Blended Methodologies

More than the sum of their parts?

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Overview

- A review of the theory
  - Contingency Approach
  - Blended Approach
- Methodologies
  - NIMSAD
  - Multiview
  - Merise
- Strengths and weaknesses
- What happens in practice

Review

- The need for a methodology
  - a “better” end product:
    - More acceptable? available? maintainable? meets requirements?
  - a “better” development process:
    - Improved management? control? productivity? fewer resources used?
  - a standardised process:
    - a common organisational approach? Innovation? flexibility? creativity?

What is an appropriate method?

- If different methods are applicable to different circumstances, what method should we choose?

Contingency approaches

- “ad hoc” - there is no single best methodology, the selection of a methodology depends on the project

Blended approaches

- “Mix and match” - the best aspects of different methodologies for different stages of the project

Contingency Approaches

- Contingency is used to describe situations where a number of things might happen, but we can not be certain what will occur. We talk of one thing being contingent on another.
- A contingent methodology is simply a methodology that has been created in order to match a particular method to a particular set of circumstances.

In praise of the ad hoc

- A strong method, like a specific size of wrench, is designed to fit and do an optimal job on one kind of problem; a weak method, like a monkey wrench, is designed to adjust to a multiplicity of problems, but solves none of them optimally.

  The misuse of ad hoc by computer scientists has, for too long, steered us away from strong approaches and towards weak ones. It is time to turn that around.

  – Robert L. Glass, In Defence of Adhocary. Journal of Systems and Software, 22(3):150, September 1993.

Contingency Approaches

or

NIMSAD

- A methodology for selecting a methodology, e.g. Normative Information Model-based System Analysis and Design NIMSAD (Jayaratna 1994)
- NIMSAD evaluates methodologies using three criteria:
  - The problem situation, the problem solver and the problem solving process
- And at three stages
  - Before a methodology is adopted, during its use and after it has been used

NIMSAD

- The three criteria:
  - problem situation (the context):
    - how does the methodology help understand the problem situation?
  - problem solver (the user of the methodology):
    - how do the users' values, skills, experiences etc relate to those of the methodology?
  - problem solving process (the methodology itself):
    - how does the methodology assist in defining, documenting problems and designing solutions, etc?

NIMSAD

- Strengths
  – Recognition that different methodologies are suited to different situations
  – Structured way of dealing with complexity
  – Possibility of learning from experience

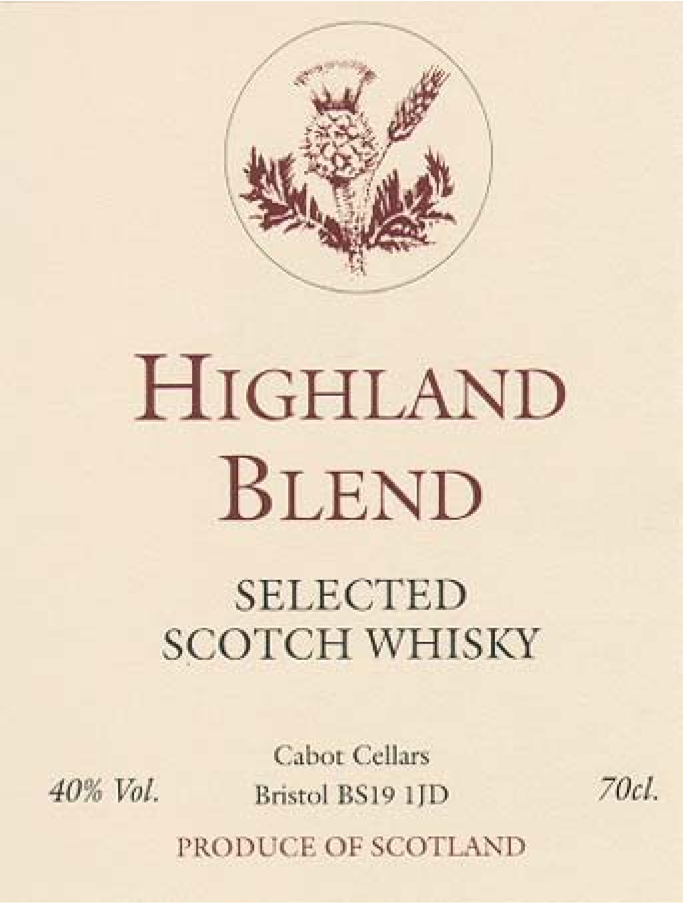
- Weaknesses
  – Based of personal experience rather than theory
  – Lack of clear guidelines for application in particualr settings
  – Overly reliant on the skill of the analyst

Blended Methodologies

- Blended is generally taken to mean where two or more things are combined harmoniously in order to produce something that exploits the strengths and weaknesses of the original constituents.

