

L'Oréal's Journey to Inventory Optimization Excellence



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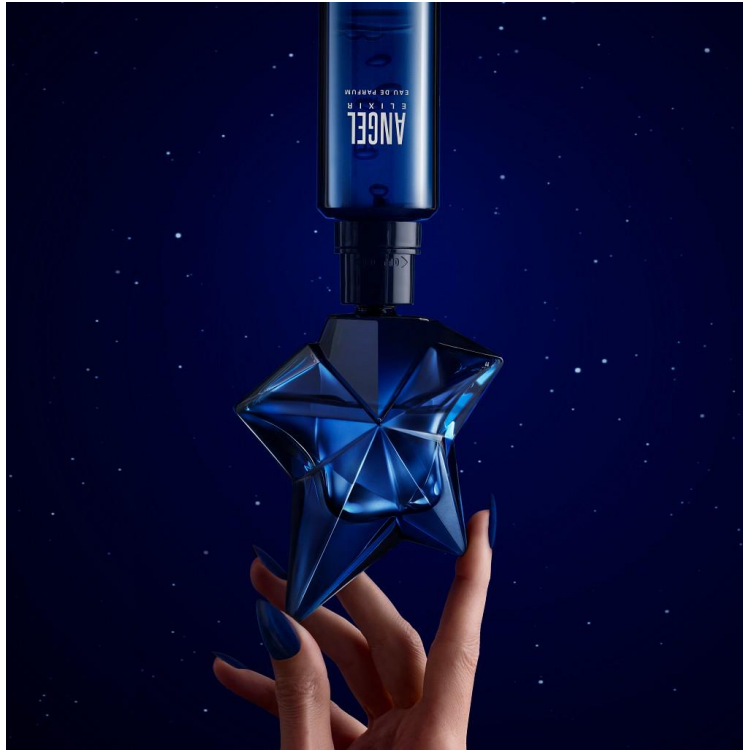
Bill Benton

Co-founder





At L'Oréal, we share
a common purpose:
Create the beauty
that moves the world



Our mission

We create **innovative, inclusive, and sustainable beauty** together with our **business partners** by designing, developing, sourcing, manufacturing and distributing products and services **all over the world**.

We are **consumer-oriented**, and act responsibly all along **the value chain**.

We seek out the most agile and efficient solutions, harnessing the power of **technology** and striving for **excellence** in everything we do.



Creating
all the beauty
products for
all the brands

PRIOR INVENTORY MANAGEMENT SOLUTION: STICK TOOL FOR CALCULATING STOCK PARAMETERS



Excel-based | Developed internally | Quarterly updates

PROJECT MEIO (MULTI-ECHELON INVENTORY OPTIMIZATION)

OBJECTIVE:

Implement a scalable solution that **calculates optimal Safety Stock for FG's and inventory levels** across L'Oréal's network.

GOALS:

- Optimize stock across the network
- Improve customer experience
- Increase service and decrease Excess, Expired, and Obsolete inventory
- Manage complexity
- Establish governance
- Drive simplicity

"Project MEIO is not just a game-changer: it's a paradigm shift in how we approach inventory management. We're moving from estimate to precision, and the results on improving service to our customers and managing our inventory will be transformative."
Michael Wachtel, VP of Supply Chain Data & Analytics, L'Oréal

MEIO ESSENTIALS



Multi-Echelon “echelons” include:

- Distribution levels (e.g., flow from Plant/Supplier to DC to Branch/Store, etc.)
- Levels in a Bill-of-Material (Raw materials to Components to Semi-Finished to Finished/Kits)

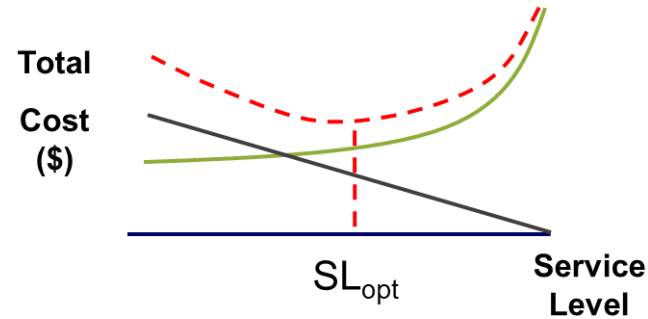
Key Levers & Factors include:

- Stocking/Service Level Policy
- Total Planning Error (e.g., differences between predicted and actual Supply Time, Supply Yield, Demand, Stocking-level Lead-time, etc.)
- Lot size & total inventory coverage
- Critical paths & where-used density (e.g., hourglass, wedge, pyramid)

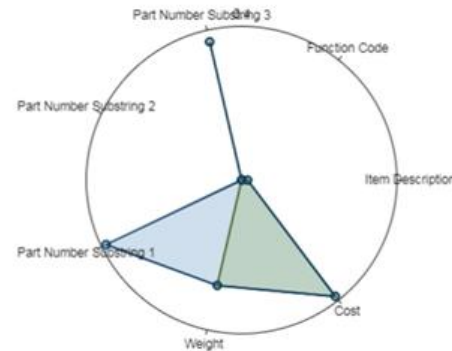
Optimization Trade-off Parameters:

- Service Level
- Working Capital
- Activity &/or Set-up Costs

Three Examples of Ways MEIO Makes Better Inventory Recommendations

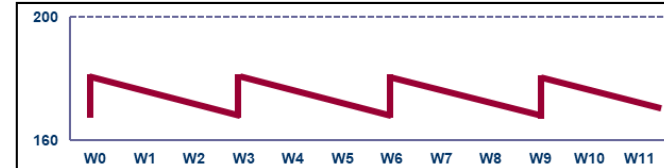


Optimize service and inventory carrying costs by SKU

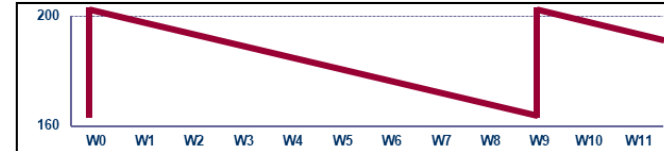


“Nearest Neighbor” AI functionality for launches

Possibility of Stock-out = Once Every 3 Weeks



Possibility of Stock-out = Once Every 9 Weeks



Total inventory analysis when calculating cut risk

TODAY'S DECISIONS
NEED MUCH MORE
THAN YESTERDAY'S
SOLUTIONS



Composable

Customer-centric

Expertise

Traditional MEIO	AI-Optimized MEIO with GAINS
Based on Observed Variance (over-stating error)	Based on Prediction Error Some higher-variance time-series can be lower-error such as seasonal patterns
Assumes Error Level is Given/ Fixed for most inputs	Minimizes Error: Applies Machine Learning (ML) to predict more accurate MEIO inputs (e.g., more-accurate ML-based Lead-time Predictions is integrated)
Opaque / ' Black-Box '	Explicable / ' Glass-Box '
Deterministically Derives Results based on simplifying, broad assumptions (e.g., Variance equals Mean) resulting in reliance on deterministic methods	Uses AI methods (e.g., Genetic Algorithms) and Stochastically Evolve Results iteratively by teasing-out near-global-optimum according to multi-objective fitness function
Often requires Hard Overrides for user engagement	Optimizes with-&-around ' Guardrails ' for greater user adoption with minimized Optimization Loss

