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O'VISTA

WHITE PAPER

Real-Time, Privacy-First
Analytics for Cognitive Health

<https://ovista-insight.com/>

O'VISTA



Introduction

Cognitive disorders are among the most difficult conditions to diagnose early and manage effectively. Traditional tools—like MMSE or MoCA—rely heavily on subjective reporting and manual scoring, leaving room for errors, delays, and inconsistent outcomes.

O'VISTA addresses this challenge with a new standard in digital diagnostics. By combining research-grade eye-tracking technology with AI-powered analytics, we provide clinicians, researchers, and operators with objective, real-time insights—all while protecting patient privacy by design.

The Internal Team



Pieter H. Dubbeld

COO



Rose Turner

Project Manager



Mathew Nasr

Lead Developer



Market Need & Problem Statement

Cognitive decline, neurodegenerative disorders, and stress-related impairments impose a growing burden worldwide. Current diagnostic methods rely heavily on costly neuroimaging, invasive biomarkers, or subjective questionnaires. These approaches often lead to delayed detection, inconsistent results, and high barriers to access.

In parallel, defense and security organizations face urgent demands for real-time cognitive readiness monitoring. Soldiers and operators must remain vigilant, but existing screening tools are slow, non-scalable, or poorly suited for field environments.

The lack of standardized, scalable, and privacy-conscious solutions creates a global gap in both clinical and defense domains – a gap that O'VISTA is uniquely positioned to address.

Target Users & Market Segments

O'VISTA is designed for diverse but complementary user groups:

- Clinicians – Neurologists, psychologists, and geriatric specialists who require standardized eye-movement assessments for early detection and monitoring.
- Hospitals & Research Centers – Institutions seeking reliable, non-invasive tools for large-scale studies and clinical trials.
- Defense & Security Agencies – Military units and security organizations needing cognitive readiness and fatigue detection in real time.
- Patients & Caregivers – Individuals seeking accessible, non-invasive assessments for early awareness of cognitive changes.

Technology Architecture

The O’VISTA platform combines hardware flexibility with advanced software architecture:

- **Hardware Layer:** Standard cameras for clinics; ruggedized optics (e.g., binocular-based devices) for field deployment.
- **Software Core:** A web-based orchestration system enabling two-screen synchronization, precise stimulus delivery, and sub-frame event logging.
- **AI Analytics Engine:** Real-time computation of latency, error rates, and pupillary responses, generating clinician-ready reports.
- **Privacy & Security Layer:** Data anonymization, k-anonymity, noise injection, and encrypted exports to ensure compliance with HIPAA, GDPR, and defense protocols.
- **Integration Interfaces:** APIs for interoperability with Electronic Health Records (EHR/EMR), research databases, and defense C4ISR systems.

Intellectual Property & Competitive Advantage

O’VISTA is protected through a defensive disclosure and pending intellectual property filings, securing its dual-use deployment architecture and privacy-preserving analytics pipeline.

Unlike existing digital tools such as Cogstate or Cambridge Cognition, O’VISTA offers:

- Research-grade precision within a browser-based workflow.
- Dual-use adaptability for both clinical and defense contexts.
- Built-in privacy safeguards, allowing compliant data sharing without raw logs.

This combination of scalability, privacy, and technical rigor creates a competitive moat around O’VISTA’s core offering.



The O’VISTA Approach

Flexible Assessment Platform

O’VISTA allows professionals to go beyond rigid tests. Clinicians and researchers can use validated protocols (MMSE, MoCA, ACE-III) or build custom interactive tasks that engage patients with images, videos, sounds, or memory-based exercises. Advanced AOI (Area of Interest) tools let users define specific regions in visual stimuli to analyze how attention and gaze behave in detail.

AI-Driven Analytics

Every eye movement—fixation, saccade, or regression—is captured with millisecond precision. O’VISTA’s AI engine processes this data instantly, generating metrics such as:

- Fixation duration
- Saccadic velocity and distance
- Regression count
- Gaze disparity

These metrics are then classified into meaningful categories, identifying whether patterns indicate mild, moderate, or severe impairment. Visualizations like heatmaps, timelines, and trend graphs make the results clear at a glance.





Automated Reporting & Recommendations

O’VISTA transforms complex data into easy-to-read reports that combine visuals, AI-generated insights, and clinician commentary. Each report highlights the patient’s current cognitive status and offers therapeutic recommendations or training exercises. This ensures the data is not just diagnostic, but actionable.



Continuous Monitoring & Support

Beyond single assessments, O’VISTA supports longitudinal tracking. Clinicians and patients can see progress over weeks or months, while the system flags concerning trends for early intervention.

All data is safeguarded with GDPR and HIPAA-compliant privacy controls, using advanced anonymization and encryption. Optional expert review ensures reliability, while virtual consultations extend support outside the clinic.

Why O’VISTA Stands Out

- Real-time precision: from signal capture to insights without delay.
- Privacy-first architecture: sensitive data never leaves protected environments.
- Dual-use adaptability: equally effective in clinics, research labs, and defense settings.
- Scalable design: from a single provider to global multi-location networks.

Optional Blockchain Integration (Future Pathway)

O’VISTA is fundamentally a privacy-first, standardized cognitive assessment platform. Blockchain is not required for its operation, but the architecture allows for optional integration where transparent data handling or incentive mechanisms could add value. Potential future applications include:

- **Transparent Licensing:** Research partners could license O’VISTA modules through blockchain-based contracts, ensuring verifiable and auditable transactions with minimal administrative effort.
- **Participation Incentives:** Patients or volunteers contributing anonymized data to large-scale research studies could optionally receive tokenized acknowledgments or benefits, encouraging engagement while respecting ethical standards.
- **Premium Access Control:** Clinics and collaborators might unlock advanced modules or analytics features through secure, blockchain-mediated keys, adding flexibility to platform distribution and monetization.

This integration pathway is a future-oriented add-on, not a core dependency. It ensures that O’VISTA remains adaptable to evolving data-sharing ecosystems, while today’s deployments remain fully operational without blockchain components.

Roadmap & Implementation Plan

O’VISTA will follow a phased development and deployment roadmap:

- **Phase 1: Pilot Studies** – Deploy in small clinical and research sites; validate antisaccade benchmarks and reporting workflows.
- **Phase 2: Clinical Validation** – Conduct larger trials to establish normative baselines and validate against gold-standard assessments.
- **Phase 3: Scaled Deployment** – Roll out across multi-site healthcare networks and defense units.
- **Phase 4: Extended Modules** – Enable blockchain-based transparency and incentive mechanisms, advanced analytics, and additional task batteries.



Contact

For further information regarding this project, please contact us:

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|--|---|
|  Address | FLOTMYRGATA 183, 5525 Haugesund, Norway |
|  Email | petercascolne@outlook.com |
|  Website | https://ovista-insight.com/wp |
|  Phone | (49) 179 11 53 215 |