

A strategy for a Nordic Grid infrastructure

View of the Nordic National Grid Initiatives (NGIs)
and national HPC agencies/initiatives

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1. The current situation
2. The target situation
3. How to get there

The current situation (1)

Organization

- The Nordic countries have their own NGI and HPC organizational models:
 - Finland centralized
 - Norway and Sweden distributed (4-6 centers)
 - Denmark distributed (funding allocated to research groups, invested at 5 centers)
- National centers participate in EU research and infrastructure projects, partly with local/national funding, partly coordinating key activity
- First sustainable European Research Infrastructures created in FP7
- NDGF is a Nordic collaboration building on national operations, competence, and resource providers. NDGF delivers strong support to HEP/WLCG and middleware development

The current situation (2)

Parameters in a collaboration

- General purpose grid infrastructure to support multiple communities is complex. It requires the bundling of expertise from many areas: HPC, data management, networks, operations, application enabling and support, middleware, standards, ...
- Boundaries between HPC infrastructure and grid infrastructure for science and research are not always well-defined and have overlap (e.g., in end-user interactions and resource operations). National centers need critical mass in both.
- It is desirable for the national infrastructures to share and combine. Nordic collaboration must be based on mutual understanding among the stakeholders of the national and Nordic advantage of such collaboration.
- The national infrastructures should be able to and be encouraged to maximize their engagement and contribution to the development of permanent Nordic and pan-European infrastructures for research (e.g., EGEE/EGI, PRACE, etc.).
- Joint Nordic participation in a European initiative must be recognized as such (e.g., with 'larger' weight) and opinion must be based on agreement of the stakeholders.
- Participants should contribute with what they are good at →

The current situation (3)

Available competence

Resource providers (HPC, data, network centers):

1. Operation of resources (also those used in the grid)
2. Application enabling and end-user support
3. Outreach & dissemination
4. Training

NDGF:

1. Nordic grid operations, in particular for HEP
5. Middleware development and support

NGIs:

1. Operation of the general national grid resource
2. Application enabling and end-user support

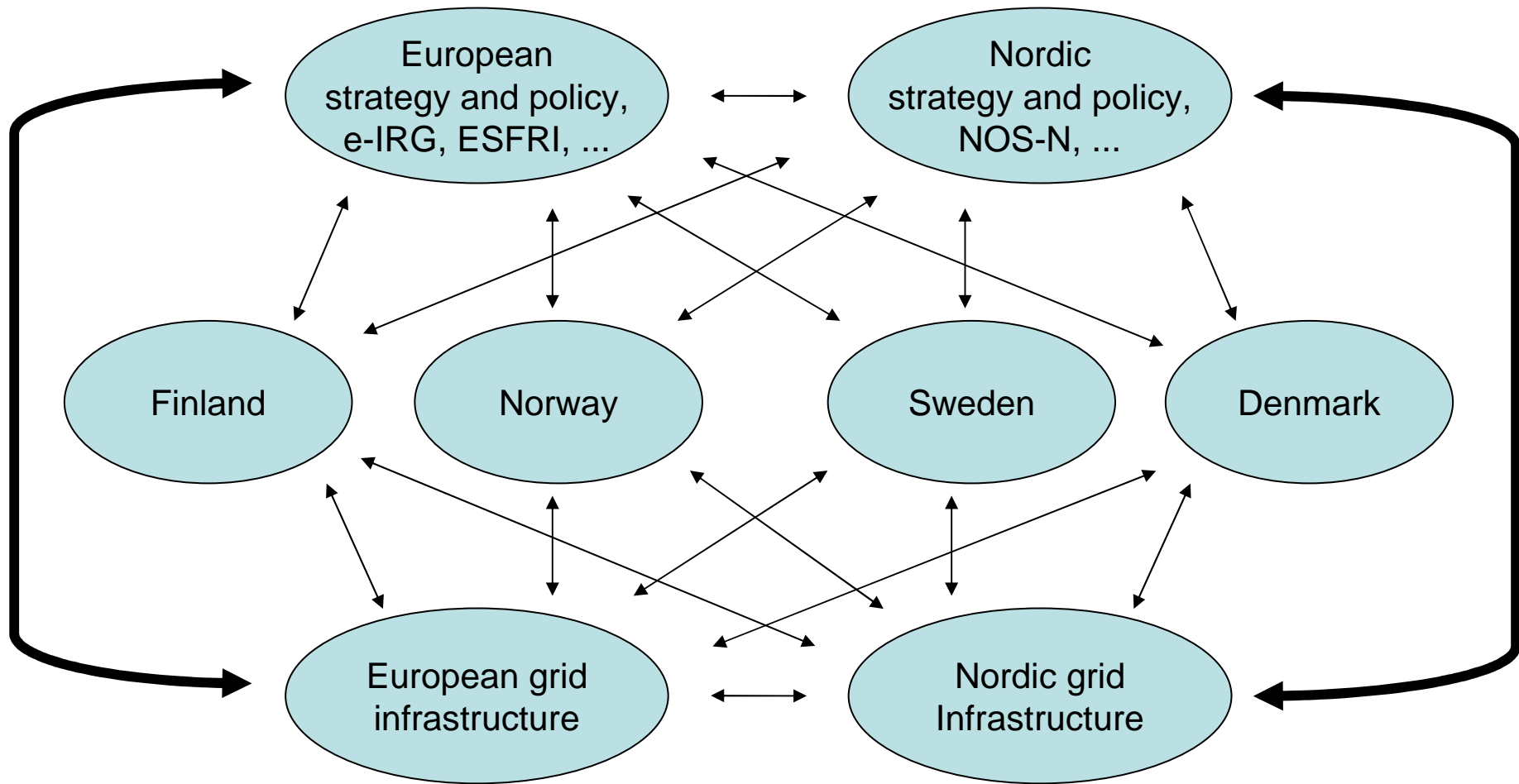
The target situation (1)

