TOWARDS A LINK MAPPING AND EVALUATION APPROACH FOR CORE OPERATIONAL BUSINESS-IT ALIGNMENT (COBITA)

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INTRODUCTION – GENERAL CONTEXT

Information Technologies are considered as a separate speciality in parallel to the business

- 48% of the CIOs spend most of their time trying to align their IT strategies with the overall organisational objectives

- 72% of budget spent on software maintenance. [1]

BUSINESS-IT ALIGNMENT (BITA) to tackle these issues.
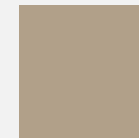
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OUTLINE

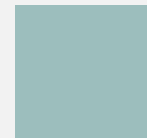Context & Motivations

Establish COBITA's cartography
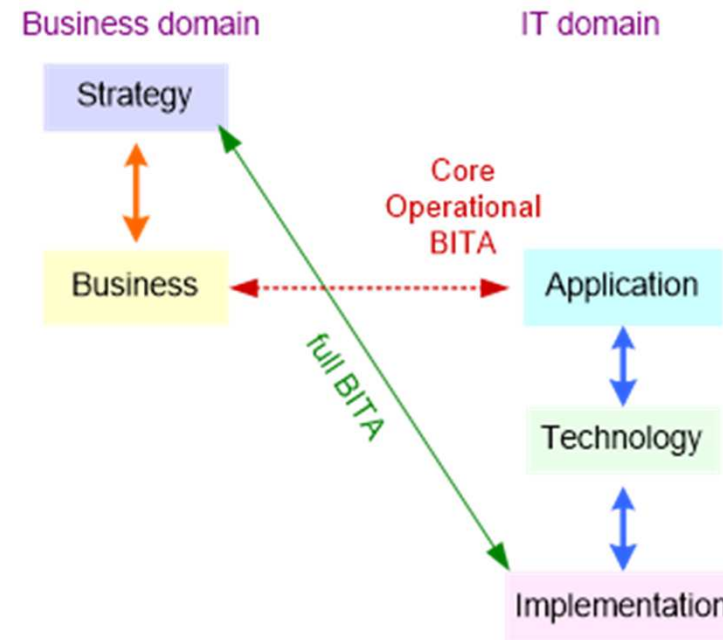
Evaluate COBITA's cartography

Tool support

Experimentations on a case study

Conclusion

CONTEXT - COBITA

- IS representation according to TOGAF EA framework.

- BITA = Alignment between all adjacent layers

- COBITA = Alignment between Business & Application layers
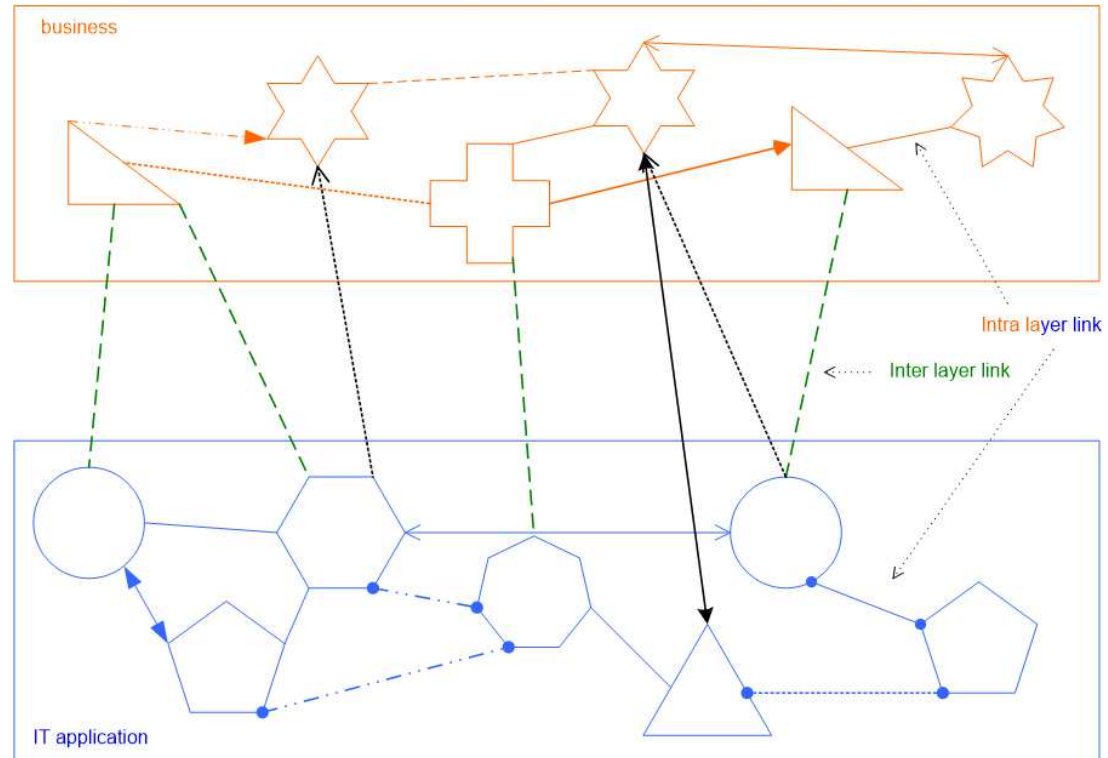
WOOCLAP

