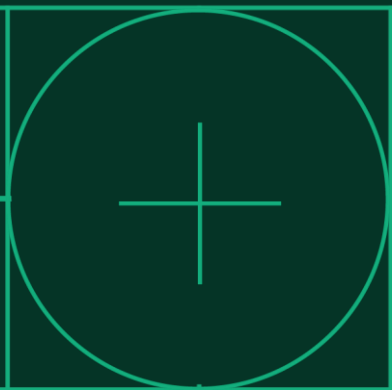


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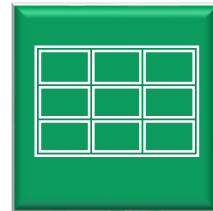
# Automating the Lab with SystemLink™ Laboratory Management Systems

TJ Giere  
Product Analytics

# What is the Most Popular Collaboration Tool In Your Lab?



Email / Voice (shouting across the lab)



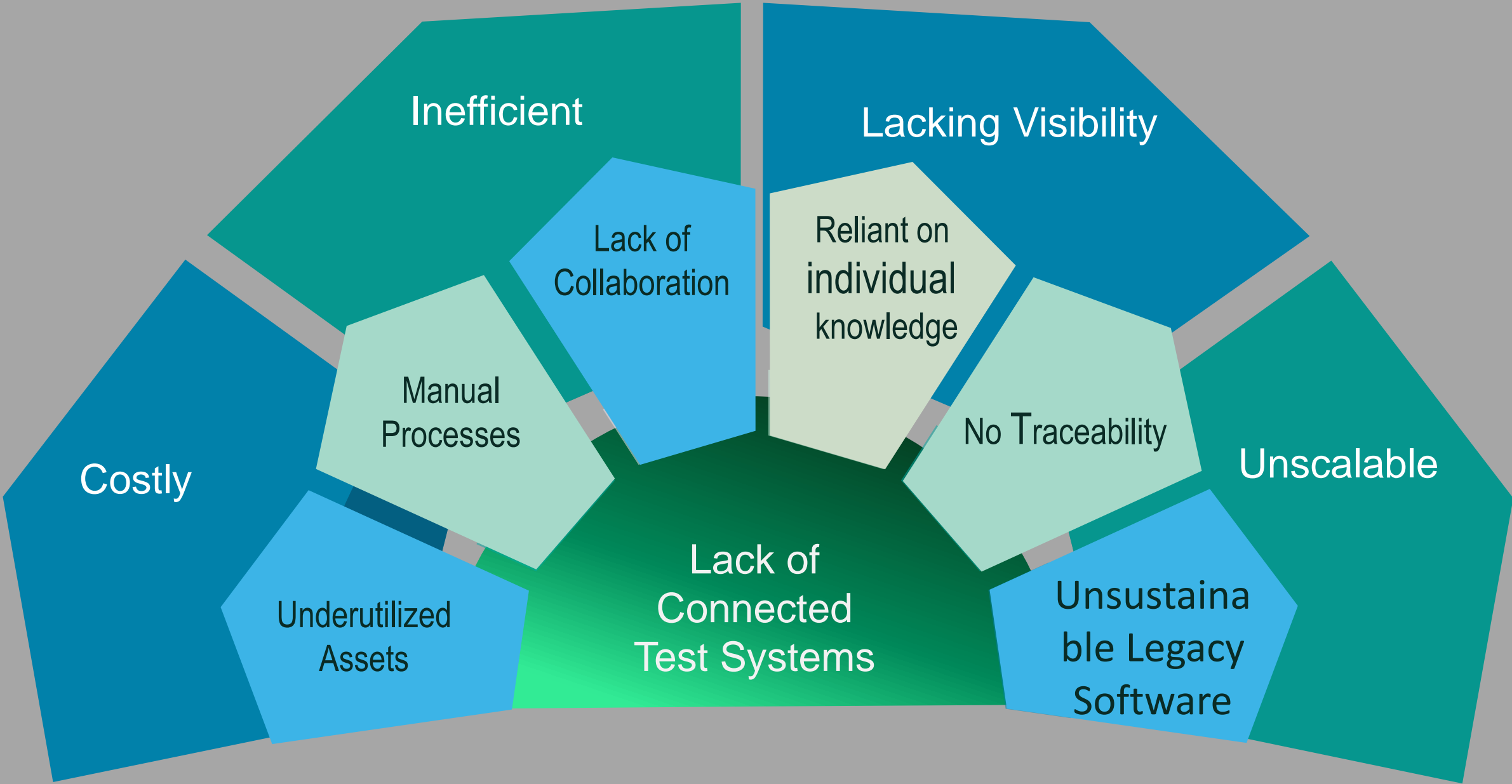
Spreadsheets or SharePoint



Legacy Software

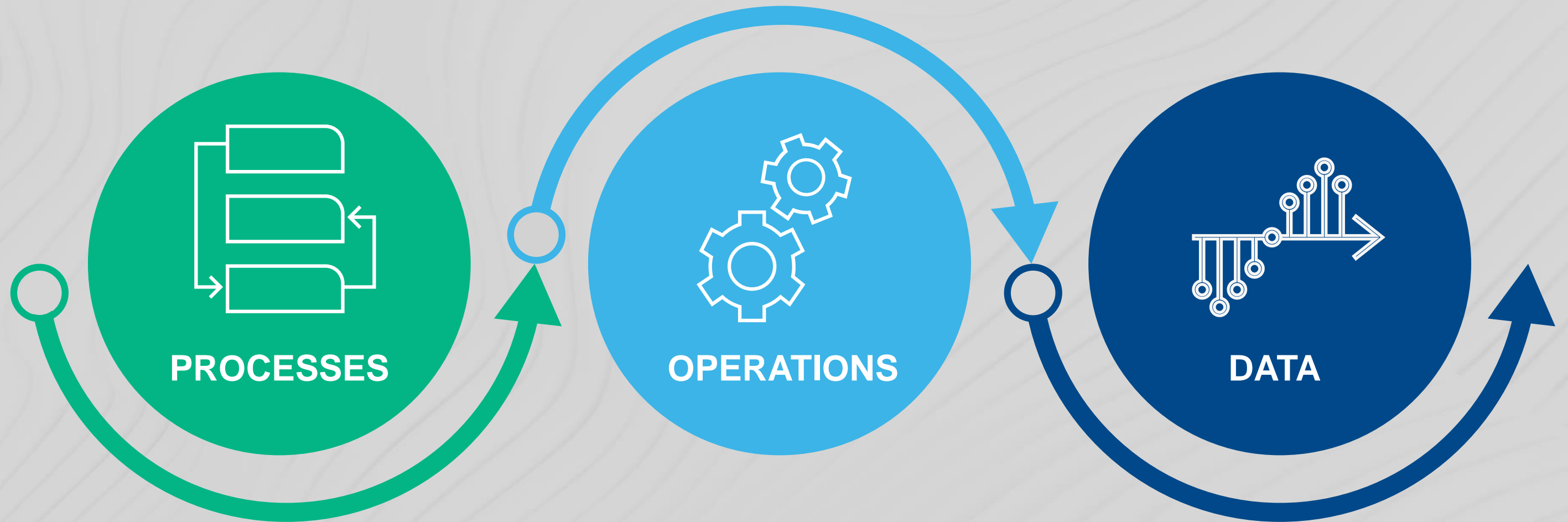
# Silo'd Lab Cause Multiple Problems

*The True State of Digitization in Today's Labs*



# To Break the Silos You Must Be Connected at all Stages

*It's not just good enough to look at one aspect of your lab, you need to look all levels*



# Characteristics of a Connected Lab

*Using Software to Maximize Efficiency, Productivity, and Product Outcomes*

## PROGRAM OPTIMIZATION

- Faster & reliable Time-to-NPI
