

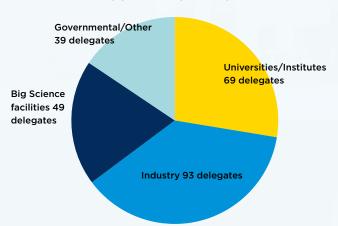


WELGOTIE TO SWEDEN, AN INTERNATIONAL BRIVER IN BIG SCIENCE

BRINGING TOGETHER INDUSTRY, UNIVERSITIES, INSTITUTES AND RESEARCH FACILITIES

OUR PARTICIPANTS

CONFERENCE RATING







DAY 1

Big Science Sweden Conference 2019 in figures

250 delegates from 10 different countries

69 from universities

93 from industry

49 from Big Science facilities

50 exhibitors

5 exhibitors - Strategic and sustainable environments

30 speakers

300 1-to-1 meetings

140 Big Science Evening

20 took part in study visit to ESS and MAX IV

9 parallel sessions on various technical themes



DAY 2

Challenge-driven innovation

19 different challenges identified by CERN, ESS, ITER, MAX IV, attracting

96 delegates

7 applications for pre-studies

QUOTES FROM THE EVALUATION

Looking forward to continuing the journey together with you.

Well organised. Good venue, good food, etc, but the exhibition area and space for match-making were too small.

Excellent organisation and 'commanding the crowd' by the staff.

Hoping to attend next Conference.

Very good, keep up the good work.

Exceeded my expectations by far.

Great job, you rock!

It was a great experience that I'd be happy to repeat. I'd like to thank everybody who put in the hard work to make it happen. Thank you!

Effective and intensive, good that the bar closed as early as eleven.

Great event and great 1-to-1 meetings. Thank you very much and please arrange more of these events in the future.

Nice people, nice atmosphere, enthusiastic team, and a very good moderator (Anna). Very interesting visit to ESS and MAX IV.

Excellent event quality in every aspect.

Best of any Big Science conference I have ever attended.

This is definitively an important hub for connecting industry, researchers and research facilities.

SEVEN BIG SCIENCE FACILITIES AT THE CONFERENCE

BUSINESS AND COLLABORATION



Kevin Jones, Technical Director, ESS. I can see everything that ESS needs out in the industry exhibition. The exhibition was made up of 50 industrial companies, universities, institutes and research facilities.



lan McNulty, General Director, MAX IV.
MAX IV has been in operation for a couple of years, and has received good help from Swedish suppliers. There are now several beamlines ready for use by researchers and industry.





Patrik Carlsson, Co-Director Big Science Sweden and Industrial Liaison Officer (ILO) for ITER, ESO and SKA, talked about what was happening at SKA.

Mario Di Castro Head of Mechatronics, Robotics and Operation Section, CERN.

It's been valuable to meet so many people and discuss development ideas. The format's been good, with short meetings focused on results.

Darren Spruce
Head of Controls &
IT, MAX IV Laboratory.
A conference like this gives us an overview of technological opportunities and possible future suppliers. It also gives us new ideas for projects and collaborations.

BUSINESS AND COLLABORATION



CERN, was impressed by what Swedish

industry can supply.



Niels Van de Ven, Commercial Manager, Fusion for Energy.

CERN, ITER and ESS talked about how to do business with the respective facilities.

Jonas Söderlund Note, Erik Strömqvist, GE Healthcare, Mats Orup RFR Solutions and, at the microphone, Mikael Vieweg, Scanditronix Magnet.



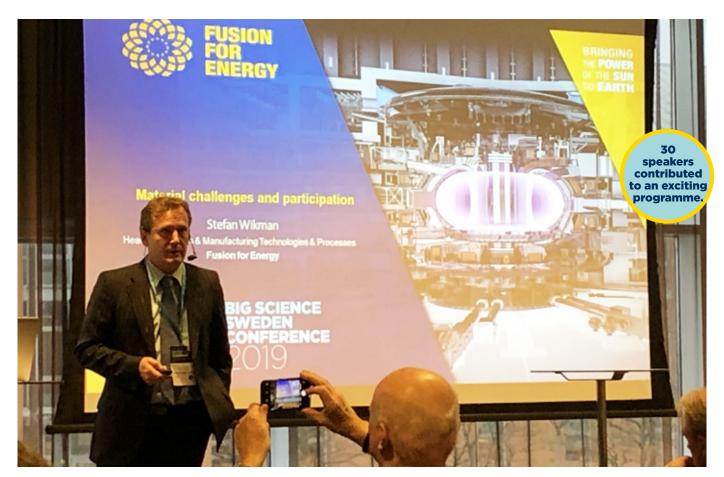
BIG SCIENCE FACILITIES/STATUS AND CHALLENGES



Antonio Bonucci, Industrial Liaison Manager, XFEL. Big Science Sweden Conference gave us the opportunity to show all the development work we've got planned at XFEL, and we came into contact with suppliers that were new to us. We can inspire companies to become suppliers by presenting all the exciting things that lie ahead in the next few years.



