

# European Spallation Source Overview and Project Status

DARMA Annual Meeting & Study Visit  
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LIGHTNING

NEW MATERIALS

SOLAR ENERGY

FOOD

PACE-MAKERS

TAILOR MADE MATERIALS

MOBILE PHONES

MEDICINE

COSMETICS

IMPLANTS

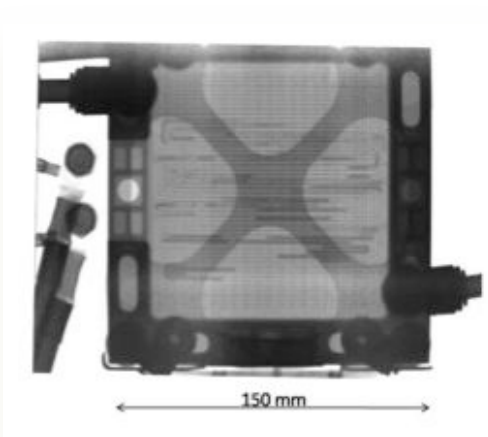
TRANSPORT

BIO FUEL

GEO SCIENCE

# Properties of neutrons for measurements

**Charge neutral**  
**Deeply penetrating**

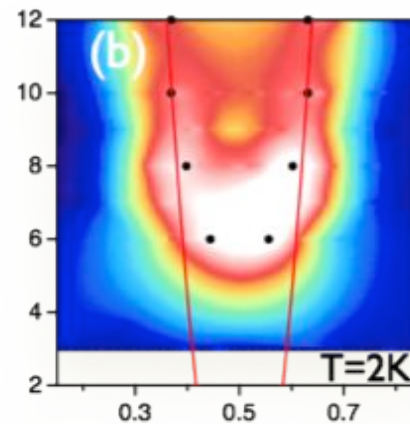


