Institute of Information Management

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Terminology, Theory, Technology and Philosophy of Business Engineering

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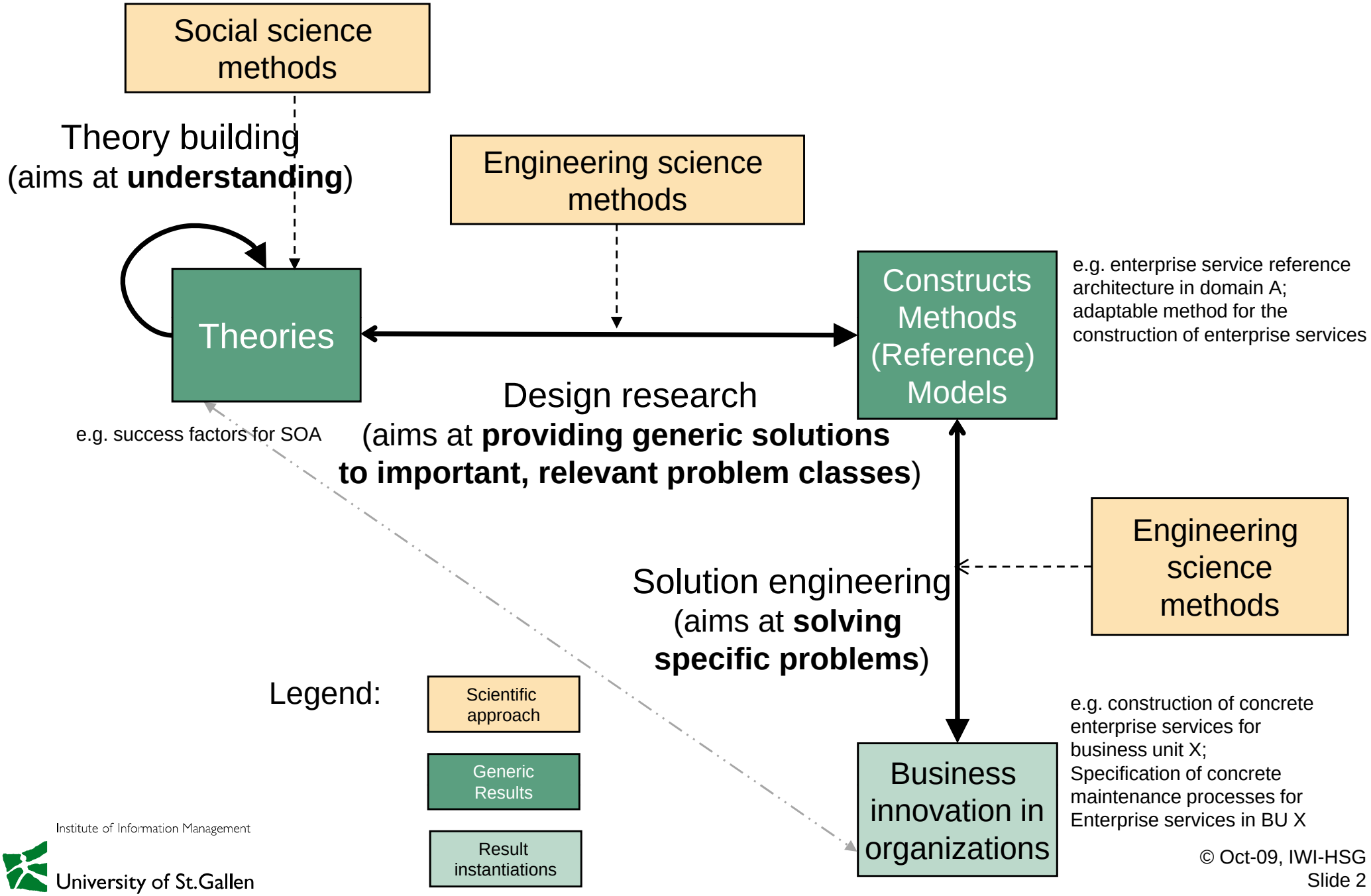
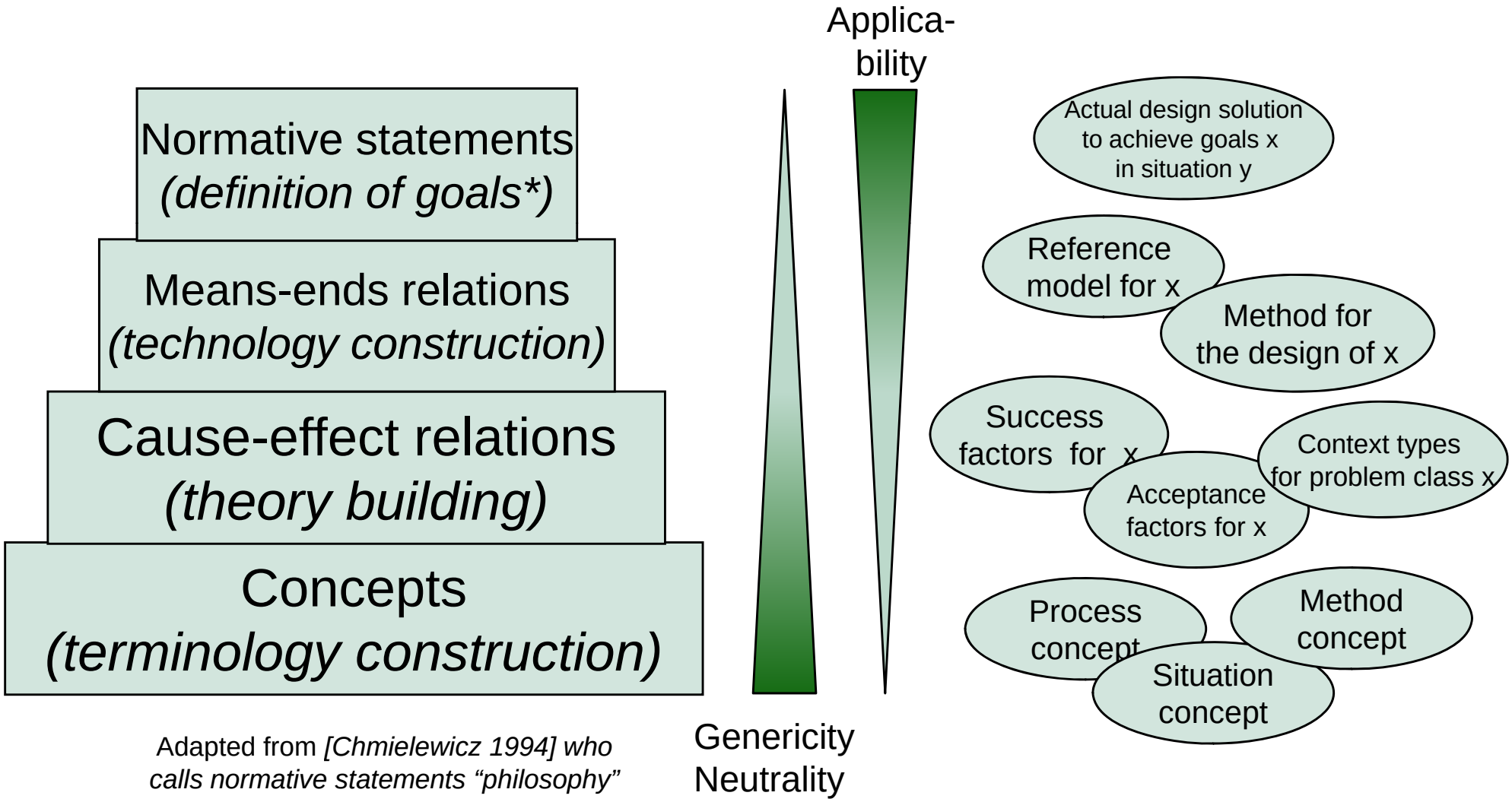
Theory building vs. design research vs. solution engineering



