Building an Agent Methodology from Fragments: the MEnSA experience

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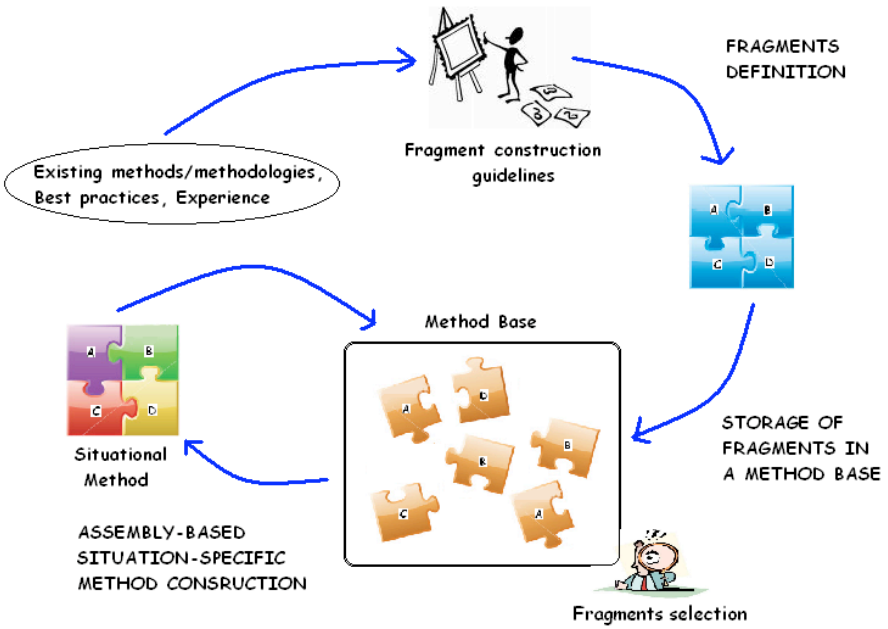
  - assemble fragments for creating a new methodology

Situational method engineering



- Each methodology can be decomposed into reusable method fragments
- A designer can re-use and re-assemble fragments in order to create a new methodology [Cossentino et al., 2007]
- First step: extraction and storing of method fragments in the *method base*
- Second step: selection of the suitable fragments from the method base
- Third step: fragments assembly

Outline

Initial requirements

1. To fill the gap between design and implementation:
   - a support for *traceability*
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2. To adopt a complete requirements analysis phase
3. To adopt proper levels of abstraction in order to deal with complex problems
4. To enable an easy transition towards the new methodology to designers fluent with one or more of the "source" methodologies

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Outline

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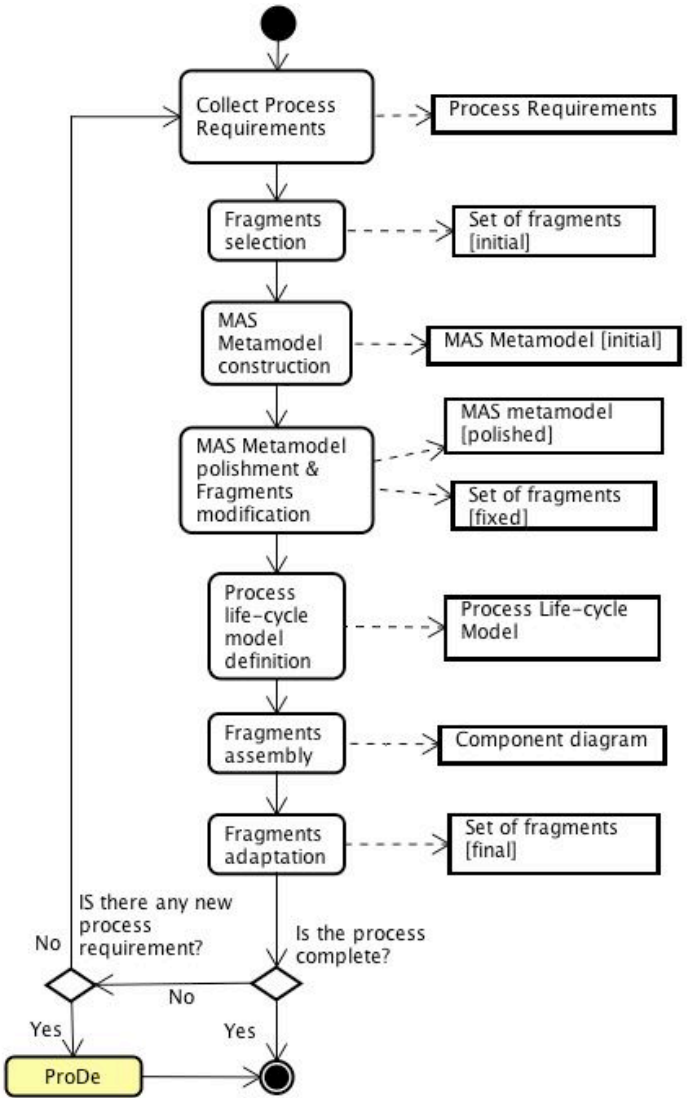

