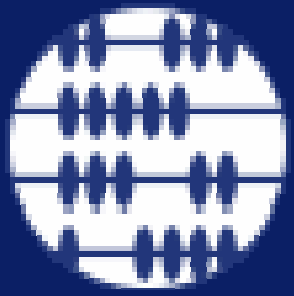


notur

The Norwegian Metacenter for Computational Science

Jacko Koster
(presented by R. Dragseth)
www.notur.no

HPC projects in Norway

1986 - 1991: First HPC project (NTH, SINTEF)
1988 - : Met. office starts using the HPC resources

1991 - 1995: Second HPC project (NTH, UiO, UiB)
Nordic cooperation

1995 - 2000: Third HPC project (NTNU, UiO, UiB)
Central resource allocations

2000 - 2004: Fourth HPC project (Notur I)
Partners: NTNU, UiO, UiB, UiT, met.no, Statoil, SINTEF, Ceetron; Budget 22 Mkr RCN

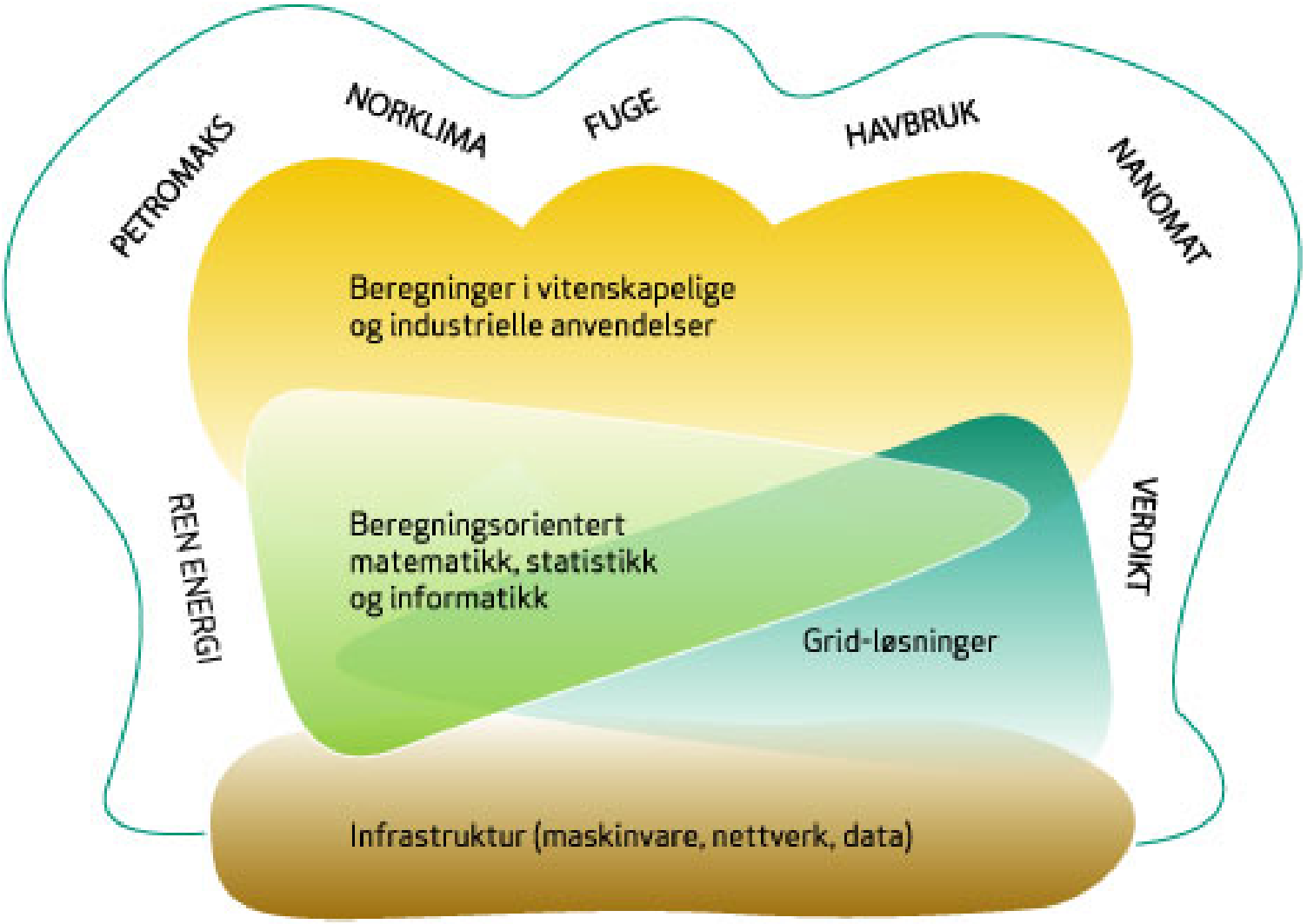
2005 – 2014: Fifth HPC project (Notur II)
Partners: UNINETT Sigma, NTNU, UiO, UiB, UiT, met.no. Budget 22 Mkr RCN

