



**SWEDISH eINFRASTRUCTURE  
for  
RESEARCH**

VISIONS and ROADMAPS  
2010-2013

A Landscape Document



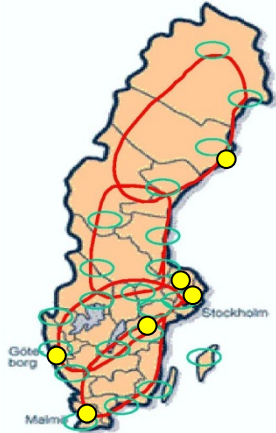
# Swedish National Infrastructure for Computing (SNIC)

Sverker Holmgren  
SNIC Director

# SNIC

- The Swedish Computing Meta-Center, organized within the Swedish Research Council (Vetenskapsrådet)
- Mission:
  - Provide funding for computing resources in Sweden
  - Coordinate investments and competence
  - Allocate resources to users (SNAC committee)
  - Fund and coordinate development projects
  - Host the Swedish National Graduate School in Scientific Computing (NGSSC)
- Means:
  - Work by SNIC centers
  - A board and a very small executive organization
  - Strategic plan: **The SNIC Landscape Document**

# SNIC 2009



- HPC2N (Umeå)
- UPPMAX (Uppsala)
- PDC (Stockholm)
- NSC (Linköping)
- C3SE (Göteborg)
- LUNARC (Lund)

+ OptoSUNET, 10 Gbit

- About **300** user groups (**1-50** researchers each)
- SNIC funding: **68** MSEK (KFI) + **15** MSEK (KAW)
  - Coordinates additional funding (LHCK **6** MSEK, Foundations, ...)
  - SNIC funds investments and staff. Facilities funded by universities.
- Hardware resources:
  - A few large-scale computing systems
  - Foundation-level computer systems and storage at all centers
  - SweGrid initiated 2003
  - SweStore initiated 2009
- Development projects
- The Swedish entry point to major international collaborations

# SNIC 2009

- Significant capacity increase for SNIC users
  - Now more than **35000 cores** and **1,5 PB** disk
  - (C.f. SNAC Allocation round spring **2007**: **1730 cores** available)
- New resources coming in:
  - Four new foundation-level computing systems
  - Computing system for demanding applications (24 MSEK)
  - SweStore effort on local and national storage (15 MSEK)
  - PRACE prototype system
  - Two group-specific KAW/SNIC systems
- Participation in EU-level initiatives
  - PRACE
  - EGI
  - PARADE
- Building relations to DISC, ESFRI-projects etc



SWEDISH eINFRASTRUCTURE  
for  
RESEARCH

VISIONS and ROADMAPS  
2010-2013

A Landscape Document



Proposed budget:

168 MSEK/year  
(for investments and  
staff)

Based on analysis of  
user needs  
(SNIC Scientific Case)

# Swedish Landscape for Computing

## European-level resources

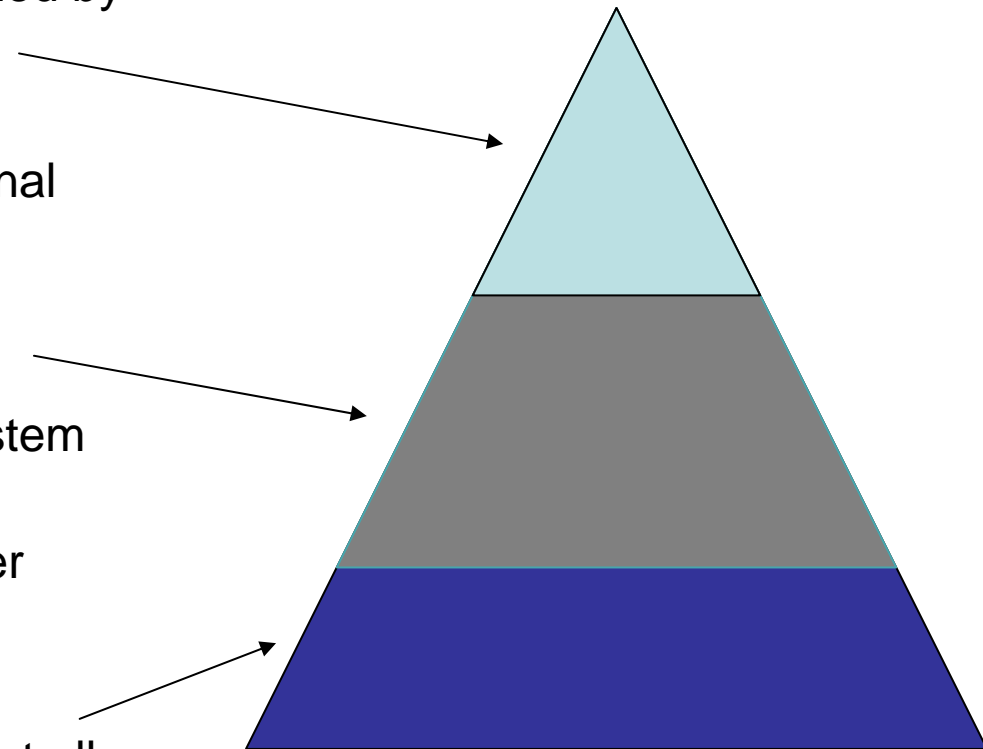
- Grand-scale resources provided by e.g. PRACE and EGI.

