



Humanitarian
Technology
Trust

Humanitarian Technology Trust Annual Report 2025

Humanitarian Technology Trust Annual Report 2025

Charity number: 1212197

Report for the period from 18 February 2025 to 31 December 2025

Image credits:

Page 7 - Dr. Joe Knapper

Page 8 - Humanitarian Technology Trust

Page 10 - Dr. Kelsey Hummel

Page 12 - Dr. Per Wilhelmsson

Page 12 - Dr. Per Wilhelmsson

Page 13 - Mykolaiv Water Hub

<https://httrust.org>

contact@httrust.org

2026 © Humanitarian Technology Trust. All Content licensed under CC BY-SA 4.0

Contents

Message from the Chair and Chief Executive	4
Trustees report	5
Reference and Administrative Details	5
Objectives	5
Activities: The OpenFlexure Microscope Project	6
Development	7
Community and Stakeholder Engagement	10
Financial Review	14
Reserves	15
Declaration	15
Independent Examiner's Report	16
Financial Statements	17
Statement of Receipts and Payments	17
Statement of Assets and Liabilities	18
Notes to the Accounts	19

Message from the Chair and Chief Executive

This is the first year of the Humanitarian Technology Trust. The Trust was established with a vision of enabling distributed production of vital technologies that benefit humanity. Across the globe there are hugely varying levels of access to vital technologies that sustain and improve human life, from educational equipment to medical devices. We see distributed production as by far the best way to overcome the endemic inequality in access to technology, enabling communities to build the technologies they need. The best way to enable distributed production is by creating open source designs that give innovators around the world the freedom to build, manufacture, adapt, improve, and study the technology.

The Trust is part of a growing movement. We collaborate with numerous organisations that focus on open source hardware as a route for more equal access to humanitarian technology. What sets the Humanitarian Technology Trust apart is our approach. Many organisations exist that support the wider ecosystem of Open Source Hardware and distributed production, but we identified the need for an bottom-up approach focussing on supporting specific technologies to push forward projects from the prototype phase through to self sustaining global production.

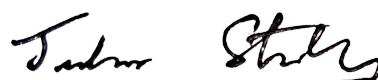
Universities are prolific at creating prototypes for essential technologies, but these projects regularly stall at the phase product development phase. Product development is often described as the “Valley of Death”, as significant investment is needed to improve a prototype to reach market. Essential technologies for underserved populations do not promise the return on investment needed to navigate the Valley of Death, and open source and distributed development models certainly do not. Instead the Humanitarian Technology Trust was established to act as a bridge over the valley supporting development of essential technologies for the public benefit.

Our first project is the OpenFlexure Microscope, an automated lab-grade microscope with potential to revolutionise access to medical diagnostics. In our first year of operation we have made significant progress with putting the microscope’s development on a firm, sustainable footing and engaging with relevant stakeholders across the globe.

We would like to thank our contributors, our volunteers, our collaborators and the global OpenFlexure community for all the work that has been done to bring this technology one step closer to clinics worldwide.



Dr Adrian Bowyer MBE
Chair of Trustees



Dr Julian Stirling
Chief Executive

Trustees report

Reference and Administrative Details

Charity Name

Humanitarian Technology Trust

Trustees

Dr Adrian Bowyer MBE (Chair)

Andrew Lamb (Treasurer)

Anna Sera Lowe

All three Trustees are the founding trustees appointed on the 18th February 2025. As founding trustees initial terms were staggered, with Anna Sera Lowe appointed for 4 years, Dr Adrian Bowyer for 3 years, and Andrew Lamb for 2 years.

Staff

Dr Julian Stirling (Chief Executive)

Registered Office

Humanitarian Technology Trust, c/o The Centre for Global Equality
74 Eden Street, Cambridge, CB1 1EL

Governance

Humanitarian Technology Trust was incorporated as a Charitable Incorporated Organisation on the 18th February 2025. Its governing document follows the the Charity Commission's 'Foundation' model CIO constitution.

