



Open Accessibility
Everywhere

Groundwork, Infrastructure, Standards



Symbol Supported Accessibility in Mainstream ICT Environments, Based on Concept Coding and Free Software and Symbol Resources

Symbolstöd tillgänglighet i vanliga IKT-miljöer, baserad på begreppskodning
och fria program- och symbolresurser

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Raising the Floor





Open Accessibility Everywhere

Groundwork, Infrastructure, Standards



– True access will require access to language – including good support for multilinguality and multi-modality – will require solid language technology infrastructures – ideally open tech

A few words about the context of some of the work at DART:

- The ÆGIS project
- The Concept Coding Framework
- Some concrete applications – Graphic symbol support and AAC based on mainstream, free and Open Source ICT

Possibly a few words about a vision of the building of an infrastructure for multi-modal and multilingual language support



ÆGIS – a short introduction:

The challenge:

(freely after Gregg Vanderheiden RtF - NP11)

- To keep up with the accelerating general ICT development – which we all are increasingly depending on for our daily lives
- How to offer reasonable access for *all* who encounter obstacles due to disability, reading and writing difficulties, aging etc.
 - i.e. for many more than we've done so far (10-20x+)
 - wider range of abilities/disabilities and needs to be covered than traditionally

... and to manage this within available budgets !



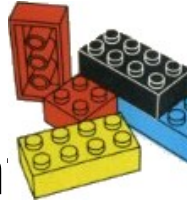
Two basic strategies for addressing the challenges:

(freely after Gregg Vanderheiden RtF - NP11)



- **Building in UI alternatives** – for most needs
 - ... levelling the field
 - ... but will not be sufficient for all
- For those not serviced by built in functionality:
 - **prepared for interoperation with AT tools**
 - APIs
 - Prepared for komplementary UIs/ATs
 - **and to provide this widely – much of it freely**
... and based on free infrastructural resources

- Develop **building blocks for accessibility**
- Building on previous achievements and concurrent efforts for access to desktop environment – now also for Internet services mobile devices and services
- Researching how to build a foundation – an **OAF** – “Open Accessibility Framework” – facilitating for mainstream developers to bring out products that work better for people with disabilities
- Contributing to a **free/open infrastructure for a11y**



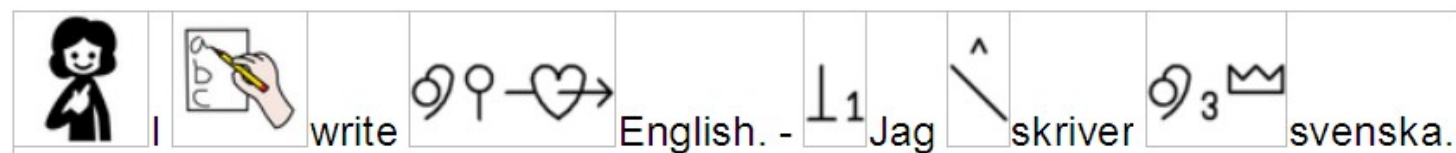
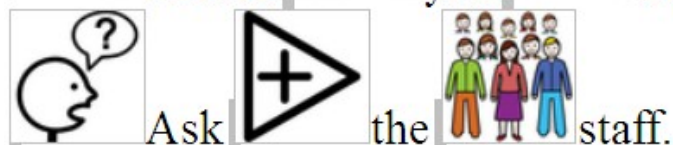


Basic Accessibility:

- Basic accessibility options in current mainstream ICT
 - Windows | – screen: magnific., alternative feedback – TTS, braille ...
 - Unix/Linux | – keyboard, mouse: alternative behaviour and navigation ...
 - Mac | – sound: visual alternatives
 - The Web | – w3c – WAI – WCAG 1 and 2 a. o. a11y standards
- In AEGIS a. o. projects cognitive access – including language aspects – is beginning to be recognised as part of basic accessibility ... some examples from AEGIS:
 - Symbol support in Open Office (as of Widgit SymWriter + Symbered)
 - Symbol supported AAC on the mobile (as of Proloquo2Go etc)
 - Magnification - and potentially simplification (Gnome Magnifier)
 - Alternative input/control/feedback (Dasher, SAW, Caribou/Tekla – eSpeak ...)
 - Access to interactive web services (Tool widgets – ARIA compliant JQuery, etc)

