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National Instruments
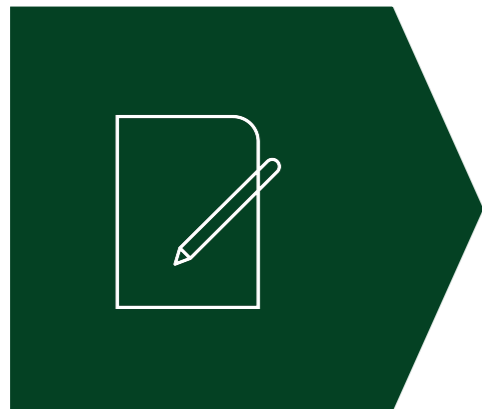is now NI.

Our Vision

Lifecycle Analytics Through Product-Centric Approach
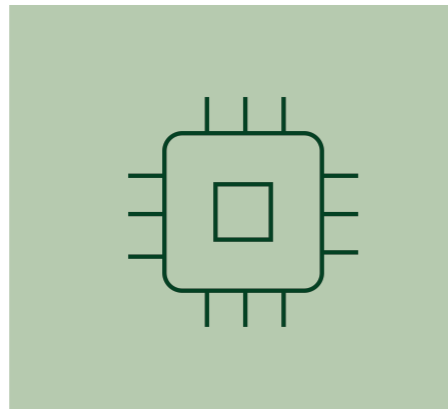

