A strategy for neutron science in Sweden for 2025 to 2035 and beyond

The Swedish Neutron Scattering Society (SNSS)

The SNSS board foresees key strategic goals and challenges for the upcoming decade 2025-2035. The central challenge is the sustainable consolidation of the neutron community and activities in neutron science. The Swedish neutron community has to capitalize on the investments in community growth, education and access and development of neutron facilities. SNSS considers overarching tasks: the formation of a coherent and strong environment integrating academic excellence and competence, relevant method development at neutron facilities and industrially relevant science tackling the grand societal challenges. SNSS contributes to these goals by representing the user community in a national and international context and providing a platform for exchange of information and communication within the user community as well as with relevant stakeholders.

The following specific objectives have been identified and translated into strategic actions:

1. ***We need to ensure sufficient access to diverse neutron instrumentation and sources****:*
   - Establish a strong Swedish scientific program at the European Spallation Source (ESS) as highest priority.
   - Operate Swedish national infrastructure as essential facilities for direct access, deep method understanding, method development, education and long-term projects.
   - Continue access to the Institute Laue Langevin (ILL) beyond 2033 to benefit from the unique opportunities and high capacity of beam days.
   - Continue the Swedish access program to the ISIS facility for method development and resilience to facility shutdowns.
   - Support and formalize access to facilities other than ILL and ISIS for unique and relevant capabilities.
   - Promote and enable direct access to low-brilliance neutron sources for education, test measurements, technical and method development.

2. ***We need to develop a sustainable community:***
   - Establish efficient and transparent support for career pipelines for neutron scientists towards future roles at neutron facilities, in academia and in industry.
   - Secure strategic investments with a long-term vision of a broad and well-established landscape of university faculty with neutron expertise.
   - Strengthen and support national centers and organizations promoting and enabling neutron science.
   - Facilitate participation in international neutron graduate school programs, for which co-funding might be required.

3. ***We need to expand competence in instrumentation and method development:***
   - Continue national neutron infrastructures to maintain expertise in neutron methods and enable scientific excellence.
   - Support involvement of Swedish scientists in method and instrument development at facilities to shape experimental opportunities relevant for the Swedish research communities.
   - Follow developments on high-current accelerator-driven neutron sources (HiCANS) and work towards a Swedish national source to complement ESS.

4. ***We need to consolidate and develop a broad, inclusive education program:***
   - Consolidate the portfolio of PhD courses established in educational programs, like e.g. SwedNess, for future high-quality research education.
   - Establish outreach and training activities for industrial researchers and users from research fields with limited or no neutron use.
   - Integrate neutron science into first and second cycle programs to increase awareness and attract highly qualified and excellent students.

5. ***We need to facilitate industrial use of neutron methods:***
   - Diversify industrial access modes to recognize the specific needs in industry.
   - Support a rich ecosystem of neutron science, to enable industrial use including participation from large industries, SMI, mediator/CRO, facilities, RISE and experts from academia.

6. ***We need to establish and exploit national organisations and centres*****:**
   - Communicate with facilities, funding agencies and other stakeholders to secure that the needs of the Swedish neutron users are met.
   - Monitor the development and needs of the Swedish neutron user community.
   - Represent the Swedish neutron user community in the international context, e.g. ENSA.