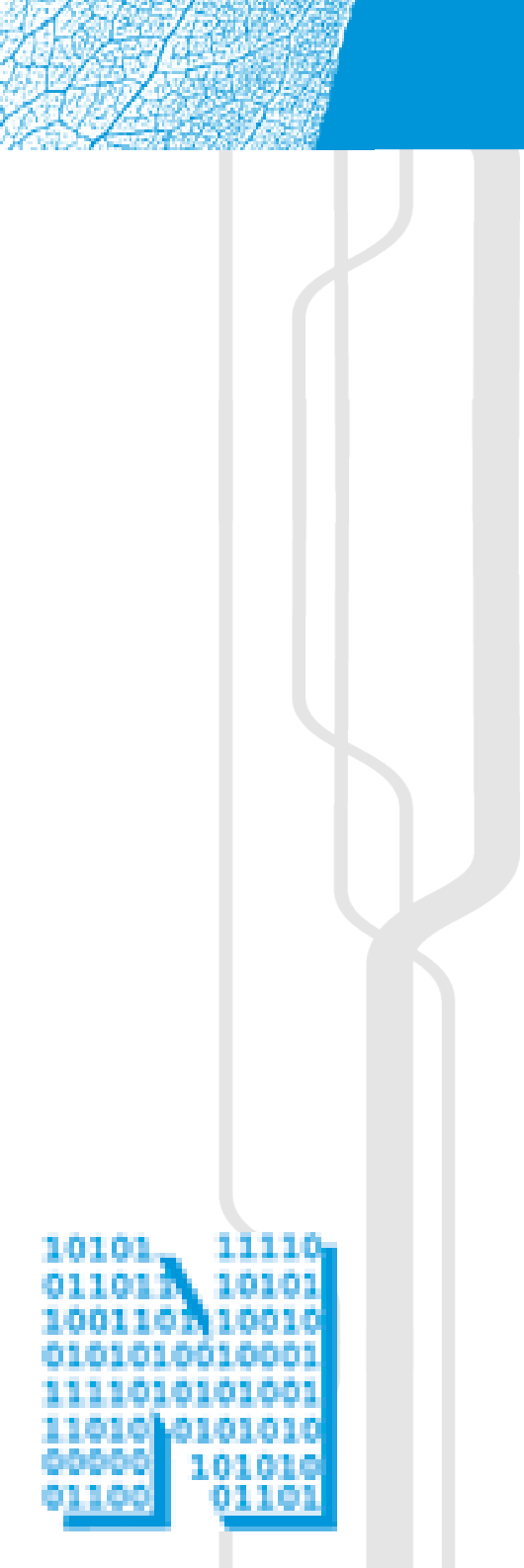


NDGF Tier-1 Architecture

Overview

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Outline

- NDGF Short intro
- The NDGF Tier-1
- Technical overview
- Milestones

NDGF short intro

- NDGF is an organization funded equally by the research councils of Denmark, Finland, Norway and Sweden
- It is hosted by NORDUnet A/S sharing the same CEO and Development Manager
- It aims at facilitate resource sharing in the Nordic countries to enable:
 - More optimal use of resources
 - Participation in huge international projects (like WLCG)
 - Solving Grand Challenge problems

NDGF short intro

- NDGF coordinates:
 - Technical Coordinator (Michael Grønager)
 - Middleware Coordinator (Josva Kleist)
 - User group coordinators
 - CERN Coordinator (Oxana Smirnova)
 - Node Coordinator in each country
- NDGF facilitates:
 - A crew of 6 dedicated middleware developers address compliance to agreed interfaces etc...

