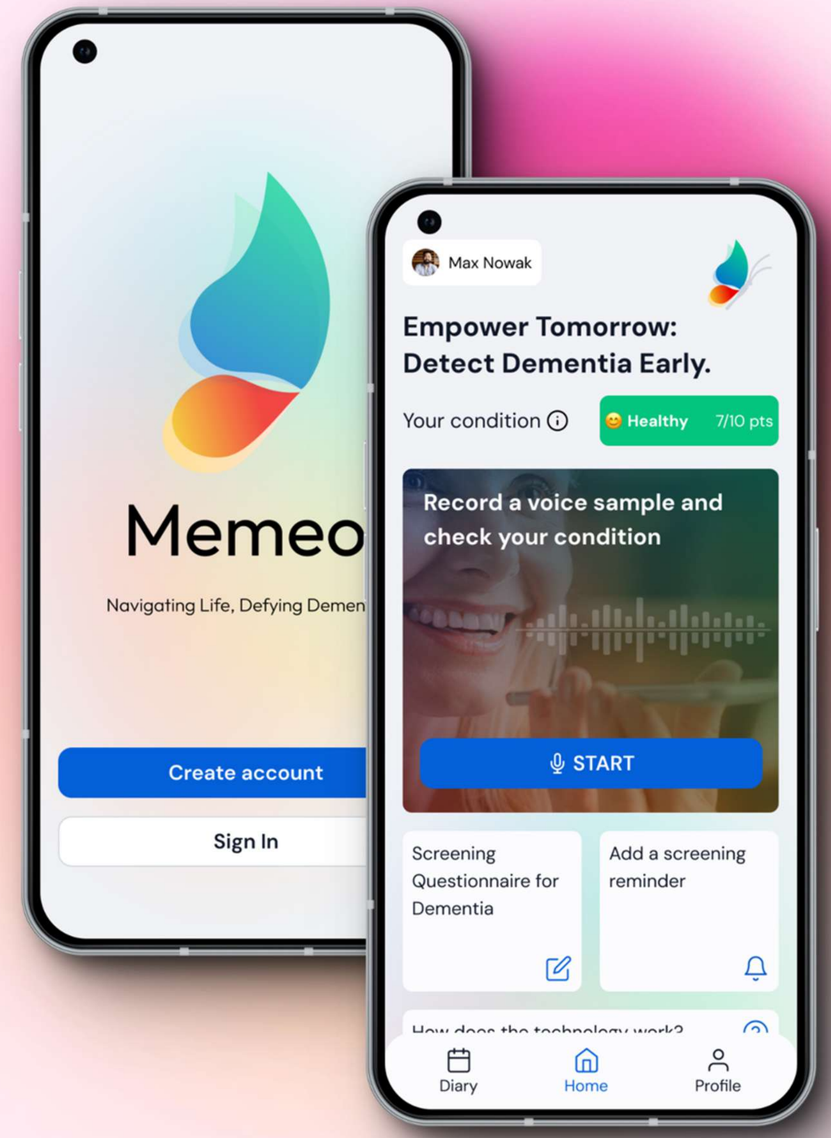
Vivid Mind

Revolutionizing Dementia Care with Advanced AI and Sound Objects Technology

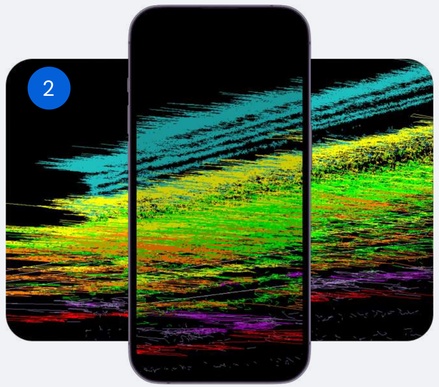
A 10-second Voice Recording That Will Change the Way Dementia is Captured And Adressed.



Early detection of dementia disease that can save lives.

HOW THE VIVID MIND SCREENING TEST WORKS

Recording the Patient's Voice: A 10-second voice sample is taken from the patient.



Voice Transformation & Feature Extraction: The voice sample is transformed into an audio object (known as partials) and distinct features are extracted from it.

Data Transmission to Classifier: The extracted data is then transmitted to a classifier.

Based on the data analysis, it’s recommended either to visit a specialist or repet regular check-ups at a general practitioner's clinic.

Screening Results (Healthy; MCI; Dementia) In Under 1 Minute.

BATTLE FOR DEMENTIA FRONTS. AT GP'S OFFICE AND AT HOME

Majority of the affected population (one out of every ten elderly people) are never diagnosed or are diagnosed too late.

Primary care is the place where the effectiveness of timely dementia diagnosis is inadequate (false positives, non-referrals).

Regular testing at home (coupled with preventive care recommendations and engagement) can supplement the war on dementaia waged in primary care.

GPs lack simple, short, objective (100% quantitative and physical-parameter-based) and reasonably accurate screening tools (only 20% of referrals are tested).

Lack of research-based digital therapeutics programs for patients and their families.

HOME: CHALLENGES

Passive lifestyles (lack of cognitive stimuli).

Unaddressed factors that can stop development of dementia (lifestyle, diet habits, etc.)

Lack of ideas for continued engagement and care oriented at friends and family of persons affected.