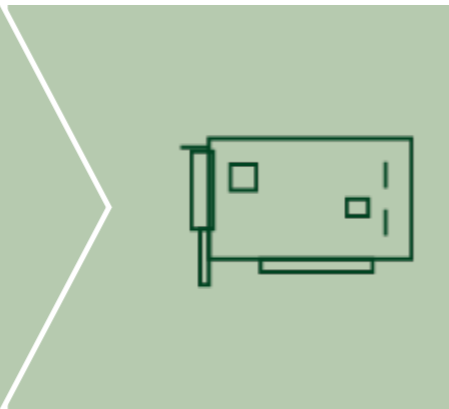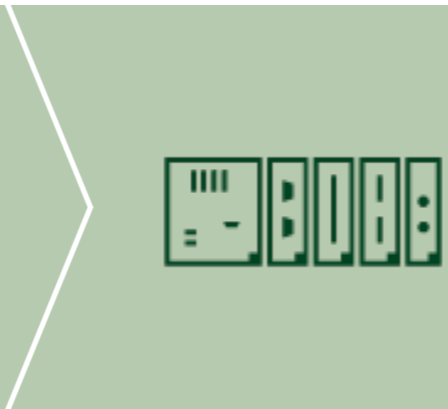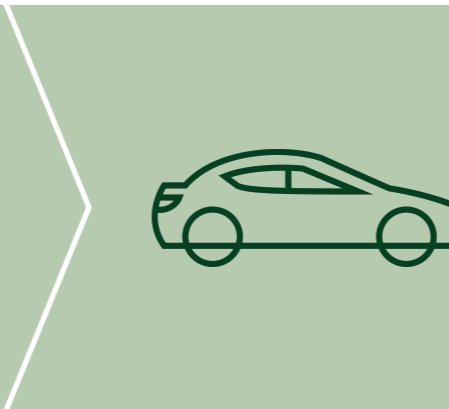DESIGN AND ENG.   MANUFACTURING   CUSTOMER
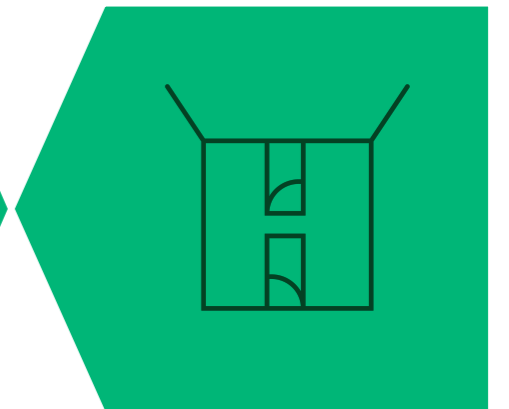
DESIGN   CHIP   BOARD   MODULE   PRODUCT   IN USE   RETURNS
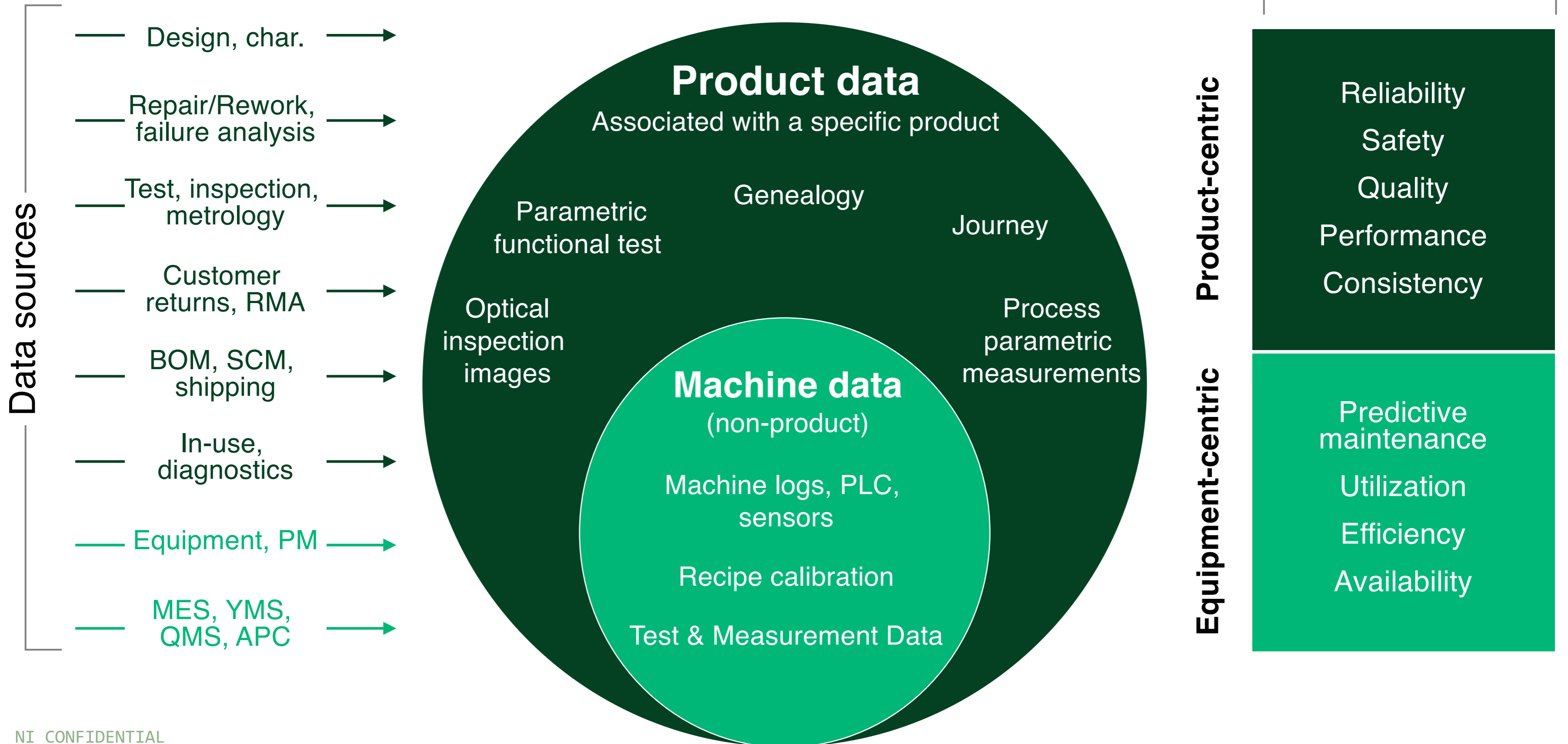
Design Spec • Machine • Process • Metrology • Test • Rework • Genealogy • Performance • Reliability • Usage • Warranty
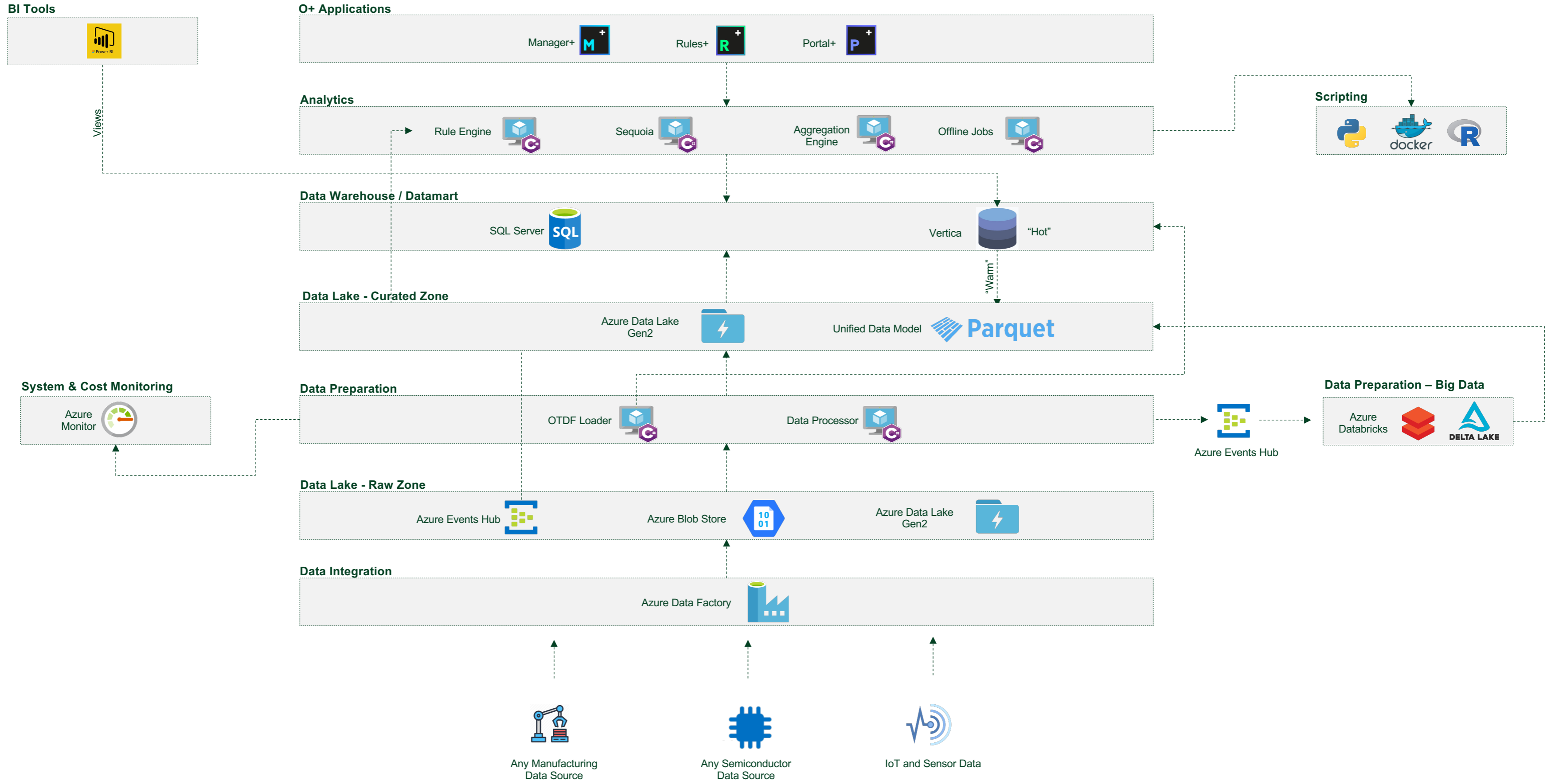
OPEN PLATFORM

