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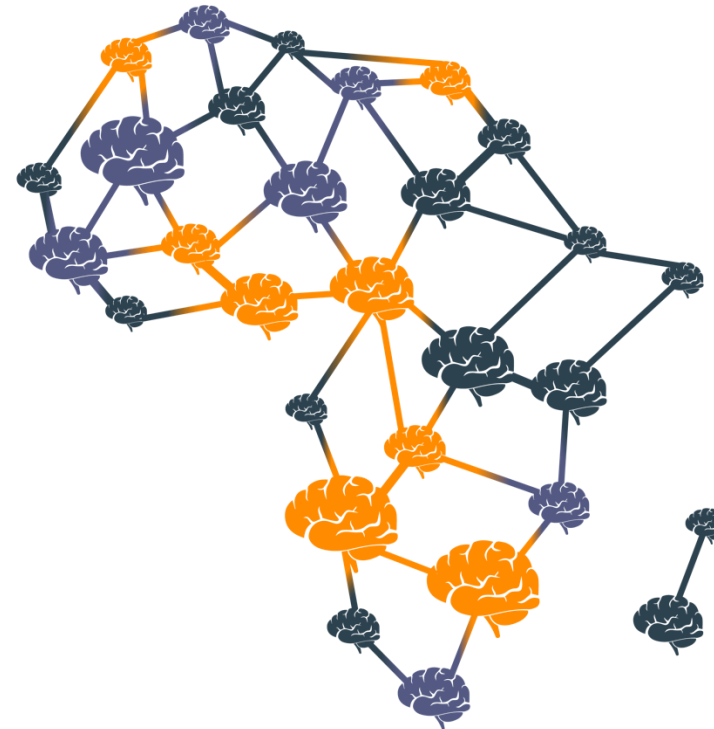
NatMEG



What EEG system to get?

Robert Oostenveld
Mikkel C. Vinding

9-14 June 2025
Port Harcourt, Nigeria



**African
Brain
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Disclaimer

I am not associated with any company, but happen to personally know some people at some of the EEG companies. Furthermore, I am a customer of some of the companies. These aspects might bias me a bit.

Also, I happen to know the European EEG systems best. I should add that a lot of the international leading EEG companies seem to be based in Europe, and actually quite a few are in the Netherlands NL

What is the best EEG system?

There is no such thing as ***the best*** system. That is similar as “what is the best car?” That would be a racecar if you want to go fast, a family car for most situations, a van if you have a lot of stuff to transport. So it depends on what you want to do with it. Features that seem attractive, such as wireless, might also cause problems in case the wireless connection is not stable.

Think not only about the EEG system, but also about the caps and the software.

Think not only about the EEG channels, but also whether you need other channels.

Some amplifiers include bipolar channels, some have it as an optional add-on box, some don't support it.

Think also about trigger input, especially if you need carefully controlled timing in the tasks.

EEG companies that are used a lot in *research* labs and that I would recommend

BrainProducts <https://www.brainproducts.com>

Biosemi <https://www.biosemi.com>

ANT Neuro <https://www.ant-neuro.com>

TMSI (part of the Artinis company, also selling fNIRS) <https://www.tmsi.artinis.com>

Gtec (both for the 8ch Unicorn and the 32ch Nautilus) <https://www.gtec.at>

MBrainTrain <https://mbraintrain.com>

NeuroScan <http://neuroscan.com>

NeuroElectrics Enobio <https://www.neuroelectrics.com>

What about clinical EEG systems?

Clinical EEG systems are different in two important aspects:

- They are often approved as medical device, which may (or may not) be relevant for reimbursement from health insurance companies and legal reasons.
- They often come with software that is optimized for a **clinical workflow** (including review of the EEG, montages, and systematic archiving in a patient database).