- A blended methodology is simply a methodology that has been created by "blending" together other methodologies.

Blended Methodologies



HIGHLAND BLEND

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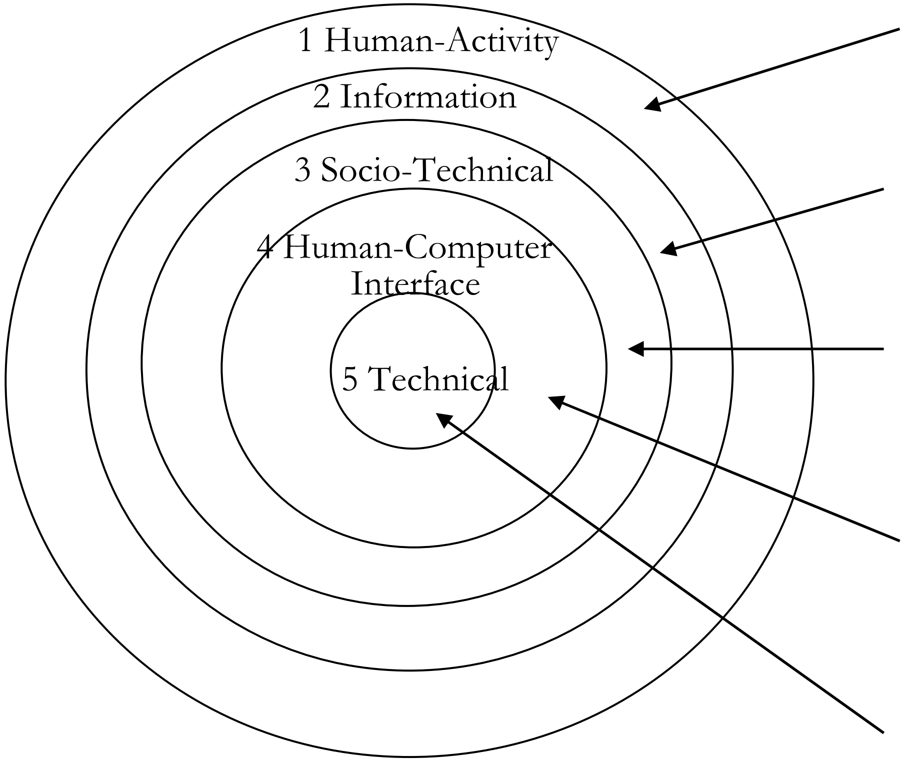
PRODUCE OF SCOTLAND

Multiview

- Multi-view:
  - Uses many of the techniques used by the other methodologies
  - Takes into account the different ways in which an Information System is viewed as a project develops
  - Looks at both issues (what is the nature of the problem?) and tasks (how can we solve it?)
- Multiview (version 1):
  - 5 questions, 5 stages
  - Stage 1 = mainly issues; Stages 2 to 5 = mainly tasks

Multiview



1 Human-Activity

2 Information

3 Socio-Technical

4 Human-Computer Interface

5 Technical

Q1- How is the information System supposed to further the aims of the organisation using it?

Q2 - What information processing function is the system to perform?

Q3 - How can it be fitted into the working lives of the people in the organisation using it?

Q4 - How can the individuals concerned best relate to the computer in terms of operating it and using the output from it?

Q5 - What is the technical specification of a system that will come close enough to meeting the identified requirements?

Stage 1

- Analysis of human activity - looks at the organisation: what is its purpose, problems, etc
- Identifies world views (Weltanschauung) which can form the basis of the system requirements
- Creates a statement about what the information system will be and what it will do
  - Worldviews are elicited by discussion of the purpose of the organisation (SSM / ETHICS)
  - Use CATWOE criteria and rich pictures to create a root definition and activity (conceptual) model (SSM)

Stage 2

- Analysis of information - analyses the entities and functions of the problem situation as described in stage one in two phases

- (1) The development of a functional model (e.g. STRADIS)
  - Identify the *main* function from the root definition
  - Decompose into sub-functions and create DFDs

- (2) The development of an entity model (e.g. JSD)
  - Extract and names entities from the area of concern
  - Establish relationships between entities

