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Abstract (for dissemination)	*This deliverable describes the eSIGN editor software which allows the user to compose signed text to be performed by the eSIGN Avatar.*

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1 Executive Summary

The eSIGN Editor software allows the user to compose signed text to be performed by the eSIGN Avatar. The editor gives the user an economic approach to create signed sequences by selecting signs from the lexicon and then modifying them with the assistance of specialised editors (that focus on different aspects of the sign's phonetics and morphology) where necessary.

The tool is delivered for Windows 32bit and MacOS platforms in three user interface languages (German, English, and Dutch). Modules to support features specific to individual sign languages have been implemented.

Revision 1 of this document describes the final release of the eSIGN editor software within the eSIGN project.

2 Introduction

A key component to ensure equal access of Deaf people to information society is the provision of web pages in their native language, sign language. As there is no established written form for any sign language, and digital video is too expensive to produce and consume, sign language animation is a promising approach.

Machine translation into sign language has only recently started as a research discipline and will need years to mature to the extent that it could be usable in this context except in very restricted services where a language model can be created. For free text, the approach taken in eSIGN is to support a human translator in order to make the translation process from spoken language into animation input as economic as possible. The central tool for that task is the eSIGN Editor.

The main idea of that program is to pick signed sentences sign-by-sign from the lexicon, and to apply morphological changes to individual signs or strings of signs as necessary. Different "assistants" are available to deal with different types of morphological and other modifications. This includes pronunciation databases to ease the description of mouth pictures and mouth gesture databases. While "writing" the signed text, the user has the possibility to immediately check the contents by sending the text to the Avatar.

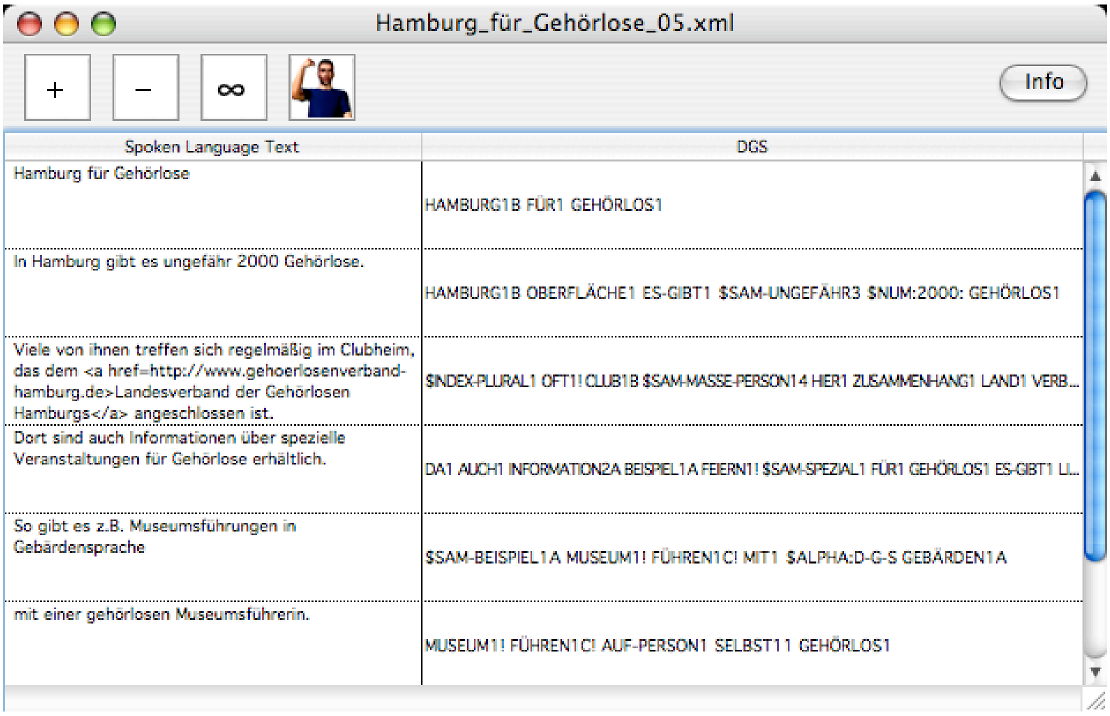
Depending on the working environment at the content creator's site, the creator can use lexicon maintenance functionality within the eSIGN Editor or use external programs for that purpose.

Documents created with the editor can be exported to SiGML. The integration of SiGML into web pages still is a manual process at this point of time.

As the tool is now used for all three content sites instead of one as originally planned, the focus for the tool had to be shifted towards delivering a cross-platform tool that allows specific editors for each of the target languages, e.g. fingerspelling. While the tool does provide a rather flexible assistance in combining parametrised signs in linguistically meaningful ways, we still have lots of ideas to make working with the tool more efficient. These ideas will find their way into future revisions of the tool.

3 Quick tour through the eSIGN Editor

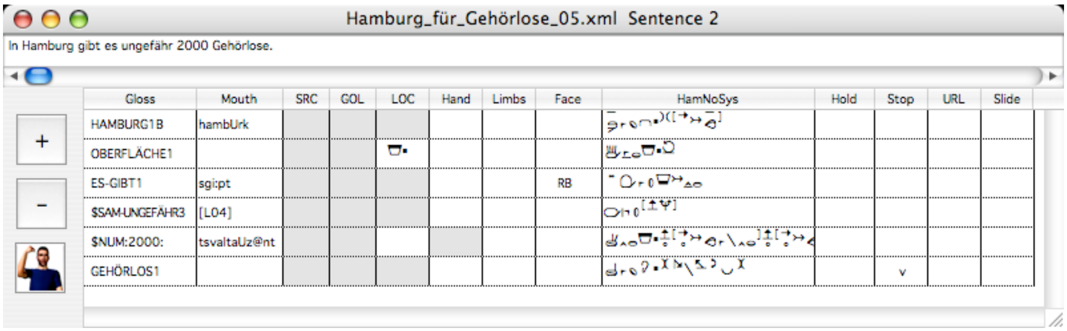
An eSIGN Editor document represents a signed text. In the document window, the signed text is represented by sequences of glosses parallel to the (optional) spoken language text that serves as the translation basis.



Hamburg_für_Gehörlose_05.xml

Spoken Language Text	DGS
Hamburg für Gehörlose	HAMBURG1B FÜR1 GEHÖRLOS1
In Hamburg gibt es ungefähr 2000 Gehörlose.	HAMBURG1B OBERFLÄCHE1 ES-GIBT1 $SAM-UNGEFÄHR3 $NUM:2000: GEHÖRLOS1
Viele von ihnen treffen sich regelmäßig im Clubheim, das dem <a href=http://www.gehoerlosenverband-hamburg.de>Landesverband der Gehörlosen Hamburgs</a> angeschlossen ist.	$INDEX-PLURAL1 OFT1! CLUB1B $SAM-MASSE-PERSON14 HER1 ZUSAMMENHANG1 LAND1 VERB...
Dort sind auch Informationen über spezielle Veranstaltungen für Gehörlose erhältlich.	DA1 AUCH1 INFORMATION2A BEISPIEL1A FEIERN1! $SAM-SPEZIAL1 FÜR1 GEHÖRLOS1 ES-GIBT1 LI...
So gibt es z.B. Museumsführungen in Gebärdensprache	$SAM-BEISPIEL1A MUSEUM1! FÜHREN1C! MIT1 $ALPHA:D-G-S GEBÄRDEN1A
mit einer gehörlosen Museumsführerin.	MUSEUM1! FÜHREN1C! AUF-PERSON1 SELBST11 GEHÖRLOS1

For creating the signed contents, each utterance is handled separately. In order to create or modify an utterance, the user opens a window to specify the sequence of signs.



Hamburg_für_Gehörlose_05.xml Sentence 2

In Hamburg gibt es ungefähr 2000 Gehörlose.

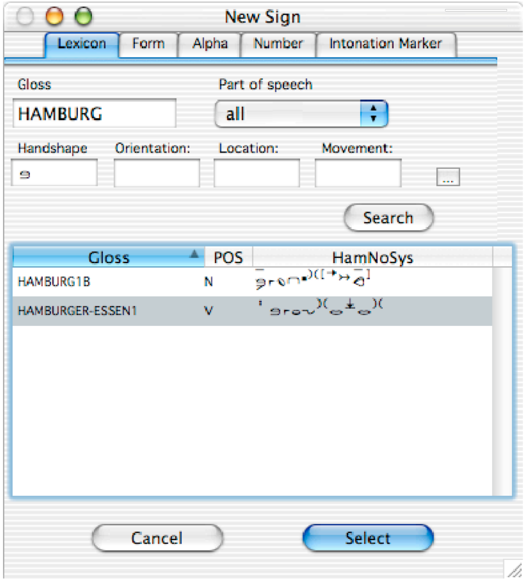
Gloss	Mouth	SRC	GOL	LOC	Hand	Limbs	Face	HamNoSys	Hold	Stop	URL	Slide
HAMBURG1B	hambUrk							[illegible]				
OBERFLÄCHE1				[illegible]				[illegible]				
ES-GIBT1	sgi:pt						RB	[illegible]				
$SAM-UNGEFÄHR3	[L04]							[illegible]				
$NUM:2000:	tsvaltaUz@nt							[illegible]				
GEHÖRLOS1								[illegible]		v		

Signs are represented by glosses[1] as well as a couple of form aspects. Some columns are governed by the lexical entries, i.e. the lexical entry determines whether a field may be filled by the user (otherwise it is grey) and which default value to use. The

[1] Glosses are spoken-language labels for signs that match the semantics of a sign as closely as possible. Glossing is widely used not only in academic contexts, but also for note-taking by deaf people. However, the danger of using another language for describing utterances in one language has to be kept in mind (cf. Pizzuto/Pietrandrea 2001).

user can view the utterance as a whole or sign-by-sign by using the Avatar playback controls.

