FP7 - Information and Communication Technologies

Collaborative Project

Dicta-Sign

Sign Language Recognition, Generation and Modelling
with application in Deaf Communication

Grant Agreement Number 231135

Deliverable D9.3

Dissemination Activities Final Report

Leading Partner: WebSourd

December 2011 1.0
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1. Introduction

1.1 Purpose of the document

The objective of the Dissemination Activities Final Report is to present the summary of the planned WP9 “Dissemination” activities at the end of the project life. The activities were carried out in order to promote the technological, scientific and practical uses project results and ensure the widest possible use of knowledge derived from it.

The report will describe the activities carried out by the DictaSign Consortium, performed in several directions: industrials, scientists, deaf communities, and general audience, using several channels.

1.2 Executive summary

Dicta-Sign is an innovative research project, which aims at creating prototypes for technological tools that promote Deaf communication and accessibility in the environment of HCI applications for the Web. Dissemination of the project's scientific outcomes to the scientific community, the related industry and the international as well as national deaf communities is a major goal.

The project's dissemination action plan targeted the following objectives:
- To gather specifications and evaluations by the deaf communities of the partner’s countries about tools and interfaces developed
- To make scientific innovations available to the international scientific community and standardisation bodies, via publication of papers in conferences and refereed journals, workshop organisation, exhibitions, etc.
- To communicate innovations and elicit feedback from project support organisations interested in signed content production
- To gather all necessary feedback to develop an appropriate project exploitation plan.

In this line, Dicta-Sign applied a strong dissemination strategy, which is viewed as a crucial forerunner for further exploitation of the project outcomes.

Dicta-Sign dissemination strategy aimed to:
- Inform on goals of the project
- Present progresses and achievements
- Give access to resources and outcomes

This strategy has been deployed along two axes:
- Dissemination channels (Internet, mass-media, scientific publications, articles, newsletters)
- Dissemination events (scientific and industrials conferences, workshops, deaf festivals and events)

Giving this framework, the dissemination has to reach various targets, which do not share same languages and same expectations. The goal was to provide, when it was relevant, information in all languages, which are written and sign languages. SL share
a strong iconic basis, therefore it was also possible to provide information in a visual way with icons and drawings, based on SL grammar: this form of communication can be understood by hearing and deaf people. Using this visual information, we could address even people that communicate in a language that is not one of the project.

2. Context

Dicta-Sign is an ambitious project both in terms of scientific and social goals and objectives. On scientific grounds this is exhibited in the way work is structured and accomplished by the different research and user communities involved, characterized by very different backgrounds and origin, namely:

- Scientists from different domains such as computer vision and sign recognition, animation and sign language generation, natural language processing and corpus linguistics.
- Deaf organisations and companies working on accessibility issues for the Deaf, involved in a socio political environment very quickly evolving all over Europe.

The technologies and concepts developed by the project to serve the Deaf audience are supposed to be already available and rather popular among average ICT consumers. This misconception is related to the wide use of applications such as:

- Language translators for oral languages, which are available for free on the internet.
- Avatar technologies which are more and more used in the entertainment and video games industry.

The popularity of such software has an effect directly impacting the project as regards non expert, naïve user audience. It gives the impression that the project objectives are easy to reach, since similar technologies are “largely available”. The truth is that sign language applications demand a state of performance which is not comparable to any state serving the above kind of applications. In fact sign language technological demands require a state-of-the-art far beyond currently available achievements.

The Dicta Sign project will have to highlight and communicate the real state of the art to the wide public, regarding the research components of the project and sign language technologies in general.

2.1 Socio-political considerations

The project began at a time when most of the member states of the European Union are incorporating the basic recommendations relevant to accessibility and disability into their national legal systems. And although these changes are directing both the market and the industry towards the right direction, also providing means and money to support development of new solutions adequate to serve the disabled citizens, they also trigger an adverse effect: the perspective of new market and new business opportunities is attracting all kind of new “players”, among them many with no or
very little serious knowledge of the demands of the emerging market addressing accessibility issues. The major risk here in respect to deaf support is that some new players tend to impose “easy to develop” solutions that are neither scientifically do not sound, nor they fit expectations of the deaf community.

2.2 Deafness and sign language

DICTA-SIGN project had to deal with a very “reluctant” deaf community in Europe with regard to potential improvements new technologies can provide them with. Therefore, a focus oriented, strong effort was needed as far as dissemination towards this community is concerned.

This is one of the key issues which led to involvement of WebSourd in the project from the start. The proximity of WebSourd Company to the deaf community will facilitate contact and enable effective dissemination of the project goals, objectives and outcomes. In this line, the primary goal is to clarify to the Deaf population the project objectives and highlight its impact as well as its positive return for the deaf people. A crucial factor towards this end is to reassure Deaf organisations about their active involvement in the project as regards evaluation procedures.

The previously mentioned reluctance of the Deaf to accept initiatives coming from outside their closed communities is strongly linked with the social reality of deafness in most of the European countries, either in respect to the legal status of the local sign languages, or depending on the past and recent history of deafness in each individual country.

In a significant majority of European countries, the local sign languages have been prohibited to use or had no recognised status of an official language throughout the most of the twentieth century. Under these conditions, cultural and scientific or academic knowledge and understanding of sign languages has been “lost”, or more precisely, it has been confined in a thus closed Deaf minority. This situation also reinforced a very strong sense of “property” as regards sign language, cultivated by Deaf organisations, and still dominantly present, which is accompanied by a clear feeling of responsibility to “protect” the sign language from outside threats.

This situation has started to change in the 80s, when work of a few pioneers pointed out the scientific interest in sign language research, combined with initial development of technological applications capable of providing serious support to deaf individuals.

