Enhancing healthy eating by intelligent digital assistants

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Basic facts about Estonia

- North-East Europe
- Capital Tallinn
- Population 1,34 mio

- Area 45 000 km2, comparable to the Netherlands and Denmark
- Parliamentary republic, independence Feb 24 1918
- EU, May 1 2004
- Schengen treaty, Dec 21 2007
- Euro zone, Jan 1 2011

Problem statement

- Nutrition information printed on product packages in small print
- Nutrition information hard to compare, especially with respect to price and between different stores
- Experience-based information available but hard to use in the context

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Intelligent digital assistant

- We use the term “agent”
- A software entity that can act in the environment *on behalf* of its principal, perceive events, and reason
- May run on a variety of devices: desktops, cell phones, blackberries, laptops, specialized devices, etc.

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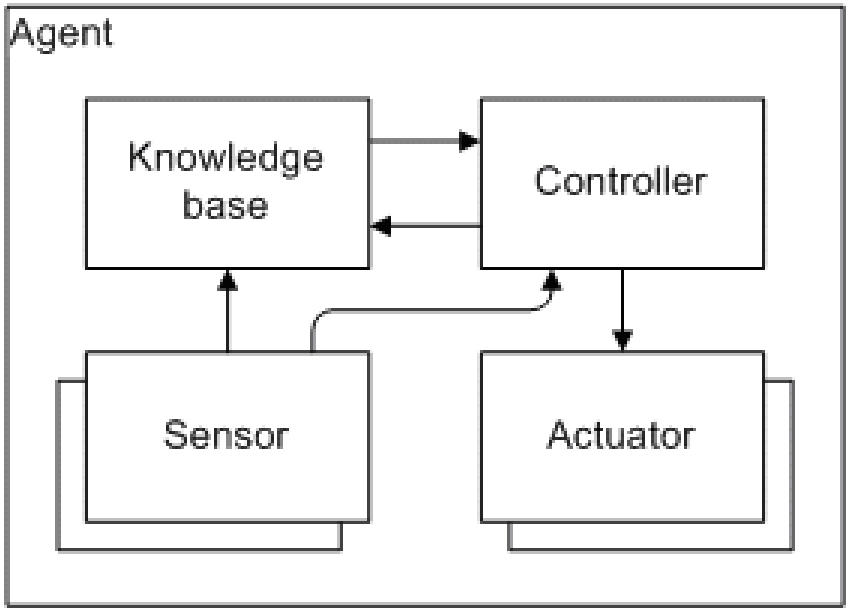
The abstract agent architecture



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The case study of social grocery shopping

- Customers post the prices they paid for their groceries and QoS information
- A prospective shopper enters a grocery list and obtains a pointer to the store(s) with the lowest total price (and best service)
- Each customer has an agent representing his/her interests and interacting with the agents of the other customers
- Results from initial experiments by Prof. Michael Huhns and Hongying Du: savings up to 21% can be obtained!

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Extending the case study to healthy eating

- Agent:
  - Manages the profile of its principal;
  - Retrieves nutrition and price information of products;
  - Processes price information posted by other customers;
  - Processes feedback posted by other customers;
  - Suggests healthy and affordable alternatives;
  - Accordingly creates the list of stores to be visited.

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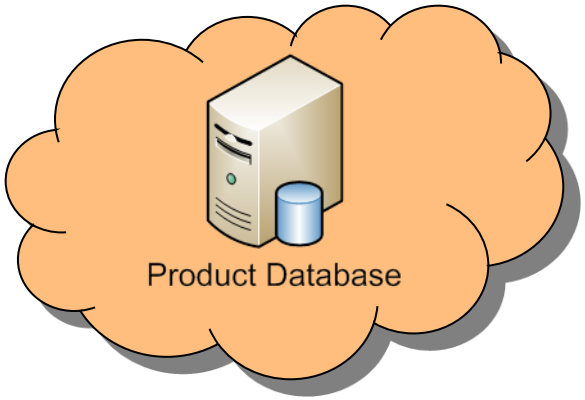
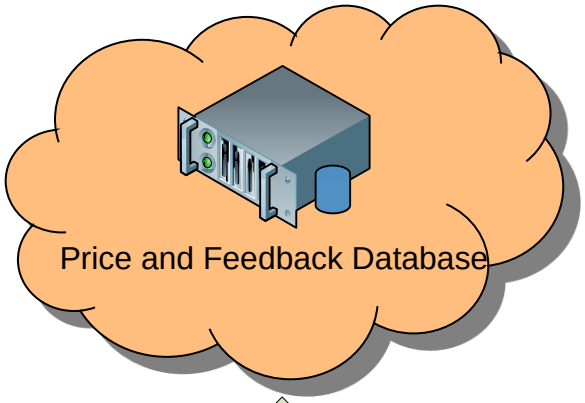


