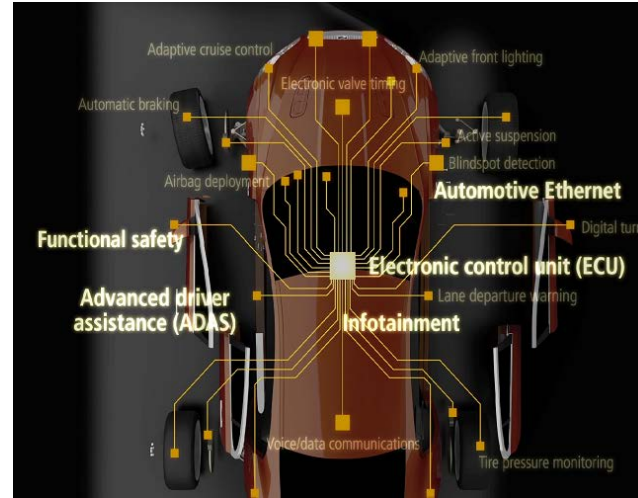
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PCB West 2016



Rigid-Flex Collaboration Considerations

Technology-Driven Rigid Flex Design

Unique contours and high-speed interconnects



Lightweight and environmental conditions



Compact, lightweight, durable wearables



Medical - lightweight and reliable

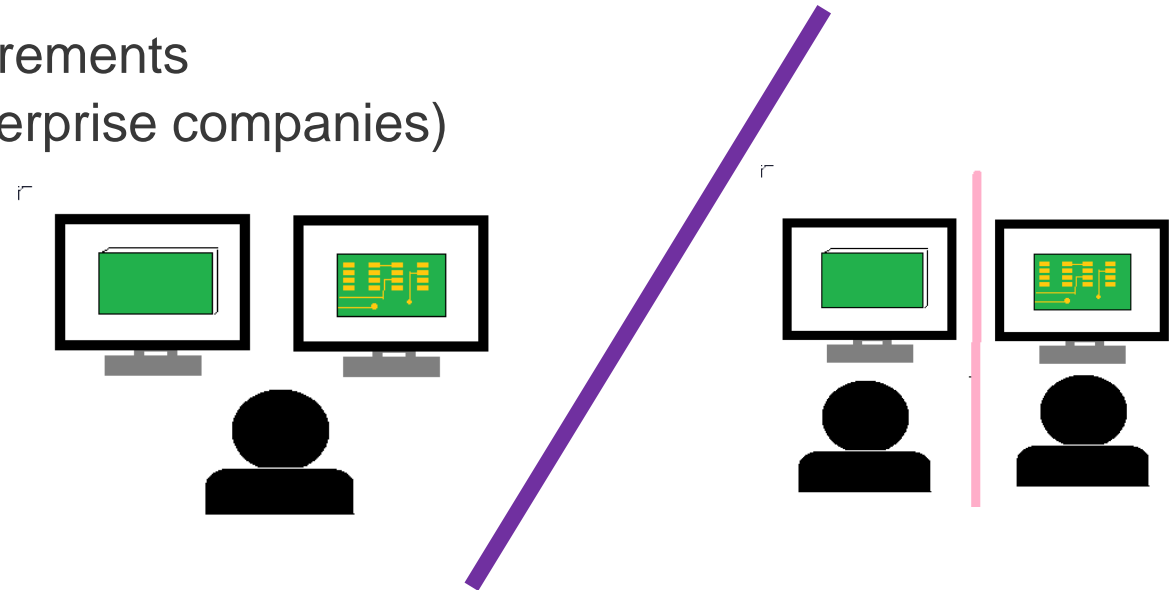


Who Is in the Drivers Seat?

- Physical design details
 - Who drives the physical design?
 - Who drives the circuit base material definition?

