

Introducing the VSM: Re:Thinking Organisation

24th November 2009

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?
- How is it used?

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’
 - Developed the VSM: 1966, 1973, 1979, 1981, 1985

- Developments, Applications, Critiques:
 - Clemson: 1984:
 - » Cybernetics: A New Management Tool
 - Jackson & Keys (Eds): 1987
 - » New Directions in Management Science
 - Espejo and Harnden (Eds): 1989
 - » The VSM – Edited Papers
 - Espejo & Schwaninger (Eds): 1993
 - » Organisational Fitness
 - Flood & Jackson: 1991
 - » Creative Problem Solving

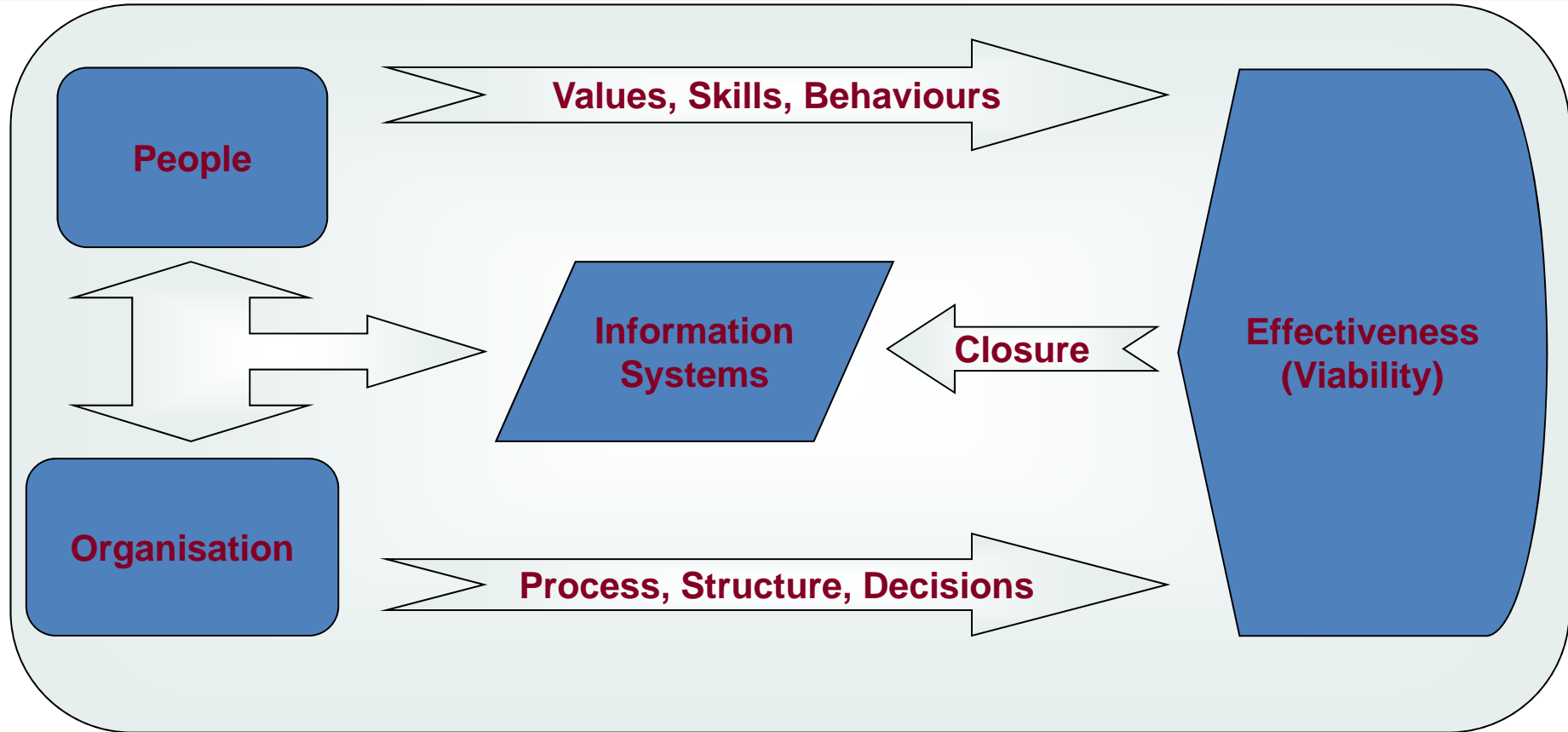
- Own Contribution
 - 1991: Passing on a Family Business or a Family Business Passing On
 - 1993: The VSM: A More Adequate Tool for Practising Management
 - 1995: Towards a Participative Methodology for the VSM
 - 1998/99 (with Peter Dudley)
 - That's Not Very Big is It?
 - Size Doesn't Matter
 - It's What You Do With It That Counts
 - 2010: Quality, Routledge (3rd Edition)
 - 1999 – date:
 - About 50 other papers and presentations
 - 2009 UK CST Report:
 - Critical Interactions of the UK National Infrastructure

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



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...

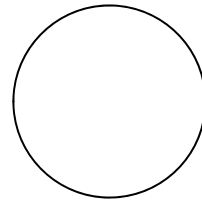
- It is a model – a representation
- A way of thinking about the world
- An abstraction from the full reality of a situation
- It is therefore:

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

Beer, 1985

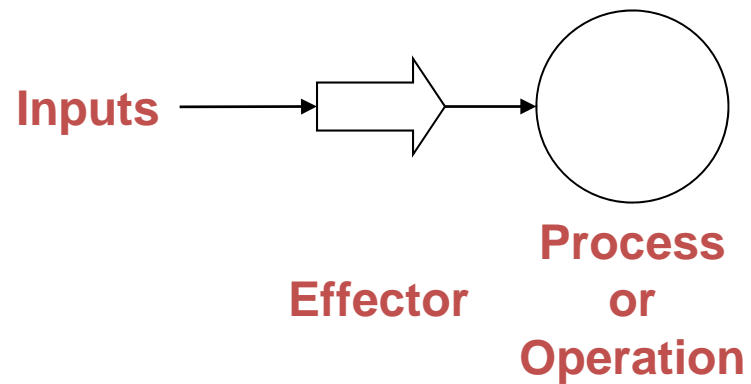
I find it most useful!

