

TaiM Key Outcomes and Insights

As the collaborative project comes to a close, we consider what we have achieved.

The TaiM (Trustable AI in Mapping) consortium, which includes EOLAS Insight, Omanos Analytics, Agrimetrics, Highlands Rewilding, The James Hutton Institute, AECOM, and a working group of Scottish Government departments and nature-based agencies, worked together to encourage the broader adoption of emerging AI technologies in the environmental and geospatial sectors. This has been achieved by developing and sharing open, transparent frameworks and methods to evaluate the quality of AI and machine learning-derived mapping products. The TAIM project not only showcases the potential of AI but also benefits the wider natural economy by promoting reliable and innovative mapping solutions.

Our planet's varied ecosystems provide natural resources vital to our survival, including clean water and air, healthy soils and seas. They provide a balanced climate and underpin much of the world's economic value. This 'natural capital' provides the stocks and flows of food and the raw materials that support the livelihoods of billions of people, meaning that the accelerating biodiversity and nature losses we face today pose significant problems for corporations and society at large.

Our consortium's consideration of nature tech examines whether it produces a trustable source of data from its sensors and instruments, which is then compiled into visual maps by algorithms. The resulting maps enable us to cost-effectively address an increasing range of environmental challenges surrounding our natural capital, including habitat destruction, deforestation, soil degradation, water pollution and species loss.

'Nature tech' refers to technologies that enhance and scale nature-based solutions (NBS) for environmental sustainability within the private sector. Digital tools and platforms such as remote sensing satellites and drones, artificial intelligence (AI), machine learning (ML), Internet of Things, blockchain, and bioacoustics have emerged to help to close the nature-data gap that many businesses face.

But how can we evaluate the quality of algorithms that interpret and organise the data? Most nature tech hardware uses closed-source, 'black-box' software systems. The specific algorithms and choices made by software developers can lead to different interpretations of the same source data. As a result, a mapped visualisation of the same natural asset can vary.

We have developed standards and an associated framework for the measurement and comparison of algorithm quality in digital mapping. The consortium defined standard classes for a variety of landcover types, conducted precise ground-based mapping of baseline sites, and developed tester AI algorithms. Nature tech organisations can now evaluate the performance of their own algorithms by comparing their results with these pre-verified baseline sites. We developed this framework with nature markets as our initial focus due to the high demand for trustworthy outputs, emerging best practices, and the sector's rapid growth, making it ideal for small and medium-sized enterprises (SMEs) to get involved.

In February 2025, we shared our results at a working group session attended by 40 enthusiastic colleagues from the mapping, nature markets, and policy sectors. After introducing common problems encountered in AI-driven mapping and the solution offered by the TAiM project (namely our framework and its supporting knowledge base), we gathered feedback and insights from the group so that we may meet the needs of the market more widely.



Figure 1: Iain Cameron (EOLAS) introduces TaiM to workshop participants.