

SUPPLY CHAINS OF THE FUTURE

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Berlin 14 May 2003

Objectives

- Not to forecast the future ... or
- To dream about high-tech possibilities! But..
- To find the next steps and the win-win opportunities we can take together
- To think about how to design our supply chains for the future
- To begin to think about our impact on the environment ... and
- To begin discussing ECR for the next 10 years

ECR to date

Value Chain Analysis

Efficient Replenishment

CPFR

Consumer Direct

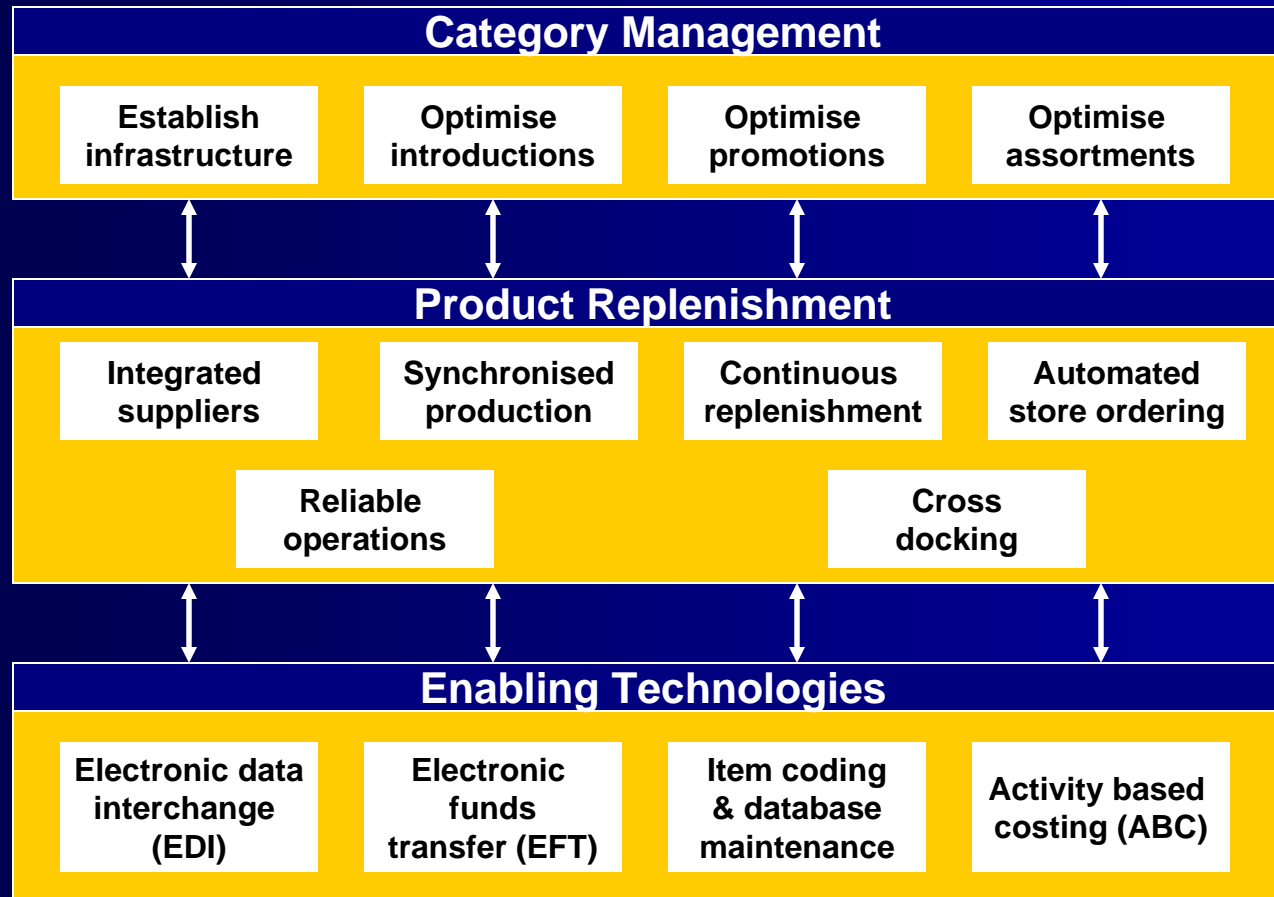
Transport Optimisation

Unit Loads

Integrated Suppliers

Out of Stocks

Shrinkage



Three Approaches

Rocket Science Retailing

Marshall Fisher
Wharton Harvard
Smart Systems

Demand Based Management

Hau Lee
Stanford
Demand Analysis

**Common conclusion –
the way forward is through further
supply chain integration**

Lean Thinking

Daniel Jones
Cardiff Toyota
Operational Excellence

Toyota

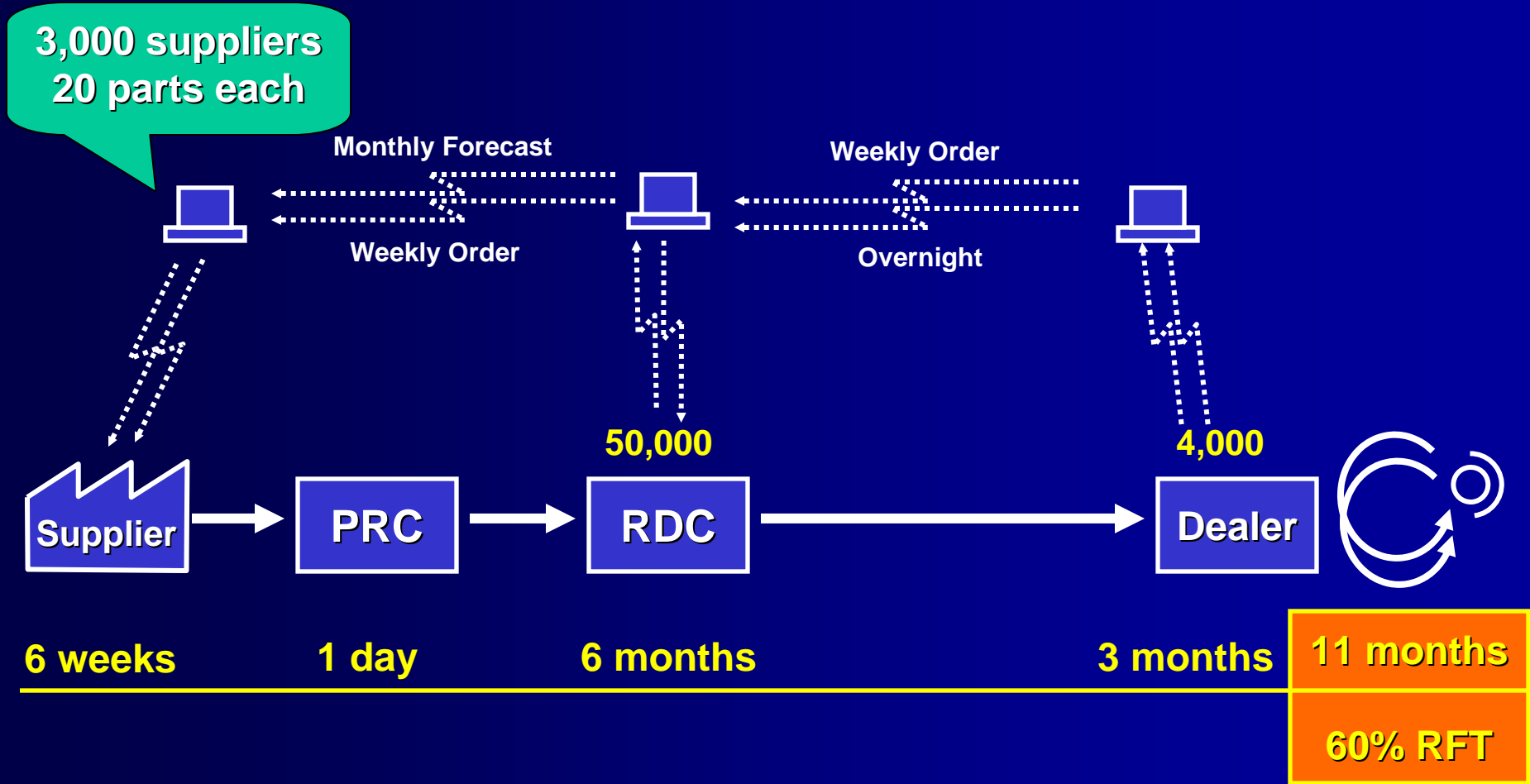
The best example of operational excellence
...on its way to becoming No 1 in autos

“Brilliant process management is our strategy.

