

A domestic application of Intelligent Social Computing: the SandS project

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Outline

- 1 Introduction
- 2 Intuitive definition of SandS
- 3 Task and recipe domains
- 4 Knowledge storage
- 5 Conclusion

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- Its goal is to build up a physical and computational networked infrastructure allowing household appliances to better meet the needs of their owners.

Social computing was defined by Vannoy and Palvia as “intra-group social and business actions practiced through group consensus, group cooperation, and group authority, where such actions are made possible through the mediation of information technologies, and where group interaction causes members to conform and influences others to join the group”.

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 - ▶ *Information gathering*, like a player asking for a nearby restaurant, and the social framework search for the most appropriate.

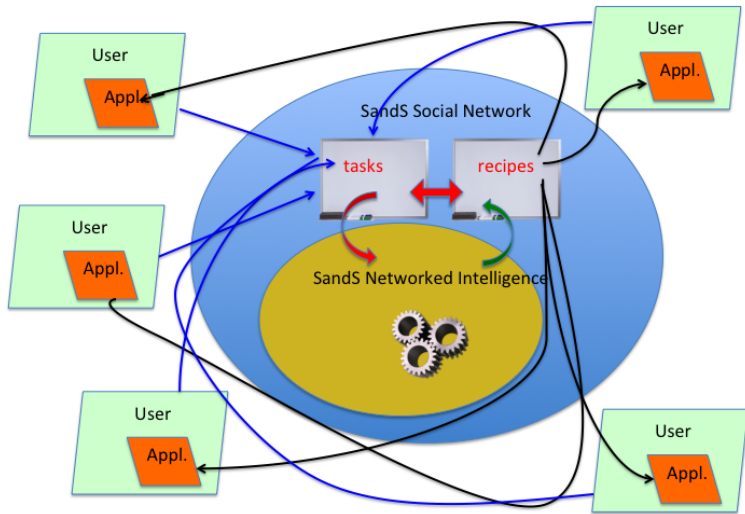
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 - ▶ *Solution generation*, e.g. the social player asks for the solution of a problem, i.e. how to cook a 5 kg turkey?, and the social framework generates solutions based on previous reported experience from other social players.

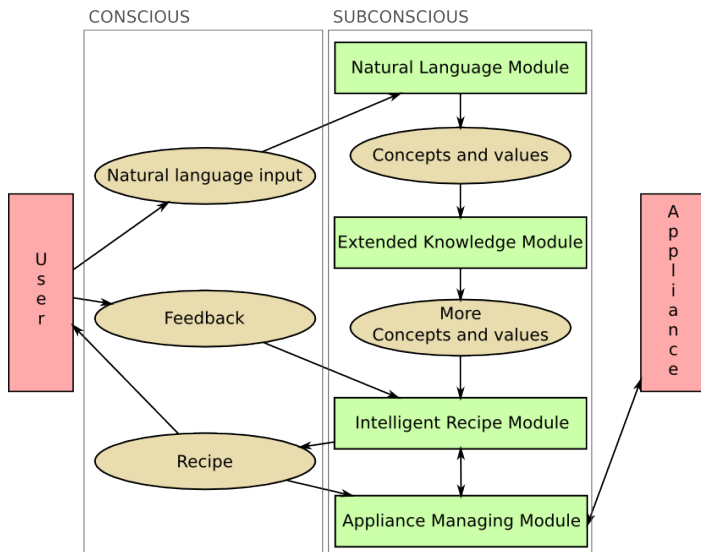
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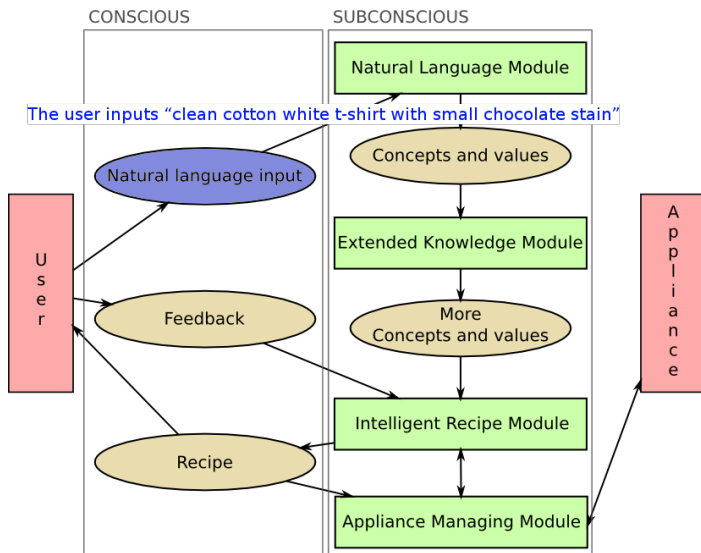
Social and Smart system prototypical architecture