NDGF Short Intro

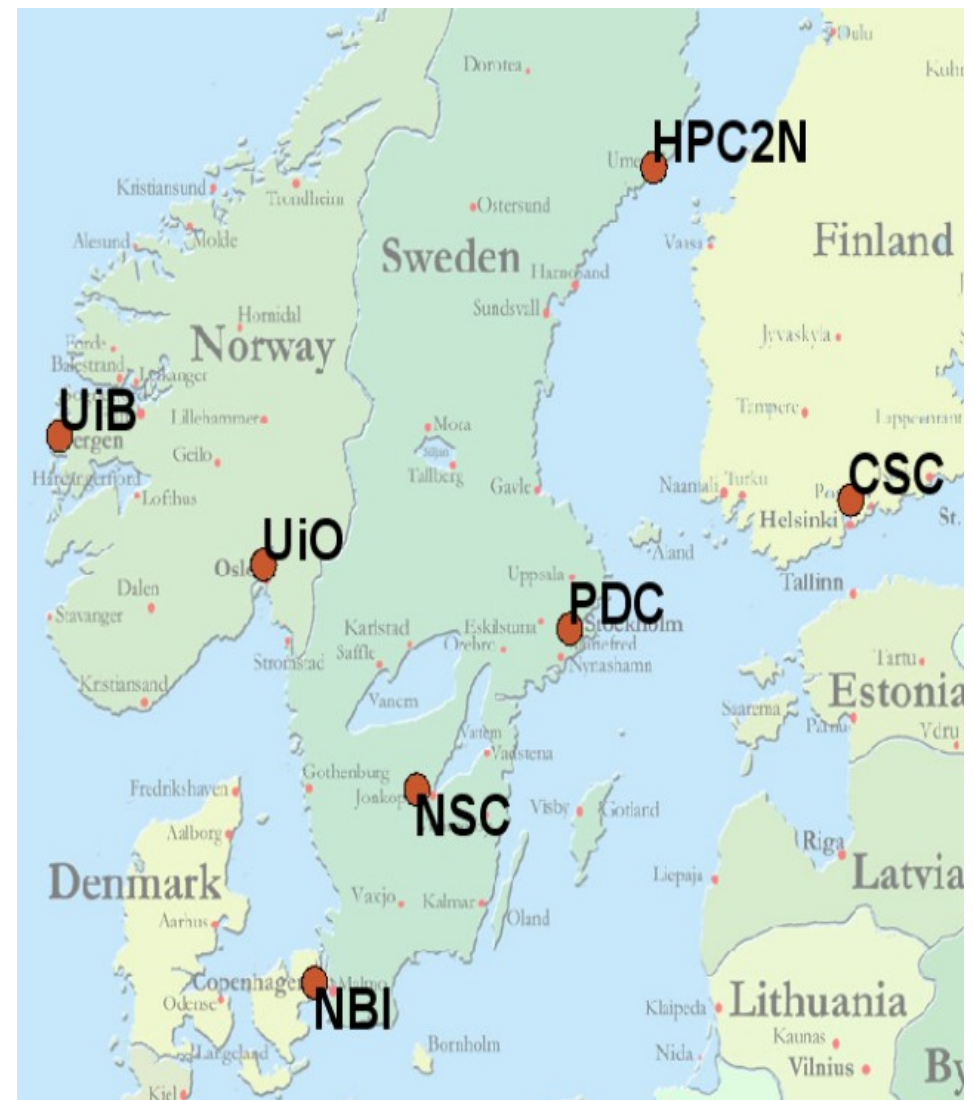
- NDGF has no hardware resources
- The e-Infrastructure organization of each country signs a SLA with NDGF on:
 - General resource use
 - Special purpose use – like the Tier-1
- The SLA include CPUs, Disk, Tape, Manpower and Service infrastructure
- Operation is communicated via the Country Node Coordinators

NDGF Short intro summery

- NDGF is a distributed, virtual organization with:
 - A core staff of 15 people
 - An operational staff of about 10 people
- Think of NDGF as a virtual, distributed supercomputing center

The NDGF Tier-1

- Consists of 7 sites
 - At each site resources are co-used by other projects
- Supports:
 - ATLAS
 - ALICE
 - CMS (from next year?)
- Use the ARC middleware



The NDGF Tier-1

- Base line services:
 - Computation
 - Storage
 - Monitoring / Testing
 - VO-Boxes
 - ATLAS
 - ALICE
- Resources

VO-Boxes

- VO-Boxes adds VO specific services to the grid-fabric
 - Type-1: non-edge (either inside or outside the site firewall)
 - Type-2: edge (site intrusive like a CE)
- Gateway for:
 - VO production
 - VO storage

ATLAS VO-BOX

- Interface to DQ2
- NDGF is currently participating in the ATLAS MC production with ARC
- Data is stored on gsiftp enabled SEs
- Data is registered in DQ2 using off-line scripts
 - A need for online registration (November)
 - A need for masquerading the SEs under a common SRM address (December)

