

# Exploring The Supply Chain Digital Thread

Tamara Lewis  
Northrop Grumman, Aeronautics Systems  
Director, Digital Transformation

## GLOBAL PRODUCT DATA INTEROPERABILITY SUMMIT 2023



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# Tamara Lewis

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## Sector Director of Digital Transformation

Tamara Lewis is the Director of Digital Transformation for the Aeronautics Systems Sector. In this role, she leads the AS Digital Transformation Organization as well as the AS sector team who delivers solutions to the AS sector that align with program and functional homeroom teams. She also serves as part of the Enterprise Digital Transformation Enterprise Leadership Team that is helping to lead the company in a multi-year enterprise initiative to meet the goal of being a Digital Company by 2025.

## Experience and Responsibilities

- 20+ years of success in managing large-scale PLM, ERP and MES systems implementation
- Tamara leads teams of cross functional employees that define, test, train and deploy systems that support our programs that produces many of the world's most capable and technologically advanced products
- Tamara is responsible for developing the sector digital transformation roadmap aligned to the enterprise strategy that will develop and deploy new innovative and affordable solutions to enhance the efficiency and productivity of Aeronautics Systems
- Prior to her current role Tamara also served as the Director of Supplier Quality where she led a team of 150 employees who supported internal and external operations to ensure the quality delivery of our products to our programs

Tamara sets the tactical and strategic vision of Digital Transformation for the Aeronautics Systems Sector and lead teams in executing the work to achieve the digital goals of Northrop Grumman.

# Northrop Grumman Today

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Northrop Grumman is a leading global aerospace and defense technology company. Our pioneering solutions equip our customers with the capabilities they need to connect and protect the world and push the boundaries of human exploration across the universe. Driven by a shared purpose to solve our customers' toughest problems, our 95,000 employees define possible every day.





# What We Do

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## Air

We build some of the world's most advanced aircrafts. From the innovative B-2 Spirit stealth bomber to the groundbreaking X-47B, in addition to powerful airborne sensors and systems.



## Cyber

We are a leading provider of full-spectrum cyber across land, air, sea and space. From preventing cyber attacks to securing military communications and giving our customers a decisive advantage, our capabilities are second to none.



## Land

We provide critical logistics, sustainment and modernization services for everything from America's emergency services infrastructure to combat vehicles on the battlefield.



## Sea

We are a world leader in the design, development and production of naval systems. From sonar that can map the deepest depths of the ocean to anti-submarine systems and advanced electronic warfare, we're constantly evolving to counter increasingly sophisticated threats at sea.



## Space

We've been pioneering in space for over 60 years and we continue to push the boundaries of what's possible. From the Lunar Module to the latest space telescopes, from national security launch systems and payloads to advanced communications satellites, our space capabilities are unrivaled.



## Multi-Domain

In the future, more than ever before, mission advantage will go to military forces who can coordinate and act together across all domains. Observing, orienting, deciding and acting together, faster and with greater effect than their adversaries is the next-gen technological edge for Joint Forces.



## Advanced Weapons

For decades, Northrop Grumman has protected U.S. forces and our allies by designing, developing and delivering weapons of increasing complexity and capabilities for expanded missions and domains.

A leading global  
aerospace and  
defense technology  
company

# Four Operating Sectors at-a-Glance

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**Strike | Air Dominance | Battle Management and Control | Intelligence, Surveillance and Reconnaissance (ISR)**

Leader in the design, development, production, integration, sustainment and modernization of advanced aircraft systems for the U.S. Air Force, the U.S. Navy, other U.S. government agencies, and international customers.



**Integrated Battle Management Systems | Weapons Systems | Aircraft and Mission Systems Sustainment and Modernization**

Leader in the design, development, production, integration, sustainment and modernization of weapon and mission systems for U.S. military and civilian agency customers, and a broad range of international customers.



**Cyber | C4ISR Systems | Radar, Electro-optical/infrared (EO/IR) and Acoustic Sensors | Electronic Warfare Systems | Advanced Communications and Network Systems**

Leader in advanced mission solutions and multifunction systems, primarily for the U.S. defense and intelligence community, and international customers.



**Satellites and Payloads | Ground Systems | Missile Defense Systems and Interceptors | Launch Vehicles and Related Propulsion Systems | Strategic Missiles**