Artifact types (= research result classes) in social sciences vs. in Business Engineering

Artifact types *(and research approaches)* in social sciences

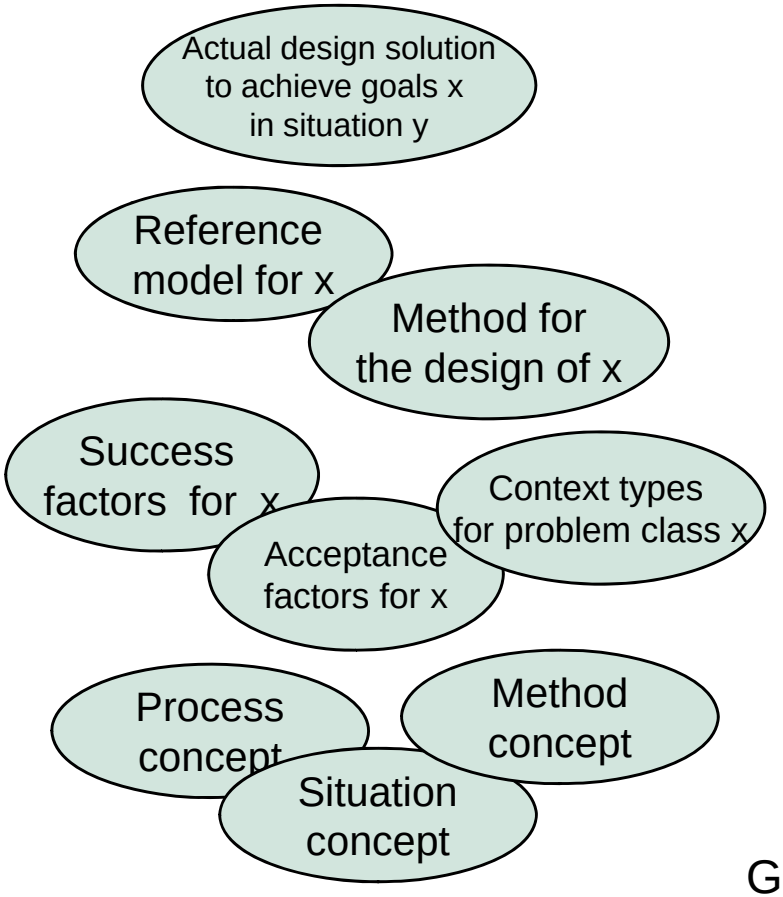
Exemplary artifact types in Business Engineering

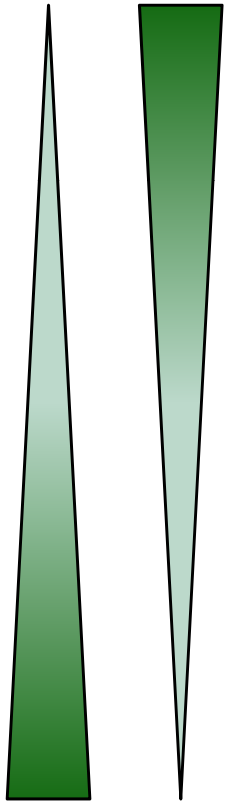


Adapted from *[Chmielewicz 1994] who calls normative statements "philosophy"*

Artifact types (= research result classes) in Business Engineering vs. in DSR for IS

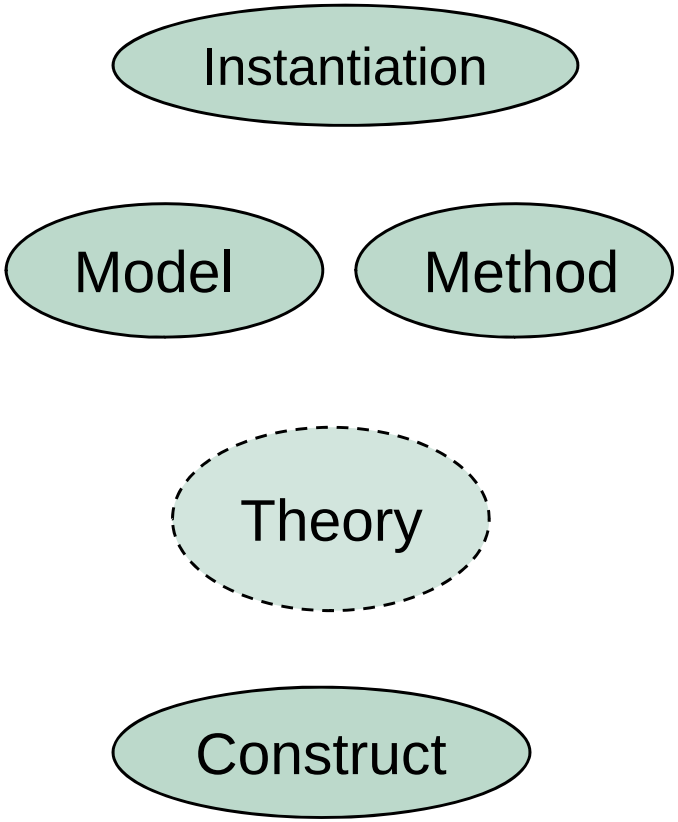
Exemplary artifact types in Business Engineering





Artifact types in DSR for IS

(e.g. *[March/Smith 1995]*, *[Hevner et al. 2004]*)

