

Remanufacturing

Resource Efficiency Potential



OECD, 24 April 2008
David Parker

Topics

- Definitions
- Benefits
- Feasibility
- System issues
- Examples
- Challenges

Re-words

Reuse

Repair

Recycle

Remanufacture

Refurbish

Rebuild

Recondition

Repurpose

Remarket

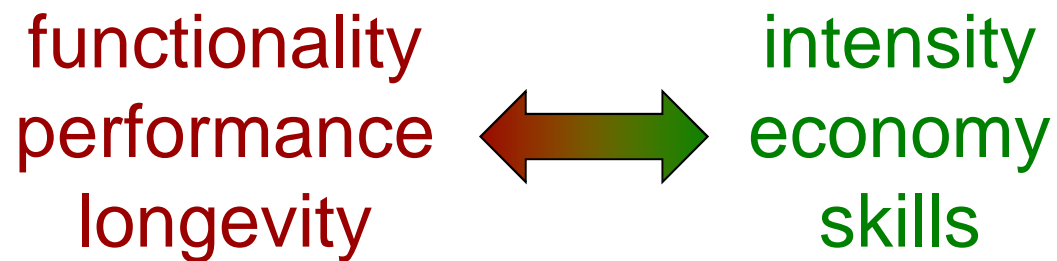


Centre for
Remanufacturing
& Reuse

Definition

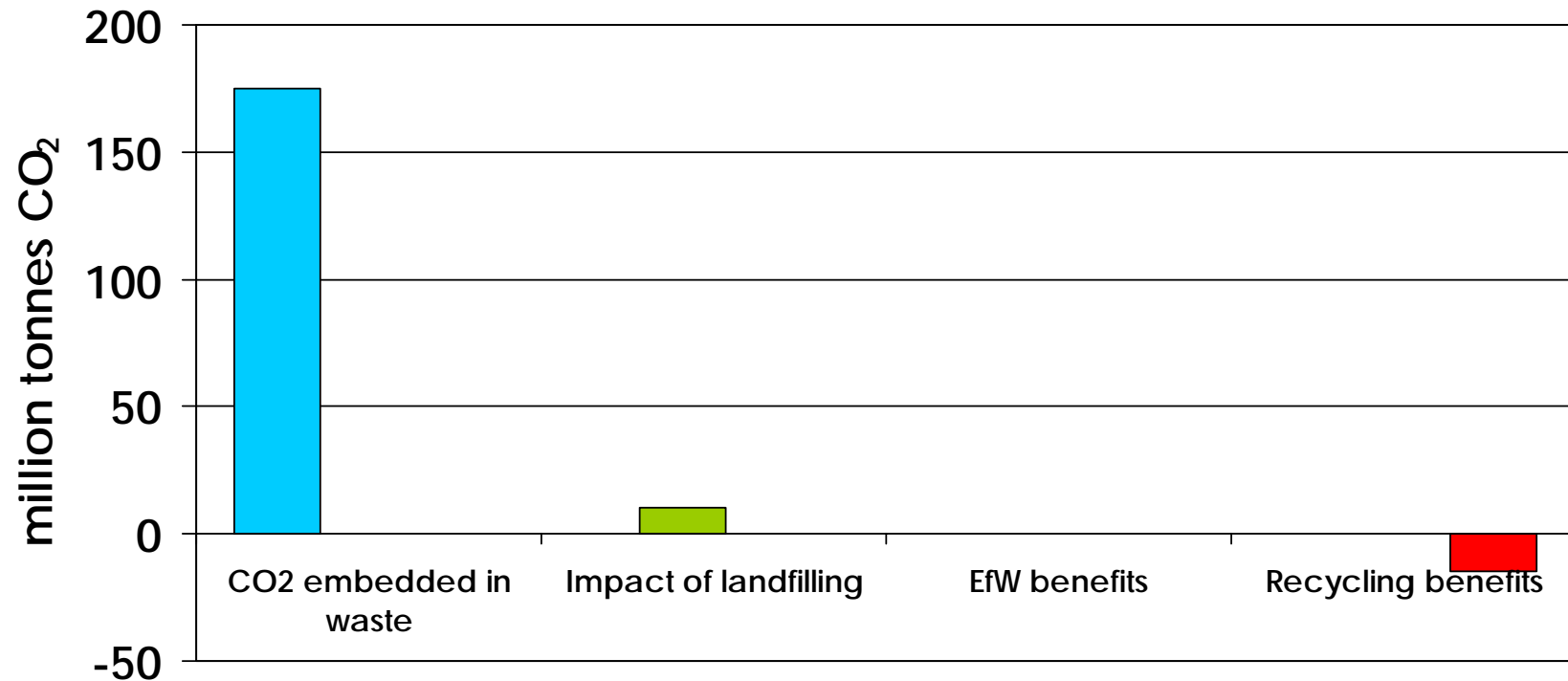
“A series of **manufacturing steps** acting on an **end-of-life part or product** in order to return it to **like-new or better performance**, with **warranty** to match.”