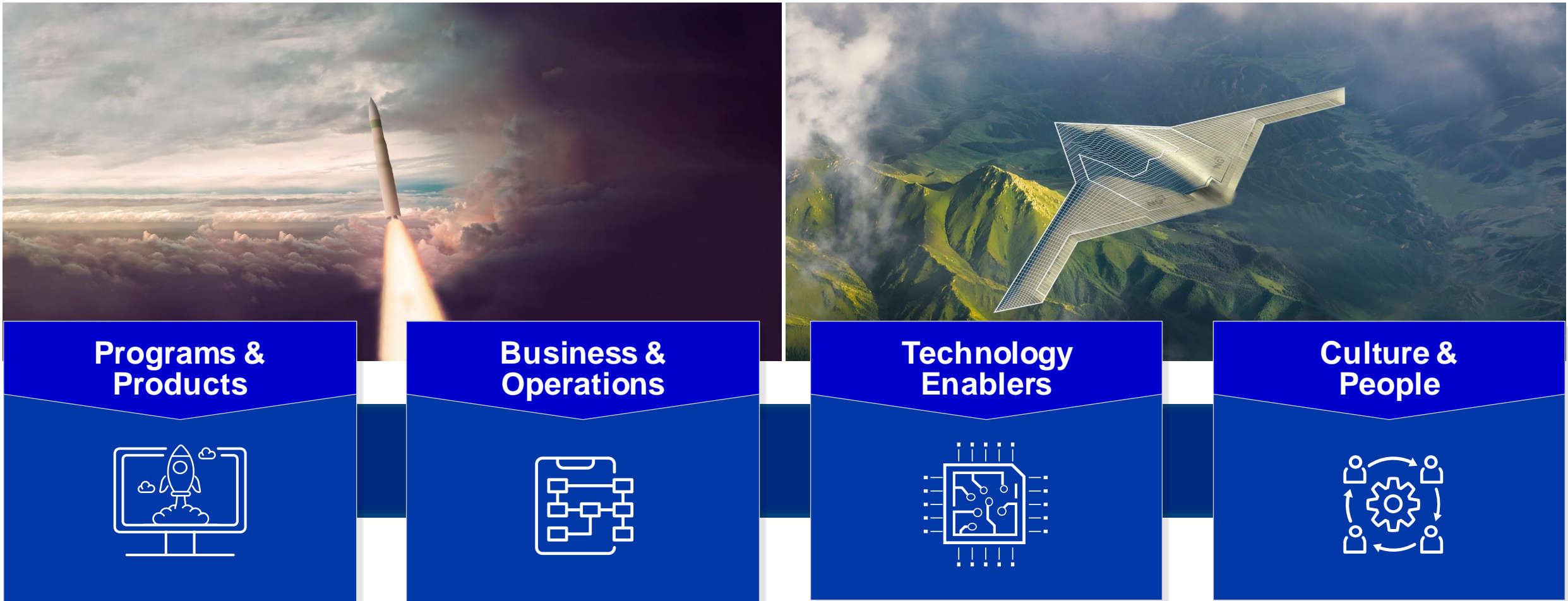
Leader in delivering end-to-end mission solutions through the design, development, integration, production and operation of space, missile defense, launch and strategic missile systems for national security, civil, commercial and international customers.



# Digital Transformation

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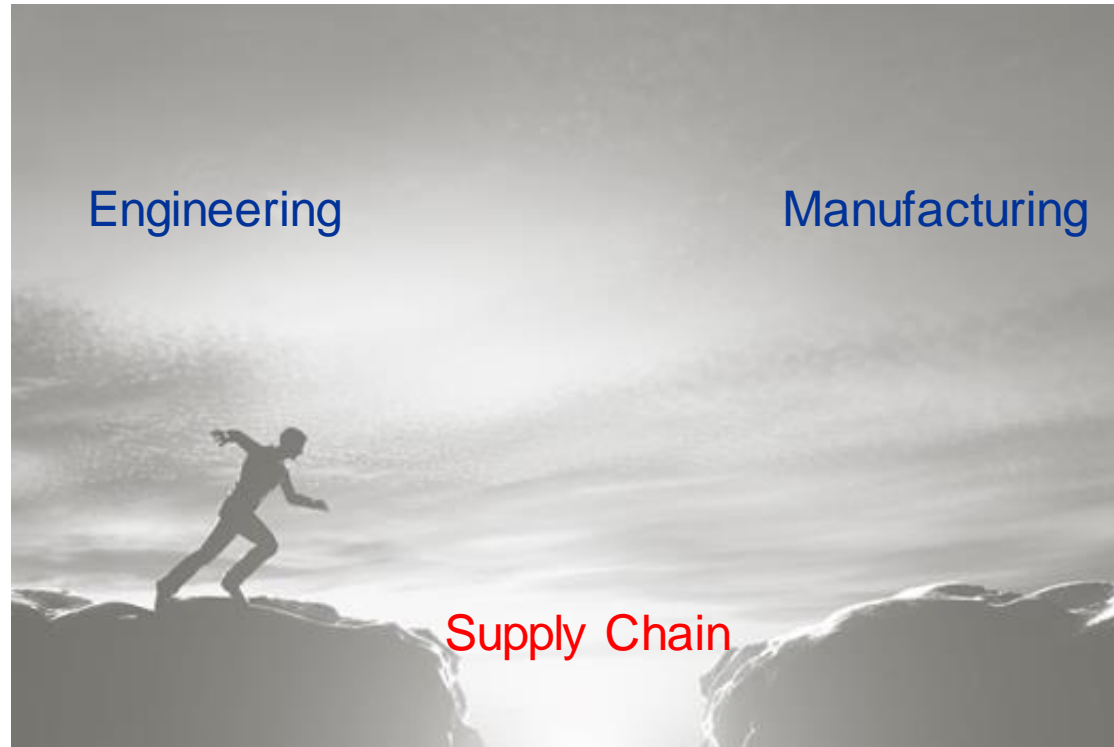
*Enabling a digital ecosystem to rapidly deliver capability and achieve mission success*



