

# Characterization of Conversational Activities in a Corpus of Assistance Requests

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# Assisting Conversational Agents

- Who?  
Ordinary users: novices, not used to computer softwares.
- Why current approaches aren't enough?
  - “motivational paradox” (*Carroll & Rosson, 1987*)
  - novice prefers to ask from “a friend behind their shoulder” (*Capobianco & Carbonell, 2001*)
- Why Natural Language ?
  - Naturally used when confused (cf. “thinking aloud effect”)
  - Reflects users' cognitive processes (*Ericsson & Simon, 1993*)
  - Clear cognitive separation between the task and the assistance system (*Morrell & Park, 1993*) (*Amalberti, 1996*)
  - “Persona Effect” (*Lester et al., 1997*): more confidence when there is an embodiment.

# Assisting Conversational Agents

- When?  
In the worst moment: cognitive drift, user-specific vocabulary, degraded spelling or prosody...  
But...
- Hypothesis: assistance can be circumscribed
- Development of a NLP chain based on a corpus

Objectives here:

- Comparing assistance corpus to similar ones
- Analyzing the content of this corpus

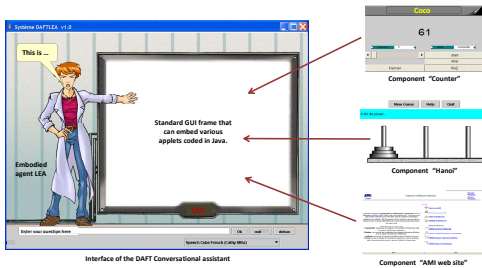
# Need for a specific corpus

- French language
- isolated requests (natural languages interfaces  $\neq$  dialog)  
(*Capobianco & Carbonell, 2002*) (*Hasson, 2007*)
- not only task-oriented but assistance-oriented

# Corpus complementary sources

The Daft corpus contains 11.000 requests, from three sources:

- ① 100 human subjects with 5 applications (applets + websites):  
**grounded** in reality
- ② manually constructed requests (according to 1) using two thesauri: improved linguistic **coverage**
- ③ FAQ from integrated help systems and websites (L<sup>A</sup>T<sub>E</sub>X and Microsoft Word): handling **complex** applications



# (Translated) excerpt from the Daft corpus

**clicks** on the quit button

**clickon** the back button

ok, come back to **th ehomepage**

what is this window for,

**WDYM** by GT ACA

do the "close" button and the "quit" button work the same way?

I **cna't** see any **demso** page!!

I was really surprised to see there's no global cancel function

it'd be better to be able to go directly at the beginning

**auf viedersen**

you good-for-nothing!

What kind of music do you like?

works for me :-)

## Four corpora to compare

**Objective:** check that the assisting function is different from classical man-computer interaction.

Corpora chosen:

- **Switchboard** (*Jurafsky et al., 1998*): 200.000 manually annotated utterances from phone talks;
- **MapTask** (*Carletta et al., 1996*): 128 dialogues in which one person has to reproduce a route on a map, following instructions from another person with a similar map;
- **Bugzilla** (*Ripoche, 2006*): 1.200.000 comments from 128.000 bug reports created during the development of the Mozilla Foundation's suite.

**Main advantage:** speech acts taxonomy available.



# Interactional profiles

**Interactional profile** = “the distribution of speech acts appearing in a given interaction unit” (*Ripoche, 2006*)

- choice of the interaction unit (according to the objectives);
- calculation of the ratio per speech act for each interaction unit;
- display as a histogram.

**Main advantage:** possibility to compare interaction units.

Here: interaction unit = corpus as a whole.

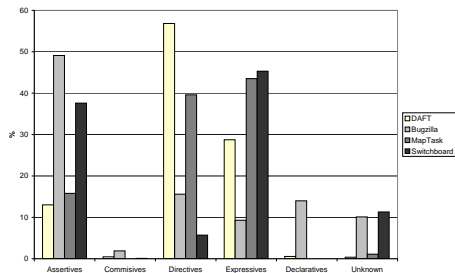
# Speech acts mapping

One of the most generic taxonomy of speech acts (*Searle, 1969*):

- **Assertives**: commit the speaker to the truth of the proposition  
examples in MapTask: clarify, explain. . .
- **Directives**: cause the hearer to take a particular action  
ex: check, instruct. . .
- **Commissives**: commit a speaker to some future action
- **Expressives**: express the speaker's attitudes and emotions  
towards the proposition  
ex: acknowledge, ready. . .
- **Declaratives**: change the reality according to the declaration
- **Unknown**: speech acts that couldn't be map (lack of information)

# Results

- a majority of *directives* (57%): more direct than with a human.
- low number of *assertives* (13%): users prefer to express their feelings and states of mind (29%).
- very few *commissives* (1%): relationship user-agent.