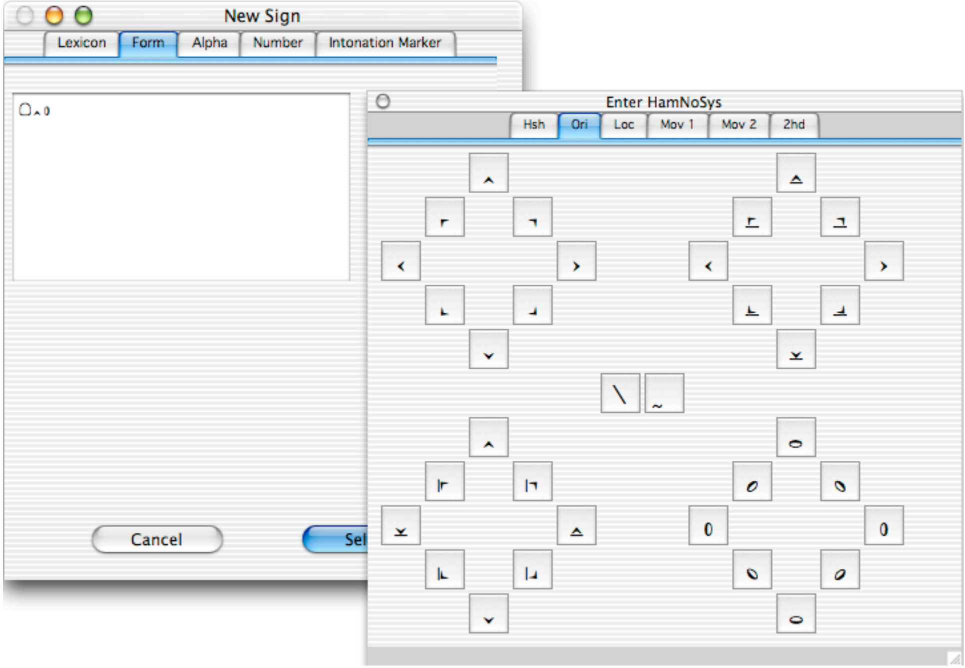
New signs are usually chosen from the lexicon. A dialog window allows the user to specify search criteria (parts of the gloss, HamNoSys (Schmaling/Hanke 2001) form aspects, or part of speech) and then select from the result set.



Gloss: HAMBURG
Part of speech: all
Handshape:
Orientation:
Location:
Movement:

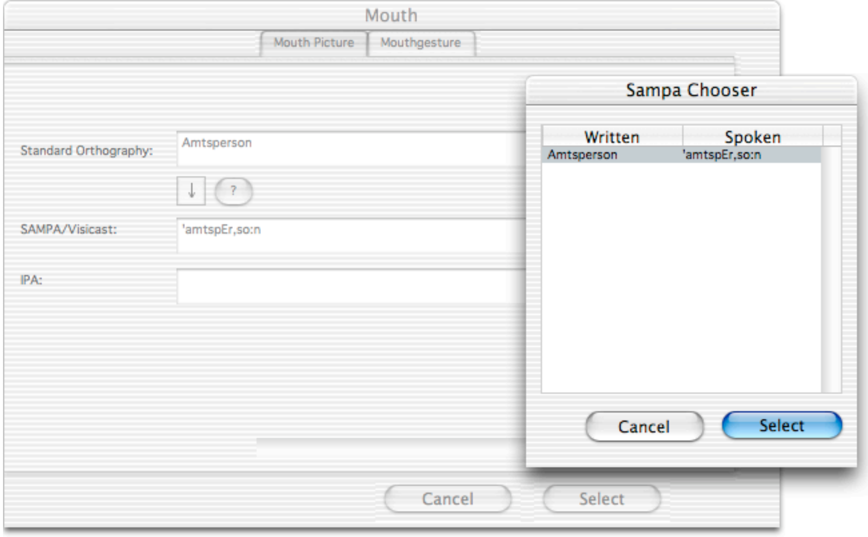
Gloss	POS	HamNoSys
HAMBURG1B	N	
HAMBURGER-ESSEN1	V	

If a sign is not in the lexicon, it can be specified by directly entering a HamNoSys string:



For numbers and fingerspelling, special editors are available.

Lexical entries usually have a mouthing, either a mouth picture or a mouth gesture. As there is no strict one-to-one mapping, the user has the option to specify an alternate form. For mouth pictures, a spoken language text can be entered and then be converted to the SAMPA (Gibbon et al. 1997) pronunciation encoding used in ViSiCAST for viseme description.[2]



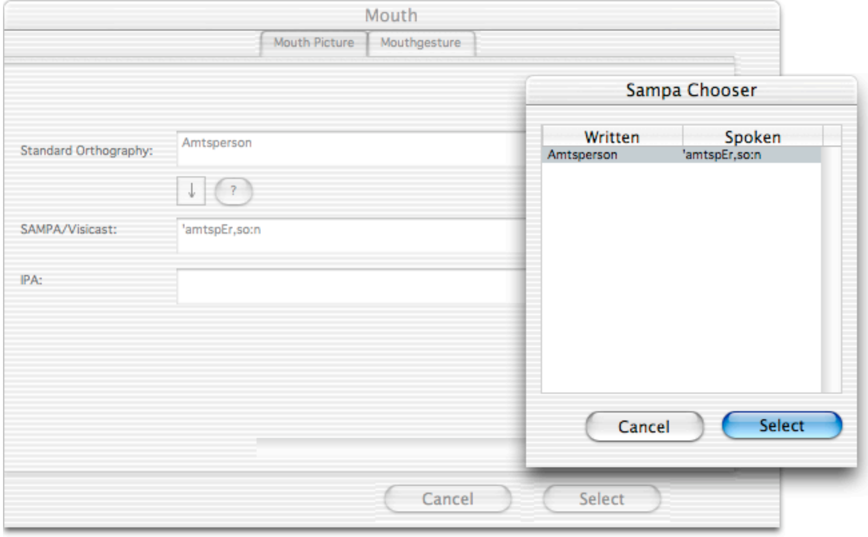
Standard Orthography: Amtsperson

SAMPA/Visicast: 'amtspEr,so:n

IPA:

Written	Spoken
Amtsperson	'amtspEr,so:n

Mouth gestures are selected from a list. For each mouth gesture, the code is shown along with a picture, a movie, and a description.



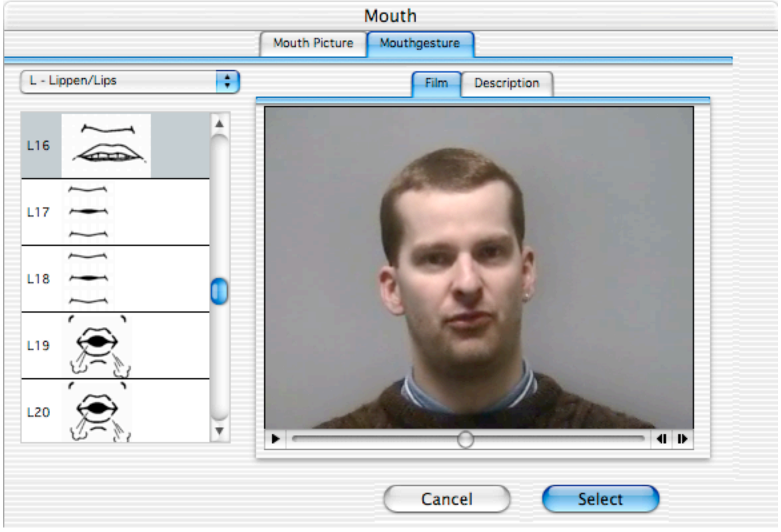
Standard Orthography: Amtsperson

SAMPA/Visicast: 'amtspEr,so:n

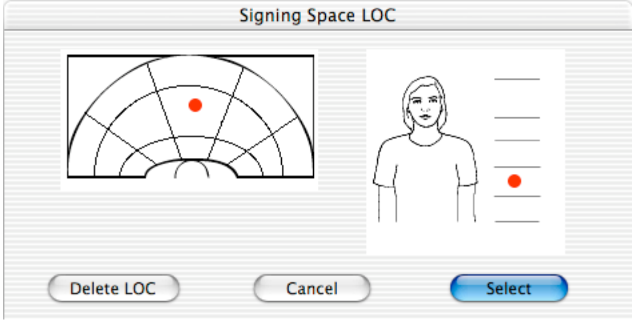
IPA:

Written	Spoken
Amtsperson	'amtspEr,so:n

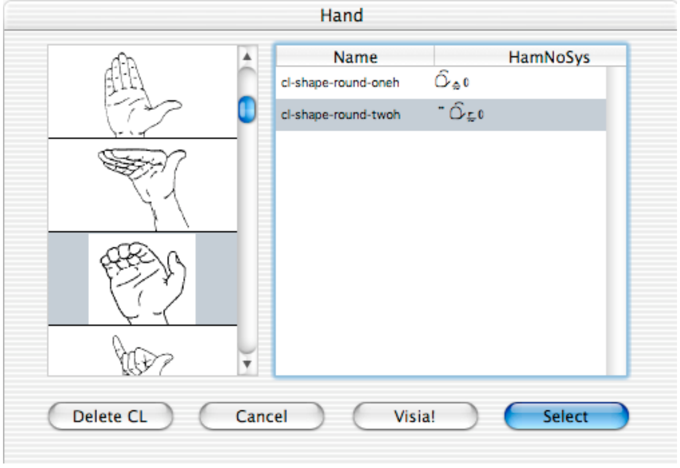
[2] The pronunciation database builds on the Bonn machine-readable pronunciation dictionary (Portele et al. 1995).



The lexical entries for directional signs as well as locatable signs are not specified for their location in signing space. Default positions are assumed until the user defines them:

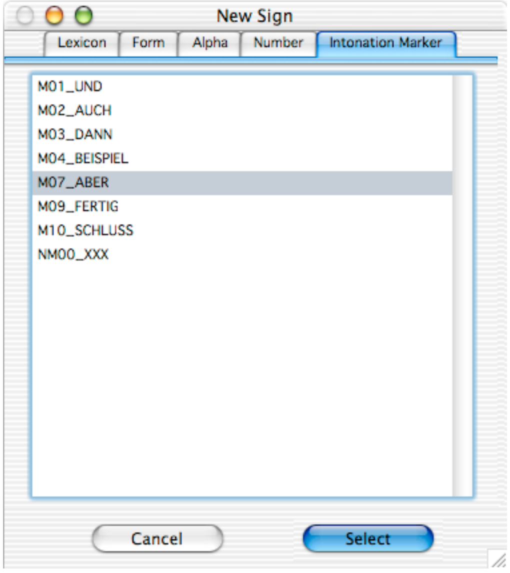


In the same way, the user can add handshape/classifier information for those signs that depend on their arguments to set handshape, orientation, and handedness:



Name	HamNoSys
cl-shape-round-oneh	
cl-shape-round-twoh	

For convenience reasons, discourse structuring signals can be added to utterances in a single action even if they consist of sequences of signs:



M01_UND
M02_AUCH
M03_DANN
M04_BEISPIEL
M07_ABER
M09_FERTIG
M10_SCHLUSS
NM00_XXX

The inventory of these signals can be built inside the eSIGN Editor itself.