- Better integration of customer requirements & features
- Connecting bench characteristics

- ✓ Reduce validation time by 30%
- ✓ Reduce incorrect decisions by 10%

## LAB OPTIMIZATION

- Better utilization of lab budgets
- Predictable outcomes across all lab footprints
- Eliminate reliance on disparate tool chain or tribal knowledge

- ✓ Reduce CAPEX by >20% by better equipment use & planning
- ✓ Decrease manual tasks by >90% through automation

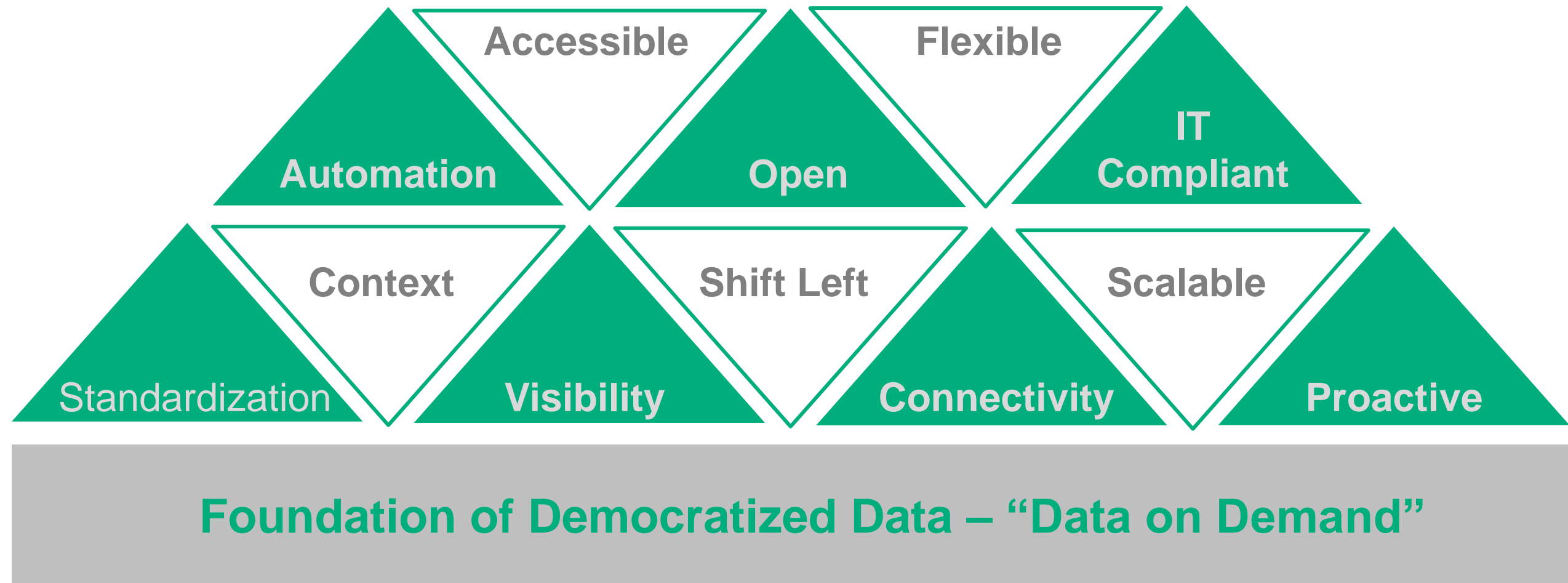
## TEST/BENCH OPTIMIZATION

- Accelerate tester setup ramp up time
- Faster time to measurements  
▶ data ▶ insights ▶ decisions
- Connected context across the test workflow

- ✓ Shorten readiness time by a minimum of two weeks
- ✓ Decrease root cause analysis by as much as 70%

Better utilization of staff time, expertise, and resources = improved *Productivity*

