

Standardisation of multimodal dialogue context formats

Introduction

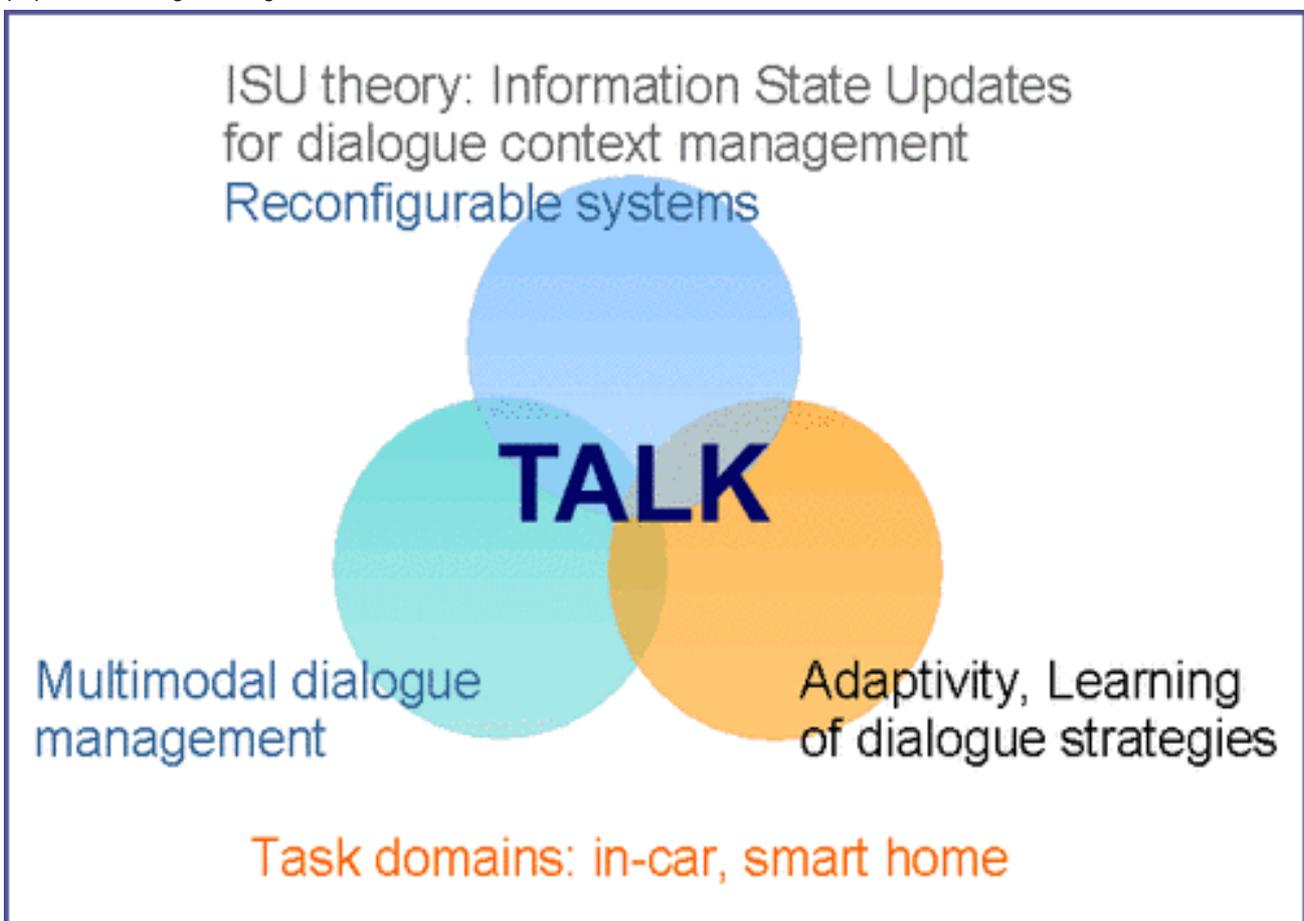
The EU project TALK focused on the development of new technologies for adaptive multimodal and multilingual human-computer dialogue systems. The aim was to make dialogue interfaces more conversational, robust, intuitive, and user-adaptive: TALK worked towards the long-term vision of users interacting naturally with devices and services, in the home or car, using speech, graphics, or a combination of the two.