Objectives

The objects of the charity as set out by its governing document are:

1. To relieve, or assist in the relief of, poverty, suffering, and sickness, and to preserve and protect good health throughout the world, in particular by, but without limitation to, promoting, enabling, and supporting the development and adoption of humanitarian technology where all designs are freely available.
2. To further the advancement of education of adults and children, particularly in the fields of sustainable development, mechanical engineering, electronic engineering, computing, and related subjects.

In furtherance of the above objects but not otherwise, to promote and organise cooperation between voluntary organisations, academia, medical institutions, the business community, the wider relief and development community, and the general public.

For the purpose of this clause “humanitarian technology” means technology that has a primarily humanitarian purpose, including, but not limited to technology for education, healthcare, and agriculture.

Activities: The OpenFlexure Microscope Project

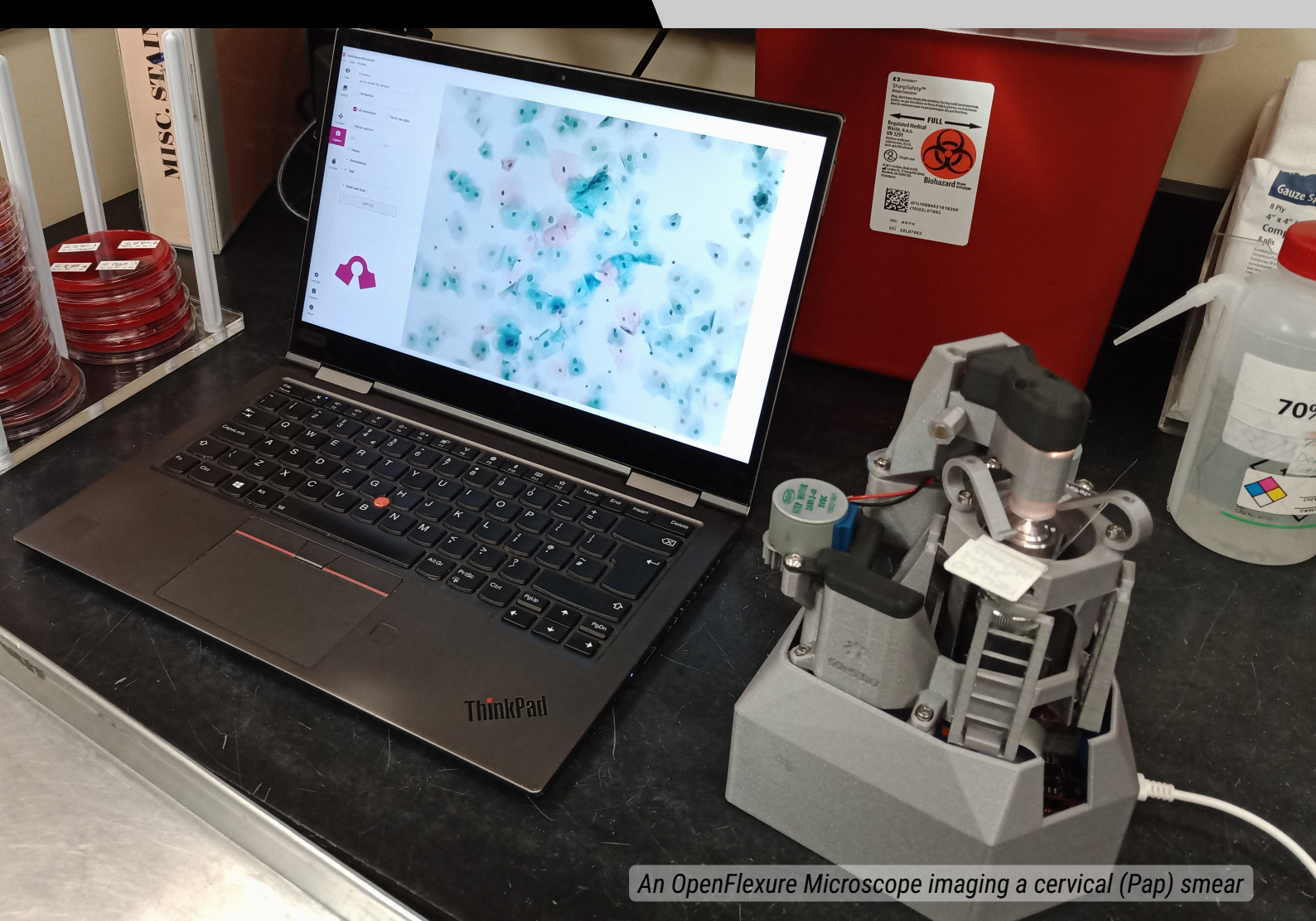
The Humanitarian Technology Trust is currently running one core project: The OpenFlexure Microscope. The OpenFlexure Microscope is a laboratory grade, robotic microscope with potential applications in Healthcare, Education, Agriculture, Ecology, and Scientific research. All software, hardware, and associated project knowledge is openly licensed and openly developed, ensuring this critical technology is always available for public benefit. All custom mechanical components are 3D printed, and the entire bill of materials has been curated in collaboration with partners across the globe, allowing us to pioneer a distributed approach to the manufacture of advanced scientific instruments.