## Special resources

- A few large-scale computational resources
- A few other special-purpose computational resources
- The national data storage system (SweStore)
- Collaborative efforts with other partners, e.g. KAW.

## Foundation-level resources

- Computing and data storage at all SNIC centers
- 



# Roadmap for 2010

- Computing resources
  - Ensure sufficient foundation-level capacity at all sites
    - Collaborative process and joint procurements
  - Install a 160-200 Tflop system for demanding applications
  - Install a pilot system with hardware accelerators
  - Participate in procurement of a pilot system at Nordic level
  - Continuation of KAW/SNIC collaboration?
- Data storage
  - Ensure unified center storage at all sites
  - Build first version of distributed, national storage
  - Cross-site backup
- User support
  - Application experts coordinated with Strategic Area eScience efforts
  - Application experts for massive-scale parallelization



# Also in the roadmaps

- Computing resources
  - Regular updates of foundation-level systems in 2011-2013
    - Two systems at each site, each system renewed every 4th year
  - Possibly one large-scale system in 2011
    - Depending on user needs
  - A Pflop system for demanding applications in 2012
    - After further evaluation of user need
- Data storage
  - Continued build-up according to plan produced by the SNIC Data Storage Task Force
- User support
  - Extended effort!! Program development coordinated with Strategic Area efforts in eScience
- Access modes
  - Harmonization with EGI and PRACE
  - Simplified/unified sign-on to SNIC resources

