The Use of Technology in Multilingual Learning: Challenges and Opportunities:

LA JOURNÉE DE LA LANGUE MATERNELLE

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@SIL Cameroon

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A copy of this presentation can be found at:

http://LangTechCameroon.info/mt

Introduction

- Over fifty years from independence language developers have been involved in developing Cameroonian languages in order to make them viable and learnable. Until independence little or no attention was paid to most Cameroonian Mother Tongues (MTs) at the levels of; sociolinguistics, phonology, morphology, lexicography, grammar, and syntax, which could eventually result in language endangerment and loss.

Introduction

- Soon after independence, attempts invested by language developers notably the Summer Institute of Linguistics (SIL), the National Association of Cameroonian Languages Committee (NACALCO), the Cameroon Bible Translation Association and Literacy (CABTAL), communities, and some state universities coupled with a favourable linguistic political atmosphere resulted in efforts of learning the MTs. In line with the attempted efforts, technological endeavours were implied.

Introduction

- The implication of technology establishes the basis for the examination of how it was/could be used in multilingual learning within the current technological era coupled with some challenges and opportunities. The discussion will also encompass who the learner is, how he uses technology, what elements of technology are used, and the location of the user.

Challenges

Personnel Challenges of Using Technology in Learning MTs:

- There is an imbalance in digital divide (urban and rural area folk disparity)
- Limited qualified trained personnel (many teachers/learners are not computer literate)
- Time demanding (Presentation preparation at home requires time)

Infrastructure Challenges of Using Technology in Learning MTs:

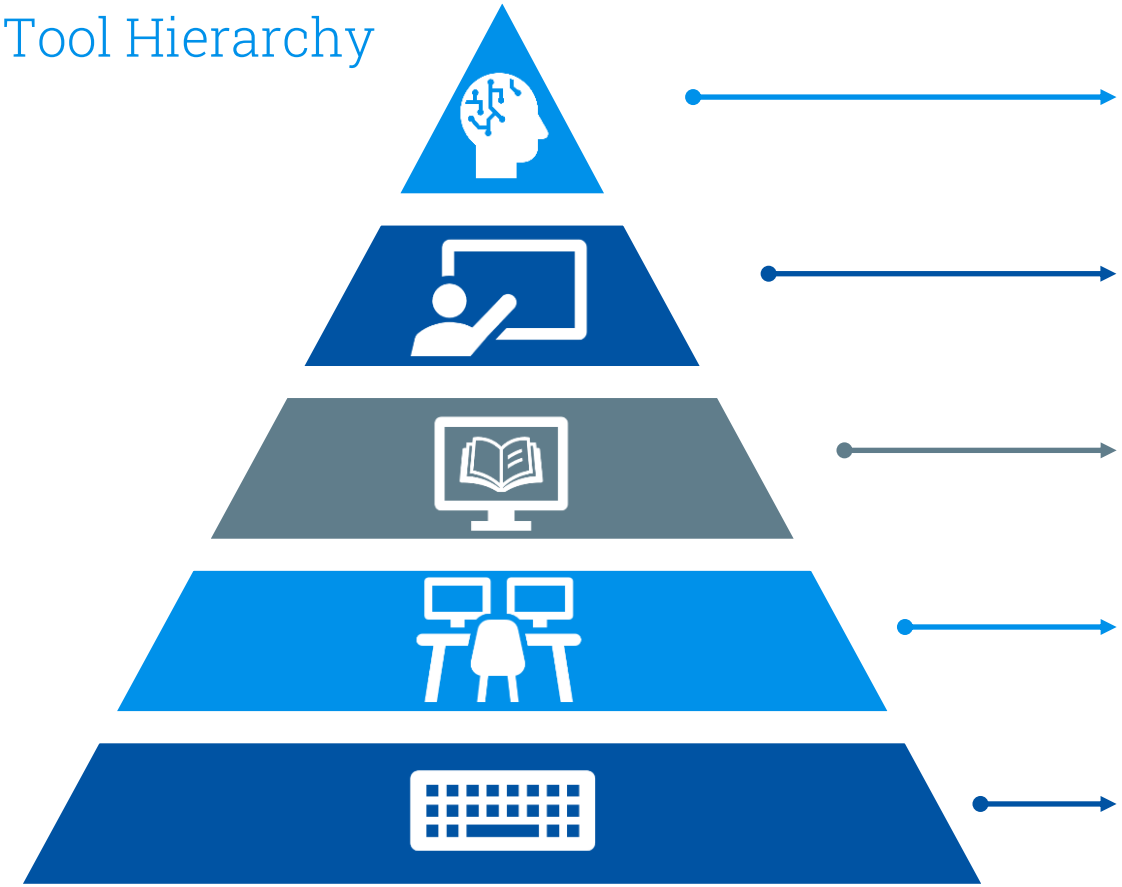
- Financial barriers (e.g., purchase of equipment by have-nots)
- Absence of power supply in typical rural settings
- Limited connectivity (internet connection access hampers distance learning and research)

Language-Specific Tech Problems

- Some languages do not have established orthographies
- Mother Tongue fonts are limited in circulation
  - Few computers in public places have good MT fonts.
- Computers and phones do not currently assist with spelling in the mother tongue.
- Keyboards are not simplified for MTs
- Stress in combining characters to produce certain letters.

How can SIL Language Technology help?

Tool Hierarchy



Advanced Tools

Machine Learning, AutoCorrect, Text-to-speech, Speech Recognition

Training and Resources

Videos, Blogs, Training Manuals, Personal Support, Resources

Content Creation and Sharing Tools

Bloom, AlphaChart, Reading App Builder, etc.

Linguistics Tools

FLEx, PrimerPrep, Phonology Assistant, etc.

