

Federated Operations

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- Federation
 - “a union comprising a number of partially self-governing [entities]”
 - “multiple computing and/or network providers agreeing upon standard of operation in a collective fashion [with] different internal structures [and] delegate collective authority”
- Driver
 - Q: How do you operate a multi-domain service?
 - A: By establishing coordinated operations in multiple domains
- Sharing, involvement, and sense of ownership is key

- Many ways to share operations
- Sharing expertise from other organizations
 - NORDUnet IP team / UNINETT
 - CERT / UNINETT
- Outsourcing
 - Web functions
 - Tool development
- Establishing shared functions
 - NORDUnet NOC
- Distributed, Federated teams
 - NDGF
- Two Examples

- Established jointly by NORDUnet and SUNET
- NORDUnet and SUNET sharing operations teams
 - 1st level – shared across functions and organizations
 - Level 2 teams – functionally specialized, serves multiple organizations
- Performance goals
 - Metrics, SLAs, response time guarantees, ...
 - Setting expectations
- Tools
 - Platform for sharing, collaboration
 - Fundamental for transparency, documentation
 - Tracking & follow up essential
- NOC as a service (L1, L2 ...)
 - Offered to other (e-Infrastructure) organizations



- Cost sharing
 - Shares cost of tools
 - Shares cost of facilities
 - Shared development
- Critical mass
 - Allows NORDUnet, SUNET to have 24/7 operations support
 - Creates enough work to have viable engineering teams (IP, optical)
- Collaboration
 - Creates a strong platform for joint efforts



- A Co-operative Production Grid facility
 - Leveraging national grid resources
 - Common policy framework
 - Joint Nordic planning and coordination
 - Host eScience projects
 - Nordic WLGCC Tier-1
 - Develop grid middleware and services
- A coordinating entity
 - Does not own HPC resources
 - Partnership of Nordic NGI's, HPC centers
- Hosted by NORDUnet

