



Future Industrial Instrument at ESS

Round Table with ESS High-Level Industrial Forum and specially invited guests

March 6th, 2024

Agenda



- 09.00 Welcome and presentation
Lisbeth Olsson, Vetenskapsrådet
Lars Börjesson, chair ESS High-Level Industrial Forum
- 09.15 Introduction to the day – instruments for industrial use
Helmut Schober, Pia Kinhult and Lars Börjesson
- 10.00 Industrial instrument at MAX IV – the creation of Formax/Treeseach
Daniel Söderberg, professor at KTH
- 10.30 Coffee break
- 11.00 Roundtable discussion about a future instrument for industrial use at ESS
- 12.00 Lunch

ESS High Level Industrial Forum



Purpose of the High Level Industrial Forum

The objective is to support ESS in becoming a cornerstone and natural partner within the industrial research, innovation, and business development in Europe.

The Forum provides ESS with guidance, network, and contacts within the industrial and business spheres. It also acts as a sounding board to the DG on leadership, change management and general strategic challenges.

Members

Håkan Björklund, Bonesupport etc

Lars Börjesson, Chalmers, chair

Arne Karlsson, Maersk etc

Björn Savén, IK Partners etc

Maria Strömme, Uppsala university etc

Johan Söderström, Hitachi Energy

Mene Pangalos, Astra Zeneca (incoming)



By scientists, for society



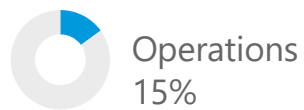
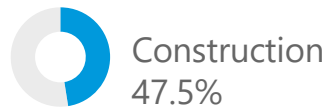
Enable scientific breakthroughs in research related to **energy, health and materials** addressing some of the most important societal challenges of our time

A coalition of 13 European countries



Host countries

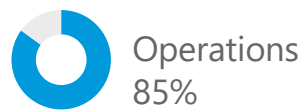
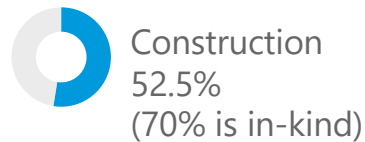
Sweden, Denmark



Base budget for construction
€1.84 B₂₀₁₃
Estimated annual operating
budget €140 M₂₀₁₃

Non host member countries

Czech Republic, Estonia, France, Germany, Hungary,
Italy, Norway, Poland, Spain, Switzerland, United
Kingdom



Facts about ESS



Neutron research

- Allow research of materials down to the atomic scale.
- Penetrate materials, and analysing how these neutrons behave during this process allows us to study the structure and dynamics of the atoms and molecules in the material.
- Especially adept at detecting hydrogen atoms, research at ESS is ideal for seeing how enzymes and proteins interact, or how bacteria and viruses respond to drugs.
- Study objects, like engines, in operation, to discover more about how fluids behave in action.
- The power and precision available at ESS will make us see the world in new ways



