

EU-AFRICAN R&D PROPOSAL IDEA**Personal Details**

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Proposal**Title**

Multilingual Content Creation & Delivery for eLearning, eHealth and eGovernance in Africa.

The title of your Proposal: please provide a maximum of 15 words that accurately reflect what your proposal is about.

Proposal idea (max 500 words):

ICTs have been identified as being catalysts to rapid and sustainable development, especially in today's information-driven economies. The provision of timely, accurate and relevant information to the masses should therefore be a prime consideration in any development agenda. For this information to have an effective developmental impact, it must be presented in the language that the populace is most proficient in, usually the language(s) commonly spoken in day to day life. The language factor should therefore be recognized as a critical success factor in the deployment of ICTs for development, especially in the areas of education, health and governance.

While Africa is home to a third of all the world's languages, the "information languages" on the continent are more often than not, European languages, namely English, French and Portuguese, which are by and large, languages of the educated elite. This has the adverse

effect of locking out a huge percentage of Africa's populace from effectively participating in the increasingly information-based economies. This proposal seeks to exploit language technology to provide relevant content for various development areas that addresses and satisfies the linguistic and cultural diversity of the continent.

Language technology is a relatively new but rapidly growing field, whose importance in the deployment of ICT-based solutions is now widely acknowledged. However language technology research and development for African languages is largely in its infancy – a situation that urgently needs to be reversed if ICTs are to have any impact in achieving real and sustainable development in Africa. By adopting and adapting the multilingual technology employed by WebALT Inc, this proposal seeks to provide language technology tools that will aid in the production of multilingual content, in core African languages such as Swahili, Amharic, Zulu, Yoruba etc., as well as the Major European languages. The proposal seeks to accomplish this goal via a piece-meal implementation plan that initially addresses one African language (Kiswahili) and one application area - eLearning of mathematics, and later extends the developed core technology to other key languages and application areas.

Project Aims:

1. Development of Swahili Resource grammars within the Grammatical Framework, the latter being a multilingual parsing and generation framework. In addition to actual software development, this task will involve capacity building in African Language Technology research, with the first training programmes being conducted at the School of Computing and Informatics and Linguistics department, University of Nairobi by distinguished European researchers affiliated with the WebALT project.
2. Deployment of WebALT's technology for eLearning of Mathematics to an African institution – the Department of Mathematics, University of Nairobi. This pilot will help assess the infrastructural needs for EU-Africa collaborative eLearning, Learner and Educator attitudes to eLearning of mathematics, training and capacity building in localized creation of educational content that is compliant with the guidelines and objectives of specific institutions, gathering of experience and insights on how best WebALT's elearning technology can be successfully deployed for mathematics teaching at different education levels and in different linguistic regions in Africa.
3. Extending WebALT's multilingual engine with Swahili language capability, thereby making it possible to render mathematical content in Swahili – particularly useful for primary and secondary education in East Africa.
4. Consolidating the technologies, knowledge and experience gained from the first three tasks and extending these to produce language-independent content that can be rendered in different African languages for eLearning, eHealth and eGovernance in Africa.

Short Description of Institution

A short description of the institution (between 200 and 300 words) to include the most recent relevant experience related to the proposal idea.

University of Nairobi: This is the oldest university in Kenya with over 10,000 undergraduates and 2000 graduate students. The SCI which was founded in 1977 with a mission to to be a leading centre of excellence in research and development (R&D) and advanced education in computing that addresses national and regional needs for information and communications technology and product development. SCI currently has about 200 undergraduate students, 100 graduate and post-graduate students and 21 academic staff. With diverse research interests, the Artificial Intelligence (AI) research group comprises an active group of researchers with interests in Natural Language Processing, and who are progressively venturing into African Language Technology (ALT). By fostering research collaboration with the Linguistics department, linguistic expertise necessary to boost ALT research and development will be readily available. The mathematics department enrolls about 1,700 students annually with an additional 1500 students enrolled in service courses, but has only 44 teaching staff. An eLearning programme for mathematics would thus be highly applicable and beneficial in this department and would provide relevant insights to the questions raised in 2) above.

WebALT Inc: Specializes in developing multilingual eContent for the teaching of Mathematics in European universities. It is a spin-off company of the WebALT project, an EU-funded eContent for the Global networks project. The company brings together the best expertise and research efforts in online teaching of mathematics worldwide. WebALT adopts a language-independent representation of content which is subsequently rendered into different languages. Currently, WebALT content can be rendered into 6 European languages. Since the core technology is platform-independent, institutions can use any third-party technology to access and deliver the content to their students. In addition, and more importantly, this core technology can be adopted to provide multilingual content in different domains, thereby making it possible to deliver more content to more consumers with minimal to no additional cost in content production.