The Basic Cybernetic Model

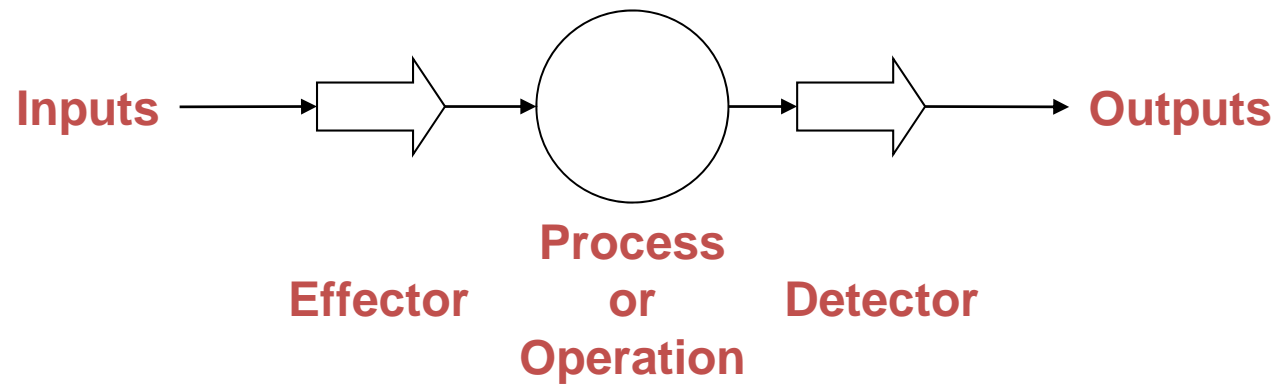


**Process
or
Operation**

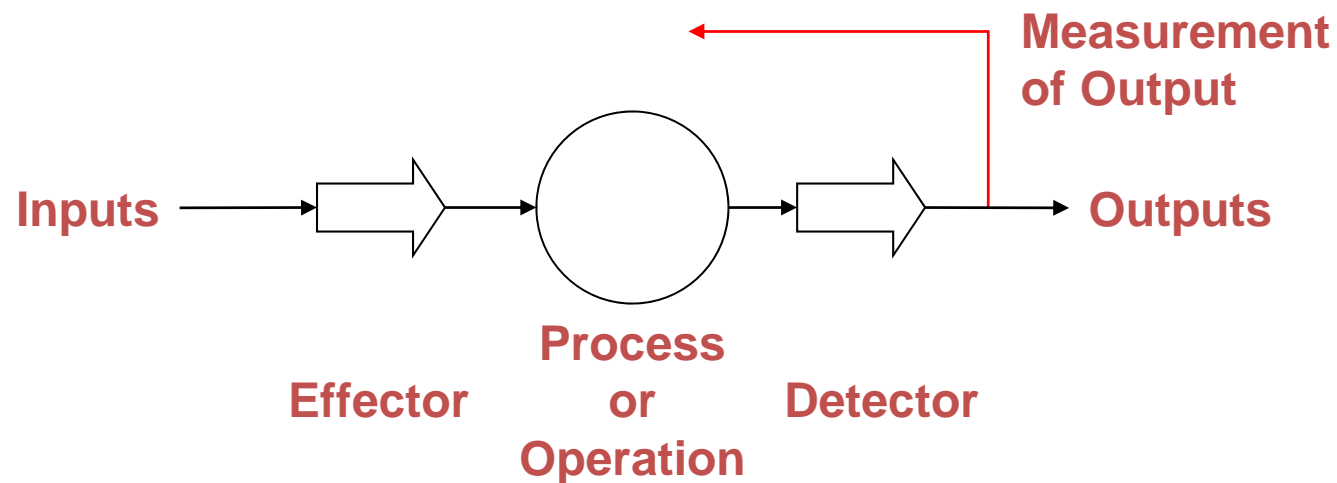
The Basic Cybernetic Model



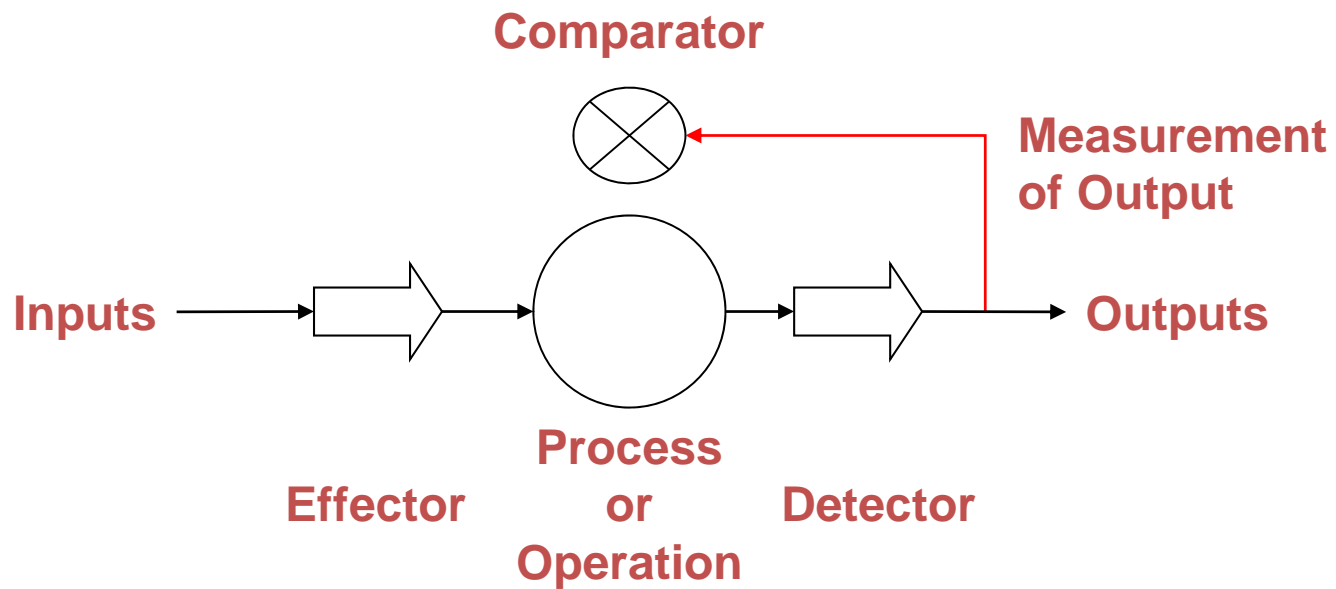
The Basic Cybernetic Model



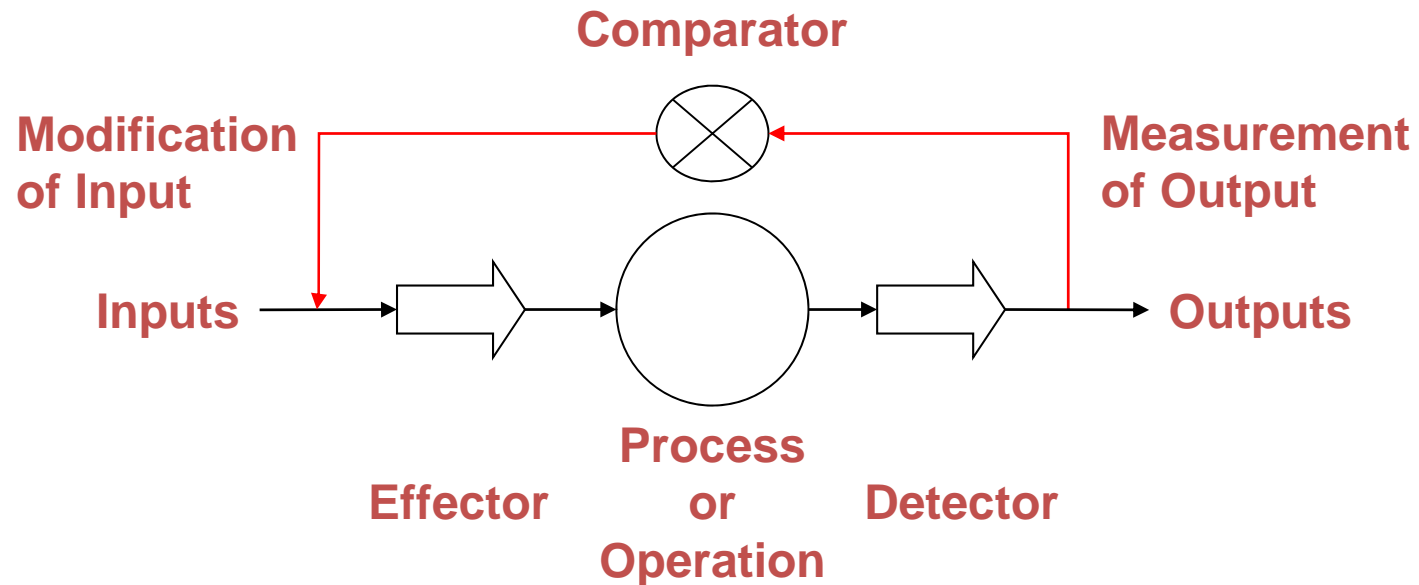
The Basic Cybernetic Model



The Basic Cybernetic Model

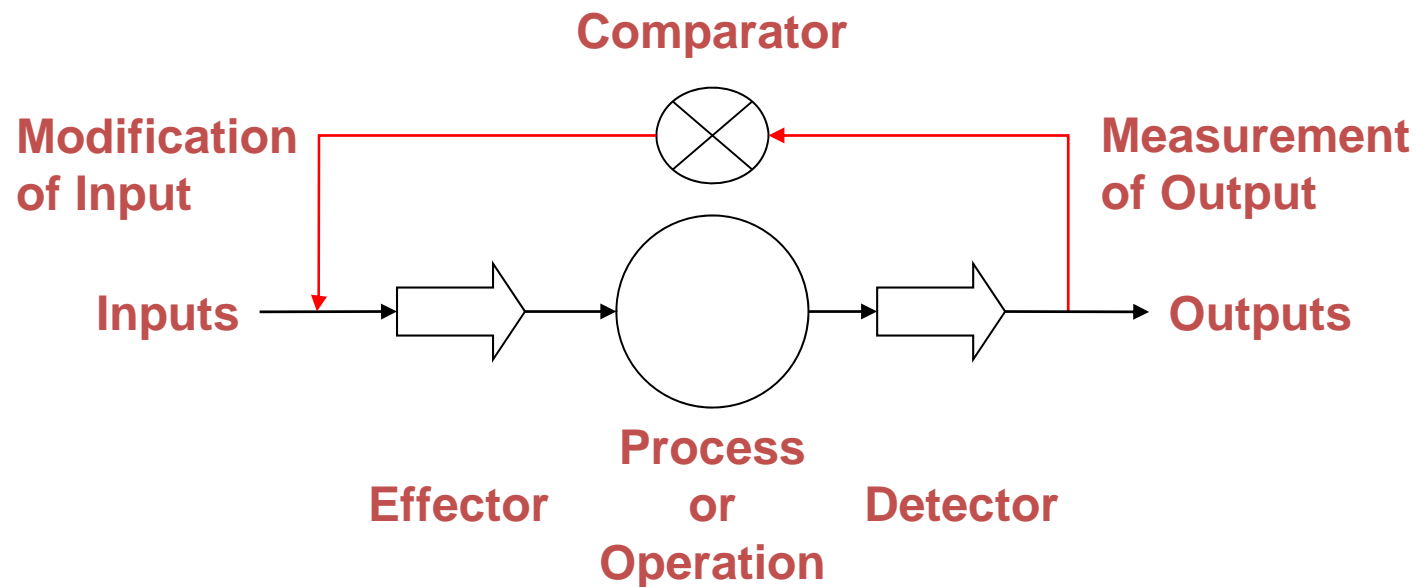


The Basic Cybernetic Model

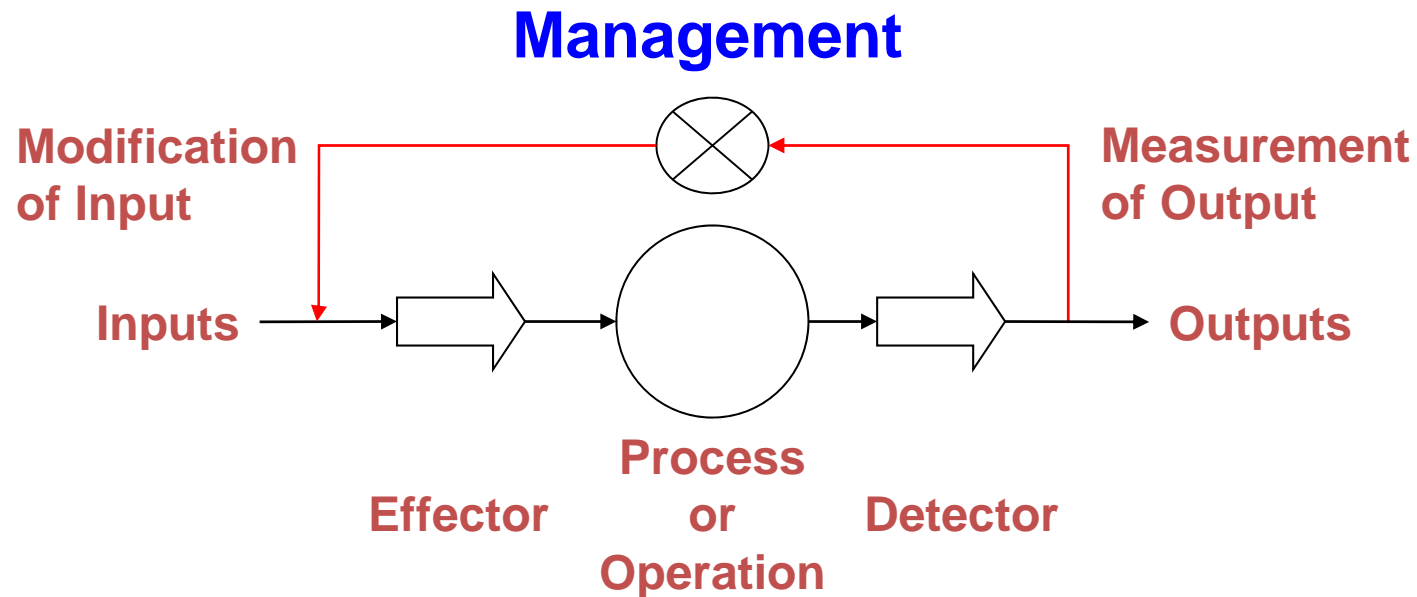


The Basic Cybernetic Model

Plan, Do, Check, Act – the Continuous Improvement Cycle

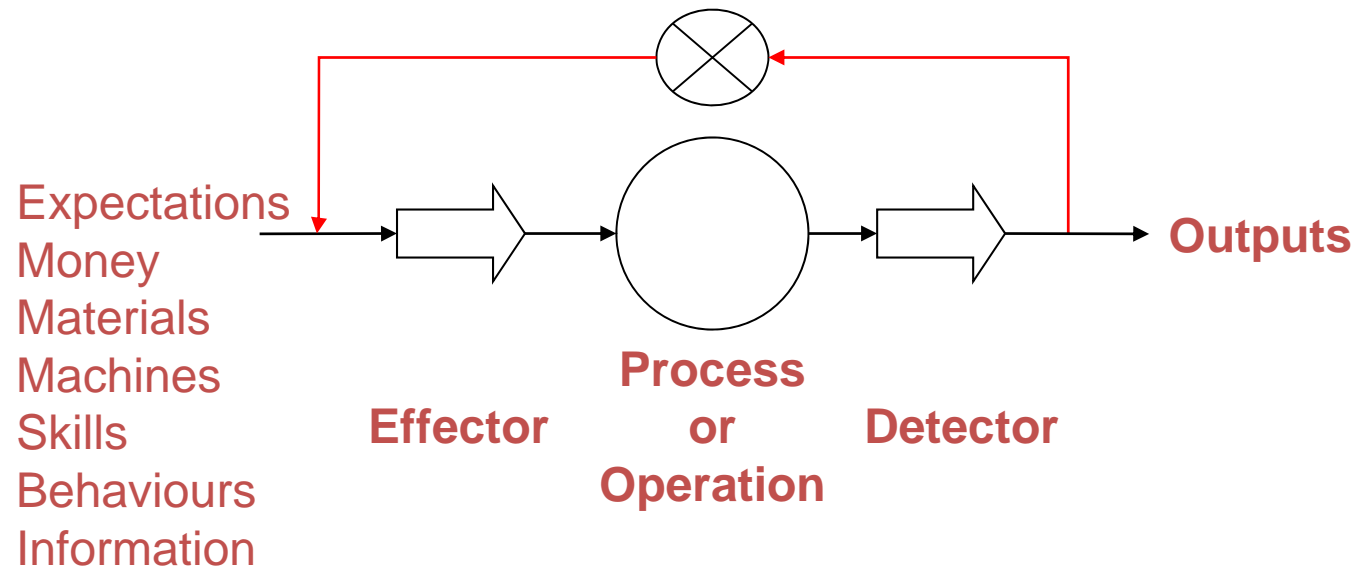


The Basic Cybernetic Model



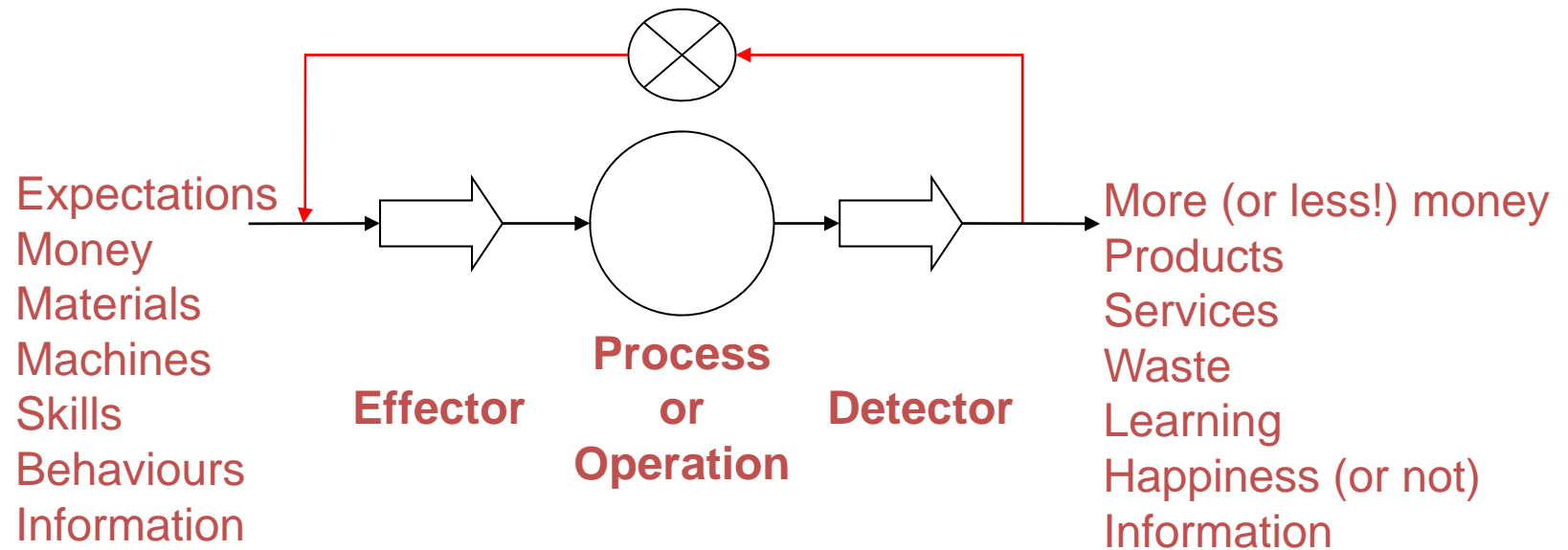
The Basic Cybernetic Model

Management



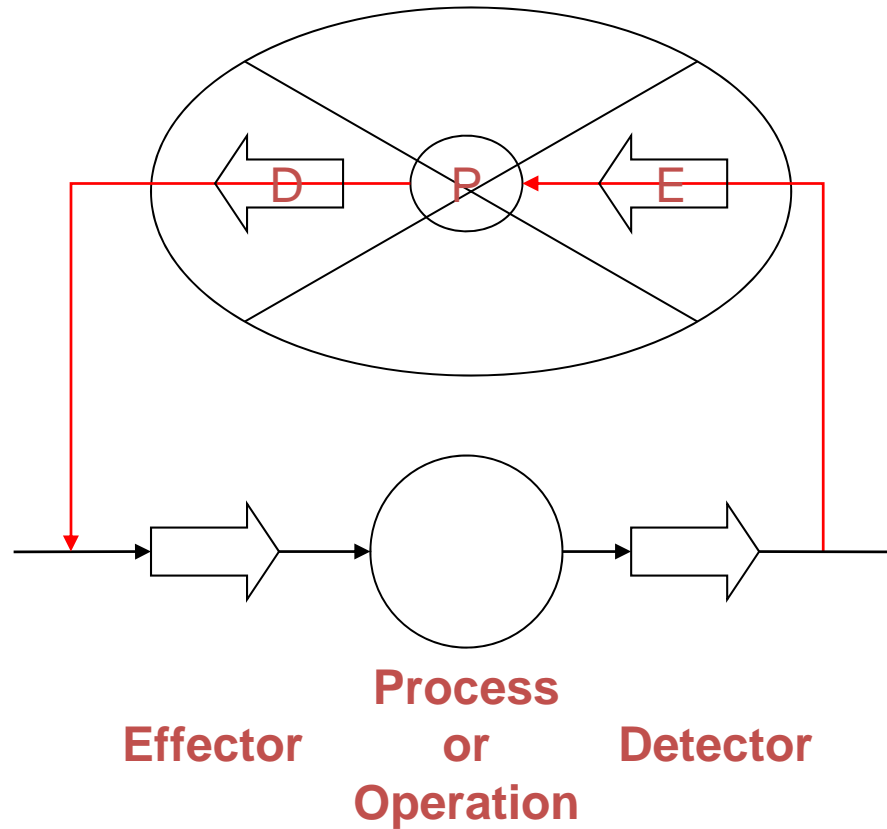
The Basic Cybernetic Model

Management



The Basic Cybernetic Model

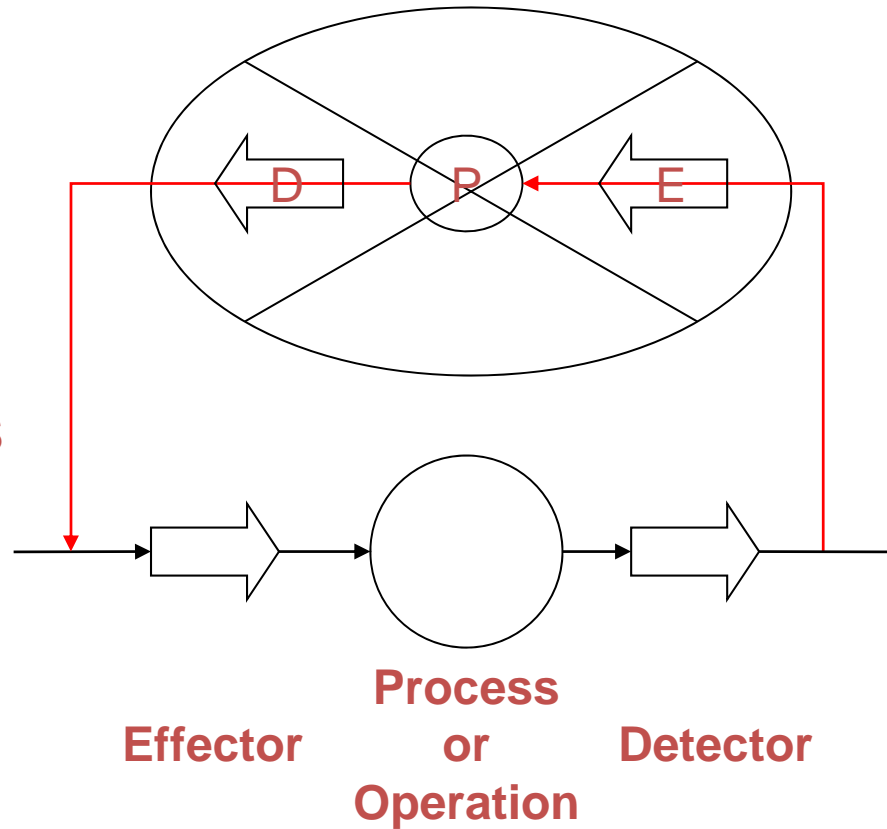
Management



The Basic Cybernetic Model

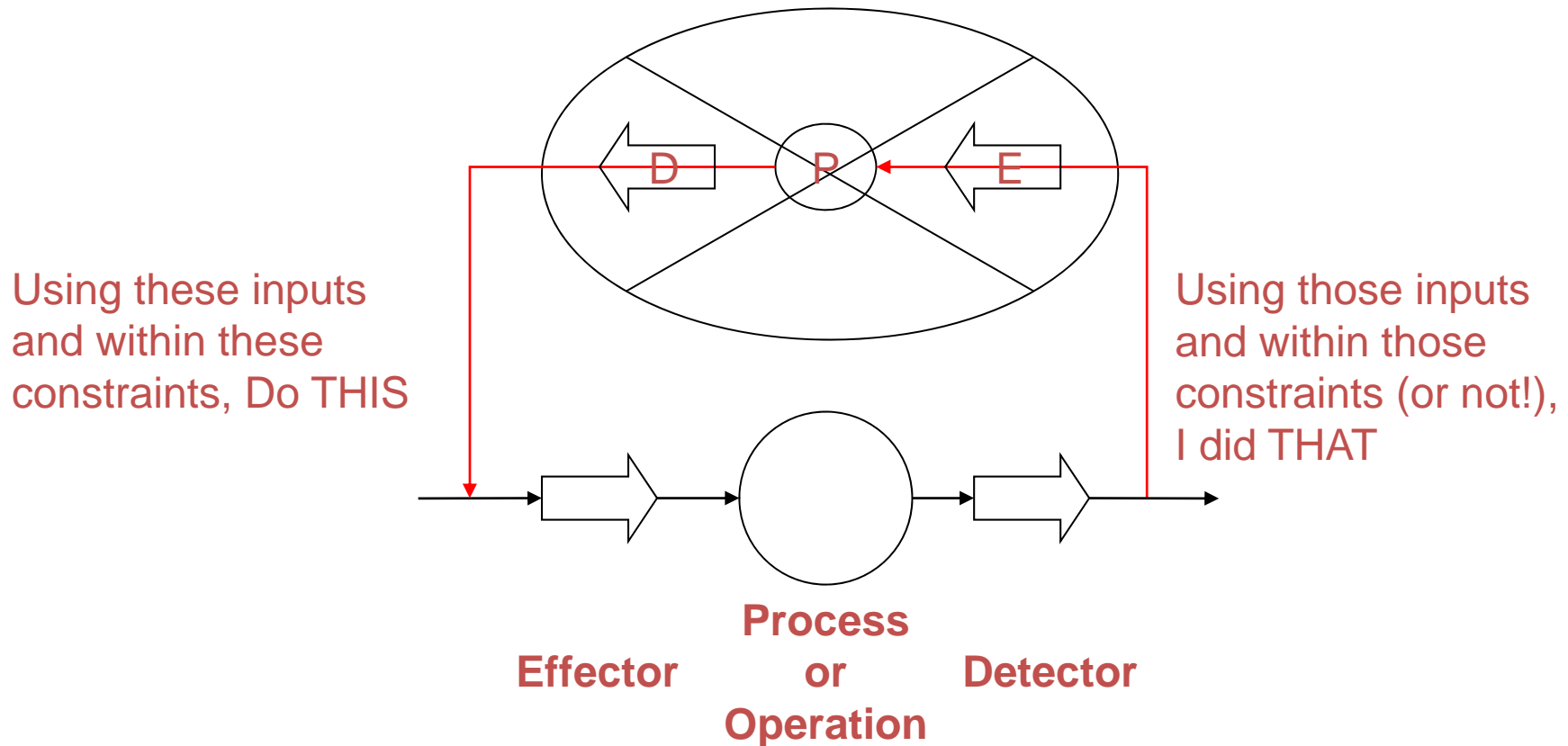
Management

Using these inputs
and within these
constraints, Do THIS



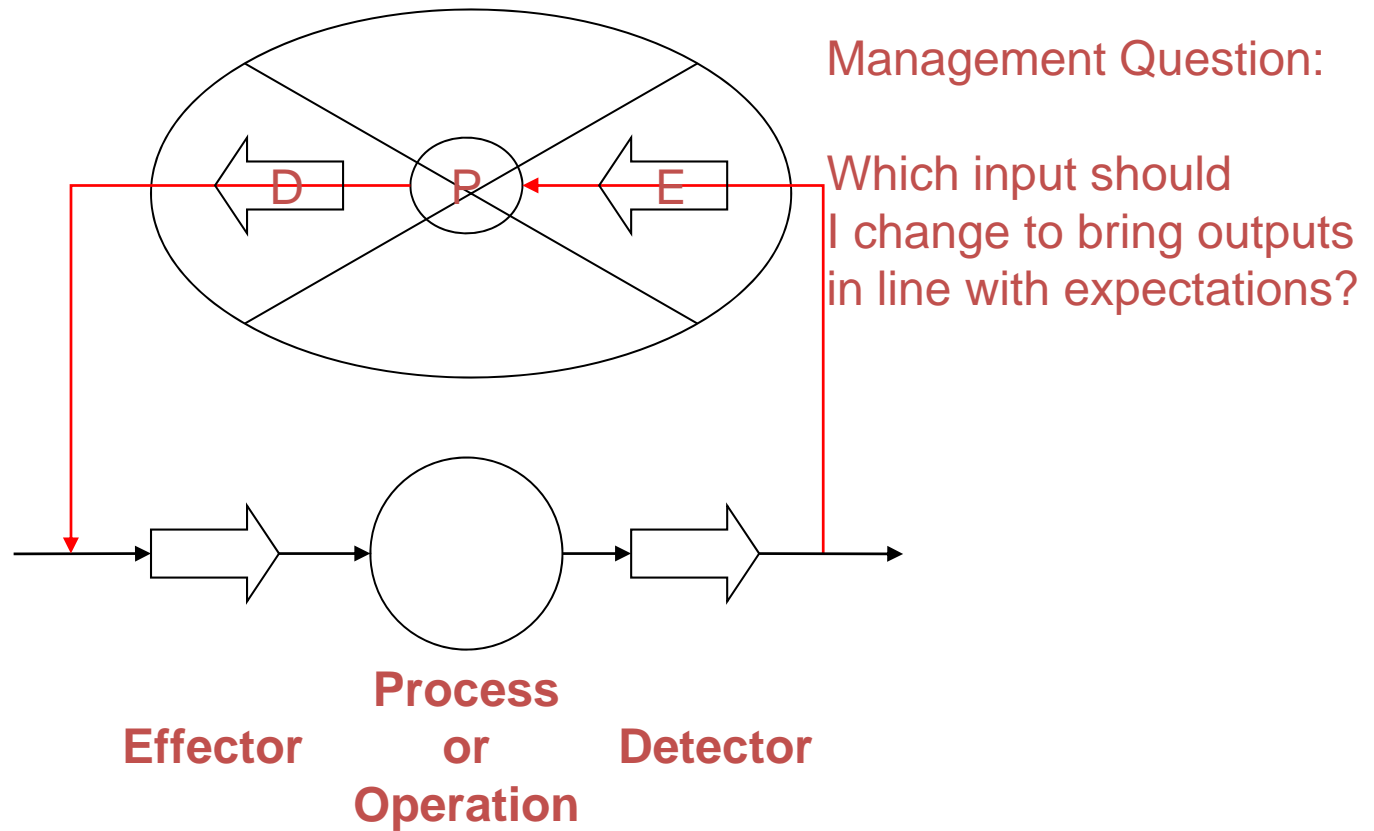
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Management



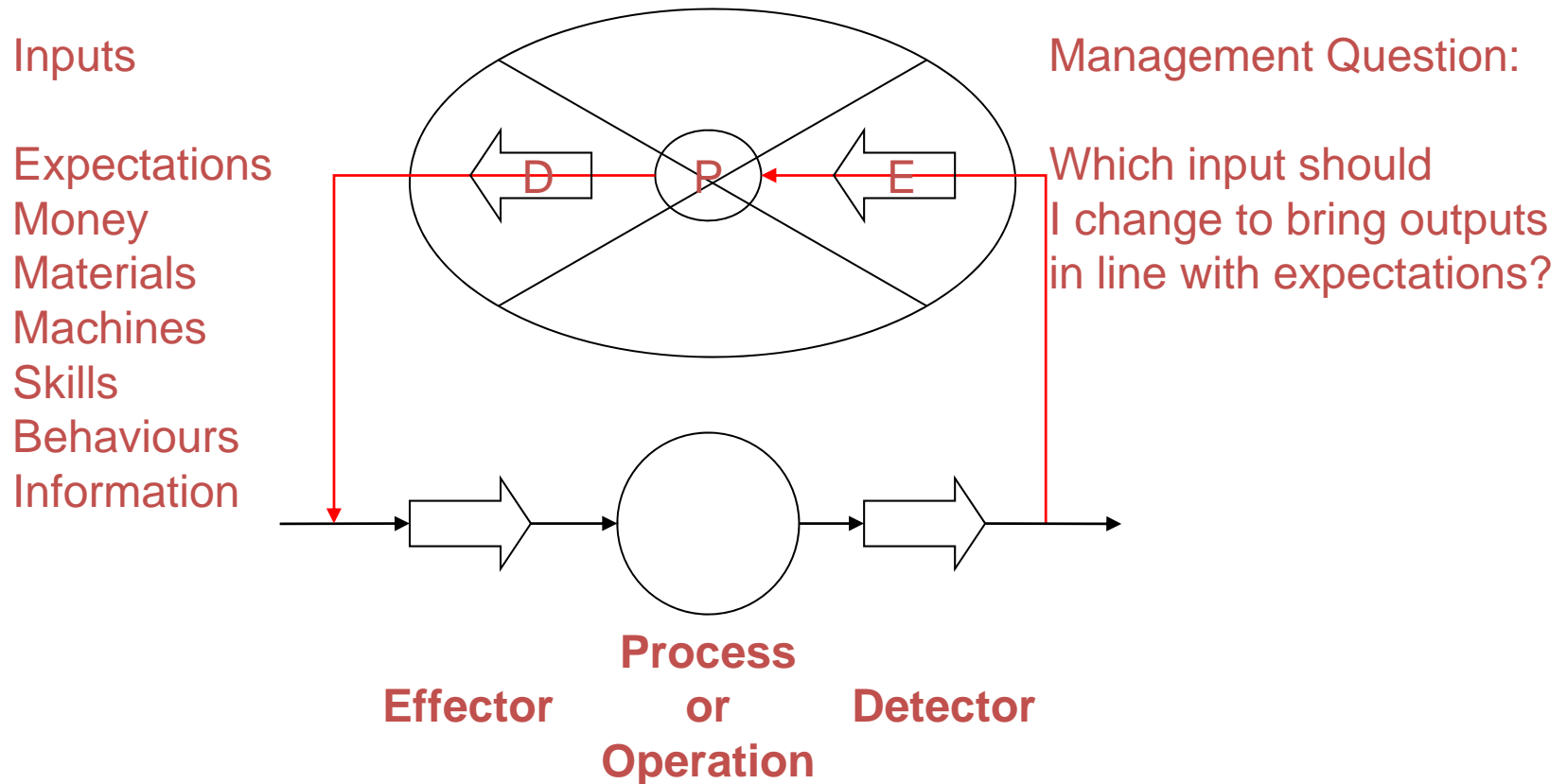
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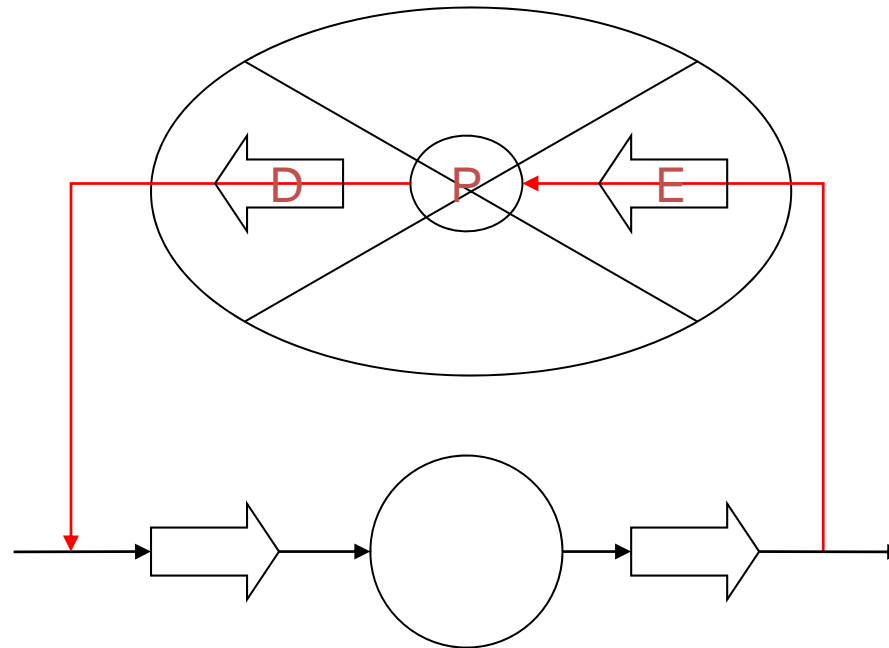
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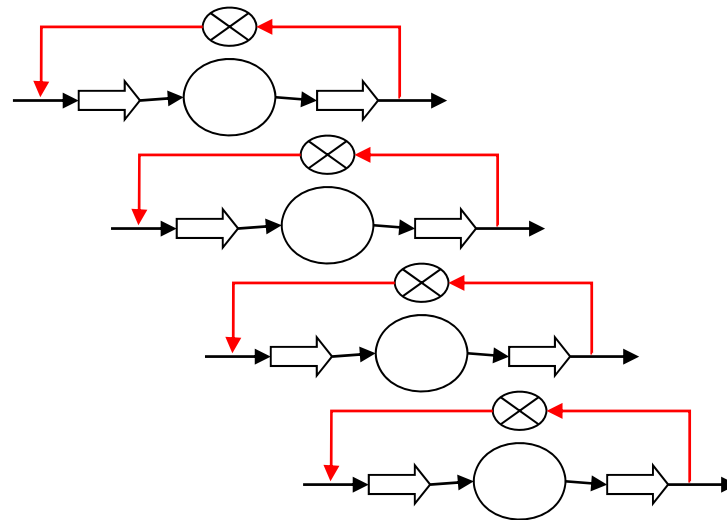
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Management