The OpenFlexure Project originated as an academic project but has since evolved into a global collaboration. The project was founded in 2016 by Dr Richard Bowman at the University of Cambridge before moving to the University of Bath in 2017, where it experienced significant growth. Today, the project has expanded into a worldwide community spanning every continent, with known uses of the OpenFlexure Microscope in over 60 countries.

As the OpenFlexure Project has matured we have moved from academic exploration of a novel prototype towards implementation. Clinical evaluations of OpenFlexure’s application for cancer, malaria, and urinary tract infections are underway in multiple continents, supported by multiple peer-reviewed publications. The microscope has also been built in wartime Ukraine for water quality analysis. The next key step in our vision is to build up the reliability, documentation, and knowledge that enables manufacturers around the globe to build microscopes certified for diagnostic use.

The Humanitarian Technology Trust was founded in 2025 to support this vision. We believe technology transfer of essential life-saving technology is possible while keeping all IP under an open source license. The Trust has enabled our academic partners to continue to develop novel applications with OpenFlexure, safe in the knowledge that implementation is supported by an organisation with the same vision and values.

In this report we detail the progress of the OpenFlexure Microscope project as a whole. Much of this work was performed by the Trust’s staff and volunteers, and in the spare time of OpenFlexure project members who helped to found the Trust. This work was