Obviously, defining a string of signs is often not enough to specify a signed utterance. In addition to allow for small pauses in the signing, the editor provides a mechanism to keep the final posture of one sign while performing the next sign with the other hand.

In order to create signed hypertexts, the editor allows for the inclusion of URLs to be shown to the user to optionally follow a hyperlink as well as slides, URLs to be automatically loaded into another frame of a web page while the avatar is showing the signed text.

4 eSIGN Editor user documentation

4.1 Installation

The eSIGN Editor currently is available for Win32 and MacOS X. As it internally works with Unicode only, older versions of the operating systems (i.e. Win95, Win98, WinME, and MacOS 9) are not supported.

Download the package from the given URL and store the contents of the whole package in a new directory (folder). (Please note that in order to display HamNoSys columns correctly, you need to have HamNoSysUnicode installed. If this is not the case, please find the download URL in the Read Me file of the eSIGN editor download.)

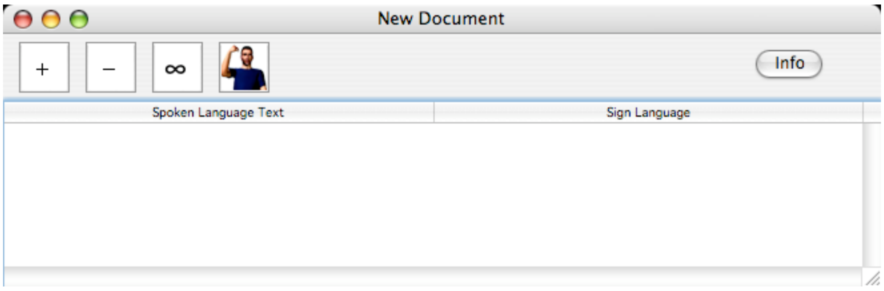
If you expect to work in a multi-user enviornment, please read the appendix regarding your choices about the database to be used.

4.2 eSIGN Editor documents

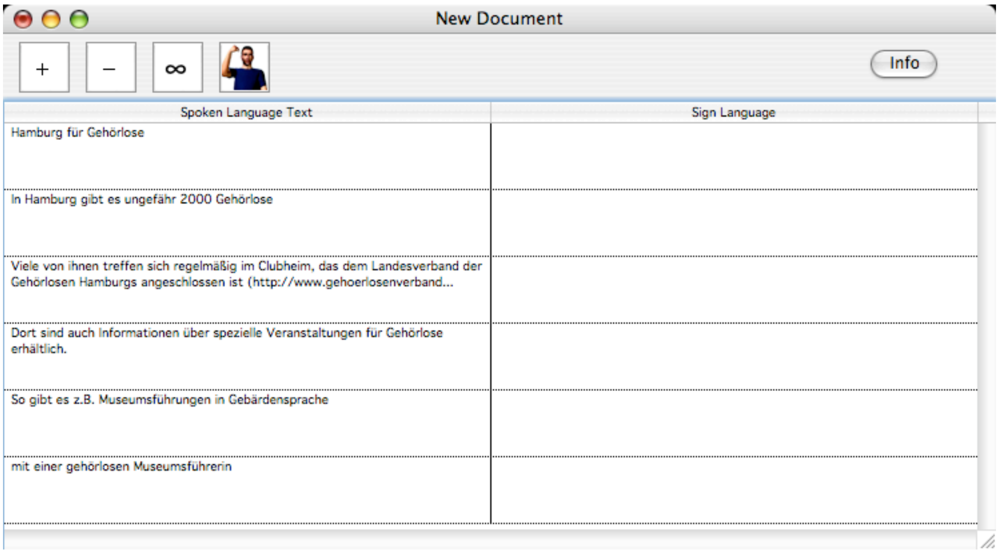
Documents are used to store one signed text each. It is up to the user to decide what a text is: There is no limit to the amount of utterances or signs in a document. But as it is possible and convenient to work with multiple documents at the same time, a text can also be split into a number of documents.

A new document is created with the "New Document…" command in the "File" menu. A window will open containing the contents of the new document. As soon as a document is open, "Save" and "Save as…" commands are available.

Initially, the new document consists of zero utterances.



Utterances can be produced either manually by clicking on the "+" button or by dragging a text file containing a spoken language text onto the window. In the latter case the editor will create an utterance for each paragraph in the source text.



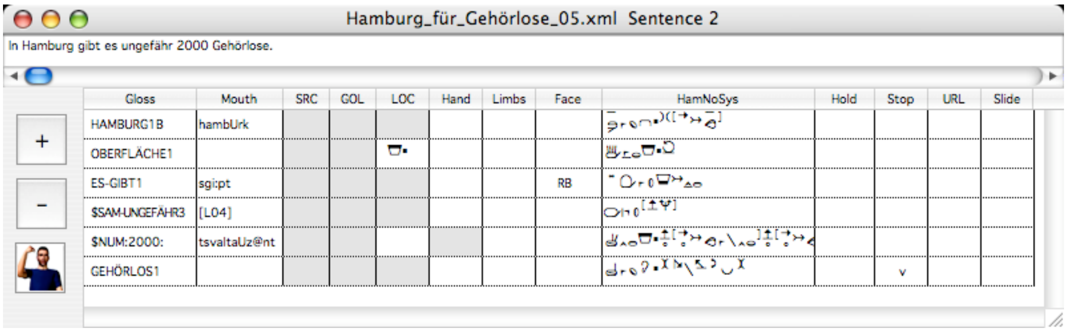
Spoken Language Text	Sign Language
Hamburg für Gehörlose	
In Hamburg gibt es ungefähr 2000 Gehörlose	
Viele von ihnen treffen sich regelmäßig im Clubheim, das dem Landesverband der Gehörlosen Hamburgs angeschlossen ist (http://www.gehoerlosenverband...	
Dort sind auch Informationen über spezielle Veranstaltungen für Gehörlose erhältlich.	
So gibt es z.B. Museumsführungen in Gebärdensprache	
mit einer gehörlosen Museumsführerin	

To prepare for the actual translation, the utterances can be reordered (by dragging them around after clicking on the right column of a row), joined (button “∞”), or split: To split an utterance into two, place–the insertion mark in the left column text and press the Enter key: The text after the insertion mark will be moved into a new utterance.

Double clicking a row (in the right column) will open an extra window for the corresponding utterance.

With the “-” button, selected utterances can be deleted. The Avatar button sends the selected utterances to the avatar, cf. below.

4.3 Utterance windows



In Hamburg gibt es ungefähr 2000 Gehörlose.

Gloss	Mouth	SRC	GOL	LOC	Hand	Limbs	Face	HamNoSys	Hold	Stop	URL	Slide
HAMBURG1B	hambUrk							[illegible]				
OBERFLÄCHE1				[illegible]				[illegible]				
ES-GIBT1	sgi:pt						RB	[illegible]				
$SAM-UNGEFÄHR3	[L04]							[illegible]				
$NUM:2000:	tsvaltaUz@nt							[illegible]				
GEHÖRLOS1								[illegible]		v		

The text field on the upper left side of the window shows the spoken language text corresponding to the utterance. The list on the right shows the signs the utterance consists of. New signs can be added by clicking on “+” (or by dragging in signs from other places), the selected signs can be deleted with the “-” button. By dragging the rows, their order can be changed. The selected signs can be sent to the avatar by clicking on the Avatar button.

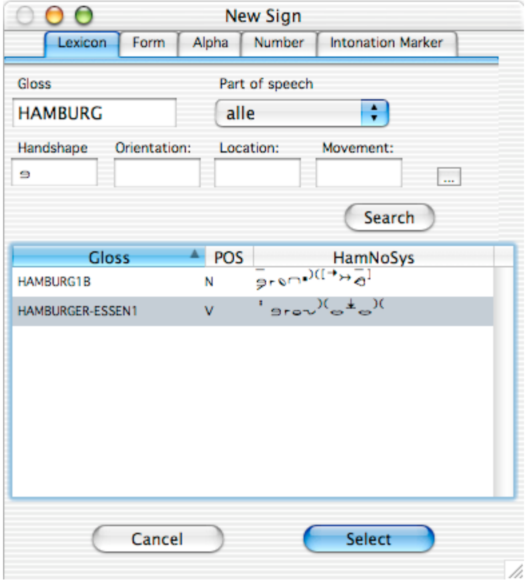
To add a sign to the utterance,

- click on “+”.

- click on the appropriate tab for the kind of sign you want to add:
    - Lexical signs can be retrieved from the "Lexicon".

      Define the search criteria with the "Gloss", "Handshape" etc. text fields and the part of speech menu and click "Search". In the lower part of the window you will see the search results. Select one sign from the list.

      For entering HamNoSys into the "Handshape" text field and its siblings, click on "…" to view the HamNoSys input palette.