Li motion in fuel cells



Help build electric cars

**Magnetic moment (spin)**  
**Directly probe magnetism** **Sensitive to light element**

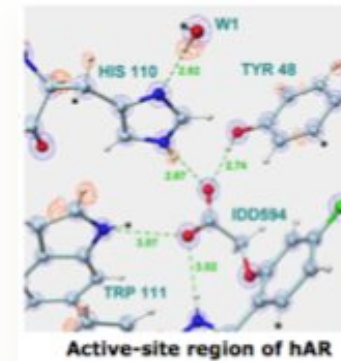


High-Tc superconductivity



Efficient high speed trains

**Scattering**  
**Sensitive to light element**



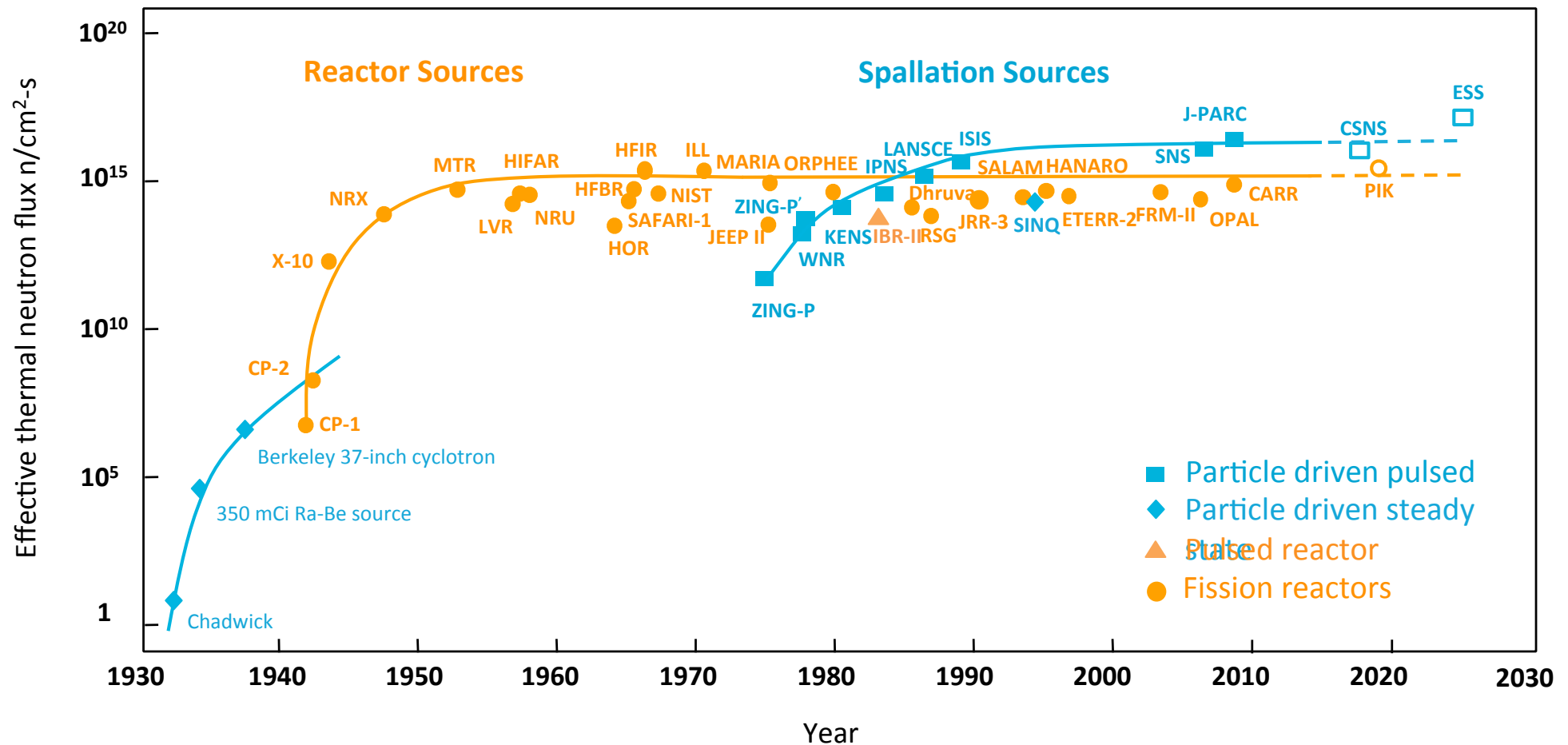
Active sites in proteins