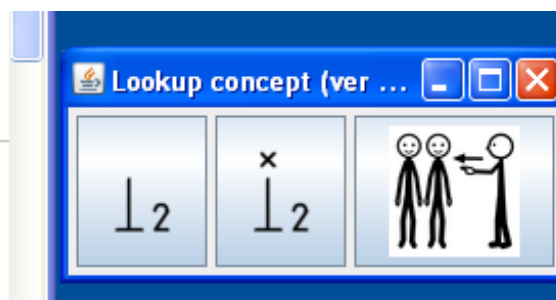
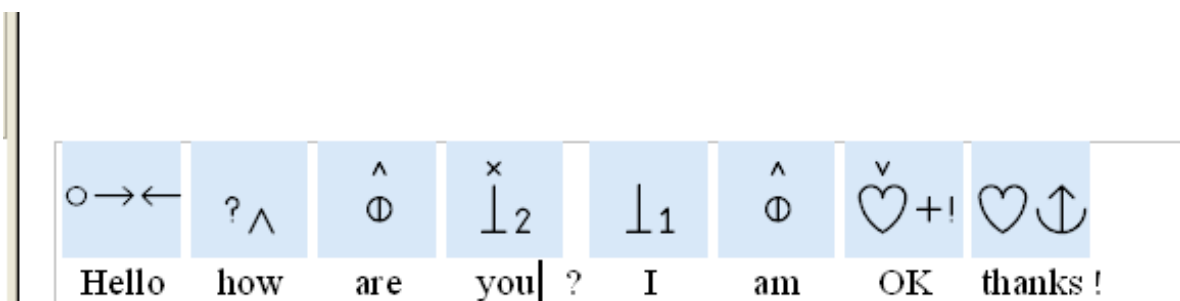
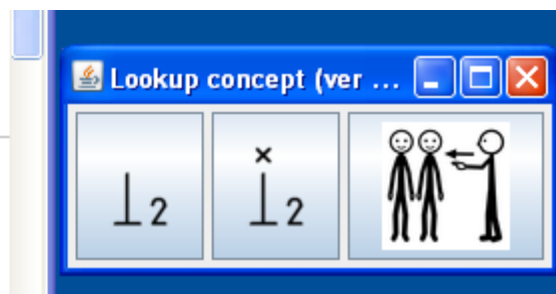
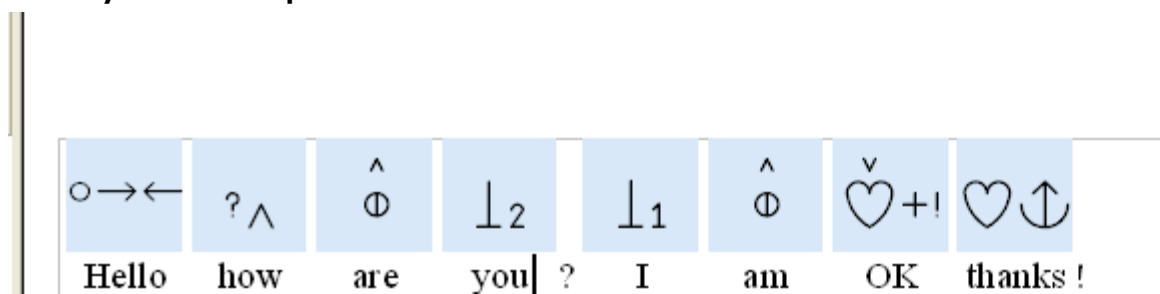
Full Document Scanning & Multiple symbols options:

- Top: Full Document Scanning; On + Multiple Symbols; Off
- Mid: Full Document Scanning; Off + Multiple Symbols; On
- Bottom: English - ARASAAC (+Bliss) – Swedish – Bliss (ARASAAC)



Based on suggestions from the pilot testers and experts, as well as from implementation experiences:

- Current interface for display and selection of alternative concepts and symbol representations





CCF – for symbol support in OO.org

- 2nd alpha version – with SAW5:



Namnlös 1 - OpenOffice.org Writer

Arkiv Redigera Visa Infoga Format Tabell Verktyg ConceptCoding Fönster Hjälp

Standard Times New Roman 12 F K U

I can write with blissymbol

blissymbol on

bliss6-2.sss - SAW5

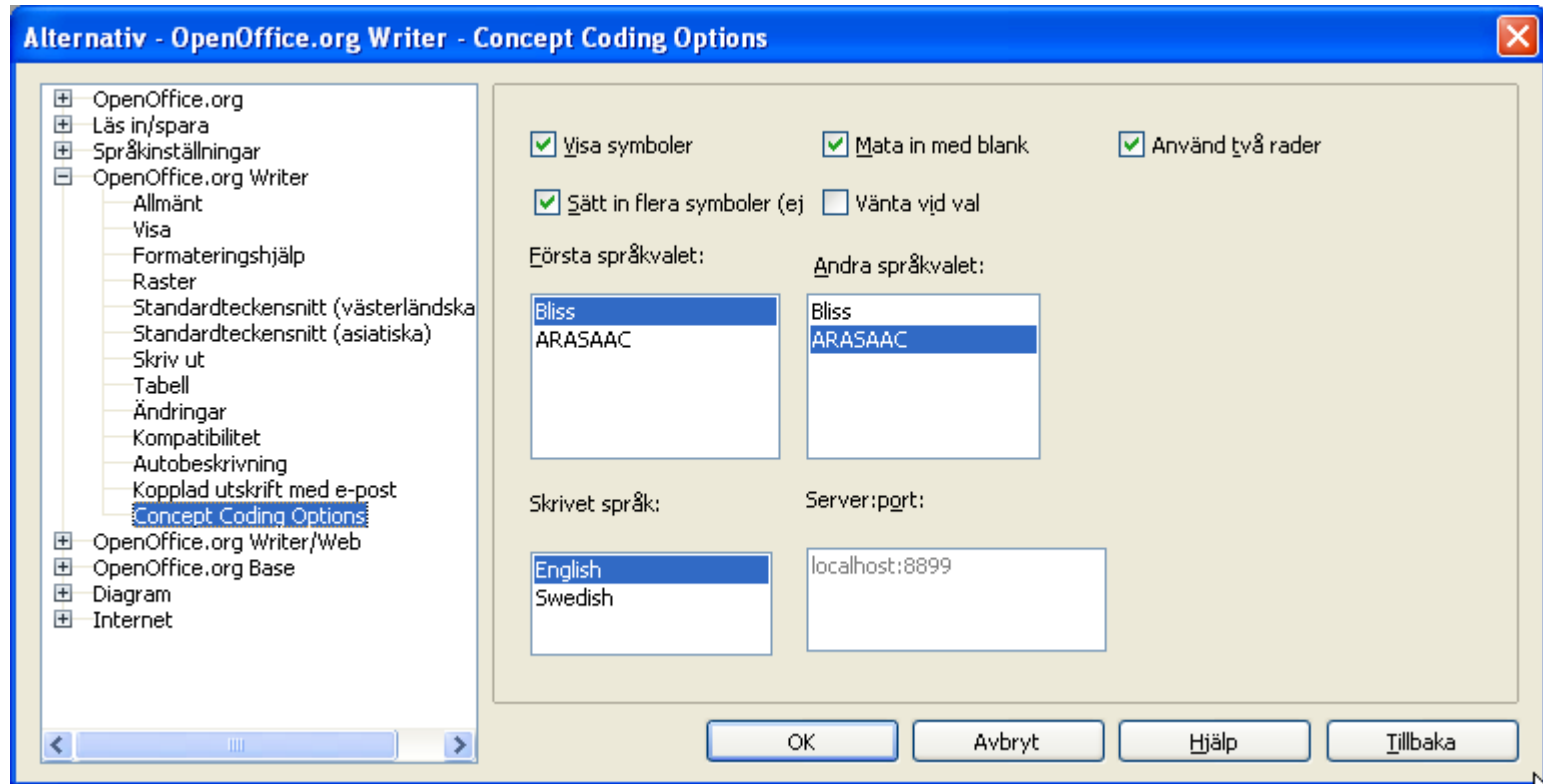
back 	blissymbol 	word 	internet 	problem 	idea 	thought 	person
	secret 	gathering 	party 	club 	hobby 		
	gift 	toy 	play 	game 	ball 	camera 	competition
	picture 	painting 	music 	gymnastics 	sport 	and +	not -
speak in 							ABC



CCF – for symbol support in OO.org - 2nd Alpha version options/settings:



→ The Concept Coding Options Menu:





AAC in free and standard software – how can it be done – what is needed?

