ELI – E-ELT –HiPER Memorandum of Understanding

Preamble:

The **Extreme Light Infrastructure** (ELI), based on an exawatt (10^{18} Watt) laser, would be the first infrastructure dedicated to the fundamental study of laser-matter interaction in the ultra-relativistic intensity regime ($I_0 > 10^{25}$ W/cm^2), and possibly to the regime of non-linear quantum electro-dynamic (QED). ELI will open a unique research platform where basic as well as applied research studies will be conducted, in Physics, Chemistry, Biology, Life and Material Science, in a regime of laser intensity that was otherwise inaccessible.

The **Extremely Large Telescopes** (E-ELT) allow the next major step in addressing the most fundamental properties of the universe. All aspects of known astronomy, from studies of our own Solar System to the farthest observable objects at the edge of the Universe, will be advanced by the enormous improvements attainable in collecting area and angular resolution: it is the opportunity for discovery of the new and unexpected; it promises detailed study of the formation and evolution of planets, stars, galaxies, quasars, black holes, neutron stars, and the first objects to form in the Universe; a better understanding of the Dark Matter and of the mysterious "Dark Energy", which in turn controls the future of our entire Universe.

HiPER for European **Hi**gh **P**ower laser **E**nergy **R**esearch facility is dedicated to demonstrating the feasibility of laser-driven fusion as a **future energy source**. HiPER is being designed to enable a broad array of new science including extreme material studies, astrophysics in the laboratory, and a wide range of fundamental physics research.

Purpose of the Memorandum of Understanding.

By signing this Memorandum of Understanding, the Parties express their interest to join their efforts and knowledge on common developments that would be carried out for and during the ELI, E-ELT and HiPER Preparatory Phases. The main but not exclusive aspects under interest are the large mirror manufacturing and coating, active optics co-phasing of two or more optics, and laser developments.
The Parties understand that by combining their efforts during their respective Preparatory Phase, some critical issues may be solved more efficiently.

I hereby do agree to promote and create the ELI – E-ELT – HiPER collaboration structure aiming to strengthen our respective Preparatory Phases. This agreement is not legally binding. I do understand that this collaboration might be extended after the end of the Preparatory Phase on the basis of a renew agreement.

Signed on ...1..... of ..may.....2007, in ..Palaiseau.....

Extreme Light Infrastructure	European Extremely Large Telescope	High-Power laser Energy Research
Represented by Gérard Mourou	Represented by Roberto Gilmozzi	Represented by Mike Dunne