

Richard Dodds

Experience to date at Liverpool University

# Approach by 'Stealth'

- Half-module in MSc product design course (plus projects)
- Sanity checks with external lectures to Branch  
IEEE/IMechE meeting and Astra Zeneca engineers seminar
- Proposed component of new common design module for first year Mech Eng/Materials engineering (2003-2004: 2<sup>nd</sup> semester: 130 students)
- Proposed component of third year Mech Eng course (2005-2006: 80 students)
- Potential component of modules for first year civil, electrical/electronic engineers (2004-2005)
- Ensure can be continued by permanent staff

# Domain

- ‘Fast-moving’ and other consumer goods
- Consumer attitudes
- Regulations

# Unilever Case Study Slides

- Launch of Laundry Tablets.
- Launch of Laundry Capsules.

in context of :

- Competitive position
- Business Decisions
- Sustainability Aspects

# The Proposition

- All the performance of the best powder in a new, more convenient, form



# Introducing Liqui-tabs



15. 3. 2001

# Taking newspapers/bottles to the tip

- How many do it?
- Why?
- Does it do any good?
- How did it happen ?

The governing impulse of the consumer is *"I want."*

The governing impulse of the citizen is *"We need."*

*How do we change 'consumers' into 'citizens' ?*

*What will trigger a change in behaviour ?*

## Perceived comparative features of Information Technology (mobile phones) and Genetic Modification (of Foods)

COMPARATIVE DIMENSION	IT	GM
Consumer benefits	<ul style="list-style-type: none"> <li>•Visible</li> <li>•Authentic,</li> <li>•Empowering.</li> </ul>	<ul style="list-style-type: none"> <li>•Invisible.</li> <li>•Questionable</li> <li>•Artificial.</li> </ul>
Intrinsic hazard potential	<ul style="list-style-type: none"> <li>•External to body.</li> </ul>	<ul style="list-style-type: none"> <li>•Internal to body.</li> </ul>
Manufacturer-consumer	<ul style="list-style-type: none"> <li>•Flexible.</li> <li>•Responsive via interactions.</li> </ul>	<ul style="list-style-type: none"> <li>•Inflexible.</li> <li>•Unresponsive.</li> </ul>
Knowledge sources	<ul style="list-style-type: none"> <li>•Competitive markets.</li> <li>•Informed social networks.</li> </ul>	<ul style="list-style-type: none"> <li>•Restricted, ‘Partisan’.</li> <li>•Closed networks.</li> </ul>
Industry structure	<ul style="list-style-type: none"> <li>•Plural, highly competitive.</li> </ul>	<ul style="list-style-type: none"> <li>•Oligopolistic</li> </ul>
Political-regulatory frameworks	<ul style="list-style-type: none"> <li>•Familiar’ patterns of accountability.</li> </ul>	<ul style="list-style-type: none"> <li>•Patterns of accountability are obscure</li> </ul>
‘Retrievability’ in crisis	<ul style="list-style-type: none"> <li>•Retrievable.</li> <li>•Identifiable.</li> <li>•Public involved.</li> </ul>	<ul style="list-style-type: none"> <li>•Potentially irretrievable,</li> <li>Pervasive.</li> <li>•Public as spectator.</li> </ul>

# Perception of Risk

Social psychologists have found that citizens judge the tolerability of risk on two dimensions – voluntariness and catastrophic potential.

Where risks are entered into voluntarily then tolerance is higher than for risks which are somehow ‘imposed’.

# How do consumers experience product information?

- Information Providers tend to operate on the tacit assumption that people reach judgements on the strength of ‘facts’- and so concentrate on what is known rather than the uncertainties.