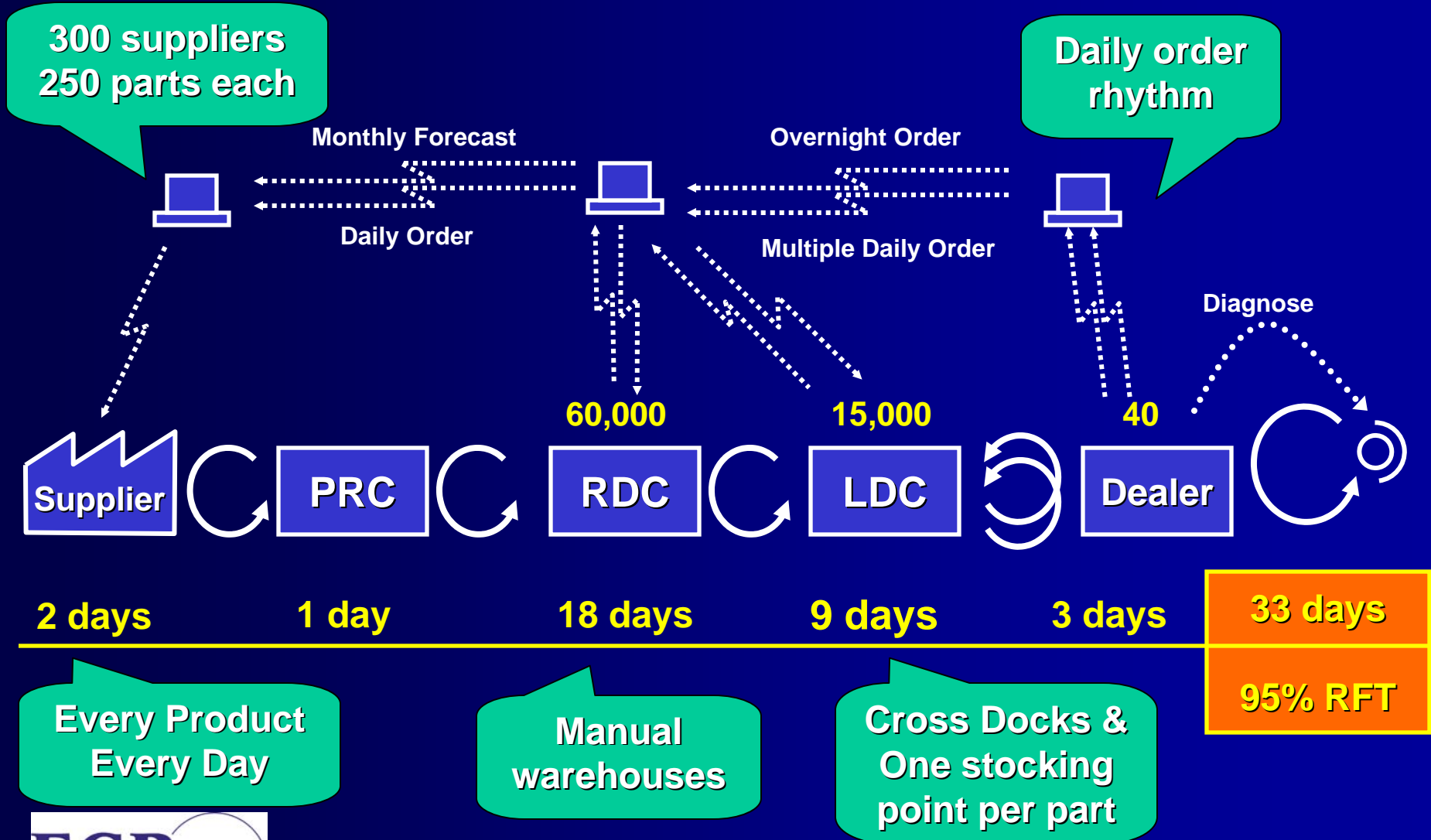
**We get brilliant results from average people
managing brilliant processes.**

**We observe that our competitors often get
average (or worse) results from brilliant
people managing broken processes.”**

Traditional Auto Parts System



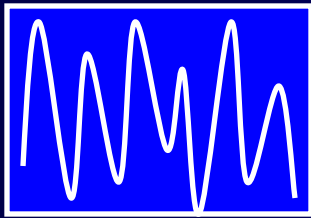
Toyota Auto Parts System



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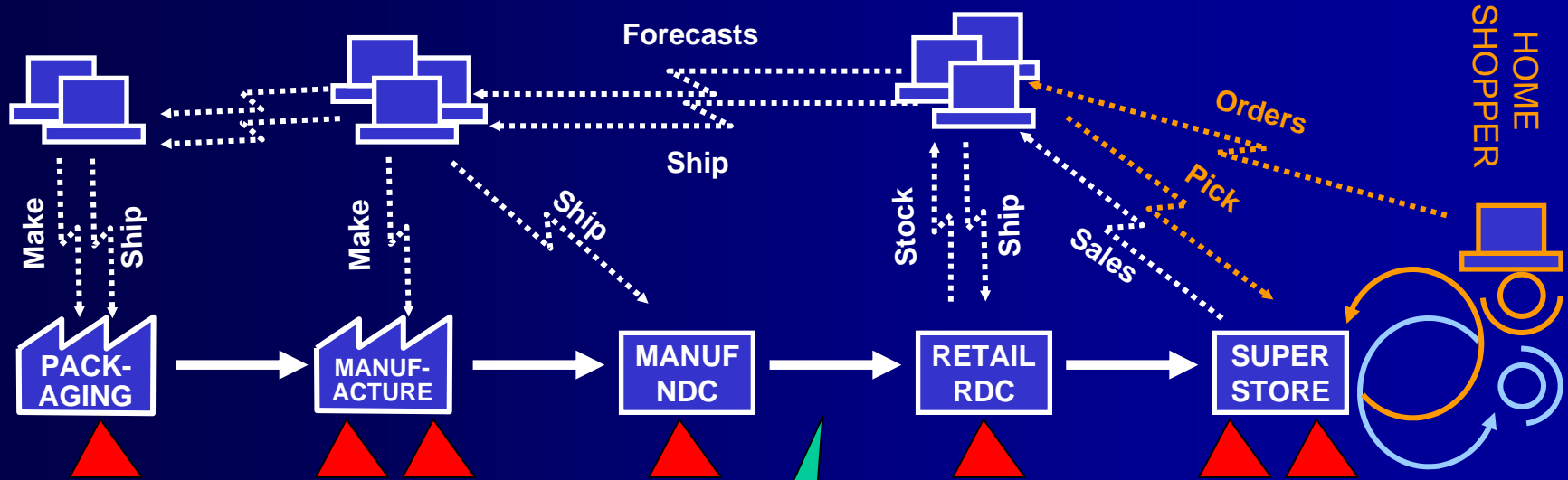
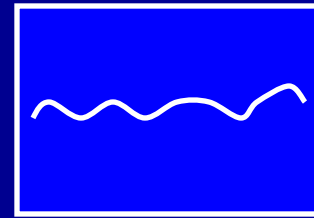
Seven-Eleven Bread