SOLUTION OVERVIEW



Key Principles



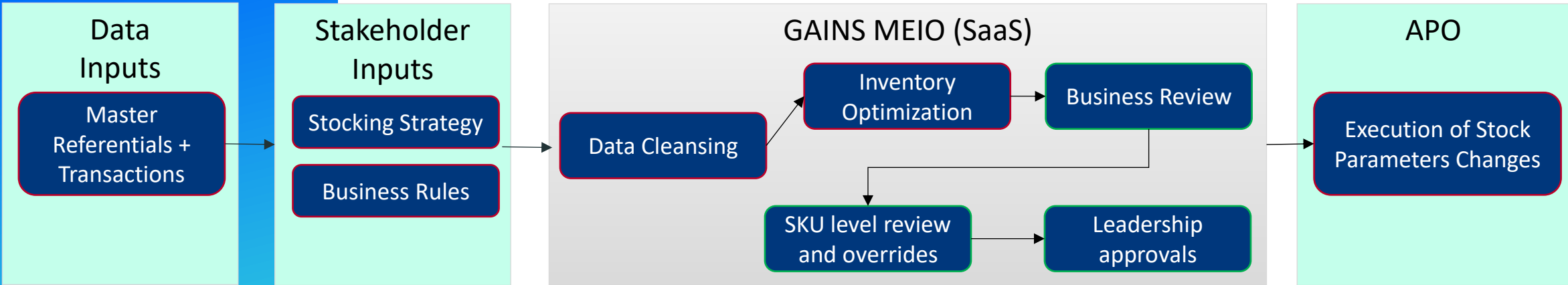
Leverage our Data assets



Use software algorithms to perform complex calculations



Enable Métier management and oversight

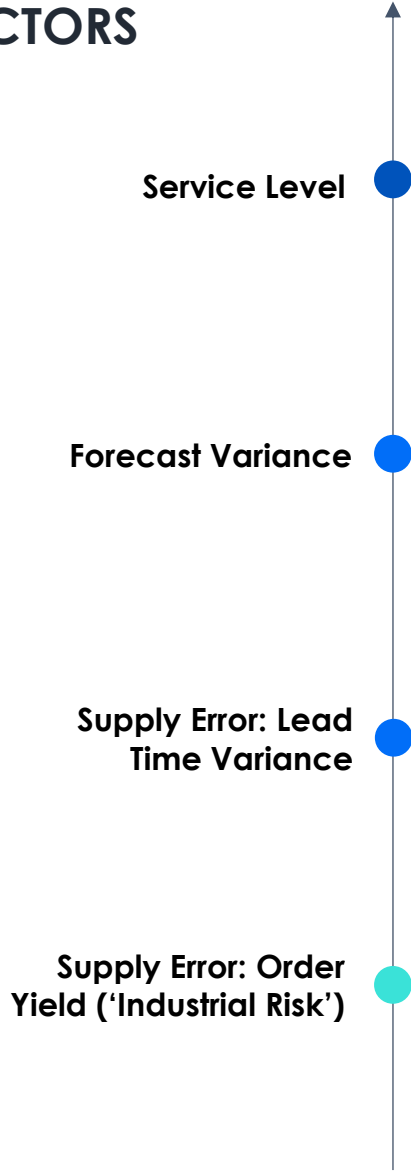


STOCK PARAMETERS: CALCULATION FACTORS



BETTER OUTPUTS:
GAINS analyzes order-level data for a more realistic picture of supply chain risk

SIMPLICITY:
Reduce manual inputs



- Performs simulations to manage **non-normal error distributions**
- Functionality includes **optimization of Service given Inventory Targets**

- Considers **demand frequency and order size within month**
- Data cleansing

- Automatically calculates lead time monthly **based on observed actual**
- Can apply Machine Learning for **Lead-time Prediction**
- Data cleansing

- Automatically calculates Supply Variance **based on predicted versus actual**

ROLLOUT



UNEXPECTED BUT IMPORTANT BENEFITS TO :

- Building on clean master data
- Ready for AI
- Empowering digital decision making

Rollout

- **4 divisions, 100's of planners, completed in less than a year**
 - March 2023: Kickoff with GAINS
 - July 2023: Rollout begins
 - Feb 2024: Exit hypercare; rollout completed



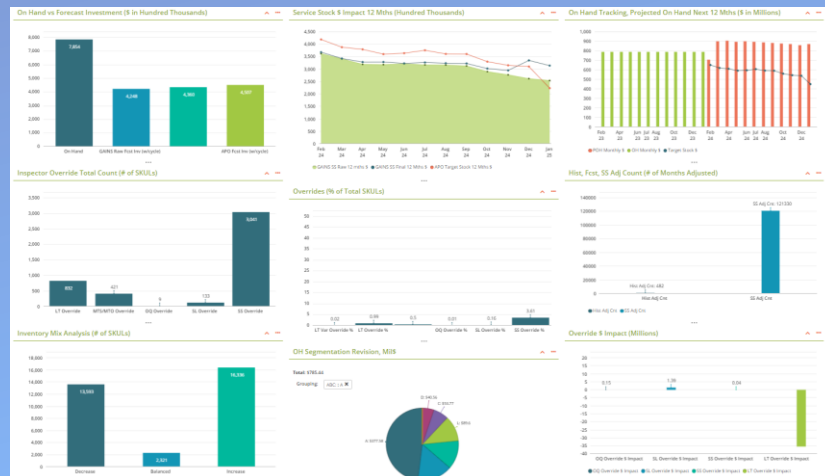
Next Steps



- Tracking Service % trends and Inventory DOS to measure success
- Working with GAINS to track if overrides have helped or hurt results
- Turning on "Nearest Neighbor" functionality to improve launch stock parameter sizing
- Expanding to other L'Oréal countries (*this was the global pilot*)
- Expanding with L'Oréal USA to RM & PM

LESSONS LEARNED

- Data quality is critical
- MEIO is like driving a car – it takes practice to build trust!
- Be prepared to deal with the rocks below the surface



WENT WELL

Innovation and collaboration
Cross-functional Business and IT team
Drive for Simplicity and Harmonization



VALUE

Catalyst for change, driving us towards a more sustainable, data-driven, and optimized supply chain management process



OPPORTUNITIES

Change management
Speed to onboard complex catalogs

CONTRIBUTING TO CONTINUED GROWTH

First Quarter 2024

- **Continued outperformance** in a global beauty market that remained dynamic.
- All Divisions grew with **stellar performances from the Consumer Products and Dermatological Beauty Divisions**
- Continued growth in **both, volume and value.**

Source: <https://www.loreal-finance.com/eng/news-release/first-quarter-2024-sales>



“Embracing MEIO has been a bold step into the future. It’s not solely about improving our results: it also enables our teams to focus on setting the strategy and to optimize the detailed planning.”

Vanessa Clemendot, VP NA Chief Supply Chain Officer, L'Oréal

THANK YOU

L'ORÉAL
GROUPE



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