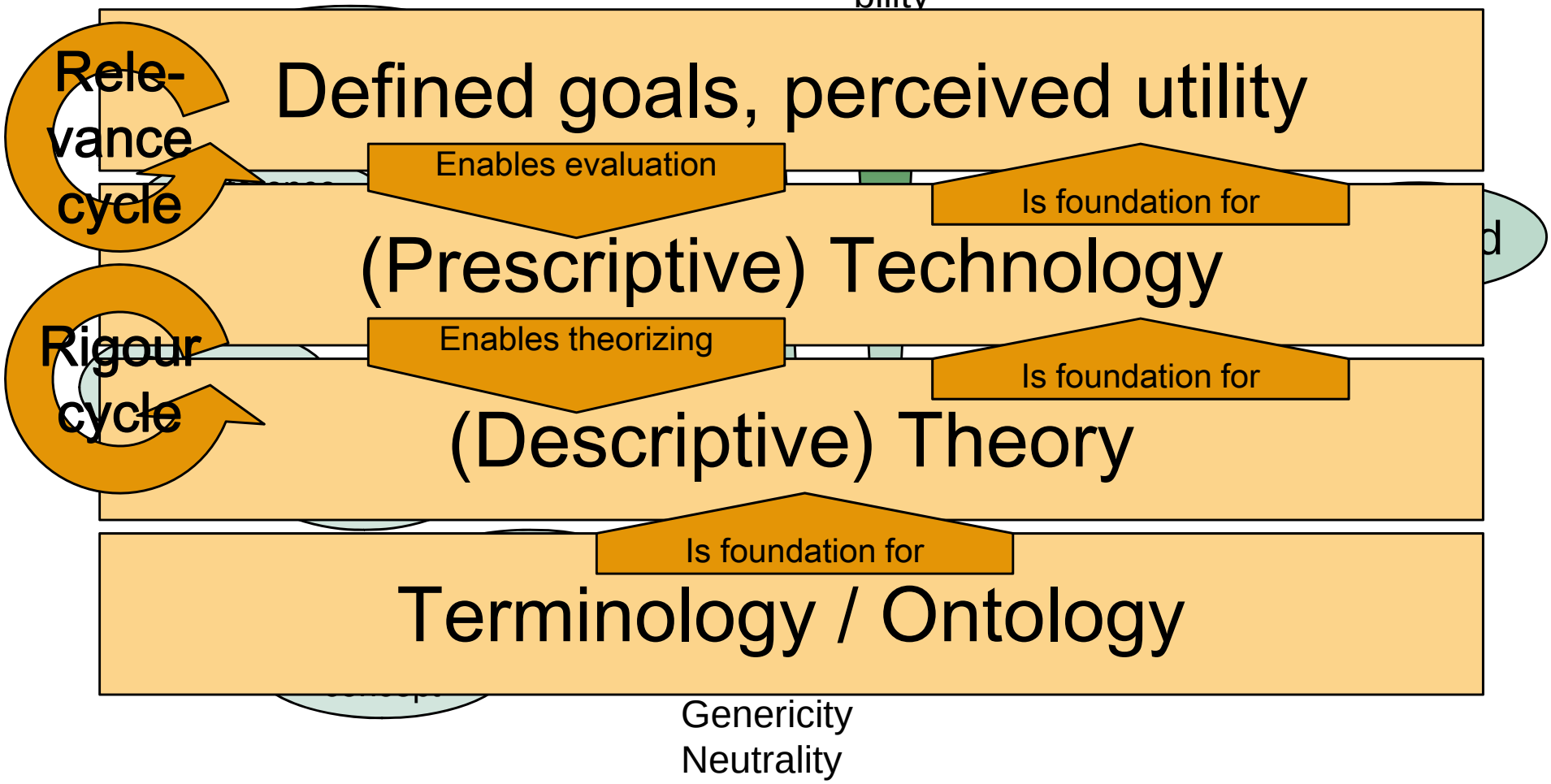


Artifact types (= research result classes) in Business Engineering vs. in DSR for IS

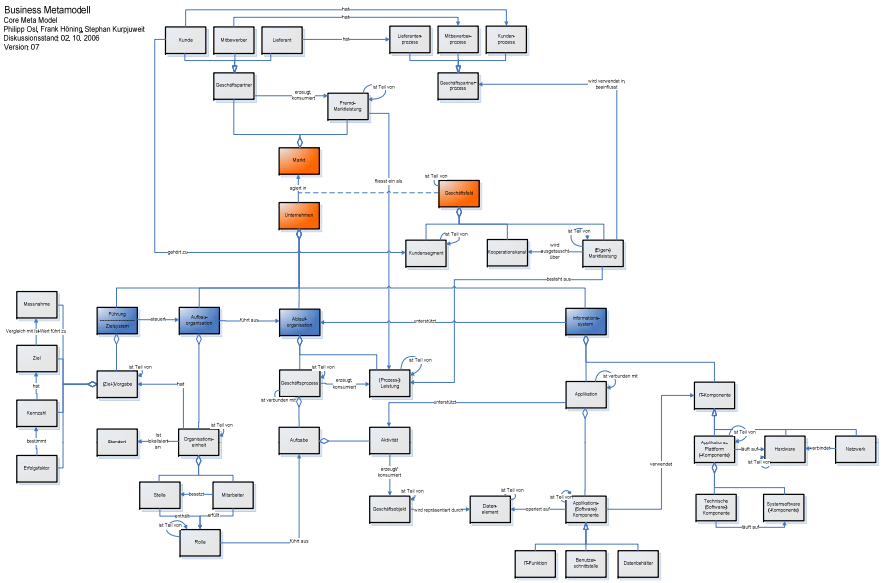
Exemplary artifact types in Business Engineering

Artifact types in DSR for IS

(e.g. *[March/Smith 1995]*, *[Hevner et al. 2004]*)

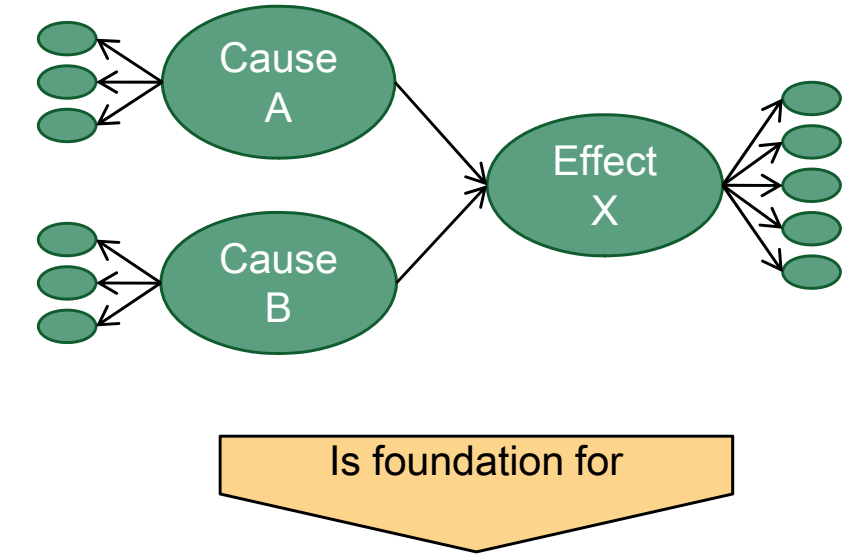


The Terminology of Business Engineering



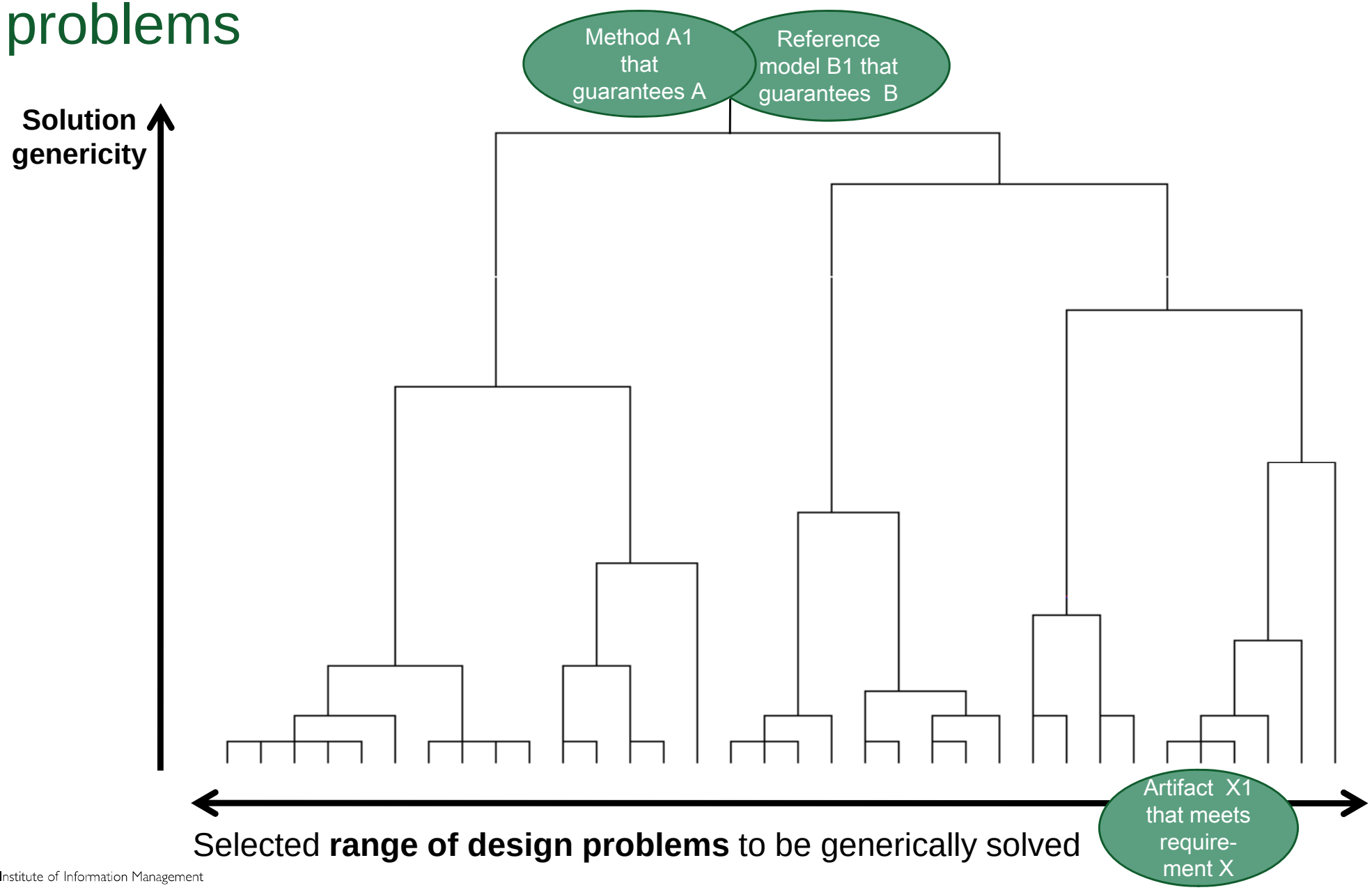
- Meta model for all BE artifacts “Business-to-IT”
- Shared language of BE community (academia and practice)
- “Translation” into other language communities (e.g. EE)
- Foundation for (consistent) extensions (e.g. business networking, workflow mgmt)

The Theory of Business Engineering



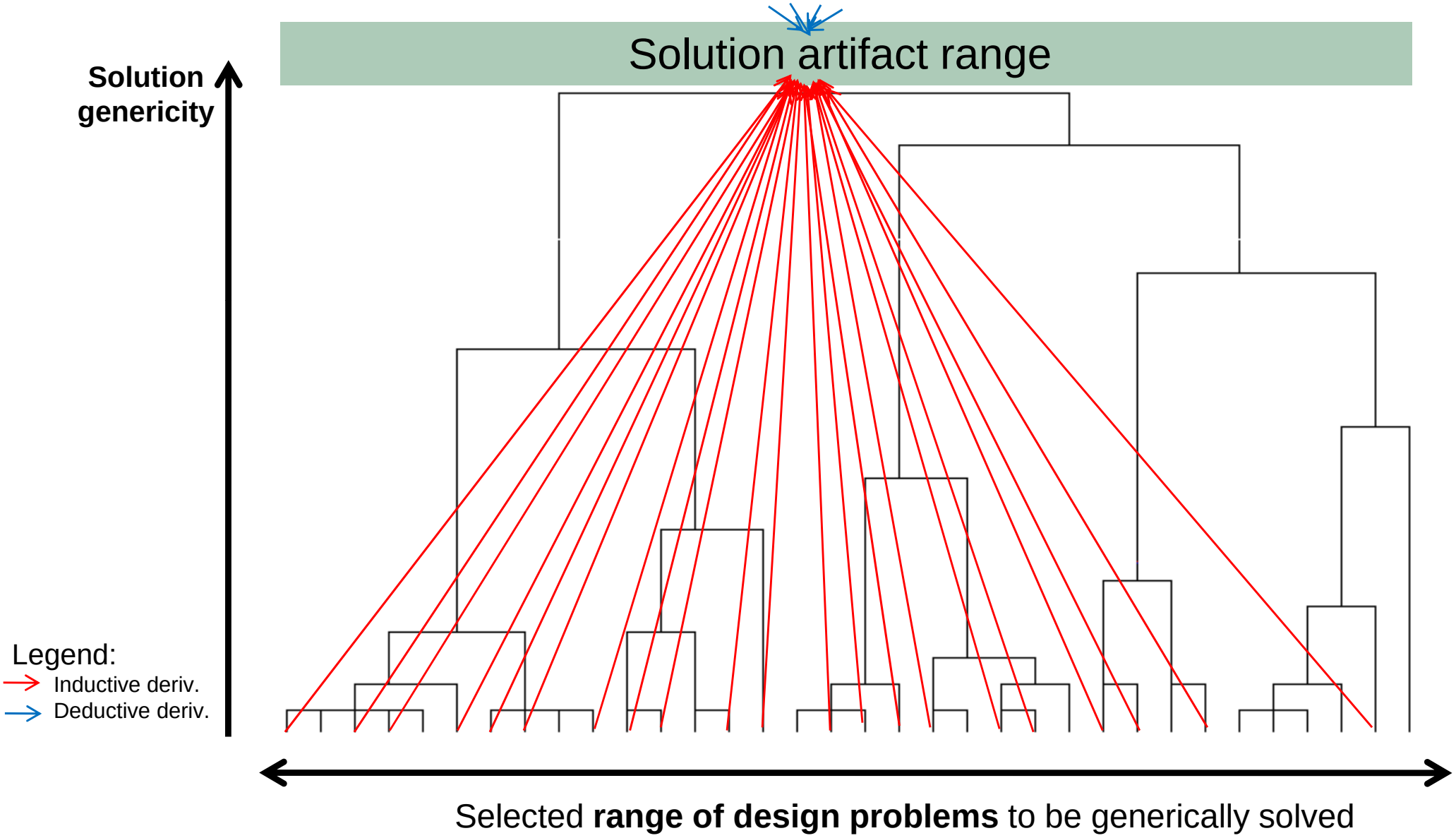
- BE artifacts transform descriptive theory into prescriptive technology
- Example: Empirically validated success factors for a solution class are used to construct a generic design method