CODE : ITYFFQ

CONTEXT - CARTOGRAPHY

- Cartography = models + links between them
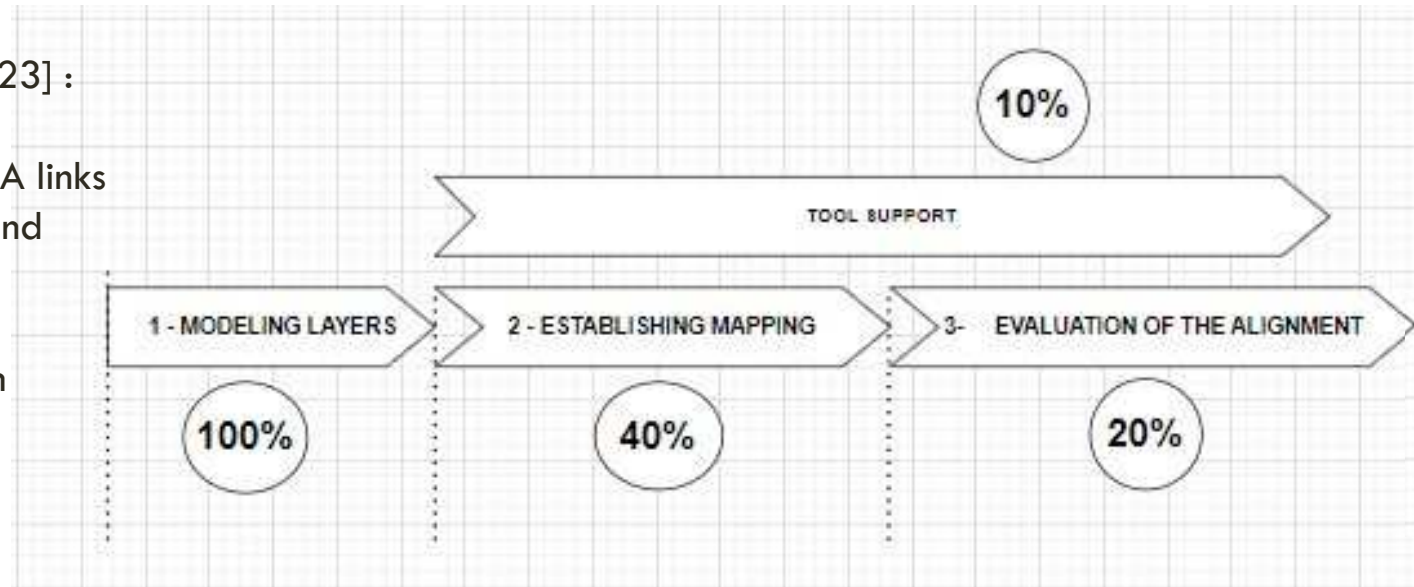
- Useful for representing alignment state of a system
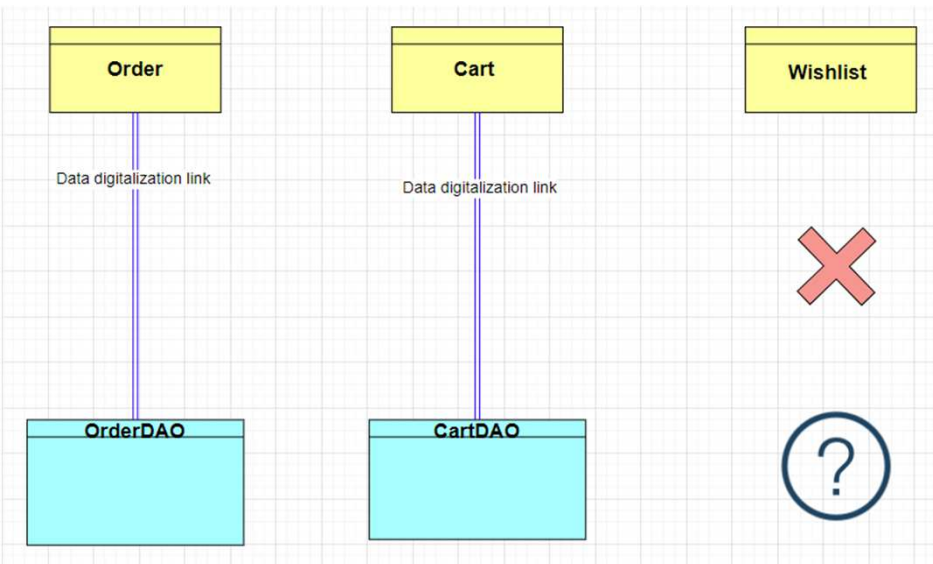
MOTIVATIONS

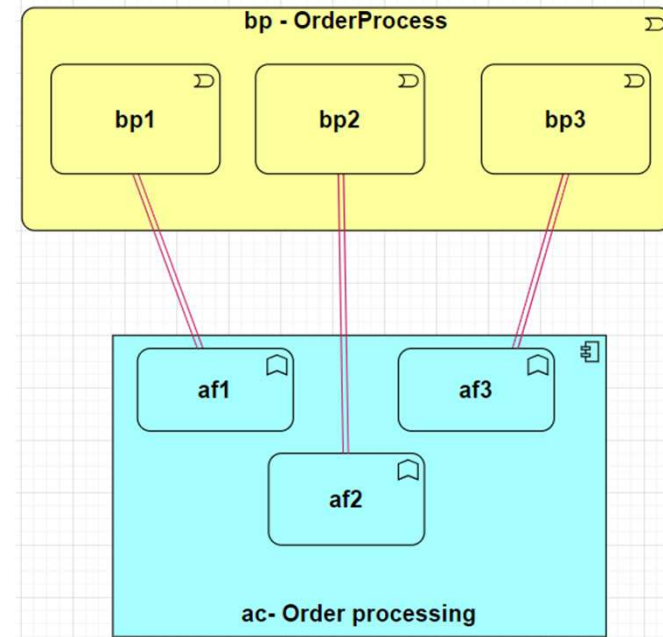According to [Andre et al. 2023] :

