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CASE STUDY

Democratizing Global Health Through Open Source AI With Splunk

Key Challenges

Manual data processes hindered Ersilia's ability to scale its work supporting research against infectious and neglected diseases and contribute to the United Nations' Sustainable Development Goals.

Key Results

With Splunk, the lean team at Ersilia now automates time-consuming tasks, increasing its capacity to build AI models that could potentially help billions of underserved patients around the world.

Ersilia

Industry: Nonprofit

Solutions: IT

Creating equity in global health would be a giant leap for humankind. Ersilia is taking a big first step.

Barriers to equitable healthcare and scientific research are systemic and immense — and disproportionately impact developing countries. While an alarming 6 of the top 10 causes of deaths in low income countries are due to infections, only 15% of the drugs in development target infectious diseases, according to the World Health Organization. These countries also produce less than five percent of the world's scientific publications. The result is a vicious cycle: the lack of timely biomedical research and limited access to potentially lifesaving medicines effectively neglect the needs of billions of people living in low resource countries.

The Ersilia Open Source Initiative is working to change that. The tech nonprofit organization strives to create equity in healthcare by making user-friendly data science tools openly available to those tackling the spread of infectious diseases like malaria and tuberculosis. Ersilia's open source AI models help speed up experiments and reduce drug development costs and support researchers working in low-resourced settings.

Outcomes

5X
more AI models in the first year

10X
improvement in antimalarial drug candidate discovery

>700
hours of manual work saved per year

But Ersilia is a lean organization — it's run entirely by its two founders and a growing number of contributors. Resource-strapped and relying on manual processes to create its AI models, the nonprofit struggled to scale. That changed when Splunk selected Ersilia as a recipient of the Splunk Global Impact donation program, an initiative that provides software licenses, training, support and education to nonprofit organizations and educational institutions around the world.

Now with Splunk, Ersilia is able to achieve unprecedented scale and work towards its short-term goal to serve 10 times more global health researchers in the next two years, initially focusing in Sub-Saharan Africa with plans to expand to Latin America. "We don't have the luxury of time to make generational changes in the education of biomedicine in the Global South," says Ersilia co-founder and chief scientific officer Miquel Duran-Frigola. "That could take three generations — from being admitted to school to graduating with a PhD. But data science helps them leapfrog into the future, today."

Unlocking unprecedented scale and impact through automated analysis

Ersilia's mission — to make science accessible to all — is sizable. And it calls for scale. The key lies in the organization's own open source platform, which allows scientists and clinicians to browse a collection of AI models and run predictions without having to write their own code or pay for expensive software licenses. Through Ersilia, researchers working in different labs — or even countries — can centralize their databases and apply predictive modeling to identify, for example, a targeted list of high risk patients in days, something that could otherwise take a decade of appointments and traditional lab testing.

> Enabling best practices while respecting local agendas will open up health solutions at speed. This ultimately creates safer, healthier and more resilient societies around the world."
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> **Miquel Duran-Frigola,** Chief Scientific Officer and Founder, Ersilia

Before Splunk, the Ersilia team manually analyzed and managed the data for its AI models. This was incredibly time-consuming, costly and required technical expertise — seriously limiting the organization's ability to scale. With access to the full suite of Splunk Enterprise features — and hands-on training sessions — the Ersilia team was able to get up and running quickly. In the first year, the organization saw exponential growth in the production of its data models, scaling to more than 100 models in the first six months with a projected 500 by the end of the first year. This was a direct result from the time saved manually analyzing and managing data for clinics around the world.

"By streamlining how we ingest, analyze and process our data, Splunk has transformed our product and unlocked new scale for Ersilia," says co-founder and chief scientific officer Miquel Duran-Frigola.

> We are so appreciative of Splunk's partnership in helping us tackle infectious diseases around the world."
>
> **Miquel Duran-Frigola,** Chief Scientific Officer and Founder, Ersilia

Sharing data and best practices to help communities help themselves

At its core, Ersilia is about supporting researchers in their own work — an echo of the proverb that encourages those wanting to help others to "teach them how to fish," instead of simply satisfying that day's hunger. Sharing best practices that help communities create self-sustainable labs, then, isn't a nice-to-have. It's imperative to accomplishing Ersilia's mission.

With Splunk — and crucially, in partnership with bitsIO, who offered pro bono support to transition Ersilia's Model Hub onto the Splunk platform, the Ersilia team can now reach more communities. "The platform has dramatically expanded our capacity to equip the scientists we serve with the tools they need to cure infectious diseases," says Duran-Frigola. "Splunk's solution saves us over 700 hours of manual work a year," he continues. "This is time we reinvest into community training to grow our 'data model as a service.'"

With intuitive Splunk dashboards and alerts, the Ersilia team ensures its AI pipelines remain up and running — and available to the hundreds of students, professors and clinicians worldwide that use its models in their work. This has had an immediate, and lasting impact on an increasing number of under-resourced communities. For Cape Town's H3D Centre, for example, Ersilia's support has meant that the research center now has its own lab with 100 chemists who independently maintain — and benefit from — 10 AI models tackling infectious diseases.

Healthier and more resilient global societies

"A lasting lesson from this decade's global pandemic is that diseases have no borders," says Gemma Turon, Ersilia's co-founder and CEO. "But science does. The labs of today need microscopes. The labs of the future need AI." By facilitating knowledge sharing across borders, Ersilia also helps researchers and clinics keep tabs on infectious disease cases, helping communities be more proactive and resilient against potential outbreaks.

Both co-founders remain committed and energized to ensure world-class research can be conducted in countries around the world without relying on developing countries to take the lead. Ersilia nurtures a global community of over 100 (and counting) open source contributors who share their time and expertise developing and deploying custom AI models so healthcare researchers on the ground can get a head start.

With Splunk's help, Ersilia will continue to grow its community and assemble the largest collection of ready-to-use AI models for infectious and neglected disease research — scaling its impact as it works towards creating equity in global health. "Enabling best practices while respecting local agendas will open up health solutions at speed," says Duran-Frigola. "This ultimately creates safer, healthier and more resilient societies around the world."

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