Opportunities for Nordic collaboration

- Vision: a Nordic collaborative framework on e-Infrastructure
 - to support Nordic communities in many areas of science
 - to enable grand computationally and data-intensive research
 - to strengthen national infrastructures
- Share/combine competence and resources between centers and countries in key functions: operations, application support, resource provisioning, middlewares, outreach and dissemination, training, ...
- Create Nordic excellence in core grid infrastructure, thereby aiding the Nordic countries to become e-Science / research- / user-driven knowledge societies
- Play a leading role in European infrastructure initiatives

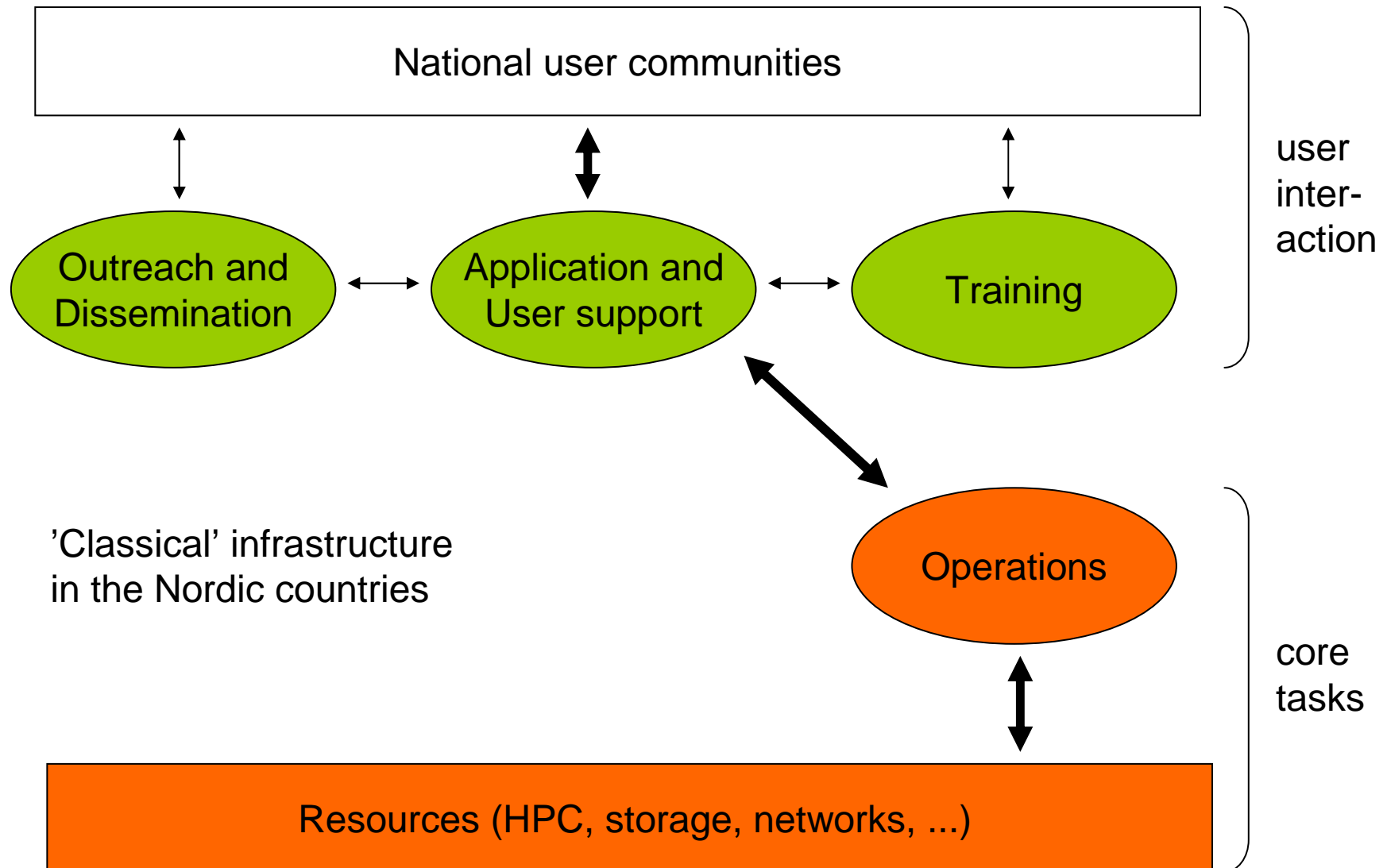
The target situation (2)

