

OR: A SCIENCE FOR A BETTER WORLD

Supply chain management from
business to humanitarian applications

Luk N. Van Wassenhove
INSEAD

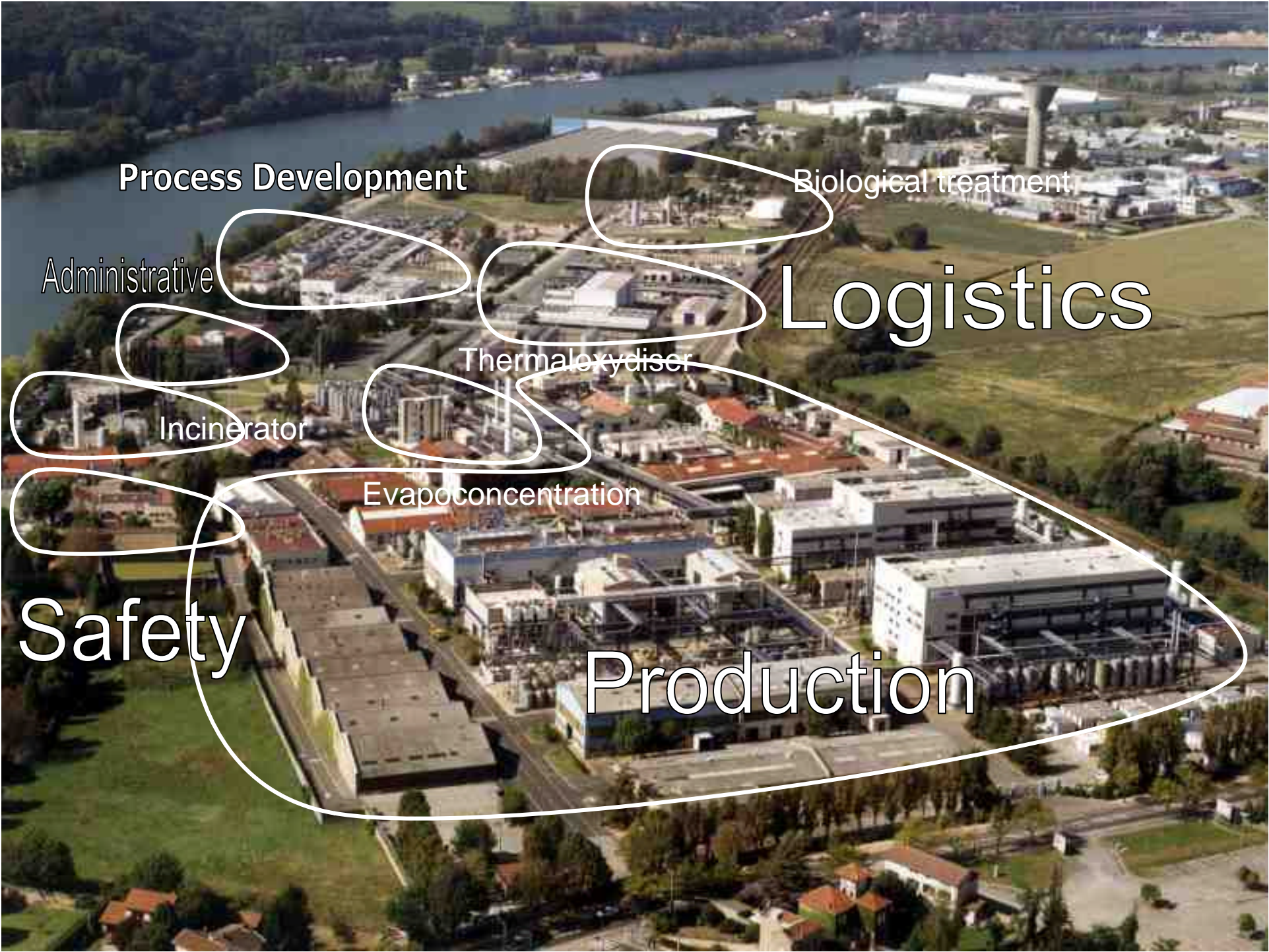
PART 1

**“THE FUTURE AIN’T WHAT
IT USED TO BE”**

(Yogi Berra)

EXAMPLE 1: A SIMPLE PLANT

Sanofi-Aventis Neuville plant near
Lyon, France



Process Development

Biological treatment

Administrative

Logistics

Incinerator

Thermal oxidiser

Evapoconcentration

Safety

Production

NOT SO SIMPLE AFTER ALL

- Development activities (R&D link)
- Logistics (supply chain links)
- Environmental concerns
- Health and Safety provisions
- Anything else?