# Key Pillars: Software Defined Lab



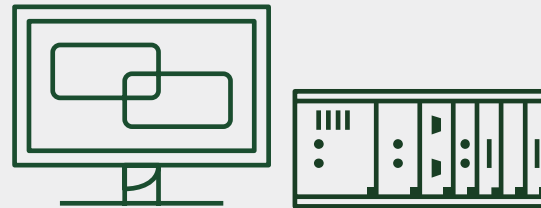
# There Are Options

*Standardize on An Open Software Driven Platform*



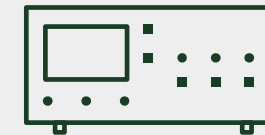
## DIY/Fully Customized System

“Customer Does Everything”  
Costly (Time, Upkeep)  
No Ecosystem  
Customer Maintains



## Open Platform-Based System

“Customer Knows Best”  
Customizable Solution  
Open, Valuable Ecosystem  
Customer Designs



## Closed Turnkey System

“Vendor Knows Best”  
Fixed Functionality  
Closed Ecosystem  
Customer Pays

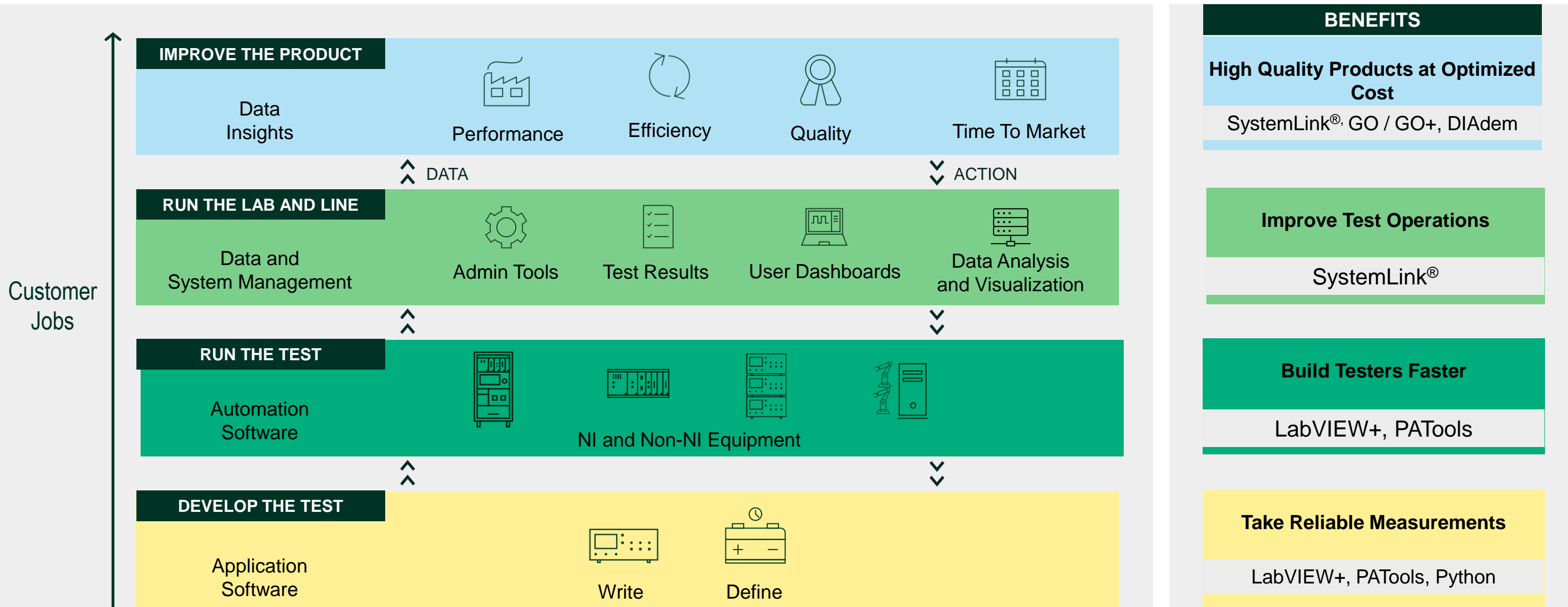


# Platforms and Solutions

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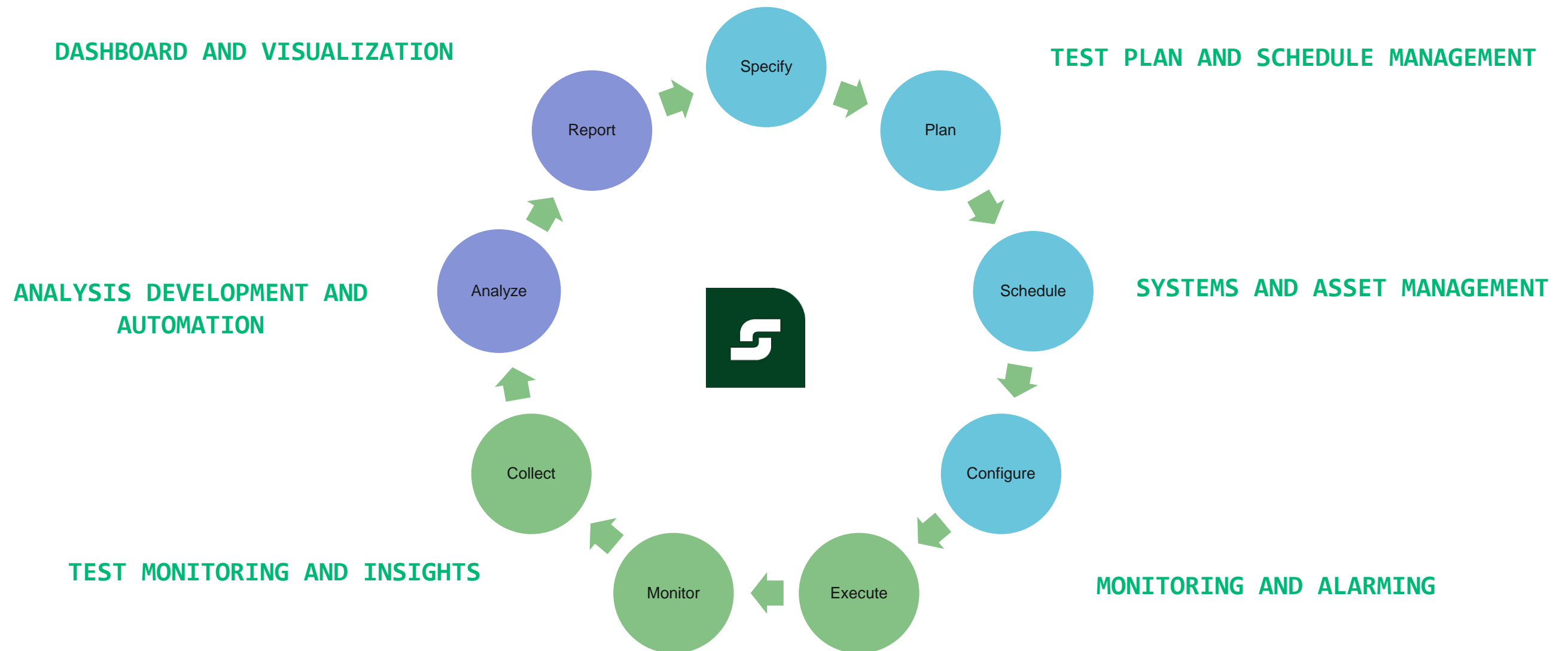
# From Instrumentation to the Enterprise

