Analytics for Electronics

Our Mission:

NI equips engineers and enterprises with systems that accelerate productivity, innovation, and discovery.

We're invested.

$1.3B 2020 REVENUE

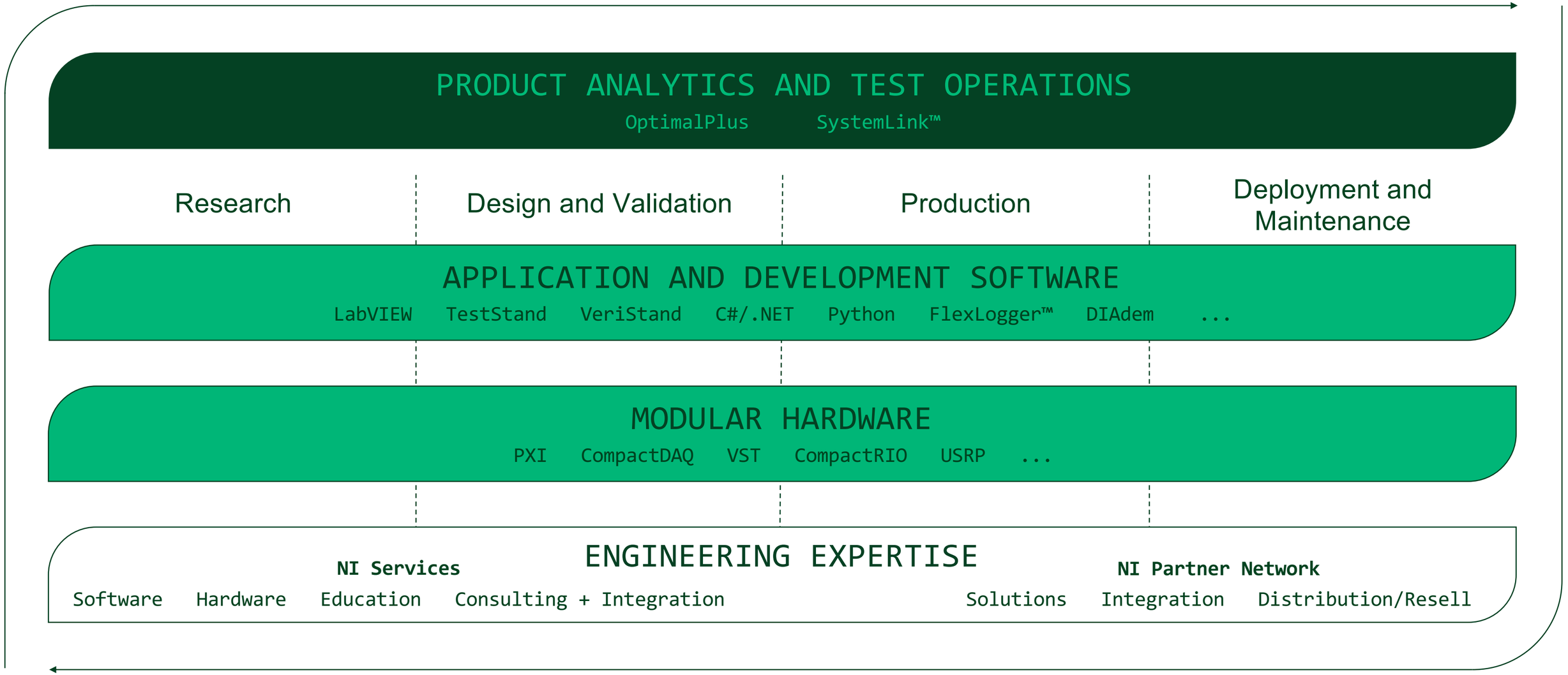
22% INVESTMENT IN R&D IN 2020

~40 COUNTRIES WITH NI OPERATIONS

35,000+ CUSTOMERS WORLDWIDE

NI SOFTWARE-CONNECTED SOLUTIONS

ENABLING INNOVATION AND PRODUCTIVITY ACROSS THE PRODUCT DEVELOPMENT CYCLE



NI SOFTWARE-CONNECTED SOLUTIONS

ENABLING INNOVATION AND PRODUCTIVITY ACROSS THE PRODUCT DEVELOPMENT CYCLE

PRODUCT ANALYTICS AND TEST OPERATIONS

OptimalPlus SystemLink™

Research | Design and Validation | Production | Deployment and Maintenance

TAILORED, APPLICATION-SPECIFIC SYSTEMS

Semiconductor Test System Electric Vehicle Battery Test System Condition Monitoring ...

ENGINEERING EXPERTISE

NI Services

Software Hardware Education Consulting + Integration

NI Partner Network

Solutions Integration Distribution/Resell

You’re in good company.

