

Towards a Canadian Neutron Strategy

Context

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Our Purpose:

To establish a new, pan-Canadian, university-led framework for governance, management and representation of Canada's capacity for materials research with neutron beams, building on existing national and international resources.

Canadian Neutron Initiative

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Timeline



CINS endorses U Sask proposal for national program operated by a "Virtual Inst. for Neutron Scattering" CINS AGM recommends coordinated work

Federal Finance Committee endorses CNI proposal for holistic national program

NFRF funds awarded to U Windsor re: accelerator sources 16 universities endorse creation of "Neutrons Canada" at CNI Roundtable of VPRs

CINS approached universities for executive leadership

U Sask produces vision doc

Canada – Sweden state visit at ESS

NRU closes. SNS access expires. CINS AGM reaffirms coordination within CNI

CNBC terminates

CNI Roundtable on a National Neutron Strategy

2015

₂₀₁₆

/2017

2018

2019

2020

2021

GoC announces 2018 NRU shutdown McMaster initiates CFI-IF discussion

CNI proposal for national program discussed with federal depts and agencies

Federal Finance Committee endorses CNI proposal again

17 universities support CFI-IF proposal (MNR, access to NIST and ORNL) We are here International Conference on Research Infrastructures

CFI rejects MNR proposal for MSI funding

Executive leaders of U Sask, McMaster, CINS, and the Canadian Nuclear Association create the CNI working group CINS endorses CFI-IF proposal as a step towards CNI vision, and calls on CNI to create a national governance framework

ESS offers financial support for outreach CNI expands working group as steering committee for creation of "Neutrons Canada"



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Neutron beam facilities are critical tools for materials research and technology development in areas such as clean energy, clean transportation, health, and food security.

Nobel Laureate in Physics (2015), Prof. Art McDonald, Queen's University

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Challenges

Environmental, Social, Health, Economic



CLEAN ENERGY

Producing clean energy and storing it in an efficient electricity grid.



SAFETY & SECURITY

Ensuring nuclear, pipeline and rail safety, and determining fitness-for-service of naval ships.



CLEAN GROWTH

Making parts for clean, light-weight planes, ships, and cars using advanced manufacturing.



HEALTH AND FOOD SECURITY

Understanding the materials of our bodies, designing medical devices, and developing resilient crops.

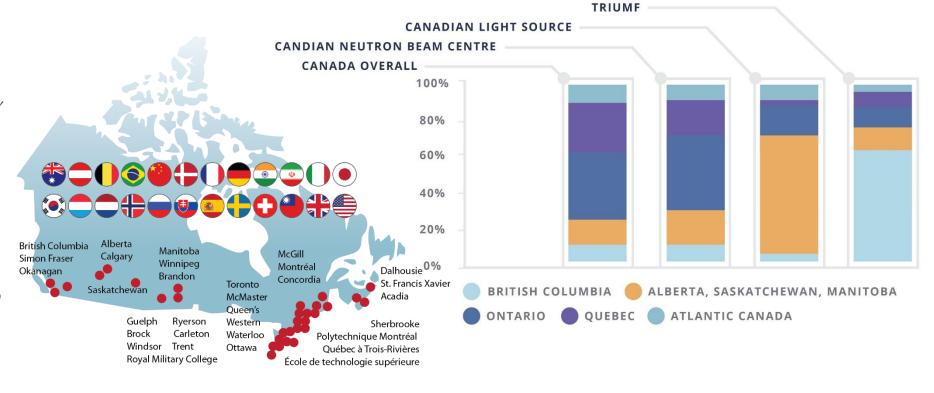


Pan-Canadian User community

Users of the CNBC included about 100 principal investigators were well-distributed among over 60 departments at 30 universities.

Comparison of User Distributions

About 800 scientists, engineers, and students from universities, government labs, and industry participated in research at the CNBC, during its last five years of operation. Of these, over were 400 researchers from 139 foreign institutions in 22 countries.