*Drive Efficiency and Performance to an Open Software Defined Approach across the Product Lifecycle*



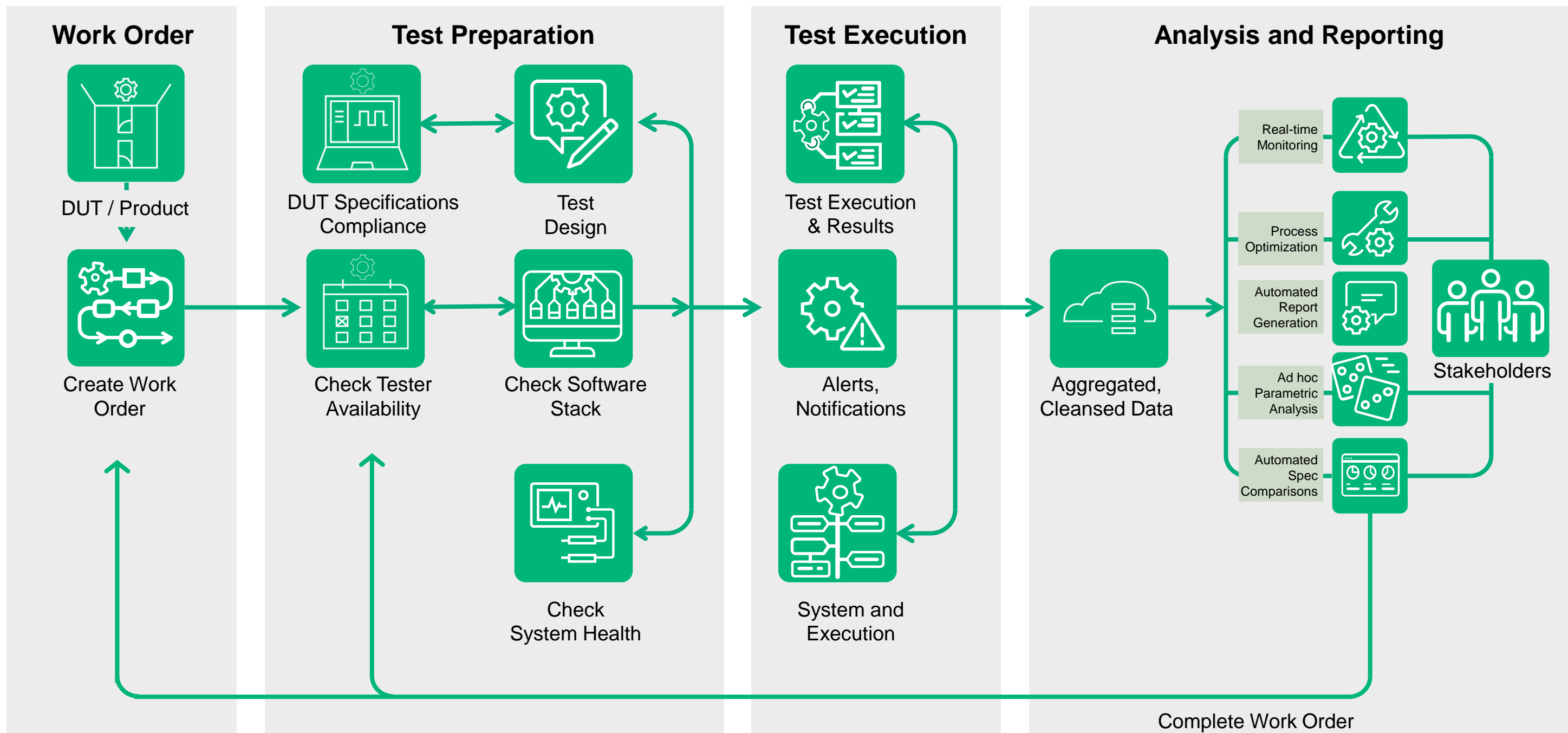
# ni **SystemLink: NI's Answer For The Connected Lab**

SystemLink™ is a scalable, self-hosted enterprise platform for managing labs, improving test operations, and analyzing test results.