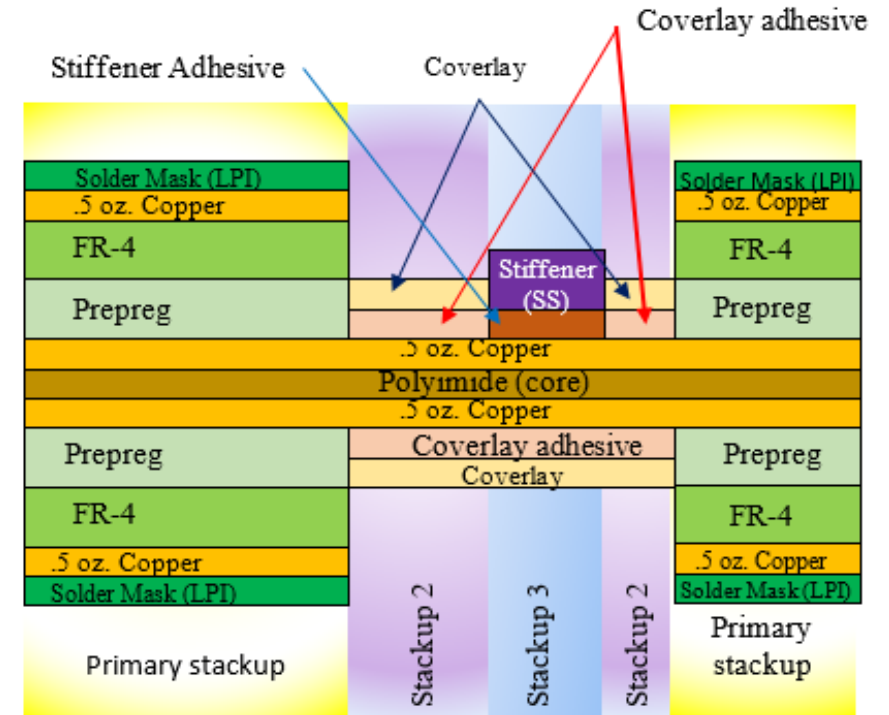


- Decision making
 - Mechanical restrictions vs. electrical requirements
 - Multiple people in multiple disciplines (enterprise companies)
 - One person in multiple disciplines
 - Startups
 - Small engineering teams



Rigid-Flex Structures

- Design materials
 - Rigid materials (FR4)
 - Flex materials (Polyimide, Dupont Kapton, etc.)
 - Conductive (1/4 oz. CU, RA CU, silver, etc.)
 - Adhesives
- Structure definition
 - Flex regions
 - Rigid regions
- Flex data
 - Bend definitions
 - Bend area