Semiconductor

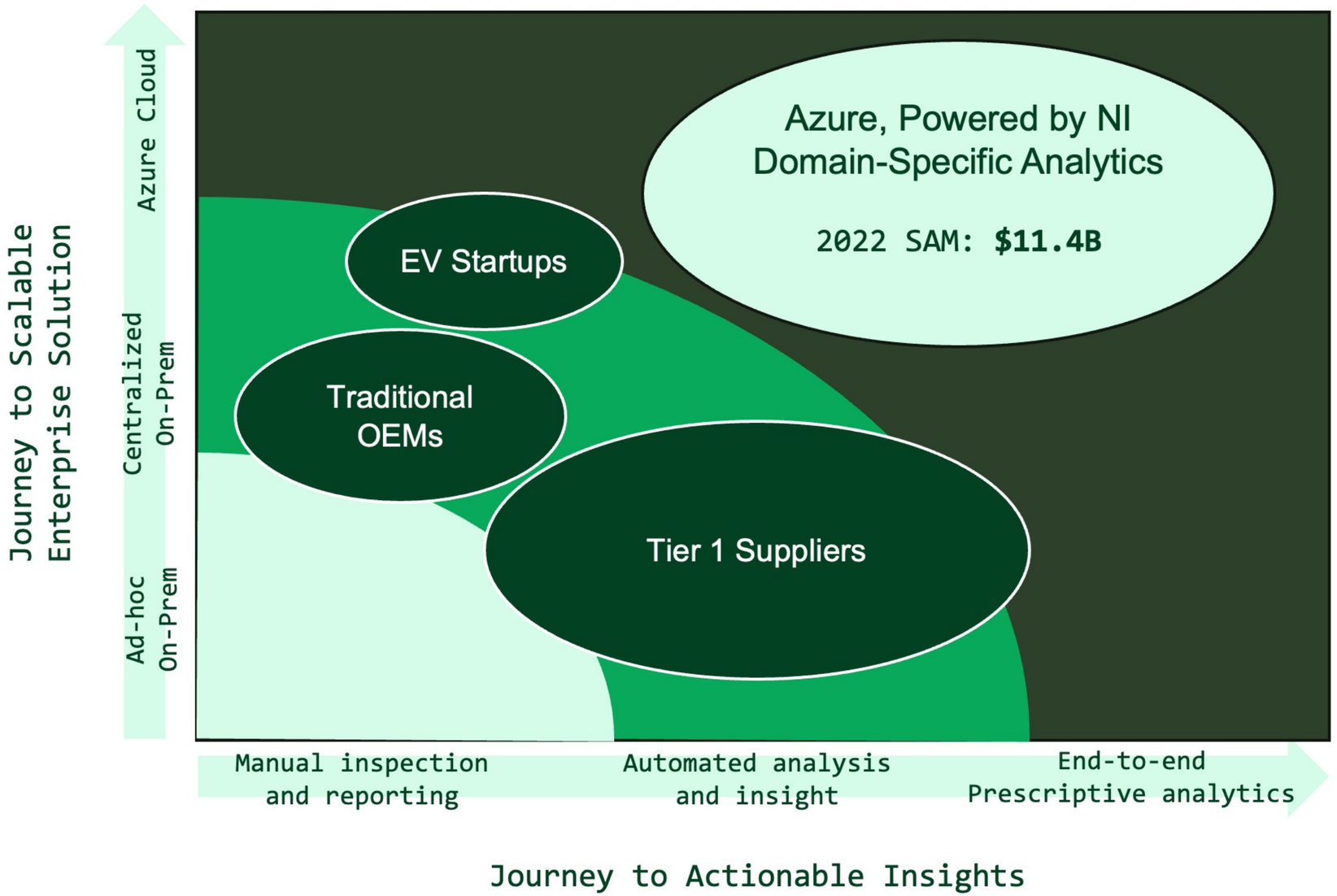
Transportation

Aerospace, Defense, and Government

Electronics, Academia, and Industrial Equipment

Vision for Analytics in Automotive Manufacturing

The automotive landscape is at a critical stage in an ongoing transformation



Innovation and Reliability are on a Collision Path

The trend towards cloud-enabled analytics is driven by:

- Accelerated vehicle innovation and increased system complexity
- Uncompromising product quality and reliability
- Focus on resilient operations
- Growing importance of collaboration
- Competition to provide highly differentiated customer experiences
- Exponential increase in data generation

Companies are moving ML and AI from experiments to critical parts of their operational infrastructure

Analytics for Automotive

National Instruments

★★★★★ (0) Write a review

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Solutions that turn your data into valuable business insights

NI's analytics platform turns product, manufacturing, and customer data into a model that can be used to transform your business. Get to market faster, increase product quality, and increase operational efficiency.

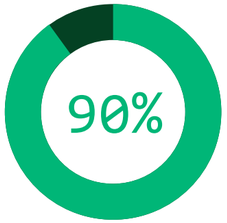
Rapidly changing industries like automotive require a digitally transformed enterprise to remain competitive and to bring innovative and disruptive technologies to market quickly. The NI Optimal platform connects data from across the development lifecycle to provide insights that can radically accelerate time-to-market while also maximizing the utilization of the capital-intensive assets.