Standardization challenges

Standards serve various purposes such as internationalisation or quality control. The primary goal of standardising dialogue context formats and dialogue annotation is to be able to create uniform corpora that can be shared among partners. This is especially important as data driven methods become more popular in dialogue design.

For example, researchers aim to learn a dialogue policy from dialogue state representations where the size of the state space increases exponentially with the number of state variables. To address this problem, one either needs to get more data, or keep the state space small enough for the learning problem to remain tractable. Both issues are closely related to the question of standardising the dialogue context.

The challenge is the representation of various aspects of the dialogue context. The analysis of the annotated data is supposed to feed into system development. A major concern here is that annotations, which are time-consuming and expensive, should be reusable for analyzing various phenomena, from the viewpoints of different theoretical models and/or concrete implementations. This is what motivates the interest in efforts aiming to define interoperable concepts for context representation. These types of interoperability issues represent an important area where standardization could provide substantial benefits.



Standardisation Path

There are several different standardisation initiatives touching on dialog corpora and dialog annotations. While the TALK project and the AMI Project are more based in the W3C Voice works using EMMA -mostly using XML dialects-, the LIRICS project pushes the current work in ISO TC 37 SC 3 & 4.

First step for TALK was to present their work to the Voice Working Group and Multimodal Interaction Working Group to get their attention and comments. The Groups were both very interested but both concluded that the work undertaken by TALK was too far ahead of their actual schedule to be accommodated directly by the Working Groups.

After preliminary discussions with involved stakeholders from industry and universities, the Standardization Action Plan identified a multitude of existing groups spreading over IETF, ETSI and ISO. The Plan suggested to have a Workshop, gathering the community of researchers working in the area of dialogue context. This workshop would determine whether there was enough agreement in the community to push the creation of a specification of an XML format for dialogue context.

Further, it would also determine whether there would be a possibility to bring the ISO branch and the XML branch back together on to some common ground. If such a common ground could be found, W3C would make a lightweight group called "Incubator" to allow for the creation of the specification or help TALK with further work in ISO.

Step 1: Identification of relevant formats

As a first action, TALK performed an analysis within the community of experts on dialogue annotation about the formats already used. It also identified several ongoing standardization activities, and determined to which extend these could be leveraged within the project.

Step 2: Identification of needs

Following these initial activities, TALK made an inventory within its own constituency on which parts of the work was relevant and appropriate for standardisation.

Step 3: Identification of stakeholders

By collecting the various dialogue annotation formats, TALK had automatically identified the relevant community on a global scale. Moreover, relevant stakeholders in the university community were already known to the long standing experts working within the

project. Further, Industry contacts were provided through coordination with the W3C Working Groups as well as with ISO TC 37 SC 3 & 4. This created a large overview of the state of the art in the area and the relevant actors.

Step 4: The Workshop

The Workshop that brought the relevant community together was organized in Edinburgh on 12 December 2005. It united all relevant actors interested in dialogue context formats. While participants agreed that the issues addressed and discussed were highly relevant from a scientific perspective a concrete agreement to team up and push forward a single format for dialogue context was not retained. However, a limited number of people still remained committed to continue to push for standardisation.

The Workshop therefore for the time being finalized the standardization activities developed by the TALK and AMI projects within the project's lifetime. However, additional initiatives may be developed in the future, when the W3C work on Voice and Multimodal would be a bit more advanced and come closer to the work on dialogue annotation.

Key Learning Points

The action steps towards standardization of a dialogue annotation format generated some experiences that could be relevant to other research projects plating their standards work as well.

- TALK had a really compelling case for standardisation as it would have allowed several communities to get more insight and research results by creating larger dialogue corpora, thus allowing all to share the benefits. However, other circumstances may cause barriers to unite a sufficiently large constituency around the standardization challenge, that is related to it.
- A compelling argument for standardisation can be sufficient to unite and motivate the relevant community to discuss standardization opportunities. However, timing is an important aspect in standardization processes, and under certain circumstances it may be necessary to take a step in between (i.e. going through an incubator-type process), rather than to pursue full blown standardization objectives.