The Technology of Business Engineering: Generic artifacts address certain classes of design problems



Traditional “one size fits all” approach:

Theories and successful practices are consolidated into one generic method/reference model

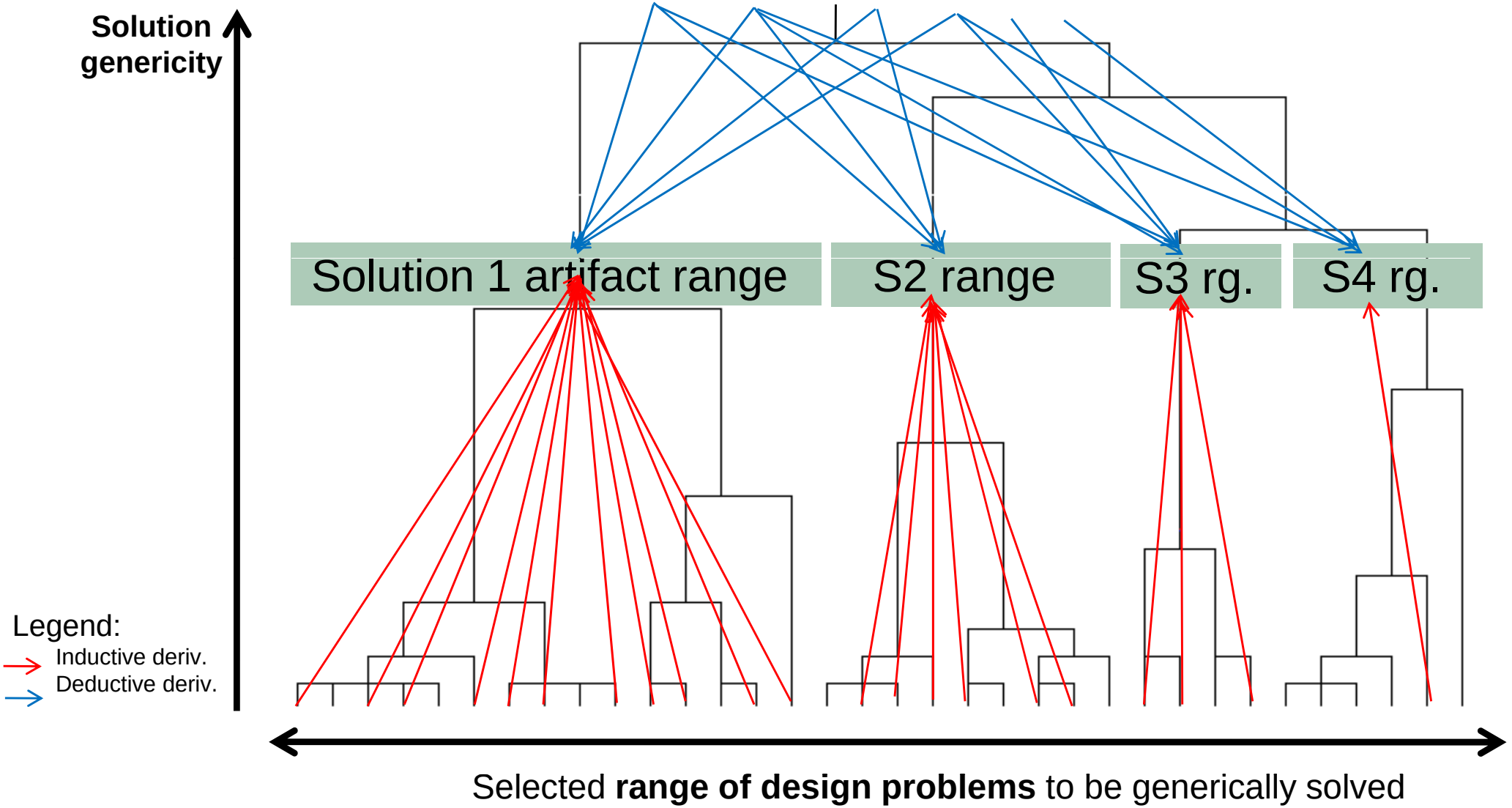


No single size fits all!