# Instruments of environmental policy

- Awards/recognition
- Public Information/Education
- Life-cycle assessment
- Environmental accounting/reporting
- Eco-audits/management
- Products Labelling
- 'Right to Know'

Information-based strategies to correct the lack of information

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- Negotiated agreements
  - Demand-side management
  - Regulatory reform
  - Liability rules
  - Subsidy removal
  - Marketable permits
  - Eco-taxes/ tax reform
  - Environmental impact assessment

Incentive-based instruments to change behaviour

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- Trade restrictions
  - Ambient/emissions standards
  - Licensing/permitting
  - Bans

Directive-based regulations to force specific behaviour

# Four Slides to Remember

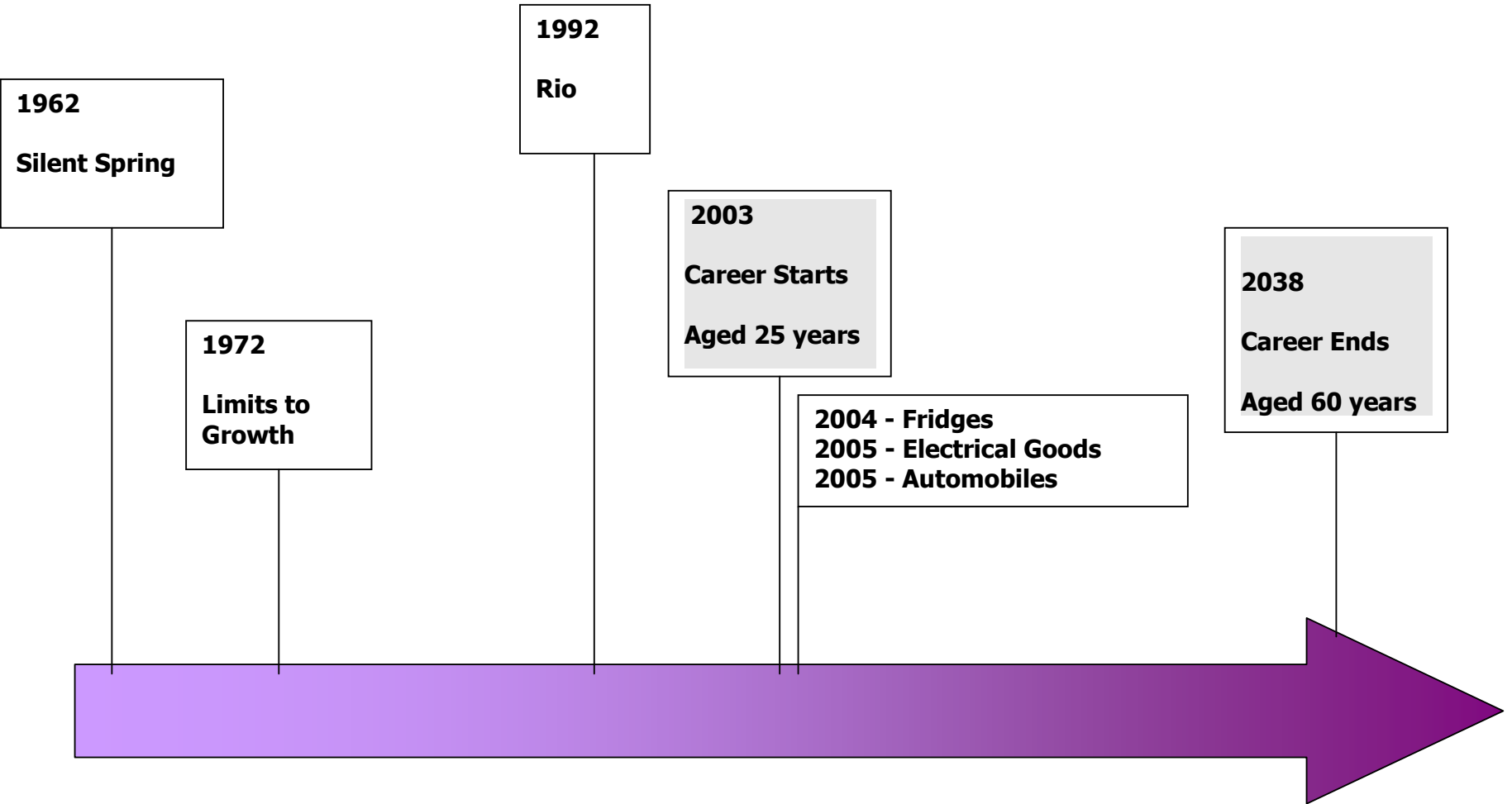
# Sustainable Development

- “..development that meets the needs of the present generation, without compromising the ability of future generations to meet their own needs..”

