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Item Criticality: The Foundation of Supply Chain Resilience

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Learning Objectives

- Discuss using an item master criticality matrix to fortify supply chain resiliency.
- Enhance productivity through prioritization using critical item scoring

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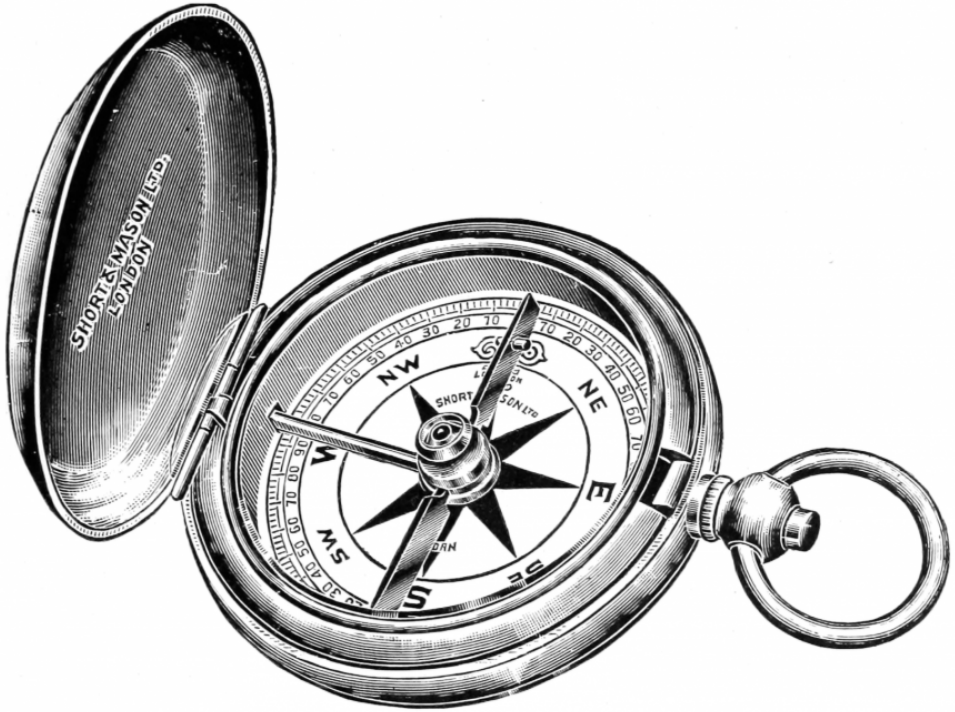
The Compass



A magnetized piece of metal that turns towards the earth's magnetic pole, **connecting us to the very core** of our planet.

The first known compasses were used to improve Feng Shui, creating layouts for **optimal energy flow**.

Sailors adopted the compass, no matter the external conditions of the sun and stars, true north could always be found.

The compass rose, which laid out North, South, East, and West. **Enabled new directions** like Northwest, Northeast, Southwest, and Southeast.

The **efficacy of maps** improved and unlocked the age of exploration.

The compass changed our entire relationship with the world, as we finally **knew where we were headed**.

Navigating the new world

1 week of disruptions (27)

Natural Disaster	2 Severe Floods	1 Hurricane	1 Tornado	
Market Exit	Rx Solution	Testosterone Gel	Sulfate Injection	
Recall	1 Contaminatio n Defect	4 Manufacturin g Defects	1 Software Defect	1 Sub-Assembly Defect
Other	Cyberattack impact	Labor strike	Plant closure (Bomb Threat)	
Acquisitions	Key supplier acquired	Key supplier acquired		
Geopolitical	USA Bombs Iran	Israel and Iran Conflict	Russia and Ukraine War	
Economic / Regulatory	Steel Tariff doubles	Forced labor, US expands import bans		

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THE POSSIBILITIES

The Old World

- Free flow of goods
- Consistent and stable supply lines
- Buy anywhere at the lowest cos
- Buy from anyone across the globe
- Knowing your suppliers was enough

The New World

- Networked compliance enforcement
- Fluctuating values-based regulations
- Consolidated supply lines (chain vs. web)
- Frequent natural disasters
- Devastating global pandemics

The criticality matrix is the new world's compass.

