

Re:Thinking Organisations

Inaugural Lecture
20th April 2004

Professor John Beckford

“the truths of cybernetics are not conditional on their being derived from some other branch of science”

Ross Ashby, 1956

Managerial Cybernetics

- What is Managerial Cybernetics?
- How does it work?
- Why do we need it?
- What is the benefit?

Managerial Cybernetics

- Common conception of cybernetics
 - Dr. Who, Cybermen, Cyberspace (the Internet)
- Plato - 417 – 347 BC
 - Kybernetes, 'steersman', 'steering the ship of state', 'governance'
- Wiener – 1947
 - 'Control and Communication in the Animal and the Machine'
- Beer – 1959
 - 'The Science of Effective Organisation'

Managerial Cybernetics

‘The branch of Management Science that studies the structural, informational and human aspects of any organisation as an integrated whole’

Beckford & Dudley, 1998

Managerial Cybernetics

- Provides an alternative way of thinking about organisations in terms of:
 - Purpose
 - Structure
 - Behaviour (people)
 - Interaction
- Offers different insights into:
 - Efficiency (Productivity)
 - Effectiveness (Performance)
 - Sustainability (Viability)
- How those things can be managed

However...

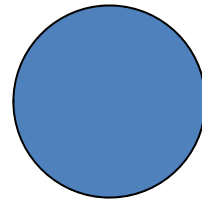
- It is a model – a representation
- A way of thinking about the world
- An abstraction from the full reality of a situation
- It is therefore:

“neither true nor false, it is more or less useful”

Beer, 1985

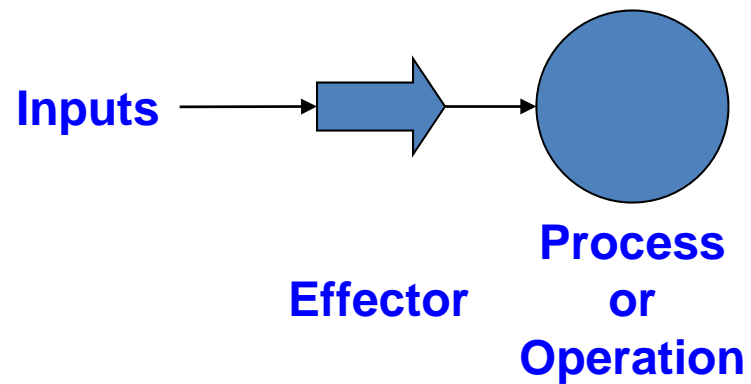
I find it most useful!

The Basic Cybernetic Model

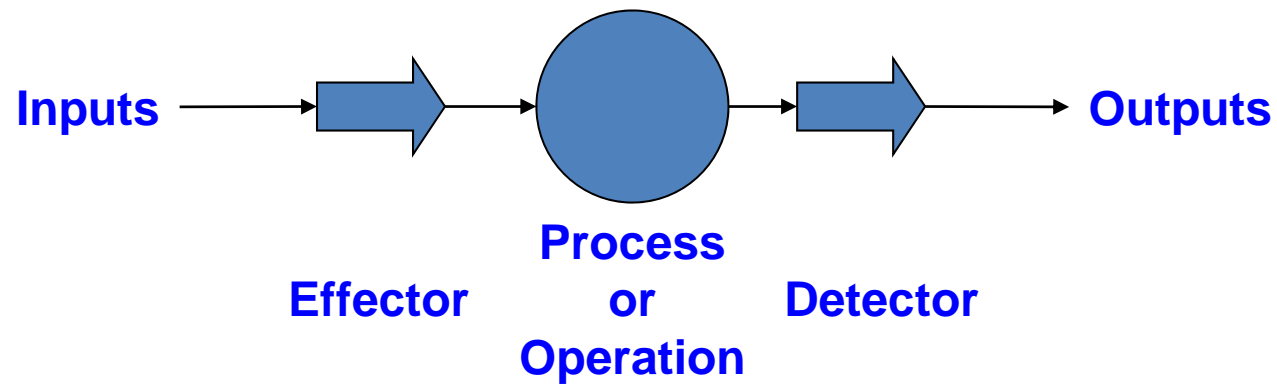


**Process
or
Operation**

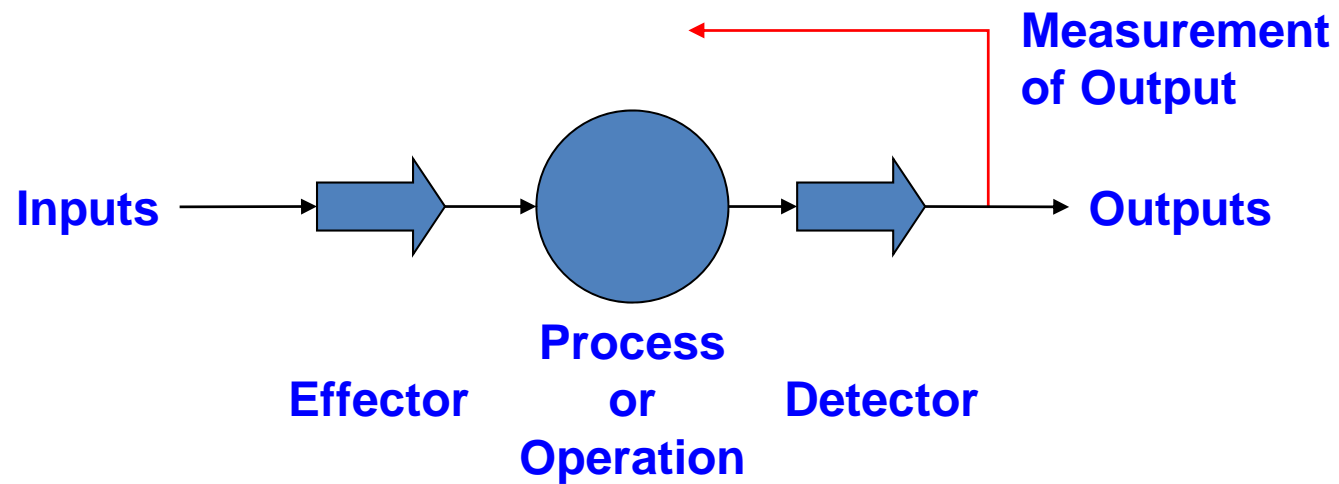
The Basic Cybernetic Model



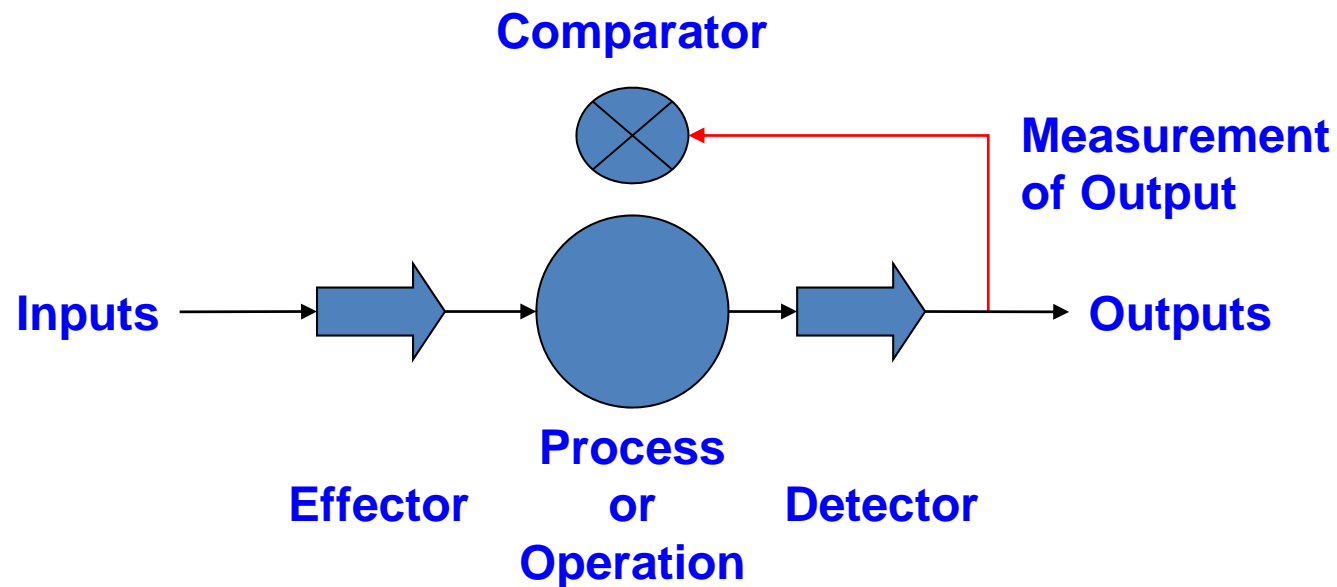
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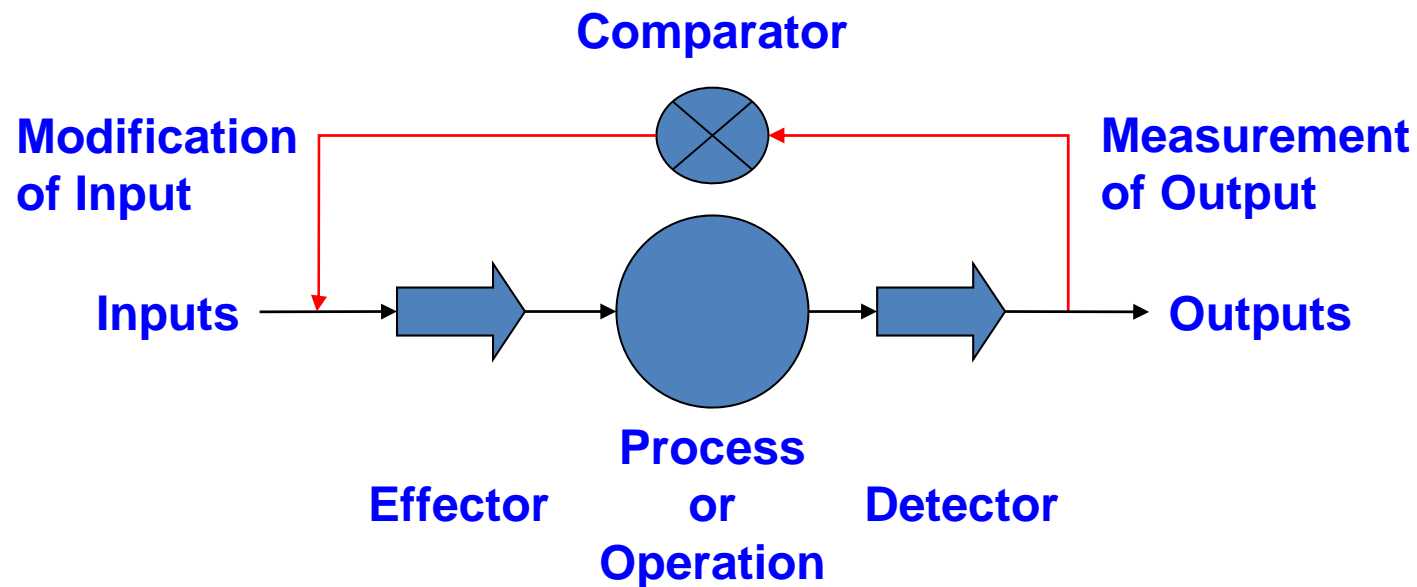
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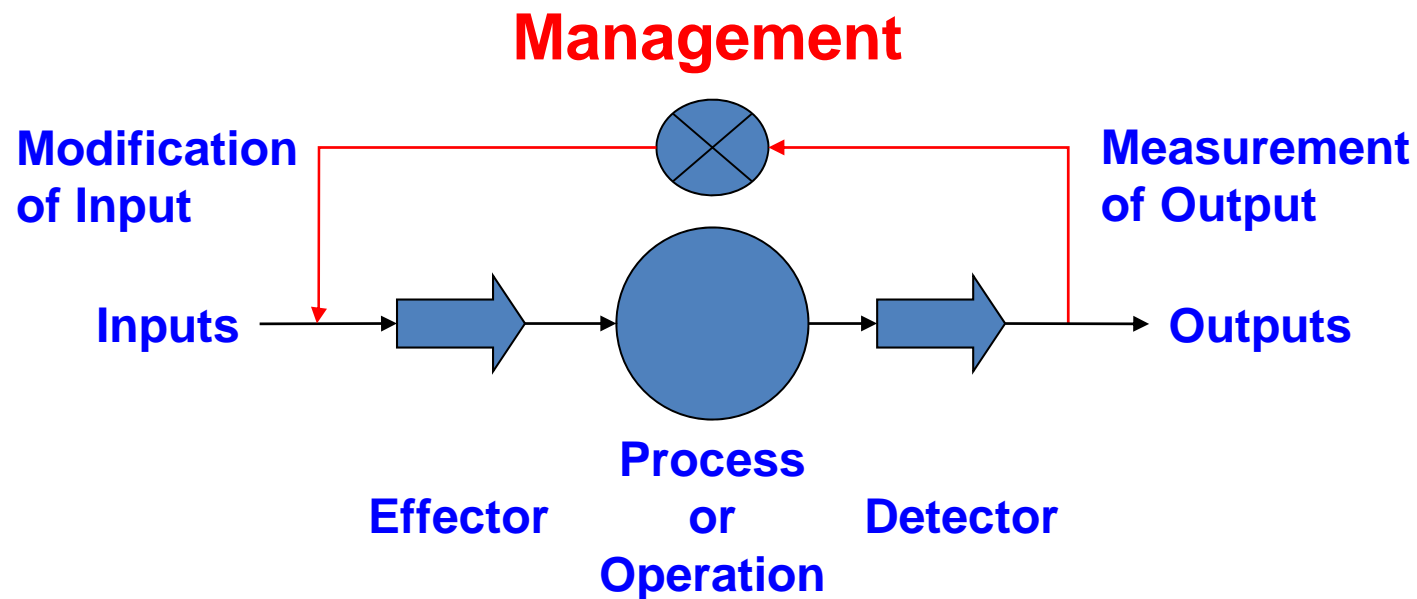
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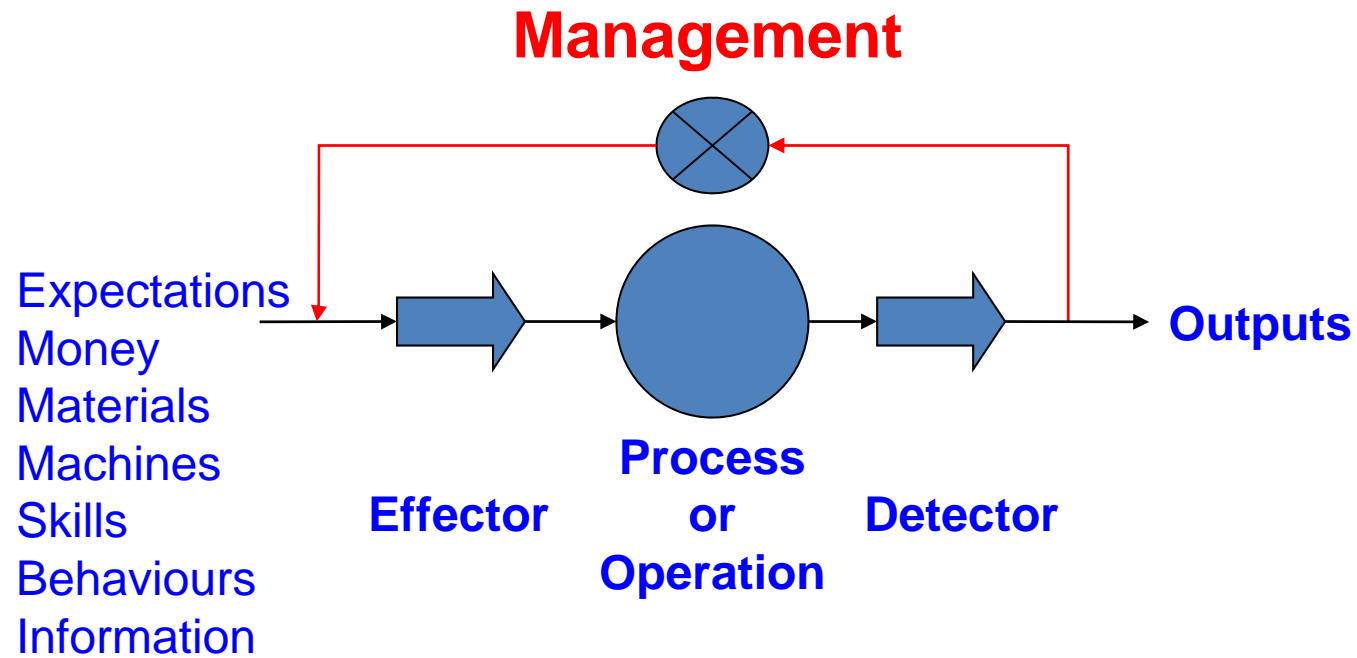
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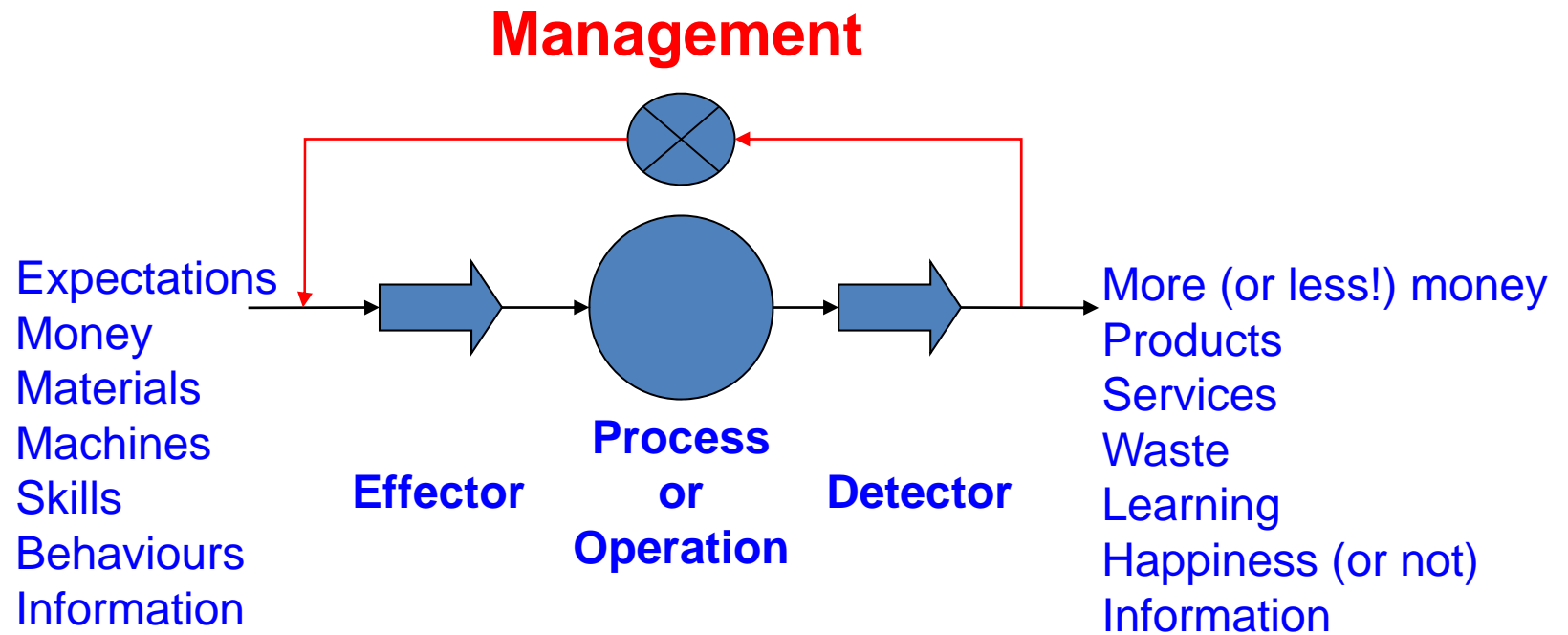
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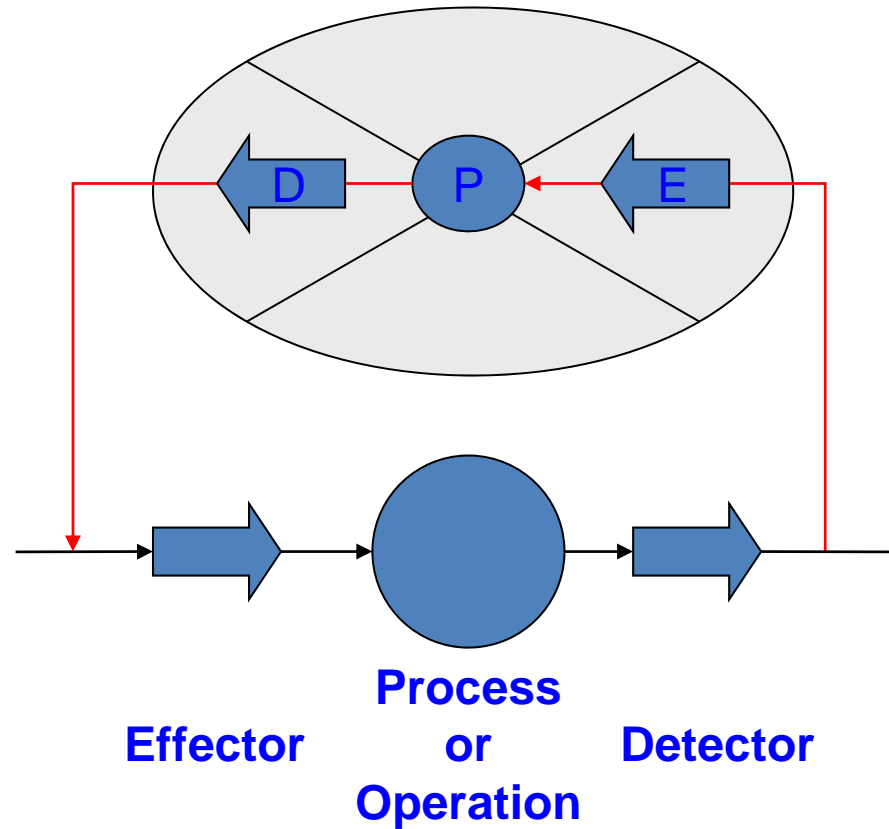