This interest, however, led to further defensiveness, since scientists who researched sign languages and sign language communities needed direct information from deaf community members, who started to feel like “losing control” of what they perceived to be the “fundament” of their communities.

This has been emphasised in the recent years when sign languages received the status of official national languages in many European countries and thus are becoming more and more popular in the hearing society, directly connected with an emerging
“market” of sign language teaching, based on new demands for sign language consumption.
The fear among Deaf groups of losing control of what was always a private matter is also accompanied by the feeling that “scientists” would tend to oversimplify sign language in an attempt towards normalisation of many of its aspects, just for the sake of facilitating their own research without allowing Deaf organisations to control the outcome of their work.
DICTA-SIGN communication with the project’s national Deaf communities must address these concerns from the very beginning of the project’s contact with the respective Deaf organisations.
Another important issue to deal with is the notion of “time”.
Time is not running at the same pace for scientific researchers, which has to develop a clear and flawless process, and the deaf community, who will be very eager to take benefit from what is presented to them and looks equally assistive and promising.
The distance between prototype development and availability of a technological product for full public use is usually very long. Support of the deaf community is strongly depending upon both their understanding of the ongoing developments, and their acceptance of the timeline of the process.
Regarding this kind of understanding, each individual country is presenting a different level of maturity, so the project dissemination policy needs to develop a global approach with situation dependent, specific local implementation plans.
The dissemination action plan also takes into account that a deaf community is not a uniform social group. Any local implementation plan then will have to adapt to this reality as well.
In practical terms, all dissemination actions must target a deaf population with a poor educational and academic background, and with a major illiteracy problem.
Furthermore, this population is organised in thousands of “deaf associations” and contrary to what one would expect on the basis of the above described situation, there is a huge network of very active associations all over the world.
The various means the project will use to inform the Deaf communities on all of its aspects will take the set of parameters depicted above into account and we already assume that sign language is more than ever a key media for disseminating the project, either through video or signing avatars, or with life presentations in conferences in the deaf association networks and local events.

2.3 Research context
The project is built upon expertise and knowledge from different research domains and backgrounds such as “computer vision”, “sign recognition”, “animation”, “sign synthesis”, “corpus linguistics” and “natural language processing” Cooperation of the project teams is not a trivial issue, even within academic expert community.
Synergies in the project will inform the research community on innovative aspects of achievement in the different fields required to develop sign language technologies.
Key scientific forum and international conferences with high reputation are targeted by the project to disseminate research outcomes.

3. Strategy

The WP9 of the project work plan along with the Project Dissemination Committee (PDC), a purpose-formed committee that manages, coordinates and effectuates dissemination efforts as part of the project management strategy, are the basic instruments, through which the project dissemination strategy has been implemented.

The PDC is constituted of members from each partner and led by WebSourd. A dissemination initiative has also been undertaken by the deaf members of the project, who have formed a dissemination working group, also led by WebSourd, which met for the first time during the plenary project meeting that took place May 24th 2010 in Malta with an agenda for the promotion of Dicta-Sign to the project countries’ Deaf communities.

The PDC used to have a meeting every semester at minima, but people from WebSourd used to meet on a more regularly basis, every 2 month, in order to update the information to disseminate regarding project advancements.

Three different targets were identified for dissemination regarding Dicta-Sign:
- Scientific community
- Industrial companies
- Deaf communities

These targets do not have the same needs of information: scientific community are interested in scientific improvements, innovations and prototype developments, industrial companies are interested in prototypes that could end in applications and be sellable in short term, or technological developments that will be reusable in existing applications, and deaf communities are interested in the uses of sign language, applications that are usable or that could be a minima evaluated.

Therefore, the PDC committee had to give different point of view that fit targets’ needs: scientific advancements of the project are communicated to the international scientific community via publication of papers in conferences and refereed journals, industrial companies are informed about latest development via WebSourd newsletters and business shows, and deaf community about uses of sign languages and also applications development via sign language newsletters, and live demonstration.

The project’s state of work and outcomes are also communicated to Dicta-Sign support organisations, a group of experts from the academia and the industry, on a regular basis via Dicta-Sign newsletters.
Other interested organisations and standardisation bodies as well as institutions and public policy makers also received information on progress of work within Dicta-Sign via project and WebSourd newsletters, with the aim to have the project contribute towards formulation of recommendations and standards in the areas it investigates.

4. Dissemination activities

Firstly, dissemination to each target was to inform that the project was starting. Then, as results were available they were given to the corresponding targets. At the same time, evaluations were conducted in accordance to prototypes availability, whether it was applications or interface prototypes. For each evaluation, it was mandatory to present the overall project and the achievements at the time of evaluation.

The consortium did use several approach to disseminate information all along the project. We first present what has been made to communicate remotely to people, then we present in presence communications.

4.1 Remote dissemination

4.1.1 Project website

A website (http://www.dictasign.eu) was set up to present the project in the 4 written and sign languages (cf. Picture 1).

![Picture 1: Project website – screenshot of the main page](image-url)
This website has evolved during the second year to better fit partner's needs (from a Drupal it became a wiki based content management system). The overall goal of this tool was to be a communication tool to the different targets and the public, but also between each partner of the project, and for European structures that followed the project (i.e. PO and reviewers). It presents the project in the eight written and signed languages of the project.

A detailed description can be found in Appendix 1.

There are 2 main parts: a public and a private section. Everyone can access the public section but they need to log in (login and password) to access private pages. Among the people that can access private pages, there are the "public site maintainers" who can edit and create pages, and "reviewers" or "public officer" who can only view private pages.