ECAD/MCAD Design Outline Exchange

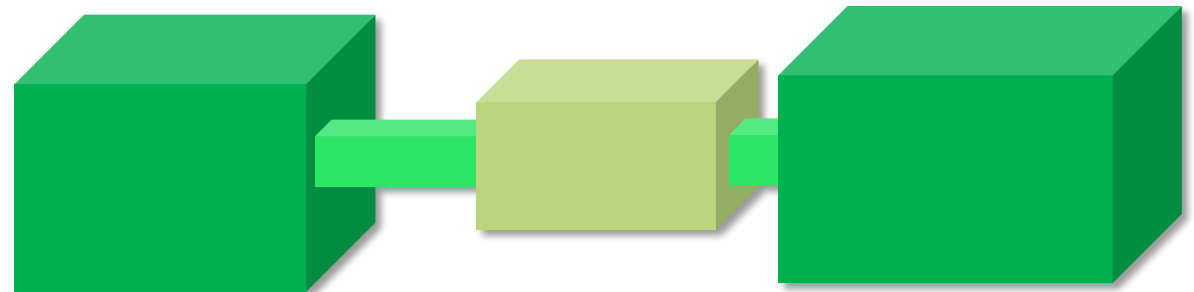
- Current formats

- Base design is a uniform height
- No multi-stack awareness



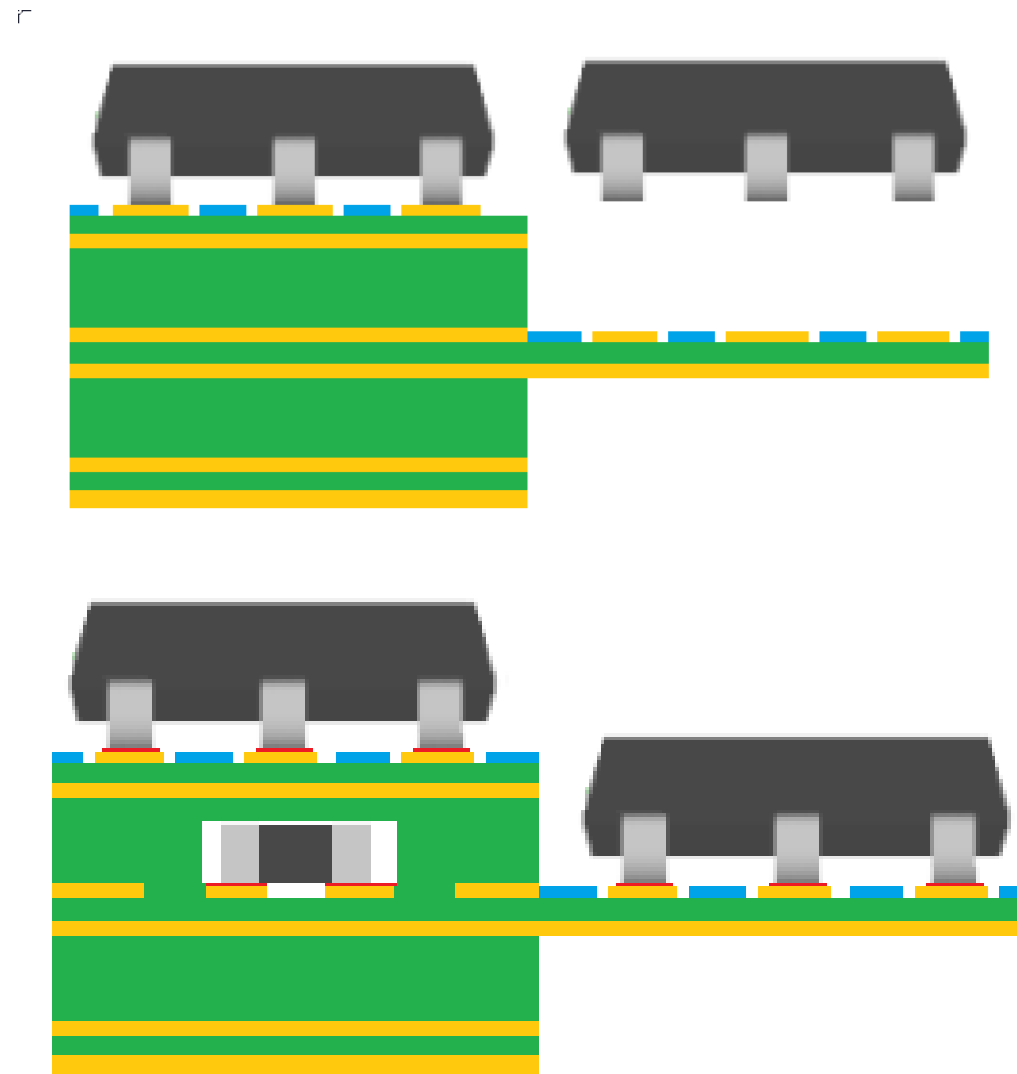
- What is needed:


- Realistic zone-based stack up
- Stack-up defined thickness



ECAD/MCAD Component Placement

- Current format support
 - TOP/BOTTOM representation
 - Copper surface based
- What is needed
 - Zone-aware component placement
 - Embedded component placement
 - Solder paste offset