In Windows, this can in fact now be achieved based on Open Source software tools alone. Here follows a suggested set-up:

OpenOffice/LibreOffice with the AEGIS CCF Symbols extension (soon to be public from www.aegis-project.eu) - including Blissymbol and ARASAAC symbol libraries

(© 2010 BCI, www.blissymbolics.org. License: CreativeCommons–BY–SA)

(© 2010 ARASAAC www.catedu.es/arasaac . License: CreativeCommons – BY–NC–SA)

- For TTS support download and install **eSpeak** from:

<http://espeak.sourceforge.net/>

- Also download and install **Simple TTS Reader** from:

<http://simplettsreader.sourceforge.net/> .

This latter is a so called “clipboard reader” that can use the eSpeak or other voices to read any text that is copied to the clipboard.

- For on-screen symbol or letter based keystroke input, use **Special Access to Windows** (SAW5), which can be downloaded via:

www.oatsoft.org/Software/SpecialAccessToWindows .



CCF - the foundation of the symbol support



- ÆGIS decided to include the challenging needs of people with cognitive and communication impairments in its overall ambition
- Access to communication and language is the key to human development and participation
- Multimodal and multilingual language support – including graphic symbol support – is needed as an infrastructure to address this range of accessibility goals on the ÆGIS level of ambition
- The Concept Coding Framework (CCF) is the platform we build on
- The CCF is a great strength and help - a precondition
- However, important to bear in mind that the CCF is not an established “in production” technology – it's still largely under construction
- ... and language technology is a heavy and slowly developing area ...



CCF -Concept Coding Framework



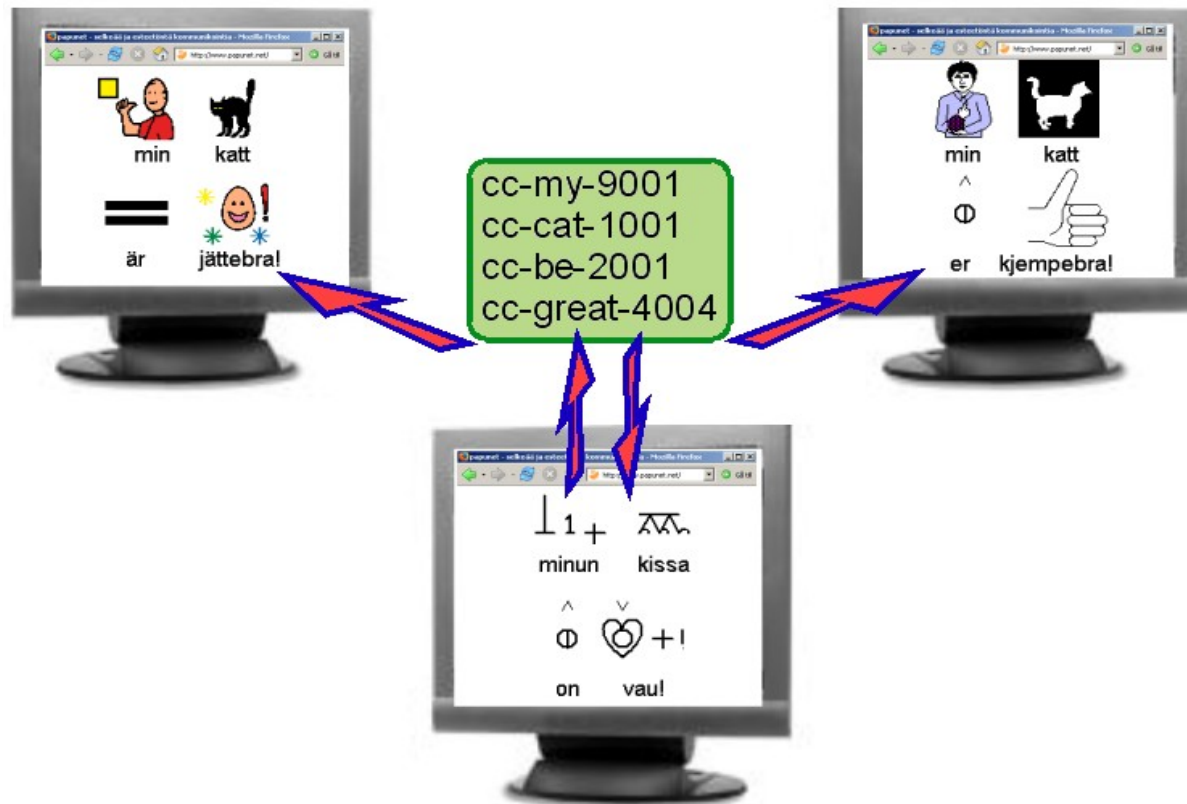
- An infrastructure and protocol to support symbol-based communication
- An open source and vendor neutral standard
- Allows dynamic repurposing of textual web / email and other content into a user's preferred (symbolic) representation
- Uses the underlying standard technologies of the semantic web (RDF-OWL)



