

SOURCEREE

*“Innovation in Supply
Chain Thinking”*

Sense & Respond Logistics

Adaptive Enterprise Transformation:
Sense and Respond Seminar - Washington 2003

Leveraging Technology for New Advantages

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What This is All About!

- This presentation will tell you the following:
 - Why adaptive supply chains can evolve from commodity technologies
 - What experiences informed our design
 - What we built as a result
 - How it is being used



Introduction

- Defence Logistics operations are challenged as never before
- Need to support unpredictable deployments
- Need to sustain forces in theatre for an indeterminate period of time
- Need high degree of robustness i.e. “survivability”
- This implies that the physical and logical Logistic support networks need to be:
 - Agile
 - Adaptable
 - Collaborative
 - Coherent
 - Appropriately accessible



Solution Reference Points

- There are strong parallels with industries facing similar challenges
- These challenges 'inform' a specific architectural approach
- Important preliminary lessons have been learned from tackling similar problems in international logistics
- The solution must rely heavily on 'communities of trust' and an iterative 'step by step' approach, due to the inappropriate design of prevailing applications

Industry Parallels

- In some industries supply chains are increasingly:
 - Outsourced – globally (especially high technology manufacturing)
 - Dynamic
 - Inclusive of many parties
 - Some of whom are unknown at moment of engagement...
 - Involve collections of disparate systems
- Global transportation infrastructure does not provide end-end visibility
- Many 'gaps' in information flow
- Supply chain visibility is the essential platform for providing the data to '**sense**' and the context to '**respond**'



Challenges

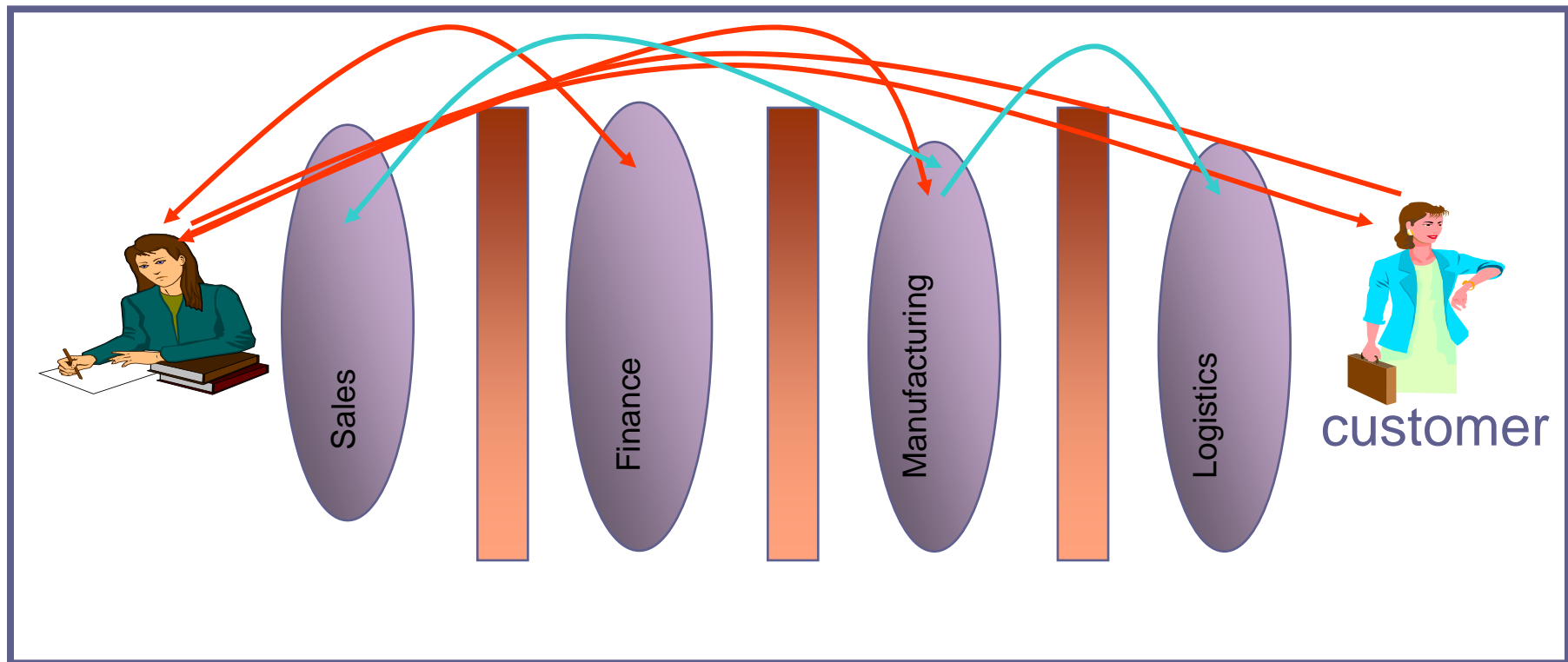
– Applicable to both Commercial AND Military Logistics