Preservation of embedded value



Benefits Where We Are

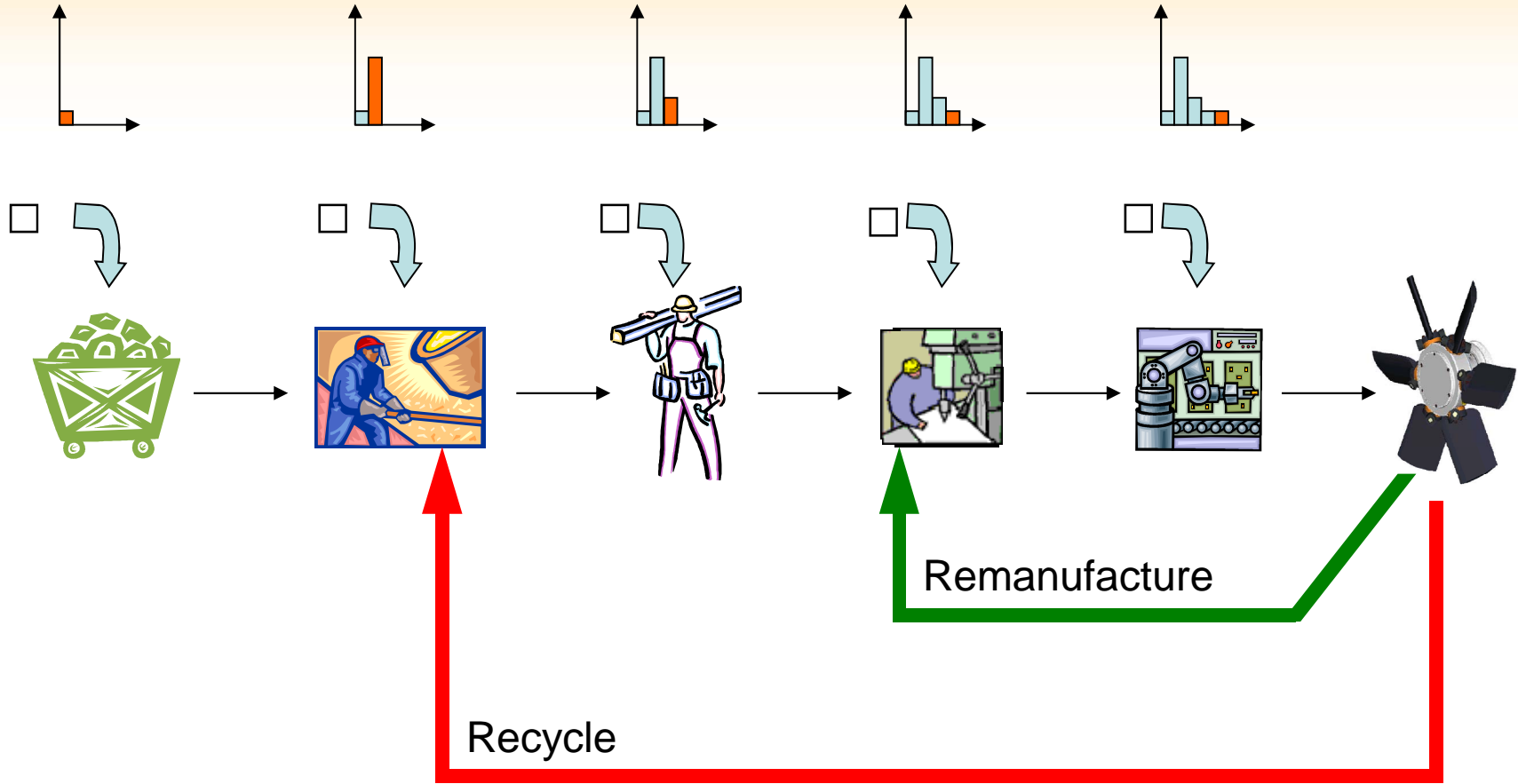
Waste & CO₂ - MSW, C&I Waste Totals



Source: Defra, unpublished data

Benefits

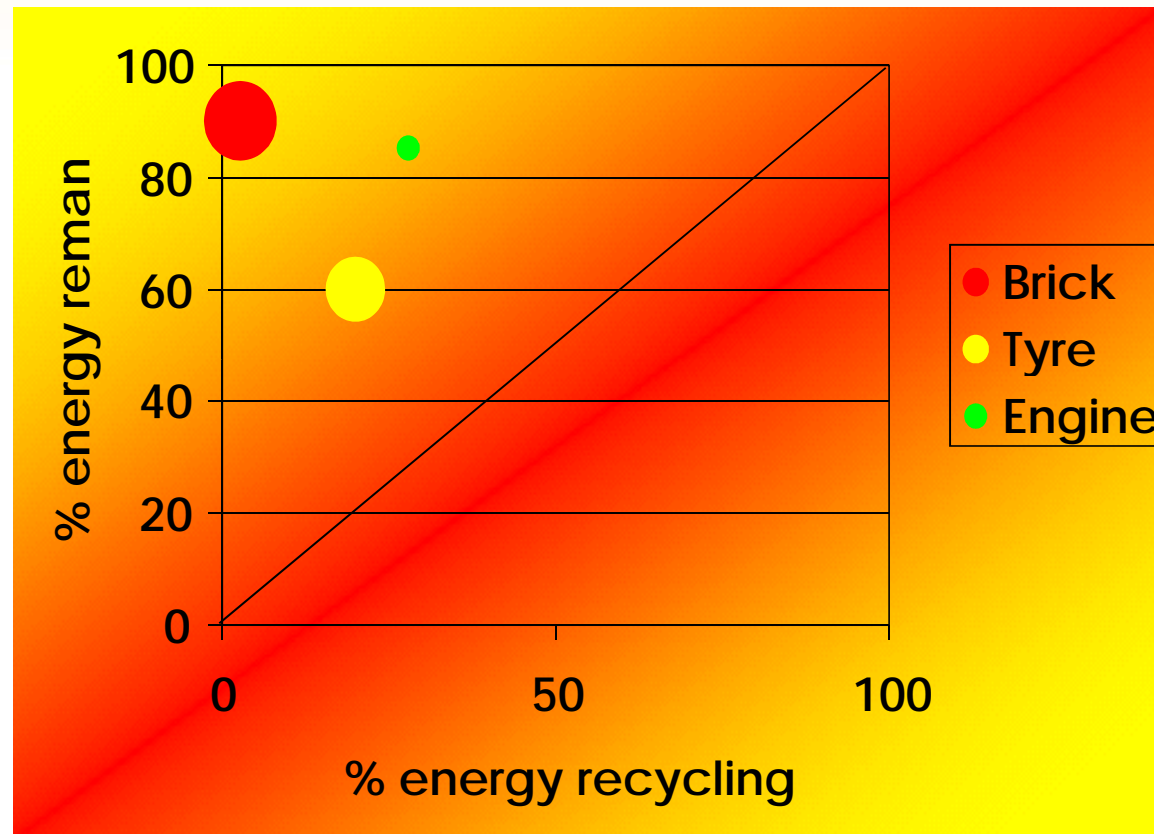
Embedded impacts



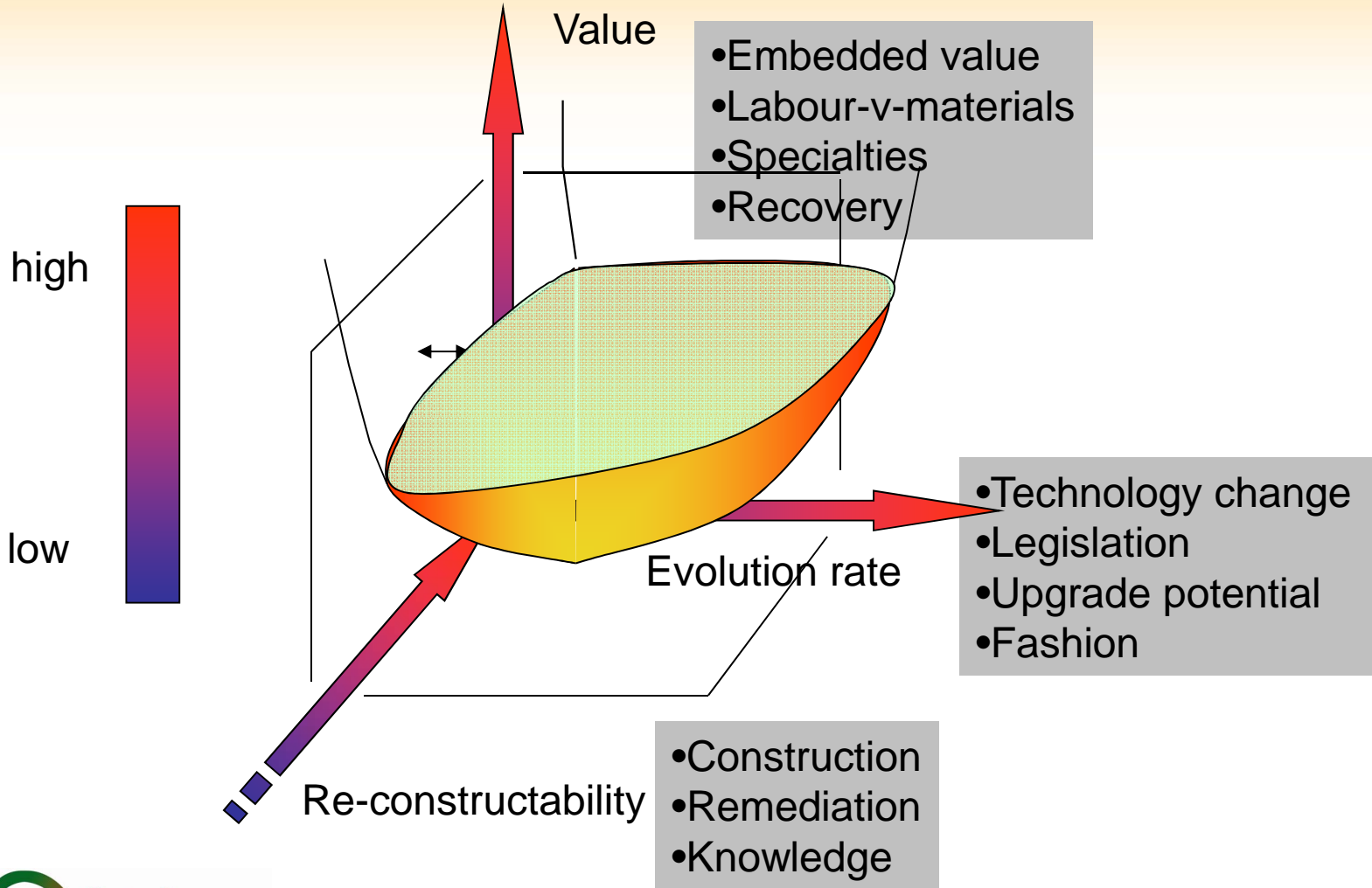
Benefits

What Might Be

Comparative embedded energy recoveries