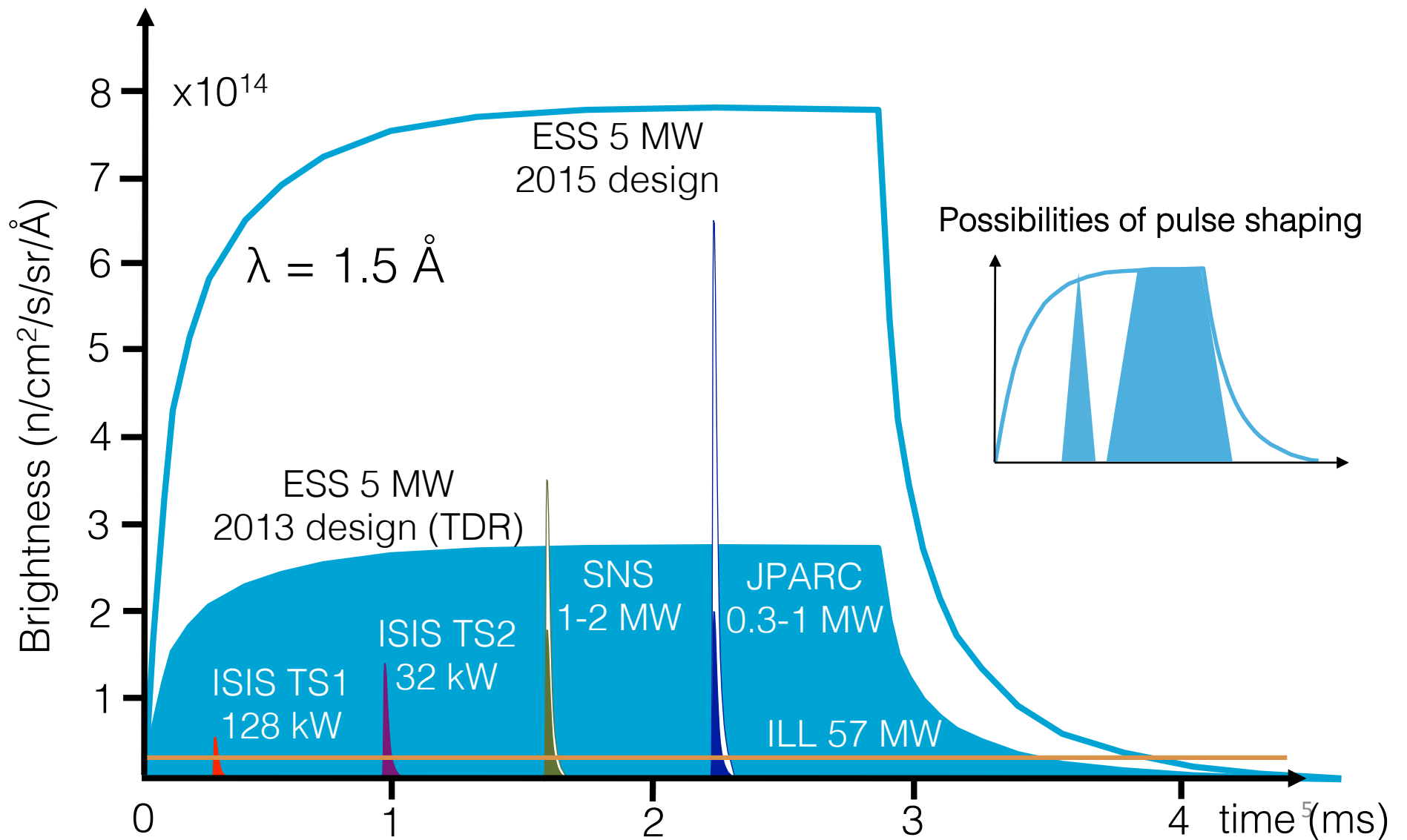
Tertiary structure of hAR

Better drugs

# Neutron facilities – reactors and particle driven



# Long-pulse performance



**Youtube video:**

<https://www.youtube.com/watch?v=xJU1FxZ8oxA>

# Financing includes cash and deliverables



## Host Countries of Sweden and Denmark

47,5% Construction

15% Operations

**In-kind Deliverables** ~3%

**Cash Investment** ~97%

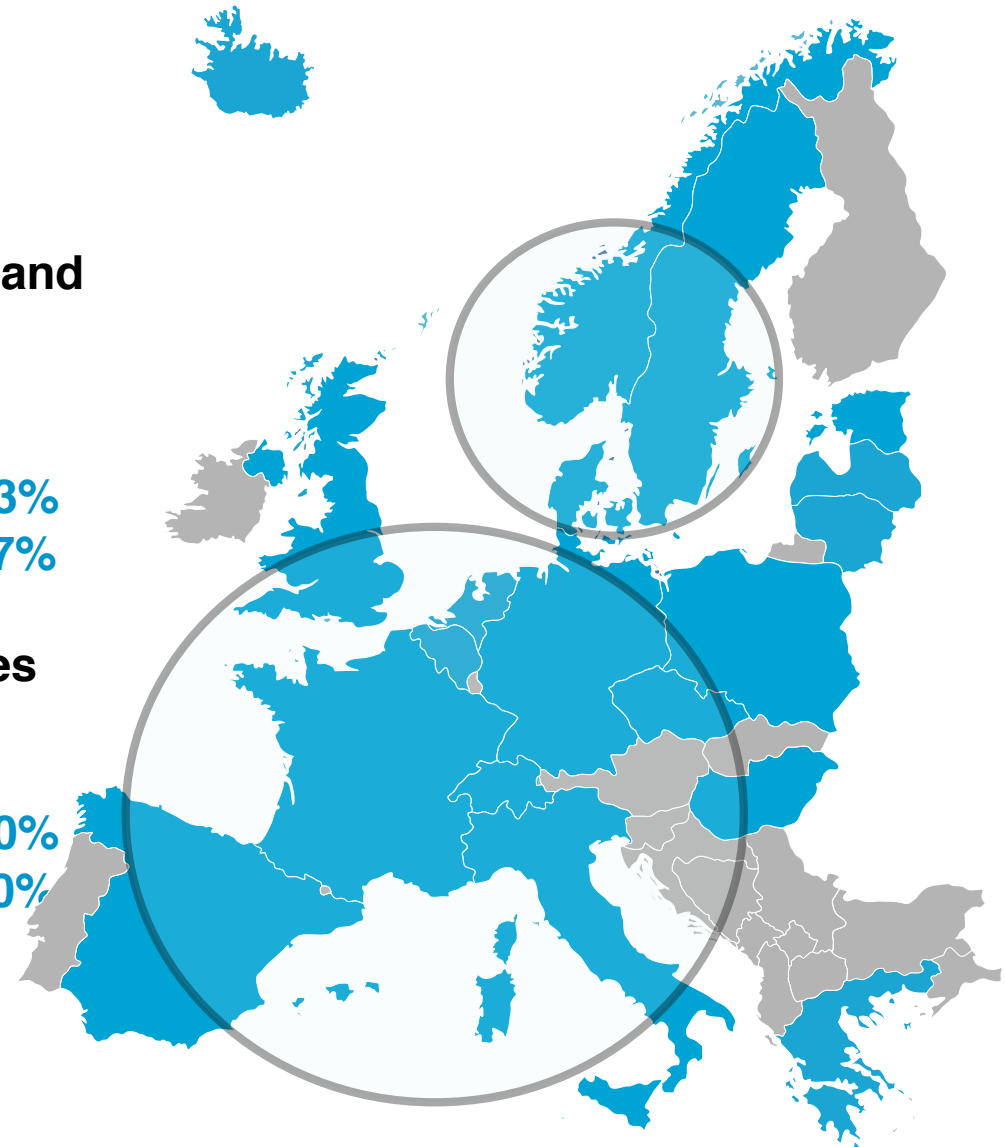