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Product-Centric Approach to Advanced Analytics

Data sources

- Design, char.
- Repair/Rework, failure analysis
- Test, inspection, metrology
- Customer returns, RMA
- BOM, SCM, shipping
- In-use, diagnostics
- Equipment, PM
- MES, YMS, QMS, APC

Product data
Associated with a specific product

Parametric functional test

Genealogy

Journey

Optical inspection images

Process parametric measurements

Machine data
(non-product)

Machine logs, PLC, sensors

Recipe calibration

Test & Measurement Data

Benefits

Product-centric

Reliability
Safety
Quality
Performance
Consistency

Equipment-centric

Predictive maintenance
Utilization
Efficiency
Availability

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Detailed Architecture

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BI Tools

O+ Applications

Manager+ M+   Rules+ R+   Portal+ P+

Analytics

Rule Engine   Sequoia   Aggregation Engine   Offline Jobs

Scripting

docker

Views

Data Warehouse / Datamart

SQL Server SQL   Vertica "Hot"

"Warm"

Data Lake - Curated Zone

Azure Data Lake Gen2   Unified Data Model Parquet

System & Cost Monitoring

Azure Monitor

Data Preparation

OTDF Loader   Data Processor

Azure Events Hub

Data Preparation – Big Data

Azure Databricks DELTA LAKE

Data Lake - Raw Zone

Azure Events Hub   Azure Blob Store   Azure Data Lake Gen2

Data Integration

Azure Data Factory

Any Manufacturing Data Source   Any Semiconductor Data Source   IoT and Sensor Data

NI Analytics for Transportation on Microsoft Azure

Run NI's industry-leading analytics solutions for the Transportation industry on Microsoft Azure and benefit from tight integration with your other Azure-based investments and lower cloud costs.