Foundational Technologies

Fonts, Keyboards, Encoding, Display Technologies

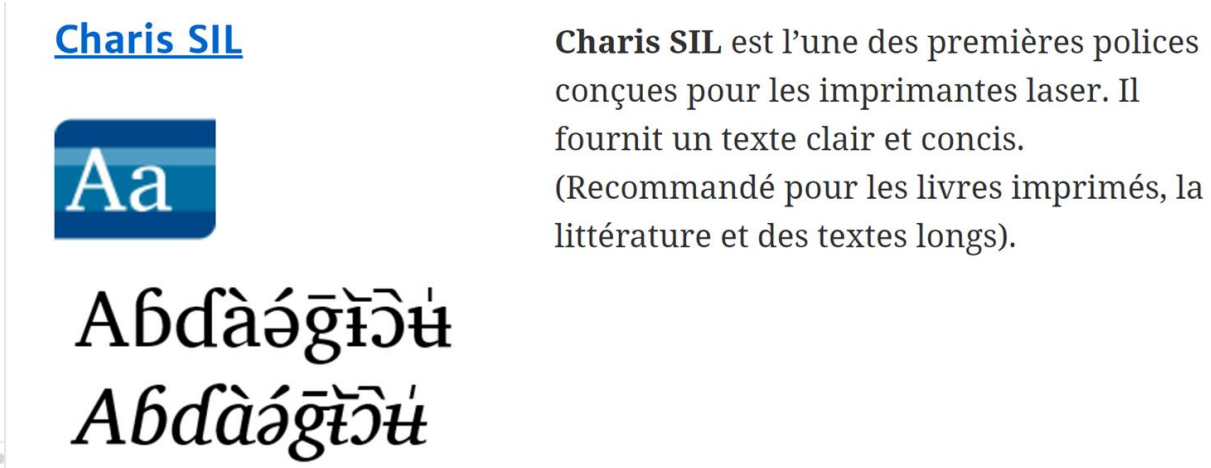
LangTechCameroon.info

https://langtechcameroon.info/

Foundational Technologies

Foundational Technologies: Fonts

- Charis SIL
  - https://software.sil.org/charis/



Foundational Technologies: Fonts

- Doulos SIL
  - https://software.sil.org/doulos/

Doulos SIL

Aa

Abɗàə́ḡɨ̀ɔ̀ʉ́

Abɗàə́ḡɨ̀ɔ̀ʉ́

Doulos SIL est une police Unicode sérif semblable à Times New Roman. **Doulos SIL** est recommandé pour les transcriptions phonétiques, comme les caractères sont clairs et sans ambiguïté.

Foundational Technologies: Fonts

- Andika
  - https://software.sil.org/andika/

Andika

Aa

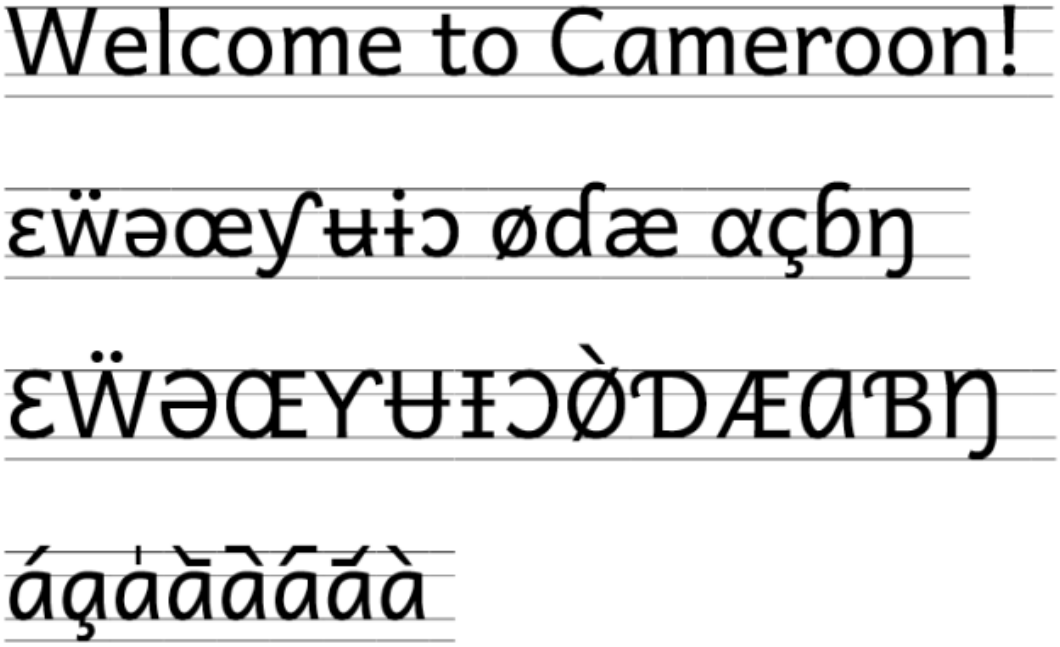
Aɓɗàə́ḡɨ̀ɔ̀ʉ́

Aɓɗàə́ḡɨ̀ɔ̀ʉ́

Andika est une police d'Unicode sans-sérif conçue spécialement pour l'utilisation dans l'alphabétisation et pour les besoins des lecteurs débutants. L'accent est mis sur des lettres claires qui ne seront pas facilement confondus avec d'autres. **Andika** est recommandé pour les primeurs, livres pour enfants et ressources pour les lecteurs débutants.

Foundational Technologies: Fonts

- PrimaryLines
  - https://langtechcameroon.info/primarylines/



Foundational Technologies: Cameroon Keyboards

- AZERTY and QWERTY
  - MSKLC for Windows
    - https://langtechcameroon.info/cam-keyboard-msk/
  - Cameroon Keyboard for Android
    - https://play.google.com/store/apps/details?id=info.langtechcameroon.keyboard
  - Keyman for Windows, Mac, Linux, Android, iOS
    - https://keyman.com/keyboards/h/cameroon/

