
**Situational method engineering**: starts to build a completely new method for a project

**Incremental method engineering**: changes an existing method at some places.

**Method definition**: A method is an approach to perform a systems development project, based on a specific way of thinking.

**Technique**: is a procedure, possibly with a prescribed notation, to perform a development activity.

**Tool**: a possibly automated means to support a part of a development process.

**Methodology**: Scientific theory building of ISDMs

**Method engineering**: engineering discipline to design, construct and adapt methods, techniques and tools for the development of IS.

**Method engineering** has a link with project management, software configuration management, software process development etc.

Critical to the support of engineering situational methods is the provision of standardized building blocks that are stored and retrieved from the method base.

**Method fragments**: coherent pieces of IS development methods.

**Process fragments**: also known as meta-process level, describing activities, and are models of the development process.

**Product fragments**: Also known as meta-data level, describing deliverables, model the structures of the products of a systems development method.

Hong, Goor, & Brinkkemper (1993) A formal approach to the Comparison of OOADM

OOADMs should be based on an **uniform**, **formal**, and **unbiased** basis (modeling in PDDs allows this).

**Meta-process model**: describes analysis and design steps by each methodology. Also showing the input to and output from each step.

**Meta-data model**: represents the concepts and techniques provided by each methodology.

Using the same meta-modeling constructs for all methodologies, an uniform and formal representation of these methodologies is achieved.

**OOADMs** should be based on an uniform, formal and unbiased basis.

Meta-models are conceptual models of modeling methodologies or techniques.

There are two aspects of an ISDM methodology: the processes that are steps with the corresponding input and output products. Concepts that are used to construct the representation of the intermediate and final products of the methodology.

**Supermethodology** is defined as the smallest common denominator of all activities depicted in the meta-process models of the OOADMs.

**Supermethodology usage explanation**: Comparison of processes is performed by aligning the steps of the OOADMs side by side and revealing the similar and different activities of the analysis and design.

**Comparison indicator (also known as utilizing four operators)**:

A = B: the activity A is equivalent to the activity B

A > B: the activity A does more than the activity B

A < B: the activity A does less than the activity B
A $\rangle\ll B$: a part of the activity A overlaps a part of the activity B and the other parts of both activities do not overlap.

Van de Weerd, Brinkkemper, and Versendaal (2010) Incremental method evolution

**Method increments**: which are collections of method fragments that have been changed (inserted, modified, deleted) during a certain method adaption.

**Method snapshots**: a model of the method as it was at a certain moment in time.

**Method snapshot**: A meta-model of a method at a fixed moment in time.

**Method rationale**: a powerful mechanism in maintaining knowledge on systems development, by preserving information on earlier method versions, changes and decisions, it can support future decision-making on the method.

**Method history**: is a set of method snapshots in a subsequent series of moments in time. A method history contains a number of method snapshots.

Van de Weerd, de Weerd, & Brinkkemper (****) Developing a Reference Method by Method Comparison

**Method comparison** aid in selecting the best method for a particular situation.

**Method comparison** leads to a better understanding of methods and their rationale.

**Method comparison** uses meta-models in a table to reveal their similarities and differences between the methods.

**Comparing methods** uses the; $\rangle$, $\ll$, $\rangle\ll$ notations to indicate whether an activity is the same, does more, etc.

**Comparing methods** can help improving existing methods, create new situational methods, ultimately lead to a reference method.

**Reference method** can be used to identify similarities and differences between the various methods in a systematic way.

**Reference method** is an executable method that includes the best method fragments from the super method.

**PDD** is better than extended ER or Task Structure Diagramming as it allows to obtain a formal, uniform, and unbiased representation of the method.

**Meta-models** are used to compare the analysis and design steps, the concepts, and the techniques provided in each method.


Luinenburg, Jansen, Souer, van de Weerd, and Brinkkemper (****) WCMS Method Association Approach

**Method Association Approach** shows which feature groups are addressed by the selected web modeling methods, and so suitable for a particular application domain.

**Method association**: a helpful technique in order to select and assemble method fragments that fit with domain situational factors.

**Meta-models** from a process and data perspective, a uniform and formal representation of the methods is established.

**Super method** shows the similarities and differences between various methods.
Method engineering is the engineering discipline to design, construct, adapt methods, techniques and tools for the development of IS.

Situational method is an IS method tuned to the situation of the project at hand.

Assembly-based situational method engineering is an approach in which method fragments are extracted and stored in a method base driven by situational method requirements.

Method fragment is a description of an IS engineering method, or any coherent part thereof.

Method fragments allow for engineering situational methods in a way that it supports selection, storage, and assembly.

Feature groups: a class of functional design requirements.

Granularity levels: method, model, and concept

Qualitative analysis/association strategies: Feature group strategy, web modeling strategy

Feature group strategy; to find out which web design model or concept the feature group can be designed

Web modeling strategy; the relative weighting of concepts and web design models part of a method is revealed.

Association table: shows how each feature groups is covered by the web design models and concepts of the web modeling methods.

Method association approach limitations: no automatic built-in validation mechanism like supermethodology, and transformational relationships are not made clearly visual and traceable in the association table.

Formalization: add formalization to the MA-approach to decrease ambiguity between the feature groups. This can be achieved by adding ontology to feature groups.

The Method Association Approach consists of the following seven steps:

1. Identify project situations
2. Identify feature groups
3. Select candidate methods for the identified feature groups
4. Model candidate method fragments in a method base
5. Associate feature groups with candidate methods
6. Assemble situational method
7. Validate situational method

Step 1: project situations are identified by means of categorizing unique development project characteristics.

Three project development characteristics have been defined; 1. Standard, 2. Complex, 3. Migration. By analyzing the similarities and differences in the phases, deliverables and activities can be determined.

Step 2: Feature groups are categorizations of functionalities of the software domain product. It can have existing and future functionalities.

Feature groups: enable comparison of existing methods by providing means to select or find the method that fits best with functional design requirements.

Step 3: A manageable selection is made to provide input for the meta-modeling in step 4. This prevents modeling of irrelevant methods.

Step 5: Feature groups of step 2 are listed in an association table, revealing to what extend the method fragments of the method base support the modeling of a particular feature.

Step 7: The method is checked on completeness and consistency and this can be checked with a case study or expert group evaluation.