

The logo for Meraka Institute features the word "meraka" in a lowercase, grey, sans-serif font. A blue play button icon is positioned above the letter 'a'.

meraka

I N S T I T U T E

African Advanced Institute for Information
& Communications Technology

Is Video on the Web for Sign Languages?



Opening word



Invitation to the launch of the Southern African W3C Office at the Meraka Institute

The Meraka Institute, managed by South Africa's Council for Scientific and Industrial Research, the CSIR, has been awarded the rights to host the second Africa office of the world's biggest ICT standardisation body, the World Wide Web Consortium (W3C).

You are cordially invited to attend the launch of the first W3C office in Southern Africa to be held on 14 May 2007 at the CSIR International Convention Centre.

Position Paper

- A proper digital video representation of Sign Languages is needed for the Web
 - structure, hypermedia, notations, meta-data and profiles (semantic and encoding)
- The Web as a community platform for the Deaf
 - current similarities with Cell phones, need to support “mother tongue”, equality=no discrimination
- Video search engines supporting
 - body pose retrieval, facial expression look-up and human gestures estimations

Context

- Presence of Sign Languages on the Web is poor
- Sign Language production and sources
 - Public TV (interpreted news VS production), education
- Video sharing communities popped-up but no real uptake from Deaf communities (privacy, technicality, adapted to needs?)
 - Researchers' Sign Languages corpora
- Deaf use SMS a lot, little MMS ...
- Are Sign Language fit to become official languages some day?

Requirements

- WCAG 2.0 Guidelines, SMIL
- Deaf and the Web
 - Deaf are web users, Cell users
 - English (Zulu, Xhosa) is often the second language of Deaf people and they are not comfortable writing. Their literacy lies somewhere else.
 - Is Video the only accepted medium for Sign Languages? -- or will other solution become accepted with time?)
- Sign Languages
 - have different structure than spoken languages, are visual by nature, involve all upper body movements, have a use freedom in expressibility (iconicity).

Levels of Sign Language integration

- **A. Providing video interpretation**
 - as prescribed by WCAG2.0, with SMIL
 - navigation following textual content
- **AA. Providing Sign Language specific content**
 - need specific integration with elements
 - Sign Languages specific structure and navigation
- **AAA. Providing Web structure and navigation in Sign Language.**
 - Navigation elements (image captions, graphical notations, signing avatars, video clips)
 - Styling CSS *Time+SpaceSheets* .

User experience

- **Quality of Service**
 - Medium: jitter, delays, noise, fps, viewport, pix size
 - intelligibility: clarity, faithfulness of the message
- **Accessibility**
 - change playback rate
 - access to time, spacial elements
 - many independent, synchronized channels
- **On-demand**
 - Video optimization for Sign Languages
 - Transcoding for specific audiences and purposes

Sign Language Production

- Video recording
 - 3G and IP video : SMIL + Cell = MMS
 - Webcams : better quality compression / optics
- Captioning ...
 - Text and image; (SVG)
 - Layout : Alongside and Over (Space refs)
 - User control on presentation; (Size, colors and pos)
- ... annotating and 3D gesture modelling
 - SMIL + Gestures = Xstep
 - GestureBuilder, HamNoSys, VRML+H-anim paths

Web architecture

- **Hypermedia**
 - reference time elements and spatial elements
 - provides the ability to “jump to” other parts of video streams (as in weaving video streams)
 - Meta-data & Sign Language MPEG-7 RDF profile
- **Integration**
 - What is the “place” of video on Web pages?
 - Rethinking the Web browser / client ?
 - Interactions between all Web elements and objects
- **Presentation**

Conclusion

- Promoting the production of structured video documents
 - with sign language higher level edition functions
- Video search engines
 - look-up mechanisms for human gestures, body and facial expressions, poses
- Digitization of video content
 - meta-data, Web elements interactions
 - A MPEG-7 RDF profile for Sign Languages
 - Transcoding, optimization and delivery
- Equip Web clients with Sign Language video functions

