

Welcome!

- **Very important time – a time of real change**
 - High repetition rate
 - Fusion ignition scale experiments
 - Focus on making applications real
 - (as well as delivering the ongoing targets!)
- **2nd target fabrication workshop**
 - Double the number of delegates!
 - UK, France, Germany, Spain, Russia, Japan, USA
 - New groups involved
 - Workshop style (very necessary – Innovation is needed)
 - Themed sessions:
 - *Characterisation*
 - *Microtechnology*
 - *Cryogenics*
 - *Foams*





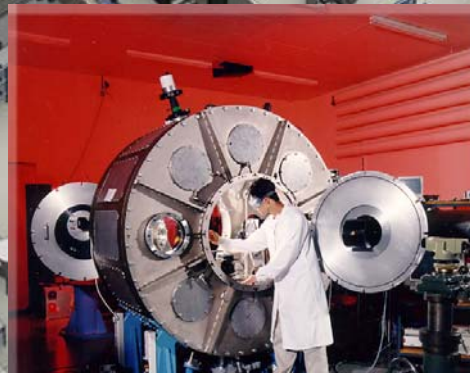
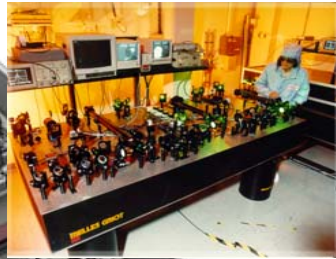
Science & Technology
Facilities Council

- **Facilities**
 - **Synchrotrons**
 - **Neutron Scattering**
 - **Lasers, FELs**
 - **Computing**
 - **Telescopes**
- **Accelerator Science**
- **Particle Physics**
- **Space Physics**
- **Nuclear Physics, ...**

A quick local perspective on the challenges ...

Vulcan Laser Facility

- 8 Beam CPA Laser
- 3 Target Areas
- 3 kJ Energy
- 1 PW Power



Increased complexity, accuracy & rep-rate

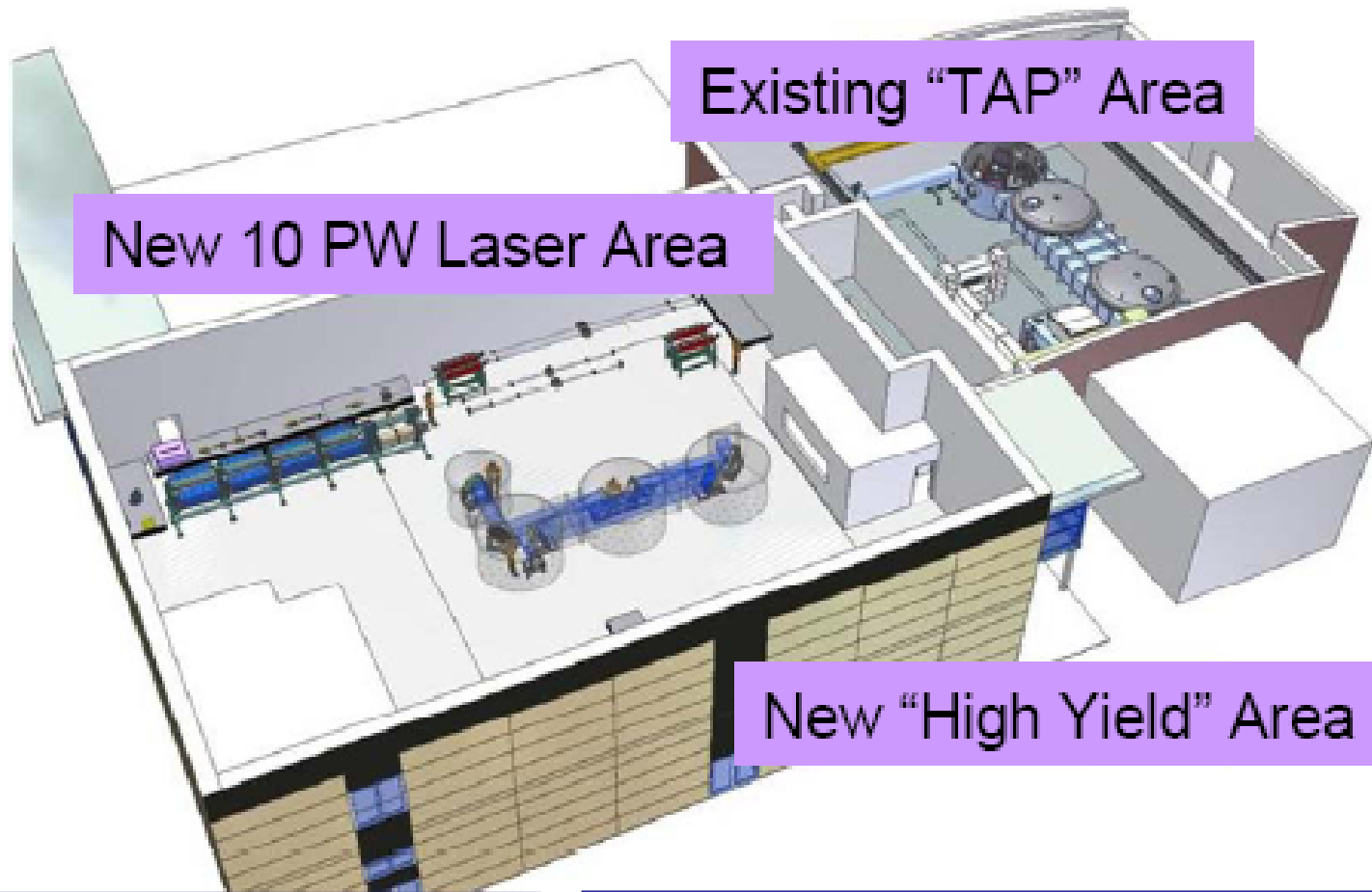
The new generation: Astra-Gemini facility

