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Draft Agenda of Workshop: 'Neurotechnology and Society: Strengthening Responsible Research and Innovation in Brain Science'

15-16 September 2016 ⎢ Washington D.C. ⎢ United States

Time	Minutes	Day 1 ⎢ 15 September 2016
08.00-09.00	60	**Registration**
09.00-09.15	15	**Welcome**
09.15-10.00	45	**Keynote**
10.00-12.30	150	**Session 1:** **Programmes in Brain Science & Technology**
12.30-13.30	60	**Lunch Break**
13.30-16.00	150	**Session 2:** **Case of Neuromodulation**
16.00-18.00	120	**Session 3:** **Governance and Public Engagement**
18.00-19.00	60	**Reception**

Time	Minutes	Day 2 ⎢16 September 2016
09.00-09.45	45	**Keynote**
09.45-12.15	150	**Session 4:** **The Role of Public and Private Funders**
12.15-13.00	45	**Wrap-up & Conclusions**
		End of Workshop

Context │ Participants │ Panellists

We are experiencing an era of rapid technological change, and many societies have targeted the human brain as an important frontier for innovation. Across the world, large brain research initiatives are deepening an understanding of how a healthy brain functions, developing new tools to address open questions in fundamental neuroscience that could contribute to the prevention and treatment of mental illness and neurological disease. This would not only improve health and quality of life, but also significantly reduce national health care costs. But these very advances in science raise a myriad of ethical, legal, and social aspects. The opportunities offered by novel research tools and 'brain devices' – for example, stem cell technology in regenerative medicine, thought-controlled computing, 'mind reading' and deep brain stimulation – must be considered in the context of important human values such as dignity, privacy, and equity.

While the field of neuroethics has been examining the potential social implications of neuroscience for some time, less attention has focused on how ethical, legal, and social dimensions should inform the development of technology itself. There is, in fact, broad international agreement that integrating societal dimensions into brain research projects is important. But there is great diversity in how that is being approached and, to date there have been only limited opportunities to learn from experiences and findings across initiatives, innovation systems, and jurisdictions.

The purpose of this meeting is to pool ideas and approaches, and promote coordinated efforts at understanding and addressing the science and society interplay in the course of the development of novel neurotechnologies. In recent years, a number of frameworks have been developed for addressing the technology and society relationship, from programs in "ELSI" and "ELSA" (ethical, legal and social dimensions), Responsible Research and Innovation (RRI), and Anticipatory Governance. The workshop will examine how relevant actors are seeking to implement these approaches through particular mechanisms and practices, including through programs of stakeholder involvement, parallel streams of ethics scholarship, the embedding of natural and social scientists in teams, public outreach, and foresight. What are the goals? What are the challenges that have been encountered? What has worked well?

The workshop will be attended by leading stakeholders and commentators from Asia, the Americas, Europe, and Oceania, with representatives drawn from the public and private sectors, leading research organisations and universities, national funding bodies, investors, civil society, and business. We aim to convene representatives from key brain research initiatives, for example: the 'Blue Brain Project' (Switzerland); the 'BRAIN Initiative' (United States); 'Brain/MINDS' (Japan); the 'Human Brain Project' (Europe); Israel Brain Technologies (IBT); the Korea Brain Research Institute (KBRI). A focus will be put on working groups and advisory committees on ethical and societal implications of brain science and neurotechnology at the interface between research, policy and society. It is an opportune time to engage with funders and entrepreneurs to discuss the array of approaches and mechanisms that are taking place to strengthen societal values in brain science and technology innovation processes.

Day 1 │15 September 2016

Keynote Speech	TBD

Session 1 (AM)	**Programmes in Brain Research and Neurotechnology: Mechanisms Connecting Scientific and Social Outcomes**

Many of the brain research initiatives have provision for work in the social sciences and humanities, and have aims to engage stakeholders and the broader society around technological development. The session aims to compare the design principles across these initiatives: what are the major social issues that these projects need to engage in the course of their work? What are their goals, conceptual frameworks, funding mechanisms, and approaches? Why and how were these features built in? How will success be measured and broader impacts be attained?

Suggested Speakers: Representatives of major brain research initiatives, e.g., Directors, and Principle Investigators; members of ELSA Committees; US Defense Advanced Research Projects Agency (DARPA).

Objectives:

1. Canvass major projects in brain research and neurotechnology to identify key social issues raised by research;
2. Learn how these programmes are attempting to include ethical and social issues in their work;
3. Discuss more reflexive approaches to evaluating and advancing mechanisms to connect scientific and social outcomes.