# Closing the Operations Loop with SystemLink

*Providing Context Across the Lab Operations Workflow*



# SystemLink Enterprise IT Integration

*Leverage cloud-native technologies for Test Operations*

**High availability** out of the box for all services

**Horizontal scalability** to support big data, 1000s of users, and 1000s of connected systems

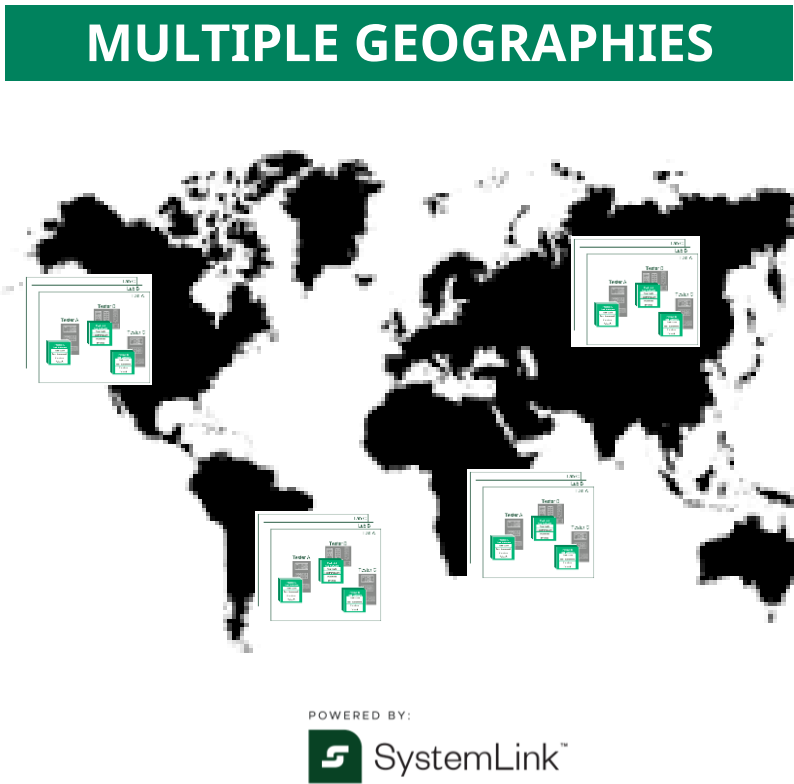
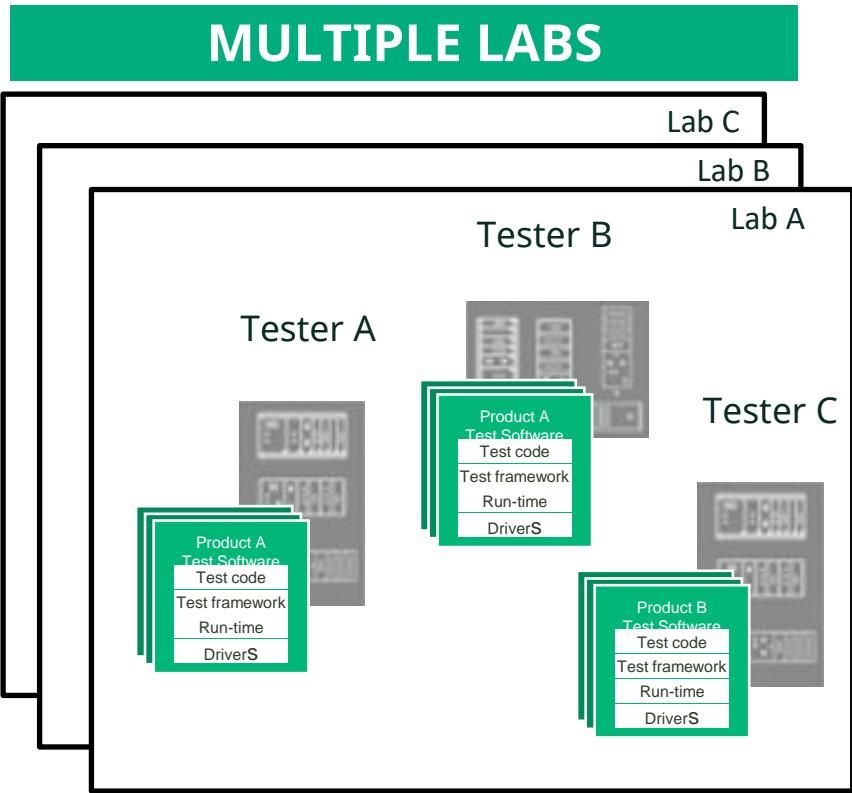
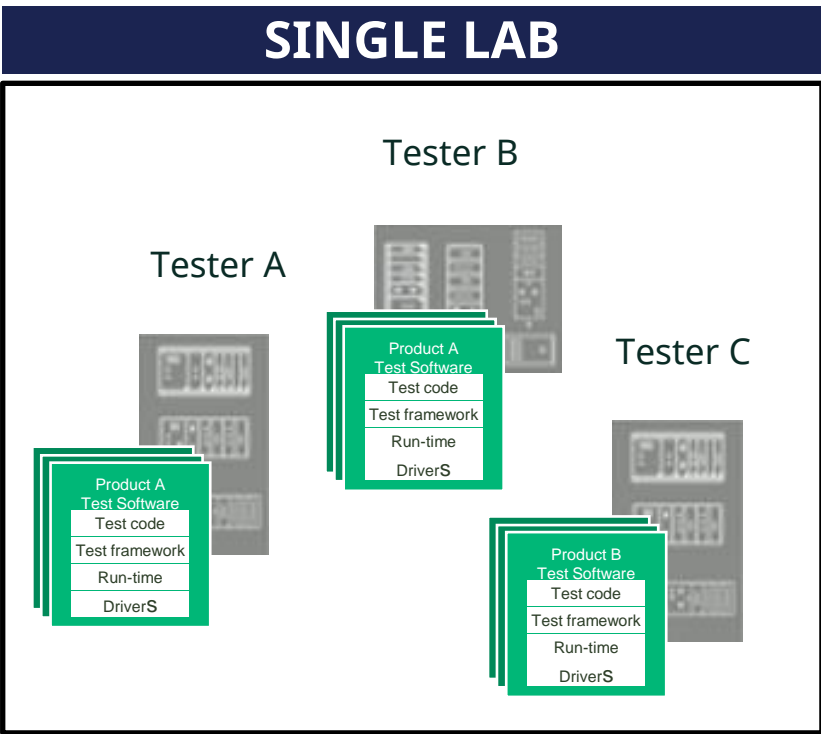
**Role-based access control** to data and systems different groups of users

