

Chapter 27

Issues

What is methodology?

- Issues
 - What is the difference between a methodology and a method?
 - Does a methodology include a specification of the techniques and tools which are to be used?
 - Does a collection of techniques and tools constitute a methodology?
 - Should the use of a methodology produce the same results each time?

What is methodology?

- Definitions by British Computer Society (BCS) of information systems methodology (Maddison, 1983)
 - Collection of philosophies
 - Phases
 - Procedures
 - Rules
 - Techniques
 - Tools
 - Documentation
 - Management
 - Training

What is methodology?

- Components used with the definition;
 - What tasks at each stage
 - What outputs produced
 - When, and under what circumstances
 - What are the constraints
 - People should be involved
 - Managed and controlled
 - Support tools

What is methodology?

- Definitions by British Computer Society (BCS) extended;
 - Achieve the development
 - Information systems based on a set of rationales
 - Underlying philosophy;
 - Supports
 - Justifies
 - Makes coherent

What is methodology?

- Common assumptions used commercially;
 - Manuals
 - Education and training (including videos)
 - Consultancy support
 - Tools and toolsets
 - Pro forma documents
 - Model-building templates

What is methodology?

- Context component of the general model in Information System Development;
 - Intellectual framework
 - Ideas
 - Philosophy
 - Guides and constrains
 - Ontological and epistemological assumptions
 - Methodology
 - Prescriptions or guidelines
 - Particular methods and techniques
 - Application area
 - Real world problematical and worthy

Methodology components (2)

- A methodology can range from being a fully fledged product detailing every stage and task to be undertaken to being a vague outline of the basic principles in a short pamphlet
- A methodology can cover widely differing areas of the development process, from high level strategic and organizational problem solving to the detail of implementing a small computer system
- A methodology can cover conceptual issues or physical design procedures or the whole range of intermediate stages
- A methodology can range from being designed to be applicable to specific types of problem in certain types of environment or industry to an all-encompassing general-purpose methodology
- A methodology may imply a number of assumptions, for example, that the environment is one where an old system is replaced by a new one rather than development being incremental and integrative
- A methodology may be potentially usable by anybody or only by highly trained specialists or be designed for users to develop their own applications
- A methodology may require an army of people to perform all the specified tasks or it may not even have any specified tasks
- A methodology may or may not include tools and toolsets

Rationale for a methodology

- The important of adopting methodology;
 - A better product
 - A better development process
 - A standardized process

Rationale for a methodology

A better end product

■ Addressing the components of quality of an information system;

- | | | |
|--------------------|-------------------------|---------------|
| ■ Acceptability | ■ Efficiency | ■ Reliability |
| ■ Availability | ■ Fast development rate | ■ Robustness |
| ■ Cohesiveness | ■ Flexibility | ■ Security |
| ■ Compatibility | ■ Functionality | ■ Simplicity |
| ■ Documentation | ■ Implementability | ■ Testability |
| ■ Ease of learning | ■ Low coupling | ■ Timeliness |
| ■ Economy | ■ Maintainability | ■ Visibility |
| ■ Effectiveness | ■ Portability | |

Rationale for a methodology

A better development process

- Tightly controlling
- Identifying the outputs
- Productivity is enhanced results;
 - Build systems faster
 - Specific resources or fewer resources

Rationale for a methodology

A standardized process

- Having a common approach
- Integrated systems
- Retraining staff unnecessary
- Common experience and knowledge
- Adopting approach;
 - Improved systems specifications
 - Easier maintenance and enhancement

Adopting a methodology in practice

What do they get?

- Range from being a fully fledged
- Cover widely differing areas of the development process
- Cover conceptual issues or physical design
- Range from being designed
- May imply a number of assumptions
- May be potentially usable
- May require an army of people to perform
- May or may not include tools and toolsets

Adopting a methodology in practice

The more usual questions are;

- Whether it fits in with the organization's way of working
- Whether it specifies what deliverables (or outputs) are required at the end of each stage
- Whether it enables better control and improved productivity
- Whether it supports a particular set of tools

Adopting a methodology in practice

Differences between actual and practices;

- Developers interpret the strictures of the methodology
- Developers are individuals and act in different ways
- Developers only apply parts of the methodology as they think appropriate
- Developers may react to the controlling nature
- More experienced developers may be flexible
- Developers use the methodology for political reasons

Adopting a methodology in practice

Differences between actual and practices;

- Users may refuse to participate
- Organizations (as well as developers) are different in their style and culture
- Managers may or may not enforce adherence
- Senior managers may have other agendas
- Time and/or budget pressures
- Different methodologies in the organization
- Contingency and judgement is applied

Evolution and development of methodologies

Pre-methodology

- Early 1970's
- Developed and implemented without the use of an explicit or formalized
- Computer applications development was on programming and solving various technical problems
- Demand for computer-based business systems
 - Growing appreciation that analysis and design
 - Growing appreciation of the desirability for standards and a more disciplined approach

Evolution and development of methodologies

Early methodology era

- 1970s and early 1980s
- An approach to building computer-based applications
 - Identification of phases and stages
 - Known as the **Systems Development Life Cycle (SDLC)** or the 'waterfall model'.

Evolution and development of methodologies

Methodology era

- Late 1980s to late 1990s
- Methodologies emerged from;
 - Developed from practice
 - Developed from theory
- A potential designing a methodology product;
 - Written up
 - Made consistent
 - Made comprehensive
 - Made marketable
 - Updated as needed
 - Maintained
 - Researched and developed
 - Evolved into training packages
 - Provided with supporting software

Evolution and development of methodologies

Methodology era

- Result of this investment;
 - Filling the gaps
 - Expending the scope
 - Did not address the whole of the life cycle of systems development
 - To achieve this integration;
 - Information systems were becoming a fundamental part of the organization
 - Information was increasingly being regarded by organizations as an important
 - Gaining competitive advantage
 - Strategy at a high level in an organization

Evolution and development of methodologies

Era of Methodology reassessment

- From late 1990s till present
- Reappraisal of the concepts and practicalities;
 - Panacea for the problems of traditional development approaches
 - Often chosen and adopted for the wrong reasons

Evolution and development of methodologies

Era of Methodology reassessment

- The criticisms of methodologies;
 - Productivity
 - Complexity
 - 'Gilding the lily'
 - Skills
 - Tools
 - Not contingent
 - One-dimensional approach
 - Inflexible
 - Invalid or impractical assumptions
 - Goal displacement
 - Problems of building understanding into methods
 - Insufficient focus on social and contextual issues
 - Difficulties in adopting a methodology
 - No improvements

Evolution and development of methodologies

Era of Methodology reassessment

- Organizations moving in this reappraisal are as follows;
 - Ad hoc development
 - Amethodical systems development
 - Further developments in the methodology arena
 - Contingency
 - External development