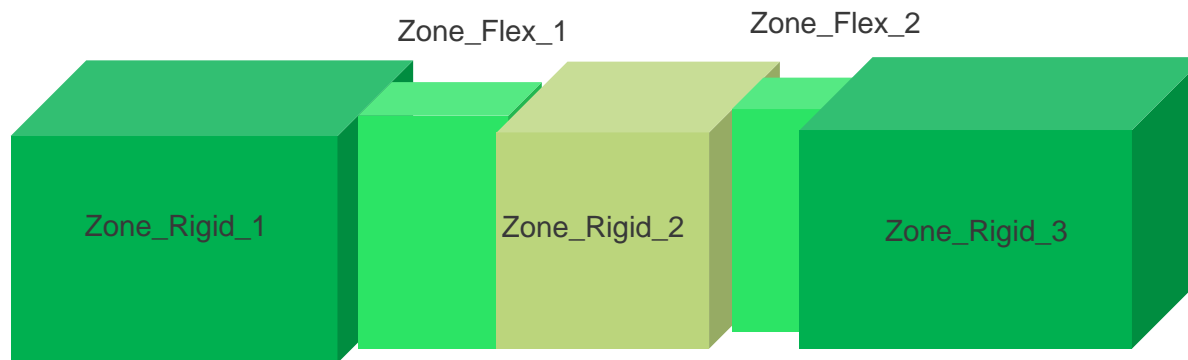


EDMD Schema (IDX) Expanding Support for Rigid Flex

Basic Rigid-Flex Support Flow (MCAD Baseline)

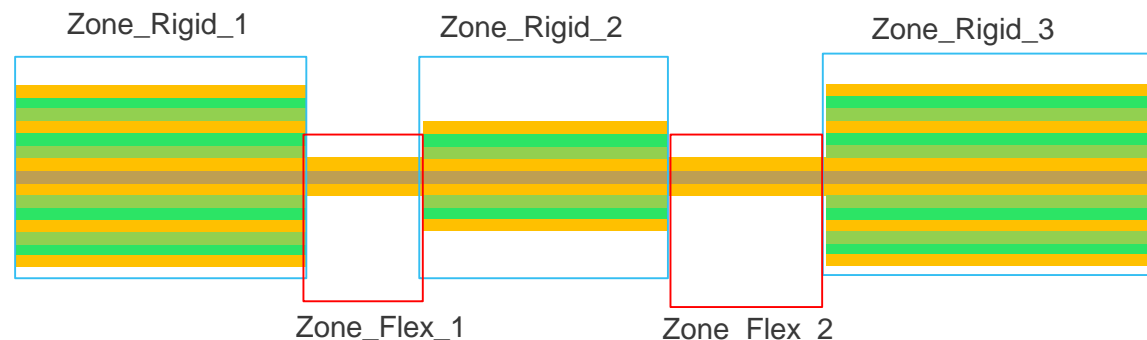
- MCAD

- Defines design outline
- Defines rigid and flex zones
- Exports IDX baseline



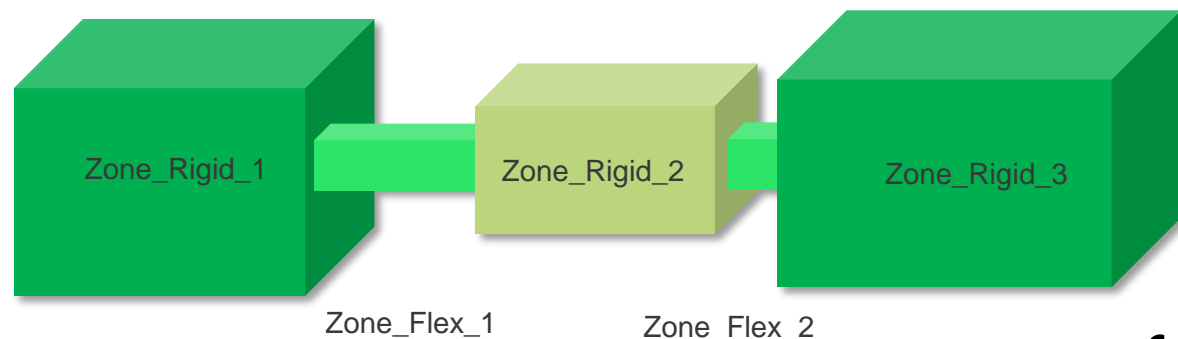
- ECAD

- Imports outline
- Defines multi-stack up
- Assigns stack ups to zones
- Export incremental IDX for zone thickness



