

# BDIggy: a cognitive architecture for cooperative problem solving

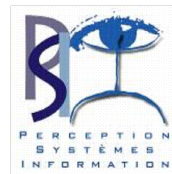
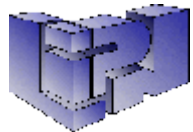
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# Cognitive modelling

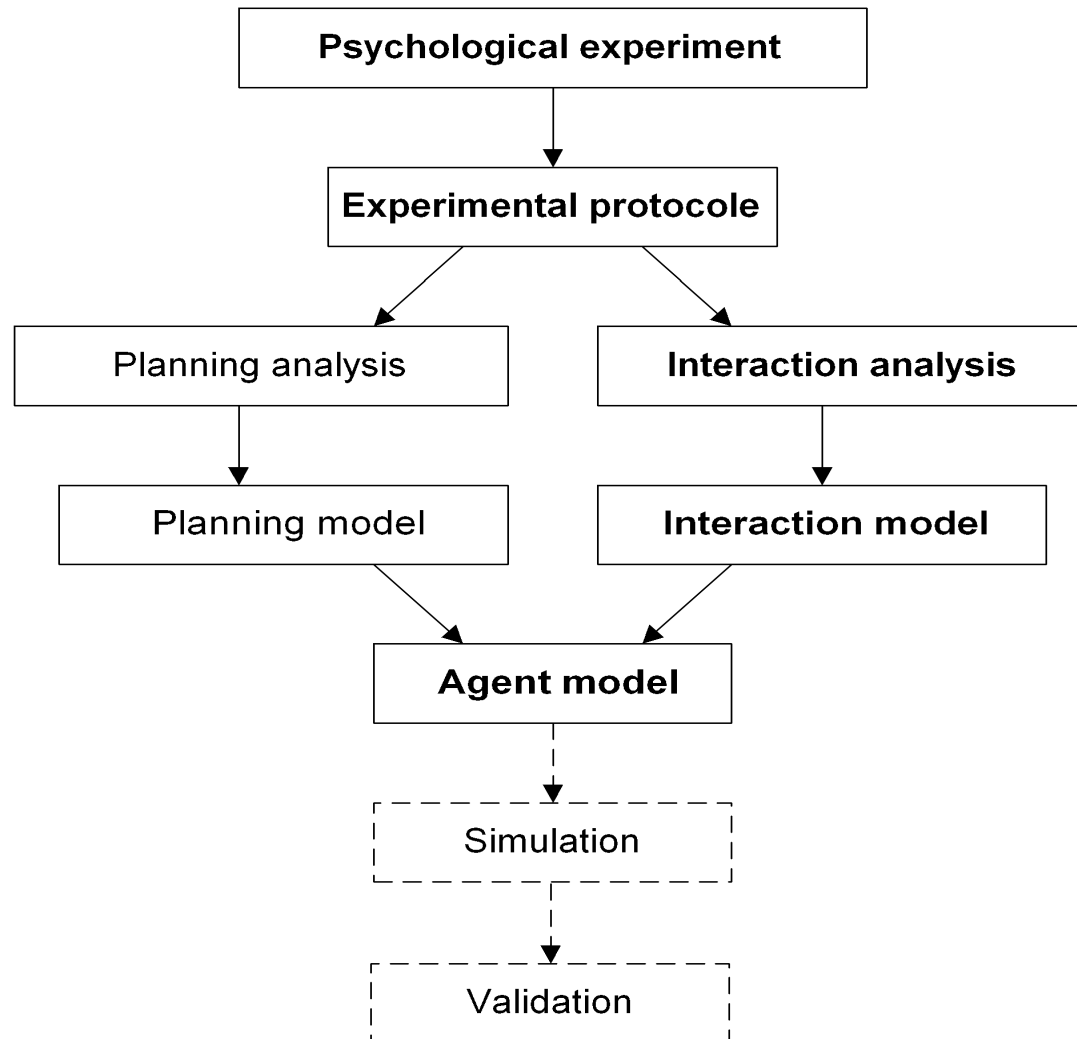
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**Aim : analyzing, modelling and simulating human capabilities of planning and interaction.**

- Design systems able to well interact with human beings.
- Benefit from the robustness of human communication and reasoning processes in MAS.