Defining Sign Language Video Quality : setting standards



snippet_
36x44.avi



snippet_
72x88.avi

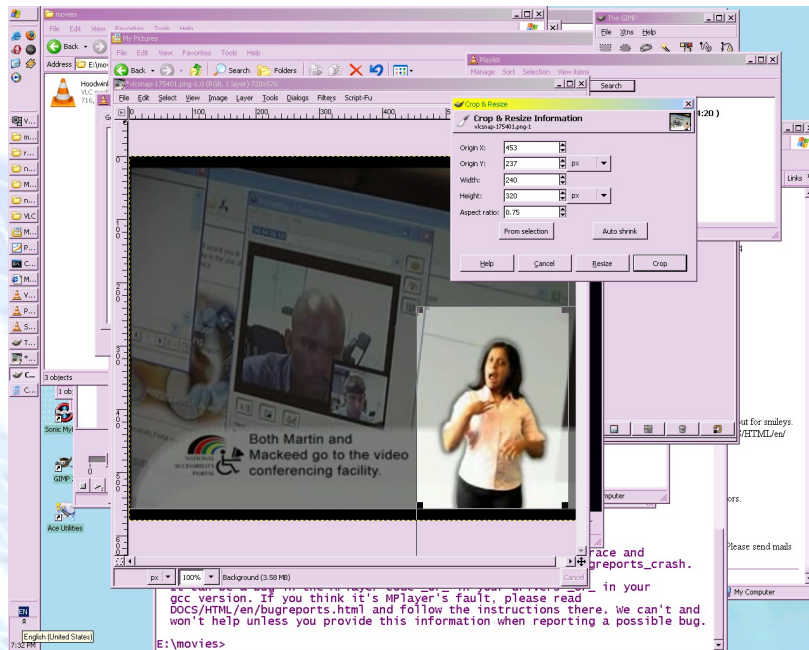


snippet_
144x176.avi

- Defining quality criteria of language, view port, size, fluidity, perception of depth etc.
 - 72x88 raw

- Codec optimization for Sign Languages

- Usability testing needed for experimental measurements

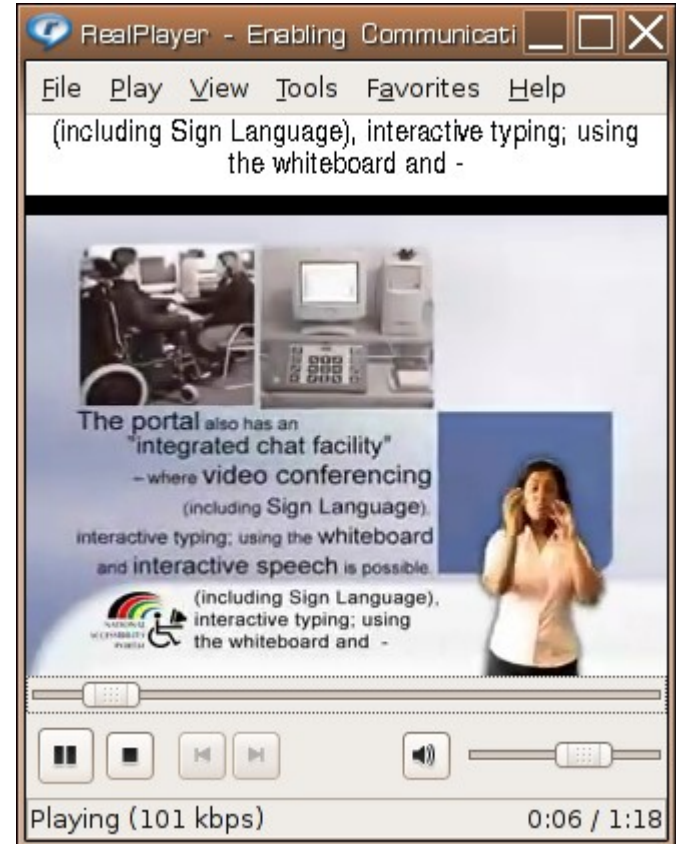


SWF

- SWF object
 - NAP uses Deconcept SWFObject JavaScript to embed player
 - Makes SWF inclusion XHTML compliant
 - Handles no-plugin, no object/embedded elements, parameters
- FLV player