NI's analytics platform integrates with simulation software, manufacturing infrastructure, test and measurement systems, existing IT solutions, fleet data, and more. The Optimal software can connect to massive amounts of data to generate a rich data model that can help understand product quality, or inform and adapt dynamic manufacturing processes.

Learn more

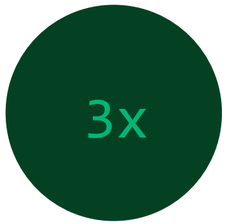
Overview Presentation

Automotive Innovation Reliability Challenge



Car innovations and new features are driven by electronics[1]

Warranty costs related to electronics and semiconductors[2]



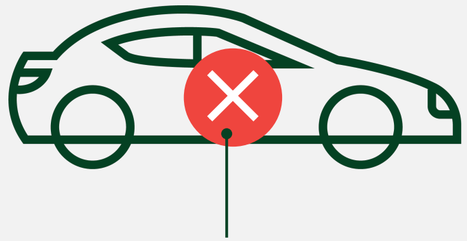
Car recall increase from 2014-2016 due to electronics[3]

Ignition switch failure
Failure to park
Takata airbag recall

15x Drive per day[4]:
1.5hr traditional car vs.
22.5hr autonomous car

1 Automotive change drivers for the next Decade, EY, 2016
2 BMW - AEC Automotive electronics reliability workshop, 2017
3 NHTSA Recall Data
4 Audi, DVCon Munich, 2017

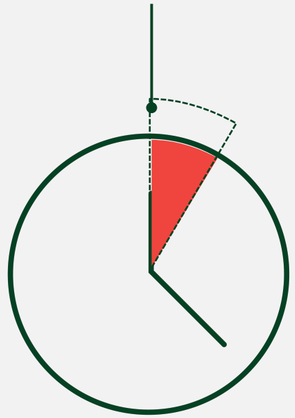
AUDI SAYS



1 CAR FAILURE

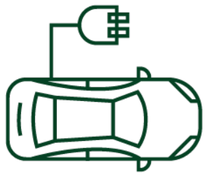
↓

EVERY HOUR[4]