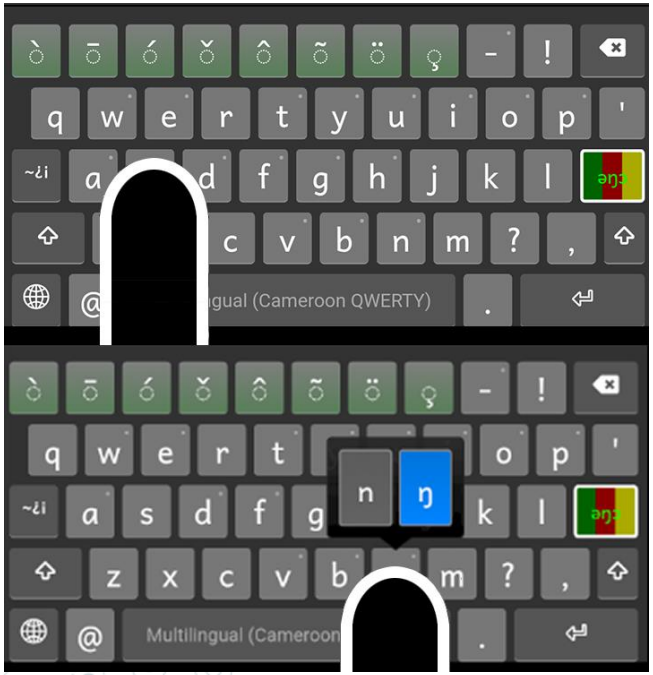
Cameroon QWERTY (Desktop)

https://help.keyman.com/keyboard/sil_cameroon_qwerty/

Cameroon AZERTY (Desktop)

https://help.keyman.com/keyboard/sil_cameroon_azerty/

Cameroon AZERTY and QWERTY Touch



https://play.google.com/store/apps/details?id=info.langtechcameroon.keyboard

Foundational Technologies: Minimum

- SIL maintains fonts and keyboards that cover all languages under the GALC
  - https://www.sil.org/resources/archives/32295
- There is an opportunity for simplified single-language keyboards and more decorative fonts.
- Word lists from languages can be added to Keyman keyboards to enable autocorrect.

IPA Keyboards

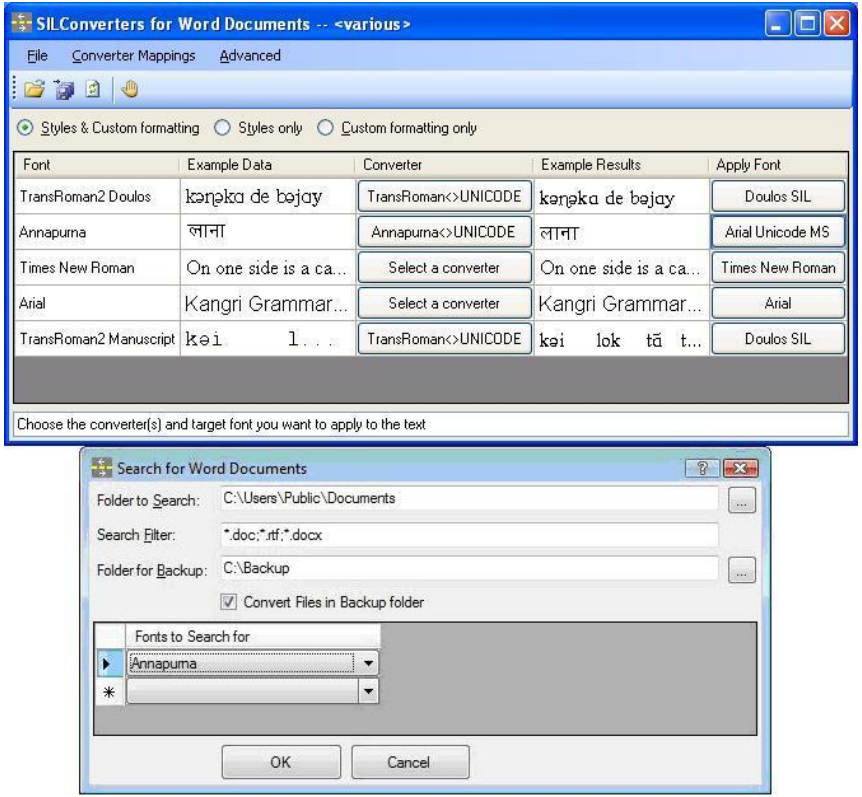
- Mature IPA Keyboards for QWERTY/QWERTZ
  - Keyman:
    - https://keyman.com/keyboards/sil_ipa
  - Microsoft:
    - https://scripts.sil.org/cms/scripts/page.php?site_id=nrsi&id=uniipakeyboard
- Neither version is ideal for AZERTY
  - Need help!

Communication Tools

- Social Media:
  - WhatsApp
  - Telegram
  - Facebook
  - Ayoba
  - Instagram
  - TikTok
- Google Meet
- Zoom
- Moodle

Taking it Online: Literacy Classes on WhatsApp?