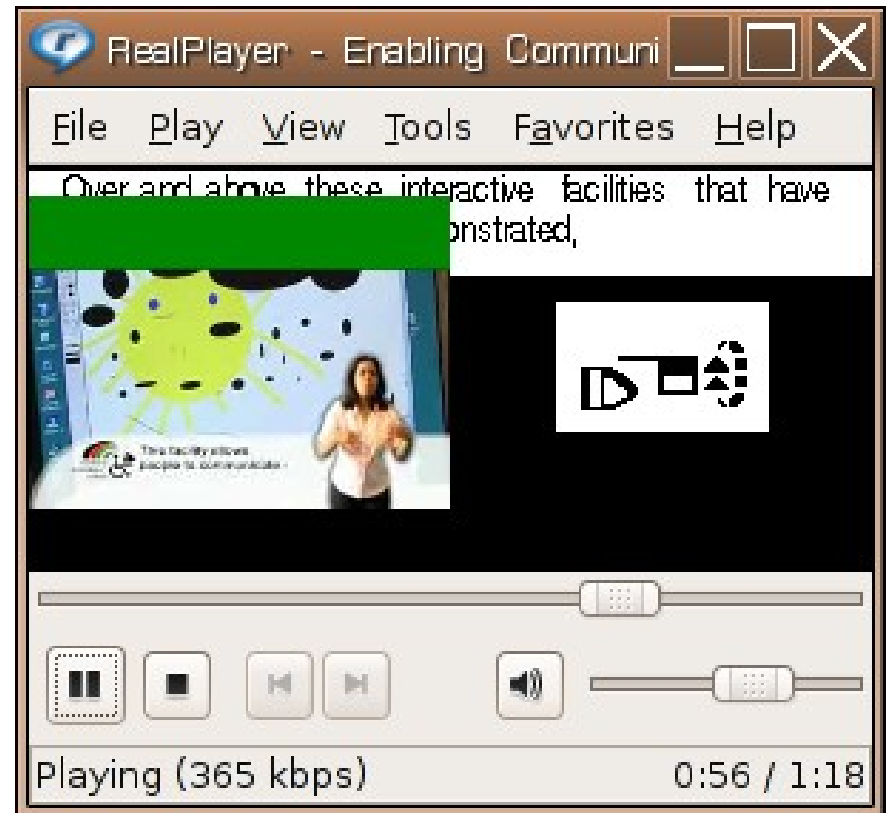
SMIL

- SM13: Providing sign language interpretation through synchronized video streams in SMIL 1.0 (SMIL)
- SM14: Providing sign language interpretation through synchronized video streams in SMIL 2.0 (SMIL)



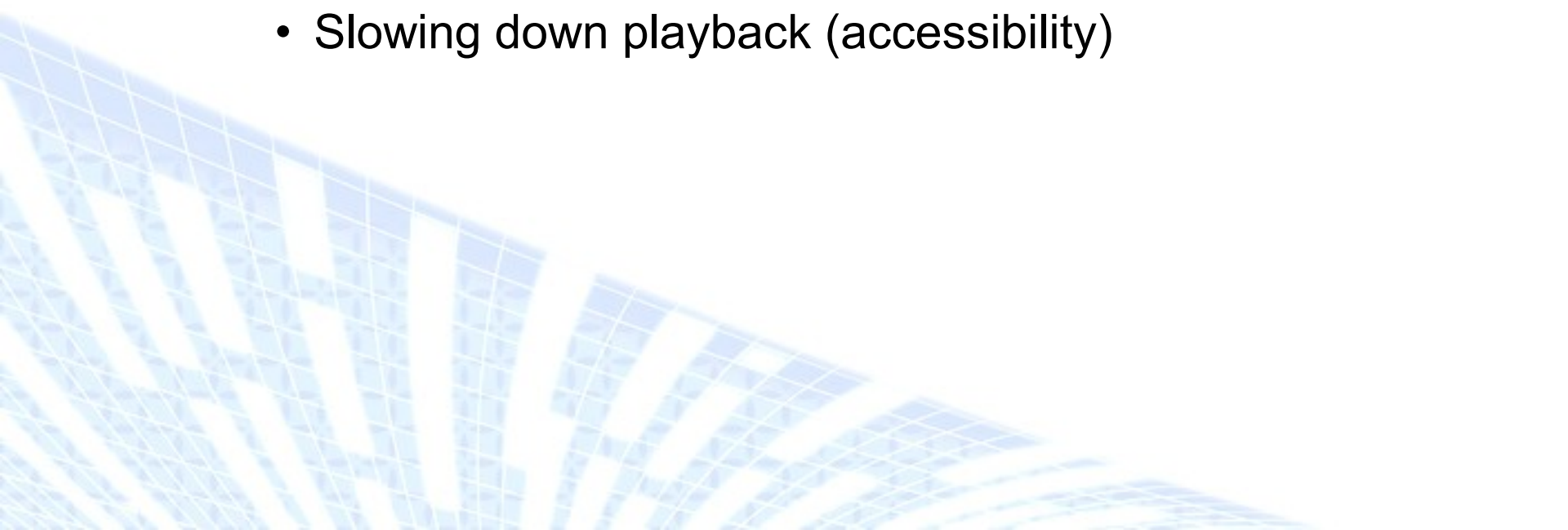
SMIL, :-) or :!-(?

- Authoring problems
- Rendition problems
- Codec and Formats compatibility problems
- Playback availability
- Handling multiple separate media files
- and still .. we need it.