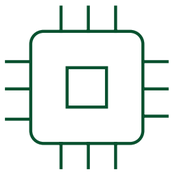


ADAS & Autonomy

Connectivity



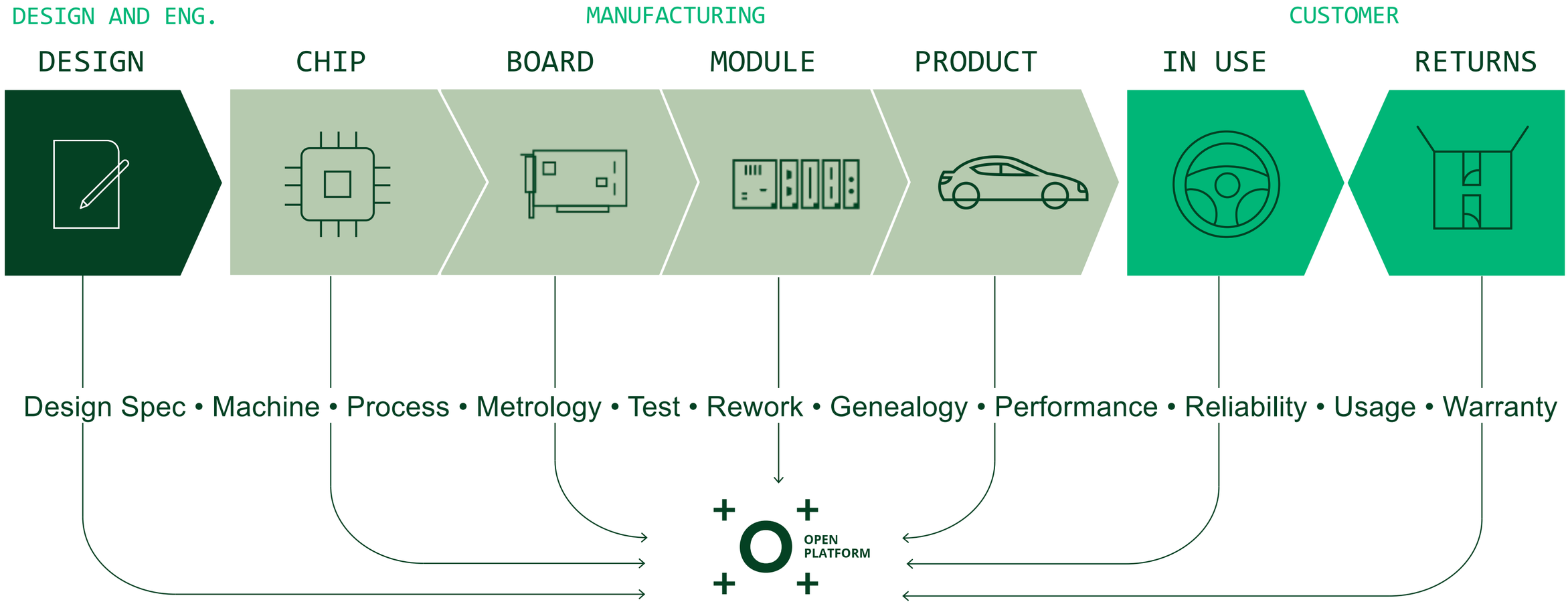
Electrification



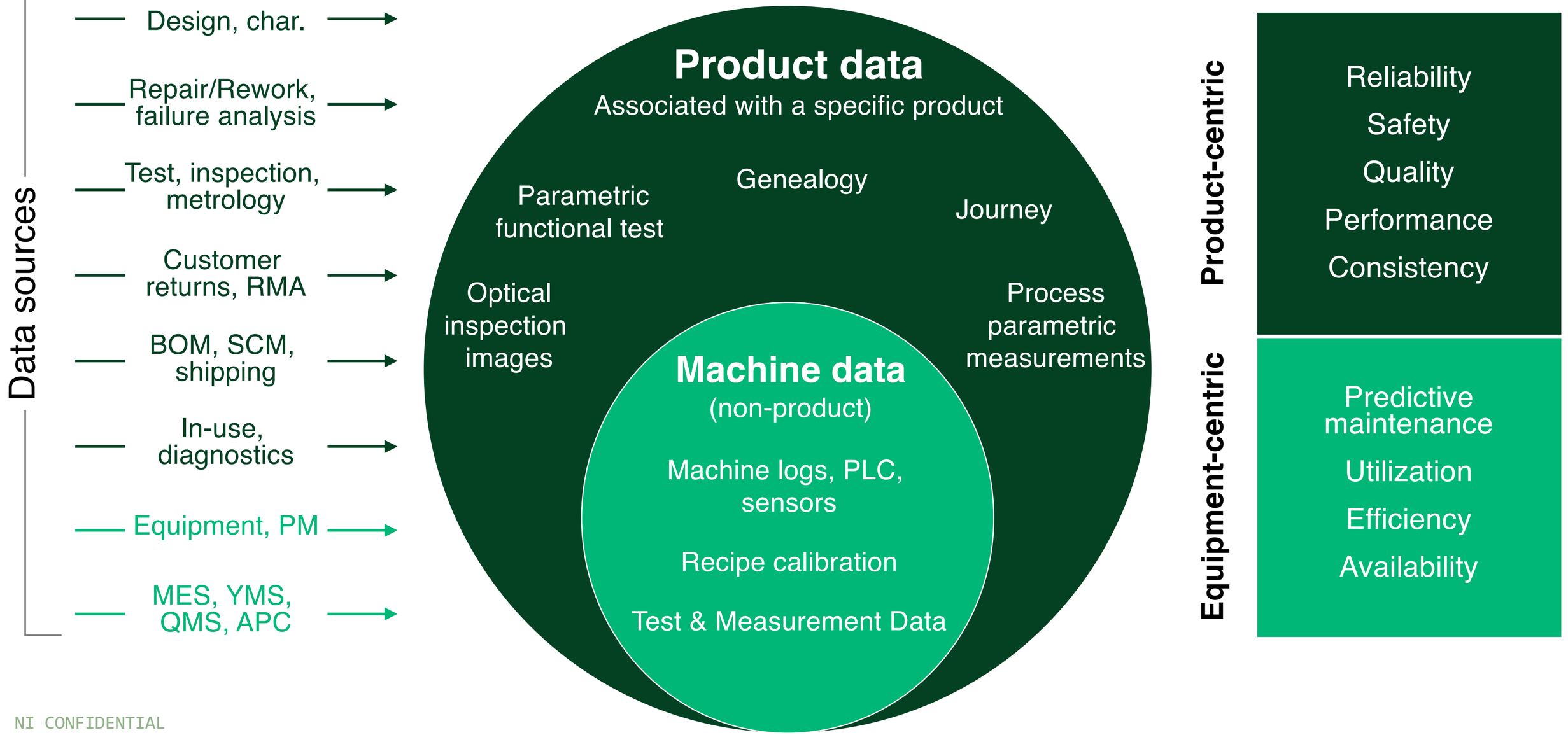
ECU Complexity

Our Vision

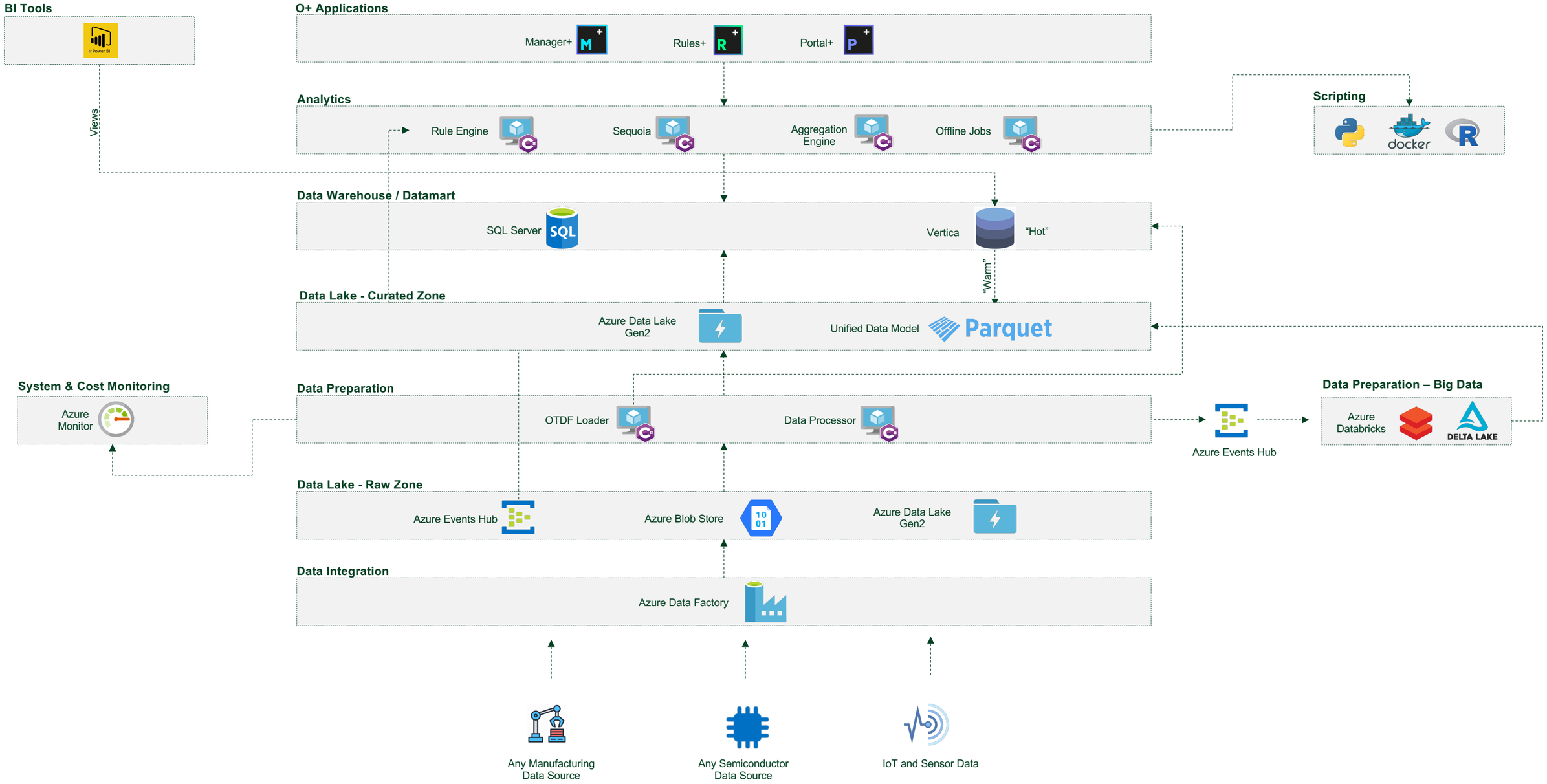
Lifecycle Analytics Through Product-Centric Approach



Product-Centric Approach to Advanced Analytics



Detailed Architecture



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
STMicroelectronics
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

NI and Azure: Transforming Automotive

Transforming Mobility