The Basic Cybernetic Model



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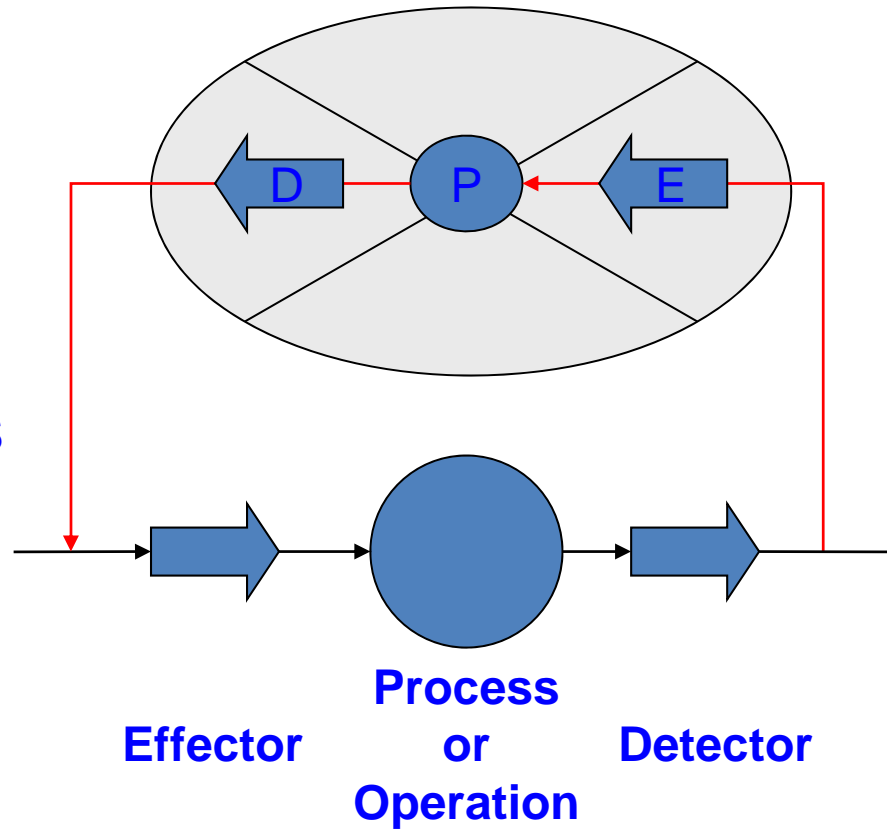
Management



The Basic Cybernetic Model

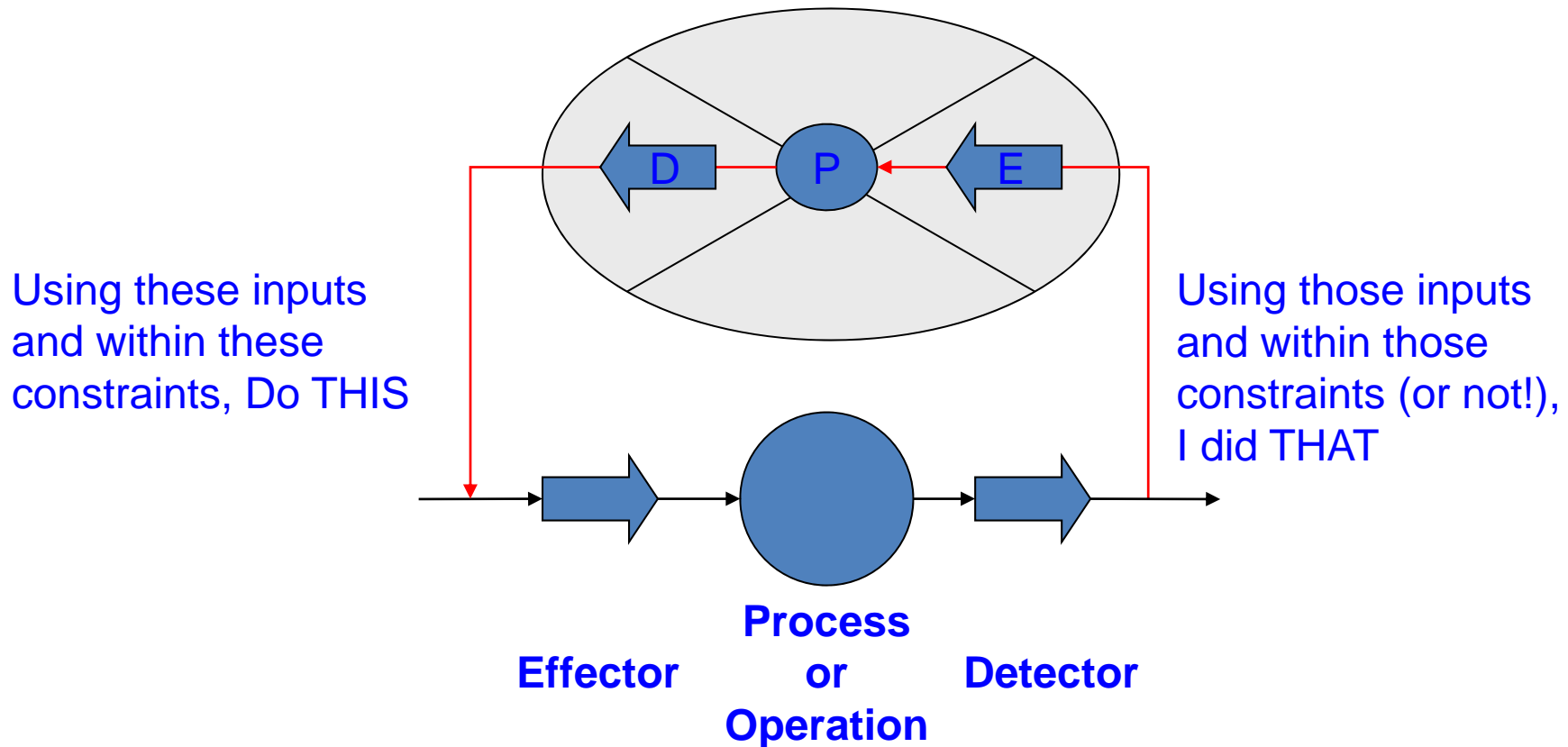
Management

Using these inputs
and within these
constraints, Do THIS



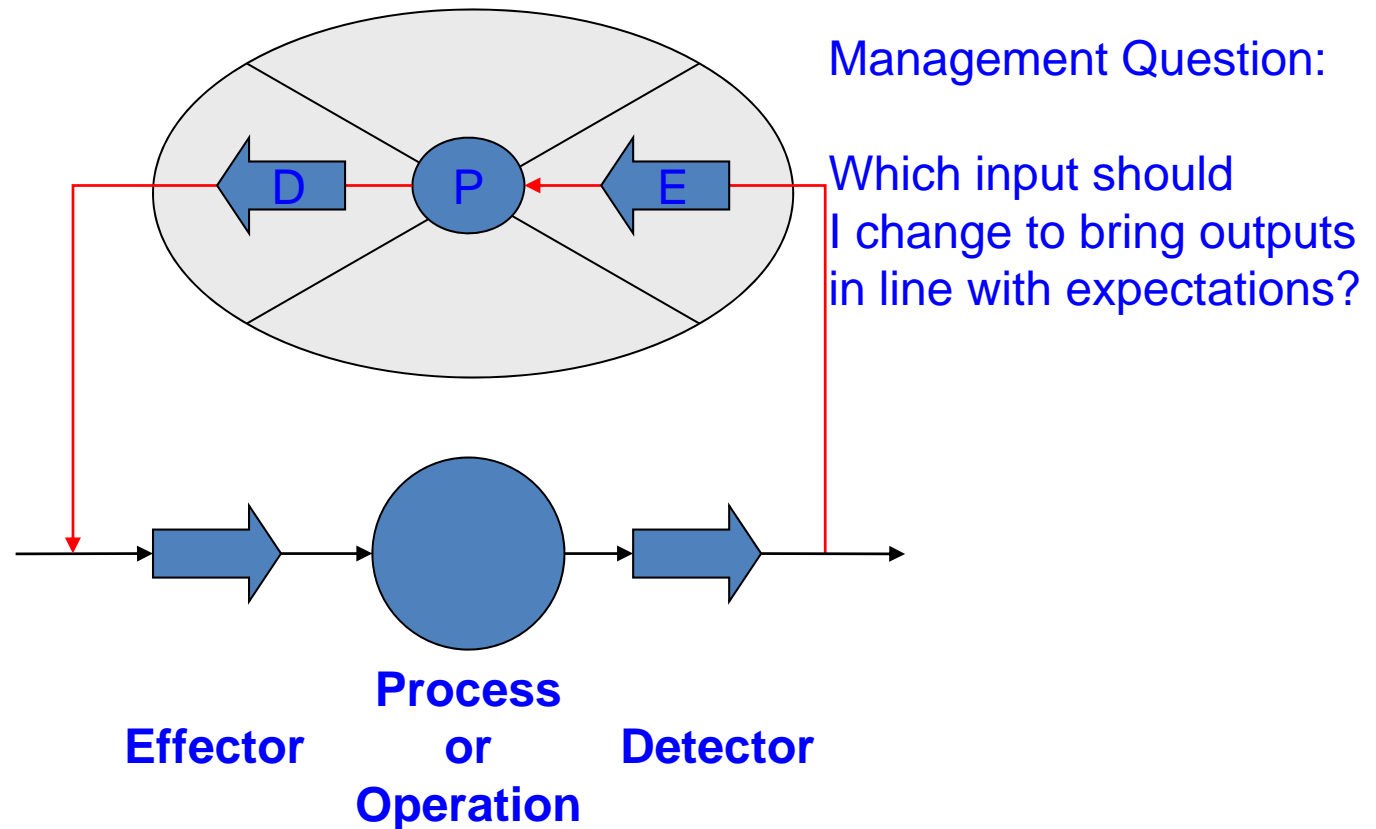
The Basic Cybernetic Model

Management



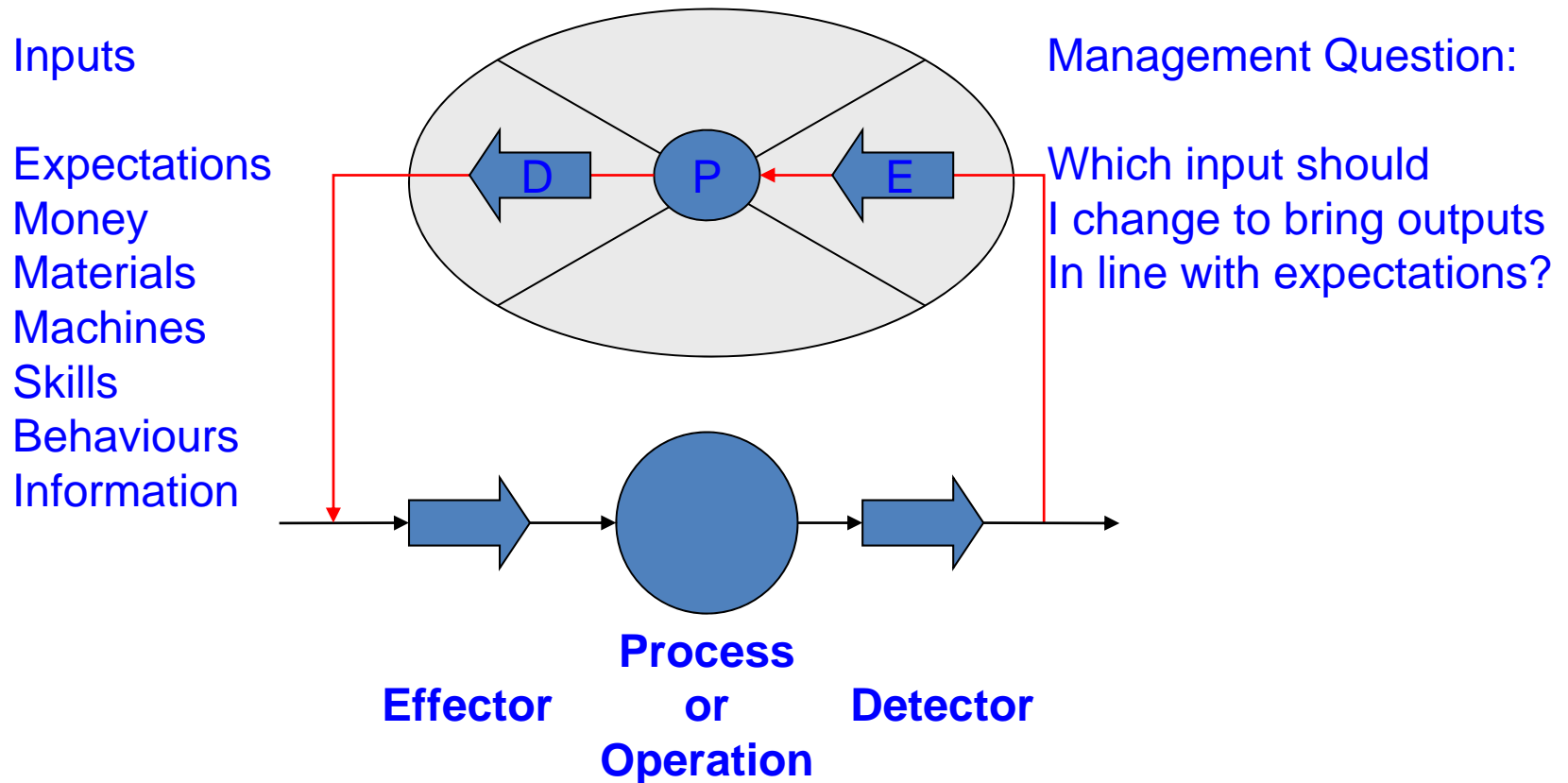
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Management



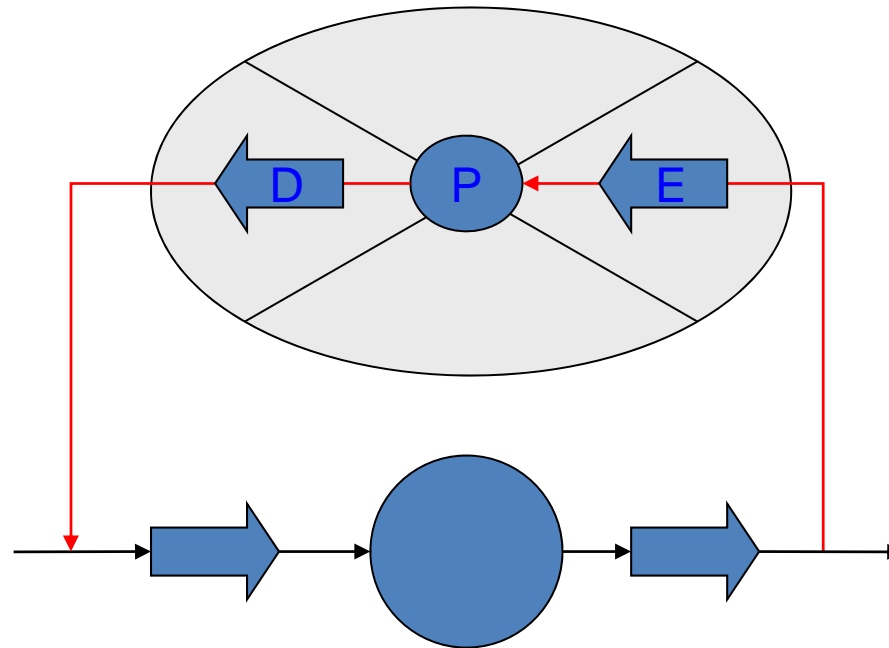
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Management



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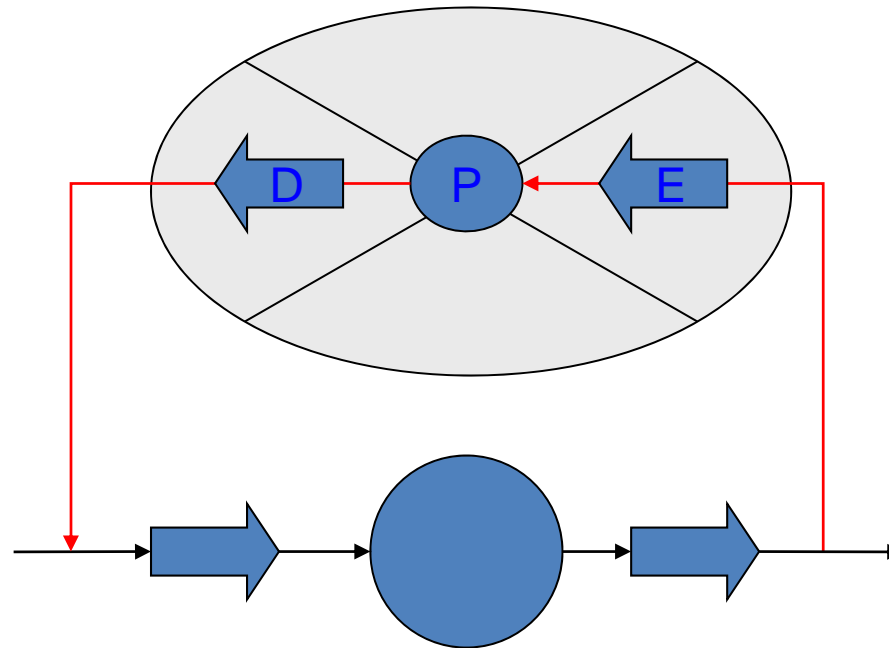
Management



Are we doing things right?