# Conversational activities

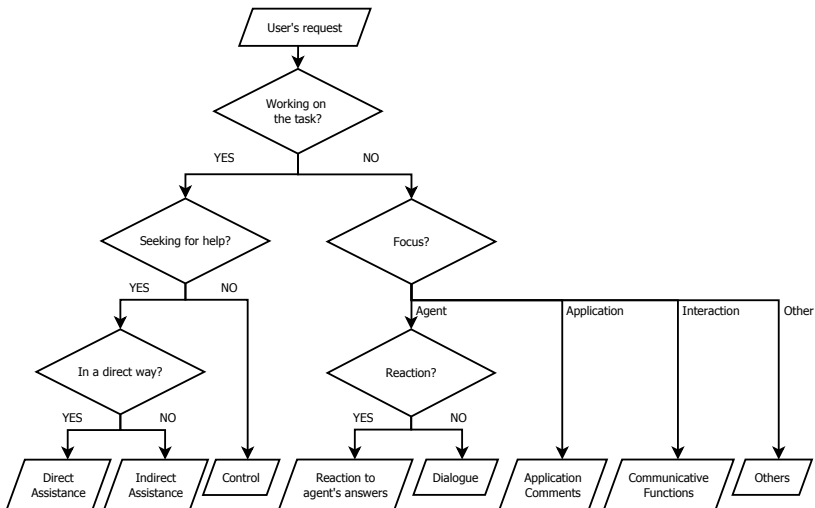
**Objective:** Users were told to use the agent when needed... but it appeared they have used it for more than assistance.

What are those other needs?

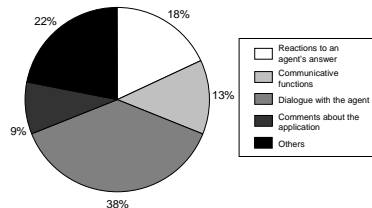
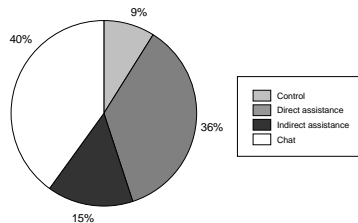
**Methodology:** Manual independant annotation of two random collected subsets

- First subset: definition of the annotation protocol
- Second subset: validation of the annotation protocol

# Annotation protocol



## Results: four main classes



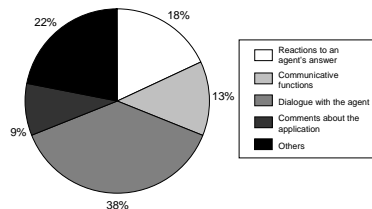
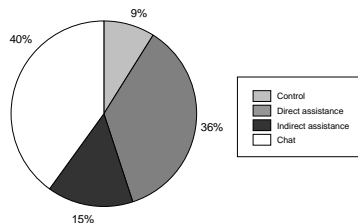
## Control:

**clicks** on the quit button

**clickon** the back button

ok, come back to **th ehomepage**

## Results: four main classes



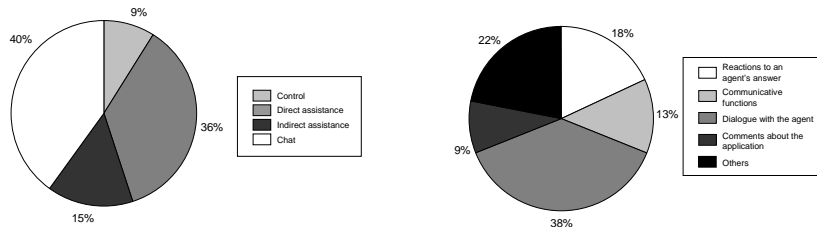
Direct assistance:

what is this window for,

**WDYM** by GT ACA

do the "close" button and the "quit" button work the same way?

## Results: four main classes



Indirect assistance:

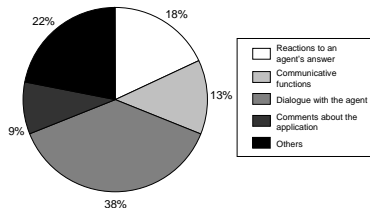
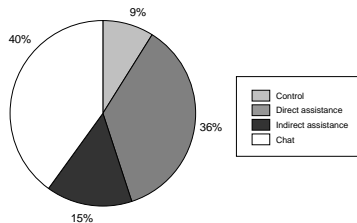
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## Results: four main classes



Chat:

**auf viedersen**

you good-for-nothing!

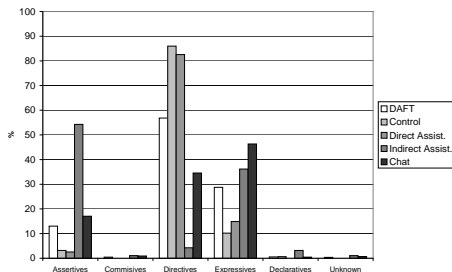
What kind of music do you like?

# Subcorpora comparison

**Methodology:** Application of the interactional profile approach to the subcorpora defined by the conversational activities.

## Results:

- visible differences between activities confirm corpus heterogeneity;
- only direct/indirect difference is significant;
- complementary to a lexicon based approach (*Bouchet, 2007*).



# Conclusion

We have presented a corpus of assistance requests, the Daft corpus, which:

- is **distinguishable** from similar corpora in terms of speech acts (human-computer interaction effect)
- contains different conversational activities :
  - assistance-oriented (60%): **control, direct and indirect assistance.**
  - chat-oriented (40%)
- approach based on speech acts allows to distinguish direct from indirect assistance.

Follow-ups:

- finding other ways to identify conversational activity;
- formal modeling of the users' requests.