- Connects to the core, prioritizing most vital
- Directs energy, focused resource allocation
- True north, integrated & aligned response independent of externals
- Creates directions, division strategies
- Improves efficacy, empowers platforms
- Changes perspective, renewed approach

The Item Criticality Matrix

The Building Blocks

Clinical Necessity - Level of medical intervention the item supports. *UNSPC Code *Cost Center
3 - Procedural
2 - Nursing
1 - Non-Clinical

Market Availability – Level of options available on the market
3 - No subs available (tied to equipment, unique product, sole source)
2 - Subs available with variables (size options, varying practice is option, conservation)
1 - Many subs available on market (commodity, several manufacturers)

Volume – Actual Utilization
3 - Utilization Data (Greater than 1 Standard Deviation above the mean)
2 - Utilization Data (Within 1 Standard Deviation above the mean)
1 - Utilization Data (Below Mean)

Scope – Degree the item is used across the system
3 - Used in 3+ Regions
2 - Used in 2 Regions
1 - Used in only 1 Region

Complexity - Degree of Intervention Required, Partnership with Nursing Education
3 - Multiple Steps, Critical Thinking Required, Major Change to Workflow
2 - Muscle Memory, Vendor Webinar, Self-directed hands-on learning
1 - Non-invasive, Concise communication, Targeted Huddle Helper

506J - Deemed critical to public health by the FDA
3 - Active on 506J
1 - Not active on 506J

Item Score	Score Rank	Action
0 – 7	Non-Critical	• Future State Review
8 – 14	Moderate	• Substitution Plan • Allocation Monitoring
15 – 21	Critical	• Substitution Plan • Allocation Monitoring • Supplier Depth • Safety Stock • Network Monitoring

Manufacturing Depth - Degree to which an impact to a manufacturing plant can disrupt the product spend category
3 - Single or isolated manufacturing plants
2 – Multiple manufacturing plants distributed across the globe
1 - Several manufacturers and plants across limited geographic regions

Metric 1: Clinical Necessity

Department level spend data and UNSPC

3

- Identify procedural departments | OR, Cath Lab, IR, Endoscopy
- Extract line level purchase history
- Remove non-clinical items | UNSPC Segment

2

- Identify all remaining departments
- Extract line level purchase history
- Remove score 3 items
- Remove non-clinical items | UNSPC Segment

1

- All remaining unscored items

3

- Identify all procedural UNSPC items
- Segment* | Family* | Class | Commodity
- 4232 Orthopedic implants

2

- Identify all nursing UNSPC items
- Segment* | Family* | Class | Commodity
- 4227 Respiratory products

1

- Identify all non-clinical UNSPC items
- Segment* | Family* | Class | Commodity
- 5020 Beverages

Metric 2: Market Availability

Equipment Specific

Device Type	• Item A: Blood Pressure Cuff • Item B: Filter • Item C: Needle
Product Code	• Item A: DXQ • Item B: CAH • Item C: FMI
Product Code Preferred Name	• Item A: Blood Pressure Cuff • Item B: Filter, Bacterial, Breathing-Circuit • Item C: Needle, Hypodermic, Single-Lumen
Compatibility Requirements	• Item A: High Probability of Specific Compatibility Required (Score 3) • Item B: Low Probability of Specific Compatibility Required (Score 2) • Item C: No Specific Compatibility Required (Score 1)
Justification	• Item A: Adapters from the cuff to the luer are proprietary and not-interchangeable • Item B: Majority not tied to specific device. Dimension and filtration grade. • Item C: Luer-Lok connection allows for broad compatibility across companies