The Basic Cybernetic Model

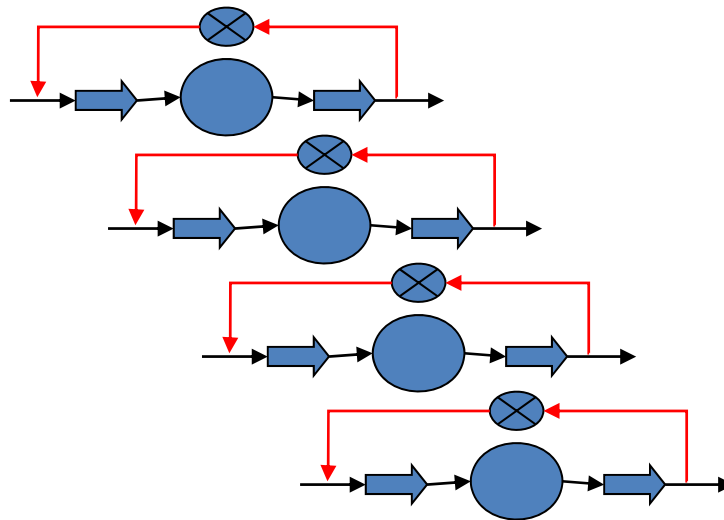
Management



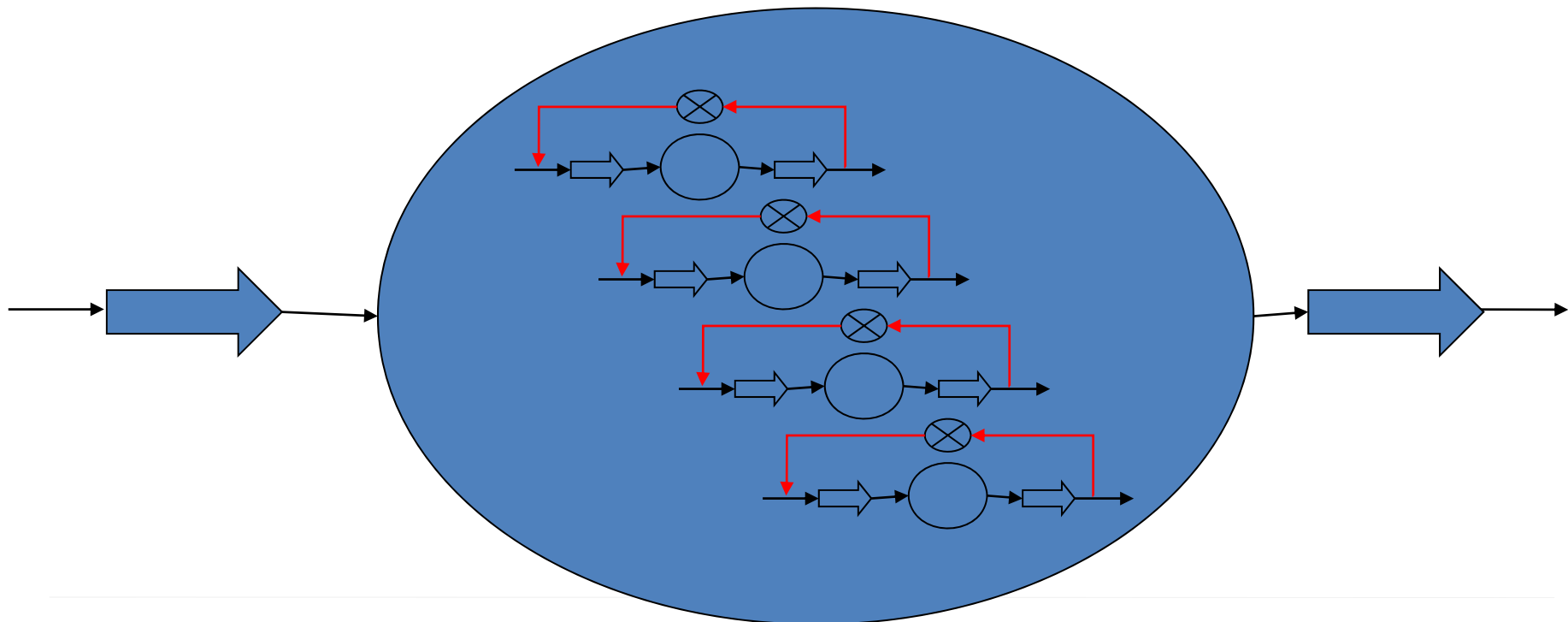
Are we doing things right?

Efficiency, Productivity, Behaviour, Quality, Profitability

Multi-Process Cybernetic Model

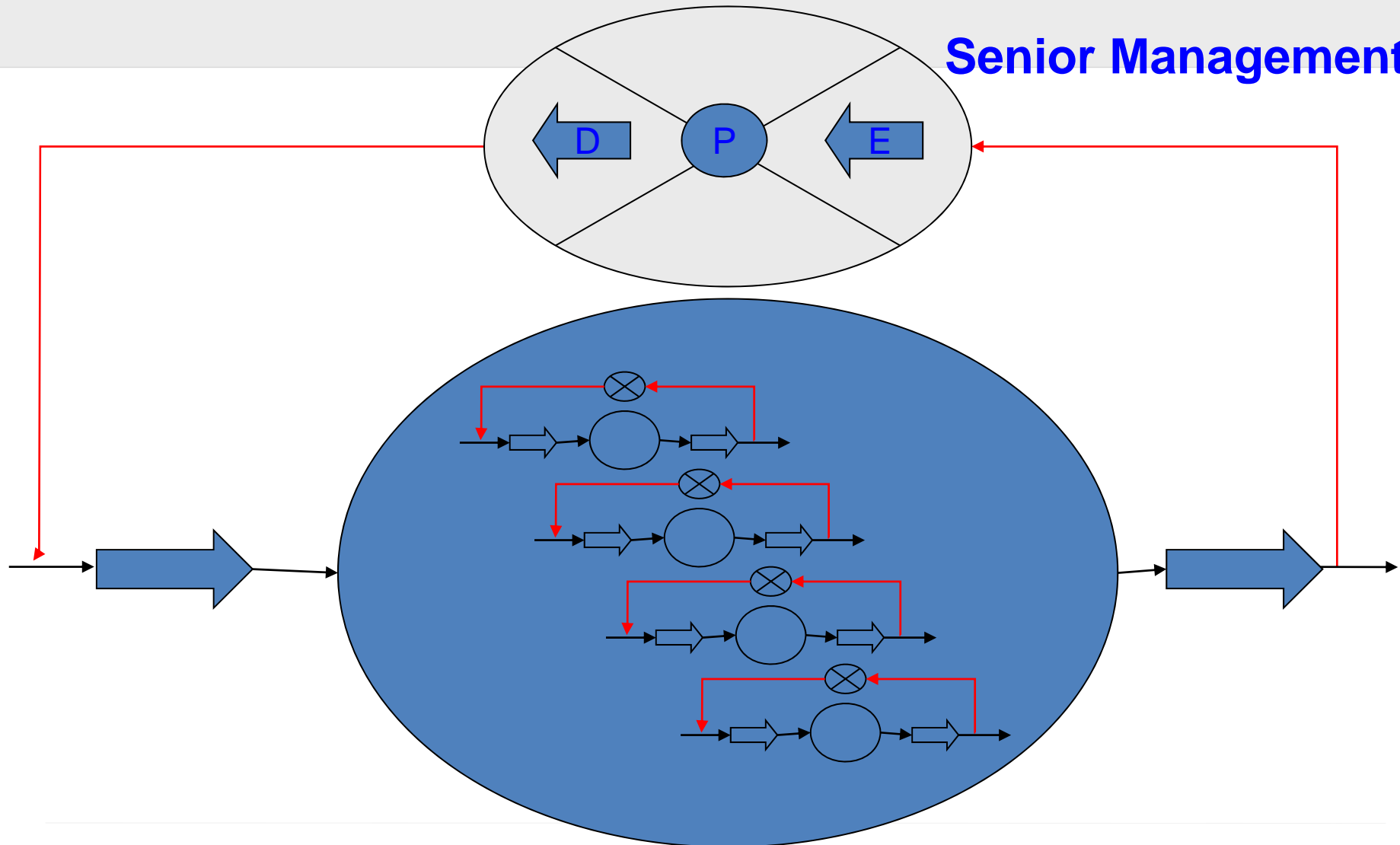


Multi-Process Cybernetic Model



Multi-Process Cybernetic Model

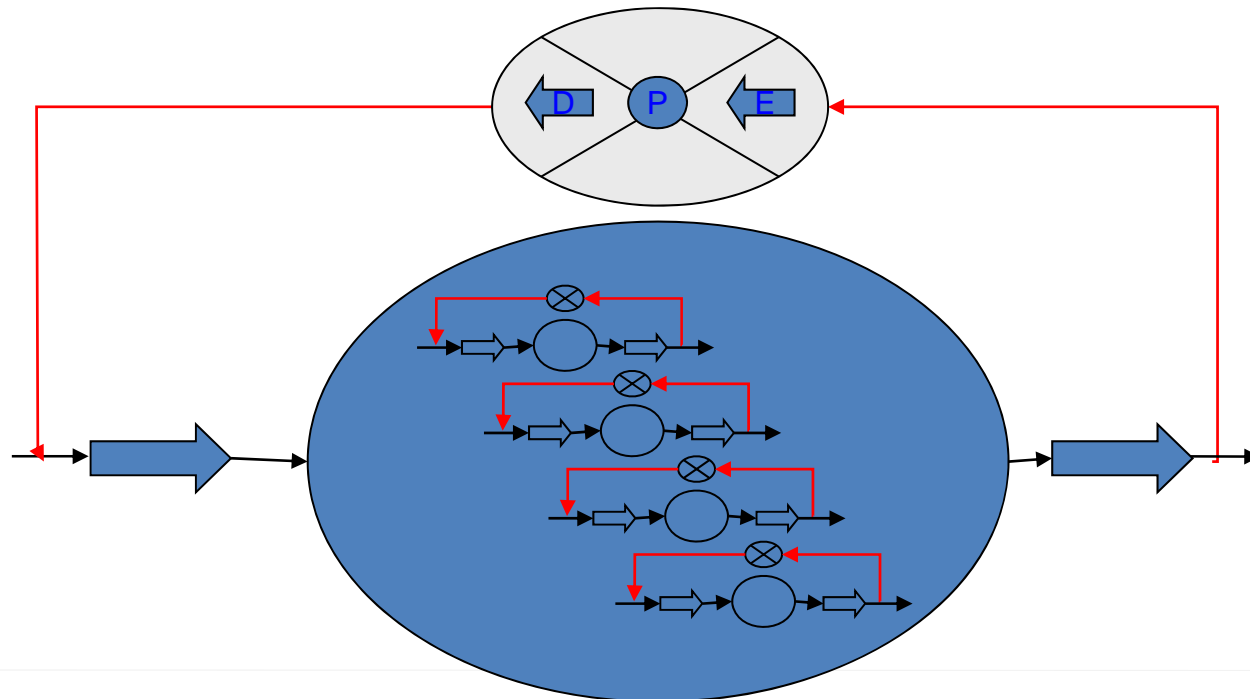
Senior Management



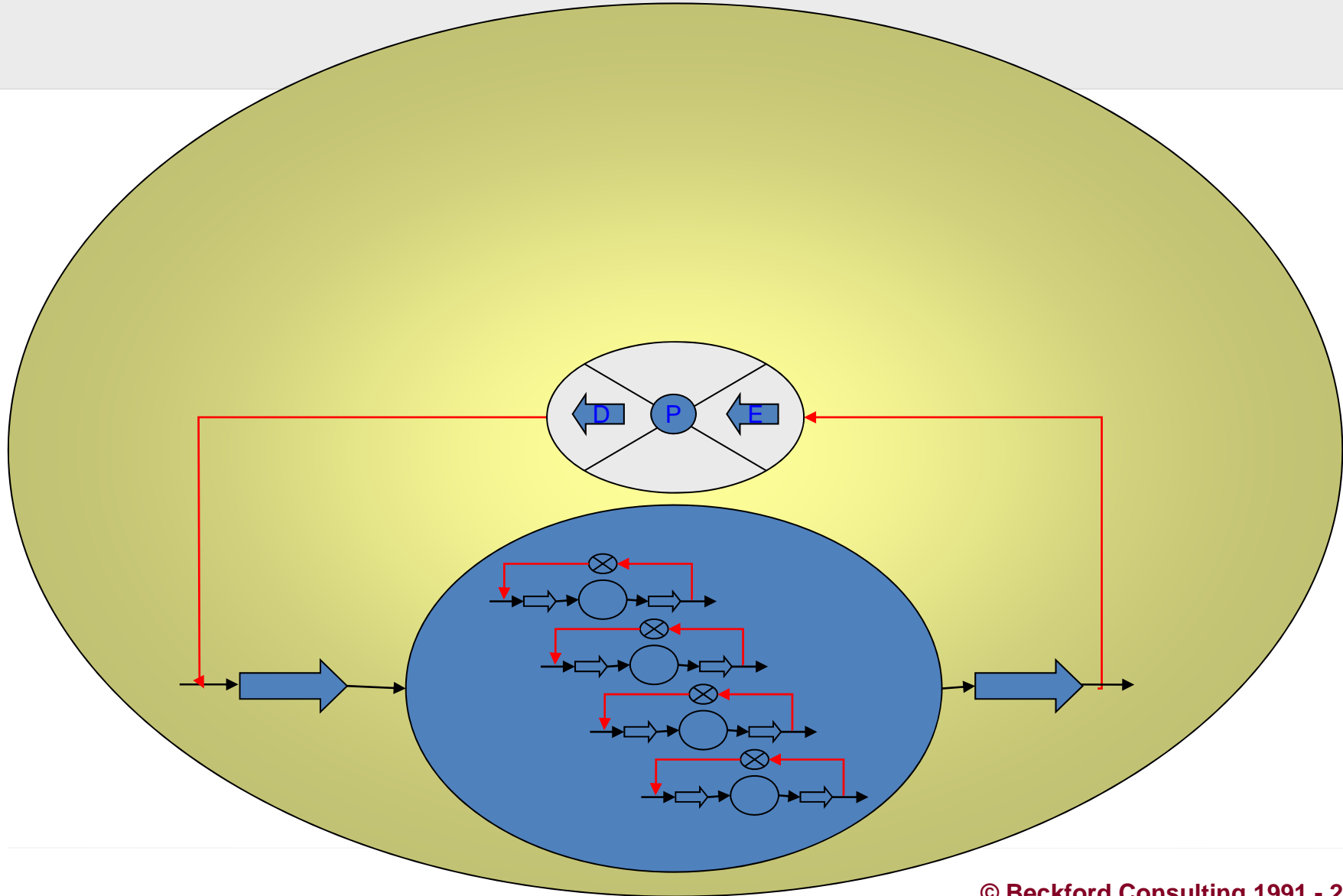
- Autonomic
- Autopoietic
- Dynamically Stable
- Performance Focused
- Self-Improvement Focused
- Multi-faceted
- Wholly Inadequate!

- Wholly Inadequate! Why?
- Because:
 - Rightness is internally defined
 - Rightness is about NOW
 - Rightness cannot be challenged within that model!
- BUT – most organisations work that way!
- What is needed?
 - A mechanism that enables the ongoing redefinition of rightness!