Pia Kinhult, Head of Host States Relations, ESS. We're currently building ESS in Lund together with 12 other European countries. ESS will have a unique capacity that will enable important scientific discoveries in the fields of materials, biosciences, energy, environmental technology, cultural heritage and fundamental physics.



Stefan Wikman, Head of Materials & Manufacturing Technologies & Processes Group, Fusion for Energy, ITER, is responsible for materials and fabrication of fusion reactor material, and sees great opportunities for Swedish industry.

JOIN US IN DRIVING BIG SCIENCE TECHNOLOGY





Mikael Vieweg, VD Scanditronix. I've made a number of new contacts, and met previous customers, so I've been able to get up to date on their projects and plans.



Hans-Christian Becker, applications expert, Gammadata.
Gammadata sees the Big Science Sweden Conference as an opportunity to find more customers and collaboration partners.





Exhibitors comprised industry, universities and institutes,

and Swedish sustainable and strategic technology

The Conference invited participants to Join Us in Driving Big Science Technology. With a strong focus on knowledge sharing and establishing contact networks, the two days were packed with workshops on various challenges relating to technology.

- 1. Advanced materials & Production methods
- 2. Electronics
- 3. Technology Integration, consortia and subcontracting
- 4. Remote handling and robotics
- 5. Vacuum and Cryogenics and magnets
- 6. Al, Control Systems, Data Acquisition, Big Data
- 7. Power Supplies & RF systems
- 8. Virtual reality and Augmented reality

9. Safety and Quality

Erik Sundström, Head of Communications, ScandiNova.

environments.

The Big Science Sweden Conference helps us to gather information that can inspire ideas on how we at ScandiNova can help the research facilities develop. It's important for us to keep up to date and find out about all the developments in our technological field.

Samuel Axklo, Technical Manager, 2B Best Business.

We hope to meet potential customers and possible partners, and we're constantly looking for new development opportunities.

BIG SCIENCE SWEDEN CONFERENCE 2019 Sweden

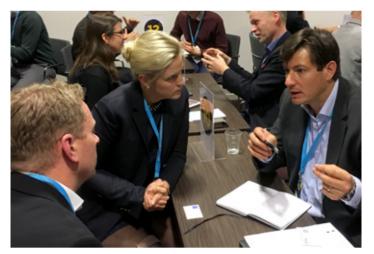
1-TO-1 MATCHMAKING MEETINGS

Switzerland **Finland France**

Germany Spain Netherlands United Kingdom Belgium Italy



On the first day, no fewer than 300 one-to-one meetings were held, pre-arranged to maximise benefit.









NETWORKING OPPORTUNITIES



Professor Adrian Rennie, Uppsala University.

It's very useful to be able to speak informally with the participants between the sessions. It's also interesting to learn more about the projects at the facilities and what challenges they see.



Karin Cedergren, Researcher in transportation and safety, RISE. A totally fantastic event! The one-to-one meetings have been extremely valuable. I've got many new and valuable contacts, and also had many interesting conversations in the breaks.



Leif Gjerløv-Jensen, Technical Sales, Carlsson & Möller.

A big plus for the one-to-one meetings, and because Big Science Sweden has attracted so many exhibitors. The Big Science Sweden team is strong, and will lay the foundation for Sweden being a great success in Big Science.



Manager, Finepart.

At the conference, there were many companies I'd never come across before. Those that I didn't get time to finish talking with here, I can call later. It's also been interesting to learn more about all the facilities and their projects, so we can now start to look for supply opportunities.



Mats Ohlsson, CEO Examec.

The best conference I've ever been to. And, yes, you can quote me on that!

Companies, institutes and academia met with ESS, European XFEL, CERN, DESY, MAX IV, ITER/Fusion for Energy, and each other.



Anders Siward, Business Development Manager, BitSim.

We want to submit more tenders for procurements from CERN and other research facilities. Here we can make contacts that can give us tips on procurements and the associated requirements.



