



AEGEUS



Call: HORIZON-EIC-2022-PATHFINDEROPEN-01

(EIC Pathfinder Open 2022)

Topic: HORIZON-EIC-2022-PATHFINDEROPEN-01-01

Type of Action: HORIZON-EIC

European
Innovation
Council



**Funded by
the European Union**

AEGEUS – *A Novel EEG Ultrasound Device for Functional Brain Imaging and Neurostimulation*

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SAPIENZA
UNIVERSITÀ DI ROMA



AKA Biotech



Háskólinn
á Akureyri
University
of Akureyri



Rome, June 20th 2023

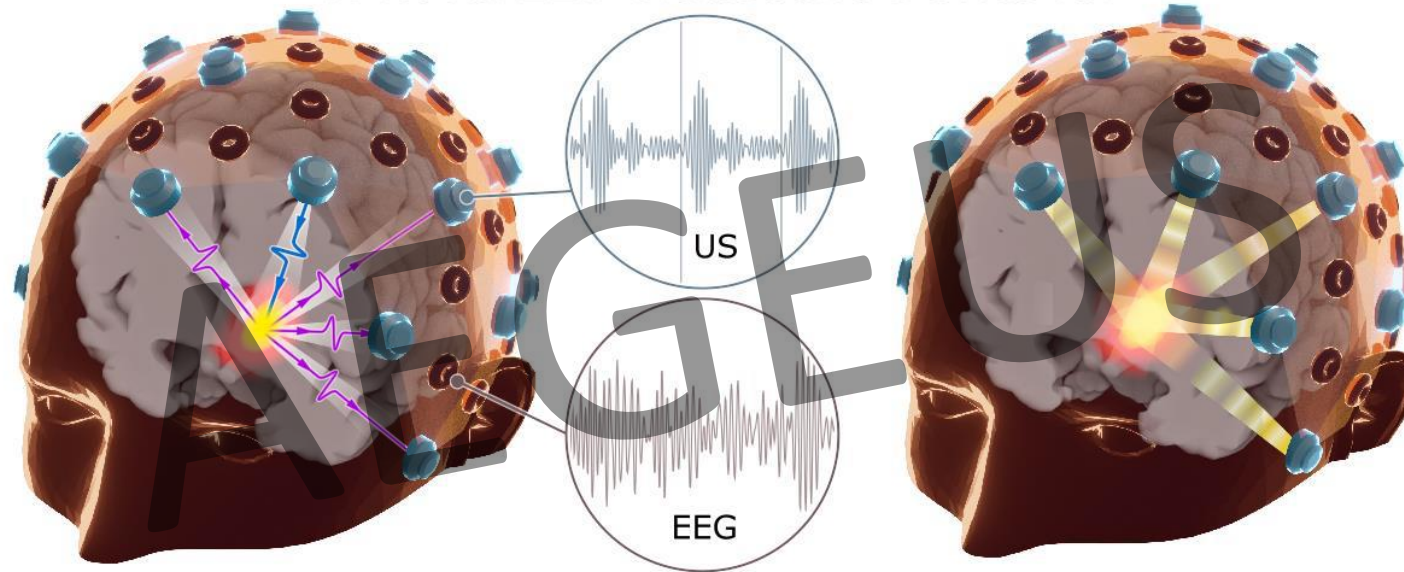


The beginning: start with the idea

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A Novel EEG Ultrasound Device for



A) Functional Brain Imaging

Improved Spatiotemporal Resolution
Joint EEG/US Functional Imaging

B) Neurostimulation

Flexible and Portable
US-based Neurostimulation

Goal: to develop a **radically new diagnostic and therapeutic device** (wearable headset) for neurological applications which combines a highly innovative **ultrasound component** for brain imaging and focused stimulation of brain regions.



Consortium building process

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- The core group of partners (US experts, neuroscientists, clinicians) were looking for an EEG expert for the US/EEG combination, and contacted me with this specific idea in mind
- Two of the partners (including myself) knew an SME → we introduced them to the consortium
- I added an Associated Partner with specific expertise needed for a core task
- The Associated Partner introduced us to an Innovation Manager → the Consortium was complete (6+1)
- Start with the idea, look for the right partner (not the other way around)
- Important: make sure that all partners are aware and agree that **incremental ideas must be thrown out**



Consortium

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HASKOLINN A AKUREYRI
(Cognitive Neuroscientists,
Clinicians)

FRAUNHOFER INSTITUT
MEVIS (Coordination,
Physicists)

FRAUNHOFER INSTITUT
IMBT (Electronic
Engineers, Physicists)