4:1

The Tesco Can



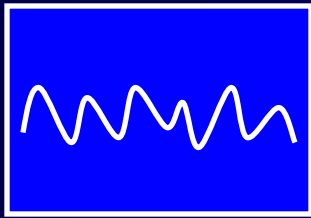
Machines
30-50%
Productive

Trucks
30-50%
Utilised

170 touches
20-60 days
98.5% avail
55% basket

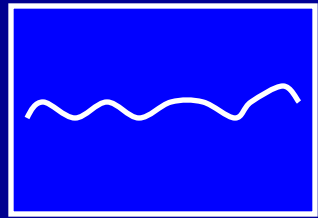


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2:1

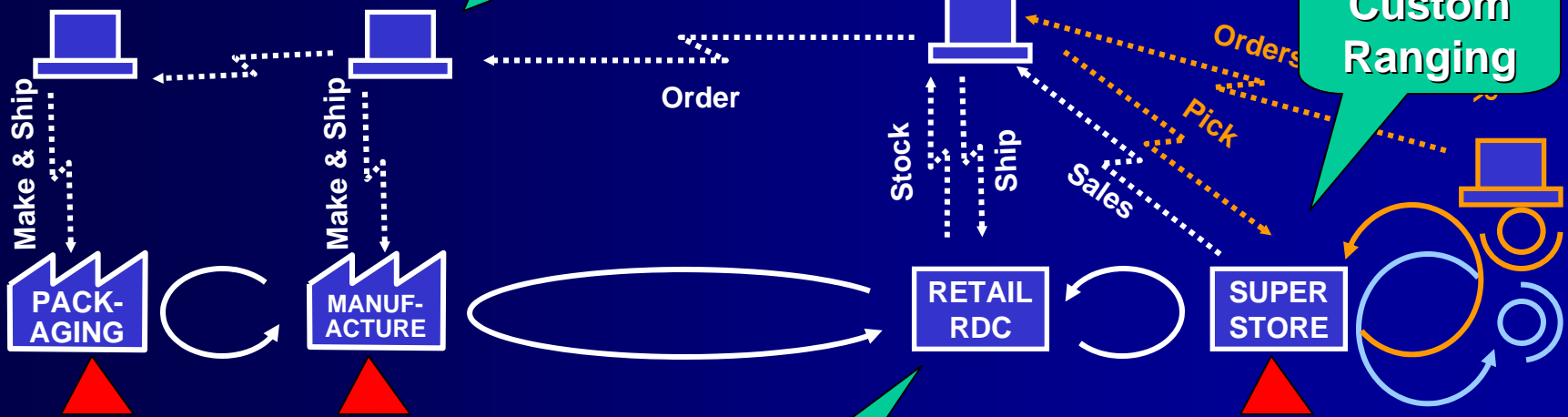
The Flow Can



Daily Scheduling

Continuous Replenishment

Custom Ranging



Every Product Every Day

Cross Dock & Milk Rounds

Co-managed Buffer Stock

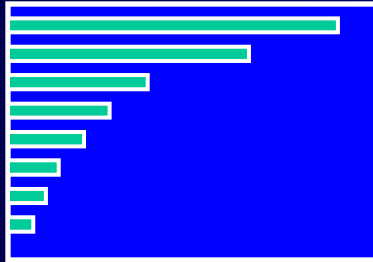
70 touches
5-15 days
99.5% avail
82% basket



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What suppliers can do

Filter your product range



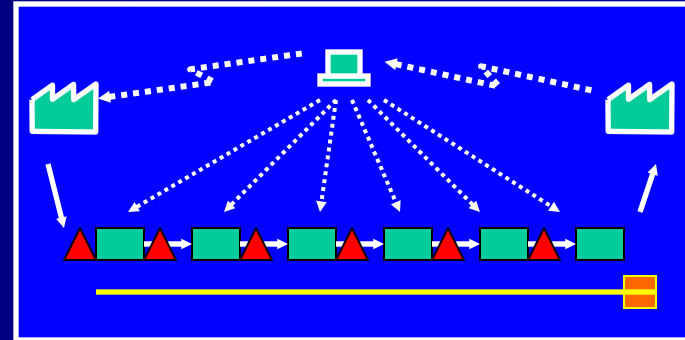
So you can create regular and frequent schedules with variable volumes



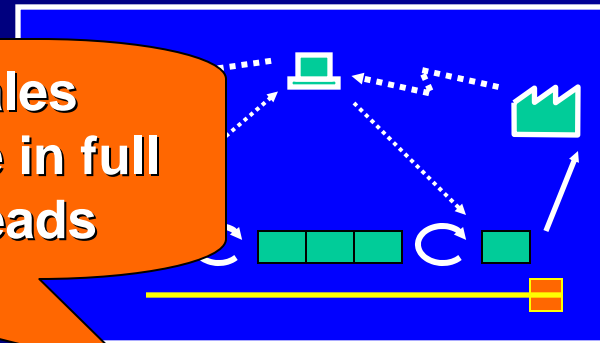
Frees capacity – increases sales
Less inventories – better on time in full
Lower direct costs and overheads



Map your product flows

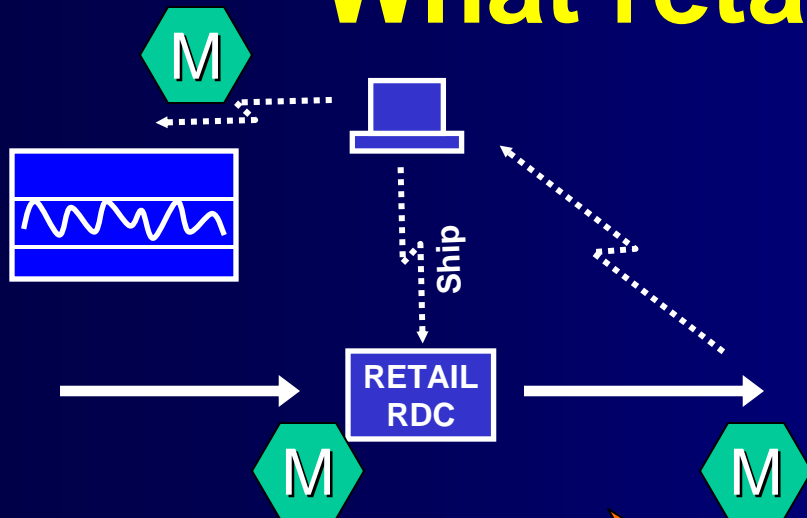


Improve capability and availability so you can create flow and pull



So you can cut time and cost while responding faster

What retailers can do



*Gaps reveal problems
 Problems reveal opportunities
 Pareto them and trace root causes
 Redesign and standardise*

*Likewise for promotion
 Trial, stagger and separate
 Evaluate and redesign the*

Right stock

Who is buying what?

