Method Association Approach: Situational construction and evaluation of an implementation method for software products

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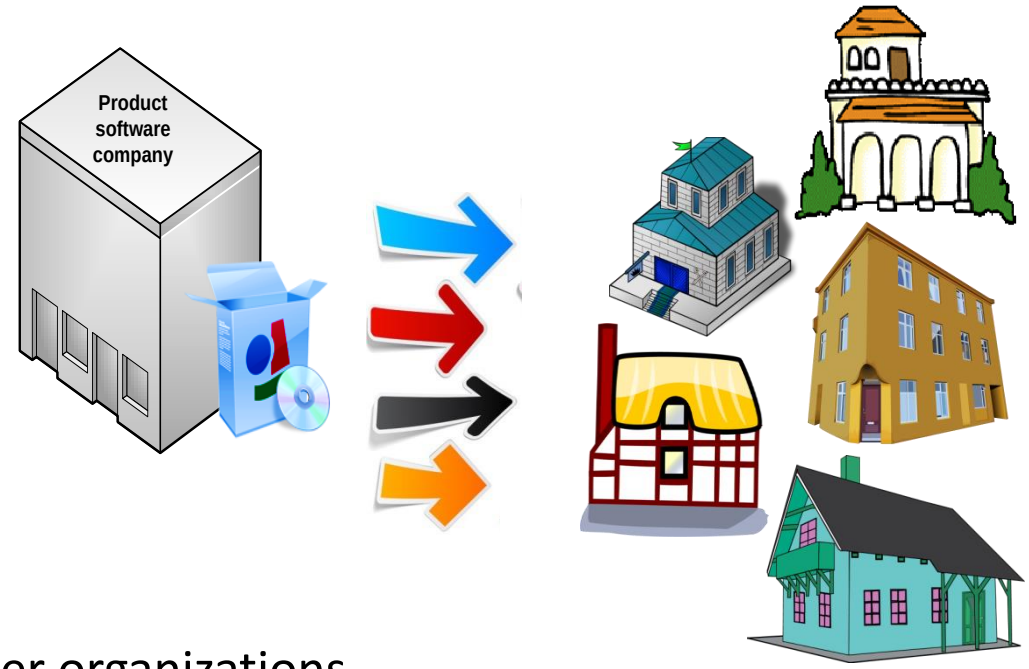
Issues of Software Implementation

- SAP R3
- Microsoft Dynamics
- Oracle ERP
- IBM WebSphere
- SalesForce CRM



- Complex standard products
- Deployment in different customer organizations
- Organization-wide implementations
- Customizations (= customer specific extensions) required

Motivation

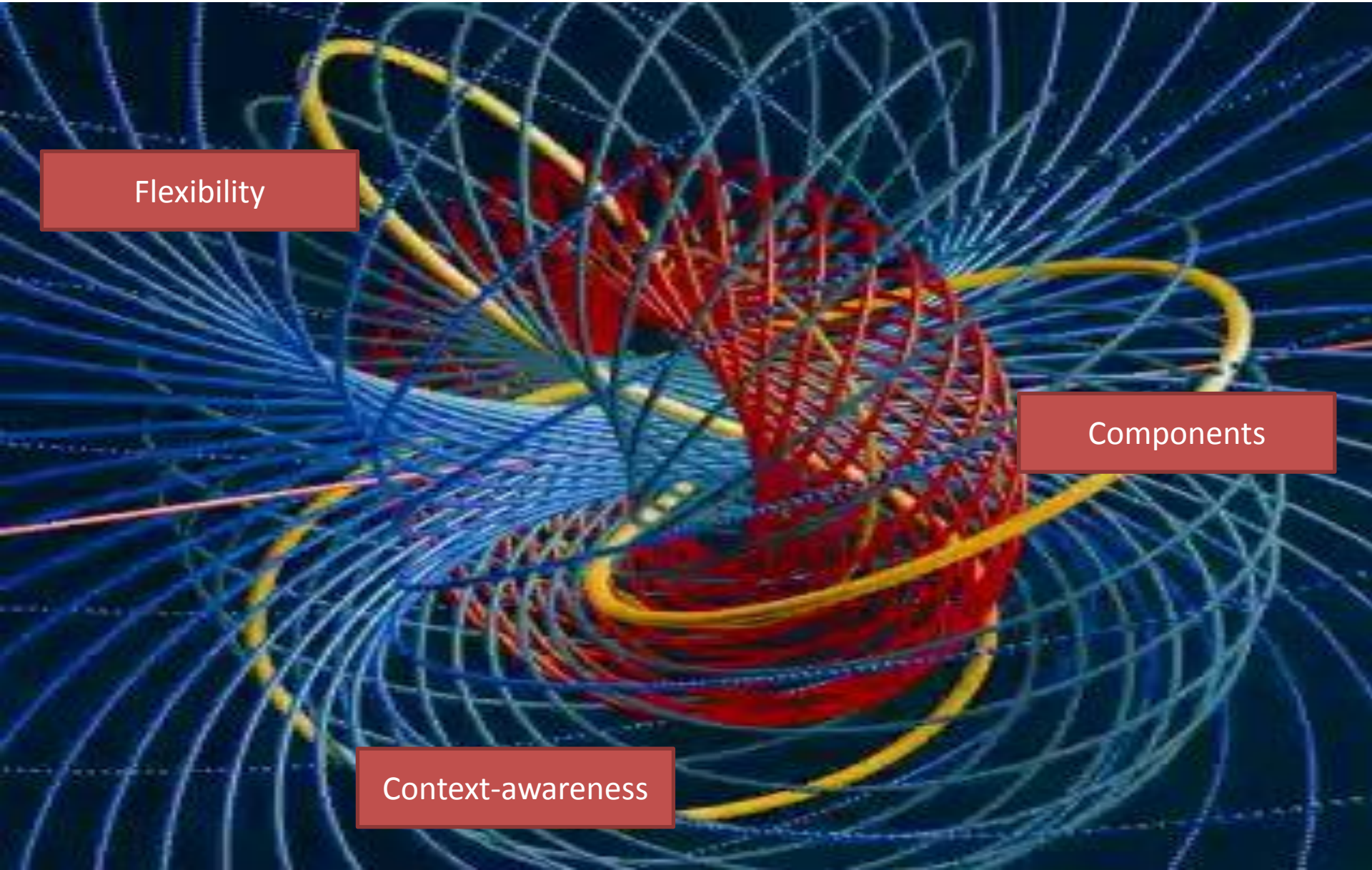
- Software implementation is one of the important steps in a software engineering process.

- Complex
- Not supported in detail by the existing design and implementation methods.