Engagement of the Nordic countries



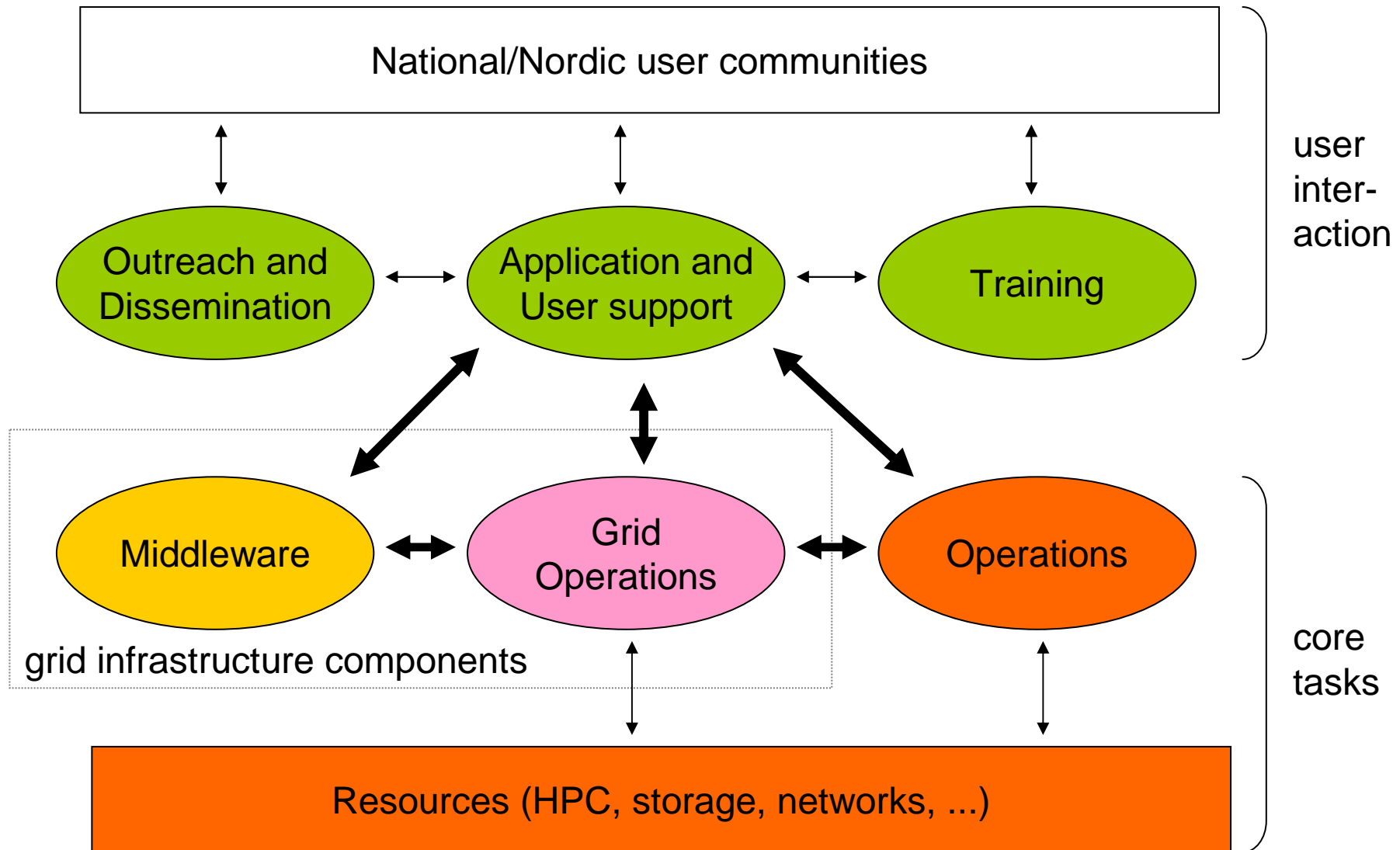
The target situation (3)