Metric 2: Market Availability

Continued... options

Sourcing Avenues

- ✓ Reserve program
- ✓ Secondary / Tertiary supplier contract

Sub-Metric Score

Up to one option = 3

Minimum of two options = 2

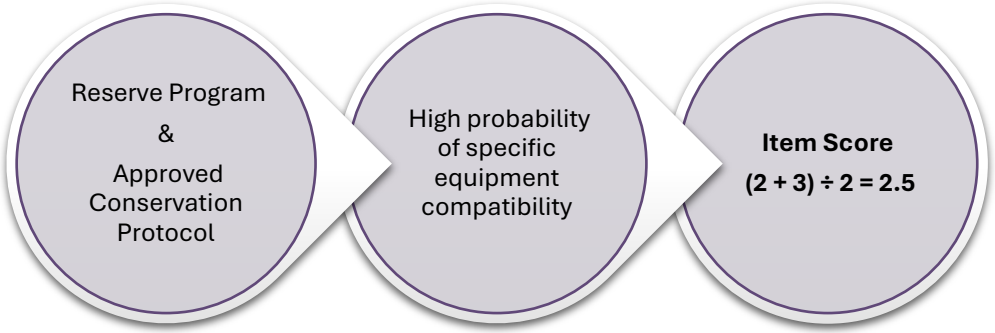
Three or more options = 1

Item Alternatives

- ✓ Size alternatives
- ✓ Approved substitutes

Change Management

- ✓Conservation Efforts
- ✓Clinical Practice Modifications

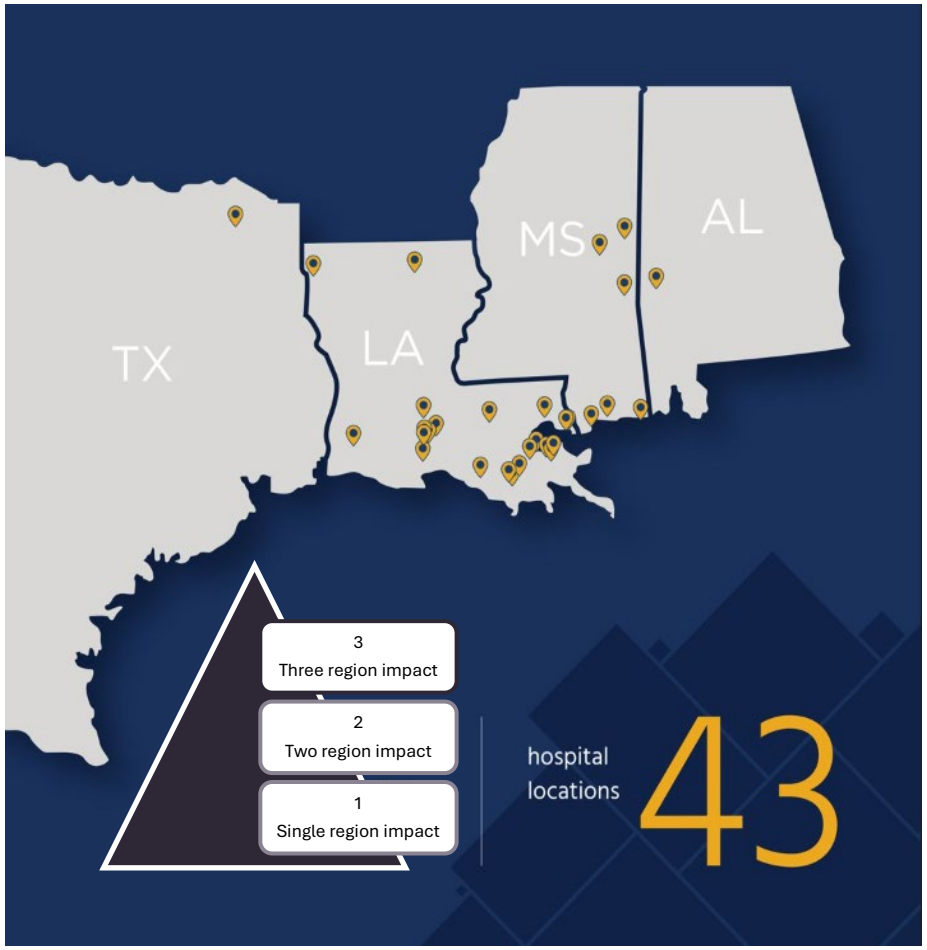


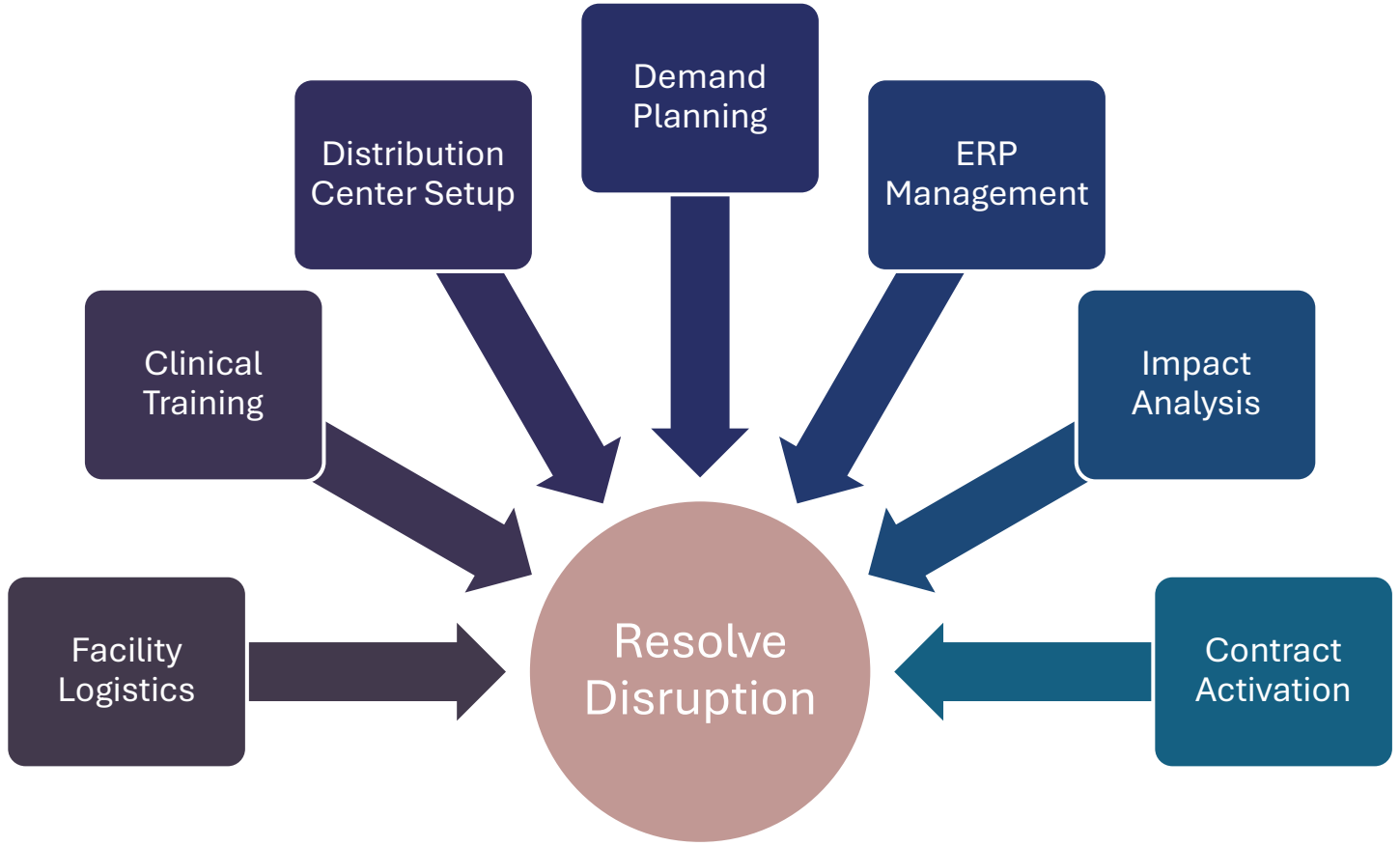
Metric 3: Volume

Lowest unit of measure and standard deviation

Product	Sterile Wipe	Suction Catheter	Aortic Valve	Exam Glove	Sterile Wipe
• Packaging String • Lowest unit of measure average usage per day	• 24/BX • 5.8 EA	• 50/CA • 1.6 EA	• 1/EA • 0.1 EA	• 50/BX, 200/CA • 371.3 PR	• 12/CA • 499.5 EA
Logic	**Calculate the mean**	**Calculate the differences**	**Square the differences**	**Standard Deviation**	**Thresholds**
• Below mean • Within 1+ standard deviation of mean • Greater than 1+ standard deviation of mean	• sum all values and divide by total number of values • 5.8+ 1.6+ 0.1+ 371.3 + 499.5 = 878.3 • 878.3 ÷ 5 = 175.66	• subtract the mean from each individual value in the data set • 5.8 – 175.66 = -169.86 • 1.6 – 175.66 = -174.06 • 0.1 – 175.66 = -175.56 • 371.3 – 175.66 = 195.64 • 499.5 – 175.66 = 323.84	• sum the squared values for each of the differences from prior step • (-169.862) + (-174.062) + (-175.562) + (195.642) + (328.842) = 233118	• divide the Sum of the squared differences by the total number of values in the set, then take the square root of that • 233118 ÷ 5 = 46623.59 • $\sqrt{46623.59} = 215.925$	• Score 1 = 0 to 175.66 • Score 2 = 175.67 to 391.58 • Score 3 = 391.59 and up

