Executive Summary

Future Directions in Brain/Neuronal Computer Interaction (Future BNCI) was a project funded within the Seventh Framework (FP7) of the European Commission. The project ran from Jan 2010 until December 2011. Four institutes were responsible for Future BNCI: Graz University of Technology (Austria); Ecole Polytechnique Fédérale de Lausanne (Switzerland); University of Twente (Netherlands); and Starlab (Spain). The first three institutes are universities, and Starlab is a company, providing a mix of academic and commercial representation in the consortium. Future BNCI included an Advisory Board and relied heavily on interaction with other stakeholders in our field.

Interaction with stakeholders was critical, since Future BNCI was a Coordination and Support Action (CSA), meaning that the project's primary responsibilities did not entail original experimental research, or new technical developments. Instead, the project focused on coordinating and supporting research efforts involving brain-computer interfaces (BCIs) and, more globally, brain/neuronal computer interaction. We established four goals: develop clear standardized terminology; identify specific opportunities and roadmaps; encourage discussion and collaboration among key academic and commercial stakeholders; and disseminate knowledge and strategic objectives to established and new groups and to the public at large.

We accomplished these goals through four objectives: literature reviews, targeted discussions, organizing events, and establishing central electronic resources such as a website. The literature reviews include reports on the state-of-the-art in different BCI components and extensive review, commentary, and analysis in a 250+ page roadmap and a book with Springer publishing. We coordinated targeted discussion through online groups such as LinkedIn, a cluster teleconference, email announcements and many individual email discussions, presenting work at conferences and workshops (and ensuing discussions), visiting laboratories in Europe, the United States, and China, publishing articles that promote and facilitate discussion, and informal means. We also organized many events, which fostered targeted discussion. Specifically, we organized one conference in Graz, one booth and talk session in Brussels, and eight workshops in Europe and the United States. The website (future-bnci.org) includes many helpful resources, including introductory information, downloadable articles and reports, videos developed by FBNCI or other projects, a database of references, materials from university classes, slideshows from presentations, links, and information about other EU projects.

Future BNCI had a strong impact on many groups, and this impact will generally continue even though the project is over. The decision makers who are considering the amount and nature of future funding for BCI and BNCI research will benefit from the recommendations in our roadmap, which are directed primarily at them. Other people might use the roadmap and book to help guide other decisions, such as which products to develop, which features matter most, which user groups are most promising for a given technology, or which research questions are most important. Many established stakeholders will also benefit from the many other resources for experts, such as our database of references and available articles and reports. Some of these materials are also appropriate for more general audiences, such as current or potential students, end users, and caretakers. The video materials are also appropriate for all audiences and provide a friendly introduction to the people and issues in BNCI research. Our efforts to promote common terms and standards, through talks, published articles, encouraging a BCI Society, and strident interpersonal interactions, should further impact the field by reducing miscommunication and fragmentation. Overall, Future BNCI was a successful project that attained all of its goals and exceeded expectations in many ways.