

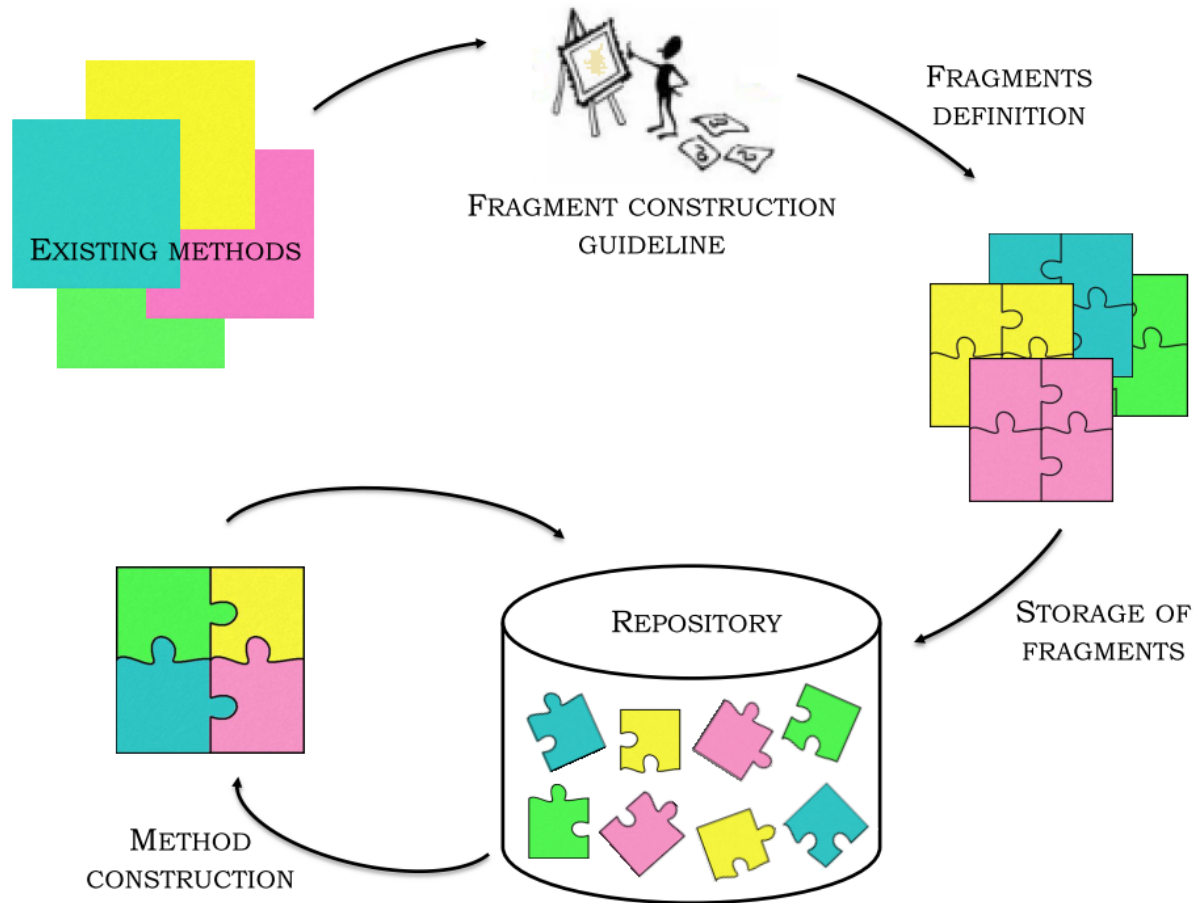


# FORWARD SELF-COMBINED METHOD FRAGMENTS

NOÉLIE BONJEAN

# Design New AOSE Methods

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# Challenges

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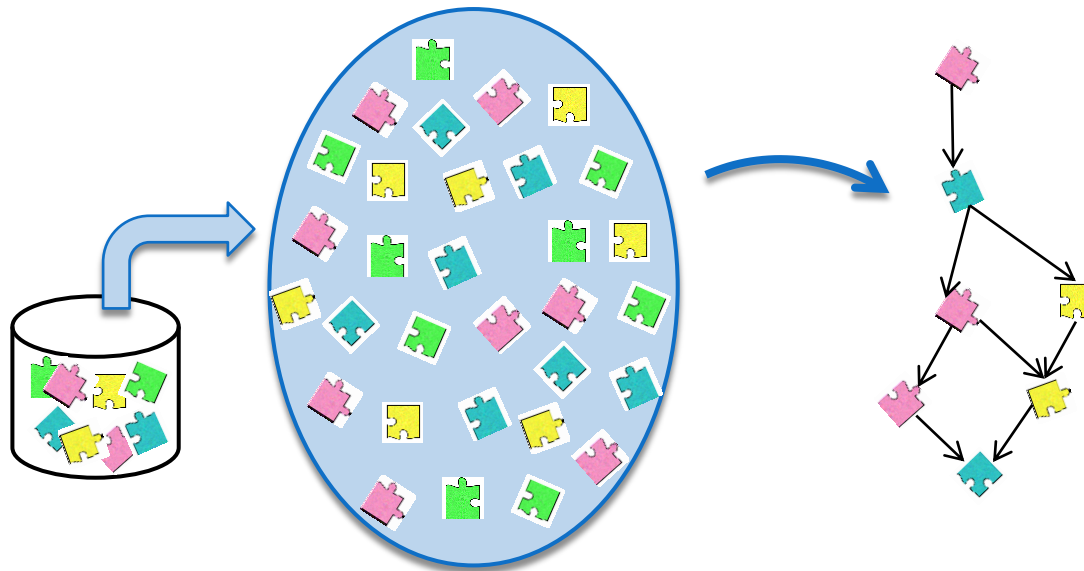
- Design a tailored method
- Reuse part of existing methods
  
- Examples
  - PASSIM: PASSI and Distilled State Charts (DSC)-based simulation method [*M. Cossentino & co., IJAOSE 2008*]
  - ADELFE and TROPOS [*M. Morandini & co., ESAW 2009*]



Self-Combining Method Fragments

# Combining Fragments: a Complex System

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- ▣ Numerous entities
- ▣ Huge number of interactions
- ▣ Openness



Adaptive Multi-Agent System



SCoRe: Self-Combined Method Fragments

# Outline

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- Requirements of SCoRe
- Parameters of SCoRe
- SCoRe System
  - ▣ Example of SCoRe execution
  - ▣ Behaviour of agents
  - ▣ General structure
- Adaptation of SCoRe
- Conclusion and Future Works

# Requirements of SCoRe

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- Functional
  - Providing a tailored method
    - User context
    - System characteristics
  - Self-combining fragments
    - Guidance Tool
  
- Non functional
  - Studying for the compatibility of each fragment with the others
  - Dynamic adaptation to the context at processing time