Software product implementation method

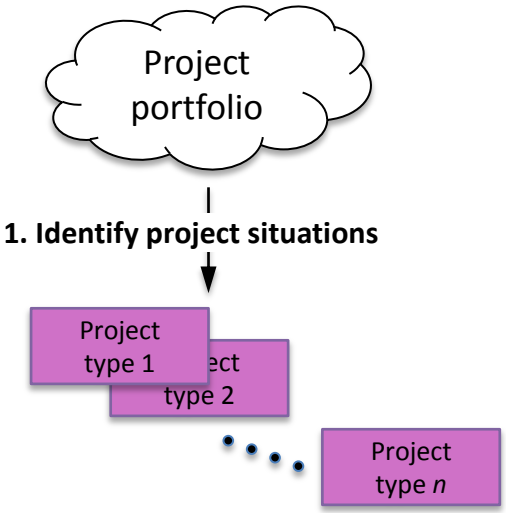
- "Systematically structured approach to effectively integrate software based services or components into the workflow of an organizational structure or an individual end-user"

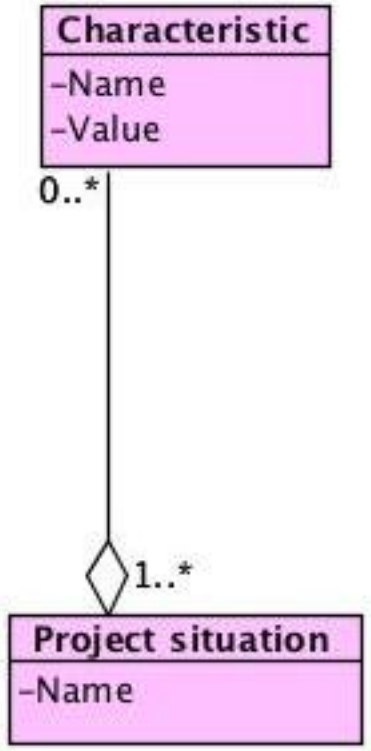
Situational Method Engineering



Method Association Approach (MAA)

Method Association Approach





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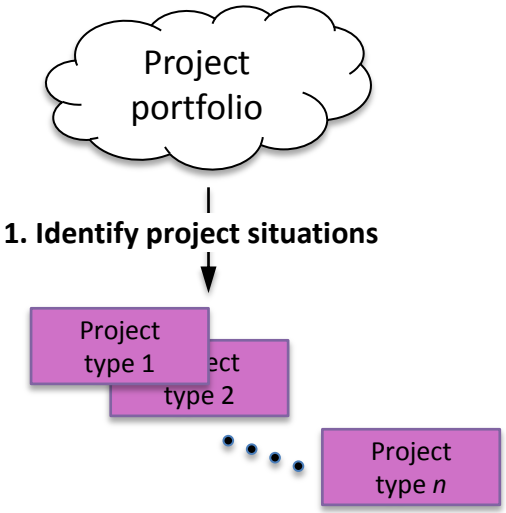

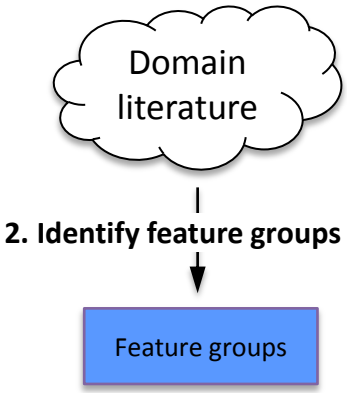

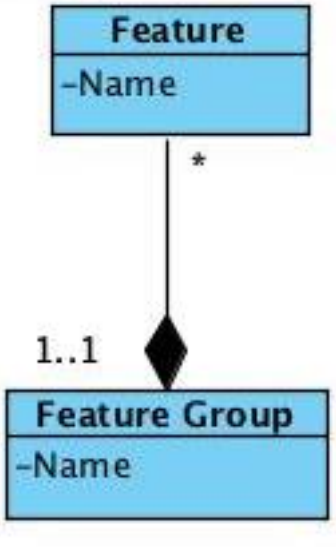

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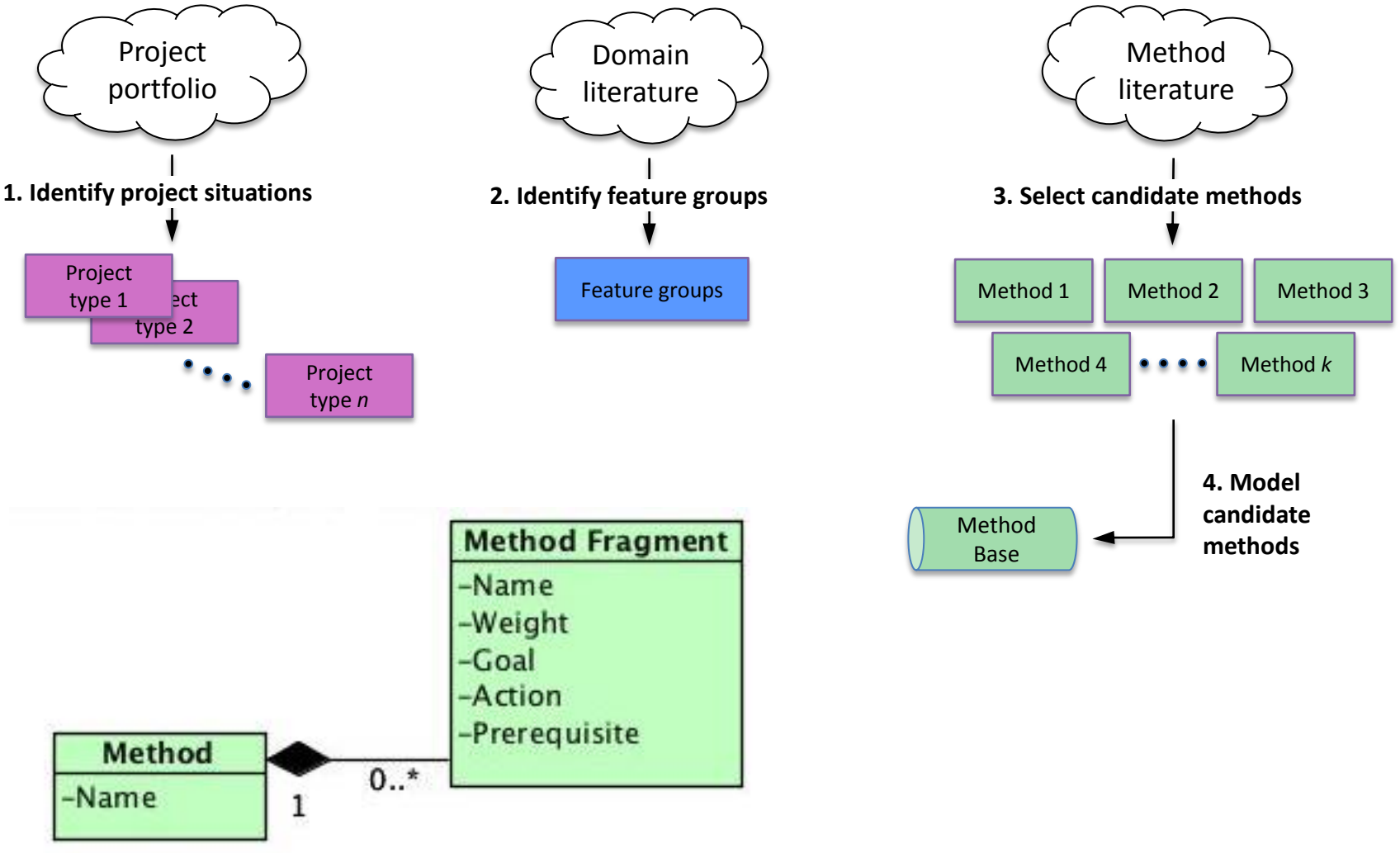