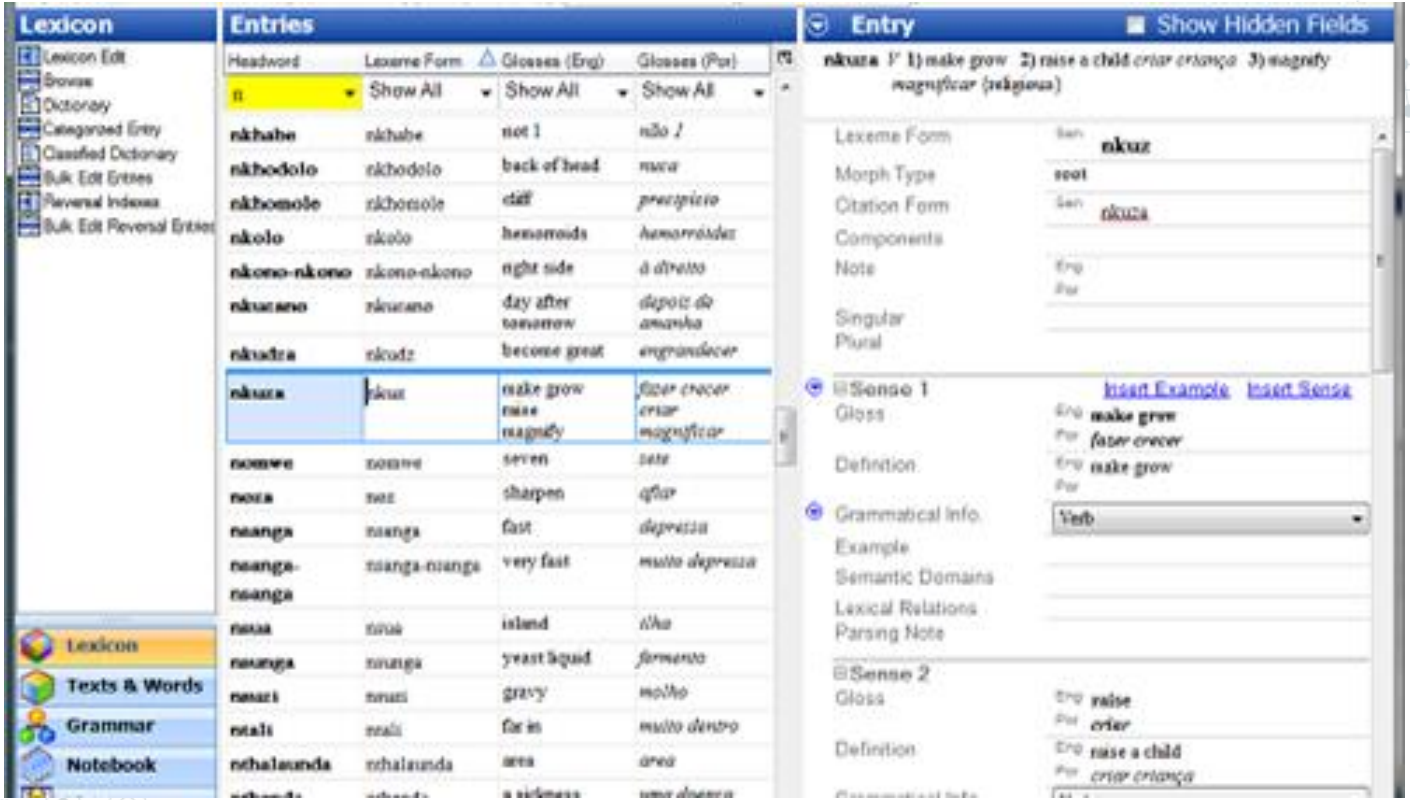
SIL Converters



https://software.sil.org/silconverters/

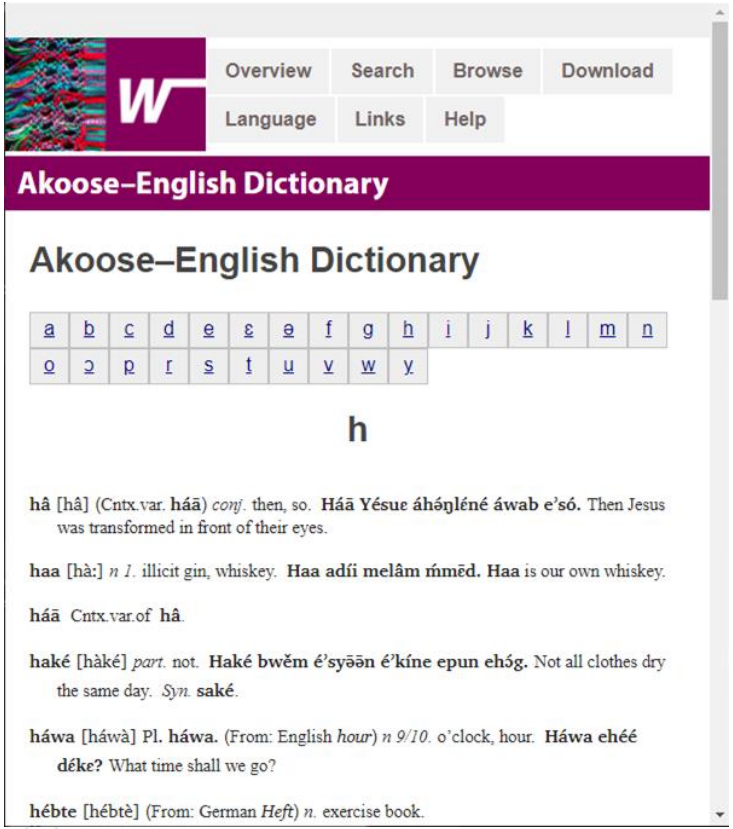
Linguistic Tools

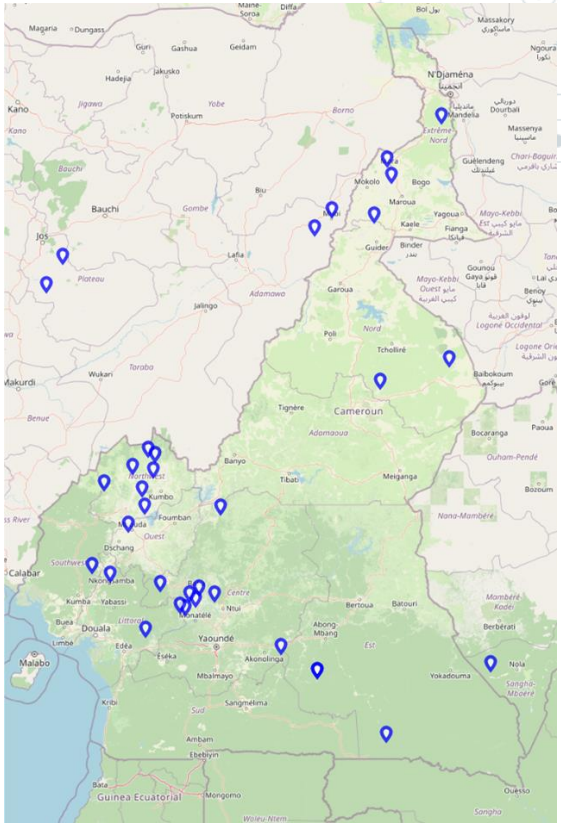
Linguistic Tools: Fieldworks Language Explorer (FLEx)