# The Digital Supply Chain Problem Statement

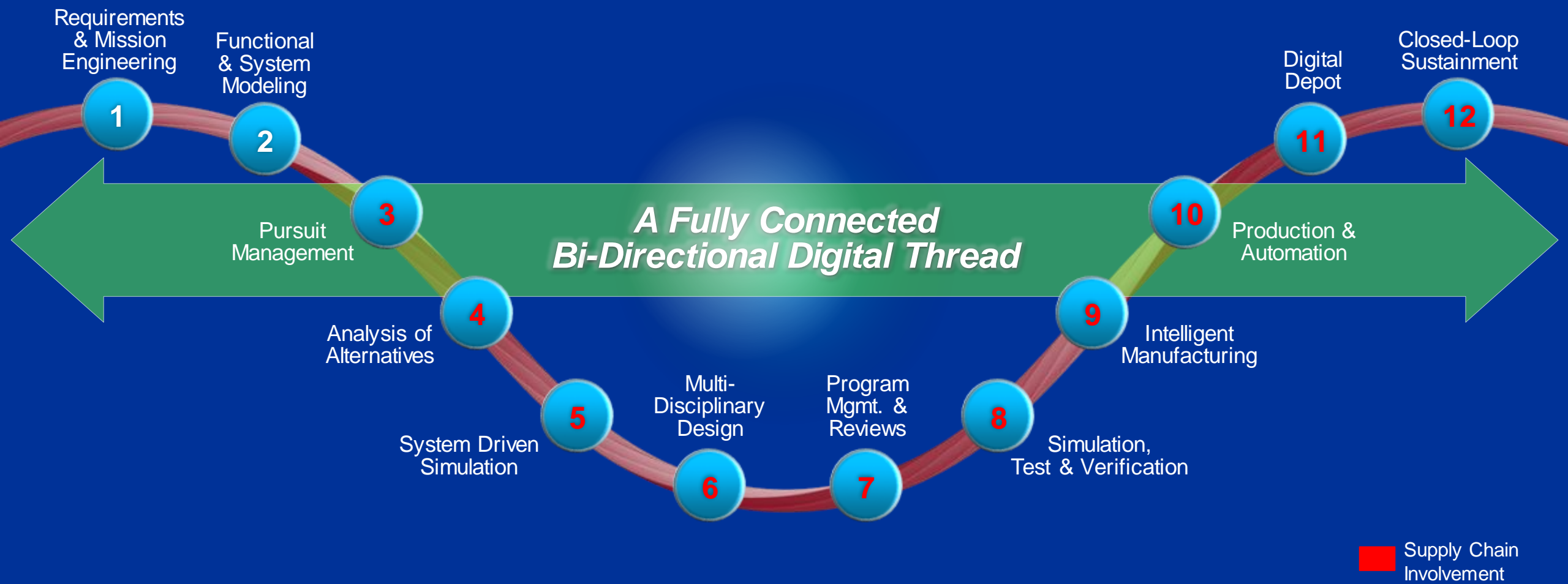
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**Most Digital Transformation initiatives focus on Digital Engineering and Manufacturing leaving a digital gap for the operational teams**