Gloss: HAMBURG

Part of speech: alle

Handshape:

Orientation:

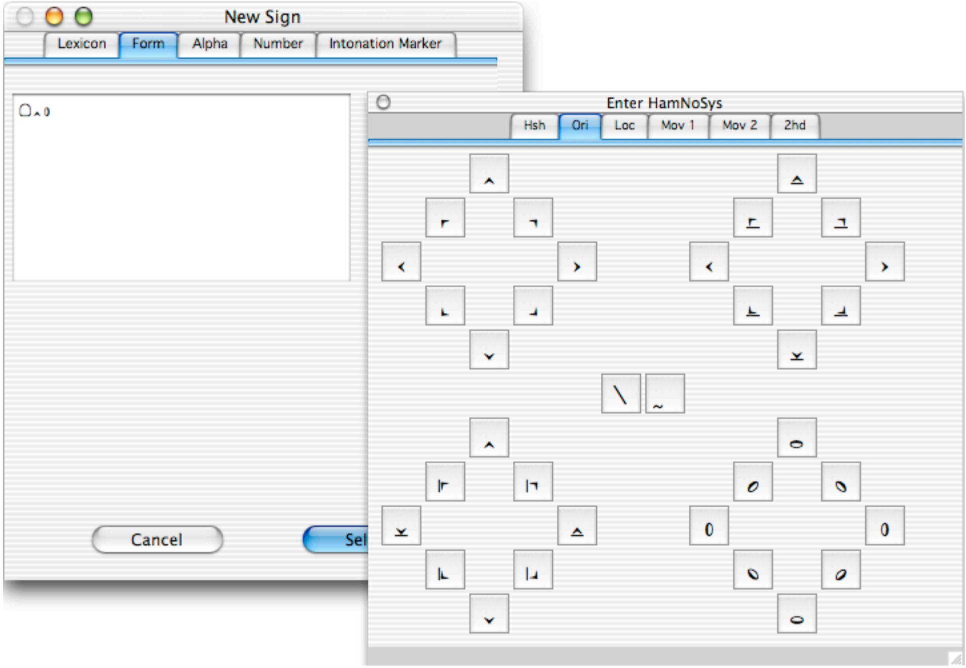
Location:

Movement:

Gloss	POS	HamNoSys
HAMBURG1B	N	
HAMBURGER-ESSEN1	V	

Please note that the search routine simply looks for matches of all four HamNoSys fields, and does not care whether the contents really is what the text field label says. Thereby you can look for signs with two handshapes, by entering one into "Handshape" and the other one into one of the three other fields. If you placed the two handshapes into one field, only those signs where the notation contains the two symbol strings concatenated would be found. (Which in most cases would mean incorrect HamNoSys.)

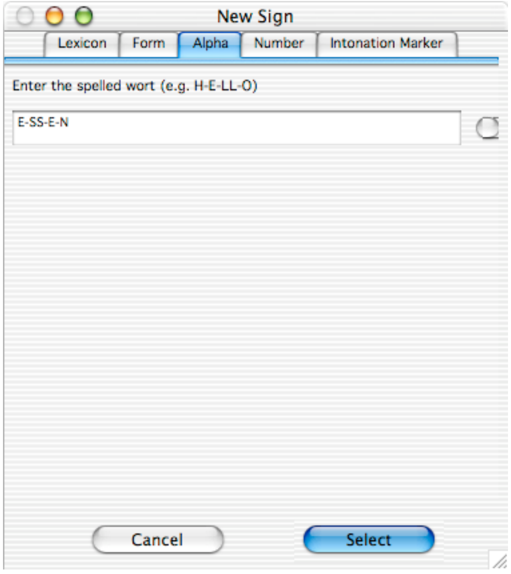
- Productive signs and other forms not contained in the lexicon can be added by entering HamNoSys: Click on "Form".



While on the Macintosh the keyboard switches automatically to the HamNoSys layout, no comparable assistance is available on Windows. However, you can once again use the HamNoSys input palette to assist you in typing HamNoSys.

These signs will show up in the utterance's list of signs with the gloss “$PROD”.

- “Alpha” allows you to add fingerspelling to the utterance.



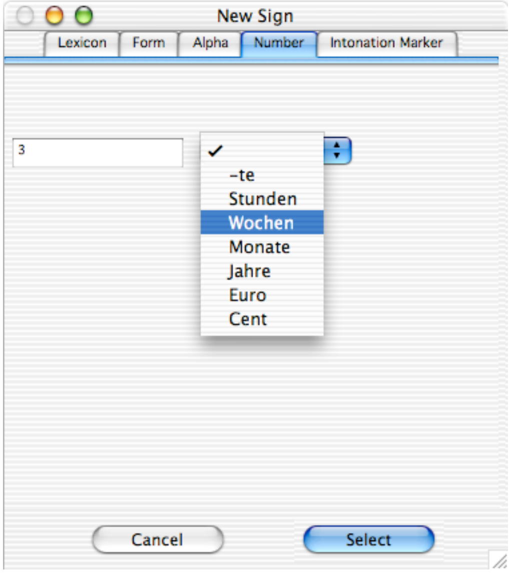
Enter the spelled wort (e.g. H-E-LL-O)

E-SS-E-N

Type in the word letter by letter and press on the button to the right, or type in the letters separated by hyphens to signal what to sign, e.g. H-E-LL-O if you want a double-L sign to be shown. The button tries to achieve the same: It uppercases the letters (except ß) and inserts hyphens between the letters except between doubles without movement.

The fingerspelling will show up in the utterance's list of signs with a gloss beginning with "$ALPHA:".

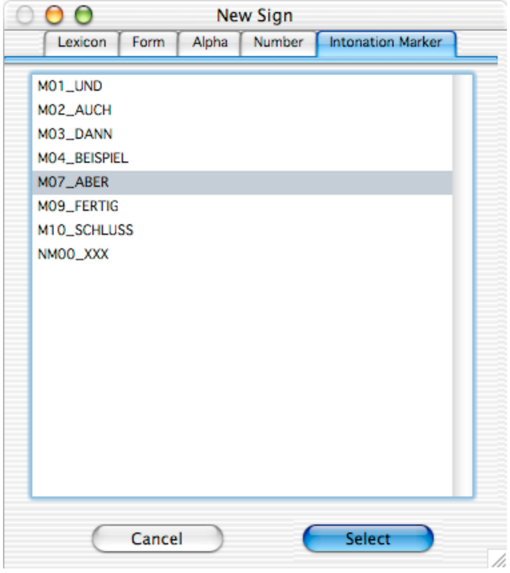
- "Number" allows you to conveniently add numbers and number incorporation signs. Please note that you will probably also be able to add the number signs by selecting them from the lexicon.



Type the number into the text field. The pop-up menu then allows you to select number incorporating signs that would fit with the number entered. Leave the menu option blank if you just want the number sign.

These signs will show up in the utterance's list of signs with a gloss beginning with "$NUM:".

- "Intonation Marker" allows you to add discourse structuring signals into the utterance, independent of whether they consist of a single sign or a sequence.

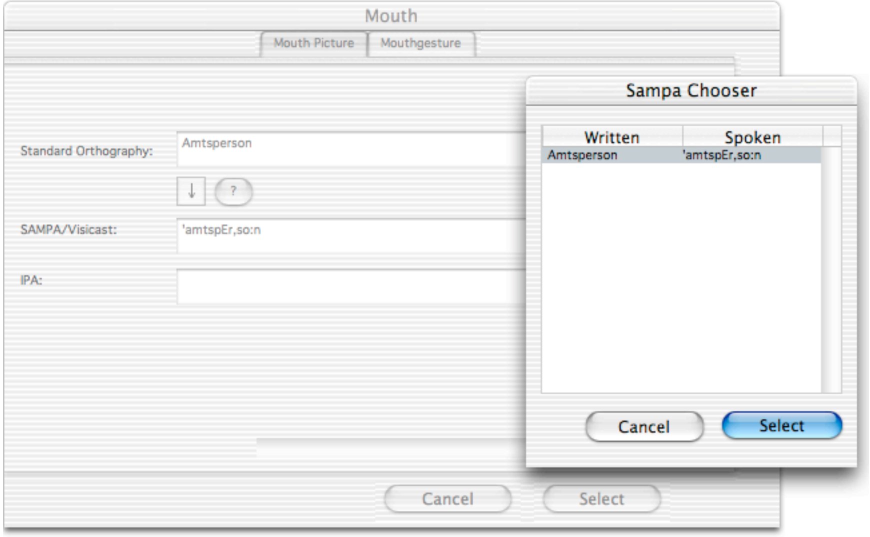


M01_UND
M02_AUCH
M03_DANN
M04_BEISPIEL
M07_ABER
M09_FERTIG
M10_SCHLUSS
NM00_XXX

Just select the signal you need from the list.

Please note that the list of markers shown here can be edited with the eSIGN Editor program itself. Cf. the appendix.

- Now click “Select“ to close the window and insert the sign selected into the utterance, or “Cancel” to close the window without inserting anything into the utterance. (Please note that signs can also be added by dragging them from the eSIGN-Editor database window or from an iLex window or from the Potential phrases window – cf. chapter 0.)
- By doubleclicking on the gloss, you can add comments regarding the selected sign.
- Next you can change a number of parameters of the sign: Mouth, source and goal or location (for signs that are tagged to allow these modifications), hand (classifier, actually more than just the handshape), facial expression, and HamNoSys: Just doubleclick on the cell that you want to change. (Cells that are grey indicate that the lexicon considers selecting a value of that kind inappropriate for the sign. If you want to assign a value nevertheless, hold the ctrl key when doubleclicking).
    - Mouth: You will open this dialog if the lexical entry has not been specified with a mouth picture or mouth gesture or not that one you prefer in the given context. By clicking on the tabs you can choose between entering a mouth picture or a mouth gesture:



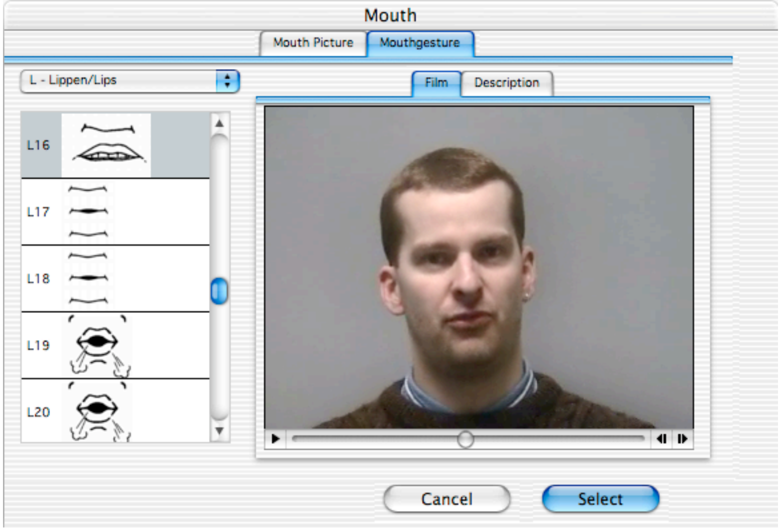
Standard Orthography: Amtsperson

SAMPA/Visicast: 'amtspEr,so:n

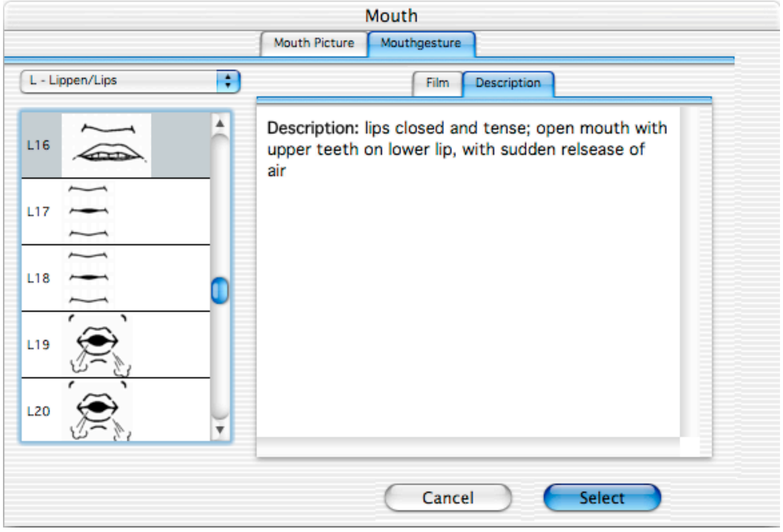
IPA:

Written	Spoken
Amtsperson	'amtspEr,so:n

To specify a mouth picture, you can either directly enter it in SAMPA encoding (cf. ViSiCAST deliverable 5-1) or use the pronunciation database: Enter a spoken language word in the upper text field, and have it convert into SAMPA by clicking the downwards arrow button. If you need a shortened mouth picture, still enter the full orthography, and then shorten the resulting SAMPA code appropriately. If you enter a partial word, you can use the "?" button to list the pronunciation database entries matching. Select one from the list to have SAMPA code inserted.

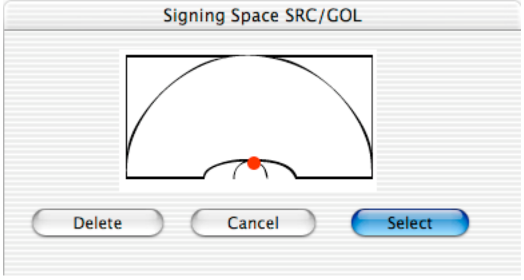


Mouth gestures are grouped by the main articulator: Teeth, jaw, lips, cheeks, or tongue. If you select one of these from the pop-up menu on the upper left of the window, all available gestures show up in the list below with their codes and drawings. Click on one item in that list to get a movie showing the mouth gesture and a textual description. (Switch between the two by clicking on the "Film" and "Description" tabs. The descriptions match those in the ViSiCAST deliverable 5-1.)

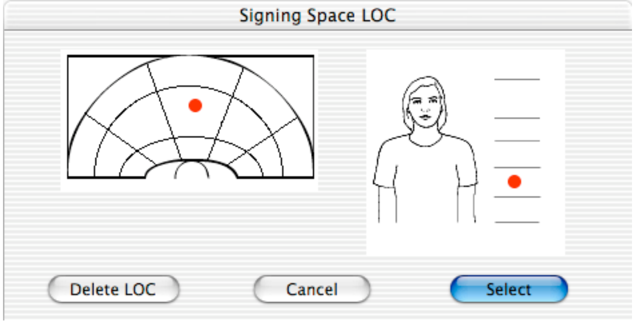


Description: lips closed and tense; open mouth with upper teeth on lower lip, with sudden relsease of air

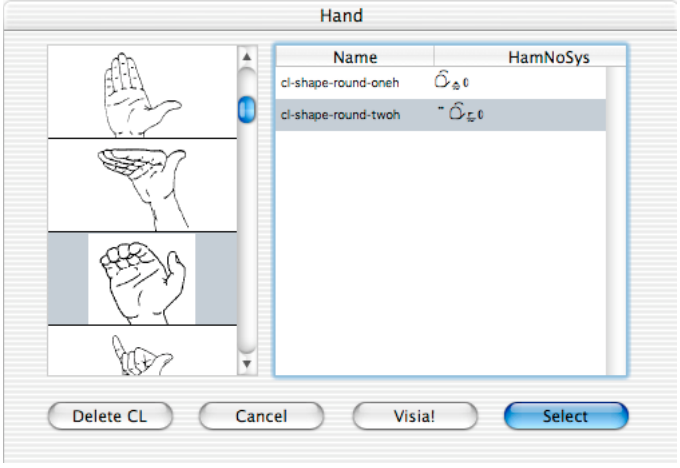
- SRC (Source) and GOL (Goal): Specify a position in signing space to be used for source/goal by clicking: Your click will be rounded to the next available position representing 1st person, 2nd person, 3rd person on the ipsilateral side, and 3rd person on the contralateral side.



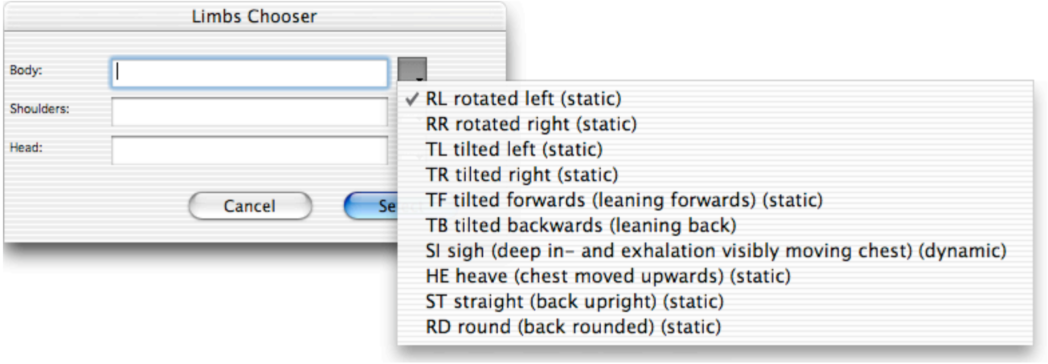
- LOC (Location): Specify a position by clicking on both the horizontal and the vertical grid: Your click will be rounded to the next available position expressible in HamNoSys. Click on “Delete” to return to the default location.



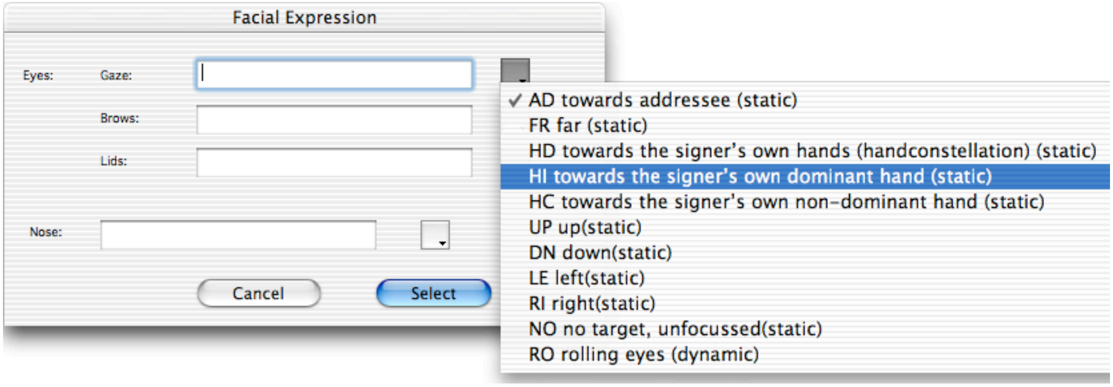
- Hand: If you click on a handshape in the left list, the right list will show all classifiers in the database with that handshape. The classifier consists of the handshape, orientation, and handedness, as shown by the HamNoSys values. To learn how exactly the classifiers looks without reading the HamNoSys, have the avatar show it to you by clicking on the Avatar button. (For more information on the classifier definition used here as well as on the names, refer to the ViSiCAST WP5 deliverable D5-1.)



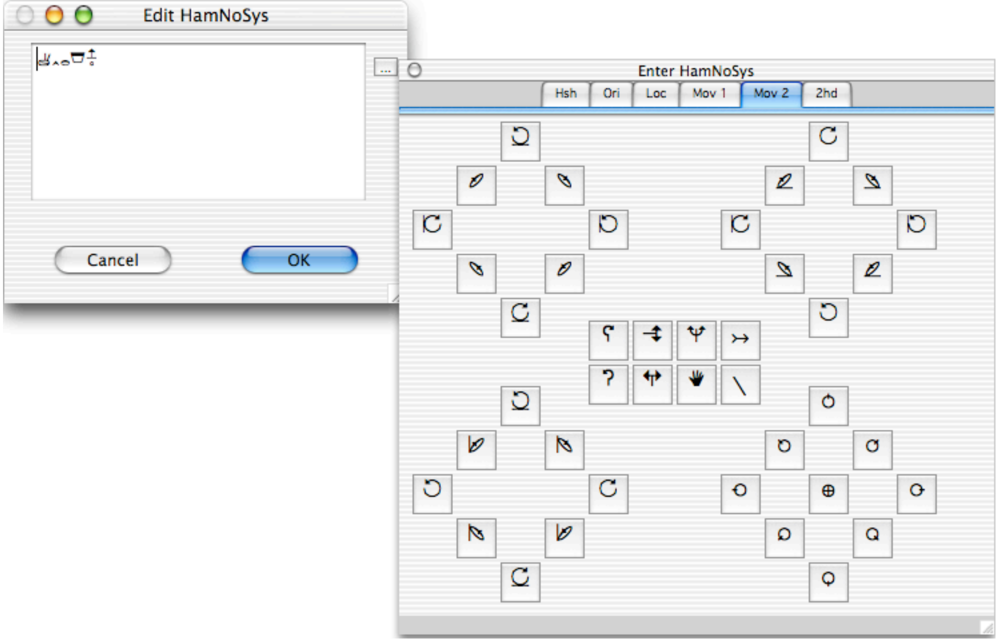
- Limbs: Here you can specify body, shoulder, and head movement by selecting values from the menus right to the text fields. The values stem from ViSiCAST D5-1 where you can find extensive explanations.


