

# Jaltek Design Services DFM & DFT

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# DFM ( Design for Manufacture)

- Key Objectives

- Minimise Product Cost
- Maximise Product Quality
- Ensure Sustainability

## Principles Of Design For Manufacturing



# DFM Levels

Volume	Product type			
	Domestic / Consumer	Reliable	Mission Critical	Safety Critical
Prototype	Dark Blue	Green	Yellow	Yellow
Low	Green	Green	Orange	Red
Medium	Yellow	Yellow	Red	Red
High	Orange	Orange	Red	Red



Basic Manufacturability: Can the product be produced



Risk Assessment: Identifying potential manufacturing challenges and their impact



Optimization: Enhancing manufacturability while minimizing costs



Robustness and Reliability: Ensuring Product performance under varying conditions



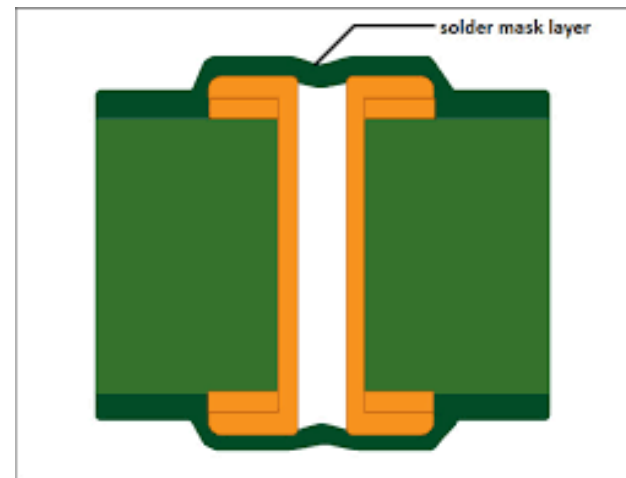
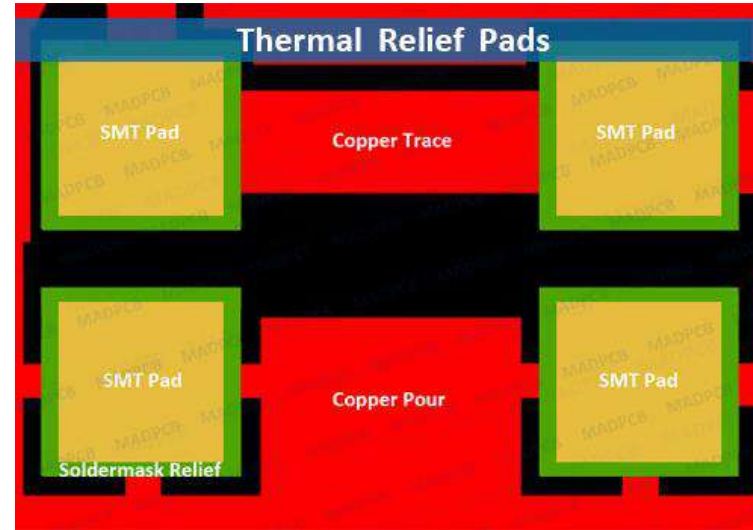
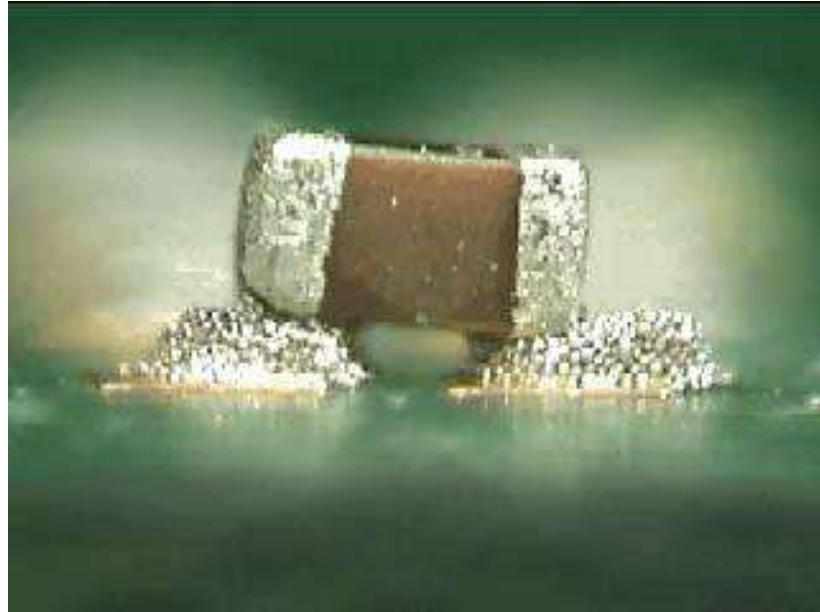
Advanced Simulation and Analysis: Focus: Leveraging advanced tools for detailed analysis and optimization