# The Digital Thread

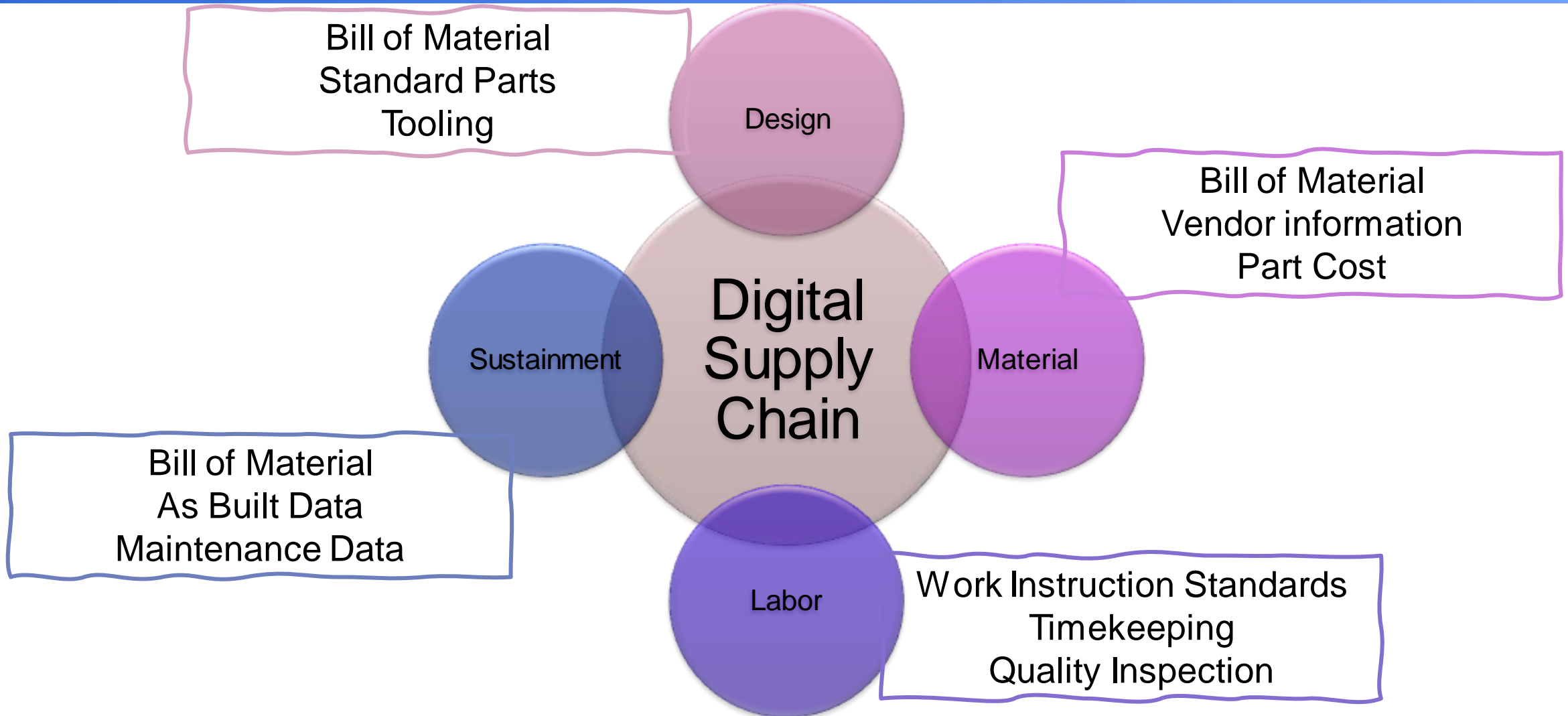
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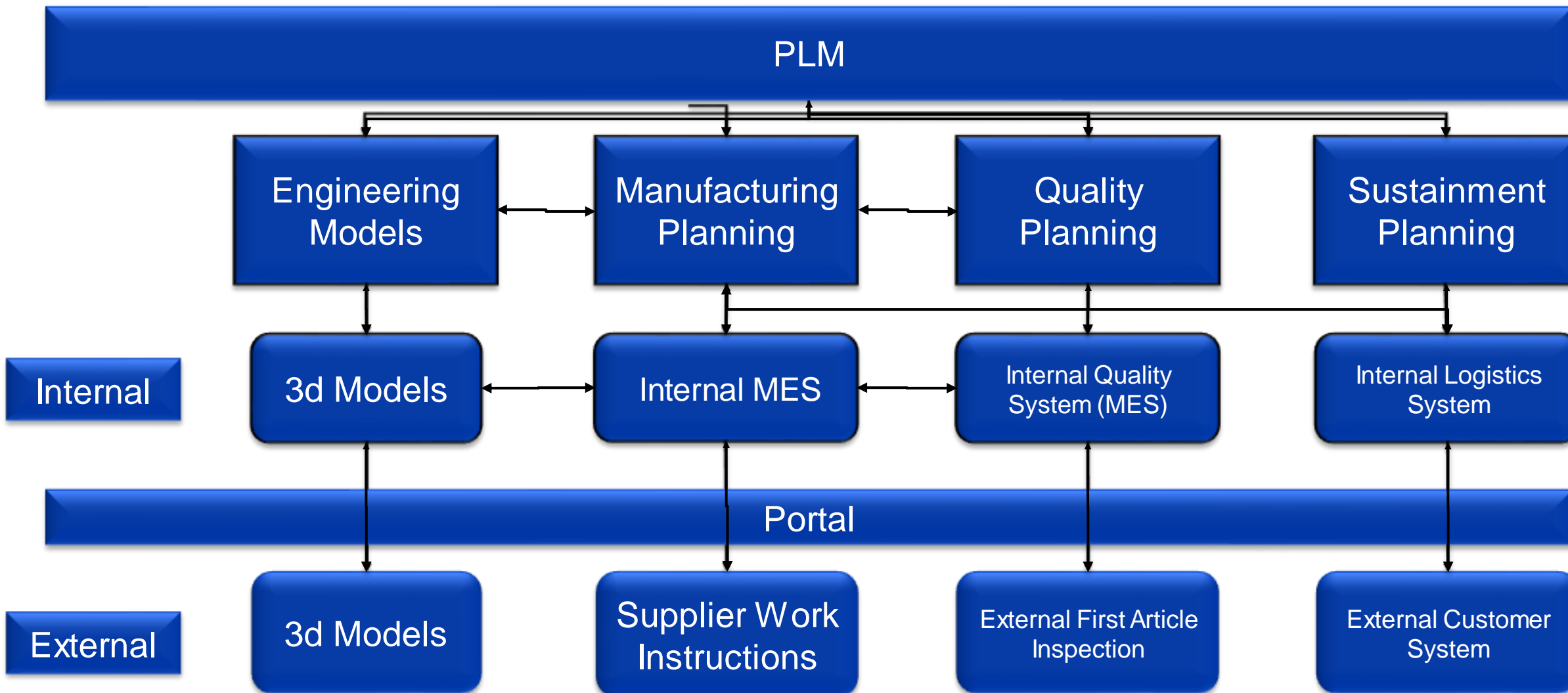
# What data feeds the Digital Supply Chain?

