MICROB·AI·OME

Federated artificial intelligence for privacy-preserving international stratification of colorectal cancer patients

Public project website and social media accounts

June 2023

Microb-AI-ome - Public deliverable report **D7.1**

The Microb-AI-ome project has received funding from the European Union's Horizon research and innovation programme under the Grant Agreement nº 101079777

Funded by the European Union

Title Picture: ADOBE: 423952248

Microb-AI-ome as a whole

What is Microb-AI-ome's goal?

Colorectal cancer (CRC) is the 2nd most common type of cancer in the world (WHO Global Health Estimates 2019). However, identifying CRC early improves disease prognoses, and as such lessens the disease burden on the individual and on society as a whole. Current CRC screening programs utilize a quantitative faecal immunological test (FIT) to predict the need for colonoscopy for the detection of colorectal lesions indicative of CRC. However, the FIT has a high false-positive rate of over 37% leading to many unnecessary, unpleasant, invasive and costly colonoscopies. Microb-AI-ome aims to reduce this false-positive rate by 20% points by utilizing powerful information hidden in our stool microbiomes.

What is Microb-AI-ome's approach?

Artificial intelligence (AI) and machine learning (ML) technology have started to pave the way towards highly personalized medicine. However, while the number of identified associations between microbiome profiles and CRC has been rising in recent years, robust AI models for personalized prediction of a need for a colonoscopy are still missing. The big data needed to train such models is distributed over many repositories around the globe, and privacy regulations are hindering its effective integration. With Microb-AI-ome, we will overcome this barrier by establishing the first privacy-preserving federated big data network for CRC research. We will integrate isolated, national databases, into one international federated database network - rather than a cloud - covering metagenomes for over 4,000 individuals screened for CRC, and an expected total of 100,000 by 2026. Microb-AI-ome ensures that no sensitive patient data will leave the safe harbours of the local databases while still allowing for the training of robust AI models, which we will demonstrate in clinical practice allowing regulatory bodies to adopt evidence-based guidelines.