An OpenFlexure Microscope imaging a cervical (Pap) smear

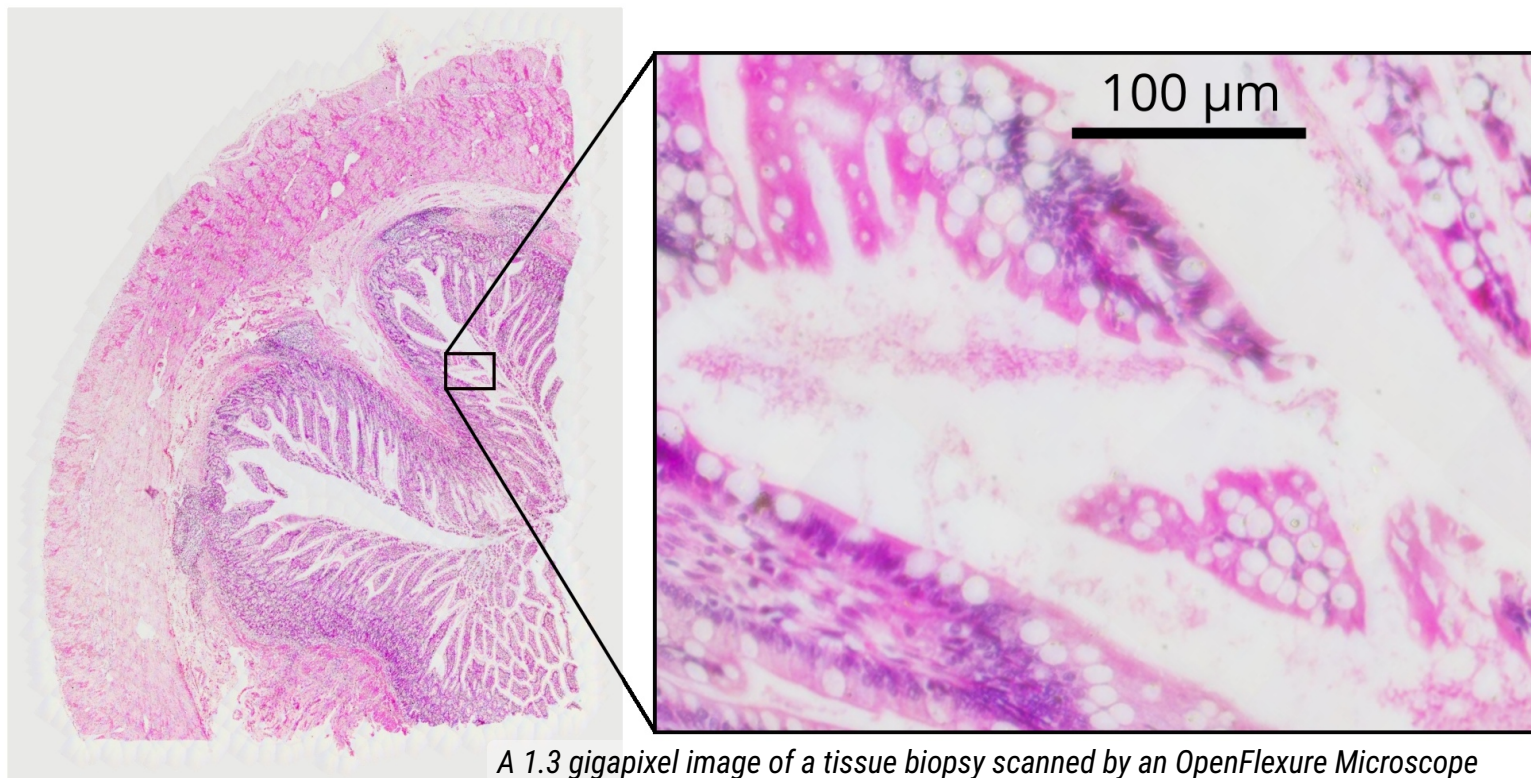
also supported by thousands of hours from our partners at universities, hospitals, companies, NGOs across the world.

The Trustees confirm that they have had regard to the Charity Commission's guidance on public benefit.

Development

The Trust's long term vision for the OpenFlexure Microscope is a self supporting network of manufacturers across the globe building high quality microscopes for local needs. These manufacturers will support local healthcare, local research, local industry, and local education. Open licensing prevents the formation of global or local monopolies while enabling local manufacturers to build strong businesses focussed on context-appropriate modifications, quality production, and timely local support.

The key to this vision is ensuring that the OpenFlexure Microscope's design, software, documentation and other project knowledge is ready for these real world contexts. All the necessary materials for knowledge transfer are openly available under a reciprocal license that guarantees that any changes by other parties must be openly shared with the community.



A 1.3 gigapixel image of a tissue biopsy scanned by an OpenFlexure Microscope

This year's development has been focussed primarily on software improvements for the OpenFlexure Microscope. As an automated robotic microscope, the OpenFlexure software is extensive. We maintain a customised Linux operating system, a server-based control software that runs on the microscope, a web-based graphical user interface for the microscope, a client for connection to microscopes from desktop computers, stitching software to generate large panoramic images of entire samples, and numerous other software libraries for visualisation, analysis, and calibration. On top of this we also design the microscope itself in an open source CAD package, where we maintain our own open source software for documentation, and quality control.