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# Flow of Data


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# Building the Digital Foundation


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## Capability



**People**

Unencumbered by many repetitive and data-entry level tasks, decisions are made quickly and at the right level of the organization.




**Process**

Risks and opportunities identified in real time, with automated analytics to influence process flow, ensuring optimized execution model.



**Information Flow**

Enabling secure and efficient design and business data exchange with suppliers



**Data**

Available in real-time, from all relevant data-sources (both internal and external), and presented in a manner that drives analytical decision making

## Value

**Aggregated, real-time visibility and analysis of the end-to-end supply chain**

Reduce program risk with enhanced real-time end-to-end visibility for stakeholders  
Increased supply chain resiliency and agility using analytics to provide actionable insights

**Multi-dimensional view of aggregated and categorized spend data with embedded AI-powered analytics**

Improved negotiation leverage through visibility to aggregated spend  
Ability to use analytics to identify category opportunities for Enterprise Agreements as well as potential risk areas

**Automated purchasing capability for low risk procurement**

Multi-user tool that enables coordination of low-dollar / low-risk procurements across programs and sectors from a single supplier  
Increases cost competitiveness by leveraging volume-based pricing

**Digitized smart file checklist and form automation**

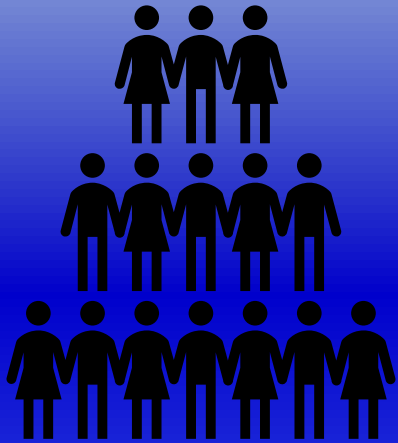
Digitizes policy requirements to drive efficiency and streamline procurement file development  
Reduction in labor hours required to create, review and approve PO package resulting in improved operational efficiency

**Digital supplier search capability**

Connect disparate data sources to provide the user an executive view of supplier's technical capabilities and other relevant information  
Drives efficient identification of strategic external partnership opportunities and commitments, providing significant competitive advantage