https://software.sil.org/fieldworks/

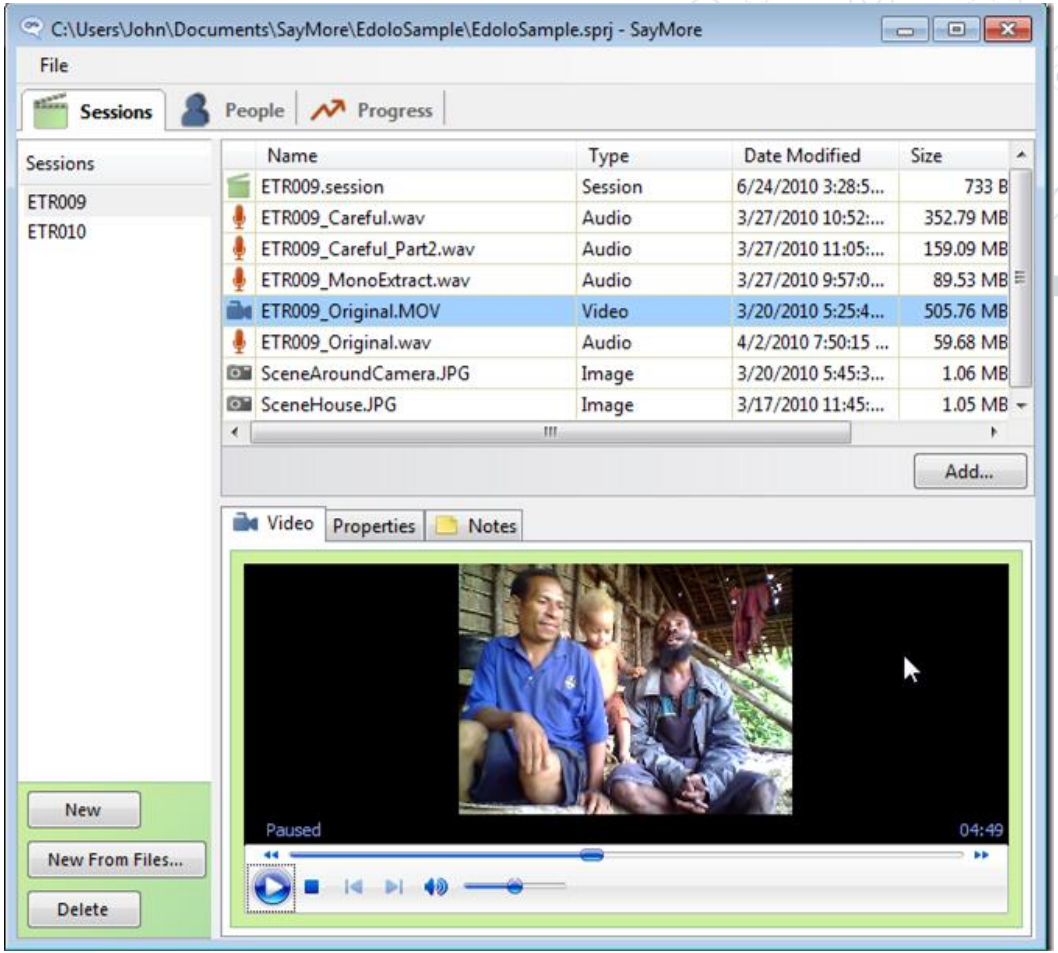
Webonary





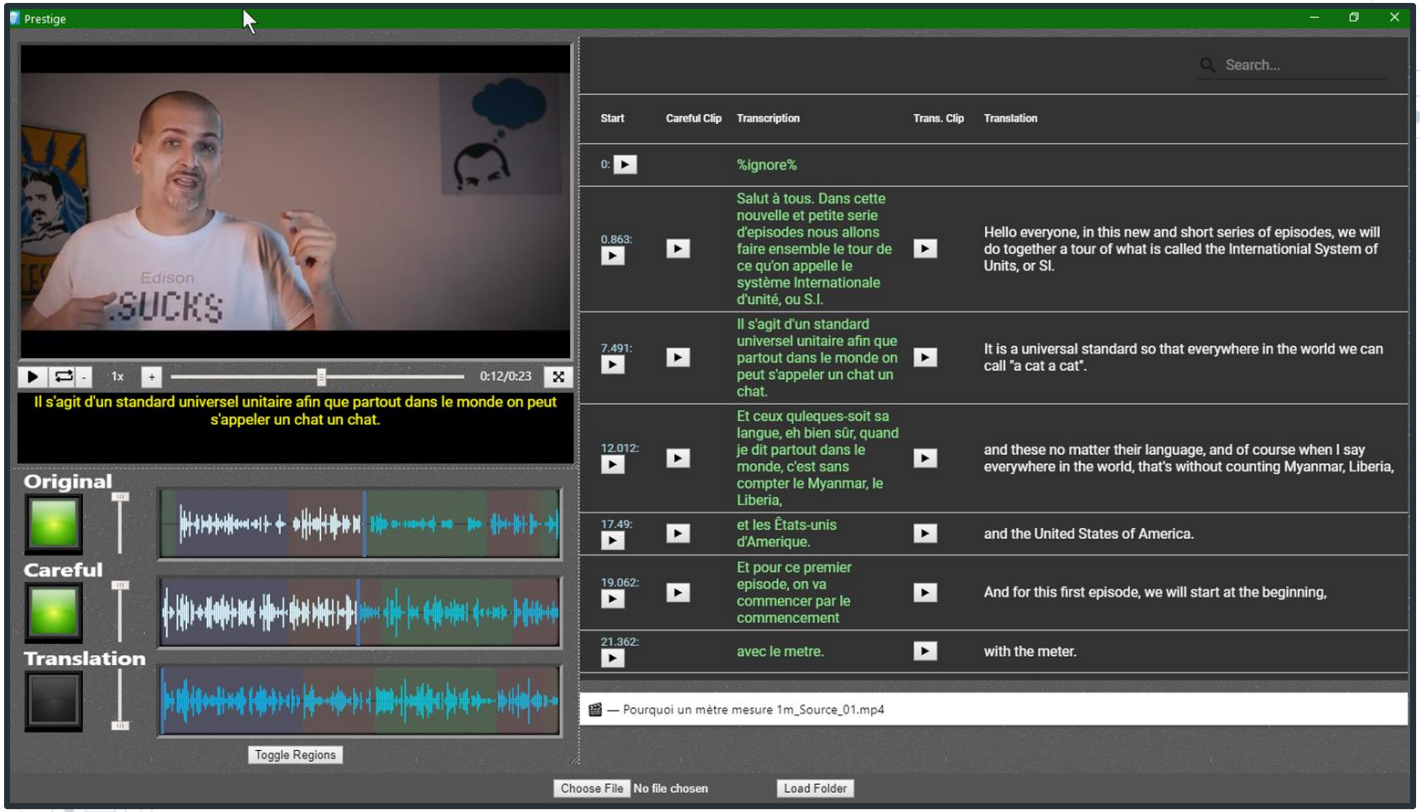
https://www.webonary.org/

SayMore



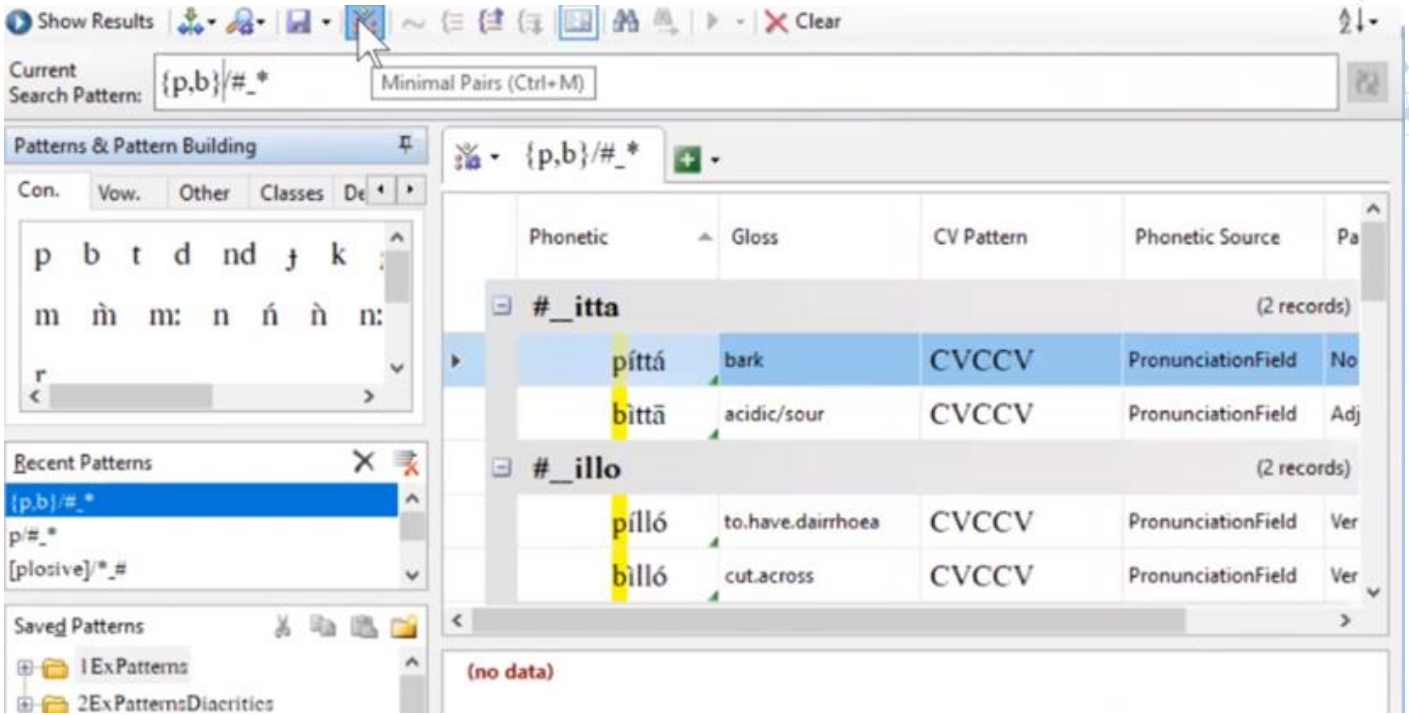
https://software.sil.org/saymore/

Prestige