All of our extensive software development work is open for the public benefit. The code we produce is available and licensed openly. In addition to this all ongoing work, all project management, and our technical discussions are undertaken in the open enabling our global community to participate in development and to use our work for other related projects.

It is difficult to capture the scale of the software contributions. Across our five main sub-projects a total of 9 community members (including Trust staff and volunteers) produced 2,055 "commits". Each commit is a series of changes to the code with a message describing the changes. These changes made up 365 separate "merge requests". These are formal requests from a developer to have their code merged into the main version of the software, complete with a description of the changes. Each of these requests were reviewed and signed off, providing an auditable record of the code changes, the reasoning behind them, and who signed off the changes, moving us closer towards the record keeping required to transfer the prototype software into a medical software development workflow.

Volunteer Spotlight

Beth Probert

Volunteer and Project Manager



I have been volunteering for the Humanitarian Technology Trust since its formation in February 2025, dedicating about one day a week to the team. As the Technical Project Manager for the OpenFlexure collaboration, I bridge the Trust, the University of Bath, and the University of Glasgow to ensure the operational delivery and reliability of our open-source tools.

My daily work is as a PhD researcher in space engineering, where I focus on developing open source software for use in satellite networks. Volunteering with the Trust is a fantastic way to apply my engineering background and Python skills to an impactful cause. It is incredibly rewarding to apply those skills to impactful, open-source medical hardware.

A personal highlight this past year was organising the OpenFlexure Hackathon in August. While coordinating our software releases was a great technical milestone, gathering developers face-to-face, including welcoming a contributor who traveled all the way from Mexico, brought an unmatched energy to the project. I also really enjoyed stepping outside my usual academic sphere to successfully pitch our work to publications like **The IET's E+T Magazine** and **Raspberry Pi Magazine**.

Looking ahead, I am excited to carry this momentum into 2026, particularly as we prepare for our upcoming field trip and symposium in Brazil. It will be an incredible opportunity to see the real-world impact of the tools we are building and continue growing this community.

By comparison in the previous year the OpenFlexure project only saw approximately one quarter of the number of commits (552), and one fifth the number of merge requests (74), each with significantly less review. The 4–5 fold increase in activity during 2025 highlights the direct impact of the Humanitarian Technology Trust's impact on the development progress.

Throughout the year we have worked in close collaboration with our community and stakeholders to improve the usability, functionality and reliability of the microscope's code, including significant investment of effort into improvements to automated code testing and analysis. This stability is enabling us to increase the pace of development without sacrificing quality.



OpenFlexure Microscopes in Harena Innovation Hub (Barretos, Brazil)

During the year we reached some significant milestones. We released two pre-releases of the Version 7 hardware, approaching a stable release of five years of work for the OpenFlexure Project. We also released the first 4 pre-releases of an almost total re-implementation of the microscope's software. This re-write puts us on a firm footing for the future. These new software releases were the first introduction to our community of a fully turnkey solution for digitising and viewing whole samples, an essential technique in digital pathology.

Community and Stakeholder Engagement

The key impact of the OpenFlexure Project to date is the community of practice that we have supported and nurtured. Our community include local vendors selling microscope kits, educators inspiring the next generation of scientists, and medics investigating how open source imaging has the potential to revolutionise access to diagnosis. Our community also includes citizen scientists, ecologists, hobbyists, engineers, and students.

As an open source project we are supporting a community to build their own microscopes. It is a testament to the quality of our documentation that most of users are

100 μm



Micro algae from an open dataset of images taken on an OpenFlexure Microscope

able to build a microscope without ever needing to interact with the Trust or others in the OpenFlexure development team. Clear instructions and openly available software and design files breaks down the barrier to accessing microscopy, giving thousands of users their first access to a laboratory grade digital microscope. Yet this impact is very difficult to track. As a privacy respecting project we do not use telemetry within our software to track usage. We believe benefits of the usage data this may provide would not justify the harm to our community from this privacy violation. We instead track our engagement via those who opt to directly engage with the project.