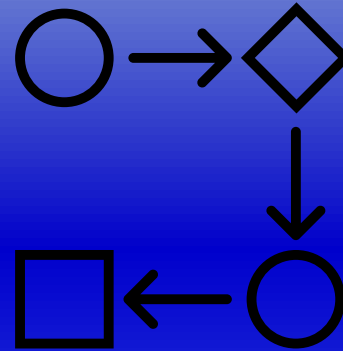
# Transforming the Supply Chain

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## ADOPTION

Building Trust  
Empowering  
Decision Making



## PROCESS

Harmonization  
and  
Re-engineering



## CAPABILITIES

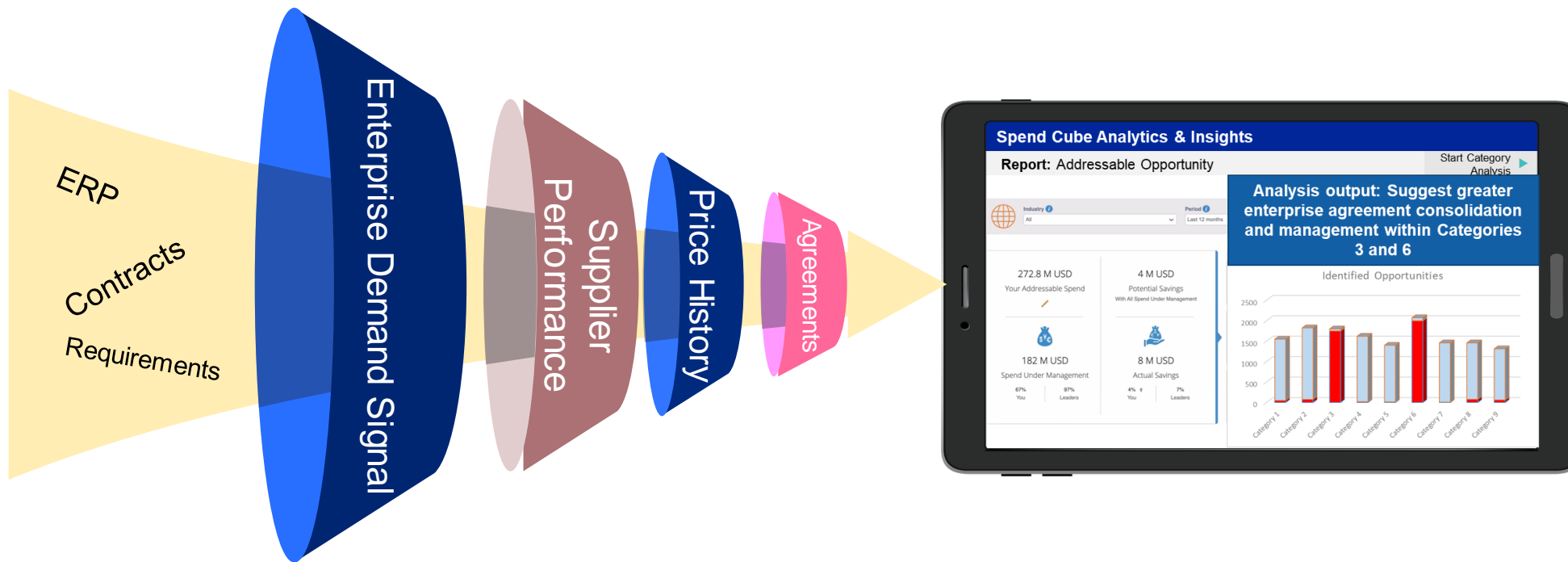
Spend Analytics  
Data Availability  
Supplier  
Collaboration



# Spend Analytics

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Spend Analytics provides a multi-dimensional view of aggregated and categorized NGC Spend Data across the enterprise, including AI-empowered analytics that provide prescriptions to reduce overall cost and improve efficiency.