Helping a rapidly changing industry adapt to electrification and autonomy

Accelerated Vehicle Innovation

Differentiated Customer Experience

In-Use Data

Predict repairs, minimize warranty issues and optimize service the experience

Maximize Capital

Maximize the utilization and efficiency of the resources using in R&D and manufacturing

Resilient Operations

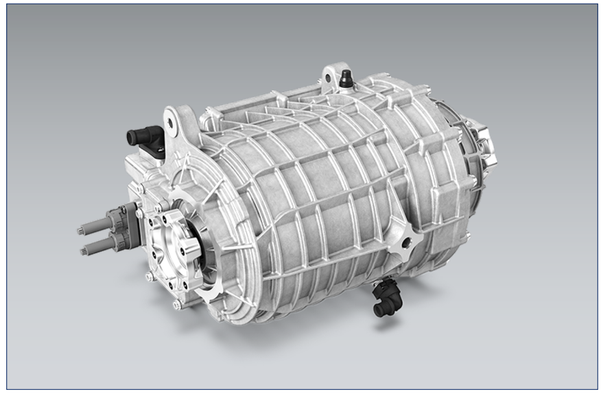
Increased Organizational Productivity

Lifecycle Connectivity

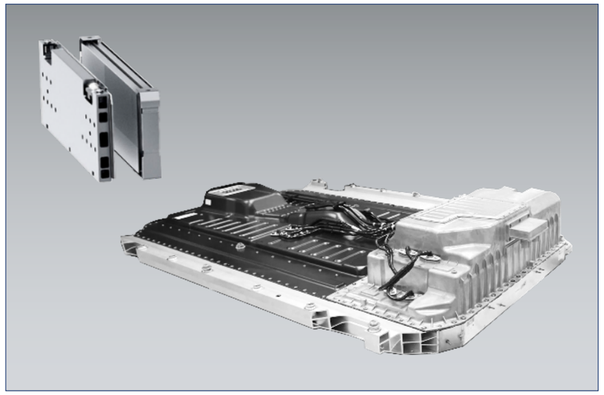
Share data and insights across the product lifecycle to break down organizational barriers

