Solving the Inventory Dilemma:
Cut Costs NOW *and* Improve Service

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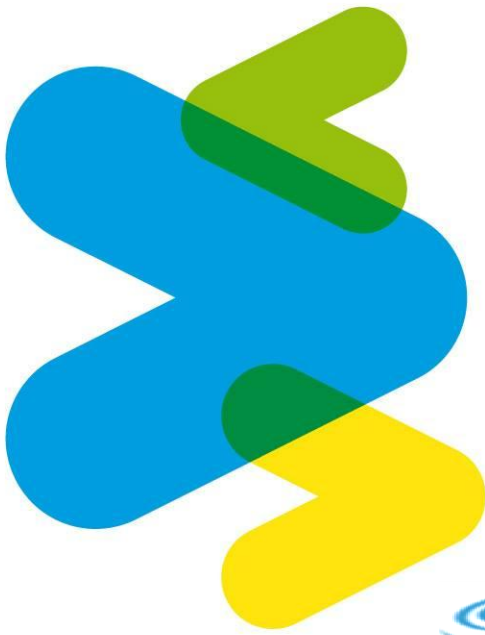Webinar hosted by Smart Software, Inc.
December 6, 2011

About Smart Software

- Leading provider of forecasting, demand planning, and inventory optimization software since 1984
- Primary customer need: find the inventory 'sweet spot'
  - Meet service objectives, minimize stockouts
  - Reduce inventory costs
- Unique advantage – planning for *intermittent demand*
- Thousands of demand & inventory planners worldwide
- SmartForecasts® integrates with leading ERP & Supply Chain software systems

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SmartForecasts Webinar – STM Case study

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December 6th, 2011

Chaîne logistique - GLD

stm

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Who I am

- **Reginald Soubry, p.eng.**
- **Senior Analyst, Material management, Logistics, Montreal Transit Corporation**
- **Professional experience:**
  - *30 years in stock management*
  - *25 years in public transit*
  - *14 years with the Logistics Service*
  - *Last 5 year in stock management system development and performance enhancement*

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What is the STM ?

> **Société de transport de Montréal**

>> *Provides public transit services on the 480 km² island of Montreal*
>> *388 million trips handled in 2010*
>>> *Bus punctuality 86,3% (scheduled time –1 to +3 minutes)*
>>> *Metro reliability: 97.9 % on-time (less than 5 minutes late)*
>> *162 million km travelled by our buses and metro-cars*
>> *1705 buses and 749 metro-cars*
>> *Annual budget (2010): 1.090 B$*
>> *Replacement value of our assets: 14.5 B$*
>> *8,680 permanent employees*

> **2010's Outstanding Public Transit System in North America, according to the American Public Transportation Association (APTA)**

> **2008's Most productive manpower (hrs/car-km) of the 27 largest metro systems in the world, according to the London Imperial College.**

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Where We Were (2008)

> **200,000+ SKUs**

> **33.6 M$ of inventory**

> **Inactive SKUs: estimated value over 10 M$**

> **Overall part availability: 76 %**

> **No way to properly differentiate between insurance, inactive and obsolete parts.**

> **No way to properly identify overstocks.**

> **Reprovisioning parameters: safety stocks, reorder points and reorder lot sizes were, most of the time, determined by a "best guess" from the associates.**

> **Basic forecasting on specific items only.**

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Where We Wanted to Go

> **We wanted to be the best parts provider in the public transit industry. Find the optimal balance between stock level and service level.**

> **Meet 100% of service agreement requirements**
>> *Ex.: 99.5% of parts required for maintenance made available within the time allowed:*
>> *All parts stocked in store: over the counter*
>> *All parts stocked in network: 72 hours*

> **Calculated parameter:**
>> *Stock management parameters based on forecasted demand*
>> *Safety stocks to cover desired service level*
>> *Order points dependant on forecasted demand*

> **Stocks in control:**
>> *All parts classified according to nature and velocity*
>> *No overstocks, No inactive stocks and No obsolete parts*

> **Manage stocks proactively instead or reactively, with the proper tools, processes and people.**

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Challenges and To-Do List

> **Management and managers buy-in on the benefits of proper stock management.**

> **Convincing the associates that "a machine" can properly calculate parameters.**

