

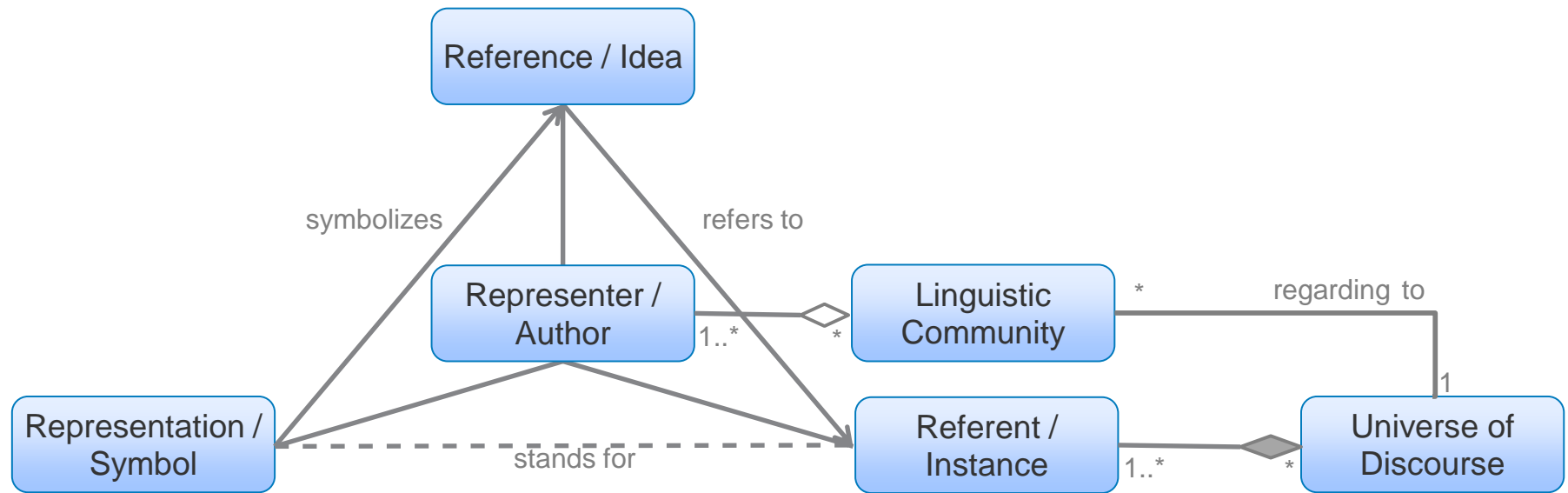
Patterns and Reference Models – Two Sides of the Same Coin

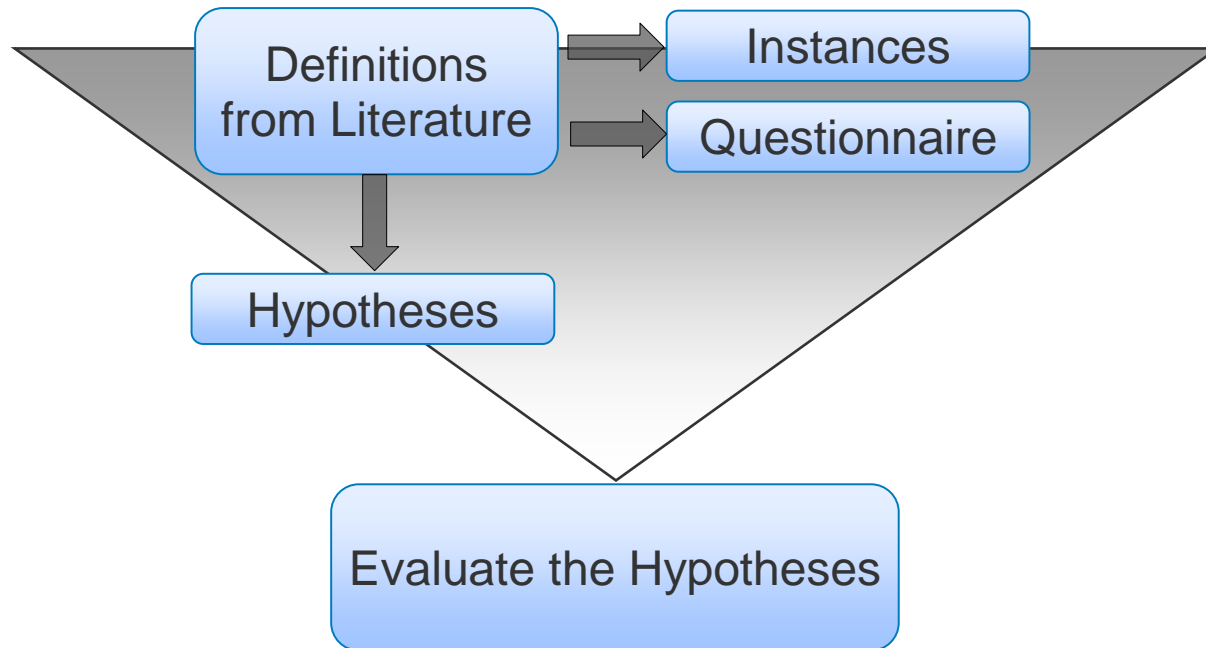
Referent: Regine Preuß

Betreuer: Sabine Buckl

Software Engineering Betrieblicher Informationssysteme (sebis)

Patterns und Referenzmodelle - Zwei Seiten einer Medaille?