Maximized **Business continuity** by self-healing mechanisms

**Zero down-time** with rolling-upgrade strategies

**Aligned with IT initiatives** and best practices

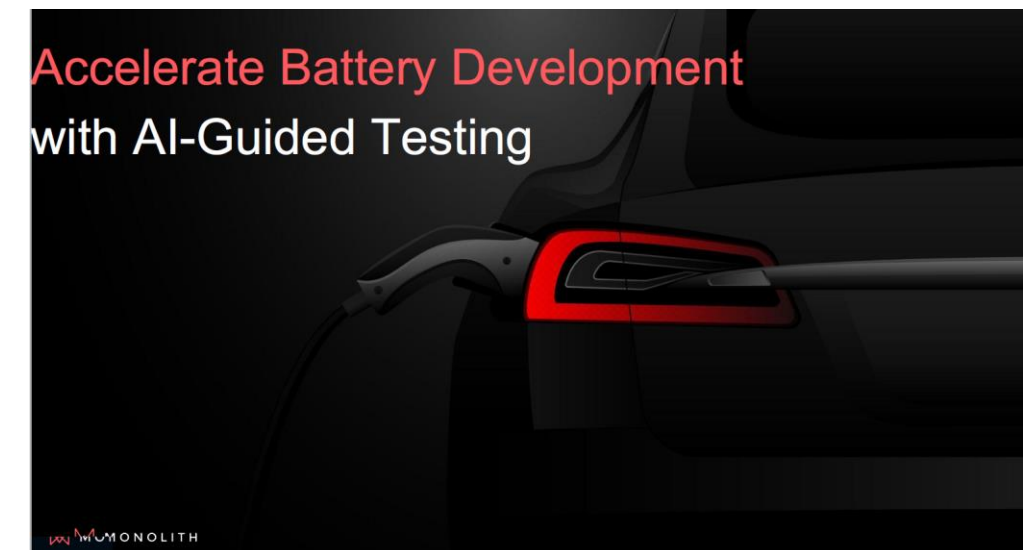
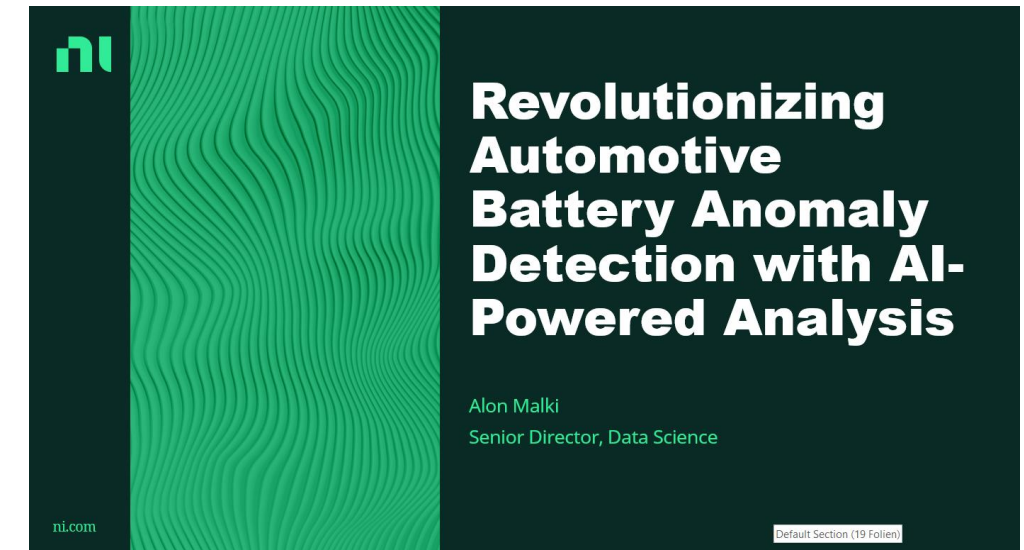
# Scale Operations From a Single Lab to Global Enterprises



# The Gateway to Disruptive Analytics

Less silos, more insights:

- **Efficiently collected and well-connected data** build the fundament for innovations in test engineering
- ML/AI models enable **unprecedented engineering workflows** and create competitive advantage.
- A **product-centric data solution** is needed to maximize the **business impact** of this disruptive technology.