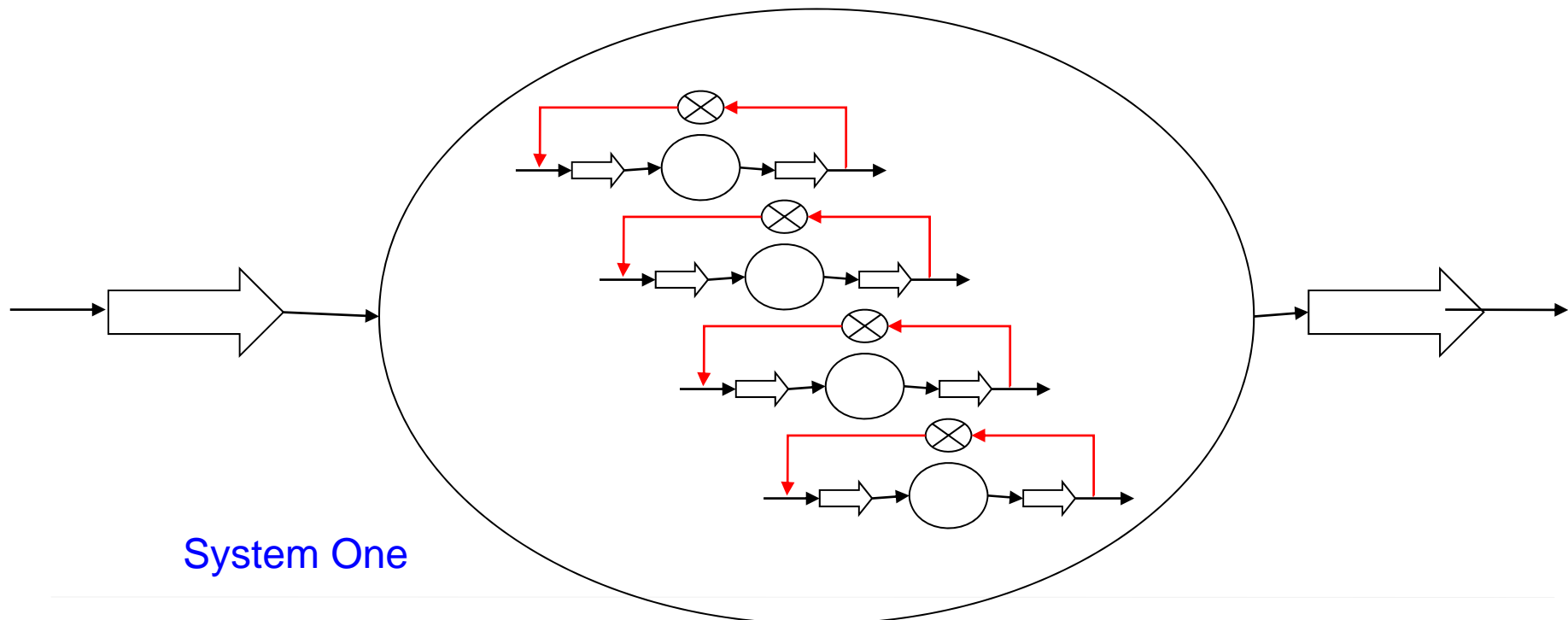
Are we doing things right?

Multi-Process Cybernetic Model



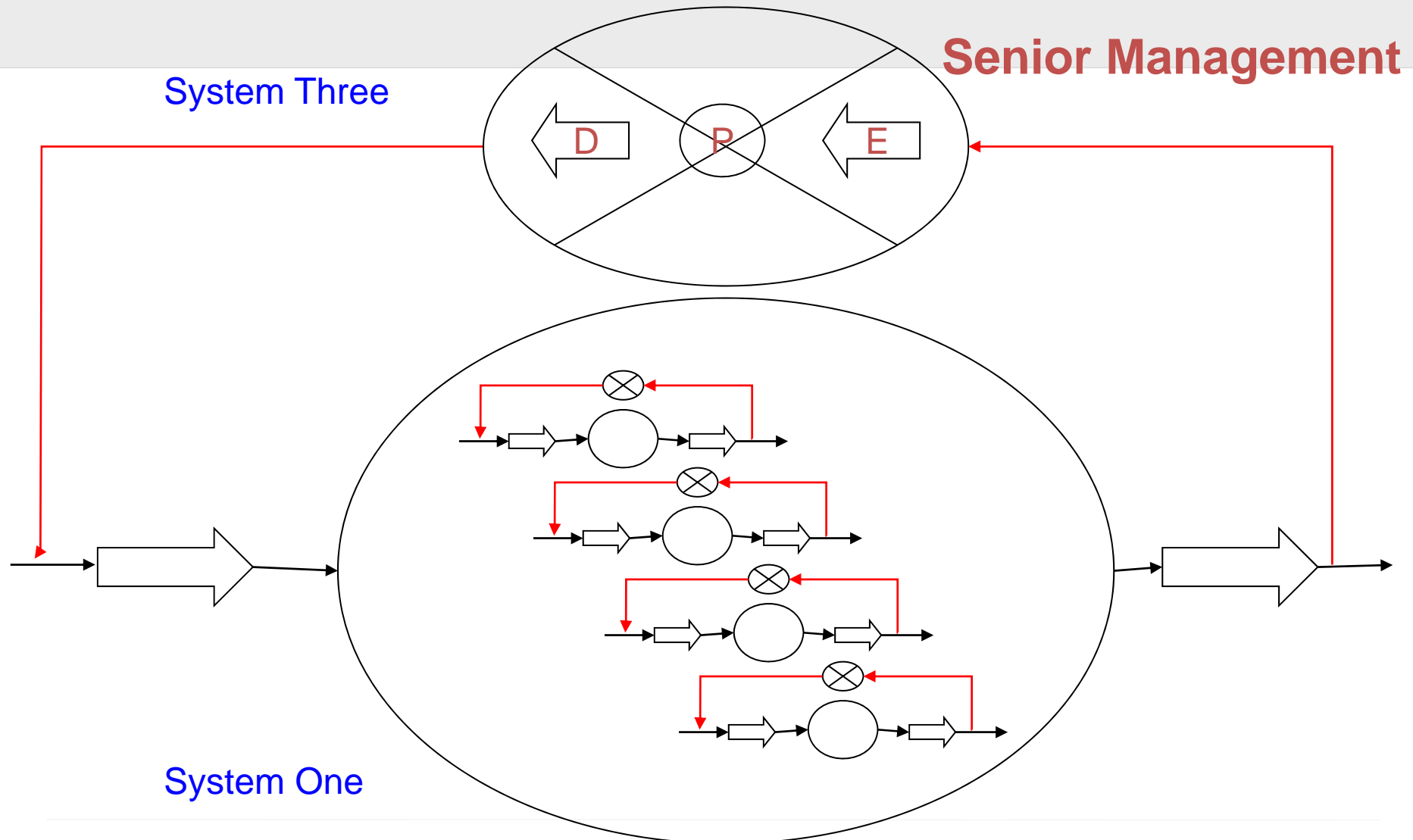
System One

Multi-Process Cybernetic Model



System One

Multi-Process Cybernetic Model



Multi-Process Cybernetic Model

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

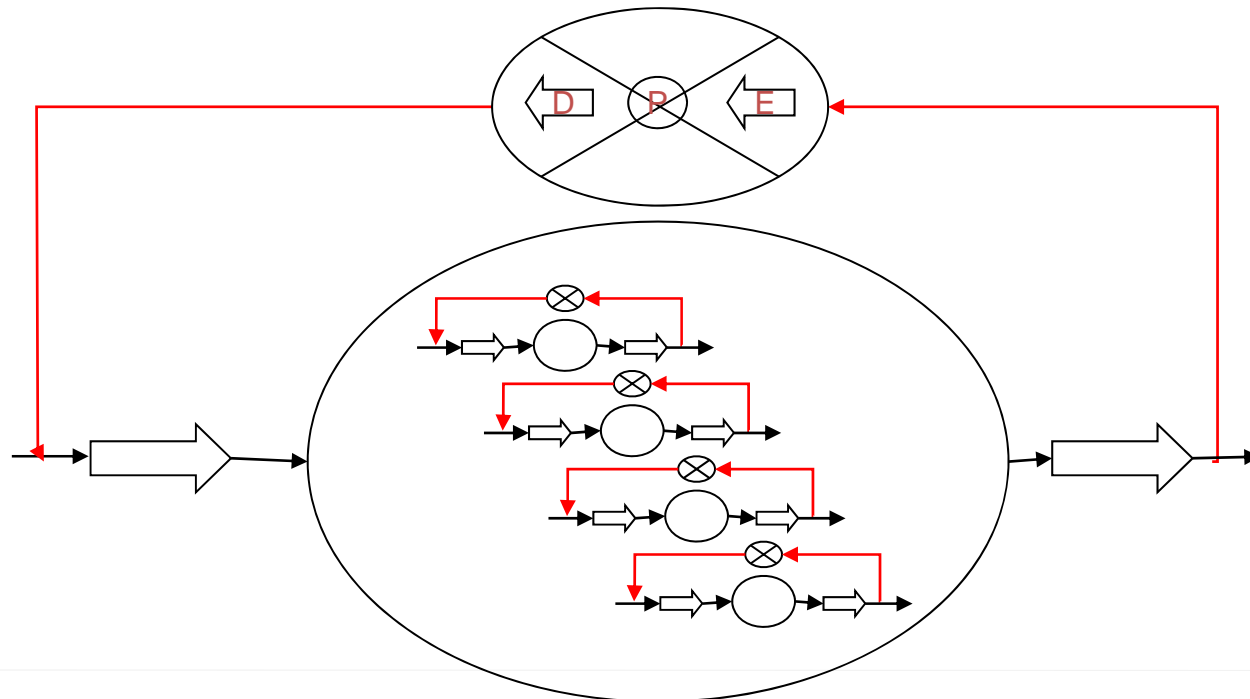
Multi-Process Cybernetic Model

- Wholly Inadequate! Why?
- Because:
 - Rightness is internally defined
 - Rightness is about NOW
 - Rightness cannot be challenged within that model!
 - Goedel's incompleteness theorem?
 - 'Within the limits of any formal language there are propositions that are undecidable'
 - Russell
 - 'The Barber shaves everyone in this town who does not shave himself, who shaves the Barber?'

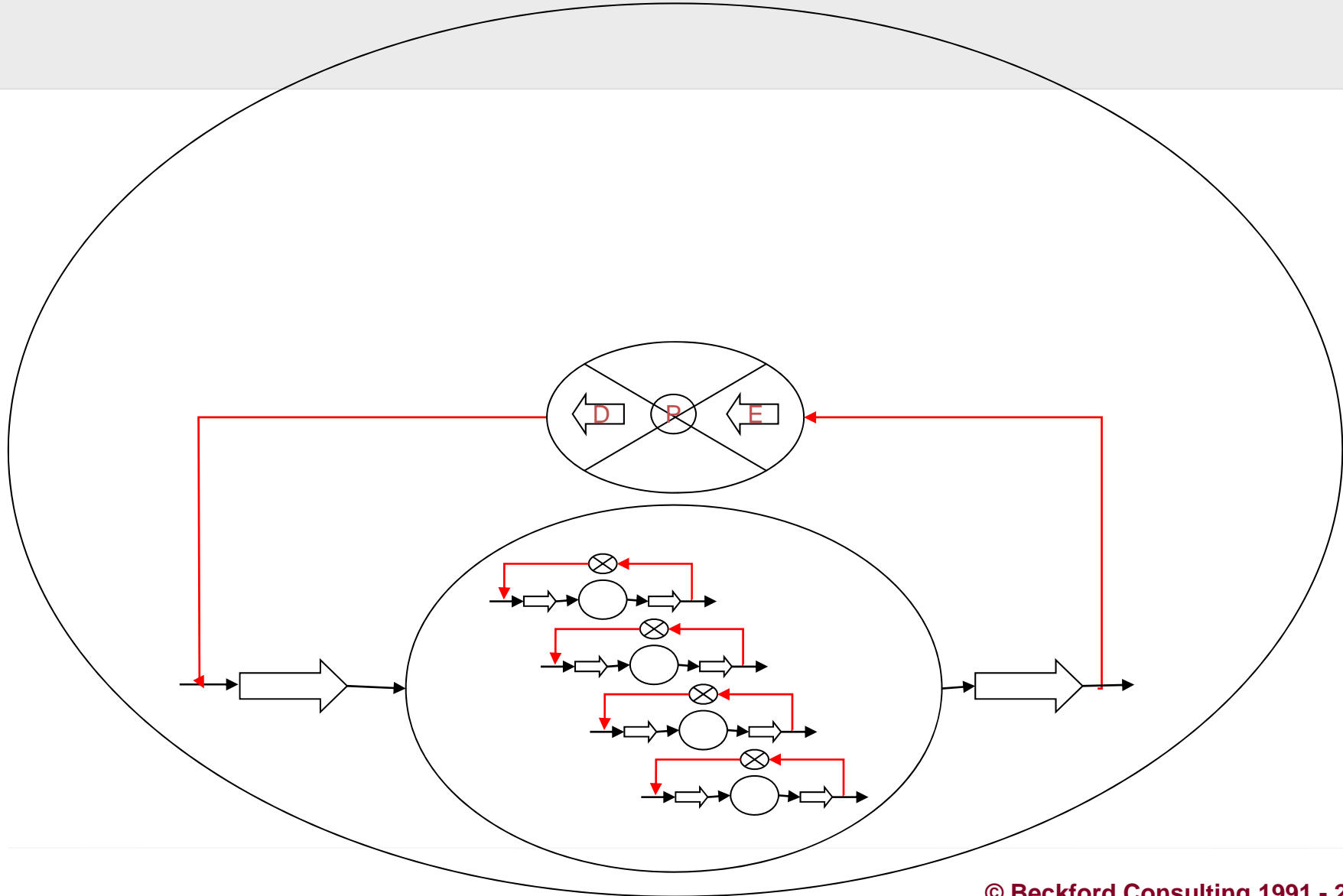
Multi-Process Cybernetic Model

- 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!

