ITEA 4

Project Results

DAIsy

AI for improved diagnosis and treatment of mental health

To improve mental healthcare, the ITEA project DAIsy (Developing AI ecosystems improving diagnosis and care of mental diseases) developed artificial intelligence (AI) modules, clinical workflows, and platform components to support a variety of steps in a patient's journey.

Mental illnesses still lack sufficiently reliable tools to evaluate symptoms, making it hard to find the right approach per individual: major depressive disorder (MDD), for instance, is the second leading contributor of years lived with disability. Diagnosis, treatment selection, diet monitoring, activity tracking, behaviour adjustment support and treatment response assessment can all be improved to reduce the personal and societal impact of such disorders.

Project developments

These areas were addressed by DAIsy, which developed a portfolio of AI-enabled applications and components across four use cases: MDD, Eating Disorders, Multimodal Neurofeedback, and Virtual Therapy Assistance. For MDD, an end-to-end clinical support solution covers diagnosis, pre-treatment assessment, treatment monitoring, and follow-up. A key strength is the combination of clinical findings, wearable and sensor-based insights, and neuroimaging data. This includes support for more accurate differentiation between bipolar and unipolar depression, functional magnetic resonance imaging-based treatment response prediction, and continuous monitoring that enables earlier clinician intervention.

The Eating Disorder use case, meanwhile, focused on clinician support via conversational and generative AI (GenAI). Key developments include speech-to-text, ambient listening, automated intake summaries, and AI-supported assessment and prognosis – all of which help to reduce manual workload and improve personalised care. Multimodal Neurofeedback refers to a computer-assisted therapy method for improving the brain's ability to self-regulate, combining electroencephalography and functional near-infrared spectroscopy. This offers real-time processing, multimodal fusion, and closed-loop therapy support. Finally, Virtual Therapy Assistance created a daily companion that collects and provides behavioural data. As a patient-facing AI solution for continuous support beyond the clinic, this combines patient apps, therapist dashboards, and backend AI services for mood tracking, symptom follow-up, personalised content, and long-term care continuity.

Additionally, DAIsy generated shared architectural principles on modular design, standards-based interoperability, multimodal data and AI services, security, privacy, and data sovereignty. These project-wide elements benefited from strong coordination between partners, including efforts to build a shared understanding across a consortium of clinicians, AI developers, platform architects, data specialists, and application/device teams. For example, a dedicated session helped establish a common language and align on shared goals, thereby turning different perspectives into more coherent results. Such efforts enabled interoperability and security/user-centred design to be present from the start, providing the trust and scalability needed to integrate novel AI solutions with real-world clinical workflows.

DAIsy consortium

Results so far

In its work to advance AI-driven mental healthcare, DAIsy has generated results that are not only technically innovative but also clinically meaningful: helping patients reach the right treatment faster, improving prediction accuracy, and reducing diagnostic error. In a pilot study, DAIsy has enabled 70% of patients to find the right treatment within one week; prior to the project, 50% of MDD patients had not found the right treatment within one year. Likewise, the assessment time for eating disorders has been reduced by around 75% compared to manual processes. As for treatment efficacy, MDD prediction accuracy has been improved from 50% to 70% using neuroimaging, while the

diagnostic error rate when distinguishing between unipolar and bipolar depression has been reduced from 50% to 30%.

As a result, DAIsy has already moved beyond research into new products, services, and methodologies that will soon be commercialised in a global AI in mental health market projected to grow from USD 1.8 billion in 2025 to around 11.84 billion by 2034. Per use case, the results can be combined in an end-to-end manner, effectively creating platforms that can be integrated into hospitals to target different treatment phases. For instance, ARD Group's AI-supported clinical decision support platform for differentiating bipolar and unipolar MDD can be combined with Bewell's IoT wearable monitoring platform that collects and structures physiological and activity data for digital health ecosystems. Other innovations include Ascora's patient app that delivers dynamic, personalised e-learning modules, Materna's therapeutic support and brain-computer interface solutions, SemLab's Ambient Listening product that uses GenAI to analyse conversations between patients and providers, MEDrecord's secure medical speech-to-text solution HealthTalk, and 5M Software's FitSprite Nutrition mobile app for AI-based calorie intake estimation and activity tracking.

Future outlook

These results now provide a springboard for further development, exploitation, and possible reuse. For example, DAIsy has already generated follow-up collaboration in the ITEA project MedGPT, aiming to embed ethical AI and compliance in a European platform, and has produced reusable methodological outputs such as response-quality evaluation and duplicate-question detection for GenAI-based healthcare services. There is also plenty of room for expansion within the participating countries: Türkiye still lacks an AI-powered end-to-end solution across mental health treatment, Germany continues to have fragmented solutions that do not combine multimodal biosignals, contextual data, and individualised therapy, and the Netherlands still has no end-to-end AI-driven solution for eating disorders. These market gaps show that DAIsy will remain relevant well beyond the project lifetime and that the project's results should be seen as an important foundation for continued innovation and market uptake in the years ahead.

Major project outcomes

Dissemination

- 20+ publications and several conferences

Exploitation (so far)

New products:

- DAIsy sensor prototypes validated in a laboratory environment
- 3D MRI Viewer Application
- AI-driven Automated Mental Health Intake Treatment Selection Solution
- Wearable device fitted with sensors
- Open source real-time toolbox project designed to stream fNIRS and EEG data

New services:

- Dedicated On-Premise Server for Ambient listening
- Integration of AI-driven solutions for enhanced mental healthcare delivery
- FitSprite Nutrition mobile app new release

New Systems

- End-to-end Orchestration System constituting UPS server, among other modules , to enable the integration of AI Models into radiology and other pathways.
- FHIR-Compliant Telemedicine Architecture and Scalable Data Pipeline
- Data Collector App

Standardisation

- Complying with FHIR, DICOM, IHE, BIDS and IHE AI Workflow Integration

DAIsy

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Partners

Germany

- Ascora GmbH
- BEE Medic GmbH
- Materna Information & Communications SE
- OFFIS
- University Hospital Bonn

The Netherlands

- 5M Software
- Amsterdam UMC
- Eindhoven University of Technology
- GGZ Oost-Brabant
- MEDrecord BV
- Philips Electronics Nederland BV
- SemLab

Türkiye

- ARD GROUP
- Bewell Teknololji San.Tic.A.Ş.
- Etiya Bilgi Teknolojileri Yazilim Sanayi ve Ticare...
- NP ISTANBUL BRAIN HOSPITAL
- Vestel Sağlık Teknolojileri AŞ

Project start

November 2022

Project end

March 2026

Project leader

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