

Keysight Factory Integrated In-Circuit Test for Cleveland UGM

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Jeff Kalukin
Applications Engineering
Manager



Automation Data Transactions

Automation

Collaborative Robot (aka Co-Bot)



- Collaborative robotics in conjunction with industry leading test and measurement for world-class performance
- Reduce production costs and improve efficiency increasing your electronics manufacturing work cells' productivity
- Flexibility and agility for easy integration with existing production lines, processes and tooling
- Free your operators from manual repetitive operations, with low additive value

Automation

Collaborative Robot (aka Co-Bot)

Current Generation

- Co-Bot dedicated to single task
- COM port communication
- Wired

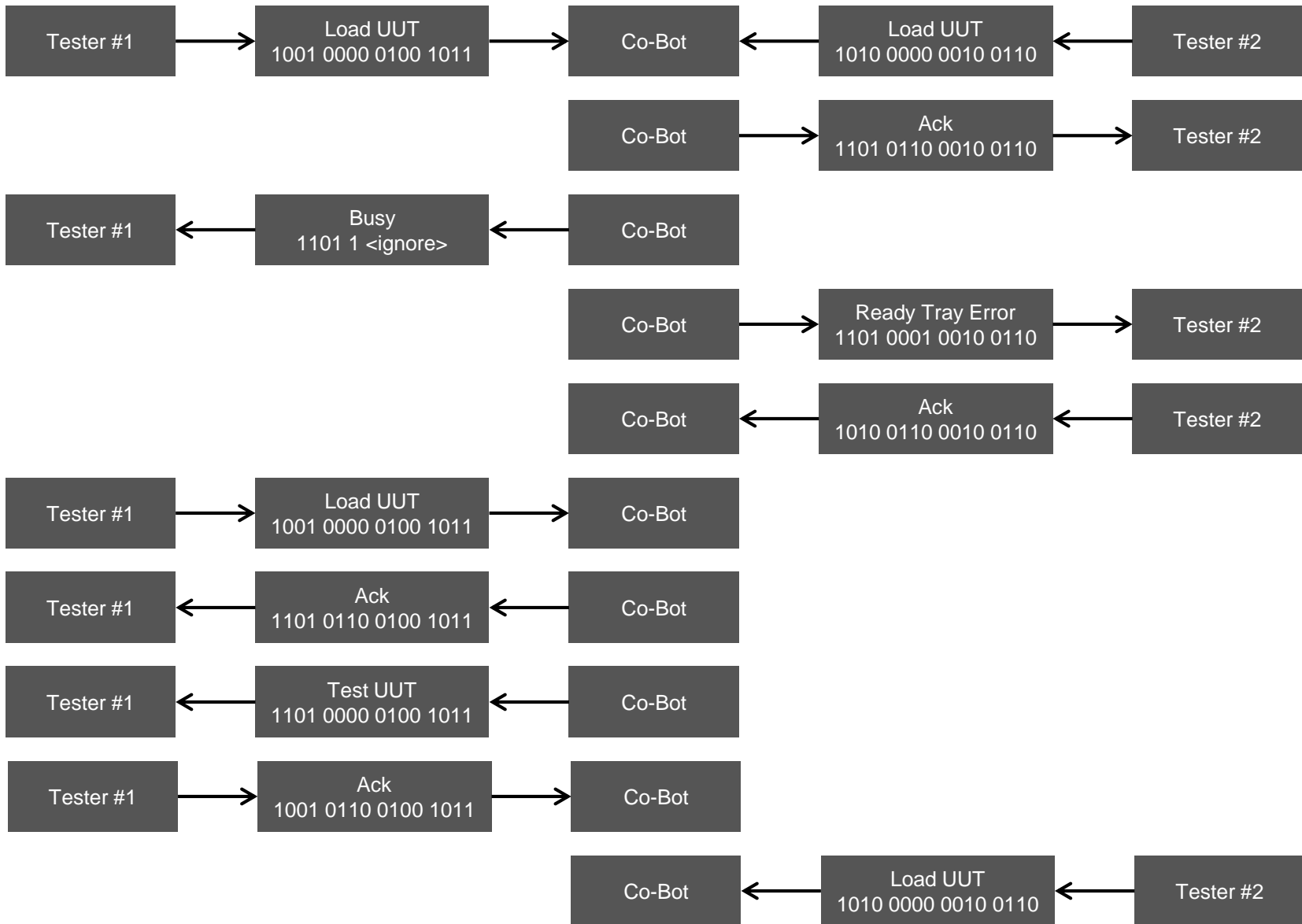
Next Generation

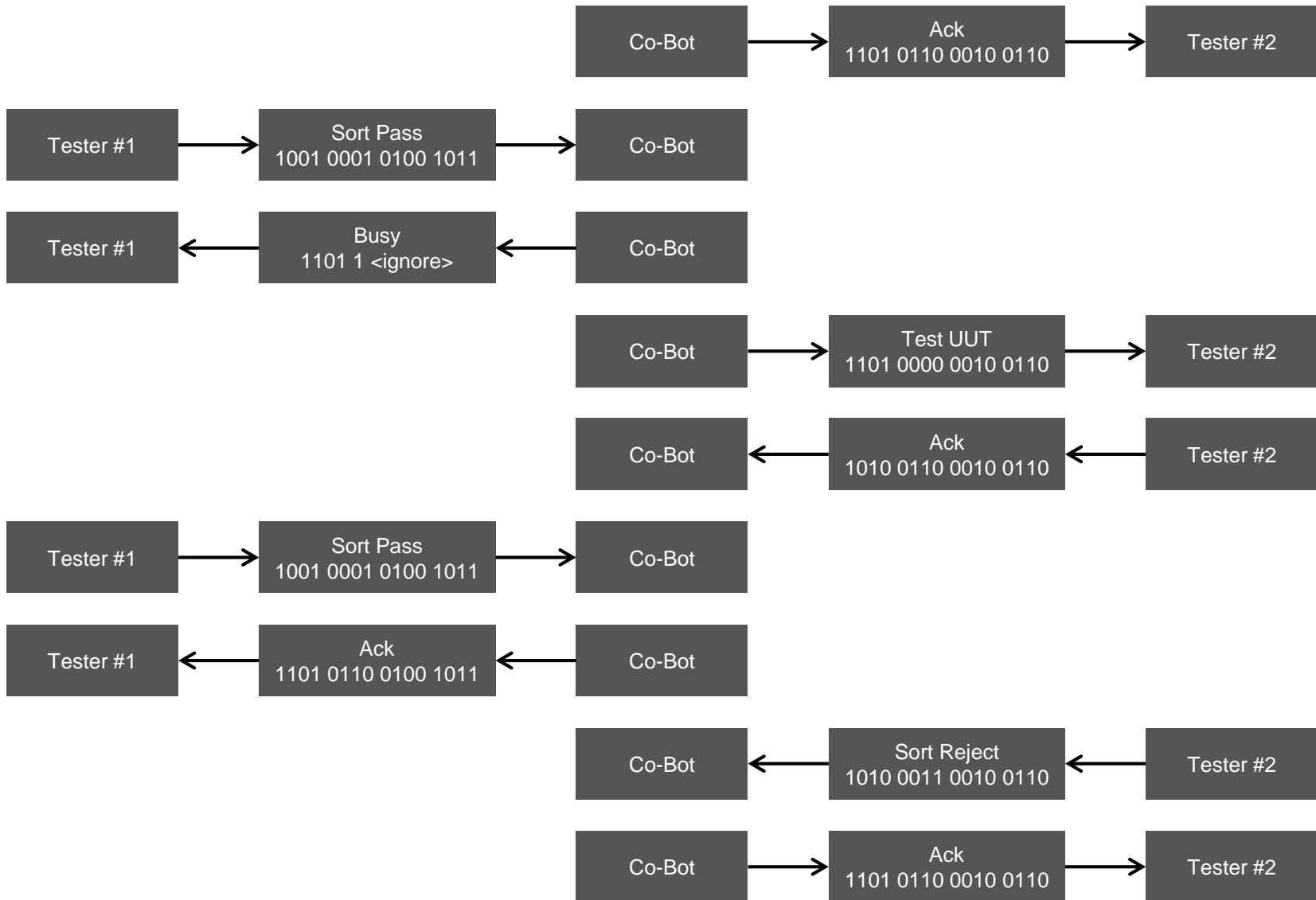
- Co-Bot can multitask serving dissimilar stages
- LAN communication managed by DLL function calls
- Wireless?

Automation

Proposed Peer-to-Peer Communication for Work Cell

- Ethernet LAN with each CID assigned an addressable port; <IP Address>:<Port>, 192.168.1.100:2869
- Host file maps Cell addressable ports.
- **Data Packet**: [1 bit Preamble] [3 bit CID] [1 bit Busy] [3 bit Action] [8 bit PID]
- **Cell ID** (CID) is a numeric assignment representing priority rank in cell of co-bot, tester, or other stage.
- **Process ID** (PID) is a numeric assignment unique to each process (e.g. 1 = widget A, 2 = widget B).
- **Action Command** is a declarative command to addressed Cell ID.
- **Data Packet**: [1 bit Preamble] [3 bit CID] [1 bit Busy] [3 bit Action] [8 bit PID]
- **Co-Bot CID** = 5, **Tester #1 CID** = 1 & PID = 38, **Tester #2 CID** = 2 & PID = 75
- Co-Bot Declarative:
Action [0:7] = <Test UUT>, <Ready Tray Error>, < Sort Pass Error>, < Sort Fail Error>, < Sort Reject Error>, <undefined>, <Ack>, <Abort>
- Tester Declarative:
Action [0:7] = <Load UUT>, <Sort Pass>, <Sort Fail>, <Sort Reject>, <undefined>, <undefined>, <Ack>, <Abort>





Data Transactions

Manufacturing Execution Systems

- Data transacted Server to Tester, Tester to Server, Tester to DUT.
 - File Server
 - Data Logging
 - Paperless Repair
 - Shop Floor Control
 - Process Monitoring
 - **Product Configuration**
- i3070 Tools to Use.
 - Testplan Customization
 - Data Log Converter
 - External Application DLL
- Programming Tools
 - Flash/PLD ISP, Flash70, VCL
 - Utility Card with Programming Module for Serial Embedded Flash

Data Transactions

Product Configured with Traceability Data

- Programmed content can include Static and Dynamic elements.
- Static content can be Mbytes.
- Dynamic content can be a few bytes or 100's of bytes.
- Dynamic Elements can include
 - Metadata; Line, Shift, Fixture, Timestamp
 - Parsed from Barcode; Assembly Type, Serial Number
 - Fixed Values; Padding
 - Derived Values; Seed-Key Values

OEM Cybersecurity

Seed-Key Generation