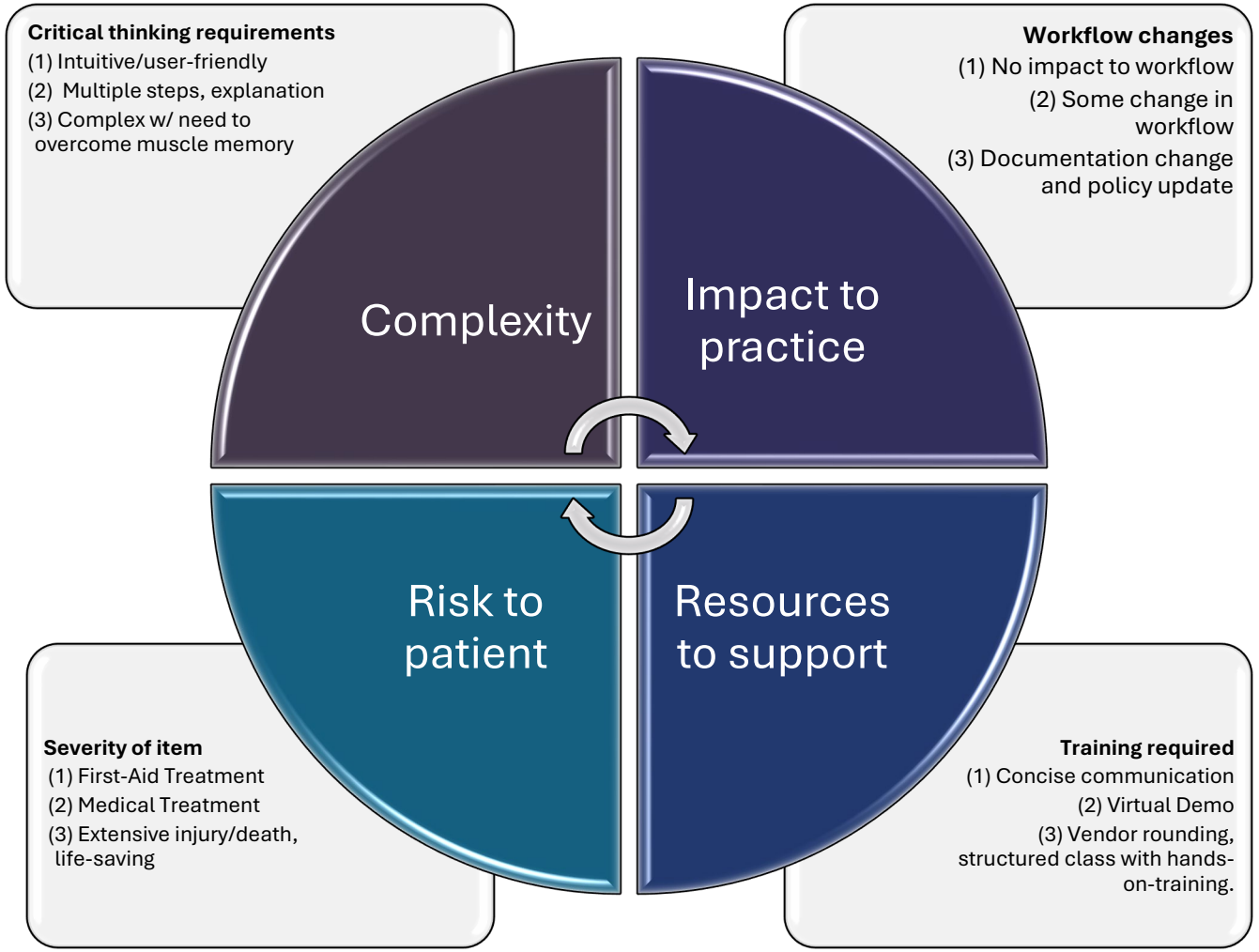
Metric 4: Scope
System wide facility penetration