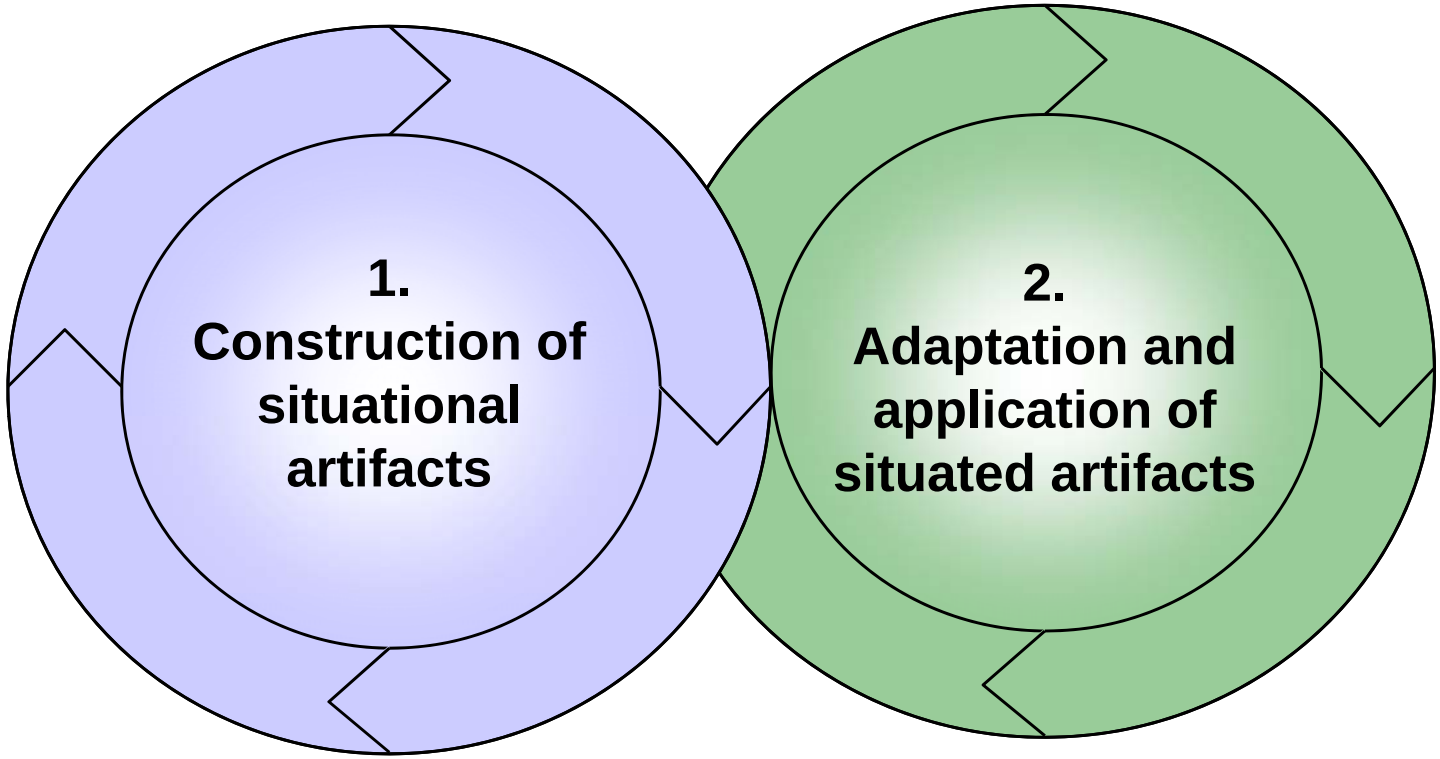
- Within a design problem class, solution artifacts should be adaptable to project type *(= design goals)* and context type *(= relevant contingency factors)*
- Adaptation needed for
  - …method procedure model
  - …method role model
  - …method activity model and techniques
  - …reference result models
- Several approaches proposed:
  - Situational **method configuration** (e.g. *[Karlsson and Ågerfalk 2004]*)
  - Situational **method composition** (e.g. *[Brinkkemper 1996], [Harmsen, 1997]*)
  - Situational **reference model adaptation** (e.g. *[Becker, Delfmann and Knackstedt 2004]*)

Situational method/RM engineering:

Theories and successful practices are consolidated into a set of less generic methods (ref. models)



