GUIDING DE USER WHEN SEARCHING INFORMATION ON THE WEB

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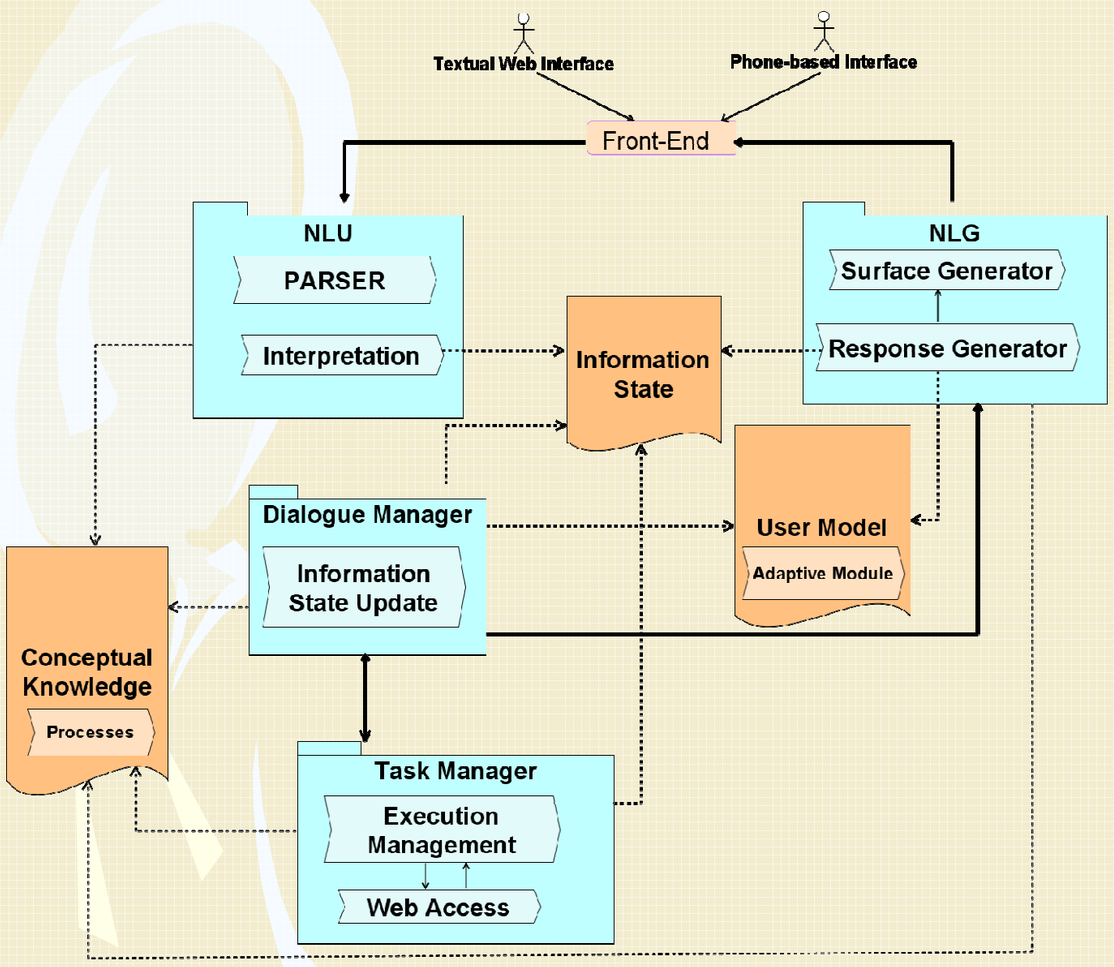
The Dialogue System