- The public section ("Project Overview: free access") contains information that concerns all targets of the dissemination and all people in general. The main page of the public section is fully accessible in the eight languages of the project. The majority of the publicly accessible parts provide information only in written English (and not in the eighth different languages), because these pages contain either lists of items (names, web url, tables, pictures, etc.). People are only allowed to see those pages, without being able to edit or create pages and menus. Information available are latest news and past and forthcoming events, presentation of the consortium, presentation of the project, deliverables publicly available, newsletters, presentation of the applications, outcomes resources of the project.

- The private section ("Restricted Area") is a powerful tool for communication between partners, and to the project officer as for reviewers to check the deliverables for instance. Everyone involved in the project within a partner team has his own access with a login and a password, and can create and edit menus and pages in order to communicate to others.

All pages are in written English, because everyone one in the project knows English, but not everyone one know one same sign language or another written language. Thus, to be able to communicate easily and rapidly, we made the choice to use written English.

We here present in details the content of the private section:

- "Technical Information": a reminder of how the site is constituted, ie a public and a private section, what are the rights of the different users. Note: there is a side bar menu (at the bottom of the left menu, freely accessible) leading to a training place, for those who are not used to write using Wiki syntax, therefore we did not clone this in the "technical information" page.

- "Confidential Work Discussions": it is the main part of the private section. It contains every documents and notes that were used during the project: mainly practical information and pre programme of all meetings, general discussions about cross-cutting issues and thought, discussions on each WP, and other various discussions.
o "PDC-PCC Activities": gather official documents produced at the beginning of the project (DoW, contracts, etc.), all report of all meetings made by the PCC and the PDC, all six month progress and annual reports, and review reports.

o "Year-X Deliverables": is a page containing all links to the deliverables due in the considering period. There are 3 menus (namely "Year-1 Deliverables", "Year-2 Deliverables", "Year-3 Deliverables"), one for each year of the project, and deliverables are first stored to be readable by reviewers and project officer, then modified to address reviewers' and project officer's recommendations.

There is also a RSS feed and a "Help" section for people who are not at ease with the wiki syntax in which you have to write to fill pages in the website.

To sum up, project website addressed several needs: communicate to targets, be a tool for collaborative work either within partners or with evaluators’ communities, be an archive for the project, make resources available to a wide audience, expose the outcomes. These targets were reached by a wide range of media, using either written and/or sign language, archived in the website.

b. Statistics

There is a tool that gathers data and provides statistics from the website. Here is a first point of view, following years of the project:

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nb. of distinct visitors</td>
<td>1122</td>
<td>4607</td>
<td>6064</td>
</tr>
<tr>
<td>Nb. of visits</td>
<td>3032</td>
<td>18297</td>
<td>19575</td>
</tr>
<tr>
<td>Mean visit/visitors</td>
<td>2.7</td>
<td>3.97</td>
<td>3.22</td>
</tr>
</tbody>
</table>

Visit duration

<table>
<thead>
<tr>
<th></th>
<th>0s-30s</th>
<th>30s-2mn</th>
<th>5-15mn</th>
<th>1h+</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nb.</td>
<td>47 %</td>
<td>11 %</td>
<td>10 %</td>
<td>10 %</td>
<td>12mn</td>
</tr>
<tr>
<td>Duration</td>
<td>46 %</td>
<td>5 %</td>
<td>4 %</td>
<td>30 %</td>
<td>23mn</td>
</tr>
<tr>
<td></td>
<td>44 %</td>
<td>7 %</td>
<td>4 %</td>
<td>28 %</td>
<td>23mn</td>
</tr>
</tbody>
</table>

Most seen pages

1. Welcome pages (in different languages)
2. Confidential work discussions
3. Publications
4. Applications
5. Publications

Visitors from Domain / Country (from top one)

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR, GR, DE, UK</td>
<td>FR, com*, UK, GR, DE</td>
<td>com*, DE, FR, UK, GR</td>
<td></td>
</tr>
</tbody>
</table>

Keywords used to access the website

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>DictaSign &amp; al**</td>
<td>DictaSign &amp; al**</td>
<td>DictaSign &amp; al**</td>
<td></td>
</tr>
</tbody>
</table>
Notes:
*: “com” means it is a commercial website that led to the project website
**: “&al” means that it is mainly the name of the project typed in a search engine, either with a hyphen, a space or word pasted together, that led to the project website. It is important to notice that for 2009, 50% of visitors came from a search engine, whereas for 2010 and 2011 they are from 2 to 4%. That means that last two years, people get directly to the website by typing the URL or selecting it from their favourite’s folder.

A point of view to analyse this table could be over the years. There is an overall raise of visitors going to the website from 2009 to 2011. Visitors also stay longer on the website, even if a proportion still stays for a very short time: this can be explained partly because partners of the consortium use the website as a working tool. Partners do not stay more than few seconds, for logging in, then go to private pages were statistics are not allowed to enter. Thus, there are many visitors that do not stay a long time on the “public” website.

Pages seen follow the progress of the project: as time pass by, pages “publications” and “applications” were created and enriched with latest results and improvements. Lastly, people tend to bookmark the website, maybe to get in touch with it and come again later when new achievements are added: this idea comes also from the fact that people don’t come once on the website, but from 2 to 3 times in mean.

4.1.2 Other websites

Information about progress and achievements of the project were also available both in written French and in LSF on the company website of WebSourd (http://www.websourd-entreprise.fr/spip.php?article122), by the mean of a dedicated section presenting the project and articles available whenever a significant progress was made (Picture 2a). Websites from other partners, namely UHH (university of Hamburg: http://www.sign-lang.uni-hamburg.de/dicta-sign/) and ILSP (institute in Greece: http://www.ilsp.gr/el/component/jresearch/?view=project&task=show&id=14) present the project in their own written languages (Picture 2b, 2c). All these information are very useful to reach people that work in academic, institutional and industrial fields of sign language and language in a general way.
Dicta-Sign

Abstract

Dicta-Sign has the major objective to enable communication between Deaf individuals by prompting the development of natural human computer interfaces (HCl) for Deaf users.