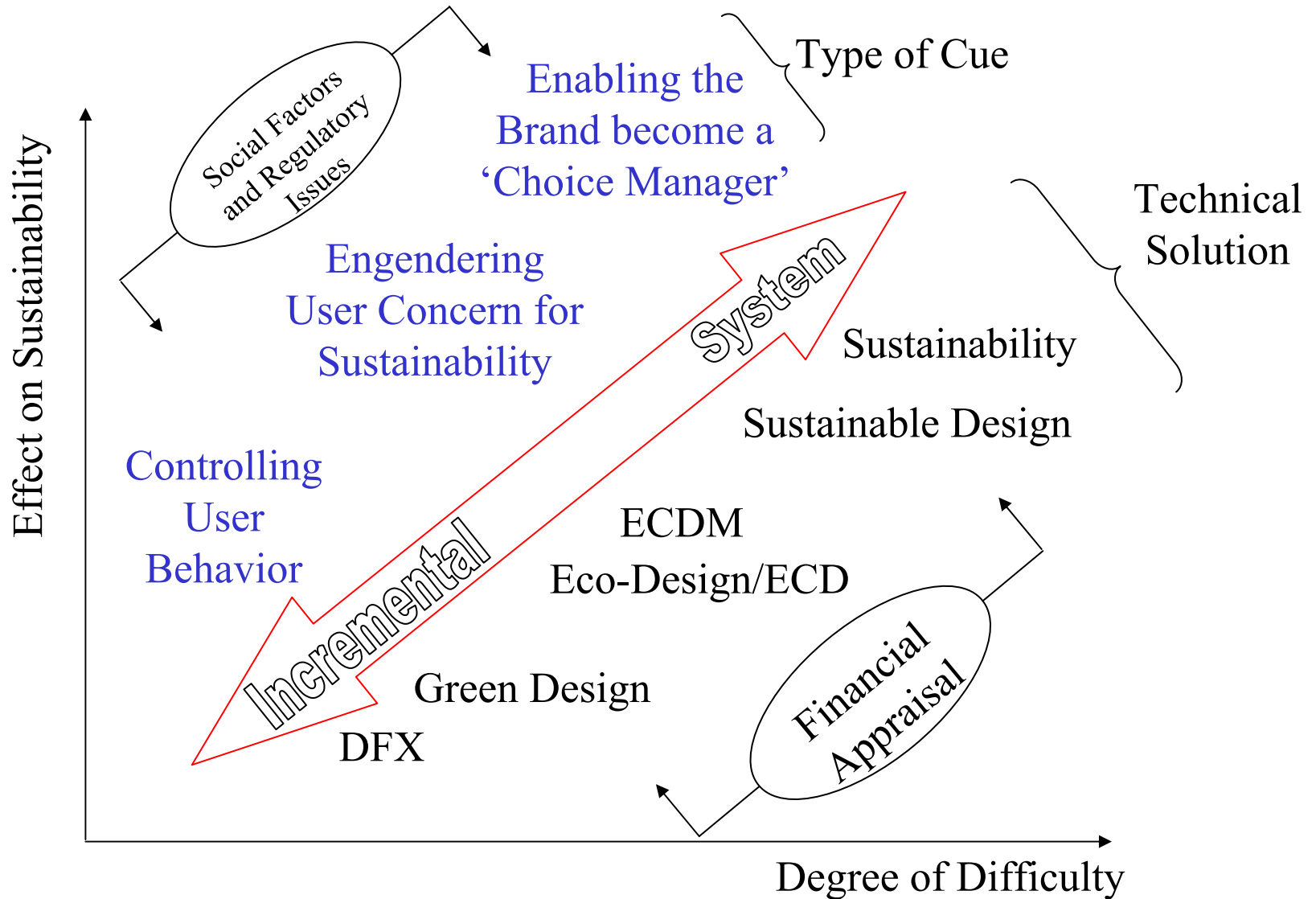
-Bruntland 1987

- Sustainability is the principle, the destination,
- Sustainable Development is the route we take to get there