5 MW
particle accelerator
2 MW at start



15
instruments
next step is 22



3 000
guest scientists visiting per year
to conduct experiments



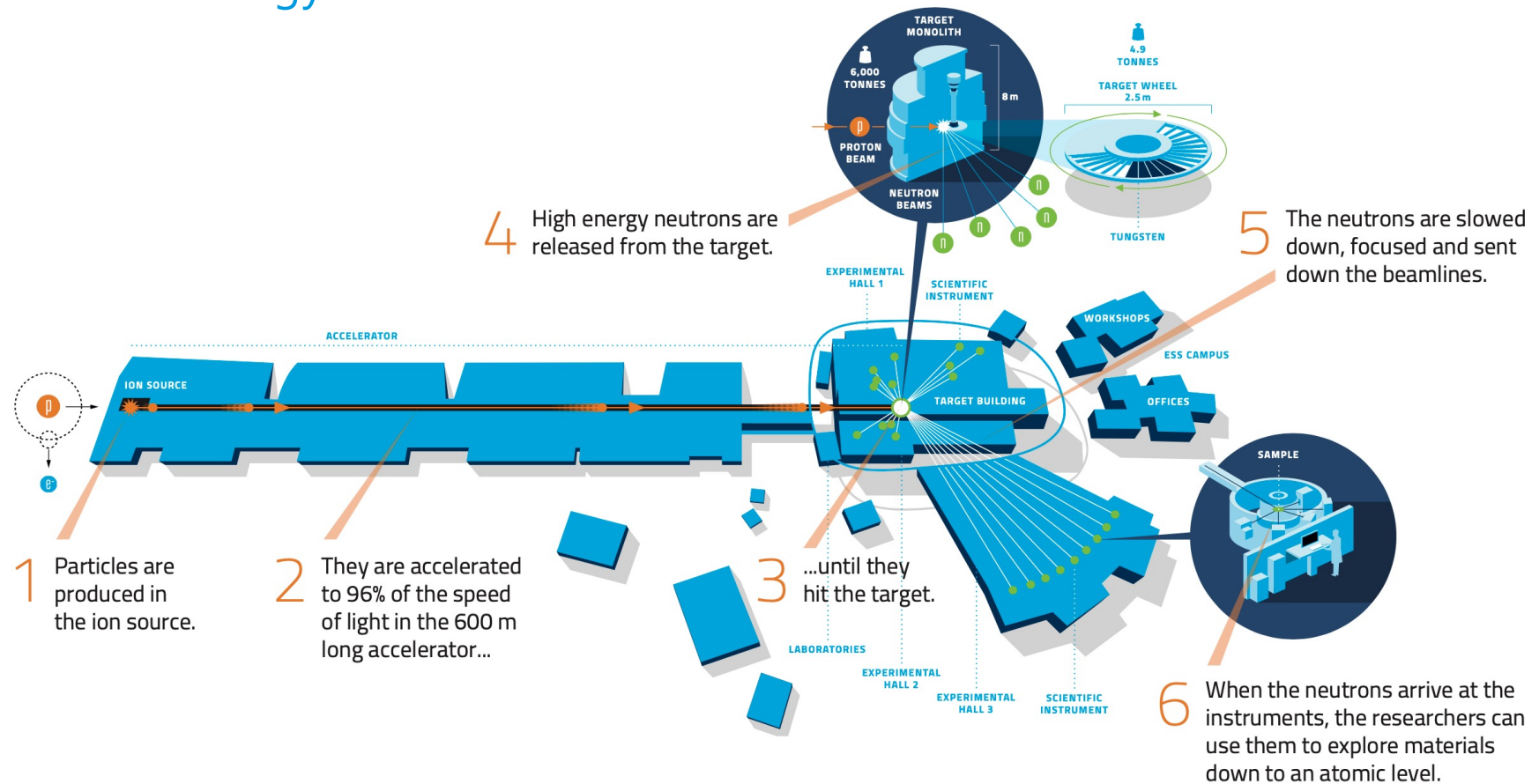
800
experiments per year



BREEAM
Renewable energy
& waste heat
recovery

How it works

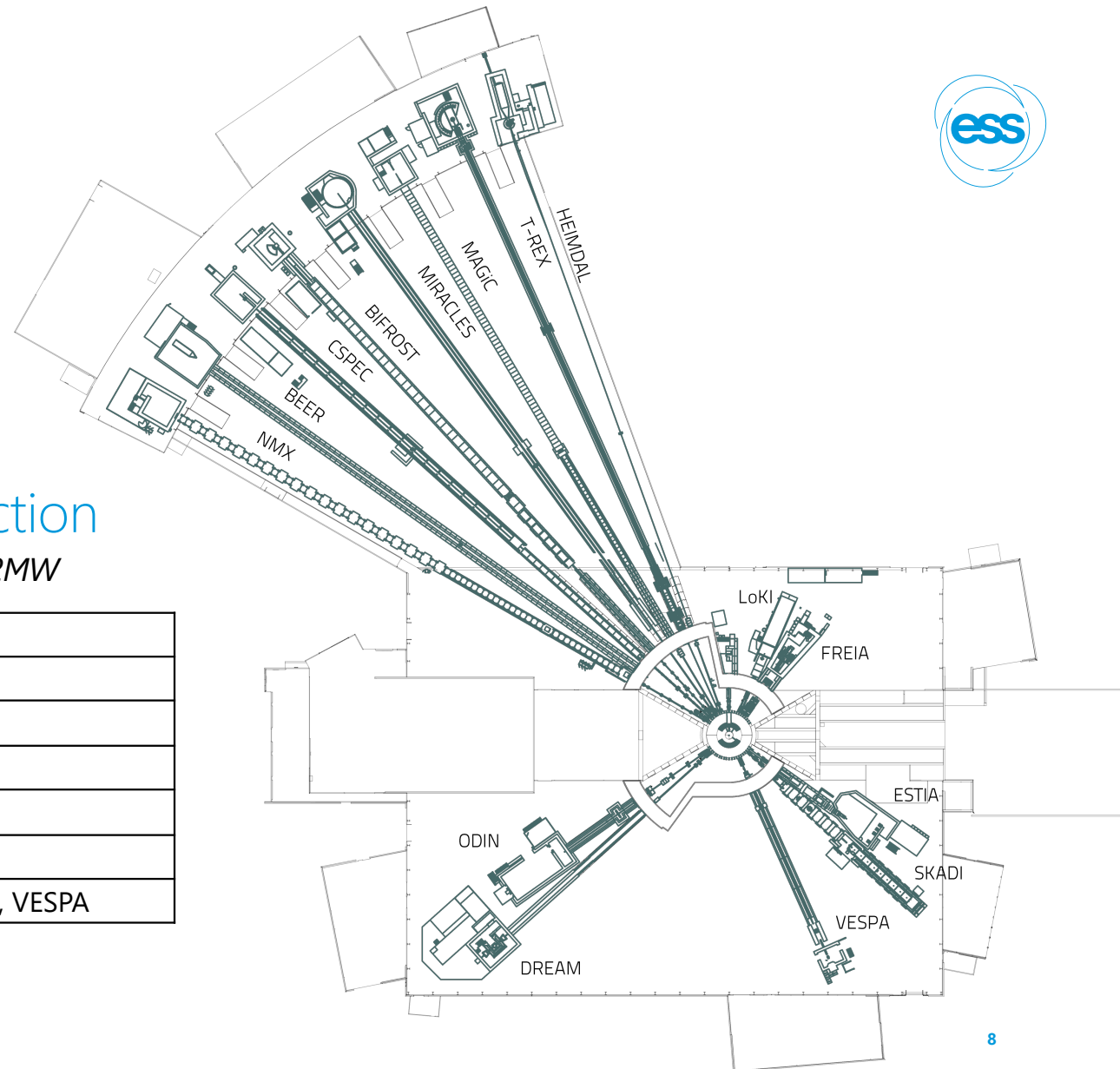
The technology



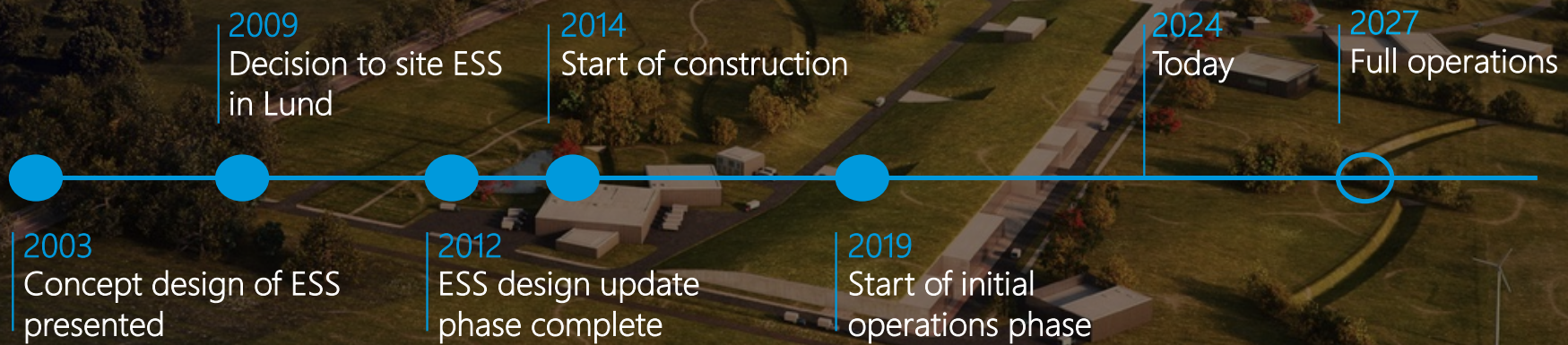
15 instruments under construction

Each instrument designed to be world-leading at 2MW

Small Angle Neutron Scattering	LoKI, SKADI
Reflectometry	ESTIA, FREIA
Single-Crystal Diffraction	MAGIC, NMX
Powder Diffraction	DREAM, HEIMDAL
Imaging & Engineering	ODIN, BEER
Direct-Geometry Spectroscopy	CSPEC, T-REX
Indirect-Geometry Spectroscopy	BIFROST, MIRACLES, VESPA



Full operations in 2027



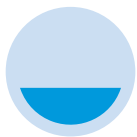


Industrial Instrument at ESS

A way forward?

Industrial Instrument at ESS

A way forward?



Scoping study

Funded by a handful of founding industrial partners:

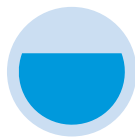
Identify industrial alliances of potential future partners.

Explore industrial needs and scientific scope, aligned with ESS.

Design a proposal for process, timeframe and budget.

Output: Prospectus to form a coalition willing to engage and finance the next phase.

Ready to Innovation Day 27/8



Pilot study*

Instrument proposal(s) detailed enough to judge performance and cost.

Industrial Use Case to identify potential impact on growth, innovation & competitiveness.

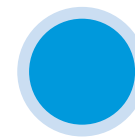
Business case and financial model to support building and operating the instrument.

Operational model to support both the construction phase and ongoing operation.

Output: Detailed proposal to build a formal consortium.

Ready in 2025

***See also separat memo.**



Project phase

Instrument design and construction.

Set-up of consortium and organisation.



**EUROPEAN
SPALLATION
SOURCE**