

Language Technology Applications in Africa within an “Inclusive, Innovative and Reflective” Crisis

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Abstract

Any valid and objective contemporary scientific finding must be appropriately researched and made easily accessible via digitalized technology and techniques for public consumption. “Inclusiveness, innovation and reflectiveness” pose a crisis interface environment in the implementation of “Language Technology” in Africa; thus it will entail us into examining each of the variables and their corresponding effects. So far, “There is NO African solution to African problem fix here!” Let us put into practice the UN’s “Leaving no one behind” motto, which is an integral part of the 2030 Agenda for Sustainable Development. Keywords: language technology, inclusion, innovation, reflection, Crisis interface.

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Semkwep nkwel

Kikii dinyi i len nunu ditée, yokiyo yi iyôni, ni i ihéli, inlama nyégsaba le iwéna, ikôda, itjéna ni manjel ma bôt banla pala jubul, tóbôtôbô ma lôak i ngambi i minsongi, ni imakenge mankiha ni mo. Ingéda dimbéngé kikii likenge li ngambi minsongi inyu mahop inyep ni njômbi ikot bôt, to ni njômbi i mahol, ndi to njômbi ihek béngba djomede, dinléba le, lini likenge linla bé pala hol i kéndi yés i Afrika; hala antinde bés iwan manjom mantuga mana mahol. Ibol ingéda ini ditée, Afrika añéba bé su le ayé le ala léba dipa inyu litôngi jéé munu ini njel; inyu kii? Inyule to Likoda li Maloñ ma Africa (UA), to ACALAN nu ayé hikuu hyé hikeñi hi mbéngé mahol ma mahop, bankômôk bé dipa inyu ndôngi munu ini njel. We, sañ ijubga ni ni nguy inyu iyônôs ndak i Likoda li Makoñ ma nkoñ hisi (ONU) impot le, "tomut ayéglege bañ i mbus", ndak iyé le iyé yada ikédé makak makeñi ma bikéga inyu mapuhul ma maloñ momasô inwaa nwii 2030 inkola. Miño mi bibuk: likañ li yigil i mahop, likot, ligwal, kék i ndudu, bitée.

1. Introduction

Considering the *indispensable nature of language* in almost all spheres of human existence or interaction on earth, the description, documentation, sustainability, revitalization, and usage of language has been made practical in facilitating our day-today activities via the current evolving insights of *Language technologies* and their applications. The question is –“Is the above statement of FACT a truism to African academia?”

In Africa, less than 20% of the rich Indigenous Knowledge (IK), researched data and/or findings have been digitally catalogued and barely 1-2% is imaged. This renders information highly inaccessible and underused especially because of the remoteness from or the poor networking with and/or applications of modern technologies and advance research techniques infrastructures.

2. The Crisis Interphase

A **crisis** in this context is considered as “a turning point or situation in which there are a lot of problems that must be dealt with *quickly* so that the situation does not get worse or more dangerous → **emergency!**” An **interface** here refers to “the common boundary between two things – the point of interconnection between entities; or it could be ‘the place where things happen’”. (<https://d4htechnologies.com>)

2.1 Inclusiveness

Africa as a continent is in a crossroad as a passive or an observational participant in the global engagement of “Language technology application”. Poor Governance and prioritization mix-up have deprived the continent from focusing on the advantages of digitizing and providing access to huge data resources that require technological, socio-cultural, and organizational capacity enhancements across the continent.

Most of our African languages are not yet supported with the modern technological expertise trend (e.g. Smart keyboards, Speech technology needs, Apps, etc.). So how inclusive

can Africa be in the global move into the language and technologically driven world, when there is no enabling environment for the African scholars to effectively contribute or be part of the game?

2.2 Innovation

The Western World is fast developing constructive clusters of collaborative “Research Infrastructures, integrating initiatives, e-infrastructures and other world-class infrastructures, and building bridges between different although tightly interrelated fields, etc.” This is in a bid to adequately address Social Sciences and Humanities data lifecycle’s management; even though most African scholars/researchers apart from South Africans with their SADiLaR¹ and a few pockets in the Western (ALORA²), and Eastern countries are still to be aware of or affected with the current waves of “Language technology” innovation fever.