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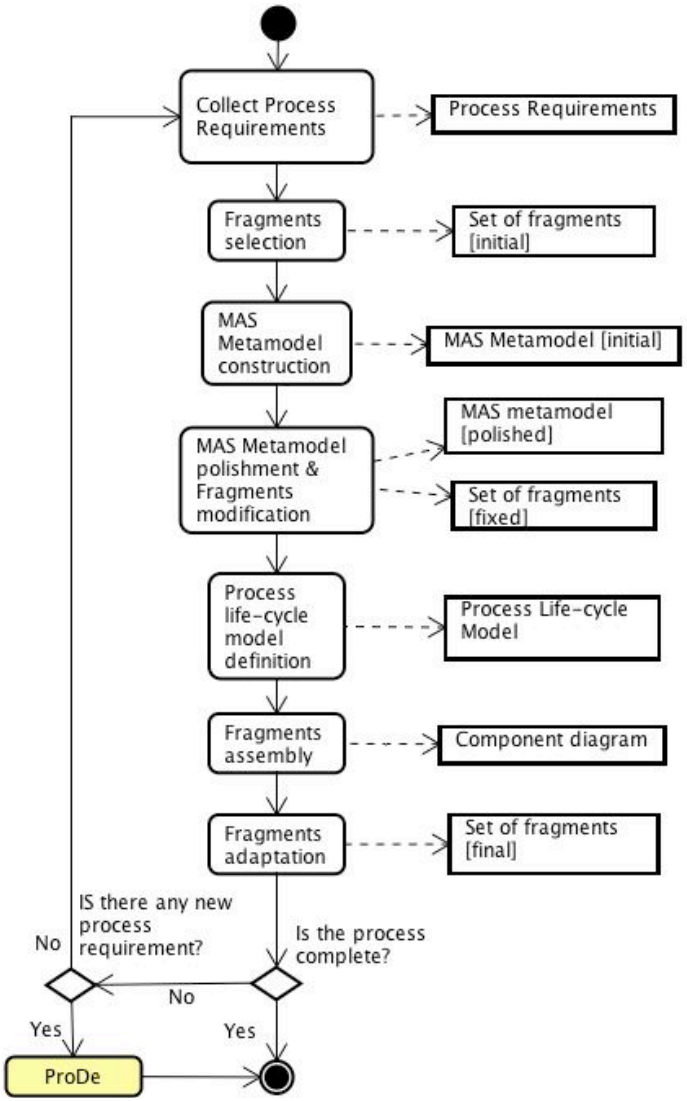

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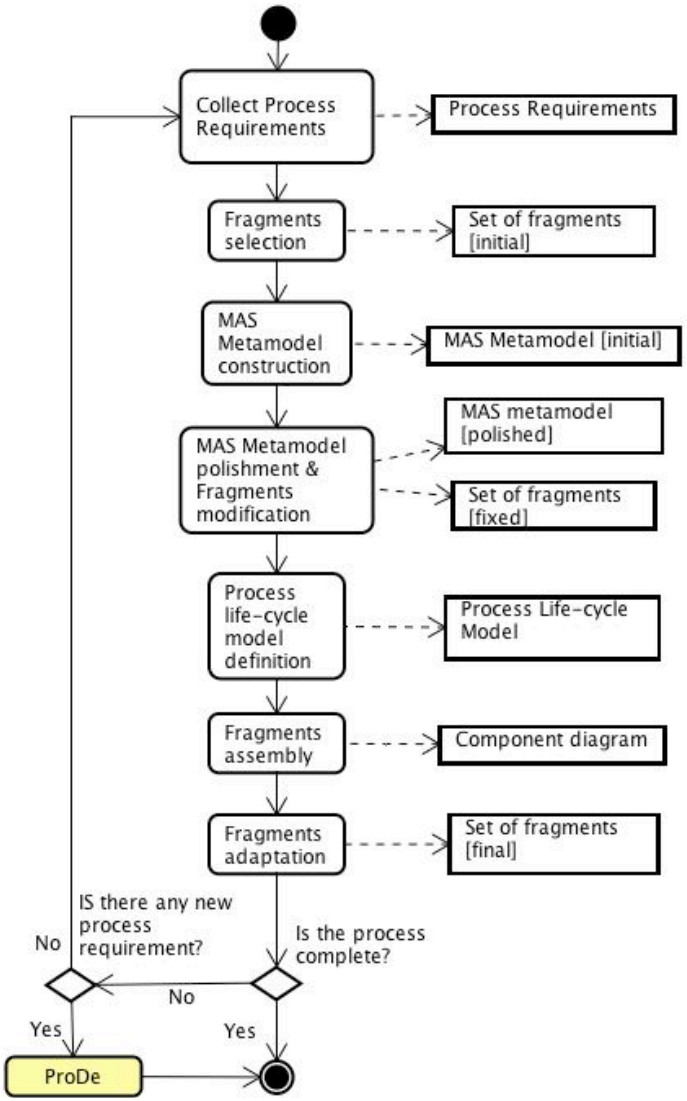