Limbs Chooser
Body:
Shoulders:
Head:
Cancel
Se
✓ RL rotated left (static)
RR rotated right (static)
TL tilted left (static)
TR tilted right (static)
TF tilted forwards (leaning forwards) (static)
TB tilted backwards (leaning back)
SI sigh (deep in- and exhalation visibly moving chest) (dynamic)
HE heave (chest moved upwards) (static)
ST straight (back upright) (static)
RD round (back rounded) (static)

- Facial Expression: Here you define the avatar's facial behaviour except for the mouth. Select values from the menus right to the text fields to specify eye gaze direction, eye brows and lids movements as well as movements of the nose. Once again, the values stem from ViSiCAST D5-1.

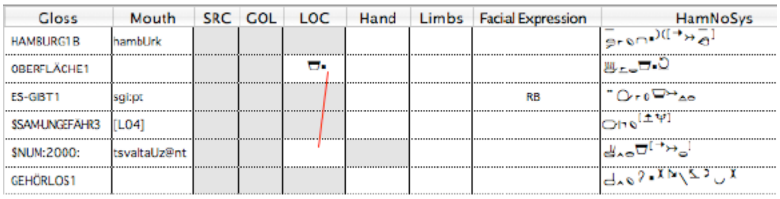

Facial Expression
Eyes:
Gaze:
Brows:
Lids:
Nose:
Cancel
Select
✓ AD towards addressee (static)
FR far (static)
HD towards the signer's own hands (handconstellation) (static)
HI towards the signer's own dominant hand (static)
HC towards the signer's own non-dominant hand (static)
UP up(static)
DN down(static)
LE left(static)
RI right(static)
NO no target, unfocussed(static)
RO rolling eyes (dynamic)

- HamNoSys: If you want to change manual aspects of the sign not covered elsewhere, you can directly manipulate the HamNoSys value. To assist you in typing in HamNoSys, the palette opens if you click on "…".



Please note that if you have manually changed a HamNoSys value, this entry will not automatically update if the sign's lexical entry is revised.

- The easiest method to fill in a value that is not yet specified is to "copy" it from somewhere else. Option-click (Win: alt-click) into the receiving field and drag a line into the defining field.



Gloss	Mouth	SRC	GOL	LOC	Hand	Limbs	Facial Expression	HamNoSys
HAMBURG1B	hamblUrk							
OBERFLÄCHE1								
ES-GIBT1	sgi:pt						RB	
$SAMUNGEFÄHR3	[L04]							
$NUM:2000:	tsvaltaUz@nt							
GEHÖRLOS1								

Dragging can be within a column to copy a value from another (possibly temporally preceding) cell, or between compatible cell in different rows and columns. The latter applies to source, goal, and column. What precisely is added to the receiving cell depends on the columns involved: It might simply be a copy of the value (e.g. location to location), or a temporal extension of the previous value (e.g. /HOLD/ for mouth).

4.4 Holding signs and pauses

By doubleclicking on the “Hold” cell of a sign entry row, you can set or unset the holdover feature. If it is set, the final posture of the preceding sign will be kept during execution of the selected sign. Apparently, this only works for one-handed signs following two-handed signs.

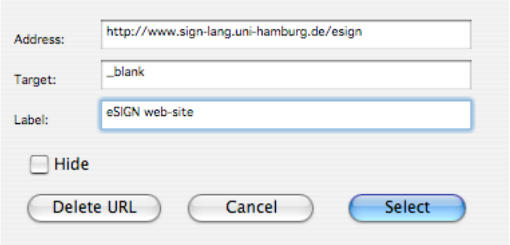
By doubleclicking on the “Stop” cell of a sign entry row, you can set or unset the pause feature. If it is set, the avatar will make a short pause after signing the selected sign.

4.5 URLs and slides

In order to make a signed text part of a hypertext, you can embed references to other nodes of the hypertext. URLs are meant to be displayed as text along with the avatar (e.g. below the avatar rectangle) and can optionally be followed by the user simply clicking on the link. In contrast to these URLs, slide URLs shall automatically loaded once the avatar signs the corresponding part of the document, most often in another frame within the window the avatar resides in. This allows the construction of eSIGN editor documents that are to be performed as a slide show with the avatar as the presenter.

A URL or slide is specified with the sign at the beginning of which is shall appear. It is displayed as long as no other URL or slide specification (for the same target) is made. To remove a URL instead of a replacing it with a new one, a new URL specification with the “Hide” checkbox selected can be used. It is up to the creator of the document to make sure URLs are displayed long enough to be clearly visible to the user. Keep in mind that the user's attention is towards the signing avatar, so any other information must be kept for some time to become recognised.

The exact semantics of these actions depends on the program that converts the Editor documents into HTML pages.



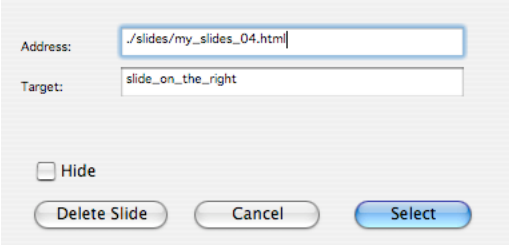
Address: http://www.sign-lang.uni-hamburg.de/esign

Target: _blank

Label: eSIGN web-site

□ Hide

For URLs, you can optionally specify a label. This will be displayed as text with the URL as the link to be followed if the user clicks on the hyperlink. If needed, a target (frame) can be specified as well. Probably the converter will use a default target if none is specified. It may also choose to ignore that specification.



Address: ./slides/my_slides_04.html

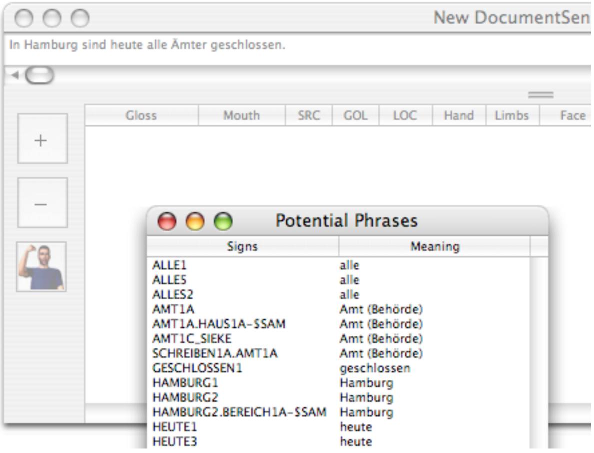
Target: slide_on_the_right

□ Hide

For slides, you specify the URL of the slide to be loaded, and optionally a frame name where to load it. Probably the converter will use a default target if none is specified. It may also choose to ignore that specification.

4.6 Proposed signs and phrases (currently only available when connected to an iLex database)

When opening an utterance with spoken language text filled in, but yet no signs, the Editor opens a window with potentially useful signs and phrases to be inserted in the signs list. This is based on meaning attributions for lexemes and phrases to match any word in the spoken language text (either in the form present or in its lemmatised form).



In Hamburg sind heute alle Ämter geschlossen.

Signs	Meaning
ALLE1	alle
ALLE5	alle
ALLES2	alle
AMT1A	Amt (Behörde)
AMT1A.HAUS1A-$SAM	Amt (Behörde)
AMT1C_SIEKE	Amt (Behörde)
SCHREIBEN1A.AMT1A	Amt (Behörde)
GESCHLOSSEN1	geschlossen
HAMBURG1	Hamburg
HAMBURG2	Hamburg
HAMBURG2.BEREICH1A-$SAM	Hamburg
HEUTE1	heute
HEUTE3	heute

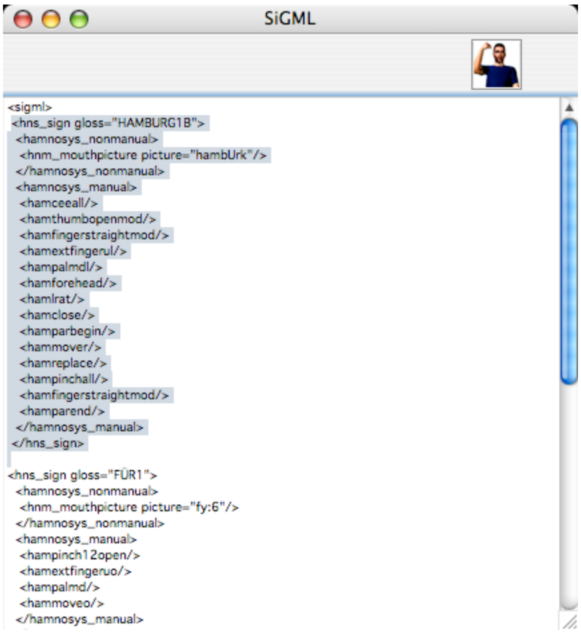
Signs and phrases can be dragged into the utterance's signs list as appropriate.

4.7 Talking to the avatar

Utterances or parts thereof can be sent to a SiGMLAnimation Service to immediately view the avatar playing back the constructed signed text by clicking the Avatar button available at the appropriate places in the program.

The IP address of the SiGMLAnimation service talked to is stored in the text file *VisiaIPAddress.txt* which in the package distribution is preset to 127.0.0.1 (localhost). The service can, however, reside on another machine. (In fact, this is currently required if the editor is running on a Macintosh.)

If you hold the Option key (Win: alt) pressed when clicking on the Avatar button, the program will open a window with the SiGML string to be sent. You can then review or even alter the text before actually sending it.



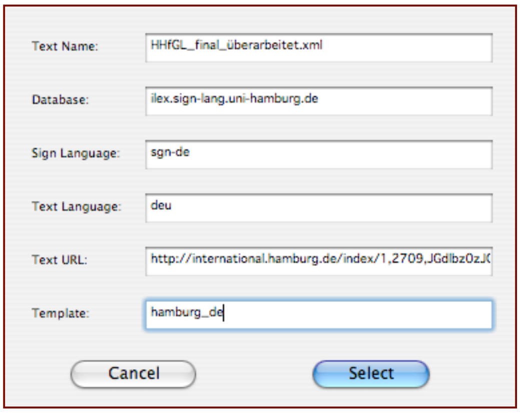
```
<sigml>
 <hns_sign gloss="HAMBURG1B">
  <hamnosys_nonmanual>
   <hnm_mouthpicture picture="hambUrk"/>
  </hamnosys_nonmanual>
  <hamnosys_manual>
   <hamceeall/>
   <hamthumbopenmod/>
   <hamfingerstraightmod/>
   <hamextfingerul/>
   <hampalmdl/>
   <hamforehead/>
   <hamlrat/>
   <hamclose/>
   <hamparbegin/>
   <hammover/>
   <hamreplace/>
   <hampinchall/>
   <hamfingerstraightmod/>
   <hamparend/>
  </hamnosys_manual>
 </hns_sign>

<hns_sign gloss="FÜR1">
  <hamnosys_nonmanual>
   <hnm_mouthpicture picture="fy:6"/>
  </hamnosys_nonmanual>
  <hamnosys_manual>
   <hampinch12open/>
   <hamextfingeruo/>
   <hampalmd/>
   <hammoveo/>
  </hamnosys_manual>
```

While it is possible to copy SiGML from that window to be used elsewhere, you can also use “Export as SiGML…” in the “File” menu to save SiGML corresponding to the selected utterances.

4.8 Document information

If you click on “Info” in the document window, a window will open where you can specify metadata for the document.



Text Name: HHfGL_final_überarbeitet.xml

Database: ilex.sign-lang.uni-hamburg.de

Sign Language: sgn-de

Text Language: deu

Text URL: http://international.hamburg.de/index/1,2709,JGdlbz0zJ(

Template: hamburg_de

The first two fields are read-only. They tell you the name of the document as well as the database where the sign entries are retrieved from. In the next two fields, you specify the language pair used in the document, i.e. the sign language and the spoken language. If the document is a translation of a web page, the original's URL goes into the “Text URL” field. The template indicates how to format the web page that results from this document. (How the template name given here will be interpreted depends on the program that will be used for the conversion into HTML.)

4.9 Database maintenance

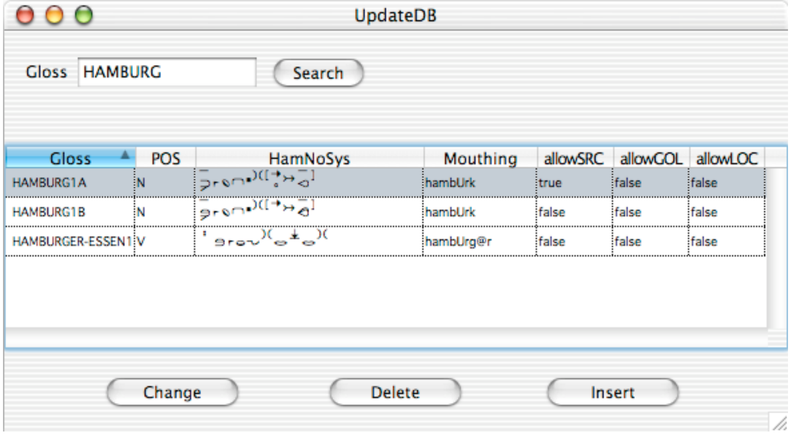
While the signed texts created with the eSIGN Editor are stored in document files, a database is used to store the lexicon, the list of classifiers as well as the SAMPA pronunciation data. The editor provides functions to batch populate the database:

If you choose "Database Maintenance…" in the "Maintenance" menu, a window will open offering three import functions. Each will empty one table in the database and then populate that table from the contents of a text file with a predefined name available in the same directory as the program. For the formats and names of these files, please refer to the appendix.

Attention: Importing signs will mean that all sign entries that you created inside the editor will be lost!

To work as a stand-alone solution, the editor also provides the functionality to extend and revise the lexicon, i.e. the database table of signs:

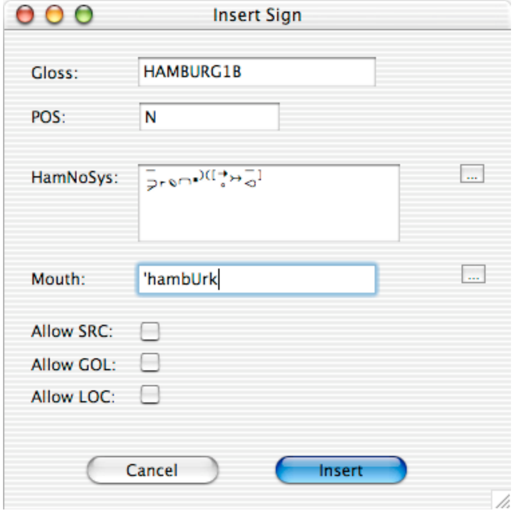
Choose "Update Signs…" from the "Maintenance" menu.



Gloss: HAMBURG

Gloss	POS	HamNoSys	Mouthing	allowSRC	allowGOL	allowLOC
HAMBURG1A	N		hambUrk	true	false	false
HAMBURG1B	N		hambUrk	false	false	false
HAMBURGER-ESSEN1	V		hambUrg@r	false	false	false

To insert a new sign into the lexicon, choose "Insert".



Gloss: HAMBURG1B

POS: N

HamNoSys:

Mouth: 'hambUrk

Allow SRC: □

Allow GOL: □

Allow LOC: □

In the window opening now, fill in the required data:

- The gloss is used a convenient name for the sign. In most cases you will use a gloss name approximating the semantics of the sign. The idea is that glosses are unique in the lexicon. This is, however, not endorsed by the editor.
- The POS (part of speech) value currently is just for information of the user when browsing through a list of possible signs. It is recommended to use abbreviations such as “N”, “V” etc. or to leave the field empty.
- In order to enter a HamNoSys description of the sign (in its citation form), you can open the HamNoSys palette window by clicking on the “…” button. For locatable signs, you can still enter complete HamNoSys including location information. The location information will then be used as the default value until you specify another location for the sign within an utterance.
- To enter a default mouth picture or a mouth gesture associated with the sign, click on the “…” button to the view the editor described above.
- Check the appropriate boxes for directional signs (taking source and/or goal) and locatable signs. Checking the box here will allow you to use the corresponding editors to specify source, goal, or location once you insert this sign into an utterance.

Click “Insert” to store the new sign in the lexicon and to close the window, or “Cancel” to close the window without storing the sign.

Before you can update or delete a lexical entry, you have to find it: Enter a (partial) string in the “Gloss” field and click “Search”. Then select the entry to be changed or deleted and press the appropriate button. For updating a sign, doubleclick on the value to be changed. Boolean values will toggle. For other data, a dialog will open where you can change the data.

Please note that from the list of signs resulting from a search you can drag a sign and drop it onto an utterance window to have the sign inserted into the utterance.

4.10 Production of web pages

In the easiest case, the sign contents of an eSIGN editor document can be exported to a file in SiGML format (“File” menu, “Export as SiGML…”) which can then be stored along with an HTML file referencing it.

For more sophisticated interaction in the document, e.g. text shown aside the signer, URLs or slides displayed, more structure is needed. For this purpose, the document can be exported into SiGML+ format (“File” menu, “Export as SiGML+…”). SiGML+ contains strings of signs forming an utterance in SiGML format, and wraps these with structural information, URL and slide data. This format will typically be fed into some HTML generator process, such as an XSLT processor. The eSIGN distribution contains an example of this kind.

4.11 Help

If you need help with the eSIGN Editor, have a feature request or bug to report, please send us an email (mailto:esign-editor@sign-lang.uni-hamburg.de). If you have questions about HamNoSys or how to encode lexical entries, please turn to mailto:hamnosys-helpdesk@sign-lang.uni-hamburg.de.

5 References

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Hanke, T., and C. Schmaling (eds.). 2002. ViSiCAST Milestone M5-15: User documentation.

Pizzuto, E., and P. Pietrandrea. 2001. The notation of signed texts: Open questions and indications for further research. *Sign language and linguistics* 4 (1/2):29-45.

Portele, T., J. Krämer, and D. Stock. 1995. Symbolverarbeitung im Sprachsynthesesystem Hadifix. In: *Proc. 6. Konferenz Elektronische Sprachsignalverarbeitung 1995, Wolfenbüttel*, 97-104.

Prillwitz, S., et al. 1989. *HamNoSys Version 2.0: Hamburg notation system for sign languages: An introductory guide*. Hamburg: Signum.

Schmaling, C., and T. Hanke. 2001. HamNoSys 4.0. (http://www.sign-lang.uni-hamburg.de/Projekte/HamNoSys/

6 Appendices

6.1 Appendix: eSIGN Databases

In the standard installation, the eSIGN Editor will automatically open a RealDatabase provided in the distribution. This database is empty, but can be filled with data provided for signs, classifiers, and mouthpictures.

The RealDatabase is a single-user database, i.e. if you plan to extend the lexicon by means of the eSIGN Editor with more than one person at a time, you need to switch to another database.

Currently, the editor supports mySQL and PostgreSQL databases. (Version of the program with other database connectors can be made available upon request.)

If you want to use a mySQL or PostgreSQL database, you have to set up the database to provide the schema listed below before accessing it with the editor:

```
CREATE TABLE sign (
       signID                     INTEGER PRIMARY KEY,
       gloss                      VARCHAR(255),
       hamnosys                   TEXT,
       mouthing                   VARCHAR(255),
       pos                        VARCHAR(255),
       allowSRC                   BOOLEAN,
       allowGOL                   BOOLEAN,
       allowLOC                   BOOLEAN
);

CREATE TABLE classifier (
       name                       VARCHAR(255),
       hamnosys                   TEXT
);

CREATE TABLE sampa (
       written                    VARCHAR(255),
       spoken                     VARCHAR(255)
);
```

(When using mySQL replace `BOOLEAN` by `TINYINT(1)` and `TEXT` by `BLOB`. Please note that mySQL in some contexts considers `sign` a reserved word. So if necessary, quote the table name by backticks (`)).

If the editor does not find a RealDatabase named EditorData.rbd in the same folder as the program, it will display a dialog allowing the user to specify the database to connect to. For a mySQL or PostgreSQL database, the type and name of the database, a user name and a password have to be supplied.

You can prefill some or all of the required fields by creating a text file named *dbConnectionFile.txt* in the same folder as the Editor.