Landscape



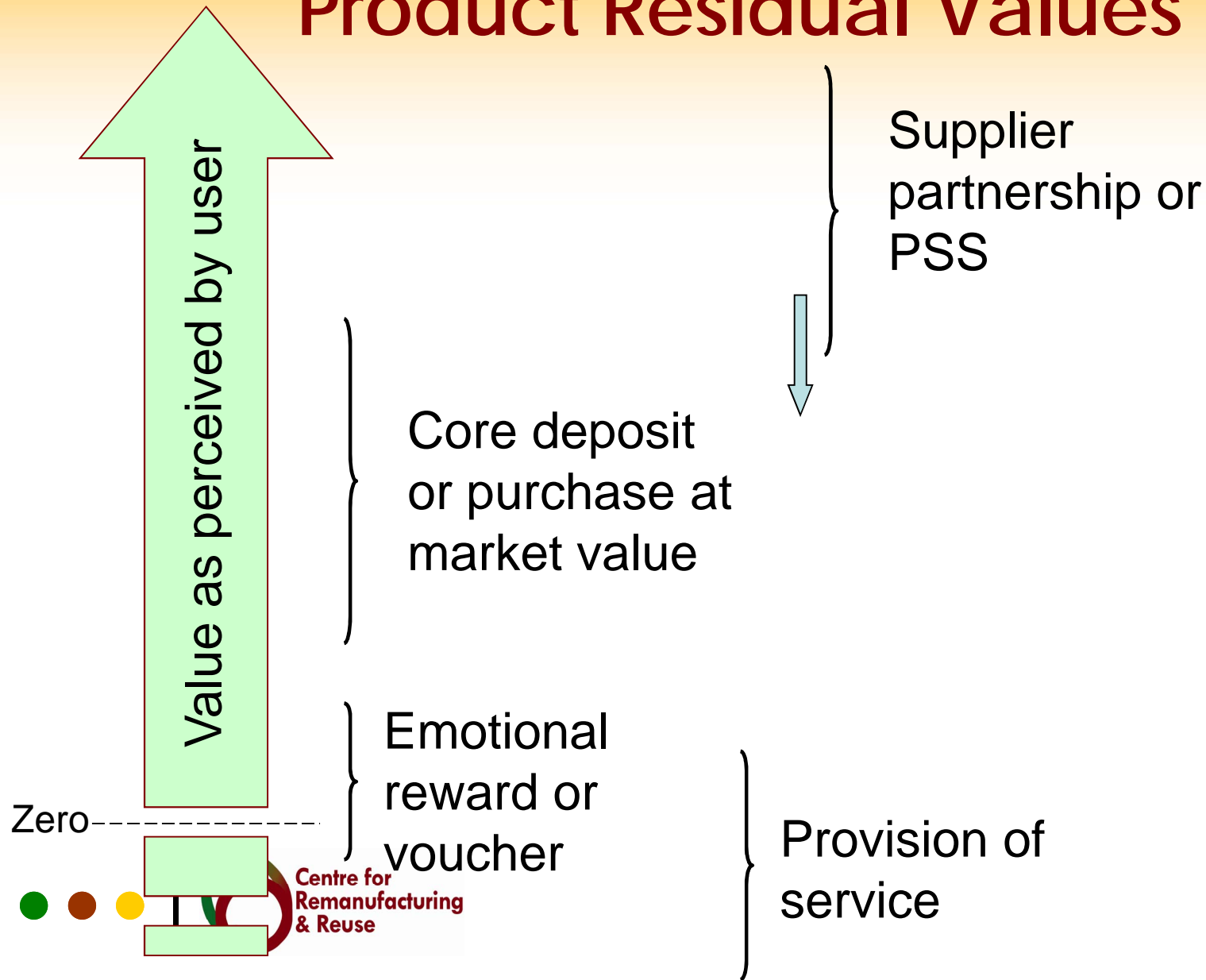
Relevance

Can we make this work in major global businesses?

Value UK

- 6€ billion per annum
- > 1 Mt CO_{2e}
- > 50,000 people
- More in refurbishment etc.
 - Exchanges skills for energy and materials
 - Reduces primary extraction and processing
 - Improves supply security?

Product Residual Values



Business models

closing the loop

- Capital incentives
 - deposit-return e.g. milk bottles
 - return core credit e.g. Ivor Searle
 - new build premium e.g. [Sovereign](#)
- Amortized incentive
 - lifetime cost of ownership e.g. [Caterpillar](#)
- Easy asset management
 - zero cost disposal e.g. [Foneback](#)
 - supply and maintain e.g. Rolls-Royce
 - pay on performance e.g. [Balzers](#)

Business models

examples

- Orthogonal strategies
 - Performance gap e.g. warranty (universal)
 - Fear of failure e.g. [Cartridge World](#)
 - Reputation gap e.g. other cartridge
 - Product redesign e.g. custom auto
 - Risk absorption/benefit sharing e.g. [GKN](#)