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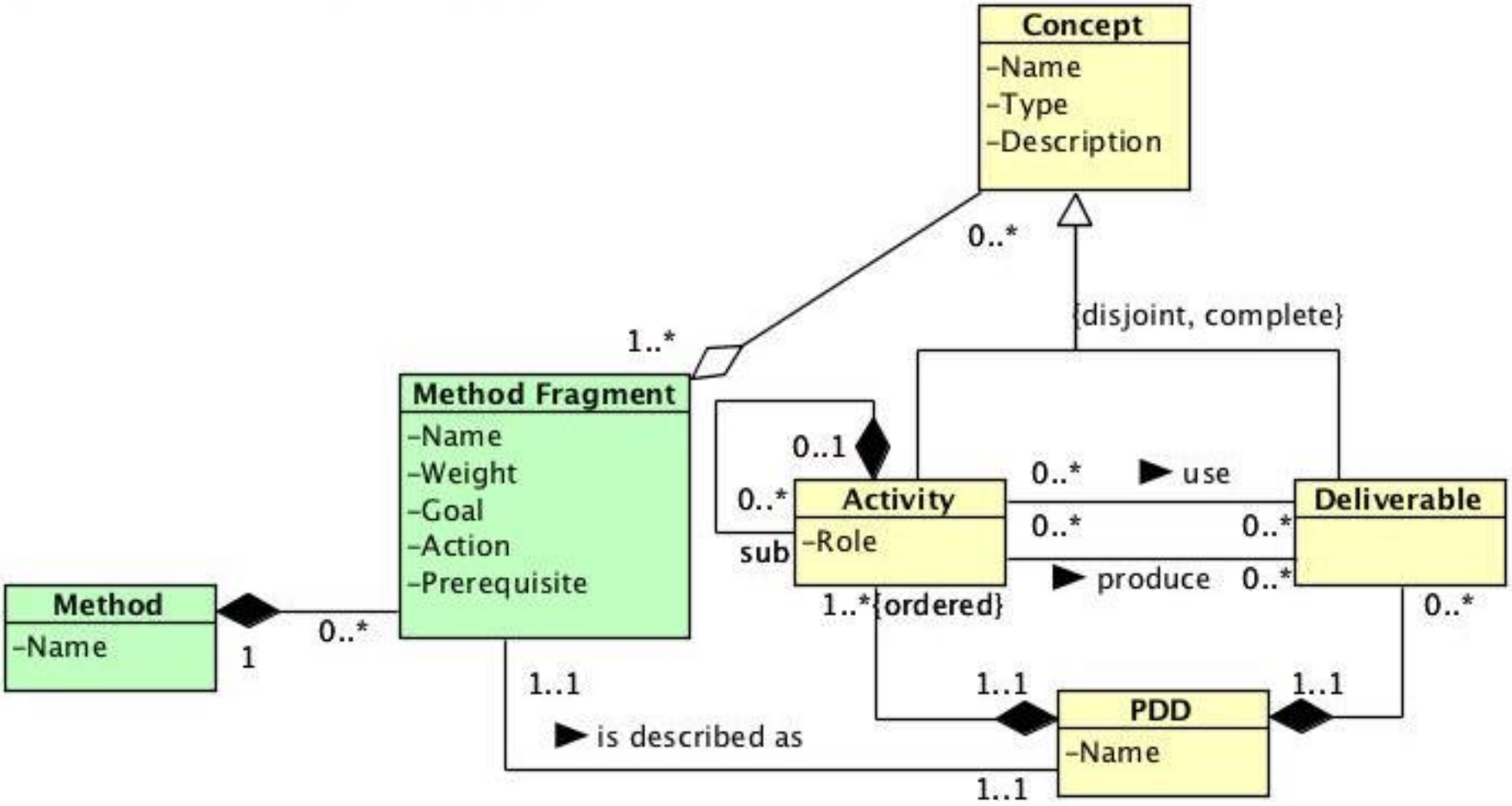

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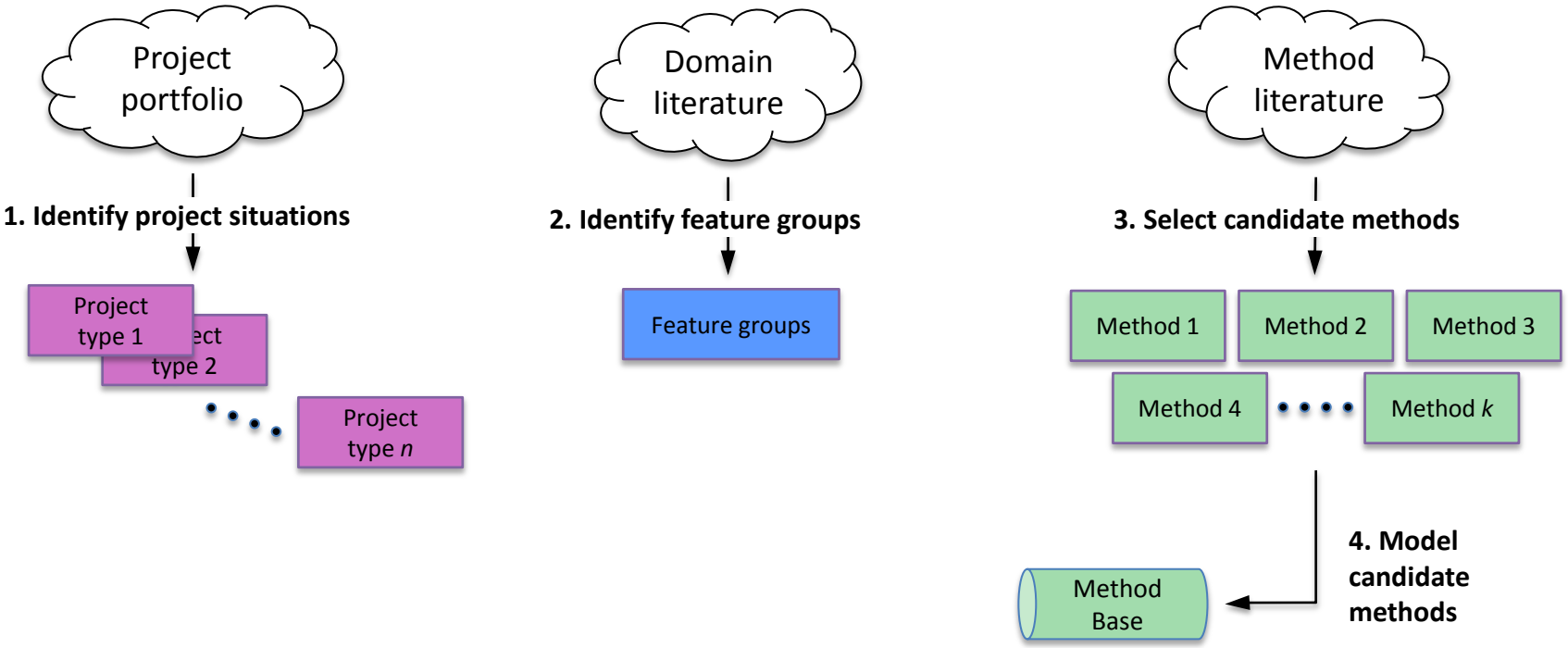

