



Visualization of Spoken Dialogue Systems for Demonstration, Debugging and Tutoring

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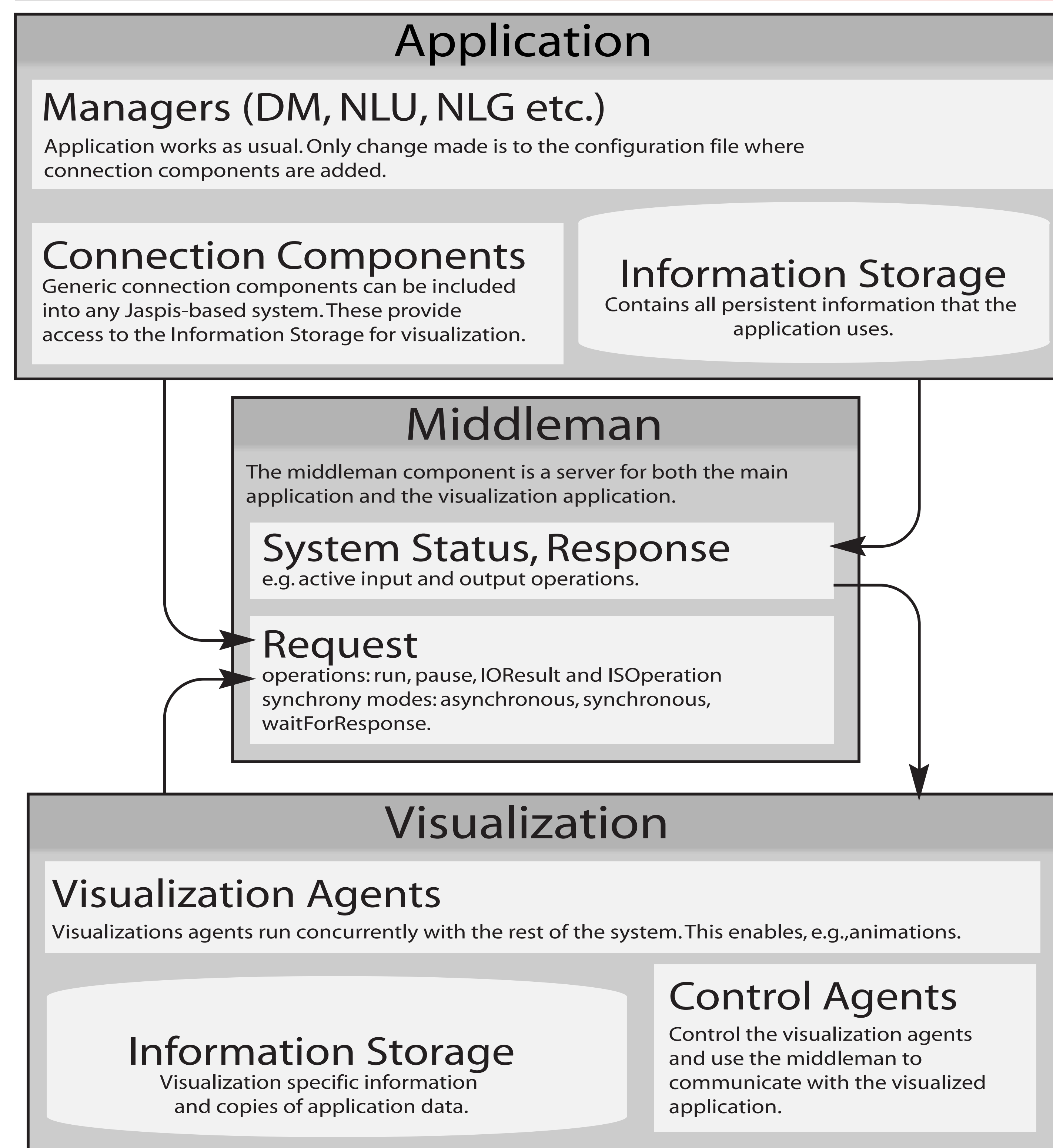
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Introduction. We introduce a general model to visualize spoken interaction (e.g. utterances) dynamically for tasks such as:

- **demonstrations**
- **debugging**
- **interactive tutoring of speech applications.**

On the right various tutoring concepts demonstrate visualizations generated with a framework. The model is depicted below.

The visualization framework in the Jaspis architecture



Spoken Dialogue with a System

S: Busman, Tampere area bus timetable system welcomes you.

U: Which bus goes to Hervanta?

S: Bus in line 13, 20, 23 and 30 go from Central Square to Hervanta.

Visualizations of the Dialogue and Tutoring

Guidance

Ask a question
Now as a question from busman. You must speak to to busman after a tone. Press "continue" button, wait for the tone and say:
"Which bus goes to Hervanta?"

Continue Back

Busman, Tampere bus timetable system wishes welcome.

Which bus to Hervanta

Speech recognition results are visualized as balloons. Users can see the actual recognition results and detect recognition errors. Bold face is used to mark words spotted by NLU.

U: When does the next one leave?

S: A moment please, querying database.

S: From Central Square to Hervanta on weekdays leaves at 10:12 bus on line 20.

Guidance

Good

Busman heard your input correctly and will tell you the next departure time.

While listening to this information, you can try interrupting Busman. You can interrupt Busman by pressing any telephone key while Busman is talking. This can come handy if Busman mishears you or you have already heard what you wanted to know.

Continue Back

When does the next one leave

departure time	current-terminate_to_1	departure time	14:32-terminate_to_1
question type	when	place of departure	Central Square
destination	Hervanta		

This tutor visualizes an internal form used by a timetable system for dialogue management. Such visualization can be used for debugging purposes as well.

U: What about in the evening after six?

S: A moment please.

S: From Central Square to Hervanta on weekdays leaves at 18:03 bus on line 23.

System

What about in the evening after six

departure time	1800-terminate_to_1
question type	when
place of departure	Central Square
destination	Hervanta

A moment please, I will query database.

Continue

Good. Busman heard your input correctly and will next tell you a departure time after six pm.

You can interrupt Busman by pressing any telephone key while Busman is talking. This can come handy if Busman mishears you and answers to a wrong question. By interrupting you can quickly make a new question.

Now press continue button.

In this tutor, an animated character provides context sensitive tutoring and explains the system using a set of small visualizations.