- New £4 Million STFC Facility
- Dual Beam Petawatt Upgrade of Astra (factor 40 power upgrade)
- Focusable to $\sim 10^{22}$ Wcm⁻² (factor 10 increase on Vulcan)
- 1 shot every 20 seconds (factor 100+ increase on Vulcan)
- First shot: September 2007
- Opened by the Minister (Ian Pearson MP) Dec 07



Ian Pearson, MP
*Minister of State for Science and
Innovation , Dec 2007*

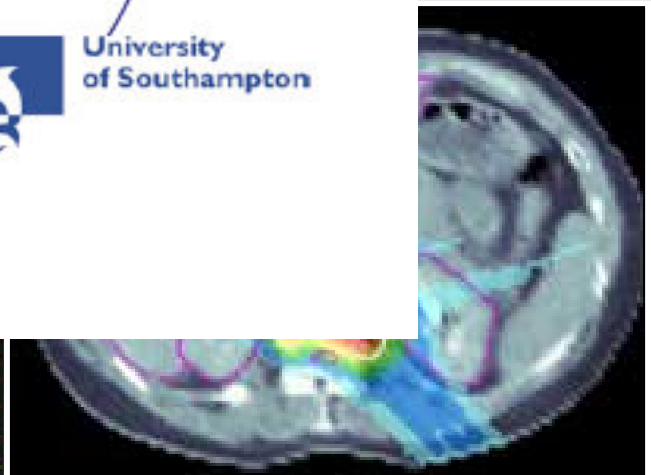
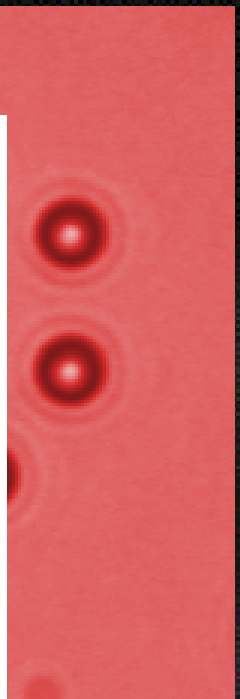
Vulcan – the next generation? 10PW, 10^{23} W/cm²



Create a new target area using TA East and extend the existing building

100 fold intensity enhancement
Based on a unique concept (OPCPA) pioneered at the CLF