- Existing processes designed for speed of throughput with limited opportunities for corrective action
- Different nomenclatures and taxonomies exist across the community
- Data quality is poor
- Infrastructure is often non-existent or inappropriate
- Language variances



Functional Excellence As a Priority

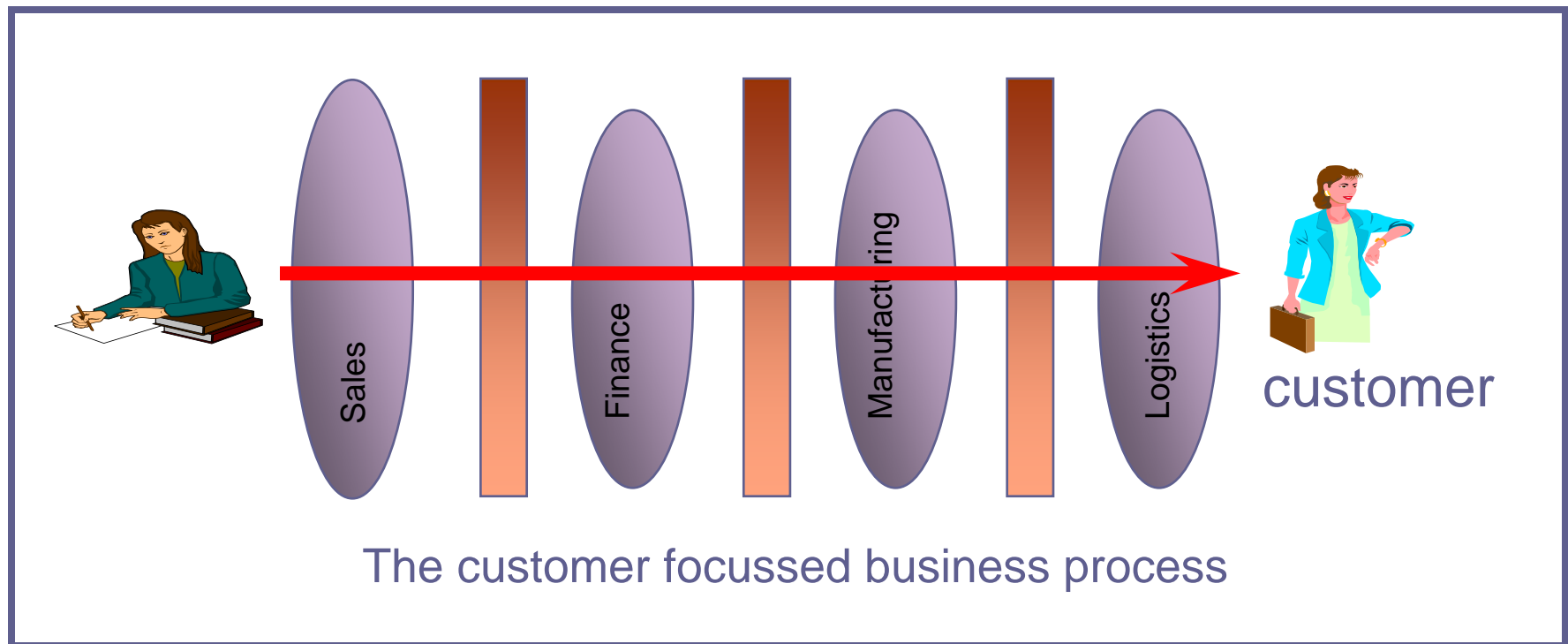
Existing Silo oriented organisations ignore the value chain whilst focusing on departmental performance



The customer seldom benefits!