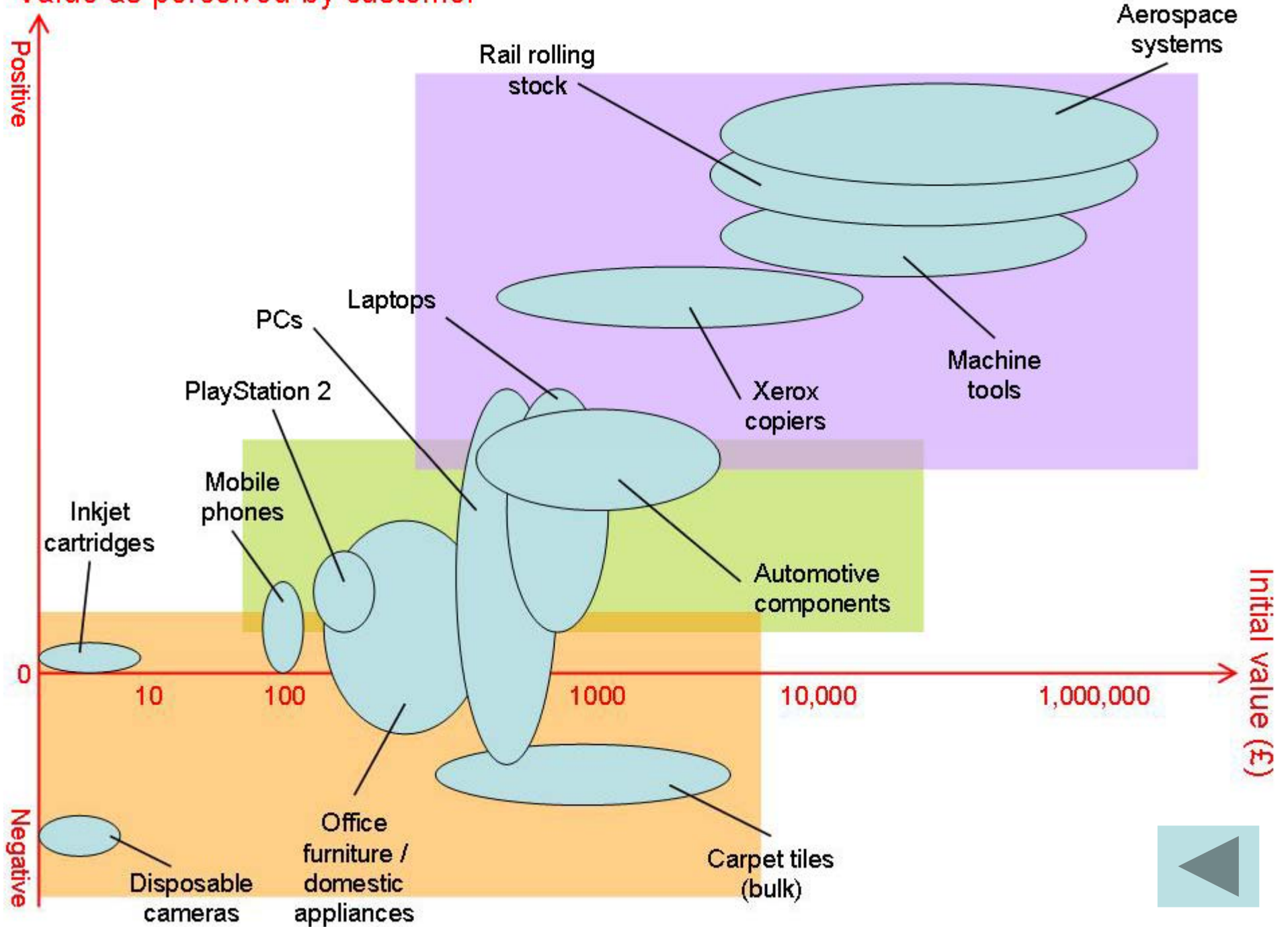
Key Challenges

- Improving core availability
 - Structuring market incentives
 - Improving infrastructure
- Stimulating capabilities that embed
 - Design for reuse
- Purchaser de-risking
 - Standards, accreditation
 - Life-cycle costing

Information

- www.remanufacturing.org.uk
- david.parker@remanufacturing.org.uk
- +44 (0) 1296 337 165

Value as perceived by customer



Business Models

- Businesses
 - All scales
 - OEMs, Contract, Independent
 - Local, regional, global
 - Economic driver, resource benefits
- Business models
 - Sell + service
 - Lease
 - Deposit-return
 - Incentivised return
 - Life-cycle management
 - Risk management
 - Servicisation