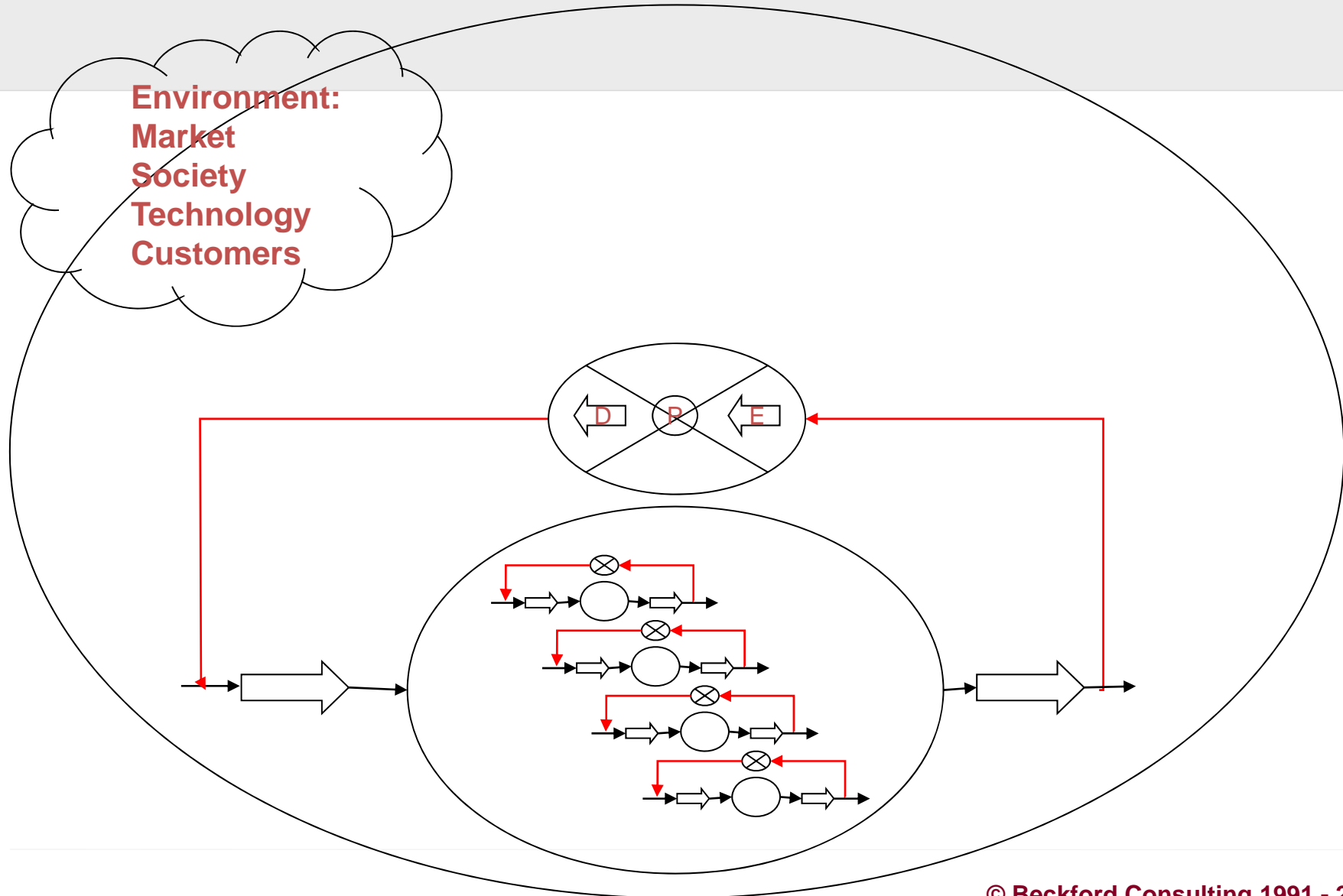
Complete Cybernetic Model



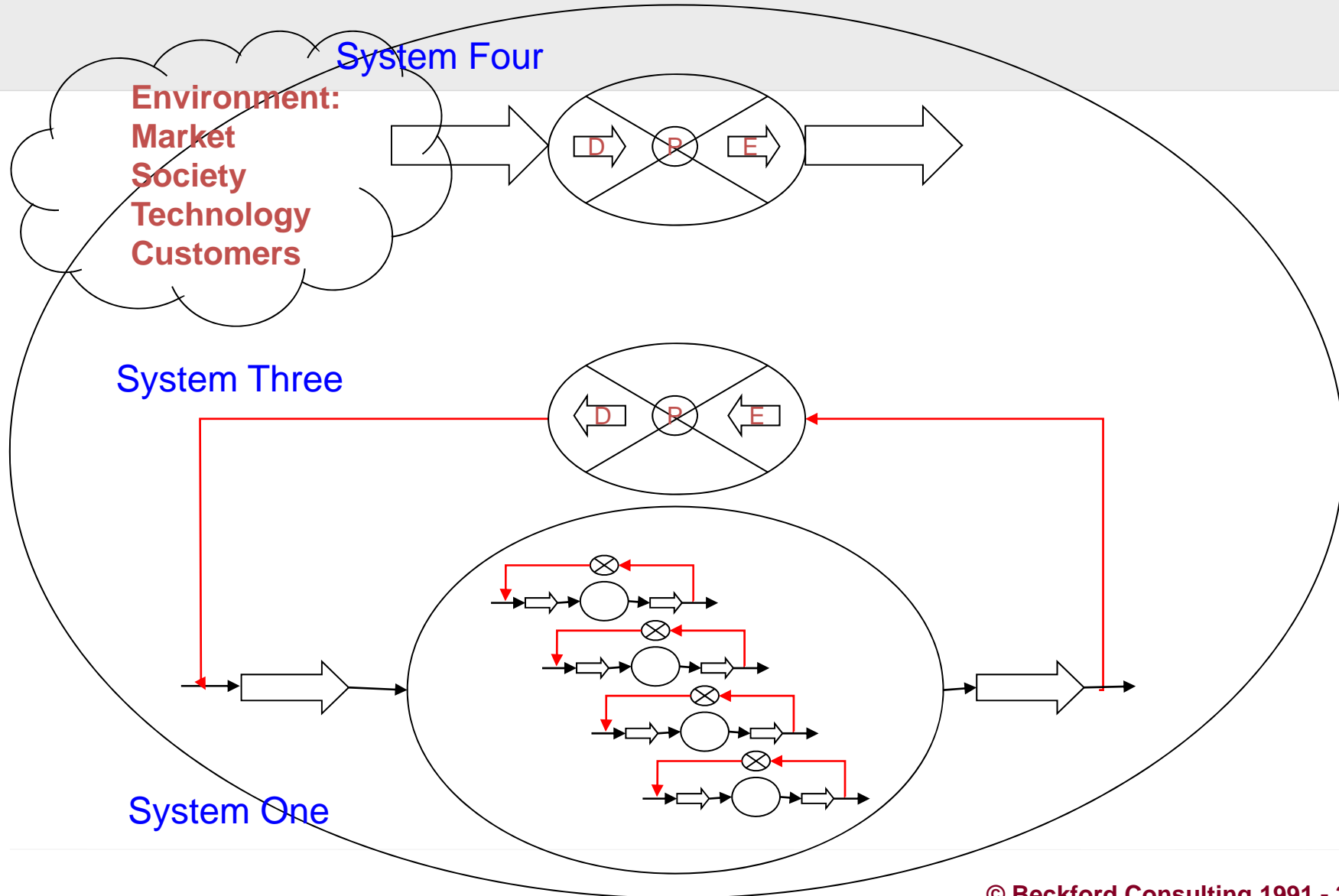
Complete Cybernetic Model



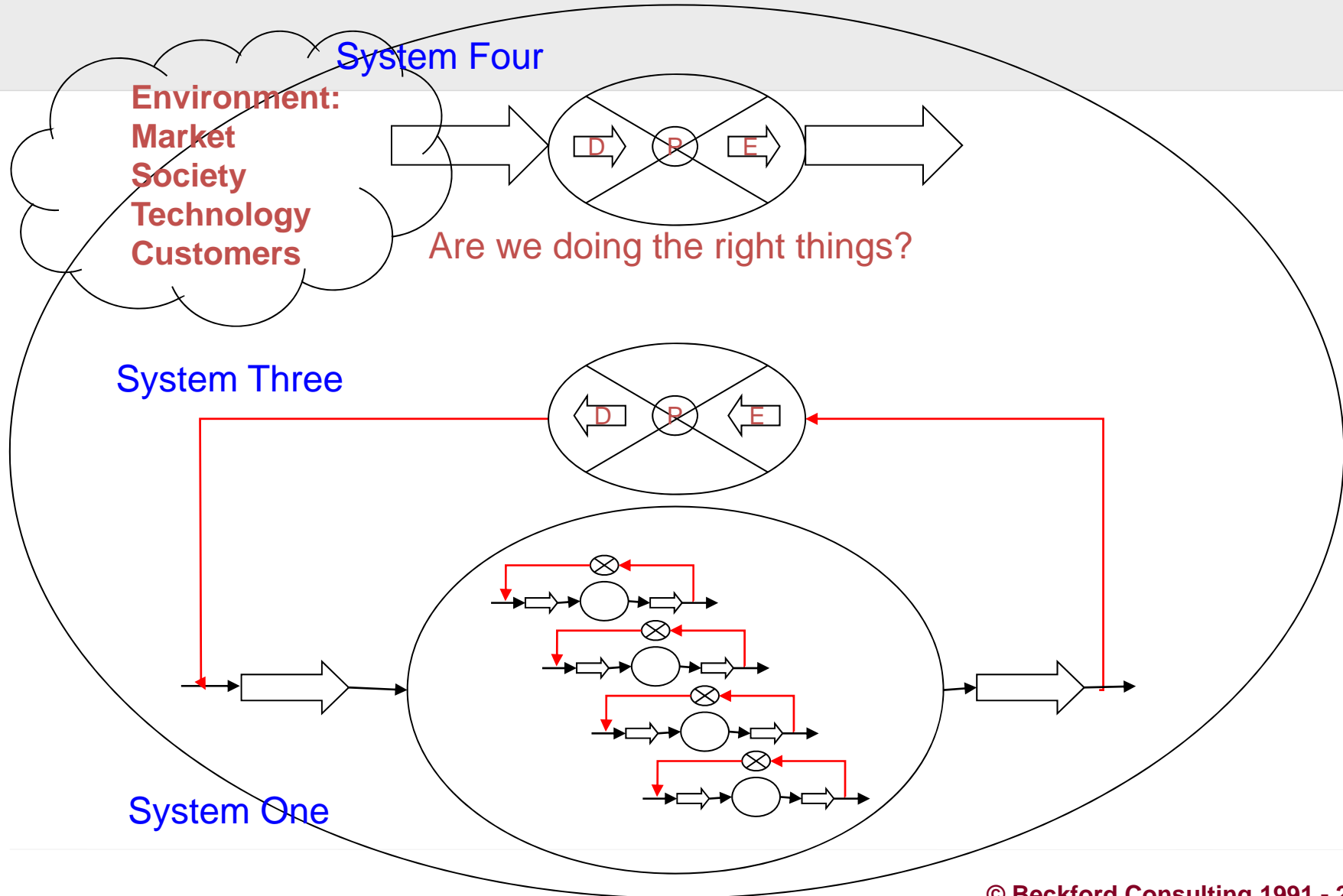
Complete Cybernetic Model



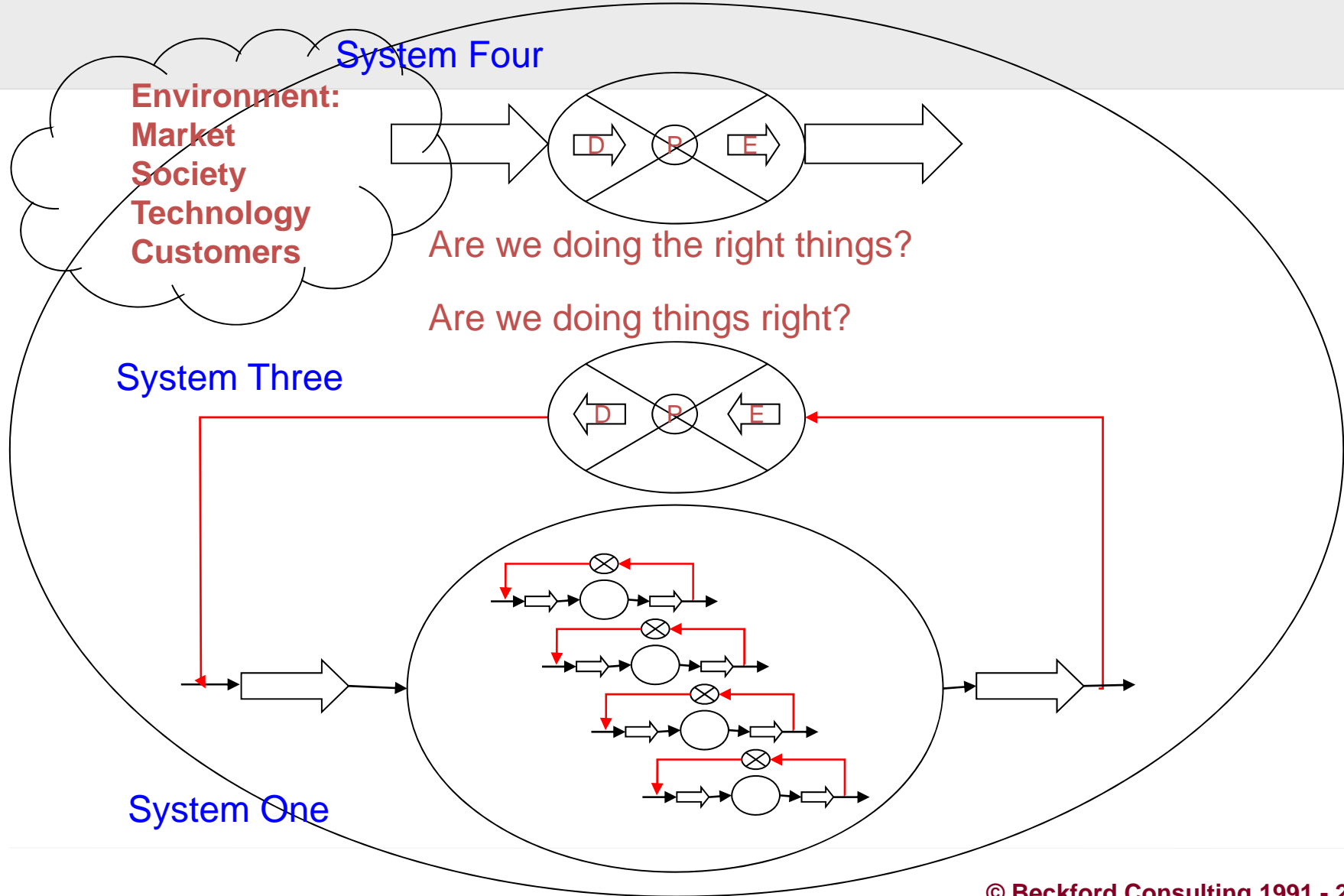
Complete Cybernetic Model



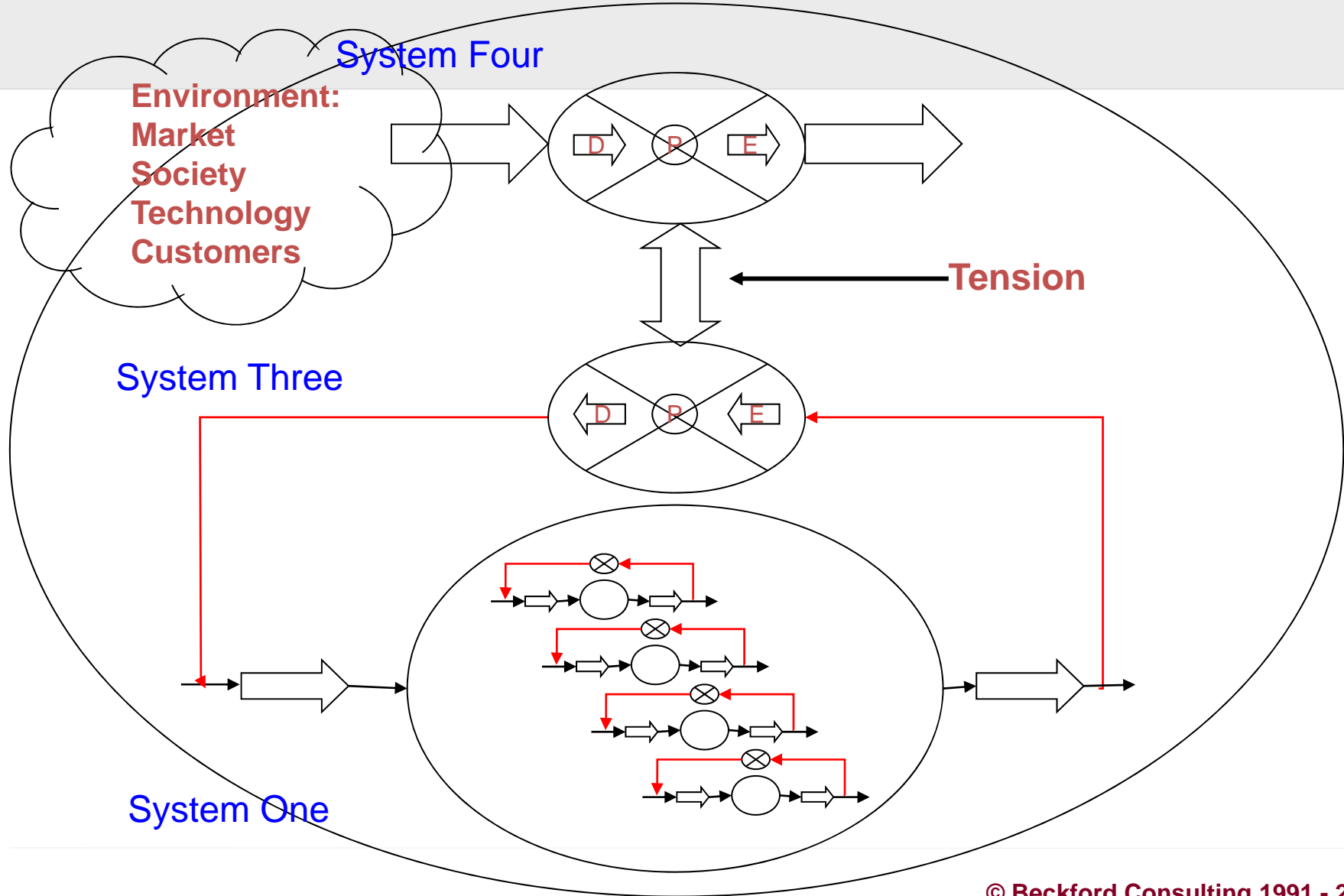
Complete Cybernetic Model



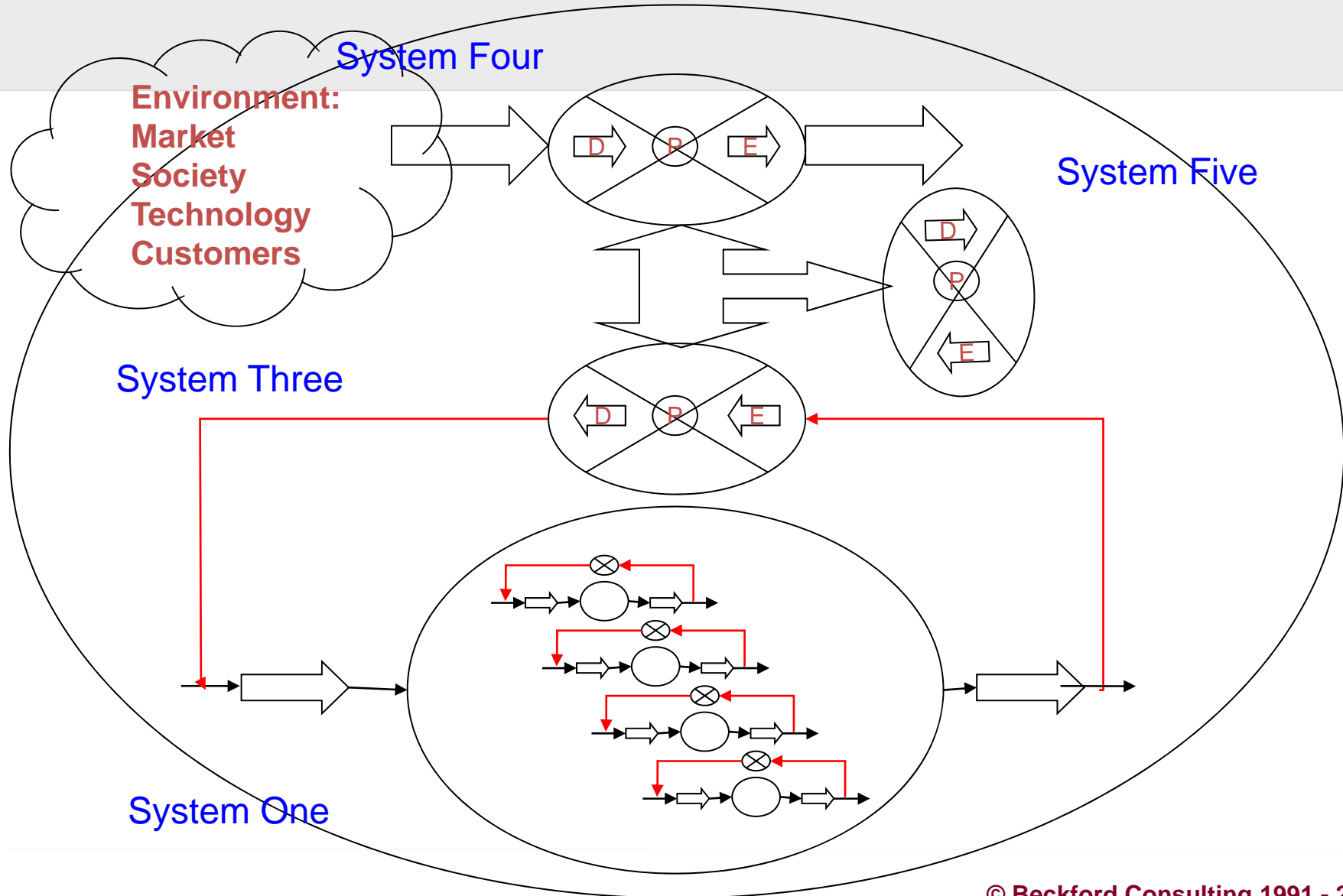
Complete Cybernetic Model



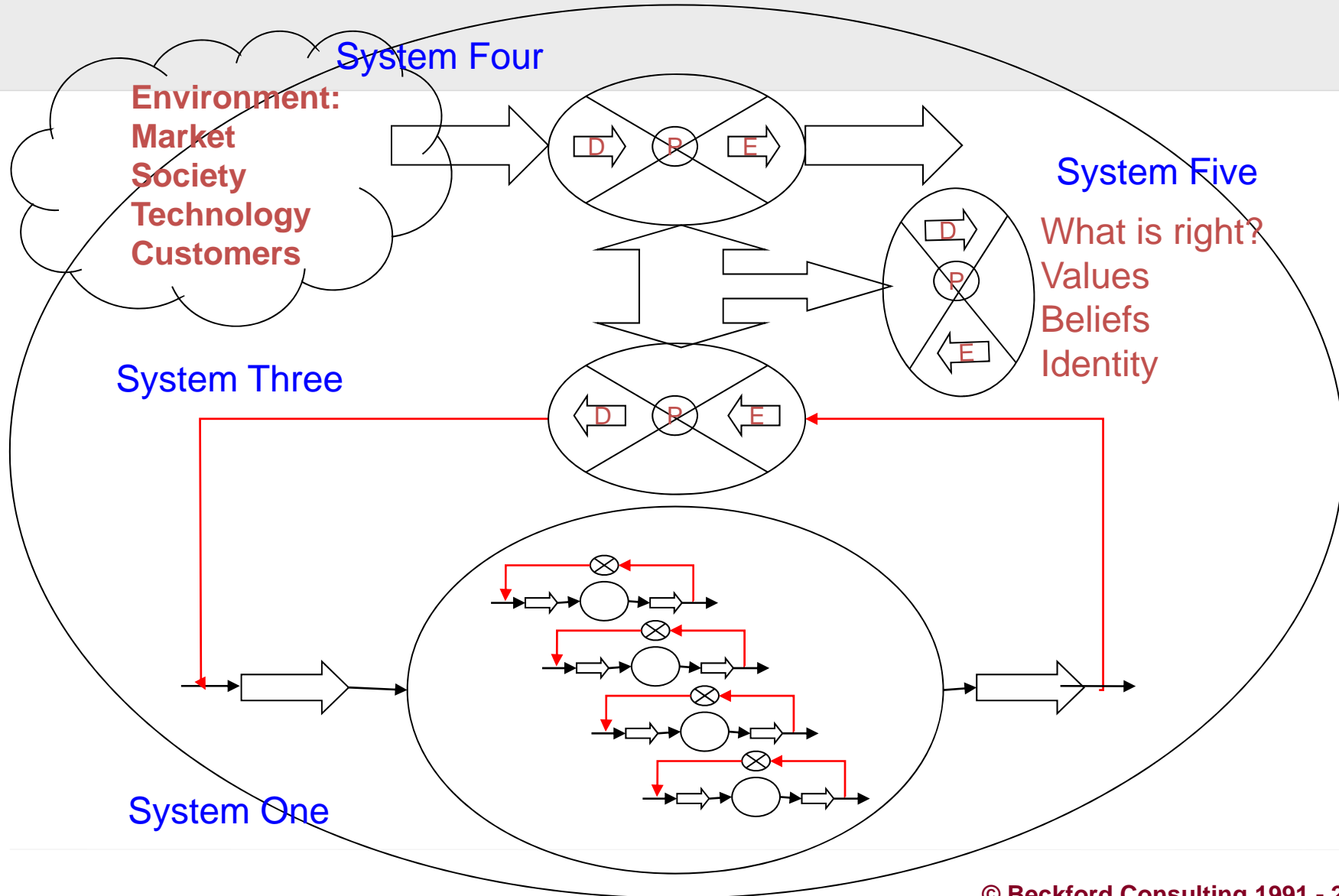
Complete Cybernetic Model



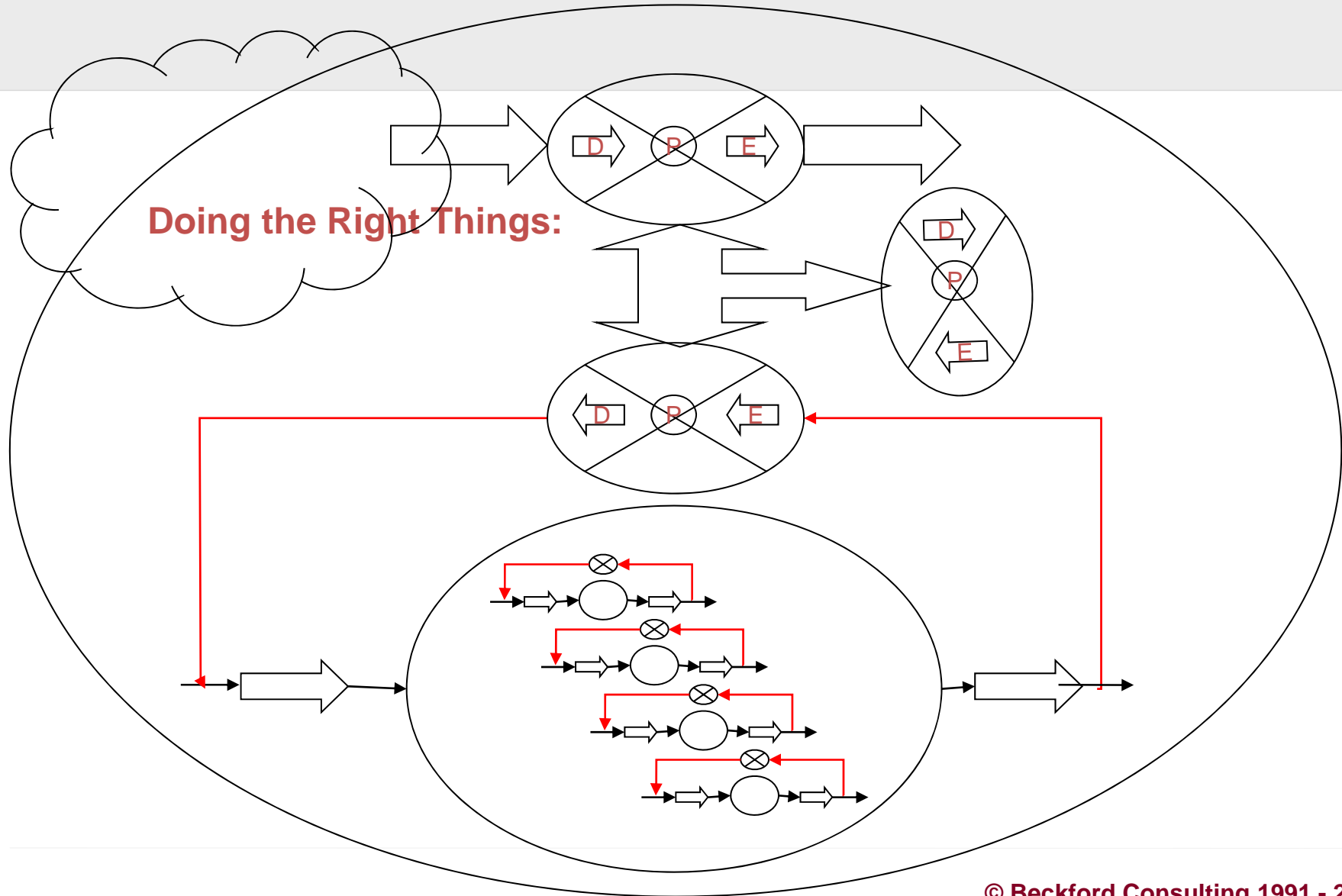
Complete Cybernetic Model



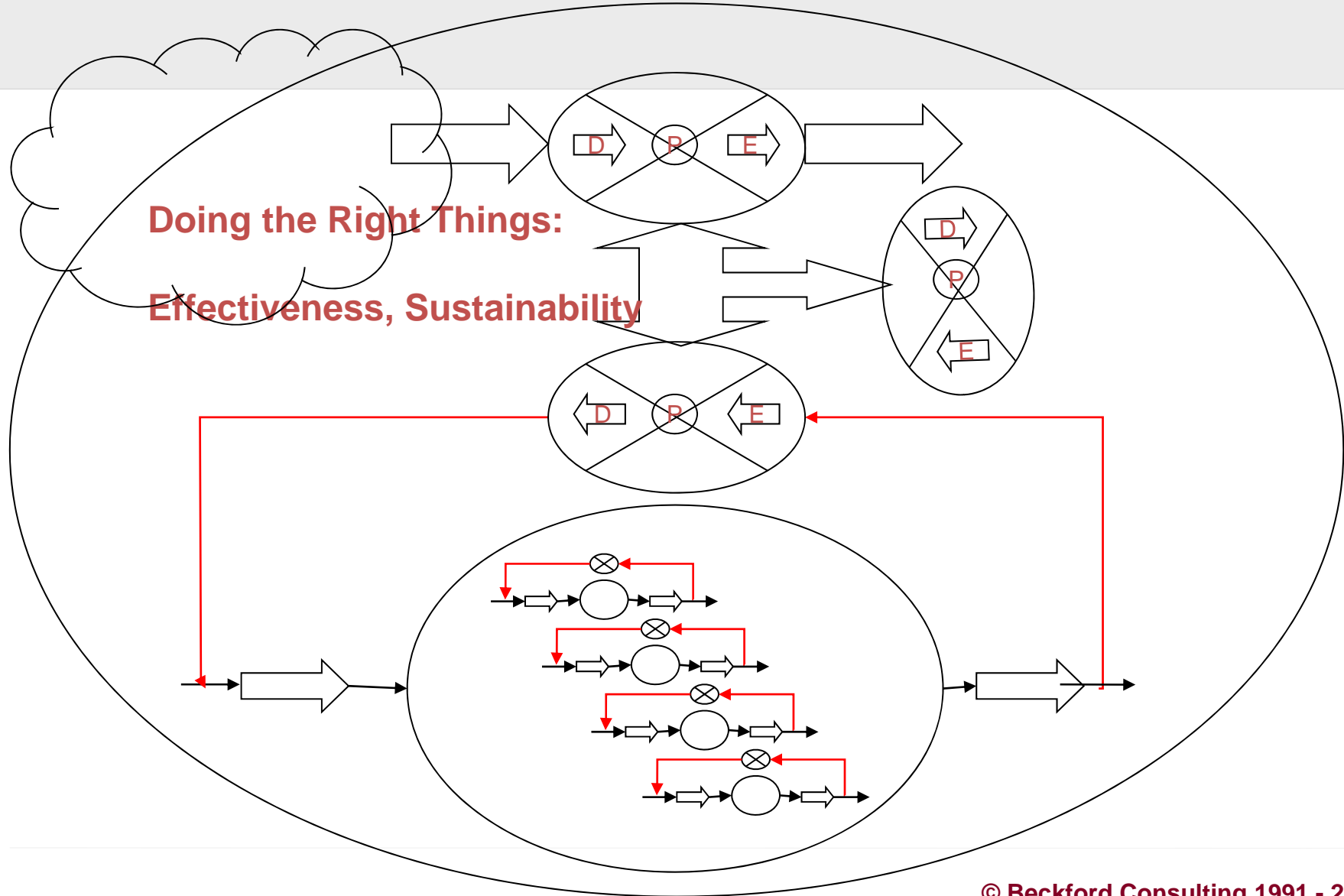
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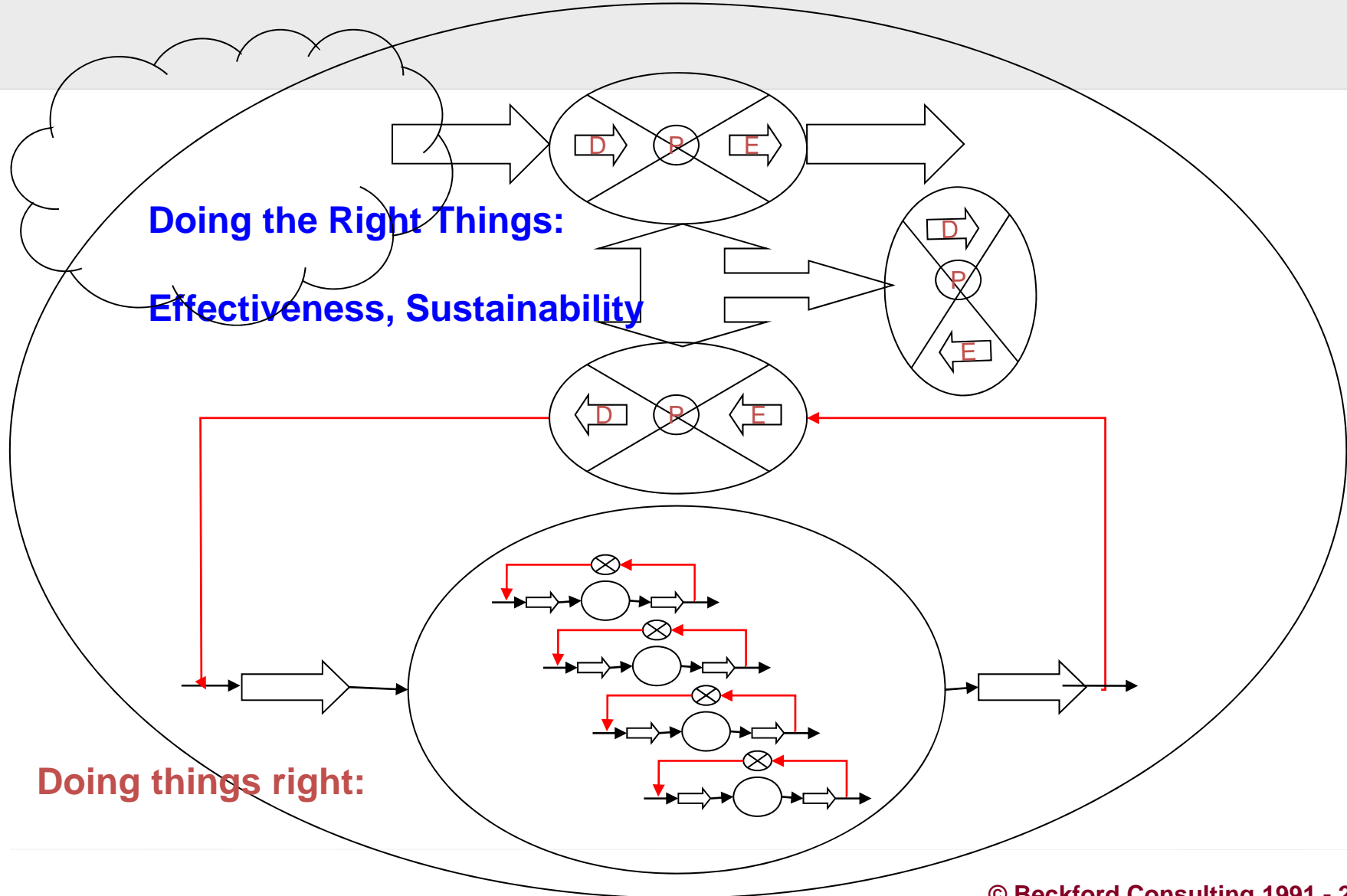
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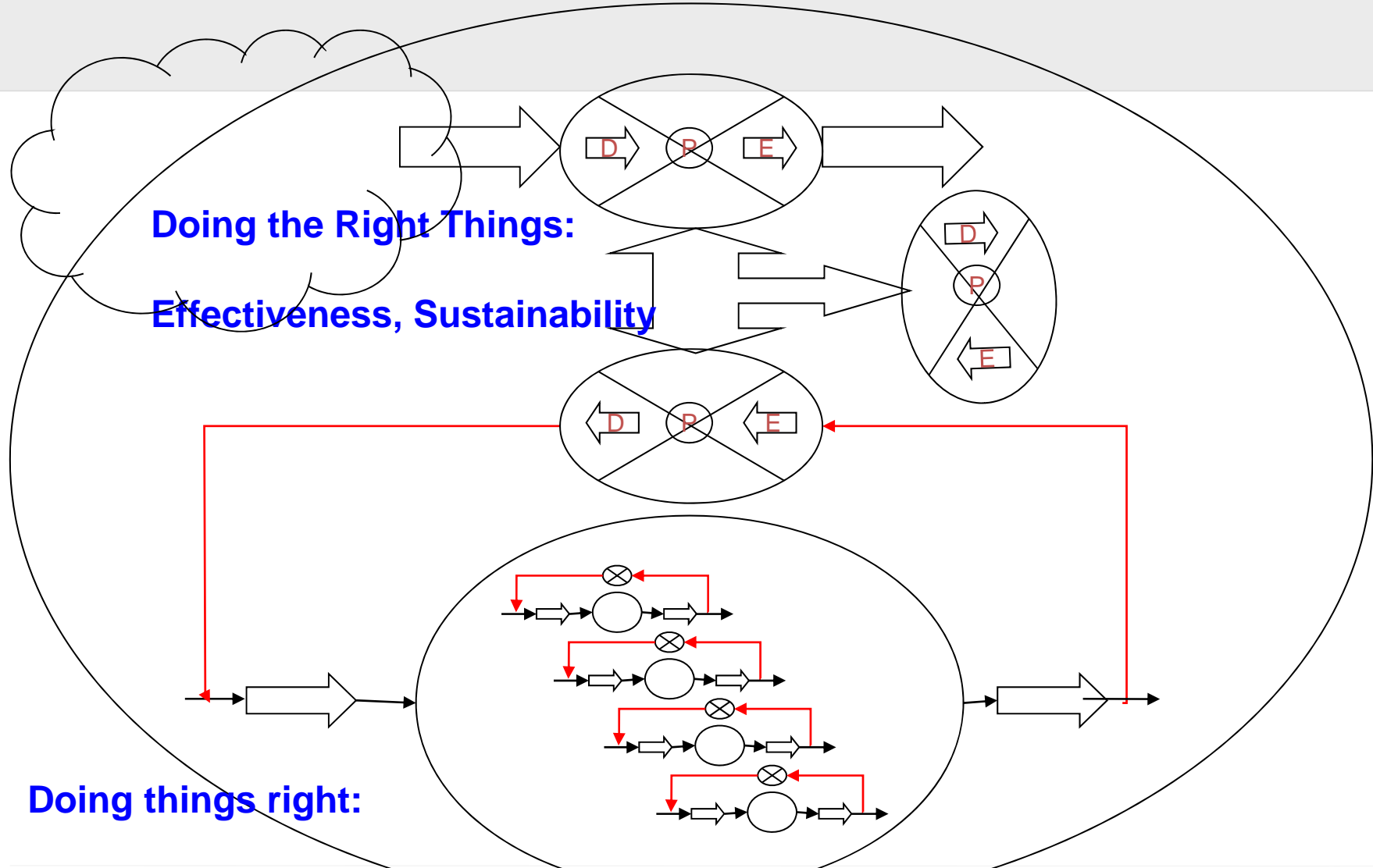
Complete Cybernetic Model



Complete Cybernetic Model



Complete Cybernetic Model

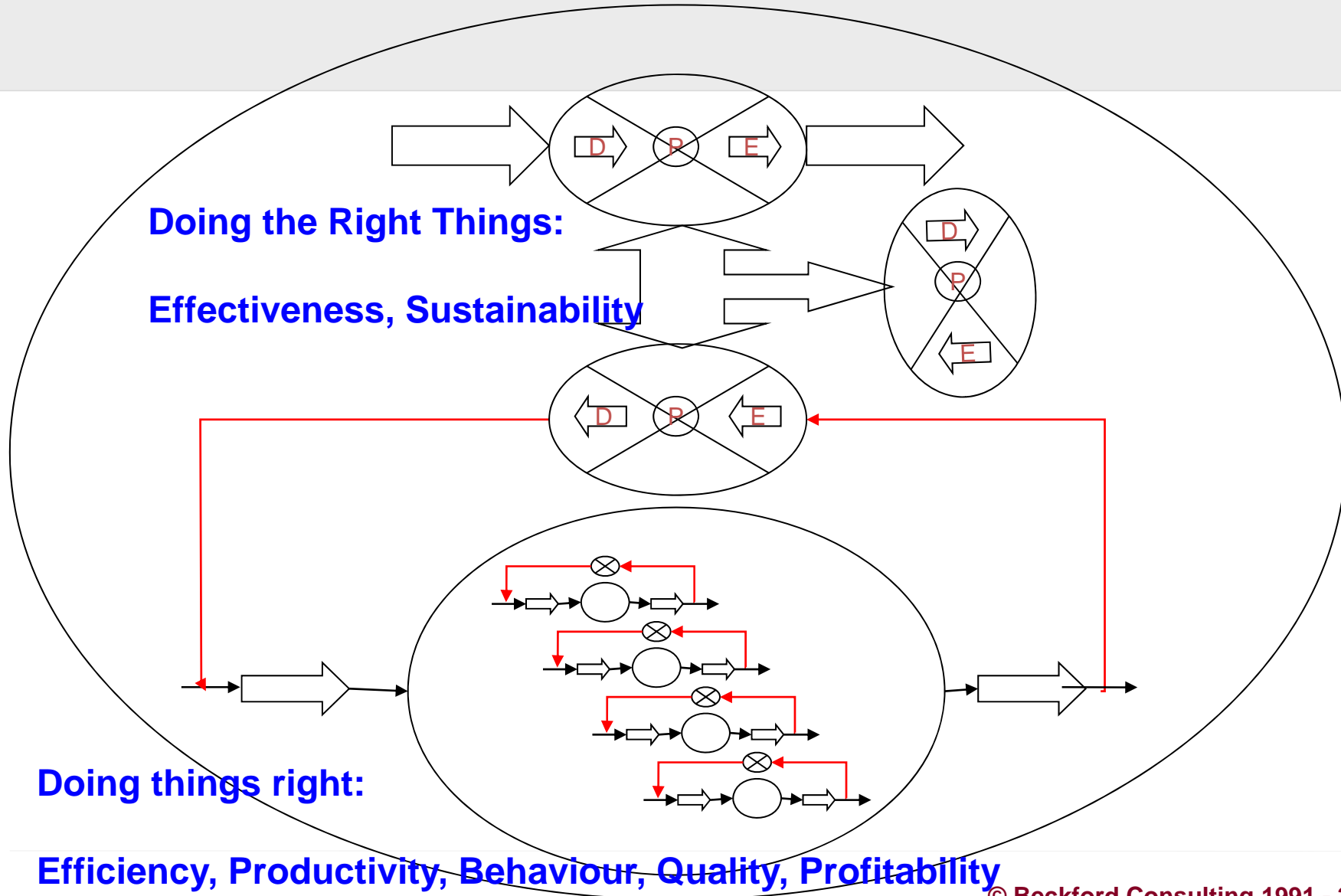


