

European Partnership on Innovative SMEs Innowwide

Example of a funded project proposal

Important note for applicants

This is a model example of an application funded through Innowwide call 2 (2023).

Please note:

- This model application is for guidance only.
- Sections have been summarised and grouped, so do not always match the original application form.
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Your application must be submitted through our SmartSimple platform by the call for projects deadline.

Project title and acronym: Assistive Technology Made in Africa (AT-MiA)

From Austria to Zimbabwe

Funded through Eureka Innnowwide call 2 (2023)

Project summary: Assistive technologies, especially for sensory and communication-impaired people, have significantly improved quality of life, education, careers and autonomy. However, these technologies are usually expensive and only affordable in high-income countries.

The startup social enterprise, TETRAGON Braille Systems GmbH (a spin-off company of Vienna University of Technology with more than 40 years of expertise in technology for blind and visually impaired people), was founded to make Braille technology available and affordable for low-income countries.

Thanks to several national funding opportunities over the last two years, TETRAGON drastically reduced the complexity of Braille displays by modularisation and developed a co-creation strategy with, and for, the maker-community in low-income countries.

Technology aspects: To make Braille displays affordable in African counties, TETRAGON developed a modular concept where the number of delicate parts, like mechatronic actuators could be reduced by factors of between 50 and 100. Other parts of the modular concept can be mass produced in the target countries using 3D-printing or injection moulding.

Co-creation strategy: Our strategy involves sharing the know-how of building and maintaining Braille technologies, offering all the necessary training and support, with SMEs in Africa. High-tech parts – which cannot reasonably be produced by our African pilot project partner (main subcontractor) will be manufactured in Europe and provided to the partner in Africa at cost. The components from Europe, together with the components produced in Africa, will be assembled, tested, distributed and serviced by the African partners. The subcontractor will build up an independent business of their own without any obligations to TETRAGON for royalties and license fees. Using these measures, it will be feasible to bring down the costs of Braille technology to about 10% of the present market prices for European brands.

The entire concept will start with a six-month pilot trial with iZonehub in Harare, Zimbabwe. Funding from Innnowwide will be used to cover the costs of providing the African partner with the necessary equipment and material to test the products, labour costs incurred for training and first production of prototypes.

In due course, the target market will be expanded to other low-income countries and a wider portfolio of assistive technologies.



Pitch

WHAT

Bring cost-efficient Braille technology to low-income countries via co-creation and shared production, reducing prices to 10% of current market rates.

WHY

Address the neglected needs of the blind population in low-income countries by providing affordable and robust devices that can be assembled and maintained locally.

HOW

Through local production of components, European-supplied high-tech parts and comprehensive local training and support.

Excellence summary

Objectives, ambitiousness and degree of innovation

The project aims to bring affordable Braille technology to Zimbabwe as a proof of concept that can then be expanded across Africa. The solution involves technological and marketing innovations. Technologically, TETRAGON offers two patented technologies for Braille displays, with ecoBRAILLE being particularly easy to manufacture and assemble in various sizes. From a marketing perspective, the plan involves collaborating with partners in low-income countries, providing them with complex components at cost and allowing local assembly, distribution and service.

The ecoBRAILLE design has passed proof-of-concept stage and reached technology readiness level (TRL) 6. TETRAGON will focus initially on the unserved blind population in low-income countries, starting with a pilot in Zimbabwe.

Competitive advantage

Traditional Braille displays use expensive, delicate piezo-electric actuators for each dot. TETRAGON's ecoBRAILLE uses a single actuator on a slider, reducing costs by 75% and allowing local assembly to further decrease prices. ecoBRAILLE can also be made robust against harsh environments and allows for compact multi-line and tactile graphic displays.

Alignment with SME's overall business strategy

The project aligns with TETRAGON's strategy of entering the market cost-efficiently by establishing partnerships in low-income countries and so achieving economy of scale. Success in this pilot will enable expansion to other African countries and extend the product portfolio in assistive technologies.

Co-creation or technology adaptations in the target market

The ecoBRAILLE concept is designed for African conditions, with possible hermetic sealing against moisture and dust. Local adaptations, in cooperation with the subcontractor in Africa, include language support, teaching software for Braille and consideration of power supply options, like personal photovoltaic units.

The project aims to broaden its scope by developing additional products (such as, Braille keyboards, printers, typewriters and communication aids) and expanding geographically to other African countries, Asia and Latin America. TETRAGON will seek further funding and ensure that low-income countries can procure know-how and components at cost, with strict rules against selling outside designated markets.

Impact summary

Market size

The assistive technology market for blind people in Africa and East Asia, is expected to reach €7,500,000 with a 5% growth rate. Short-term plans include establishing infrastructure in Zimbabwe to provide affordable refreshable Braille displays. Long-term, the market will expand to additional countries, increasing growth in this segment.

In Europe and North America, the market is projected to reach €98,500,000, with a 5% growth rate. In the short term, a simple one-line Braille display will be introduced as a low-cost alternative to the Orbit Reader 20. In the long term, a low-cost multi-line/tactile graphic display will aim to replace paper-based tactile information tools for many users.

The total expected market size across these regions is €106,000,000.

End users

In Zimbabwe, approximately 60,000 people are blind and 2 million have visual impairments. Braille technology serves two market segments: low-income countries, where affordable single-line Braille displays are accessible through modular hardware, and high-income countries, where more advanced multi-line or tactile graphic displays are also available using the same system.

The targeted users will be reached primarily through organisations for blind people, with which connections are already established.

Despite advancements in text-to-speech software, Braille technology remains essential for education and workforce integration, significantly improving life satisfaction. Affordable Braille technology benefits both users and economies by enabling education, increasing employment opportunities and fostering local job creation.