2006 – 2015 eVITA programme

today

From January 2006, Notur is a project under eVITA

eVITA



Research & innovation

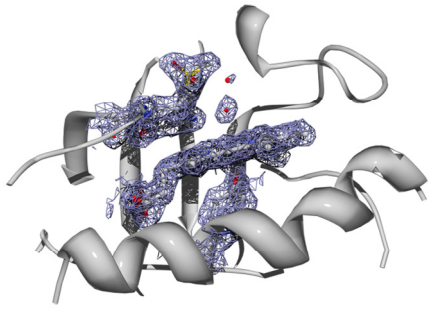
Infrastructure & support

The Notur project provides the national infrastructure for computationally oriented science in Norway

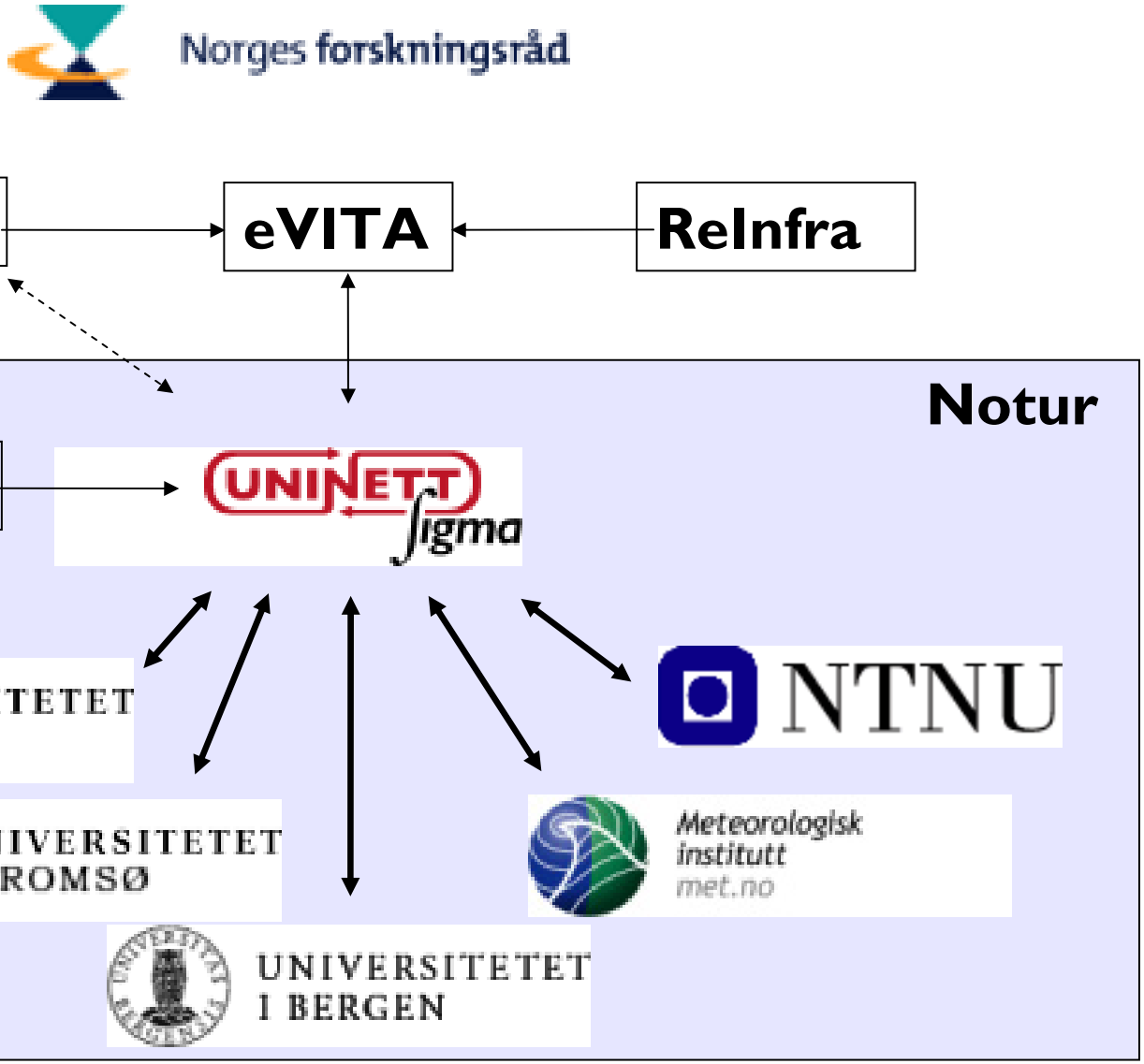
The project provides resources and services to