Big Data Analytics for Automotive

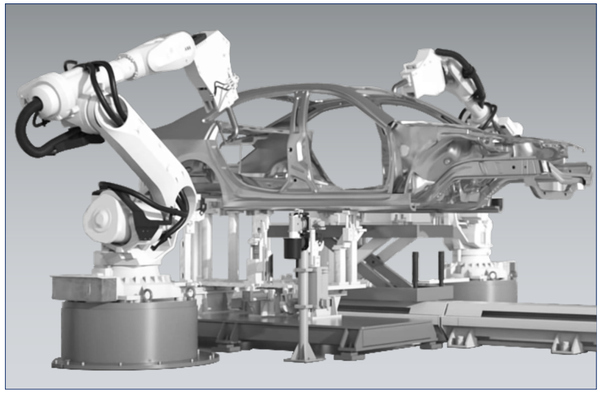
eMotor Shop



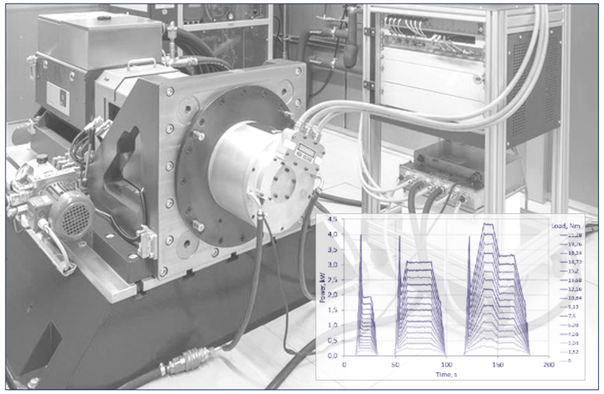
Battery Shop

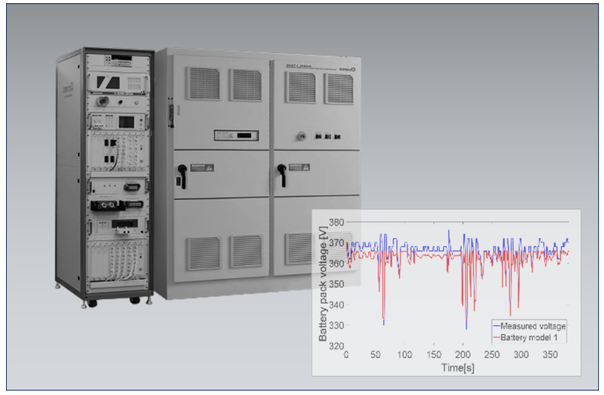


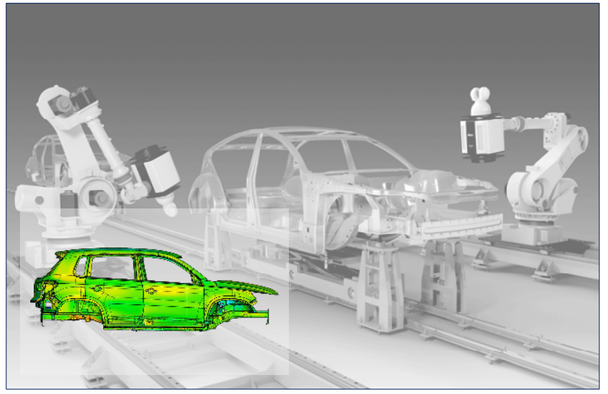
Body Shop

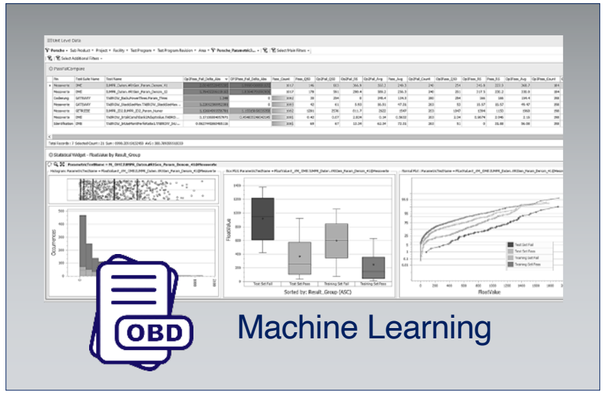


After Sales









Auto Camera Manufacturing Optimization

Deployment Summary

- Factory health instant visibility
- Early scrap detection – Shift Left
- Adaptive Manufacturing – improved efficiency and scrap
- Closed the loop – customized alerts & MES integration