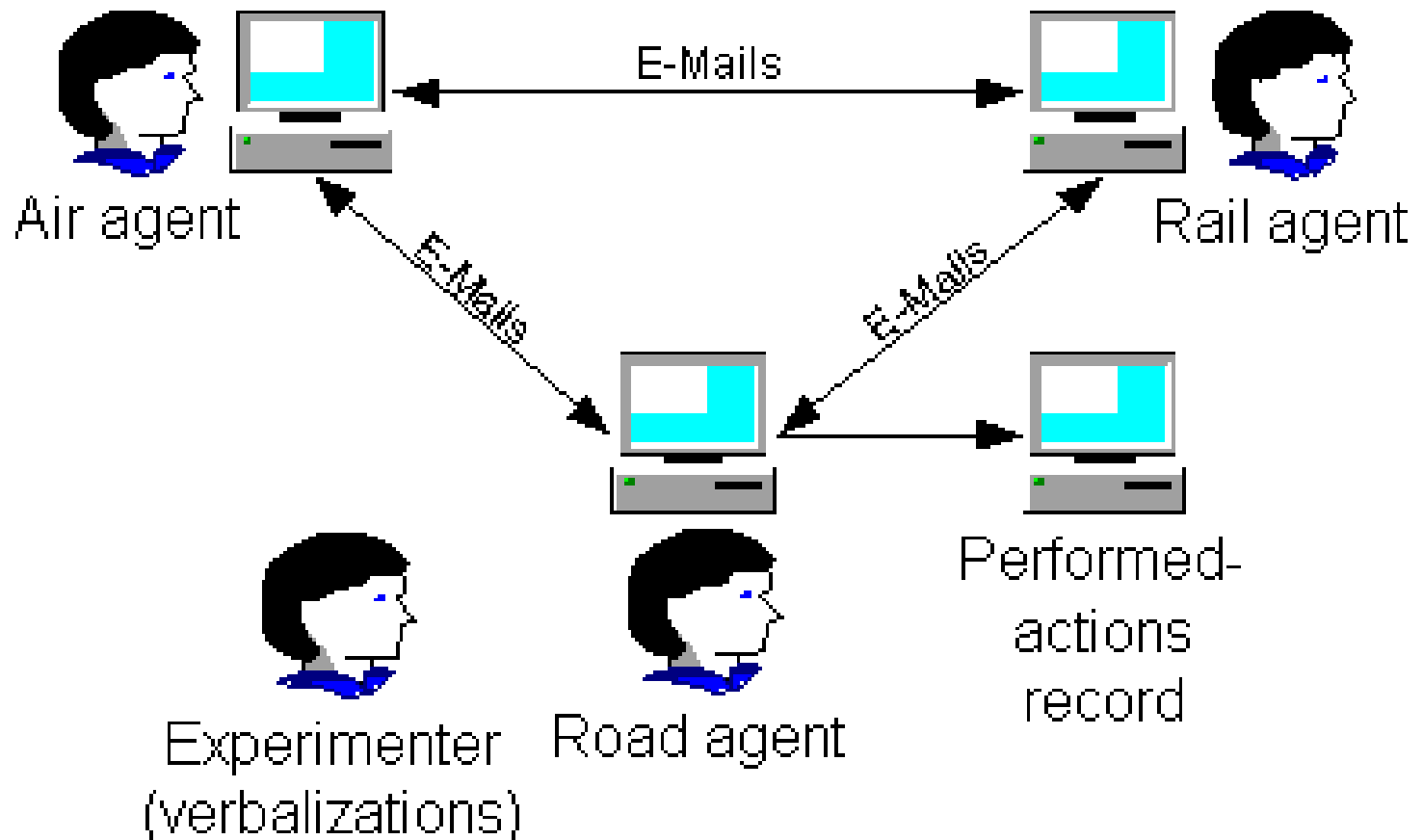
# Approach

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# Psychological experiment

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# Dynamics of human conversations

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- Analysis of e-mail exchanges
- List of pertinent performatives
- **Intervention** : series of utterances guided by the discourse intention of the initiator subject.
- 3 categories :
  - information query,
  - information proposal,
  - spontaneous sending of information.