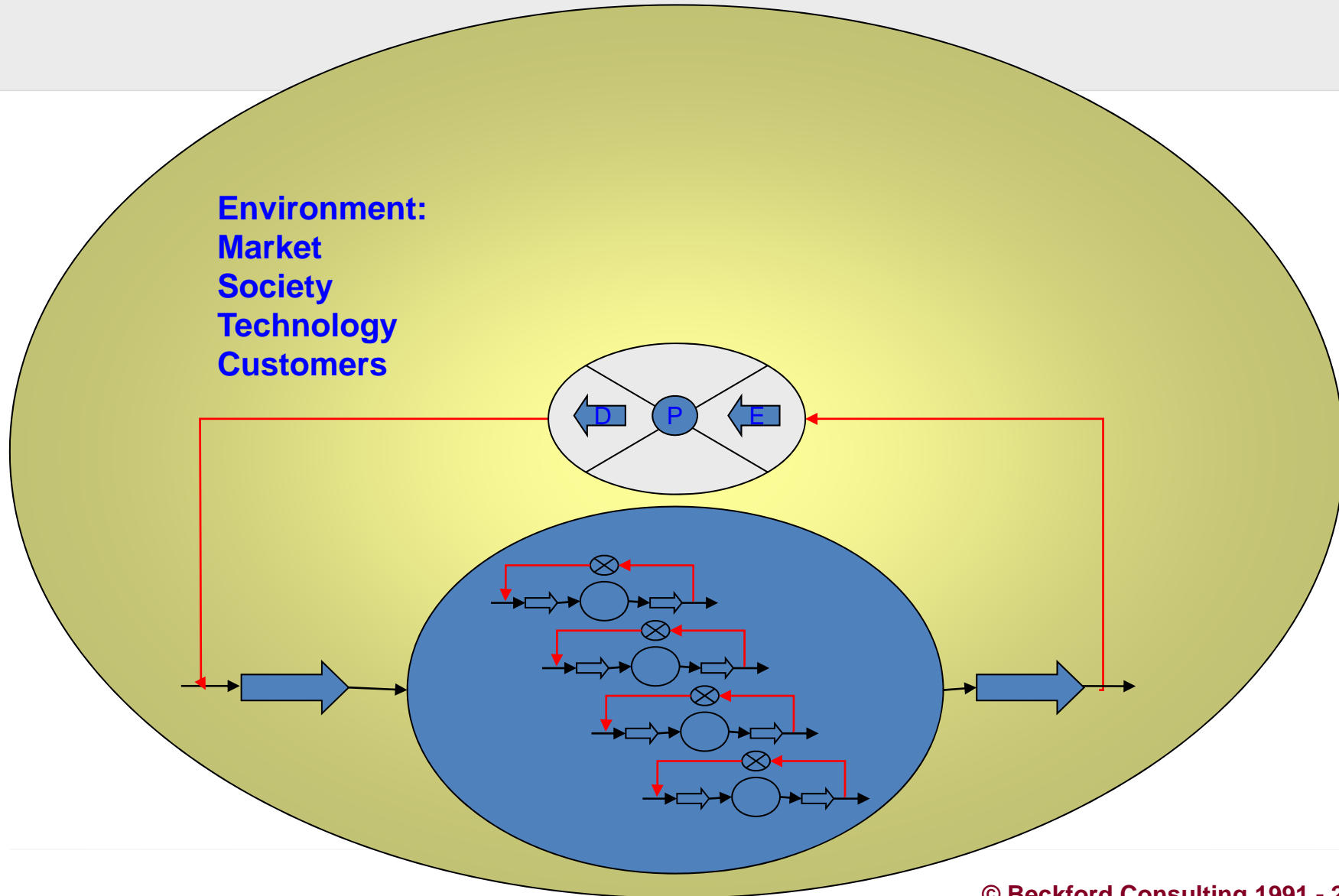
Complete Cybernetic Model



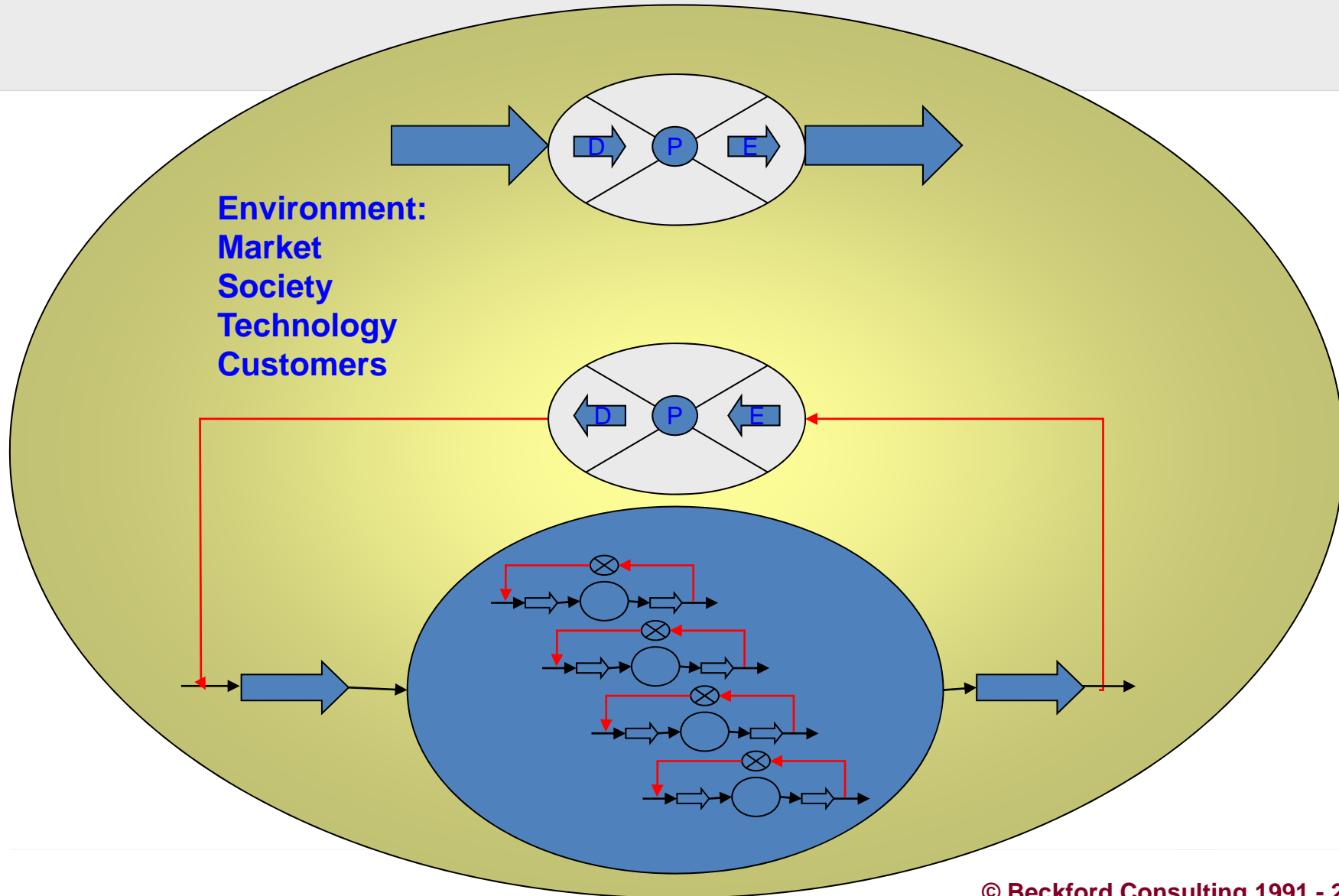
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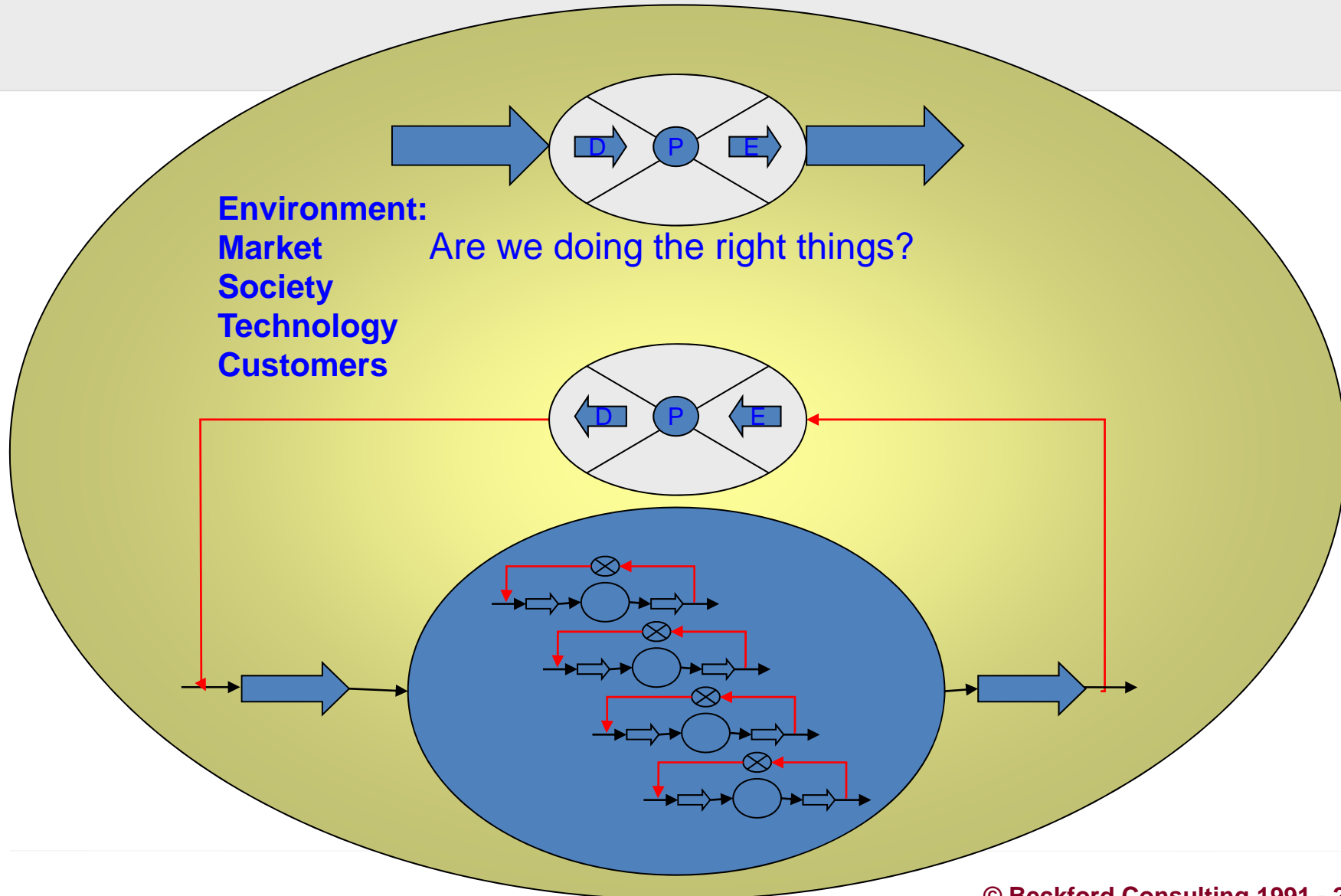
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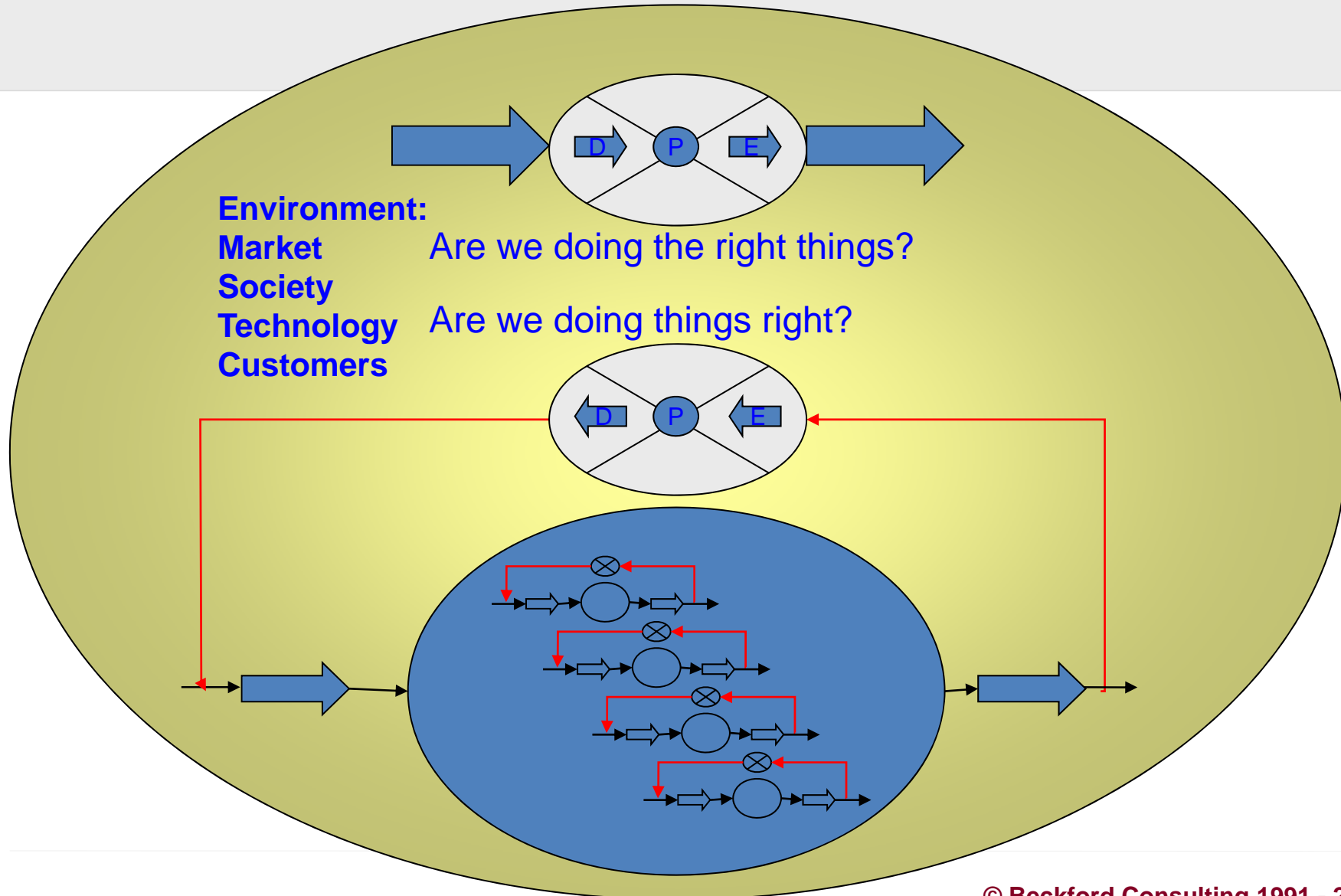
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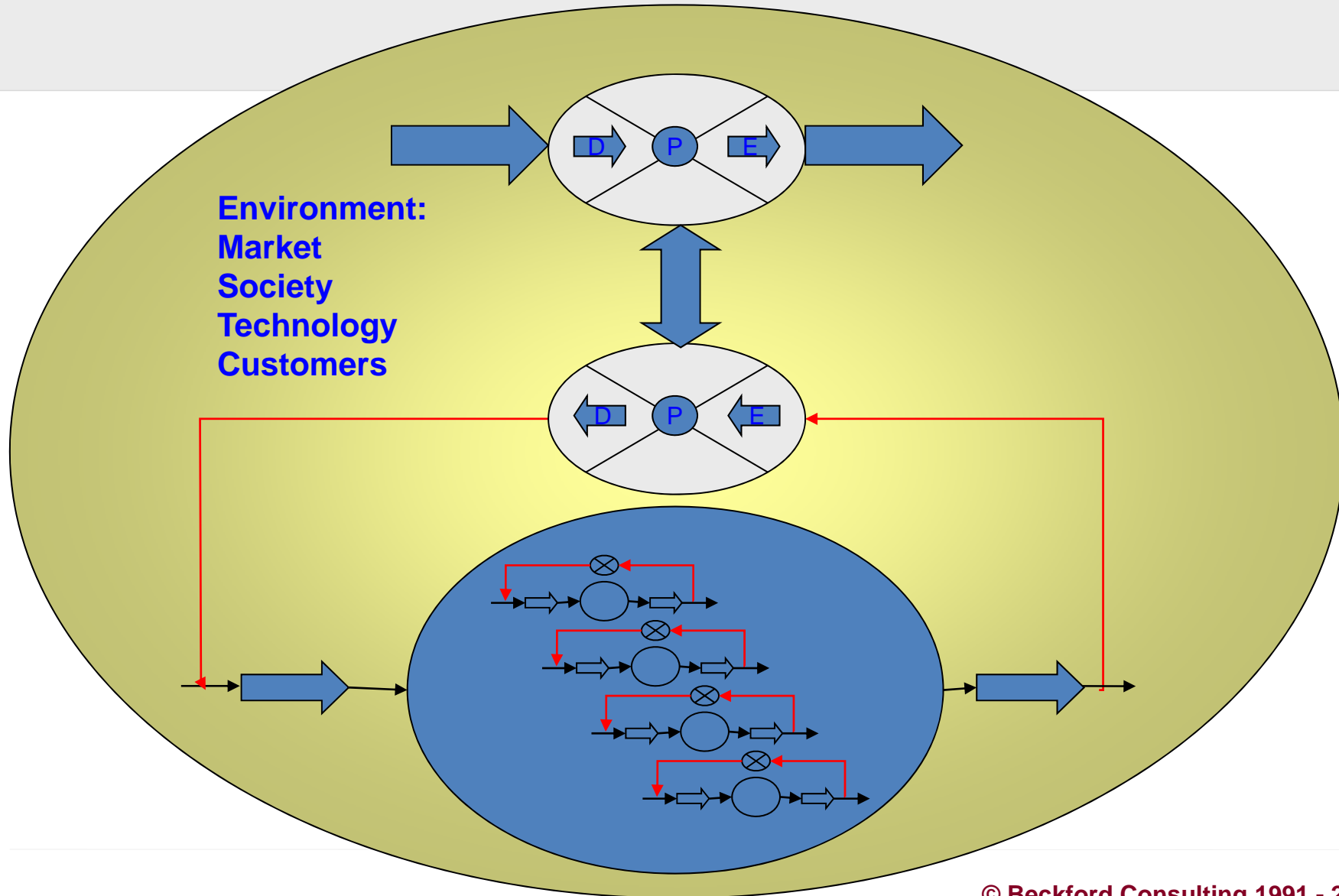
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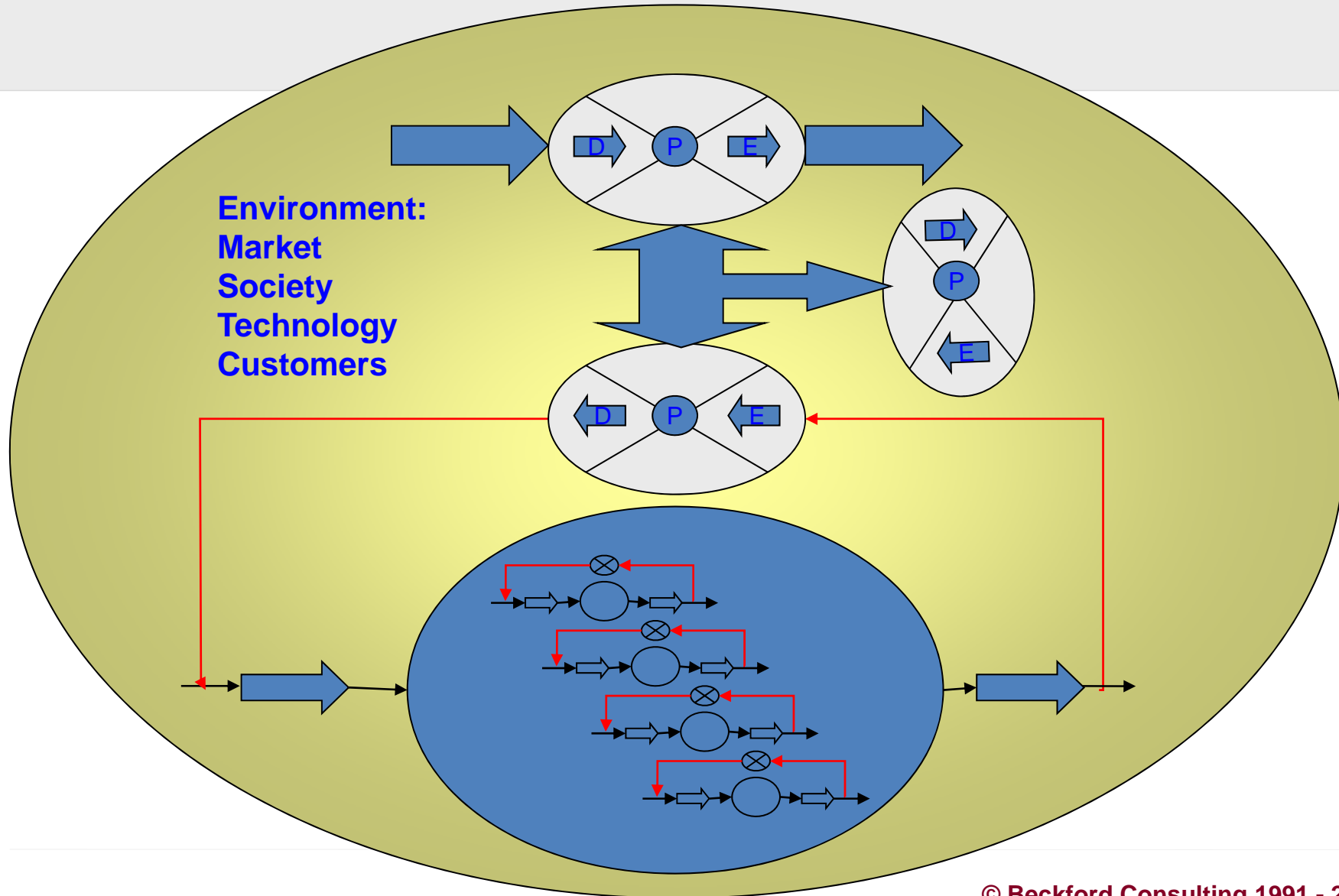
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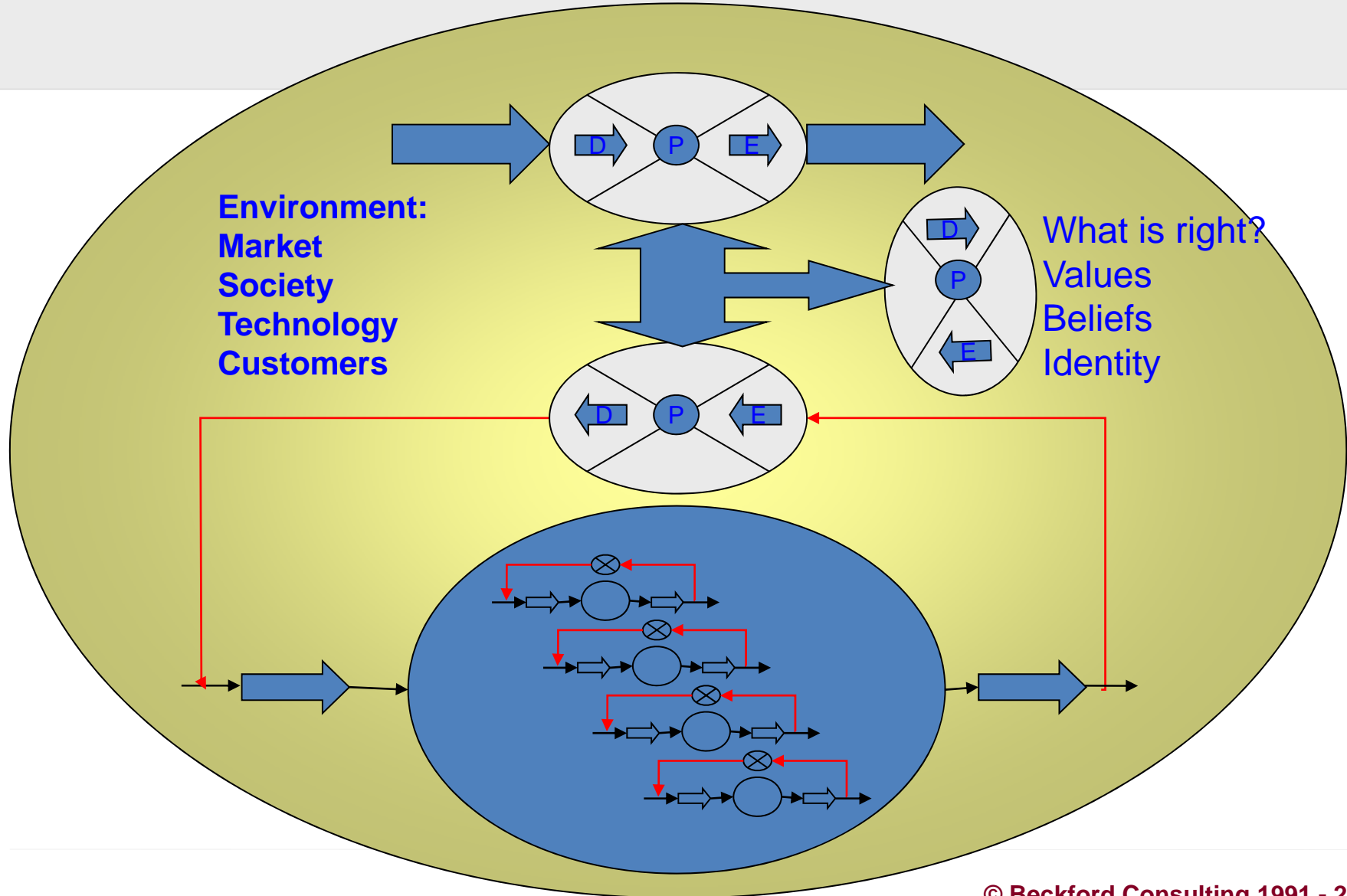
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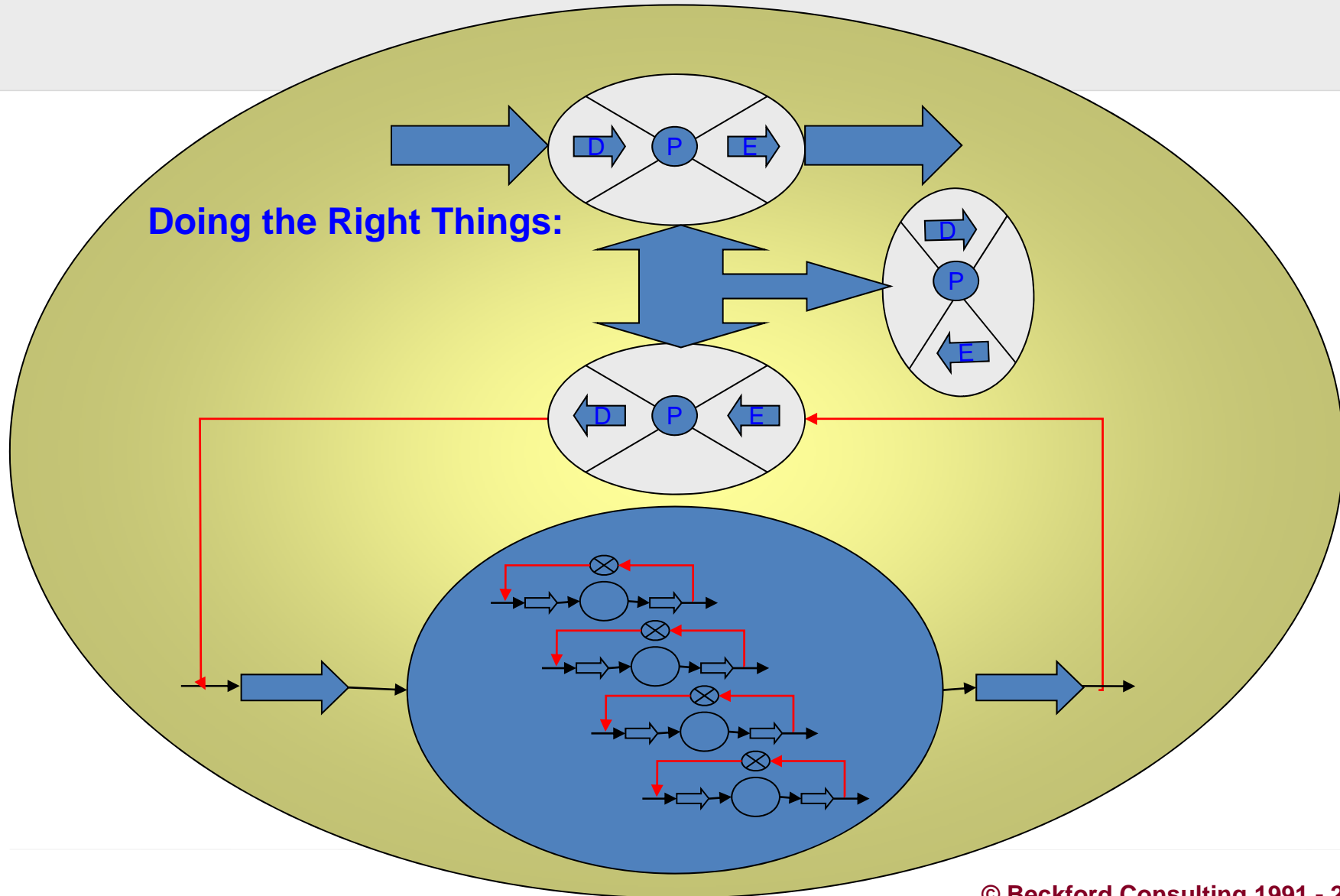
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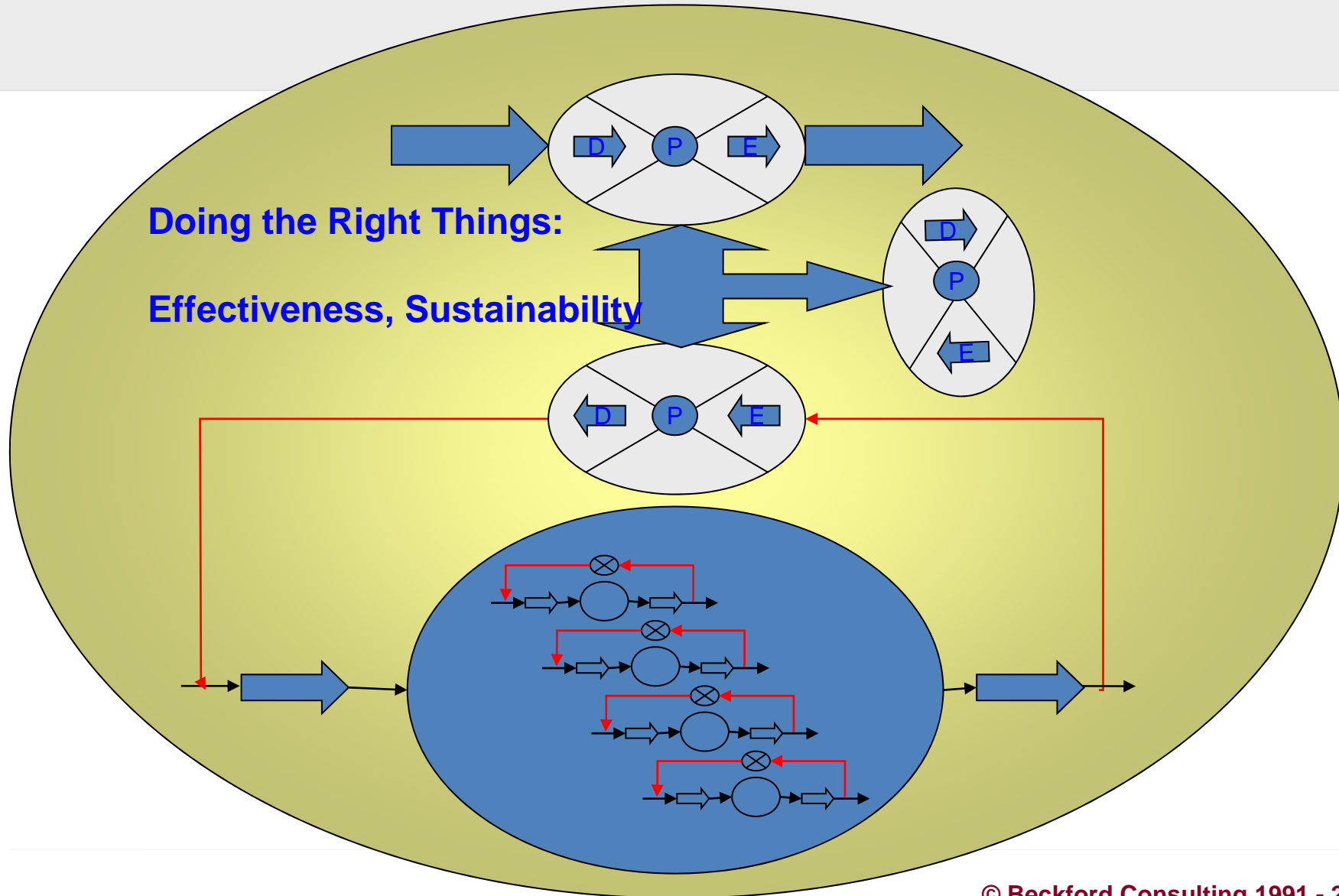
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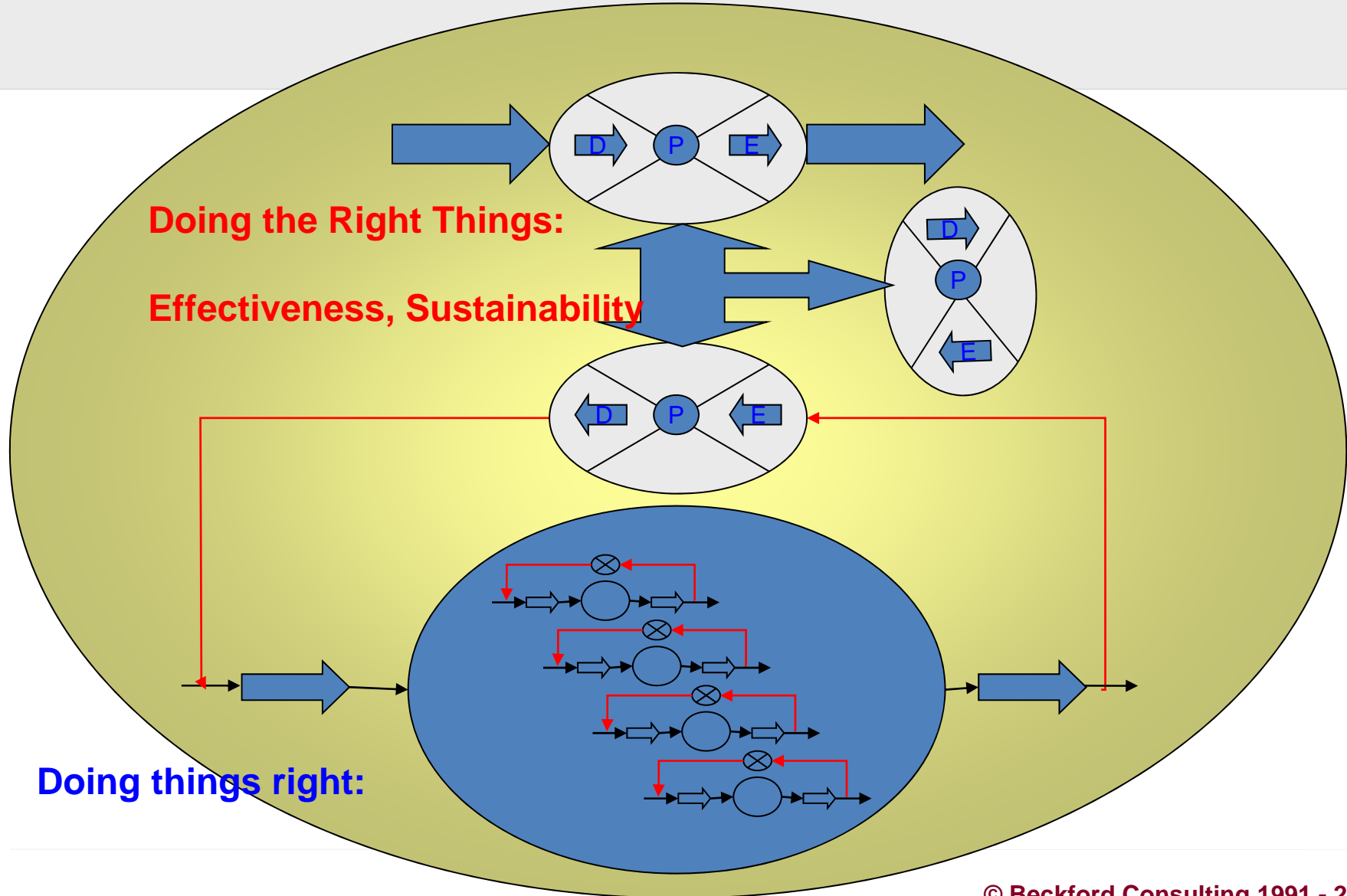
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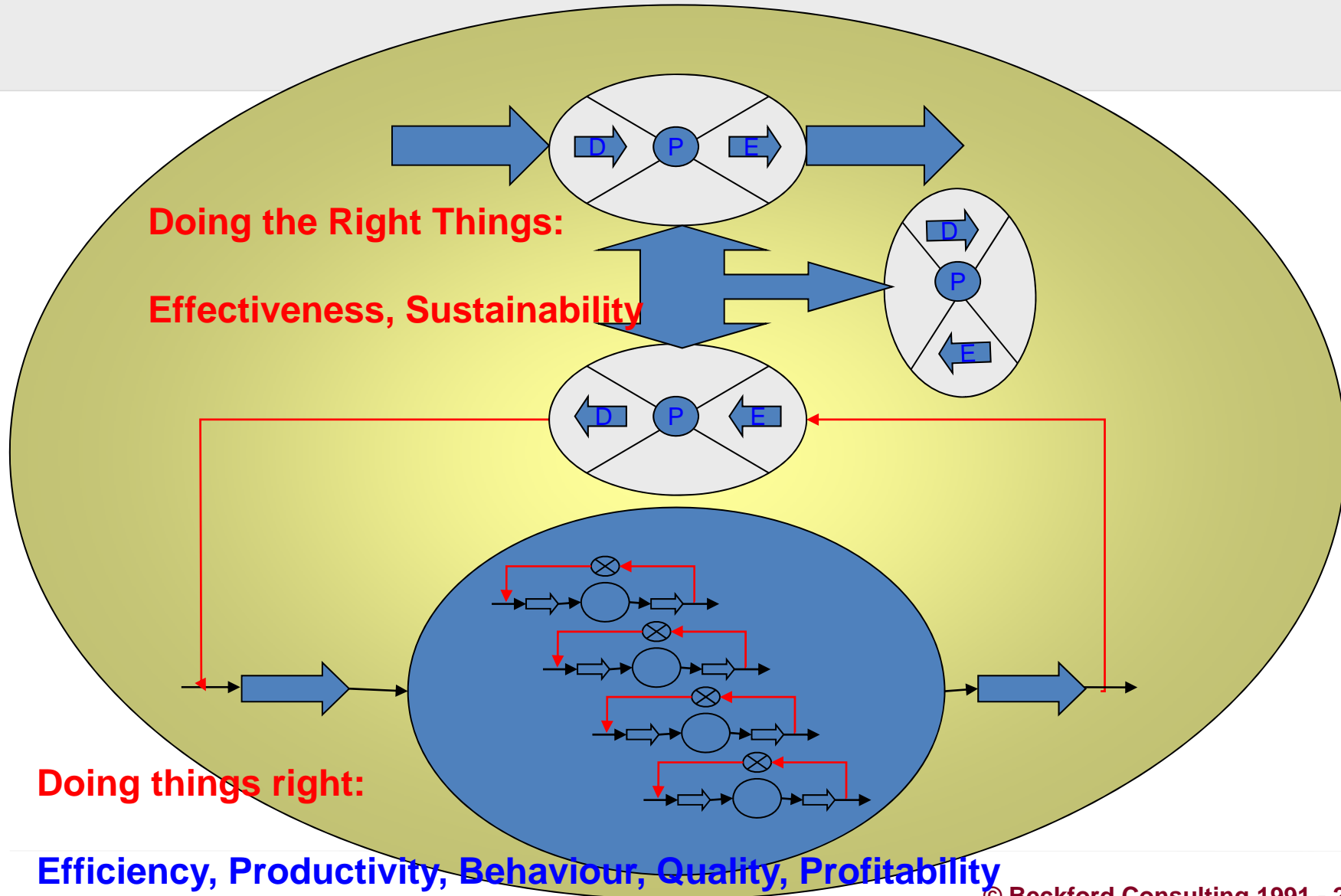
Complete Cybernetic Model