# Key Takeaways

1

## Modernization

Use high availability, scalable, modern technology to break the silos

2

## Stay Flexible

Implement technology that works today and can adapt to future requirements

3

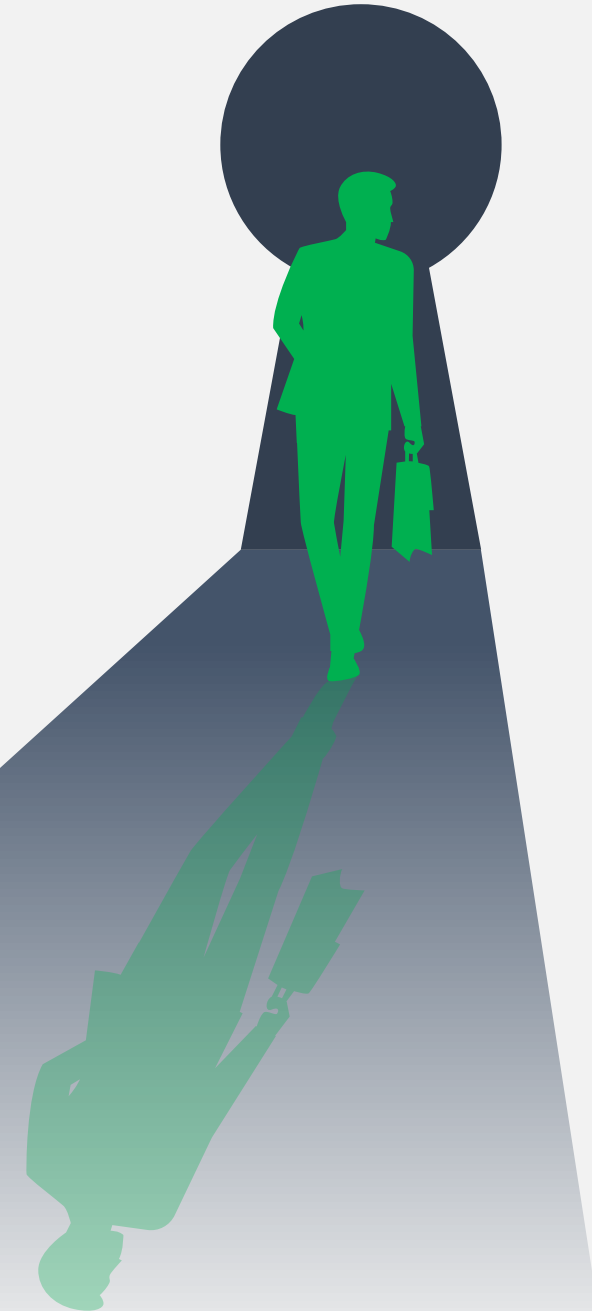
## Control Your Destiny

Leverage standard, open technology you are in control of using the best option for each project

4

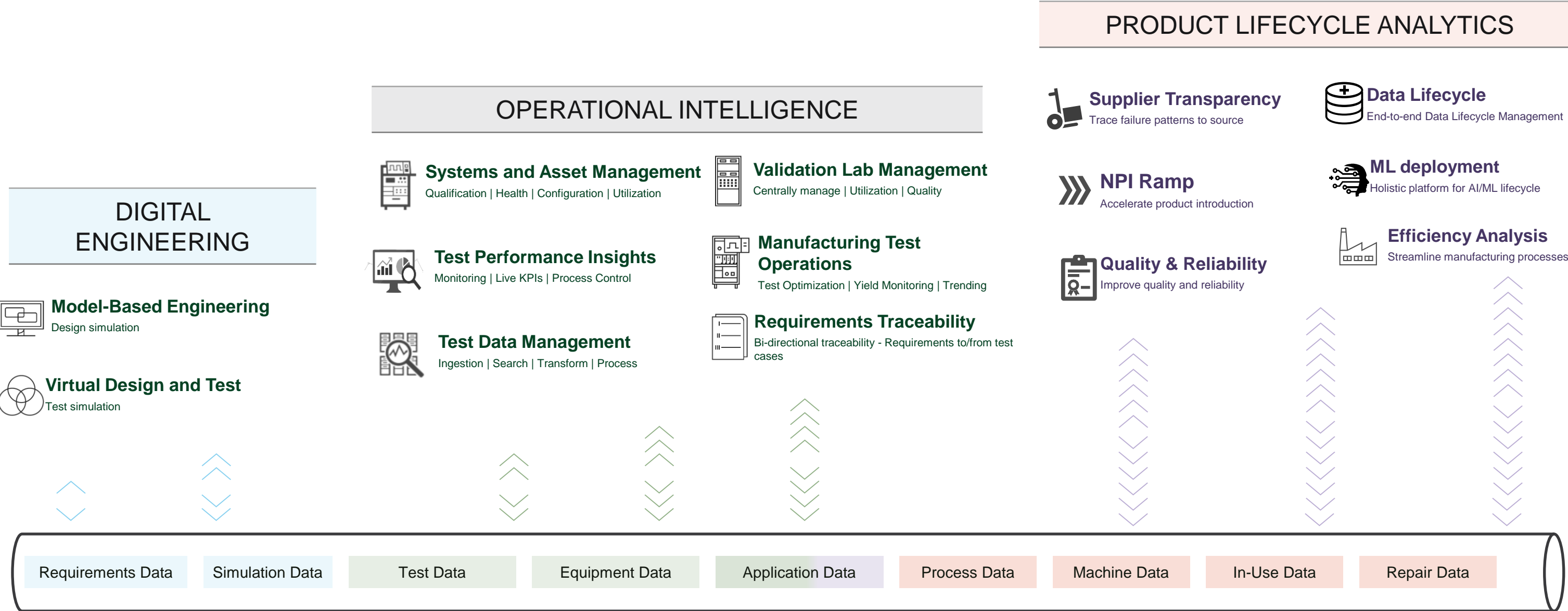
## Work with a Trusted Partner

Don't work alone; Choose a partner who can consult with IT and support the entire implementation lifecycle





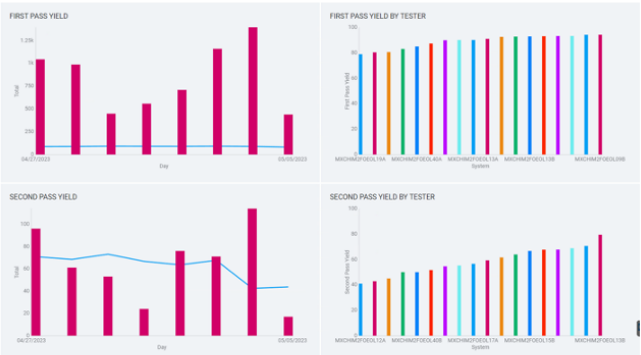
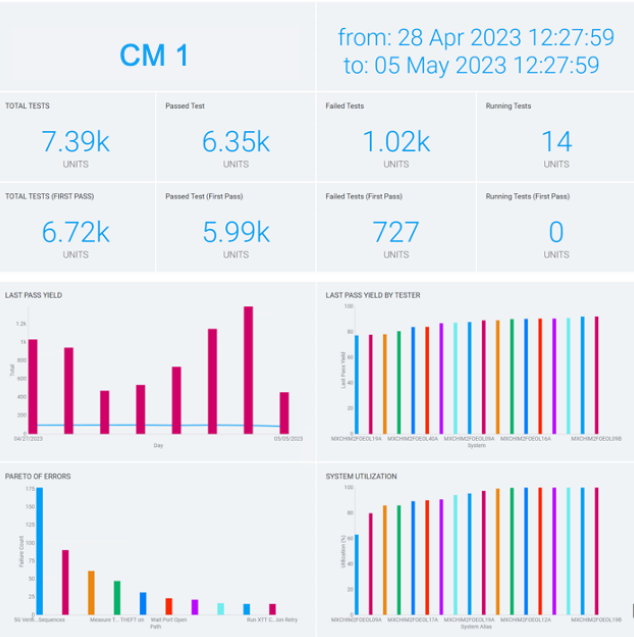
# Harnessing the Power of Data Across the Product Lifecycle