Product information

Product information

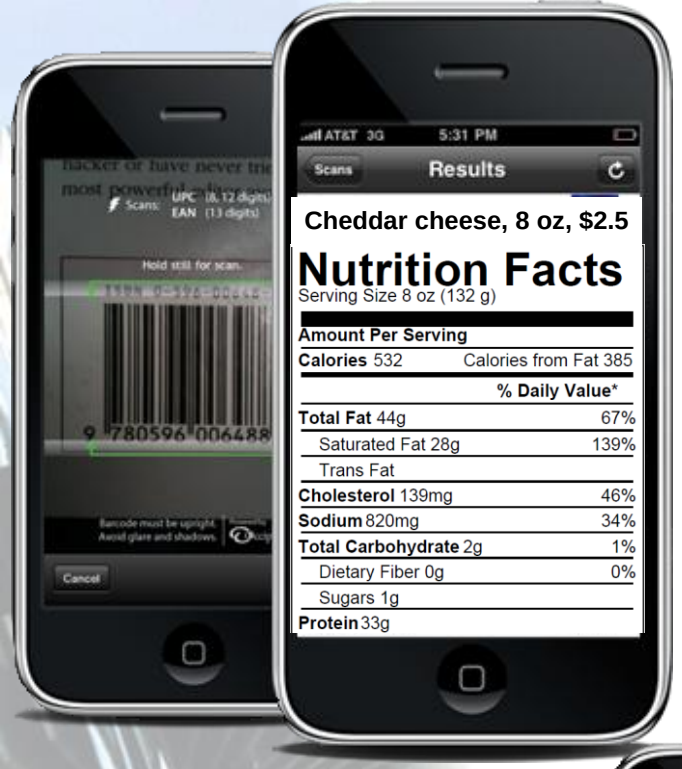
Product information



Price information

Price information

Price information



Healthy alternatives

Customer ratings

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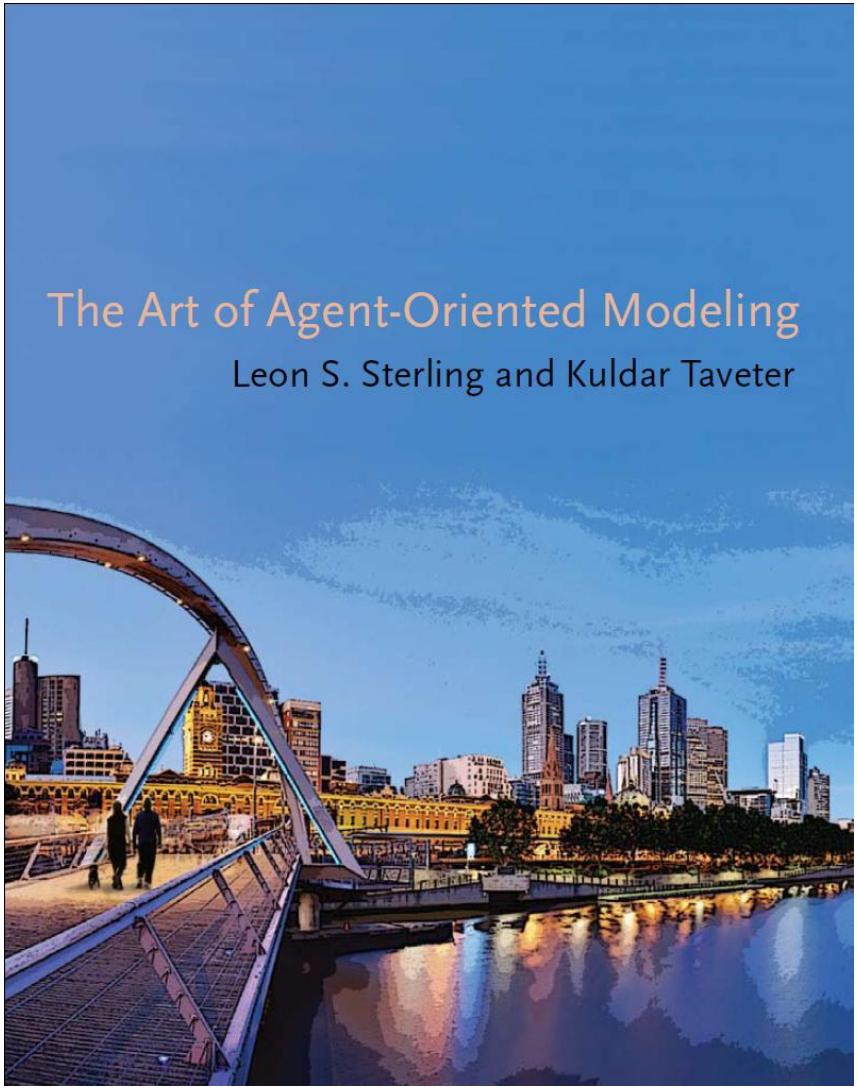
How to engineer such systems?