Microb-AI-ome public website

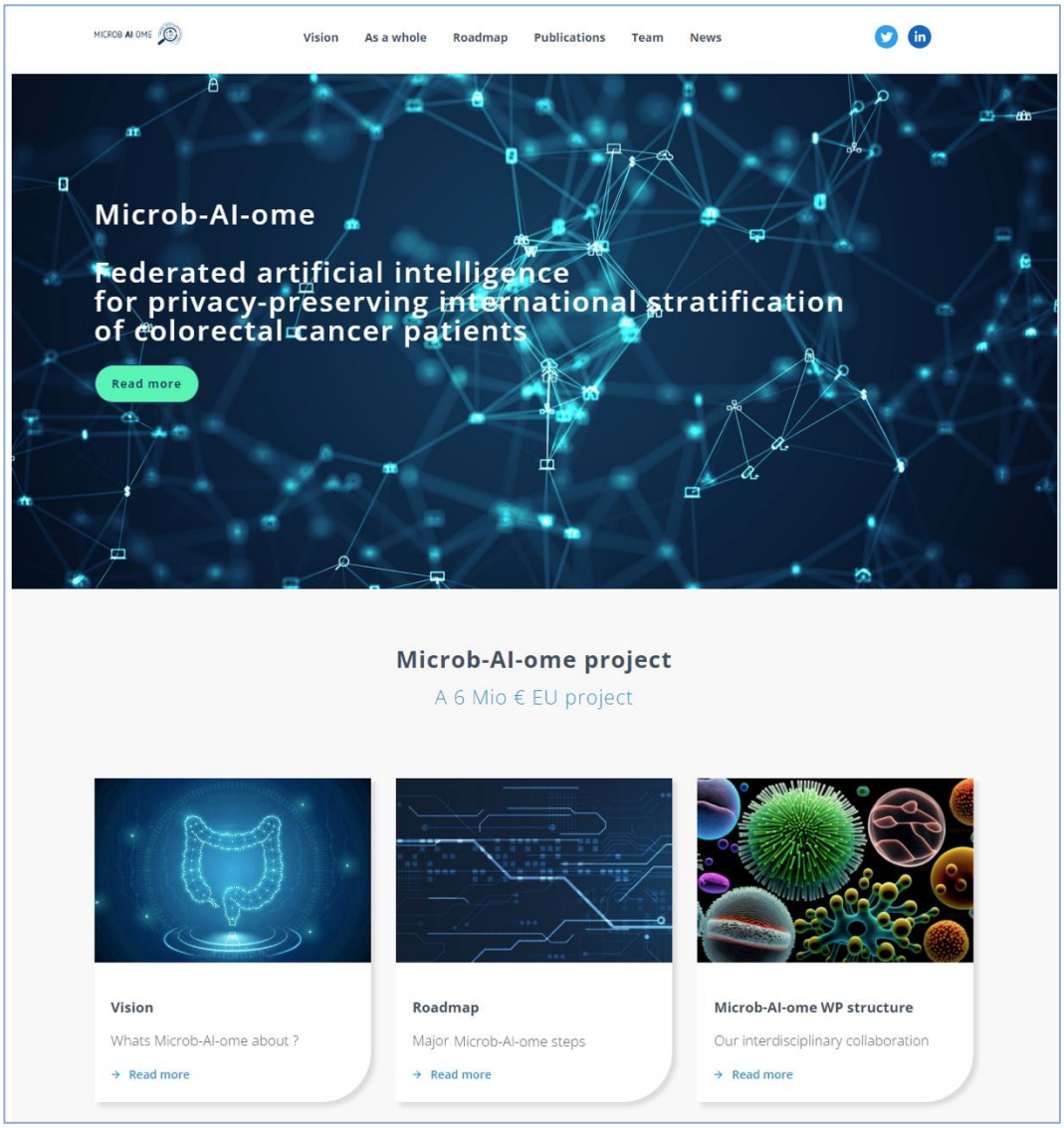

Figure 1: Screenshot of Microb-AI-ome's homepage.

Overview

The Microb-AI-ome project has created a website (http://microbaiome.net) as a primary platform for sharing information with interested individuals and organizations. The website serves the following purposes:

1. Introduces Microb-AI-ome to external stakeholders, explaining the project's main goals, providing a roadmap, and showcasing published results.
2. Encourages other interested parties to get involved and participate in the project by contacting the coordinator and/or sharing their views in the project's social medias.
3. Keeps stakeholders updated on the project's progress through news updates and a list of publications.

The website for Microb-AI-ome can be accessed at https://microbaiome.net. The project partner, tp21 registered this URL at the beginning of the project and will be in charge of the website development and maintenance. The website also features a link to the consortium's private internal platform, which serves

as a secure area for accessing and downloading presentations, deliverables, and working materials. Access to this private area is secured and requires a login name and password.

Responsive Design

The Microb-AI-ome website, https://microbaiome.net, has been designed to adapt to various user behaviours and environments based on factors such as the device used, screen size and resolution, platform, and device orientation (**Figure 2**). The website's functionality is optimized for different devices, including smartphones and tablets operating on Android, iOS, or Linux.

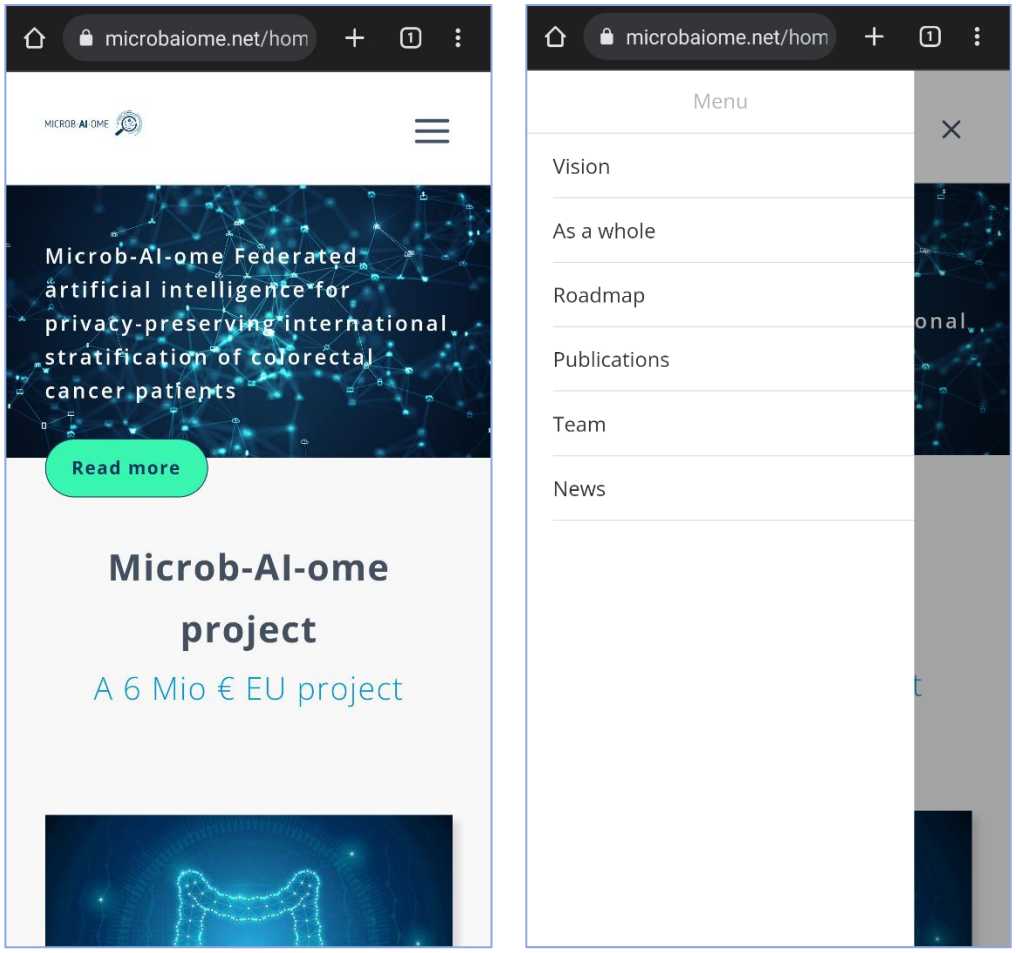

Figure 2: Example of the Microb-AI-ome's website responsiveness on Smartphone.

Functionalities

The Microb-AI-ome project website prioritizes a modern layout and impactful images that symbolize the project's integration of AI technology and life science. The site encourages intuitive navigation, enabling visitors to explore the project's vision, progress, news, and other relevant information.

Navigability

The Microb-AI-ome website is characterized by its easy navigability, simplicity and user-friendly features, making it easy for the public to scout the site and quickly obtain the desired information, regardless of their technological capabilities.

Website Content

On the top menu, the following sections have been created: Vision, As a whole, Roadmap, Publications, Team and News. Additionally, the Twitter and LinkedIn icons direct the users to the project's profiles in each of those social medias (**Figure 1**).

Vision

The 'Vision' section briefly presents the value proposition of the Microb-AI-ome project. Here, a detailed description of the rational for the project as well as the intended work to be performed is given to let the audience understand what the project is about and why it is innovative and marketable (**Figure 3**).

Figure 3: Microb-AI-ome website: screenshot of the project visions' section

As a whole

The 'as a whole' section provides a comprehensible description of the work to be performed during the project, dividing it in work packages and indicating which partnering institution is in charge of which work package (**Figure 4**). All respective work package leaders are listed here as well.