# Parameters of SCoRe

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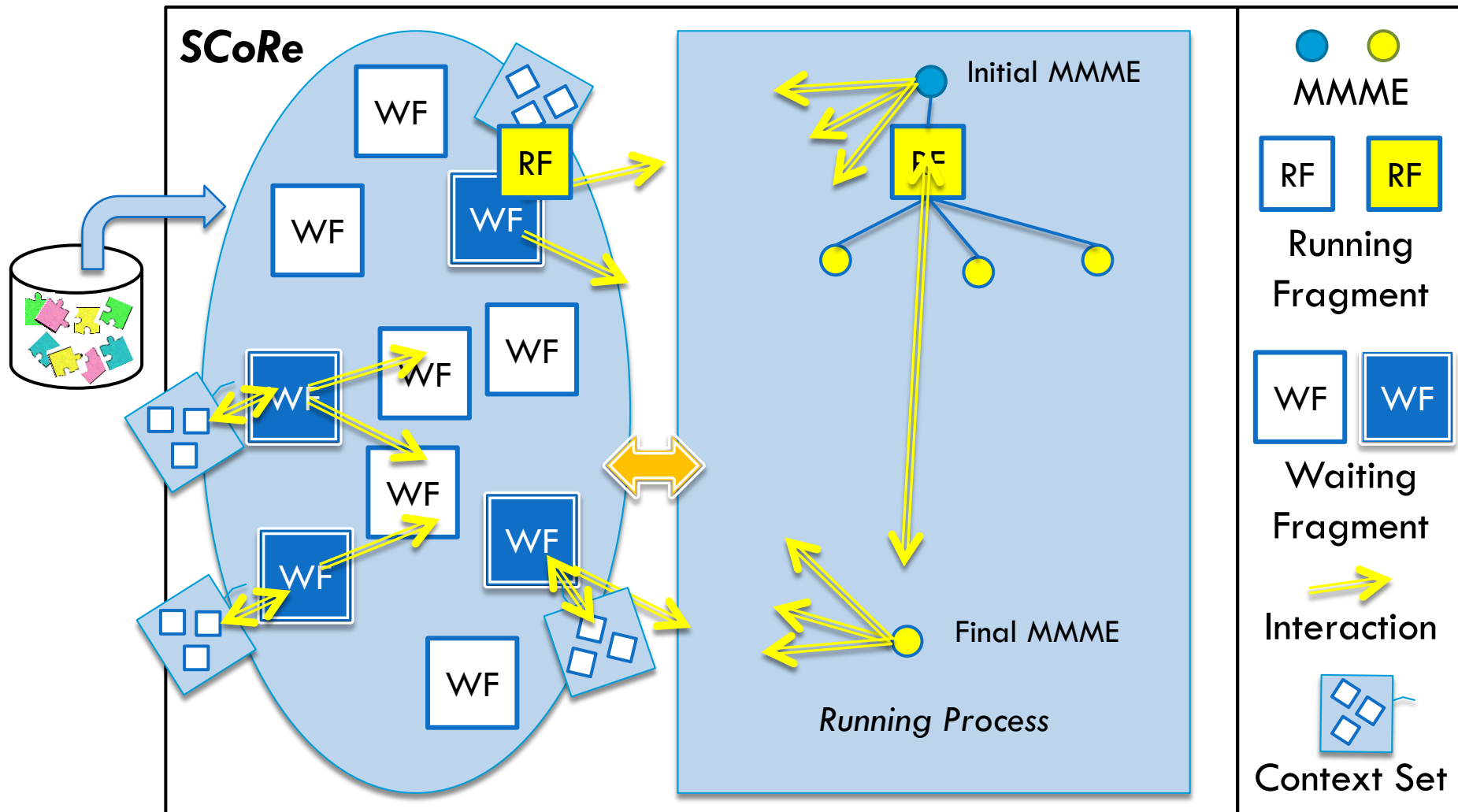
<b>Users</b>	<b>Technologies</b>	<b>Methods</b>	<b>Paradigms</b>
	<input type="checkbox"/> UML <input type="checkbox"/> Java <input type="checkbox"/> SpeADL <input type="checkbox"/> MAY	<input type="checkbox"/> ADELFE <input type="checkbox"/> PASSI <input type="checkbox"/> INGENIAS <input type="checkbox"/> TROPOS	<input type="checkbox"/> Agent <input type="checkbox"/> Cooperation <input type="checkbox"/> Emergence