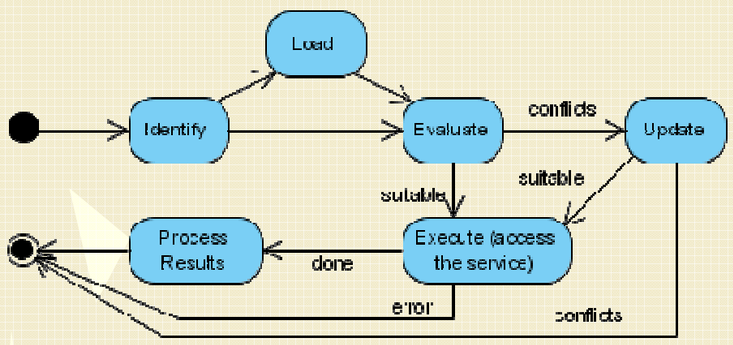
- The Dialogue System was developed to guide the user when accessing web services.
- The prototype supports Spanish access to two different types of web services: transaction and informational
- The Dialogue System consists of five independent modules:
  - The Language Understanding, using general grammar rules and domain-specific vocabularies
  - The Language Generator, using general linguistic patterns and domain-specific vocabularies
  - The Dialogue Manager, using a domain and language independent model
  - The Task Manager, using general tasks definitions for each web service type
  - The User model, using dialogue cues to automatically adapt the degree of initiative of the system

The system includes two knowledge structures:
- The Information State, representing dialogue context
- The Conceptual Knowledge, describing the application domain