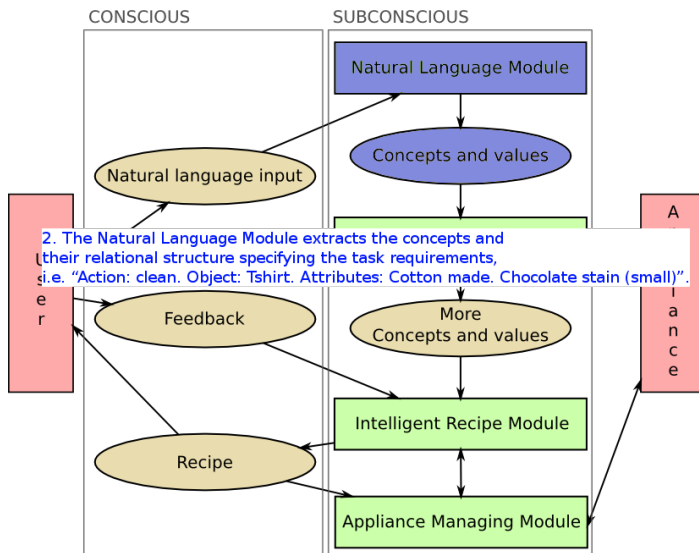
A visualization of the SandS task and recipe processing flow chart



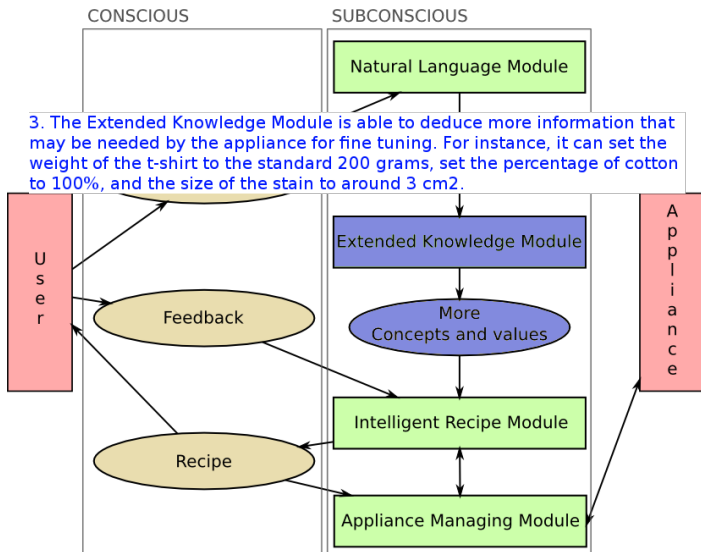
SandS task and recipe processing example



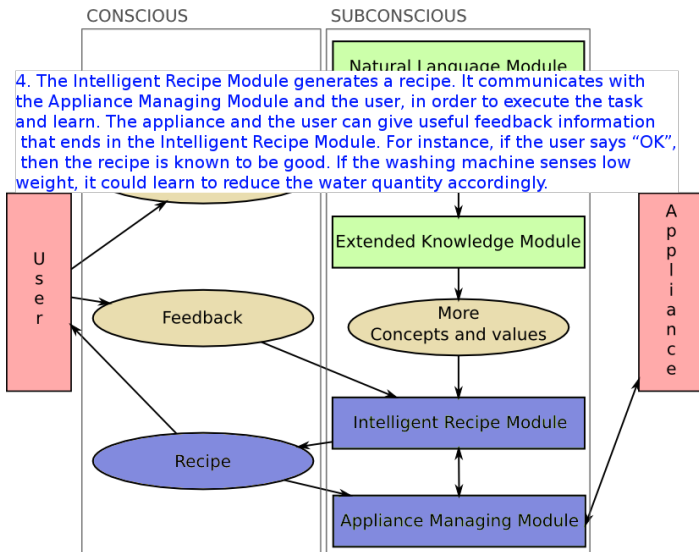
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Tasks and recipes

- The **task** domain is a representation of the conscious aspect of the conscious interaction of the user and his appliance mediated by the social network service. They conform the basic vocabulary that the user wants to use to communicate, the natural language of the events related to her needs.
- **Recipes** will be composed by sequences of actions and perceptually conditioned decisions whose atomic elements would be extracted from an ontology.

Tasks and recipes

- The **conscious** social computing of the user goes in terms of the specification of task to be performed and informal reasoning about the most adequate procedure.
- The **subconscious** social computing aspect of the system consists in the formal translation of tasks into recipes and vice versa, as well as the formal manipulation of the recipes to obtain new recipes that may provide enhanced solutions to the tasks that are presented by the user.