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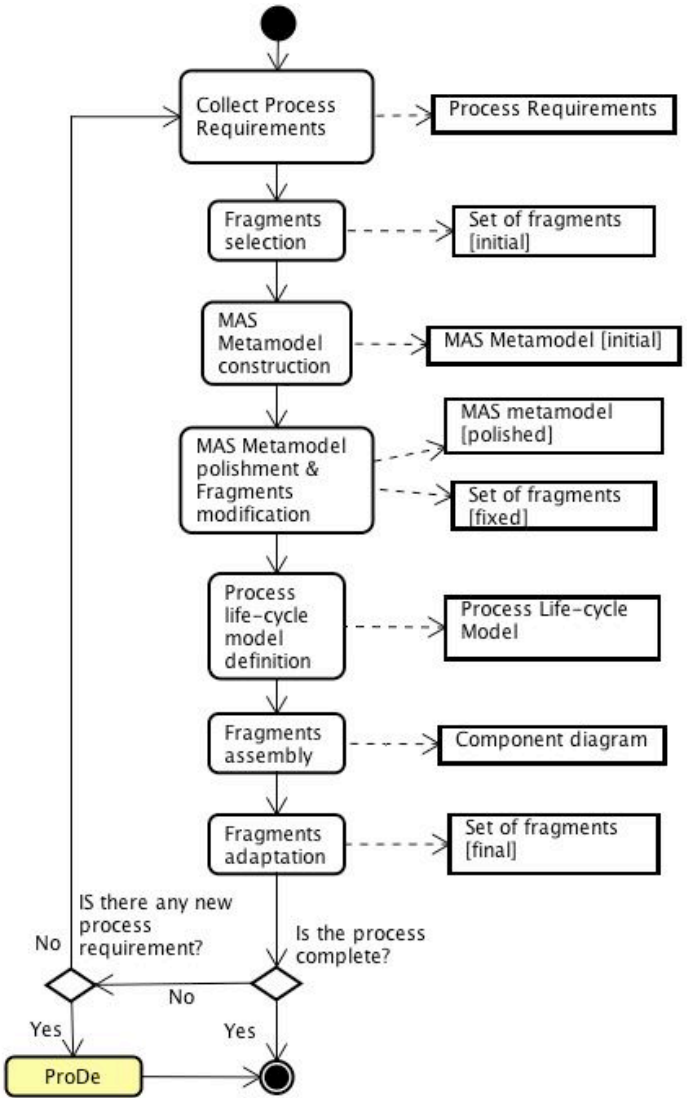

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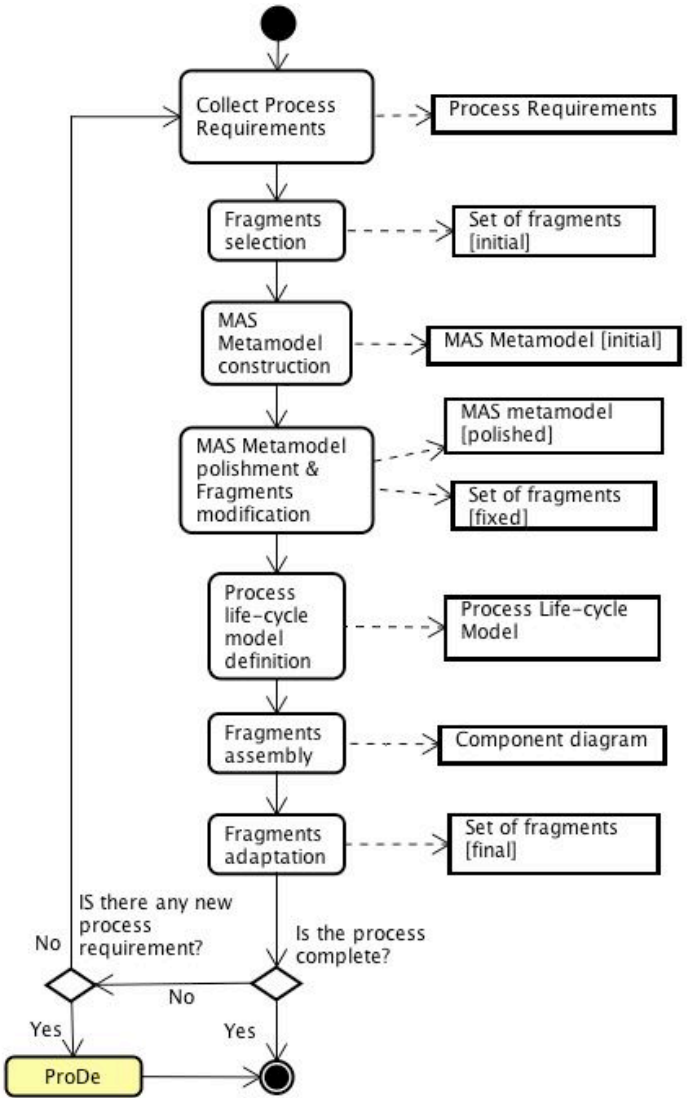

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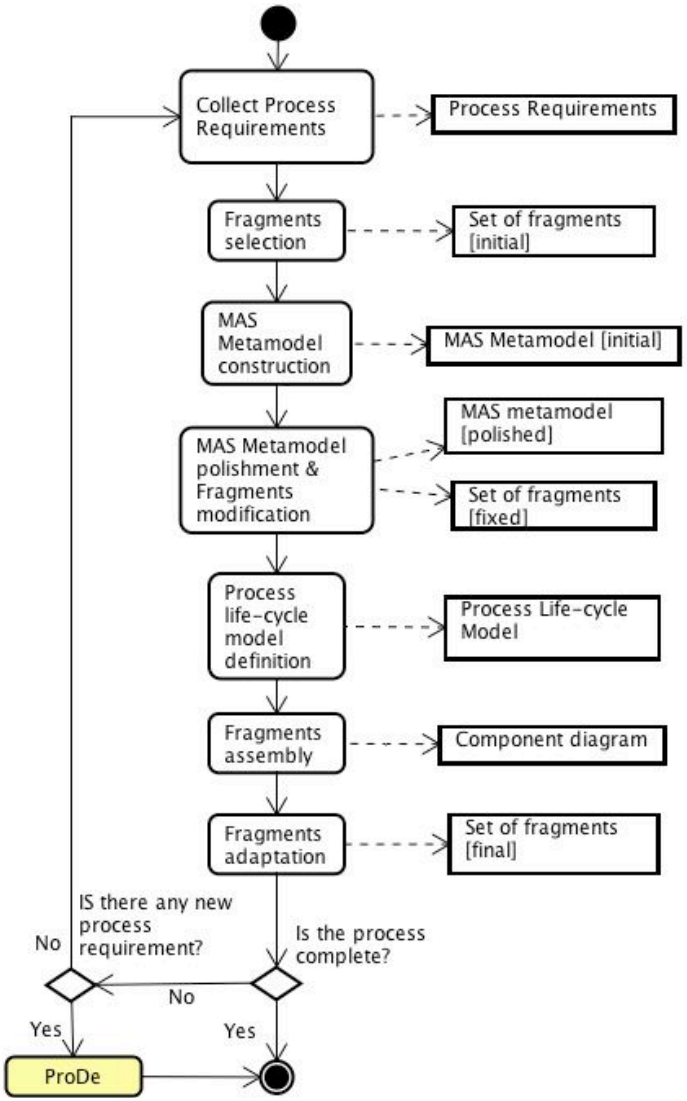

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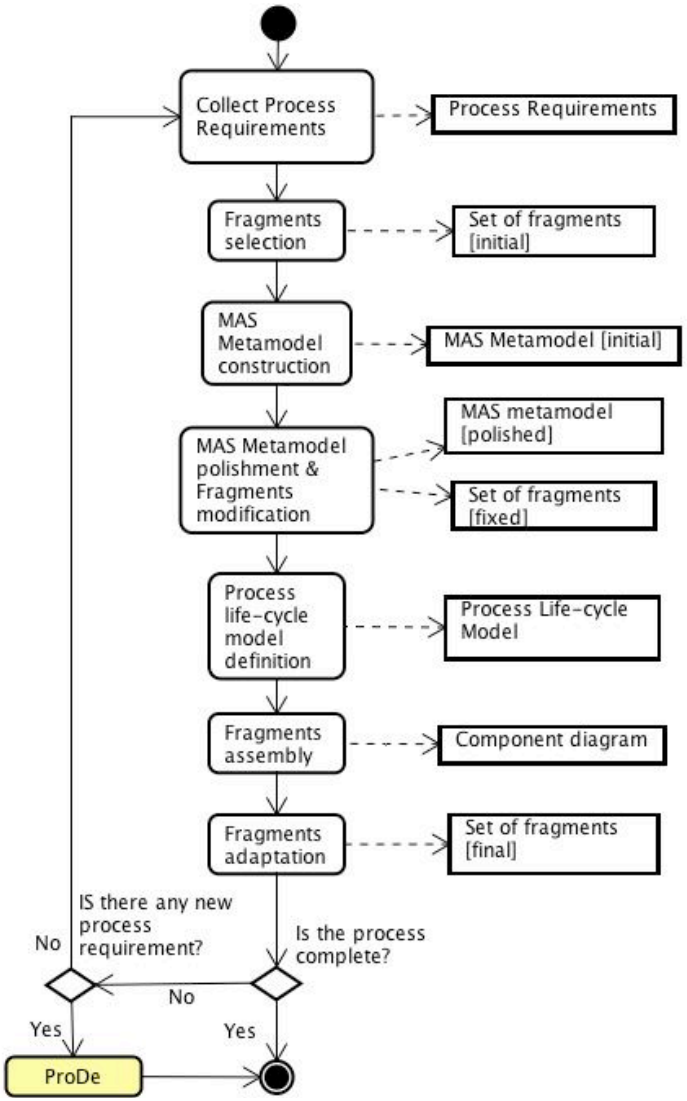

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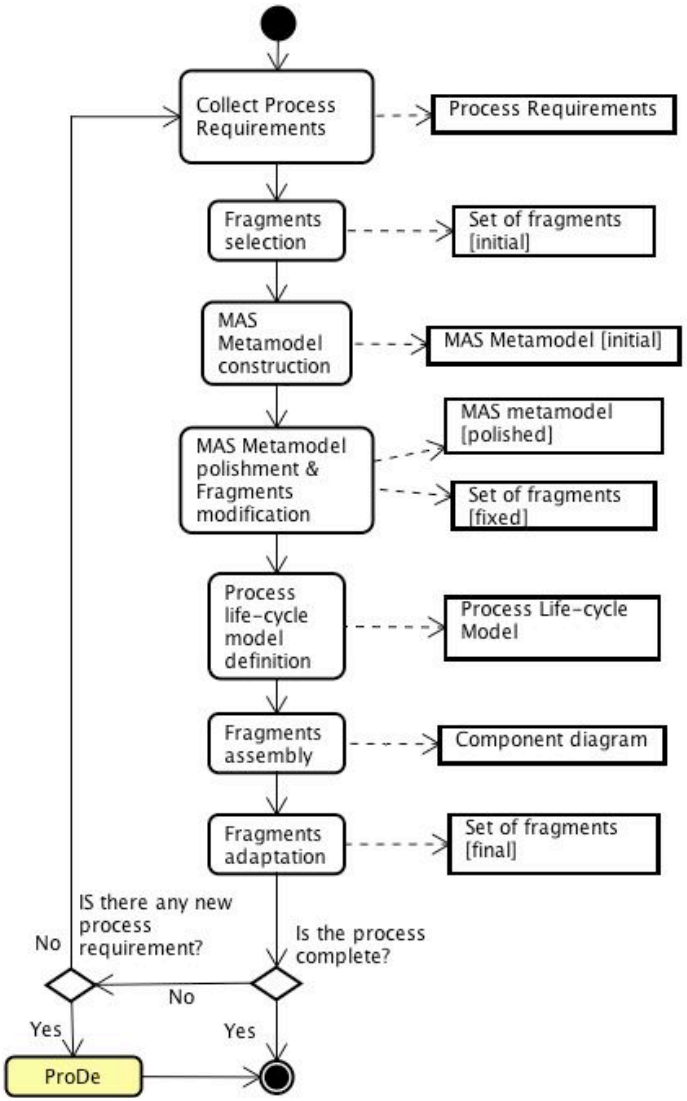

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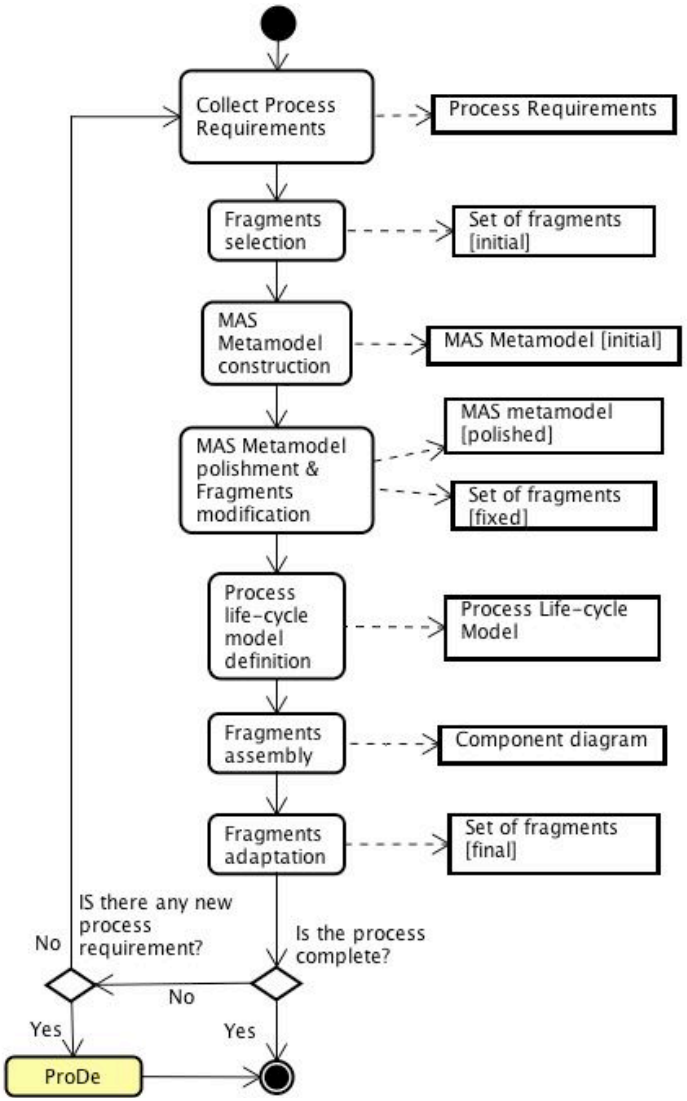

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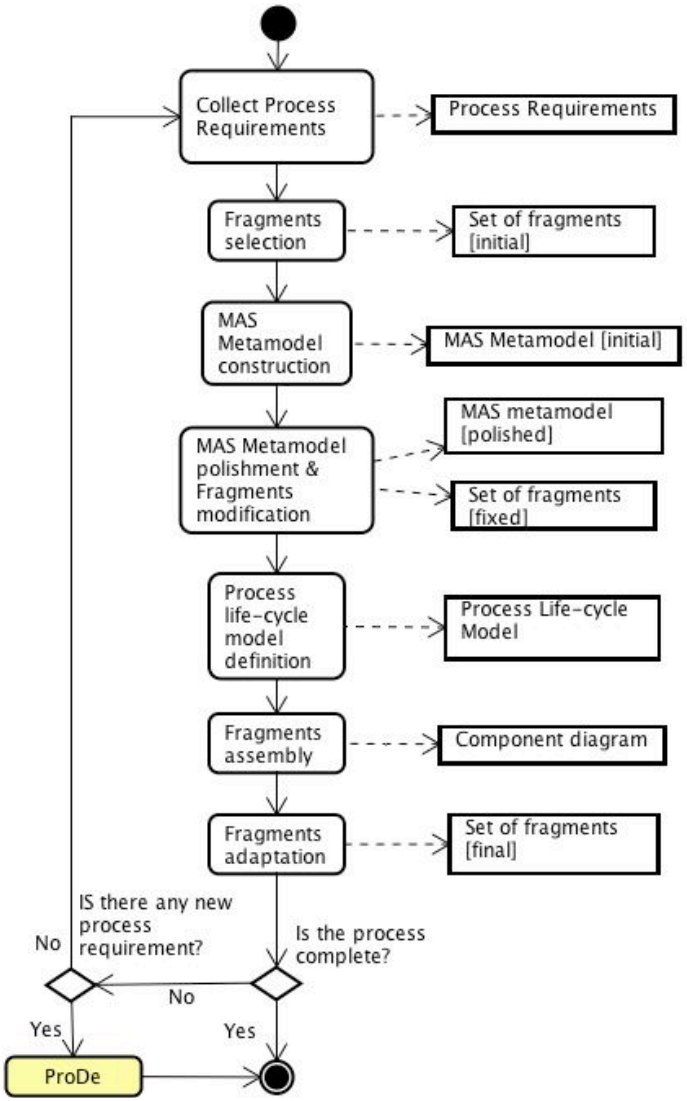

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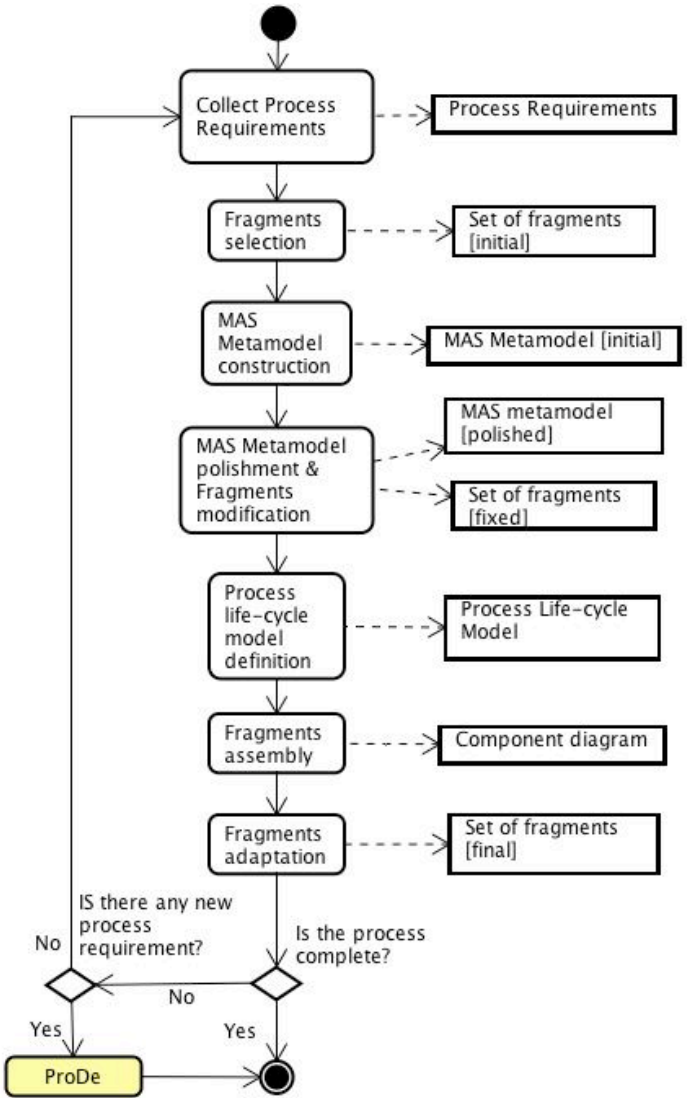

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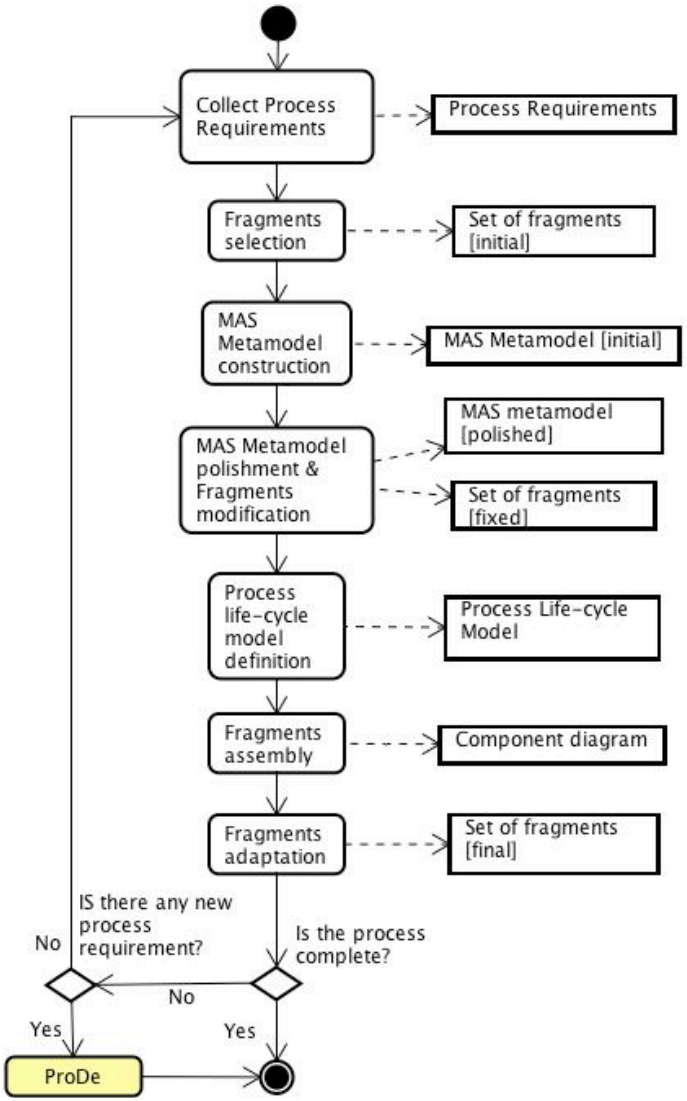