CCF – the basic idea:

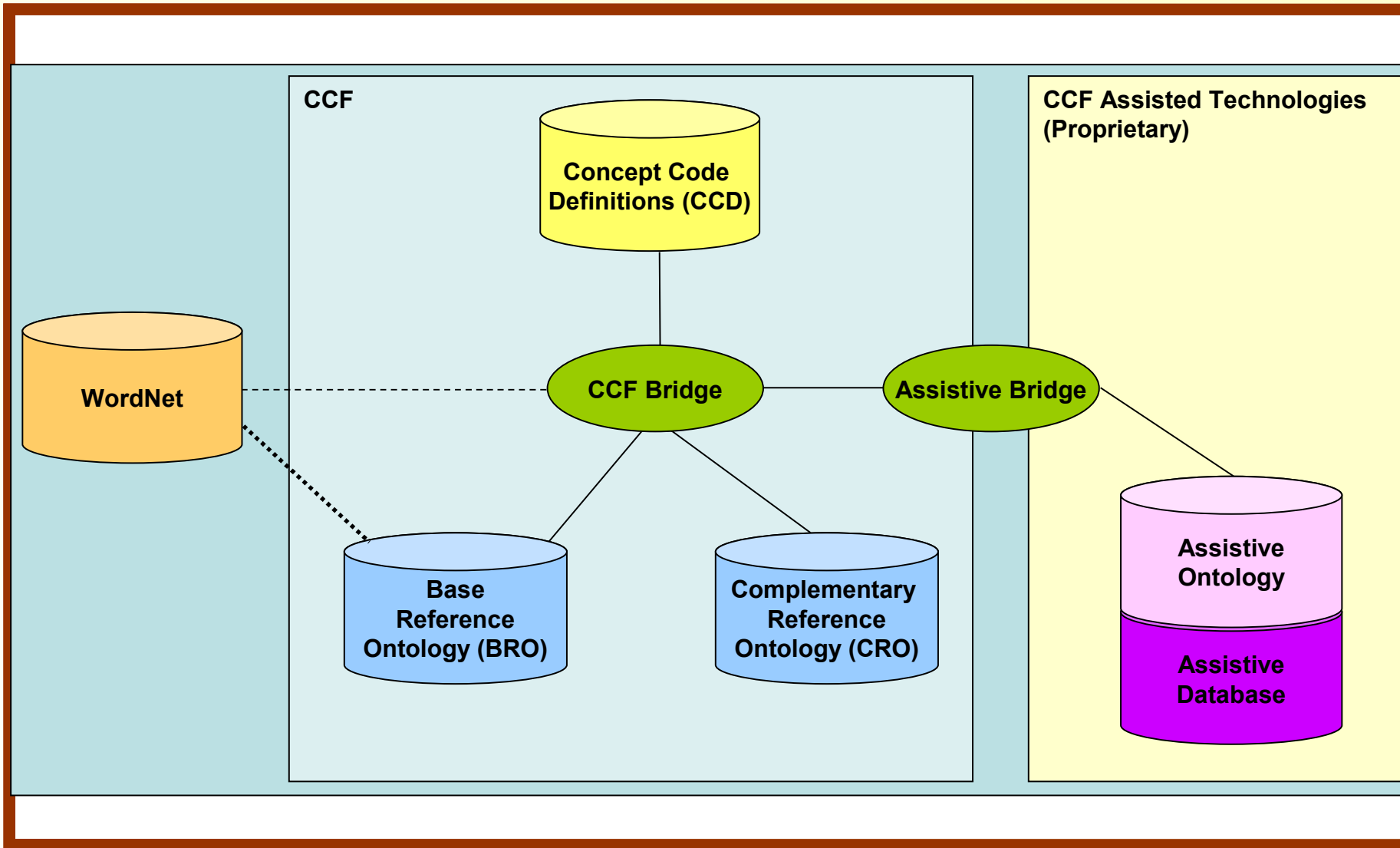
- One basic principle for modern web design is to separate content from form e.g. with Cascading Style Sheets (CSS)
- This is (among other things) a major step towards improved accessibility
- The CCF may be seen as another step towards strengthened accessibility by, to some extension, separating meaning from its representation