# Standards (What does quality look like)

Examples of IPC standards and test methods you can use include:

- IPC-2221- Generic Standard on Printed Board Design
- IPC-A-600 Acceptability of Printed Boards
- IPC-A-610 Acceptability of Electronic Assemblies
- IPC J-STD-001D - Requirements for Soldered Electrical & Electronic Assemblies
- IPC-7095 Design and Assembly Process Implementation for BGAs
- J-STD-020D.01: Joint IPC/JEDEC standard for moisture/reflow sensitivity classification for non- hermetic solid state surface-mount devices
- IPC-TM-650: Test Methods Manual
  - Section 1.0: Reporting and Measurement Analysis Methods
  - Section 2.1: Visual Test Methods
  - Section 2.2: Dimensional Test Methods
  - Section 2.3: Chemical Test Methods
  - Section 2.4: Mechanical Test Methods
  - Section 2.5: Electrical Test Methods
  - Section 2.6: Environmental Test Methods

# Assembly defects



# Assembly defects and solutions (2)

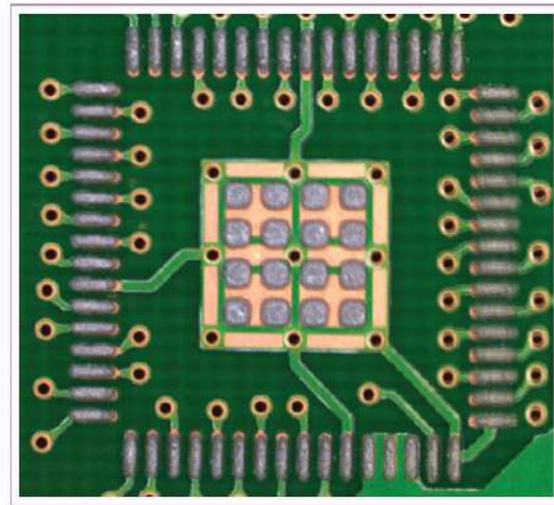
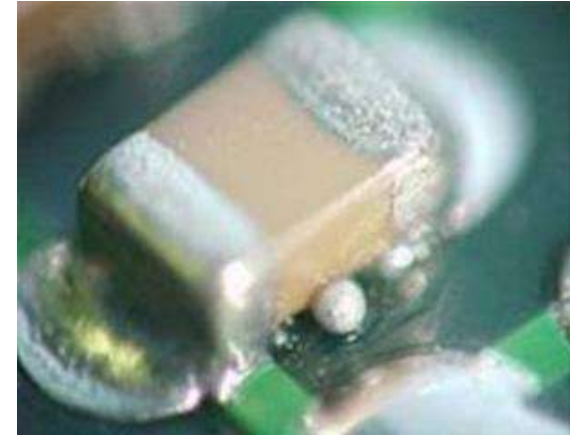
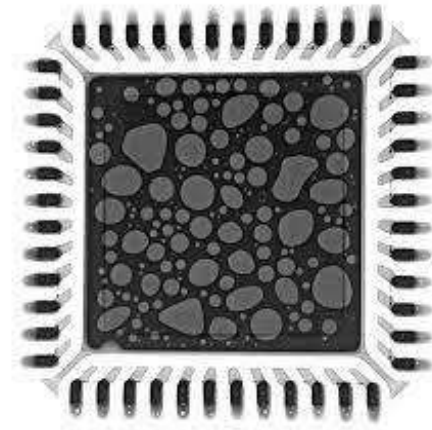
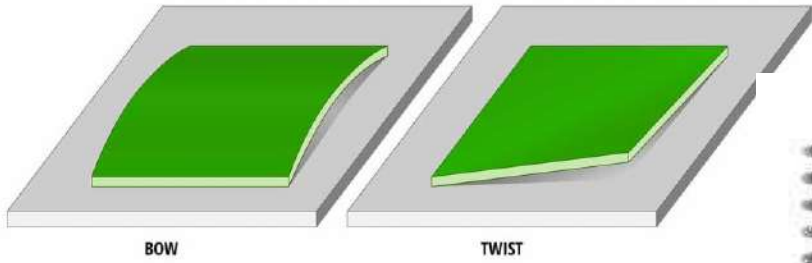
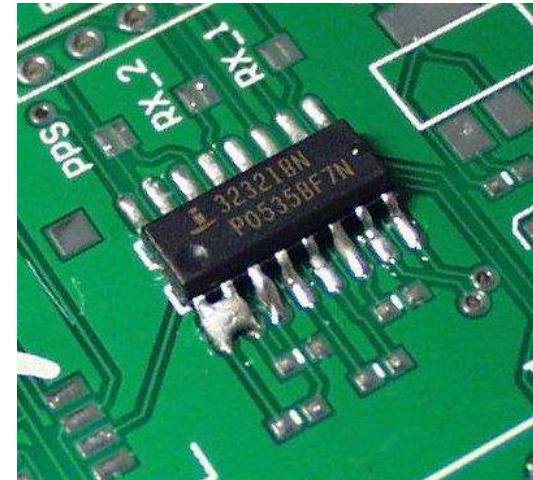
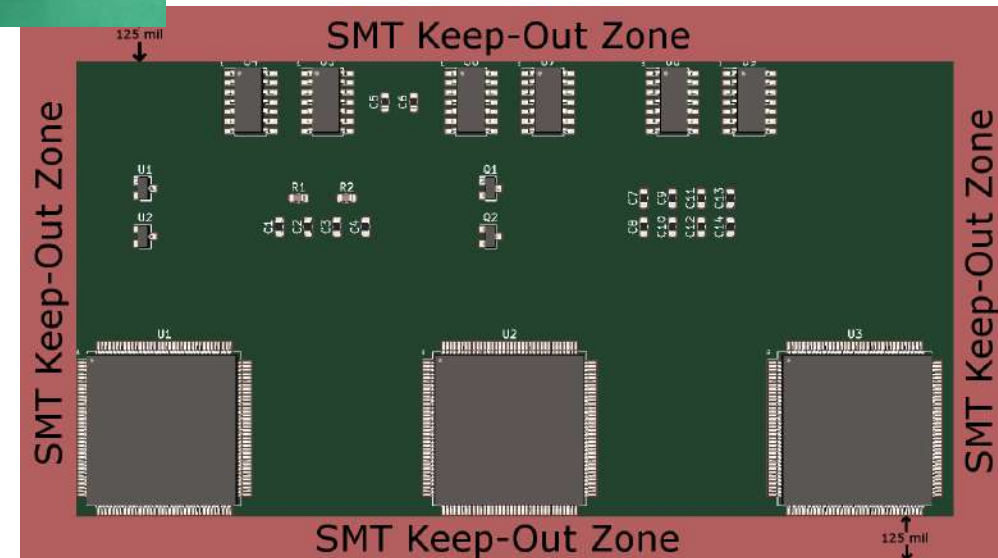
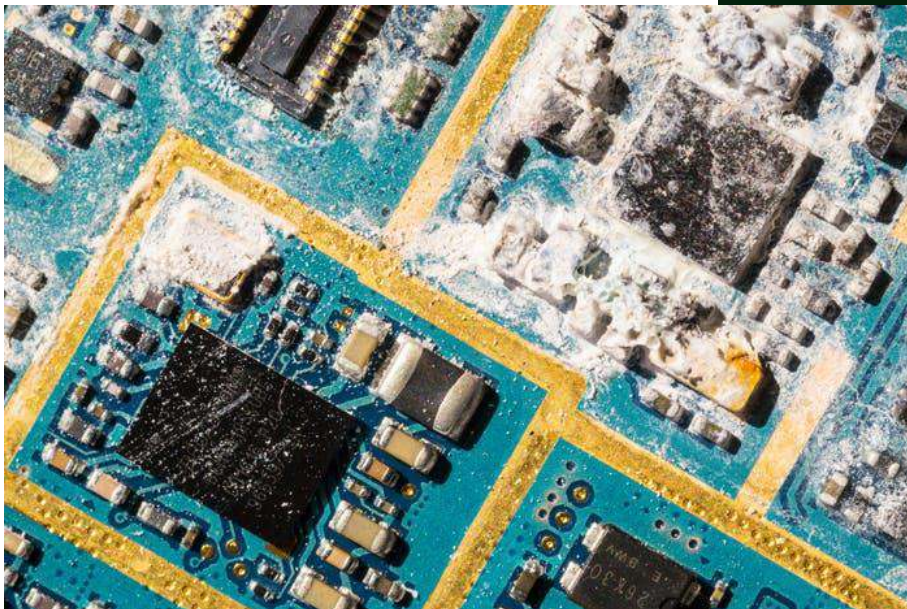
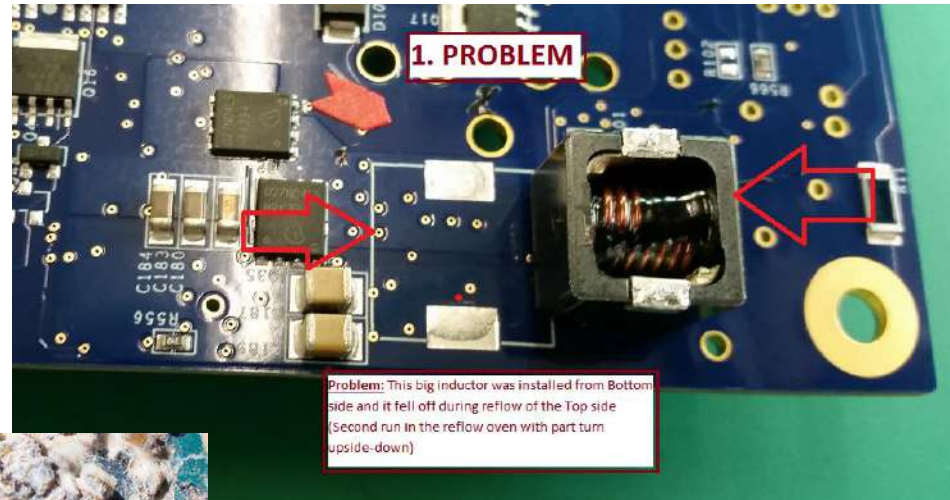