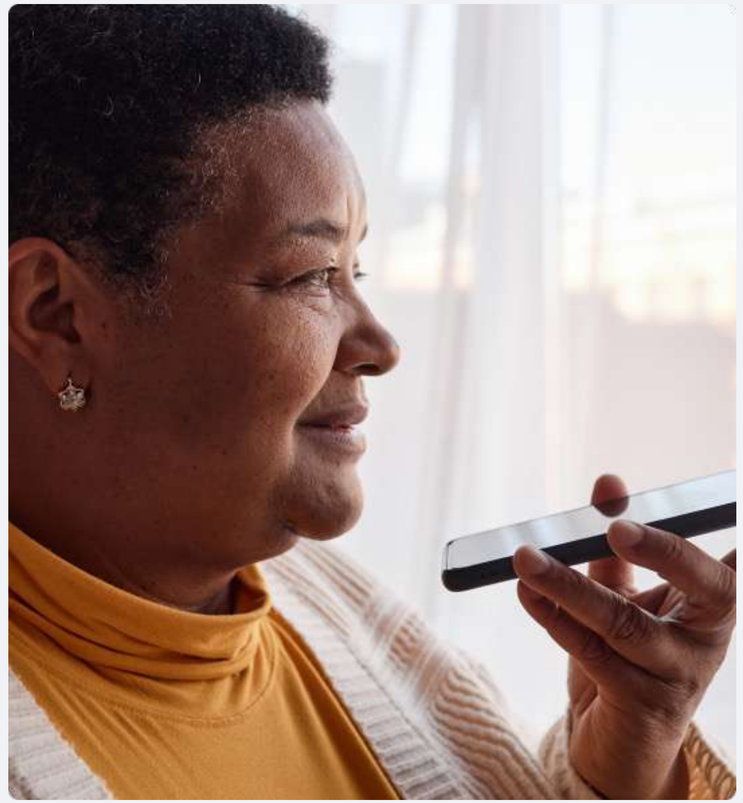
HUMAN VOICE SHOWS PROMISE AS BIOMARKER FOR SCREENING DEMENTIA

Attempts at creating screen tests - paper based (e.g., clock test, mini-mental) -take around 10 minutes to conduct and are prone to human error.

Digitalization of paper tests to incorporate AI and become independent from human error.

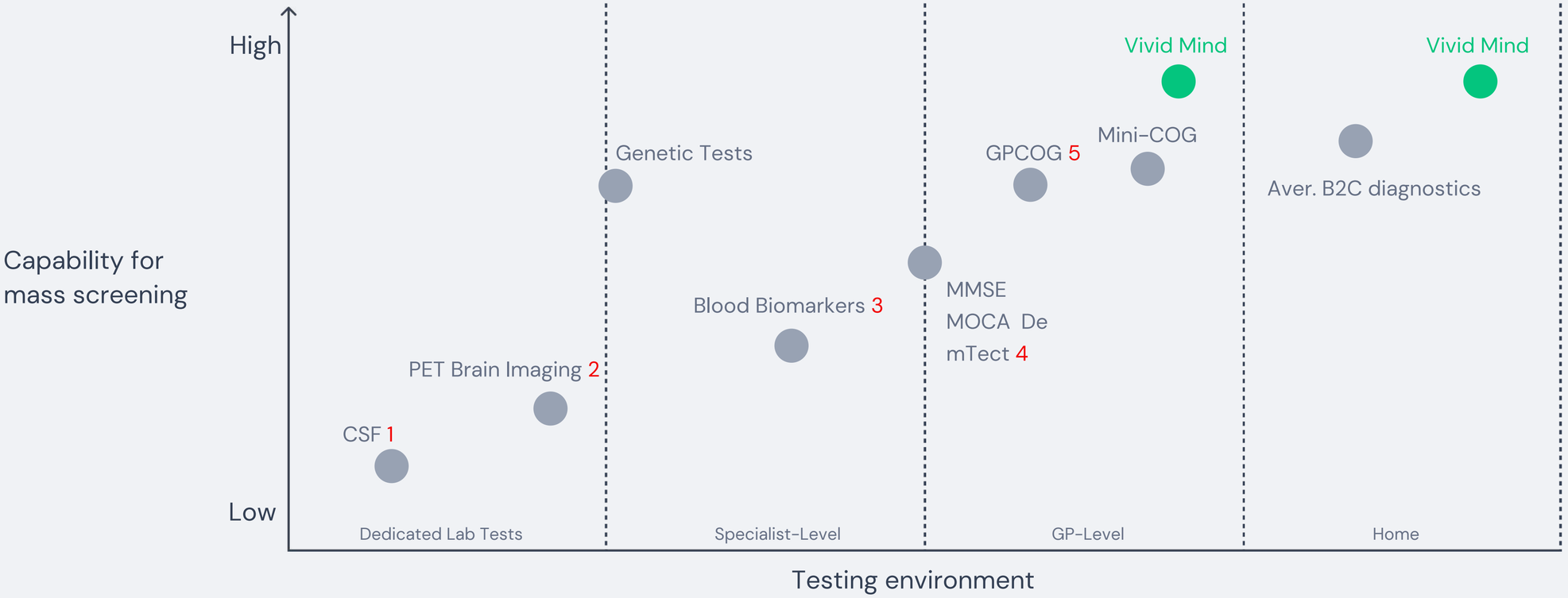
Work on vocal biomarkers to produce voice-based tests (AcceXible and Winterlight Labs) - 15 minutes to conduct but more precise than paper tests.