Transportation Solutions

Drive better efficiency, reliability and quality in manufacturing with the Product Lifecycle Analytics solution

Analytics for YOUR Business

Embed powerful analytics, designed specifically for the automotive industry, into your manufacturing operations

Self-service Analytics using Power BI

Use Microsoft's PowerBI self-service analytics to visualize data and insights created by the NI solutions
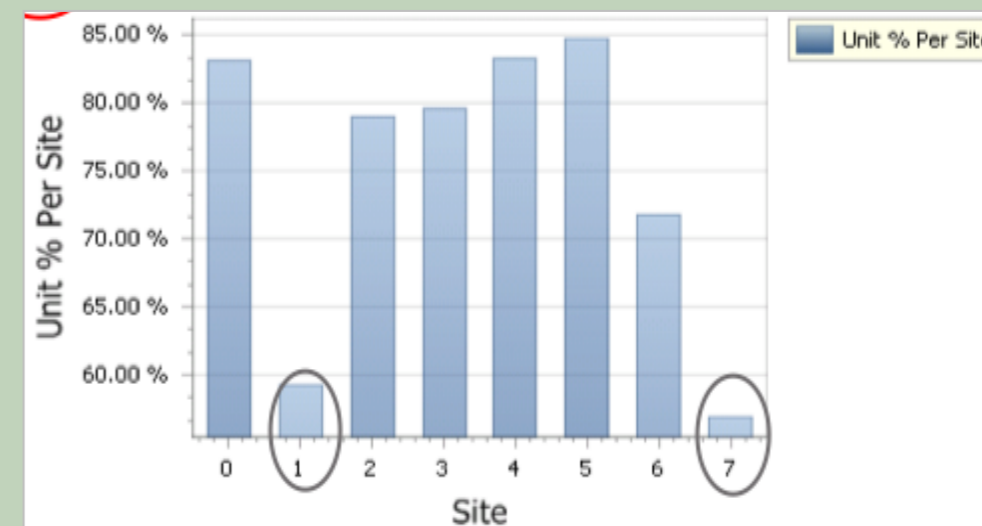
Trusted By Leading Brands

Customers

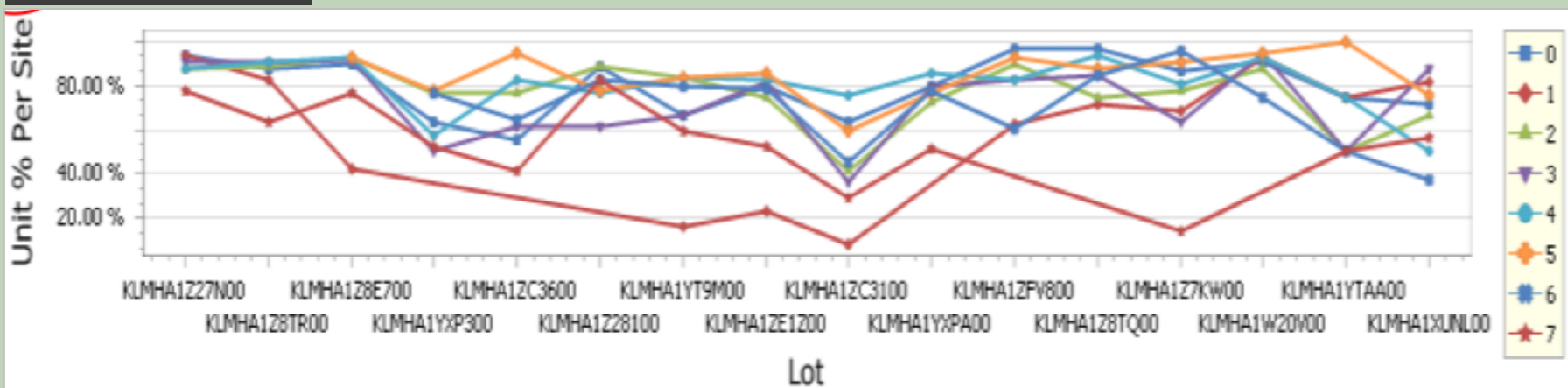Qualcomm · ST · DENSO · Nidec · amazon · ALLEGRO microsystems