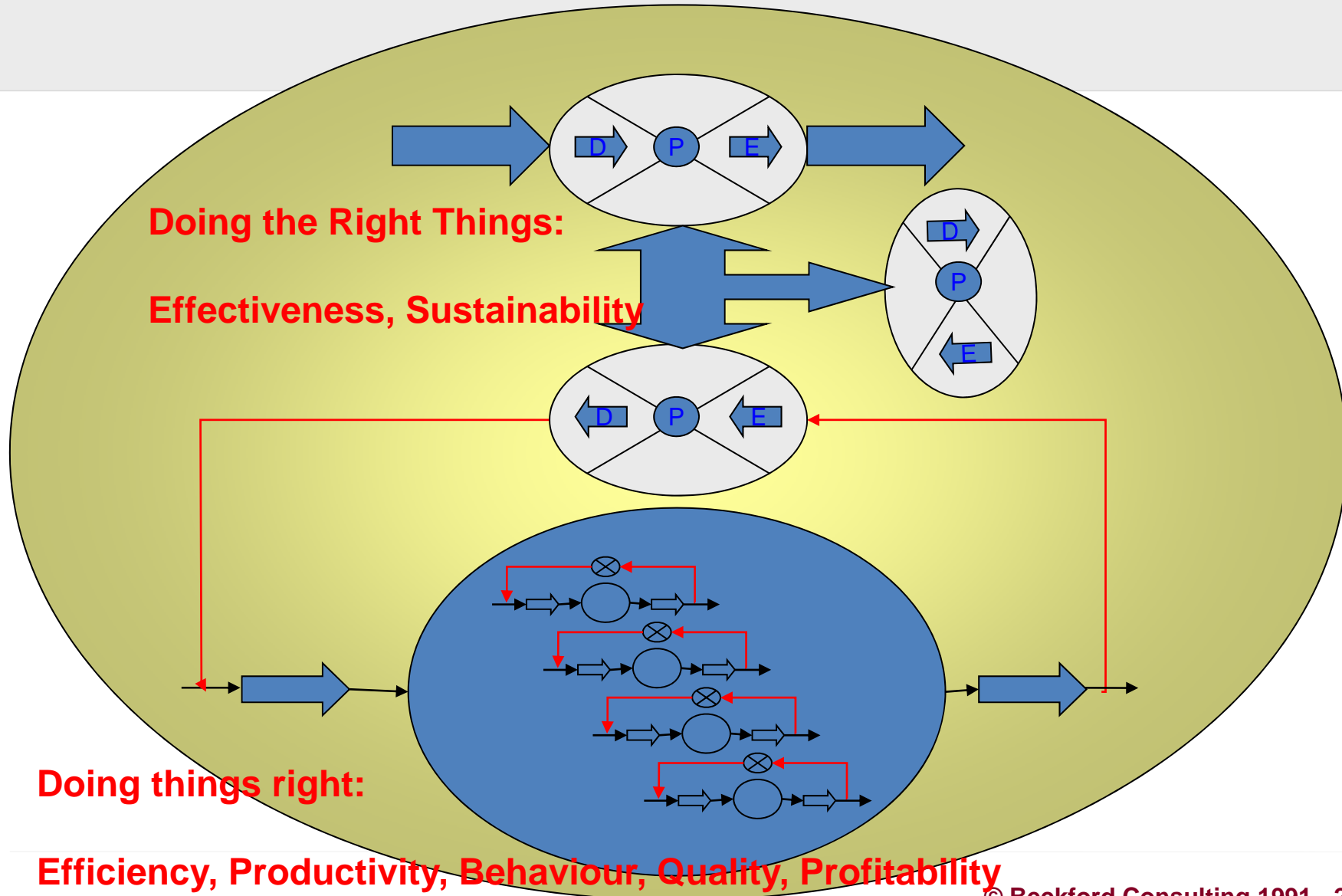
Complete Cybernetic Model



Complete Cybernetic Model



Complete Cybernetic Model



- Autopoietic
- Ultra-Stable
- Customer/Market Focused
- Adaptive
- Learning
- Empowered
- Viable (Sustainable)

Why do we need it?

- It makes explicit the true role of the manager
- We can use it to model:
 - any process
 - any discipline
 - any 'dimension' of the organisation
- It provides the basis for the design of Information Systems
- It provides a methodology for thinking about organisations which:
 - enables diagnosis
 - enables prognosis
 - enables effective treatment
 - provides the basis for meaningful measurement of performance

Key Realisation

Problems and issues of contemporary organisations cannot be resolved within the limitations of any one discipline:

They can only be understood and expressed from a supra-disciplinary position which embraces all relevant aspects of the matters under consideration

Managerial Cybernetics provides a robust 'tool kit' which attempts to provide this!

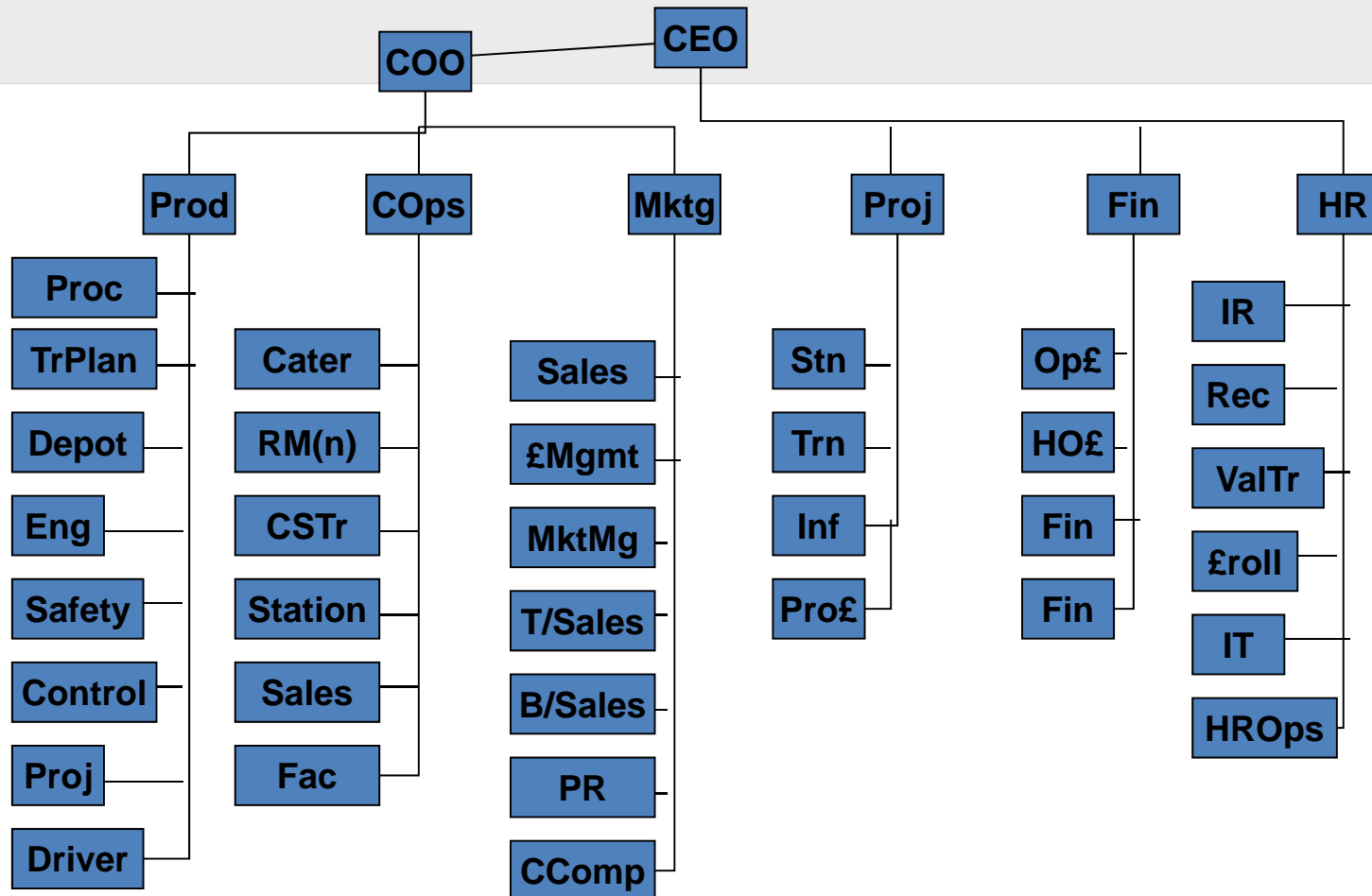
So, why do we need it?

- British Steel
- British Shipbuilders
- Enron
- Parmalat
- Marconi
- Equitable Life
- Railtrack
- The NHS?

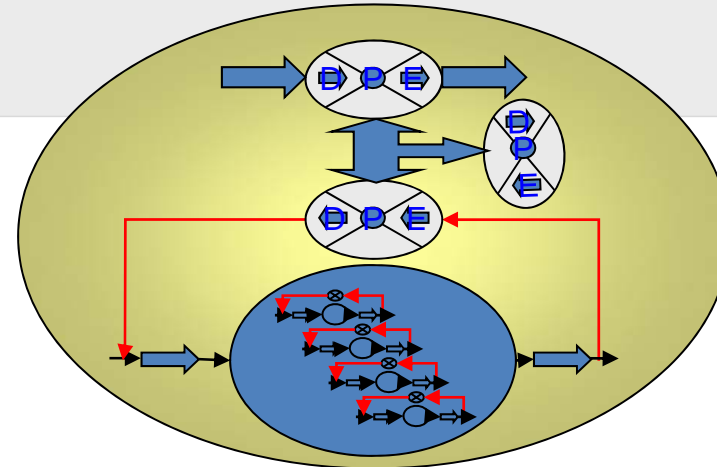
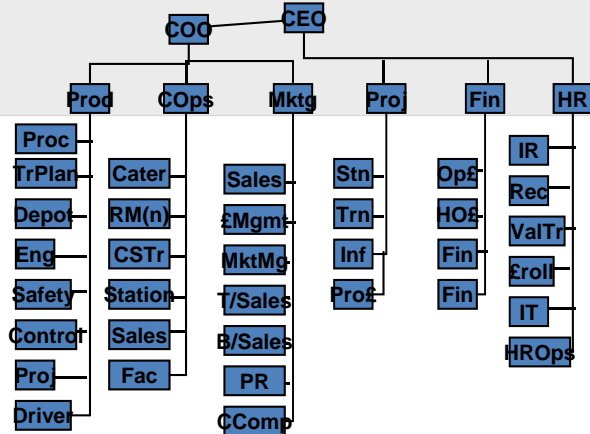
So, why do we need it?

- ALL organisations are, to some extent, dysfunctional, most commonly because:
 - They fail to adequately investigate the environment
 - Dealing with today dominates thinking about tomorrow
 - The ‘identity’ of the organisation is not explicit
- The cybernetics of any situation will assert themselves so that ALL organisations necessarily answer to the ‘laws’ of cybernetics
- If we design the cybernetics we can make them work in our favour!

A REAL Organisation



Spot the Difference?



How much more does the right hand diagram tell us about the organisation?

The left hand diagram simply tells us who to blame for failure!

The right hand diagram (and the thinking that underpins it) tells us:

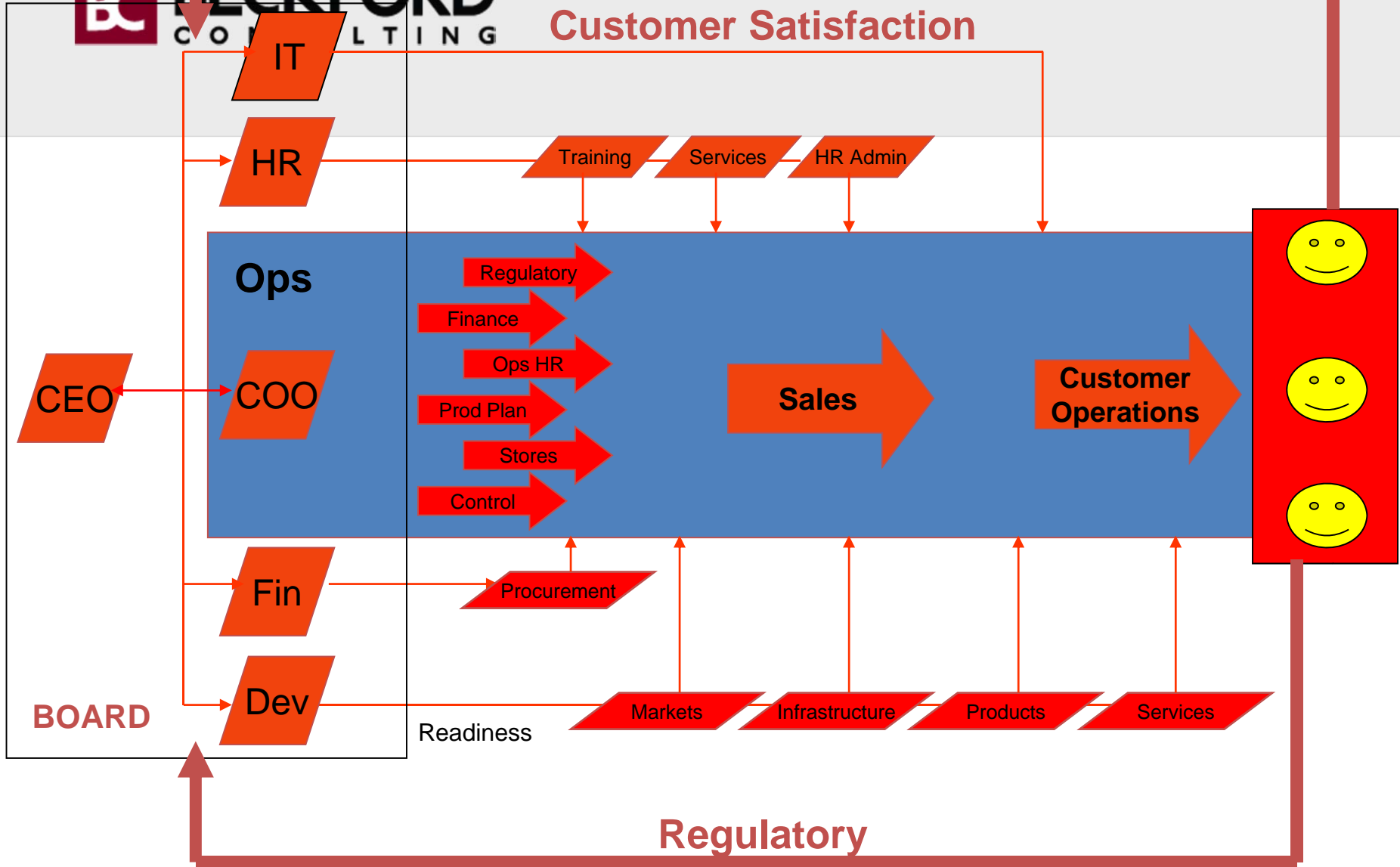
HOW the organisation works
 WHY it works that way
 HOW to fix it!



Employee Satisfaction

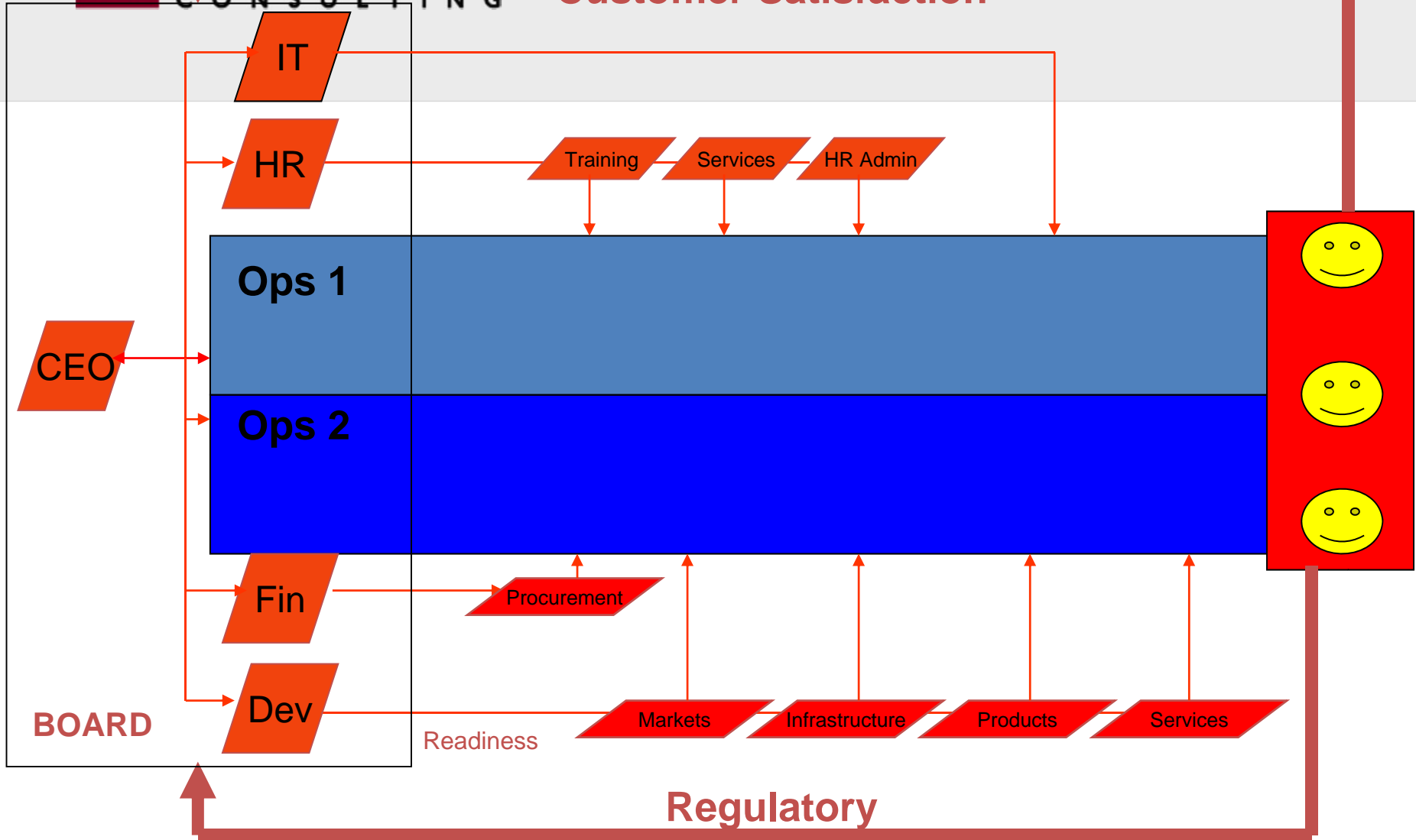
A Real One!

Customer Satisfaction



Financial Performance

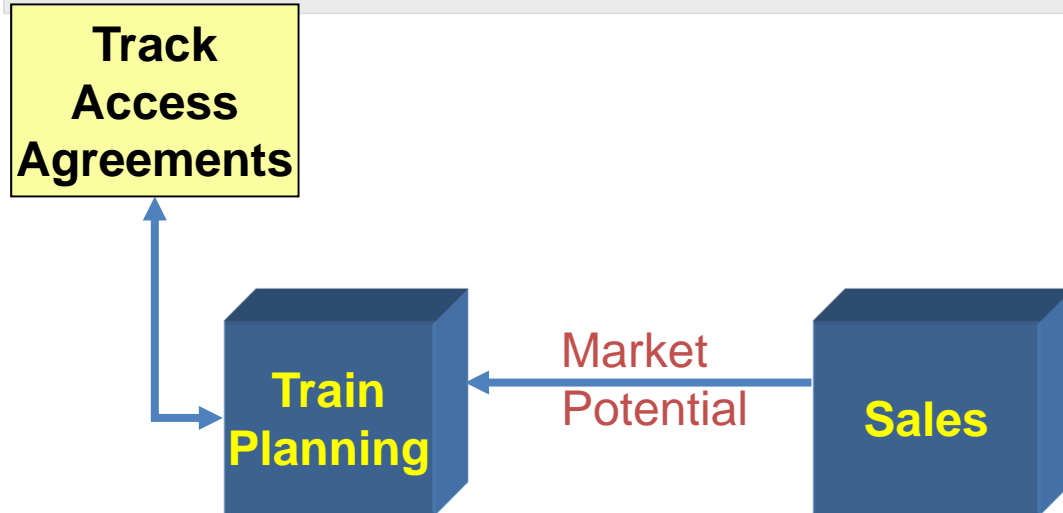
Employee Satisfaction
Customer Satisfaction

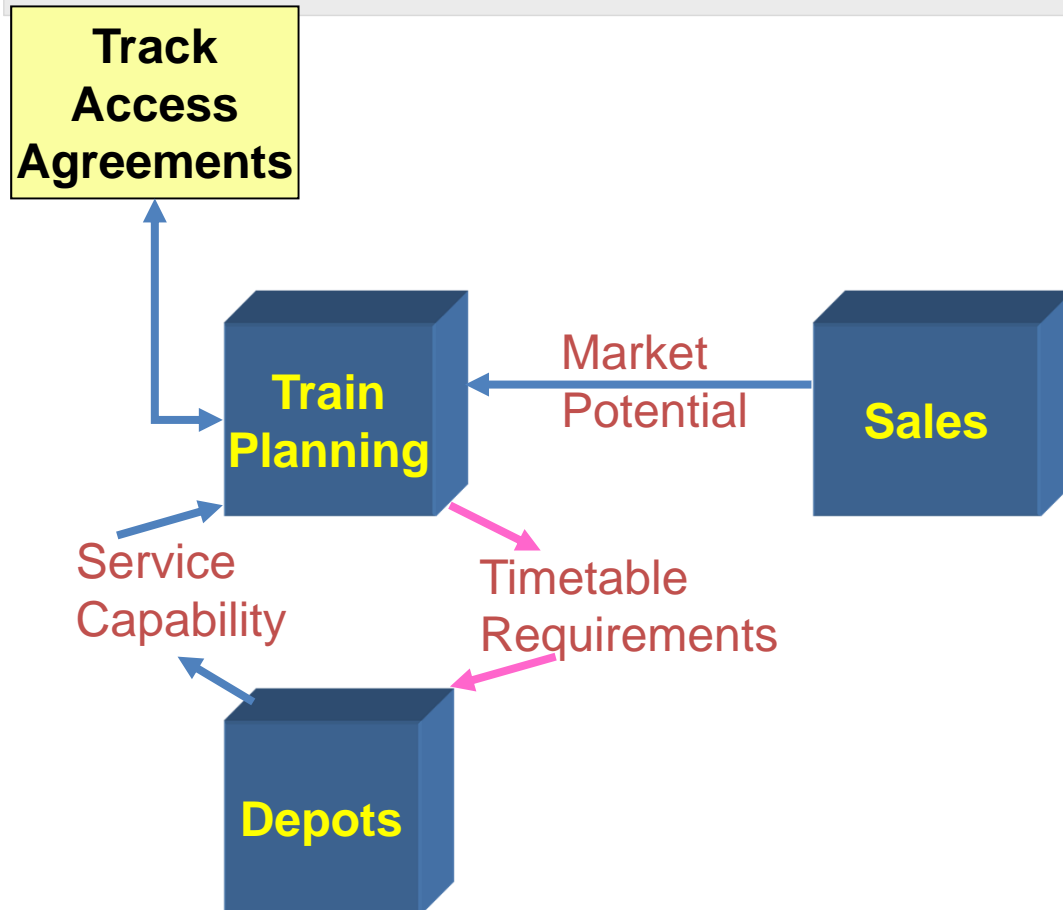


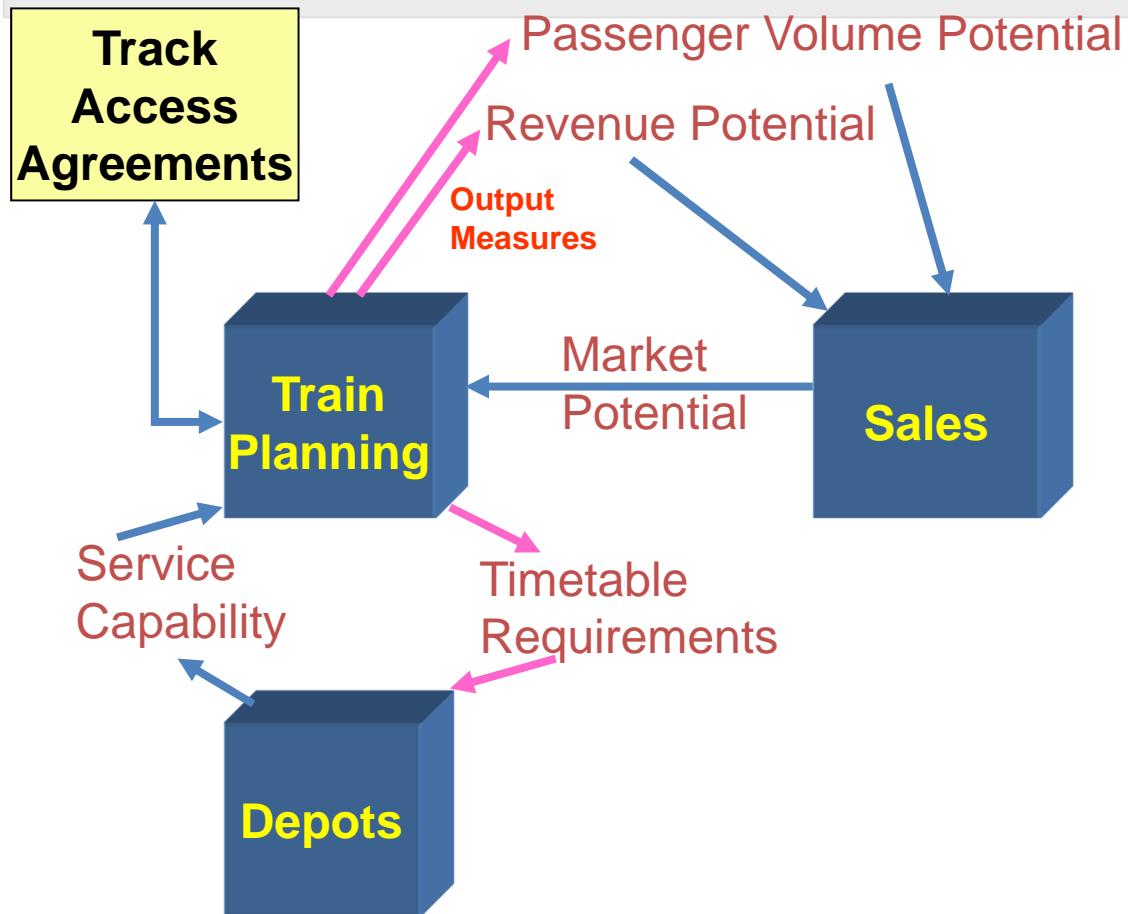
Regulatory
Financial Performance

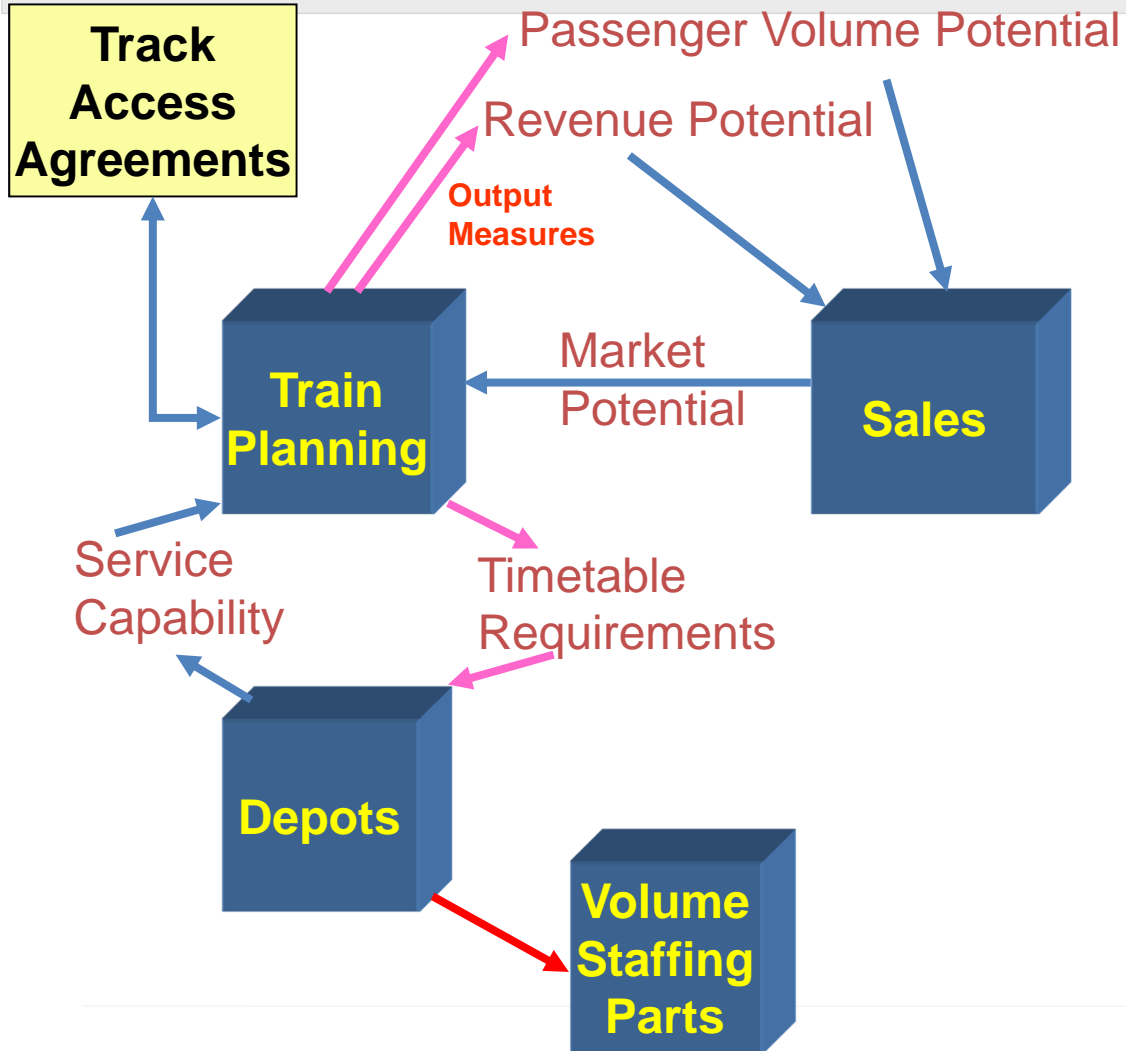
How does that work?