VividMind analyzes voice characteristics instead of semantics to obtain a 10-second test.



HERE IS WHERE MEMEO HEALTH APP FITS IN

no tools based on objective, physical parameters are available to gps and consumers today.



1. P-Tau & A-Beta 1-42
2. Radiology – assessment of plaque level
3. Protein fingerprints in the blood
4. Traditional neuropsychological tests
5. General Practitioner Assessment of Cognition
6. Eg. Vocalis Health, Cordio

OUR VALUE PROPOSITION:
OBJECTIVENESS, SPEED AND INCREASED CONFIDENCE IN RESULTS

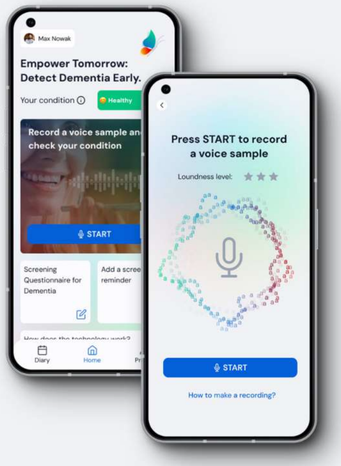
FOR GPs:

The only simple, fast, objective (quantifiable factors, based on physical parameters) and accurate screening tool enabling confident patient referrals and increasing dementia detection in primary care.

FOR FAMILIES:

Simple test that can be administered periodically and followed up with a practical program for strengthening cognitive skills and slowing down dementia.

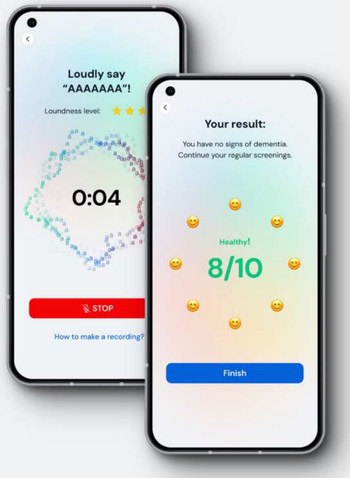
OUR PRODUCTS



Memeo Health

Memeo Health is not just an app; it's a breakthrough in proactive cognitive health management.

Designed for early detection of Alzheimer's disease and Mild Cognitive Impairment (MCI), Memeo Health empowers you to take control of your cognitive well-being right from your fingertips.



Memeo Clinic

Memeo Clinic is at the forefront of cognitive function diagnostics, harnessing AI's power to revolutionize how healthcare professionals approach the diagnosis of cognitive impairment.

This advanced tool, accessible via a smartphone, represents a significant leap forward in patient care.

Memeo Web Diagnostics

Memeo Web Diagnostics is a groundbreaking platform designed to seamlessly integrate advanced cognitive diagnostics into your website.

It's a tool that transforms your site into an active participant in promoting cognitive health awareness and management.

VM LEVERAGES ITS PROPRIETARY TECHNOLOGY OF PRECISE SPECTRUM CAPTURE

Patented sound processing technology

- It measures all three parameters of voice (frequency, amplitude and phase).
- Unique focus on phase drift (measures brain-to-speech organs signal distortion).
- Super-accurate spectrum images yield themselves well to ML processing.

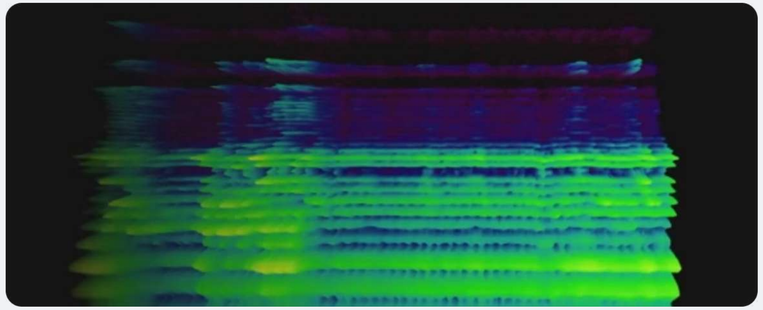
Big-data potential

- Massive amounts of information contained in short recordings help differentiating between various types of dementia.
- Leveraging evidence-based research.

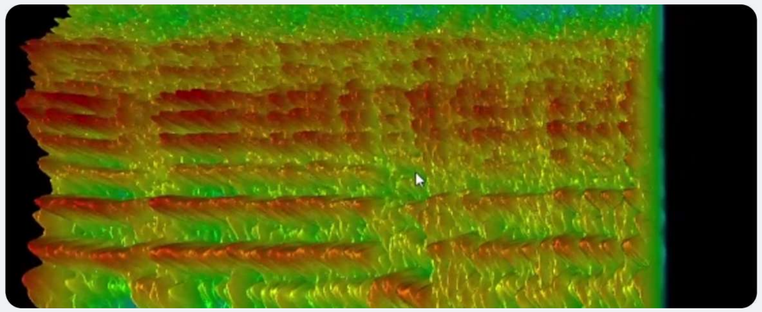
Potential to differentiate various stages of disease:

- Clinically validated 10-point scale will accelerate referrals after VM launch.