- Lack of exploitable COBITA links with well-defined syntax and semantic

- Lack of COBITA evaluation methods

- Lack of tool support to perform COBITA

COBITA INTER-LAYER LINKS DEFINITION

DATA LINK

IMPLEMENTATION LINK

CONTEXT → CARTOGRAPHY → EVALUATION OF ALIGNMENT → TOOLS → EXPERIMENTATION

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CASE STUDY'S CARTOGRAPHY
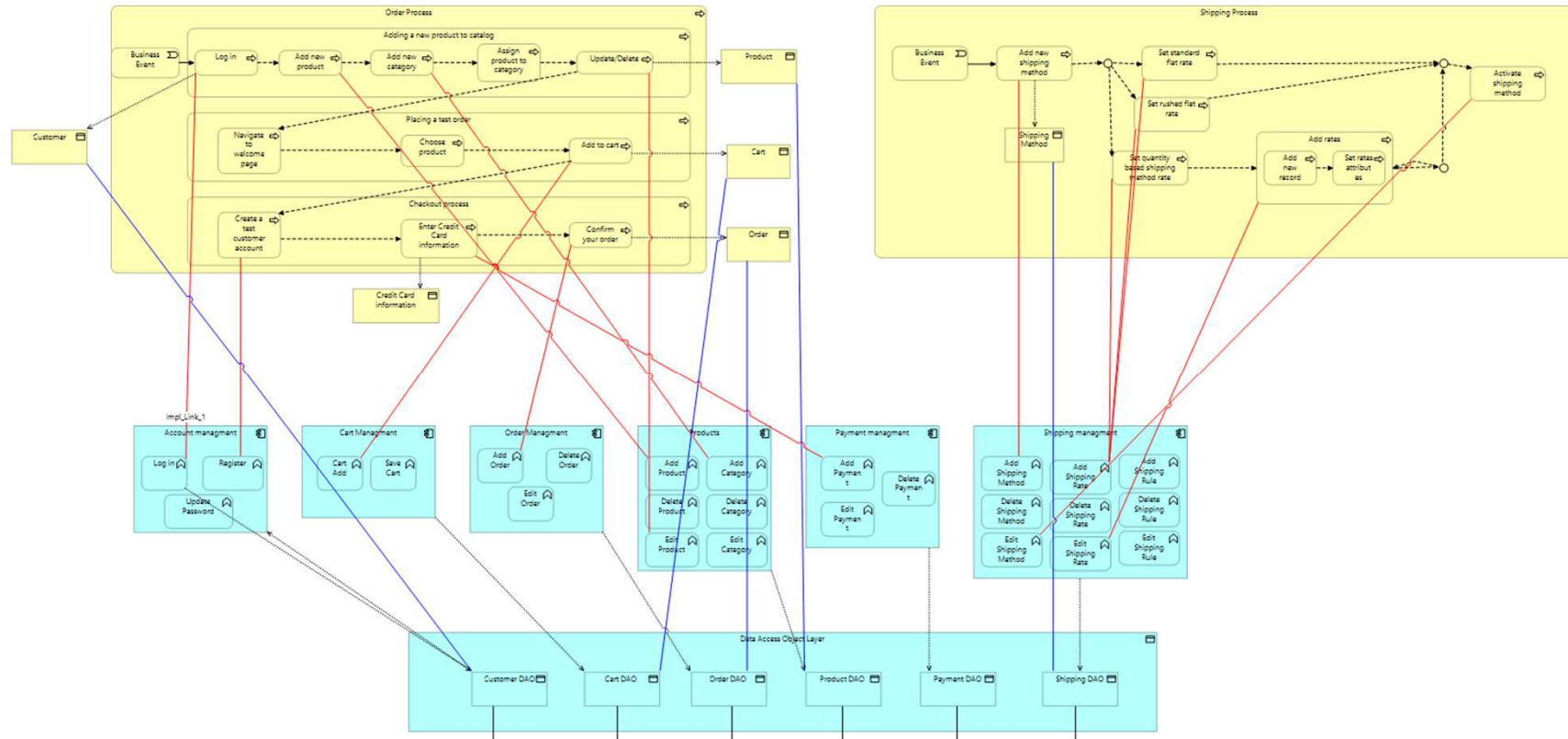
EVALUATION : METRICS