RISK MANAGEMENT

Accidental and Purposeful Events

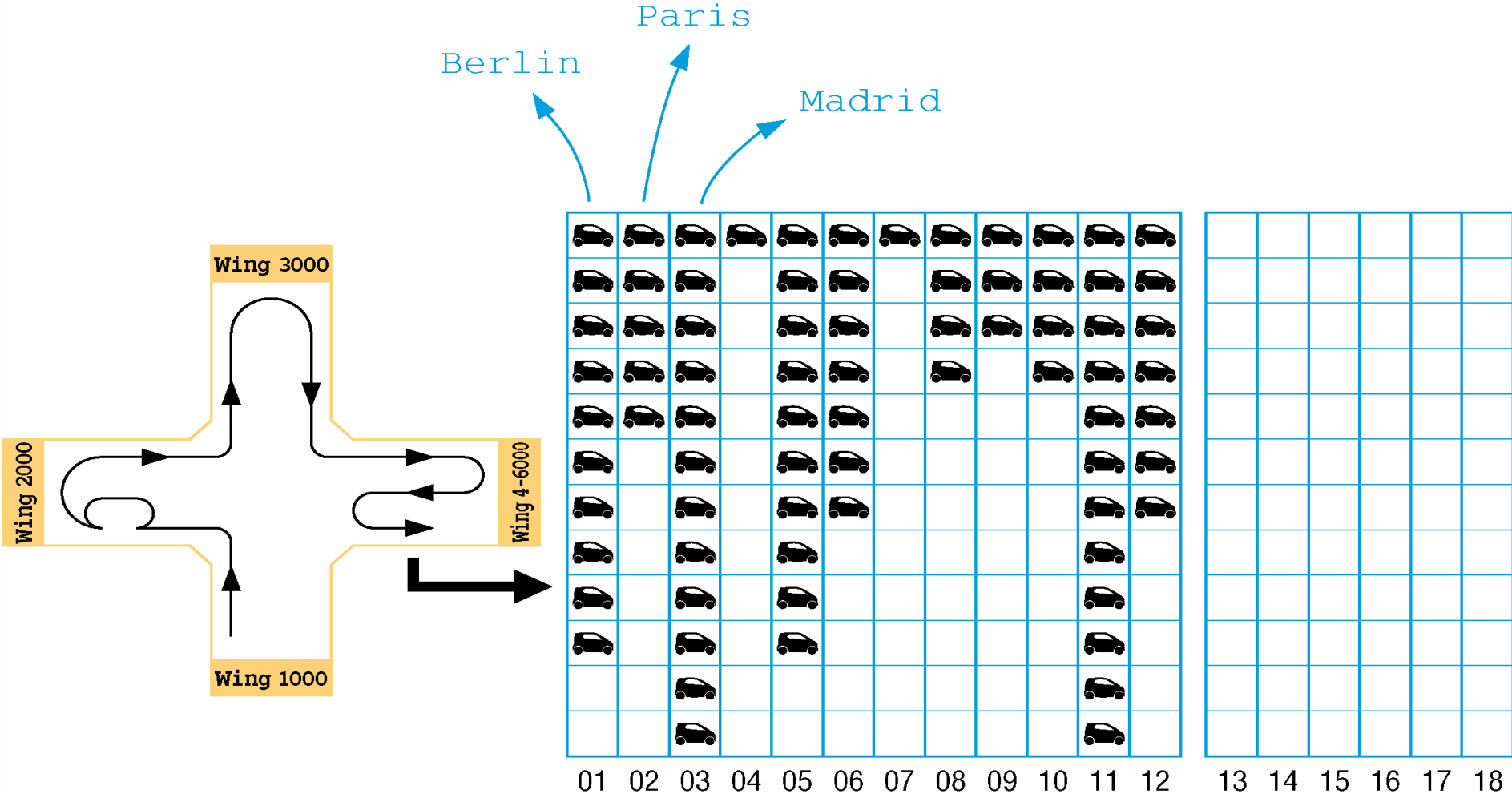


**22 firefighters divided in 4 shifts, 7/7 d, 365 days per year
An intervention fleet in place**

EXAMPLE 2: AN INDUSTRIAL PARK

Smart City at Hambach, Alsace,
France

VISUAL MANAGEMENT AT THE ASSEMBLY



LEAN AND MEAN (AND VULNERABLE?)

- Multiple actors with different objectives to be coordinated
- Synchronized JIT activities with minimal margin for errors (a clockwork)
- Complex material and product flows (cluttering our road networks?)
- How can we make this more resilient?