Stage 3

- Socio-technical analysis and design - produce a ‘good fit’ taking into account both people and their needs together with the computer systems and necessary work tasks (ETHICS)
  - The emphasis is on alternative systems and and on making a choice between them
  - Social and technical alternatives are brought together and ranked
  - Create requirements for computer tasks, people tasks and the socio-technical role-set

Stage 4

- The human-computer interface – concerned with the implementation level detail of how to match the social and the technical requirements

- Looks at alternative technical systems and the ways in which users will interact with the computer
  - In broad terms (e.g. mode of processing)
  - In specific terms (e.g. screens, inputs and outputs, etc)

Stage 5

- Technical aspects - largely seen as a technical exercise that concentrates on efficient design that meets the given systems specification.
- System is broken down in to sub-systems, e.g.
  - The application subsystem
  - The information retrieval subsystem
  - The database subsystem
  - The control subsystem
  - The recovery subsystem
  - The monitoring subsystem

Multiview 2

- Include Strategic Assumption Surfacing and Testing (SAST)
- Include Business Process Redesign (BPR)
- Introduce aspects of ethical analysis
- Consider of non-human stakeholders
- Include Technology Foresight and Future Analysis (TFTA)
- Move to Object-Oriented approach from structured
- Include ethnographic approaches
- Include construction within the methodology

MERISE

- Merise is French for “wild cherry”

- MERISE = **M**ethode d'**E**tude et de **R**ealisation **I**nformatique pour les **S**ystemes d'**E**ntreprise

- Created in 1977 for the French Ministry of Industry by a group which included consultants, engineers and academics.

- Analogous to SSDAM in UK in terms of official recognition but contains different assumptions

MERISE

- Is used in the public and private sectors in France, Spain, Switzerland and Canada
- Has undergone significant modification and several different versions now exist
- Has had a significant influence of Euromethod which as, in turn, acted influenced the evolution of MERISE

MERISE

- MERISE is based on three cycles that deal with the different aspects of Information System development
- The decision cycle
  - describes the various decision making processes that need to take place
- The life cycle
  - describes the chronological progress of a MERISE project
- The abstraction cycle
  - describes the various models required for processes and data

The Decision Cycle

- Decisions are viewed a process requiring the cooperation of different stakeholders.
- Groups of users and systems developers are expected to agree together on a strategy.
- It is necessary to specify, in advance, how a compromise should be reached in the case of conflicting views.
- Who takes the various decisions, particularly those relating to the various models used in the method, must be thoroughly documented.

The Life Cycle

- The Life Cycle deals with how an information system can be incorporated into the organisation.
- It is similar to the waterfall model of the life cycle in SSDAM
- It has four phases:
    - Strategic planning and identification of system goals (*corporate level*)
    - Preliminary study on the impact of the system (*domain level*)
    - Detailed study of the functional and technical aspects (*project level*)
    - Documentation for implementation and maintenance (*implementation level*)

The Abstraction Cycle

- Deals with the transition from the conceptual to the physical
- Has three phases which deal with data and processes together:
  - The conceptual phase looks at the organisation in which the system will be developed
  - The logical phase looks at making decisions relating to resources and tasks
  - The physical phase looks at the technical means and constraints of implementation

The Abstraction Cycle

- MERISE contains detailed rules for creating each model and for converting one model to another

Level	Data	Processes
Conceptual Level = what do you want to do?	Conceptual data model	Conceptual processing model
Logical and Organisational Level = who does what, when, where & how?	Logical data model	Organizational data model
Physical and Operational Level = by what means?	Physical data model	Operational processing model

Advantages

- Is more in tune with the reality of systems development
- Offers flexibility to adapt the method to suit the circumstances of the particular situation
- Gain advantages of a structure / framework without excessive rigidity
- Could prove to be more cost effective
- Could encourage creativity and innovation

Disadvantages

- no integrating philosophy: just a set of methods, tools and techniques
- idiosyncratic, systems that can be difficult to maintain
- selection of appropriate techniques requires skill and experience to be successful
- difficulty in training new systems analysts
- lack of standardisation

Practical examples

- Fitzgerald, B. (1997). The use of systems development methodologies in practice: a field study. Information Systems Journal, 7(3), pp 201-212.
- Nandhakumar, J. and Avison, D. E. (1999). The fiction of methodological development: a field study of information systems development. Information Technology and People, 12(2), pp. 176 - 191.