The main subcontractor is expected to scale up its business, creating additional high-quality jobs and potentially becoming a leading local provider by specialising in Braille technology.

Market access and risk

The commercialisation plan involves selling complete Braille devices to high-income countries and high-tech components to low-income countries at cost, enabling large-scale production and competitive pricing. To overcome the challenges of a startup company that does not have a product on the market yet, we plan to cooperate with a European SME in assistive technologies, gaining potential access to their production partners.

The project is initially aimed at testing the technical feasibility of implementing ecoBRAILLE in Africa, rather than market penetration. Potential barriers include customs regulations and bureaucratic barriers in Zimbabwe, as well as logistical challenges like supply chain delays. Such barriers are anticipated and will be addressed through collaboration with the Austrian Chamber of Commerce.

TETRAGON's long-term goal is to make its devices globally available, with expansion plans dependent on the pilot project's success. Besides Zimbabwe, we have contacts in Kenya, where we anticipate



forming partnerships by the end of 2024 and expect further African partners later on. Initial sales will target the EU and the USA, with potential expansion to other African countries and beyond.

The intellectual property for the main refreshable Braille display ecoBRAILLE used in the proposed project is owned by TETRAGON and TU Wien, where TETRAGON is a spin-off company from the university. The ecoBRAILLE technology is patented by TETRAGON's founder.

Contribution to UN SDGs

The project aligns with several UN Sustainable Development Goals (SDGs) including:

- **SDG 3: Good Health and Well-being.** Scientific studies have proven a correlation between Braille and life satisfaction of blind people by enabling their participation in private and professional activities they would otherwise be excluded from.
- **SDG 4: Quality Education.** Quality education demands professional text handling. Braille is the only tool for blind people to meet this precondition.
- **SDG 8: Decent Work and Economic Growth.** Quality education through Braille technology results in better job opportunities for blind people. In addition, our local partner creates quality jobs (technology, sales, marketing) in low-income countries.
- **SDG 10: Reduced Inequalities.** Braille technology increases accessibility in many areas that would otherwise only be available to sighted individuals. Our market strategy also aims to close the gap of Braille technology availability between high-income and low-income countries, thus reducing inequalities.
- **SDG 17: Partnerships for the Goals.** Assembly, distribution and service will be provided by our local subcontractor to achieve maximum impact in the areas where it is most needed.

Social and Environmental Risks

Potential risks include negative environmental and social effects from production and waste generation. Mitigation measures include waste management, eco-design, recycling and implementing safety guidelines in the production process. The modular concept of ecoBRAILLE also extends product lifecycle and minimises waste.

Quality and efficiency of implementation summary

Capacity and role of the applicant SME and main subcontractor: complementarity and benefits of collaboration

TETRAGON in Austria has extensive experience with Braille technology. The team includes experts in hardware, software and user issues, and it is guided by a skilled leader, who offers comprehensive expertise to tailor the product to the requirements of our partner in Zimbabwe.

iZonehub in Zimbabwe has offered pre-incubation and linkage programmes since 2015. The team involved in the project includes a Makerspace Lead, an expert in innovation ecosystems across various African digital landscapes, a Digital Lead, and an individual leading the Female Founders initiative at iZone Hub.

TETRAGON, Austrian company, partners with iZonehub in Zimbabwe to provide affordable Braille technology. This collaboration enables local assembly and repair, making products more accessible and cost-effective for the blind community in Zimbabwe.

TETRAGON leverages iZonehub's expertise in building tech communities in Zimbabwe, which work as a platform for capacity building and a talent pool.

iZonehub will benefit from this project through tech transfer, machinery and a new revenue source, which will in turn enable the makerspace to implement more projects that ultimately help the community and Zimbabwe at large. The country will benefit from employment creation and economic activity stimulated by this project.

Availability of resources

TETRAGON has the necessary personnel and equipment, but some infrastructure adjustments are required. iZonehub needs additional resources, including machinery and materials, which will be covered by the project budget.

Gender dimension

While detailed demographic data on blindness and Braille usage are scarce, TETRAGON acknowledges the potential gender disparity in Braille readership. User tests will include both genders to address possible differences.

Project planning

The project aims to enable the target country to access affordable assistive technologies by empowering local partners to independently manufacture it. This involves six months of intensive technology transfer, partnership building and coaching.

A backbone for this close cooperation will be to set up a symmetrical infrastructure at iZonehub in Zimbabwe and at TETRAGON in Austria, enabling simultaneous production of components and prototypes in parallel on both sites. This ensures that errors and issues encountered in Zimbabwe can be swiftly identified and addressed by mirroring the operations in Austria.

Summary of the work plan:

- **Preparation phase:** Agree on components sourcing (which components can be produced in Zimbabwe and Austria and which must come from other sources) and provide intensive training to iZonehub on Braille displays in general and the details of the ecoBRAILLE concept.
- **Cocreation or technology adaptation:** Establish infrastructure in Africa; co-create components in Africa and Europe, assemble prototypes in Zimbabwe.
- **Testing and evaluation:** User test prototypes in Zimbabwe and evaluate results for possible redesign and future cooperation in follow-up projects.

Deliverables

- Updated and agreed upon workplan, timeline and software
- Components, tools and equipment delivered and installed in Zimbabwe
- Checklist for functional tests completed
- User tests approved
- Evaluation report completed
- Roadmap for necessary redesign measures and follow-up work completed

Budget:

- Direct costs:
 - Personnel costs: €X
 - Subcontracting costs: €X
 - Purchase costs: Travel and subsistence (€X); equipment depreciation (€X); other goods, works and services (€X)
- Indirect costs, calculated as 25% of direct costs, excluding subcontracting: €X
- Total budget: €X

Risks for each work package are identified and contingency measures described.