The core focus of our community is our online forum. On the forum we ask users who have built a microscope to let us know the country where they are using the microscope. As of November 2025 we know that our microscopes have been used in at least 67 countries. The forum has over six hundred users, which represents the tip of the iceberg of a user community, as the forum receives tens of thousands of page views a month from readers who are not logged in. There is significant evidence of use beyond the our forum users, as the OpenFlexure Microscope is regularly credited in the scientific literature, forming the basis of many peer reviewed papers. Outside of the traditional academic literature, it is regularly mentioned on social media.

A key aspect of our community is supporting the work of clinical collaborators who are assessing the OpenFlexure's performance and applicability to clinical use. In Brazil, microscopes assembled at the Harena Innovation Hub in Barretos were tested on 60 representative samples from Hospital De Amor's standard case load. Consistency between diagnoses on glass slides and OpenFlexure-scanned images was assessed, following the College of American Pathologists' recommended procedure. Results indicated sufficient resolution and contrast for cancer diagnosis, particularly for H&E stained biopsies, while also informing future development towards cytology support. Further engagement and collaboration between Harena Innovation Hub, Hospital De Amor, and the Humanitarian Technology Trust are planned for 2026.

Alongside the work in Brazil, pathologists at Meru University in Kenya established the Kenya Open Telepathology Project. This project (funded by Innovate UK) uses OpenFlexure Microscopes manufactured in Kenya to investigate its use for both malaria and cancer diagnosis. More details on the Kenya Open Telepathology Project are available on YouTube.¹

Closer to home we have been working with University College London's Bladder Infection and Immunity Group (BIIG) based at the Royal Free Hospital. BIIG are using microscopy for urinary tract infection diagnosis and monitoring, as traditional urine culture diagnosis has a very high rate of both false positive and false negatives. Urine microscopy offers the potential to provide significantly more accurate and timely diagnostics, but there is no NHS capacity for urine microscopy as the liquid samples are short lived and cannot be sent to central laboratories. We are working with BIIG to develop the OpenFlexure Microscope for automated data collection from urine samples.

Alongside working towards diagnostic applications of the microscope our medical collaborators are also working on medical education. The School of Open Pathology Education was founded to create a platform for globally accessible pathology education using OpenFlexure microscopy. Attendees ranged from medical students to pathology professors, spanning 3 continents. Throughout the four public, online seminars, over 20 cases discussed and the associated samples digitised, giving attendees increased exposure to the variance in global pathology services.

Educational workshops for school students, university students, and teachers have taken place in Scotland, Sweden, Ukraine, and Kenya. Workshops have focussed on both building and using the microscope, with water being a core theme between workshops. Workshops in Sweden have produced a large open data set of images of micro-algae, with similar sessions looking at water quality being run in Eldoret (Kenya). Mykolaiv Water Hub in Ukraine hosted a workshop where participants from regional water companies and local girls interested in science and technology built OpenFlexure Microscopes. Teacher training workshops in both Scotland and Sweden identified the need for a greater range of materials to enable teachers to use the microscope in

¹The Kenya Open Telepathology Project: https://www.youtube.com/watch?v=Z7Z_cOQ-zyk



A OpenFlexure Microscope field kit in use in Eldoret (Kenya)

classrooms. At the end of the year we secured a grant from the Royal Commission for the Exhibition of 1851 which will enable us to develop educational materials aligned with the UK school curriculum.

The workshop at Mykolaiv in Ukraine is part of a broader collaboration between the Humanitarian Technology Trust, Fab Foundation Europe, and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). The ongoing collaboration named “Microscopes for Everyone” won the GIZ Innovation Prize. The project is working with makerspaces across Ukraine to establish local production of microscopes for research and educational use.

The Trust have also supported the Open Science Shop (OSS), a collaboration of companies over six continents selling kits of open source hardware. By collaborating with the OSS vendors we are better able to understand production and sourcing issues and to make improvements that will ultimately benefit the goal of creating a microscope that can be manufactured for diagnostic use. Some of the OSS vendors opt to donate a proportion of their profits from OpenFlexure sales back to the Humanitarian Technology Trust.