Gamma, E.; Helm, R.; Johnson, R. E.; Vlissides, J. M.: Design Patterns: Elements of Reusable Object-Oriented Software

Rosemann, M.: Komplexitätsmanagement in Prozeßmodellen.: Methodenspezifische Gestaltungsempfehlungen für die Informationsmodellierung.

Scheer, A.-W.: ARIS House of Business EngineeringKonzept zur Beschreibung und Ausführung von Referenzmodellen. In Entwicklungsstand und Entwicklungsperspektiven der Referenzmodellierung .

Definitions:

- **Gamma et al.** : In general a pattern has four essential elements: the pattern name [...] the problem [...] the solution [and] the consequences. [...] For this book we have concentrated on patterns at a certain level of abstraction. Design patterns are not about designs such as linked lists and hash tables that can be encoded in classes and reused as is.
Format: pattern name, also known as, classification, intent, motivation, applicability, structure, participants, collaborations, consequences, implementation, sample code, known uses, related patterns
- **Roseman** : Reference models raise a higher claim of universality (e.g. for a whole branch) than enterprise-specific models. They reach this aim by abstracting individual enterprise specific models (inductive generation: empirical-descriptive approach) and by integrating theory-based knowledge (deductive generation: analytical-prescriptive approach).
- **Scheer** : A reference model is seen as model which can be used as basis to develop problem solutions referring to concrete tasks.
According to which problem should be handled by the use of reference models there can be differentiated between e.g. branch-related reference models, software-specific reference models or process-reference models.

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Hypotheses:

H01: There is no strict differentiation between patterns and reference models.

H02: The relation between both conceptions has changed over the years.

H03: Reference models are used alone whereas patterns are often used or can be used in combination or related to other patterns.

H04: Reference models relate to a branch whereas patterns are branch neutral.

H05: Patterns describe the context in which they can be applied.

H06: Patterns describe observed solutions that have been proven to work in practice.

H07: Patterns have a structured format whereas reference models are not presented in a recurring format.

H08: It depends on the country whether a concept is named as pattern or reference model.

H09: It depends on the educational background whether a concept is named as pattern or reference model.

H10: A person with an academic background trends to name concepts a reference models whereas a practitioner tends to name them as patterns.

H11: A person with an academic background trends to use reference models whereas a practitioner prefers patterns.

Instances:

- 33 instances of pattern from Gamma et al. Design Patterns and PloP Conferences (1998, 2002, 2006, 2010) and 33 reference models from 1996 to 2006
- Tested if the characteristic is **true** for the instance, **no statement** or the **opposite is true**

| | re-usable | practice-proven | theory-based | adaptable | documented in a defined format | constrained in their applicability | universal | branch related | problem specific | provides a solution | linked to others |
|-------|-----------|-----------------|--------------|-----------|--------------------------------|------------------------------------|-----------|----------------|------------------|---------------------|------------------|
| Ga94 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | -1 | 1 | 1 | 1 |
| Sw98 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | -1 | 1 | 1 | 1 |
| ZS02 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | -1 | 1 | 1 | 1 |
| Sa06 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | -1 | 1 | 1 | 1 |
| Sa10 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | -1 | 1 | 1 | 1 |
| | | | ... | | | ... | | | ... | | |
| Kr96 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | -1 | 0 | 0 | 0 |
| Sc97a | 1 | 0 | 0 | 1 | 1 | 1 | 1 | -1 | 1 | 1 | 1 |
| Pu00 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| Tz03 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| Ah06 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -1 | 1 | 1 | 1 |
| | | | ... | | | ... | | | ... | | |

Questionnaire:

- Introduction

Q02: Where (country) do you currently work?

Q03 / Q04: What is your educational background?

Q05 / Q06: Which of the following describes your current professional occupation best?