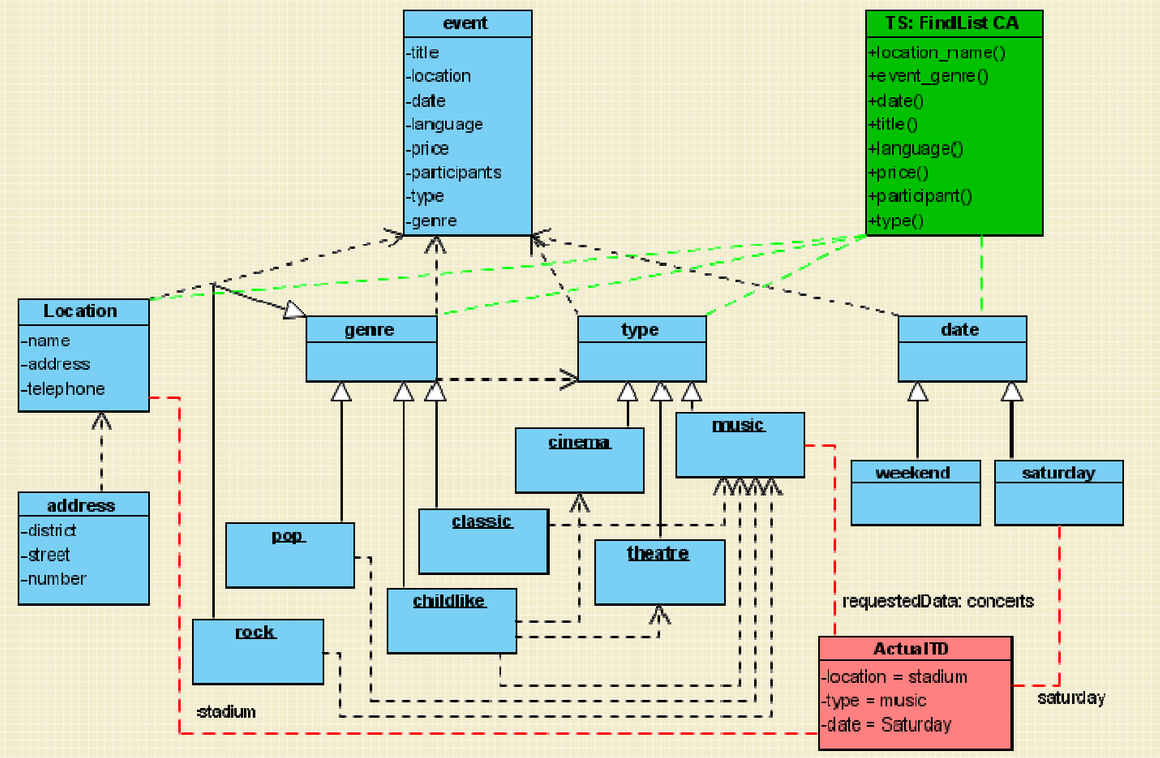
Dialogue and Task Management

- The Dialogue Manager controls the interaction with the user:
  - It follows the information state update model
  - It uses communication plans, generated (semi)-automatically, to determine the next system actions
- The Task Manager controls the access to the web services. It performs the following actions:
  - Identification of the requested web service and the specific service task
  - Completion of the data obtained from the user
  - Access the web service
  - Processing of the results obtained



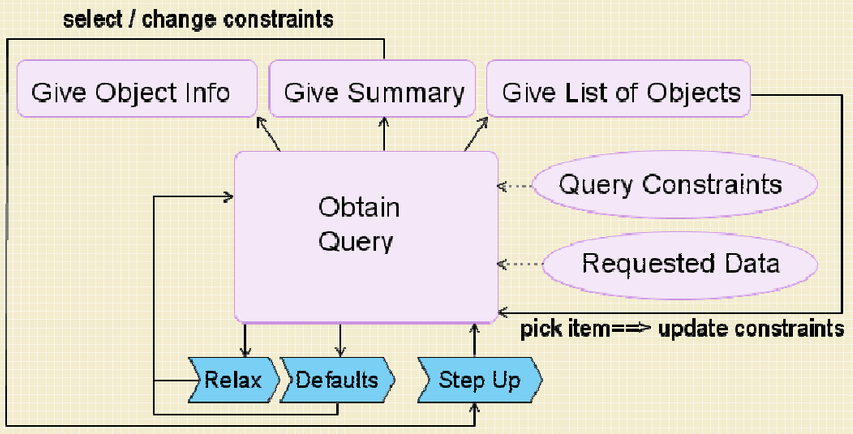
Example

U: Which concerts are there in the stadium on Saturday?
S: OK. There are no concerts in the Stadium on Saturday.
There are several concerts on Saturday in other places.
What type of music are you interested in?



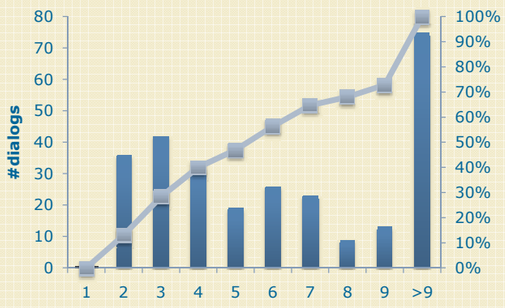
Accessing Informational Services

- When the Dialogue System guides the user to access an Informational service:
  - The Dialogue Manager has to obtain from the user
    - the searched data (requestedData or output parameters). E.g.: "Concerts"
    - the data constraining the query (queryConstraints or input parameters). E.g.: "in the Stadium", "on Saturday"
  - The Task Manager can update query constraints:
    - using default values (to complete information given by the user)
    - adding new constraints (if two many results are obtained). e.g.: "At noon"
    - relaxing constraints (if no results are obtained). e.g.: "in other places"
  - The Task Manager can give the results in three different forms
    - A description of a particular item (when the result is only one item).
    - A list of items (the user can ask for the complete description of an item)
    - A summary of all the items obtained (when many items are obtained)



Conclusions

- The Task Manager uses general knowledge for informational services
  - a general scheme to specific communication plans
  - general tasks that are instantiated for each service.
- The resulting architecture facilitates the integration of other application types into the system.
- We evaluate the prototype of the system when accessing an example of Informational (in the figure, CA) and Transactional service (LOC). The results show that the number of database accesses is higher for the informational services, and that the accesses are done at earlier turns of dialogue.



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