In real research and develop recognition and synthesis systems for sign languages (SLs) at a level of detail necessary for recognizing and generating aesthetic signing. Research outcomes will be integrated in three laboratory prototypes (Searchable-Example, A2R, and a signWriter) leading to a practical project demonstrator.

Dicta-Sign will be based on research activities in sign recognition and generation exploiting significant linguistic knowledge and resources. Interpretation of several scientific domains is required in order to combine linguistic knowledge with computer vision for image/video analysis for continuous sign recognition, and with computer graphics for realistic virtual signing (visual) animation. Sign Language linguistic knowledge can be derived by appropriate processing of SL video corpus linked to grammar and sentence modules. Dicta-Sign will deal with deaf SLs: British Sign Language (BSL), German Sign Language (DeG), Greek Sign Language (GSS) and French Sign Language (LSF).

Prototypes and the demonstrator will validate the interaction between sign recognition, linguistic modelling, and sign synthesis.

Project Duration

3 years, beginning Feb 1st, 2009.

Funding Organisation

European Commission, 7th Framework, IST (Challenge 2: Cognitive Systems, Interaction, Robotics)

Partners in UHH

- Coordinator: LSIG, Aberdeen, GB (Graeme Effah-Ansah, Erika Fictions, Claudia Vogler)
- UEA, Norwich, UK (Eva Green)
- UNL, Quedlinburg, DE (Richard Driessen)
- LSH, Osnabrück, FR (Konrad Schütt)
- IRIT, Toulouse, FR (Pierre Dauzat, Christelle Caubel)
- NTUA, Athens, GR (Petros Manolopoulos)
- Wirtschaft, Tübingen, FR (Hugo Mercker)

Predecessor Projects

- VECAST
- eSIGN
- COPSyS

Contact

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Picture 2a: WebSourd website

Picture 2b: UHH website
4.1.3 Newsletters

Two newsletters have been produced, in May and in December 2011, that were sent to a mailing list constituted of list of potentially interested institutions, companies, labs or people given by each partner (available on the website: http://www.dictasign.eu/Main/ProjectNewsletter). The releases do not begin when the project starts but when first “interesting for all” progresses have been made, i.e. at the beginning of year 2011 were available first prototypes along with their evaluations, which interests scientific, industrial and deaf communities. Newsletters were at least provided in both written and sign languages (Picture 3). The content was always at first a short sump up of what the project is, its aims and methodologies. Then a brief description about what has been done so far. Lastly, if needed, a call to participation to evaluate prototypes or interfaces (mainly at the end of the project, once these interfaces and prototypes were developed).
Picture 3: Sample view of a newsletter (normal view is on one single page)

Newsletter is the media with which the widest audience can be reached: it was sent to specified people, institutions and companies, it was passed on by partners' and project's websites, and by other newsletters (the one of WebSourd company, for instance), ensuring that most of potentially interested people could be in touch with project progresses. Each newsletter was focused on one main topic: for instance, in May 2011 the newsletter was more about corpus creation announcement, when in December 2011 it is more on the Sign Wiki application.

4.1.4 Paper based presentations

Following the goal of delivering understandable information, regardless of the media, the consortium designed leaflets (Picture 4b) and a poster (Picture 4a): they are easily understandable because of their visual conception. Leaflets were distributed during public and some scientific events, while the poster, presenting the goal and the different steps of the project in a very intuitive way, was adapted to all languages and showed on public and deaf events.
These two paper based presentations were very important to us because it reflects the capacity of the consortium to be able to present the project without being constrained by the language, and with a visual thought approach that correspond more or less to the way deaf people gather information. That means the consortium don't just try to disseminate information in a known written way, but try to adapt the communication one important part of end users, the deaf people.

4.1.5 Video based presentation

Another media of information was proposed that is not written or sign language based, but display information in a visual and intuitive way. The media is a video,
containing a visual slide show and video samples of what is described: for instance http://www.youtube.com/watch?v=_xzhWs6Yx8s. This video is fully understandable by a large number of people (despite there is no subtitles) and explain how innovative the project, and future outcomes, are. It is based on the query by example tool, to explain and demonstrates how features can be combined to achieve the conception of the tool.

4.1.6 Scientific articles

Scientific articles are not always presented to conference or workshop. And even if they are presented live, after the conference everyone can get access to the papers that have been presented. These articles, because they refer explicitly to Dicta-Sign project, took part in the dissemination process in the scientific research field. They can be found in one of the four written languages of the project, depending of the conference official language, freely or not on the Web. A detailed list of scientific articles (and publications in general) is available in Appendix 2.

4.1.7 Newspapers articles

- Article in DER SPIEGEL

DER SPIEGEL is one of the most prestigious and highest volume weekly magazines in Germany. An article in the Science section (issue 34/2011) is dedicated to sign language research conducted by the DGS Corpus Project and Dicta-Sign as well as teaching at the Institute of German Sign Language (University of Hamburg). The article describes Dicta-Sign's 'Search by example' prototype and explains the potential of such tools, e.g. for future sign language dictionaries. This article in turn led to numerous press contacts certainly resulting in more trade press coverage for Dicta-Sign. UHH is currently arranging for two German public TV reports in this context. (PDF file of the article: http://wissen.spiegel.de/wissen/image/show.html?did=80075358&aref=image049/2011/08/20/CO-SP-2011-034-0106-0109.PDF&thumb=false)

4.2 In presence dissemination

4.2.1 Materials

All along the project, members of the consortium had numerous opportunities to communicate on the project achievements and progresses in presence of the audience. In these situations, several media were used: slides video projected on a screen, posters, videos, were support for oral (both vocal and sign) presentations.
4.2.2 Scientific events

At the beginning of the project it was the main information channel used, in order to present the project goals, the consortium, to situate the research within the state of the art, etc.