https://github.com/MattGyverLee/prestige/releases

Phonology Assistant

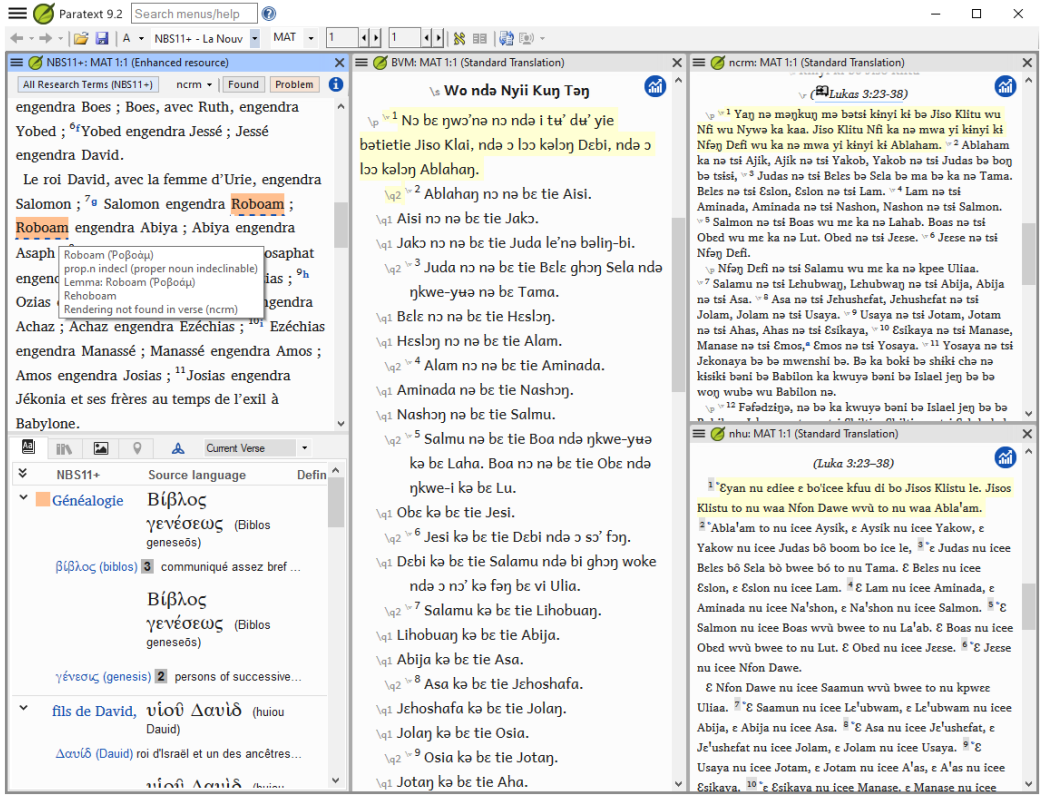


https://software.sil.org/phonologyassistant/

https://www.youtube.com/watch?v=IW_nv2kzeeg

Content Creation Tools

Paratext: Bible Translation

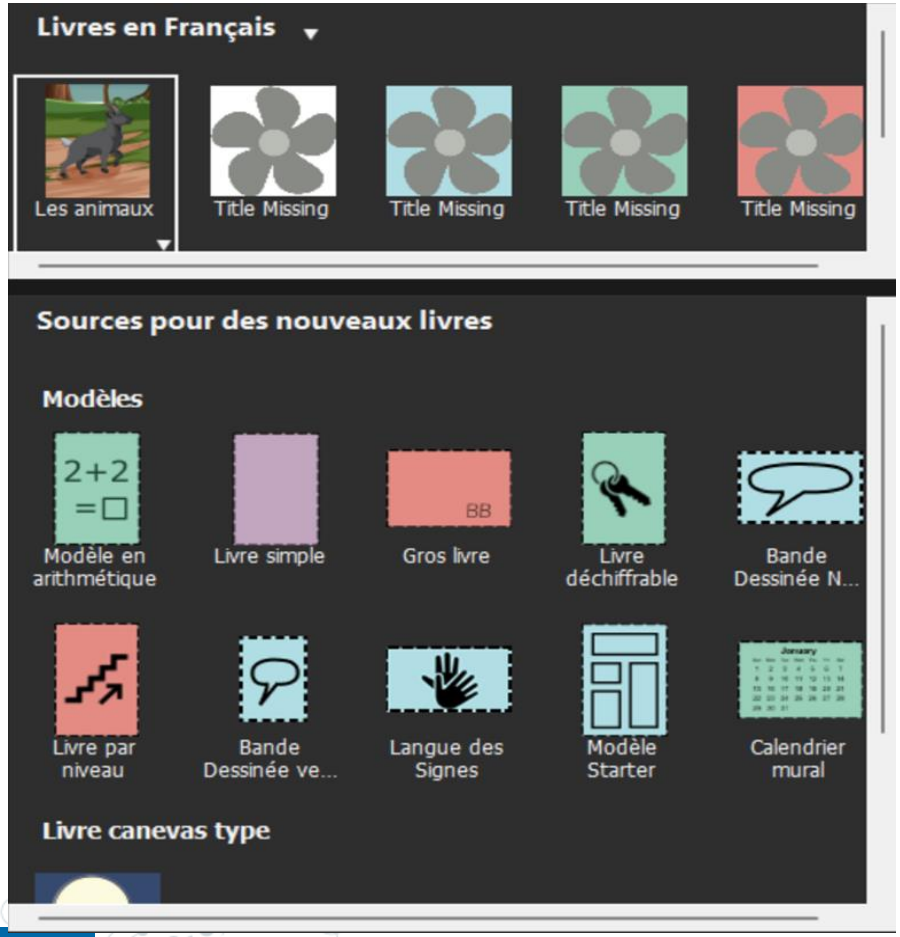