**System**

<b>Field</b>	<b>Phase of Initial Work Product</b>	<b>Phase of Final Work Product</b>	<b>Type of System</b>
<input type="checkbox"/> Automotive <input type="checkbox"/> Biology <input type="checkbox"/> Maritim <input type="checkbox"/> Surveillance <input type="checkbox"/> Aviation <input type="checkbox"/> Industry	<input type="checkbox"/> Analysis <input type="checkbox"/> Requirement <input type="checkbox"/> Implementation <input type="checkbox"/> Design	<input type="checkbox"/> Analysis <input type="checkbox"/> Requirement <input type="checkbox"/> Implementation <input type="checkbox"/> Design	<input type="checkbox"/> Profiling <input type="checkbox"/> Simulation <input type="checkbox"/> Self-regulation <input type="checkbox"/> Optimization <input type="checkbox"/> Manufacturing Control

# SCoRe : Self-Combining method fRagments

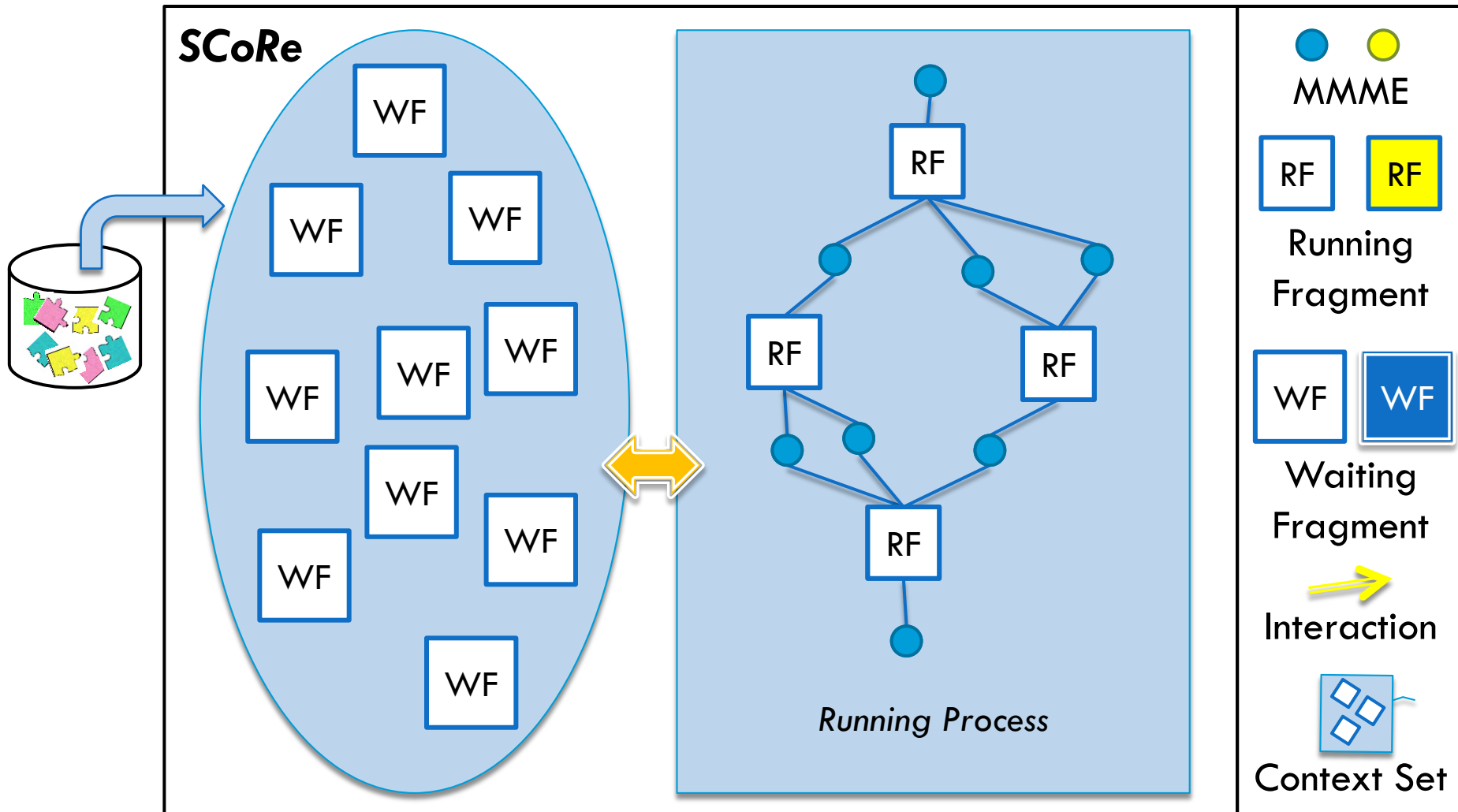
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# SCoRe : Self-Combining method fRagments

