



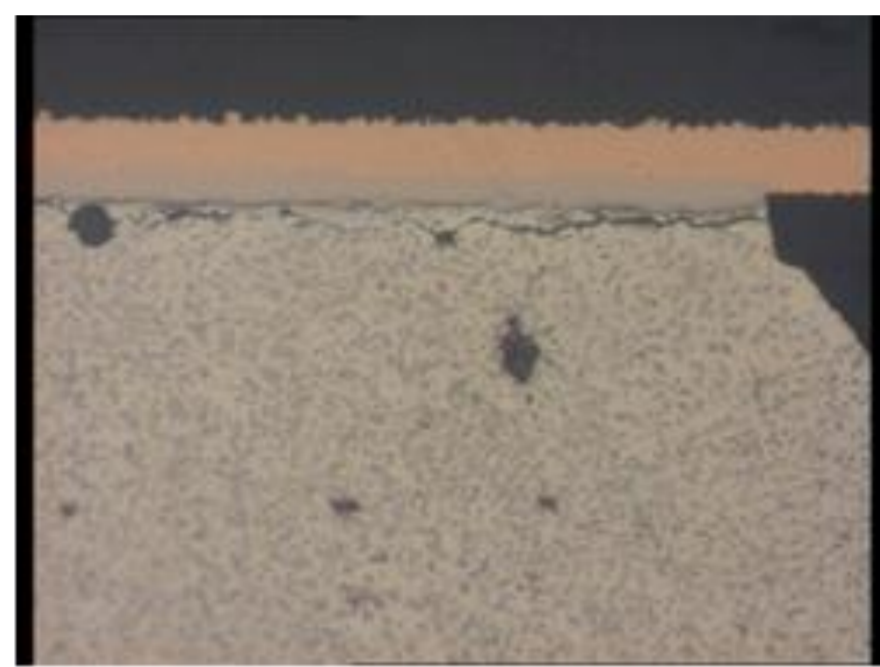
FP7 Coordination and Support Action to fund 50 technology transfer projects (TTP) in computing systems. This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement n° 609491.

IP-DIME: Image Processing to Detect Hidden Defects in Manufactured Electronics Systems