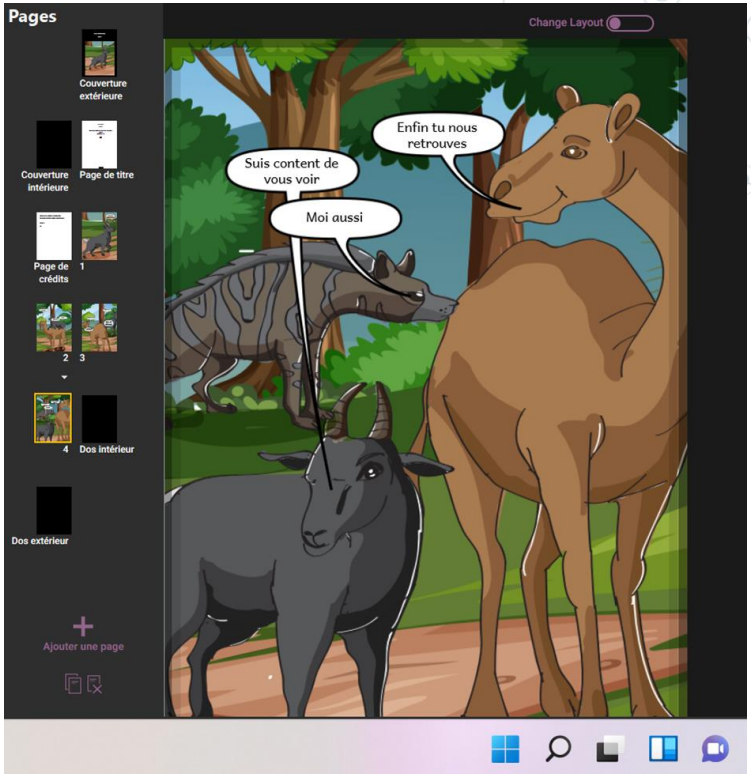
https://paratext.org/

Bloom: Literacy Books

https://BloomLibrary.org

Bloom: Literacy Books





- https://BloomLibrary.org

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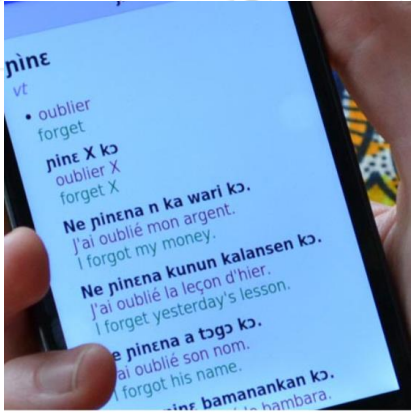
App Builders