- MCAD

- Imports incremental
- Applies new thickness



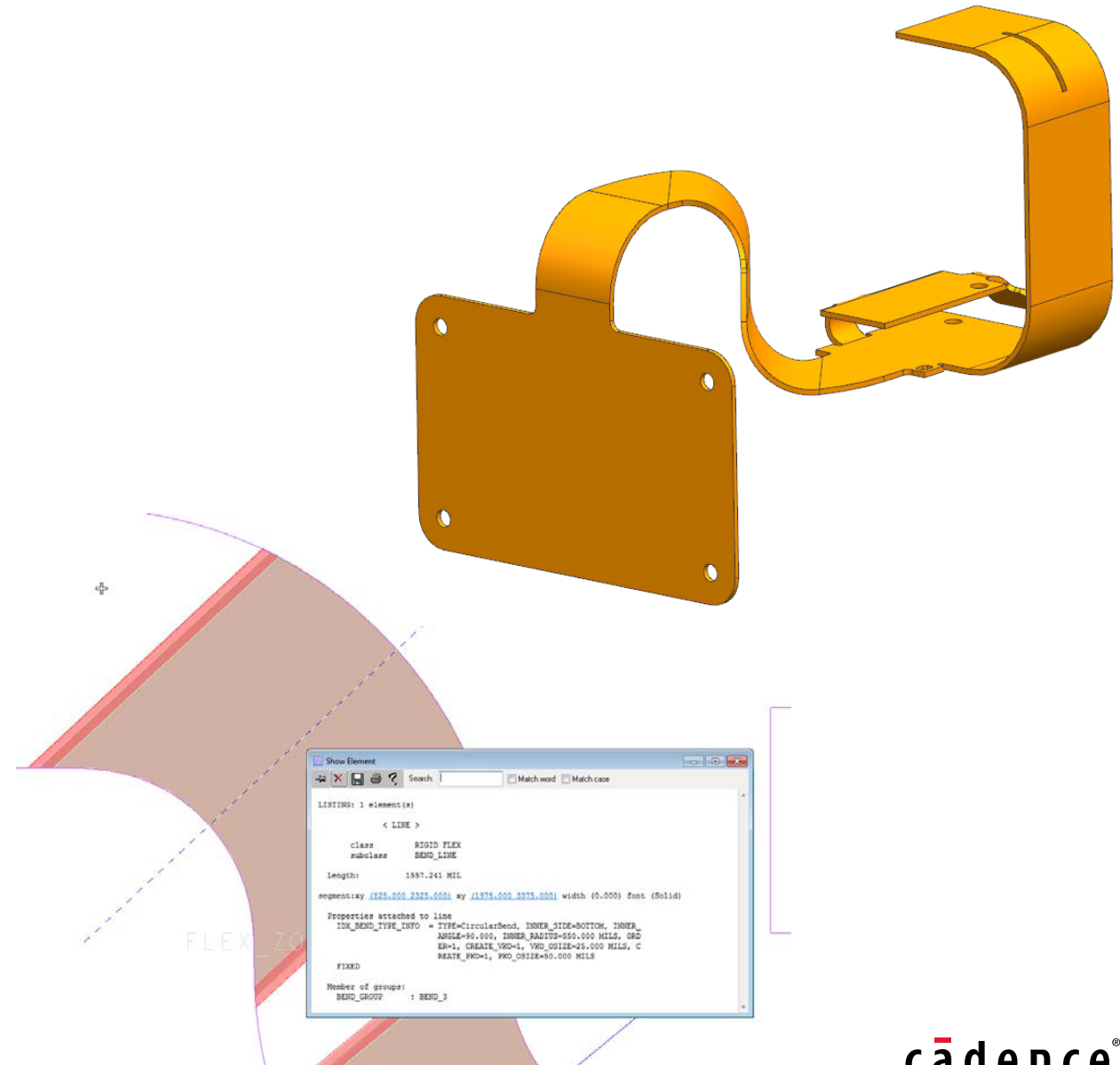
Basic Rigid-Flex Bend Data (Available in IDX 2.0 and 3.0)