NAP Player

- NAP Player prototype
 - External FLV player in SWF object
 - SMIL player implemented in SWF
 - Captions
 - Also allows for:
 - Color overlay (for color blind people)
 - Slowing down playback (accessibility)



Video Navigation strategies

- Internet linking (“HyperVideo” linking)
 - *signlinks* by D. Lee and J. Richards
 - Advene : navigating annotations and making request to a specific server
 - Papers on video navigation
 - JavaTV



Video adjustments

- Media type = video, image seq
- Format (pixel aspect, view size ...)
- Codec (bandwidth, CPU/RAM performances)
- K-frames : Timing, pre/post
- Encapsulation and External resources ref (URI+Captions)
- MIME type / Extensions
- Container, signal (stream, optic disc)

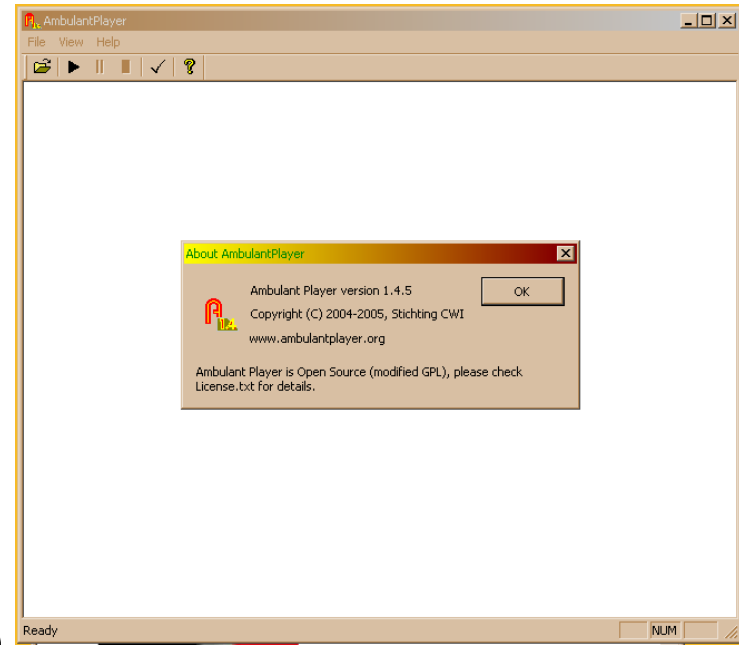
Encode



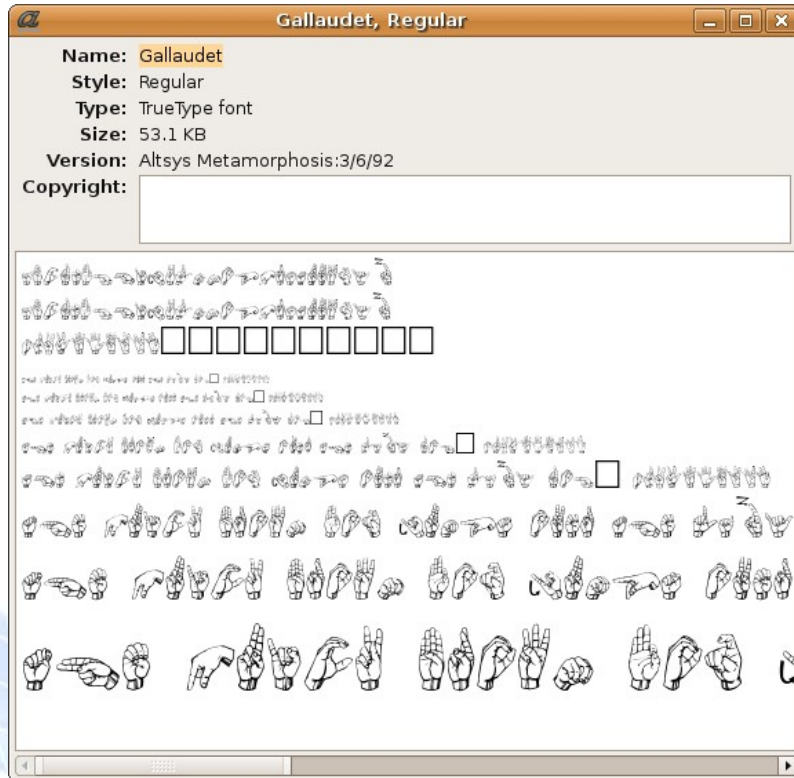
Rendering

- Engine

- Timed Text
(Internet Explorer only, dfxp)
- Flash (e.g. Google video)
- SMIL (W3C recommendation)
- RealScript or Quicktime Text or Ambulant
- DVD sub channels renderer (α -channel images transparency)




Presentation



Handling custom fonts in web browser can be challenging but is more easily supported. But the fact that it's a "rendering" of normal characters is limited to Fingerspelling and defeats the purpose of accessibility.