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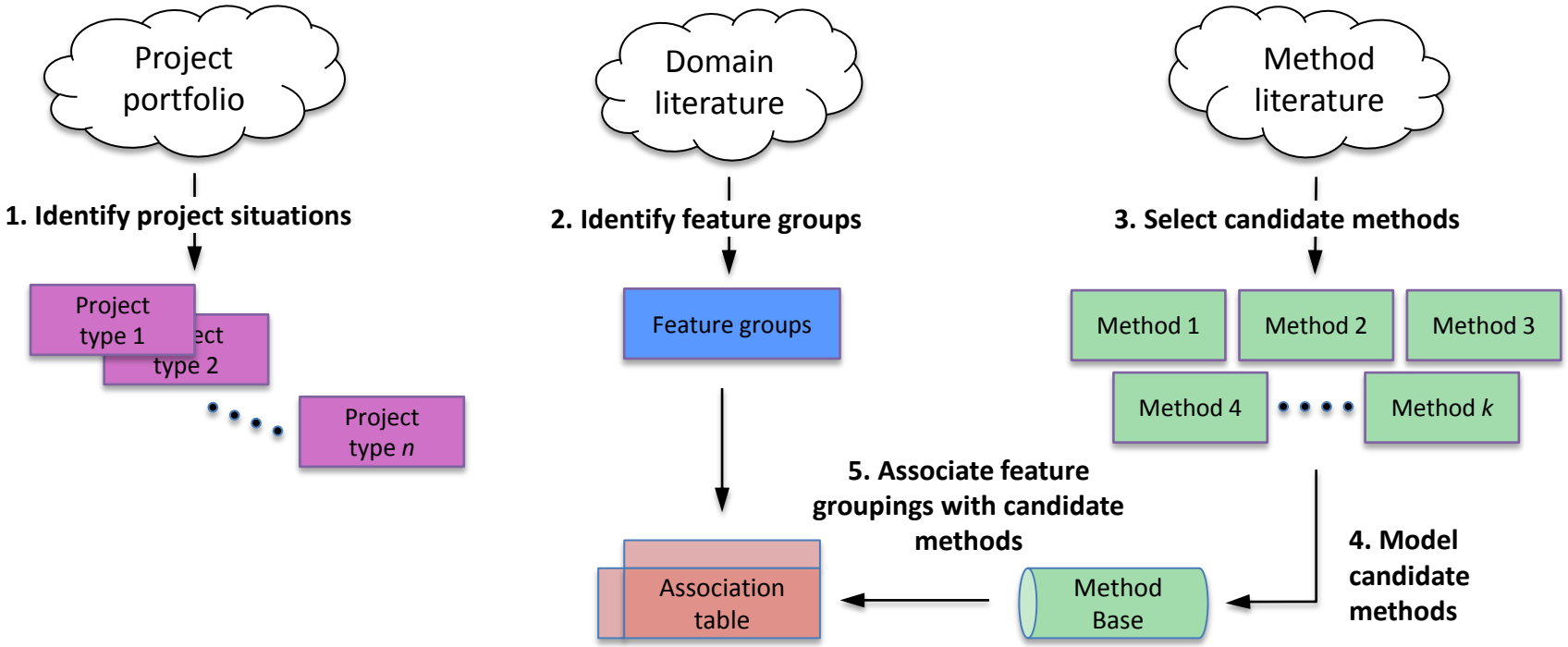
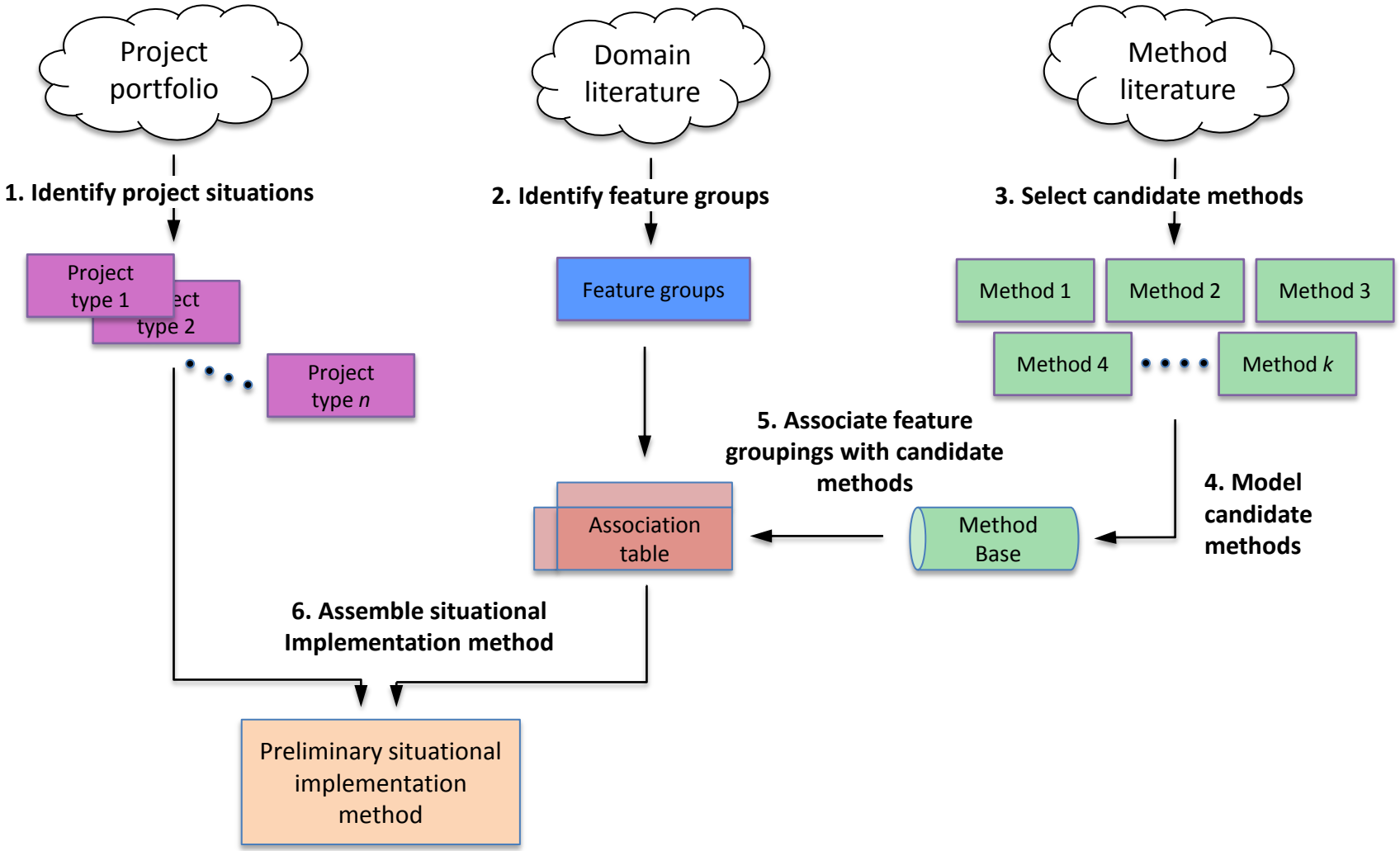