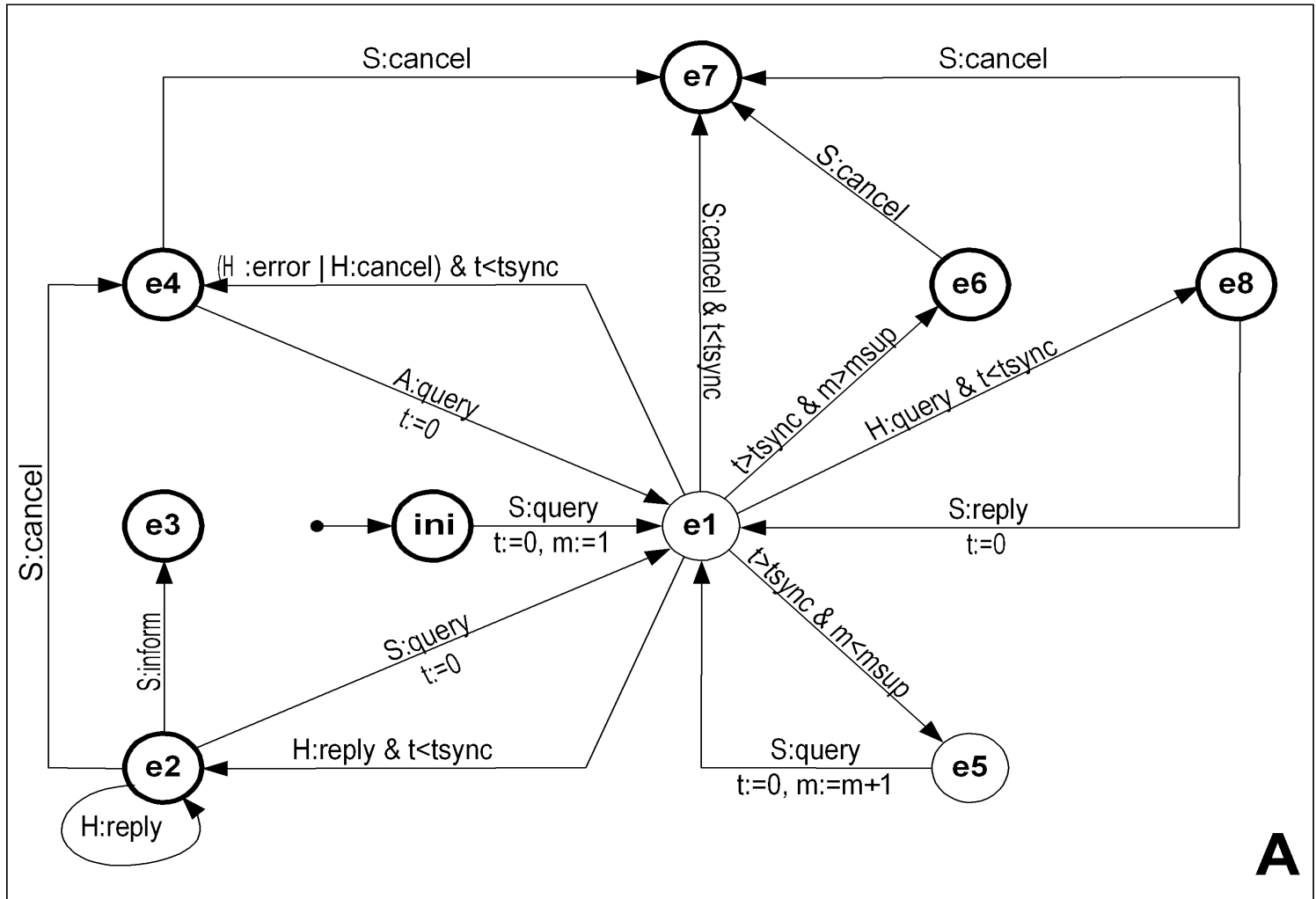


# Modelling human conversations with timed automata

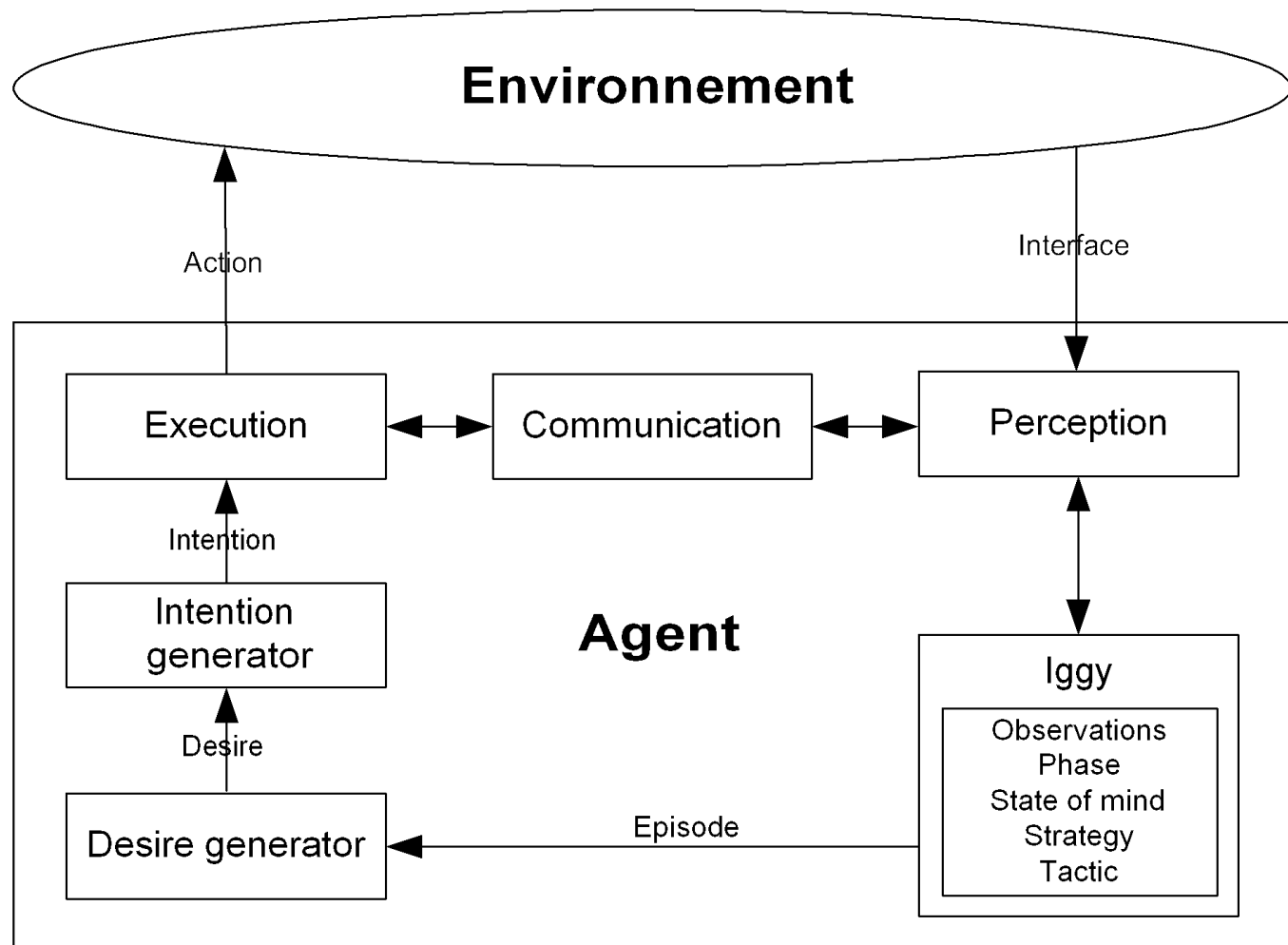
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- Timed automata help the agent :
  - to generate a message,
  - to interpret a message.
- Advantages :
  - interleaving of the dialogs,
  - repeated asks,
  - time management.

# Example : automaton of the initiator of an information query



# An agent architecture called BDIGGY





# Conclusions and perspectives

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- Cognitive model of human planning (IGGY)
- Cognitive model of human interaction :
  - Performatives
  - Timed automata
- Planning and interaction integrated in an homogeneous agent architecture (BDIlggy)
- Implement our system
- Validate the cognitive models (Turing test)



That's all folks...

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# Example of conversation

| Messages   | Performatives                             |   |   |
|--|---|---|---|
| <b>[08:23:48] From: Air-agent To: Railway-agent</b><br>I have just learnt that it is possible to travel from Paris to Montpellier by train! Could you please give me some timetables?  | query                                     | 1 |   |
| <b>[08:28:45] From: Railway-agent To: Air-agent</b><br>Yes, it's possible, there are 7 different departures from 8:12 until 18:28 (departure time). Are you interested in them? Could you be more precise on the time departure? Thanks. | reply<br>+ propose-information<br>+ query |   | 2 |
| <b>[08:29:52] From: Air-agent To: Railway-agent</b><br>Yes, from 10:15.  | reply                                     |   | 3 |
| <b>[08:33:18] From: Railway-agent To: Air-agent</b><br>Here is the first<br>====Time table====<br>Paris-Montpellier (train)<br>Date: Tomorrow -- 1 person<br>10:30/14:39 - 590 F   | reply                                     |   |   |
| <b>[08:33:49] From: Railway-agent To: Air-agent</b><br>Now number 2, do you want any others?<br>====Time table====<br>Paris-Montpellier (train)<br>Date: Tomorrow -- 1 person<br>12:06/16:21 - 590 F                                     | reply<br>+ propose-information            |   | 4 |