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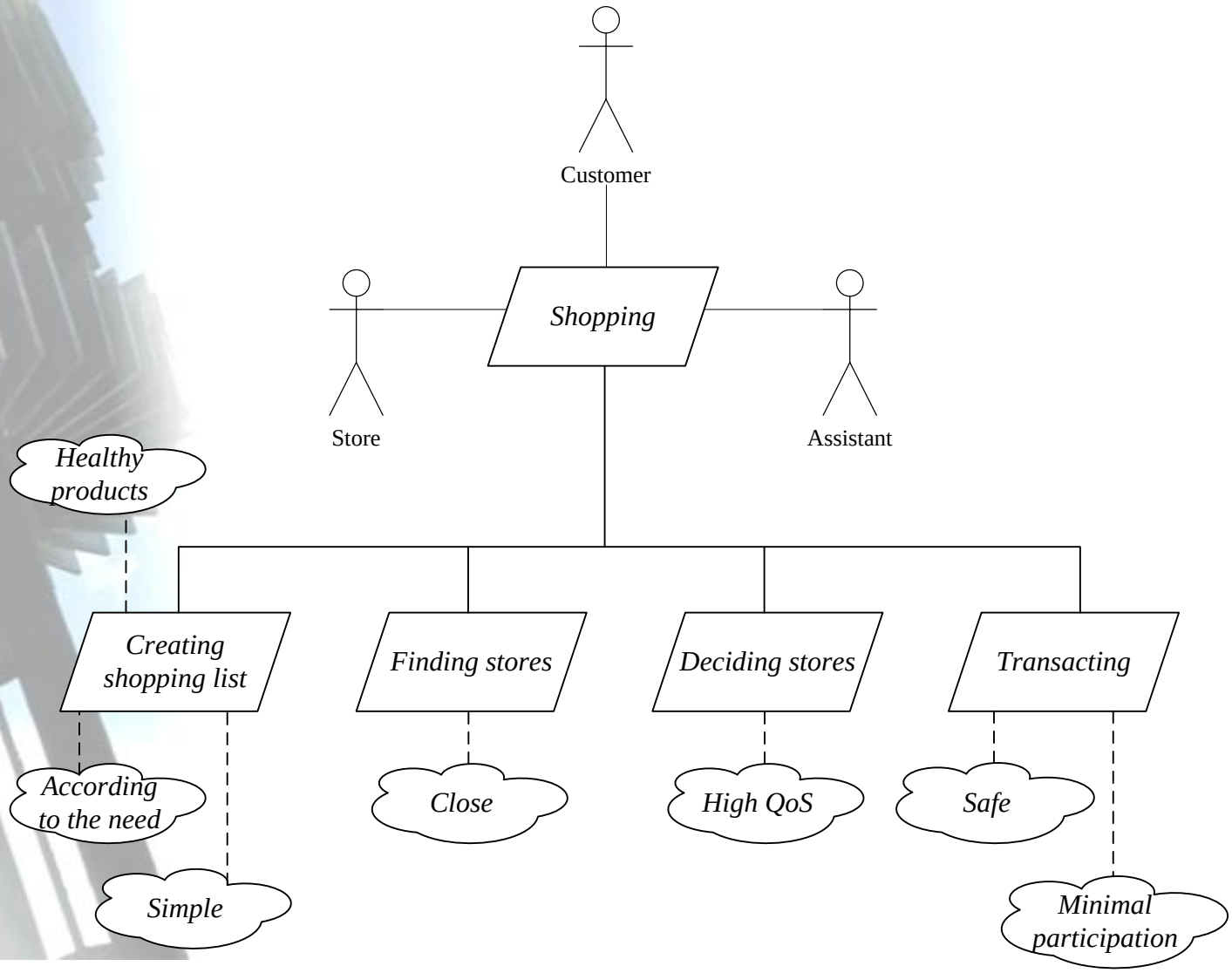
Example of a goal model



Conclusions

- Work-in-progress: how much does buying healthier products influence the cost of groceries?
- Full potential of social networks has not yet been employed
- Further experiments with real data required

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