For example PARTHENOS³ is making great strides in strengthening the cohesion of researchers and their rich massive data archives from the Social Sciences and Humanities to generate a broad-spectrum e-infrastructural pool that will build bridges and further provide a resource bank for resolution of challenging societal demands. Dynamic bodies like CLARIN⁴, DARIAH⁵, etc. are seriously

¹ **SADiLaR** “South African Centre for Digital Language Resources” is arguably the leading hub in ‘Language technology’ advancement in Africa. It focuses on all official languages of South Africa, supports research and development in the domains of language technologies and language-related studies in the humanities and social sciences. The Centre facilitates the creation, management and distribution of digital language resources, as well as applicable software. SADiLaR has developed machine translation engines for all the eleven official languages of South Africa.

² **ALORA** “Archives of Languages and Oral Resources of Africa” is a project created and run by the “Centre international de recherche et de documentation sur les traditions et les langues africaines” (CERDOTOLA) member states. It is a virtual infrastructure for hosting versatile digital resources stemming from documentation of African languages and cultural heritages. It is hosted and managed in Yaounde, Cameroon.

³ **PARTHENOS** stands for “Pooling Activities, Resources and Tools for Heritage E-research Networking, Optimization and Synergies”.

⁴ **CLARIN ERIC** is the governing and coordinating body of CLARIN (Common Languages Resources and Technology Infrastructure). It is a consortium of ca. 20 countries and intergovernmental organizations (and counting), represented by their ministries Content. Their sole objective is in providing Social Sciences & Humanities access to digital language data & advance technological tools.

reforming and transforming research technology capacity building platforms, data management policies, awareness on research data repositories, etc.; all geared towards bringing innovative strategies into New Knowledge through language technology management. This however makes it possible for oral and written language, cultural heritages and digitized data to be conveniently converted into problem solving ventures.

In most of African countries, there is a crisis of digital technologies and social media applications to create and share our language data resources or even convert them to address our societal issues. Most Africans are reduced to receivers or consumers of language technological soft wares and Applications. Regrettably, most of them are not yet involved in the designing or creation of these research techniques or actively engaged in the race for rapid expansion of access to digital technologies in the global digital landscape. At this point, how do the African humanities scholars significantly contribute in bringing innovation in the sphere of language technology without dynamic collaborative organizations or projects like those in the West to empower and motivate them to recreate and/or bring out their God endowed talents?

2.3 Reflection

Africa’s complex linguistic and cultural specificities do not make the language technology and data management (policies) any easier for her researchers. Africa is confronted with a generation of highly unacquainted and unskilled technology-driven researchers in the same platform with more experienced and fast lane technologically apt researchers in the Western World without complicated multilingual and multicultural diversities.

In reflecting about our African cultural heritages, we are placed in a position of struggling to generate new ideas, strategies and governance structures. These constitute the basis for overcoming the numerous crisis in Africa (i.e. economic innovations, socio-political stability, multilingual/cultural heritages diversity integration with emerging technologies and techniques, absence of basis subsistence facilities, poor infrastructures, geographically enclave suburbs, health challenges, etc.) to foster development and a better living. Thus, with all these internal and external vices, it becomes a major problem breaking through our existing (most often complicated) multicultural and multilingual diverse ideologies. Even though this is necessary in order to create a Pan-African

⁵ **DARIAH** is a pan-european infrastructure for arts and humanities scholars working with ICT-enabled methods. It supports digital research as well as the teaching of digital research methods.

language technology network or organization that will have functions, projects, and infrastructures like CLARIN, DAHRIN, or PARTHENOS, etc.

Africans are at a turning point. That is, how to move from the current stalemate in Africa (i.e. with negatively polarized challenging environments) to having African humanities scholars connecting, contributing their distinctive worldviews and perspectives in debates and contemporary research. Such debates of course should be towards evolving “language technology” to impact on sustainable language and societal or global development with the existing and almost virgin indigenous knowledge resources.

3. Recommendations/Strategies

The language technology crisis interface in Africa has to be addressed at two levels: the Individual and the Institutional. This is in order **not** to be left behind in this technological advancement vision or race.