Situational artifact engineering is then comprised of two distinct sub-processes

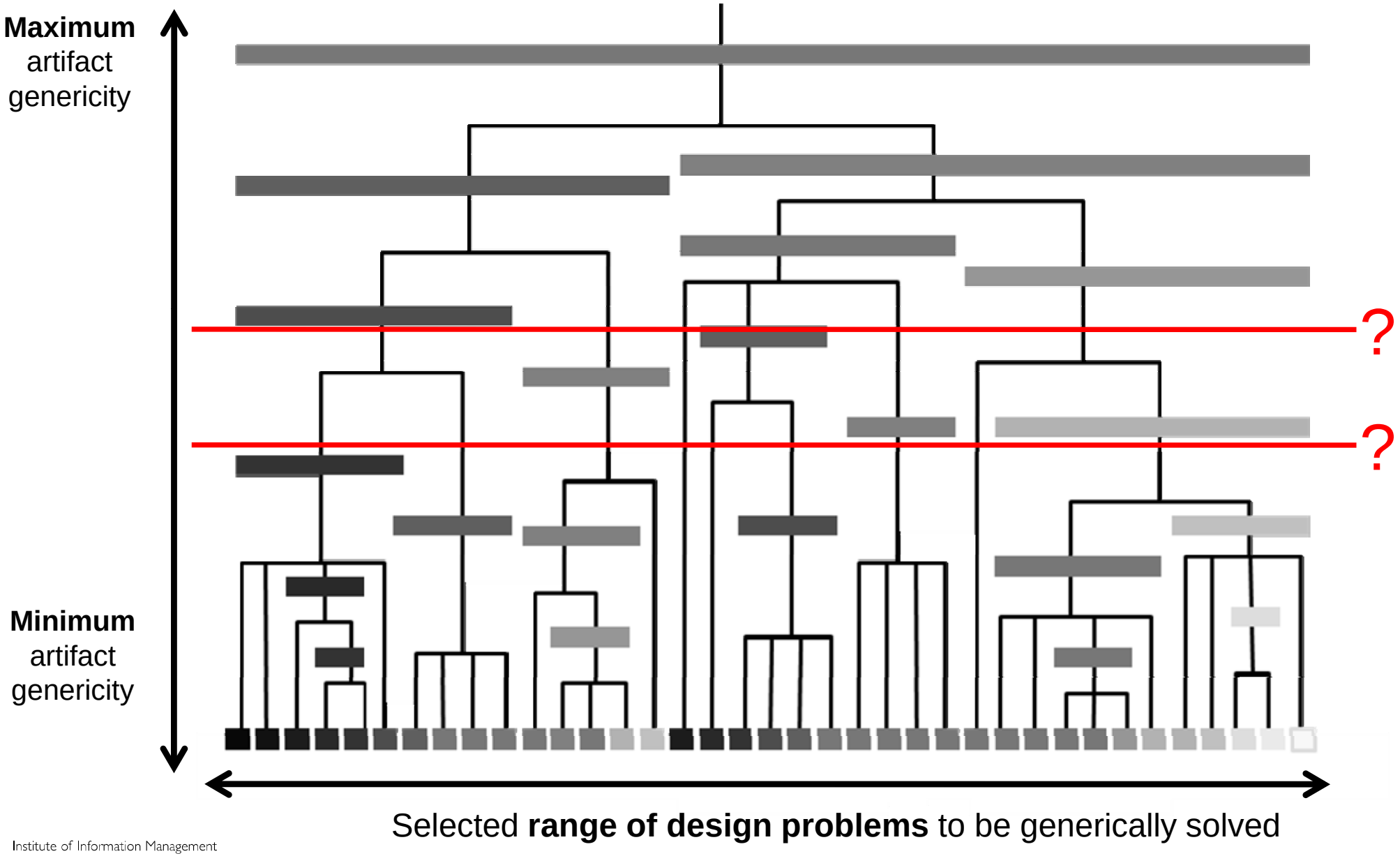


- ➔ Design problem range specification
- ➔ Artifact construction (situation matrix, fragments, adaptation rules)
- ➔ Evaluation and quality mgt
- ➔ Correction and extension

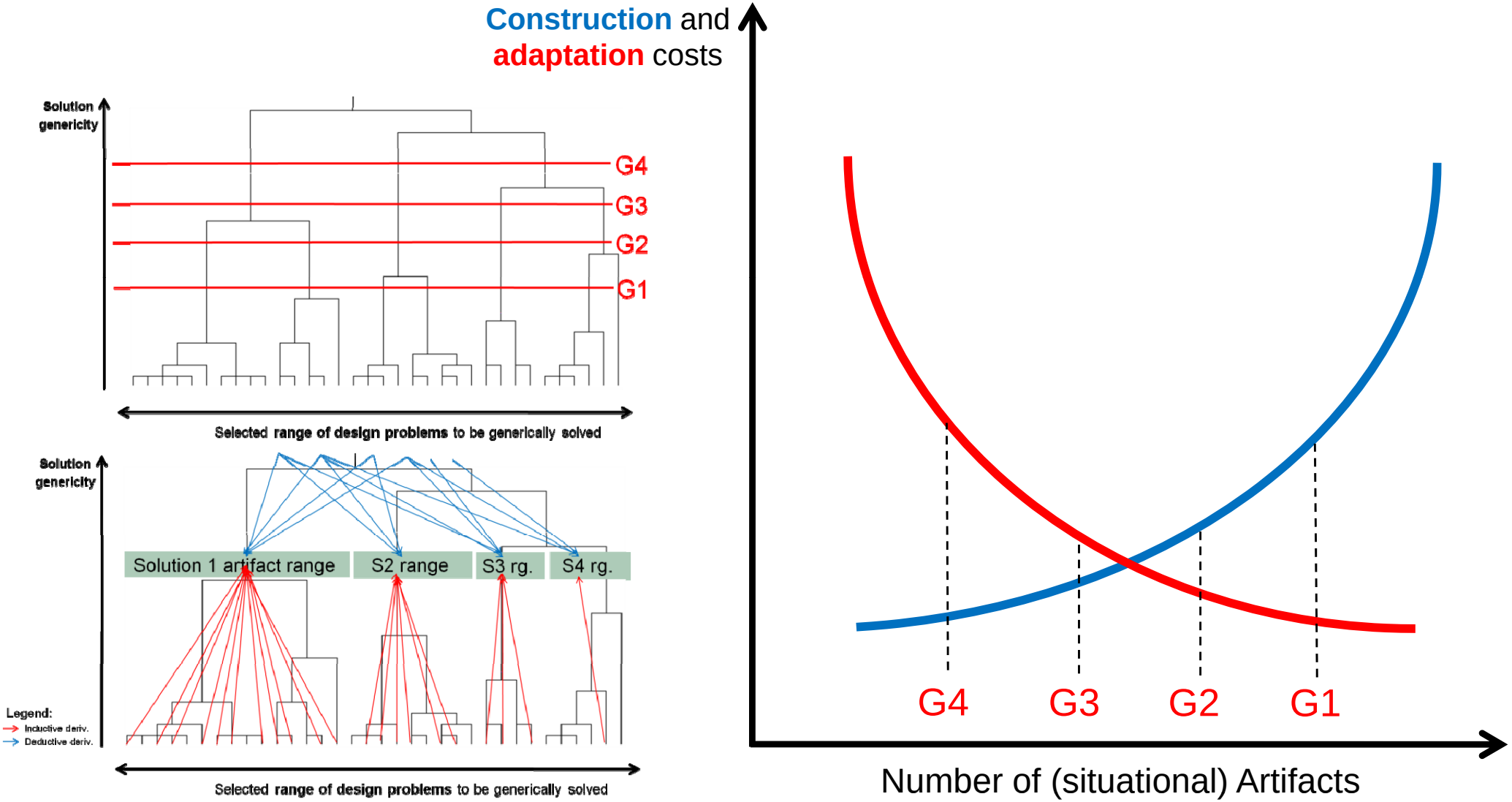
- ➔ Identification and selection of situational artifact
- ➔ Adaptation to the context and project goals at hand
- ➔ Integration of artifact fragments
- ➔ Application of situated artifacts

Based on the approach taken by
[Fettke/Loos 2005, pp. 22-23]
for reference models