CNI Supporters

The CNI working group has gathered 23 institutions from coast to coast who support its purpose:



UNIVERSITY OF BRITISH COLUMBIA | BROCK UNIVERSITY

SIMON FRASER UNIVERSITY

UNIVERSITY OF ALBERTA

UNIVERSITY OF CALGARY

UNIVERSITY OF SASKATCHEWAN

UNIVERSITY OF WINNIPEG

UNIVERSITY OF WINDSOR

WESTERN UNIVERSITY

UNIVERSITY OF GUELPH

UNIVERSITY OF WATERLOO

MCMASTER UNIVERSITY

UNIVERSITY OF TORONTO

QUEENS UNIVERSITY

MCGILL UNIVERSITY

UNIVERSITÉ DE MONTRÉAL

UNIVERSITÉ DU QUÉBEC À TROIS-RIVIÉRES

DALHOUSIE UNIVERSITY

MEMORIAL UNIVERSITY

FEDORUK CENTRE

NEMAK CANADA

CANADIAN LIGHT SOURCE

CANADIAN NUCLEAR ASSOCIATION

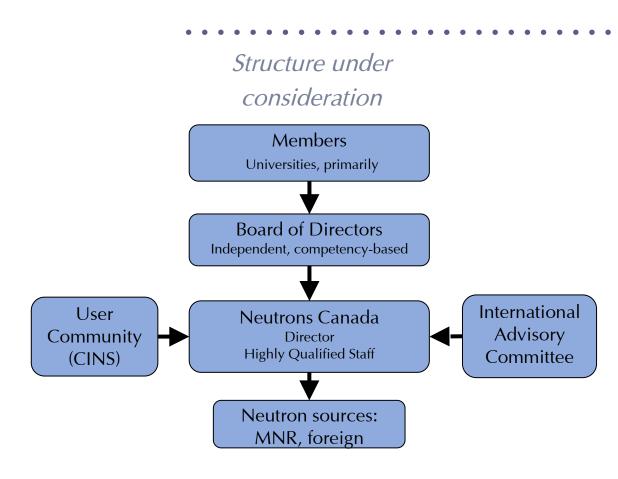
On 2020 Jan 29, executives from 16 Canadian universities agreed to establish "Neutrons Canada"



Governance

For excellence and maximum impact

- A not-for-profit corporation whose members will be composed of organizations with interest in neutron beams.
- Members elect an independent Board based on governance competencies, technical knowledge, and perspectives.
- The Board appoints the Director, who leads the organization.
- Highly qualified staff will operate the pan-Canadian program, and could be deployed to the neutron sources.
- Neutrons Canada acts as a paying customer to neutron sources and negotiates terms of partnership with each source.
- CINS represents the user community, providing advice and coordinates with Neutrons Canada on funding applications.





National Strategy

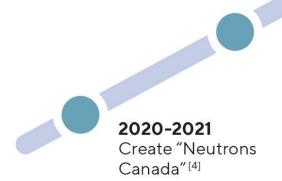
- 1. Forge foreign partnerships
- 2. Build on existing domestic capabilities
- 3. Explore new neutron sources for the long term; and
- 4. Create a new governance framework

Simplified timeline

2021-2022

Begin major projects to:

- Forge partnerships with foreign facilities [1]
- Build capacity at the McMaster Nuclear Reactor^[2]
- Explore long-term options, including a prototype source [3]



BEYOND

Major investment in new source(s) for the long-term (\$100M-1B)? [3]



Establish a national program (\$20M/year) using domestic and foreign neutron sources, under a new governance framework [1-4]

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Purpose of Meeting Today

"A gathering of leading scientists from universities and industry, government agencies, and international facilities to shape a national neutron strategy to rebuild Canadian capacity for materials research with neutron beams."



Virtual Meeting: Please register by November 30, 2020.

Sponsoring partners









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