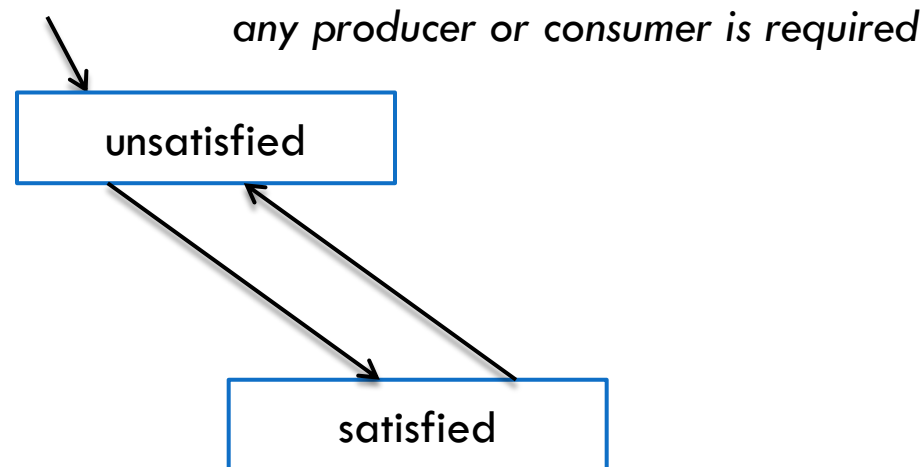
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# MMME Agent

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- Aims at choosing which fragment it will be linked to