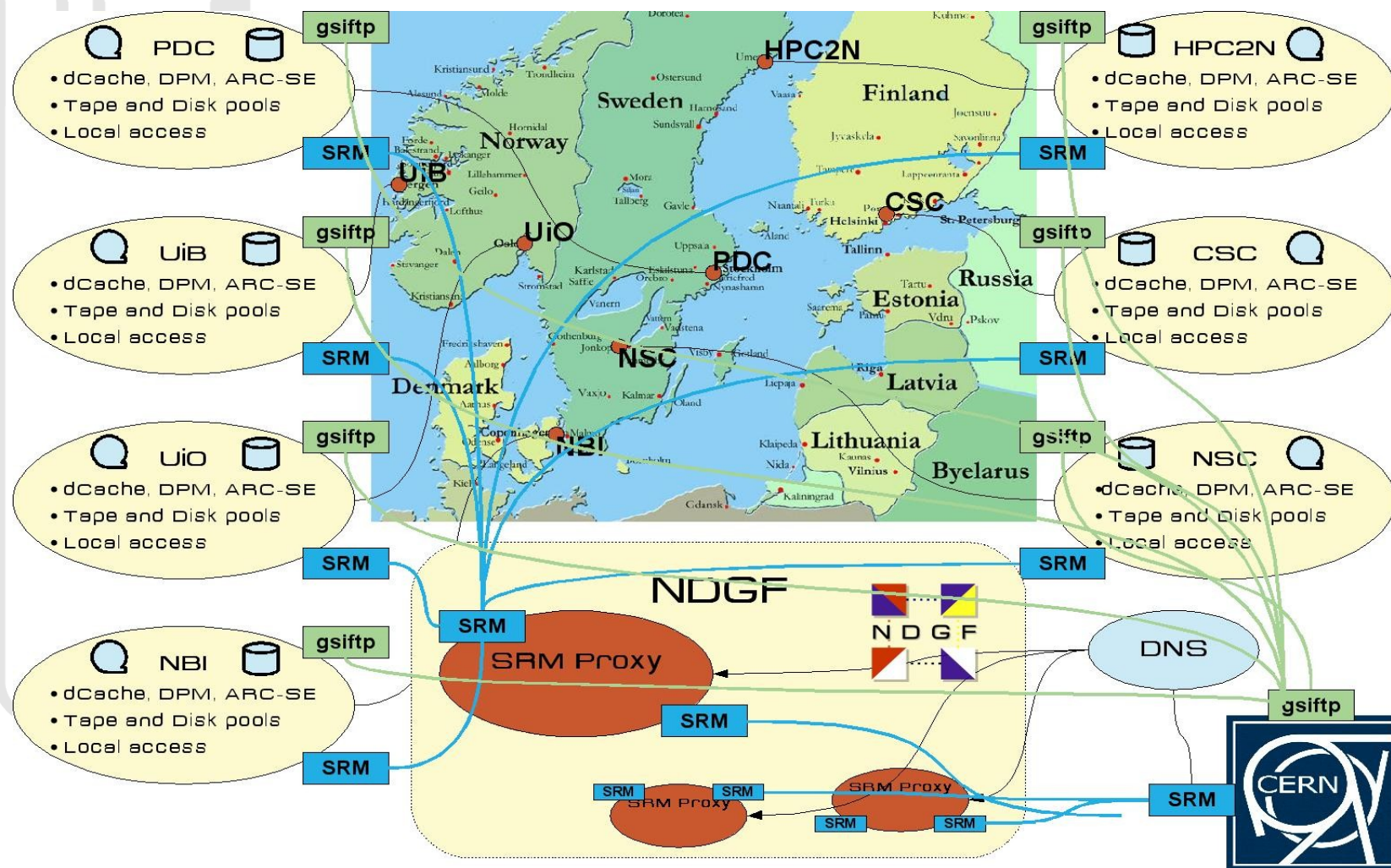
ALICE VO-BOX

- Currently the same as used by the rest of WLCG
- Deployed in Bergen – just started to participate in the production
- Changing the VO-BOX into a non-edge version:
 - Adding ARC as a batch system (in testing, due for November)
 - Bridging xrootd to other Tier-1 storage (still open)

Storage

- The NDGF Tier-1 Storage is distributed
 - Experiments conducted successfully in SC3 and 4
 - Distributed DPM setup tested for SC3
 - Distributed dCache setup tested for SC4
- Problems with central database (single point of failure)
- Problems with dCache (way too advanced for the purpose)
- Need to incorporate the local gsiftp-based SEs

Storage



Storage

- SRM Proxy / gateway
 - Use the meta protocol structure of SRM to proxy local SRM enabled storages
 - Keeps an catalog for non SRM based SEs
 - December 2006
- Will look like one SRM endpoint from outside

Computation

- CEs running ARC
- Will become general accessible via the gLite-WMS
 - Part of EGEE-II (SA3)
 - April 2007 milestone

Monitoring / Testing

- SFTs to be replaced by SAM
- Agreed with Maite Barroso to initiate creation of SAM sensors for ARC resources
 - Enable monitoring of the NDGF Tier-1
 - Enable monitoring of ARC Tier-2/3s

Resources

- Hardware in Norway and Denmark acquired
 - 750CPUs
 - 100TB disk
 - 100TB tape
- To be accessible in December
- Sweden will follow in 2007
- Finland will have only minor Tier-1 resources in 2007

Tier-2s

- Planned Tier-2s connected to the NDGF Tier-1
 - Sweden (federated)
 - Denmark
 - Norway
 - Finland – CMS Tier-1 connected to RAL
 - Ljubljana
 - ...