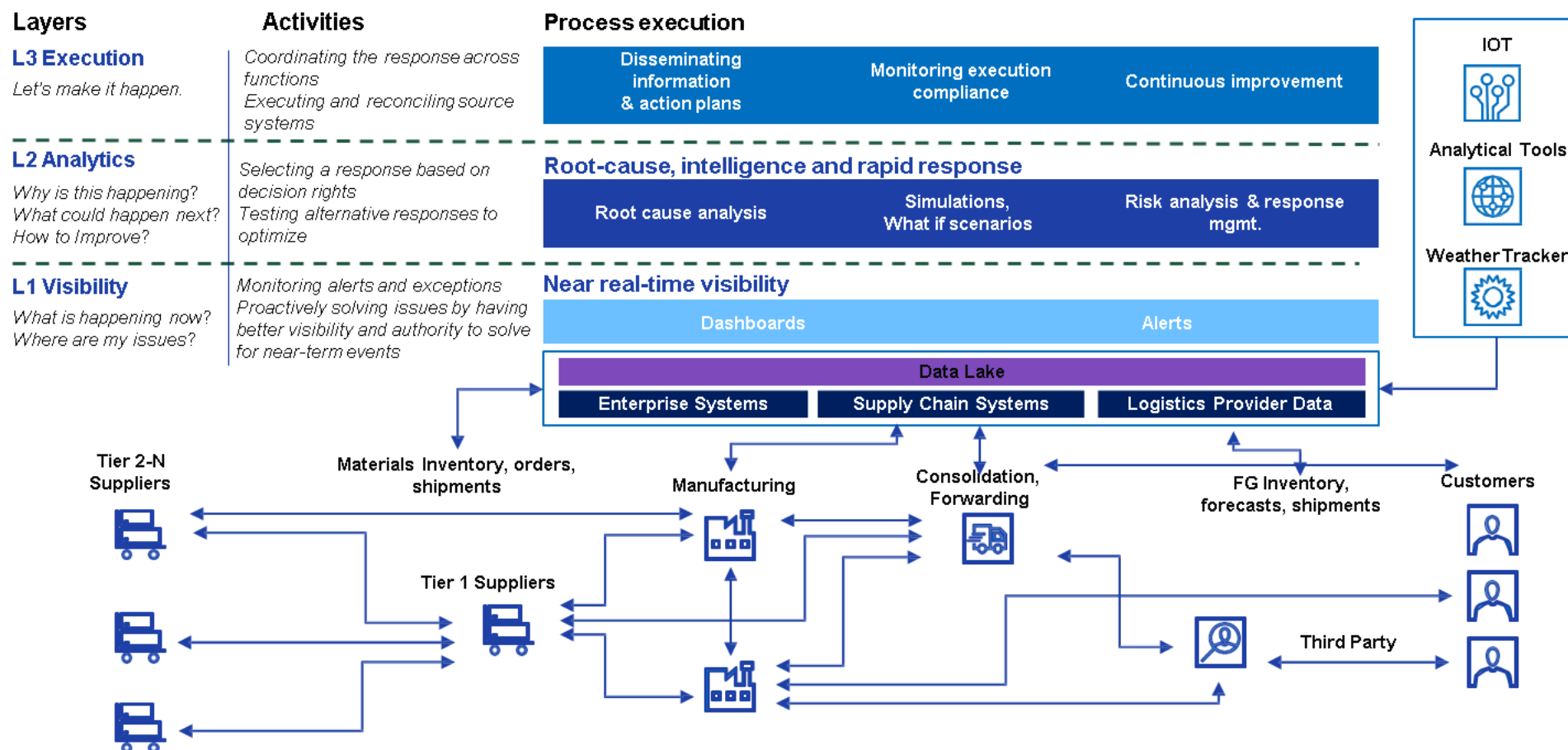
## Value Generation

- Improved negotiation leverage through visibility to aggregated spend
- Ability to use AI to identify category opportunities for Enterprise Agreements as well as potential risk areas
- Reduced costs by identifying price variations for same or similar parts
- Cleansed, harmonized GSC data is an enabler for future Digital Solutions

# Data Aggregation and Visibility

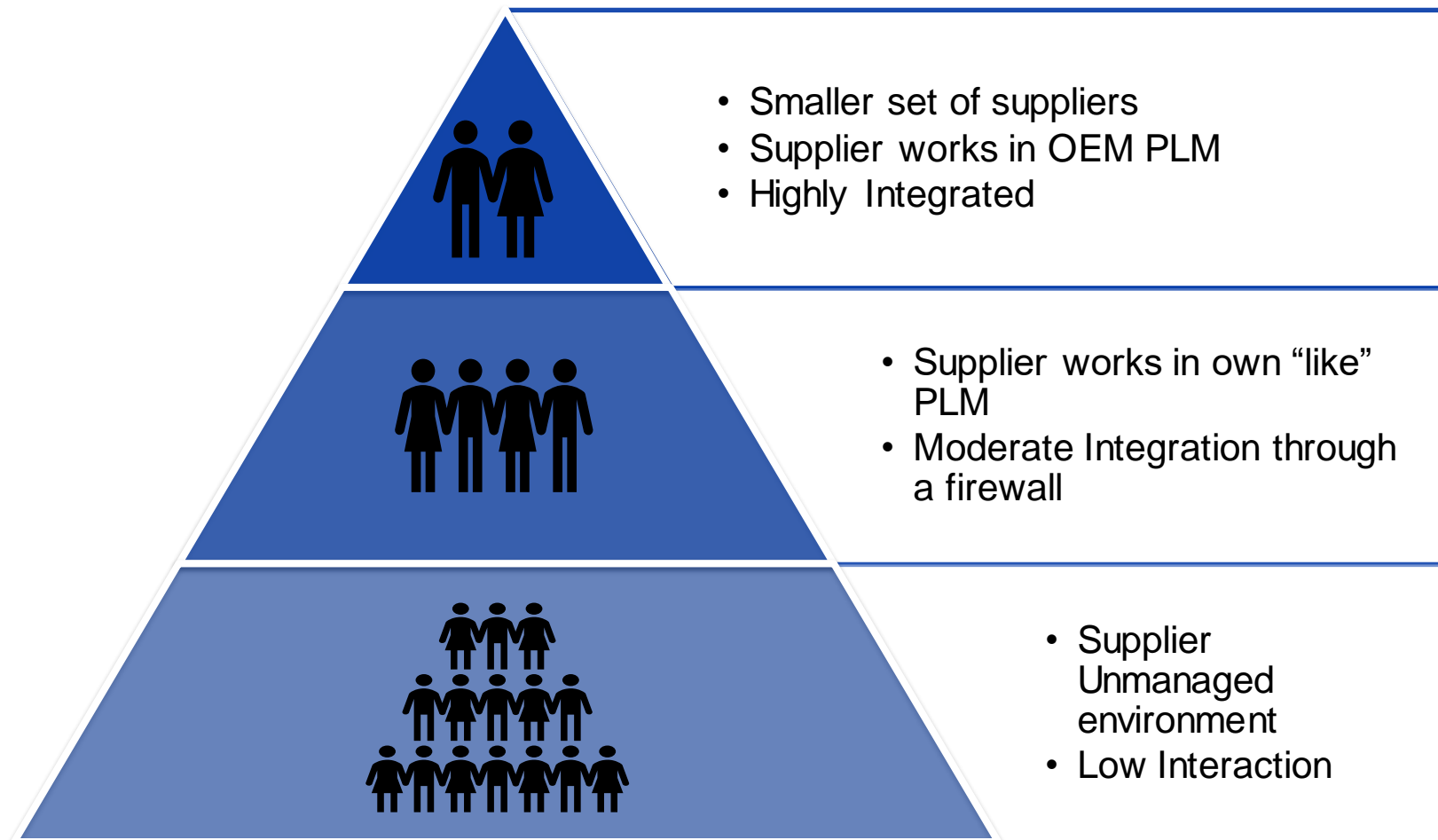
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Automates data aggregation to provide real-time visibility into the end-to-end supply chain and applies analytics to assess the impact of exception conditions and enable better decisions.