- MCAD

- Defines bend line
 - Bend radius
 - Bend angle
 - Bend direction
- Defines bend area
 - Bend extents

- ECAD

- Imports bend data
- Places components on proper reference layer
- Applies paste mask offset



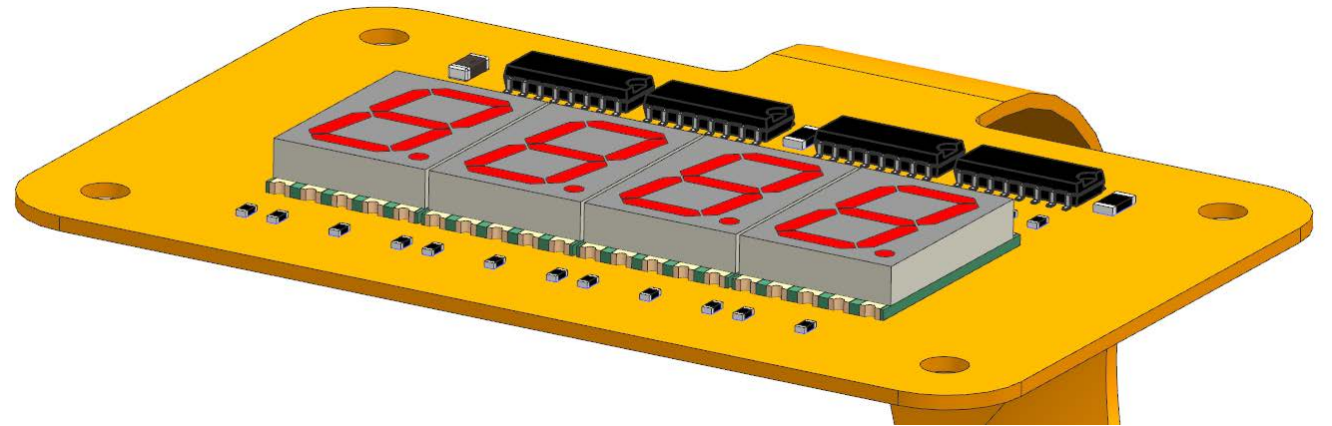
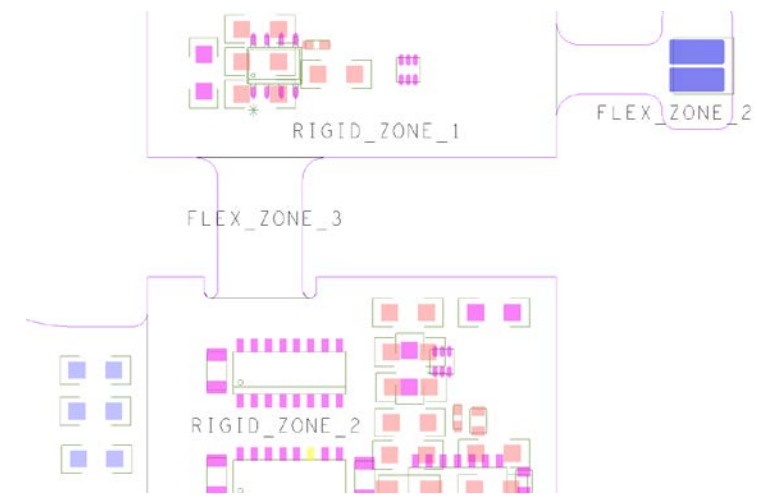
Basic Rigid-Flex Support Flow Placement

- ECAD

- ECAD zone-aware placement
- Export placement using IDX
 - Reference plane on actual layer
 - Add paste mask offset