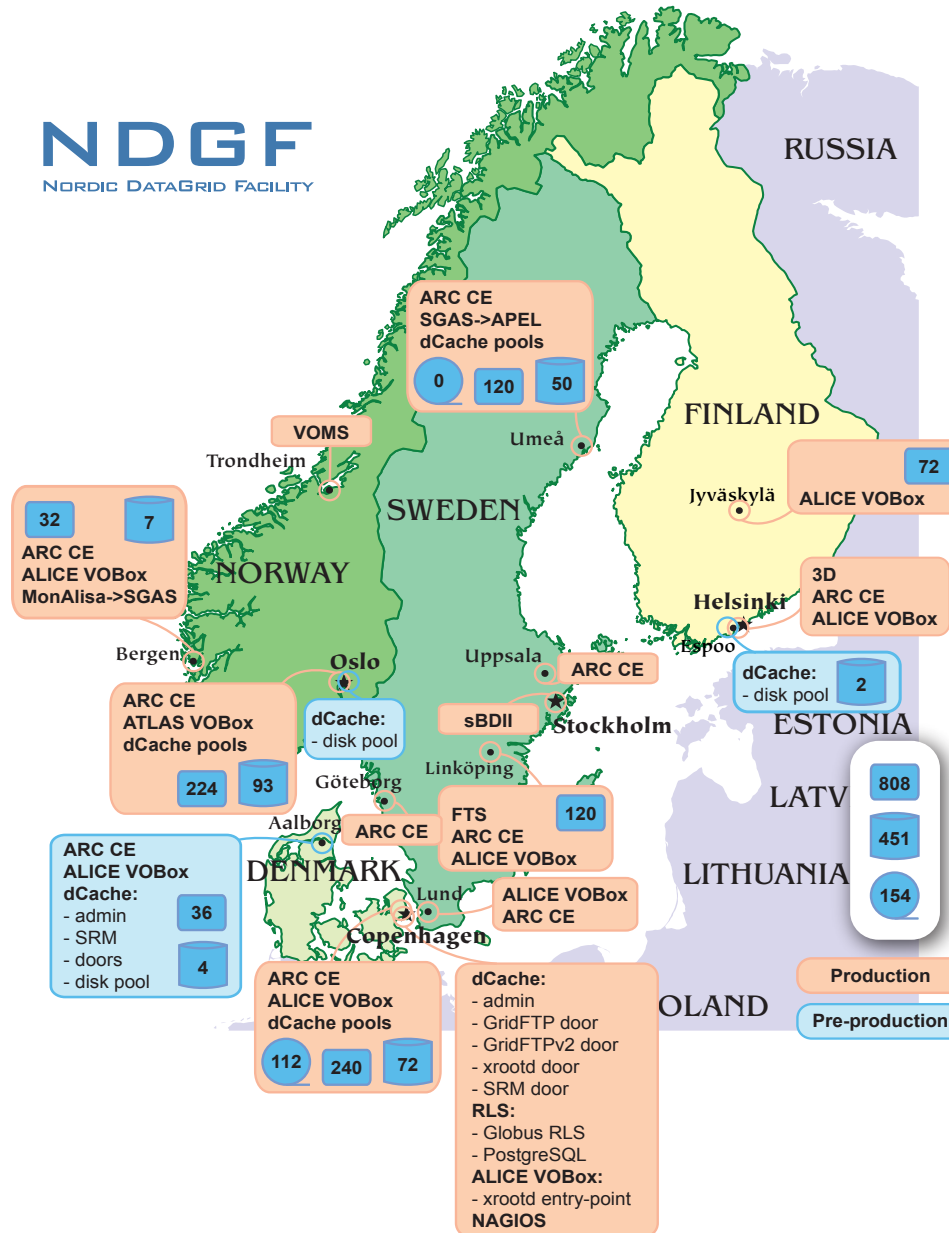


- Small central team
 - Project director
 - A couple of coordinators
 - Budget and finance
- Development team
 - 8 developers
 - Middleware development
 - Application support
 - Distributed at partner sites
- Operations team
 - 1st level support by NORDUnet NOC
 - 2nd level operations team of 7 operators
 - 24/7 operations support
 - Distributed at partner sites



- Traditional operations functions...
 - Monitor
 - Respond to requests
 - Trouble shoot
 - Issue tracking
- ...of a complex infrastructure...
 - HPC systems, Tape systems, Disk systems
 - Storage platforms
 - Database systems (Oracle, ...)
 - Grid middleware
 - eScience applications
 - Data transfers, private networks
- A multi-domain effort





- Distributed team
 - 7 operators from 7 organizations and 7 locations
 - Operators rarely in the same location
 - Team members committed to NDGF team, but based at local partner site and organization
- Federated team
 - Team members “on loan” from partners
 - Partners receive NDGF funding for staff commitments
 - Local team operating local systems, function
 - Team member part of both local and NDGF team
 - Solid agreements with local organizations
- Central coordinator functions



- Strong coordinator function
 - What are key, current challenges
 - Call for meetings, set agendas
 - Establish Guidelines and standards
 - Offer tools, establish best practice
 - Agreeing engineering priorities
- Shared tools
- Multifaceted communication
 - Highly structure weekly meetings
 - Pervasive chat room presence
 - Quarterly f2f
 - Wiki capture



- Documentation and Capture
 - Confluence Wiki
- Issue Tracking and Project management
 - JIRA
- Communication
 - Chat meetings
 - (Rare) Phone meetings (and quarterly f2f)
- Collaboration tools
 - Problem solving / problem tracking chat room
 - Used by everyone, all the time – “shared office”
 - Creates a sense of being one (distributed) team
 - Ensures follow up, handover, informal tracking
 - Creates (informal) communication and joint problem solving



- Team spirit
 - Each team member feel part of the distributed team
 - Routines & processes that make distributed team pervasive, part of daily life
- Local and Global
 - Team members involved with running infrastructure that exist and is used locally. Very different from regular outsourcing – this is partnership, and makes sense locally
 - Team members are local people with local history, but part of global team
- Central coordination
 - Central coordinator critically important
 - Coordination does no imply ownership.
 - Policy, process should be centrally agreed

- Advantages of distributed, federated operations
 - Resource & knowledge sharing
 - Coordination of local and global effort
 - Local ambassadors
 - Sense of ownership
- Does it work?
 - CHEP09 WLCG summary: “There is only one Tier-1 that has not had a major incident in the past year”
 - EGEE operate in a somewhat similar fashion
- Federated GEANT operations?
 - GEANT IP and Optical engineering hosted by NRENs
 - A central coordinating body and a fully distributed (multi-domain) operations team
 - GEANT operations as a shared NREN effort
 - NREN involvement, sense of ownership