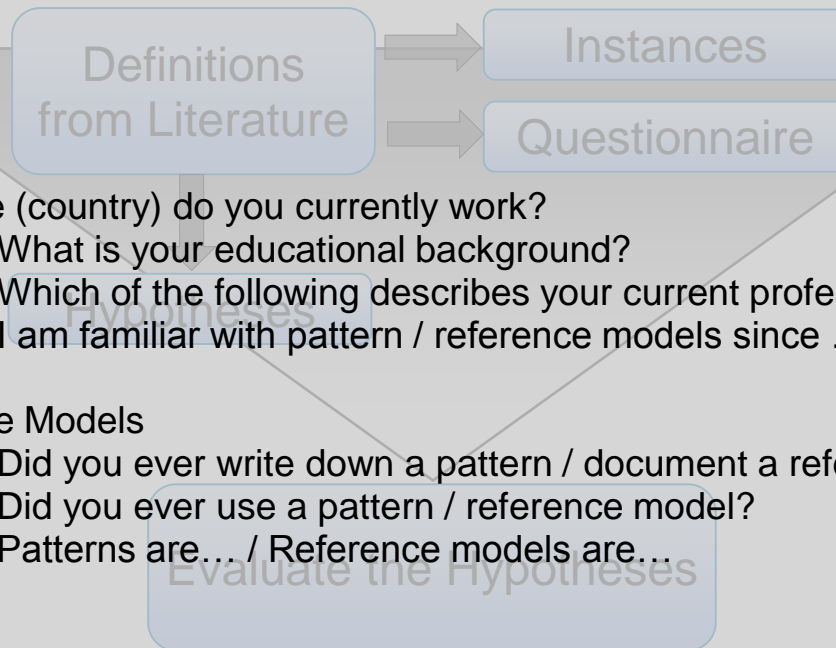
Q07 / Q08: I am familiar with pattern / reference models since ...

- Patterns / Reference Models

Q09 / Q14: Did you ever write down a pattern / document a reference model yourself?

Q10 / Q15: Did you ever use a pattern / reference model?

Q11 / Q16: Patterns are... / Reference models are...



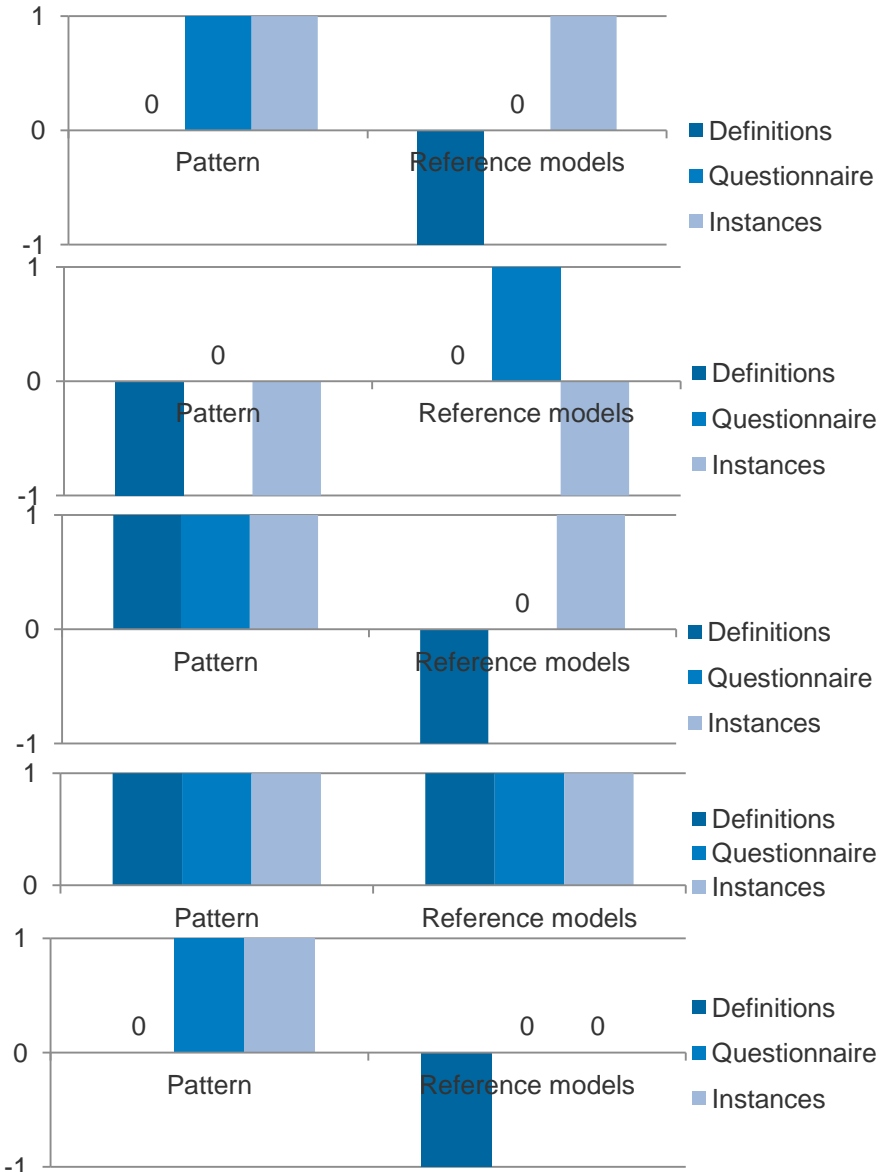
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| Have you ever used a ... | | | |
|--------------------------|-----|-----------------|-----|
| | | Reference model | |
| | | no | yes |
| Pattern | no | 0 | 3 |
| | yes | 8 | 22 |

| Have you ever documented a ... | | | |
|--------------------------------|-----|-----------------|-----|
| | | Reference model | |
| | | no | yes |
| Pattern | no | 5 | 4 |
| | yes | 12 | 12 |

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Thank you for your attention - Further Questions?