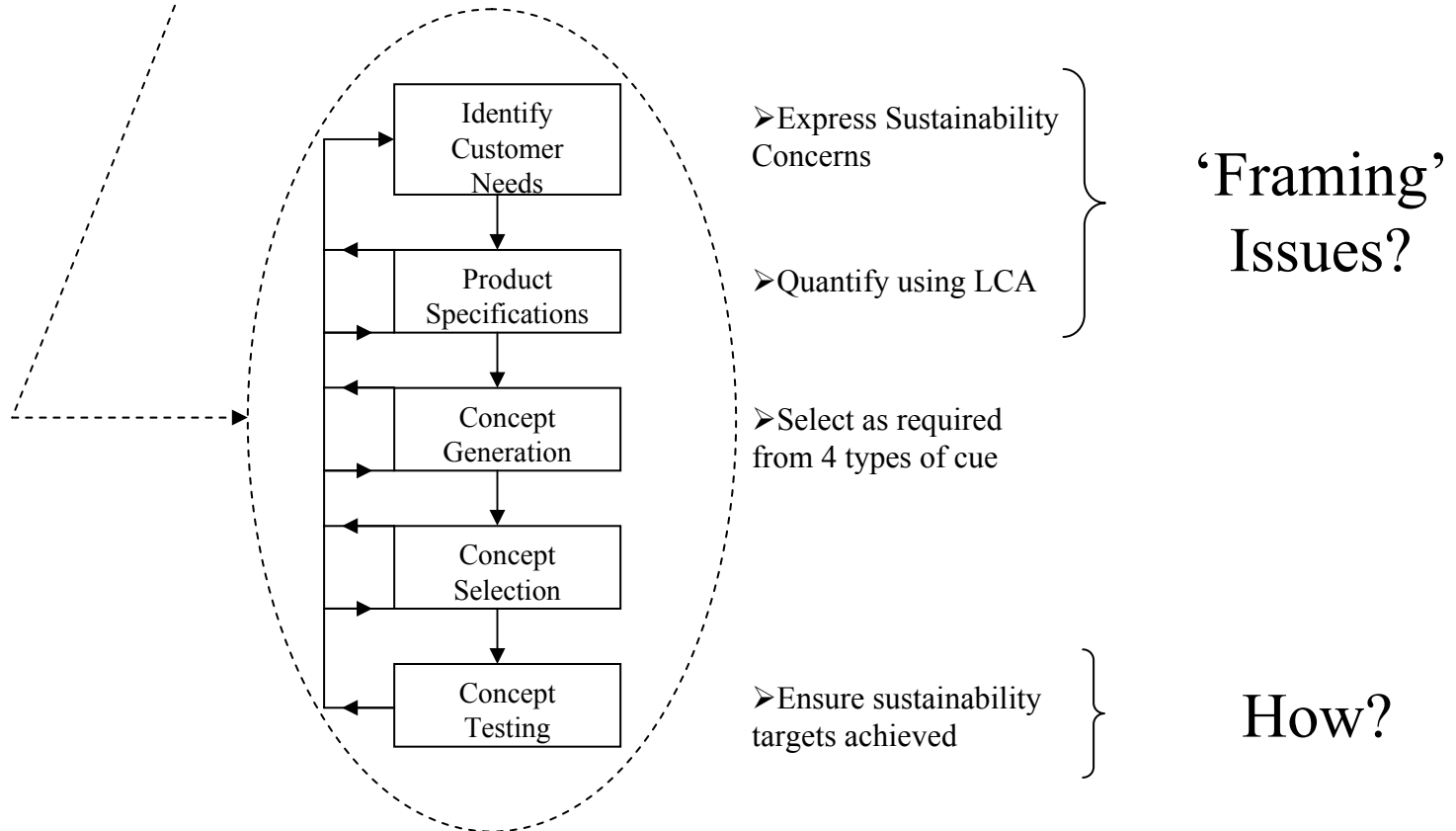
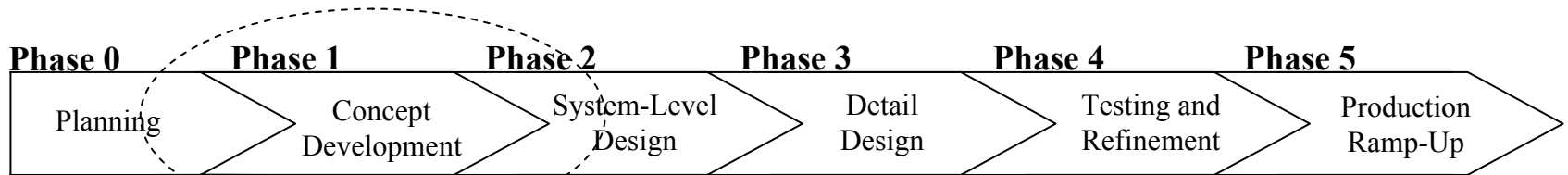
# Sustainable Development Time-Lines