- Scripture App Builder
  - https://software.sil.org/scriptureappbuilder/
- Dictionary App Builder
  - https://software.sil.org/dictionaryappbuilder/
- Reading App Builder
  - https://software.sil.org/readingappbuilder/
- Keyboard App Builder
  - https://software.sil.org/keyboardappbuilder/

AlphaChart

Jəkwan ləlaɓ ma Daba

a b ɓ c d ɗ e ə f g gb gw h hw i j k kp kw l m mb
mgb n nd nj ng ngw o p r s sl t u v vb w y z zl

A a dəhbə	B b bakalaf	Ɓ ɓ ɓaram	C c cevek	D d dəvər	Ɗ ɗ ɗawa	E e beke
Ə ə ərsla	F f falam	G g gənaw	Gb gb gbəl	Gw gw gwazla	H h hidi	Hw hw hwihwil
I i	U u	K k	Kp kp	Kw kw	L l	M m

https://alphachart.silcam.org/

And others

- Microsoft Office
- Adobe InDesign
- LibreOffice
- Scribus
- Gimp

Training and Support

Support Sites

- General Technology
  - https://community.software.sil.org/
- Scripture Software
  - https://community.scripture.software.sil.org/

Training Resources

- Each software website:
  - i.e. https://paratext.org/training-and-support-links/
- Language Technology (English)
  - https://lingtran.net/
- Technologie linguistique: (French)
  - https://outilingua.net/

Advanced Tools

Spelling Checking and Predictive Text

LibreOffice Logo Source: https://www.libreoffice.org/

Predictive Text

https://vimeopro.com/lingtransoft/keydev2020/video/399132672

Text-to-Speech, Machine Translation, etc.

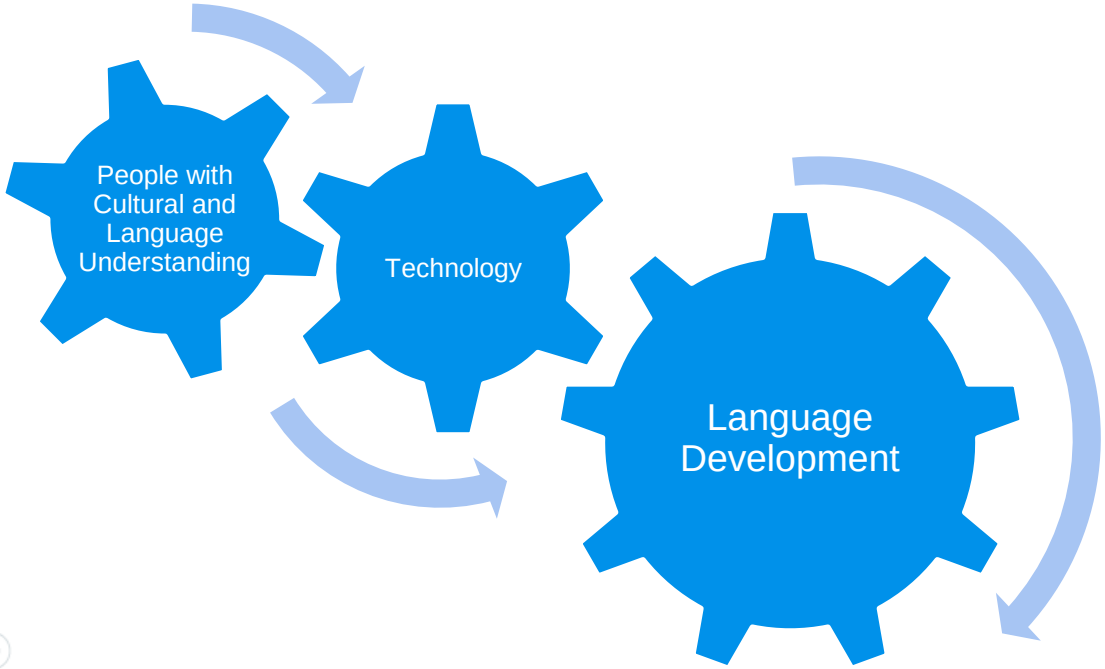
- eSpeak
  - http://espeak.sourceforge.net/
- Many others…

Where are we?

With the mature state of global language technology, developing or promoting a language is no longer a technical impossibility.

Challenges of personnel, communication, logistics, access, training, funding and resource development in the mother tongue are the next hurdles to overcome through working together.

Where are we?


People with Cultural and Language Understanding
Technology
Language Development

Opportunities

Opportunities for using Technology in MT

- Collect wordlists and morphological information to create predictive text dictionaries for keyboards and spellcheck for desktops.
- Promote installation and use of the Cameroon Keyboard as high speed which results from practice.
- Language communities can create easier to use language-specific keyboards (with SIL's assistance if needed).
- Promote use of Cameroon-complete fonts.

Opportunities for using Technology in MT

- Community members and researchers can create and share base materials using available tools:
  - Books, Primers, Dictionaries, Talking Stories, etc.
- Government, communities and elites could create philanthropic centres and equip them.
- Resource centres could spread to cities to grant access to distance learning.
- Solar panels can provide reliable power for rural folk and schools.

Opportunities for using Technology in MT

- SIL, CABTAL, NACALCO and Universities are ready to offer help if sought
- SIL renders training on language technology (hundreds of lang workers are trained in communities and universities)
- Improve on the use of time through practice and reuse of prepared materials.

Conclusion

- It is normal to face challenges in using technology for MT learning as it applies in every real-life situation. When there are challenges, efforts are made through research to overcome them. As such, challenges are a motivating factor to seek to exploit existing opportunities.

Conclusion

- Above all, communities without orthographies as a starting point can seek needed help from the institutions referred to in this discussion. These partnerships can promote language use and development (of both mother tongue and foreign languages) at home and abroad through domestic and distance education.
- Even if SIL cannot boast of having answers for every question, research is continuing to find solutions for further questions and challenges.

Thanks!

Any questions?

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