NXP · Continental · vitesco TECHNOLOGIES · socionext · ON Semiconductor

BOSCH · NVIDIA · ZF · CYPRESS · RENESAS

Supply Chain

SAMSUNG · UMC · ASE GROUP · BYD · SPIL · STATSChipPAC

SMIC · Amkor Technology · tsmc · FOXCONN · GLOBAL FOUNDRIES

Customer use case: Operational yield – Site issue
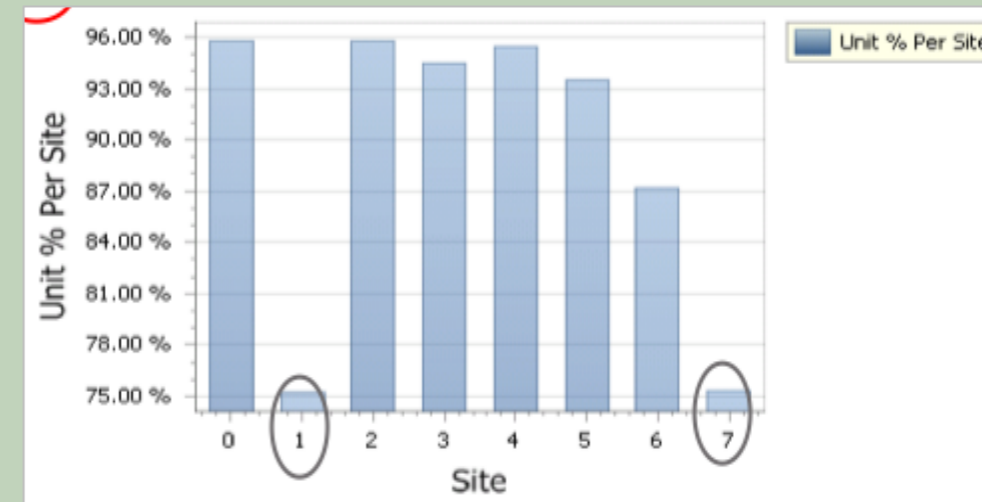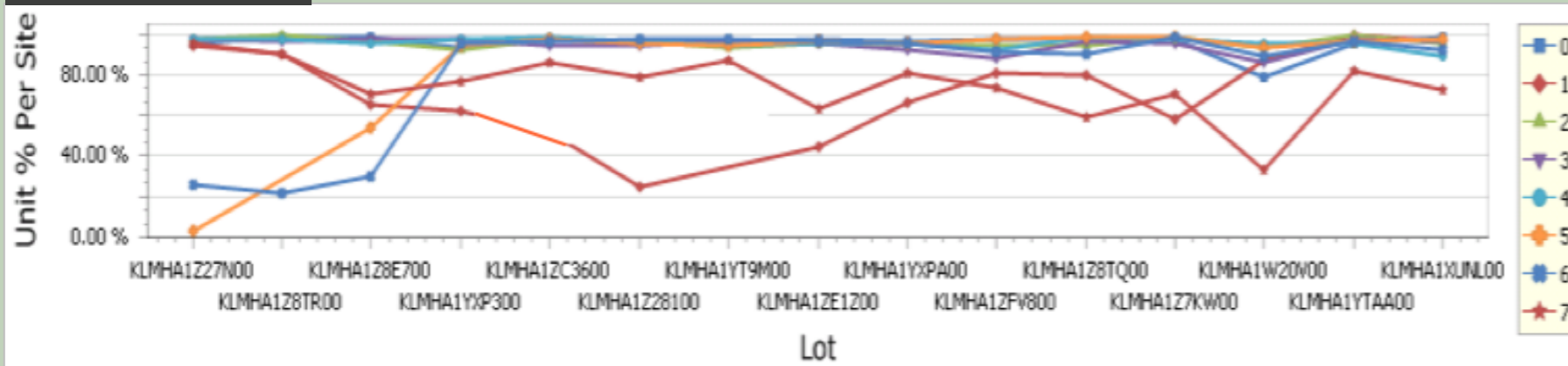
Device:
Network

Problem:
Yield loss

Issue:
Yield by tester varies

Standard O+ rules found
With no monitoring – Site-Site issue not detected – This case is 16 lots