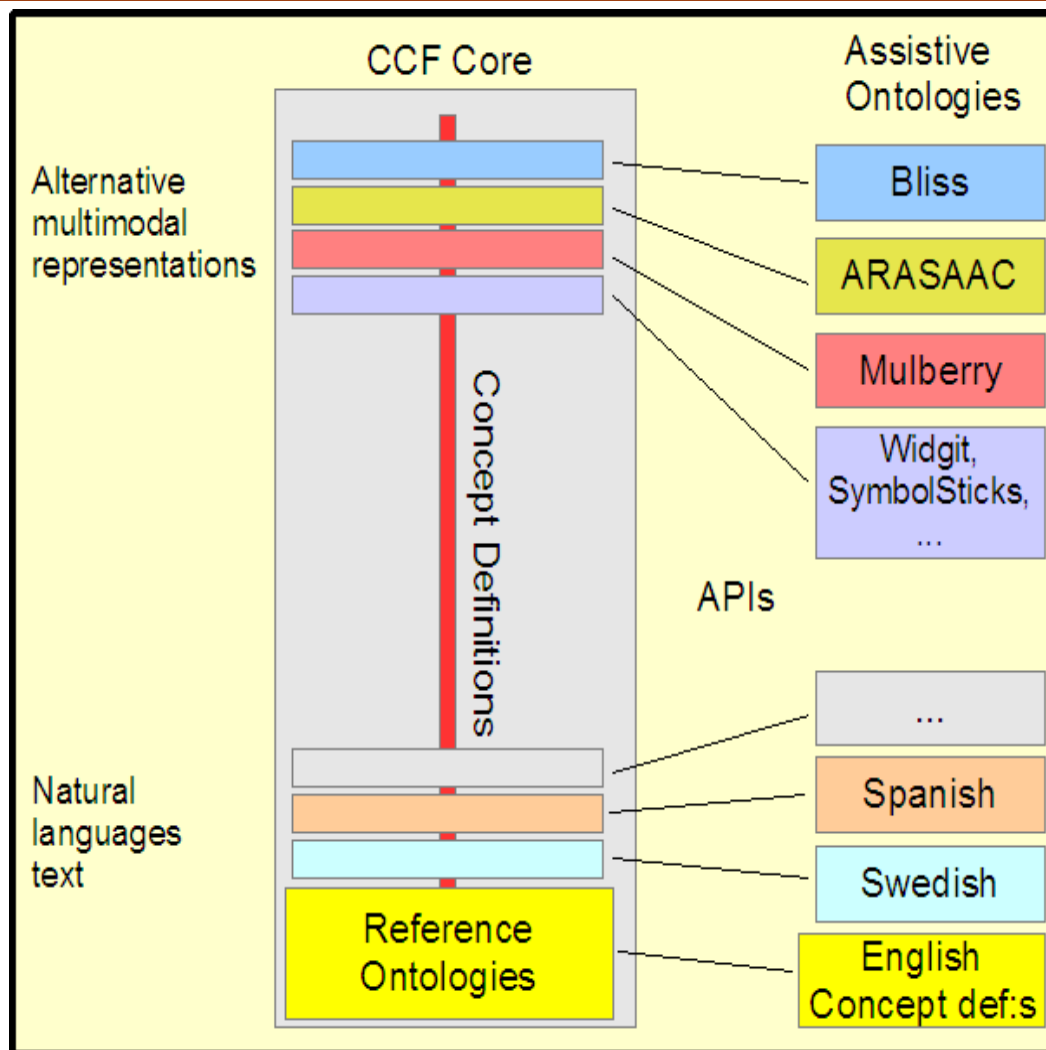
A “bridge” between different symbol systems, languages and technologies, and the users of these