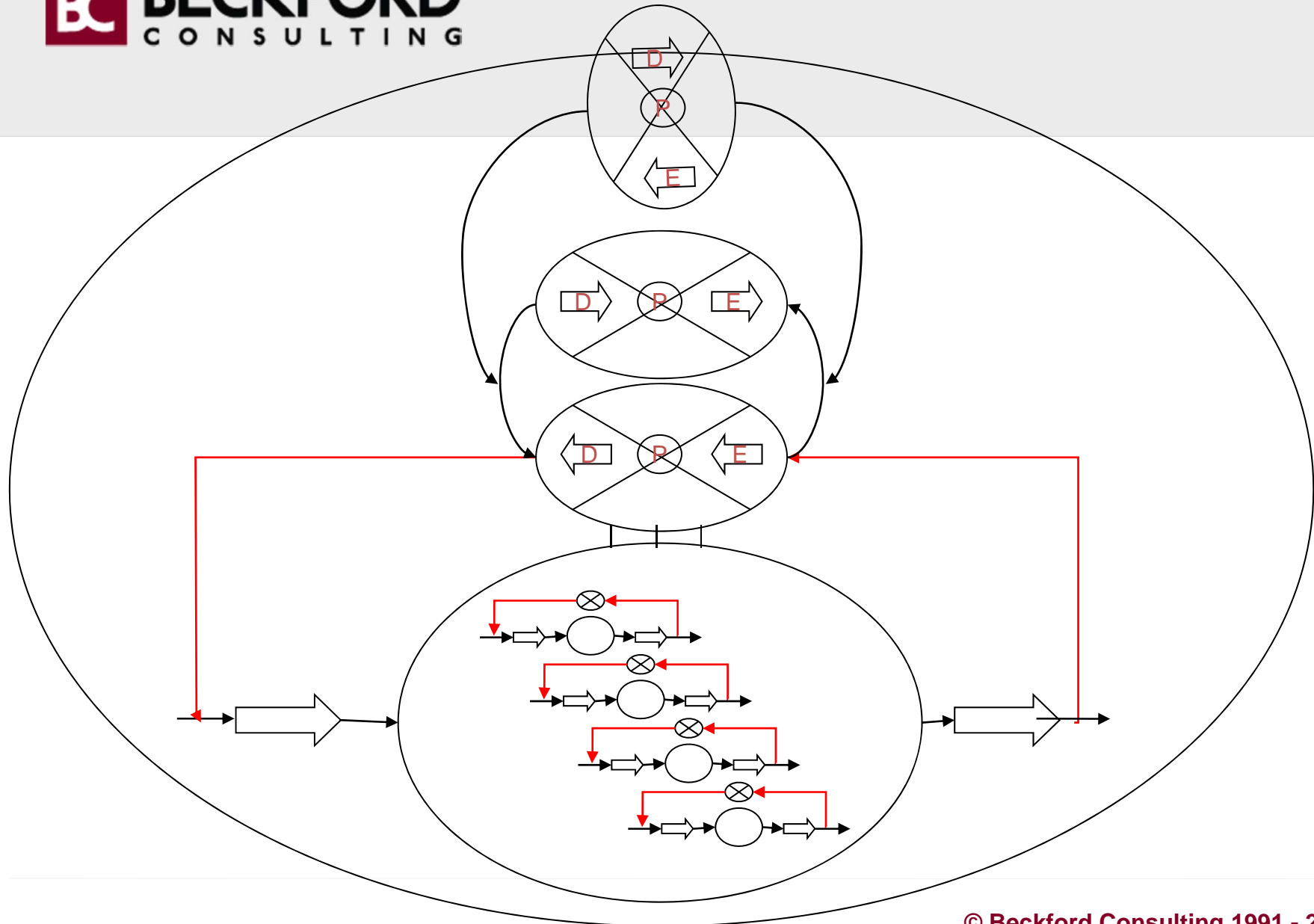
Doing the Right Things:
Effectiveness, Sustainability

Doing things right:

Efficiency, Productivity, Behaviour, Quality, Profitability

Complete Cybernetic Model





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

- Self-producing (Maturana & Varela, 1992)
 - (Self-approximating – Dudley, 2000)
- All ‘viable’ systems are autopoietic
 - Name one?
- Autopoiesis is an essential property of viability
- Pathological Autopoiesis
 - When parts of the system pursue their own ends, not those of the system to which they belong
 - Bodily instance of this?
 - Cancers

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 Information Systems design
 - a methodology for thinking about organisations which:
 - enables diagnosis
 - enables prognosis
 - enables effective treatment
 - 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!