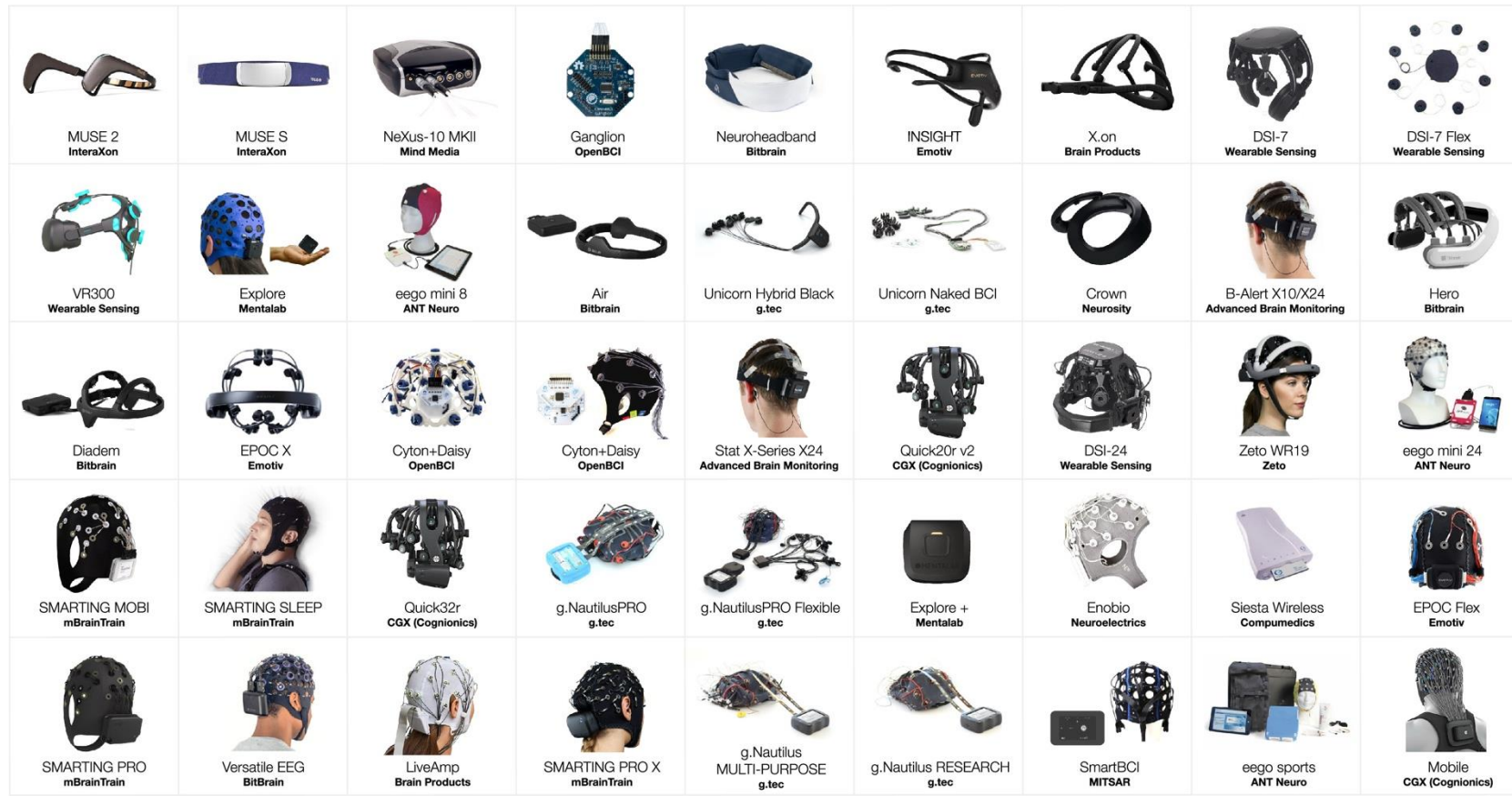
My personal impression is that **clinical systems** are in general slightly less advanced (i.e., slightly old-fashioned) than research systems, because the companies cannot update clinical certified products that easily and quickly.

Research systems often come with minimal software for data acquisition and no analysis. BrainProducts is an exception, as they have an elaborate software package (“BrainVision Analyzer”) for analysis. Note that most EEG research uses open source software (see the other lecture about this).

Niso et al (2023) Wireless EEG: A survey of systems and studies.

<https://doi.org/10.1016/j.neuroimage.2022.119774>

This includes a lot(!!) of low-cost systems. Regretfully the Gtec Unicorn was just released too late and not included in the comparison.





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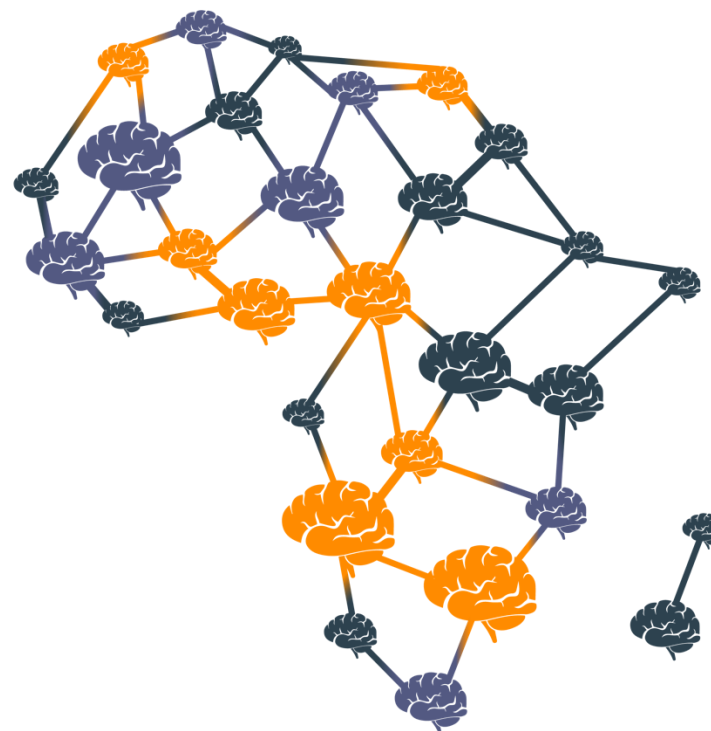
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