Our vision for locally manufactured open source technologies requires engagement from diverse stakeholders. The Trust has built its network through attending and presenting during the United Nations Open Source Week at the UN Headquarters, running booths at technology conferences like FOSDEM and Re:Publica, and participating in the UN Digital Cooperation Day as part of 80th session of the UN General Assembly, and the public open day for the German Federal Ministry for Economic Cooperation and Development (BMZ). We also hosted our first development hackathon for the OpenFlexure



An OpenFlexure Microscope workshop in Mykolaiv (Ukraine)

Microscope, inspired by the maintain-a-thons run during UN open source week. This hackathon brought together developers from across the world in Glasgow, Scotland, for two days of collaboration, relationship building, and software quality improvement.

Financial Review

During the Trust's first financial period, lasting approximately 10.5 months, we brought in receipts of £24,550. the majority of these funds (£22,807) were in the second half of the period as the first half was dominated by set-up and administration. Funding was primarily from grants (£20,388). These include:

- £8,356 from NLNet who provide an unrestricted grant when the project reaches certain development milestones
- £832 from NLNet for our Hackathon
- £1,200 from the Centre for Global Equality to fund travel to the United Nations
- £10,000 from the Royal Commission for the Exhibition of 1851 for the development of educational materials.

We also received donations totalling £4,140 of which £3,530 were voluntary contributions from Open Science Shop vendors.

Our Payments for the period totalled £9,977. The majority (£7,125) of our spending was on salary costs since November 2025 when our Chief Executive transitioned from a voluntary role to zero hours contract. With travel (£2,163) was the second largest expenditure. We also have liabilities of £1,018 of for pension and payroll taxes.

We ended the period with £14,573 of cash funds (£13,555 less liabilities), of which £4,573 (£3,555 less liabilities) is unrestricted and £10,000 is restricted.

Reserves

The Trust aims to maintain a level of unrestricted reserves equivalent to approximately three to six months of core operational expenditure. This level is intended to provide financial stability, allowing the Trust to manage short-term fluctuations in income or expenditure, and ensure continuity of charitable activities.

As the organisation is new and growing it may take time to build up to this target level. The reserves position is reviewed periodically, taking into account the Trust's size, risk profile, income stability, and future plans.

Declaration

This report has been approved by the Board of Trustees on the 11th August 2026 and signed on their behalf by:



Dr Adrian Bowyer MBE
Chair of Trustees

Independent Examiner's Report

Independent Examiners's Report to the Trustees of the Humanitarian Technology Trust

I report to the charity trustees on my examination of the accounts of the Trust for the period from 18 February 2025 to 31 December 2025.

Responsibilities and basis of report

As the charity's trustees of the Trust, you are responsible for the preparation of the accounts in accordance with the requirements of the Charities Act 2011 ('the Act').

I report in respect of my examination of the Trust's accounts as carried out under section 145 of the Charities Act 2011. In carrying out my examination I have followed the Directions given by the Charity Commission under section 145(5)(b) of the 2011 Act.

Independent examiner's statement

I have completed my examination. I confirm that no material matters have come to my attention in connection with the examination which give me cause to believe that in, any material respect:

- account records were not kept in accordance with section 130 of the Act: or
- the accounts do not accord with those records

I have no concerns and have come across no other matters in connection with the examination to which attention should be drawn in this report in order to enable a proper understanding of the accounts to be reached.