M1
Number of implementation links for a given BFC

M2
Rate of unimplemented BFC

M3
Most implemented BFC

M4
Number of implementation links for a given AFC

M5
Rate of unused AFC

M6
Most used BFC

CONTEXT ⟩ CARTOGRAPHY ⟩ EVALUATION OF ALIGNMENT ⟩ TOOLS ⟩ EXPERIMENTATION

EVALUATION : CONSISTENCY RULES

CONTEXT › CARTOGRAPHY › EVALUATION OF ALIGNMENT › TOOLS › EXPERIMENTATION
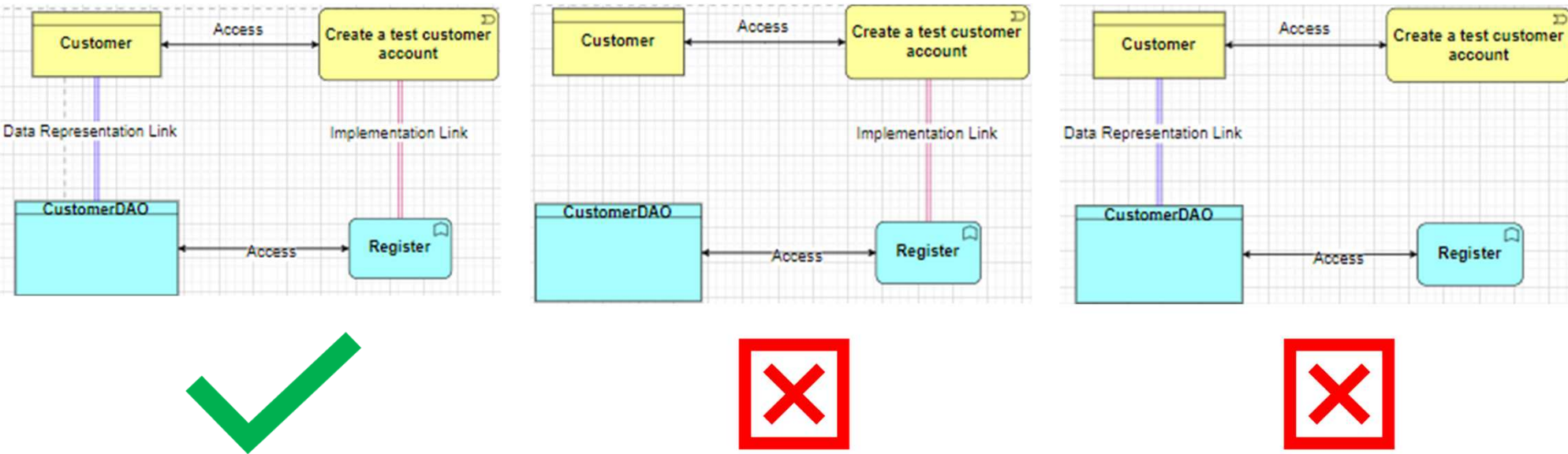
TOOL SUPPORT FOR COBITA MAPPING & EVALUATION

Archi
archimate modelling

ARCHIMATE CONCEPTS

ARCHIMATE LINKS

COBITA LINKS

PLUG-INS

PLUG-IN 1

PLUG-IN 2

JArchi

COBITA SCRIPTS

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CONTEXT → CARTOGRAPHY → EVALUATION OF ALIGNMENT → TOOLS → EXPERIMENTATION
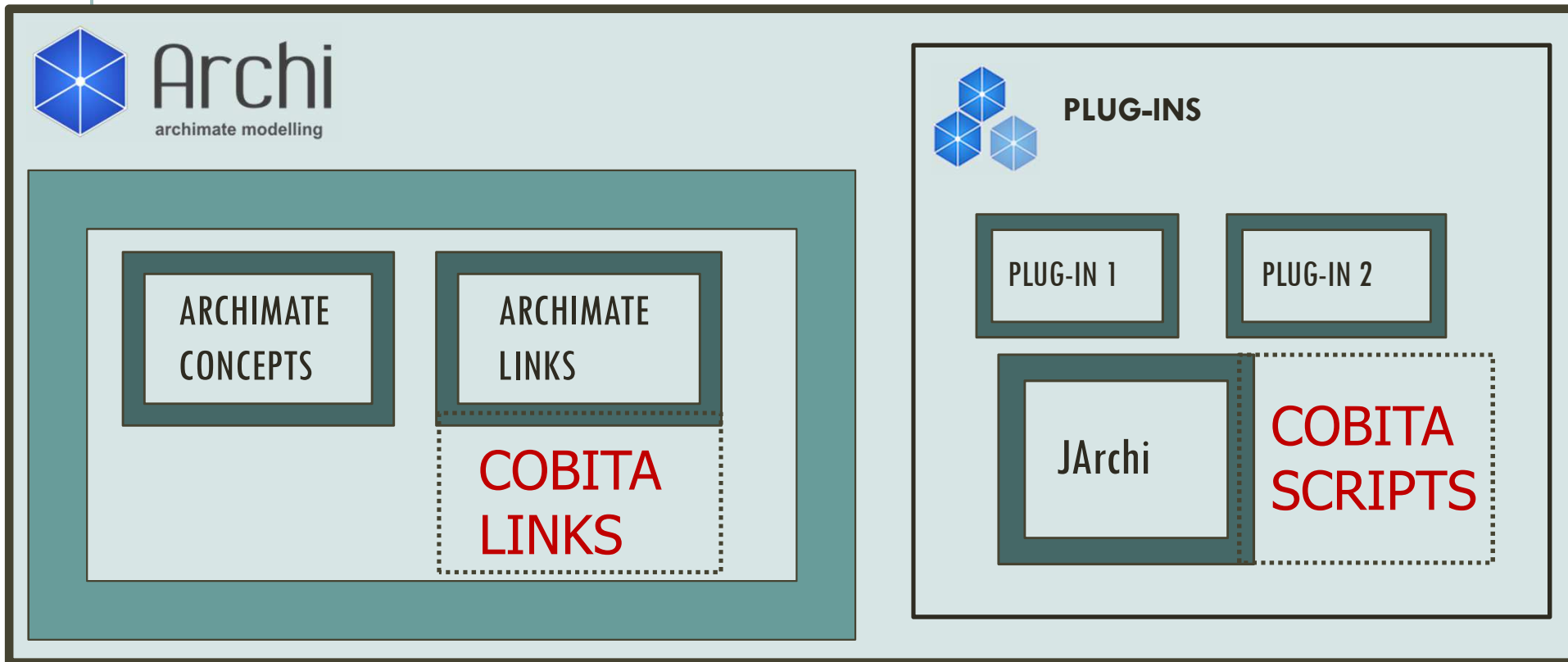
EXPERIMENTATION – RESULTS ON A CASE STUDY

M1

Number of implementation links for a given BFC

1

M2

Rate of unimplemented BFC

41,6%

M3

Most implemented BFC

-

M4

Number of implementation links for a given AFC

3

M5

Rate of unused AFC

53,8%

M6

Most used BFC

1

CONTEXT > CARTOGRAPHY > EVALUATION OF ALIGNMENT > TOOLS > EXPERIMENTATION
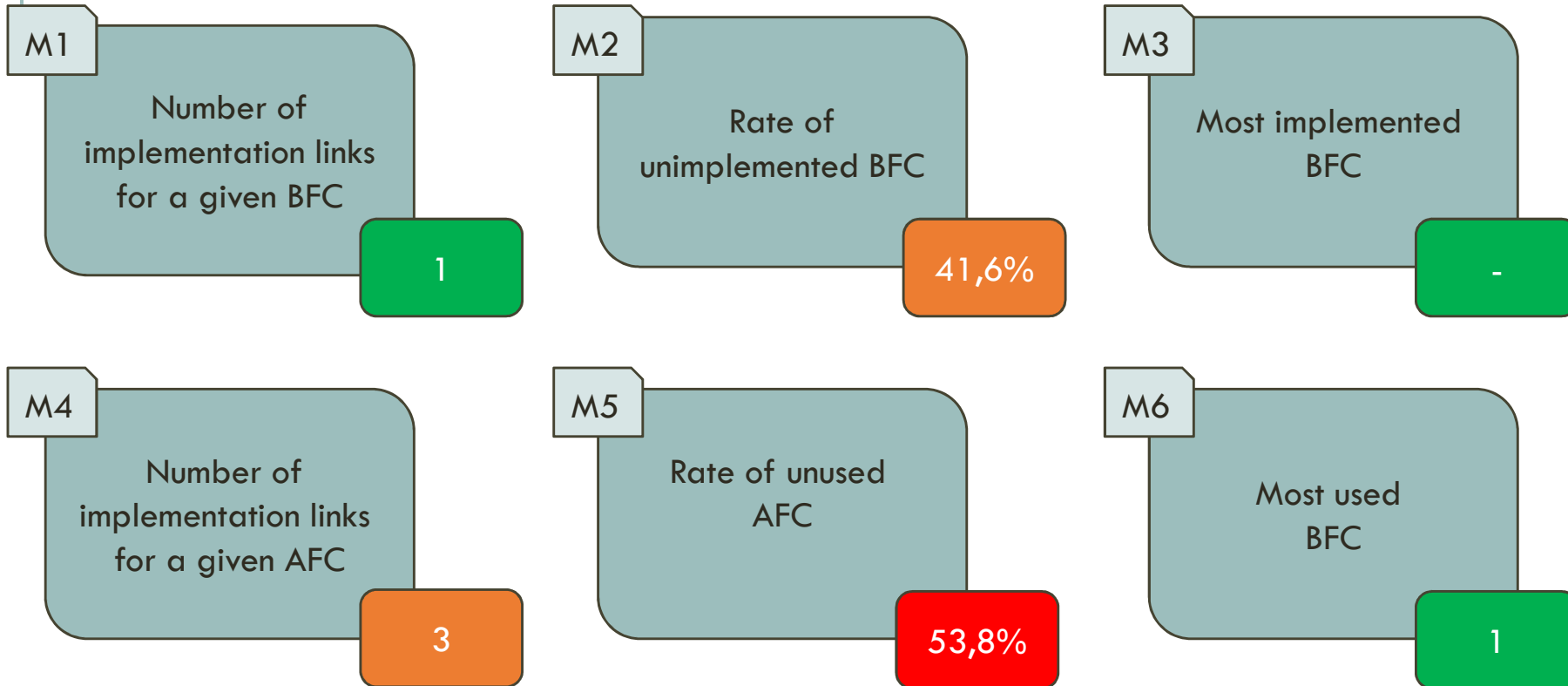
SUMMARY OF THE APPROACH

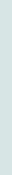Our proposal for COBITA mapping and evaluation leans on :
- Definition of 2 types of links for **COBITA mapping**
- 6 metrics & 2 Consistency rules for **COBITA evaluation**
- **Tool support** for :
  - COBITA links
  - Metrics

PERSPECTIVES

- Automatic construction of models.
- More elaborated taxonomy of links.
- More metrics (especially on data dimension)