Organisational Excellence As a Priority

- Focussing on Process ensures consistency and improves internal coordination (**good!**).



- But it also inhibits adaptability and agility (**bad!**)

The Benefit of Experience

- Our Solution has been designed from an experience base informed by many years of:-
 - Managing Uncertainty
 - Reacting to the Unexpected
 - Continuously Creating Options

Whilst continually seeking to exploit low cost, commodity, technologies
in innovative ways!



Solution Characteristics

- To provide end-end visibility in supply chains, solutions must address following problems
 - Nomenclature variances
 - Hierarchy aggregation/desegregation for Orders/Inventory etc.
 - Community management and security
- Connect a broad set of data sources
- Hold the data 'in context'
- Pro-Active event management must be inherent to the platform
- Be unobtrusive and neutral to existing systems and procedures
- Designed as platform to ultimately support intelligent 'Agents'



Sourcerees Existing Solution...

- Unique Data Model supports the huge variety of Supply Chain activities and processes
- Resolves nomenclature variances
- True 'end-to-end' visibility – Raw material to final delivery
- Comprehensive role-based community administration and security
- Does not attempt to duplicate any existing application functionality
- Architected to be extensible and scalable
- Can be changed 'on the fly' without stopping the system
- Connects any and all data sources in a community – Apps, RFID etc.
 - Via high performance, real-time, transaction bus
- Collaborative by design – Any party, Any role