3.1 Individual Strategies

We the African scholars first have to take off from a change of “Mind-set”. We need a mind-set that nurtures the necessity of actively engaging in language technology, trainings, projects, and partnership collaboration with other scholars (both national and international).

Individual efforts must be made by the African scholars to acquire basic computational competence, technological research methods, techniques and Applications, seek for capacity building workshops, conferences, Summer schools, online networking programs, etc. that will empower, introduce, and expose them to the digital generation.

African scholars should take up the initiative into the creation of a Pan-African Language technology infrastructures Association (just like what some other African Humanities scholars introduced in Leiden this July 2019). We can only achieve assistance from international bodies if we take the first step. There are already many landmark existing Organizations in the Western World that serve as templates and even mentors (and/or sponsors) for such innovative initiatives.

At individual levels, the African scholars should be involved in critical thinking, creativity and culturally sensitive, methodological, and technological software/Apps for the development of African IK resources. North-South technological and techniques exchanges and transfer can achieve this. Thus, constant and close intellectual collaboration and networking will make significant progress in our language technology endeavours.

Today we are in a global village where the lack of the knowledge of information technology to an extent is a grievous crime. In this respect, African scholars should put in more efforts into surfing and canvassing for competitive international grants or projects that are language technologies oriented; through this they will become team players in the technology game.

3.2 Institutional Strategies

The good governance practice in our African nations will play a very vital role as “Game changers”. This will require a major change of ‘mind-set’ and cultivation of the good WILL on the part of the government to develop technological infrastructures and make substantial provisions for favourable virtual environments in institutions or Universities. These institutions will subsequently develop data management systems/structures for more international (N-S) ‘language technology’ cooperation and collaborative networking that should be sponsored and meticulously monitored.

Our governments should provide subsidies for ‘Language technology’ workshops, trainings, conferences, Summer schools organizations, etc. The provision of pooling activities, resources and tools for heritage e-research networking, optimization and synergies will make all the difference in our continent.

The inclusion of language technology programs in the University syllabus will play a great role in show-casing the programme and attracting many more scholars to specialize in this academic exercise. In addition, the universities can significantly go a long way to expanding research infrastructures visibility such that strategic inter-university partnerships, cooperation links or research collaborations are promoted and strengthened.

The development of the society or our different African nations will greatly re-enforce the prevalence of enabling research environment since the availability and stable **Electricity** and **Internet** supplies are basic requirements for effective technological operation.

If the African states can facilitate a) the development of new collaborations, b) user accessibility, c) collaborative and innovative actions, d) funding opportunities, and, e) knowledge transfer opportunities in their different institutions or infrastructures, the continent will leap out of its crisis interface.

4. Conclusion

There is language technological work force everywhere in the world. If given the opportunity and/or enabling environment they will develop to meet up with our varied human needs. This is

especially because we are all humans even though our challenges or differences are superficial and defined by our unique geographical and socio-cultural specificity, which we have to consider when designing, employing, interpreting and disseminating roles of language technologies and software Applications. If technological developments are not culturally sensitive (or adapted), its unconscious applications will definitely not generate any guaranteed or expected research Outcomes. We therefore operate with the formula that **TECHNOLOGY + CULTURE** ⇒ **EXPONENTIAL DEVELOPMENT.**

In a nutshell, the inclusion, innovation and reflection on the language technology applications in Africa with its peculiar geographical, socio-political, economical, multicultural heritage, and governance complexities can be arrested. This can be done through the implementation of the ‘Crisis Now’ management model for Africa; that is, an urgent need for more collaborative interactions between language technology experts with existing major bodies like the AU and ACALAN⁶ to operate on innovative engagement exchanges, and information management strategies that will greatly project language technology infrastructures development in Africa.

Using this medium, I wish to appeal to international Organizations to help African Scholars in their partnership collaborative networking to get them into the emerging Language technology (e-infrastructure) world i.e. putting Africa into their technological evolutionary dream Agenda, projects and research programs. Together as a **willing team**, the Western and the Southern world will make this our environment a paradise on earth.

5. Acknowledgements

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⁶ **ACALAN** is ‘The African Academy of Languages’, which is an arm of the ‘African Union’ (AU) whose major role is to foster Africa’s integration and development through the development and promotion of the use of African languages in all domains of life in Africa.

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