## Non Host Member Countries

52,5% Construction

85% Operations

**In-kind Deliverables** ~ 70%

**Cash Investment** ~ 30%



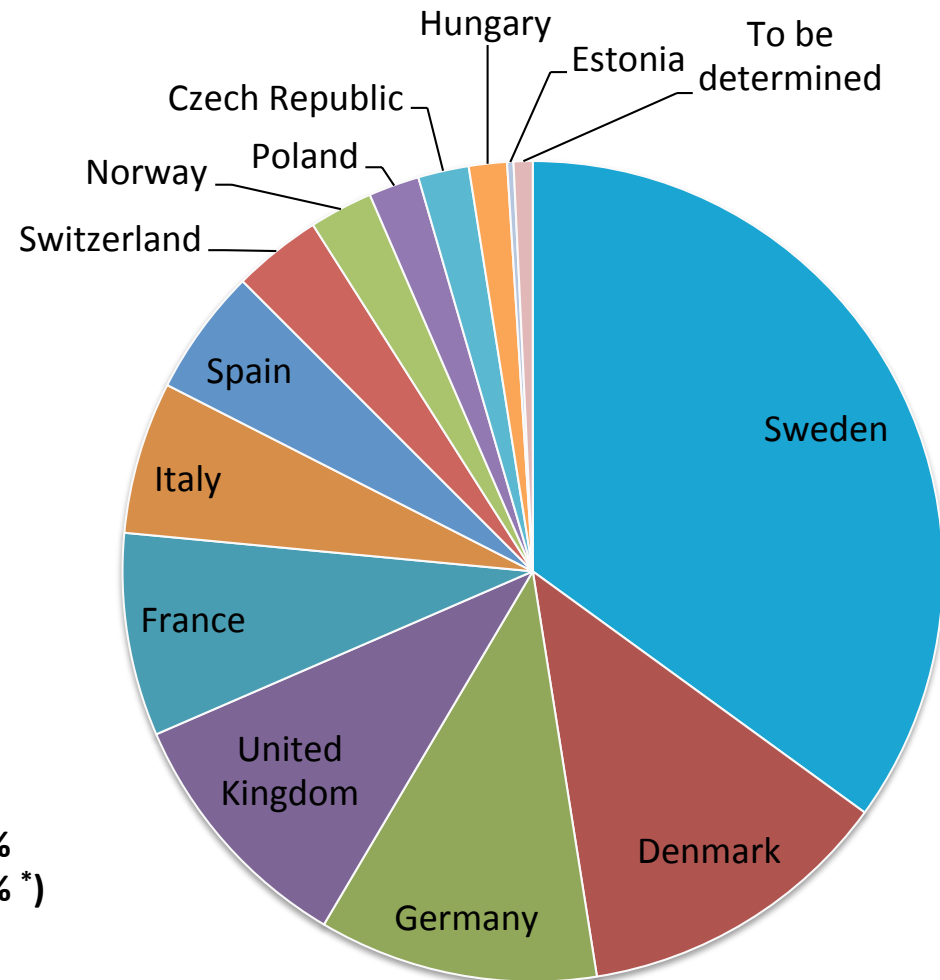
# Construction investment

Sweden	35.0 %
Denmark *	12.5 %
Germany *	11.0 %
United Kingdom	10.0 %
France	8.0 %
Italy	6.0 %
Spain *	5.0 %
Switzerland	3.5 %
Norway	2.5 %
Poland	2.0 %
Czech Republic	2.0 %
Hungary	1.5 %
Estonia	0.25 %
<b>Total</b>	<b>99.25 %</b>