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FEEL FREE TO ASK QUESTIONS

EVALUATION : CONSISTENCY RULES

EXPERIMENTATION — CONSOLE LOG

M2

Rate of
unimplemented BFC

M5

Rate of unused
AFC

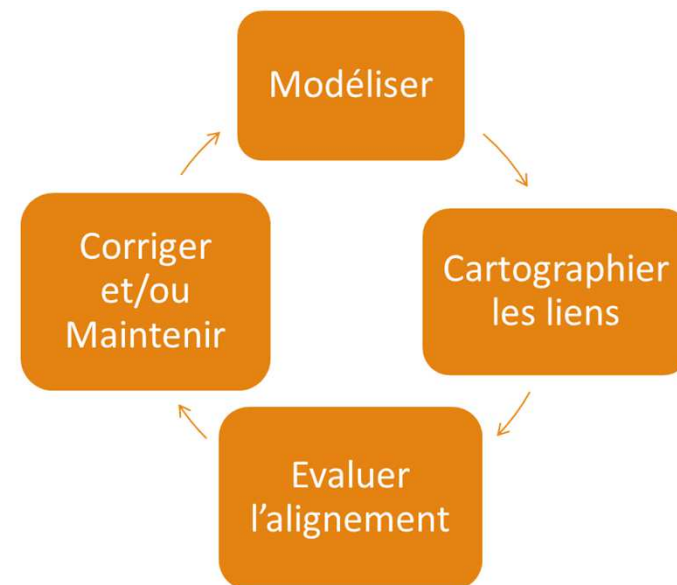CONTEXT > CARTOGRAPHY > EVALUATION OF ALIGNMENT > TOOLS > EXPERIMENTATION

COBITA : APPROCHE CYCLIQUE

1 - Modéliser : Concevoir des modèles représentatifs des couches du SI
2 - Cartographie : Etablir les liens entre modèles
3 – Evaluer l'alignement
4 – Corriger

RELATED WORK AND MISSING

COBITA : NOTRE CONTRIBUTION

Modéliser

Cartographier les liens

Evaluer l'alignement

Corriger et/ou Maintenir
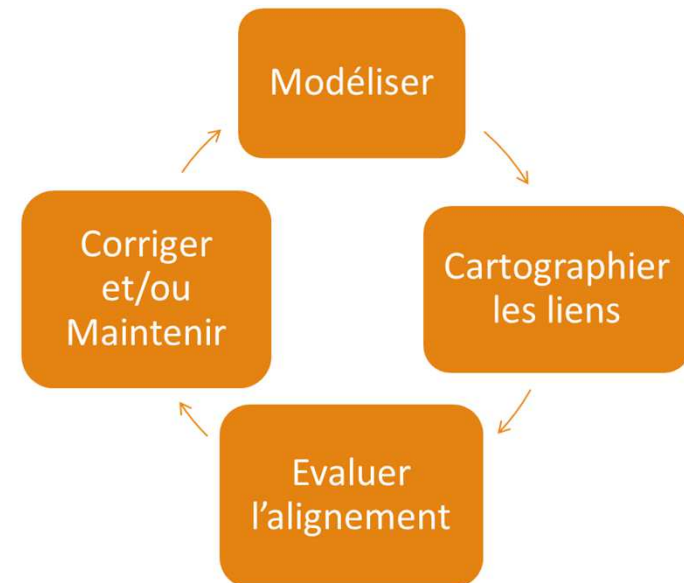
STUDY METHODOLOGY :
1- RESEARCH STAGE

1. Previous work and related references = 48 papers

2. Surveys, reviews and systematic studies = 63 papers

3. Keyword-based systematic study of recent researches = 362 papers

Total of 473 papers to be injected to selection stage.

STUDY METHODOLOGY :
2- SELECTION STAGE

Selection criteria :

The reference includes (i) a business process layer, (ii) an application layer and (iii) a relation between them.

To be comparable, the reference must be a single work not a discussion or a survey.

=> From 473 to 127 papers !

STUDY METHODOLOGY :
3-PREPARATION STAGE

1. Clean the references. Revove duplicates.

2. "Forward snowballing" to investigate missed references

3. Check again the selection criteria to filter -see slide 6.

4. 88 references that we grouped in 44 distinct selected works.

=> From 127 papers to 44 works !

RESEARCH QUESTIONS

RQ1 : How are the business process and application layers represented?

RQ2 : How is the relation between the business process and application layers represented?

RQ3 : How can we exploit the relation to perform alignment?

STUDY RESULTS: MODELLING (RQ1)

Business Layer:

- The use of BPMN is dominant

- DSLs & UML are also used

- BPMN is necessary but not sufficient !

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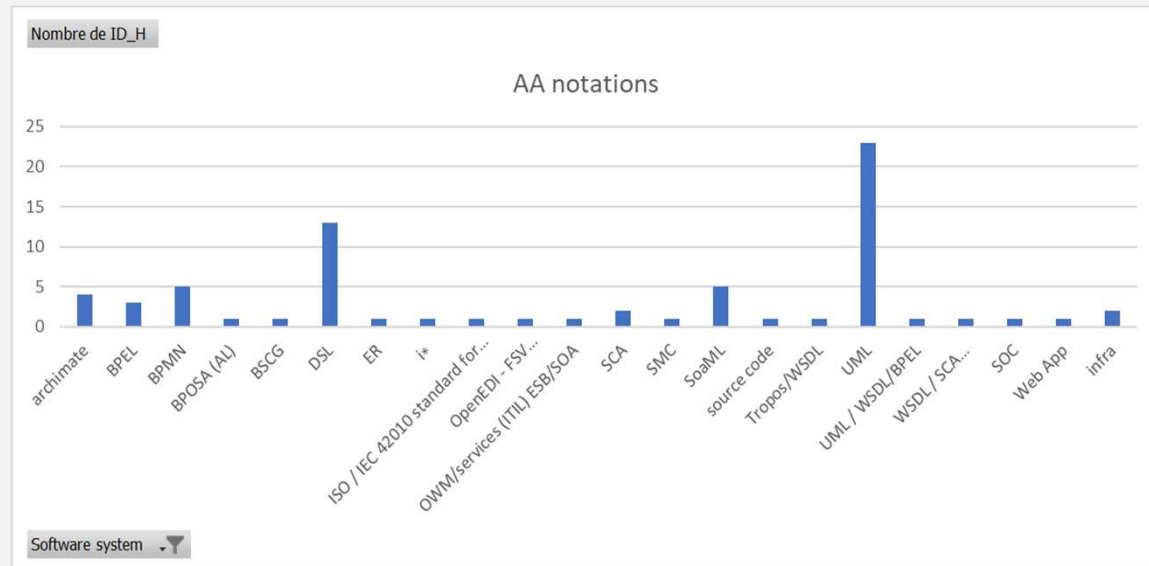
BP notations

