



Dry Sensor Innovation Challenge

Application Due Date: January 30th, 2011

Abstract:

Quantum Applied Science & Research, Inc. (QUASAR) is launching the Dry Sensor Innovation Challenge to promote novel applications of Dry EEG Sensors. This challenge offers researchers whose work would substantially benefit from the use of dry EEG sensors the opportunity to use QUASAR's revolutionary Dry Sensor Interface (DSI) technology to augment their projects. Exploring the advantages of dry-sensor technologies in clinical, academic, or commercial applications is the principal goal of this competition.

QUASAR is offering eligible proposers the opportunity to use its DSI EEG headset technology for 1 month at no charge. QUASAR's proprietary DSI technology has been optimized for **ease of use, comfortable long-term wear, ambulation, and, of course, signal quality**. Competition winners will receive use of QUASAR's DSI 10/20 EEG headset, associated data acquisition module, and advanced real-time cognitive assessment software, in addition to on-site set up and hands-on training.



1 Research Objectives

The scope of this competition encompasses a wide range of applications that include but are not limited to: brain-computer interfaces (BCI), clinical diagnostics (epilepsy, stroke, migraine, degenerative disorders, psychiatric disorders, ...), neuromarketing, neurofeedback, cognitive workload monitoring, augmented cognition, training and education, life quality enhancement, peak performance training, cognitive fatigue assessment, etc., or any application where the use of wireless dry sensor EEG technology is critical or creates a transition path to real-world implementation. Successful proposals should be geared to produce one or more of the following:

- **Lead to peer-reviewed publication:** The proposer intends to produce a paper for publication in a peer-reviewed industry or scientific journal. Papers would ideally illustrate the advantage of using dry-sensor EEG technologies for the proposer's particular application.
- **Pilot data for subsequent grant proposal:** QUASAR seeks to support the collection of clinical pilot data to be used in preparing applications for future proposals. Pilot data should reflect the advantages of using dry-sensor technologies in EEG. A plan for proposal and funding mechanism should be identified and described.
- **Exclusive dry-sensor research or application:** The proposer's research or application looks at the exclusive advantages conferred and capabilities allowed by dry-sensor technologies in EEG, and not possible with conventional wet EEG systems (e.g., extended use in ambulatory environments).
- **Validation/Commercialization of product:** The proposer should clearly demonstrate how QUASAR's dry-sensor EEG technology will be instrumental in the validation and/or commercialization of a product.
- **Dry/Wet validation:** Prospective validation studies comparing signal quality and usability benefits and drawbacks of dry EEG sensors over conventional wet EEG sensors.

Eligible proposals may involve a variety of EEG applications as they pertain to these objectives. Proposals should clearly detail the objective(s) and application(s) in which the proposer intends to use QUASAR's EEG system. Proposals will be judged by QUASAR and competition winners will be determined according to the review criteria outlined in Section 3. The application request form is attached along with this document.

2 Award Information

The number of awards is contingent upon the submission of a sufficient number of meritorious applications. Proposers may submit more than one application provided that each application is scientifically distinct.



Competition winners will receive a) QUASAR's DSI 10/20 Dry Sensor EEG headset, with 21 selectable sensors positioned according to the 10/20 International System, along with a 12-channel wireless amplifier and receiver, b) QStreamer, QUASAR's data acquisition software, and c) QStates, QUASAR's real-time cognitive assessment module.

The DSI 10/20 is designed for ease of use and comfort. First and foremost is that the data quality is comparable to that obtained with wet-electrode systems but without the need for skin abrasion or preparation and no gels. Secondly, the headset is very easy to wear and remove, even allowing trained users to put it on themselves. Thirdly, users invariably report that it is very comfortable, and if they have had any wet electrode experience, they praise the lack of gels. Fourthly, it is wireless and thus allows recordings without being tethered to a computer. These features enable subjects to wear the headsets for prolonged periods in light ambulatory environments such as home, office or lab, and to remove them for showering and put back on unaided. More information is available on QUASAR's website: www.quasarusa.com

In addition, QUASAR will deliver the system and ensure that equipment and software operate as specified on-site, as well as provide practical, hands-on training in the use of the equipment and software for data collection and analysis.

Short-term lease of QUASAR's EEG system typically costs \$4,000/month plus a setup and installation fee, but Challenge winners will receive both one month's rental and the setup and installation at no charge.