# Typical Approaches

## Monitoring

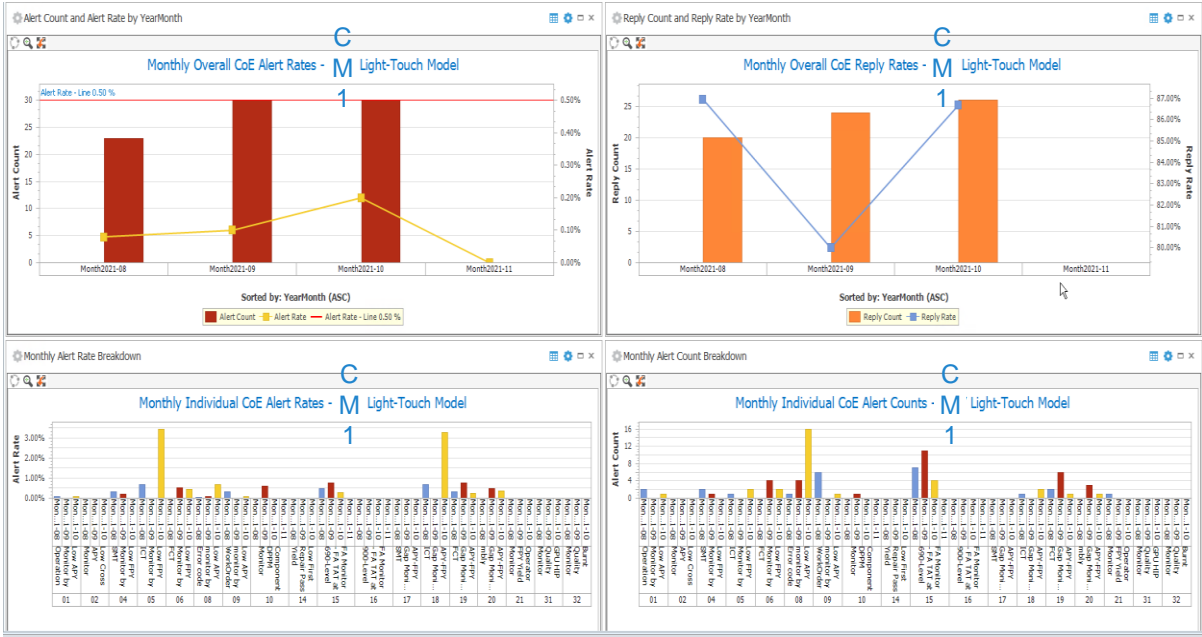
- SW Deployment
- Data Aggregation
- System Monitoring
- KPI Monitoring – Yield, Utilization



## Autonomous

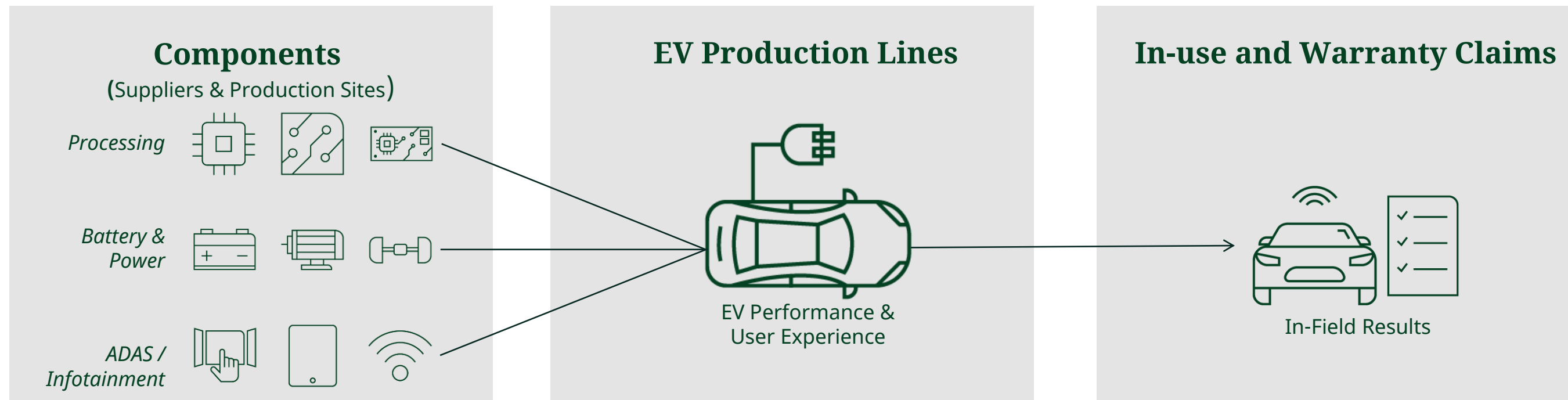


- Genealogy
  - Rapid RMA
  - Auto RCA
- Machine Learning Deployment
- Advanced Analytics
  - Low code/No code
- Direct actions – send alerts directly to operator with priority
- Action Monitoring





# NI Product Analytics Lifecycle



Design Spec • Method • Machine • Material • Rework • Test • Performance • Reliability • Usage • Warranty

1

## Product-Centric Data Traceability

NI unified data model and pipeline expertise to map product and process data from across relevant sites and data sources

2

## Advanced Quality and Product Outcomes Algorithms & ML

Design analytics tools to identify performance outcomes correlations (Outlier Detection, Drift Trends, Quality Binning, ML Models, etc.)

3

## Adaptability & Automation

Real-time production integration for proactive control of product outcomes



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