There is an important list of each publications and communications that has been made, available at the end of this document (in the bibliography section) and on the website. An important thing is that partners’ communications were made in all fields addressed by DictaSign researches and developments:

- Tracking of by components
- Gesture recognition
- Constitution, annotation and analysis of SL corpora
- Automatic generation of SL utterances
- SL linguistic modelling

These communications were made in important conferences all over the world, meaning that people from different fields and different parts of the world are aware of the Dicta-Sign project.

Moreover, the consortium targeted specific scientific events, dedicated to deaf studies and sign languages.

- International
  - Dicta-Sign management team organised the Special session “Sign Language Technologies”, in the framework of the UAHCI-2009 Conference, hosted by the HCII-2009 (San Diego, California, USA).

- European
  - Several papers were presented at the Fourth Workshop on the Representation and Processing of Sign Languages: Corpora and Sign Language Technologies, in the framework of LREC-2010, May 2010, Malta. There also was a booth for presenting DictaSign project that was animated by members of the consortium, where were exposed a poster, the leaflets, and first demonstrations of progresses on applications development.
  - A mixed team of both Dicta-Sign and another European funded project on sign language organized the Workshop on Sign, Gesture and Activity, satellite workshop of the 11th European Conference on Computer Vision (ECCV 2010), September 2010, Heraklion, Crete, Greece
  - At SLCN workshop held in Berlin, in December 2010 (European level), were there was both academic and Deaf community audience, UHH’s Deaf team members active at communicating the project to Deaf attendees from a number of countries. There was also a participation of ATHENA RC with two invited talks, one of which in German Sign Language (DGS).
  - Several members of the project did organized and were part of the scientific committee of GW2011: The 9th International Gesture
Workshop “Gesture in Embodied Communication and Human-Computer Interaction”, May 25-27, 2011, Athens, Greece

- There were intensive exchanges with the Academies of Sciences and DGS corpus project which is running in parallel with Dicta-Sign in Germany. DictaSign was regularly mentioned in fieldworker’s presentations for the German Deaf community in order to explain the use of stereo cameras in the studio setup shared between the two projects.

4.2.3 Industrial events

Dissemination to industries was set up when results begun to be available. It was not possible to think about communicating to industrials without having strong interesting points for them. The communication to his kind of community has been made either in France or in Europe:

- 2001, February 24th, Poitiers, France
  Presentation in front of French Internet companies (SPN network, http://www.spn.asso.fr/). The presentation was about websites accessibility for deaf people, and some examples were taken to discuss about how to adapt a website in order to take into account sign language. On this point, DictaSign project was cited as an example for integrating virtual signer in a dynamic web page and for database querying in LSF. The presentation also dealt with Deaf people employment and training. The audience was constituted of about twenty CEO of “small and medium enterprises”, working in web applications creation or computer graphics fields.

- 2011, March 21st, Paris, France
  Presentation about social innovation and disabled people in the frame of Social Tech organised by LIENS – Innovation Lab in Social Numeric Ecosystems - and Silicon Sentier. People in the audience were not working with sign language or with deaf people, but were very interested with the process of the project that implies from the beginning deaf people.

- 2011, May 25th, Brussels, Belgium
  Short presentation at European Social Entrepreneur's summit, Brussels, Belgium. The aim of the conference, attended by external experts and representatives of the EC, was to design an appropriate policy to help develop social entrepreneurship in the European Union. As stressed by Michel Barnier, European Commissioner for Internal Market and Services, the WebSourd Company contributing to this project, is exemplary in the field of social entrepreneurship, not only on French territory but at European level. WebSourd partnerships in Europe were presented, including DictaSign project.

- 2011, June 18th, Paris, France
  Social entrepreneurship “Etats Généraux”, Paris, France. As an actor of the social economy, the company WebSourd was at the first National Forum on Social and Solidarity Economy at the Brongniart Palace in Paris. It was an opportunity to present the innovations that it implements for accessibility to information and citizen
participation of the deaf. A brief presentation of research projects, including DictaSign, conducted as part of the accessibility of information has been made on this occasion.

Dissemination to industrials was more and more important as the project ends and prototypes are available, testable, and the consortium was able to draw some specifications about how a finalised tool could be. That explains why dissemination to industrials really began in 2011, the last year of the project.

4.2.4 Deaf events

This part of our targets is a very important one, as all prototypes developed have to be evaluated and “approved” by the deaf community, to be published in scientific events and to be future sellable applications for industrials. The dissemination to deaf people was very important in the middle of the project, to begin to inform that the project was evolving in a good way and some evaluations were about to be made. Dissemination in this field was to inform and to collect: to inform about the project, results, etc. and to gather relevant information about deaf people’s needs and evaluators. While the project reaches the end, deaf people are more and more solicited to participate to evaluations and to give their feedbacks about developed interfaces and prototypes, and on overall aspects of the project.

In the frame of this presentation, a visual presentation has been designed: the goal was to create slides that could be easily reusable in each presentation disregarding of the country or the language. Therefore, the presentation is made only with pictures and is globally understandable without any additional explanations. Of course, every partner could use it and had explanations along the slide if needed: thus, everyone use the same basis for dissemination. The slides are available in Appendix 3.

- 2011, January 26th, Toulouse, France

Presentation journey of PRESTO, a partnership agreement between research laboratories, universities and companies located in Toulouse. The presentation (Picture 5) addressed a public audience, and inform about the organisation of PRESTO, the project already conducted, and the on-going ones, like DictaSign. Even if everyone was welcome, a special targeted audience was Deaf people (speakers used either spoken or sign language and all presentations were interpreted), because all agreement members work with sign language, either as a working language, a research object and/or a product and a service.
Full program is available in Appendix 4.