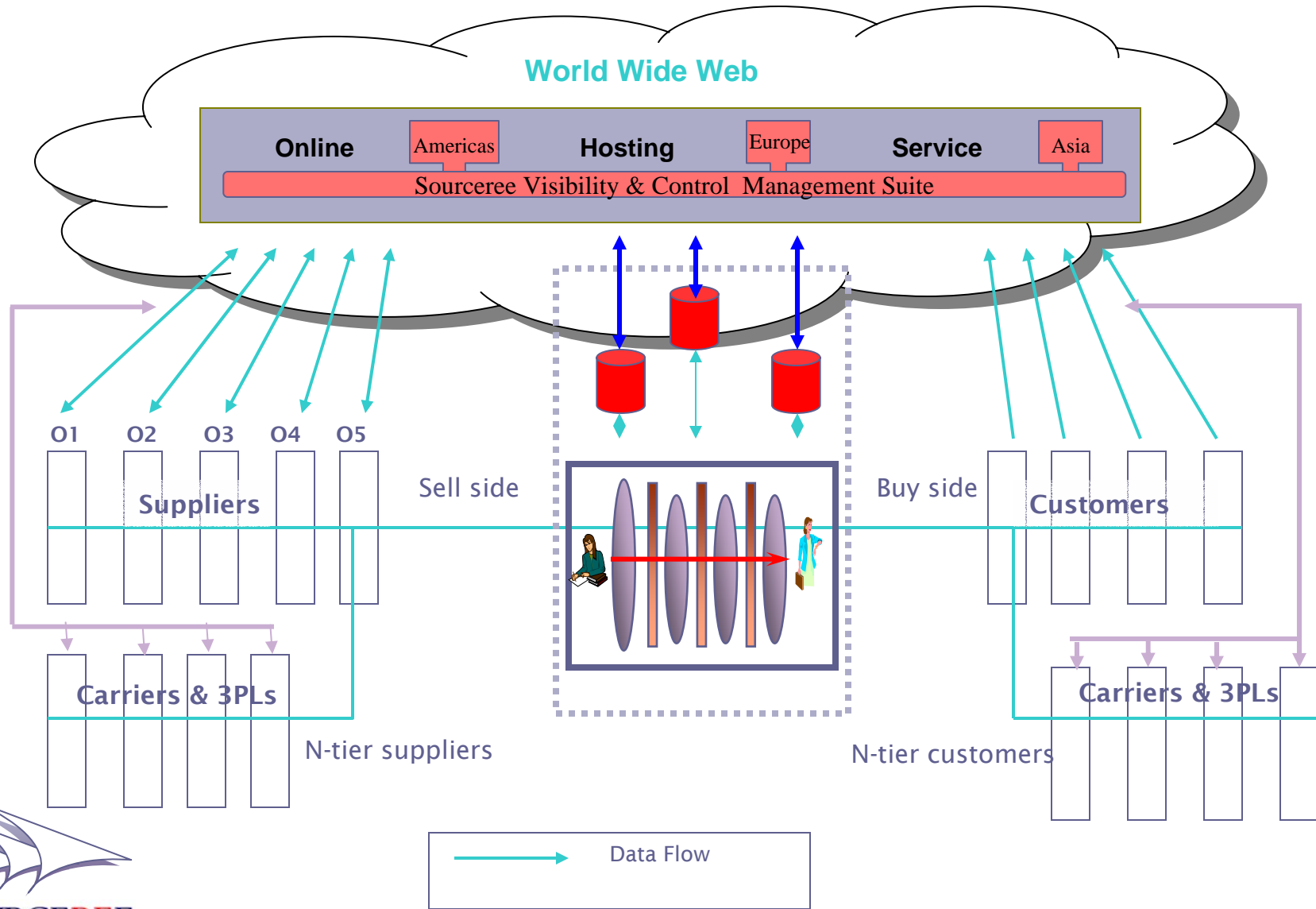


Architecture – ‘snapshot’

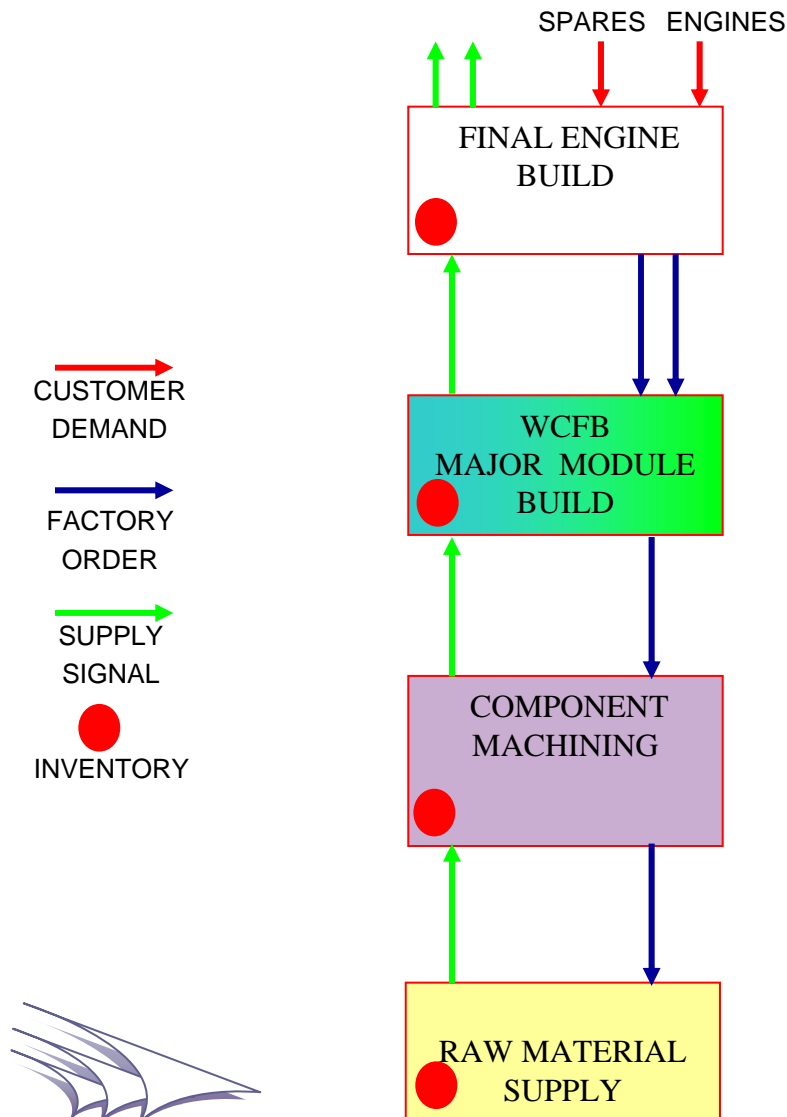
- Web enabled ‘n-tier’ architecture
- Built on J2EE Framework
- Distributed infrastructure
 - Database and applications
 - Separation of Services
- Real-time
 - Data available immediately
- Scalable & Available
 - Hardware
 - Software
- Layered application architecture
 - Encapsulation
 - Separation of concerns
 - Reusable