Opportunities for a Nordic grid infrastructure



The target situation (3)

Opportunities for a Nordic grid infrastructure



The target situation (4)

Opportunities for Nordic collaboration

1. Focus on science and user interaction: NGIs*

- *Grid enabling of new and existing applications, user support*
- *Grid enabling of national resources, grid operations*
- *Community building*
- *Outreach & dissemination; training of national/Nordic groups*





2. Nordic core grid

- *Nordic center for middleware development and middleware support; interoperability between grids; monitoring of Nordic grid infrastructure*
- *Support NGIs in grid operations*
- *Coordinate operations for selected user communities (e.g., HEP)*

3. Resource provisioning: national centers*

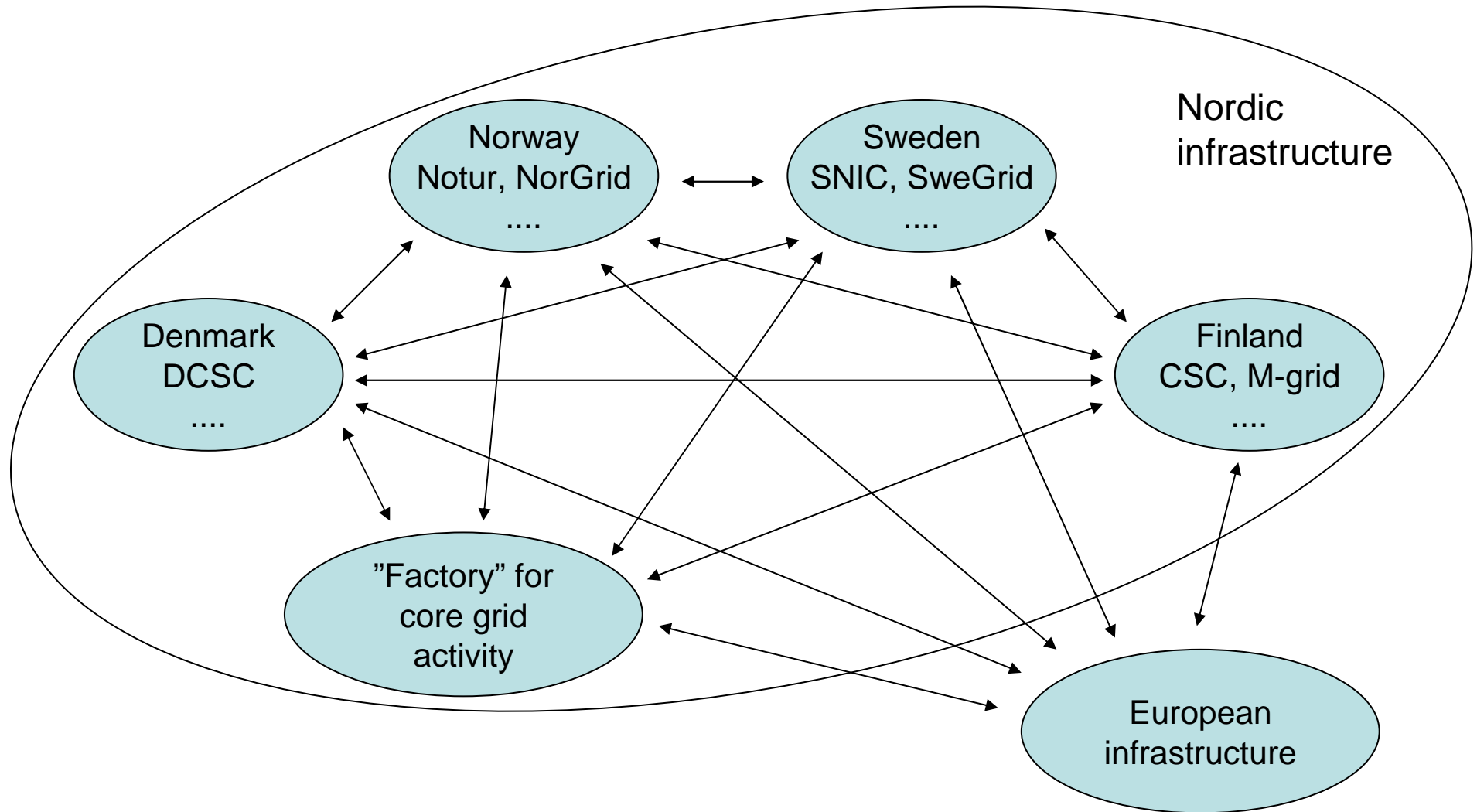
- *Operation of national resources (HPC, grid, storage, network, ...)*
- *Support 'classical' and grid usage of national resources*
- *Nordic resource provisioning*