# Bringing it all together



# Influencing the Design Process



Lecture 1	<b>Scope and Historical Context</b>	Definitions of Sustainability and Sustainable Development (SD): Environmental, Economic and Social Pillars: Development of SD since 1950.
Lecture 2	<b>LCA Methodology</b>	Outline of methodology: benefits and limitations: 'Quick' LCA analysis.
Lecture 3	<b>Social and Regulatory Contexts</b>	Consumer vs. Citizen: Risk perception; Precautionary Principle: Relationship to communication and product design.

Lecture 4	<b>Case Study (Part 1)</b>	Case study introduction and discussion related to (FMCG)Fast-Moving Consumer Goods
Assigned work on Case Study during two-week lecture break		
Lecture 5	<b>Case Study (Part 2) - Seminar</b>	Case Study feedback on SD aspects on new product launch: Design/manufacture, environmental, communication and competitor response issues.

Lecture 6	<b>Key Global Issues in Sustainability</b>	Food,forests,energy,non-energy resources,water,pollution of air,pollution of water,pollution of land : Future concerns of Biodiversity,effect of chemical,global warming : Opportunities for the Design function
Lecture 7	<b>Overall Framework</b>	Framework for consideration of SD issues: categories of design cues: Relationship to industrial Product Innovation methodologies.
Lecture 8	<b>Introduction to Project Tasks</b>	Course summary: Briefing for Individual and Team projects : Initial consideration of topics.
		Individual and Team Project work over three-week period
<b>Individual Project and Team Project report submission and presentations</b>		