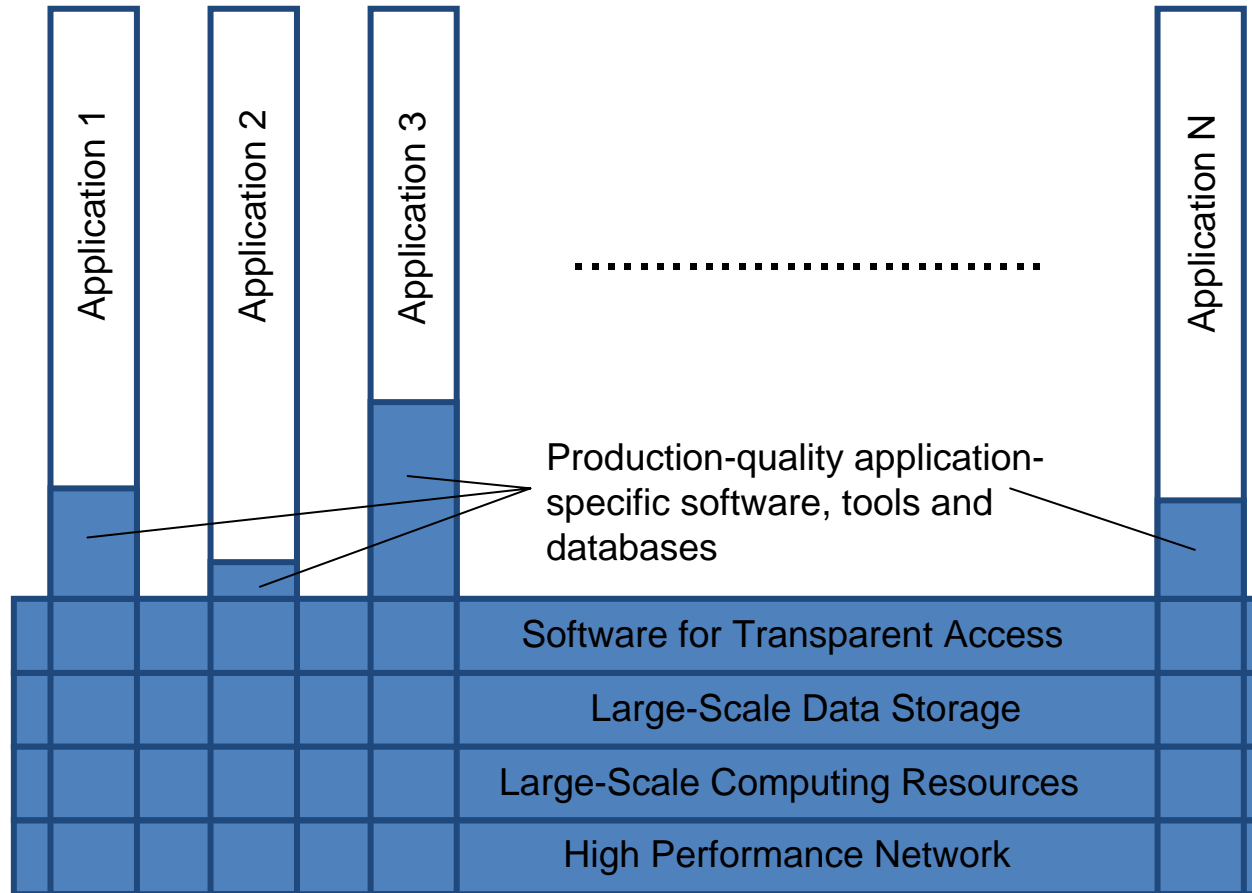
# Also in the roadmaps

- Allocation process
  - New SNAC Policy Document
  - Performance evaluation of applications for special resources
  - Allocation procedures for storage and user support
  - Improved user/project management and reporting procedures/tools
- Collaborative projects
  - PRACE and EGI
  - Future Nordic collaboration on grid, HPC and data storage
  - DISC/SND and SUNET
  - ESFRI projects etc
- Possible external facilities and service providers
  - Investigate housing options for SNIC systems
  - A possible large-scale joint Nordic resource
  - Investigate feasibility of commercial cloud services

# Challenges

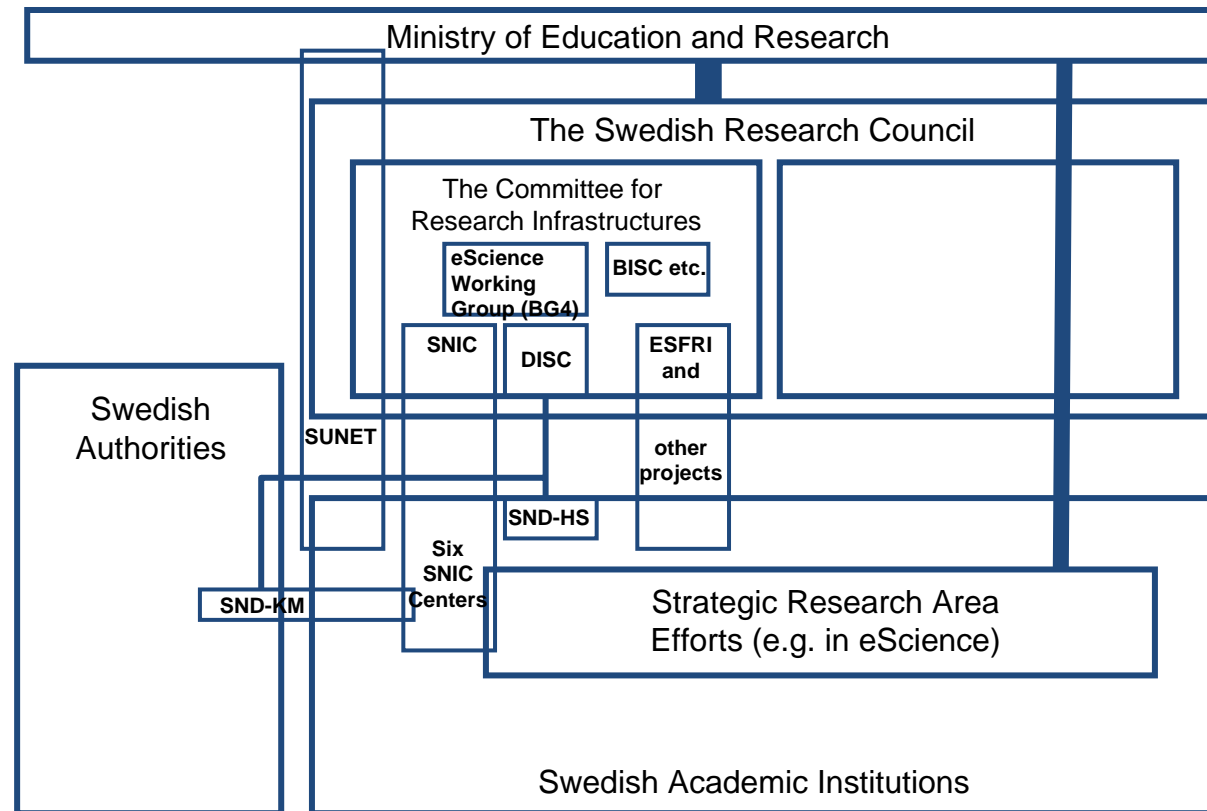
- Increased needs and new structures
  - Strategic Research Area efforts (eScience and others)
  - New, large-scale national projects
  - New, very large projects funded and coordinated at EU-level (ESFRI etc)
- Cost for facilities and electricity is growing
  - Association agreement: The Research Council and the hosting universities should agree on partitioning of total costs for SNIC resources!

# Challenges



Blue areas = eInfrastructure.

# Challenges



The Swedish eInfrastructure ecosystem

# Opportunities

SNIC is well-positioned to cater for the rapidly increasing needs of computing resources and data storage for Swedish research!

- Foundation-level and special resources
- National coordination
- Participation in international initiatives
- Collaborative efforts