FIGURE 21. Solder deposits not 1:1 with Cu pad.

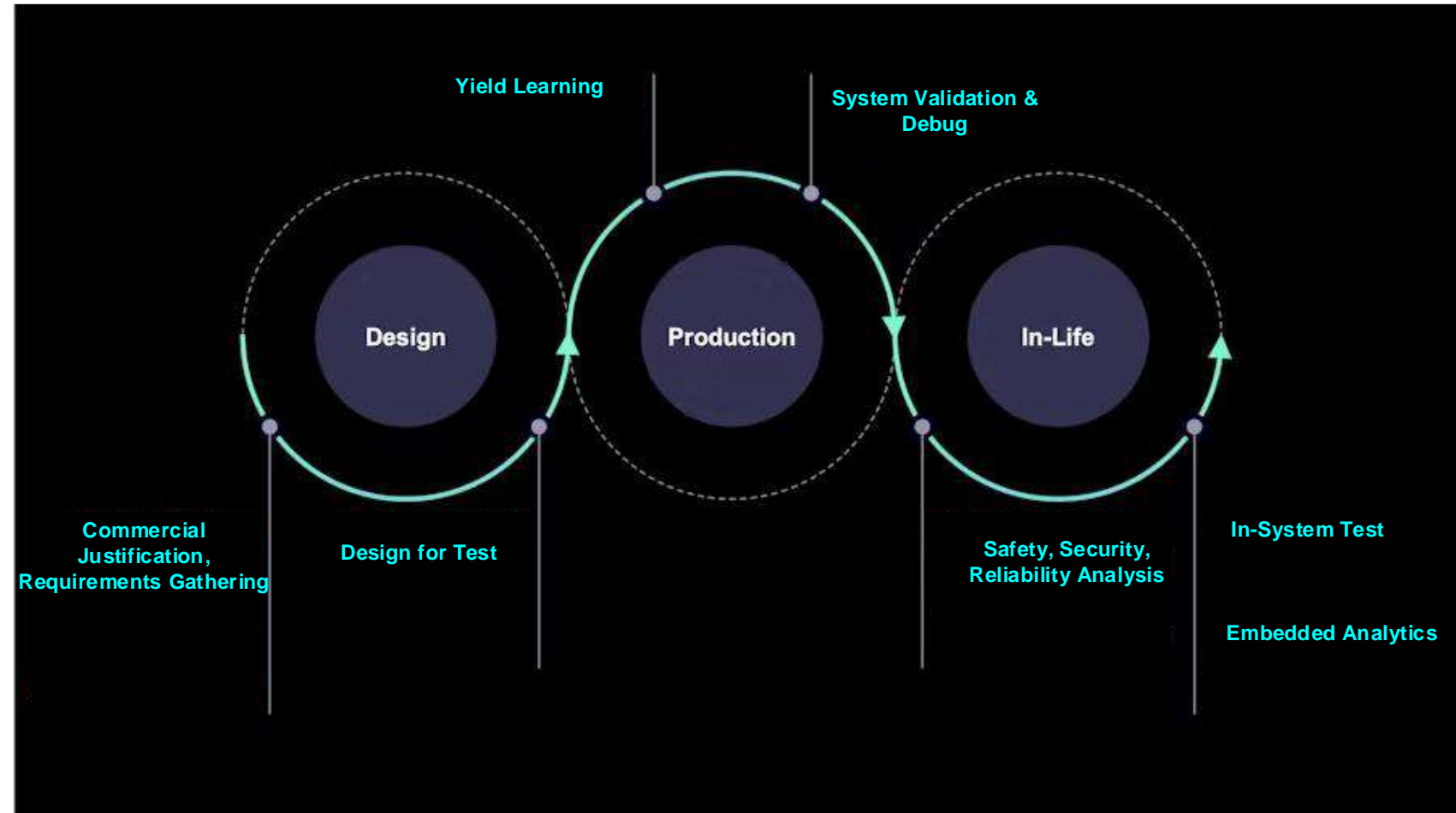


# Assembly defects and solutions (2)



# DFT (Design for Test)

- Why We Test
  - Prevent Defects
  - Reduce Costs
  - Improve Reliability





# DFT Levels

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Basic Manufacturability: Can the product be produced



