



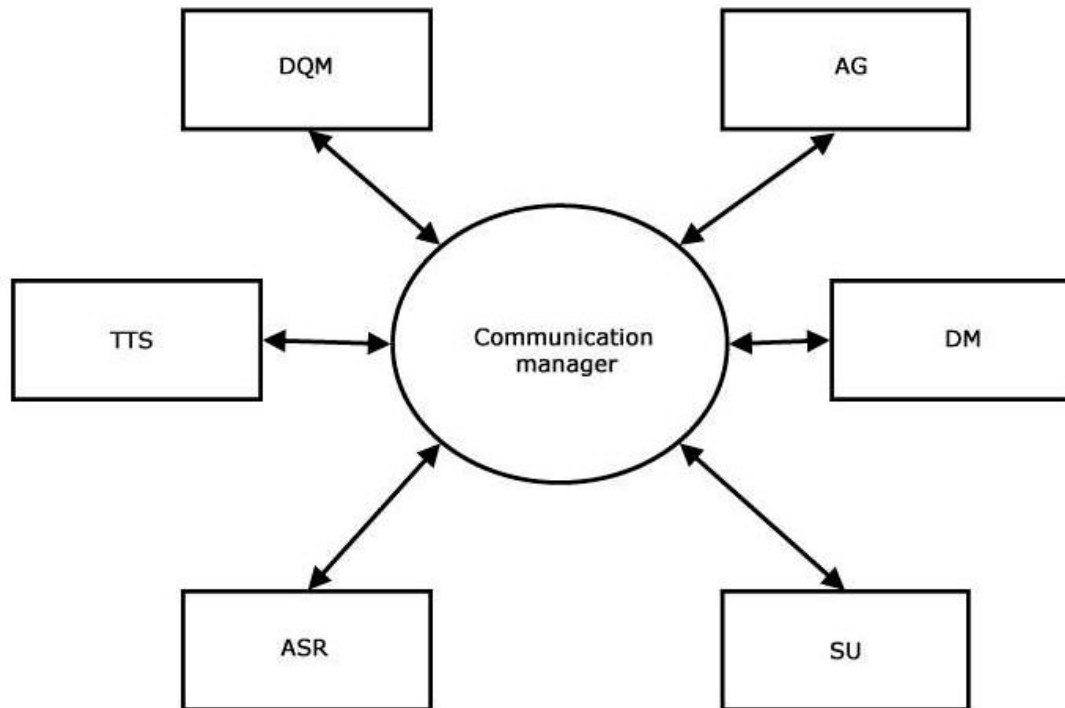
Development and evaluation of the DIHANA project dialog system

Dialogue on Dialogues Workshop - Multidisciplinary Evaluation of
Advanced Speech-based Interactive Systems



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System Architecture and communication protocol



- **ASR** (Automatic Speech Recognition module), **SU** (Speech Understanding module), **DM** (Dialog Manager), **DQM** (Database Query Manager), **AG** (Answer Generator module), and **TTS** (Text-To-Speech synthesizer)

System Architecture and communication protocol

- Communication among the modules is done by means of sending **XML communication data packages** through **sockets**

```
<?xml version="1.0" encoding="ISO-8859-15"?>
<package destination="SU" origin="ASR" version="1.0">
  <recognized_sentence>
    <information>
      I would like the train timetables from Valencia to Barcelona
    </information>
    <confidences>
      <word confidence="0.47" value="I" />
      <word confidence="0.68" value="would" />
      <word confidence="0.53" value="like" />
      <word confidence="0.75" value="the" />
      <word confidence="0.64" value="train" />
      <word confidence="0.56" value="timetables" />
      <word confidence="0.84" value="from" />
      <word confidence="0.93" value="Valencia" />
      <word confidence="0.78" value="to" />
      <word confidence="0.93" value="Barcelona" />
    </confidences>
  </recognized_sentence>
  <grammar name="dihana.jsgf">
</package>
```



Modules description

- **1) ASR** We used the **Sphinx ASR** from Carnegie Mellon University.
- **2) SU** The semantic representation chosen for the task is based on the concept of **frame**.
- **3) DM** Stochastic models, rule-based strategies.
- **4) AG** Templates associated to each one of the different frames.
- **5) TTS** Two phases: phonetic transcription and signals generation.
- **6) DQM** PostgreSQL database.
- **7) Communication Manager** Contacts the rest of the modules in the system and shows the information generated in the dialog.

- www.dihana.upv.es
- Corpus-based models.
- EVALUATION:
 - **Initial Phase**: Surveys collected from the user interaction.
 - **Second Phase**: Dialogs acquired using real users.
 - **Final Phase**: User simulation techniques.

System operation, Usability, Understanding, User satisfaction, Interaction.

Dialog success rate, Average number of turns, Confirmation rate, Error correction rate.

Percentage of unseen situations, Quality of the system answers.

- www.edecan.es