Traditional Sound Spectrum



Sound Objects Spectrum



THIS IS BIG DATA!

EVEN A 10-SECOND RECORDING RESULTS IN MASSIVE DATA OUTPUT.

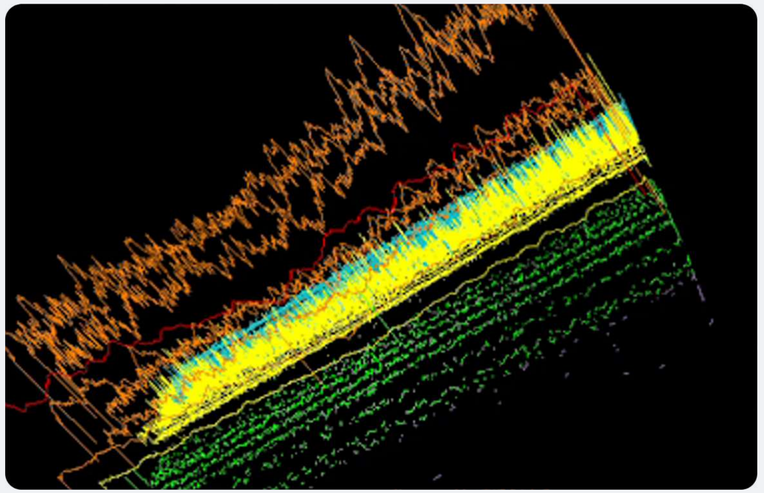
DATASET FOR A 10-SECOND RECORDING

INPUT:

- 10 seconds
- 22,000 samples per second
- 500 filters

OUTPUT:

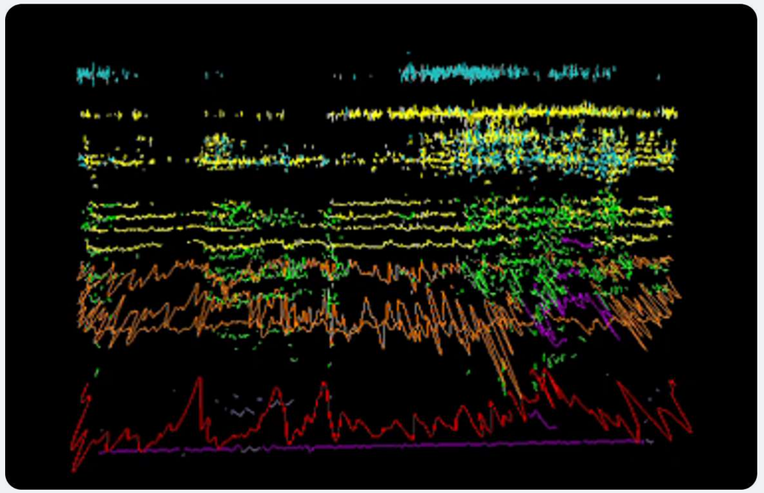
- Up to 110,000,000 points



Healthy:

Number of partials : 18 241

Number of data points: 166 243



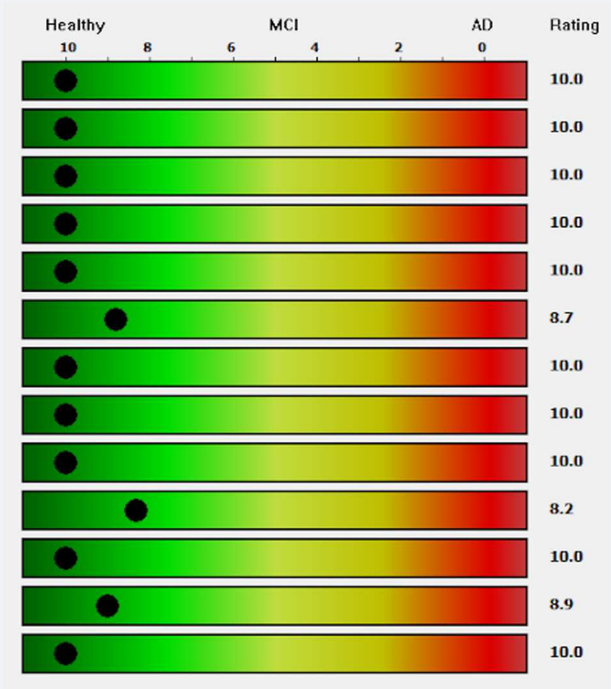
Dementia:

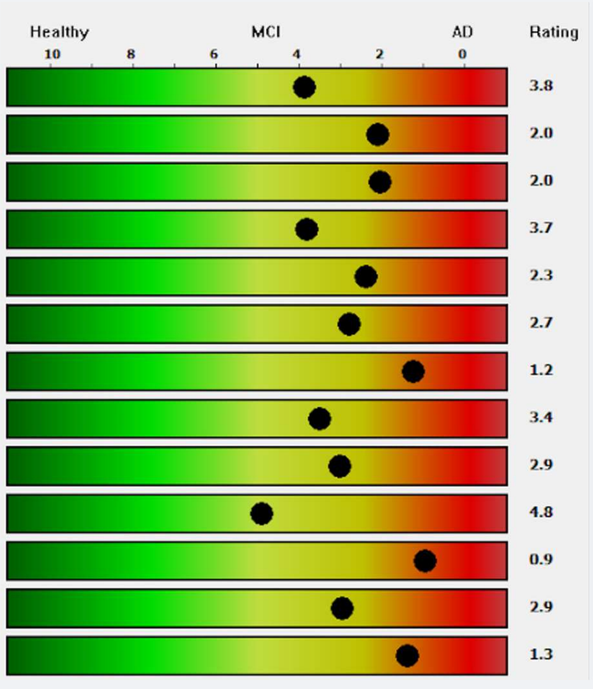
Number of partials : 4 805

Number of data points: 44 534

THE PRODUCT: A PRECISE SCREENING SCALE AND SELECTED PARAMETERS

	Healthy – 9,6	Dementia – 2,6
Amplitude – Standard Deviation	10.0	3.8
Amplitude – Shimmer	10.0	2.0
Amplitude – Lean	10.0	2.0
Frequency – Standard Deviation	10.0	3.7
Frequency – Jitter	10.0	2.3
Frequency - Lean	8.7	2.7
Phase – Standard Deviation	10.0	1.2
Phase – Drift	10.0	3.4
Sound Objects / Harm	10.0	2.9
Low Harmonics Energy	8.2	4.8
Sub Harmonics Energy	10.0	0.9
Harmonic to Noise Ratio	8.9	2.9
Harmonics Tilt	10.0	1.3





ONGOING INTENSIVE COOPPERATION AND TESTING WITH ACADEMIC PARTNERS

Cooperation agreements with medical universities and their hospitals

- Data gathering (300+ recordings & clinical descriptions already received and analyzed).
- Neurology and psychiatry consultations.
- Cooperation on research (e.g., use of phase as an important sound parameter and biomarker candidate).

Wroclaw and Szczecin Medical Universities

- Sample of 28 recordings
- 100% sensitivity; 81% specificity; 50% precision; 82% accuracy.

Lodz University Neurology Department

Search for other research partner candidates underway

- University of South Florida Health Voice Canter (coordinators of the NIH-funded Bridge to AI program).
- NIHR Cambridge Biomedical Research Centre.
- Nicolaus Copernicus University in Torun, Cognitive Science Department

KEY PARAMETERS OF THE VM DETECTION SYSTEM

On a "blind" study conducted in the summer of 2022 to test the early performance of the VM technology, carried out by Professor Jan Konopacki from the Neurological Clinic of the Medical University in Łódź, Poland, we received 33 recordings suitable for analysis.

Out of these, 5 recordings were not analyzed due to their poor technical quality. Our detection system recorded the following parameters.

⚠ Our detection system is still in the development phase, and its parameters may change in the future.

Sensitivity

The percentage of sick individuals correctly identified by the system.

100%

Specificity

The percentage of healthy individuals correctly identified as not having the disease by the system.

81%

Accuracy

The percentage of individuals correctly identified by the system, whether they have the disease or not.

82%

Precision

The percentage of individuals identified by the system as sick who are actually sick.

50%

Robustness

The system's resistance to errors and noise in the data.

In progress

Detection threshold

The smallest change in voice that the system can detect.

In progress

Quantitative marking threshold

The smallest change in voice that the system can quantify.

In progress

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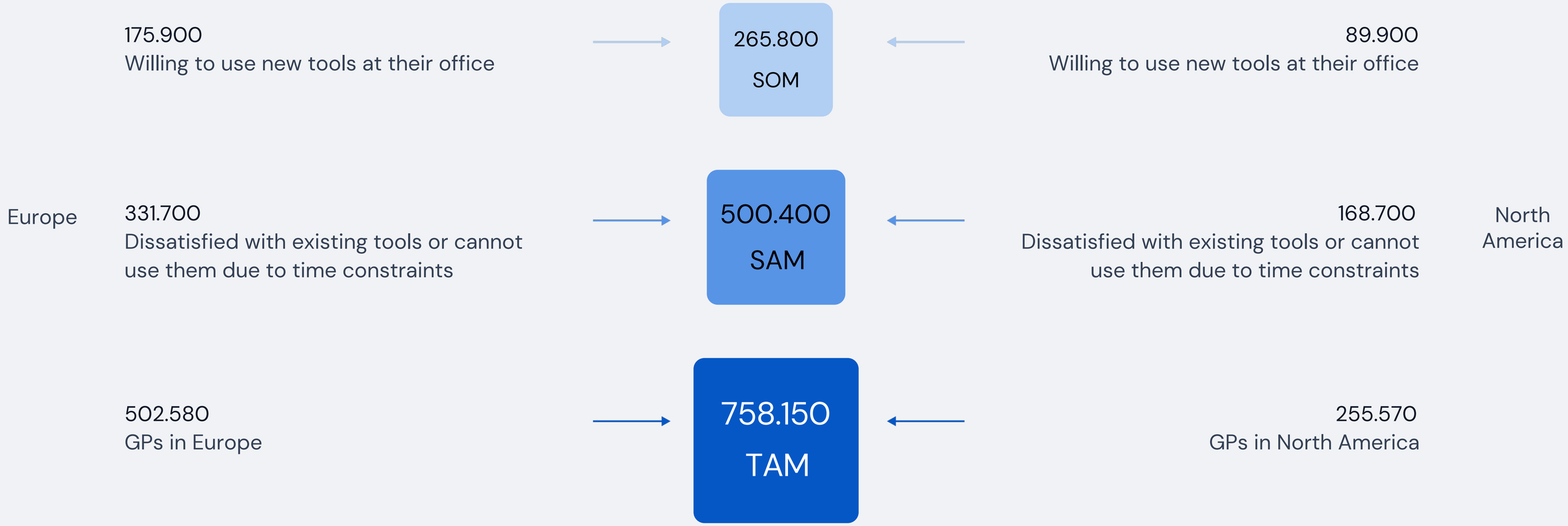
GP MARKET:

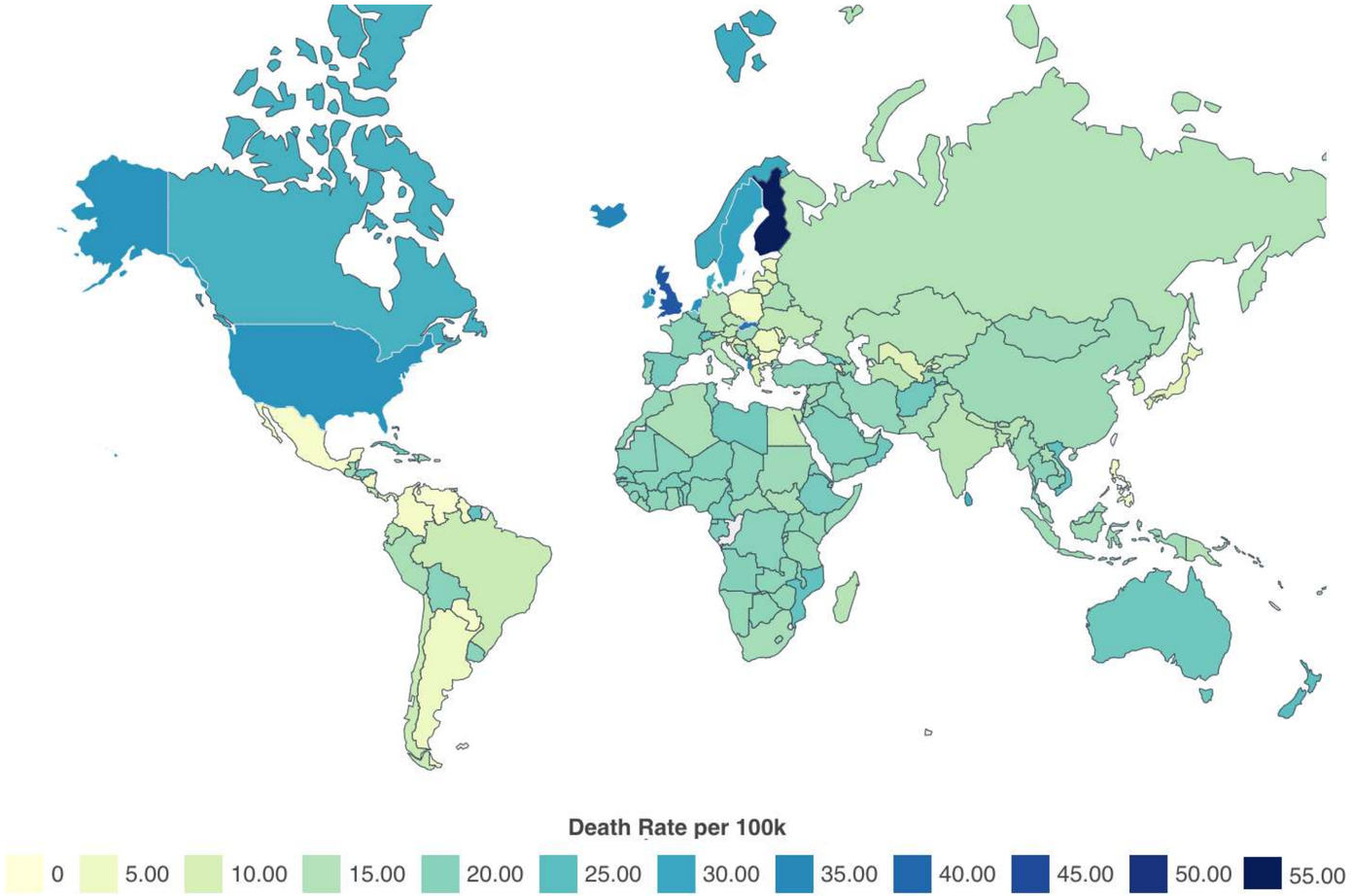
TIME-CONSTRAINED GPS WILLING TO IMPROVE THEIR REFERRAL ACCURACY



VM'S BEACHHEAD MARKETS FOR MEMEO.CLINIC

Criterion	Netherlands	Belgium / Flanders	Canada	UK / Scotland
National Dementia Plan with focus on diagnosis	✅	✅	✅	✅
GP guidelines allow and encourage diagnosis	✅	✅	✅	❌
Conducive funding mechanism	✅	✅	❌	✅
Elderly-focused programs available on large scale	✅	✅	✅	✅
Support for innovative digital tools	❌	❌	✅	❌
# GPs (thousands)	12,9	13,7	46,8	54,5

VM'S POTENTIAL MARKET FOR MEMEO.HEALTH



HIGH-LEVEL PRODUCT ROADMAP: FOCUS ON B2C, PRIMARY CARE

- Digital therepeutics application (B2C);
- Simple tool for GPs and screening;
- Offer for pharma companies.

