Implementation of the Reasoning Module

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Contents

What we have done

We wanted to achieve the following goals:

- implement the Reasoning Module according to the design
- support targeted scenarios from the conceptual framework (3,4 and 7)
- connect the Reasoning Module with other components from the project

Conceptual Framework (D1.3) $\rightarrow$ Design (D2.2) $\rightarrow$ Prototype (D3.2)

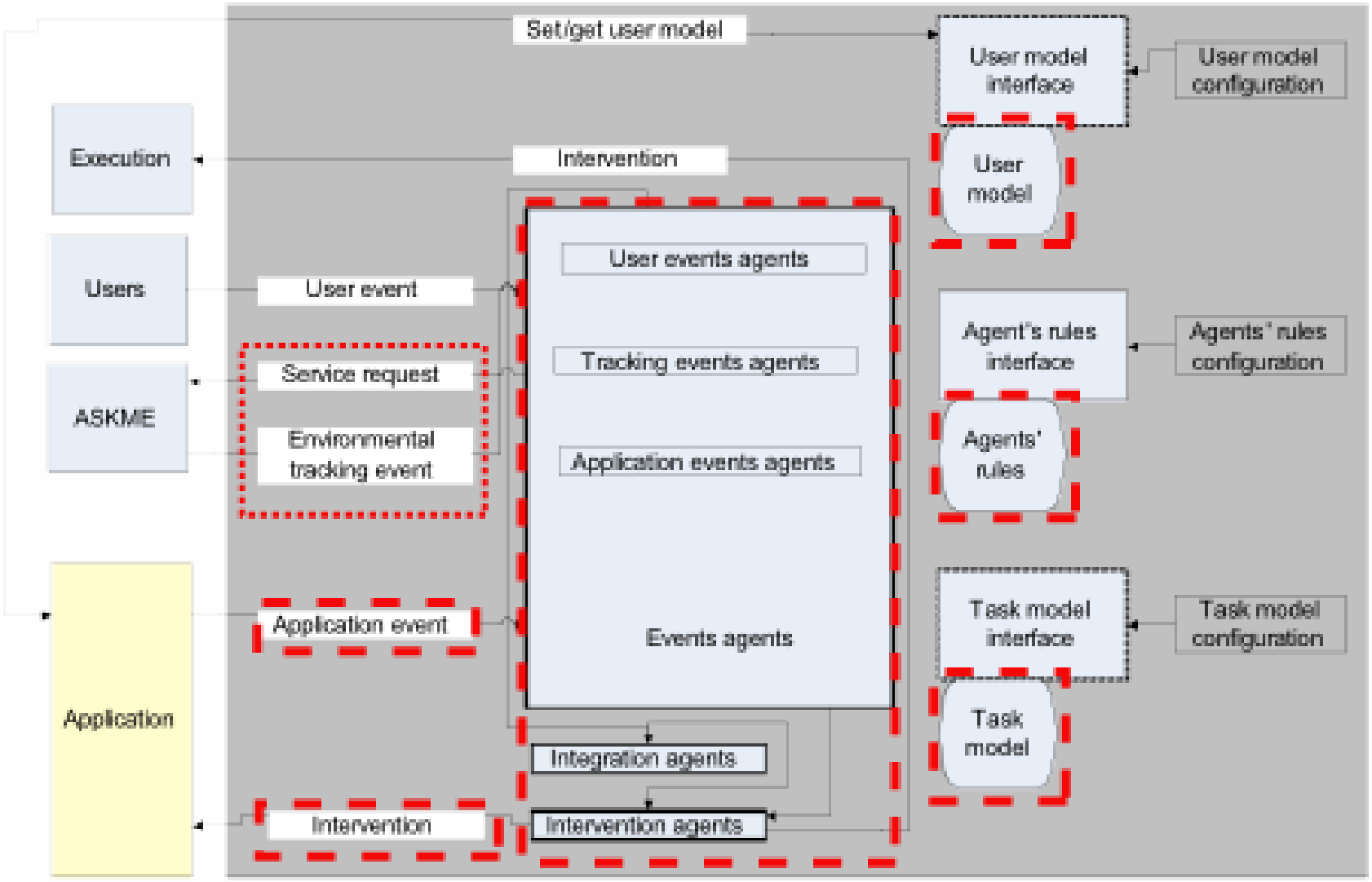
Our work environment

Focusing on open standards for interoperability and integration in heterogeneous environments:

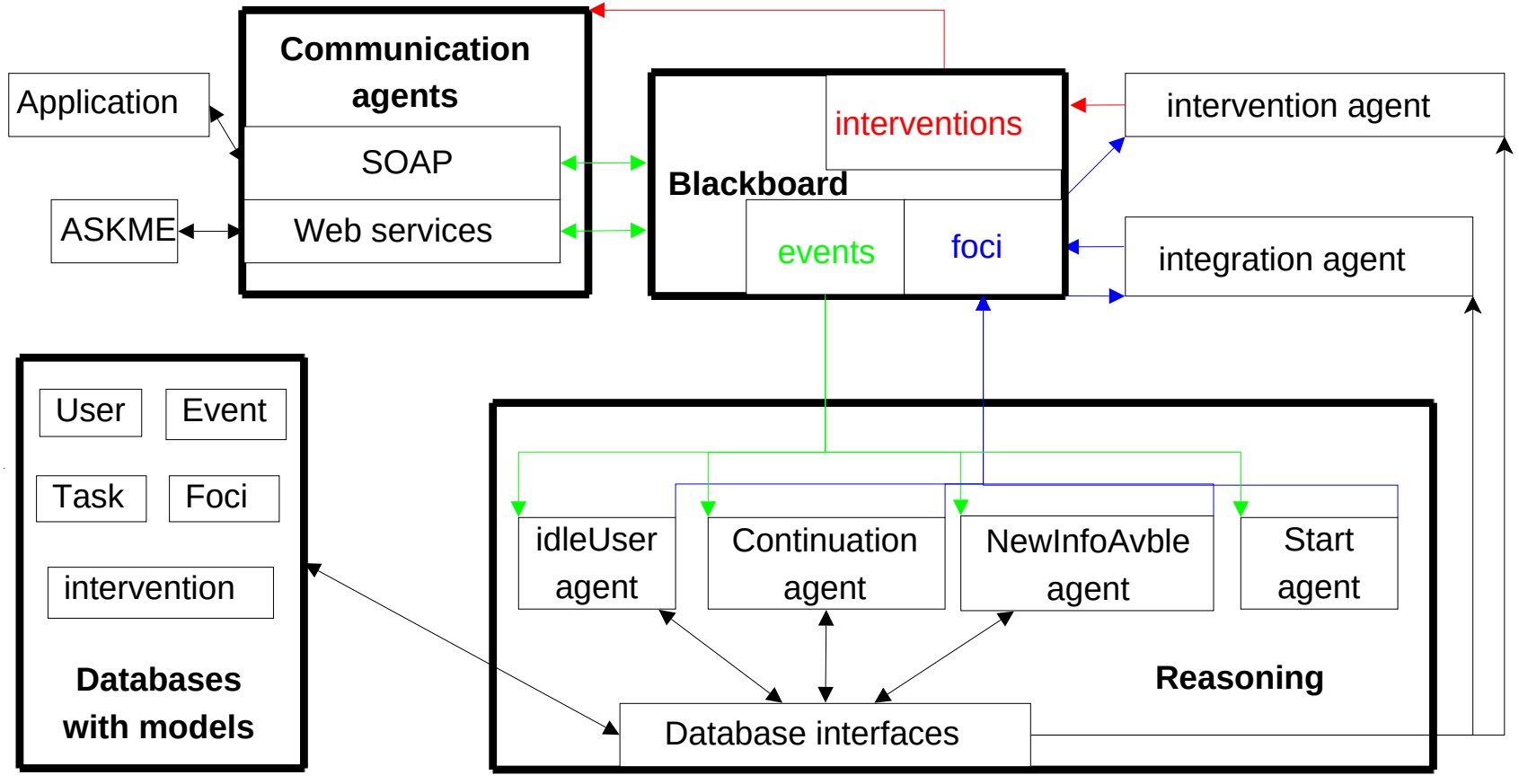
- Java application server and applet
- mySQL database server
- web services based communication

$\Rightarrow$ Only open source components

Design architecture



Implementation architecture



Blackboard

A blackboard based implementation

- used for all communication between agents
- collect facts about the user and his activity
- 1 learner = 1 blackboard

Event agents

Agents computing the possible targets of attention

- in charge of creating possible foci from events
- autonomous
- of various type (target an event or a concept)

Integration & intervention agents

Integration agent: refine the foci from the event agents

$\Rightarrow$ clean, merge and optimize

Intervention agent: prepare and manage the interventions

$\Rightarrow$ uses breakpoints

Reasoning strategy

Some reasoning and responses can be generalized:

- default set of rules for supporting common generic situations
- expandable by the hosting application
- from an event, generate several interventions for the application to choose from

Example: User becomes idle (IdleInput event)

$\Rightarrow$ attention management: re-attract user attention

$\Rightarrow$ cognitive support: propose help for the task

Conclusion

- prototype is working
- development points to a lot of things to improve
- require testing and validation

Future work

- provide high level macro language for the rules
- implement more scenarios from the conceptual framework
- support meta-reasoning