Basic Testability: Ensuring fundamental testability



Fault Coverage Analysis: Assessing the ability to detect manufacturing defects

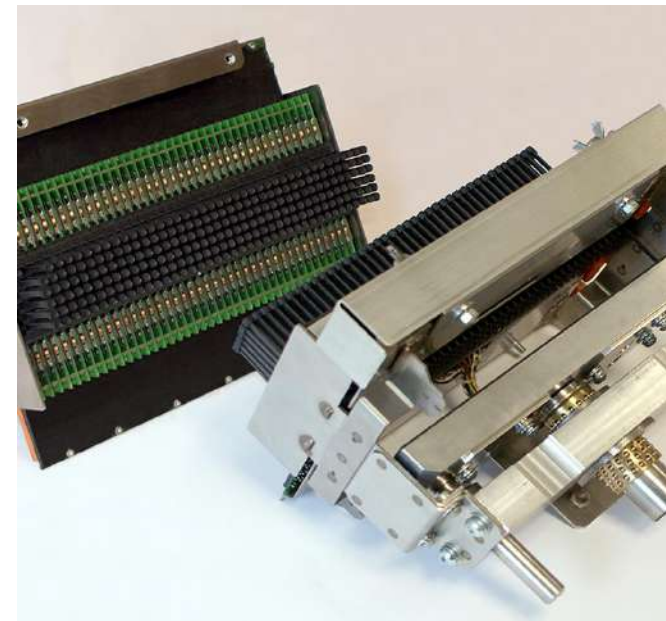
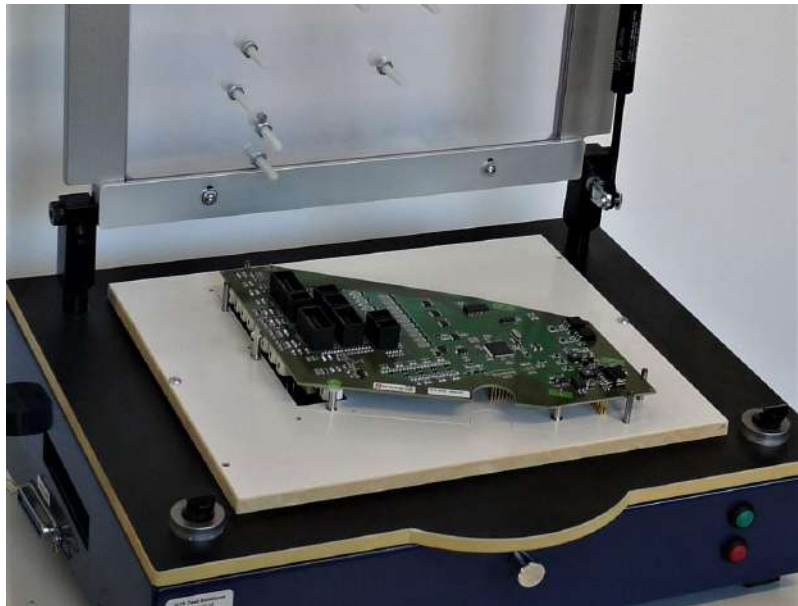
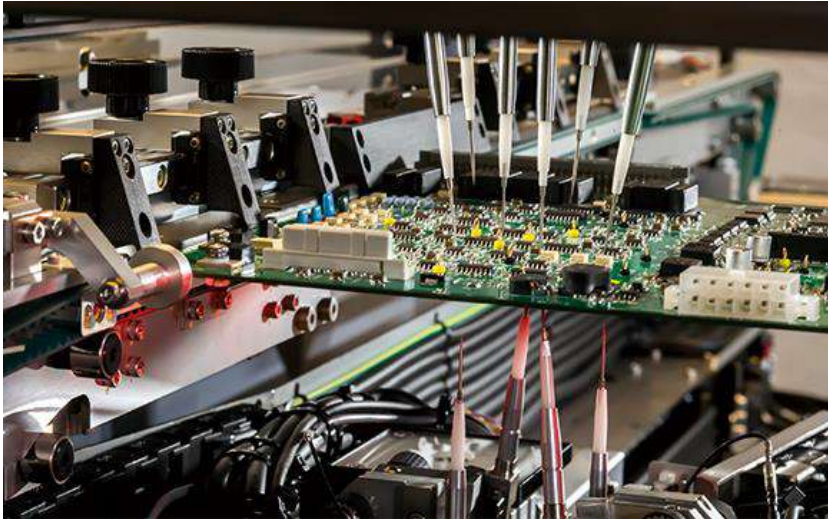