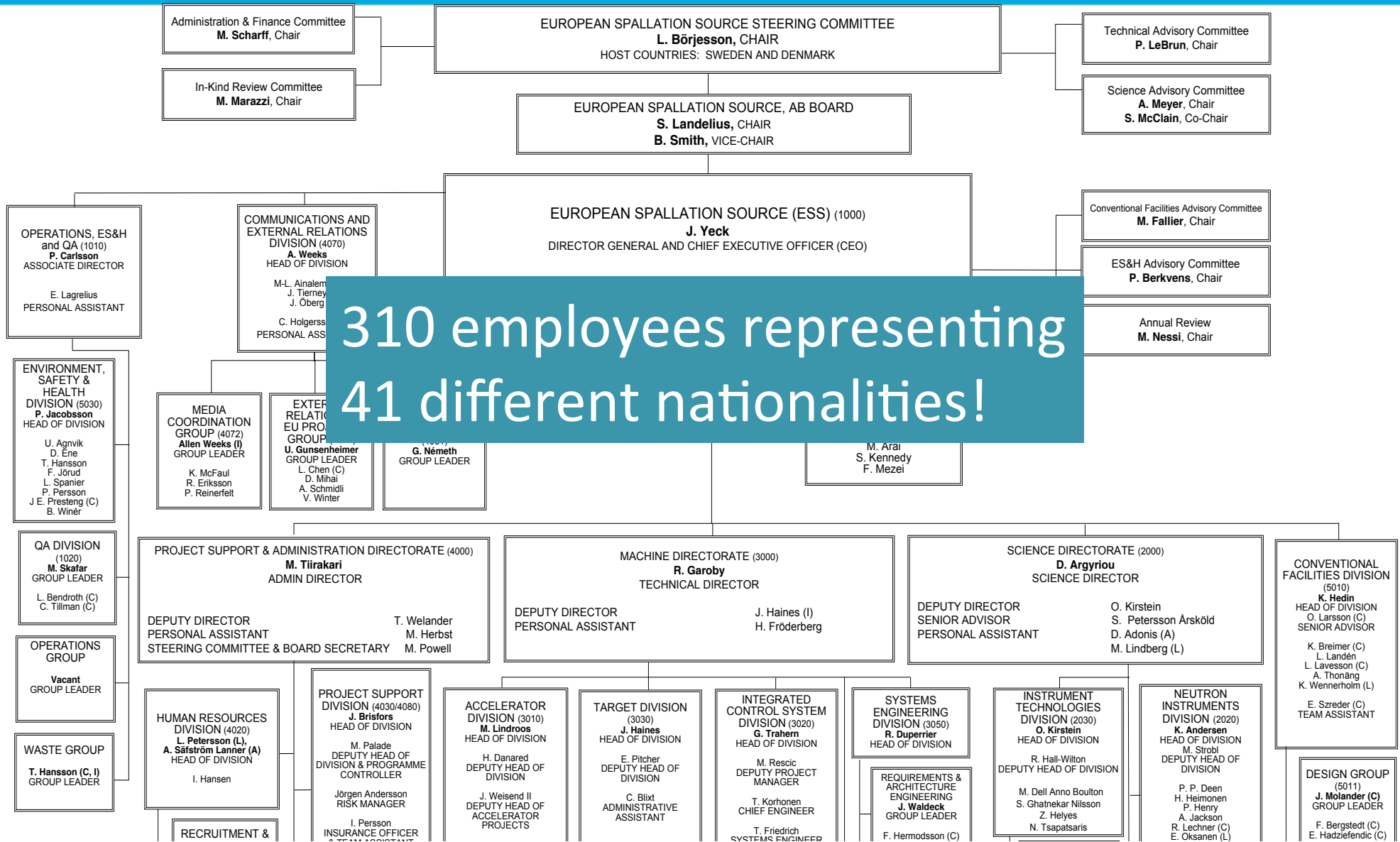
Iceland	<i>tbd (0.25)</i>
Latvia	<i>tbd (0.25)</i>
Lithuania	<i>tbd (0.45)</i>
Netherlands	<i>tbd (2.0)</i>
Belgium	<i>tbd (2.0)</i>
Greece	<i>tbd (1.0)</i>

➤ 0.75 %  
(~3.0 % \*)