# Supplier Collaboration

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# Supplier Collaboration

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## Capabilities and Key Features: Secure / Scalable web-based external supplier access

### Requests Created in PLM environment



NG creates information packages including large 3D Models to share with suppliers

### Large Files Exchanged with Data Share Manager



Teamcenter data share manager, accessed through the portal, simplifies the upload and download of large files

### Traceability & Version Control Maintained in PLM



Traceability, audit, and version control enable efficient, effective, and transparent process execution



### Sessions Conducted in Secure Web Portal

Suppliers use a secure web portal to receive requests and data packages

Suppliers use the same portal to upload and send responses back to NG



### JT Models Marked-up & Viewed in JT2Go

JT2GO is a free Siemens product that allows Suppliers to open and manipulate lightweight JT models without having to have a CAD program like NX

Users can markup a concept or illustrate an idea then save for others to see



Enabling secure design data exchange, collection, and analysis with external suppliers



# Challenges

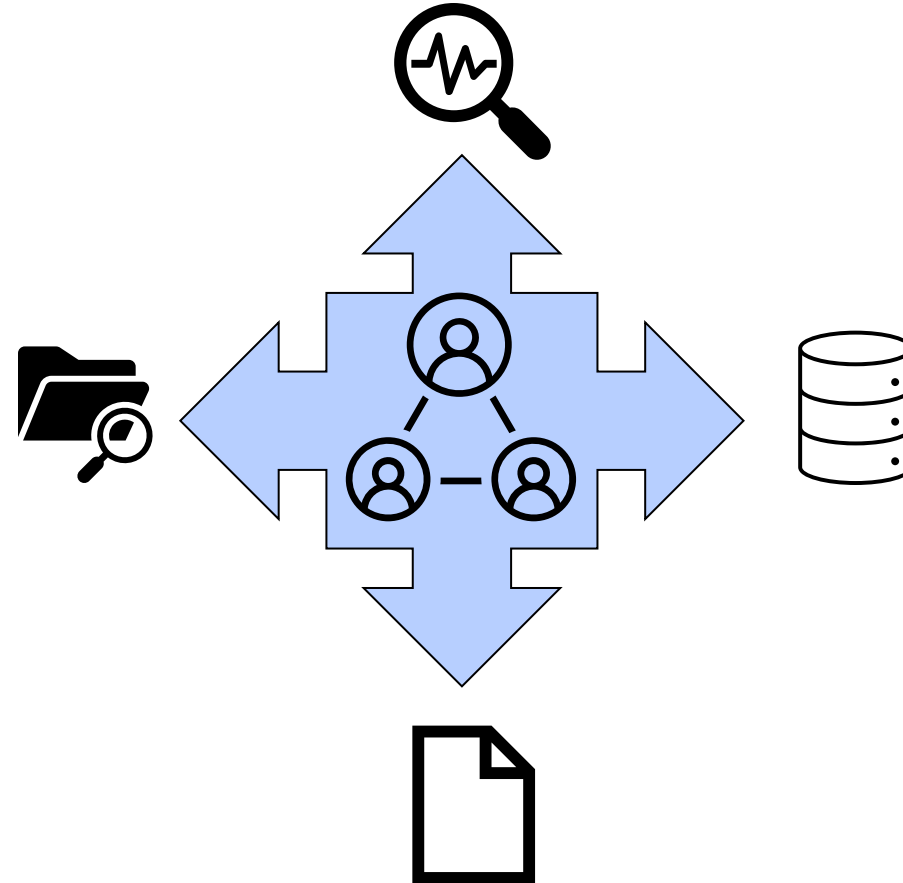
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## Data

- Data Cleanliness
- Data Migration
- Data Governance

## Adoption

- Shift Left “Acceptance”
- Digital Upskilling
- Supplier Readiness



# The Charge

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The opportunity to engage and shift left the supply chain in the digital thread is great.  
Now is the time to act.

# Questions?