

DISC

Spoken Language Dialogue Systems and Components. Best practice in development and evaluation

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DISC is an Esprit Long-Term Research Concerted Action which started on 1 June 1997 and will run until 30 November 1998. The Action draws together a number of actors from the national and European spoken language dialogue systems (SLDSs) development projects that have been executed during the last ten years. The DISC partners are: The Maersk Mc-Kinney Moller Institute for Production Technology (MIP), Odense University, Denmark (coordinator); Human-Machine Communication Department, Centre National de la Recherche Scientifique (CNRS-LIMSI), France; Institut für Maschinelle Sprachverarbeitung (IMS), Universität Stuttgart, Germany; Department of Speech, Music and Hearing, Kungliga Tekniska Högskolan (KTH), Sweden; Vocalis Ltd, UK; Daimler-Benz, Germany; Stichting Elsnet, The Netherlands.

The goal of DISC is to develop a first detailed and integrated set of development and evaluation methods and procedures (guidelines, checklists, heuristics) for dialogue engineering best practice as well as a range of support concepts and software tools. The methodology produced by DISC should contribute towards establishing dialogue engineering as a sub-discipline of software engineering. The aspects of SLDSs addressed by DISC include speech recognition, speech generation, language understanding and generation, dialogue management, human factors, and system integration. For the initial investigation of those aspects, the consortium partners contribute access to products and running prototypes and their components as well as to prototypes under development.

More specifically, DISC aims to extend the state-of-the-art in dialogue engineering in four ways:

- (1) by *generalising* current knowledge through performing analyses of a broad range of current SLDSs and components development and evaluation practices, thereby creating a detailed overview of current practice;
- (2) by *maturing* promising novel concepts, methods and software tools which exist in preliminary versions at the partners' sites, and bringing them to the industrial transfer stage;
- (3) by *testing* on industrial and research cases a methodology for dialogue engineering best practice; and
- (4) by *systematising* results into a detailed, procedural dialogue engineering best practice methodology which should take a balanced view of competing approaches and technologies, where such exist. The methodology should enable the user to specify the required behaviour (functionality, performance, ergonomics) and determine to what extent the system, its components and their interaction meet the stated requirements.

At this time there are no accepted standards or even widely understood benchmarks for assuring potential customers or users of SLDSs of the quality of systems. Neither are there any reliable methods for comparing the quality of two SLDSs before selecting one for deployment in the field. In an increasingly competitive marketplace, the ability to state that some system has been developed following a carefully designed and validated dialogue engineering methodology, along with the ability to report evaluation results in a standardised framework, is likely to give products developed in this way a competitive advantage. That in turn might stimulate take-up of the methodology by other organisations.

The envisioned industrial benefits of DISC will thus be:

- Progress towards the integration into software engineering of SLDSs best practice.
- Improved feasibility assurance of development projects (risk minimisation) and more exact feasibility assessment.
- Improved procedures, methods, concepts and software tools.
- Reduced development costs and time, improved maintenance and reusability.
- Improved product quality and increased flexibility and adaptability.
- Progress towards the establishment of dialogue engineering standards.
- Improved guarantees to end-users that a product has been developed following best software and cognitive engineering practice. Enabling end-users to objectively assess different systems and components technologies against one another and choose the right product according to quality, price and purpose.

The consortium had its first workshop on 3-5 July 1997 in Stuttgart. The workshop mostly consisted in detailed planning of the work to be done during the following months, as well as agreeing on common approaches and evaluation criteria for the analysis of the widely different aspects of SLDSs considered in the project. A first skeleton DISC dialogue engineering best practice model is nearly finished. This model will be detailed and proceduralised throughout the Action. As a first step towards refinement of the model, the DISC consortium is currently performing an in-depth examination of a broad selection of state-of-the-art SLDSs and components in order to identify current development and evaluation practices and pinpoint their deficiencies. The partners have also started to look at existing software platforms and tools with the purpose of providing an overview of the state-of-the-art. In addition, work has begun on maturing existing best practice concepts and software tools.

The nature of DISC requires a maximum of openness and communication with the communities involved in the development and evaluation of SLDSs and their components. To maximise the usability and relevance of its results, DISC is looking for the widest possible collaboration with researchers and industrial developers. The DISC Advisory Panel has been set up with this purpose in mind. We would like to invite you to join the Panel if you are interested in contributing to the continued development of an SLDSs best practice methodology. You can do so by, for instance, commenting on advance-versions of intermediate project results, providing access to finished products or to your own SLDS prototypes or components under development, and/or by making your colleagues in DISC aware of practices, theories and tools in current use. Members of the DISC Advisory Panel will be kept informed about the latest developments within DISC and have early access to DISC reports and other results. To join the DISC Advisory Panel, you may 1) send

a email message to ELSNET to this effect; or 2) complete the 'Advisory Panel' form at URL <http://www.elsnet.org/disc/>.

More detailed information on DISC can be found at the URL just mentioned. The DISC web site will include all publicly available DISC documents as well as links to relevant information on SLDS systems, projects, platforms, development tools etc.

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