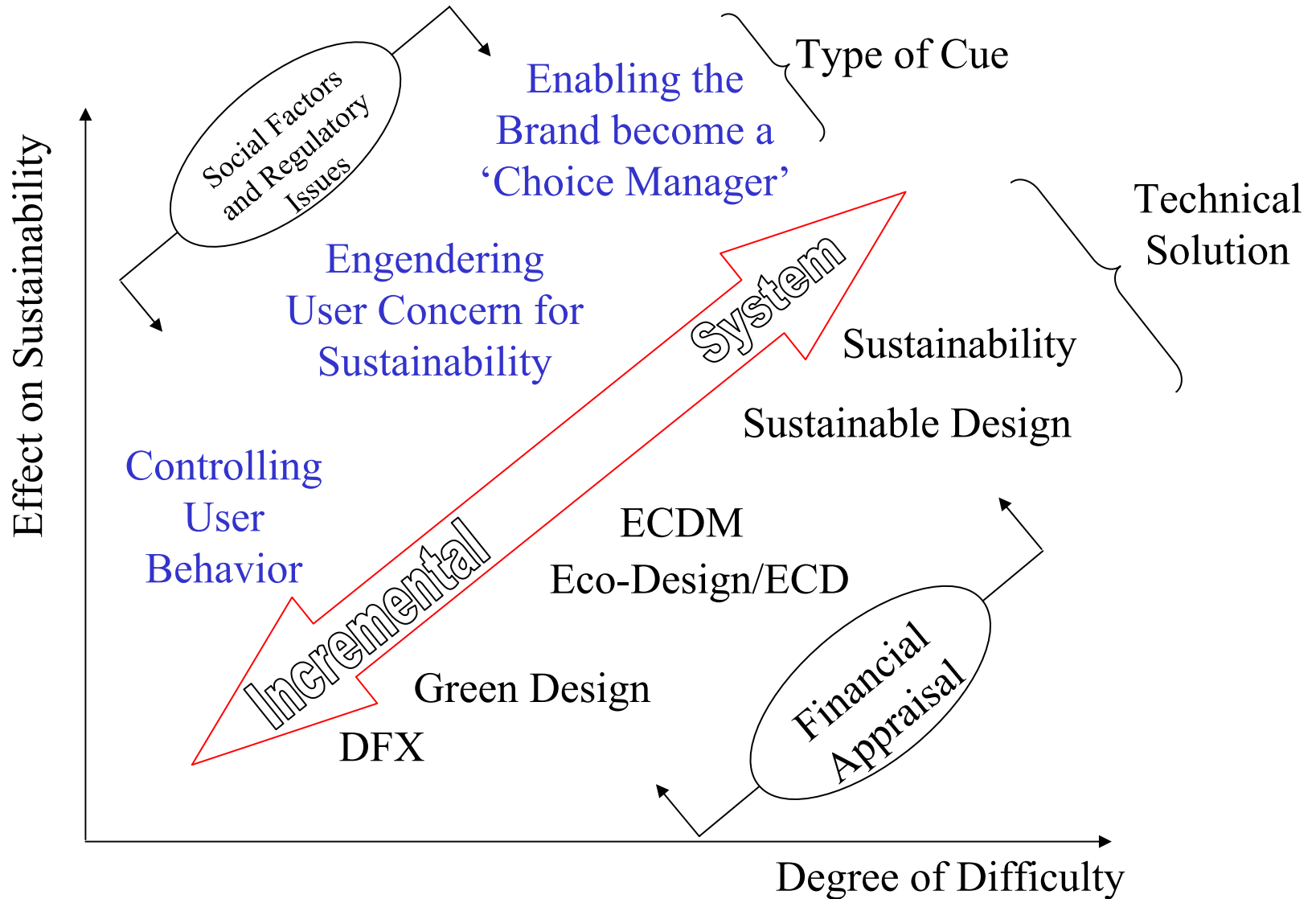
# What worked...

- Level of interest
- Level of effort in both team and individual projects
- Country based projects ( 8 China, 1 India, 1 Indonesia, 3 Greece)
- Mixed-nationality teams
- Understanding of sustainability concept

# What didn't work well....

- Method of displaying trade-off's between cost, environmental impact, social and regulatory factors.
- Their understanding the above ?  
'Design for X' preferred

# Bringing it all together



First year proposals :

An introductory lecture on Sustainable Development to be reinforced by private study and working through web-based materials in preparation for..

The second lecture which will be an ‘interactive teaching’ session on a particular laundry powders consumer goods industrial case study, which will lay the framework for considering sustainability aspects in ..

First year proposals (cont'd) :

The market survey and operator questionnaires of electric drills, which will be modified to include some sustainability aspects, to encompass more DIY drills in addition to industrial use, and to make students aware of the impending EU legislation on Waste Electrical and Electronic Equipment(WEEE) which fundamentally changes the manufacturers' responsibilities.

There will then be opportunities for students to identify and propose design improvements for sustainability benefits as part of the detailed work in the second half of the module.

At the end of the module the Learning Outcomes will be:

- The ability to create an environmental impact assessment of a product or service from first principles.

- The ability to express the technological opportunities for the improvement of a product or service in the context of social, economic and regulatory factors.