Anna Söderlund, Sales, Österby Gjuteri, here with Anna Hall, Programme Director, Big Science Sweden and Tord Ekelöf, Professor and Project Manager, FREIA Laboratory, Uppsala University.

For us at Österby, it's not just about finding business opportunities at the facilities, it's also about finding collaboration partners and possible customers among the participating companies. You need to meet many times before it can lead to a business contract, and we get this opportunity by participating in many events arranged by Big Science Sweden.

BIG SCIENCE CONFERENCE 2019

BIG SCIENCE EVENING





Big Science Sweden Award – for an individual showing particular engagement in helping to build Sweden as a Big Science nation and in driving Big Science Technology.

During the evening, the Big Science Sweden Awards were presented for the first time. Three Big Science Influencers were announced as prizewinners: Influencer Facility – Rickard Jakobsson, CERN Influencer Industry – Anna Söderlund, Österby Gjuteri Influencer University – Tord Ekelöf, FREIA, Uppsala University.

Big Science Sweden Award 2019



BIG SCIENCE CONFERENCE 2019

BIG SCIENCE STUDY VISIT

Around 20 delegates from Swedish industry and CERN took the opportunity to visit ESS and MAX IV on the Wednesday morning. At ESS, we took part in a guided tour of the facility by bus and, at MAX IV, we visited the accelerator ring.





The programme item on challenges, as identified by CERN and ESS, attracted 96 delegates. Five applications for pre-studies for joint projects were submitted.

At the AIMday Big Science Technology, researchers and representatives from industry gathered to discuss challenges identified by the research facilities. The aim was to enable long-term collaborations on the basis of the different issues of the research facilities. The day was arranged according to the internationally renowned AIMday method, developed by Uppsala University.







BIG SCIENCE CONFERENCE 2019

CHALLENGES AS FORMULATED BY CERN AND ESS





Fredrik Engelmark, Business Development and Project Management, ILO for CERN at Big Science Sweden/Uppsala University, together with Frida Tibblin Citron Business Development and Project Management Big Science Sweden, Lennart Gisselsson, Business Development and Project Management Big Science Sweden/Lund University, and Ekaterina Osipova Research Funding Advisor at Luleå University of Technology.

Advanced materials and production methods, e.g. additive manufacturing.

- Can we produce thicker sheets or bulk material of grain oriented steel, and steer the grain orientation? (CERN)
- How to produce, cut and polish radiation-hard garnet crystals more efficiently for large detector applications? (CERN)
- How to construct efficiently large and complex detector absorbers from tungsten alloys, whose composition are driven by the physics application? (CERN)
- Radiation hardness on greases: Is there a roller screw/lubricant (dry) system that can withstand the conditions in a radiation environment, and take up to 10MGy? (CERN)
- 5. Is there a method to heavily bend 316L tubes (6mm or 18mm) with nearly no deformation? (CERN)
- Can we design a cooling solution in a vacuum chamber that does not include welded seams? (CERN)

Drones

7. How can we make use of drones more efficient and more compatible in terms of flying time and having them work autonomously? (CERN)/How can we use drones for monitoring in the accelerator tunnels and other hostile environments? (ESS)

Robotics/Remote handling

- How can we make industrial robots lighter, while maintaining their precision and dynamics? (CERN)
- How can we increase safety for humans in close human/robot collaborations? (CERN)"
- 10. How can we increase the "human touch" for robots working with humans in Big Science? (CERN)/ How can we increase proprioception in maintenance teleoperation in big science facilities? (CERN)

Al/Big Data/Data handling/ Control systems

- 11. How do we optimize the flow of data in machine learning projects? (ESS)
- 12. How do we develop Intelligent Alarm Handling? (ESS)
- How to create a Software
 Development Ecosystem for Machine Learning (Agile mashine learning
- 14. What does tomorrows control rooms look like? (ESS)
- 15. How do we together drive the development of future Control Systems for Complex Processes (EPICS / Tango)? (ESS)
- 16. How can we optimize machine performance with machine learning?

Magnets and Cryo

- 17. What can Sweden do for helping CERN to develop a canted-cos-theta dipole magnet for the LHC?
- 18. How can we develop Superconducting Magnet Energy Storage (SMES) for the LHC at CERN?
- 19. How can we fabricate -53 degrees CO2 cooling systems for the experimental setup at the ATLAS experiment?





Big Science Sweden is led by a consortium of leading universities, institutes and industrial network organisations:

















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