Session 2 (PM)	The Case of Neuromodulation: Integrating ELSA/ RI into Research, Development, and Regulation

Neuromodulation devices are becoming increasingly important in the treatment of nervous system disorders and raise questions related to authenticity and the self, enhancement, use in vulnerable populations (e.g., in children or individuals with mental illness), involuntary use (e.g., court-ordered or psychiatrist-ordered), and unsupervised use. This session will explore how, in various countries, research on neuromodulation techniques currently "mainstreams" work in ELSA/ RI, and how this involvement could be better integrated into the research, development, and regulation of neuromodulatory devices.

Suggested Speakers: P.I. in a major lab with strong social and ethical programmes/ interests; representatives from public funding agency who can talk about regulatory issues in R&D; Scientist/ entrepreneur working on innovation in this area.

Objectives:

1. Review the current state of the science and anticipated future technological developments in invasive and non-invasive neuromodulation, and how and whether this work is explicitly considering ethical and social values;

2. Identify and discuss ELSA/ RI issues specific to neuromodulatory devices, e.g. therapy-enhancement distinction;

3. Use the neuromodulation case to probe and scope the other policy issues investigated in the conference, i.e., integrating ELSA/ RI issues into research funding, issues in regulatory system, trade-offs between openness/ property, the role of funders as policy levers.

Session 3 (PM)	Upstream/ Downstream: Current and Future Approaches to Governance and Public Engagement

The session will investigate questions of governance. What are the current and foreseeable challenges for regulating applications in fields of neurotechnology in different jurisdictions. Can the identification of current gaps help inform policymakers and regulators, and influence choices in the conduct of research across levels, i.e., science funding decision, project directors, and individual scientific investigators? Could fairly novel approaches that seem to inject questions of governance further upstream be resource for addressing governance problems downstream, especially the engagement of stakeholders and publics in the process? What are the challenges and opportunities of engaging in more upstream, anticipatory modes of governance? Are there costs in terms of innovation? In what ways could they enable innovation?

Suggested Speakers:

Representatives from regulatory agencies on current and future challenges of governing brain science and technology: role for self-governance versus state; social scientist in brain project (under RRI or Anticipatory governance rubric): appraisals of actual projects, e.g., engagement exercises, science museums, stakeholder forums, etc.; Olivier Rabin, Senior Director, World Anti-Doping Agency (WADA).

Objectives:

1. Discuss the current and foreseeable challenges for regulating applications in fields of neurotechnology in different jurisdictions; examining the role of regulation in shaping research and innovation.

2. Discuss the mechanisms of anticipatory governance and the delicate balance of progress and oversight: when and where should different governance strategies come in, including professional self-governance and law;

3. Address the issue of broader engagements: how to involve a wide array of stakeholders in the process of shaping neurotechnological trajectories and future access.

Day 2 │ 16 September 2016

Keynote Speech	TBD

Session 4 (AM)	**The Role of Public and Private Funders**

This session turns explicitly to the role of funders, both in the public and private sector. The funders of research are particularly well positioned to shape trajectories of neurotechnology, and to place scientific work within particular the social, ethical, and regulatory contexts. It is an opportune time to look across national research funders and investors to analyse the array of approaches and mechanisms that are taking place to strengthen societal values in neuroscience and brain research processes, whether through funding priorities, intellectual property, research guidelines, and incentives.

- First, there is the question of the process through which funders (including business) set research priorities: in what kinds of *fora* are these set, and in what ways do they involve stakeholders?
- Second, the questions of access to data, research materials, and technology are critical in both the production of knowledge and in terms of downstream use of technology in society. How are public and private funders balancing commitments to promote open science and innovation and, at the same time, the mandate translate research to society by drawing on private investment?
- Third, to the extent that ethical and social frameworks are being deployed through funding programmes, where are those values coming from and why are they being implementing in those ways?

Suggested Speakers: Representatives from public funding agencies; private philanthropies; venture capital and other investors in innovation; start-up companies and industry.

Objectives:

1. Better understand how public funders, private investors and philanthropic organisations attempt to integrate downstream hopes and concerns through processes of stakeholder involvement, intellectual property, and funding of ethics and social science research.
2. Discuss how the goals of open science and broad access might be advanced through funders.

Wrap-up	Conclusions & Outlook

End of Workshop (13.00)