Tool for specialists (sophisticated monitoring).

Platform allowing to differentiate types of dementia and identifying its very early markers.

Horizon 1

Horizon 2

Horizon 3

ROADMAP FOR MEMEO HEALTH APP

Q1 2024

Development and Optimization of Core Features

- Testing and Optimization: Focus on collecting user feedback and optimizing existing features (measurement, results, adding caregivers).
- User Interface Improvement: Enhance the UI/UX design for easier navigation and usability.

Q2 2024

Introduction of Educational Module and Community Support

- Educational Module: Add a section with information about MCI and Alzheimer's disease, including care tips.
- Community Support: Launch a forum or support groups within the app for users and caregivers.

Q3 2024

Implementation of Daily Activity Journal and Medication Reminders

- Daily Activity Journal: Functionality for users to log daily activities.
- Medication Reminders: Introduce a system for medication intake reminders and therapy schedules.

Q4 2024

Development of Interactive Cognitive Exercises and Wearable Device Integration

- Interactive Cognitive Exercises: Introduce games and exercises that stimulate cognitive functions.
- Wearable Device Integration: Start collecting data from smartwatches or fitness bands for better health monitoring.

ROADMAP FOR CLINICAL TRIALS AND CERTIFICATION PPROCESS

Preliminary Preparation and Planning

- Regulatory Analysis: understand requirements for CE Class 2A certification
- Project Team Formation: regulatory, clinical, and technical experts..
- Product Review: ensuring technical and functional requirements are met.

Clinical Trial Design

- Research Protocol Development: objectives, methodology, and participant selection criteria.
- Regulatory Consents: start obtaining regulatory and ethical approvals.
- Selection of Clinical Centers: select clinical centers for conducting the trials.

Initiation of Clinical Trials

- Participant Recruitment: begin recruitment of clinical trial participants,
- Research Staff Training: train research staff (study protocol, use of VM module).
- Progress Monitoring: monitoring of the trial's progress.

Data Analysis and Reporting

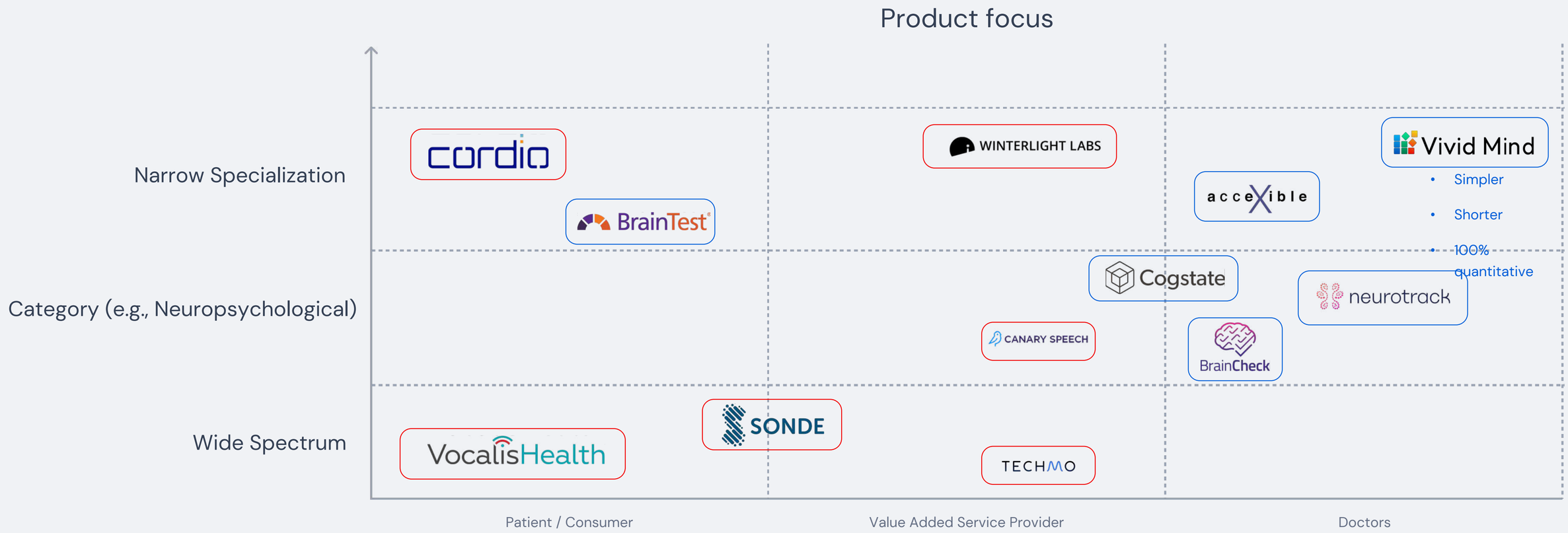
- Data Collection: collection and data analysis (focus on performance and impact).
- Preliminary Reports: reports for internal and external review,.
- Certification Preparation: documentation necessary for the CE certification process.