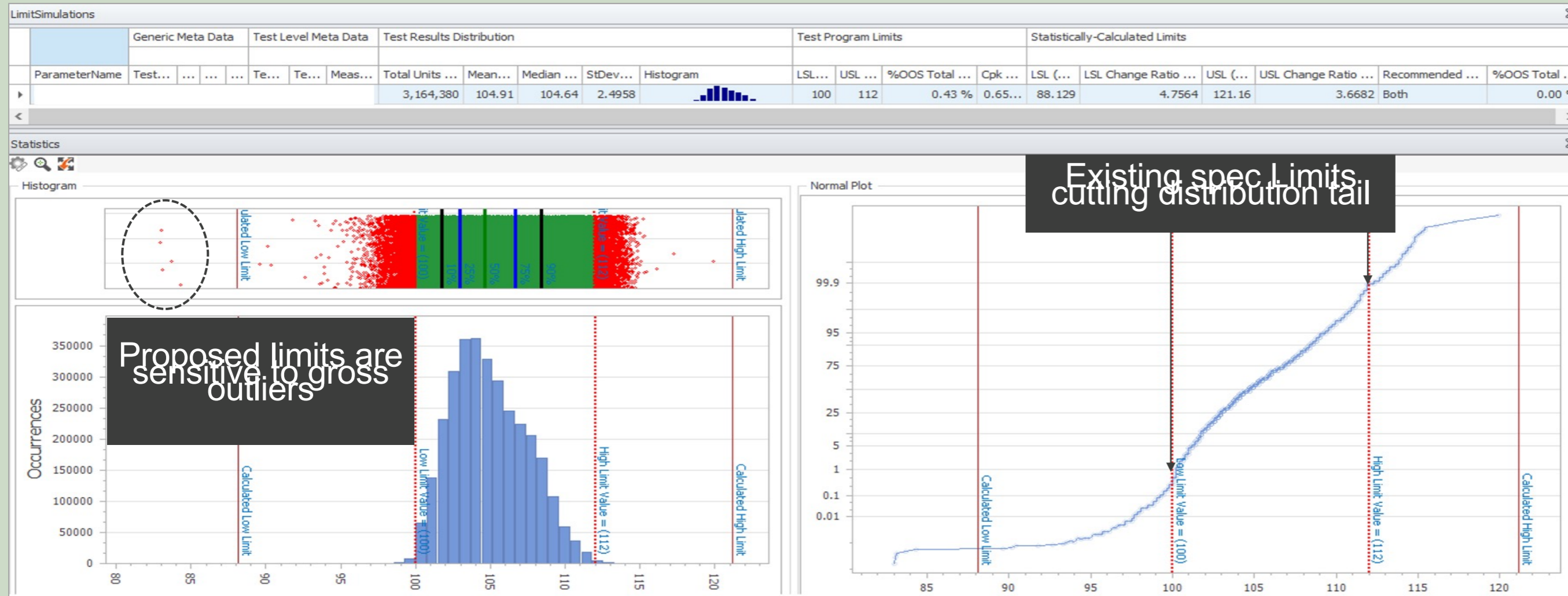# Customer use case: Lot dispositioning – Structured web analysis flows