Business process
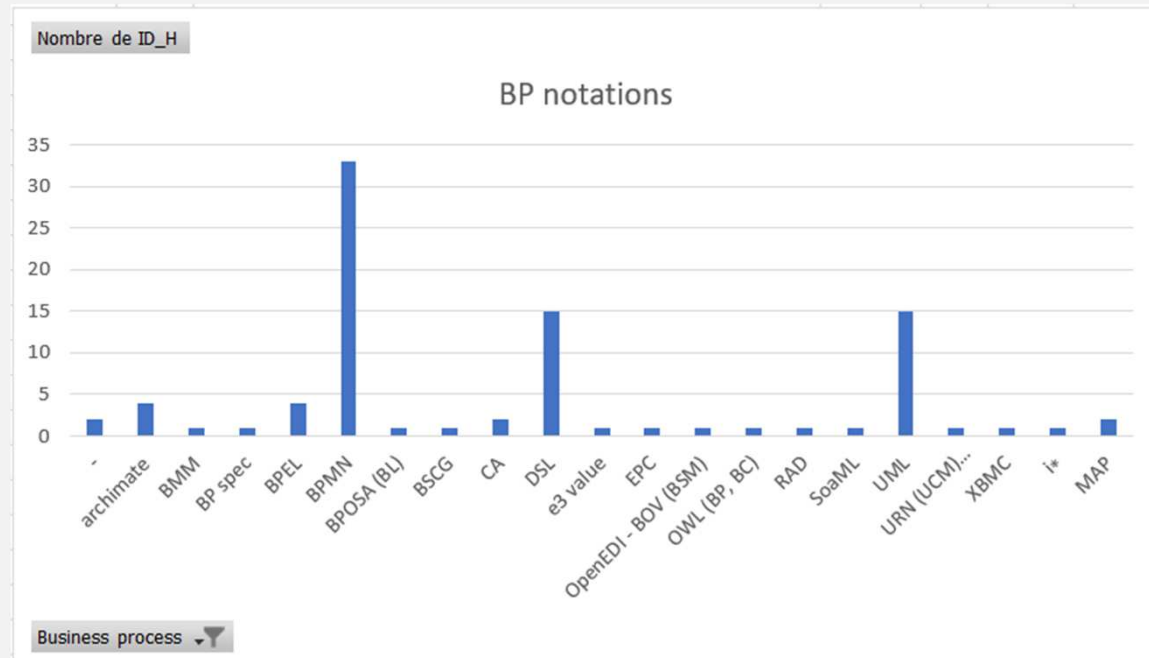
STUDY RESULTS: MODELLING (RQ1)
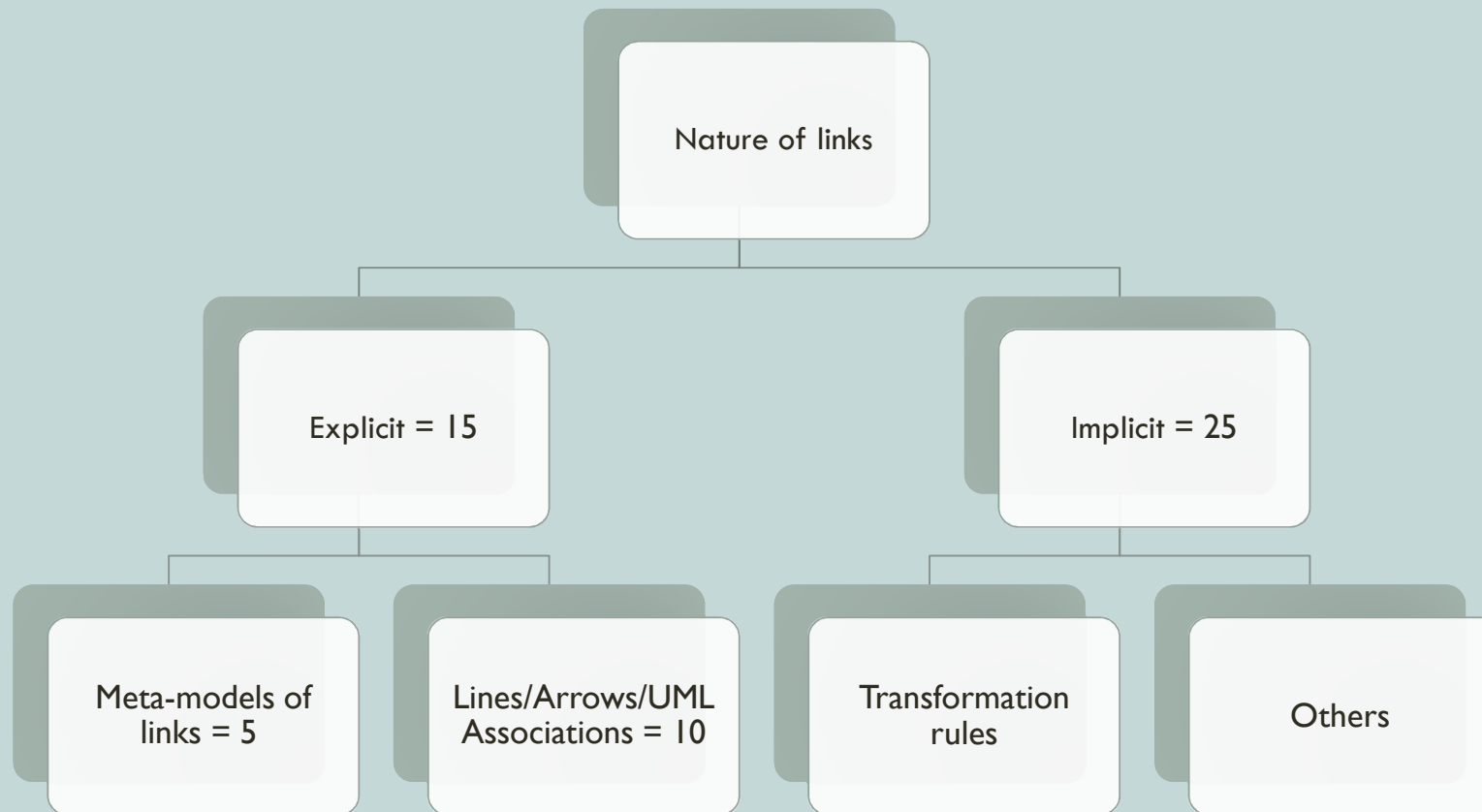
Application Layer:

- Unsurprinsingly, UML is the most used language for this layer.

- DSLs are also sometimes used.

- UML is a family of languages, not a single language !

STUDY RESULTS : LINKING (RQ2)

- Nature of links
  - Explicit = 15
    - Meta-models of links = 5
    - Lines/Arrows/UML Associations = 10
  - Implicit = 25
    - Transformation rules
    - Others

STUDY RESULTS : LINKING(RQ2)
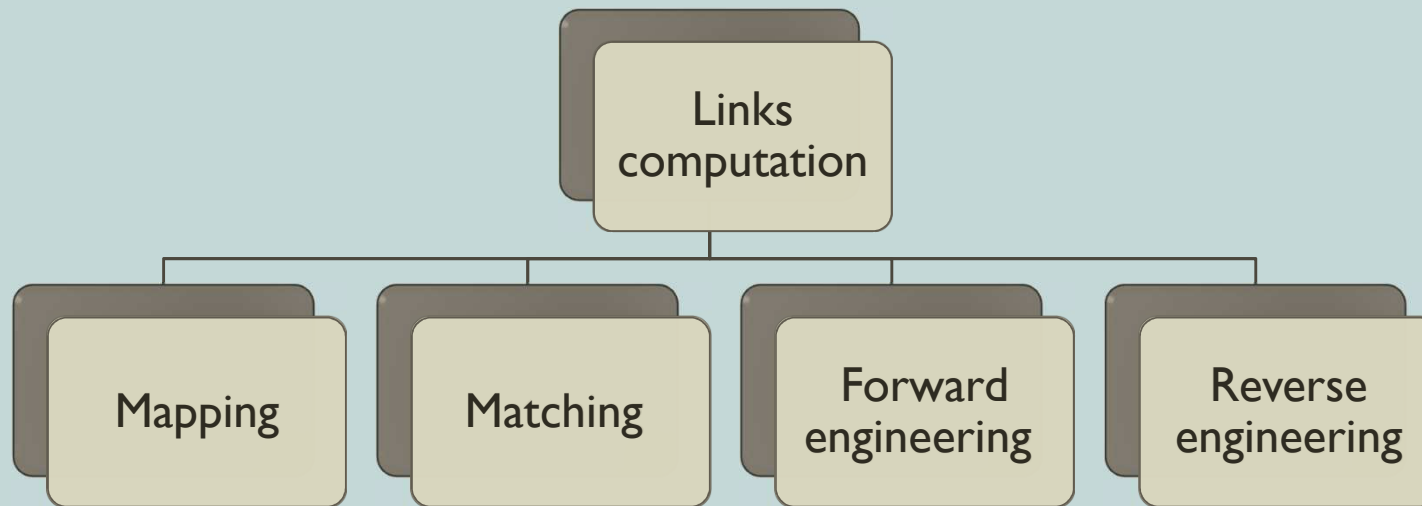
STUDY RESULTS : ALIGNMENT (RQ3)

Consistency and completeness checking : 4 works

Metrics and rating : 6 works

Change impact for maintenance and evolution : 8 works

Dimension coverage.

WHAT TO KEEP IN MIND ?

Existing solutions are heterogeneous and not easy to deploy in practice.

Most of the solutions are partial and not really applied nor applicable.

A high level of human expertise is required and specific to a given company.

Few existing solutions have a user-centred approach.

CONCLUSION

Summary : Study Methodology, Modelling of the layers, the relation between them, and how to exploit this relation.

Overall result : There is currently a lack of uniformity when addressing Operational BITA.

Our overall objective is to expose these results/challenges to the interested academics and practitioners from the domain.

BIBLIOGRAPHY

1. https://www.computerworld.com/article/2486278/how-to-balance-maintenance-and-it-innovation.html

CURRENT STATE OF OPERATIONAL BUSINESS-IT ALIGNMENT

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