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Our 10 Main Objectives

1. **Identifying the principles of intelligence** Understanding intelligence remains one of the most important, largely unsolved scientific problems of our time. Intelligence defines us as a species and plays an important role in our daily lives. Technological realizations of intelligence will fundamentally change the way we

live. SCIoI will identify and understand the principles that underlie intelligence. Science of Intelligence: Proposal for a Cluster of Excellence

1. **Closing the gap between biological and artificial intelligence** There are fundamental differences between biological and artificial intelligence. By synthesizing technological artifacts of increasing intelligence we will systematically close this gap, producing technology that is intelligent.
2. **Uniting the disciplines of intelligence research into a Science of Intelligence** The disciplinary fragmentation is a major obstacle to progress in intelligence research. We will overcome this fragmentation by uniting the disciplines in a single research project. Through an integrated, interdisciplinary team effort, we will lay the foundations for a unified Science of Intelligence.
3. **Developing engineering paradigms for intelligent systems** The dominant paradigm in engineering assumes the decomposability of problems. We believe

that this assumption does not hold for intelligent agents: functional components of intelligence engage in rich and complex interactions and cannot be decomposed. To account for this, we will develop novel engineering approaches for building intelligent machines. - **Building an international community of intelligence research** We will create a global community of intelligence research, propagating our integrative scientific approach. As a first step, we have established a strategic alliance with the Center for Brains, Minds, and Machines (CBMM) at MIT.

1. **Training the next generation of interdisciplinary intelligence researchers** For centuries science has progressed within disciplinary boundaries. These boundaries severely impede solving many of today's pressing scientific challenges, the study of intelligence being one of them. We will develop novel curricula and training programs to prepare early-career scientists to solve interdisciplinary scientific challenges.
2. **Providing long-term career perspectives for young intelligence researchers** Max Planck's principle states that "a new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because […] a new generation grows up that is familiar with it" (Planck, 1950). We will create long-term career perspectives for a new generation of scientists, rooted in a unified Science of Intelligence.
3. **Uniting the disciplines of intelligence research in one laboratory** The physical proximity of collaborators and the interdisciplinarity of collaborations positively correlates with the impact of research (Lee et al., 2010; Jones et al., 2008). SCIoI unites principal investigators from many disciplines in a single laboratory, creating a permanent structure to support impactful research.

4. **Transferring research results into industry** Intelligence research is fundamental science but will immediately have an impact on industry

by responding to pressing economic needs. We will engage in mutually beneficial collaborations with companies to transfer insights on intelligence into applications.

1. **Assessing the societal and scientific implications of SCIoI** A synthetic understanding of intelligence will have a profound impact on society and science.

We will ensure that research in SCIoI progresses in a socially responsible and ethically sound manner. We will continuously validate and improve our proposed scientific approach.

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