Pilot Improvement Opportunity

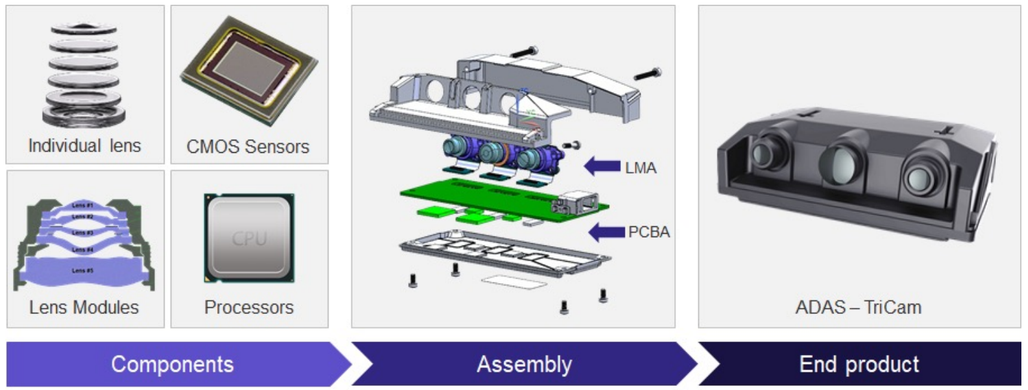
- Scrap reduction during camera assembly - CMAT
- Long NPI ramp
- No structured feedback methodology
- Data silos prevented visibility of overall factory and process health

Camera A (High Volume Production)

- Retest/Rework reduction
- Throughput increase
- Reduced Scrap

Camera B (New Product Introduction)