Formal Matching Analysis

- Semantic analysis
- Requirement feature analysis
- Project situation analysis
- Heuristic analysis

Method Association Approach



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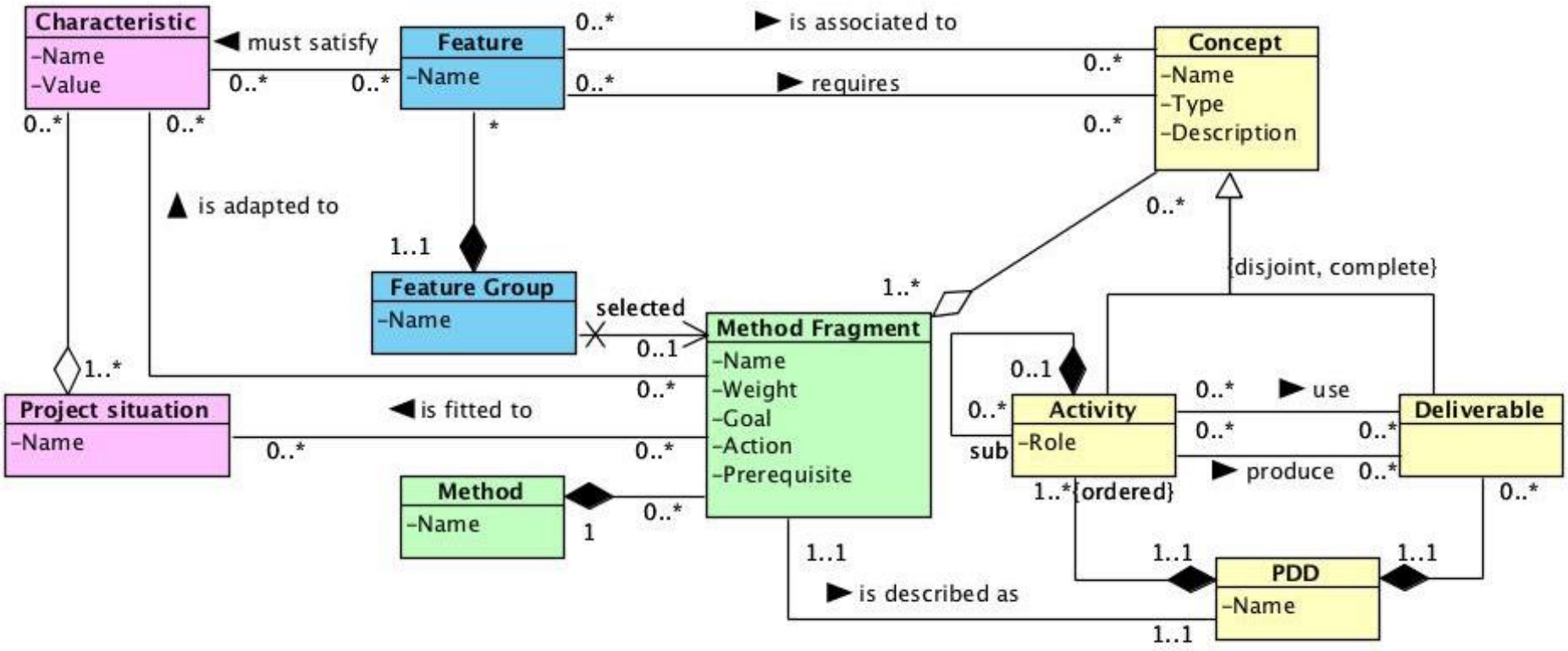