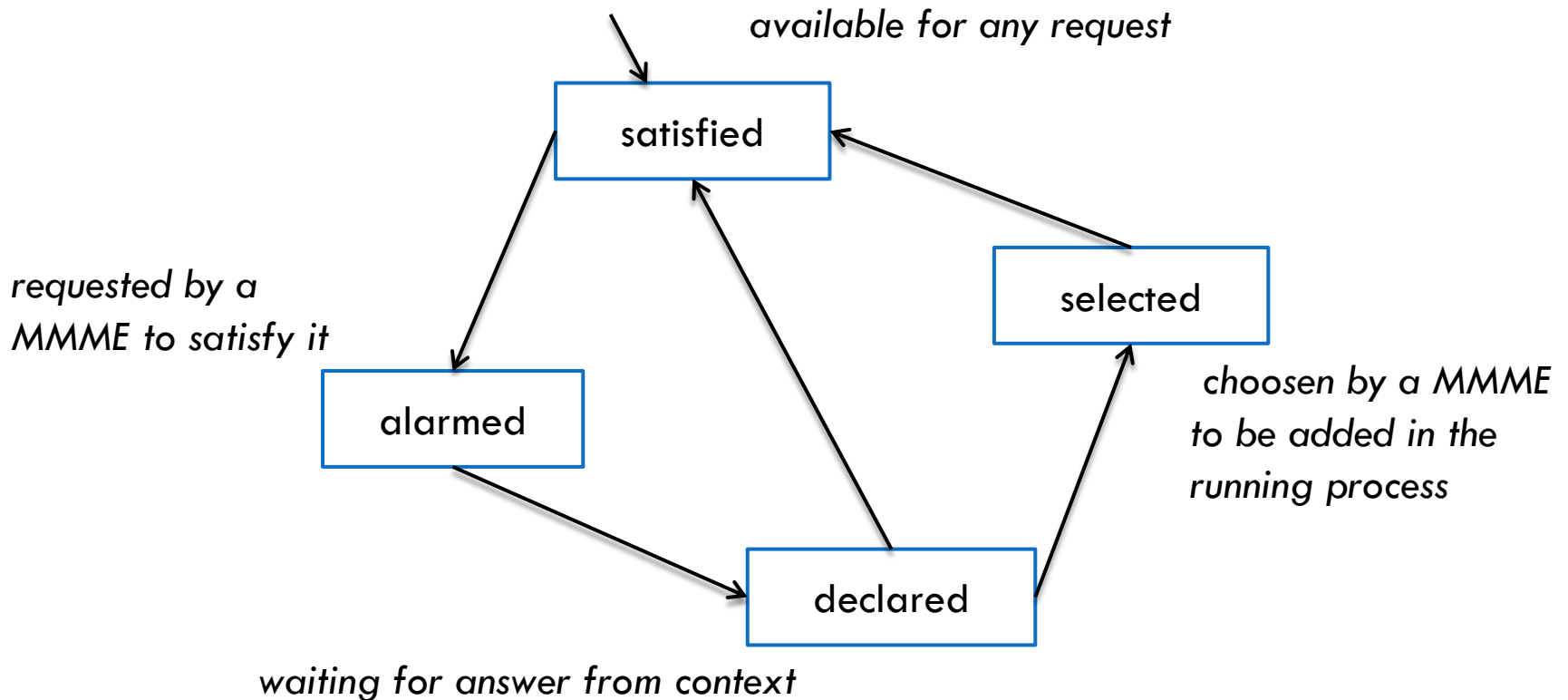


*linked to at least one consumer  
and one producer*

# Waiting Fragment Agent

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- Aims at notifying any agents of any requests from MMMEs

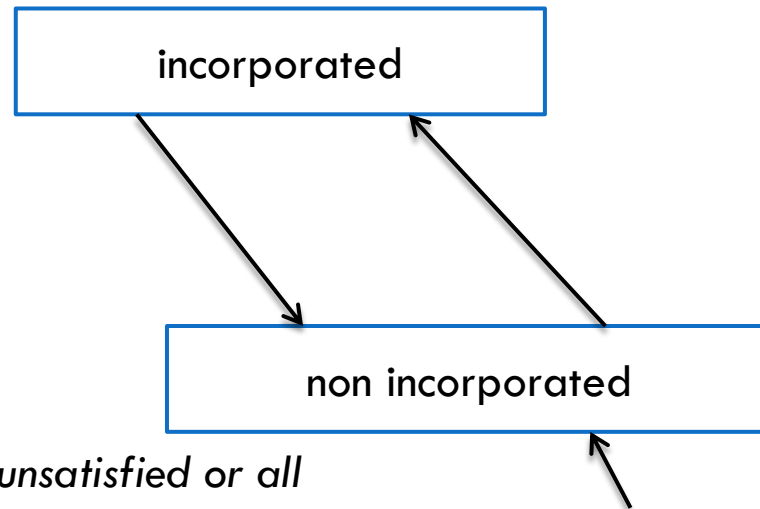


# Running Fragment Agent

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- Aims at being integrated in a process once it is in an adequate situation

*all the required MMMEs are satisfied and at least one of the provided MMMEs is satisfied*