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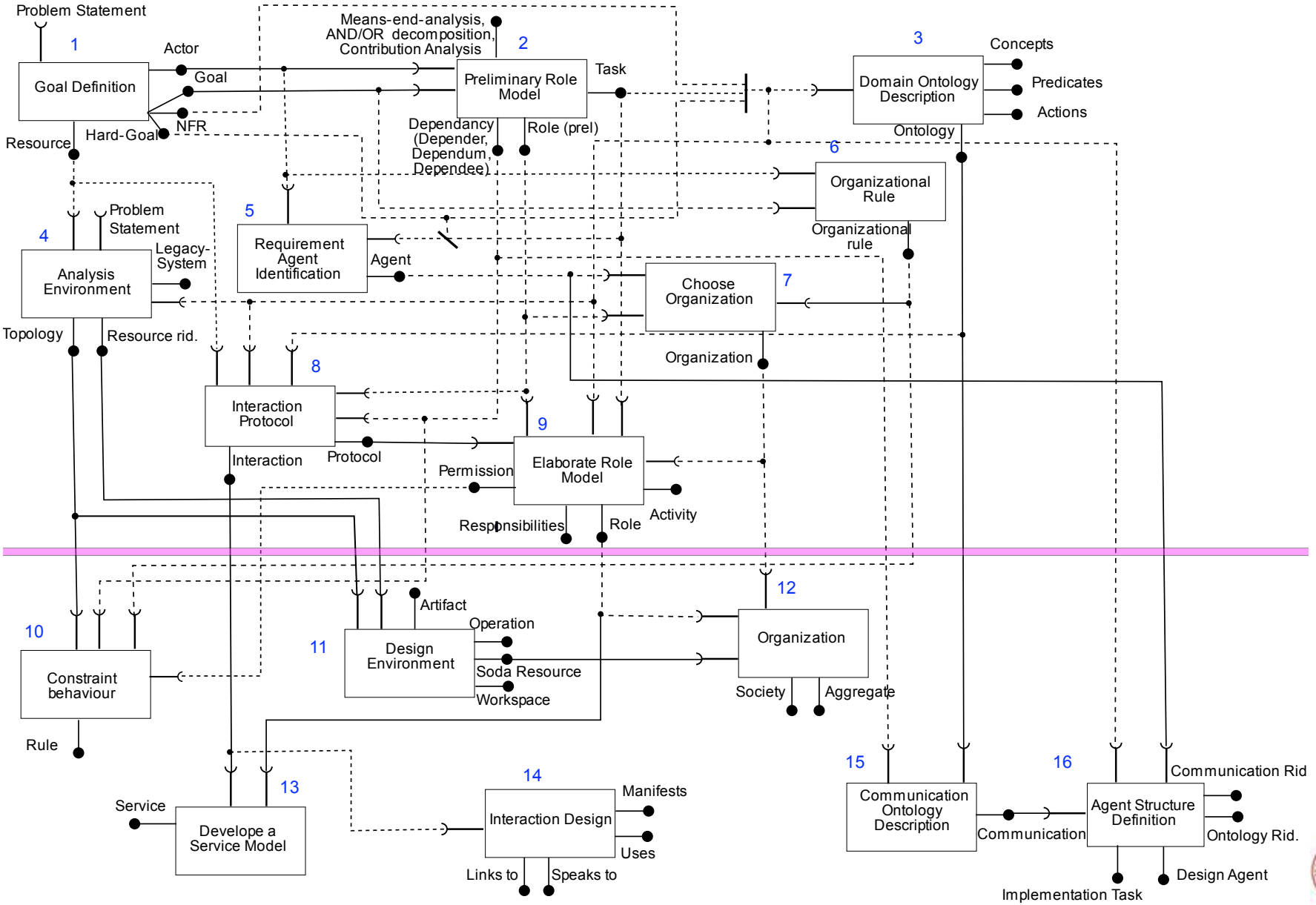
The process component diagram



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- The methodology needs to be flexible and to accord its abstractions with the infrastructure' ones
- The work on the infrastructure is today going on, so at the moment is not possible to evaluate the all development process
- Looking at the created methodology,
  - it well satisfies the project requirements
  - in the Design phase all the abstractions that are more "infrastructure-like" (e.g. artifacts) have been adopted

Comparison regarding process-related criteria[Tran and Low, 2005]

	MEnSA	Gaia	PASSI	Tropos	SODA
Development lifecycle	Iterative and incremental	Iterative within each phase but sequential between phases	Iterative across and within all phases (except for coding and deployment)	Iterative and incremental	Iterative and incremental
Coverage of lifecycle	Analysis and Design (and Implementation)	Analysis and Design	Analysis, Design and Implementation	Analysis and Design	Analysis and Design
Development perspective	Middle-out	Top-down	Top-Down/Bottom-up (for pattern reuse)	Top-down	Middle-out
Application domain	Independent	Independent	Independent	Independent	Independent
Size of MAS	Not specified	$\leq$ 100 agent classes	Not specified	Not specified	Not specified
Agent nature	Heterogeneus	Heterogeneus	Heterogeneus	BDI-like agents	Heterogeneus
Support for verification-validation	Ongoing work	No	Yes	Yes	Ongoing work
Ease of understanding of the process steps	High	High	High	High	High
Usability of the methodology	Medium (guidelines not complete)	Medium	High	Medium	Medium
Refinability	Yes	Yes	Yes	Yes	Yes
Approach towards MAS development	a. i* framework and OO b. RO (GO)	a. OO b. RO (OrO)	a. OO b. RO	a. i* framework b. NRO	a. NOO b. RO

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- Such a "meta-tool" could also produce some "development tool" for the created methodology

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- We compared it with other methodologies, pointing out the advantages of the proposed new process in connection with the requirements

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  - continuing the test and evaluation of the methodology by using a case study: the Bioinformatic Framework

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