Business models

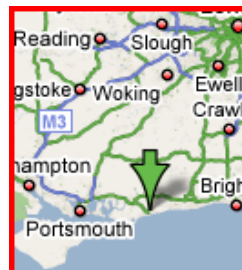
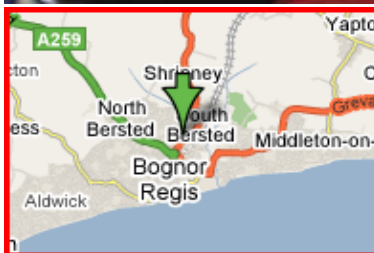
example 1

Sovereign



Total supply capability – new or old
Encouragement to buy reman
You can buy a new starter motor but you pay a non-reman surcharge

→ Cost savings



Business models

example 2

Caterpillar



You buy a branded *CAT Reman* unit
You will continue to be serviced by CAT
You will buy another CAT Reman in x years
Your overall lifetime cost of ownership is lower than buying new

- Cost savings
- Brand lock-in



Market entry: contract reman for GM
Now: global leader
Integrated reman/new build lines
Strong dealership, field evaluation, cost reduction



Business models

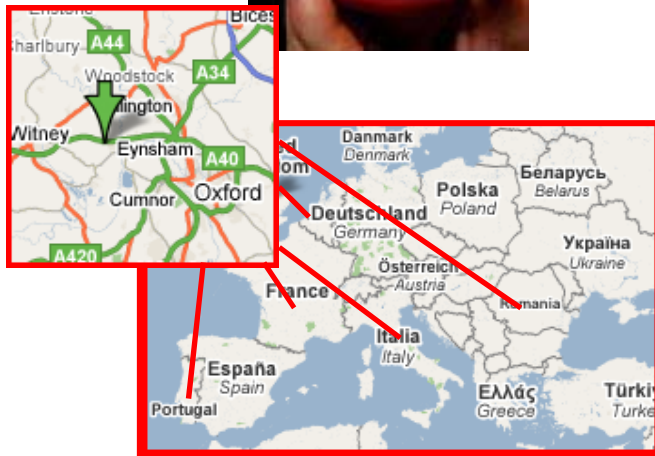
example 3

Fonebak



You buy a mobile phone
You don't get credit for a new one
Use the free return service from Fonebak

- Low effort/cost to you
- Feel-good factor
- Cascaded reuse in other markets



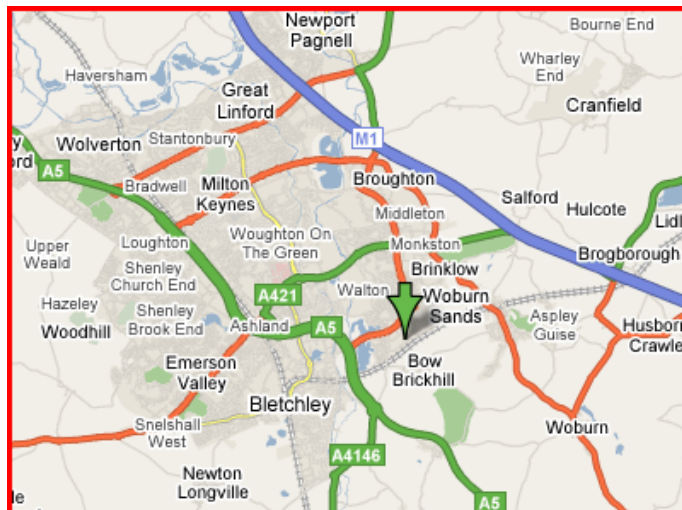
Business models

example 4

Balzers



Used to sell drill bits
Now lease use of drill bits to Ford
“Pay per hole”
Dispense in vending machines



- ➔ Amortizes cost to customer
- ➔ Locks in relationship
- ➔ Locks in core return
- ➔ Allows data-rich operation



Business models

example 5

Cartridge World



You buy a refilled cartridge
Your buyers think they make printers jam
CW embeds a printer service contract

- Cost savings
- Offloads IT department
- Amortizes risk

Other (smaller, local) refillers need to go through trusted third parties – wholesalers, who underwrite performance; they monitor complaint rates.

Business models

example 6

GKN Driveline

You don't know you're getting a reman item
It's not advertised as such
OEM/remanufacturer brand is at stake



- Cost savings/profit shared
- Risk absorbed in warranty