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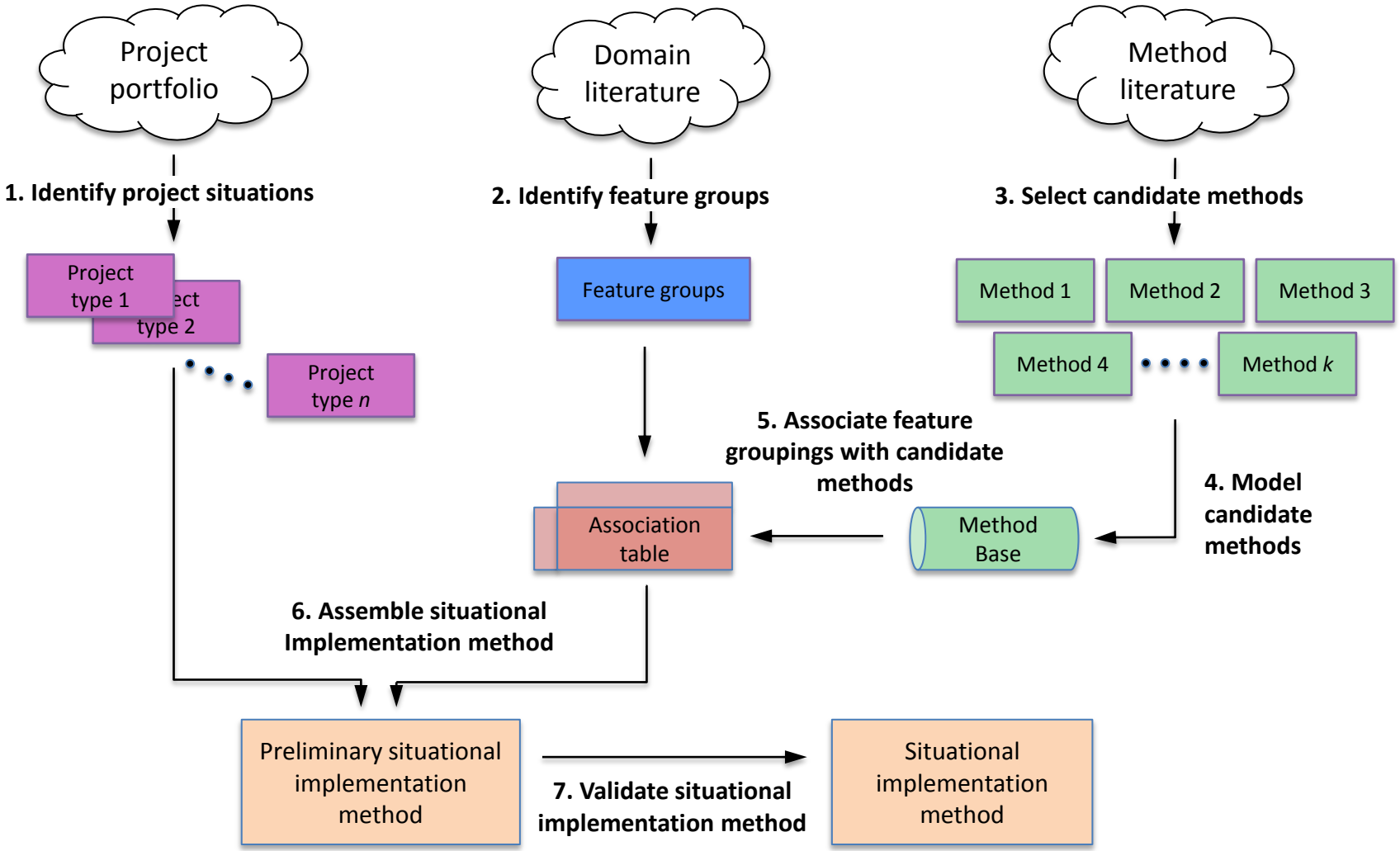


Case study: implementation method for HCM software products - VH-SIM

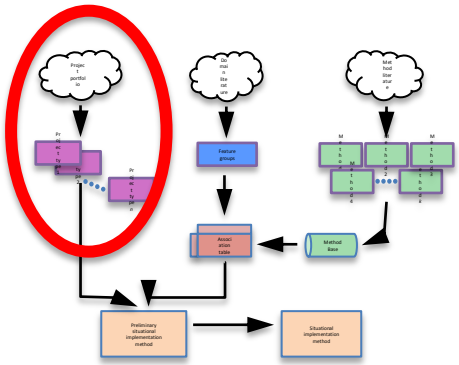
Case study: implementation method for HCM software products - VH-SIM

- VitalHealth Software
  - generic software platform for Health management
- Web-based software solutions for:
  - Personal health management
  - Chronic Diseases (Diabetes, COPD, etc)
  - Disease Management
  - Chain Care
  - Medical decision support

VitalHealth
SOFTWARE

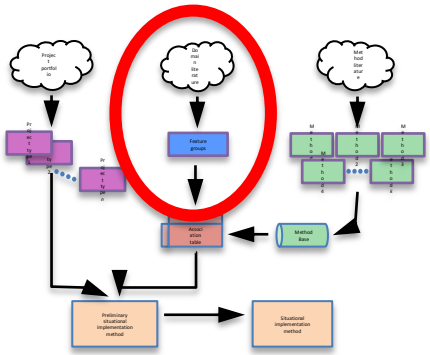
Project Situations Identification

- Based on interviews and artifact study
- 3 project situations based on different characteristics (type of hosting, upgrading).
- 3 kinds of implementations:
  - Standard software implementation
  - Customized software implementation
  - Platform implementation.



Feature Grouping

- Features gathering
  - three main works in the literature
  - documents and artifacts of the HCM-organization
  - expert interviews
- 126 features - 18 groups combined in 10 feature groups after expert interviews



Feature groups

Project management	Infrastructure arrangements	HCM software security	HCM software installation
HCM system intégration	Clinical data conversion	Health Care professional and patient authorization	HCM system introduction
	Project evaluation	Support / Maintenance	

Clinical data conversion	**When a new system or new software is implemented, old data should be taken up in the new system as well. Data conversion is necessary in this case.**

Feature groups

Project management	Infrastructure arrangements	HCM software security	HCM software installation
HCM system intégration	Clinical data conversion	Health Care professional and patient authorization	HCM system introduction

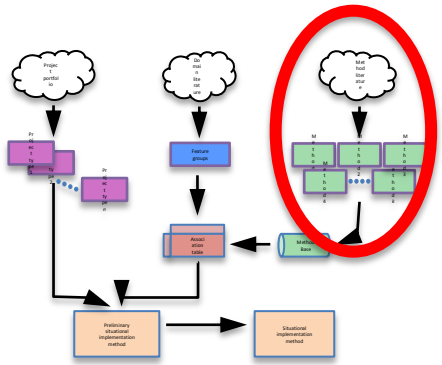
HCM Software security	**Security is always an important part of a software implementation process but, in the health care domain, the security must be optimal for the patient's privacy. The access to patient data should be restricted to specific employees. The software itself should be secured as well by the use of certificates, passwords, etc.**

Method fragments creation

- Selected methods

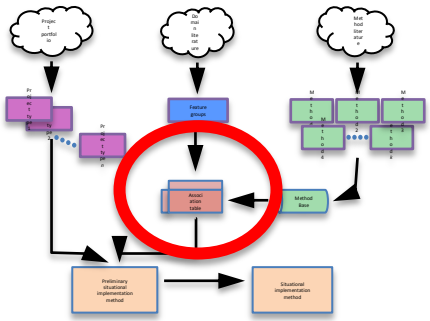
Unified process	MOOSAD	SSA OnePoint SDM (*)	GSDLC	VitalHealth method ($)

  - * recently renamed Infor Deployment Method
  - $ already existing in the organisation
- Selection Criteria
  - include the notion of software implementation starting from the point that the software is delivered to the customer
  - described in enough details
- 55 fragments