3 Submission Deadline

Full proposals must be received no later than 5:00 pm Pacific Standard Time on Monday the 30th of January, 2012. Proposers are encouraged to submit in advance of the deadline.

4 Eligibility

Any proposer with the skills, knowledge, and resources to carry out the proposed research is invited to apply. Proposer should demonstrate the capability and facilities necessary to conduct human subject research. Eligible proposers include the following:

- Accredited universities
- Non-affiliated individuals
- For-profit organizations
- Non-profit organizations
- State and Federal government entities
- Foreign agencies
- Research facilities



5 Application Review Information

The Dry Sensor Innovation Challenge seeks to promote innovative research and applications of dry-sensor EEG technology. Accordingly, reviewers will focus their evaluation on the proposal's potential to produce results that will promote further use of dry EEG sensors. Proposers will be judged competitively on each of the following review criteria in determination of scientific merit:

5.1 Innovation/Impact

Does the proposal demonstrate a problem in need of dry sensors and provide a creative solution to address the problem?

Does the proposed work provide new information that can be the basis for external funding to continue the research program of interest, or to develop a new product?

Does proposal have the potential to create a significant and sustained impact on the research area involved whose results will be broadly disseminated?

5.2 Approach

Does proposer clearly demonstrate the purpose of their research/application? Does proposer make a compelling case supported by measurable objectives?

Is the project feasible? Does proposer present a reasonable scope of activities that can be accomplished within the time (*1 month*) and resources of the program? Does proposer present an overall strategy that is well-reasoned and appropriate to accomplish the aims of the project?

5.3 Investigators

How qualified is the proposing team? Are the principal investigators, collaborators, and other researchers well-suited to the project? Does prior experience of proposer align well with current proposal? Are the research qualifications of the proposer appropriate?

6 Application & Submission Information

The application form is attached to this document. In anticipation of high volume, proposers are encouraged to submit applications early. Please note Submission Date and Time and Terms & Conditions. All completed applications can be forwarded electronically to info@quasarusa.com or sent via mail to the address below.

Quantum Applied Science and Research, Inc.

Attn: DSI Challenge
5764 Pacific Center Blvd.
Suite 107
San Diego, CA 92121



7 Challenge Terms & Conditions

- I. Proposers must complete all fields on the Application Request Form. Completed proposals must be submitted by 5:00 pm Pacific Standard Time on Monday the 30th of January, 2012.
- II. Proposals are evaluated competitively. QUASAR has sole discretion in evaluating proposals and determining winners.
- III. Do not include confidential information in the proposal. Proposals should convey an idea of the capabilities of the proposers, without divulging proprietary or confidential information.
- IV. QUASAR DSI 10/20 equipment and software will be leased for *1 month* (30 calendar days) free of charge, contingent to QUASAR's lease terms and conditions.
- V. Extended lease (*more than 1 month*) may be considered at cost. This does not affect likelihood of winning competition.
- VI. It is the responsibility of proposer to obtain all necessary IRB approvals for research projects prior to delivery of equipment.

8 Contact Information

For help with administrative issues or questions concerning content, please contact:

Gayle Guy
Phone: (858) 412-1839
E-mail: gayle@quasarusa.com

9 APPLICATION

Organization Name:	Organization Address:
Contact: Title:	Name of Project (if applicable):
WHAT ARE THE GOALS AND OBJECTIVES FOR THIS PROJECT? HOW WILL IT BENEFIT THE ADVANCEMENT OF DRY SENSOR TECHNOLOGY, ITS ADOPTION OR APPLICATIONS?	
WHY IS THE SIGNIFICANCE OR IMPACT, AND EXPECTED OUTCOME OF THIS PROJECT? (E.g. publications, pilot data, product development)	
WHAT IS THE OVERALL APPROACH OR STRATEGY TO ACHIEVE RESULTS? PLEASE PROVIDE BRIEF PROJECT PLAN WITH KEY MILESTONES AND ESTIMATED COMPLETION DATE.	
WHAT ARE THE EVALUATION PARAMETERS THAT WILL DEFINE PROJECT SUCCESS?	
BRIEFLY DESCRIBE TEAM'S AREA OF RESEARCH, AND RELEVANT EEG EXPERIENCE.	
PLEASE INCLUDE ANY ADDITIONAL INFO YOU FEEL IS NECESSARY.	
CONTACT SIGNATURE	
Name:	Date: