Big Science: Technology Challenges and Business Opportunities

Programme Technology Workshop 28th of September 2016

Cross Border Science and Society

Seminar – Industry Exhibition – Poster session – Round Table Discussions

Welcome to an interactive day where industry, research facilities and academia meet to network and discuss common technology challenges. We will focus on: Precision Engineering and production, Precision Movement and Alignment, Sample environment, Rapid support, Control and electronics, 3D printing, Technical Consumables and procurement procedures.

08.30 Registration and coffee	
09.00 Welcome and purpose of the day	John Weisend, Deputy Head of Accelerator Projects at ESS
09.15 Agenda and practicalities	IUC Syd/Big Science
09.30 Challenges of Building, Commissioning and Running Particle Accelerators	Phil Atkinson and Andy Goulden STFC*)
10.00 Building a position: Energy efficiency and cost savings in Cryogenic Helium Systems	Airec, CEO Sven Persson
10.15 Volume Growth in the Big Science market	Danfysik, CEO Frank Ebskamp
10.30 Coffee - Poster Session and Mini Exhibition	
11.00 Public Procurement for the Big Science market	Procurement Managers: Mirko Menninga, ESS and Johan Alexon, Max IV
11.20-11.40 Challenges in Sample Environment	Arno Hiess, Head of Scientific Activities Division, ESS
11.40-12.00 Sample Environment – Material challenges	Anders Bjermo, Head of Mechanical Design at Max IV
12.00.12.20 Precision movement	SKS Sweden, Johan Bergqvist/Ångström Laboratory
12.20 Lunch - Poster Session and Mini Exhibition	

STFC*) The facilities in UK, ISIS and Diamond Light Source, are represented by STFC - Science and Technology Facilities Council

13.20 Precision Engineering and Rapid Delivery Requirements for a Local Machine Shop - Critical production skills for Big Science suppliers	ESS
13.40-14.10 3D Printing - Advanced Manufacturing for Large Facilities	STFC, Mike Curtis-Rouse, Science and Technology Facilities Council
14.10–14.25 Digital Metal - A revolutionary precision ink-jet technology for additive manufacturing	Hans Kimblad, Digital Metal/Höganäs AB
14.25-14.40 Design and Services for Additive Manufacturing	R.A.P.S, CEO Pär Nobring
14.40-15.00 Control Systems and Electronics	Henrik Carling, Head of Integrated Control Systems Division

15.00-15.05 Introduction to workshop

15.05-15.20 Coffee

15.20-16.00 Workshop/ Round table discussions around seven different topics. Each participant selects one topic.

1. **Precision Engineering and production**
   Discussion about the production of medium to large numbers of components or scientific and technical equipment for ESS. Customized design, not off-the-shelf products.
2. **Precision Movement and Alignment**
   Actuators and systems for moving, aligning and measuring position of samples and equipment.
3. **Sample environment**
   Systems and equipment for providing thermal, vacuum, magnetic and other physical environment for neutron science samples.
4. **Rapid support**
   Provision of off-site capabilities for machining, welding and construction of small numbers of items with short delivery time.
5. **Control and electronics**
   Provision of control system and electronics for Max IV and ESS.
6. **3D printing**
   Potential future applications for 3D printing in support of Max IV and ESS.
7. **Technical Consumables and procurement procedures**
   Provision of Chemicals, Air products, Mechanical components and other off-the-shelf items. Involving procurement officers at ESS and Max IV.

16.00 Summary of workshop results and next steps	IUC Syd/Big Science
16.15 Study tour to ISIS and Diamond Light Source	IUC Syd/Big Science

28th to 30th of November 2016.

16.30-17.00 Poster Session and Mini Exhibition