Q1 2024 Q2 2024 Q3 2024 Q4 2024

FINANCIAL HIGHLIGHTS

2024 First Revenues	**2027** Cash Break-Even	**€ 200M+** 2030 Revenues
PLANNED GRANTS: **€ 2M**	PLANNED EQUITY FUNDING: **€ 11M** € 1M - Seed (H1 2024) € 10M - Series A (2025)	FUNDING BEFORE BREAK-EVEN: **€ 13M**
Funding to date:	Grants: **€ 200K**	Equity (F&F, business angels): **€ 100K**

AMONG VOICE-BASED DIAGNOSTIC PLAYERS WE ADDRESS WELL BOTH GPS AND CONSUMERS



OUR TEAM

Jędrzej Kardach

CTO, Co-founder

Graduate of Applied Mathematics at LSE. Data specialist who created solutions in artificial intelligence in collaboration with academics and Princeton University for MarTech startups. Founded dri.io.

Dariusz Wiatr

Business Development, Co-founder

Holds an MBA degree from Wharton School. Former Partner at Gemini Consulting, Accenture (San Francisco, CA), and McKinsey & Co. Business Angel and VC investor.

Adam Pluta

Sound Director, Co-founder

Former board member of a company listed on GPW. Founder of Sound Object Technologies S.A.

Juliusz Donajski

CEO, Co-founder

One of the pioneers of the Internet in Poland. Entrepreneur with many years of experience. Managed several research and development projects.

Elżbieta Trypka, Ph.D.

Chief Medical Scientist

Associated with the Medical University of Wroclaw. Specialist in the field of psychiatry. Lecturer and board member of the Polish Society of Neuropsychiatric. Focuses on neurodegenerative diseases and early diagnostic methods.

Piotr Zioło, Ph.D.

Data Scientist

Doctor of Mathematics, Master of Computer Science. Expert in the field of artificial intelligence, collaborated with the Polish Academy of Sciences and Princeton University. Thanks to his knowledge, experience, and commitment, Spectrum Insights pushes the boundaries of what is possible in medicine and technology.

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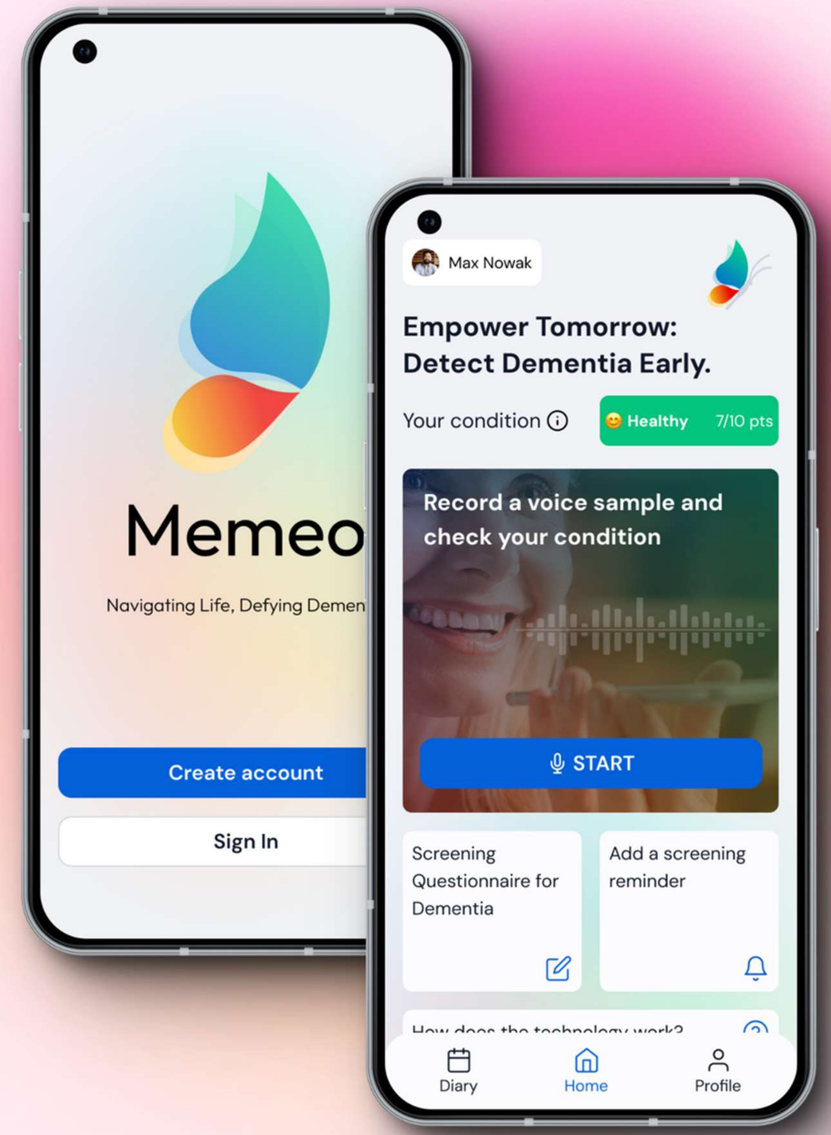

Thank you

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