\* Includes Pre-construction Costs



# ESS Organization



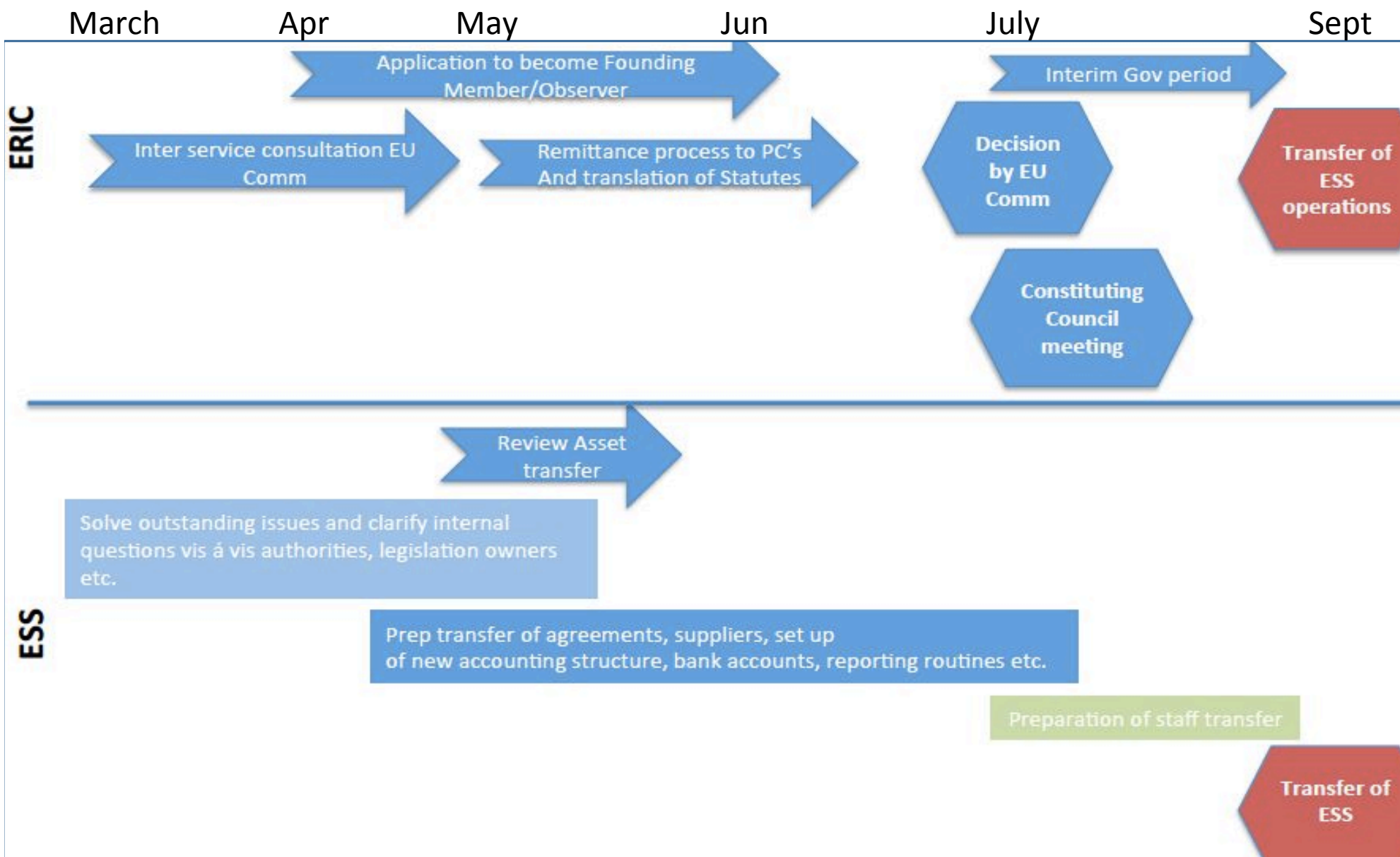
310 employees representing 41 different nationalities!