- Reached entitlement yields faster
- Throughput increase
- Reduced scrap



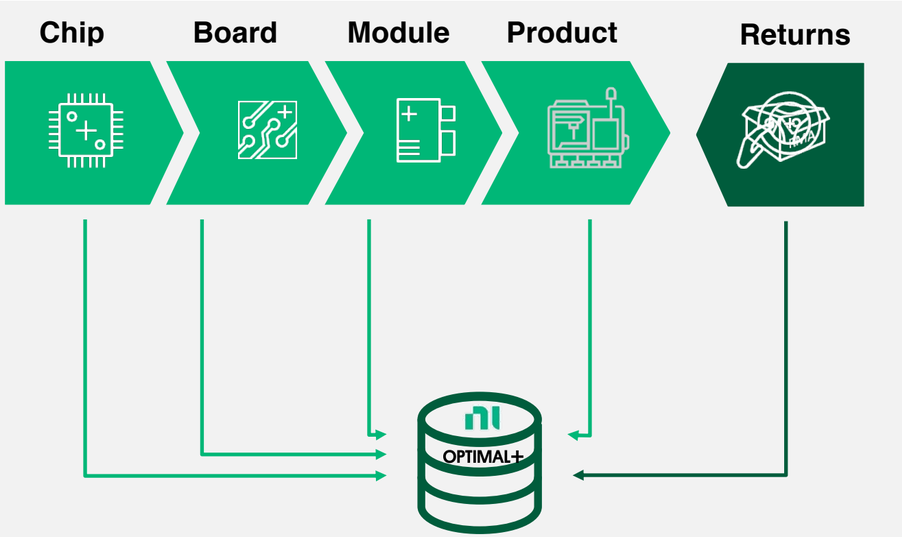
Semiconductor Supply Chain Management

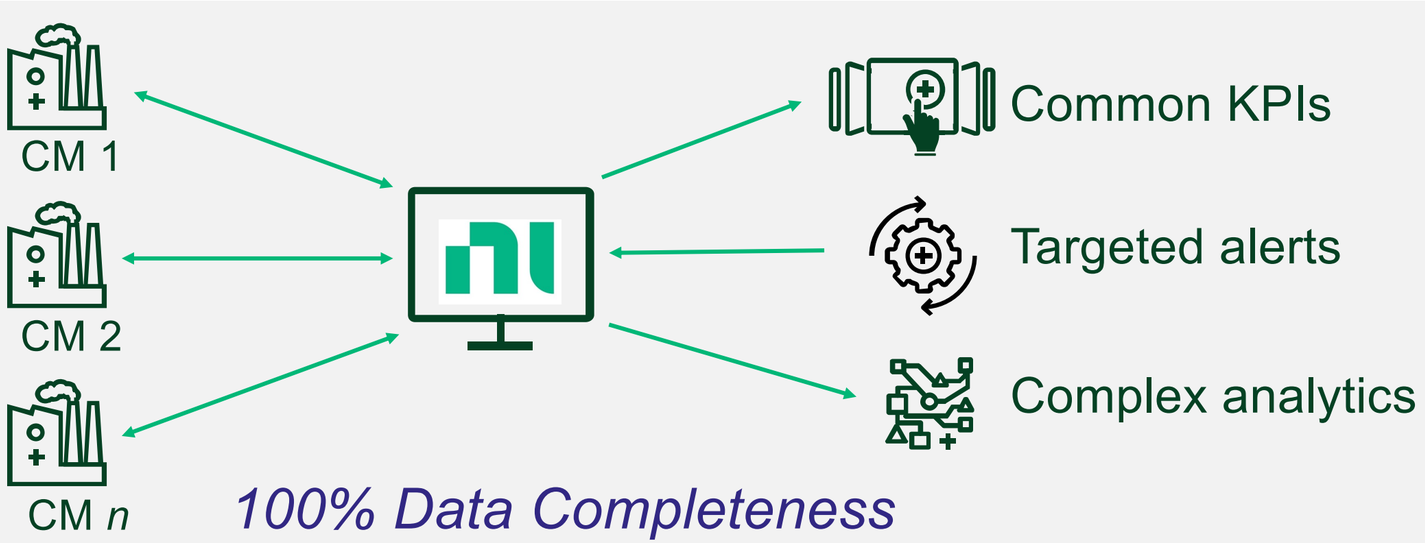
Deployment Summary

- Common, aligned visibility and KPIs across multiple contract manufacturers (CMs) for SMT through EOL test
- Deployed “crisis management” analysis to identify issues and contain affected population
- Deployed Machine Learning for failure analysis
- Targeted rules for both product and process to identify most impactful issues

Benefits

- Common KPIs and visibility across CMs
- Improved supply chain visibility
- Reduced resources needed to manage CMs
- Full traceability from board through system

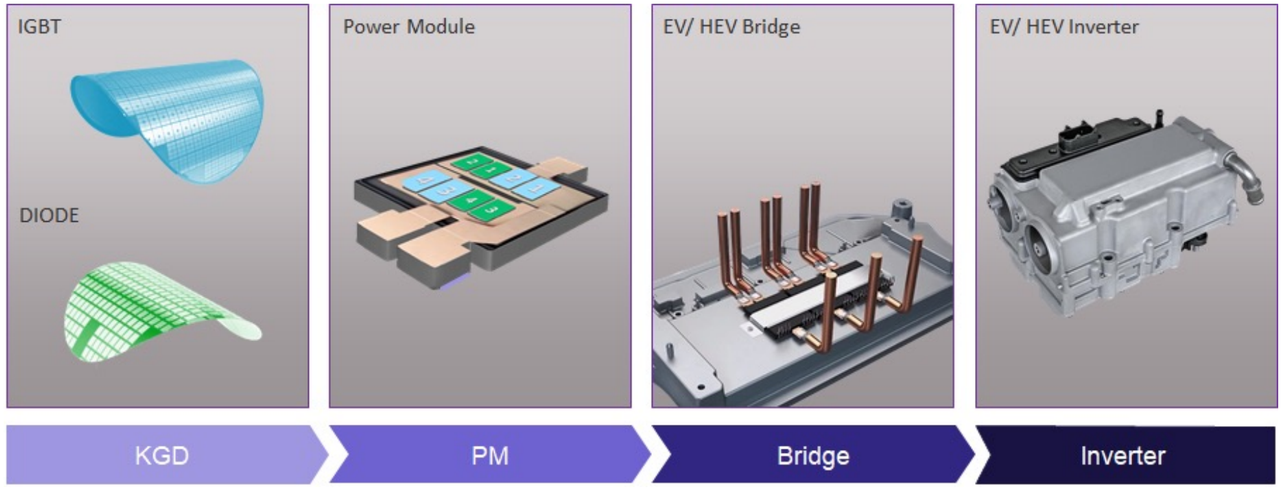




EV Power Module Mfg Optimization

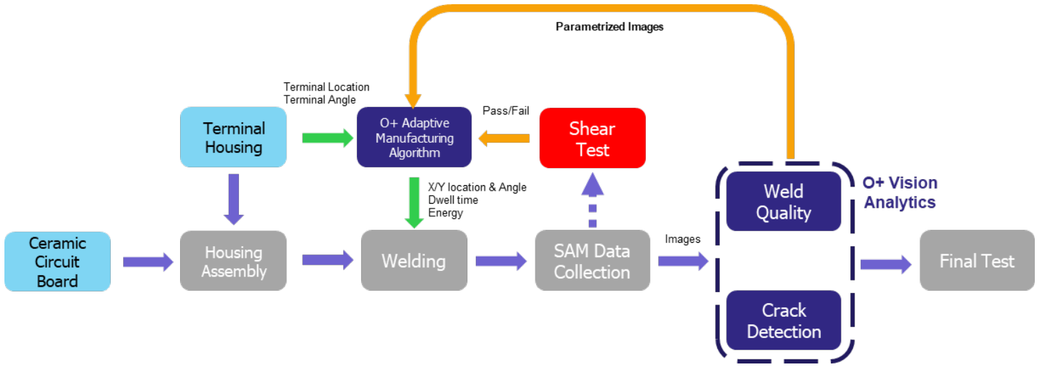
Deployment Summary

- Adaptive Manufacturing - Improved scrap & cycle time
- Implemented in-line edge Machine Learning vision analytics
- Increase product reliability
- Closed the loop with alerts and MES integration



Benefits

- Reduction in manual inspection
- Scrap reduction
- Claim/warranty exposure quantification



Contact NI to learn how Optimal + Azure can help:

Ask a question via email: support@ni.com

Learn more: https://www.optimalplus.com