Custom Ranging

Time poor

Rest-aurant

Conv Store

Super Store

Rest-aurant

Conv Store



**Who is responsible for the product?
 Is there a plan for each type of product
 Less fire-fighting – more creativity**

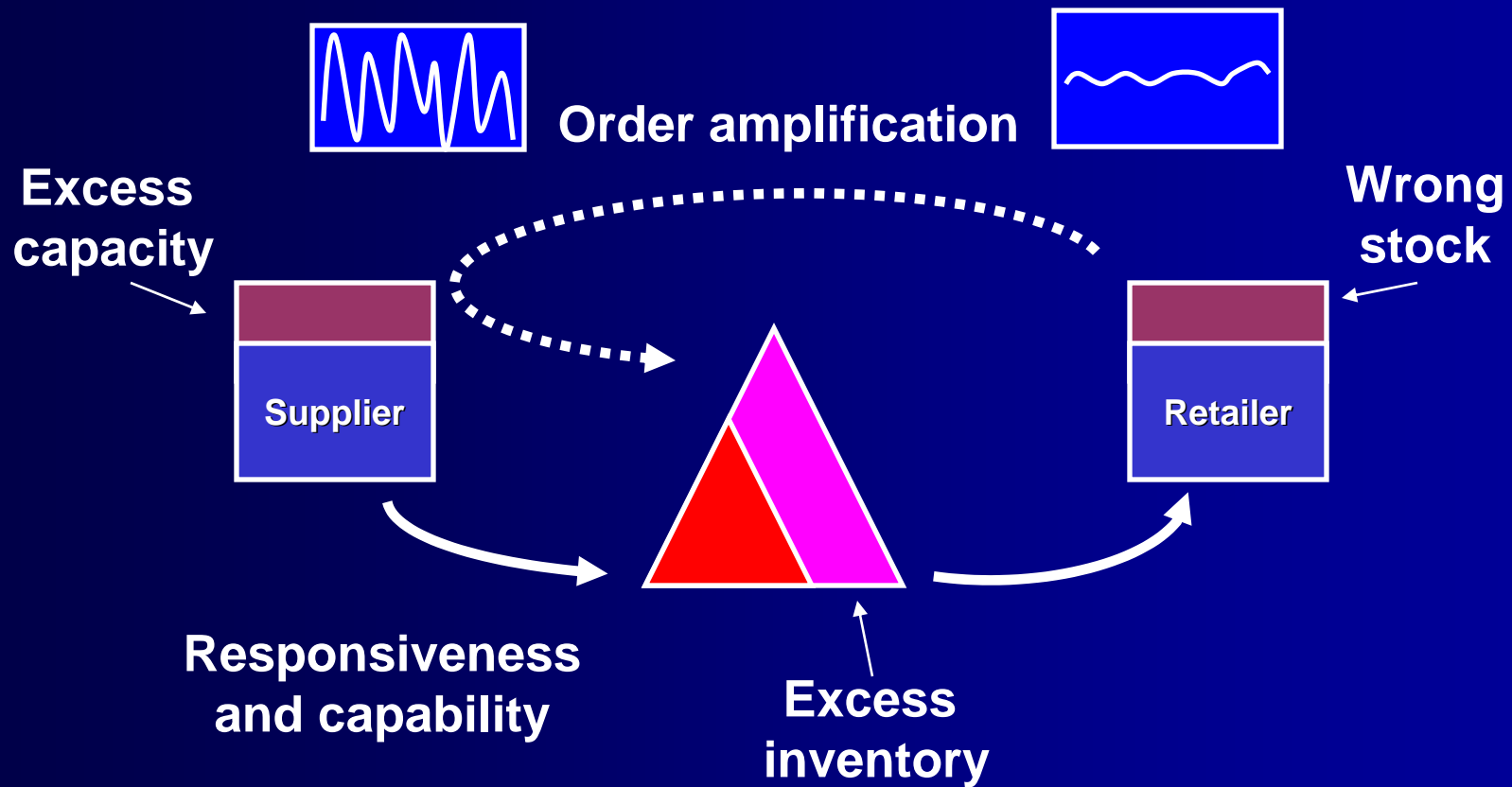


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But this is not enough!

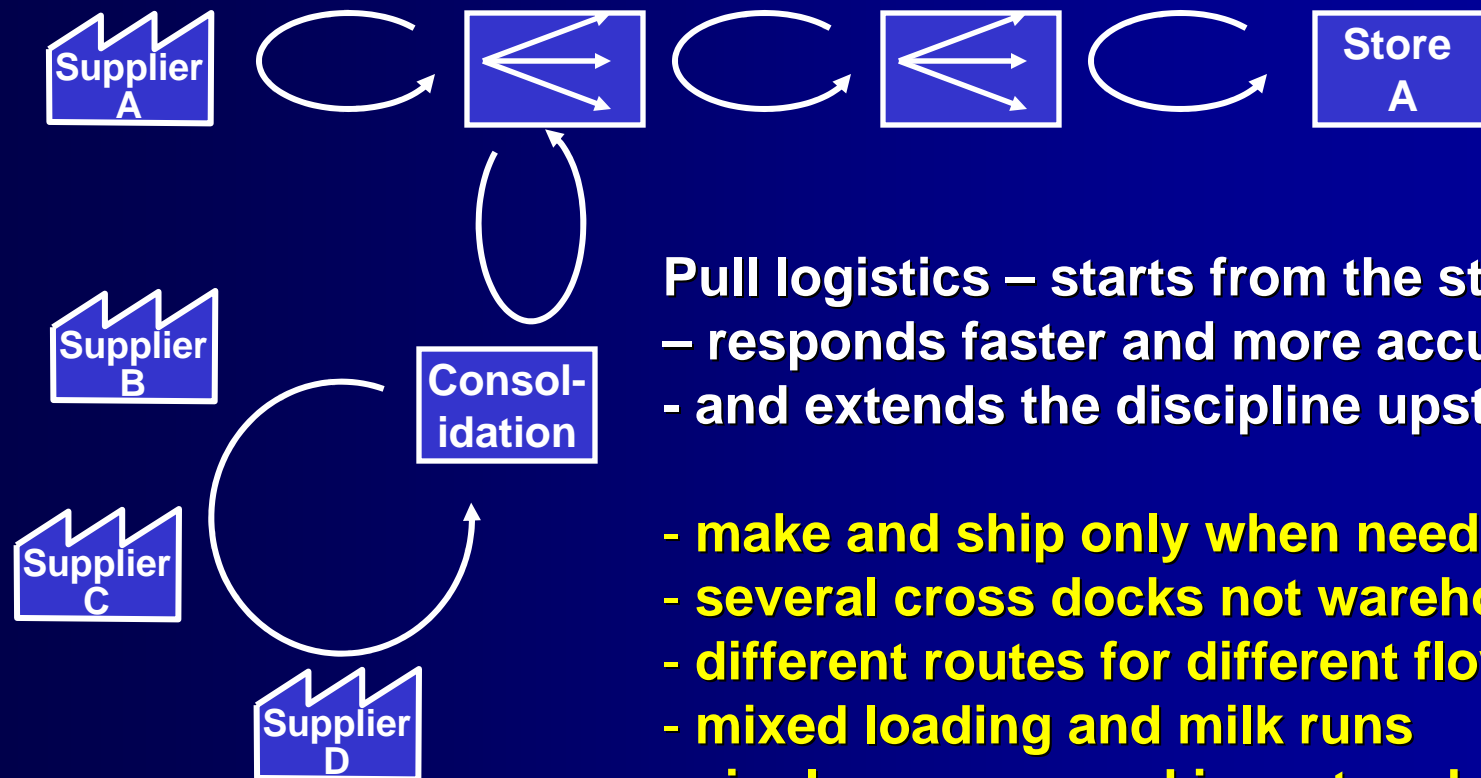
- These gains are worthwhile pursuing alone
- But you only get the full benefits if both sides act together
- The big win-win opportunity is to link synchronised production with smoother order flows
- The management challenge is that the real gains are hidden from view
 - off my patch and off my budget!