EXAMPLE 3: GLOBAL OPERATIONS

L'Oreal's Supply Chain Evolution

INDUSTRIAL REORGANIZATION

Consumer Division

Situation 90

Local markets

1 country = 1 plant + 1 DC



**A simple and
autonomous logistical
organization**

INDUSTRIAL REORGANIZATION

Situation 2000

A european market

1 continent = 11 specialized plants + 28 DC

A
complex and
interdependant
logistical
organization



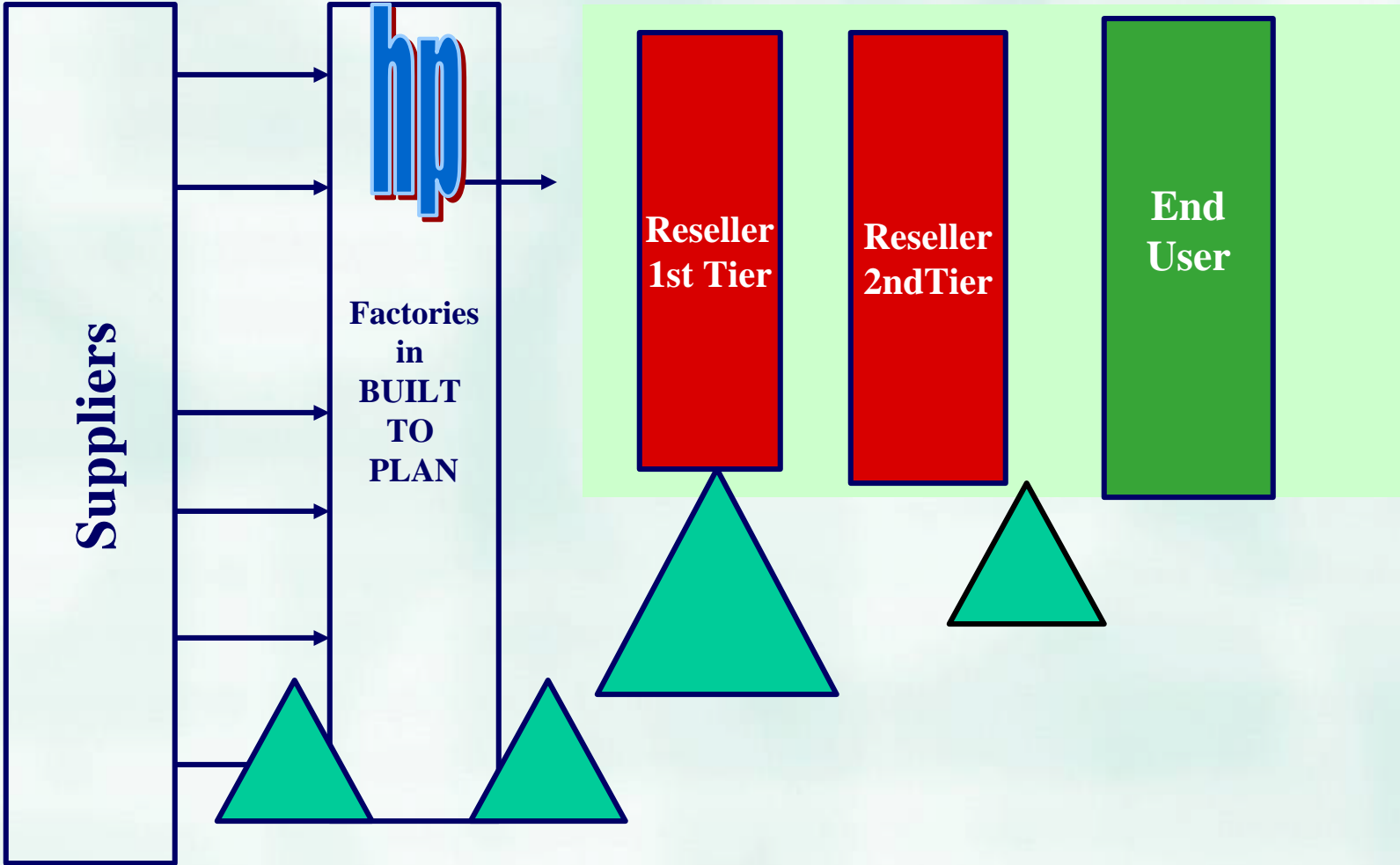
FAST TRANSITION TO GLOBAL OPERATIONS FOR SURVIVAL

Do we have the skills and can we handle the risks? What about offshoring and outsourcing?

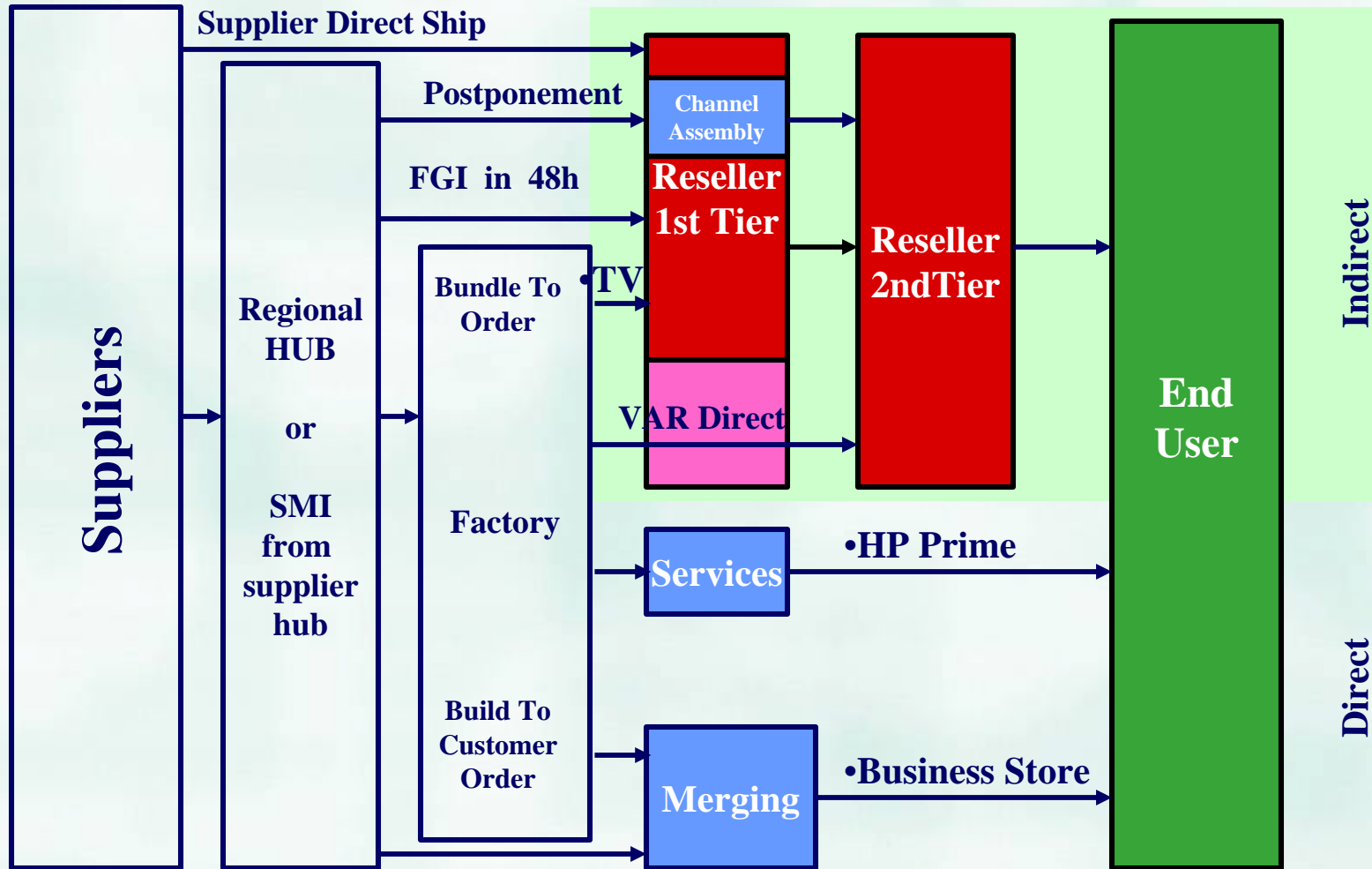
EXAMPLE 4: CREATING CUSTOMER RESPONSE SYSTEMS

The history of HP's Personal
Computer business

SUPPLY CHAIN AT THE BEGINNING



CURRENT SUPPLY CHAIN



FICKLE CUSTOMERS CALLING THE SHOTS

Can we manage constant
demand/supply matching, ever
shortening lifecycles and
individualised customer solutions?