- 2011, May, 6th, Barcelona, Spain
Presentation of the project to the “Fesoca” (Deaf federation of Cataluña). The focus was on cooperation between deaf members of the project, and between researchers and deaf communities, in order together to improve accessibility to information and use of sign languages in new technological environments.

- 2011, May from 13th to 15th, Lyon, France
Project presentation at the national convention of the FNSF (National Federation of French Deaf), where there were more than a hundred of people. The main topic of the congress was “audism” which is a concept that needed to be defined and more or less represent the discrimination hearing people make to Deaf people (often without being aware of it). The project presentation made it possible to show once again that hearing scientists do not work on sign language without involving Deaf people in every step, without any discrimination.

- 2011, June 21st, Paris, France
Oral (sign) presentation of the project and evaluation of the virtual signer within the MDSF (French Deaf Movement). It is a national association whose aim is to allow Deaf people and especially the older, to stay in touch with social, cultural, political and economic life, thus enabling them to have a citizen participation in the society. The presentation (Picture 6) made was about virtual signers, thus the DictaSign project was explained with a focus on the applications and the use of the virtual signer.
In parallel of the presentation, members of the association were asked to evaluate achievements on a large scale, focusing on virtual signer appearance. There is a deliverable reporting the evaluation: Deliverable_D7.4_MicroTest_b.

- 2011, July from 1st to 3rd, Reims, France

Poster and oral presentation and evaluation at the “Clin d’Oeil” European art festival in sign language. There were 1500 person attending the 5th edition of this festival, coming from countries all over the world. WebSourd had an information stall where were presented two projects including DictaSign. The project was explained (Picture 7) to the audience thanks to a poster and oral (in sign language) descriptions. There also was an evaluation running, on comprehension when interacting in sign language with a virtual signer. There is a deliverable reporting the evaluation: Deliverable_D7.4_MicroTest_c.
Before the event, both in the project newsletter and on WebSourd website were a call to participate in the evaluation at the festival, given in written and sign language.

- 2011, September 25th, Toulouse, France

Presentation of the project at the International Deaf Day. It takes place every year in the last week of September in most countries under the aegis of the World Federation of the Deaf. There were a week full of events, from exhibitions to walking, and stand for communicating to associations and Deaf people. This week is one of the most important of the year for the deaf community because it allows to educate, inform and make more visible the world of deafness: it allows deaf people to understand all the difficulties they face daily, to express their desire for integration in social life and assert their right of equality with other citizens. Websourd did oral (sign) presentations of the project, relying on a poster.

- 2011, September, from 16th to 18th, Salerno, Italia

Short explanation of the project at EFSLI AGM & CONFERENCE 2011 (from EFSLI association, European forum of sign language interpreter), which main topic was “Sight Translation - Sight Interpreting - Meeting at the Cross Modes”. Purpose of the presentation was to deal with translation processes in translation and interpretation. A WebSourd employee made a presentation about her work as a Deaf translator, and presents briefly the DictaSign project to highlight the translation possibilities that are developed nowadays.
4.2.5 Public events

- “Nacht des Wissens”

On the evening of the 29th of October University of Hamburg opened its doors to the public for the fourth "Nacht des Wissens" (Science Night) (http://nachtdeswissens.hamburg.de). Between 5pm and midnight the public was invited to get an insight into the variety of research activities that is being conducted at University of Hamburg (Picture 8).

In cooperation with other research projects dedicated to sign language research Dicta-Sign presented a "Visual World of Sign Language". At different stalls the projects provided a variety of information and activities linked to their research areas. At the Dicta-Sign stall a poster illustrated the different fields of work involved in the project and how they are linked together. Our 'Search by example' prototype was presented to show one of the project's outcomes. Visitors were invited to test the prototype by performing the signs they had just learned in a brief DGS course in front of a Kinect camera. In cooperation with the DGS corpus project further activities were offered to the visitors including DGS introduction courses, 3D video recordings and writing down signs as HamNoSys symbols to have them animated by an avatar.
Deaf people from the Hamburg region were made aware of this event via direct email and Deaf Association announcements so that in addition to the general public visiting the science night, quite a number of deaf people visited the Visual World of Sign Language and took the opportunity for hands-on experience with the new technologies presented.

4.3 Software and corpora dissemination

Dissemination is about aims and methodologies of the project, but also about progresses and achievements like deliverables, and results like prototypes, corpus, etc. In this line, it has been decided to share the list of parallel concepts, available in the eight languages, as well as annotated corpora and software.

4.3.1 Concepts list

A portal has been set up to give everyone the possibility to access the concepts list. The whole lexicon is available in the eight languages and in HamNoSys notation. Yet, only an extract can be accessed, but by the end of the project every concepts would be in free access for research.

http://www.sign-lang.uni-hamburg.de/dicta-sign/consign/pub/cs_list_eng.html
4.3.2 Annotated corpora

A portal is being set up that would be an easy way to access to annotated corpora. A first step is to determine how to index all the data that would be available. This portal will be opened at the end of the project.

http://www.dictasign.eu/Main/CorpusDiffusion

4.3.3 Software dissemination

In order to evaluate the Wiki, which is an on line tool, it was mandatory to first explain how the wiki works, then to ask people to use it and give feedbacks. Therefore a user manual has been realised to show people how to use the wiki, what the possibilities are. This tutorial is available in written French and English as well as in LSF, to ensure that a large number of people will be able to experiment the prototype.

Regarding software dissemination, an exploitation plan is currently in preparation, and will be available as deliverable D9.4 at the end of the project.