The supply chain system



Linking operations

Push logistics – with many handoffs, delays and inventories is very expensive and can not deliver perfect fulfilment



**Pull logistics – starts from the store
– responds faster and more accurately
- and extends the discipline upstream**

- **make and ship only when needed**
- **several cross docks not warehouses**
- **different routes for different flows**
- **mixed loading and milk runs**
- **single co-managed inventory buffers**

Linking systems

- But operational excellence needs systems to transmit noise-free orders upstream
- The real gains from little-and-often are that management can see and take corrective action quickly to get back on track
- Let us take a look at one such example

**New forms of Supply-Chain
Collaboration:
The Process of Collaborative Store
Ordering (PCSO™)**

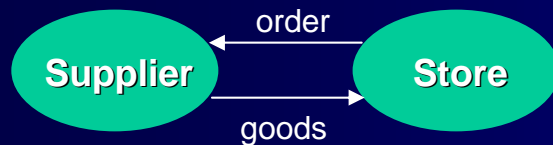
Katerina Pramatarı



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DSD vs. Centralized Deliveries

Direct Store Deliveries



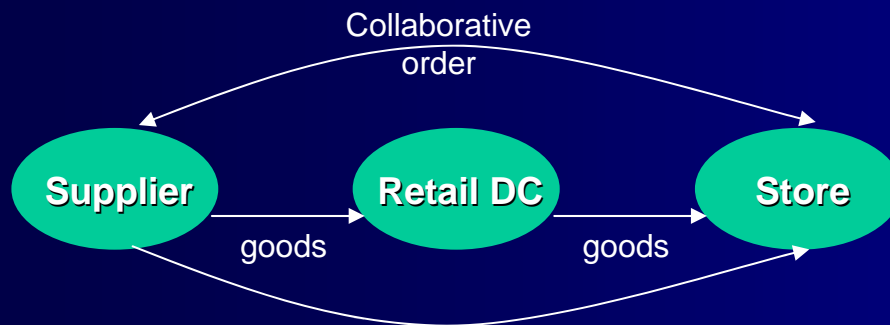
- The supplier has direct contact with the store
- Lower out-of-shelf
- Higher inventories
- Expensive logistics

Centralized Deliveries



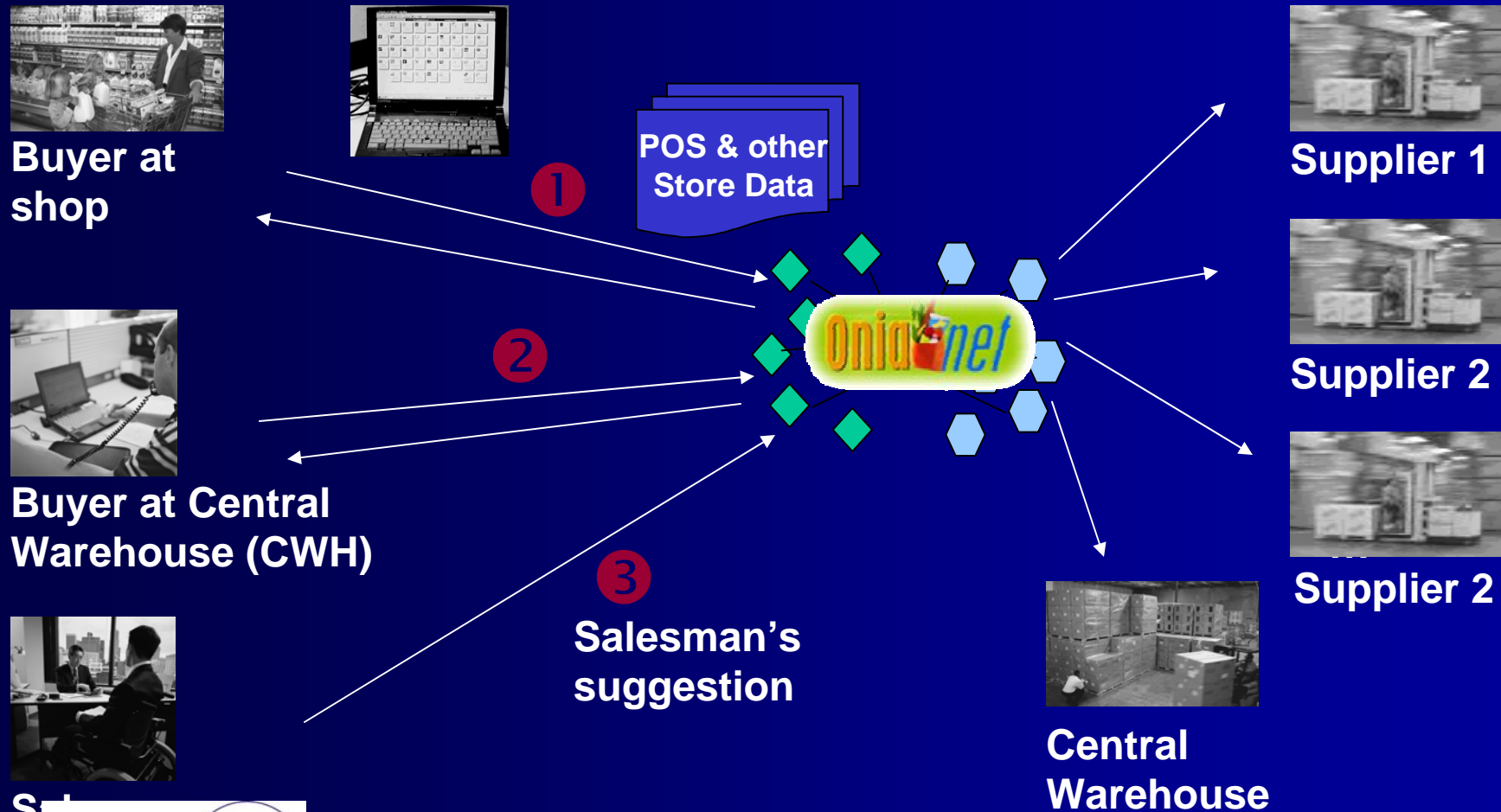
- Efficient logistics
- Lower inventories
- Higher out-of-shelf
- The supplier loses contact with the store

The Process of Collaborative Store Ordering (PCSO™)



- Efficient logistics
- Lower inventories
- Lower out-of-shelf
- The supplier has direct access to daily store information