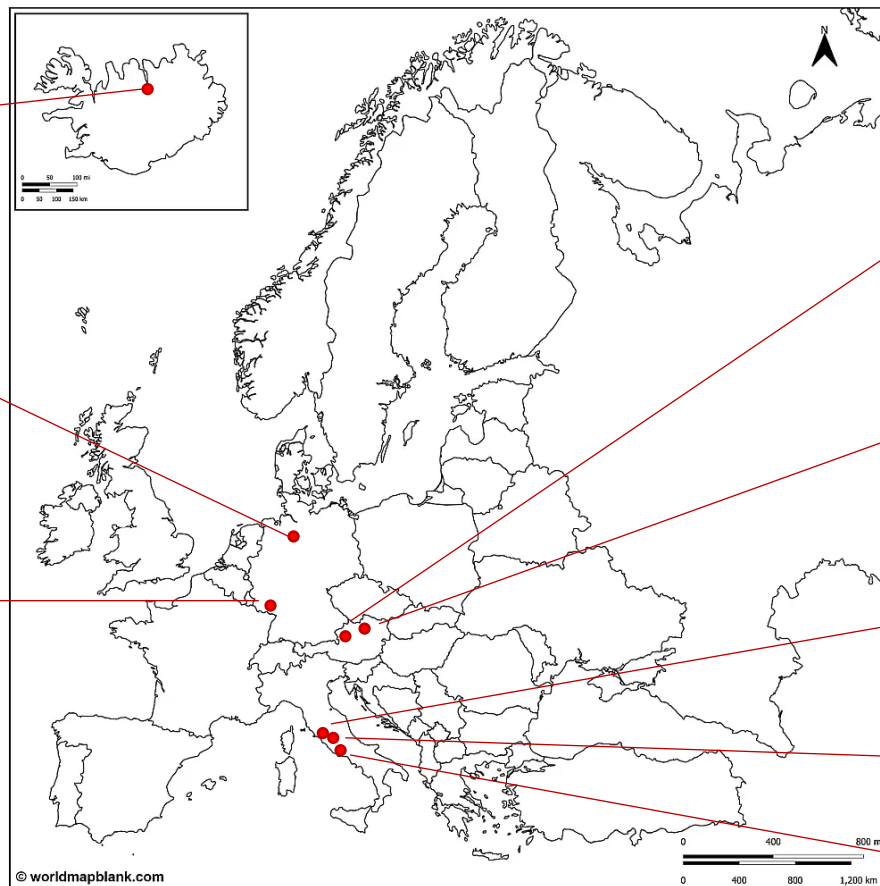
GEMEINNUTZIGE SALZBURGER
LANDESKLINIKEN
BETRIEBSGESELLSCHAFT
(Neuroscientists, clinical Partner)

G.TEC MEDICAL ENGINEERING GMBH
(SME in EEG technology)

SAPIENZA (Biomedical
Engineers)

TOR VERGATA (Medical
Physicists, Associated
Partner)

AKA Biotech
(SME, Management
and Innovation)





Proposal preparation

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- We started early (November 2021, the call was open in February 2022 and closed on May 2^o 2022)
- Regular bi-weekly meetings with an agenda, objectives, homework 😊
→ the project management started with the proposal preparation
- AEGEUS was funded at the first attempt 😊
- Shared documents, highly collaborative consortium, everyone played their part
- Initial meetings: necessary to define the idea, share expertise, get to know each other, build trust and commitment to the project



The paradigm shift

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- Innovation Manager → support by APRE and by the Grant Office, a webinar like today
- Sprouting & pruning:
 - In the first 4 months we produced a huge amount of text, figures, tables
 - In the last month we distilled 17 carefully polished pages, half of them with **new content**
 - **The new content was crucial to the success of the proposal!**



Strengths

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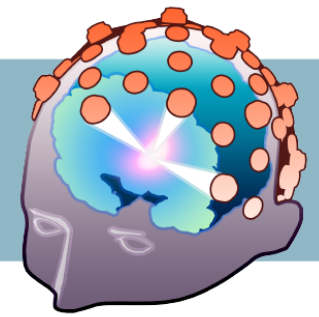


- Long-term vision: How convincing is the vision of a radically new technology towards which the project would contribute in the long term?
 - Concrete and ambitious science-towards-technology breakthroughs, mostly related to the US component of the device, with concrete and plausible objectives organized in a coherent and effective work plan.
 - The high-risk/high-gain aspects of the project are clearly exposed.
- Methodology, models, objectives → we are used to these aspects



Strengths

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- Implementation: consortium, workplan
- Interdisciplinarity: physicists, electronic and software engineers, as well as neuroscientists including neurobiologists and clinicians in the field of neurology
- Clear impact (20%), including: long-term impact, innovation potential, exploitation, dissemination and communication plan, empowering key actors
- ...but also: open science practices, data management plan, ethics, impact on societal challenges (sustainability, gender dimension) → avoid platitudes, these section needs to be well planned and organized



Right-to-react

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«The evaluation committee received and examined the additional information provided via the rebuttal procedure. Such information was found to be relevant to specific issues raised by the evaluators and has been duly taken into account during the discussion of the evaluation committee.»

At pag. 4, same section, we state that “It is further necessary to **eliminate or algorithmically compensate for cross-talk between the two modalities**. (...) Introducing longer and higher power pulse sequences, the stimulation component further increases the risk of crosstalk with the EEG system. (...)Therefore, the high-risk research approach of project AEGEUS will be backed up by an extensive plan for comprehensive simulation for system optimisation, an incremental development approach with regular and systematic interim tests for functionality, safety, and feasibility, and measures for mitigation and contingency as described in Table 3.2e.”



AEGEUS today

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- Started on March 1° 2023
- One amendment already accepted, another on the way
- First deliverables submitted
- Interaction with the PO



...wrap up

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- **The idea:** radically new, high risk-high gain, with a clear impact, a strong implementation and a carefully polished presentation
- **The consortium:** made of the right experts, interdisciplinary, collaborative, aware of the call (or willing to become so)
- **Science-toward-technology:** SME, concrete exploitation and dissemination plans
- **Proposal preparation:** everything needs to be as close to perfection as possible (text, figures, tables, graphics, color schemes... anything that contributes to clarity and conciseness, enhancing the idea)
- **Ask for help:** Grant Office and APRE provided invaluable help → crucial to the success of the project.
- **Fall in love with your idea:** you will have to perfect it for months (and work on it for several years, if it is funded)
- **Choose your consortium wisely**



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Grazie!



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Fraunhofer
MEVIS

Rome, June 20th 2023