**“IT’S A JUNGLE OUT
THERE!”**

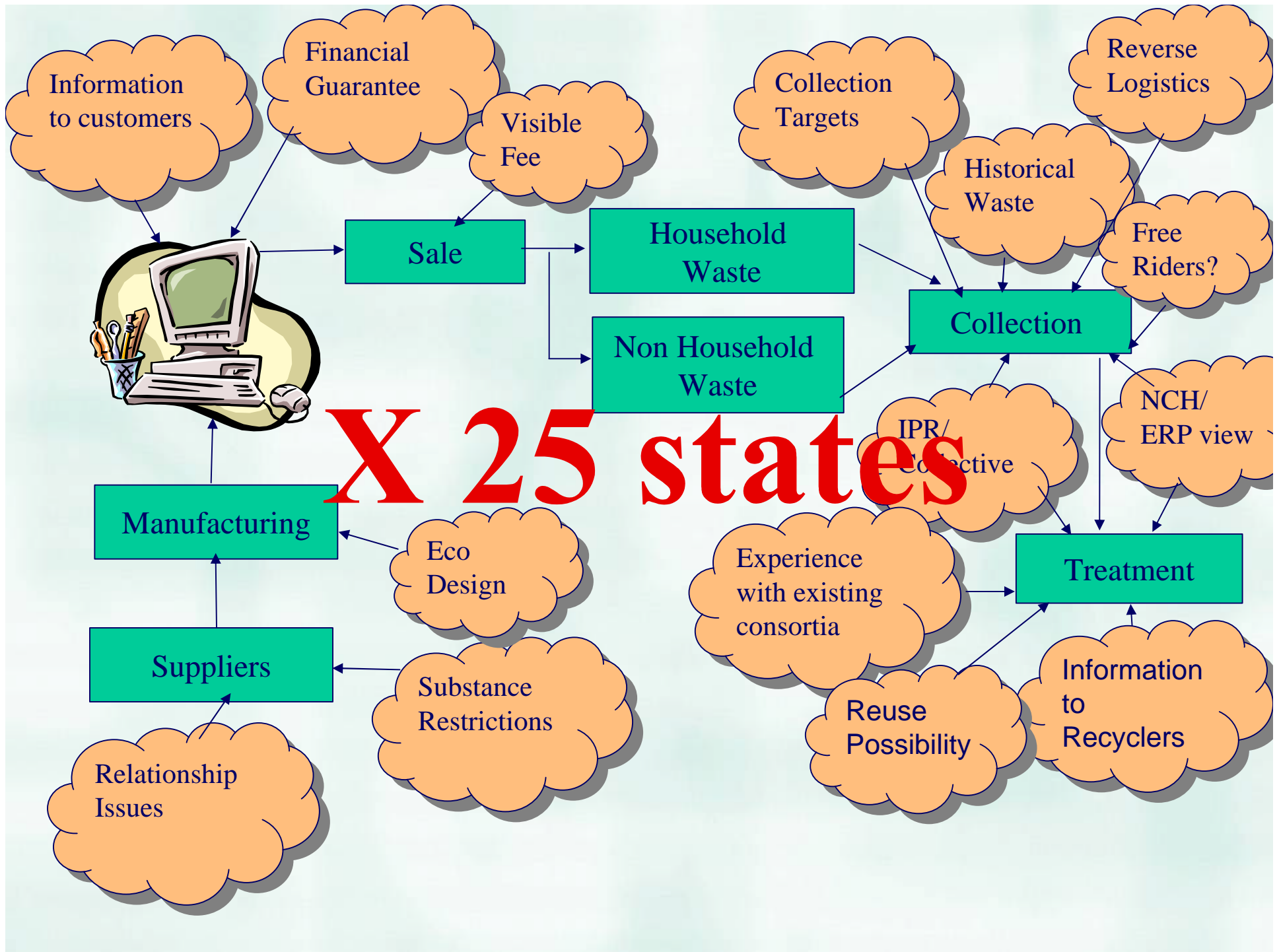
Anything we forgot?

I’m afraid so...



EXAMPLE 5: COPING WITH ENVIRONMENTAL LEGISLATION

A costly hassle or an opportunity for competitive advantage?



**YES, ADDITIONAL
COMPLEXITIES AND
UNCERTAINTIES**

And increasing costs for business

But is it good for the environment?

OK, ARE WE DONE NOW?

Not quite, I'm afraid...

CHILDREN IN AFGHANISTAN



CAN WE CONTINUE TO CLOSE OUR EYES?

Every 5 seconds a child dies of hunger

It takes 15 cents per day to feed a
child in school...

LET'S PAUSE HERE AND DO A SMALL RECAP

Things have become a lot more
complex and risky with fickle
customers and a tiny margin for errors

Business is more than just greed

SO

WHAT IS

THE GOAL?

SUSTAINABILITY

Environmental, Societal, Economic Responsibility

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

United Nations Division for Sustainable Development

WOW!
BALANCING PROFIT,
PLANET AND PEOPLE

But isn't that incredibly difficult?

**OR: THE
SCIENCE
OF
BETTER**



Enter Operational
Research...

PART 2

**OR: THE SCIENCE OF
BETTER**

BUT FOR WHOM?

OPERATIONAL RESEARCH

Deals with complex interdependent systems

Analyses different scenarios over time




Integrates multiple disciplines with process as well as analytical approaches

Balances different stakeholder objectives

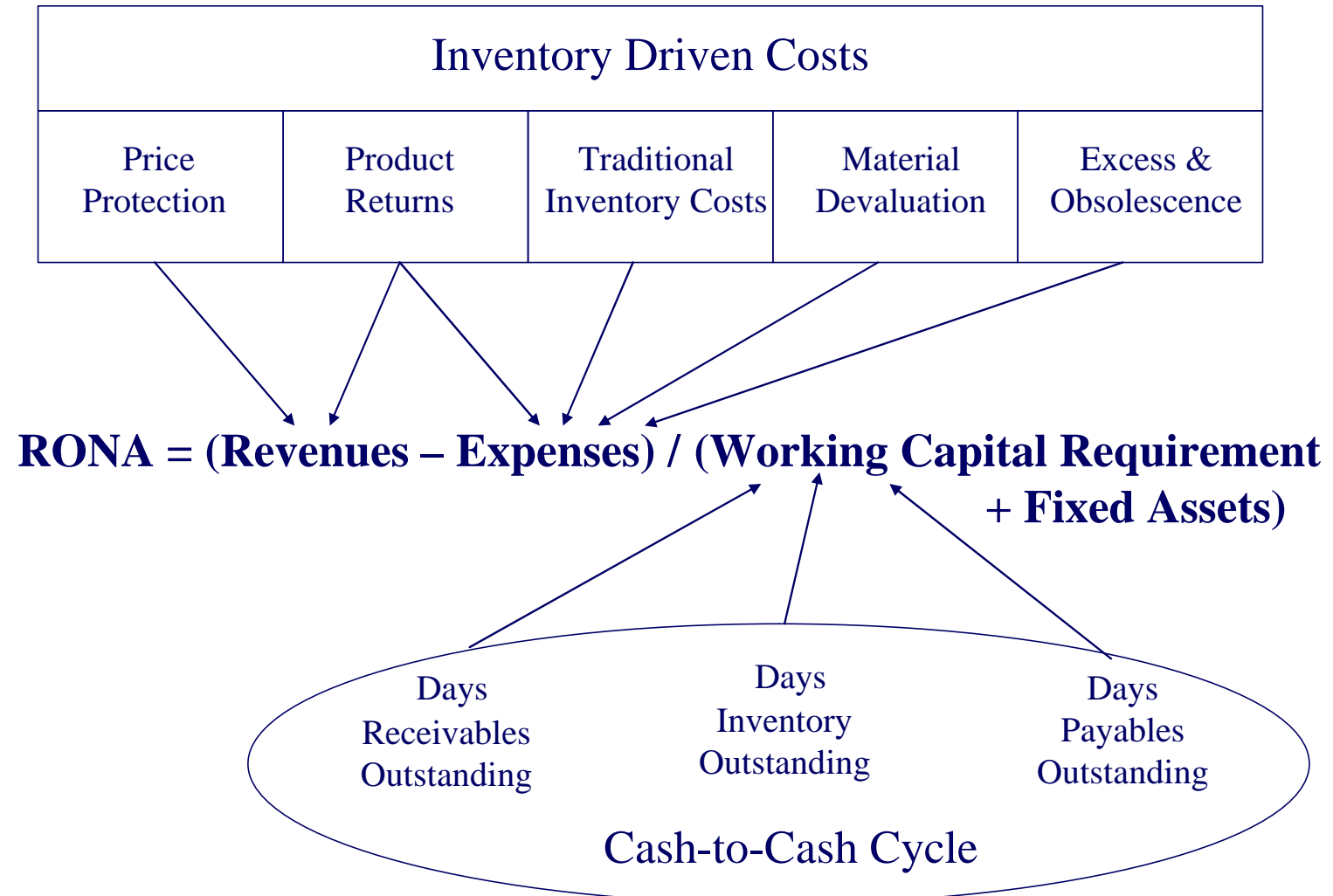
EXAMPLE 1: LINKING SUPPLY CHAIN DECISIONS TO THE BOTTOM LINE

HP's Inventory-Driven Cost Metric

HOW HIGH-TECH PRODUCTS COMPARE ON GLOBAL SUPPLY CHAIN COST DRIVERS

HP Products		Labor Content	Weight	Inventory Driven Cost	Product Margin
Portable CD Read / Writer		Very L	L	H	L
InkJet Printer		M	M	M	M
Desktop PC		L	M	H	L to M
Large Format Inkjet Printer		H	H	L	H

LINKING IDC TO FINANCIAL PERFORMANCE



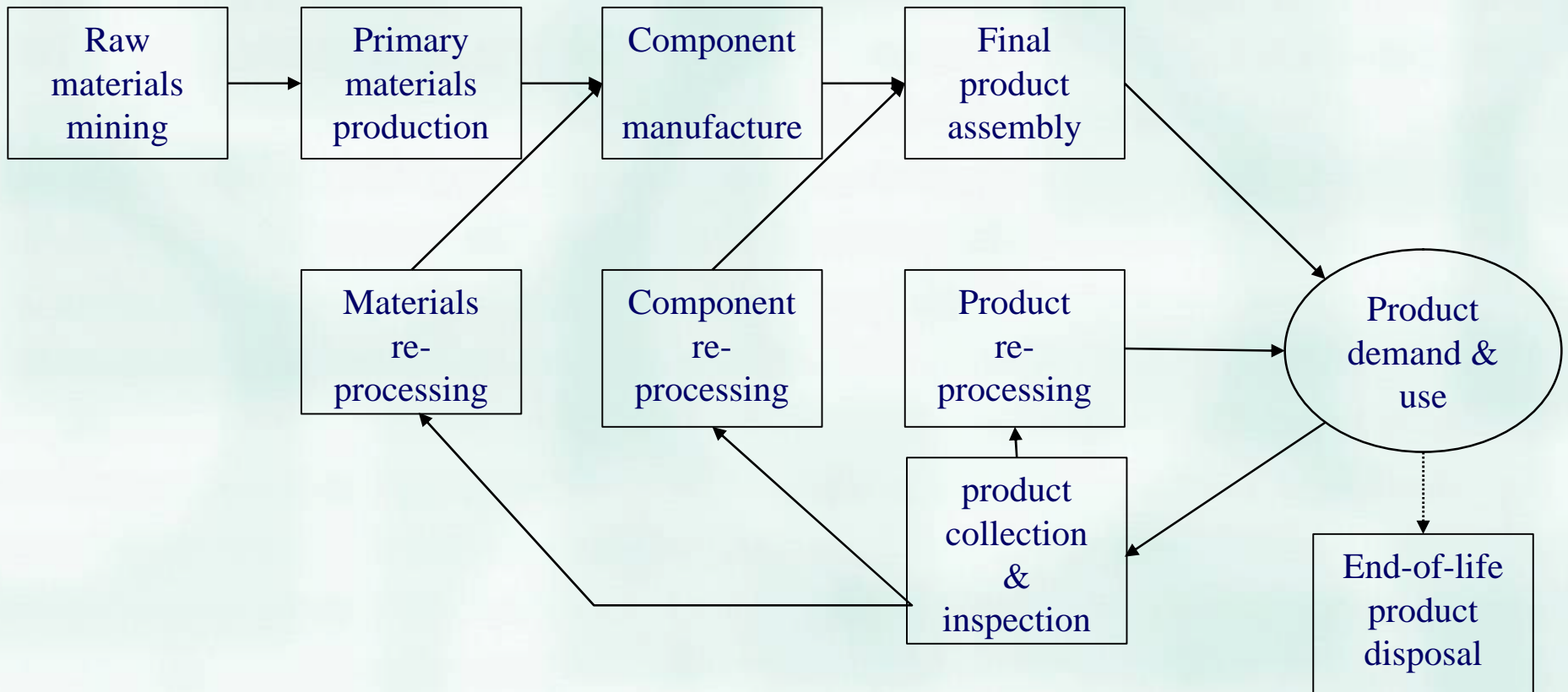
OR: The Science of Better

For the company and its stockholders
when margins are small and
competition is tough

EXAMPLE 2: CLOSED-LOOP SUPPLY CHAINS

Making money out of product
recovery


A CLOSED-LOOP SUPPLY CHAIN



EXAMPLES OF CLOSED- LOOP SUPPLY CHAINS

- Containers (cameras, toner cartridges)
- Industrial remanufacturing (copiers)
- Cellular telephones
- Product life extension (jet engines, aircraft)
- Tire retreading (passenger and commercial)
- Telecommunications (circuit packs)

Activities in the Reverse Supply Chain

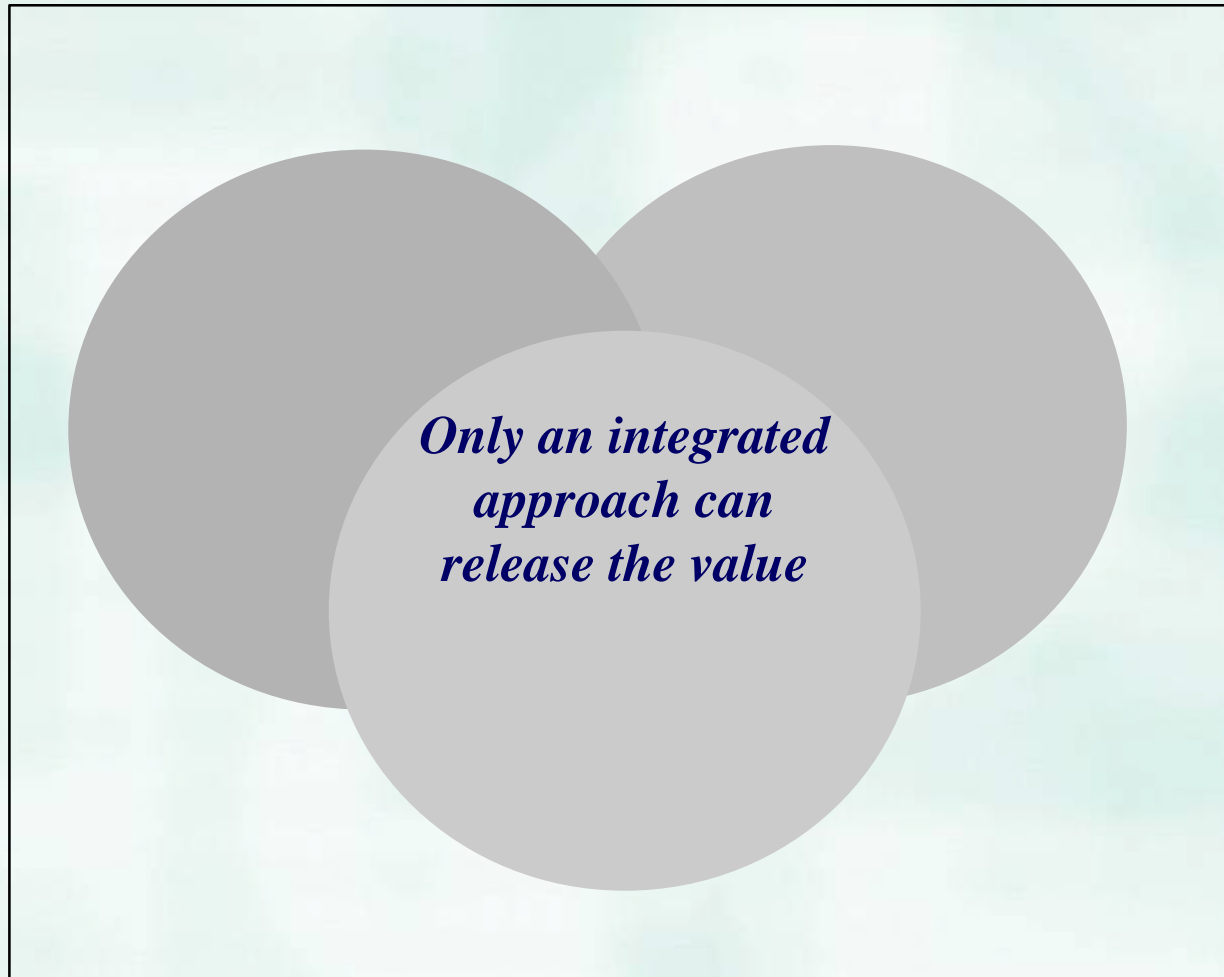


Timing, quantity, quality of used products:
Product acquisition mgmt
Return rates