# ESS AB to transition into European Research Infrastructure Consortium (ERIC)

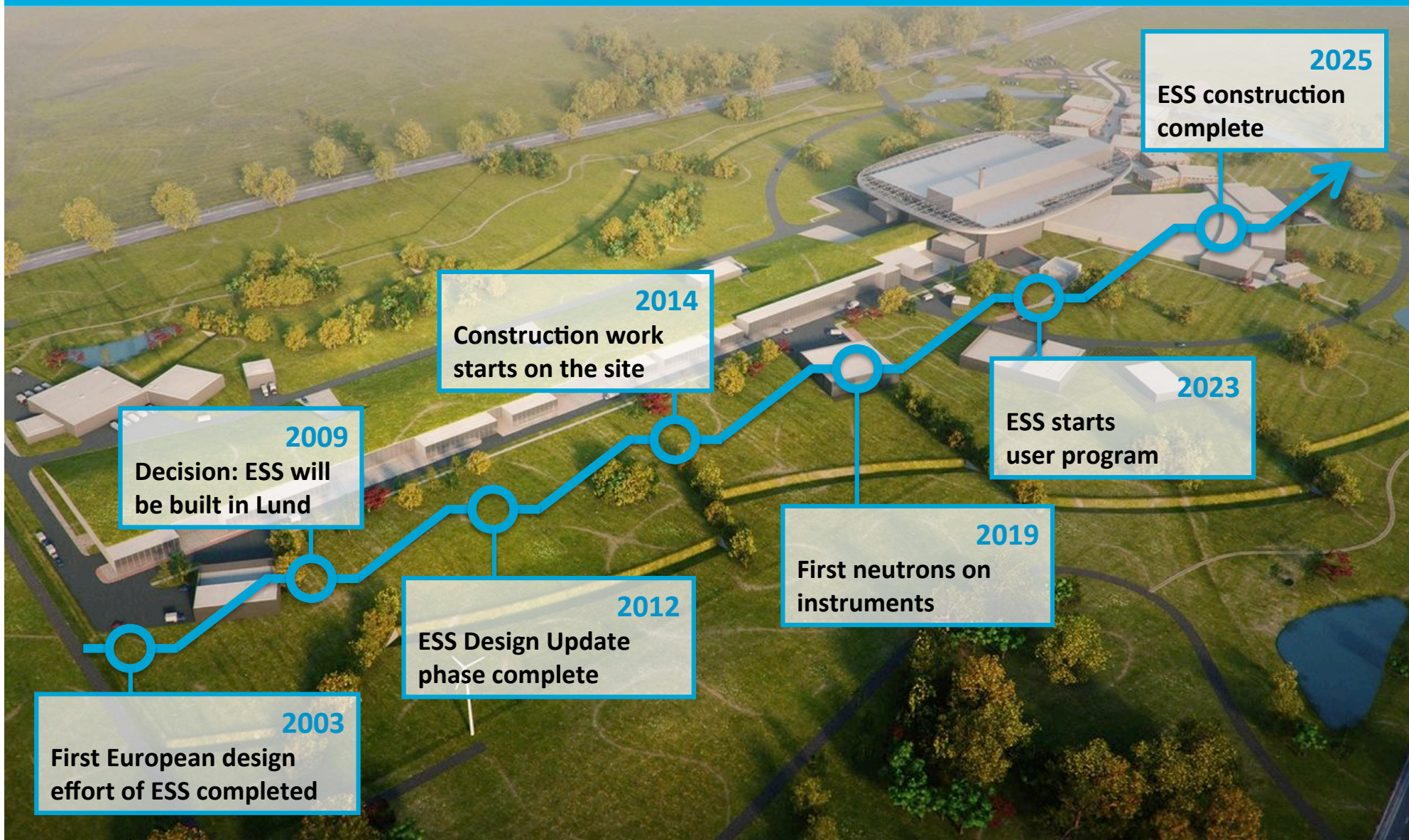


- Hosts Sweden and Denmark, Hungary, and Norway (observer) applied to the European Commission (EC) to establish a European Research Infrastructure Consortium (ERIC) for ESS. EC approval expected at the beginning of July 2015.
- Goal is to establish the European Spallation Source ERIC at the earliest possible date with as many founding members as possible. Full transition from ESS AB to the ERIC organization will be completed by the end of 2015.

