

# TDM™ Dialogue Strategy Examples

In the following pages is a list of dialogue capabilities that are supported by TDM. For each capability we give a rough idea of how common it is that other voice solutions and conversational interfaces on the market solves the challenge without extensive scripting or programming efforts by the developer.



# Answers

**Over-answering:** Handling answers to questions that give more (task-relevant) information than was requested by the system.

U (User): Make a call

S (System): OK, who do you want to call?

U: John's **mobile** [not requested by the system]

S: OK, placing the call.

*Handled by several but not all other solutions.*

**Other-answering:** Handling answers to questions that give different (task-relevant) information than was actually requested by the system.

U: Make a call

S: Who do you want to call?

U: **The mobile number** [not requested by the system]

S: OK. Who do you want to call?

U: John

S: Calling John's mobile

*Handled by a few other solutions.*

# Correcting the system

**Denial:** If the user denies an already given answer, the system re-asks the question.

S: Who do you want to call?

U: Call John

S: John's home or mobile number?

U: **Not John**

S: **OK, who do you want to call?**

*Not handled by any other solutions (to our knowledge).*

The user can also supply a new answer immediately.

S: Who do you want to call?

U: Call John

S: John's home or mobile number?

U: **Not John, Steve!**

S: OK, Steve's home or mobile number?

*Handled by very few other solutions.*

This is also useful if the denied answer was in fact a misrecognition by the system, e.g. if "call John" was interpreted by the system as "Carl John".

Answers (parameters) can also be modified after a search or action by the system:

U: Do I have a meeting tomorrow at 9?

S: You don't have anything in your calendar at 9 pm.

U: **No, a.m.**

S: You have a meeting tomorrow at 9 am.

# Topic shifts

Returning from sub-dialogue. Bold = domain change

U: Call John

S: What number? Work, home or mobile?

U: **What time is it? [Time and date domain]**

S: 10 pm. **Returning to calling.** What number do you want to call?

U: The home number

*Handled by extremely few (or no) other solutions.*

Returning from two sub-dialogues across independently developed domains.

U: Call John [Phone domain]

S: What number? Work, home or mobile?

U: **When does the train leave?**  
[Public transport domain]

S: What train?

U: **I'm freezing! [Climate domain]**

S: The temperature was increased to 21 degrees.

**Returning to public transportation.** What station are you interested in?

U: Oslo

S: The next train to Oslo leaves in 20 minutes.  
Returning to calling. What number do you want to call?

U: The home number

*Handled by extremely few (or no) other solutions.*

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## >> Topic shifts

User-initiated topic change in combination with returning back from sub-dialogues across independently developed domains.

U: Search programs based on channel [Radio domain]

S: What channel are you interested in?

U: **How many free bikes are there? [Bike rental domain]**

S: What stop are you interested in?

U: **Search programs in Music Channel**

S: What program in Channel One do you want?

U: **How many free bikes are there at First Street?**

S: **Returning to how many free bikes there are.**

**There are 20 free bikes at First Street.**

**Returning to searching for programs. What program in Music Channel are you interested in?**

*Handled by extremely few (or no) other solutions.*

# Task recognition

Recognizing task from user-supplied parameter, optionally confirming this with user.

U: John

S: (OK, you want to make a call.) John's home or mobile number?

U: ...

*Handled by extremely few (or no) other solutions.*

Clarify unspecified goal inferred from user-supplied parameter(s).

U: **John**

S: Do you want to make a call or send a text message?

Another example:

U: **7 pm**

S: Do you want add to the calendar or set the alarm?

U: Set the alarm

S: You alarm is set for 7pm.

*Handled by extremely few (or no) other solutions.*

# Mixing and switching between modalities

This example shows how the user can freely choose to provide speech input or haptic

input at every turn of the dialogue. In contrast, many systems often restrict the user to choose either spoken or haptic input.

Interaction in brackets [ ] indicates GUI output (from system) or haptic input (from user).

U: Points of interest

S: Please enter the search area

[In immediate vicinity]

[In vicinity of destination]

[In vicinity of route]

[In new town]

U: In vicinity of destination

Note: the user could instead have used Talkamatic's Patent Pending SpeechCursor™ to select this option.

S: In vicinity of destination. Please select an entry.

[Parking and petrol]

[Hotels] [Restaurants]

U: Parking garage

S: OK. Please select parking garage.

[HIGH STREET]

[PRINCESS SQUARE]

[CHARLES SQUARE]

[ELMS ROAD]

[MAIN SQUARE]

U: [Push DOWN button, thereby highlighting first option]

S: High Street

Echoing by speech the currently highlighted option

U: [Push OK button, thereby selecting the highlighted option]

Note: here, the user could instead have said "High Street"

S: OK. Would you like to start route guidance?

*Handled by very few other solutions.*

# True eyes-free interaction using SpeechCursor™

The above example also shows how SpeechCursor can be used to browse a list of options without the need to look at the screen. In the example, the user may not know or remember the available parking garages in the area, but when she hears "Princess Square" she knows that this is the one she was looking for. This makes it possible to interact with applications without ever looking at the screen. Handled by extremely few (or no) other solutions.

## System initiated dialogue

The system initiates a dialogue instead of the user based on either external input, sensors, or previous experience.

[Live traffic information reports an accident on planned route]

S: Accident ahead. Would you like to go via down town or the costal route instead?

U: Take the costal route.

S: In 300m turn left.

## Personalization

TDM can learn common user answers based on observations of user behavior. This has been explored in a setting where time and place are used to predict destination. As an example, take a situation where a user starts his car on a weekday morning and the following dialogue ensues:

U: Traffic information

S: Ok. What road? U: E6.

S: Showing traffic on the E6

After this has been repeated a sufficient number of times

U: Traffic information

S: Showing traffic on the E6

Later, the interaction is even more reduced:

S: Good morning. Showing traffic on the E6.

## About TDM

TDM is a dialogue management system that shortens development times and time to market for any development of conversational interfaces. TDM include possibilities for multimodal dialogue as well as multiple language support as an integrated part of the development platform.

The uniqueness of TDM lies to a large extent in the combination of dialogue capabilities and the availability for 3rd party development through open APIs. TDM can be integrated into voice and speech interfaces as well as chat-bots and text interfaces.

## About SpeechCursor

SpeechCursor is a Patent Pending solution for truly eyes free navigation which is very valuable in situations where the user's attention is needed elsewhere such as in a driving environment or when lacking a proper graphical user interface.

## About Talkamatic

With a strong background from research in computational linguistics and dialogue management Talkamatic was formed in 2009 by Professor Staffan Larsson and Dr. Fredrik Kronlid. With deep understanding of human natural language interaction Talkamatic has developed an advanced dialogue management system (TDM™) that enables fast and easy development of conversational interfaces, and opens up for more advanced dialogue based interaction solutions.

Talkamatic always push the limits for what can be achieved with conversational interfaces today and we believe in a very bright future for dialogue as an integrated and natural part of any computer interaction. We would love for you to challenge us, and to investigate and develop conversation with you.

**For any additional information or requests please contact**

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