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TTP Problem

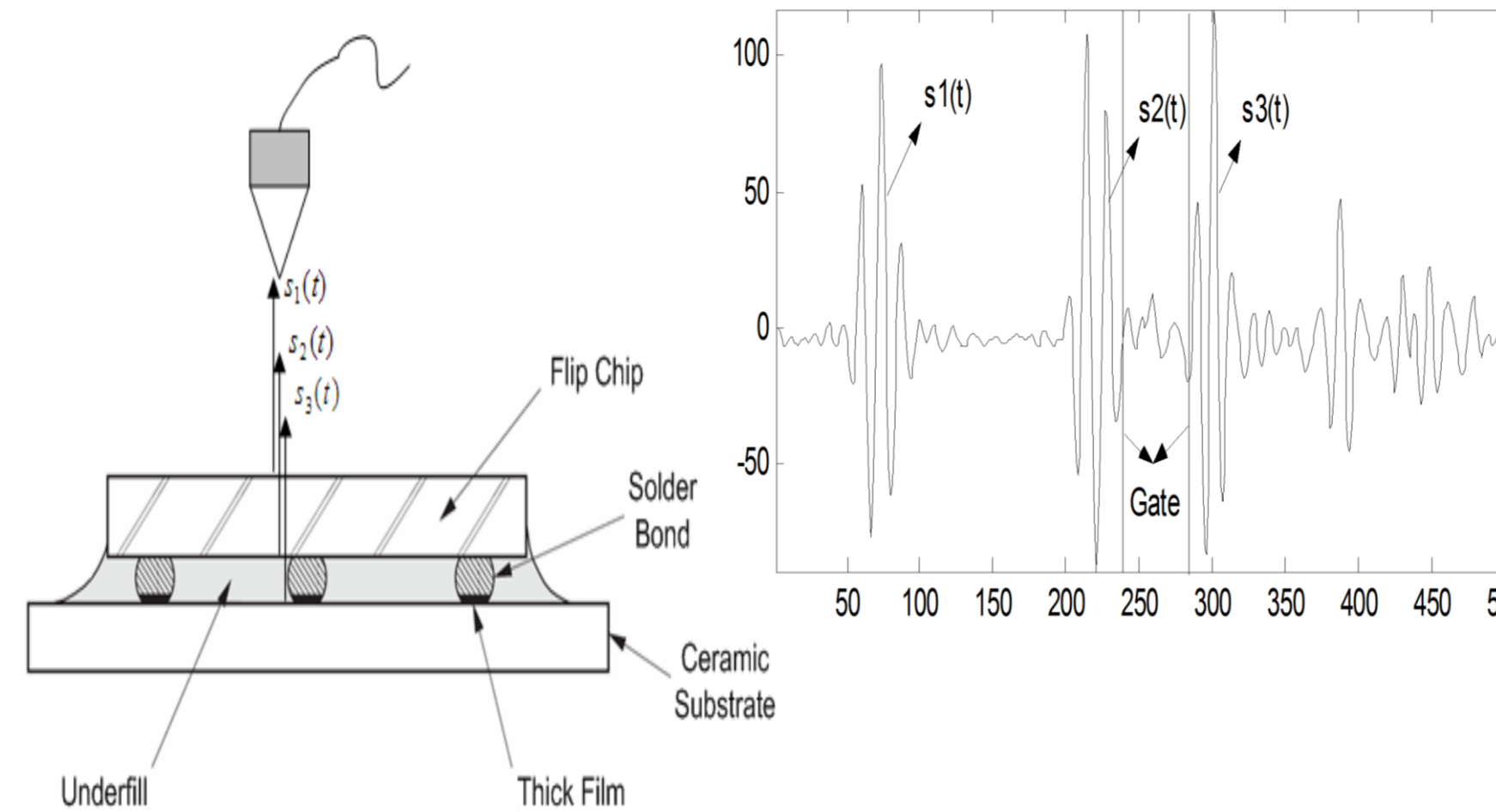
How to inspect hidden solder joints/bonds through life ?



- Crack Detection ✓
- Failure found ✓
- Not Non-destructive ?

Micro-section of fractured solder ball at the interface of the solder ball with the solder pad