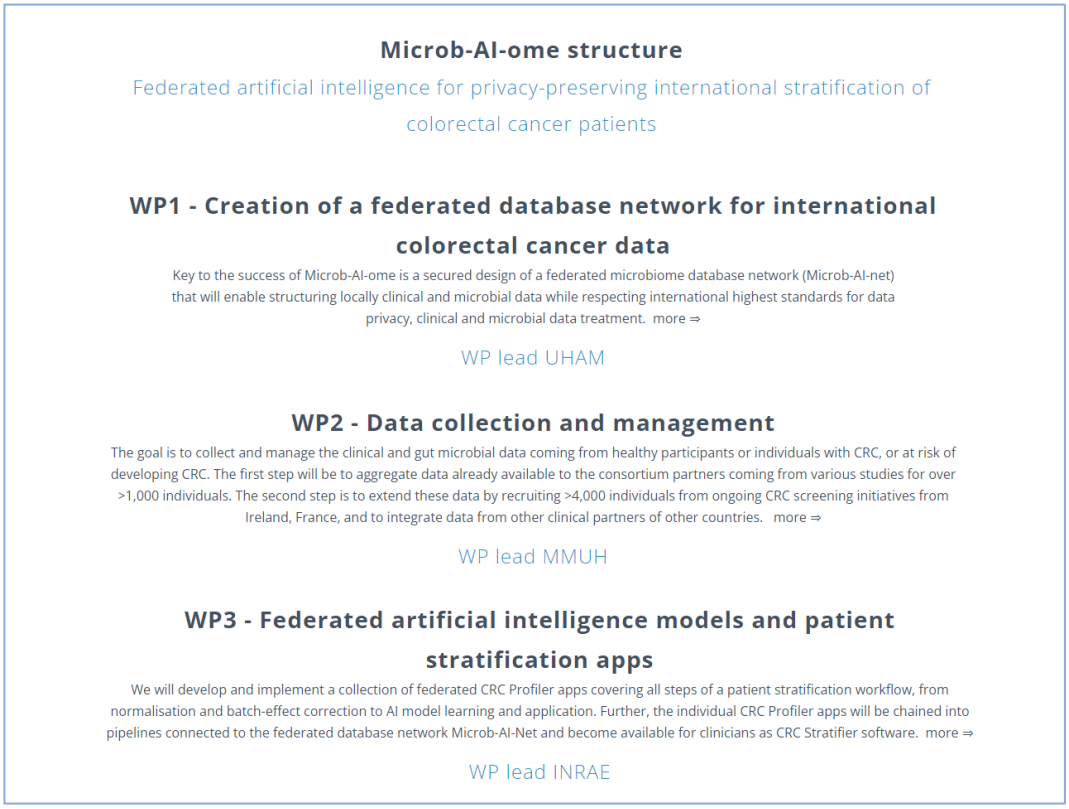

Figure 4: Microb-AI-ome's structure description found under the "As a whole" section.

Roadmap

The 'Roadmap' section leads to an interactive page where the project timeline is depicted on the top of the site. In this timeline, conveniently split into yearly quarters, the user can select a stage of the project and get an accurate description of the ongoing work at that time and the potential outcomes expected for that work (**Figure 5**).

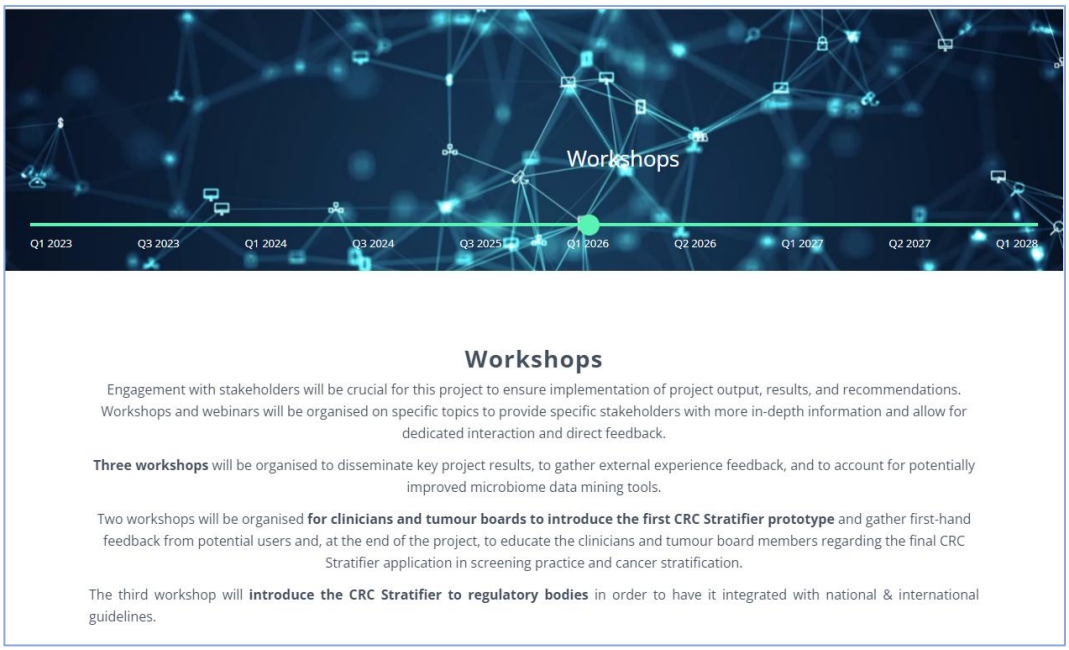

Figure 5: Screenshot of the Roadmap section. Depicted as an example is the first quarter (Q1) of 2026.

Publications

The 'Publications' section will be useful to have all the important articles, either in layman's press or in scientific journals, organized and accessible, aiding their dissemination during the project's execution. (**Figure 6**). A current example would be the Microb-AI-ome's Kick-off press release, designed to be shared by all partners to announce the project start.