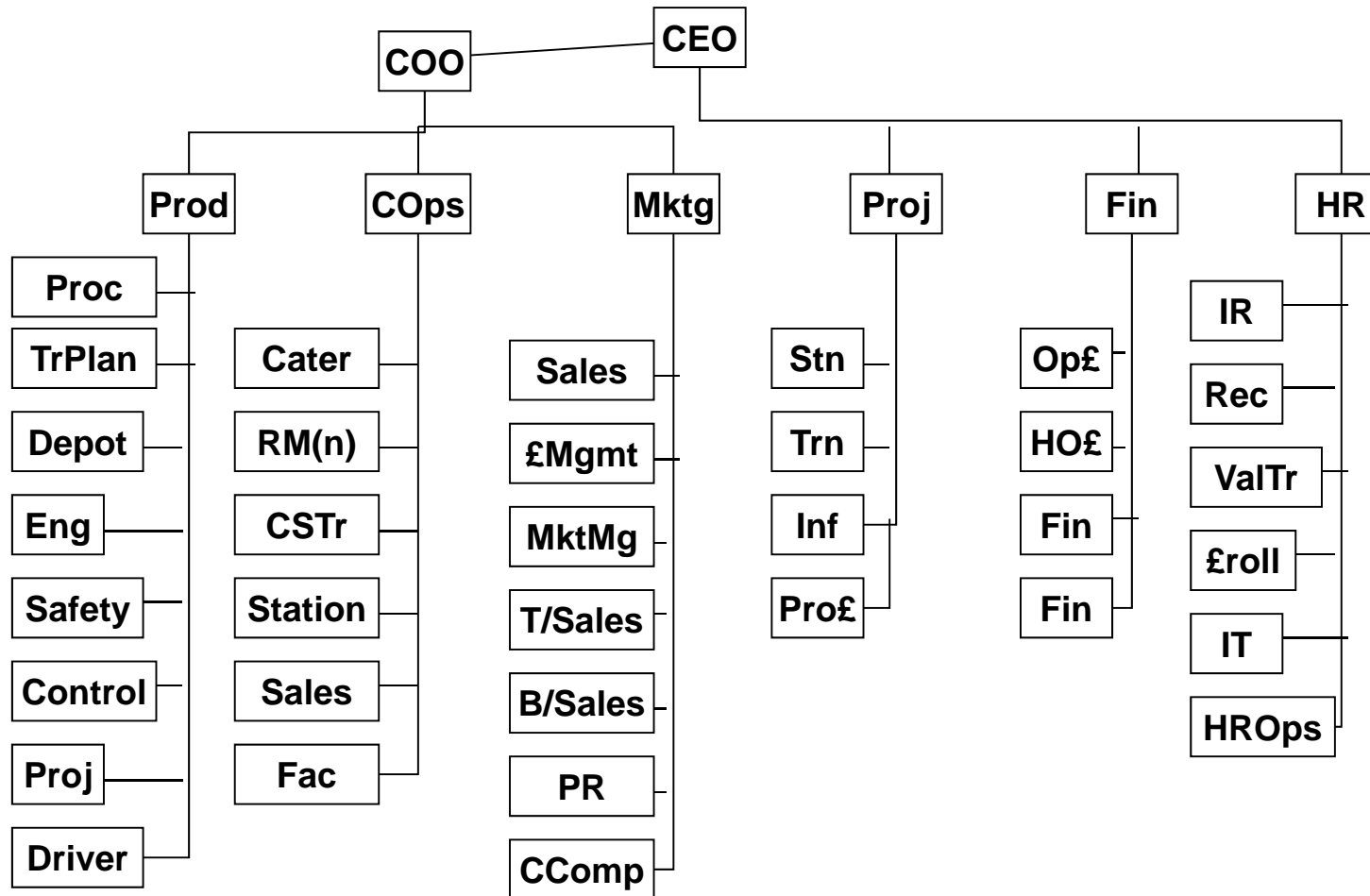
2009 Committee on Science & Technology Report on National Infrastructure:

JB modelled the interactions of Water, Energy, Transport, Waste, Ict

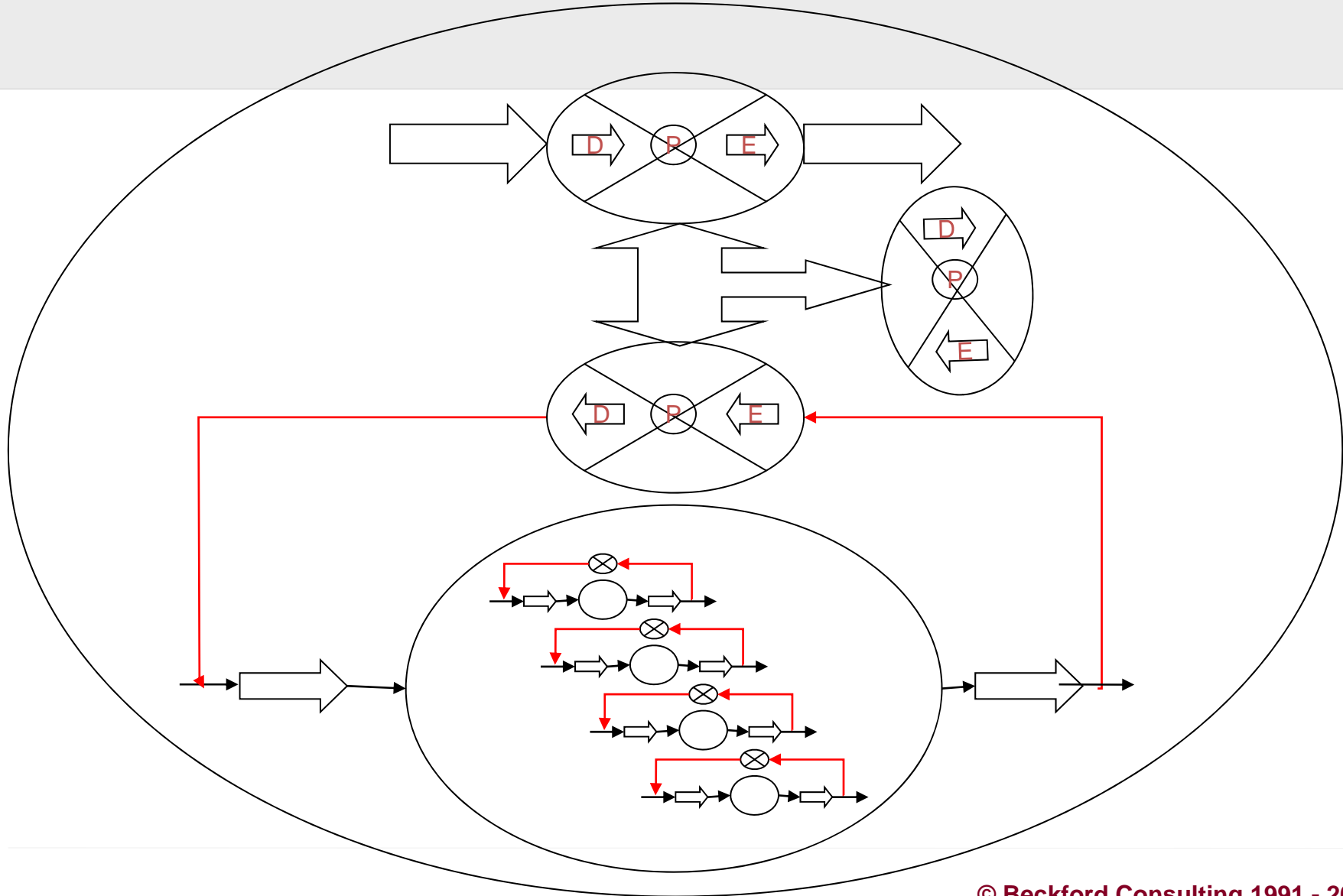
Outputs informed G8, G20, Budget, IPCC

So, why do we need it?

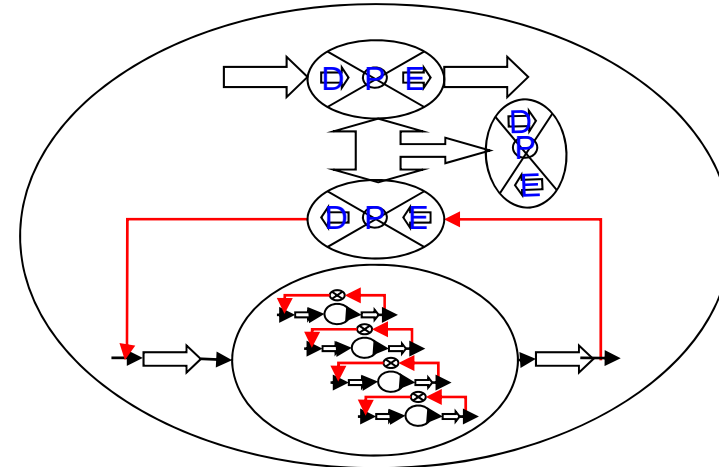
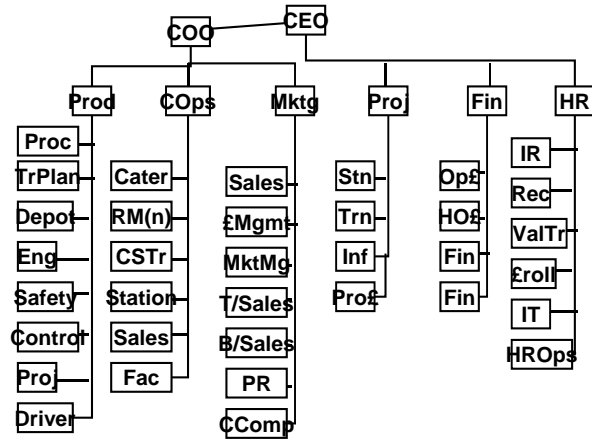
- ALL organisations are, to some extent, dysfunctional, most commonly because:
 - They fail to adequately investigate the environment
 - Dealing with today dominates thinking about tomorrow
 - The ‘identity’ of the organisation is not explicit
- The cybernetics of any situation will assert themselves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



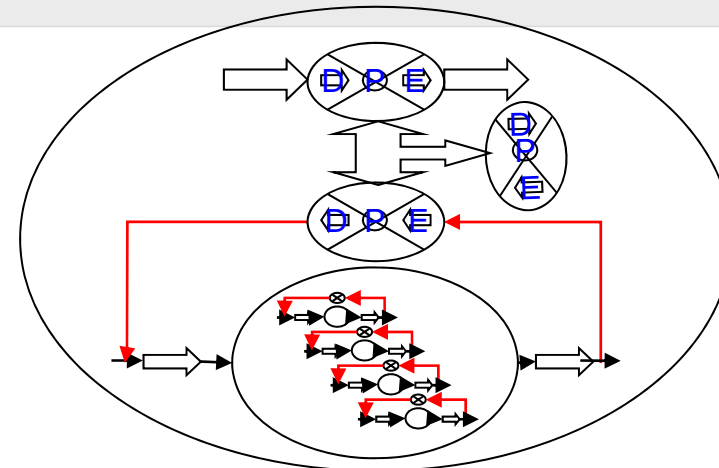
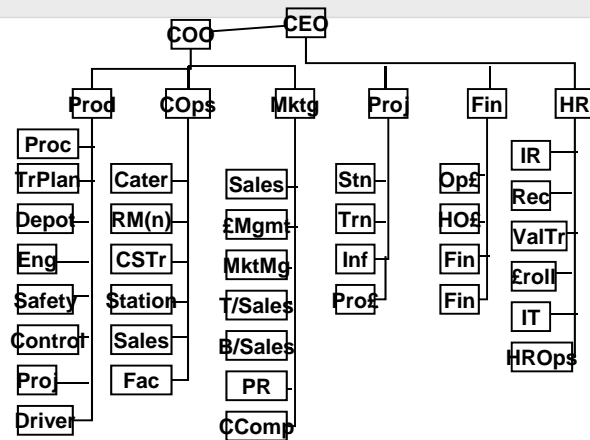
Complete Cybernetic Model



Spot the Difference?



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!

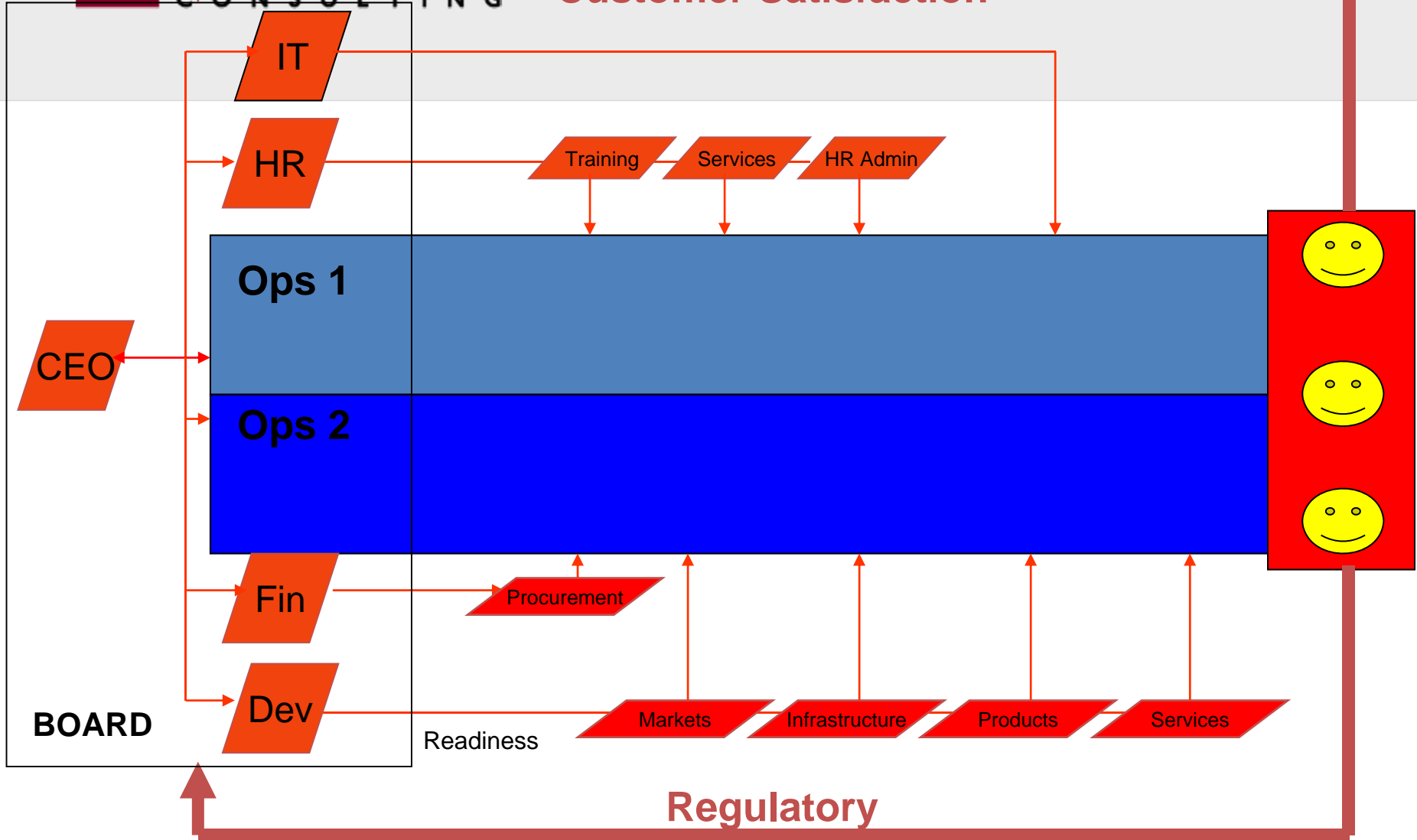
The right hand diagram (and the thinking that underpins it) tells us:

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



Employee Satisfaction
Customer Satisfaction

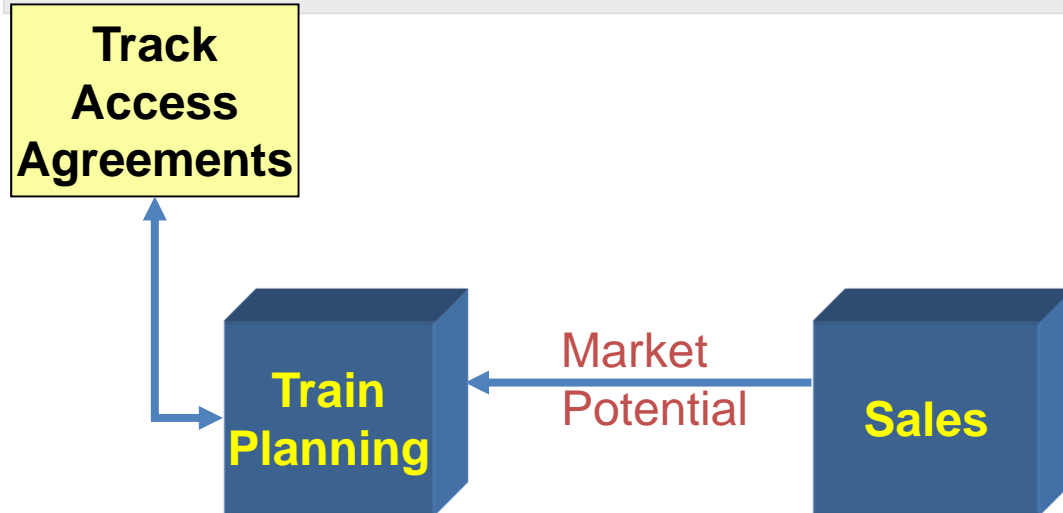
A Real One!