Connected Data = Visibility

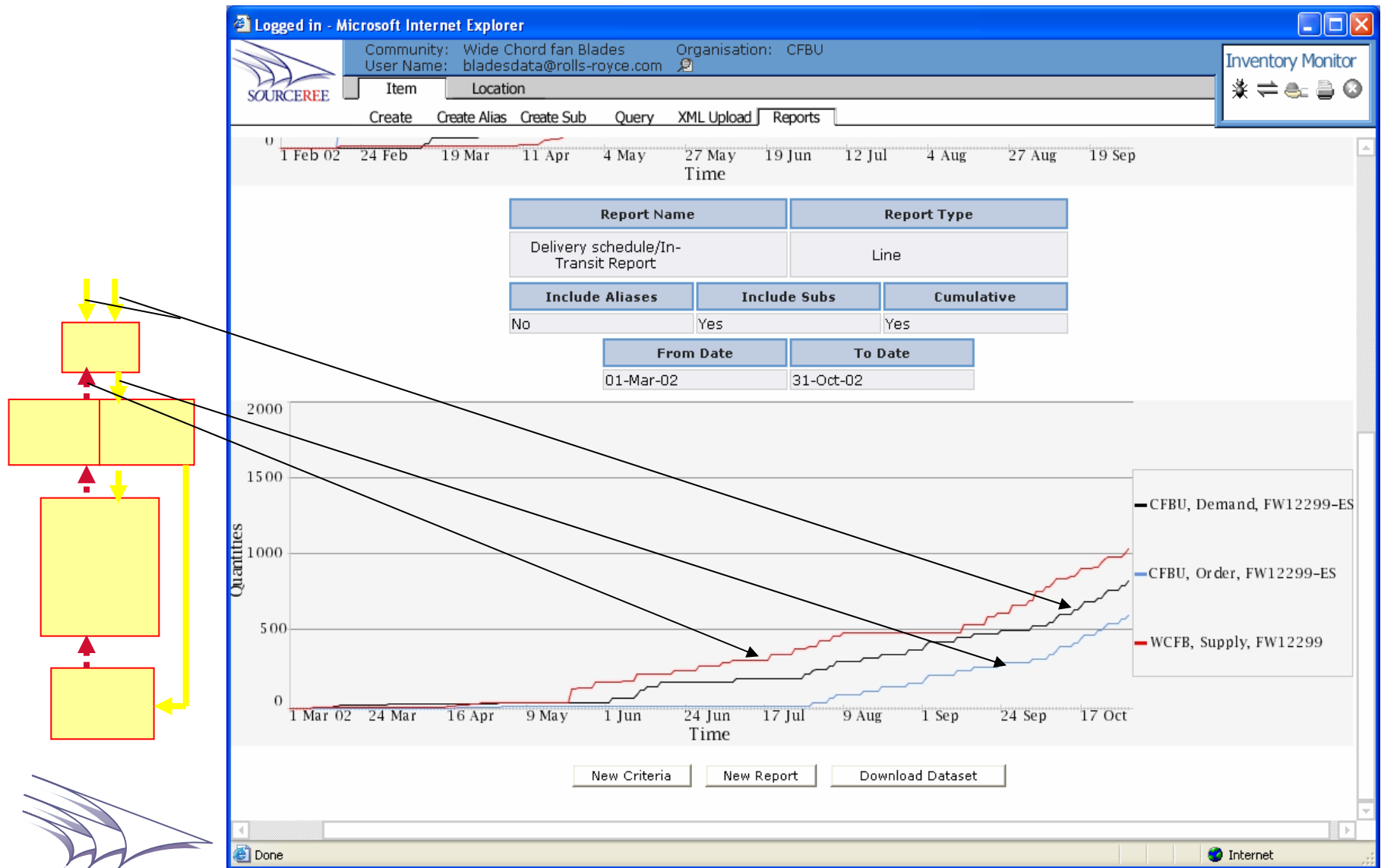


The generic buy-side supply chain process is simple, but there are problems...



- **Delays to Final Engine Build**
 - **Target 40 Days / Actual 120 Days**
- **Demand Cascades Fail**
- **Shortages**
- **Excess Inventory**
- **No Visibility**
 - **Demand**
 - **Supply**
 - **Inventory**
- **Volatile S/D Signals Promote Distrust of the Process**

That visibility shows demand cascade imbalances...