- education and research at universities and colleges
- operational weatherforecasting and research at the Meteorological institute
- research and engineering at research institutes and industry who contribute to the project

Project duration: 2005-2014



partners


Norges forskningsråd
RFK
eVITA
ReInfra
Notur
Råd
UNINETT sigma
UNIVERSITETET I OSLO
NTNU
UNIVERSITETET I TROMSØ
Meteorologisk institutt
met.no
UNIVERSITETET I BERGEN

Usage 2005-2006

Oct 1, 2005 – Sept. 30, 2006

Organisation		Discipline		Funding	
met.no	24%	geophysics	40%	NORKLIMA	16%
UiO	24%	chemistry	34%	University	16%
UiT	17%	physics	13%	SFF / SFI	10%
UiB	12%	…		EU	9%
NERSC	8%			NANOMAT	8%
NTNU	7%			FRINAT	7%
…				YFF	6%
				…	

Between 55-70 active projects
Ca. 300 TB archived data (mostly climate)

NTNU **7 Tflop/s**

njord.hpc.ntnu.no
992 power5+ CPUs, 2 TB memory, 70 TB disk

11/2006

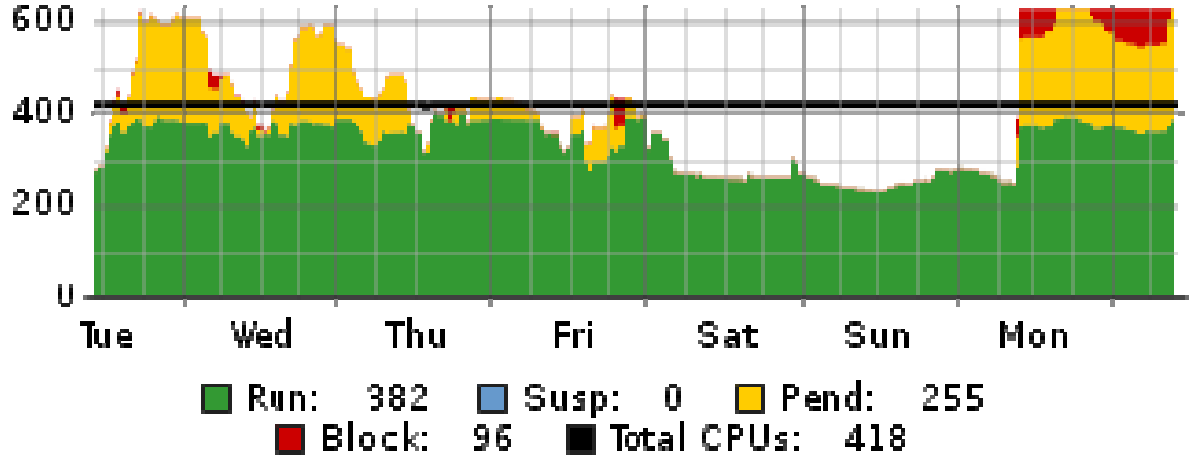
2.3 Tflop/s

The Snowstorm Cluster

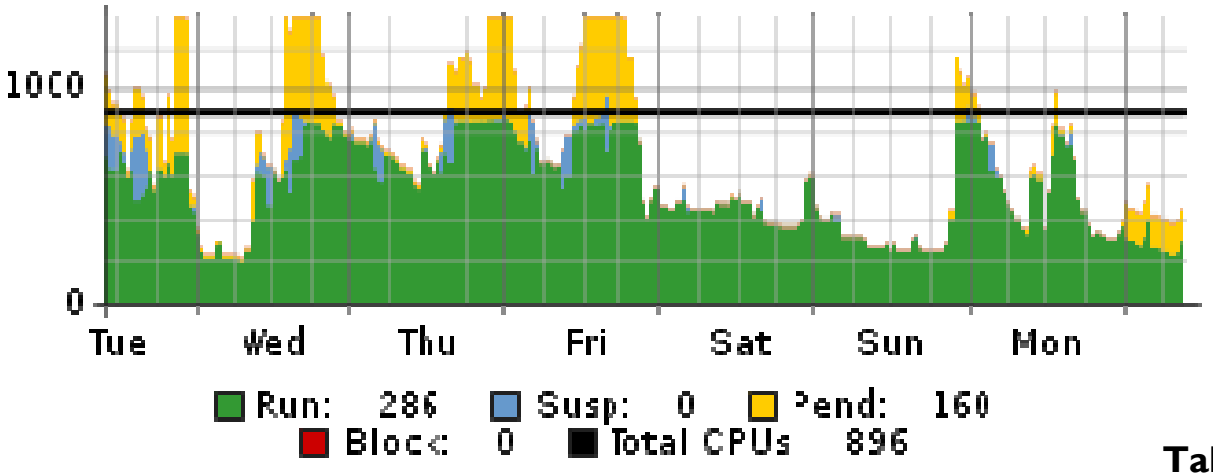
HP rx4640: 408 Itanium2 CPUs, 408 GB Memory, 30 TB Disk
Infiniband interconnect, ROCKS Cluster Distribution

09/2005

Status:



snowstorm



njord

Taken from www.notur.no

notur hardware