Reverse logistics
Test, sort, disposition
Disassemble
Repair,
Remanufacture

Develop channels,
Remarket, Secondary markets,
Cannibalization

A Business Perspective on Closed-Loop Supply Chains



OR: THE SCIENCE OF BETTER

For both the company and the natural
environment

EXAMPLE 3: RISK AS A THREAT AND AN OPPORTUNITY

An integral way of doing business

SOURCES OF RISK

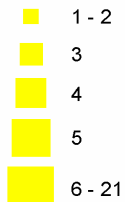
- Financial Valuation & Economic Factors
- Volumetric (Forecasting)
- Pricing and Upstream Cost (Economic)
- Strategic Behavior (Supply Chain Partners)
- Political and Regulatory Factors
- Environmental Factors (weather, natural hazards)
- **Disruptions** (Accidents, Sabotage, Strikes)
-

DESTRUCTION OF A REGIONAL ECONOMY-HOUSTON

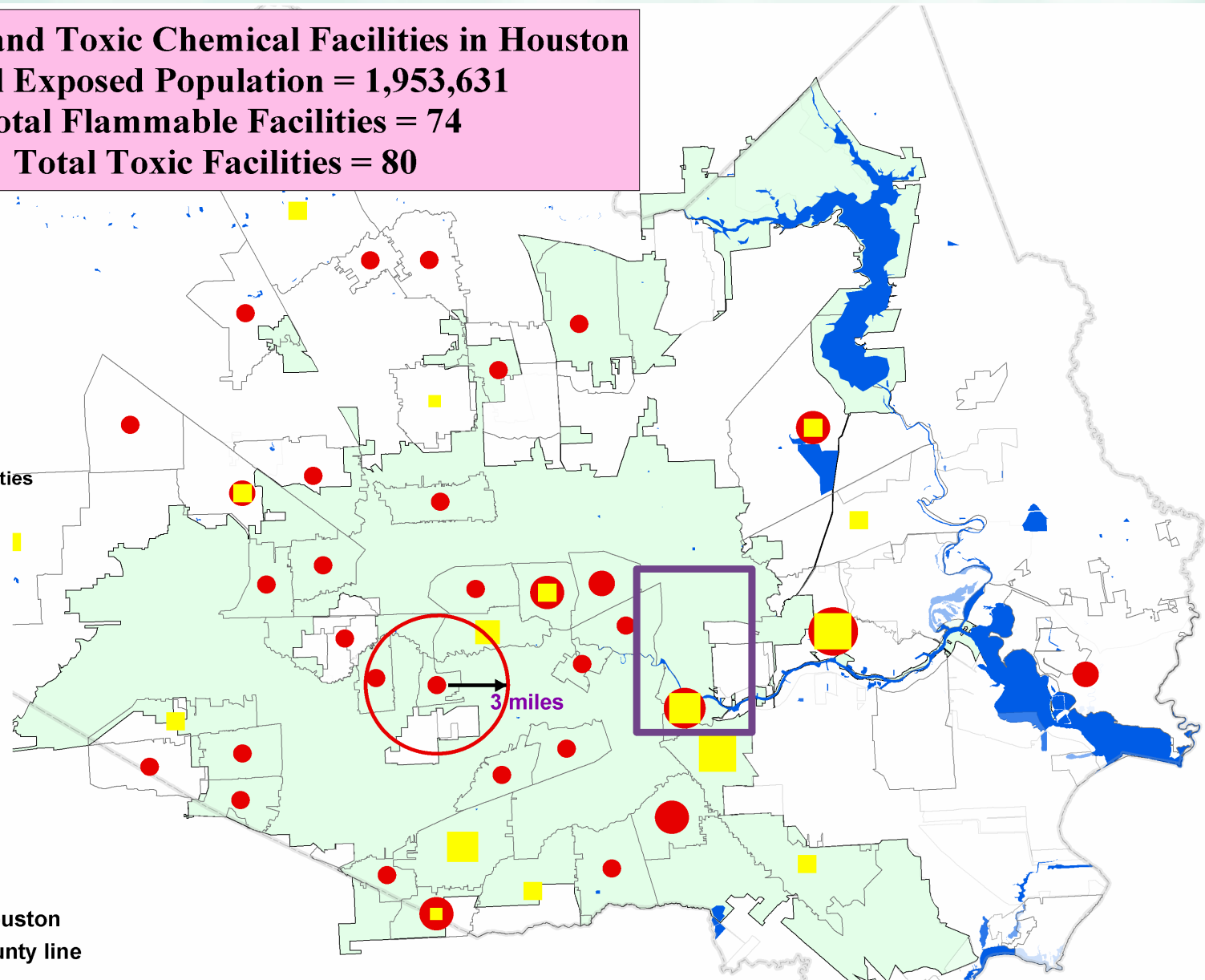
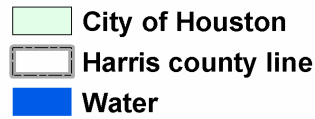
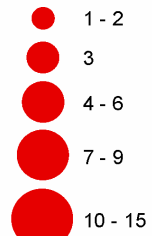
Flammable and Toxic Chemical Facilities in Houston
Total Exposed Population = 1,953,631
Total Flammable Facilities = 74
Total Toxic Facilities = 80

Legend

Flammable Facilities



Toxic Facilities



Worst case for typical toxic facility (3-minute radius red circle) in excess of 200,000 dead--Lasting damage to regional and national economy

OR: THE SCIENCE OF BETTER

For business and society to operate in
a safer world

EXAMPLE 4: HUMANITARIAN LOGISTICS

Business can help but humanitarians
can also teach business a thing or two

THE CRISIS IN AFGHANISTAN



The Main Road



A problem along the road ...



Almost safe ...



Almost there ...



UNJLC worker dressed as the locals



Food distribution

Transport Capacity Assessment – South Sudan

- Road constraints -



Transport Capacity Assessment – South Sudan

- But also ... -



from the ware -
house at port ...



via long haul ...



to the corridor ...



and via short haul ...



to the beneficiaries



or via this short haul ...



THE ULTIMATE SUPPLY CHAIN?