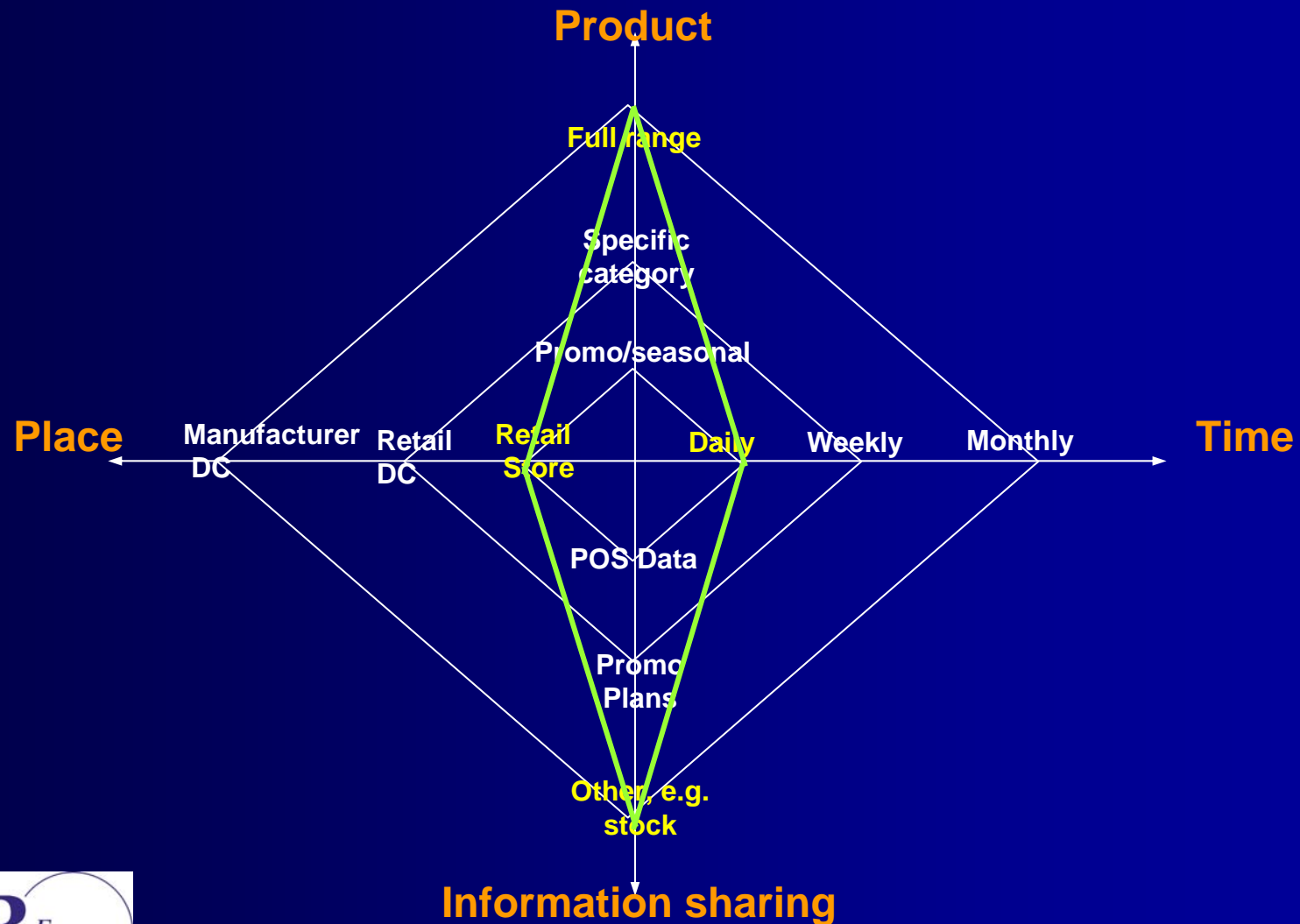
The Process of Collaborative Store Ordering (PCSO™)



Information Sharing at Store level

- Daily sell-out (POS) data
- Product assortment
- Stock
- Deliveries
- Promotional events (e.g. displays, leaflets etc.)
- Out-of-shelf alerts

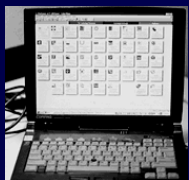
Mapping PCSO™



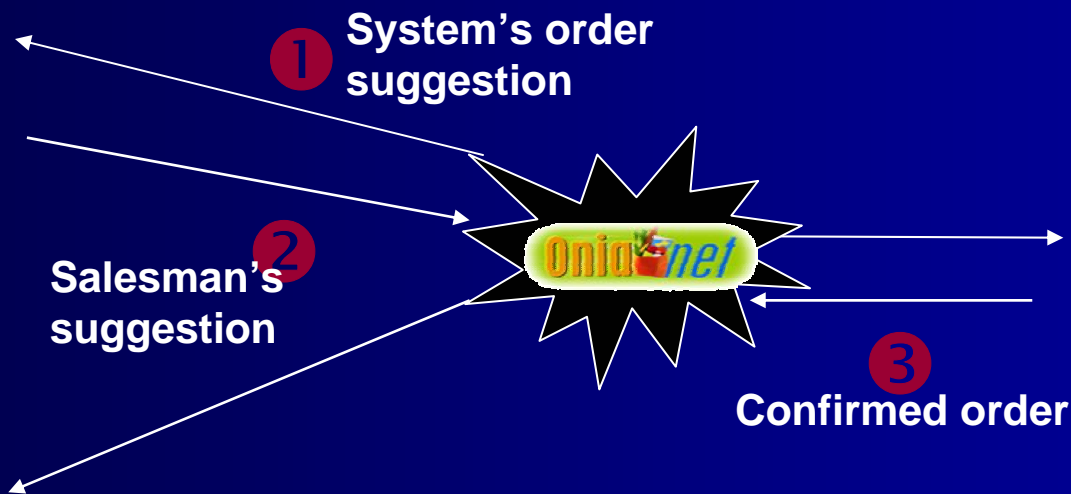
Ordering Example for DSD Products



Salesman



ERP



Store

Ordering Example for CWH Products



Salesman of Indirect Supplier

Salesman's suggestion **2**



System's order suggestion **1**



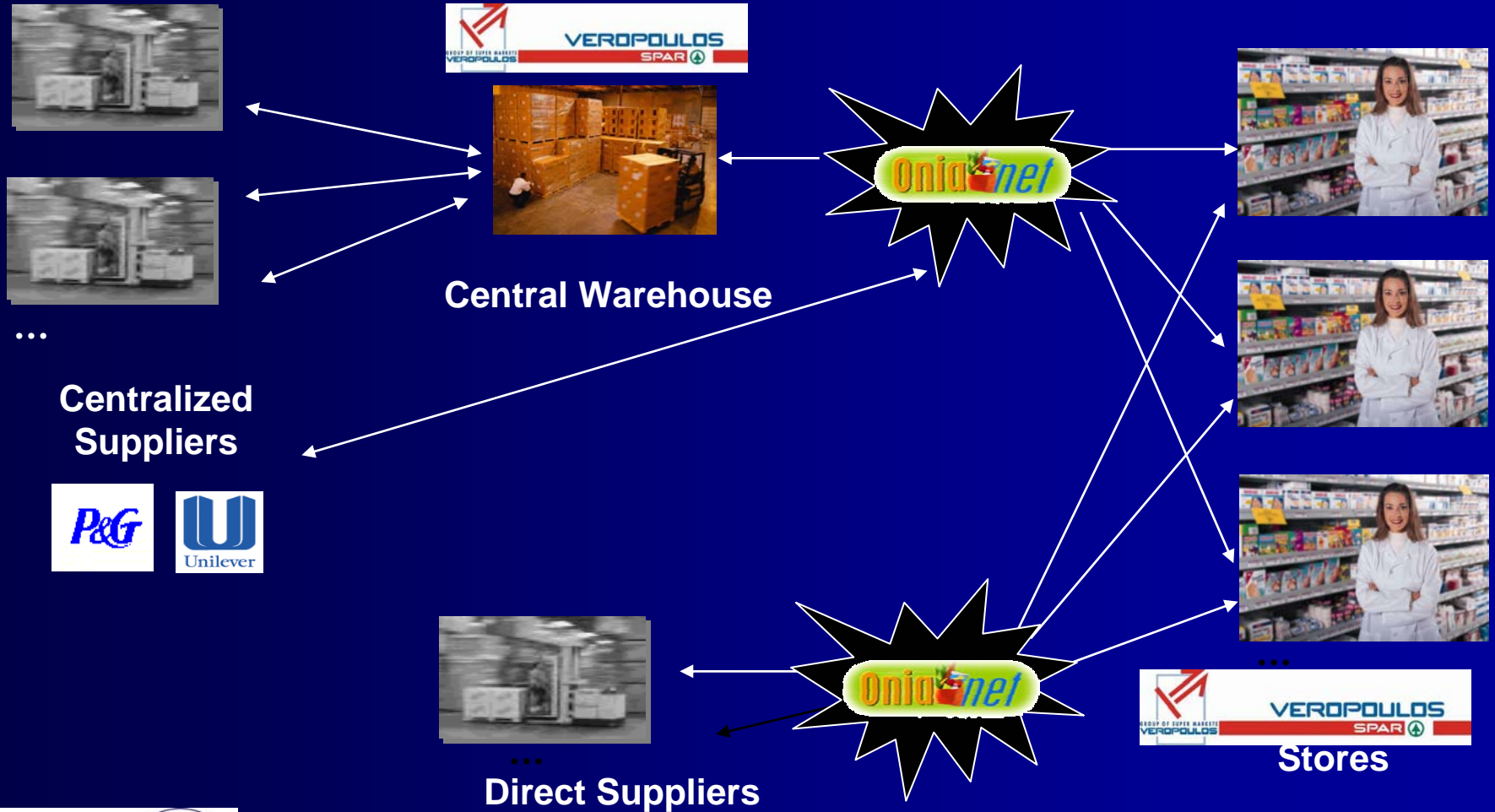
Store

Confirmed order **3**



CWH ERP

The Veropoulos Case



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Reduction in Out-of-shelf

- Before vs. after 11 months of usage



Supply-Chain Integration at Store Level

- Store level collaboration
- Online sharing of the full store image on a daily basis
- Many-to-many environment
- Common communication platform