Ultrasonic Echoes from a flip-chip Under Test

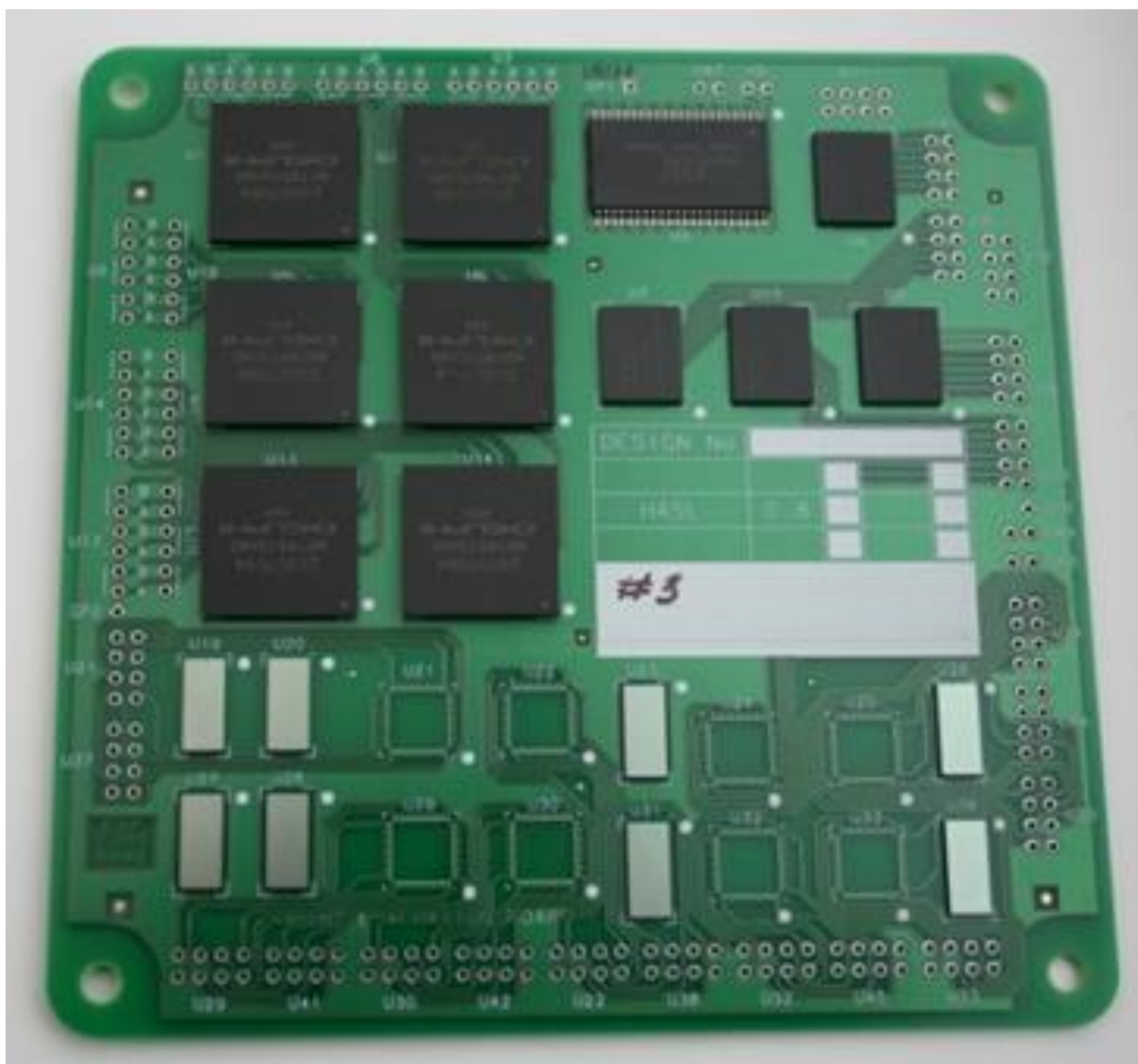


Non-destructive requirements:

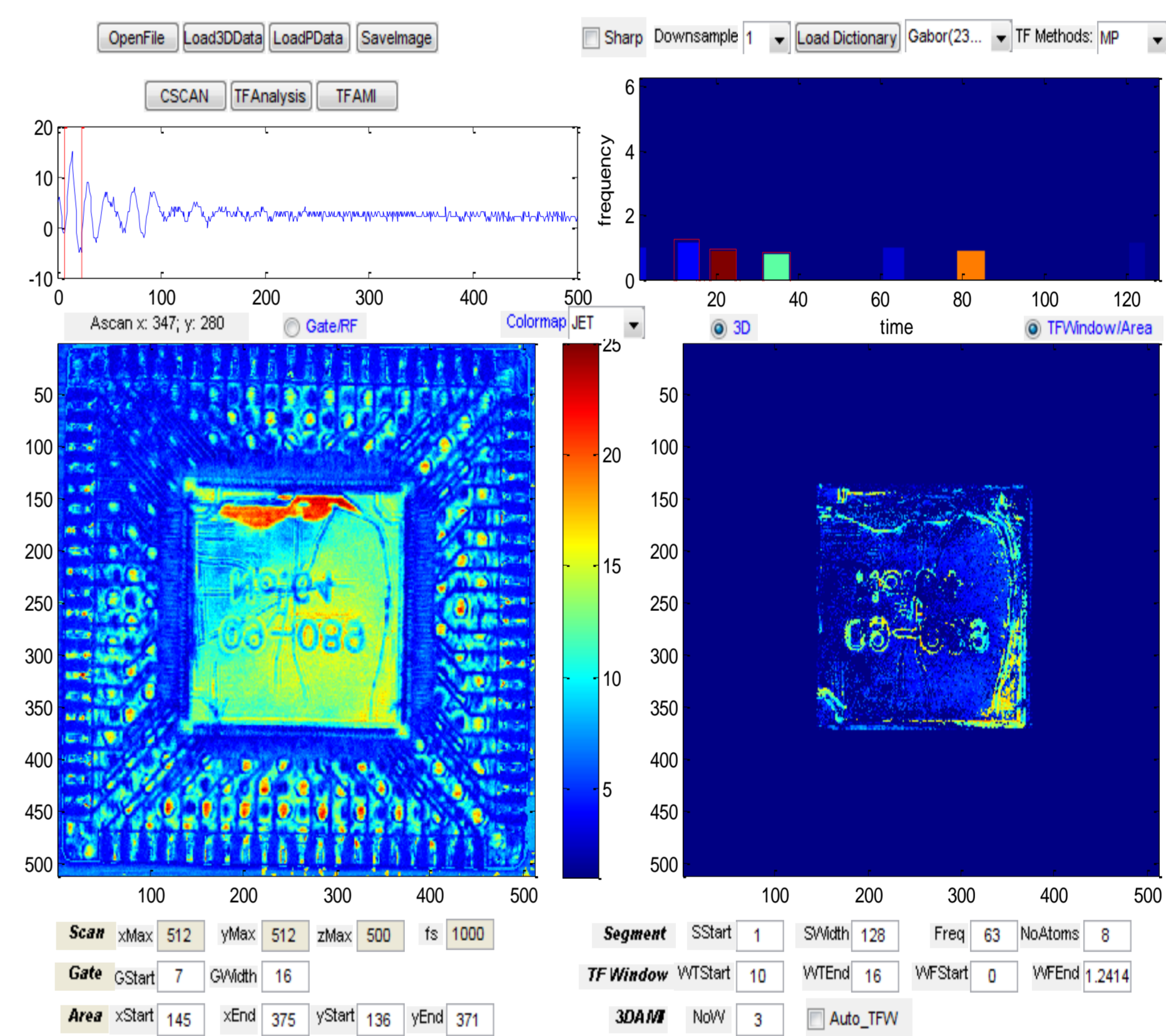
- + Echo overlaps need to be processed in 3D
- + Image Processing needs to be speeded up from minutes to seconds