«don't know when, where, what, how much, where from and how many times»

- Both demand and supply side vary
- Need to quickly configure and choreograph

A high degree of uncertainty, limited authority and scarce resources (human, financial)

He Can Use Some Help

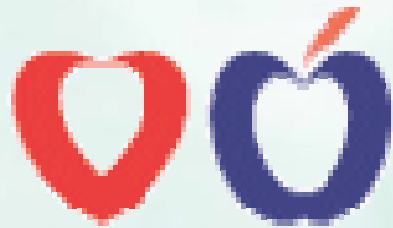


OR: THE SCIENCE OF BETTER

Build better coordination mechanisms
and competences for a more
professional response to disasters
(planet and people)

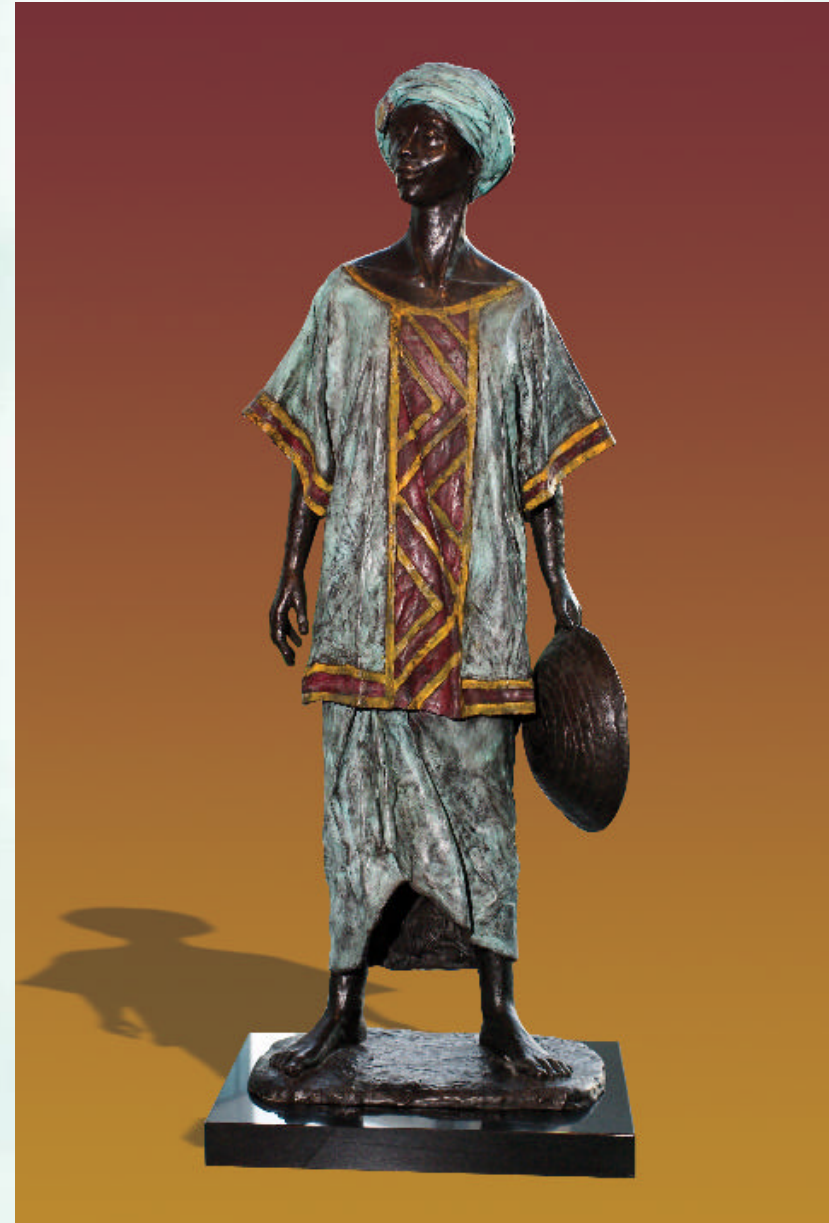
EXAMPLE 5: PARTNERSHIPS BETWEEN BUSINESS AND NOT-FOR-PROFIT

Teaching elephants how to dance



moving the world

TNT-WFP Partnership
Looking for a Partner



 **TPG** supports  **to feed the hungry**

WHAT IS THE WORLD FOOD PROGRAMME?



- The UN agency charged with fighting global hunger
- World's biggest humanitarian organisation (budget 1.6 Bi)
- On any given day of the year:
 - 40 ships on the high seas
 - 20 planes in the air
 - 1,000 trucks on the ground



TNT'S PARTNERSHIP WITH THE WORLD FOOD PROGRAMME

A long term partnership (€5 million for first year) between TNT and the World Food Programme (WFP), with an initial commitment by TNT for 5 years

**Emergency
Response**

**Joint Logistics
Supply Chain**

**Private Sector
Fund-raising**

**Transparency &
Accountability**

**School Feeding
Support**

BENEFITS FOR TNT

- Positive influence on TNT's reputation and employee motivation
- The perception of the value that our industries add to the world will improve
- The development of skills to deal with the most challenging of circumstances
- The development of business opportunities in areas that would otherwise be hard to enter



OR: THE SCIENCE OF BETTER

Helps companies build the case for
Profit, People and Planet

ANOTHER LITTLE RECAP

5 examples of profit/planet/people combinations

HP: linking decisions to bottom line (profit)

- Closed-loop supply chains: aligning business and environmental goals (profit/planet)
- Risk and Disruptions: a safer world (profit/people)
- Humanitarian logistics: a more humane world (planet and people)
- Business-humanitarian partnerships: a sustainable world (profit/planet/people)

EPILOG: BETTER FOR WHOM?

OR and Sustainable Operations

SUSTAINABLE BUSINESS OPERATIONS

- Manage complexity on a global scale
- Manage uncertainty and risk
- Manage multiple stakeholders
- Manage Profit, Planet and People
- Now and in the future

OR: THE SCIENCE OF BETTER

Can help you make the case and truly
contribute to better for business,
planet and people

**BETTER: FOR A SUSTAINABLE
FUTURE**

That means a better future also for him



**OR: THE
SCIENCE
OF
BETTER**



“Tout ce qui
brille
n’est pas
de l’OR”

(D. de Werra)

“THAT’S ALL FOLKS”

(Bugs Bunny)