> **Clean up stocking and provisioning parameters for the 200,000+ SKUs.**

> **Forecasting demand: both regular and intermittent (random)**

> **Transferring control of the reprovisioning parameters from manual to calculated, without prior major data scrub (cleanup) and without significant financial or operational impact.**

> **Replenish items where stock levels were insufficient.**

> **Dispose of excess, inactive and obsolete stocks.**

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The Results

For the items that were present at the beginning of the project:

> **Overall part availability: 94% (+18%)**

> **Inventory reduction of 4.1 M$ (-12%) to 29.2 M$**

> **Inactive stocks reduced to 7.8 M$ (-24%)**

> **Item demand estimation for major RFPs prepared with the help of the demand forecasting tool.**

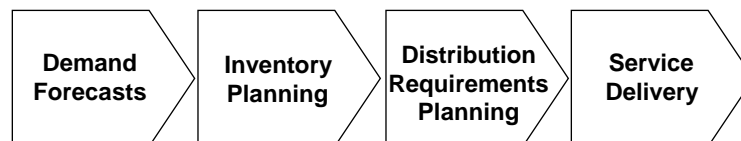MOUVEMENT COLLECTIF   stm   9

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Critical Enablers

> **Knowledge and understanding of the basic classical calculations and the influence of stock parameters on them.**

> **A way to forecast lead-time demand for both regular and intermittent demand items.**

> **A way to recalculate stock parameters.**

> **An improved "in-house" stock management system with re-modeled re-order point (ROP) processes that take better account of economic lot sizes, minimum stocks, maximum stocks.**

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Lessons Learned and Keys to Success

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- Clear objectives and the priorities.
- Plan the work in stages and make sure you have measurable and reasonable targets as well as a way to measure how close you are to the bulls-eye at each step. Have a backup plan.
- Clear definition of everyone's role and buy-in at all levels: Management, managers, personnel and suppliers.
- Make sure you have the bodies to do the work properly on the floor, that they are informed and trained and manage the change
- Involvement and teamwork at all levels and all stages of the project.
- Plan the work, Work the plan and Have the right tool set.
- Don't over think it !

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Demand Forecasting: Where the Supply Chain Starts

Demand Forecasts → Inventory Planning → Distribution Requirements Planning → Service Delivery

Demand forecasts drive the supply chain, but they're nearly impossible to produce when demand is intermittent.

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Intermittent Demand Example
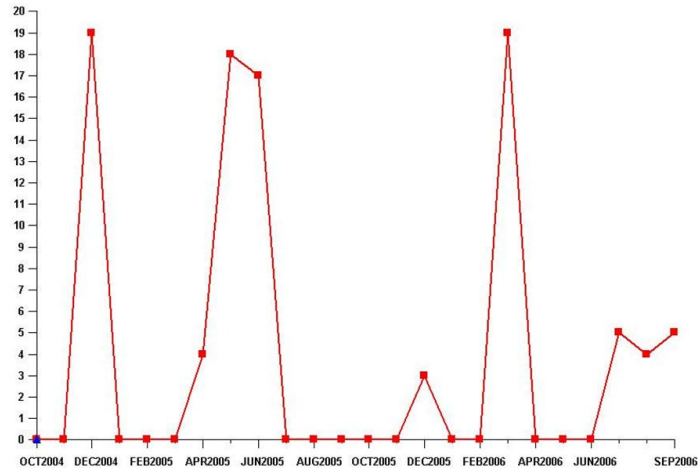
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Intermittent Demand

- What is "Intermittent Demand"
  - "slow-moving," seemingly random requirements for parts or finished goods
  - Demand history – large percentage of zero demand values
- Generally considered difficult or nearly impossible to forecast
- Especially common among:
  - Service Parts Operations – 70% of items or more
  - Equipment / Vehicle / Facility Maintenance
  - Industrial Tools and Other Capital Goods Manufacturers

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Intermittent Demand Problem

Consider – What comes next:

a)	10	20	30	40	50	60	____
b)	50	100	50	100	50	100	____
c)	2	4	8	16	32	64	____
d)	0	18	0	0	6	27	? ? ?