5. Conclusion

The aim of WP9, named “Dissemination”, was to communicate to several targets (deaf communities, scientists, industrials, public audience) using several medias (website, newsletter, conference, etc.). Communication was made to inform people but also to gather feedbacks. This interaction in communication took place in a specific context, with important socio-political, socio-linguistic and socio-economic sensitive aspects.

Given this, a dissemination strategy was set up, adapting content to targets and media, and taking contexts into account.

The dissemination occurred all along the project’s life, and evolved regarding progresses in the project: from general consideration to use of developed tools, and from prospective to results and evaluations.

The following table sum up what kind of dissemination has been made so far regarding each main target: scientific, industrial, deaf communities.

<table>
<thead>
<tr>
<th>Dissemination media</th>
<th>Deaf communities</th>
<th>Scientifics</th>
<th>Industrials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaflet and poster</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Visual presentation</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dicta-Sign project website</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Partners website</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Newsletters</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Scientific articles</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Deaf events</td>
<td>X</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Industrial events</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Scientific events</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scientific articles</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Web portal (concepts &amp; corpora)</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Evaluations</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

All along the project these parameters were of varying importance: at the beginning all three targets were informed, then dissemination focused more on scientific community, later in the second year deaf communities were more targeted, and lastly information were mainly made both to deaf and industrials communities. Naturally, these focuses do not mean that information to all other targets was neglected: it was consistent with progresses and achievements of the project.

Dissemination will not end with the project end: the website will be kept alive for a while, allowing everyone to know what has been done. Moreover, resources are about to be available through the website, like annotated corpora and concept lists.

The dissemination activities allow setting up the exploitation plan (deliverable D9.4): thanks to dissemination, markets have been identified through publics interests, tools maturity (prototypes or ready to industrialise), and commercial opportunities.
6. Appendixes

6.1 DictaSign project website

The website is available here: http://www.dictasign.eu. There are two main sections.

- The public section ("Project Overview: free access") contains information that concerns all targets of the dissemination and all people in general.

![Project Overview: free access](image)

<table>
<thead>
<tr>
<th>menus of the public section</th>
</tr>
</thead>
<tbody>
<tr>
<td>News and Events</td>
</tr>
<tr>
<td>Consortium</td>
</tr>
<tr>
<td>Applications</td>
</tr>
<tr>
<td>Visual presentation</td>
</tr>
<tr>
<td>Publicly available</td>
</tr>
<tr>
<td>project deliverables</td>
</tr>
<tr>
<td>Publications</td>
</tr>
<tr>
<td>Project Newsletter</td>
</tr>
<tr>
<td>Interesting Links</td>
</tr>
<tr>
<td>Questionnaire</td>
</tr>
<tr>
<td>Wiki evaluation</td>
</tr>
<tr>
<td>SL Resources</td>
</tr>
</tbody>
</table>

Picture 1.1: Menus of the public section

- Accessibility: The main page of the public section is fully accessible in the eight languages of the project. The majority of the publicly accessible parts provide information only in written English (and not in the eighth different languages), because these pages contain either lists of items (names, web url, tables, pictures, etc.). People are only allowed to see these pages, without being able to edit or create pages and menus.

- Contents:
  - "News and events": lists of names of past and coming events.
  - "Consortium": a table showing who the partners of the project are and how to contact them.
  - "Visual presentation": a PDF document to be used by each partner in his own language without modifying the presentation: it is a visual support free of language constraints that presents the project.
  - "Publicly available project deliverables": a list of deliverables of the project that can be downloaded, as soon as they have been validated by the reviewers and the PO.
  - "Publications": a list of potentially downloadable articles, posters and/or presentations that were made for the different users targets.
"Project newsletter": a list of newsletters that were made during the project (these newsletter are available as far as it was possible, in the eight different written and signed languages, a minima in English, French and LSF).

"Interesting links": a list of links related to different communities, mainly scientific, industrial and deaf people. They are listed as names, without any comment.

"Questionnaires": a page where people can express their opinion on a given theme thanks to a questionnaire.

"Applications": explanations about the applications targeted at the end of the project.

"SL resources": a list of resources available in sign language (corpora for example).

The private section ("Restricted Area") is a powerful tool for communication between partners, and to the project officer as for reviewers to check the deliverables for instance. Everyone involved in the project within a partner team has his own access with a login and a password, and can create and edit menus and pages in order to communicate to others.

Accessibility: all pages are in written English, because everyone one in the project knows English, but not everyone one know one same sign language or another written language. Thus, to be able to communicate easily and rapidly, we made the choice to use written English.

Contents:

"Technical Information": a reminder of how the site is constituted, ie a public and a private section, what are the rights of the different users. Note: there is a side bar menu (at the bottom of the left menu, freely accessible) leading to a training place, for those who are not used to write using Wiki syntax, therefore we did not clone this in the "technical information" page.

"Confidential Work Discussions": it is the main part of the private section. It contains every documents and notes that were
used during the project: mainly practical information and pre-
programme of all meetings, general discussions about cross-
cutting issues and thought, discussions on each WP, and other
various discussions.

- "PDC-PCC Activities": gather official documents produced at
  the beginning of the project (DoW, contracts, etc.), all report of
  all meetings made by the PCC and the PDC, all six month
  progress and annual reports, and review reports.

- "Year-X Deliverables": is a page containing all links to the
deliverables due in the considering period. There are 3 menus
(namely "Year-1 Deliverables", "Year-2 Deliverables", "Year-3
Deliverables"), one for each year of the project, and
deliverables are first stored to be readable by reviewers and
project officer, then modified to address reviewers' and project
officer's recommendations.

There is also a RSS feed so that people can be aware of modifications on the website.
This is very useful for the partner, to know as soon as a proposal they have made has
been commented. The RSS is publicly accessible, but only logged persons can have
access to private content.