Partner	System	CPU	#cores	#Gflops	in operation until
Current Notur installations					
UiB	IBM p690	power4	96	499	10/2007
UiOHP	SuperDome	Itanium2	64	384	12/2007
UiT HP	rx4640	Itanium2	418	2200	09/2008
NTNU	IBM p575+	power5+	992	7000	11/2010
UiOSun	X2200	AMD 2-core	896	10000	12/2011
12/2007: (upgrade)					
UiOSun	X2200	AMD Barcelona	2432	21000	12/2011
12/2007:					
UiT HP		Xeon 4-core	5632	59900	12/2011
01/2008:					
UiB	Cray XT4	AMD Budapest	5552	51000	12/2011

Yearly investments for WLCG/Tier-1 collaboration

Three projects:

Notur:

Norwegian HPC project.

NorStore:

National infrastructure for curation and preservation of digital data, open for all research environments. Infrastructure built independent of HPC infrastructure.

NorGrid + Tier-1:

Norwegian grid infrastructure. Focus on coupling of resources and improved utilization of resources, distributed data management. Includes HEP/WLCG collaboration.

NorGrid – Norwegian Grid Infrastructure

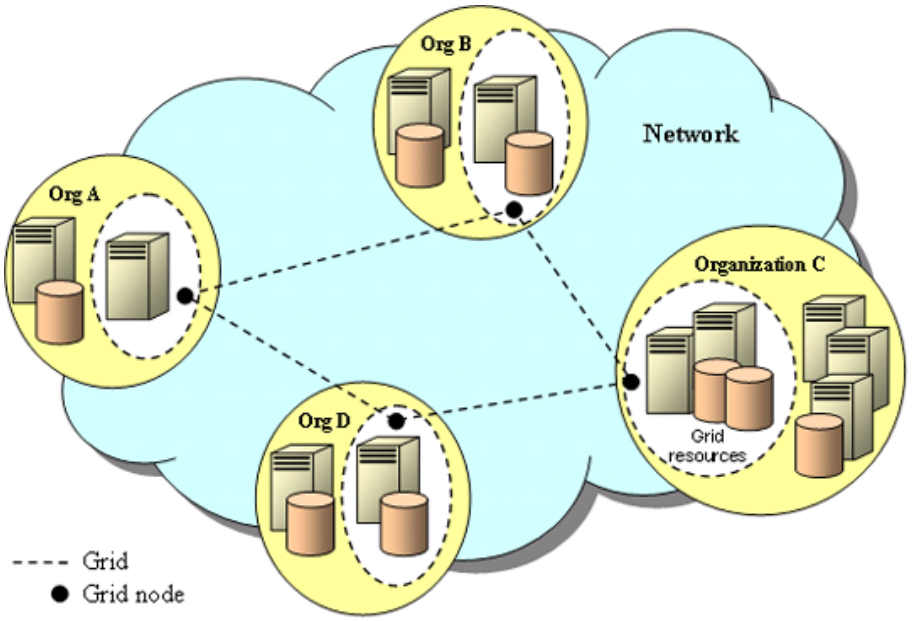
Grid is concerned with connecting resources and providing end-user functionalities for resource scheduling ('moving applications around') and data management ('moving data around') for a variety of disciplines

NorGrid:

- Deploy and operate a reliable grid on existing resources

- Provide bigger and better resources than a single machine can provide

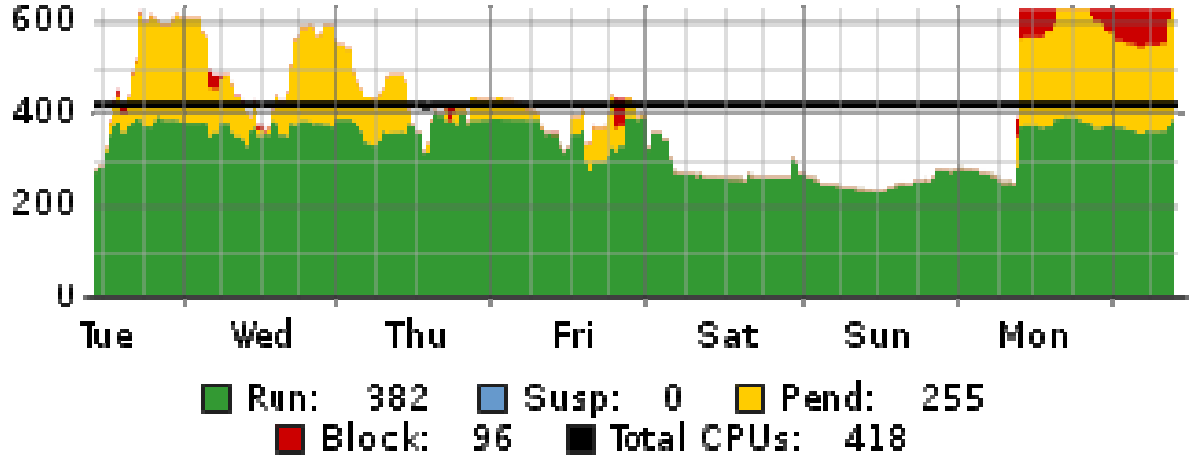
- Deploy services for sharing, collecting, retrieving data and distributed data management



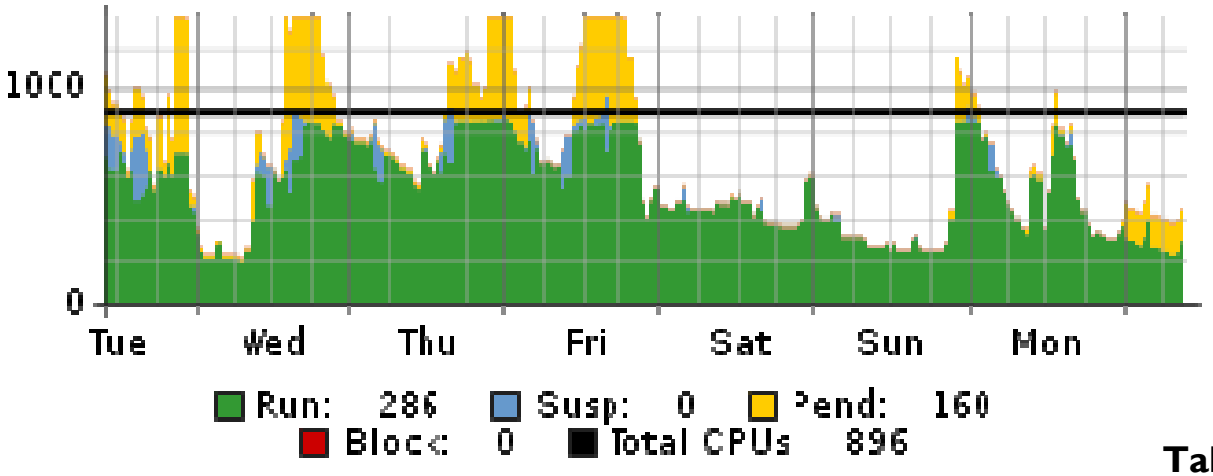
Participation in EGEE-III (2008-2009), EGI, …

NorGrid – Norwegian Grid Infrastructure

Job brokering for resource scheduling:



snowstorm



njord

Taken from www.notur.no
Tue Jan 30 2007 9.30 am

NorStore

The objective of the project is to establish and operate a national infrastructure that provides non-trivial services to scientific projects with a variety of needs for storing digital data.

The infrastructure will provide easy, secure and transparent access to distributed storage resources, provide large aggregate capacities for storage and data transfer, and optimize the utilization of the overall resource capacity.

notur

Further information

www.notur.no
www.norgrid.no
www.norstore.no

sigma@uninett.no