Operations issue:
Low yielding lot on hold at supplier

Problem discovered:
Combination of low site 7 yield due to high HB4/SB24 Rx test

Resolution:
Rules monitoring catches issues, efficient web flows allow rapid disposition
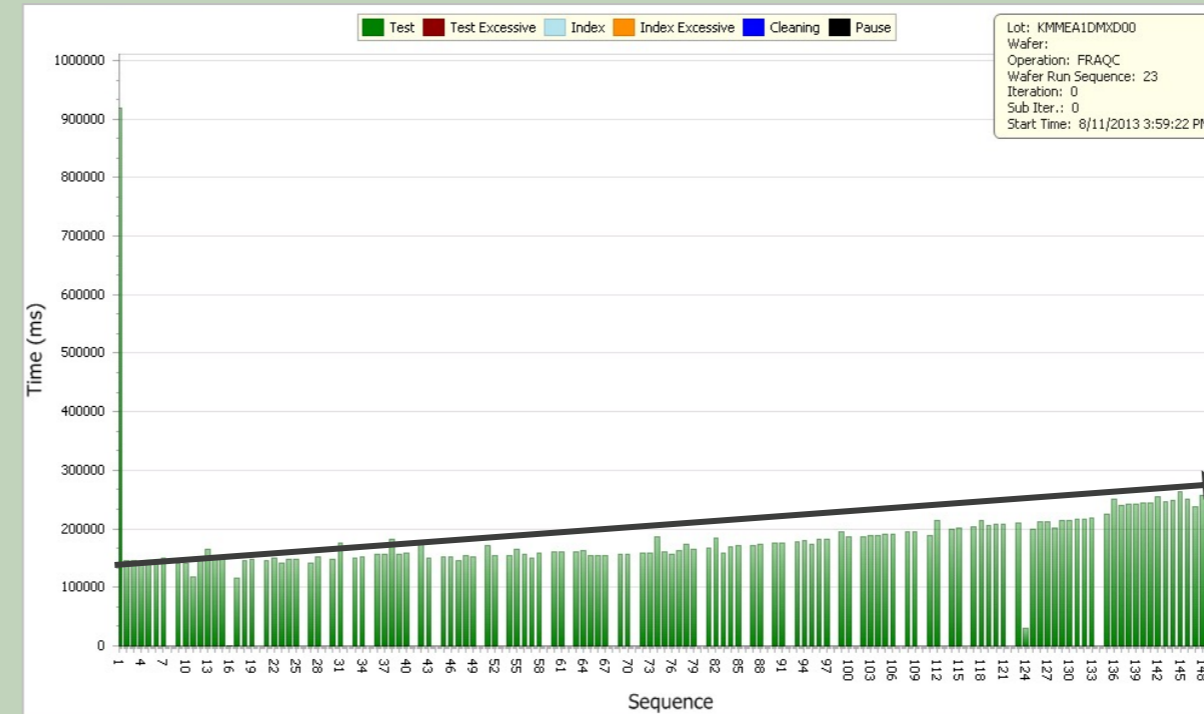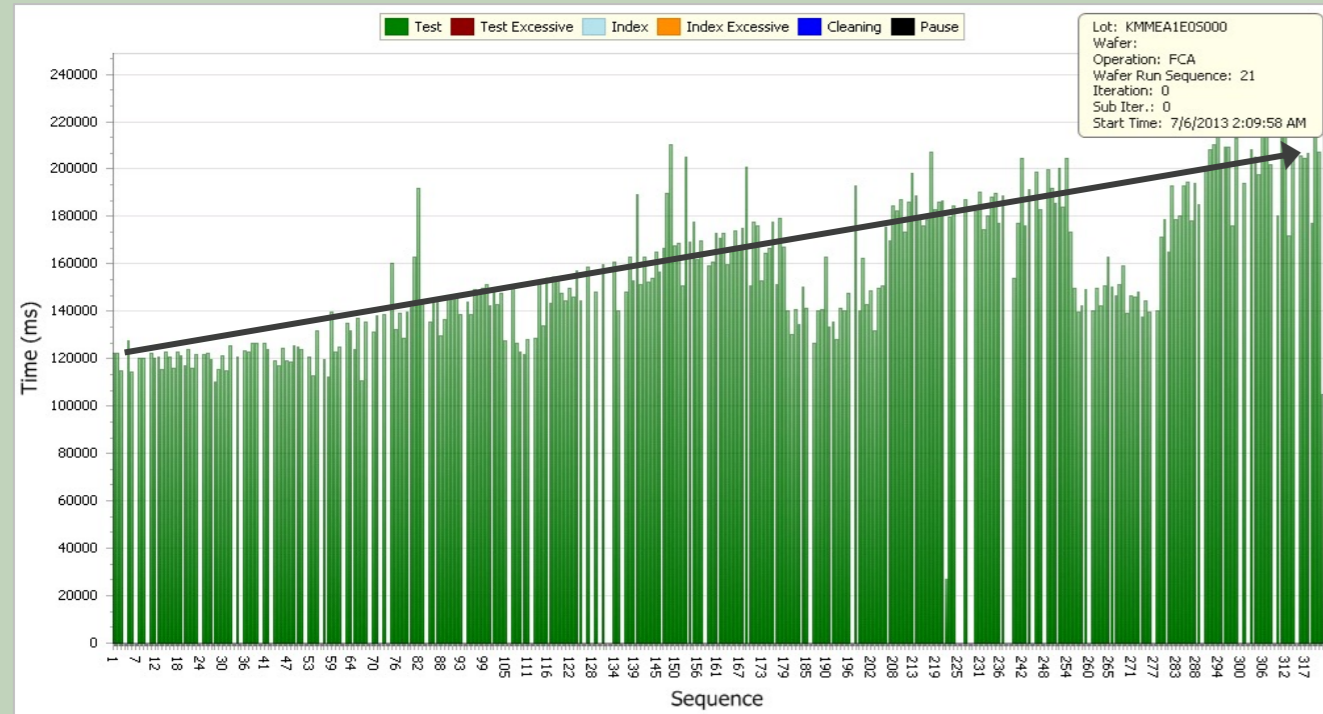
Yield improvement example – tight spec limits

Problem:
Current tests limits are too tight, causing 0.4% yield loss.

