Invitation for Expression of Interest

Partnership agreements for the commercialisation of XIPS technology

The Council for Scientific and Industrial Research (CSIR) invites suitable entities to form partnership agreements for the commercialisation of the X-ray Image Processing System (XIPS) technology.

Tuberculosis (TB) remains one of the leading causes of death in Africa and worldwide. Studies show that early diagnosis and treatment of TB can lead to significantly higher survival rates, with some studies reporting overall survival probabilities of 97% at two months, 96% at six months and 92% at 12 months. The CSIR has developed an X-ray Image Processing System (XIPS), a machine learning-based tool designed to reduce the cost of screening and speed up the process of lung-related disease detection. An artificial intelligence (AI)-powered respiratory diagnostic system (latent TB, active TB, pneumonia) can deliver substantial cost savings by reducing unnecessary tests, shortening hospital length of stay, preventing intensive care unit (ICU) escalations and improving staff efficiency.

The product is designed to be the first to assist trained healthcare professionals in interpreting X-ray images efficiently. Unlike existing solutions, XIPS is designed to detect active and latent TB, using deep learning techniques, specifically convolutional neural networks, to analyse X-ray images and provide accurate, rapid diagnostic support. The ability to differentiate between TB and other lung diseases further enhances its clinical value.

XIPS is a deep learning-based diagnostic tool designed to interpret chest X-rays for respiratory diseases. It uses advanced computer vision methods to study the entire lung area and identify patterns linked to specific conditions such as TB and pneumonia. XIPS architecture is based on globally recognised best practices for AI rapid diagnostic solutions. It is designed to streamline the diagnostic process by enabling users to upload X-ray scan images and receive a segmented version of the image with highlighted areas of interest.

Background

Tuberculosis remains one of the leading causes of death in Africa and worldwide. According to the World Health Organisation, a total of 1.25 million people died from TB in 2023 (including 161 000 people with human immunodeficiency virus (HIV). Worldwide, TB has probably returned to being the world's leading cause of death from a single infectious agent, following three years in which it was replaced by coronavirus disease (Covid-19). It was also the leading killer of people with HIV and a major cause

of deaths related to antimicrobial resistance. In 2023, an estimated 10.8 million people fell ill with TB worldwide, including 6 million men, 3.6 million women and 1.3 million children.

While TB is a curable disease, its diagnosis remains a significant challenge in underdeveloped and developing countries. Early detection, diagnosis and treatment of TB patients are key factors in halting the epidemic.

Significant progress has been made in TB diagnostics in the past decade as countries in Africa embrace new technologies. However, many people still have no access to modern testing, which is often limited to major laboratories in large cities and excludes many due to high costs. Many rural and remote areas lack adequate healthcare infrastructure and essential diagnostic tools, for example, GeneXpert machines. There is also a significant shortage of trained health professionals, including laboratory technicians and tuberculosis specialists.

There are higher costs associated with TB diagnosis and rapid molecular diagnostic machines are often only found in urban centres. Therefore, people in remote areas often face longer travel distances to access these diagnostic services. Moreover, those in rural communities must wait more than two weeks before they can get their screening results, leading to delayed access to primary care and treatment. Early diagnosis and treatment of TB significantly improve survival rates and reduce transmission.

A late TB diagnosis significantly reduces the survival rate, with mortality rates increasing compared to early diagnosis. One study reported that active TB patients had a 78% increased risk of death more than one year after diagnosis compared to a control group without TB. Most importantly, TB misdiagnosis is common, with many cases initially misdiagnosed as other conditions like pneumonia, lung cancer or chronic obstructive pulmonary disease. These misdiagnoses can lead to delayed treatment and significantly higher mortality rates. The CSIR has thus developed a machine learning respiratory diagnostic tool capable of detecting latent TB, active TB, pneumonia and other lung-related diseases.

The ideal partner should possess strong software development, marching learning and integration capabilities and should specifically meet the following requirements:

1. Software development skills: The partner should have proven experience in software development and integration;

2. Customisation and scalability: The partner should demonstrate the ability to customise the platform to address the unique challenges of different schools and integrate it with existing learner management tools;

3. Market access and distribution networks: The partner should have established networks and relationships with key stakeholders in the education sector;

4. Proven track record: The partner should have a demonstrated history of successful project delivery, particularly in developing and deploying new technology solutions;

5. Collaborative mindset: The partner must be willing to work closely with the CSIR, sharing knowledge, resources and expertise to co-develop and refine the platform for maximum impact;

6. Financial stability and resource availability: The partner should demonstrate financial stability and have the resource capacity to invest in the development, deployment and ongoing maintenance of the platform;

7. Commercial capabilities: The partner should demonstrate strong business acumen and the ability to develop and execute a viable commercialisation strategy. This includes identifying revenue streams, pricing models and marketing strategies to ensure the platform's financial sustainability and widespread adoption. Experience in negotiating partnerships, securing funding and driving sales within the respective sector is essential; and

8. Product design capabilities: The partner should possess expertise in product design to ensure the tool is intuitive, visually appealing and functionally effective. This includes the ability to conduct user research, create wireframes and prototypes and iterate based on feedback to deliver a solution that meets the needs of all stakeholders. A focus on human-centred design principles will be critical to the platform's success.

Scope of work:

- Seek market opportunities for the deployment of the technology;

- Market validation, development of a go-to-market strategy and commercialisation of the tools; and

- Business model development, validation and refinement.

Submission of Expression of Interest

Interested parties are required to submit a detailed business case clearly demonstrating viable plan for commercialising the technology. The business case must include three-year financial projections, a clear revenue model, technology deployment plan (if applicable), market analysis (including segmentation, targeting and positioning, as well as Total Addressable Market, Serviceable Available Market and Serviceable Obtainable Market) and identification of risk areas, along with proposed risk mitigation strategies.

The following documentation must be included:

- Proof of small, medium and micro enterprise (SMME) status as per the National Small Enterprise Act (from, e.g., Central Supplier Database reports); and

- Company profile with experience in software development and numerical modelling.

The Expression of Interest (EoI) submitted by companies must be signed by a person or persons duly authorised thereto.

Evaluation process and criteria

All proposals will be evaluated by an evaluation committee against the following criteria:

- Confirmation of SMME status;

- Registration as a South African company;

- Clear business case; and

- Demonstratable ability to carry out scope of work as outlined in Section Five of this EoI document.

Short-listed applicants may be required to present to the CSIR and shall be notified thereof no later than seven days prior to the presentation date.

Please note: If you have not heard from us within 12 weeks of applying, please consider your application unsuccessful.

Elimination criteria

EoI submissions will be eliminated under the following conditions:

- Submission after the deadline;

- Submission to an incorrect address; and

- EoI submissions that do not include the mandatory criteria listed above.

Closing date for applications: Friday, 28 November 2025 at 16:30.

Submission email address: SDikweni@csir.co.za

The CSIR requires that all EoI submissions be submitted electronically using the link mentioned above. Should the file size exceed 30 MB, interested parties may submit EoIs in multiple emails. **Use the EoI number and the description of the EoI as the subject of your email.**

For more information, please contact:

Sipho Dikweni

Email: SDikweni@csir.co.za

Terms and Conditions apply