Design for Diagnostics: Enabling efficient fault isolation and repair

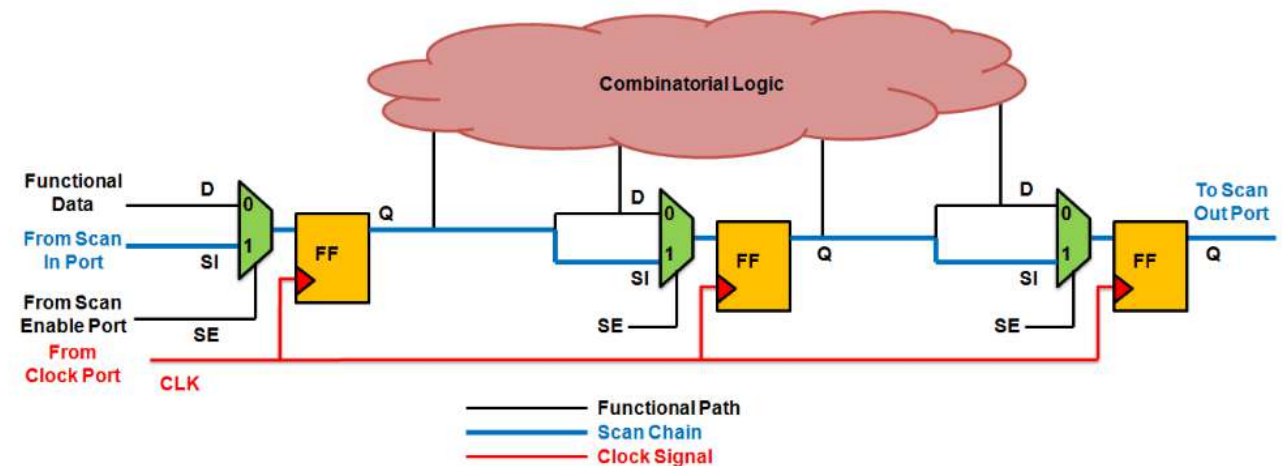
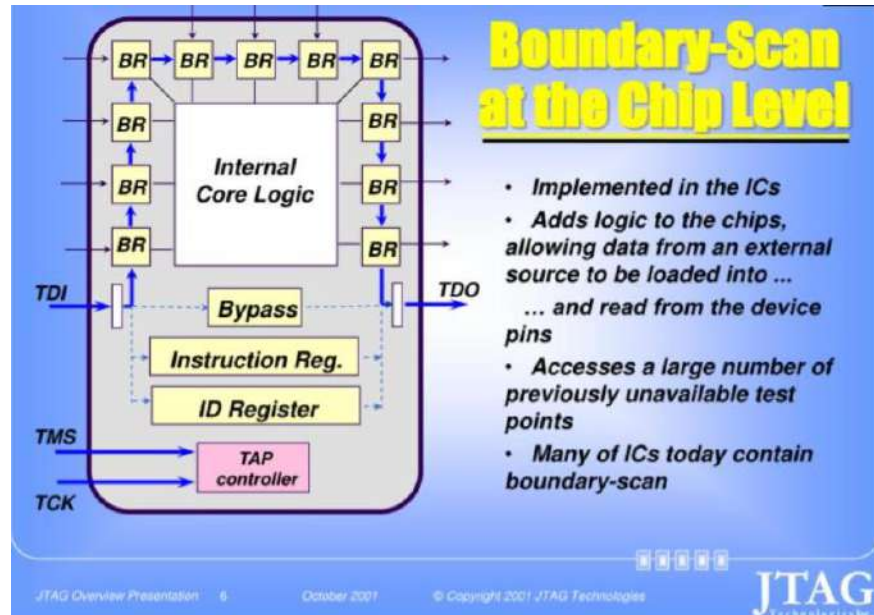


Advanced Fault Modelling and Simulation: Leveraging advanced techniques for comprehensive fault analysis

# Test Jigs (EOL)



# Embedded test



# Question

- How can DFT and DFM support each other through product life cycle?