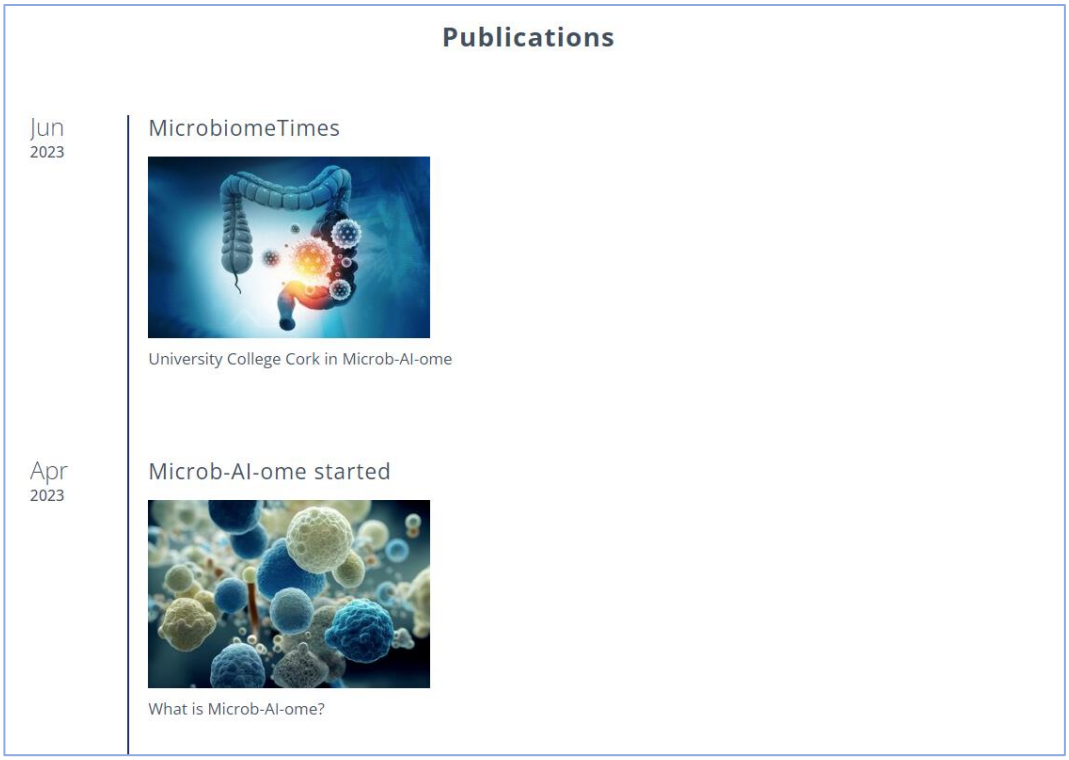

Figure 6: Screenshot of the Publication section.

Team

The 'Team' section includes a description of each organisation involved in the project, as well as the respective principal investigators of each partnering institution and links the user to their institutional webpages and social media.

The Microb-AI-ome consortium consists of the following European partners:

4. UNIVERSITAET HAMBURG (UHAM), Germany (coordinating institution)
5. UNIVERSITY COLLEGE CORK - NATIONAL UNIVERSITY OF IRELAND, CORK (UCC), Ireland
6. GNOME DESIGN SRL (GND), Romania
7. TP21 GMBH (TP21), Germany
8. RESEARCH INSTITUTE AG & CO KG (RI), Austria
9. INSTITUT NATIONAL DE RECHERCHE POUR L'AGRICULTURE, L'ALIMENTATION ET L'ENVIRONNEMENT (INRAE), France
10. ASSISTANCE PUBLIQUE HOPITAUX DE PARIS (APHP), France
11. MATER MISERICORDIAE UNIVERSITY HOSPITAL (MMUH), Ireland

News

The 'News' section is useful to inform the users on recent developments within the project, as well as public updates about related activities, such as the Hackathon planned to be performed later in the project (**Figure 7**).

Figure 7: Microb-AI-ome website: Screenshot of the news section.

Website footer

In the website footer, the Microb-AI-ome project acknowledges the funding received by the European Commission. In addition, once again, links to the project's profiles on social medias are provided (**Figure 8**).

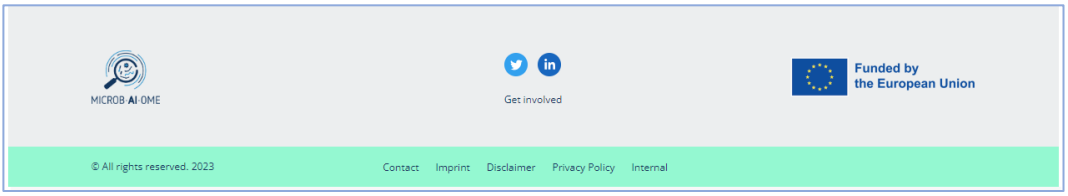

Figure 8: Microb-AI-ome website's footer. This footer is kept consistent throughout all the website's sections.