- Unicode :
 - subtitles,
 - SLIPA ,
 - HamNoSys (applied for Unicode code pages)
- Scripts :
 - WikiHierro
 - HamNoSys
- Images :
 - Raster (GIF, Animated GIF, JPEG)
 - Vectorial (SVG)

Images

- Symbols
 - Ideographs
 - Iconic
 - Animated GIF
 - Line art
 - Notation system (SASW, HamNoSys)
- 

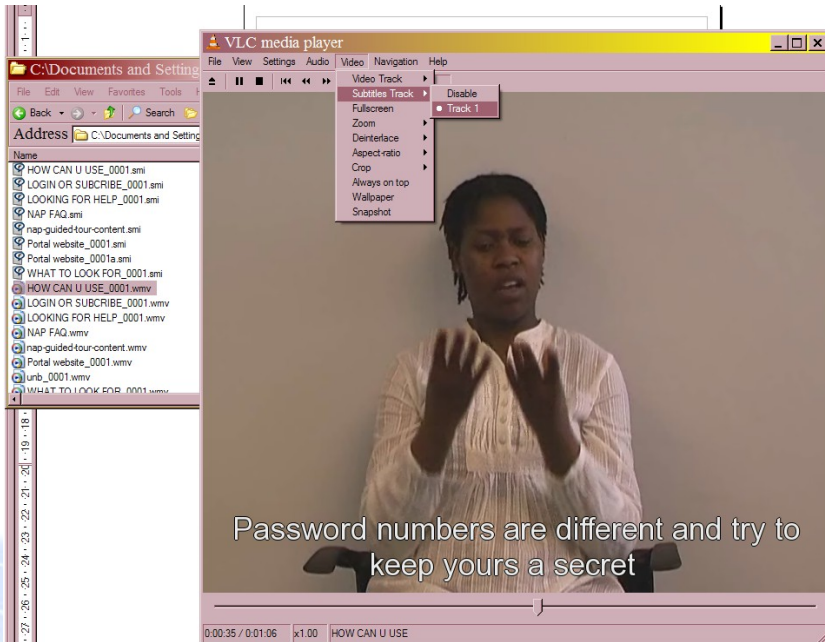
SMIL+Cell phones = MMS

- One of SMIL successes is limited domain Cell phone integration.
- Limsee can help design the layout of SMS.



4 images, "cartoon" style borders for enhanced perception but luminosity (color palette changes) is a problem.

Closed Captioning [CC]

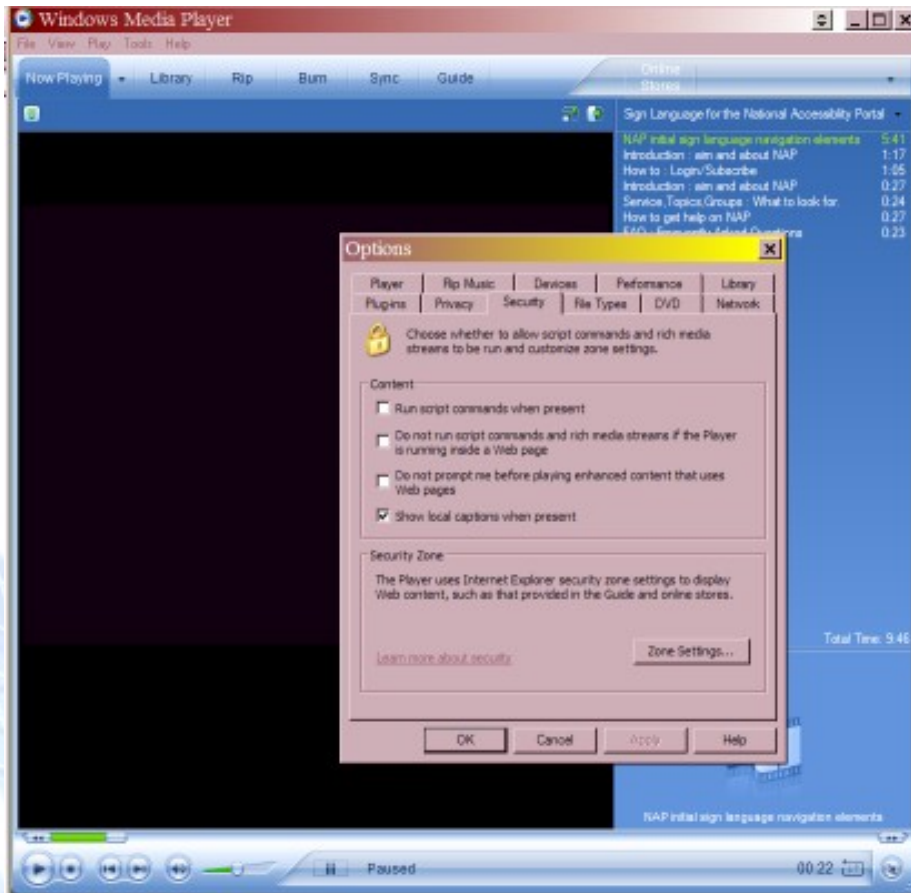


- Closed Captioning makes it possible to reach full accessibility :
- Can choose font, font size, font color, positioning of subtitles
- Text based (useful for transcripts and longDesc tags)

