



Supply Chain and
Logistics Institute

Competitive *insights*

World Class AI/ML Solutions Driving Cost and Profit Improvement Strategies



IPIC 2024

10th International
Physical Internet Conference
May 29-31, 2024
Savannah, GA USA

AGENDA

- **Introduction – Chris Gaffney**
- Introductions – Richard Sharpe
- AI / ML Critical Considerations – Richard Sharpe
- HMTX's Applied AI / ML Solution – Richard Sharpe
- Q&A – Chris Gaffney and Richard Sharpe



Chris Gaffney

Chris Gaffney serves as The Managing Director of the Supply Chain and Logistics Institute at Georgia Tech. Chris is a graduate of Georgia Tech (BIE and MSIE). Chris is also a Principal at EDGE Supply Chain, offering expertise in supply chain consulting. Chris career in industry included 25 years at Coca-Cola, he held various leadership roles, including President of Coca-Cola Supply and SVP of Product Supply System Strategy. Chris was previously the President of the National Product Supply .



Supply Chain and Logistics Institute

An Interdisciplinary Research Center, representing over 100 faculty, providing global leadership for research and education in the application of scientific principles to optimize the design and integration of supply chain strategy, infrastructure, processes, and technology.



- Addressing societal needs through collaborative research and operations improvement projects
- Decades of extensive large-scale supply chain research through projects with dozens of companies: BCO's, carriers, manufacturers, retailers, eCommerce players, Marine Corps Logistics Command...
- Life-long learning: Summer Camps, Degree Programs, Professional Education, Juvenile Justice/URM/GED programs, High School Curriculum
- Global Reach and Partnerships

Building Georgia with AI and Manufacturing

College of Engineering faculty to lead \$65 million grant announced by White House

The Georgia Institute of Technology has been awarded a \$65 million grant from the U.S. Department of Commerce's Economic Development Administration (EDA) to support a statewide initiative that combines artificial intelligence and manufacturing innovations with transformational workforce and outreach programs. The grant will increase job and wage opportunities in distressed and rural communities, as well as among historically underrepresented and underserved groups.

\$65M

Grant from the U.S. Department of Commerce's Economic Development Administration

9

Projects in the GA-AIM Technology Corridor Grant



48K+

Projected square footage of the transformed Artificial Intelligence Manufacturing Pilot Facility at Georgia Tech

**23%
WOMEN**

**15%
BLACK**

Target demographics of manufacturing workforce in the next 5 years

4

Georgia regions with manufacturing strengths & needs to be addressed



ALBANY



DALTON



GAINESVILLE



SAVANNAH



Upskilling Georgia workers



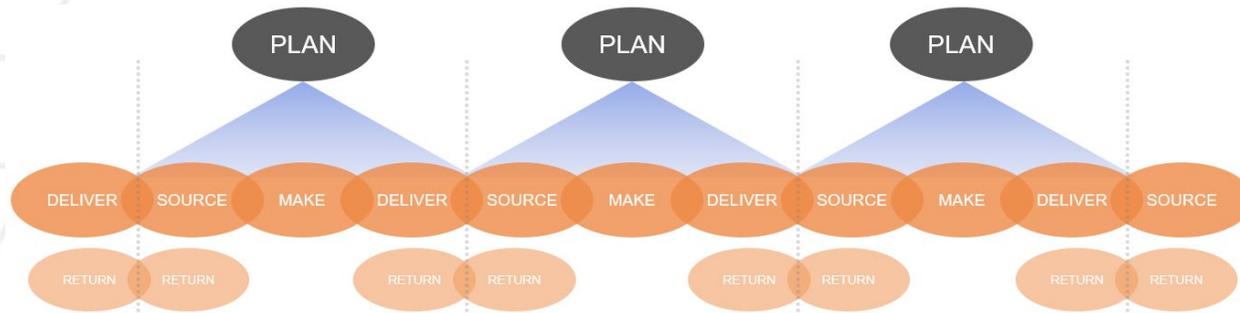
K-12 entrepreneurship initiatives



BUILDING GEORGIA BACK

GA AIM Ensuring AI-Enabled Supply Chain Resilience

SCL is working to support strengthening the resilience of rural supply chains, addressing needs beyond manufacturing



4 Georgia regions with manufacturing strengths & needs to be addressed



ALBANY



DALTON



GAINESVILLE



SAVANNAH

Creating 100 AI/Technology-aware Change Agents per Year – **focused on middle management**

- **Tailored Education Certificate Programs**
 - AI/Technology Awareness, Process Improvement, Business Case, and Project Management Skills
- **Workplace Capstone Projects**
- **Addressing Extended Supply Chain**

Connecting Problem-owners with Solution Providers

- **Connecting Faculty and SCL Business Partners with Industry to advance AI and Emerging Technology adoption**

Collaboration



ARTIFICIAL INTELLIGENCE IN MANUFACTURING

GEORGIA AIM

innovate.
collaborate.
educate.
participate.

**Artificial Intelligence/
Machine Learning
to enhance
Supply Chain Resilience
and Effectiveness**



GT | Supply Chain and Logistics Institute



Georgia AI Manufacturing (AIM) Grant



Competitive **insights**

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INTRODUCTIONS



Richard Sharpe
President & CEO

Competitive **insights**

- 30+ years of experience in Advanced Supply Chain Management and Applied Business Solutions
- Georgia Tech Executive Lecturer for 15+ years
- Inducted into the Engineering Hall of Fame and The Academy of Distinguished Engineering Alumni of Georgia Institute of Technology
- Graduate Degree in Industrial Engineering from Georgia Tech; Undergraduate Degree in Industrial Engineering from the University of Florida
- Founding member of the American Logistics Aid Network (ALAN)



INTRODUCTIONS



Analytics-as-a-Service Cloud Solutions
powered by
Machine Learning and Artificial Intelligence

Competitive **insights**

ENSURING
cross-functional
confidence in the data



PINPOINTING
insights for specific
Cost and Profit Initiatives



Trusted



Accurate



Specific



Repeatable

= ACTIONABLE

INTRODUCTIONS



Brian Greene
CSCO



- Brian Greene is the Chief Supply Chain Officer and oversees supply chain planning and strategy across the HMTX family of companies
- Brian joined Halstead in May 2002 as Vice President of the Southern division. He subsequently helped create initiatives that would lead to an expanded global supply chain footprint
- Brian's almost 30 year career in the industry includes prior experience with major retailers, including The Home Depot
- Brian earned a B.B.A. in International Business and Economics from Georgia Southern University and an Executive Masters in International Logistics and Supply Chain Strategy from the Georgia Institute of Technology

HMTX AT A GLANCE

Year Founded: 1958

Employees: 350

HQ: Norwalk, CT

Revenue: \$700mm*

* For the fiscal year that ended March 31, 2024

With over 60 years of expertise, HMTX stands as a premier designer, manufacturer, distributor, and marketer of resilient flooring, renowned for continuous product innovation.

The Company's product portfolio offers unsurpassed quality, durability, aesthetics, performance and ease of installation and is suited to various market segments and applications.

GLOBAL FOOTPRINT

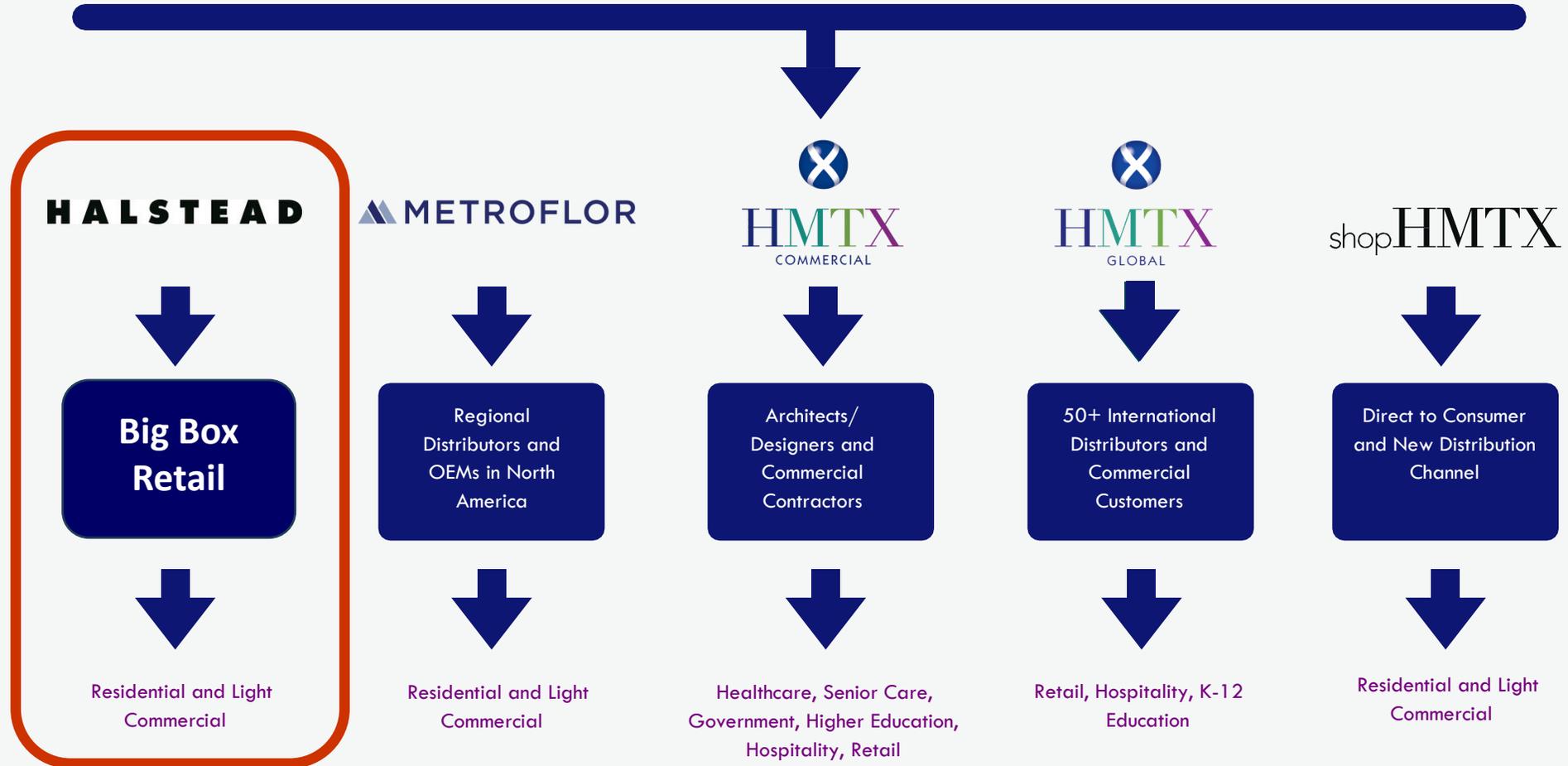


- HMTX OFFICES
- 3PL FACILITIES
- HMTX DISTRIBUTIONCENTERS

Since the early 1960s, the Company has collaborated closely with overseas manufacturers in Asia, jointly spearheading new product development.

Comprising differentiated brands and five distinct operating divisions, the Company caters to major flooring channels:

- (1) Big Box retailers
- (2) Regional flooring distributors
- (3) Commercial markets where products are specified by architects, designers, commercial flooring contractors, and end-users in commercial settings.



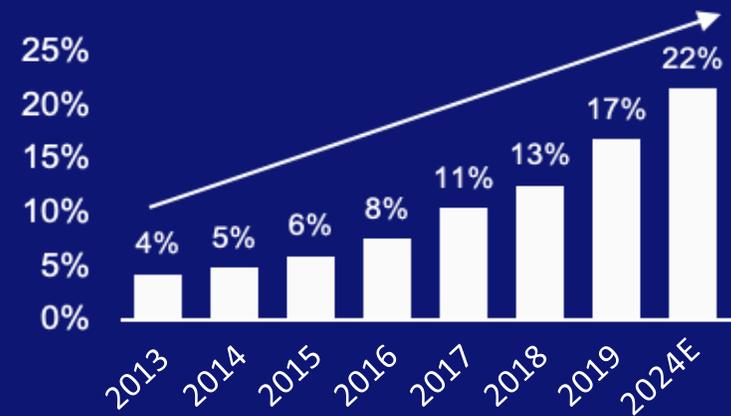
GROWTH

Leads the rapidly growing resilient flooring sector, holding the third largest North American market share due to its heritage of innovation, distinctive R&D, patents, and robust manufacturing connections

Leveraging partnerships spanning over 30 years, HMTX collaborates with global manufacturers, collectively operating over four million square feet of production space

HMTX prioritizes user data integration, disruption anticipation, and collaboration for future product innovation, elevating design and performance leadership to a "C" level position

LVT AS % OF TOTAL FLOORING MARKET



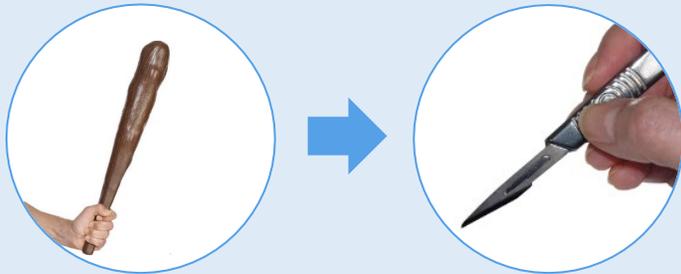
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AI / ML CRITICAL CONSIDERATIONS

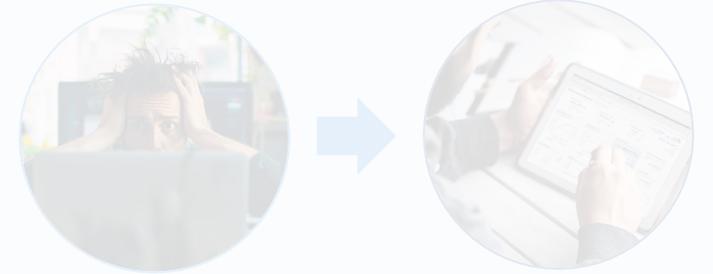
To avoid the typical technology hype cycle, AI / ML solutions must have the following:



Intentional Focus

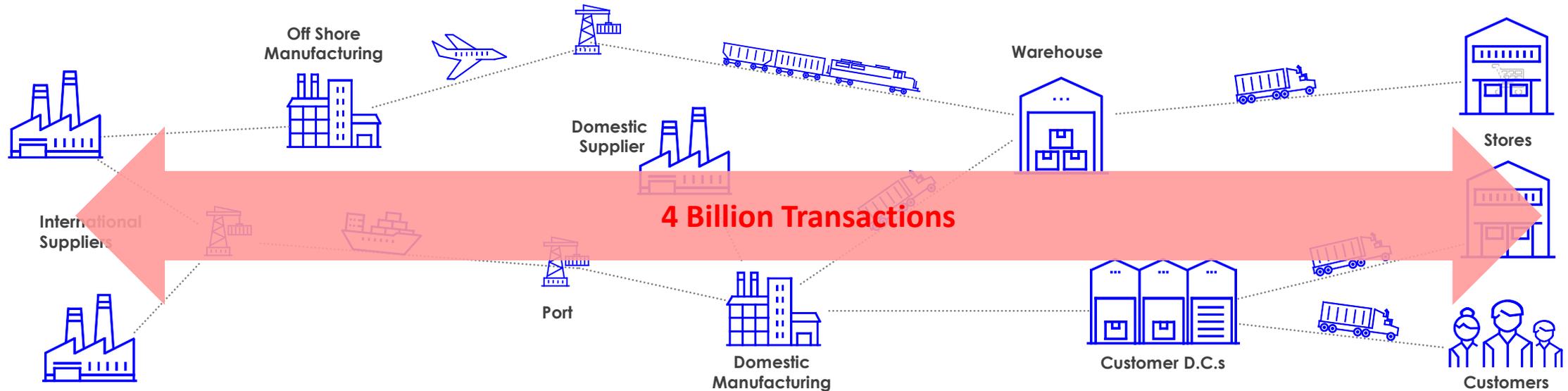


Repeatable Data Integrity



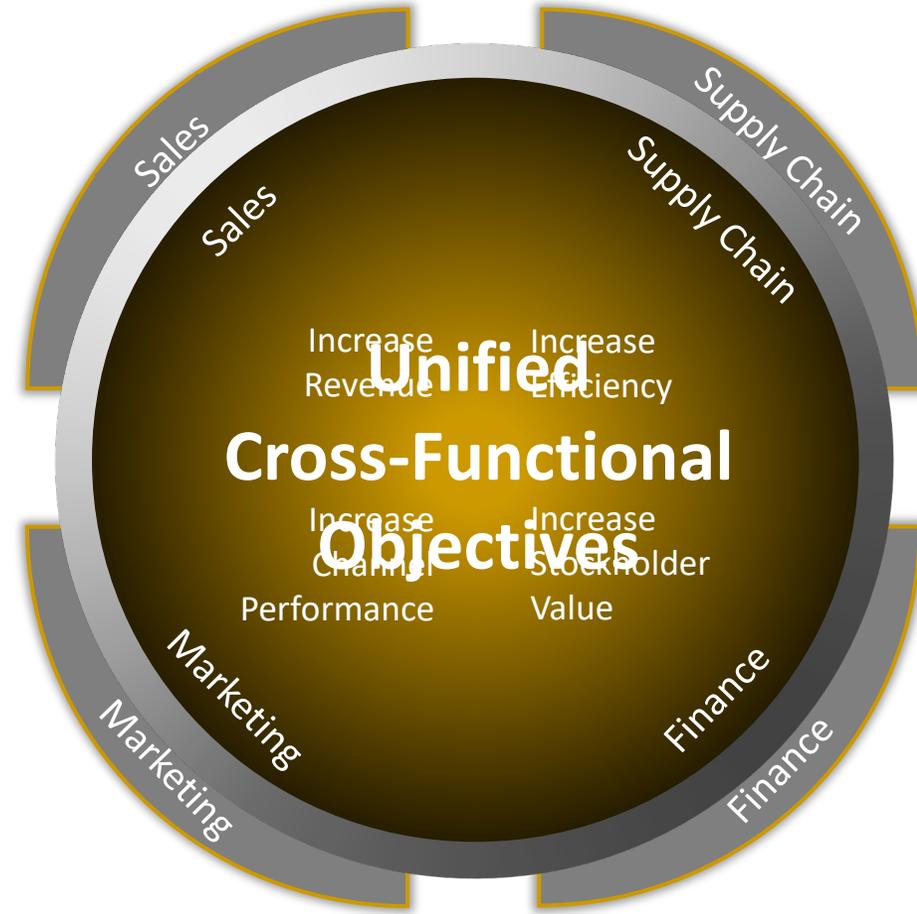
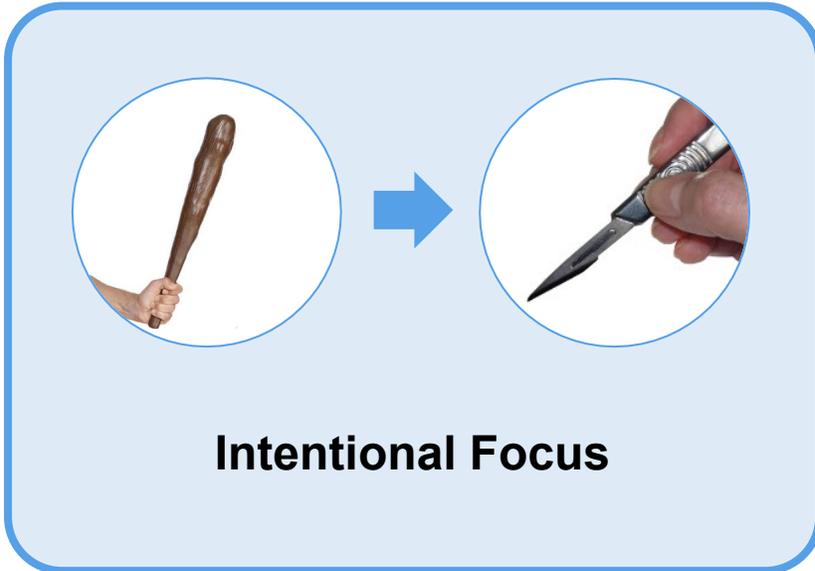
Rapid Actionable Results

AI / ML CRITICAL CONSIDERATIONS



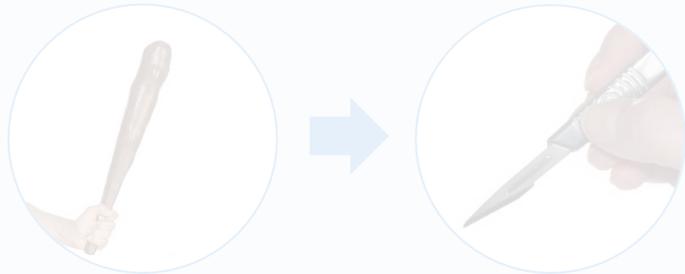
Net Landed Profit
by SKU, Customer & Channel based on Accurate, Specific Details

AI / ML CRITICAL CONSIDERATIONS

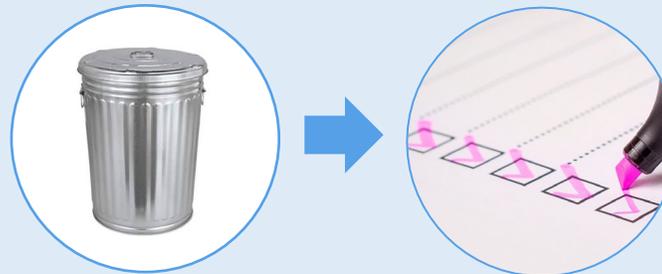


AI / ML CRITICAL CONSIDERATIONS

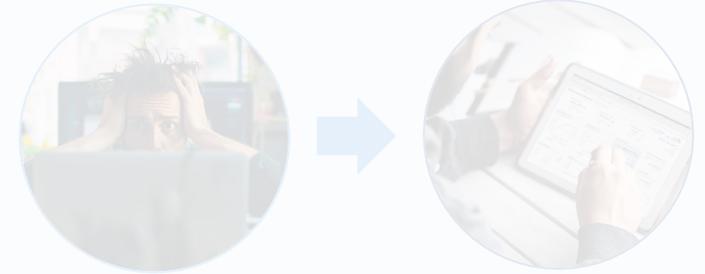
To avoid the typical technology hype cycle, AI / ML solutions must have the following:



Intentional Focus



Repeatable Data Integrity



Rapid Actionable Results

AI / ML CRITICAL CONSIDERATIONS



- addressing data silos
- disjointed functional data



- ✓ Trusted
 - 🏛️ Accurate
 - 🔍 Specific
 - 🔄 Repeatable
- = ACTIONABLE**

AI / ML CRITICAL CONSIDERATIONS



Data Assurance Processing Summary

Data Collection Status
03/03/2023

Systematic Data Validation
03/04/2023

Data Transformation
03/06/2023

SME Validation
03/07/2023

Scheduled Refresh
Release Date
03/07/2023

Data Collection

60% files loaded
10% files in working progress
30% files waiting from source

File Name	File Owner
Customer_Master	BI Team
Handling	Hugh Mann
Inbound_Freight	Craig Yasoon
Inventory	Harriet Upp
Outbound_Freight	Craig Yasoon
ProductCost	Hugh Mann
Regulations	Mark Stevenson
Sales_Direct	Chris Nice
Sales_Indirect	Chris Nice
Site_Master	BI Team
SKU_Master	BI Team

Data Collection Notes

- Repulling Inventory file
- Transportation file to be pulled a week after closing
- Returns file is late

Systematic Data Validation

40% of files received don't have warnings
60% of files received have warnings

File Name	Data Flag
Inventory	
Material	10%-20% variance from previous month
Sales	More than 20% variance from previous month
Site	
SourcingCost	More than 20% variance from previous month

Systematic Data Validation Notes

- Variances in sales file are due to seasonality
- Variances in Sourcing Cost are under review

Subject Matter Expert (ME) Validation

20% functional areas validated
40% functional areas in validation mode
40% functional areas waiting for validation

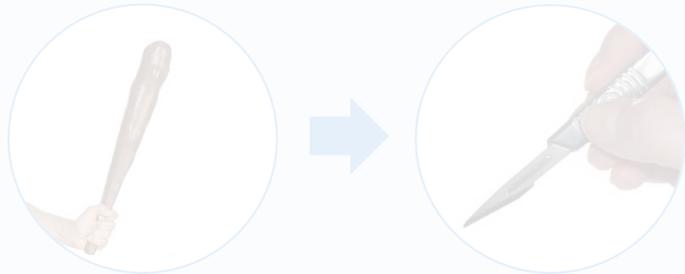
Functional Area	SME	Pass	Fail
Inventory	Luke Mills	86.11%	13.89%
Material	Joe Hart	96.15%	3.85%
Returns	Emily Young		
Sales	Angela Brown	98.47%	1.53%
Transportation	Sean Fisher		

SME Validation Notes

- SME analyzing failing records
- Transportation file to be pulled a week after closing
- Returns file is late

AI / ML CRITICAL CONSIDERATIONS

To avoid the typical technology hype cycle, AI / ML solutions must have the following:



Intentional Focus



Repeatable Data Integrity



Rapid Actionable Results

AI / ML CRITICAL CONSIDERATIONS



Rapid Actionable Results

Profit and Loss Statement (P&L)

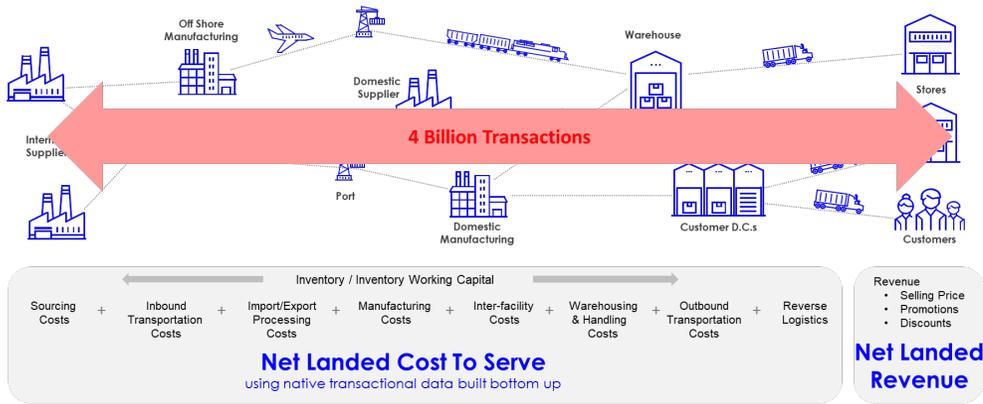
	2023	% of Net Sales	2022	% of Net Sales
Net Sales	\$ 921,218	100.0%	\$ 836,674	100.0%
Cost of Goods Sold	344,859	37.4%	293,013	35.0%
Gross Profit	576,359	62.6%	543,661	65.0%
Operating Expense	572,621	62.2%	506,752	60.6%
Other Operating Income, Net	(2,584)	-0.3%	(1,836)	-0.2%
Operating Income	6,322	0.7%	38,745	4.6%
Interest Expense, Net	1,089	0.1%	950	0.1%
Income from Continuing Operations Before Taxes	5,233	0.6%	37,795	4.5%
Tax Expense from Continuing Operations	2,248	0.2%	13,450	1.6%
Net Income from Continuing Operations	2,985	0.3%	24,345	2.9%
Net Income from Discontinued Operations	-	-	796	0.1%
Net Income	\$ 2,985	0.3%	\$ 25,141	3.0%

✗ Specific

✗ Precise

✗ Actionable

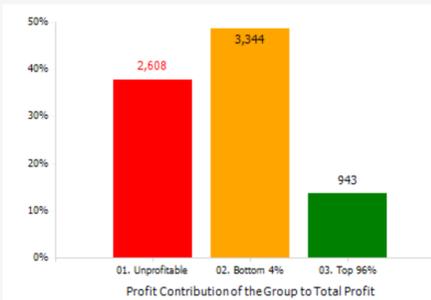
AI / ML CRITICAL CONSIDERATIONS



Net Landed Profit
by SKU, Customer & Channel based on Accurate, Specific Details



Product Profit Segmentation based on Net Landed Profit (NLP)



Prioritize insights by

- Product category
- Customer account
- Channel

Top 5 Opportunity Products

Dollar values are shown in Millions

NLP Group	Product Hierarchy	Channel	Product	Net Sales	NLP	Opportunity NLP	Last Period
01. Unprofitable	T-Shirts	Wholesale	2637651	NLP Scorecard	\$2.2	(\$0.6)	\$2.2
01. Unprofitable	Dresses	Wholesale	2637374	NLP Scorecard	\$1.8	(\$0.5)	\$2.0
01. Unprofitable	T-Shirts	Wholesale	2651169	NLP Scorecard	\$1.3	(\$0.4)	\$1.4
01. Unprofitable	Dresses	Wholesale	2680944	NLP Scorecard	\$0.5	(\$0.4)	\$0.8
01. Unprofitable	T-Shirts	Wholesale	2651166	NLP Scorecard	\$0.5	(\$0.2)	\$0.6

Top 5 Opportunity Customers

Dollar values are shown in Millions

NLP Group	Customer Hierarchy	Channel	Customer	Net Sales	NLP	Opportunity NLP	Last Period
04. 4th 20%	Ecommerce	Ecommerce	35076673	NLP Scorecard	\$40.9	\$9.7	\$5.1
04. 4th 20%	Retail	Retailers	30191245	NLP Scorecard	\$35.4	\$14.0	\$3.3
02. Least	Retail	Retailers	33787569	NLP Scorecard	\$8.6	\$1.1	\$2.1
02. Least	Retail	Retailers	33356190	NLP Scorecard	\$5.9	\$0.0	\$2.1
03. 5th 20%	Ecommerce	Ecommerce	35250945	NLP Scorecard	\$14.9	\$3.9	\$1.6

Pinpoint opportunities for specific product and customer strategy changes

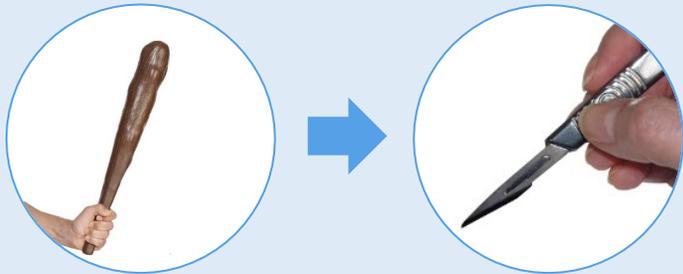
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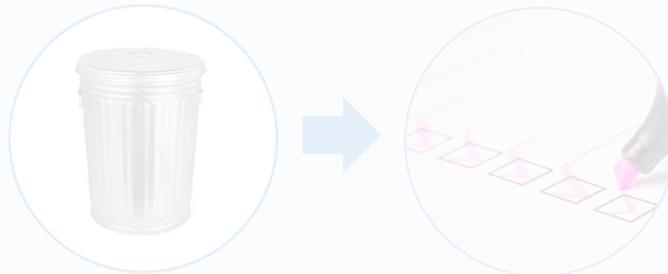


HMTX'S APPLIED AI / ML SOLUTION

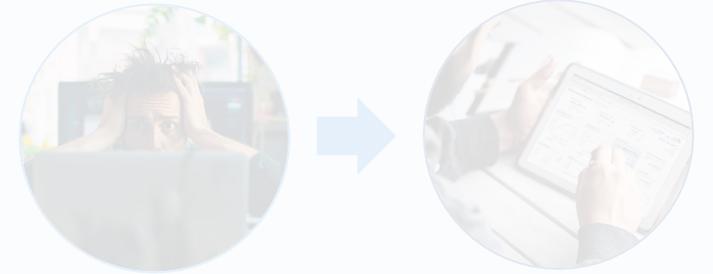
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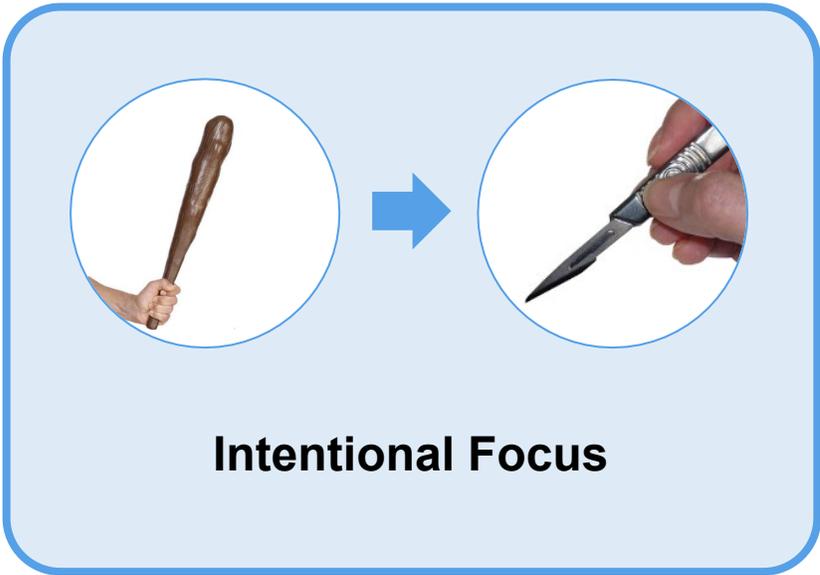


Repeatable Data Integrity



Rapid Actionable Results

HMTX'S APPLIED AI / ML SOLUTION



Analysis (In Millions)	
Revenue	
Gross Sales	
Sales Allowances	
Deductions	
IBX Discounts	
Cash Discounts	
Net Revenue	
Units Sold (Quantity)	
Net Revenue/Unit (in Dollars)	
Units Returned (Quantity)	
Cost	
COGS	
Product Cost	
Ocean Freight Cost	
Duties	
Factory Discount	
Tariffs	
License Fees	
Custom Broker	
Inland Drayage	
Chassis Rental	
Freight Inbound	
Inventory	
Inventory Returns	
Warehousing Cost	
Expenses	
Labor	
Maintenance	
Rent	
Other Cost	
Net Landed Cost to Serve (NLCTS)	
NLCTS/Unit (in Dollars)	
Profit	
Standard Profit	
Standard Profit Margin	
Net Landed Profit (NLP)	
NLP Margin	



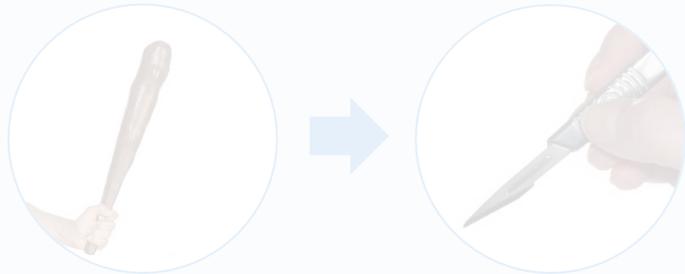
“HMTX is no different than most companies. We have a **standard operating P&L but not individual SKU – Customer specific cost and profit performance insights. Competitive Insights** CI.RADAaR™ platform has provided **actionable insights that can be sliced and diced by any operational dimension.**”

Period From:	2023-01	Period To:	2023-12
Compare Field:	-----None-----	Show Values In:	In Millions
Warehouse:	<ALL>	State:	<ALL>,Alabama,Arkansas,Arizona,C
Enter Customer to Search (optional):		Customer Listing:	<ALL>
Enter SKU to Search (optional):		SKU Listing:	<ALL>
Wear Layer:	<ALL>	Product Category:	<ALL>
Product Type:	<ALL>	Product Line:	<ALL>
Product Collection Name:	<ALL>	Product Brand Name:	<ALL>

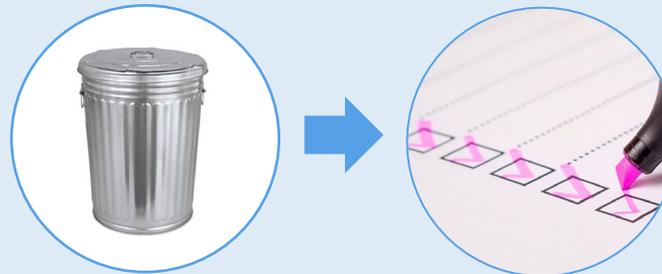
INSIGHT
 Difference between Standard Profit and Net Landed Profit Margin
9.64%

HMTX'S APPLIED AI / ML SOLUTION

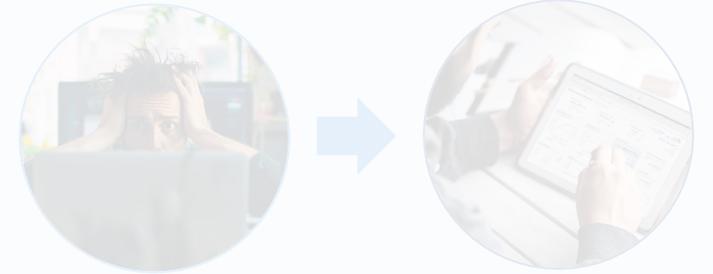
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Rapid Actionable Results

HMTX'S APPLIED AI / ML SOLUTION



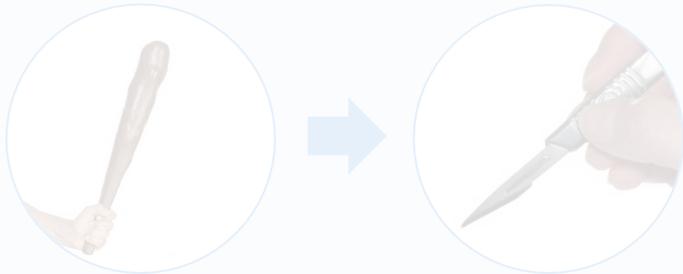
- Data processing
- Unification
- Validation
- SME verification



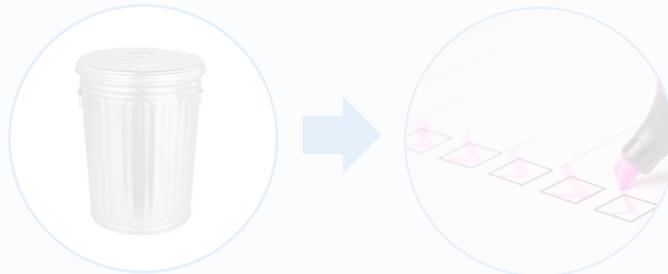
*“Each functional organization within HMTX have made decisions based on the siloed operating data available to them. We now truly have **“One Version of the Truth”**, that in some cases has been very surprising.”*

HMTX'S APPLIED AI / ML SOLUTION

To avoid the typical technology hype cycle, AI / ML solutions must have the following:



Intentional Focus



Repeatable Data Integrity

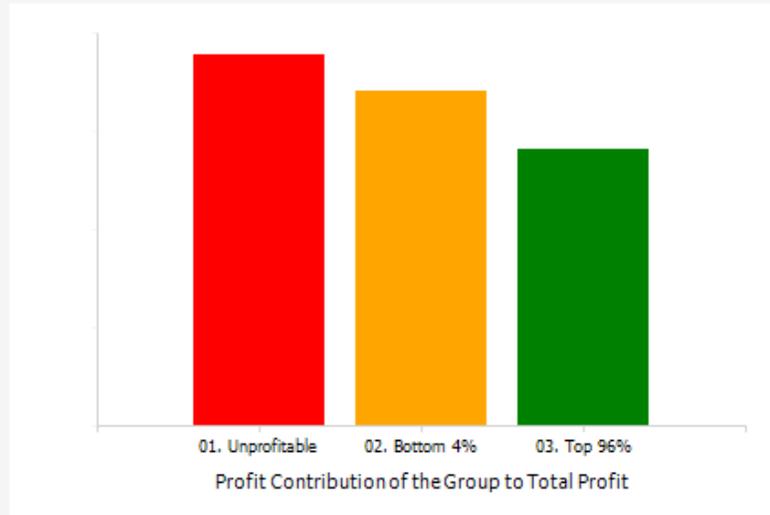


Rapid Actionable Results

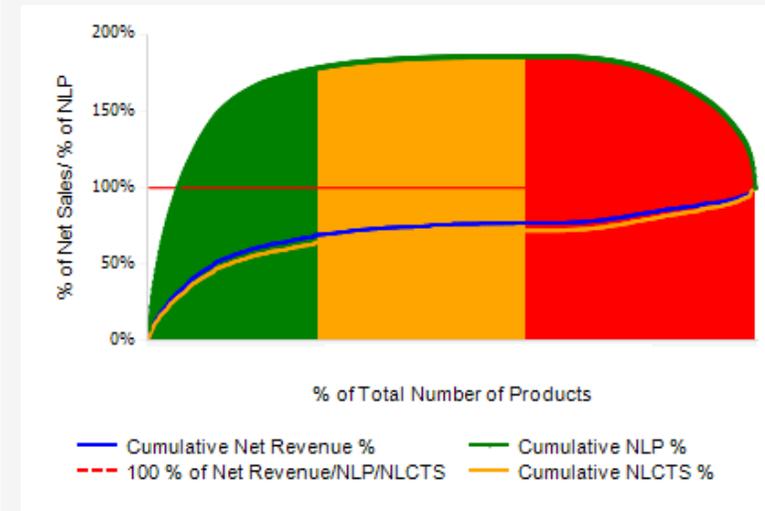
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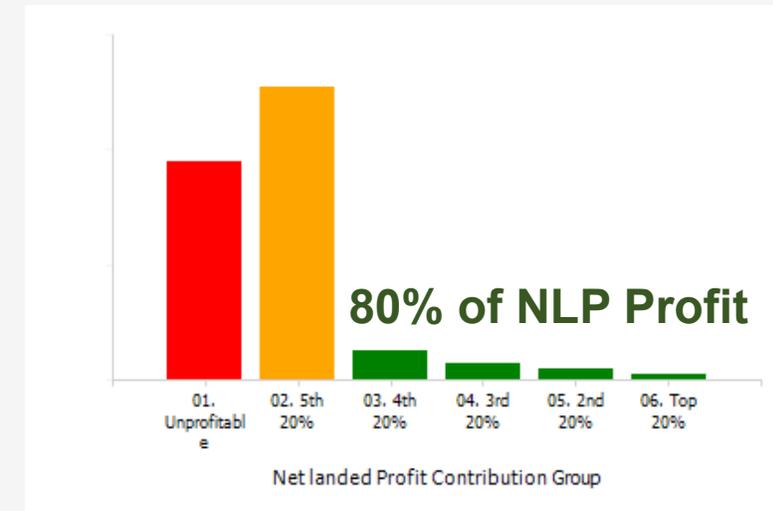
Product Profit Segmentation based on Net Landed Profit (NLP)



Cumulative Percentage of Sales, Net Landed Cost, and Net Landed Profit (NLP)



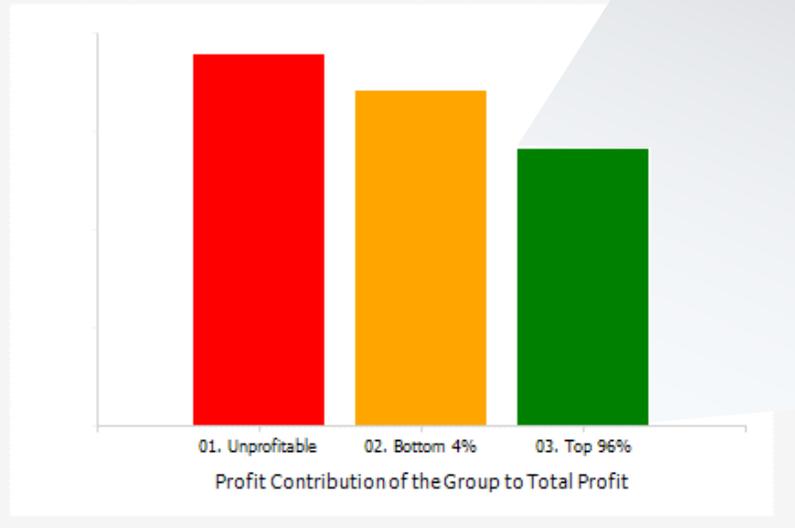
Product Grouping based on Net Landed Profit (NLP) Contribution



HMTX'S APPLIED AI / ML SOLUTION



Product Profit Segmentation based on Net Landed Profit (NLP)



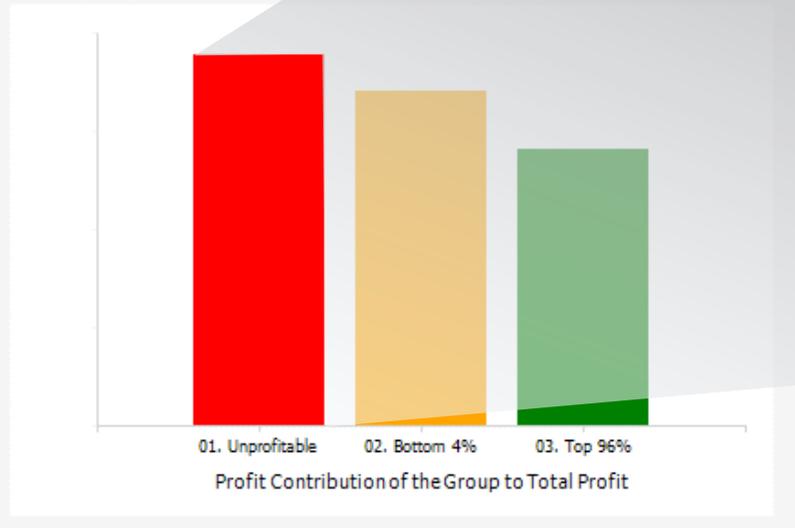
Product Profit Segmentation Group	Products and Product Division	Net Revenue	Net Landed Profit (NLP)	NLP Margin	Rank Net Revenue	Rank NLP
03. Top 96%	# of SKUs				-	-
	NLP Scorecard			●	2	1
	NLP Scorecard			●	3	2
	NLP Scorecard			●	4	3
	NLP Scorecard			●	5	4
	Transitioning SKU			●	6	5
	NLP Scorecard			●	7	6
	NLP Scorecard			●	8	11
	NLP Scorecard			●	9	20

INSIGHT
 This product is being transitioned but is the 5th largest contributor of Net Landed Profit

HMTX'S APPLIED AI / ML SOLUTION



Product Profit Segmentation based on Net Landed Profit (NLP)



Product Profit Segmentation Group	Products and Product Division	Net Revenue	Net Landed Profit (NLP)	NLP Margin	Rank Net Revenue	Rank NLP
03. Top 96%	# of SKUs				-	-
02. Bottom 4%	# of SKUs				-	-
01. Unprofitable	# of SKUs				-	-
				●		
	NLP Scorecard			●	82	546
	NLP Scorecard			●	78	545
	NLP Scorecard			●	134	544
	NLP Scorecard			●	85	543
	Highest Revenue SKU			●	1	542
	NLP Scorecard			●	39	541
	NLP Scorecard			●	204	540

INSIGHT
 Number 1 SKU in Net Revenue is unprofitable and ranked 5th worst

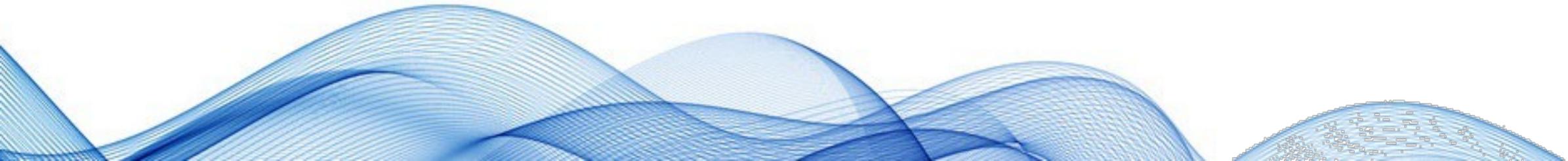


“Level of detail down to location and spec ... at a level never seen before”

HMTX'S APPLIED AI / ML SOLUTION



“This new capability will provide specific, cross-functional opportunities to deliver bottom line improvement opportunities on an ongoing basis.”



TAKE-AWAYS

- Internal collaboration of C-Suite
- Adoption of AI/ML into actionable applications in the real world
- Monthly refresh - see what strategies are working, new or adjustments to be made



“This project has been a perfect example of taking this new complex frontier of AI and boiling it down to a level of actionable results.”



Trusted



Accurate



Specific



Repeatable

= ACTIONABLE

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Chris Gaffney
Managing Director, the
Supply Chain and Logistics
Institute

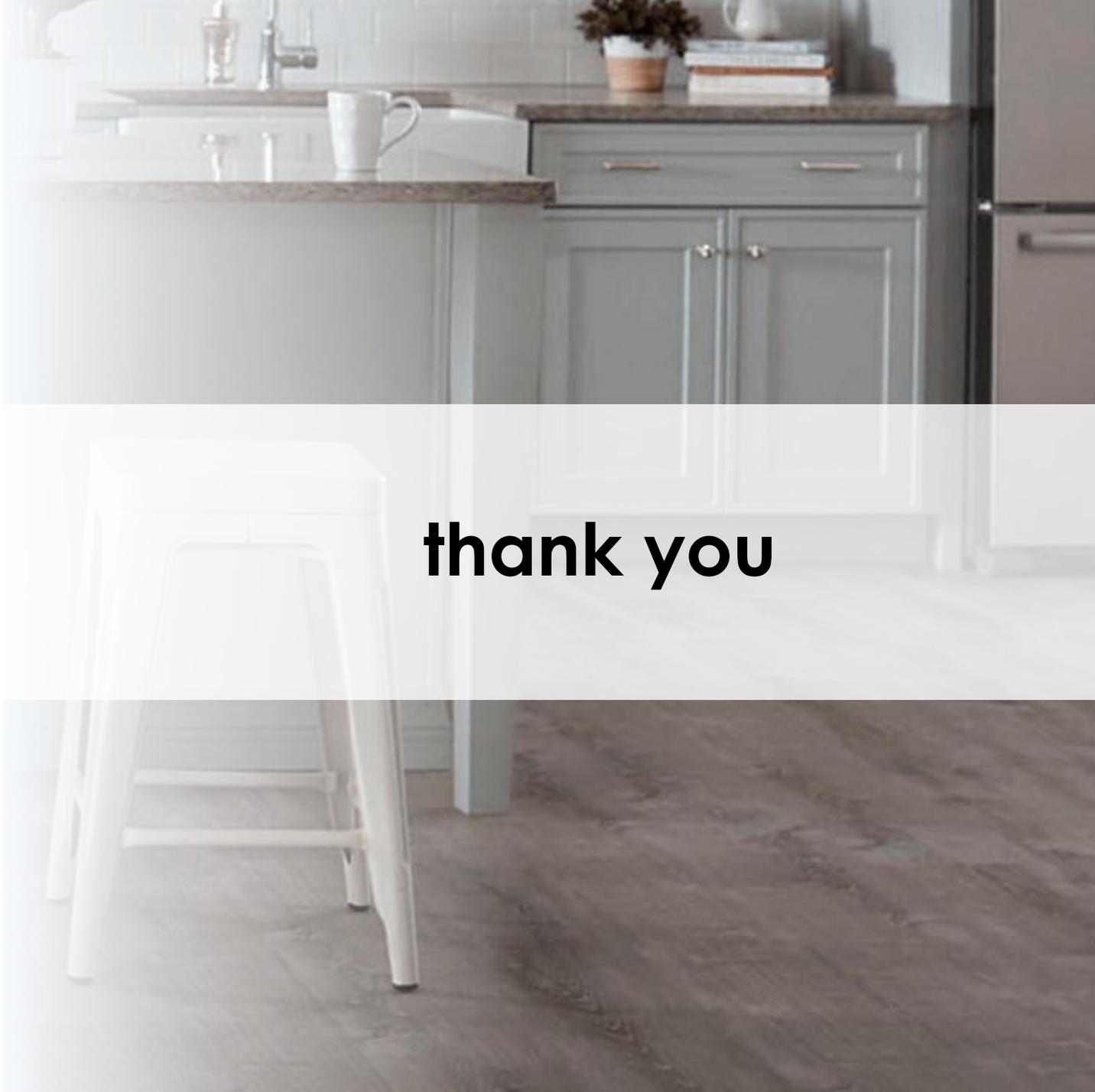


Brian Greene
CSCO
bg@hmtx.global



Richard Sharpe
CEO
rsharpe@ci-advantage.com

Competitive **insights**
www.ci-advantage.com



thank you

COMPETITIVE INSIGHTS USE OF AI / ML

- ☐ Product Insights
 - Product Segmentation
 - Product Scorecard
- ☐ Customer Insights
 - Customer Segmentation
 - Customer Scorecard
- ☐ Channel/Region Insights
 - Channel Analysis
 - Regional Analysis
- ☐ Supplier Insights
 - Supplier Segmentation
 - Supplier Scorecard
- Advanced
- ☐ Portfolio Insights
 - Portfolio Analysis
- ☐ Pricing/Discount Insights
 - Revenue Analysis
- ☐ Inventory Insights
 - Inventory Rationalization
 - Inventory Reduction
- ☐ E2E Analysis Insights
 - Actionable Variances
 - Products
 - Customers
 - Actionable Variances Scorecard
 - Products
 - Customers



Analytics-as-a-Service Cloud Solutions powered by **Machine Learning and Artificial Intelligence**

- Data Validation to learn hidden patterns in the data
- Customer/Product Segmentation
- Customer/Product Advanced Analysis
- Customer/Product NLP Analysis