Other sections within the footer include:

Contact

The 'Contact' section presents the project coordinator's contact details.

Imprint

The 'Imprint' contains the contact data for the partner in charge of the website maintenance, tp21 GmbH.

Disclaimer

A formal disclaimer is presented where funding information and a detailed notice of liability are described.

Privacy Policy

A detailed privacy policy document can be found under the 'Privacy policy' section, where the website explains how GDPR rules are considered.

Internal

The 'Internal' section is linked to Microb-AI-ome's secured internal platform workspace. This private area is specifically dedicated to communication between the partners and document exchange.

Microb-AI-ome's social media accounts

Social media accounts for research projects offer numerous benefits, starting by broadening the reach and accessibility of research findings by connecting with a diverse global audience. This inclusivity ensures that research reaches individuals who may not have easy access to traditional academic channels. In addition, social media platforms help build communities around research topics, facilitating meaningful discussions, collaborations, and valuable feedback. Researchers can connect with experts and like-minded individuals, enriching their work and fostering interdisciplinary exchanges.

In Microb-AI-ome, we understand that social media enables researchers to disseminate their findings effectively through concise and engaging posts, bridging the gap between academia and the general public. The Microb-AI-ome consortium believes that by having a social media presence, we can increase our research's visibility, impact metrics and potential collaborations, ultimately enhancing the overall quality and societal impact of our research.

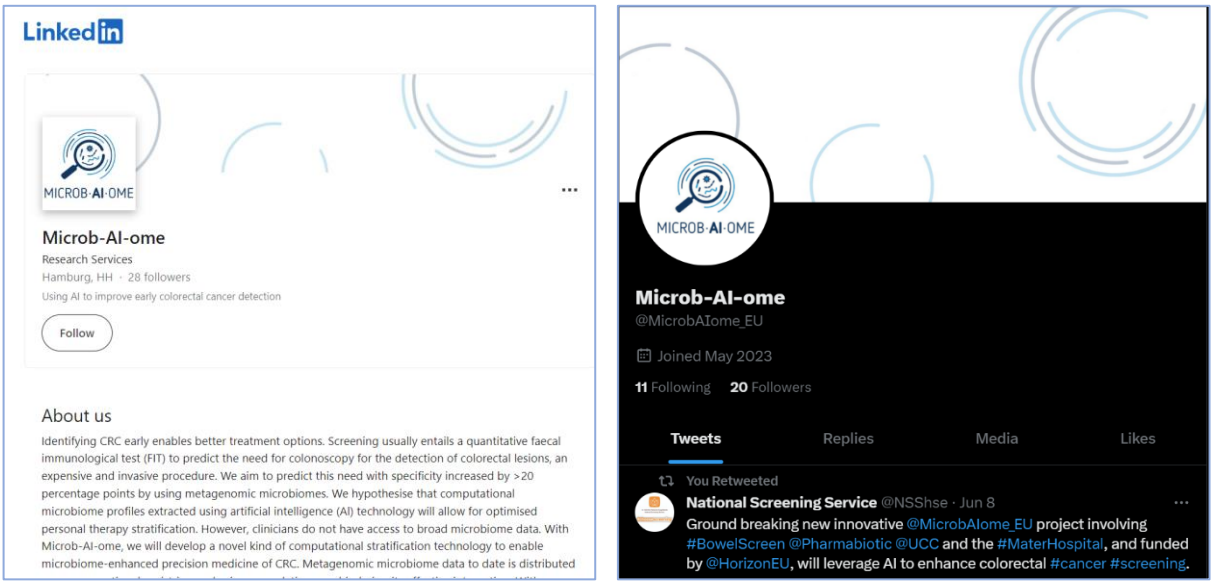

Figure 9: Microb-AI-ome social media accounts main pages on LinkedIn (left) and Twitter (right)

Social media	
LinkedIn	https://www.linkedin.com/company/microb-ai-ome/
Twitter	https://twitter.com/MicrobAIome_EU

Visit Microb-AI-ome on http://microbaiome.net

The Microb-AI-ome project has received funding from the European Union's Horizon research and innovation programme under the Grant Agreement nº 101079777. Information contained on this report, and the here described website, are however those of the author(s) only and do not necessarily reflect those of the European Union.