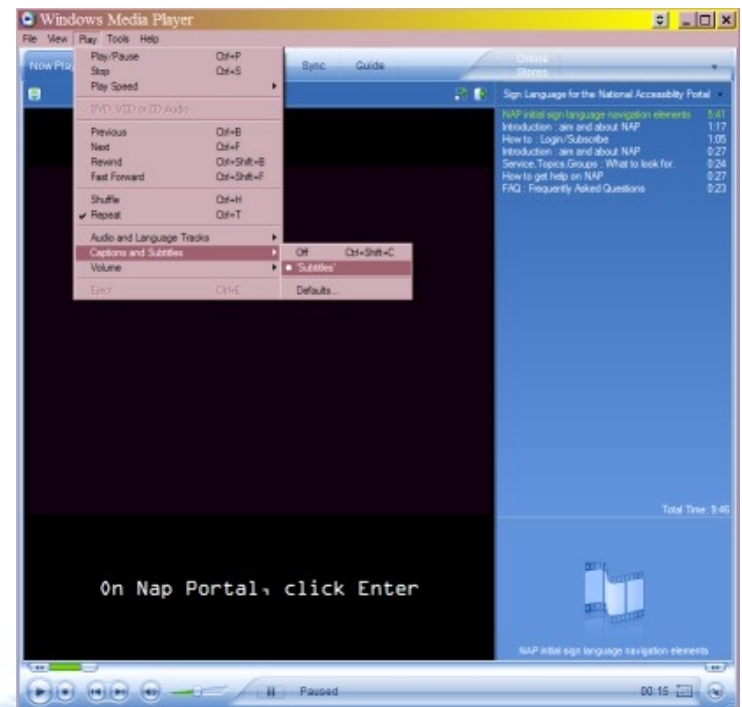
Local [cc] (with same filename as video file) are automatically handled in VLC Media Player.

Closed Captioning difficulties with WMP

Select Captions and Subtitles in Play menu and then if you video has captions, the various channels should appear.



If local, must override security settings to enable [cc] in WMP (disabled by default).



Closed Captioning in Google

The National Accessibility Portal : Communication - Mozilla Firefox

File Edit View History Bookmarks Tools Help del.icio.us

http://video.google.com/videoplay?docid=5797090991349162618

Getting Started Latest Headlines NAP - MerakaWiki IIIExplore CSIR Workflow CSIRmail CSIRStaff UltraLingua

Google Search

The National Accessibility Portal : Comm..

1 min - Nov 19, 2006
video.google.com

Related videos

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The National Accessibility Portal : Communication

All time views: 208

1 min 17 sec - Nov 19, 2006

Download for Windows/Mac

Email - Blog - Post to MySpace

The National Accessibility Portal (NAP) is a five-year research & development project aimed at addressing the marginalisation of people with disabilities from the mainstream economy and society. The project was conceptualised and developed by the CSIR in partnership with a representative group of Disabled Persons' Organisations (DPOs) and the Office of the Status of Disabled Persons (OSDP) in the Presidency.

Details - Comments - More from user

and supports the use of Sign Language.

and supports the use of Sign Language.

01:09 / 01:17

Transferring data from vp06.video.l.google.com...

✓ Chinese: Chinese
Japanese: Japanese

✓ Show captions
Show background

00:15 / 01:41

CC

Google [cc] let you select between different subtitle channels

Preview of NAP video with [cc]



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Examples web integration

Examples summary

- DeafPlanet.com
(World Summit Award e-Inclusion)
 - WikiHierro
 - SignWriting.org
 - WebSourd.fr
 - ASLpro.org
- 

Deaf Planet




15th World Congress of the WFD - Mozilla Firefox

File Edit View History Bookmarks Tools Help del.icio.us

http://www.wfdcongress.org/eng/version_text.php?categoria=comunicat courses to Deaf people

Getting Started Latest Headlines Y! NAP - MerakaWiki IIIExplore CSIR Workflow CSIRmail CSIRStaff UltraLingua

15th World Congress of ... DEAFSA Adapting e-learning courses ...