Association of feature groups to concepts

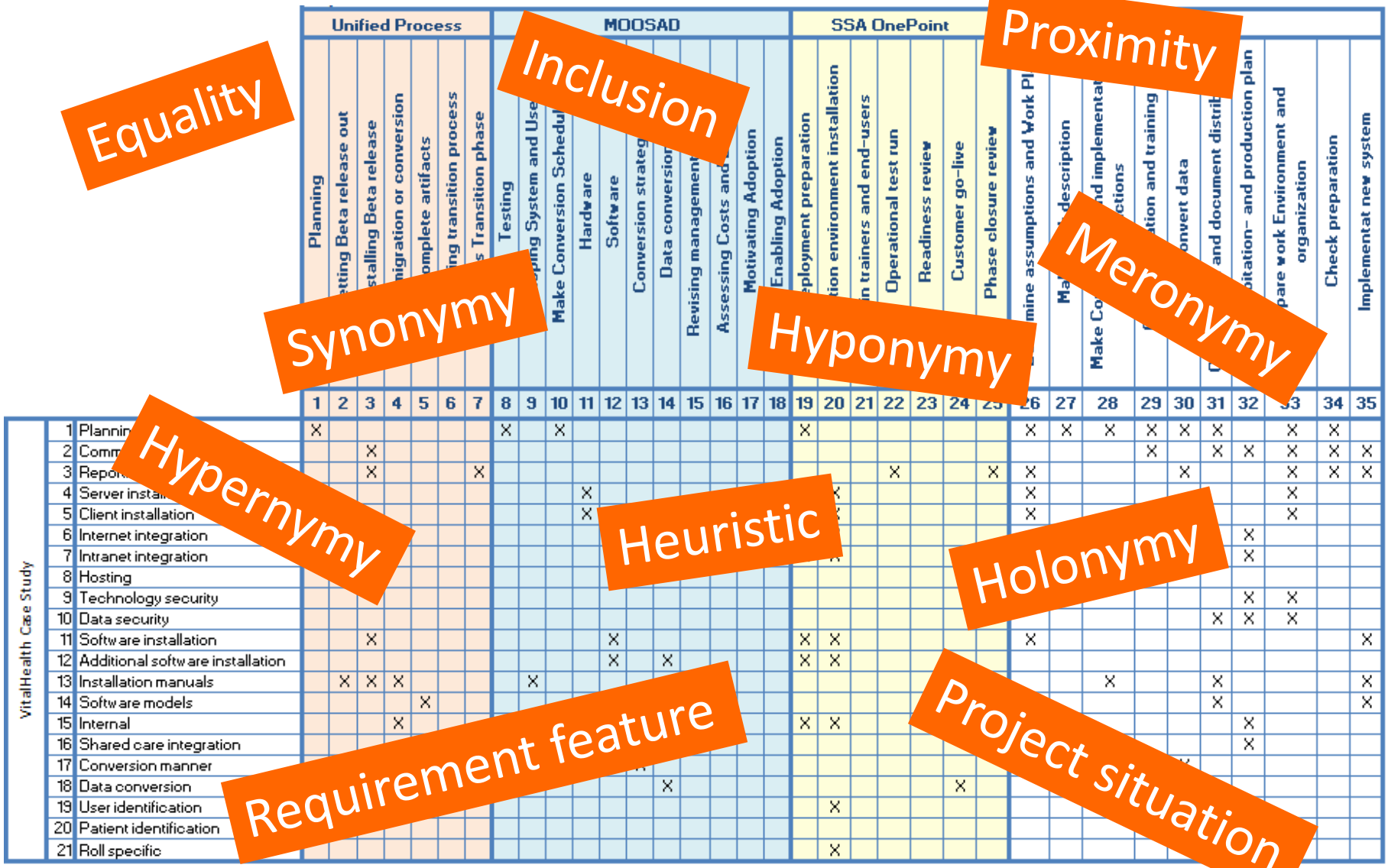
- Focus on the activities = process perspective
  - Objective = to develop a method for the implementation of the already designed and modeled software.
  - The focus is on *how* the product is implemented at the customer.



Association table

			Unified Process							MOOSAD										SSA OnePoint							SDM									
			Planning	Getting Beta release out	Installing Beta release	Data migration or conversion	Complete artifacts	controlling transition process	Assess Transition phase	Testing	Developing System and User	Make Conversion Schedule	Hardware	Software	Conversion strategy	Data conversion	Revising management policies	Assessing Costs and Benefits	Motivating Adoption	Enabling Adoption	Deployment preparation	Production environment installation	Train trainers and end-users	Operational test run	Readiness review	Customer go-live	Phase closure review	Determine assumptions and Work Plan	Make Task description	Make Conversion- and implementation instructions	Give information and training	Convert data	Complement and document distribution	Make Exploitation- and production plan	Prepare work Environment and organization	Check preparation	Implementat new system
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
VitalHealth Case Study	1	Planning	X							X		X									X						X	X	X	X	X	X		X	X	
	2	Communication			X							X																			X		X	X	X	X	X
	3	Reporting			X				X															X			X	X				X			X	X	X
	4	Server installation											X								X	X						X							X		
	5	Client installation											X								X	X						X							X		
	6	Internet integration																			X	X												X			
	7	Intranet integration																			X	X												X			
	8	Hosting																																			
	9	Technology security																																X	X		
	10	Data security																														X		X	X		
	11	Software installation			X									X							X	X						X									X
	12	Additional software installation												X		X					X	X															
	13	Installation manuals		X	X	X					X																			X		X					X
	14	Software models					X																									X					X
	15	Internal				X										X					X	X															
	16	Shared care integration																																X			
	17	Conversion manner										X			X													X		X		X					
	18	Data conversion				X										X										X				X		X					
	19	User identification																				X															
	20	Patient identification																																			
	21	Roll specific																				X															

Association table

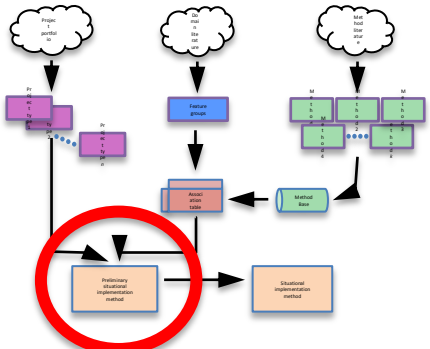


Association table

- Example of inclusion link
  - F_{11}.name= “Software installation”
  - MF_{12}.name= “Software”
  - INC (MF_{12}.name, F_{11}.name)=true
- Example of proximity link
  - F_{13}.name= “Installation manuals”
  - MF_{9}.name= “Developing system and user documentation”
  - ConceptNet : “Manual” *IsA* “Document type”
  - PRO (F_{13}.name, MF_{9}.name)=true