Implications for DSD Suppliers

- The traditional role of the salesman changes:
 - problem-solver at store-level
 - dynamic scheduling of visits
 - more qualitative work
 - company representative and not an order-taker
- Internal re-engineering is necessary in order to exploit the full benefits

Implications for Centralized Suppliers

- Store-level “VMI/CRP”
- The expected benefits need to justify the investment in human capital
- Internal re-organization required

Implications for Retailers

- Need to adopt an information-sharing mentality
- Exploit the expert opinion of the suppliers' salesmen
- Clear lines of responsibilities should be defined

From Systems to the Environment

Professor Daniel T Jones

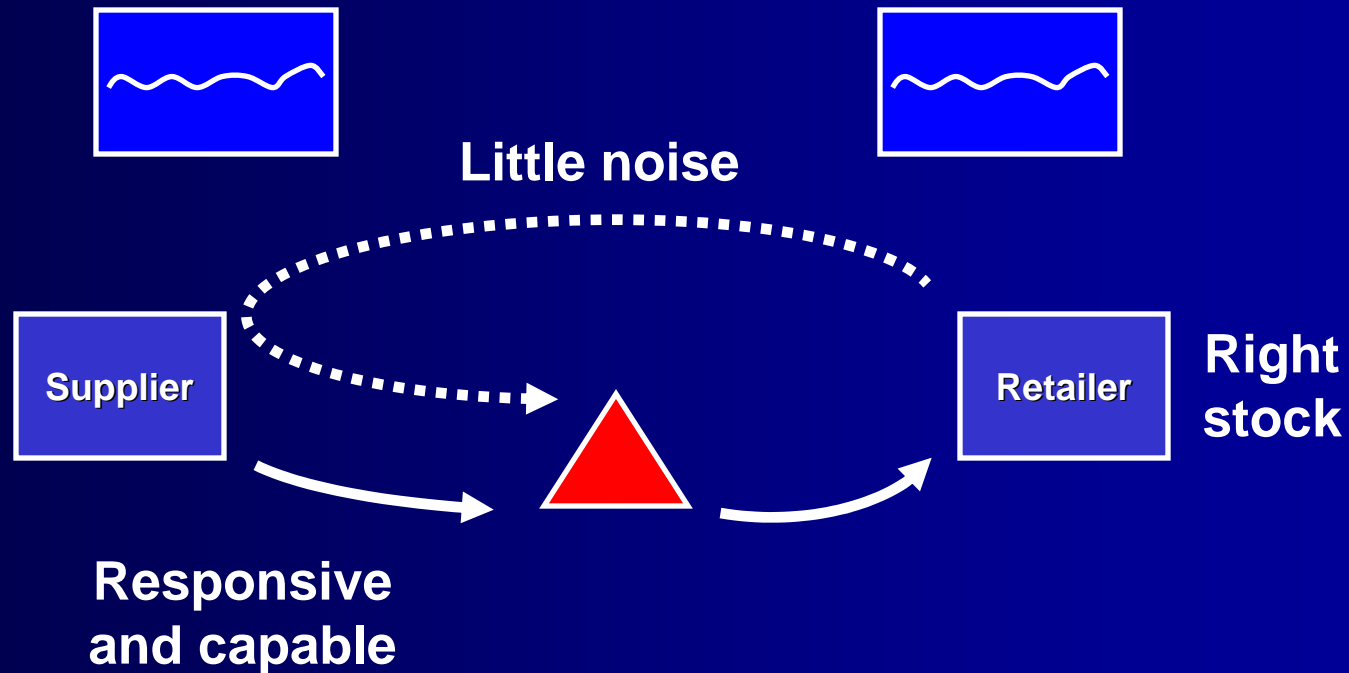


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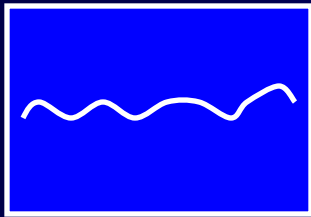
What do we learn?

- There are many ways of thinking about system design
- We can design supply chains that are simpler, more direct, more frequent, more responsive and more accurate while delivering lower cost
- But operations and systems have to learn to talk together!
- There is still a lot to be done

The supply chain system

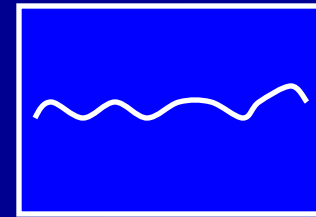


The Big Win-win Opportunity

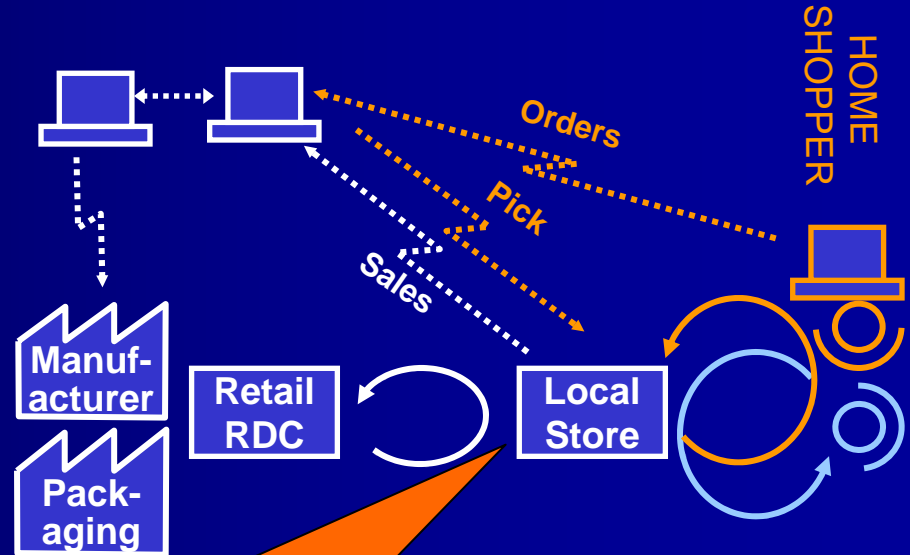


1:1

The Pull Can



Distributed, Contract Manufacturing with Right Sized Tools, Co-located Packaging, Printing after Filling



Customised Local Store and Pick-Up Point offering proactive Advice, Meals and Fresh Produce with access to Full Range of Products to Order from the RDC

20 touches
1-3 days
99.95% avail
98% basket



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Beyond the supply chain

- We can no longer think about supply chains in isolation – there are many other factors that will have a growing impact on our choices – from safety to congestion and the greenhouse
- Business finds it hard to respond to emotions – but can lead with the evidence
- Let's take a look at how we can assess our impact on the environment

Mapping the Sustainable Value Stream

Robert Mason



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Sustainable Value Stream Mapping

Time is a good proxy for economic waste

“Value Creation %” = $\frac{\text{Supply Chain Value Adding Time}}{\text{Total Supply Chain Time}}$

CO₂ is a good summary of environmental waste

“CO₂ Emissions” = $\frac{\text{Supply Chain CO}_2 \text{ Weight}}{\text{Marketable Product Weight}}$