Metric 5: Complexity

Degree of intervention required



Owned by Clinical Education Teams

Partnership is stewarded by Clinical Value Analysis

Research data is collected and transferred into the ERP

Measure organically as disruptions occur

Measure proactively prioritizing items with higher criticality

Metric 6: 506J

FDA Listing of medical devices deemed critical to public health

Device Type	Product Code	Product Code Preferred Name
Airway Connectors, Tubing, and Circuits	BYX	TUBING, PRESSURE AND ACCESSORIES
	BZA	CONNECTOR, AIRWAY (EXTENSION)
	CAI	CIRCUIT, BREATHING (W CONNECTOR, ADAPTOR, Y PIECE)
Airway Needles	BWC	NEEDLE, EMERGENCY AIRWAY
Anesthesia Gas Machines	BSZ	GAS-MACHINE, ANESTHESIA
Surgical Mesh	FTM	MESH, SURGICAL
Surgical Personal Protective Equipment (PPE)	FYA	GOWN, SURGICAL
	KGO	SURGEON'S GLOVES
	LYU	ACCESSORY, SURGICAL APPAREL
Sutures	GAM	SUTURE, ABSORBABLE, SYNTHETIC, POLYGLYCOLIC ACID
	GAP	SUTURE, NONABSORBABLE, SILK

SOURCE

United States Food and Drug Administration. (2025). 506J Device List. www.fda.gov/medical -devices/medical-device-supply-chain-and-shortages/506J-device-list

What it is..

- List of devices for which a manufacturer is required to notify the FDA under section 506J, during or in advance of a public health emergency, of a permanent discontinuance or interruption in manufacturing.

506J List Purpose..

- To ensure a stable and reliable supply of critical medical devices, especially during public health emergencies.

How it works..

- FDA determines devices are in shortage using various market signals and communications.
- 506J Notifications
- Distribution pressures
- Demand issues indicated from providers
- International factors such as export restrictions
- Actions, such as allocations, taken by interested parties including manufacturers, the FDA, etc.

Score..

- On 506J List = 3
- Not on 506J List = 1

Metric 7: Manufacturing depth

Risk assessment using the number of sites and geographic consolidation

The Map

Millions of data points aggregated into a single place to allow analysis, planning, and interpretation

Source: Jameson, Lara. “Compass Placed on a World Map”." Pexels. 11 July 2025, https://www.pexels.com/photo/compass-placed-on-a-world-map-8828681/

Created using geographical **data collected** in the real-world.

The map + the compass enable analysis, planning, and navigation.

Supply Chain Leaders are **planners**, we gather and interpret information, create action plans, alter those actions plans, to effectively support operational needs with a consistent line of supplies and/or services.

Supply chain command centers aggregate data into a single platform, driving **precise** action with AI and Machine Learning.

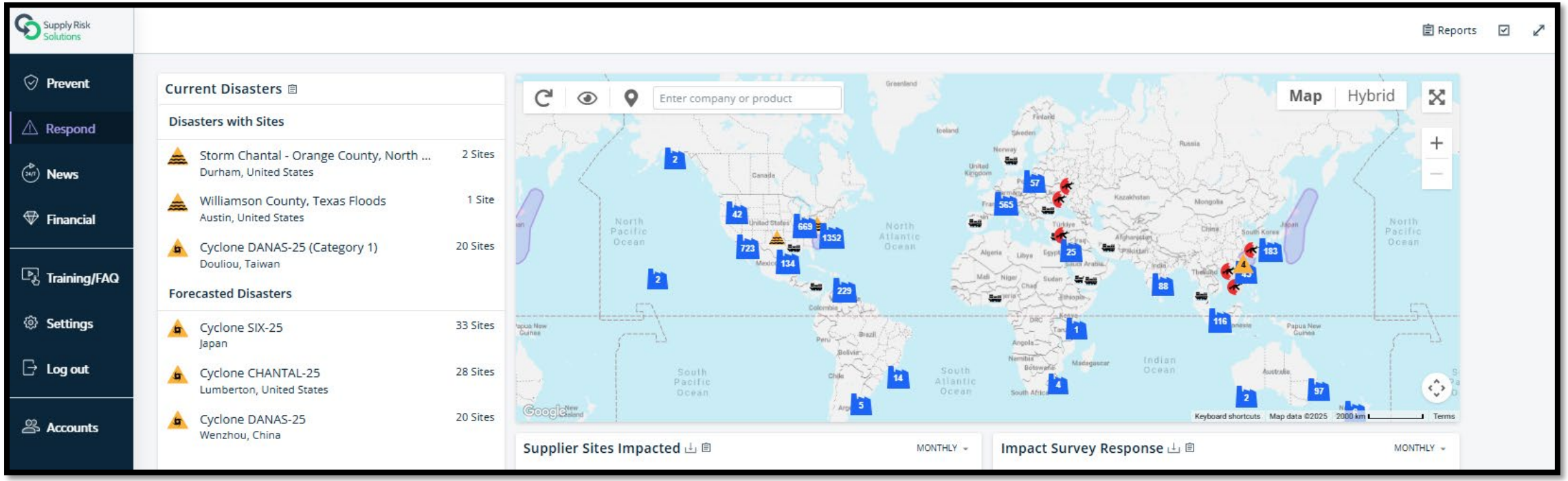
Ex) Decreased fill rates + severe weather + surge in demand = potential disruption

