



NSF EarthCube Research Coordination Network for High-Performance Distributed Computing in the Polar Sciences



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Project Vision

The potential for global impact with huge socio-economic costs makes understanding polar climate change, and the links between polar and global systems an urgent priority. Despite the data- and compute-intensive scientific needs of modern polar science, use of high-performance and distributed computing is currently limited. Bringing the polar and computing communities together in a sustained fashion has the potential to inform computing development and transform polar science research.

In response to these needs, NSF recently funded a two-year EarthCube Research Collaboration Network (RCN) led by Rutgers University. The Polar RCN aims to connect the Polar Science, Data and High-Performance and Distributed Computing communities to enable deeper penetration of computing methods and cyberinfrastructure into the polar sciences.



Supraglacial stream on the Greenland ice sheet

Themes

Activities will be organized around four themes which are designed to yield technical results and foster a collaborative polar-HPDC community.

• Current and Future Challenges Using High-Resolution Imagery

One of the major current challenges is managing and fully exploiting the large volumes of high-resolution imagery. High-performance routines are needed to geo-rectify and stitch together high-resolution images. This will require efficient algorithms, scalable solutions and infrastructure.

• Build Partnerships between Polar & Computer Scientists

The RCN will be a preeminent forum for the creation of partnerships amongst HPDC, polar science, and data management experts. The team, with a balanced mix of representatives from each discipline, will work together to facilitate & capture the emerging cyberinfrastructure needs of the polar science community.

• Education and Training

Among the numerous barriers to effective development and use of HPDC in polar sciences is a lack of relevant training for polar scientists. The RCN will support a range of basic and advanced HPDC environments and techniques.

• Data Management

International, interdisciplinary work in data sharing, discovery, transfer, handling, processing, representation, comparability, and standardization will impact, and will be impacted by, HPDC uptake in the polar science community.

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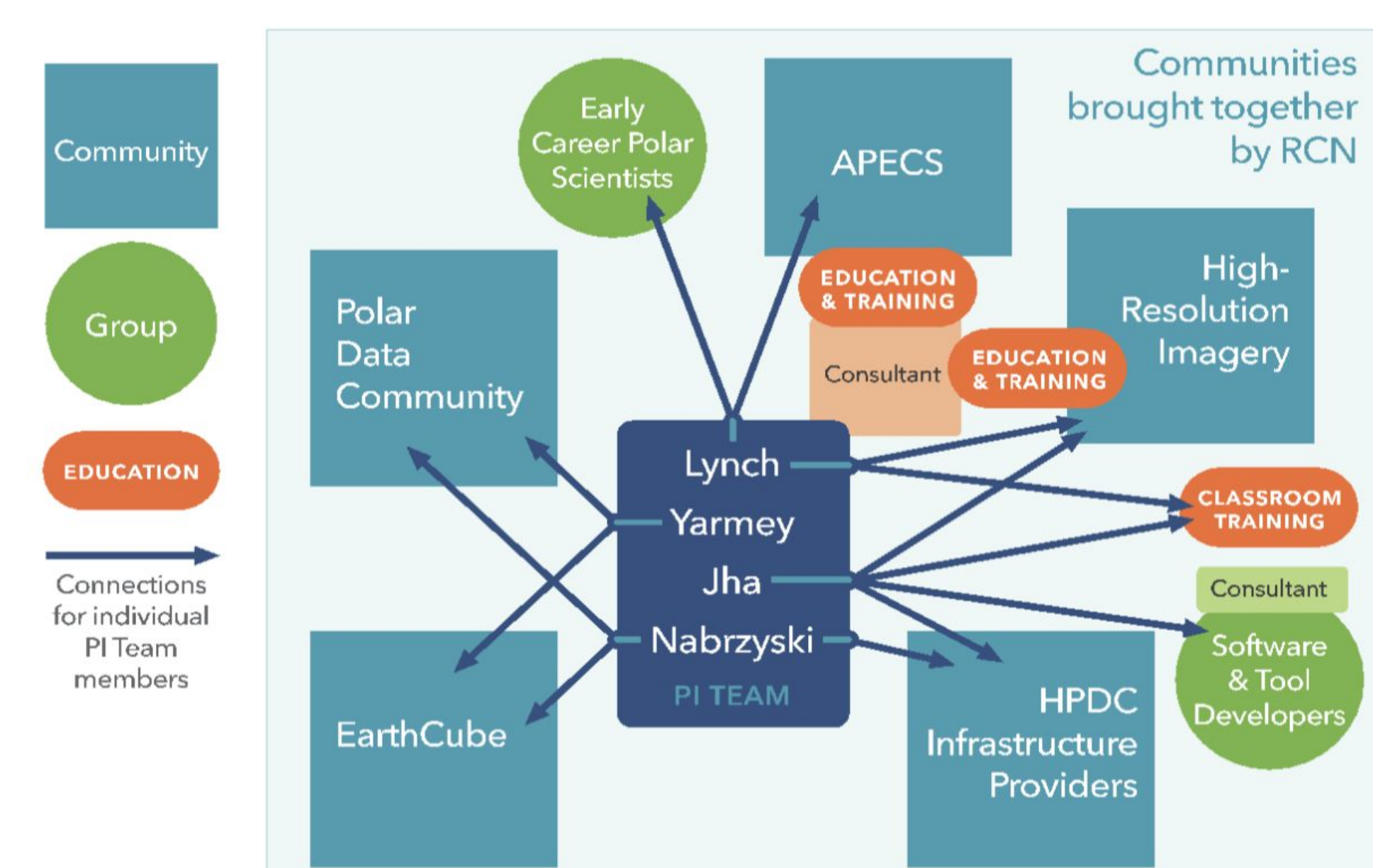
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Community connections and roles of RCN members.