TTP Solution

Sample of double sided test board designed to investigate flip-chip and BGA solder lifetimes



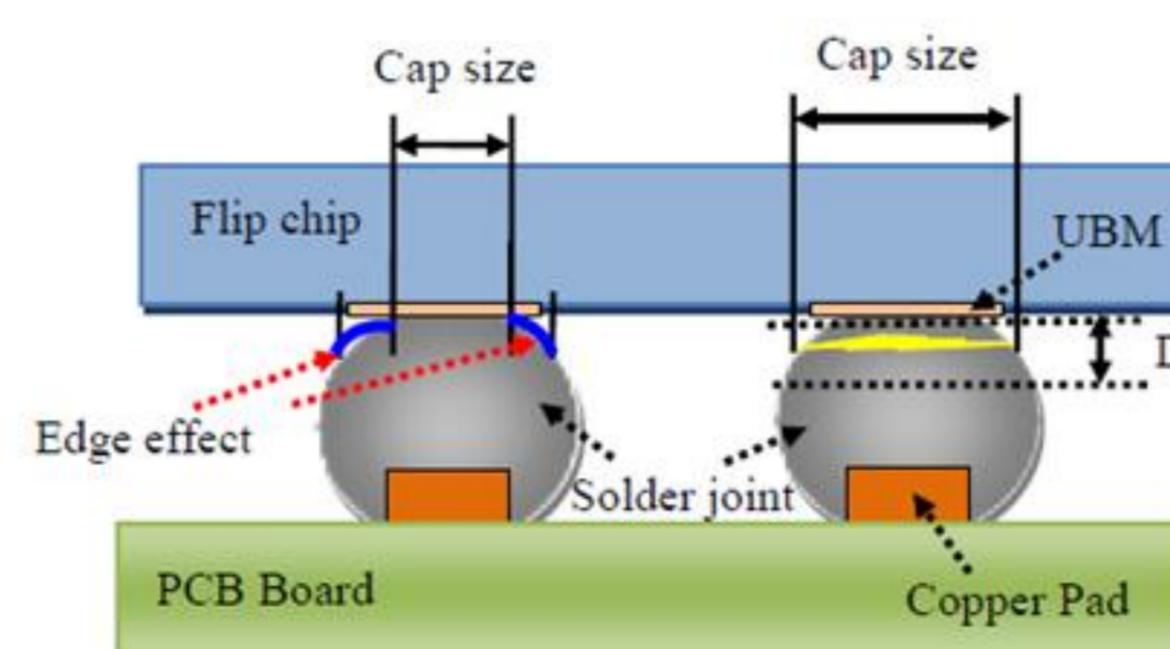
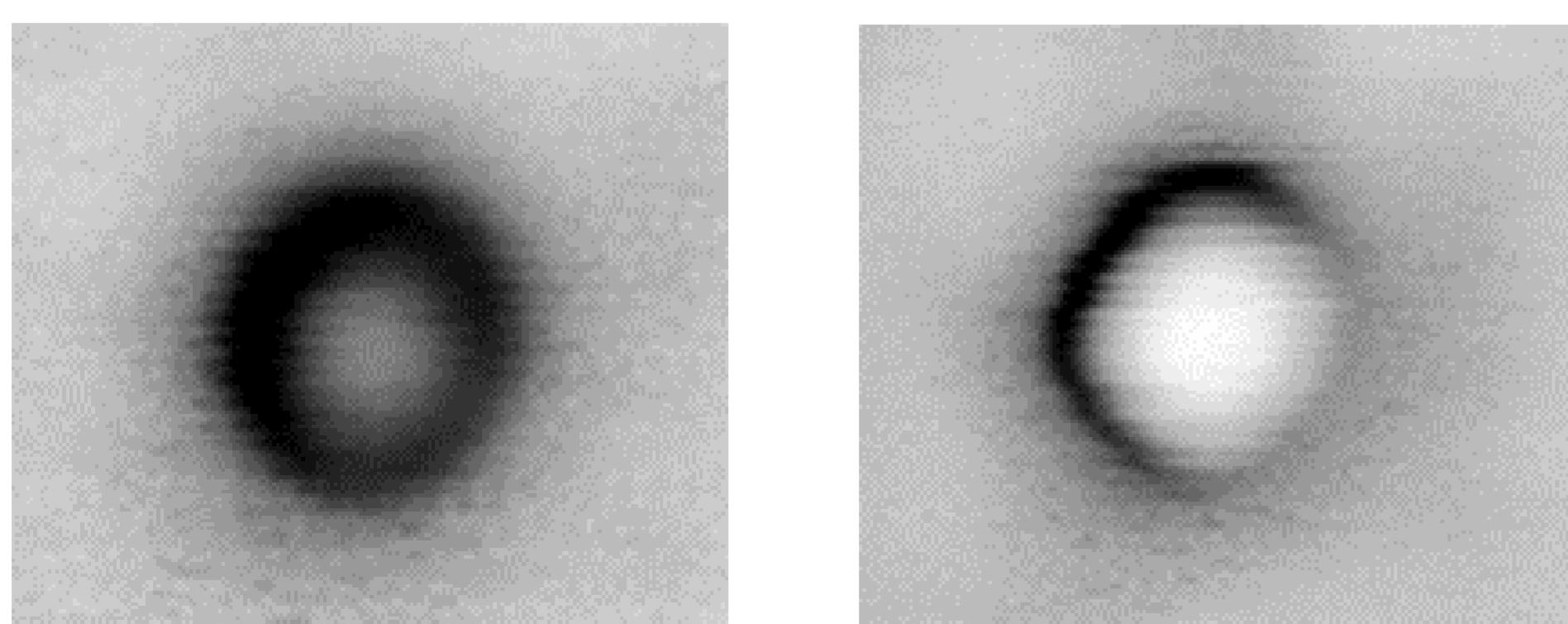
User Interface for Processing Parameter Selection



User Windows for acoustic A-scan, C-Scan, Algorithm tuning and layer control

TTP Impact

2D Acoustic signals from flip-chip healthy (left) and fractured (right) solder joints



- + Parallel processing reduces 3D image processing times from minutes to seconds
- + Crack or cap size can be better detected at individual layers giving accurate 3D fault localisation non-destructively
- + Quicker and more accurate through-life accelerated reliability tests

TTP Facts

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