Building the Map…Supply Chain Command Center

Critical external operations data reflecting market conditions

Supply Risk Solutions

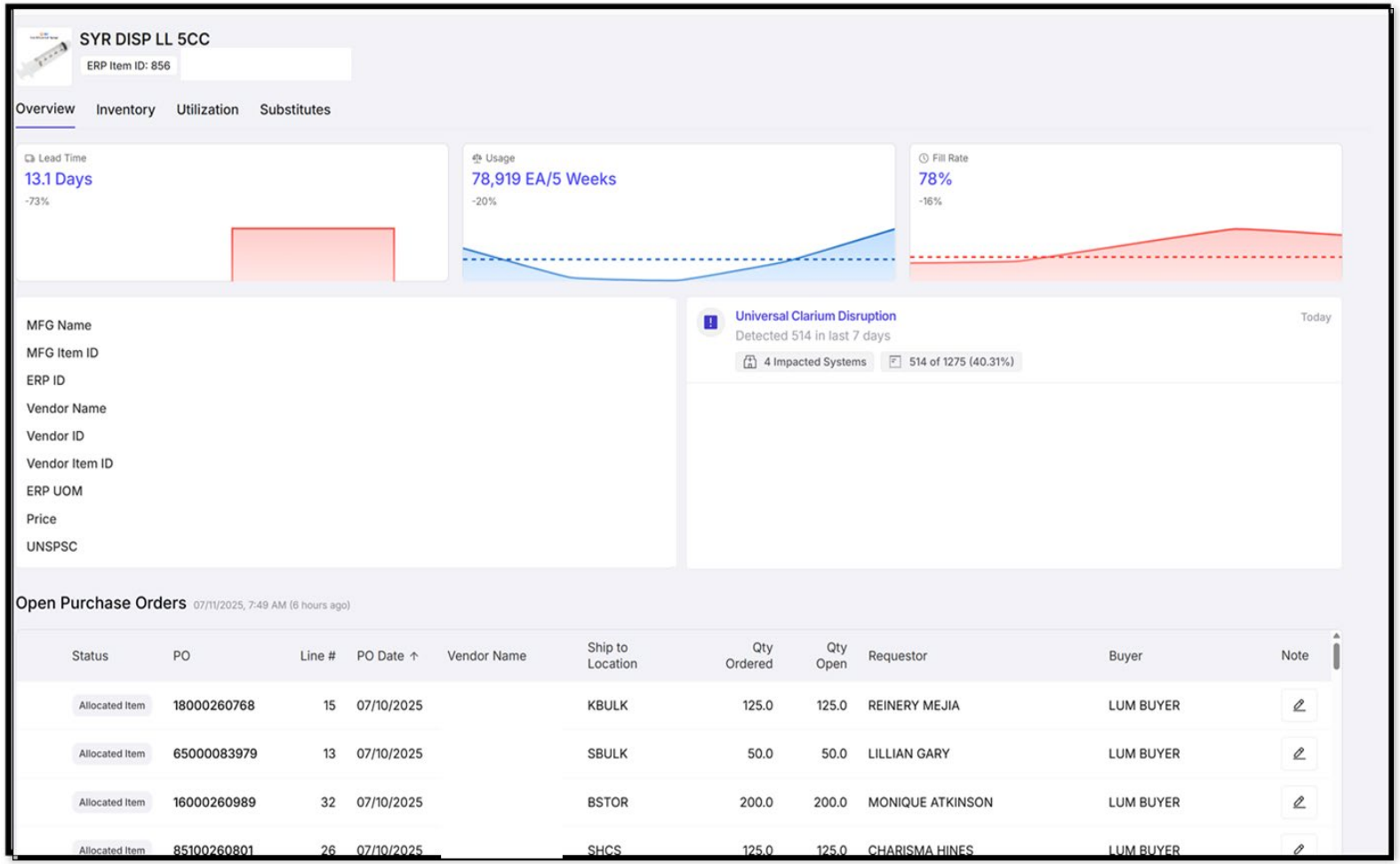
Source: Supplyrisk.com



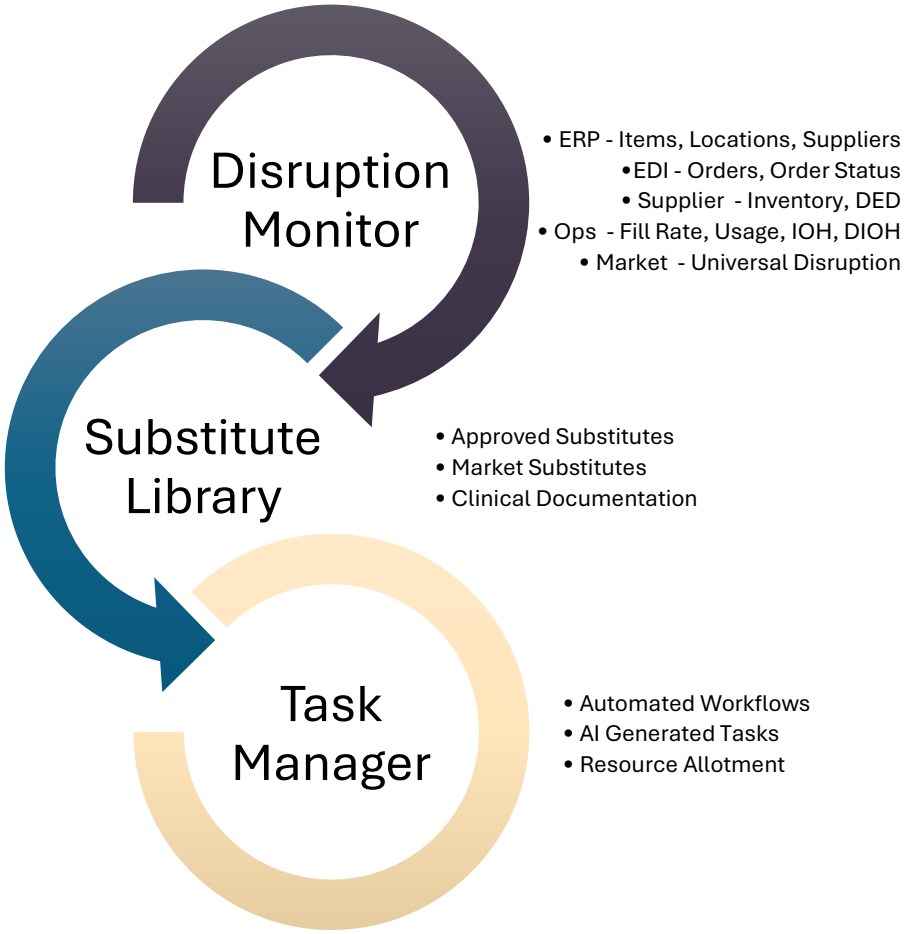
Supplier Risk	Disruptions	Market News
Geopolitical	Global Conflict	Mergers and Acquisitions
Economic	Trade Regulation	Market Exit and Entry
Natural Disaster	Natural Disasters	Political
Business Continuity	Misc. (Recall, etc.)	Economic

Building the Map…Supply Chain Command Center

Critical internal operations data



SOURCE: Internal Dashboard through Clarium Health



Lessons Learned

- The environment today demands Supply Chain teams to move quicker and more efficiently than ever before.

- The development of the Item Criticality Matrix is one of the most fundamental elements of a resilient supply chain.

- Aggregated data platforms that integrate operational data with criticality can transform the way we approach work.

Key Takeaways

- Not all attributes need to be collected for an item to receive a score. Specific attributes will require higher levels of research and should be collected organically as work occurs. (Ex: Clinical Training & Education)

- Use the attributes that can be collected using data to then prioritize the items to review moving forward. (Ex: Volume) (Items with Volume Score of 3 should be prioritized for full attribute scoring over Items with Volume Score of 1)

- AI and Machine Learning, when applied correctly can significantly reduce the manual efforts required to build a resiliency foundation.

Questions?

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