Applications of laser driven ion beams



Funding Agency involvement by 9 partners

- STFC (UK)
- CEA, CNRS and CRA (France)
- MSMT (Czech Republic)
- GSRT (Greece)
- MEC and CAM (through UPM) (Spain)
- ENEA and CNR (Italy)

Institutional involvement by 17 other partners

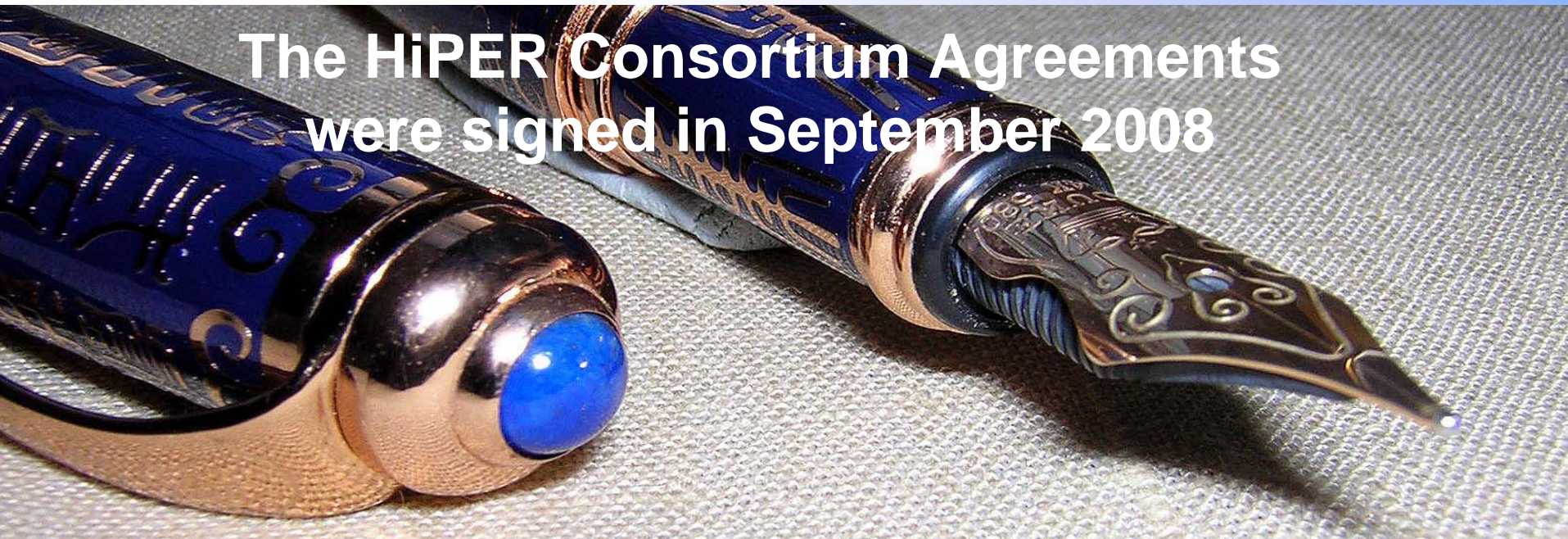
- IST Lisbon (Portugal)
- CNSIM (Italy)
- TEI, TUC (Greece)
- IOP-PALS (Czech Republic)
- IPPLM (Poland)
- FVB, FSU Jena, GSI, TUD (Germany)
- Lebedev Physical Institute, Institute of Applied Physics-RAS (Russia)
- Imperial College London, Universities of York, Oxford, Strathclyde, Queens Belfast (UK)





HiPER Signing Ceremony

The HiPER Consortium Agreements
were signed in September 2008



HiPER Target Fabrication tasks

Self-consistent target design

- Iterate design to specify a practical, robust target:
 - *manufacture & fielding constraints*
 - plasma modelling specifications
 - overall facility design constraints
- Determine credible, large scale target production route
- Assess high rep-rate injection and tracking techniques
- Assess cryogenic DT infrastructure requirements & costs

To produce : Conceptual Design for target assembly and fielding
: Assessment of European capability in this area
: Future R&D plans for required target production