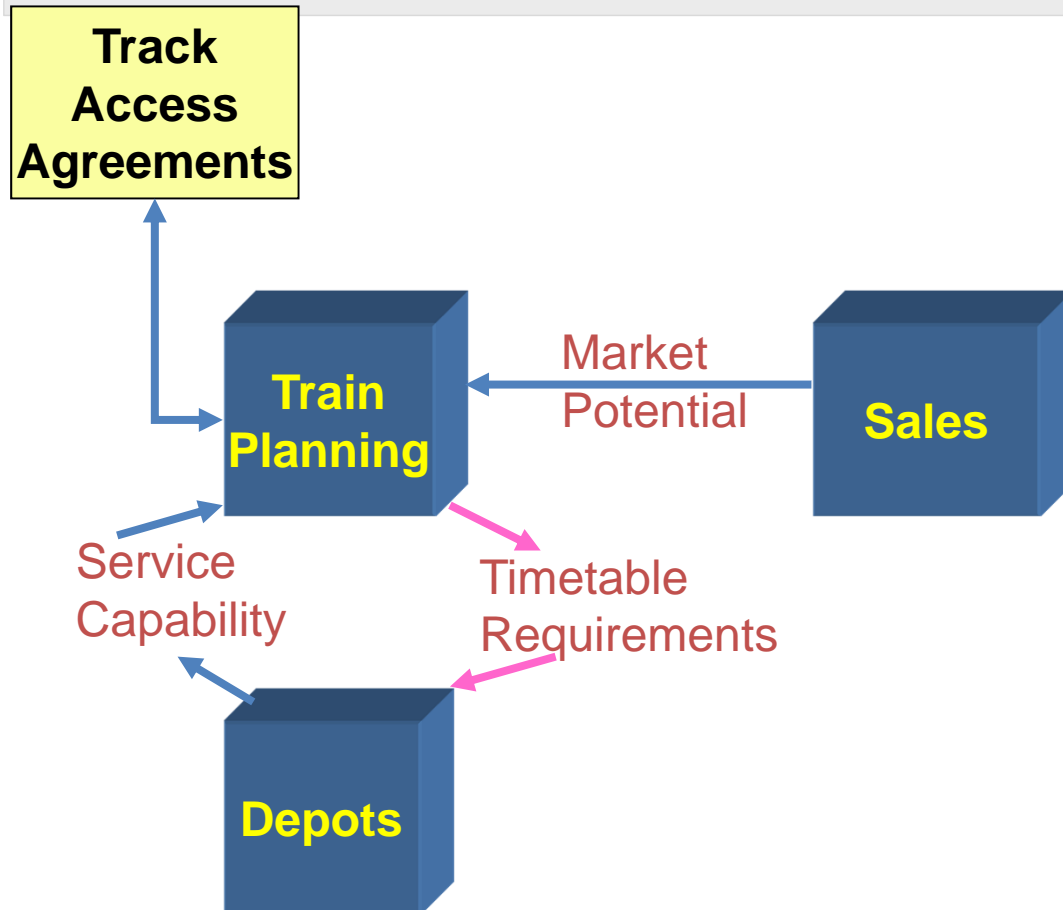


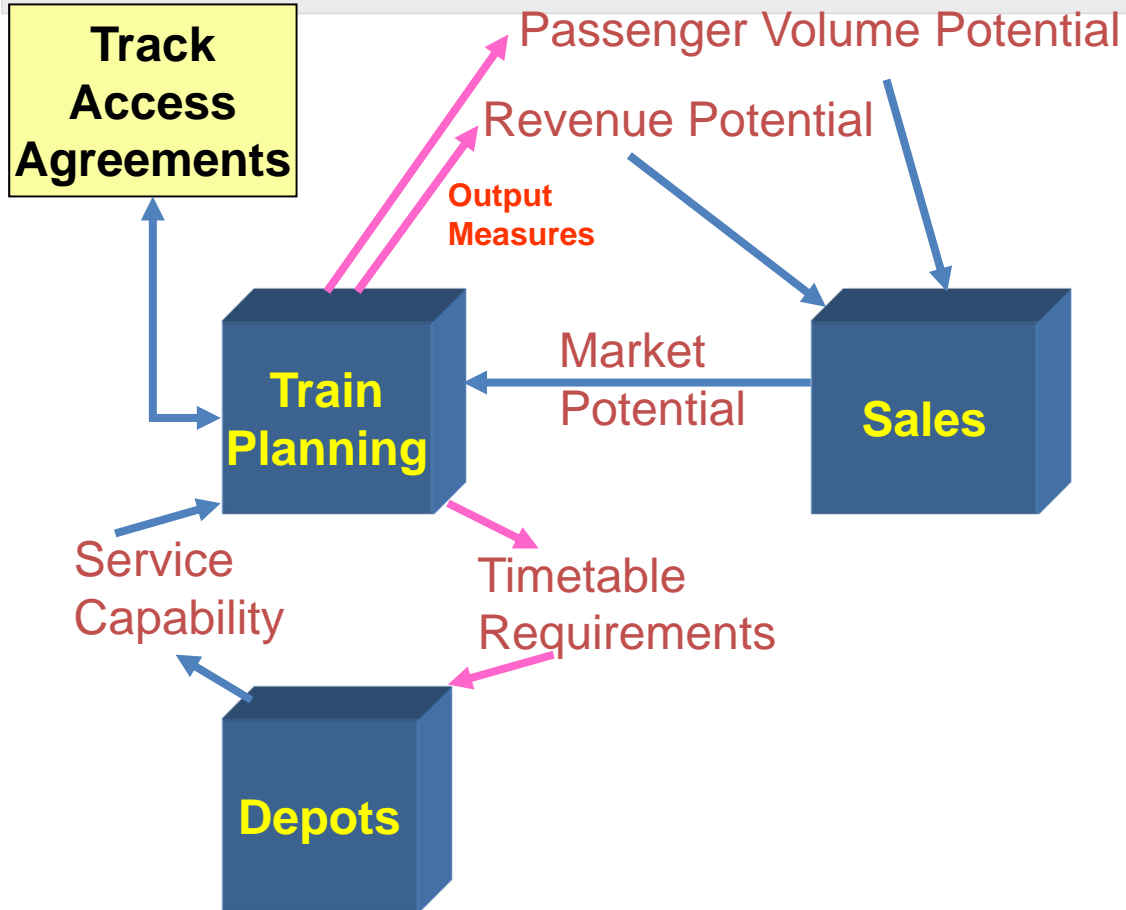
Financial Performance

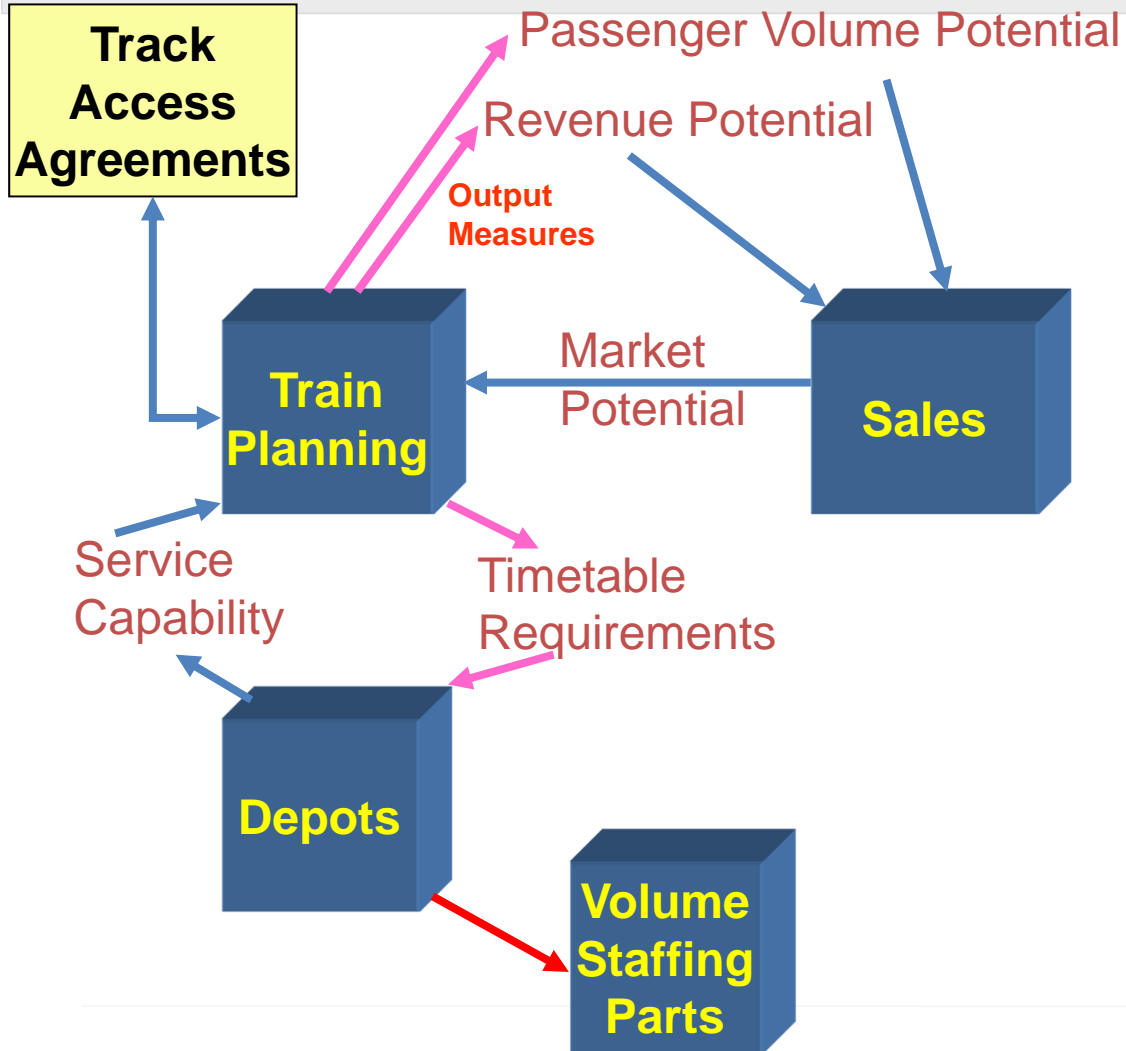
How does that work?





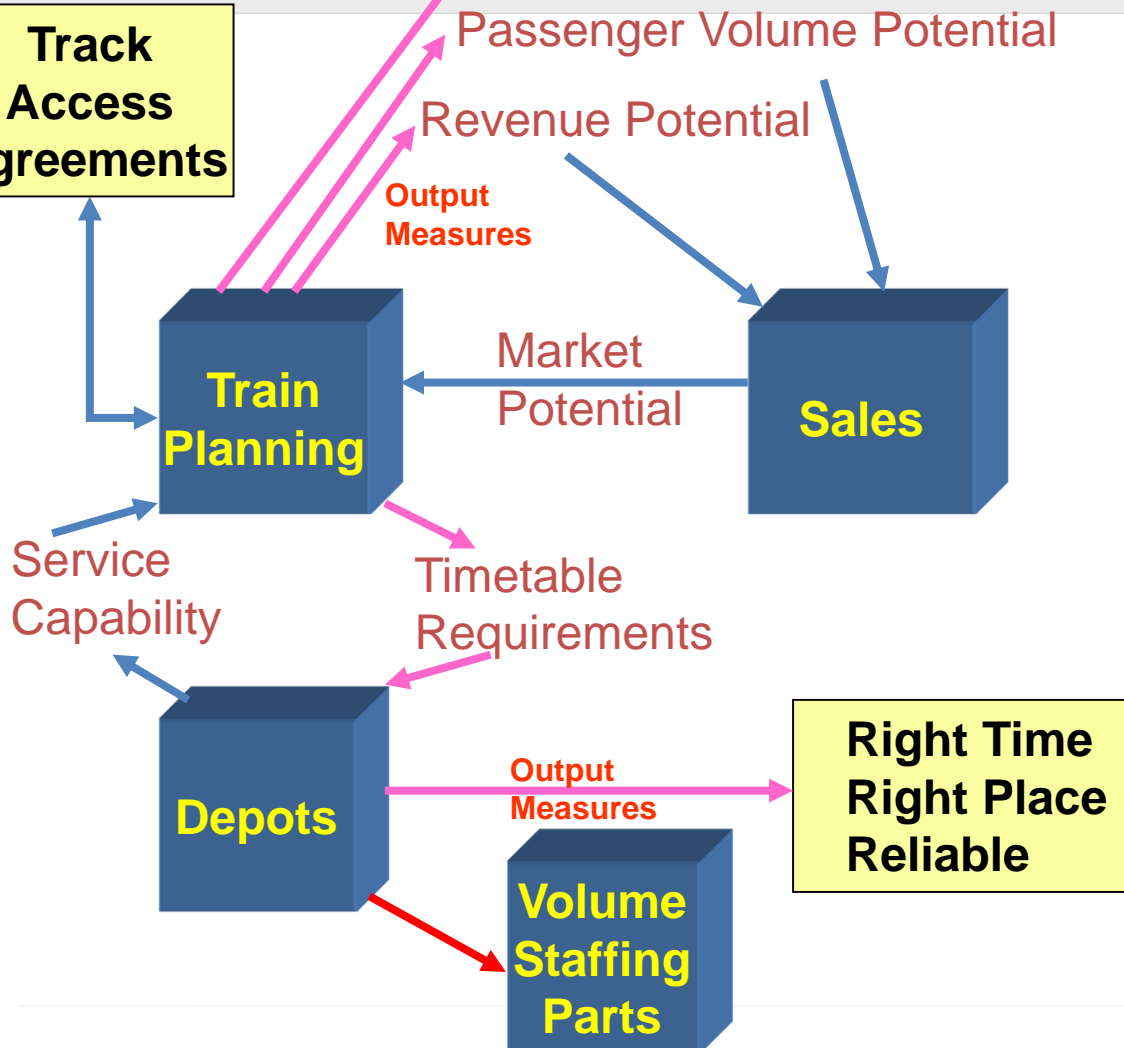


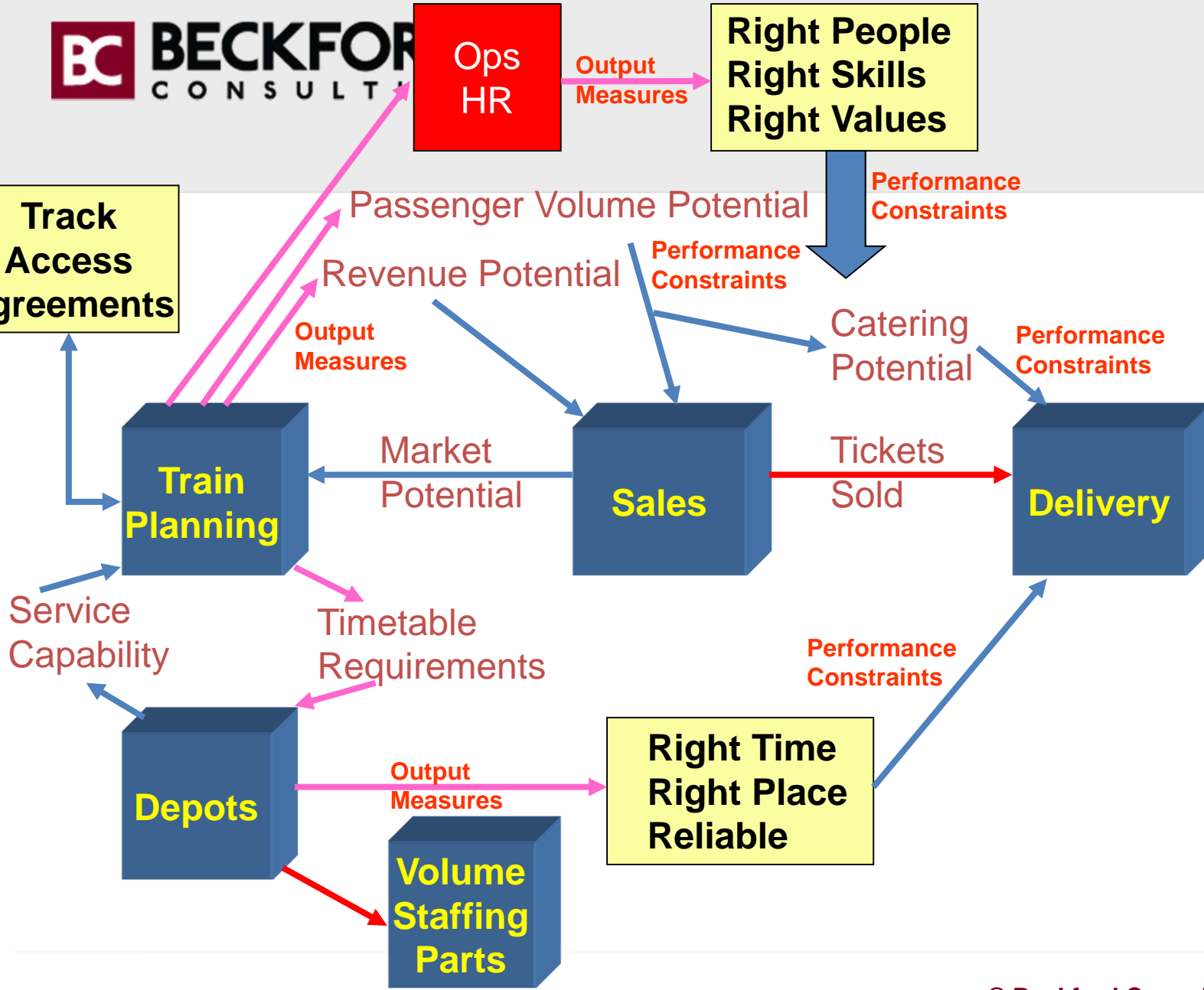






Output
Measures





**Ops
HR**

**Right People
Right Skills
Right Values**

**Track
Access
Agreements**

**Train
Planning**

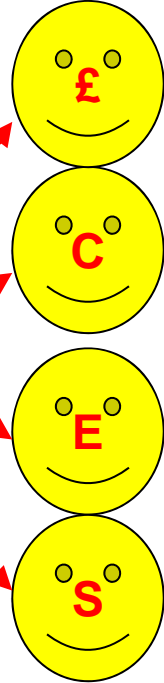
Sales

Delivery

Depots

**Volume
Staffing
Parts**

**Right Time
Right Place
Reliable**



Output Measures

Performance Constraints

Passenger Volume Potential

Performance Constraints

Revenue Potential

Output Measures

Catering Potential

Performance Constraints

Market Potential

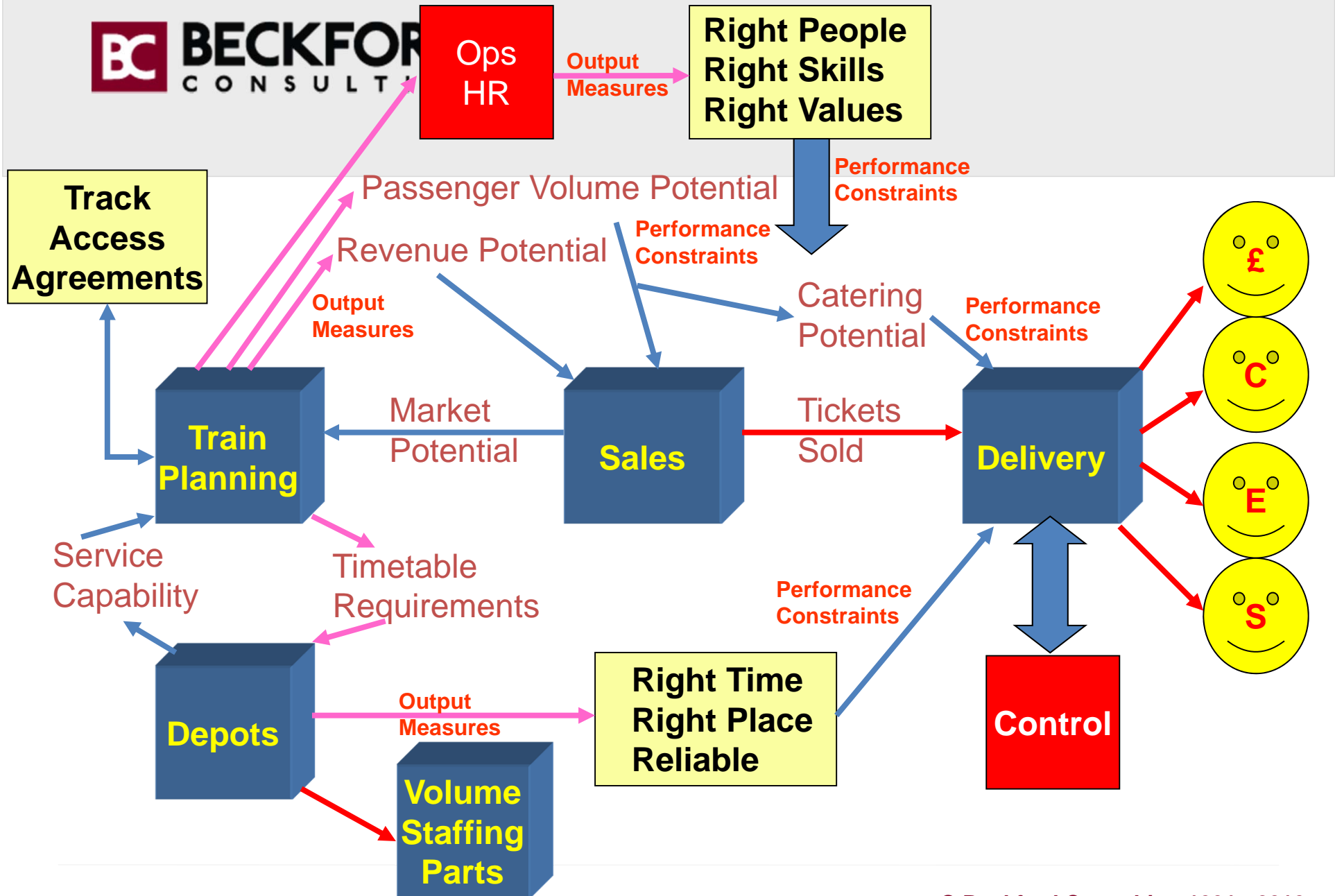
Tickets Sold

Service Capability

Timetable Requirements

Performance Constraints

Output Measures



**Ops
HR**

**Right People
Right Skills
Right Values**

**Track
Access
Agreements**

**Train
Planning**

Sales

Delivery

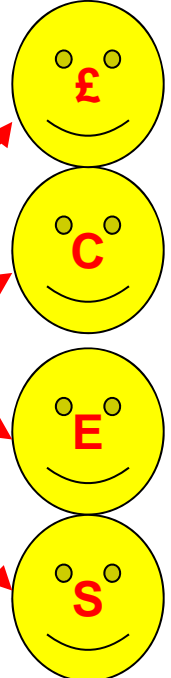
Depots

**Volume
Staffing
Parts**

**Right Time
Right Place
Reliable**

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

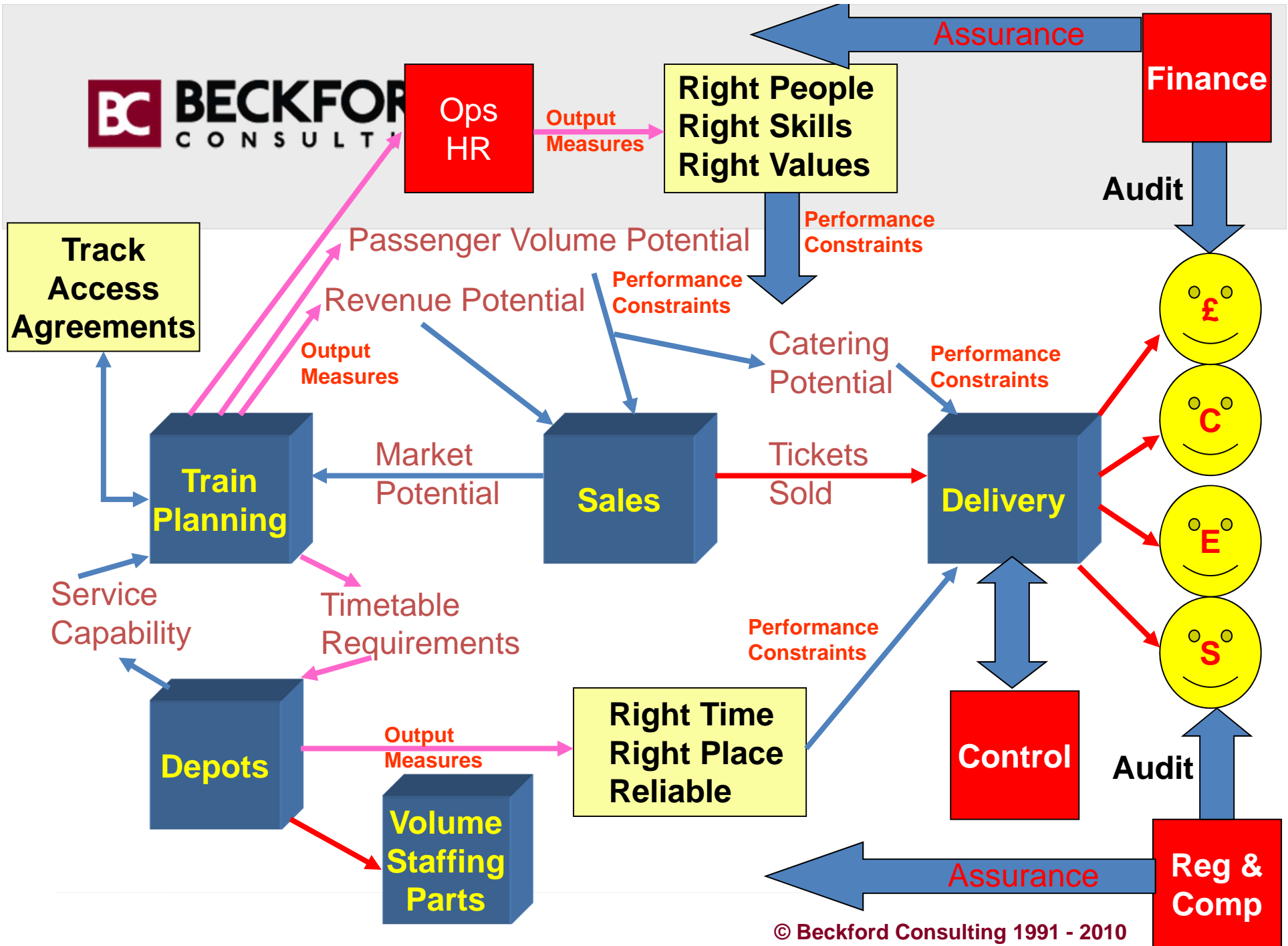
Timetable Requirements

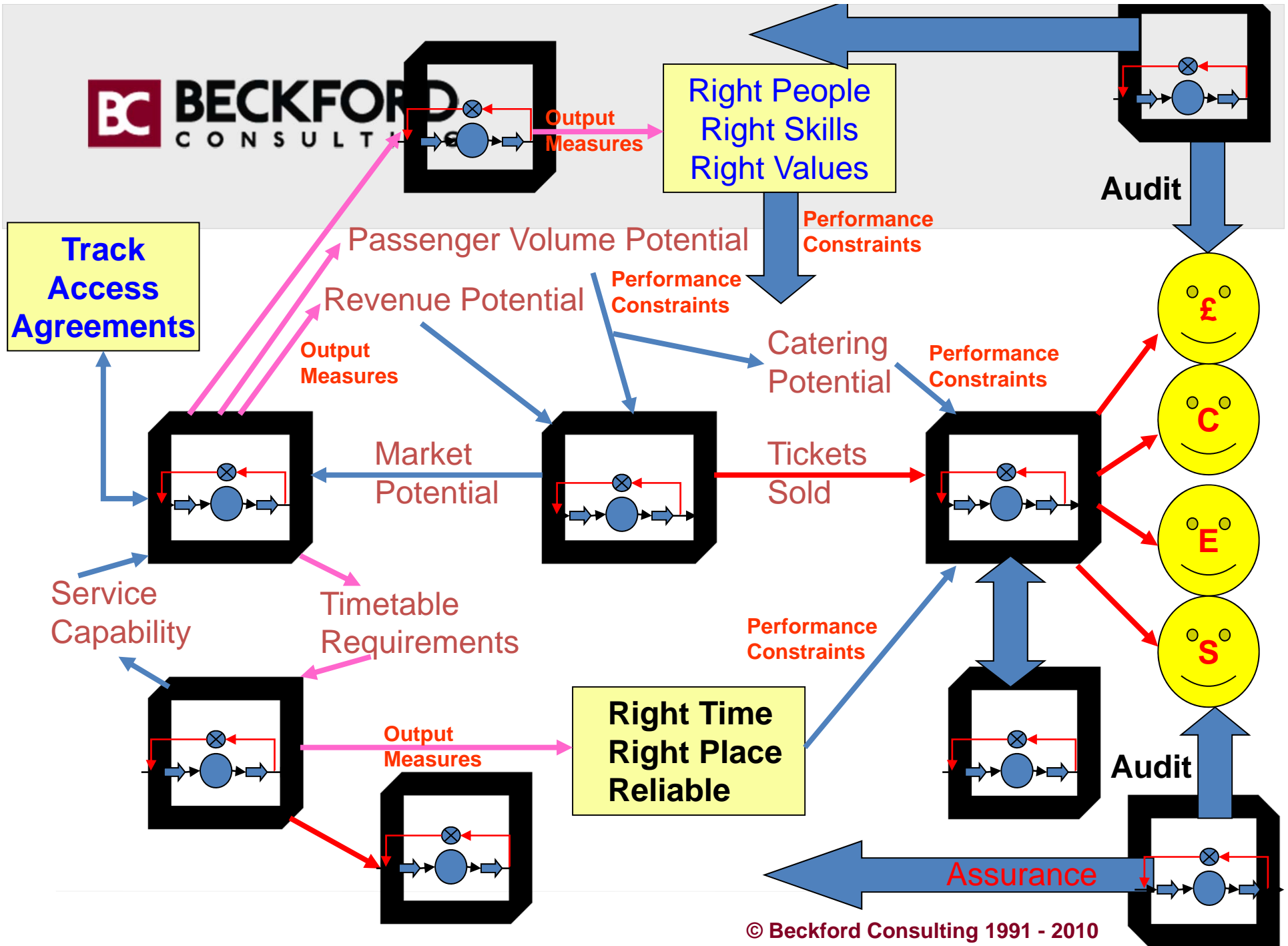
Performance Constraints

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:
 - 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