Case 1: Value Juice 1kg

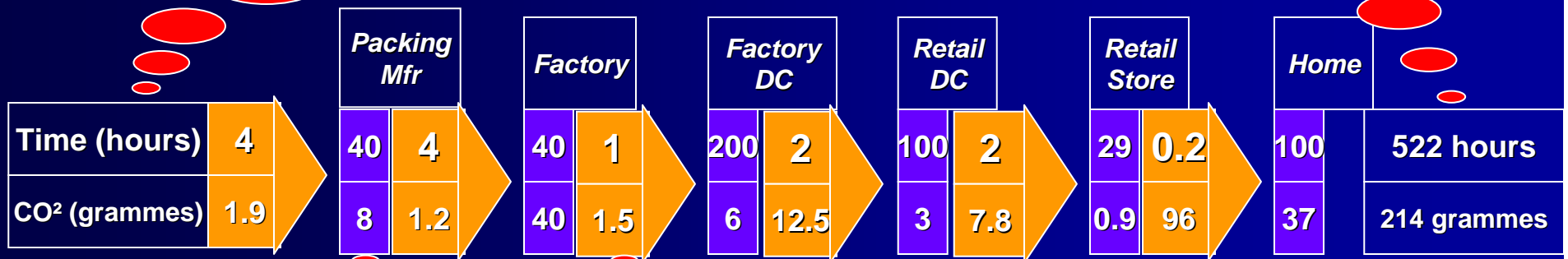
Ambient Fast Mover

Value Juice – Current State

Look at
Time & CO₂

Define the
Steps

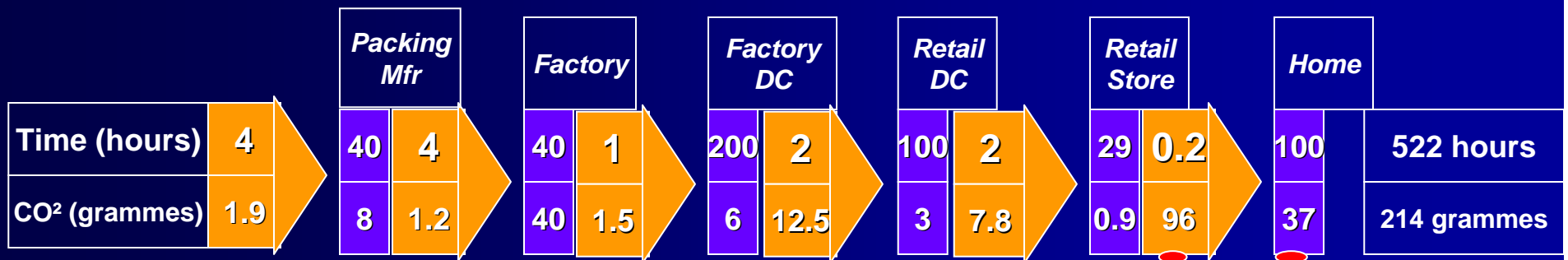
End to End



Process
Data

Transport
Data

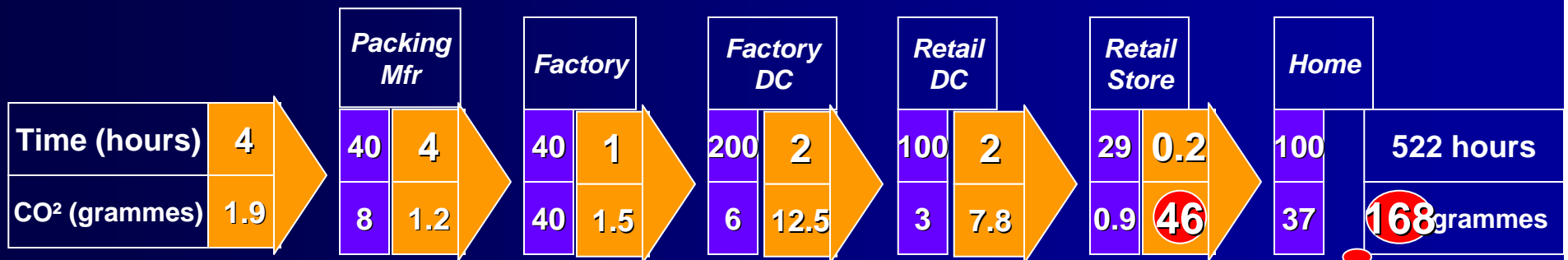
Value Juice - Opportunities



Home Trip?

Refrigeration
Once open?

Value Juice – Home Shopping

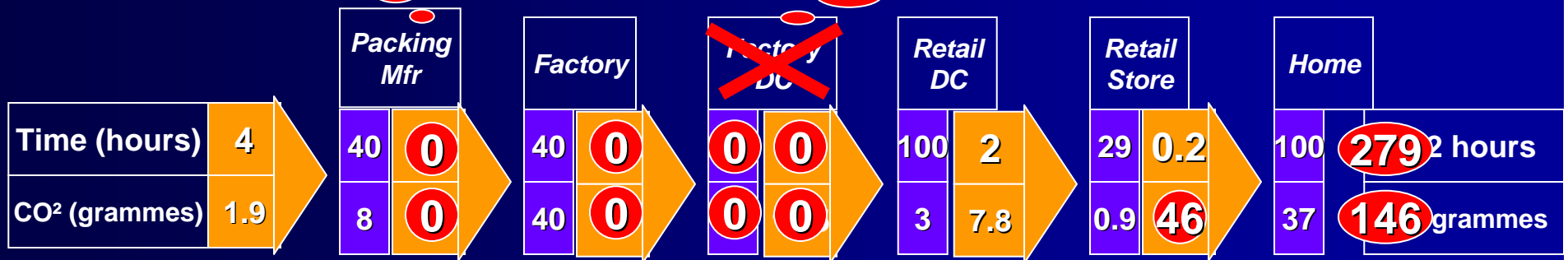


Home Shopping:
Over 20%
End to End
CO₂
Reduction

Value Juice – Distributed Manufacture

Packager located next to Retail RDC

Contract Manufacturer next to Retail RDC



Distributed Manufacture and Home Shopping:
 30% less CO₂
 40% less Throughput Time

Case 2: Apples

Seasonal Production
Europe or New Zealand?

Case 2 Summary

■ Europe: Green Assumption Closer!

- Produce
- Refrigerate for several months
- To Retailer

■ New Zealand

- Produce
- Deliver by Refrigerated Sea Container
- To Retailer

■ Mapping Result

- Europe: Growing Season plus 4 Months
- Import: Rest of the Year

Conclusion

- **End to End Assessment**
 - Identifies major environmental wastes
 - Shows trade-offs e.g. Home Shopping
- **Environmental facts rather than Green Emotions**
 - E.g. Location is Contingent on refrigeration/transport trade-off
- **Straightforward Technique**

Final Thought

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The Toyota Challenge

from Zero Defects
and Just-in-Time ...

...to Zero Emissions
from its products

How about a
supply chain with
Zero Emissions?



aim: zero emissions

Reducing emissions to zero may seem a long way off. But this is our aim. Take Toyota's hybrid technology: It cuts fuel consumption by almost 40%, compared to a conventional petrol engine, and its emissions are 40% below the European standards of 2005. The Toyota Hybrid System ingeniously combines an electric motor and another power source, for example a fuel cell, for maximum efficiency. And no recharging is required. It delivers impressive environmental performance and driving pleasure. And when it runs in pure electric mode, you get...zero emissions. Already, more than 130,000 Toyota hybrid vehicles are on the road, including the Toyota Prius, the world's first mass-produced hybrid car. And this is just the beginning. To learn more about Toyota's environmental initiatives, please visit www.toyota-europe.com/environment/

TOYOTA

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