* NGIs and national centers in three countries are the same or have large overlap

 user interaction  middleware  grid operations  core infrastruc.

The target situation (5)

Opportunities for Nordic infrastructure



How to get there (1)

Evolution of Nordic collaboration

NGIs:

- Today: NGIs are closely connected to HPC/data centres and have critical mass and expertise for application enabling, user support and operations
- Create a partnership of NGIs for support of science and research (i.e., application enabling, community building, outreach & dissemination, ...), relying on
 - available excellence in core grid operations and middleware
 - Nordic resource provisioning and sharing (HPC, storage, ...)
- 2010: start of EGI

How to get there (2)

Evolution of Nordic collaboration

NDGF:

- Today: NDGF is successful in coordinating Nordic grid operations for Tier-1 and in middleware development
- Nordic Grid Support Group: a Nordic collaboration for middleware development and supporting NGIs in grid operations, thus strengthening the national / NGI infrastructures, coordinate operations for selected Nordic/European communities
- 2010?

How to get there (3)

Evolution of Nordic collaboration

Resource providers:

- Today: national users have access to national resources. Only HEP has allocations across four countries.
- Resource providers develop a general framework for Nordic resource provisioning and sharing/aggregation of resources
- 2008

How to get there (4)

Challenges for Nordic collaboration

Organization and management ... **

- Establish an organization with trust and confidence between the parties
- Clear mandates and close interactions between the parties and key people to ensure efficient communication and avoid competing or parallel activity
- Nordic steering, strategy and policy making must be based on national interests and be detached from local interests
- Organization and management must be dedicated to defend the interests of the stakeholders. Limited outreach from the collaboration to the stakeholders will cause poor legitimacy and weaken support for the collaboration → loss of opportunities

*** A meeting was held October 2007 where the NGIs expressed concerns about the steering and management of NDGF and the passive contacts with the national centers / NGIs*

How to get there (5)

Challenges for Nordic collaboration

And ...

- Allow for flexibility/differences in participation per country based on national interests, competence and communities
- Allow flexible building and implementation of user communities. Not every community is like HEP / Tier-1 or equally present/strategic in all countries
- Focus on areas where Nordic approach provides added value compared to national approach. E.g., large-scale user communities and (ARC) middleware development
- Bottom-up and top-down support of infrastructure / communities
 - Top-down support of new/European user communities (e.g., HEP)
 - Bottom-up support to boost existing research and collaborations with predefined critical mass

Conclusions

The NGIs support strong Nordic collaboration on grid where this saves work, adds value, boosts science, and strengthens infrastructure

Proposal: the four NGIs and NDGF (5 people) continue the strategy document determining common grounds and added value for Nordic grid collaboration.

Deliverable: April 19 (6 weeks from today)

Deliverable includes a survey of the NGIs to get their ideas and opinions on Nordic grid collaboration. Survey carried out by NDGF and independent person.