...made worse by excess inventory in the 2nd & 3rd Tiers!

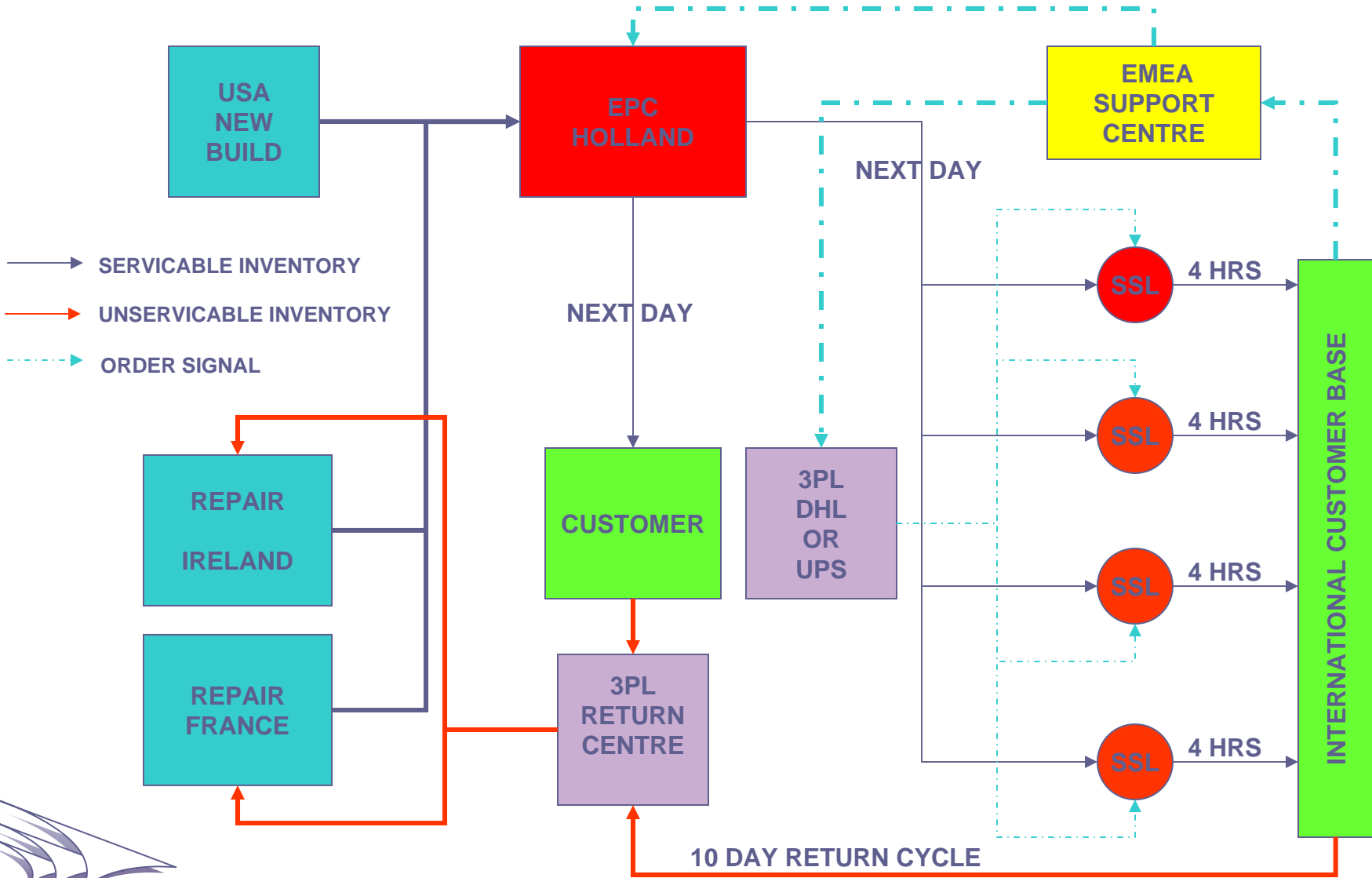
The screenshot shows a web browser window titled "Logged in - Microsoft Internet Explorer" displaying the "Inventory Monitor" application. The user is logged in as "bladesdata@rolls-royce.com" from the "Wide Chord fan Blades" community. The application shows a table of "Item Inventory" with the following data:

Location Owner	Location Type	Latest Status Location	Item Quantity	Aliases quantity	Sub quantity	Total quantity	Last update	Select
CFBU	Warehouse	Goods In	0	0	77	77.0	2002-01-29 11:04:00.0	<input type="checkbox"/>
Callender	End of Line Store	Finished Goods	0	0	66	66.0	2002-01-29 17:15:03.0	<input type="checkbox"/>
Callender	Factory	QI	0	0	0	0.0	2002-01-15 17:22:47.0	<input type="checkbox"/>
Callender	Factory	Scrap	0	0	0	0.0	2002-01-15 17:25:09.0	<input type="checkbox"/>
Callender	Factory	WIP	0	0	308	308.0	2002-01-29 17:20:11.0	<input type="checkbox"/>
Timet	End of Line Store	Finished Goods	0	0	30	30.0	2002-01-29 17:32:51.0	<input type="checkbox"/>
WCFB	End of Line Store	Finished Goods	0	0	33	33.0	2002-01-29 11:06:18.0	<input type="checkbox"/>
WCFB	End of Line Store	Spares	0	0	66	66.0	2002-01-29 11:09:01.0	<input type="checkbox"/>
WCFB	Factory	QI	0	0	11	11.0	2002-01-29 16:47:29.0	<input type="checkbox"/>
WCFB	Factory	Scrap	0	0	22	22.0	2002-01-29 16:48:21.0	<input type="checkbox"/>
WCFB	Factory	WIP	0	0	500	500.0	2002-01-29 16:45:31.0	<input type="checkbox"/>
WCFB	Warehouse	Goods In	0	0	110	110.0	2002-01-29 17:09:38.0	<input type="checkbox"/>
TOTAL Inventory			0.0	0.0	1223.0	1223.0		

The diagram on the left shows a hierarchy of yellow boxes. Red arrows point from these boxes to specific rows in the table, highlighting the 'Sub quantity' values of 308, 500, and 110, which are circled in red in the original image.



GPS EMEA – A case study



Lessons Learned from Implementing a 'Sense & Respond' platform

- ERP solutions alone are the wrong starting point – They impede agility!
- Existing logistics applications are also not designed for this challenge
 - But BOTH are vital as 'nodes' within the solution set itself
- Trust must be developed and cannot be implied
- Work within an architectural framework that engenders 'Shared Awareness', not hierarchical, top down, information flows
- Synchronisation is unrealistic as a goal in the early stages
 - This is impossible to achieve between participants until 'trust' has been established
- Solutions must support collaborative communities, not linear partnerships

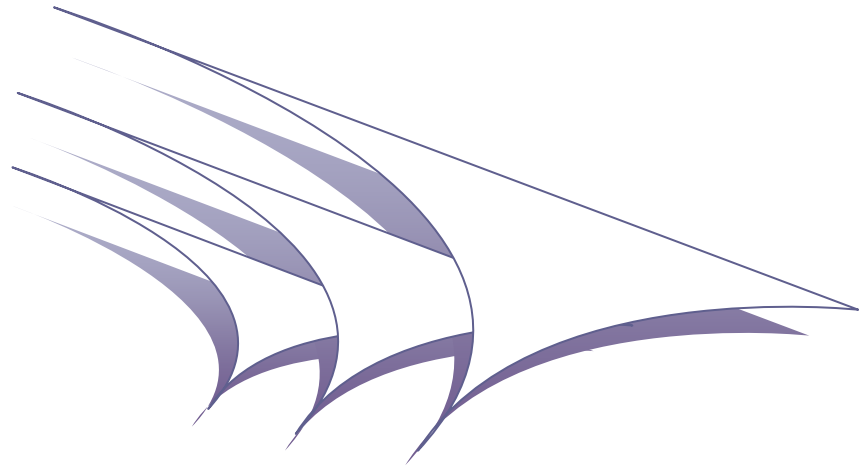
Summary

- A synchronised supply chain cannot be ‘engineered’, but must evolve
- This evolution can be accelerated – and will become self learning
- Trust and collaboration is fundamental
- Culture and habits of supply chain participants need to be recognised
- The data model and architecture must take account of need
- ‘Shared Awareness’ is a goal and not a threat!

Thank You

&

Happy Holidays!



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