CCF - Architecture







Underpinning long-term goal:



The incremental building of common, freely available, multi-modal and multi-lingual language resources

- A foundation for better accessibility to language content
- Not least for students in need of extra language support for their development
- ... including concept based symbol, sign and/or other AAC resources
- Preparations under way for international standardisation (ISO TC/37)



Approach - hypothesis



- Build national and international co-operation to gradually supply the Swedish, European (etc.) information society, in particular the school and educational sectors, with a free, open and widely applicable language resource - a generic multi-modal and multilingual concept lexicon, including grammar support, for Bliss and ARASAAC, Swedish and English, and a growing number of additional graphic symbol and signing systems, and languages.
- This would imply a substantial contribution to the work for improved general accessibility, and for an inclusive and participatory learning environment as a whole, and in particular for numerous groups and individuals with language and cognitive challenges



Means and objectives:



- Promote co-operative efforts and projects, involving numerous actors – including DART and CLT in Gbg, Språkrådet, possibly Skolverket, SPSM, and/or other interested parties (KTH/NADA, LIU, UU, ... and why not ISAAC Sweden, Norway?) – contributing the necessary elements for such open and common multi-modal and multilingual resources – as an infrastructure for better access to language content for all
- Ideally linked to further Nordic and/or European project efforts in this direction



Some more concrete resources and possible steps:

- Gradually build the widely/freely available basic language resource in the form of a Swedish – and multilingual – **multi-modal concept lexicon** based on a limited number of existing and publicly available ontologies/lexicons, and on a few on-going projects, including:
 - **WordNet/Sw WN, Saldo/Sw FrameNet++...** possibly **Lexin**
 - Multi-modality – by complementing the text format with a number of alternative representation forms, such as:
 - graphical symbol systems (Bliss, ARASAAC, Sclera Pictos, PCS, Widgit symbols, Pictograms etc.)
 - Image libraries
 - signs/sign language (Svenskt teckenspråkslexikon)
 - based on **Concept Coding Framework – CCF**
- **i.e. a multi-modal and multilingual WordNet-Saldo-Sw FrameNet++ (-Lexin) - with concept coded symbol and sign support** (+ possibly GF/Molto based grammar support etc)



Some related project links



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www.aegis-project.eu



Raising the Floor

www.conceptcoding.org

www.raisingthefloor.net



<http://npii.org>



www.oatsoft.org



GNOME Accessibility

<http://projects.gnome.org/accessibility>



DART
Kommunikations- och
dataresurscenter för funktionshindrade

www.dart-gbg.org



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More reference links ...

- **WordNet** - <http://wordnet.princeton.edu/>
- **Svenskt ordnät** - <http://www2.lingfil.uu.se/ling/swn.html>
- **Saldo** - <http://spraakbanken.gu.se/eng/saldo/> ,
- **Swedish FrameNet++** - <http://spraakbanken.gu.se/eng/swefn/>
- **Lexin** - <http://lexin2.nada.kth.se/lexin/>
- **GF** - www.grammaticalframework.org/ , **Molto** - www.molto-project.eu/
- **Concept Coding Framework – CCF** - www.oatsoft.org/Software/concept-coding-framework-ccf
- **SYMBERED** - www.symbolnet.org
- **Bliss** - www.blissymbolics.org , **ARASAAC** - www.catedu.es/arasaac/index.php
- **Sclera Pictos** - www.sclera.be , **Pictogram** - www.pictogram.se
- **Svenskt Teckenspråkslexikon** - www.ling.su.se/teckensprakslexikon
- **PCS** - www.mayer-johnson.com/nsearch/?keywords=pcs , **Widgit symbols** - www.widgit.com/
- **AEGIS tools** - www.aegis-project.eu/index.php?option=com_content&view=article&id=14&Itemid=33
 - **CCF Symbols for OO.org Writer** - <http://dev.androtech.se/ooo/content.html>
 - **Tekla** - <https://market.android.com/details?id=ca.idi.tekla> , **Caribou** - <http://live.gnome.org/Caribou>
 - **Dasher** - www.inference.phy.cam.ac.uk/dasher/
 - **Gnome Shell Magnifier** - <http://live.gnome.org/GnomeShell/Magnification>
 - **odt2daisy** (DAISY-böcker från OO.org Writer) - <http://odt2daisy.sourceforge.net/>