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Finding the Inventory "Sweet Spot"

Reduce Inventory

The Inventory Sweet Spot

Increase Service Levels

The minimum amount of inventory required
over a specified lead time
to meet a desired service level
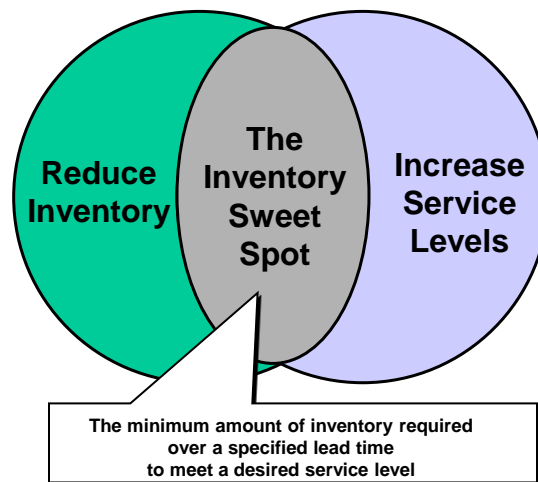
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Best-in-Class Inventory Forecasting

Use a *service level driven* approach (SLD)

- Define service level requirements by item / product group
- Understand financial implications:
  - Cost to achieve the goal
  - Stock-out pain of missing the goal
- Find the optimal inventory allocation
  - Strategic decision: service level / financial trade-offs
  - Identify inventory excess, opportunities for service improvement
  - CFO, VP of Sales, Director of Operations/Materials
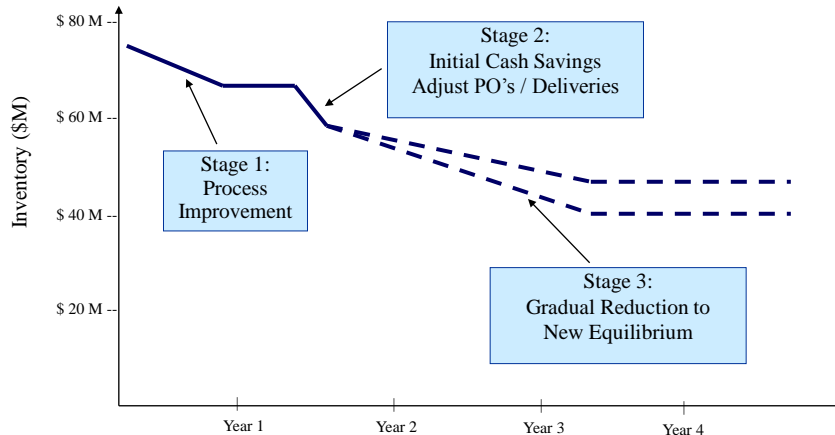- *Don't chase the forecast*

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Pillars of an effective Service Level Driven (SLD) Process

- Communication across stakeholders – Finance, Sales, Operations
- Inventory classification
- Lead-time measurement
- Calculation of forecast uncertainty
- Automatically process thousands of parts
- Compare *desired* vs. *achieved* service level

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Inventory Cost Reduction Path

Stage 2:
Initial Cash Savings
Adjust PO's / Deliveries

Stage 1:
Process
Improvement

Stage 3:
Gradual Reduction to
New Equilibrium

Inventory ($M)

$ 80 M
$ 60 M
$ 40 M
$ 20 M

Year 1   Year 2   Year 3   Year 4

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Getting Started - Validate the Opportunity

- You can do this in 2-3 weeks – requires:
  - Historical parts consumption data for 36 months (or periods)
  - Existing inventory levels & parts on order
- Demonstrate Opportunity:
  - Select representative subset of parts & service levels
  - Generate forecast, calculate safety stock requirements
  - Compare recommended inventory stock vs. existing levels
- Demonstrate Vendor Credibility:
  - Provide solution vendor with historical data – hold back last 2 months
  - Ask vendor to forecast at your desired service level
  - Compare: accuracy hitting service level, and cost of inventory
    required

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Discussion

- Questions & Answers

- For more information or a copy of today's presentation, please contact:

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  Learn more at www.smartcorp.com

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**Solving the Inventory Dilemma:
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Thank you for joining us!

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