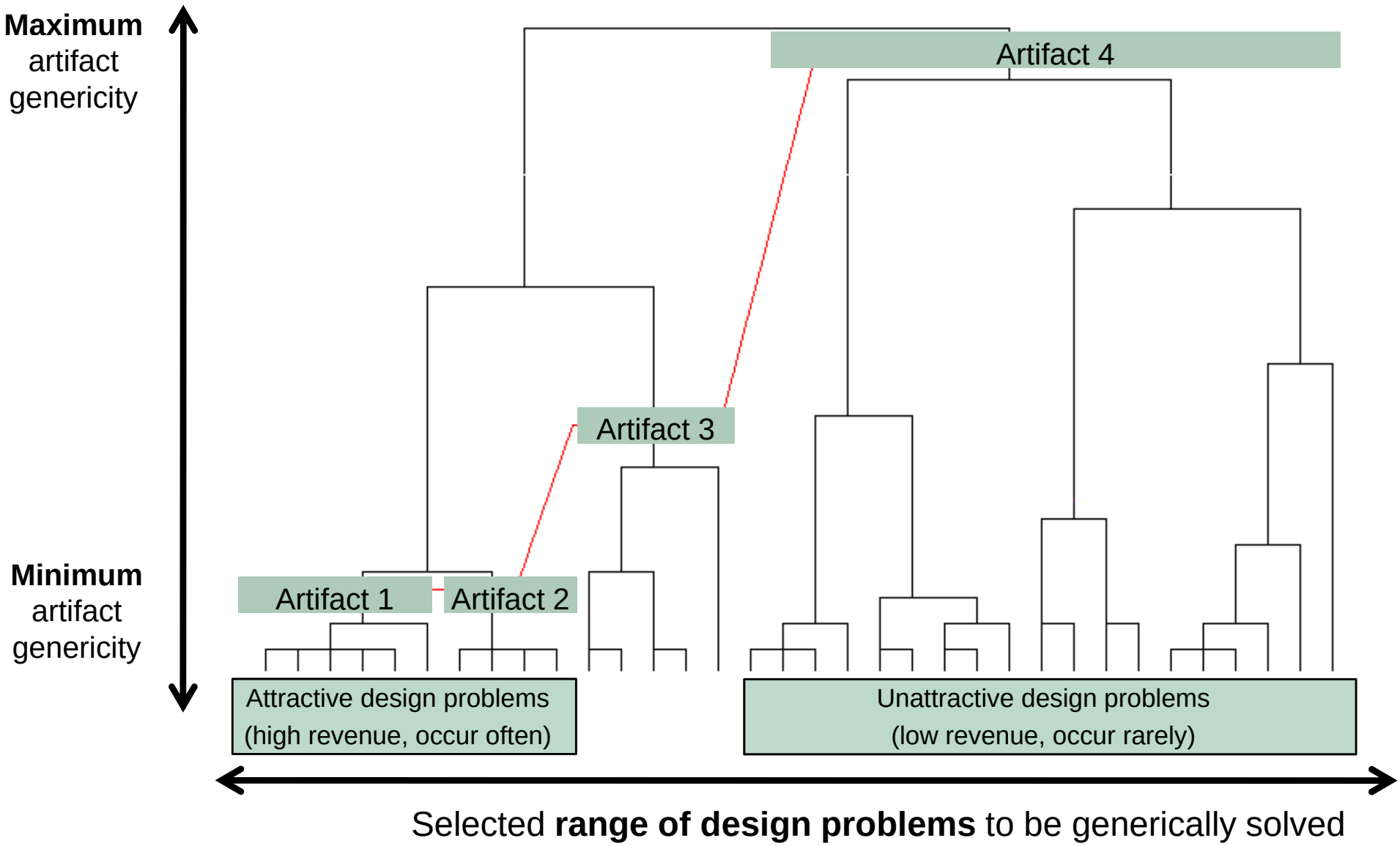
What level of artifact genericity should be aimed at?



Economies of situational artifact construction (1): Cost considerations



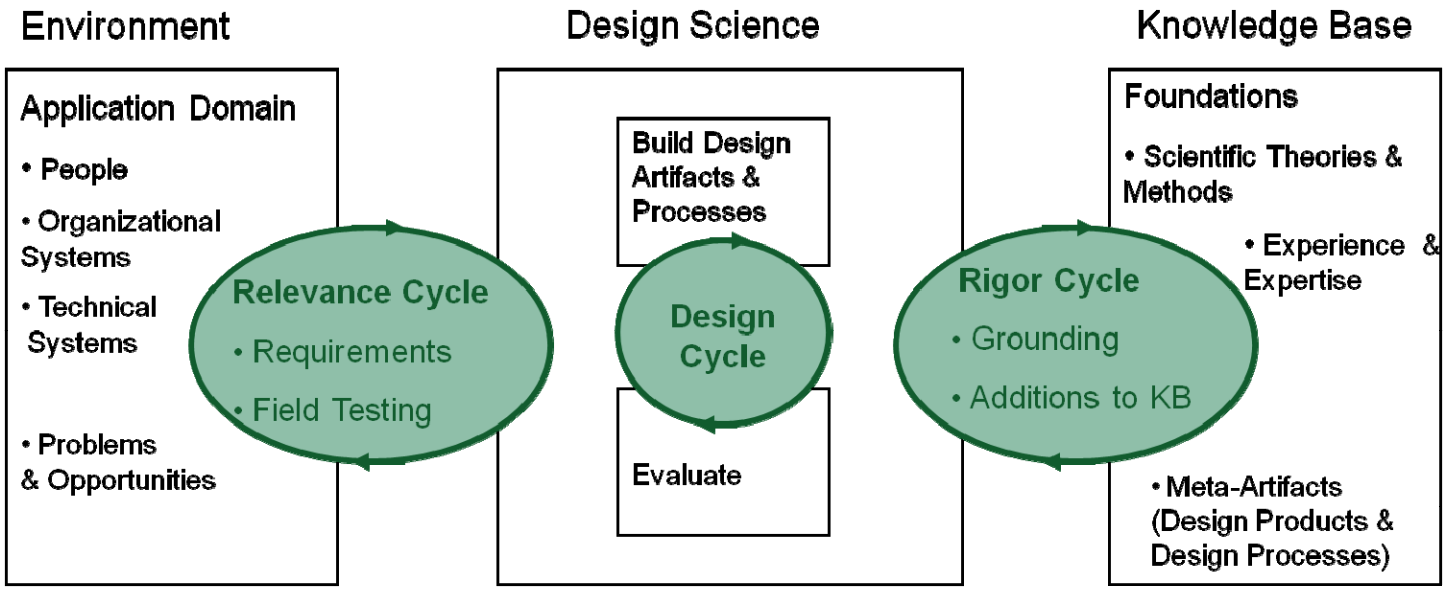
Economies of situational artifact construction (2): Cost & revenue considerations



The technology of Business Engineering: Current limitations and future extensions

- Synergy potentials of integrating situational method engineering and reference modeling not completely utilized yet (adaptation mechanisms, fragment reuse)
- Situational {method¦model} {construction¦adaptation} “technically” mature, but nearly bare of economic considerations
- Method/model induction from successful practices dominates - deduction from knowledge base needs to be enhanced on the construction level
- On the meta level, artifact design methods need also to better utilize the knowledge base from IS (e.g. standardization, componentization), organization science (e.g. contingency theory) and even economics (e.g. diversity theory)

The philosophy of Business Engineering: Useful solutions for relevant, important design problems



Adapted from *[Hevner 2007]*

- Without field testing, artifact utility cannot be tested
- Without requirements from practical problems, artifacts cannot be purposeful designed

…and this is where Enterprise Engineering contributes:

- Established an approach that integrates theory and technology, thereby
  - reducing construction costs (reduction to ontological design)
  - increasing solution value (disciplined, “grounded” design)
- Established a community that
  - uses a shared terminology (consistency across design projects)
  - is sustained through accepted, widely used methods and tools (consistency over time)
  - integrates academic research, practice solution design and consulting
- Established {Business¦Enterprise¦Organizational} Engineering as a sub-discipline
  - that integrates business and IT solution design ‘silos’
  - that integrates social science and engineering methods