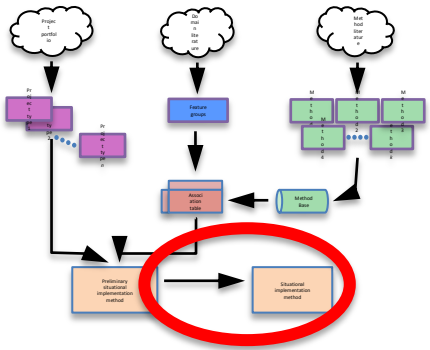
Method Fragments selection

- Based on the association table
- Rule
  - If several fragments could realize a feature group, choose the fragment that includes the higher number of features.
- Combination of the selected fragments to create the preliminary situational implementation method



VH-SIM validation

- Questions
  - Usability of the method
  - Inclusion of all the implementation required steps
- Method
  - Expert interviews
  - Practice-oriented case study (Project in a large Dutch rehabilitation clinic employing more than 550 people)
  - Survey with HCM organization employees



Validation Results

- General results
  - users pleased with the method
  - The method was found useful
  - good guideline for the implementation
  - most of the activities were performed
  - the project plan was usable, clear and structured
  - No major structural changes were necessary (changes scattered over the method)
  - the activities and sub-activities were overall correct
  - Some changes in names but overall the activities were consistents

Validation Results

- Some possible improvements
  - hard to plan the implementation over time
    - iterative process
    - late delivery of customer Inputs
  - divided opinions on the planning tools
    - The planning in MS Project was too much detailed
    - The high level planning in MS Project is well received but the other tools need more attention before they can be used properly.

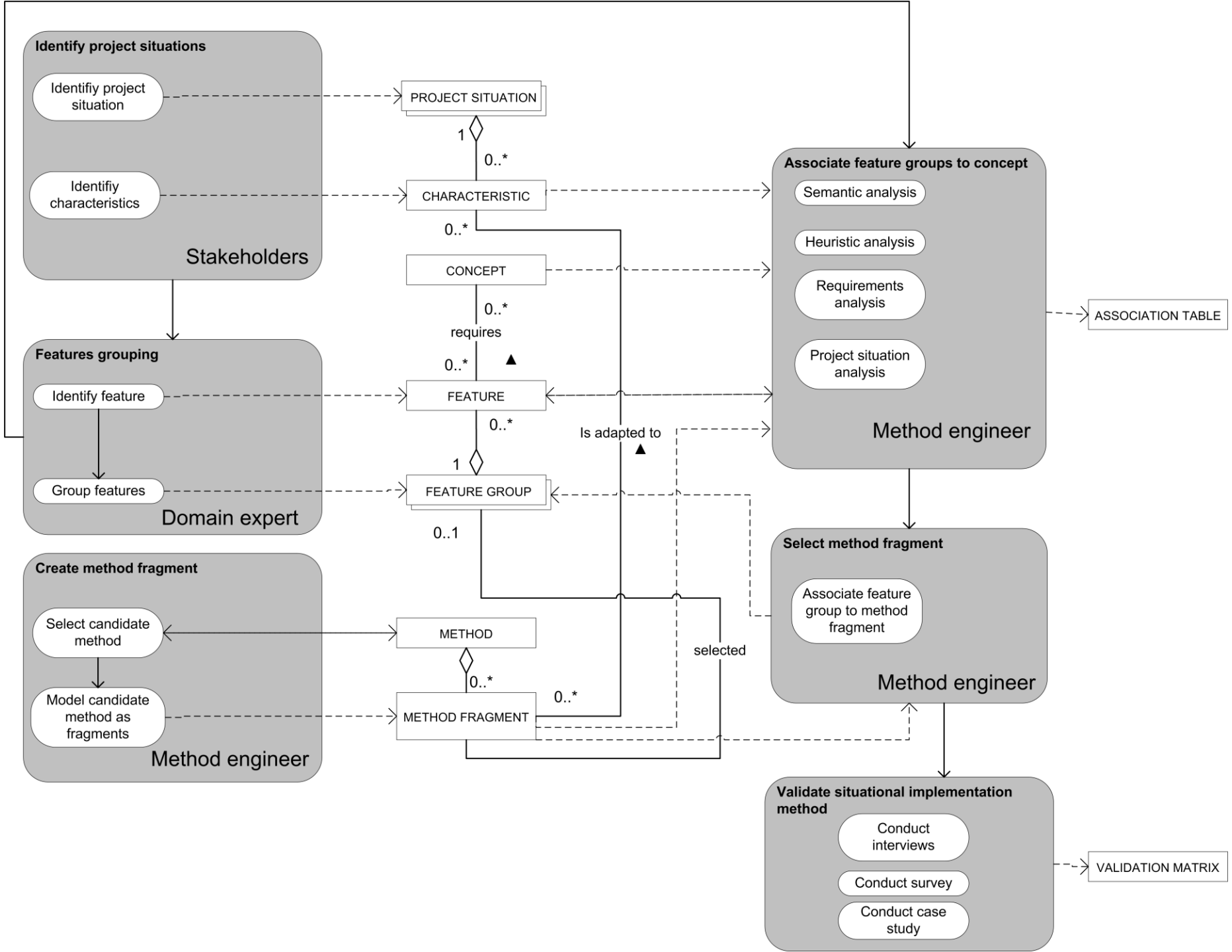
What has been done ?

- SME approach to create implementation methods for software products, named the Method Association Approach.
- Illustration and validation on a real case, VitalHealth Software

What remains to be done ?

- Validate each step of MAA to evaluate the process part of the approach
- Improve the semantic analysis
  - ontology specific to information system development methods and software lifecycle
  - Relations between concepts


That's all Folks!
Any Question ?


Identify project situations
Identifiy project situation
Identifiy characteristics
Stakeholders
PROJECT SITUATION
1
0..*
CHARACTERISTIC
0..*
CONCEPT
0..*
requires
0..*
FEATURE
0..*
Is adapted to
1
FEATURE GROUP
0..1
Features grouping
Identify feature
Group features
Domain expert
Create method fragment
Select candidate method
Model candidate method as fragments
Method engineer
METHOD
0..*
METHOD FRAGMENT
0..*
selected
Associate feature groups to concept
Semantic analysis
Heuristic analysis
Requirements analysis
Project situation analysis
Method engineer
ASSOCIATION TABLE
Select method fragment
Associate feature group to method fragment
Method engineer
Validate situational implementation method
Conduct interviews
Conduct survey
Conduct case study
VALIDATION MATRIX

Implementation

Implementation is a often misused term in the ICT industry

See Wikipedia: Implementation

Computer science:

- an implementation is a realization of a technical specification or algorithm as a program, software component, or other computer system through computer programming and deployment

IT Industry:

- implementation refers to post-sales process of guiding a client from purchase to use of the software or hardware that was purchased.

Political science

- implementation refers to the carrying out of public policy.