In the Connection dialog window, "iLex" is listed as an alternative database format. While in fact a PostgreSQL database, iLex stores data in a rather different way than shown in the data definition above. For compatibility with eSIGN Editor, iLex provides views with the names esign_sign, esign_classifier and esign_sampa. As iLex provides its own functions for maintaining data, the maintenance functions in eSIGN Editor are disabled if you choose iLex as the database format. For more information on iLex, consult http://www.sign-lang.uni-hamburg.de/iLex.

6.2 Appendix: eSIGN Editor file format

eSIGN Editor documents are stored in XML format that closely matches the data exposed to the user during the editing process: A signed text consists of several utterances, each consisting of a number of signs. Each sign is described by several attributes, the most important being HamNoSys phonetic description. An annotated DTD reads as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<!--  SignedText100.dtd

      2003-08-13 Thomas Hanke, University of Hamburg:
                          initial release
      2003-09-30 Thomas Hanke, University of Hamburg:
                          added attlists for src, gol, loc, hamnosys
      2004-08-14 Thomas Hanke, University of Hamburg:
                          added elements for url and slide as well as some
attributes to signedtext,
                          added some defaults


-->


<!ELEMENT signedtext (utterance*) >
<!ATTLIST signedtext
   database CDATA #IMPLIED
   language CDATA "sgn-de"
   spokenlanguage CDATA "deu"
   title CDATA #IMPLIED
   texturl   CDATA #IMPLIED
   template CDATA #IMPLIED
>
<!--   database  for  us  contains  "ilex.sign-lang.uni-hamburg.de",  i.e.  an
unqualified
       URL to identify the database host.
       language should contain a value such as "sgn-de", "sgn-nl", "sgn-gb"
etc.
       from RFC 3066 (extensions to ISO 639).
       spokenlanguage uses ISO 639-2 to identify the written text on the left
side
       of eSIGN Editor documents, i.e. "deu" etc.
-->


<!ELEMENT utterance (sign*) >
<!ATTLIST utterance
   spoken CDATA #IMPLIED
>

<!ENTITY  %  core_parameters  "mouth?,  src?,  gol?,  loc?,  hand?,  limbs?,
facialexpression?, hamnosys?" >

<!ELEMENT sign
   (
      (%core_parameters;) |
      (%core_parameters;, url, (slide, signdescription?)?) |
      (%core_parameters;, url, signdescription, slide?) |
      (%core_parameters;, slide, (url, signdescription?)?) |
      (%core_parameters;, slide, signdescription, url?) |
      (%core_parameters;, signdescription, (url, slide?)?) |
      (%core_parameters;, signdescription, slide, url?)
   )
>

<!ATTLIST sign
   gloss CDATA #REQUIRED
   signid CDATA #IMPLIED
   stop ( true | false ) "false"
   holdover ( true | false ) "false"
>

<!ELEMENT signdescription (#PCDATA)* >
<!--  Any text the user wants to store along with this sign, e.g. why a
   modification was applied. -->

<!ELEMENT mouth (#PCDATA)* >

<!ELEMENT src (#PCDATA)* >
<!ATTLIST src
   editable ( true | false ) "true"
>
<!-- editable=false means the field is displayed grey in the editor and a
value cannot be set. -->

<!ELEMENT gol (#PCDATA)* >
<!ATTLIST gol
   editable ( true | false ) "true"
>
<!-- editable=false means the field is displayed grey in the editor and a
value cannot be set. -->

<!ELEMENT loc (#PCDATA)* >
<!ATTLIST loc
   editable ( true | false ) "true"
>
<!-- editable=false means the field is displayed grey in the editor and a
value cannot be set. -->

<!ELEMENT hand (#PCDATA)* >
<!ATTLIST hand
   editable ( true | false ) "true"
>
<!-- editable=false means the field is displayed grey in the editor and a
value cannot be set. -->

<!ELEMENT limbs (body?, shoulders?, head?) >

<!ELEMENT body (#PCDATA)* >
<!--  uses the Visicast nonmanual codes (two-letter abbreviations), space-
delimited list -->

<!ELEMENT shoulders (#PCDATA)* >
<!--  uses the Visicast nonmanual codes (two-letter abbreviations), space-
delimited list -->

<!ELEMENT head (#PCDATA)* >
<!--  uses the Visicast nonmanual codes (two-letter abbreviations), space-
delimited list -->

<!ELEMENT facialexpression (#PCDATA)* >
<!--  uses the Visicast nonmanual codes (two-letter abbreviations), space-
delimited list -->

<!ELEMENT hamnosys (#PCDATA)* >
<!ATTLIST hamnosys
   manual ( true | false ) "false"
>
<!--  HamNoSys encoded in comma-separated tokens -->
<!--  manual can be true or false. manual=true means that the HamNoSys value
of the
      entry has been manually entered and therefore should not be
automatically
      updated from the database. -->

<!ELEMENT url (address?, label?, target?) >
```

```
<!ATTLIST url
     hide ( true | false) "false"
>

<!ELEMENT slide (address?, target?) >
<!ATTLIST slide
     hide ( true | false) "false"
>
<!ELEMENT address (#PCDATA)* >

<!ELEMENT label (#PCDATA)* >

<!ELEMENT target (#PCDATA)* >
```

For the SiGML+ export format, a separate DTD is available that refers the reader to the SiGML DTDs for the larger part of its contents:

```
<?xml version="1.0" encoding="UTF-8"?>
<!--  SiGMLPlus100.dtd

      2004-08-14 Thomas Hanke, University of Hamburg:
                           initial release

-->
<!ENTITY % xhtmldtd SYSTEM "http://www.w3.org/TR/xhtml1/DTD/xhtml1-
                                                   transitional.dtd">
%xhtmldtd;

<!ENTITY % sigmldtd SYSTEM "http://www.visicast.cmp.uea.ac.uk/
                                                   sigml/sigml.dtd">
%sigmldtd;

<!ELEMENT sigmlplus (paragraph*) >
<!ATTLIST sigmlplus
      title %Text; #IMPLIED
      template %Text; #IMPLIED
      texturl %URI; #IMPLIED
>

<!ELEMENT paragraph (spoken, (urlaction | slideaction)*, sigml) >

<!ELEMENT spoken %Inline;>

<!ELEMENT urlaction EMPTY >
<!ATTLIST urlaction
      signno %Number; #REQUIRED
      hide   ( true | false ) "false"
      address %URI; #IMPLIED
      target %FrameTarget; #IMPLIED
      label %Text; #IMPLIED
>

<!ELEMENT slideaction EMPTY >
<!ATTLIST slideaction
      signno CDATA #REQUIRED
      hide   ( true | false ) "false"
      address %URI; #IMPLIED
      target %FrameTarget; #IMPLIED
>
```

6.3 Appendix: Supporting files

The eSIGN Editor requires a number of files to be located in the same directory (folder) as the application:

- *EditorData.rbd* is the RealDatabase file to store signs, SAMPA pronunciation, and classifiers. It is not required if another database adaptor than RealDatabase is used.
- *dbConnectionFile.txt* tells eSIGN Editor which database to connect to. It is a tab-text file with two columns:

1	name of the parameter: one of database type, database name, database IP, database port, database username and database password
2	Value of the parameter specified in the first column

  If not all parameters are specified in the file, the program will show a connection dialog prefilled with the specified parameters, allowing the user to fill in the missing data, e.g. the password. You can also use this file to have eSIGN Editor auto-connect to a RealDatabase not located at the default location.
- *HamSeparators.txt*, *HamSymbols.txt*, *Layout.txt* and *VisiaIPAddress.txt* have the same content as in the Ham2HPSG package. Their format and meaning is described in the accompanying documentation. Please note that the identical format of the *Layout.txt* file means that customised layouts of the HamNoSys palettes can be shared between the two tools.
- The *CL* subdirectory (folder) contains GIF files for some hundred handshapes as displayed in the Hand (classifier) editor. Filenames are derived from the HamNoSys description of the handshapes. A converter between filenames and HamNoSys handshape descriptions is part of the Ham2HPSG program.
- The *Mouth* subdirectory (folder) contains pictures, movies, and descriptions of the ViSiCAST set of mouth gestures that are displayed in the mouth picture/mouth gesture editor.
- The *SiGLPlus* subdirectory (folder) contains three Java files needed for the export into SiGMLPlus format.
- *FingerSpellingGB.txt* and *FingerSpellingNL.txt* specify the fingerspelling for British Sign Language and Sign Language of the Netherlands. They are provided in the distribution, but can be changed, e.g. to consider dialectal variation. The files are in tab-text format with two columns:

1	Letter or letter combination, e.g. A or AA
2	HamNoSys for the fingerspelling of this letter (combination) in comma-separated token format

  (Fingerspelling for German Sign Language is built into the program so that such a file is not used for German Sign Language.)
- The file *IntonationMarks.xml* containing the list of discourse structuring signals available in the corresponding editor is an eSIGN Editor XML file, i.e. it can be edited in the eSIGN Editor itself: Intonation Marks are treated as utterances, i.e. as sequences of signs. The spoken language phrases linked with the utterances are used as the labels appearing in the editor.

6.4 Appendix: Import formats

On the database maintenance panel, buttons allow the user to populate the database from text files. This appendix explains the expected format of the text files. Please note that the respective database file is completely emptied at the beginning of the import process. The character encoding of the import files is auto-guessed during the import process, so anything like plain ASCII or UTF8 should be ok. The files are supposed to be located in the same directory as the application.

- *classifiers.txt* is a tab-text file with two columns:

1	name of the classifier
2	HamNoSys for the classifier in comma-separated token format

- *sampa.txt* is a tab-text file with two columns:

1	standard orthography of a spoken language word
2	pronunciation of that word in SAMPA encoding

- *import1.txt* is a tab-text file to batch-enter signs into the database. The file consists of the following columns:

1	signID: uniqe numerical identifier
2	gloss: assumed to be unique, but not really required
3	HamNoSys for the sign in comma-separated token format
4	part of speech descriptor, may be empty
5	default mouth picture/mouth gesture for the sign. Mouth pictures are encoded in SAMPA, mouth gestures are defined by the ViSiCAST code enclosed in square brackets.
6	allowSRC: 0 or 1. If 1, the sign can be modified by specifying a source.
7	allowGOL: 0 or 1. If 1, the sign can be modified by specifying a goal.
8	allowLOC: 0 or 1. If 1, the sign can be modified by specifying a location.

If another database other than the single-user RealDatabase is used, the database can of course be populated by more sophisticated processes.