15TH WORLD CONGRESS OF THE WORLD FEDERATION OF THE DEAF


Madrid (Spain) from 16 to 22 July 2007

English Version IS Video | Version Espanol Video LSE

Home

- Greetings
- The World Federation of The Deaf (WFD)
- Spanish National Confederation of Deaf People (CNSE)
- The 15th World Congress of the WFD
- Committees
- Registration
- Paper submission
- Interpreters
- Exhibition
- Hotels and Tours
- Commissions and SIG's: Scientific Programme
- About Spain
- Media and Broadcasters Accreditation
- WFD General Assembly
- Schedule
- Cultural Programme Preview
- 4th WFD Youth Camp 2007 (WFDYS)
- World Deaf People

PAPER SUBMISSION




THE DEADLINE FOR SUBMITTING PRESENTATIONS TO THE 15th WORLD CONGRESS OF THE WFD IS OPEN

After having assessed and scored all the abstracts received, the Organisers of the 15th World Congress of the WFD open the deadline for submitting the Presentations whose authors have been accepted to take part in the Scientific Programme of this Congress.

Directions to prepare and send the presentations:

1. The period set for paper submission begins on **12th February 2007 and ends on 9th March.**
2. In order to give a presentation at the 15th World Congress of the WFD authors must formally register. The deadline for registration ends on **26th February 2007**. If you have not registered by that date, your presentation will be excluded from the Scientific Programme of this Congress.
3. Procedure to be followed for a successful paper submission:
 - Key in the presentation ID (please, check that the author's personal data are correct)
 - Tick the Commission or Special Interest Group it is addressed to

http://www.wfdcongress.org - Paper St



Done

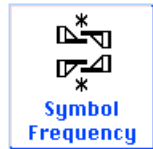
This logo activates a Javascript pop-up window were the video is rendered.

The problem is that pop-up may be counter-accessible for some people (windows stacking and focus)

Sutton Sign Writing

- **Online SSW examples :**
 - SignText editor and Sign Maker to compose SASW online (DHTML)
 - SignPuddle Dictionary has part-of-sign (POS) search ability
 - Vsigns generates VRML script for VRML/H-anim avatar animation from SwML
 - SignWriting.org has interface in SSW using static images.

Searching for Part-of-Signs



Home

SignPuddle™

Search by Symbols



Dictionary



Symbol Group List	Previous	Search
Select Next	Delete Symbol	Clear All
Variation	Mirror Symbol	Fill Symbol
Exact Match	Rotate 1	Rotate 2
Any Match	Fill Match	Rotate Match

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SignPuddle let you create new signs and Search gesture through parts.

This search feature is useful for people that are looking for content but do not know the English word. They want to search according to their knowledge of Sign Language.

This Use Case present an attractive functionality for Sign Language literate people.

The other way is through video annotation.