# Time-plan for Transfer ESS AB – ESS ERIC



# Road to realising the world's leading facility for research using neutrons



# ESS looking towards MAX IV



# ESS target building



# Progress on civil construction

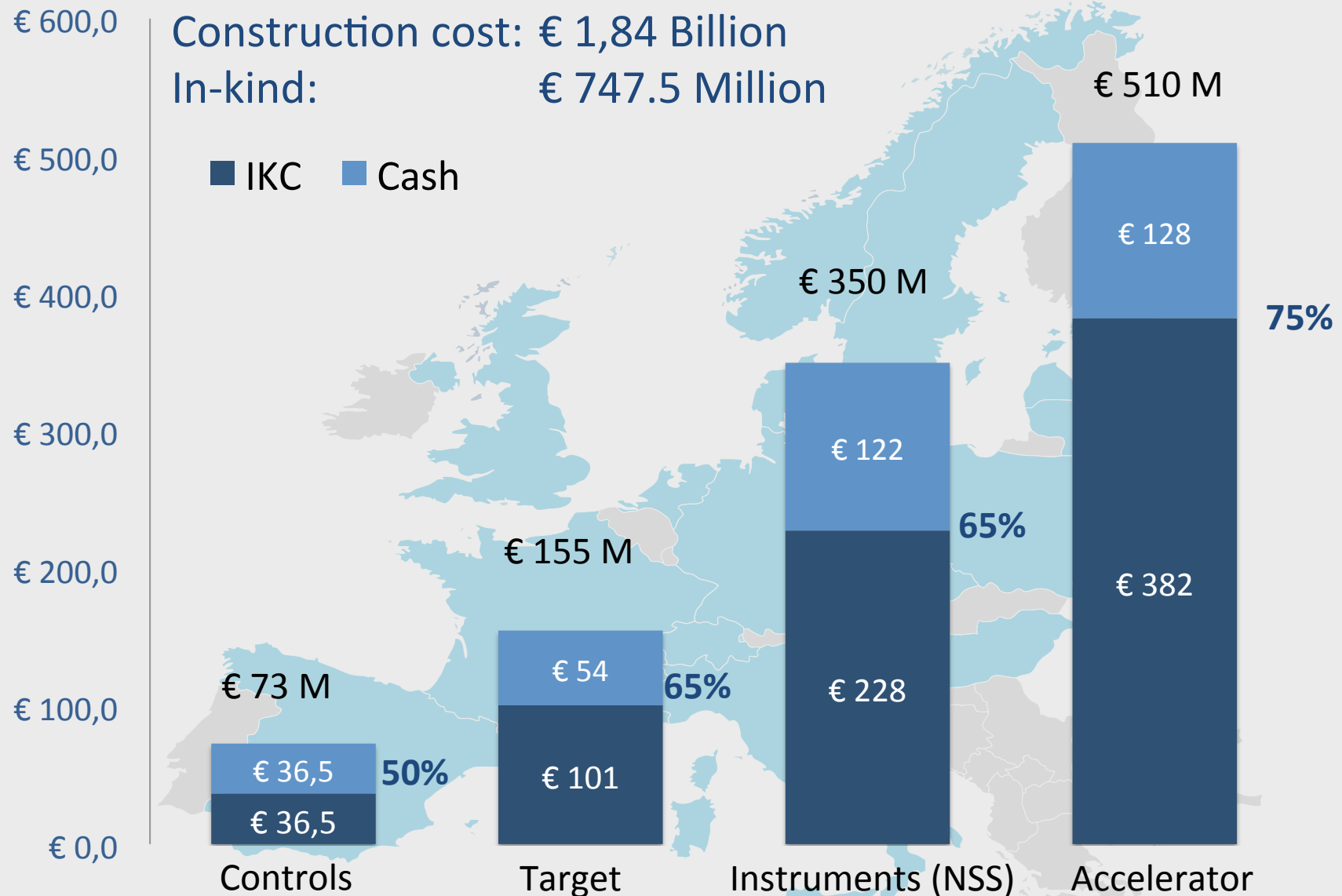


# Project execution strategy



- Deliver on the Technical Design Report performance and Steering Committee commitments
  - **5 MW accelerator capability**
  - **Cost Book construction cost of 1,843 B€<sub>2013</sub>**
  - **Cost Book annual operations cost target of 140 M€<sub>2013</sub>**
  - **22 “public” instruments (16 included in the construction budget)**
- Start w/ unconstrained resources (technically limited schedule) and develop credible project execution plans
- Comprehensive review of project baseline and execution plans
- Secure funding and resources and align schedules with the available resources

# ESS In-kind Goals



# ESS schedule baseline – external milestones



<b>Milestone</b>	<b>Date</b>
<b>Delivery TDR and Start Construction Phase</b>	Jan 2013
<b>Start Site Preparations</b>	Jun 2014
<b>Start First Installations for Accelerator On-site</b>	Sep 2016
<b>First Beam on Target (570 MeV)</b>	Dec 2019
<b>Machine installed for 2.0 GeV Performance</b>	Dec 2022
<b>Construction Phase Instruments Complete</b>	Dec 2025

# Thanks for Your Attention!