Signed:  Date: 4th September 2026

Anna R Watkins BSc
Accountant
17 Mountain Ash
Bath
BA1 2UU

Financial Statements

Humanitarian Technology Trust

Statement of Receipts and Payments

Period from 18 February 2025 to 31 December 2025

	Notes	Unrestricted Funds	Retstricted Funds	Total Funds
		2025	2025	2025
		£	£	£
Receipts				
Donations		4,140	-	4,140
Grants		8,356	12,032	20,388
Project Merchandise		22	-	22
Sub Total		12,518	12,032	24,550
Asset and Investment Sales				
Sale of fixed assets		-	-	-
Sub Total		-	-	-
Total Receipts		12,518	12,032	24,550
Payments				
Charitable Activities	4	7,935	2,032	9,967
Cost of Raising Funds		10	-	10
Sub Total		7,945	2,032	9,977
Asset and Investment Purchases				
Purchase of fixed assets		-	-	-
Sub Total		-	-	-
Total Payments		7,945	2,032	9,977
Net of Receipts/(Payments)		4,573	10,000	14,573
Cash Funds Last Year End		-	-	-
Cash Funds This Year End		4,573	10,000	14,573

Humanitarian Technology Trust

Statement of Assets and Liabilities

Period from 18 February 2025 to 31 December 2025

	Notes	Unrestricted Funds	Retstricted Funds	Total Funds
		2025	2025	2025
		£	£	£
Cash funds		4,573	10,000	14,573
		Value		
		2025		
Other Monetary Assets		-		
Investment Assets		-		
Assets retained for the charity's own use	5	500		
Liabilities	6	1,018		

Approved by the Board of Trustees on the 11th August 2026 and signed on their behalf by:



Dr Adrian Bowyer MBE
Chair of Trustees

The notes on pages 19–20 form an integral part of these accounts.

Humanitarian Technology Trust

Notes to the Accounts

Period from 18 February 2025 to 31 December 2025

Note 1: Accounting Policies

Basis of preparation

These accounts have been prepared on a Receipts and Payments basis. The financial statements have been prepared in accordance with the Statement of Recommended Practice: Accounting and Reporting by Charities preparing their accounts in accordance with the Financial Reporting Standard applicable in the UK (FRS102) issued on 16 July 2014 and the Charities Act 2011.

Income

Income is recorded when it is received.

Expenditure

Expenses are recorded when they are paid. Expenses on materials, small tools and equipment are written off as incurred and no valuation is included in the Balance Sheet.

Charitable Activities

OpenFlexure Microscope Project—represents costs directly attributable to the development, evaluation, and clinical readiness of the OpenFlexure Microscope, and any costs associated with supporting and growing the global OpenFlexure community.

Governance, Administration, and Compliance costs—include the direct costs of administration of the charity. These costs include insurance, membership of associated organisation, and training activities.

Fund Accounting

Unrestricted funds—are available for use at the discretion of the trustees in furtherance of the general objects of the charity.

Restricted funds—are for use subject to restrictions imposed by the donor or through terms of an appeal.

Note 2: Trustees remuneration and benefits

No remuneration or benefit was paid to any trustee or any person connected with a trustee during the accounting period.

Note 3: Breakdown of Restricted Funds

Fund	Incoming Resources £	Outgoing Resources £	Funds at 31/12/2025 £
OpenFlexure Hackathon (NLNet)	832	832	-
CGE Travel Grant	1,200	1,200	-
RCE 1851 Educational Material Development Grant	10,000	-	10,000
Total	12,032	2,032	10,000

Note 4: Breakdown of Charitable Activity Spending

Category	Expenditure £
OpenFlexure Microscope Project	9,288
Governance, Administration, and Compliance costs	679
Total	9,967

Note 5: Assets

The charity has an OpenFlexure Microscope demonstration kit of estimated value £500.

Note 6: Liabilities

Payroll commenced late in the year. Payments to Collegia Pension and HMRC were made in January and February 2026 respectively.

Organisation	Amount £
HMRC	465
Collegia Pension	553
Total	1,018



Humanitarian Technology Trust Annual Report 2025

Registered Charity Number: 1212197

Front Cover Image: OpenFlexure Microscopes in use in Tanzania. Image credit: Eng. Valerian Sanga

Back Cover Image: OpenFlexure Microscopes used for an automated cervical cancer diagnosis study in Michigan. Image Credit Dr. Kelsey Hummel

2026 © Humanitarian Technology Trust. All Content licensed under CC BY-SA 4.0