Interfaces in SSW

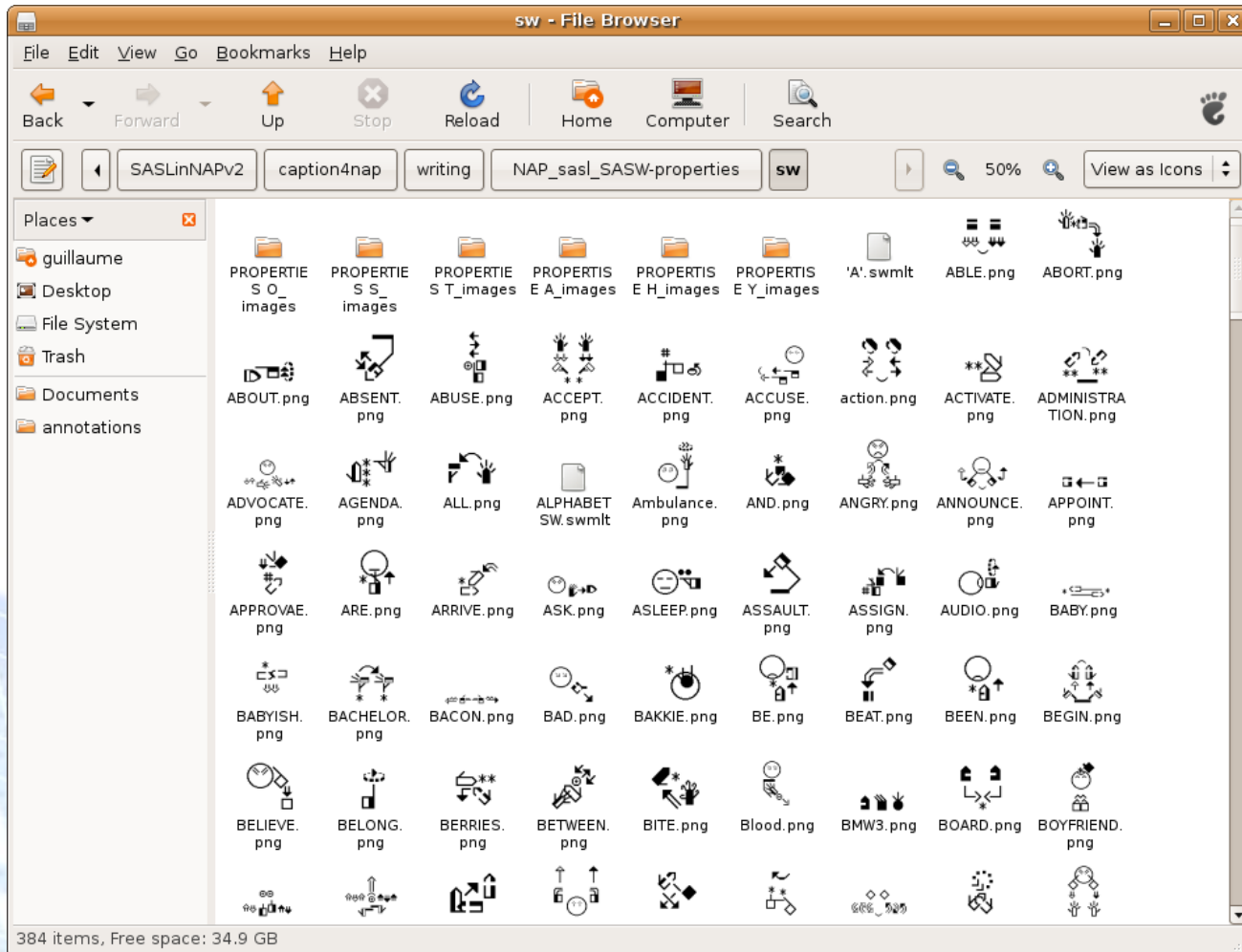


```
<button type="submit"
  name="action"
  value="ExportAll"><table
  cellpadding=5><tr><td
  align=middle><br><font
  size=-
  1>All</font></td></tr></tabl
  e></button>
```

```
http://www.signbank.org/SignPud
dle1.5/image.php?build=01-
05-001-01-06-01,106,88,01-
05-050-01-03-08,109,153,01-
05-001-01-06-01,159,152,02-
06-001-01-01-15,134,168,02-
05-001-01-01-01,112,135,08-
01-001-01-01-
05,113,125,&size=.5
```

SignWriterJava and Tiger. Software interface in Sutton Sign Writing On SourceForge.net, applying to become main helper.

NAP properties in SASW XML files



SASW development ideas

- SSW examples :
 - Java program SignWriterJava has menus in SSW
- Student projects :
 - XML representations XSLT to SVG
 - WikiHiero to WikiSW

Avatar animation from SSW

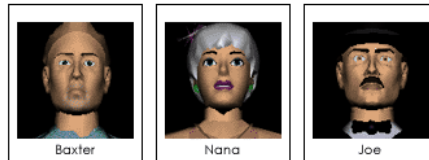


INFORMATICS & TELEMATICS INSTITUTE

Enter a Word or Phrase:

Hello butterfly

Go



Results:

Hello

hello (1) [SignWriting](#) [SWML](#) [VSign: Baxter](#) | [Nana](#) | [Joe](#) | [Baxter FBA](#)
hello (2) [SignWriting](#) [SWML](#) [VSign: Baxter](#) | [Nana](#) | [Joe](#) | [Baxter FBA](#)

butterfly

butterfly [SignWriting](#) [SWML](#) [VSign: Baxter](#) | [Nana](#) | [Joe](#) | [Baxter FBA](#)
With selected [SignWriting](#) [SWML](#) [VSign: Baxter](#) | [Nana](#) | [Joe](#) | [Baxter FBA](#)

Note: You need a VRML client to see the animations

VSigns v0.1a running on dbX v1.00
(c) 2004, Informatics & Telematics Institute
HANIM models (c) Christian Babski (LIG/EPFL)

VSigns generates VRML animation sequences from SignWriting, based on MPEG-4 Body Animation. The SignWriting of each sign is provided as input and is initially converted to SWML (SignWriting Markup Language), an XML-based format which has recently been developed for the storage, indexing and processing of SignWriting.

Synthesis of Virtual Reality Animations from SWML using MPEG-4 Body Animation Parameters by Maria Papadogiorgaki, Nikos Grammalidis, Nikos Sarris and Michael G. Strintzis

Acronyms

- **POS** – Part-of-Sign
a derivation from Part-of-Speech
 - **SASW** – South African Sign Writing
a derivation from Sutton Sign Writing SSW
 - **[CC]** – Closed Caption
 - **RSS** – Really Simple Syndication
 - **Podcast** – XML news delivering Audio or Video links
- 