Tasks and recipes

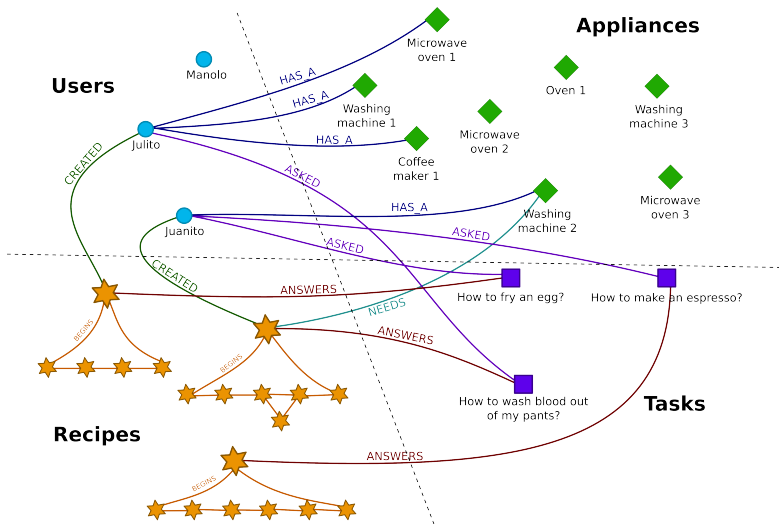
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- The mapping between task and recipe semantic domains is illustrated in the next figure...

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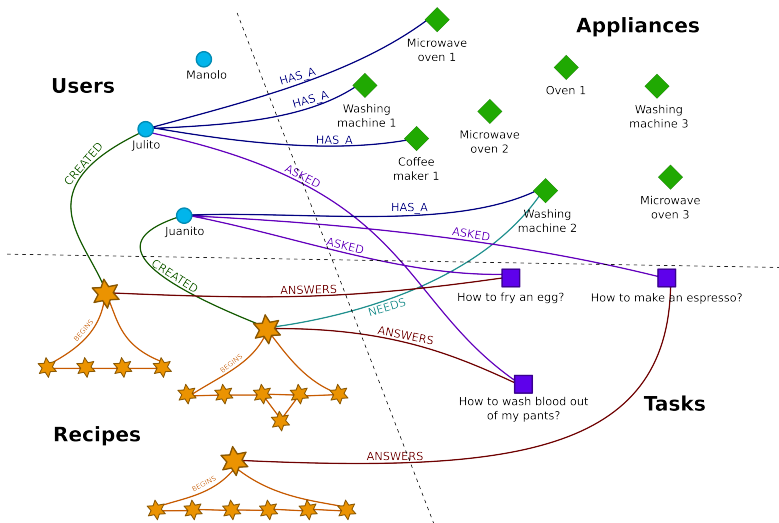
Graph database snapshot

Users and appliances are kind of terminal (blue and green) nodes of the system, storing their respective parameters.



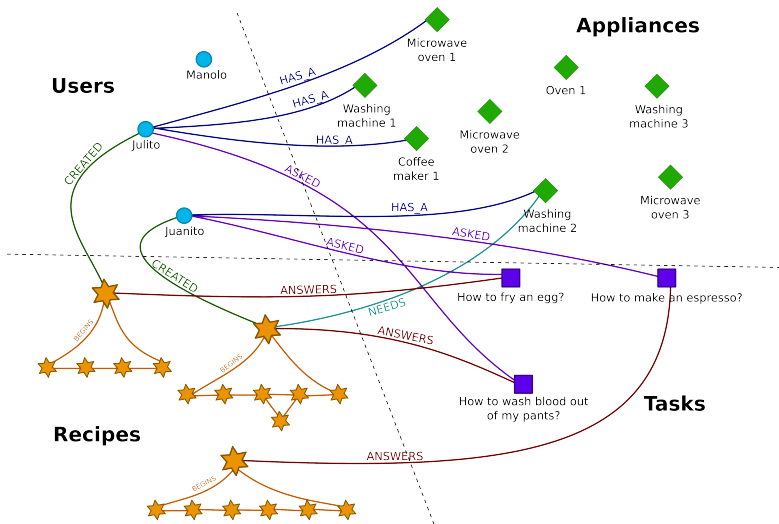
Graph database snapshot

Tasks are also represented as single magenta nodes, connected to the user(s) that has requested them, and the recipes that may provide a solution to them.



Graph database snapshot

Recipes are represented by graphs with an special connection node, which the one used to connect them to the other kinds of nodes.



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Conclusion

- We have discussed some salient features of the SandS project going beyond the accepted definition of social systems, introducing a subconscious intelligent computing layer that would be a step ahead in the social computing environment.
- Though the project is focused on household appliances, its philosophy may be exported to many other domains.
- The main difference with other approaches is that the system will autonomously elaborate on the knowledge provided by the social players to innovate and obtain solutions to new problems, and to increase the satisfaction of the user by solving better old problems by underground reinforcement learning, obtaining thus a personalization of the appliances to the user and its conditions.

Thank you