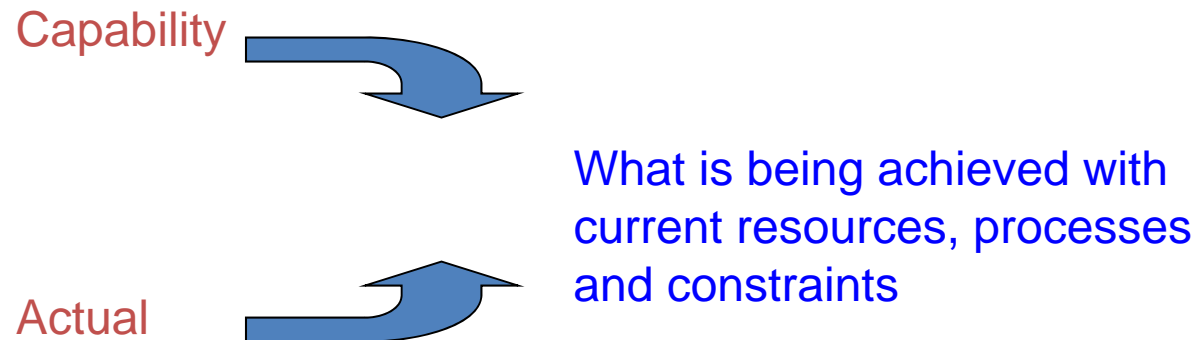
More (or less!) money
Products
Services
Waste
Learning
Happiness (or not)
Information

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

Capability

- Expectations
- Money
- Materials
- Machines
- Skills
- Behaviours
- Information

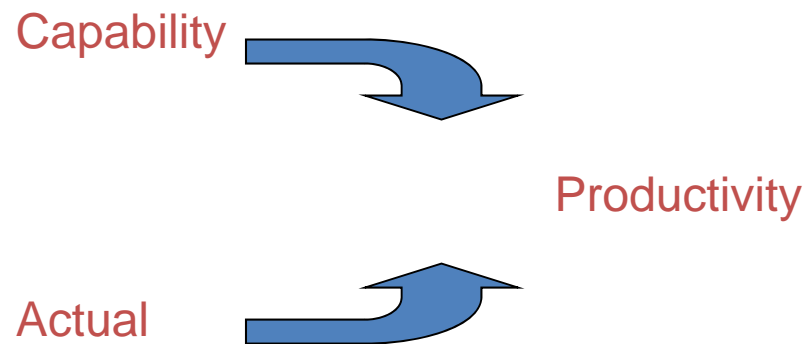
Performance Measurement



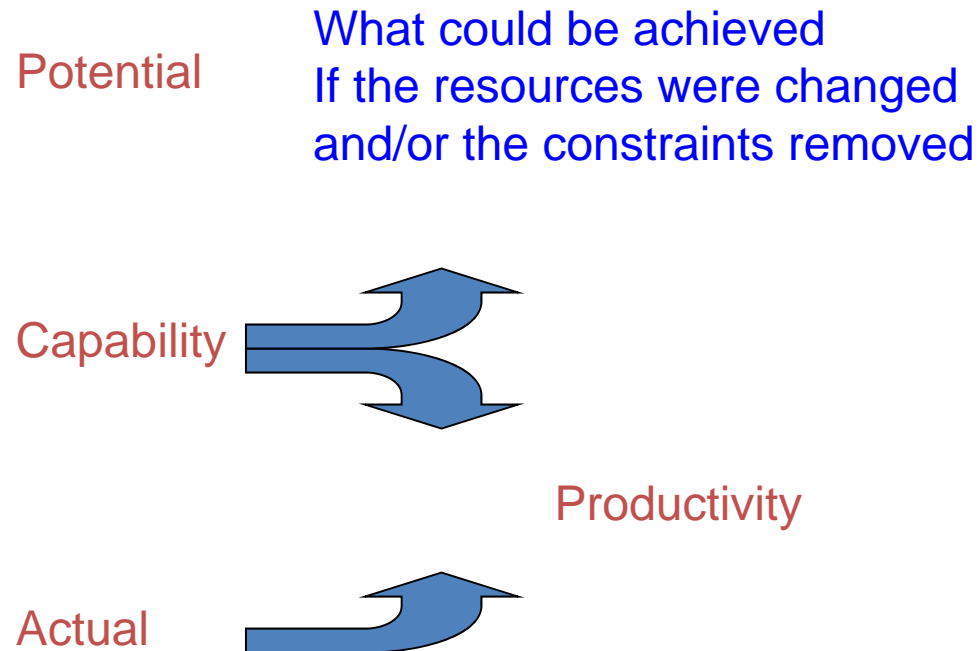
Performance Measurement



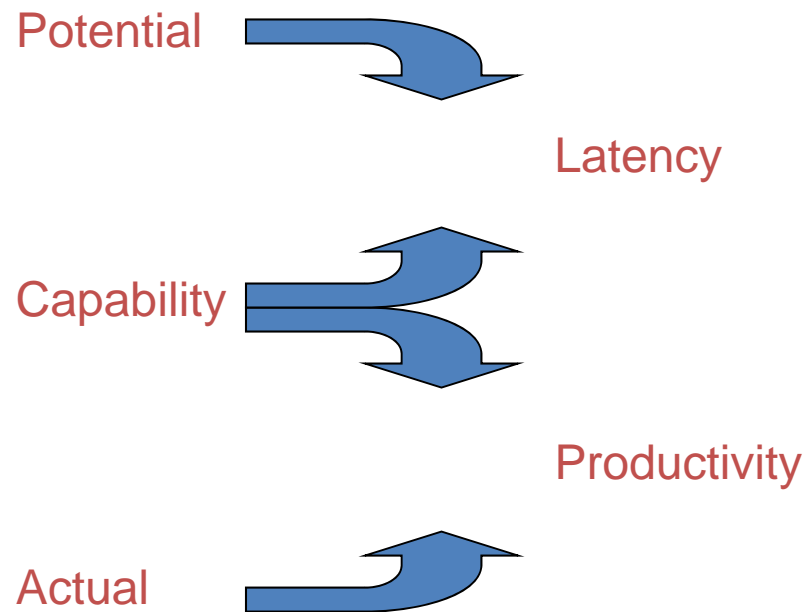
Performance Measurement



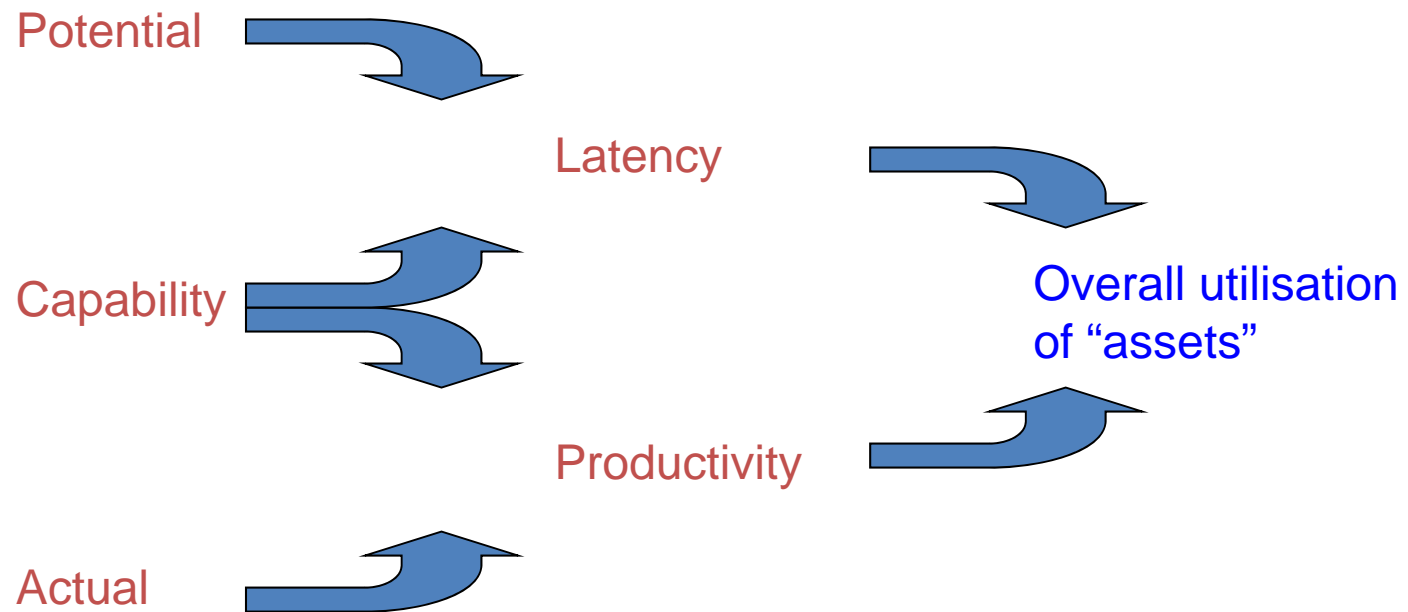
Performance Measurement



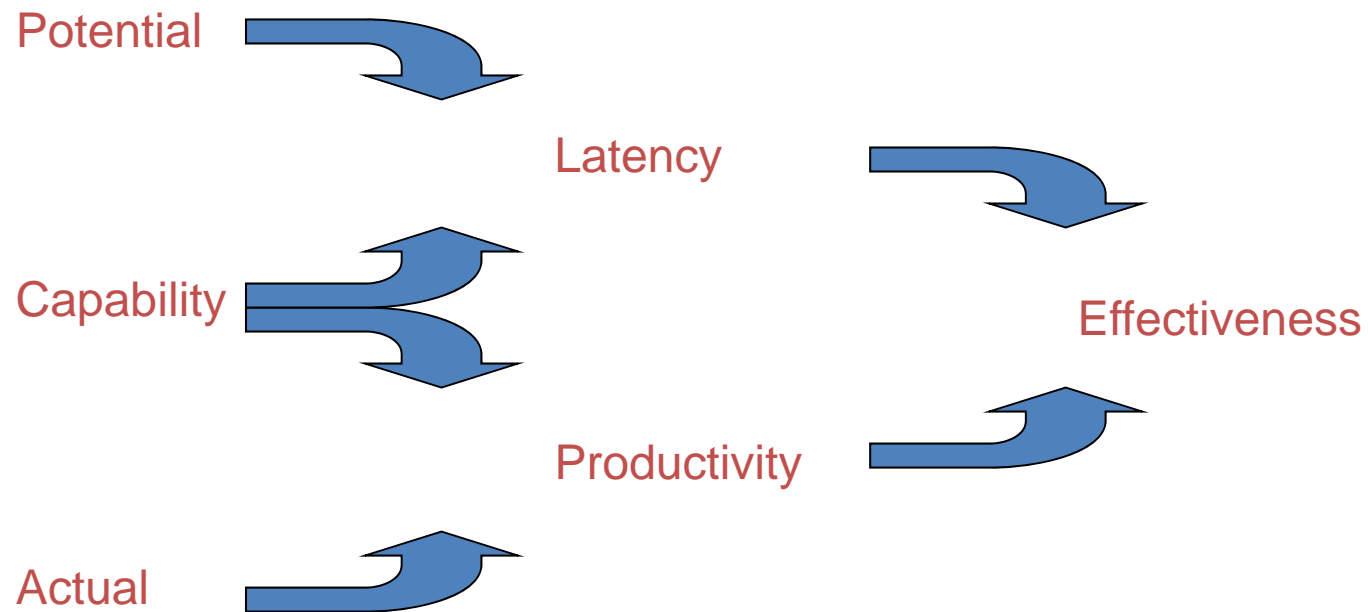
Performance Measurement



Performance Measurement



Performance Measurement

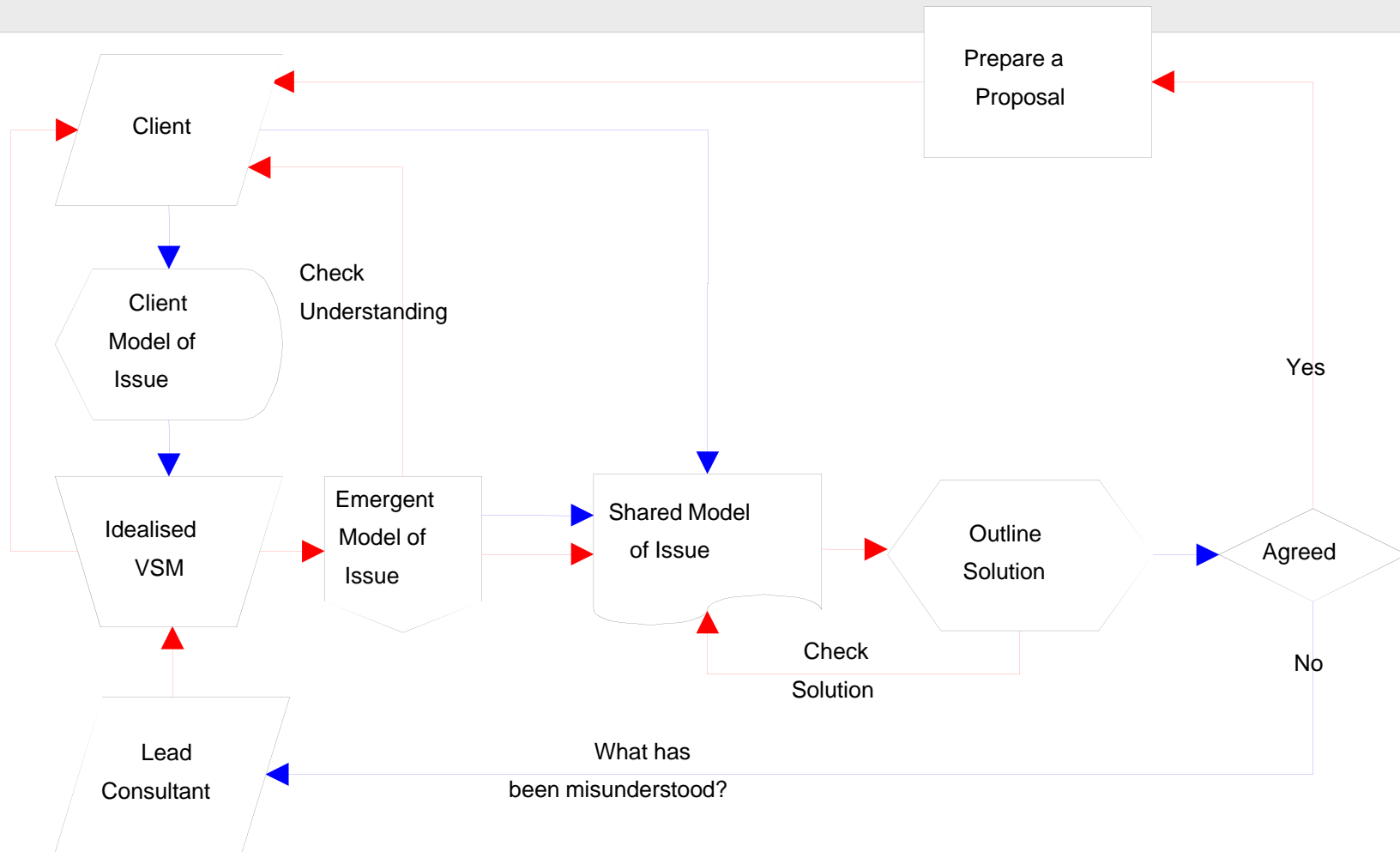


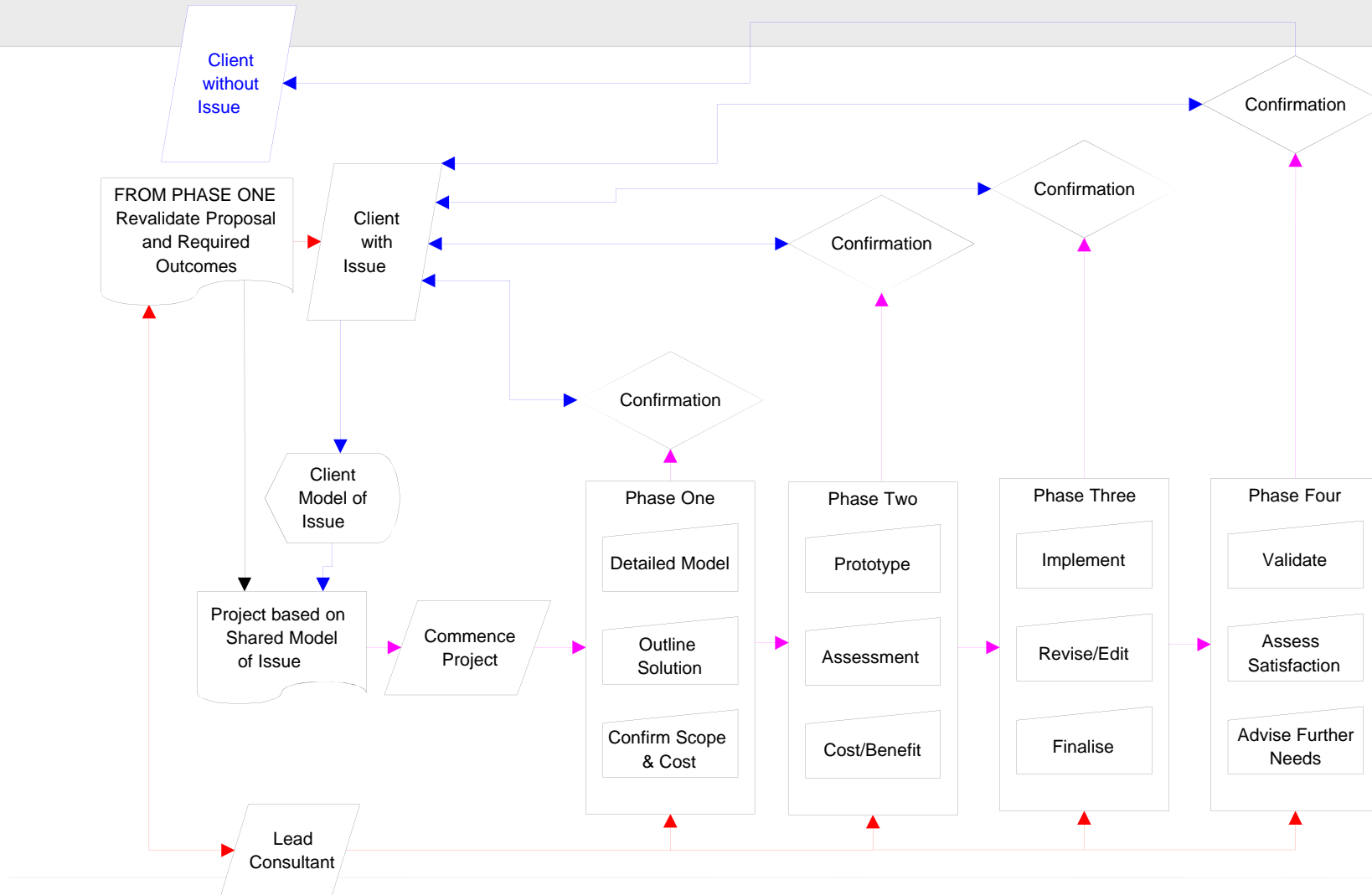
What can I use it for?

- 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

How Can I Use it?

- Thoughtfully
- Participatively
- Adaptively





- 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*)

- ReDesign of a Global Care Organisation
- Development of a 'Change' Methodology
- Social Housing – IS Design
- Rail Vehicle Gearboxes – Market Analysis
- Design of Information Systems - SAP
- Deployment of Information Systems
- A model for Coaching/Mentoring
- Analysis of Infrastructure interactions between:
 - Transport, Waste, Water, Energy, ICT

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