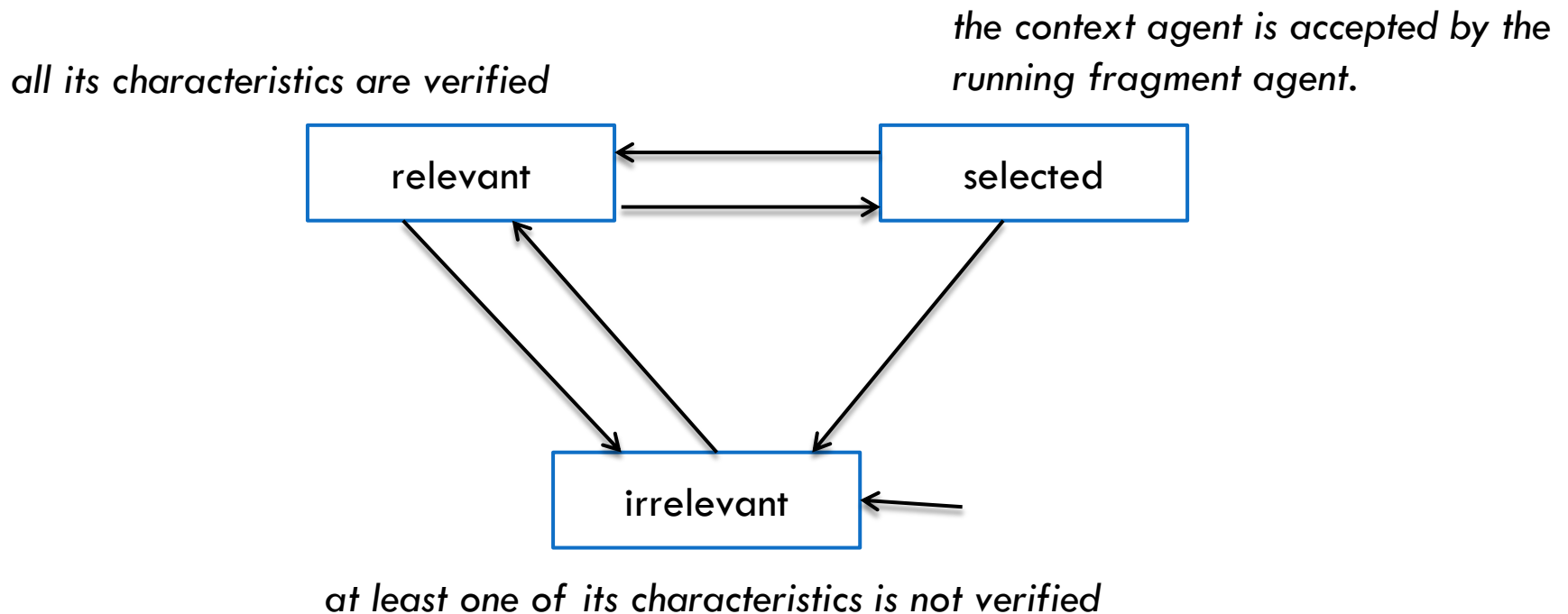


*one required MMME is unsatisfied or all provided MMMEs are unsatisfied*

# Context Agent

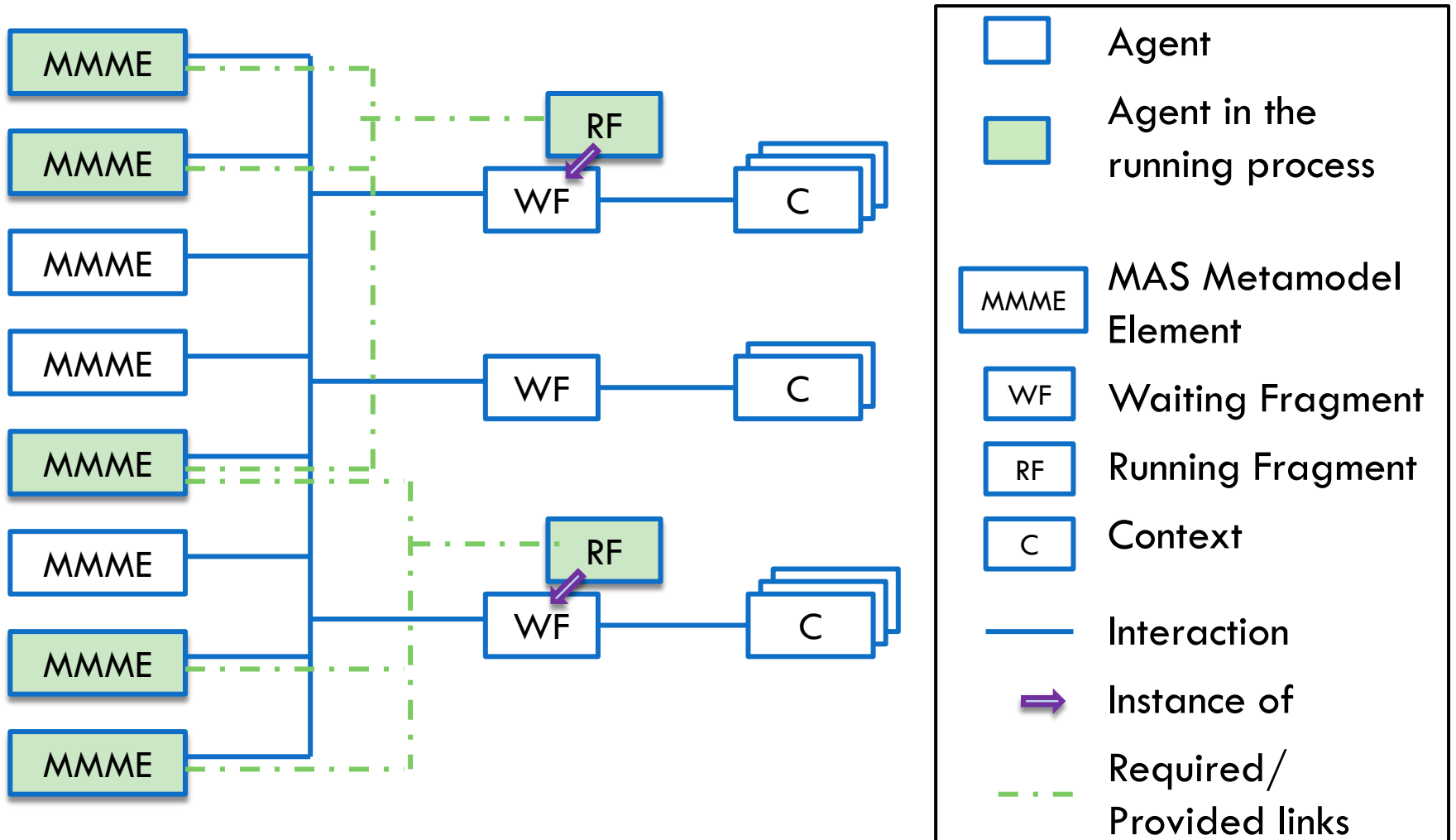
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- Aims at evaluating pertinence of the waiting fragment which they are linked to



# General Structure of SCoRe

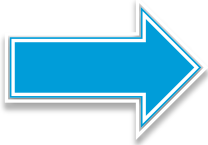
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# Adaptation of SCoRe

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- Modification of the users' characteristics
- Modification of the system characteristics
- Addition and deletion of fragments agent during runtime



System reorganization

# Adaptation Examples

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- User adds a specific fragment in the method process
  - ⇒ SCoRe have to propose a new method process including the new fragment
  
- No contexts are satisfied
  - ⇒ SCoRe have to adapt and choose one context



# Conclusion

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- SCoRe
  - ▣ Self-design a tailored method process
  - ▣ Adjust the proposed process according to the characteristics of application domain and users profile
  - ▣ React to dynamics

# Current and Future Works

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- Evaluation of the designed process
  - ▣ MAS Metamodel Metrics [AAMAS 2012]
  - ▣ Fragment Metrics
  
- Inter-operability of metamodel
  - ▣ Semantic matching of MMME
  - ▣ Ontology based
  
- Experimentation with real users' problems

# Thank You For Your Attention