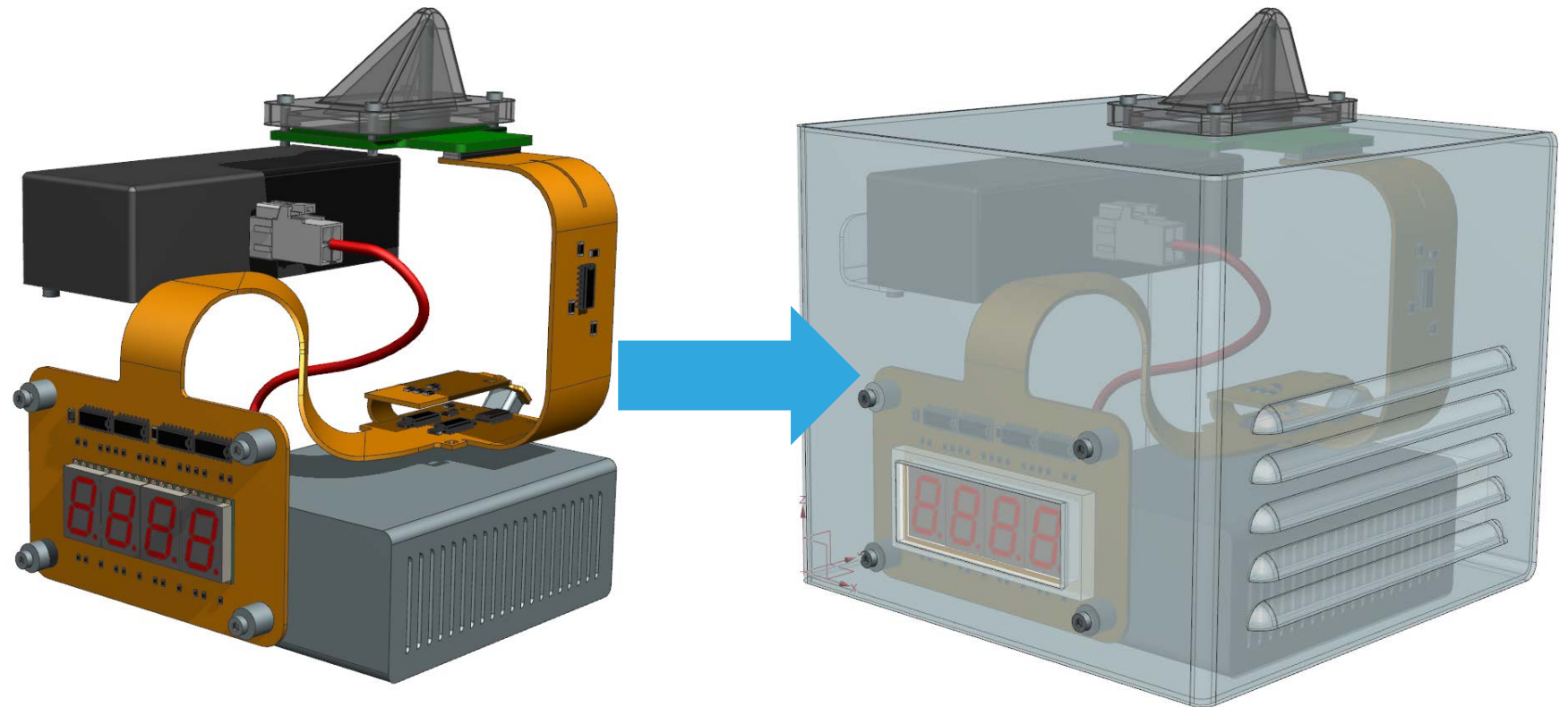
- MCAD

- Imports incremental IDX placement
- Places components on proper reference layer
- Applies paste mask offset



MCAD End Result

- MCAD
 - Proper design profile
 - Proper component placement
 - Bend criteria applied





Demo

Demo Movie

- Run Movie (Under Development)

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YOUR FEEDBACK IS IMPORTANT! DON'T FORGET YOUR SPEAKER EVALUATION.

PLEASE REMEMBER TO RETURN THE EVALUATION FORMS TO THE PRESENTER, TO THE REGISTRATION DESK OR TO THE DROP BOX IN THE LOBBY.

THANK YOU,

PCB WEST SHOW MANAGEMENT