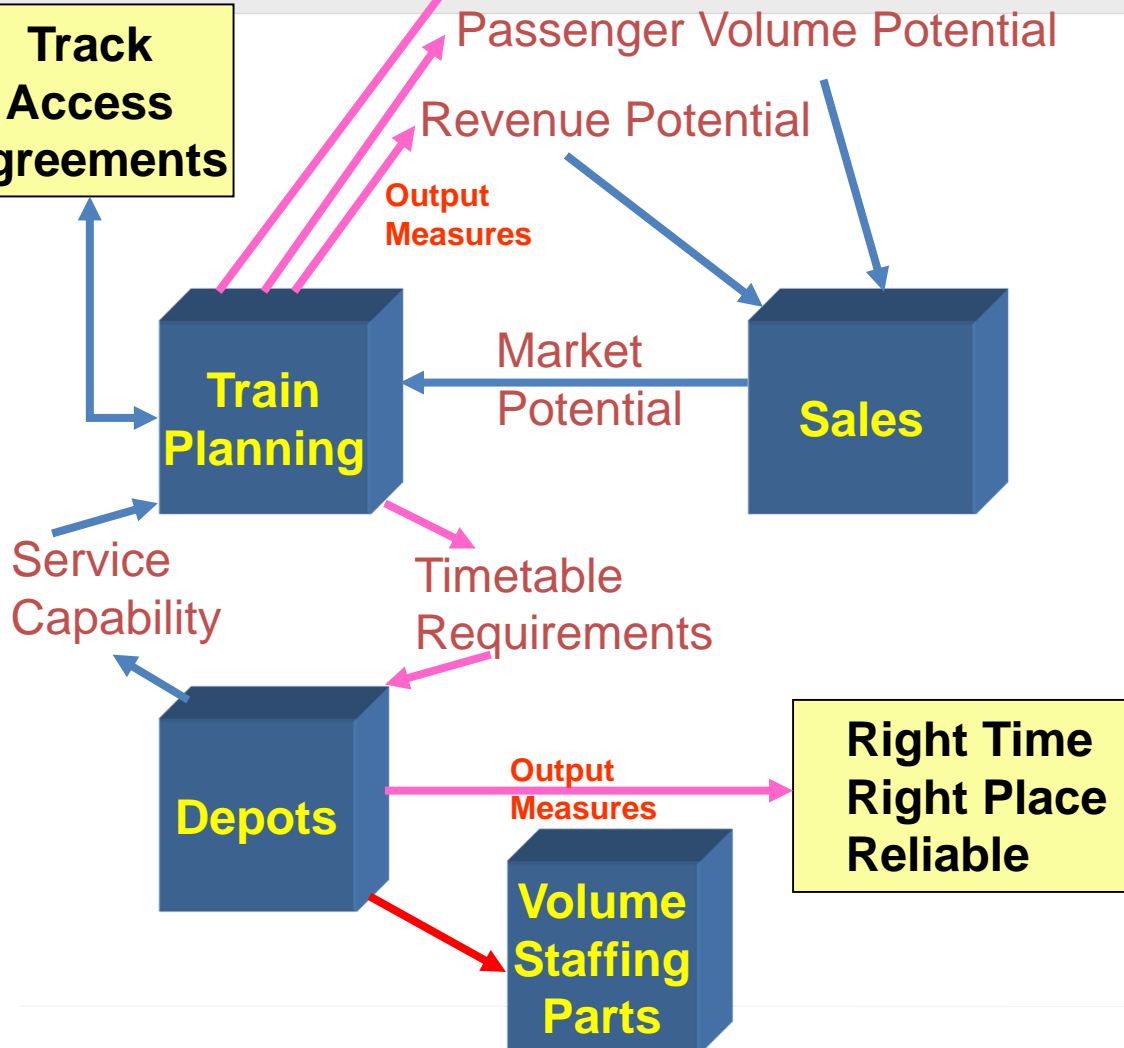








Output
Measures



Ops
HR

Right People
Right Skills
Right Values

Track
Access
Agreements

Train
Planning

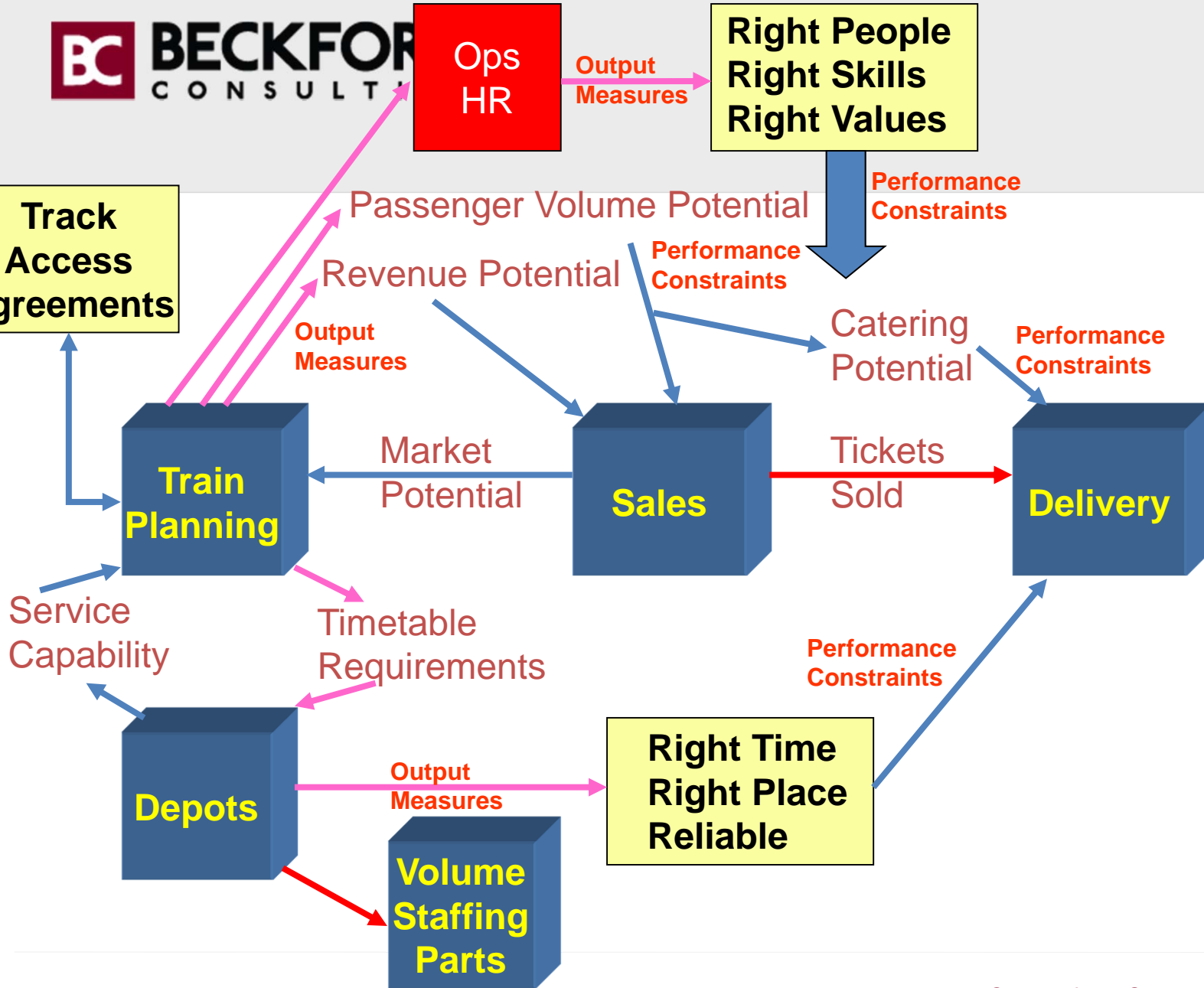
Sales

Delivery

Depots

Volume
Staffing
Parts

Right Time
Right Place
Reliable



**Ops
HR**

**Right People
Right Skills
Right Values**

**Track
Access
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**Train
Planning**

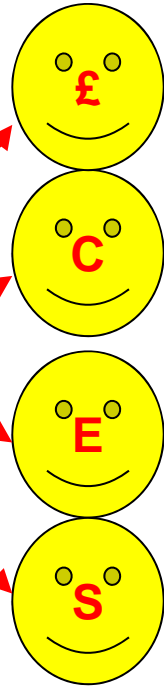
Sales

Delivery

Depots

**Volume
Staffing
Parts**

**Right Time
Right Place
Reliable**



Output Measures

Performance Constraints

Passenger Volume Potential

Revenue Potential

Output Measures

Performance Constraints

Catering Potential

Performance Constraints

Market Potential

Tickets Sold

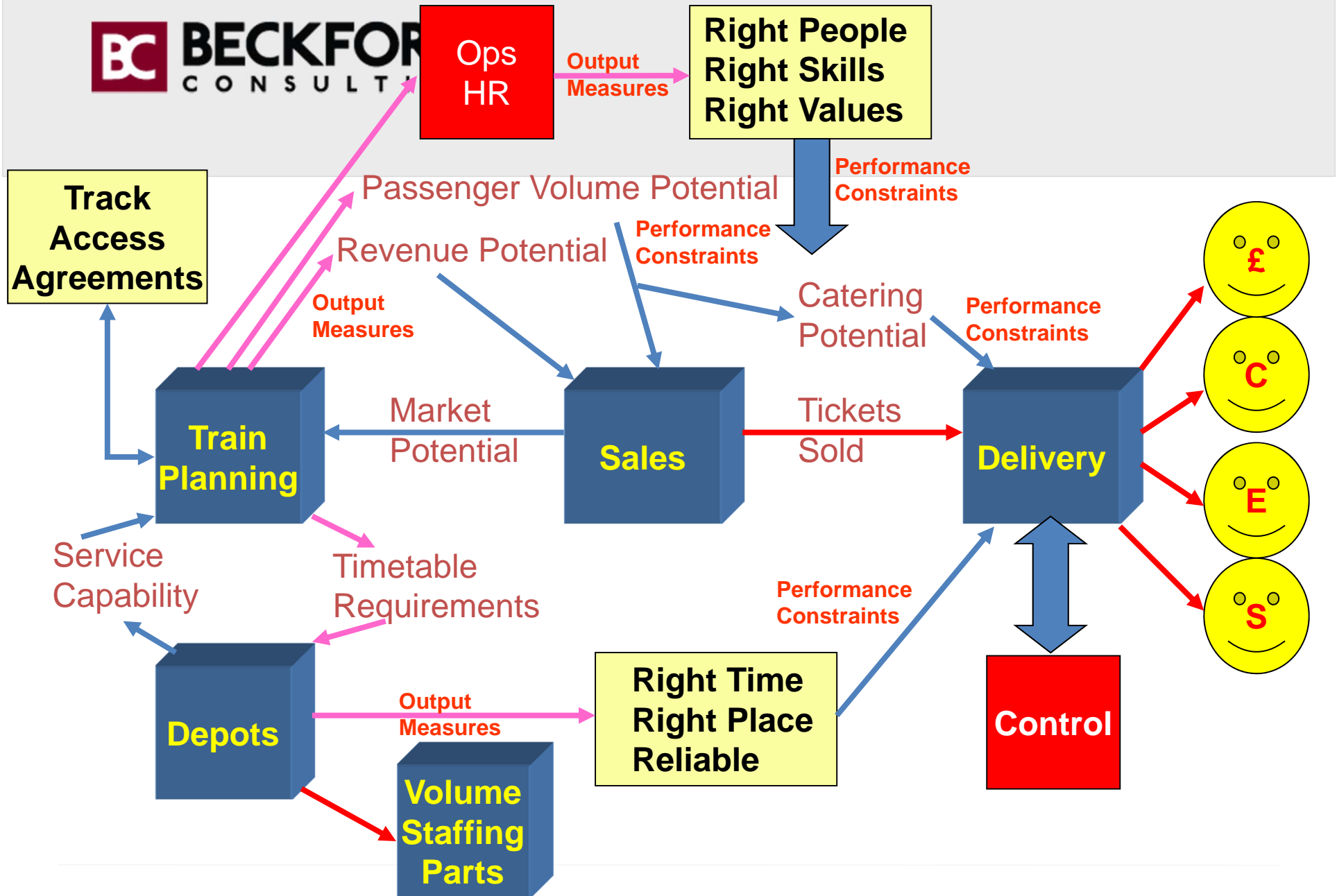
Service Capability

Timetable Requirements

Performance Constraints

Output Measures

Right Time
Right Place
Reliable



Ops HR

**Right People
Right Skills
Right Values**

**Track
Access
Agreements**

**Train
Planning**

Sales

Delivery

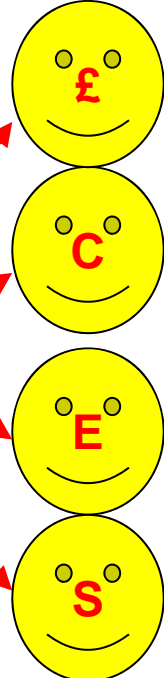
Depots

**Volume
Staffing
Parts**

**Right Time
Right Place
Reliable**

Control

Reg & Comp



Output Measures

Performance Constraints

Passenger Volume Potential

Revenue Potential

Output Measures

Performance Constraints

Catering Potential

Performance Constraints

Market Potential

Tickets Sold

Service Capability

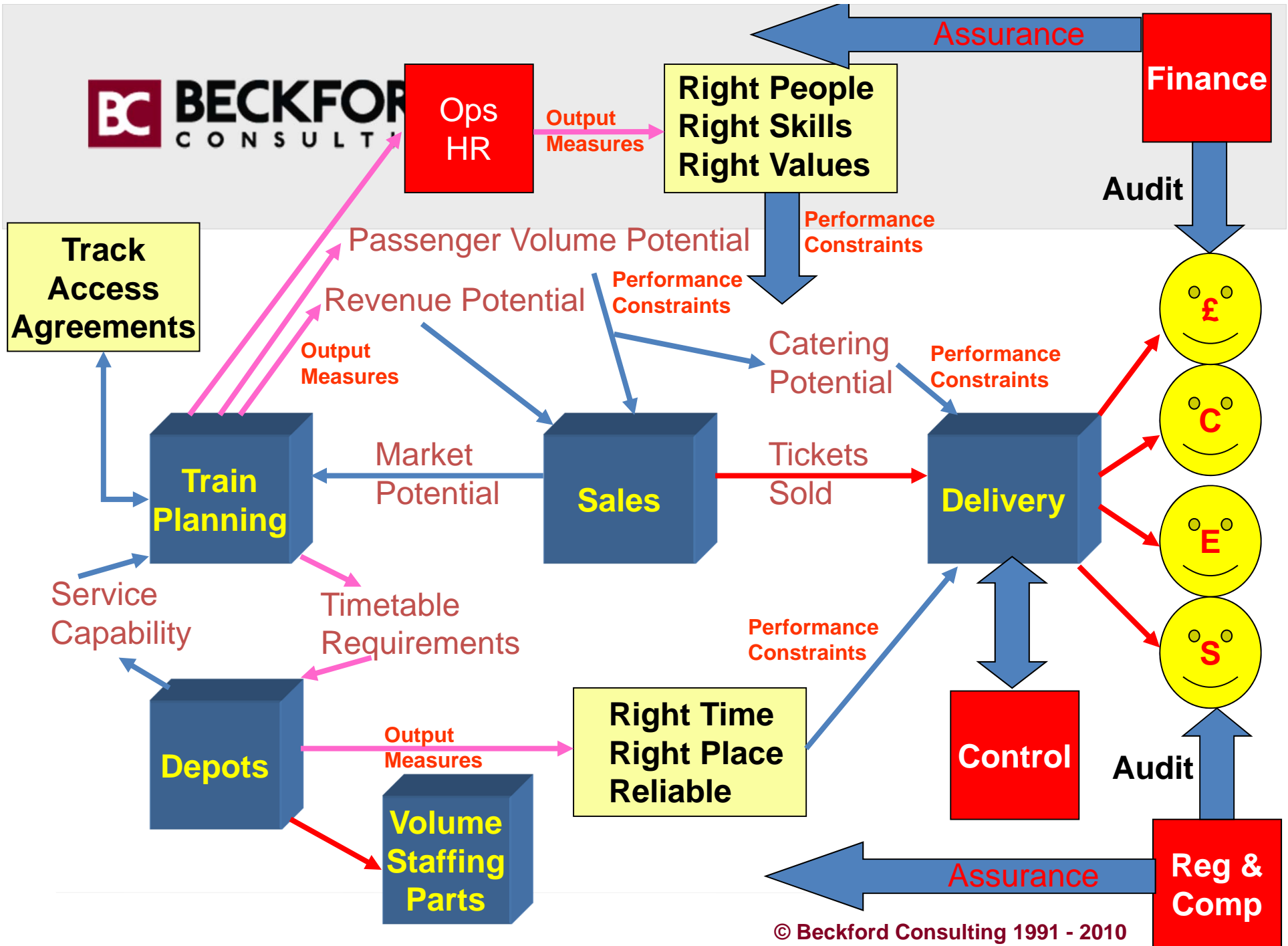
Timetable Requirements

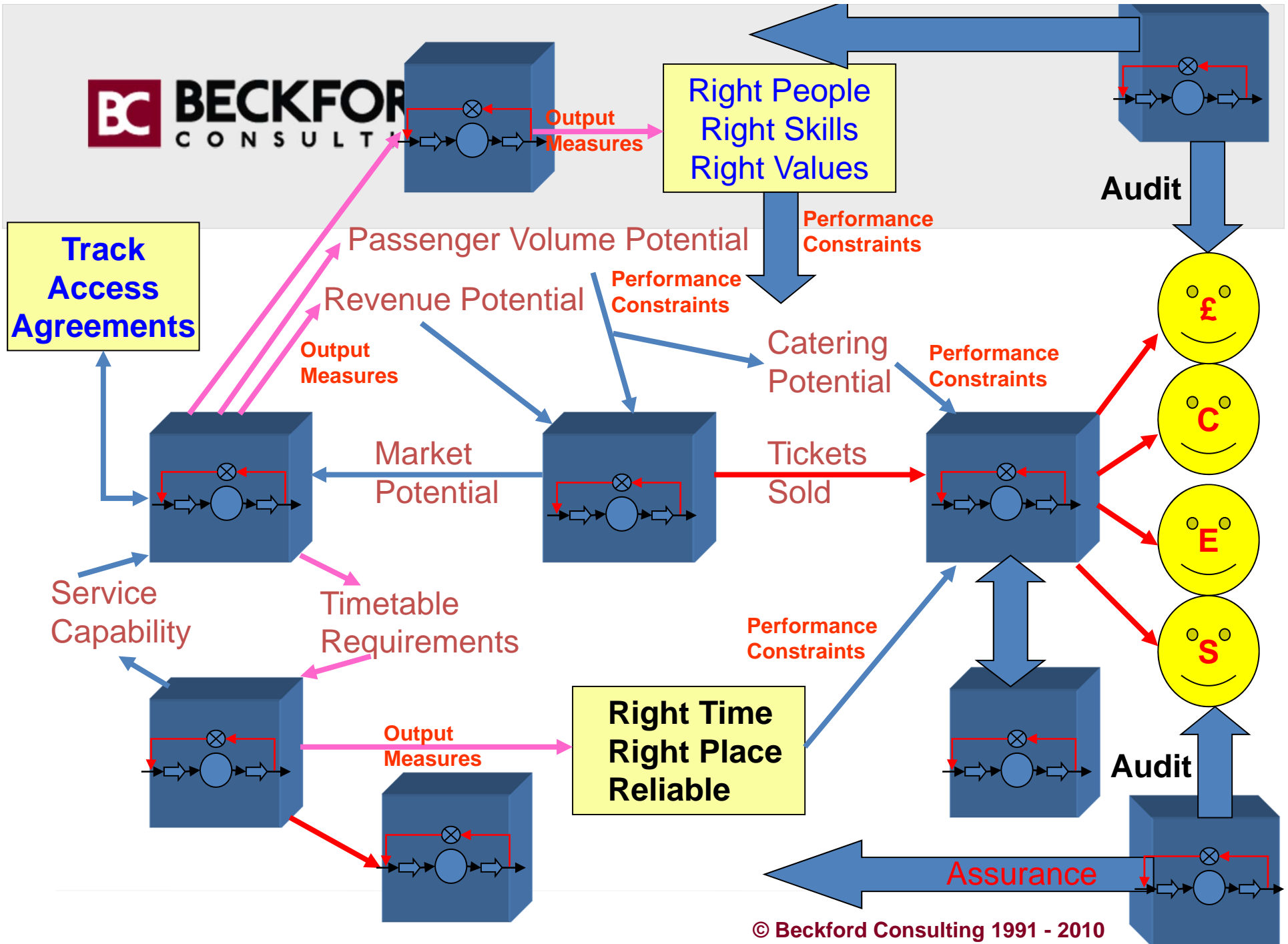
Performance Constraints

Output Measures

Audit

Assurance





Supra-disciplinary

- It is in attempting to solve problems of organisations from **WITHIN** the various disciplines that causes many failures because:
 - the languages are incomplete
 - insights generated within a discipline emphasise particular characteristics which may not be perceived as important in another
 - the approach cannot adequately address interactions – the trans-disciplinary issues which can only be seen from a ‘meta’ or ‘supra’ position
- Managerial Cybernetics helps to overcome these limitations

Performance Measurement

- Managerial Cybernetics provides the basis of meaningful performance measurement because:

Performance Measurement

- Managerial Cybernetics provides the basis of meaningful performance measurement because:
 - A statement is made of process capability in multiple dimensions:

Inputs

Expectations

Money

Materials

Machines

Skills

Behaviours

Information

Performance Measurement

- Managerial Cybernetics provides the basis of meaningful performance measurement because:
 - A formal statement is made of process capability in multiple dimensions
 - Output can be measured against that known capability

Expectations

Money

Materials

Machines

Skills

Behaviours

Information

become

More (or less!) money

Products

Services

Waste

Learning

Happiness (or not)

Information

Performance Measurement

- Managerial Cybernetics provides the basis of meaningful performance measurement because:
 - A formal statement is made of process capability in multiple dimensions
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Expectations

Money

Materials

Machines

Skills

Behaviours

Information

become

More (or less!) money

Products

Services

Waste

Learning

Happiness (or not)

Information

- The impact of increasing (or decreasing) resources or adding and removing constraints can be assessed

Performance Measurement

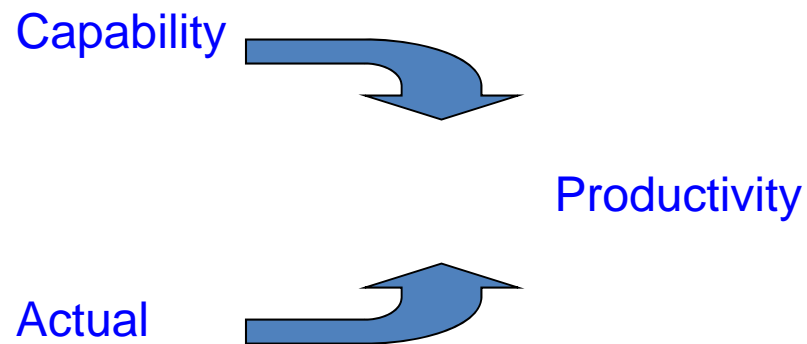
Capability

Expectations
Money
Materials
Machines
Skills
Behaviours
Information

Performance Measurement

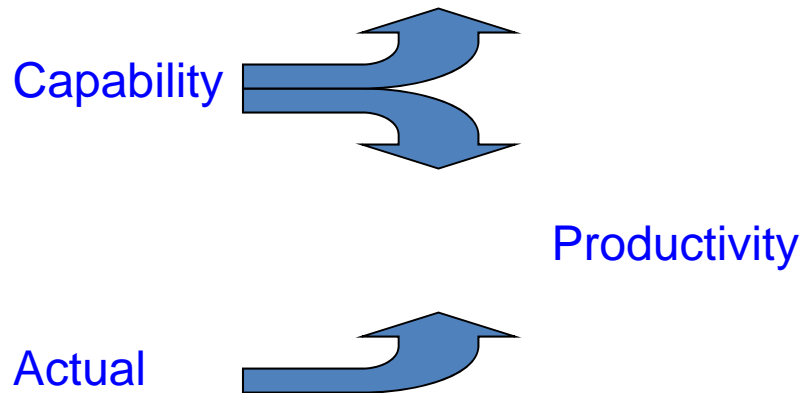


Performance Measurement

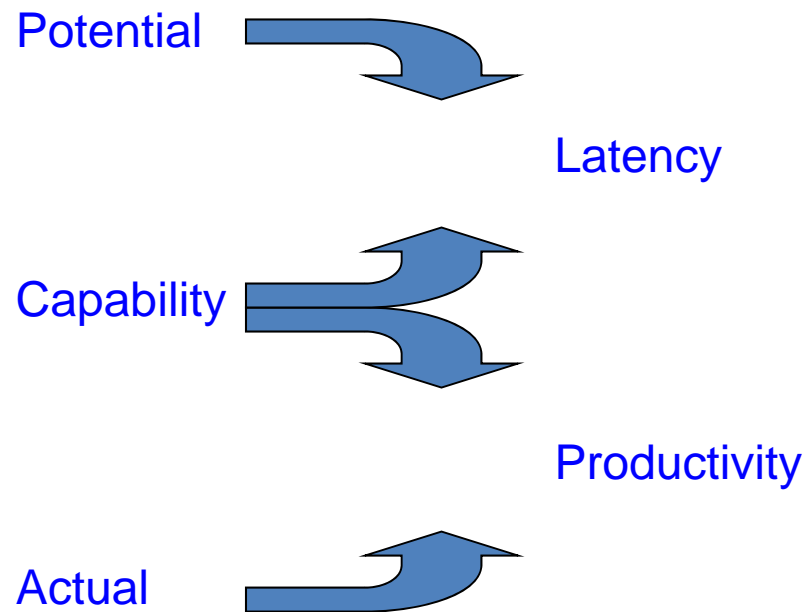


Performance Measurement

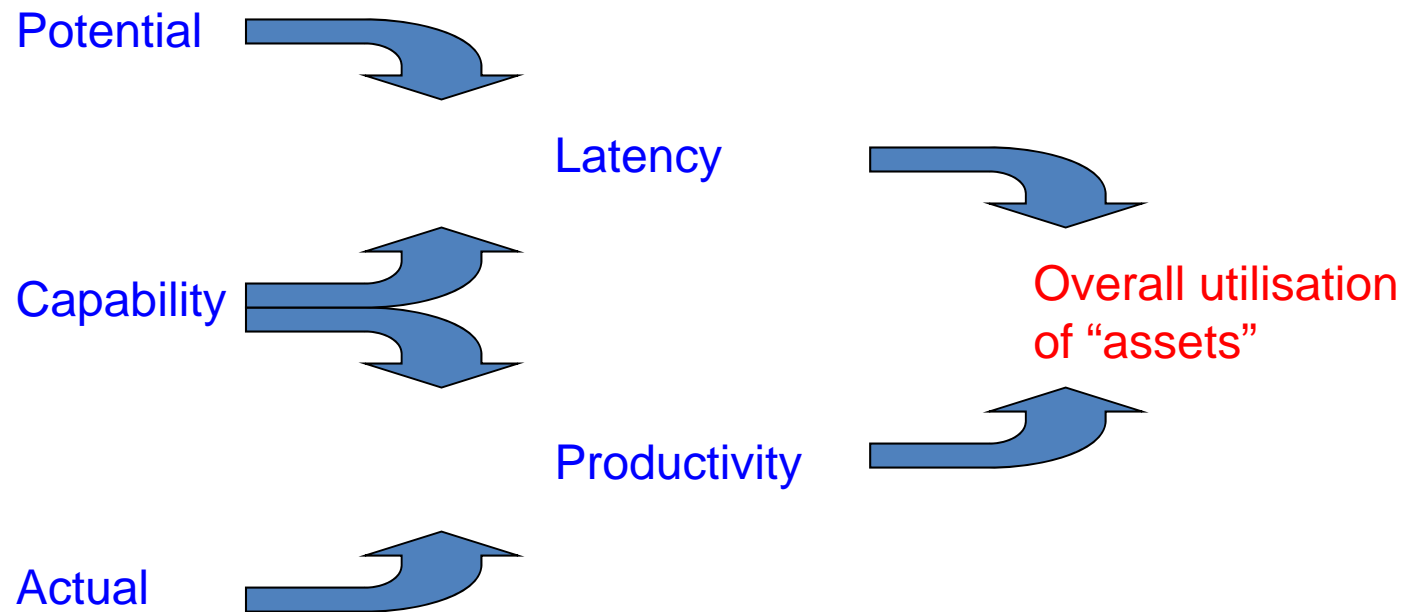
Potential What could be achieved
If the resources were changed
and/or the constraints removed



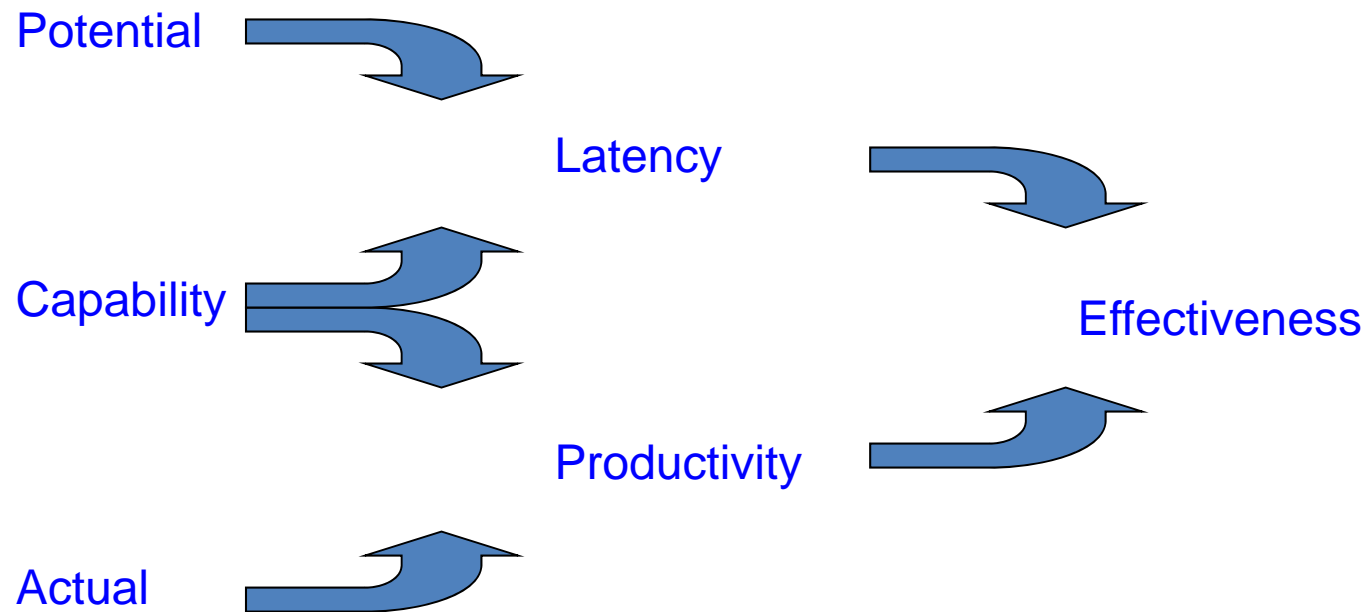
Performance Measurement



Performance Measurement



Performance Measurement



Where can I use it?

- In any organisation which is:
 - Exceedingly complex
 - Self-regulating
 - Probabilistic in behaviour
- In other words:
 - ANY organisation

What can I use it for?

- Process Design & Modelling
 - Mushroom Farming, Cake Manufacturing, Steel Production
- Analysis & Design of Organisational Structures
 - Railways, Banks, Factories, Property Companies
- Analysis & Design of Performance Management Systems
 - Logistics, Banking, Dentistry, Healthcare
- Analysis & Design of Information Systems
 - Railways, Pharmaceuticals, Performance Chemicals
- A basis for “Artificial Intelligence”
 - Research Chemistry, HR Selection

- Reduced cost of operation
- Adaptive structure means change is embedded
 - a continuous rather than sporadic process
- Promotes autonomy & empowerment
- Blends local adaptation and global (corporate) coherence
- Ensures easy compliance with regulatory systems
- Promotes organisational learning
- Promotes experimentation and development

- Extended acceptance of the approach
- Refined application & modelling methodology
- Refined Performance Management Systems
- Enhanced Software Tools (*VSSuite*)

- A view of Managerial Cybernetics
- What about it?
 - Robust
 - Rigorous
 - Practical
 - Different!
- In application?
 - Fast
 - Effective
 - It works!