Solution:
Propose tests limits which will reduce yield loss without impacting product quality

Customer use case: Efficiency problem – Increasing test time

Device:
Micro controller with Flash

Problem:
Capital avoidance

Issue: Needed 10 more test stations
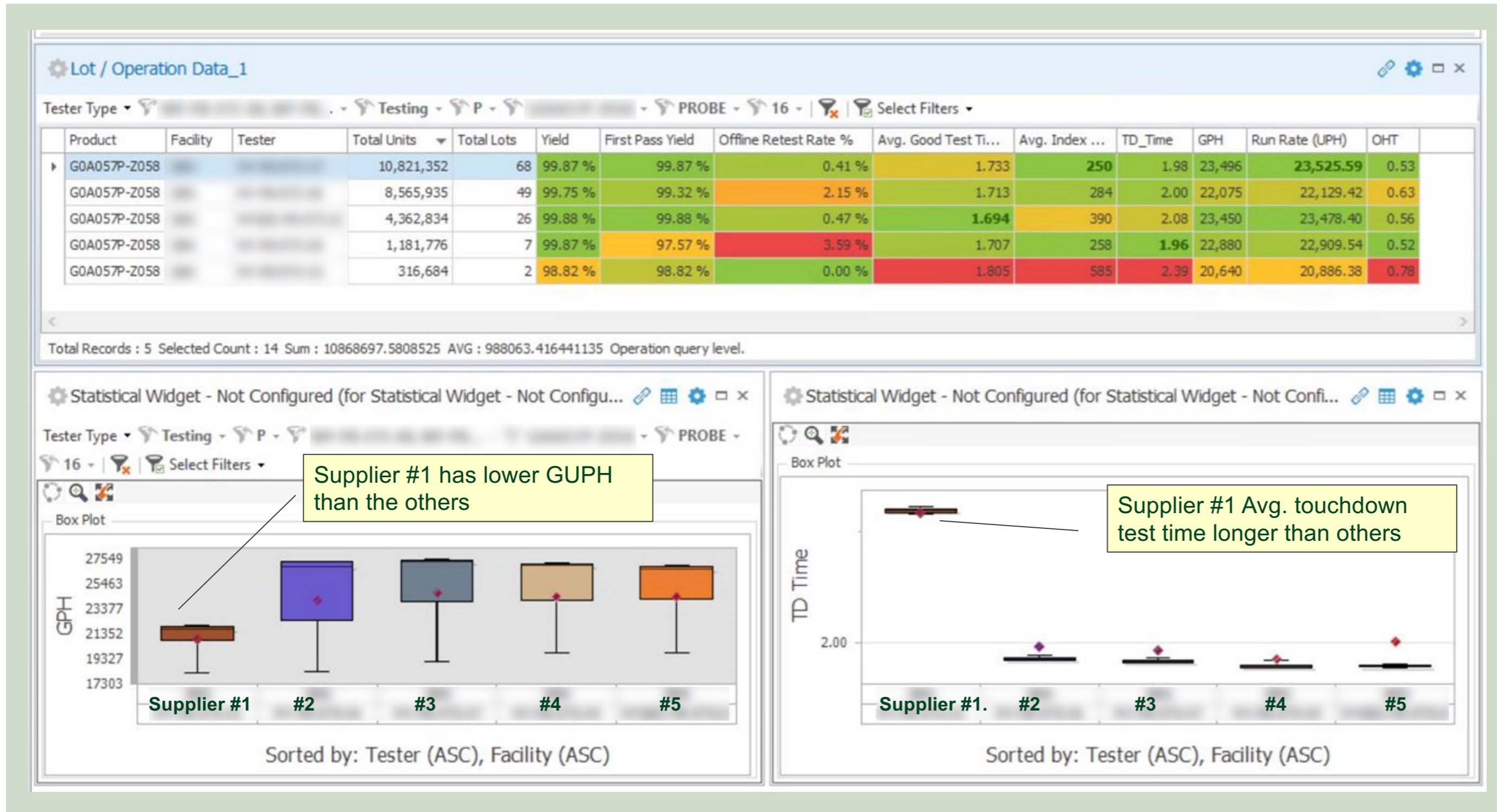
Problem discovered: Issue with test program

Fix:
Improved O+ rule
for monitoring
for all future testers/devices

Standard O+ rules found
Testers had different throughputs
Test Time Increasing from 120 Sec to 300 Sec

Result: Saved 8 test stations = $12M in CapEx & OpEx Savings

Customer use case: Suppliers benchmark dashboard for key KPIs

Problem:
How do I keep visibility on my complex supply chain

Solution:
Provide consolidated views of operations across all suppliers mfg. sites
- Enable objective benchmarking of suppliers
- Highlight KPIs that require attention
- Enable drilldown for root-cause analysis

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