As said there is also a "Help" section for people who are not at ease with the wiki
syntax in which you have to write to fill pages in the website. There is a sandbox page
to train with the syntax before going into modifications of the website private or
public pages.
6.2 Publications

This list, and downloadable versions of all papers and presentations, is available on the project website: http://www.dictasign.eu/Main/Publications

6.2.1 Papers


Filhol M, "Search through lexical sign bases with a constraint-based model", Theoretical issues on Sign Language research (TISLR 10), Sep 30-Oct 2, 2010

Filhol M, Delorme M & Braffort A, "Combining constraint-based models for Sign Language synthesis", The 4th Workshop on "Representation and Processing of Sign Languages: Corpora and Sign Language Technologies", satellite workshop to LREC-2010, Malta, May 22-23 2010

Fotinea SE and Efthimiou E, A platform for sign language content presentation, In Proc. of the V International Conference on Multimedia, Information and
Communication Technologies in Education (m-ICTE 2009), April 09, Lisbon, Portugal


Oshin O, Gilbert A, Bowden R, There is more than one way to get out of a car: Automatic Mode Finding for Action Recognition in the Wild Conference: In Pattern Recognition and Image Analysis. 5th Iberian Conference, IbPRIA 2011. Best Paper Award.

Oshin O, Gilbert A, Bowden R, Capturing the Relative Distribution of Features for Action Recognition Conference: In Face and Gesture FG2011.


Roussos A. and Maragos P., “Tensor-Based Image Diffusions Derived From Generalizations of the Total Variation and Beltrami Functionals”, in Proc. Int'l Conf. on Image Processing (ICIP-2010), Hong Kong, pp. 4141-4144, September 2010

Safar E, Glauard J, Sign Language HPSG. Proceedings of the Language Resources and Evaluation Conference Workshop on the Representation and Processing of Sign Languages : Corpora and Sign Languages Technologies, Valetta, Malta, May 17th–23rd 2010,


Theodorakis S, Pitsikalis V and Maragos P, Model-Level Data-Driven Sub-Units for Signs in Videos of Continuous Sign Language Proc. Int'l Conf. on Acoustics, Speech and Signal Processing (ICASSP-2010), Dallas, Texas, USA, March 2010

ACM ASSETS conference. This conference follows the following process: 1) Submission of extended abstracts for the doctoral consortium. Accepted ones are presented either as talks during the conference, or as posters during the poster session. 2) Submission of long papers. Accepted ones are published on the SigAccess Newsletter.

International Gesture Workshop. This conference follows the following process: 1) Submission of extended abstracts. Accepted ones are presented either as talks during the conference, or as posters during the poster session. 2) Submission of long papers. Accepted ones are published on a Springer LNCS/LNAI book.

6.2.2 Workshops and Special Sessions

Special session “Sign Language Technologies”, in the framework of UAHCI-2009, July 2009, San Diego, California, USA

Fourth Workshop on the Representation and Processing of Sign Languages: Corpora and Sign Language Technologies, in the framework of LREC-2010, May 2010, Malta

Workshop on Sign, Gesture and Activity, satellite workshop of the 11th European Conference on Computer Vision (ECCV 2010), September 2010, Heraklion, Crete, Greece


6.2.3 Presentations

Braffort A, "Annotation for Sign Language Processing", Sign Language Corpora Network, 3rd workshop on annotation, June 14-16, 2010,


Efthimiou E et al., Sign Language Recognition, Generation, and Modelling: A Research Effort with Applications in Deaf Communication. Presentation given at the UAHCI 2009/HCI 2009 conference in San Diego, CA, July 24, 2009

Filhol F, Braffort A, "Text to SL translation", International Workshop on Sign Language Translation and Avatar Technology


Hanke T, Matthes S: Phonetic Encoding in Sign Language Corpus Annotation. Signed Language Phonology Workshop, Université de Bretagne-Sud, Vannes, France, 6-8 July 2011.


6.2.4 Invited Talks


Thomas Hanke: Language Resources for German Sign Language. Jota colloquium on language technology, University of Ljubljana, Slovenia, 23 November 2011.

Thomas Hanke: Gebärdensprachkorpora in Hamburg. CLARIN-D Workshop, University of Bielefeld, Germany, 12 December 2011.

6.2.5 Popular Science

Computer Learns Sign Language by Watching TV, Article in New Scientist, 8th July 2009

Hamburg Science Night 2011, presentation of a poster
6.3 Visual presentations slides

Reading direction is from left to right then up to down.
6.4 **PRESTO day schedule**

Program of the PRESTO presentation day, including presentation of the DictaSign project to research laboratories, industrials and local deaf community, held in Toulouse, 26th of January 2011.

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**Pôle de Recherche Signe Tolosan - PRESTO**

26 janvier 2011 – auditorium de l’IRIT

14h – Accueil

14h15 – Présentation du pôle PRESTO
- historique
- partenaires
- objectifs
- principales actions réalisées ou en cours
- avenir

14h30 - Présentation des partenaires actuels
- Websourd
- INTERPRETIS
- ASP IRIS
- UTM – CETIM
- IFIRIT
- Nouveaux partenaires
  - Visuel LSF Midi-Pyrénées
  - Magenta 360

15h30 - Présentation des projets et résultats
- Dicta-Sign (projet européen)

16h - Pause

16h30 - Présentation des projets (suite)
- Sign'Com (projet national ANR)
- SESCA (projet régional Midi-Pyrénées)
- GDD (UVED)

17h - Principales applications
- Annotation en LSF de documents vidéo : AVV, SLAnnotation
- Etude de la LSF : Visualisation de l’espace de signation : VIES - VAES
- Trace de la LSF : Photosigne
- Recherche par signe dans une vidéo en LSF

Valoration
- Logisigne (PRES et région Midi-Pyrénées)

Demos

18h fin