

# Operations in NDGF-T1 (and SE-SNIC-T2)

Erik Edelman

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## NDGF & NeIC: Background

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ALICE sites in  
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Sites: Sweden 1/2

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Sites: Denmark

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CPU resources,  
pledgewise

Storage

Storage in numbers

Storage in numbers

Questions?

- Nordic DataGrid Facility (NDGF) was founded 2002 to coordinate the cooperation between Finland, Sweden, Norway and Denmark to create a Tier-1 for ATLAS and ALICE.
- A few years ago, NDGF was reorganized into NeIC (Nordic e-Infrastructure Collaboration)
  - ◆ Maintaining NDGF-T1 is a project within NeIC
  - ◆ (NDGF-T1 project leader Mattias Wadenstein send his regards!)
- In addition to the NDGF-T1, there's a few T2:s in the Nordics
  - ◆ FI-HIP-T2 for CMS
  - ◆ SE-SNIC-T2 for ALICE and ATLAS
  - ◆ Sometimes hard to distinguish from NDGF-T1.

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Questions?

- Our dCache developer Gerd Behrmann quit last year
- New dCache developer Vincent Garonne has been hired; should start now in May

# ALICE sites in NDGF

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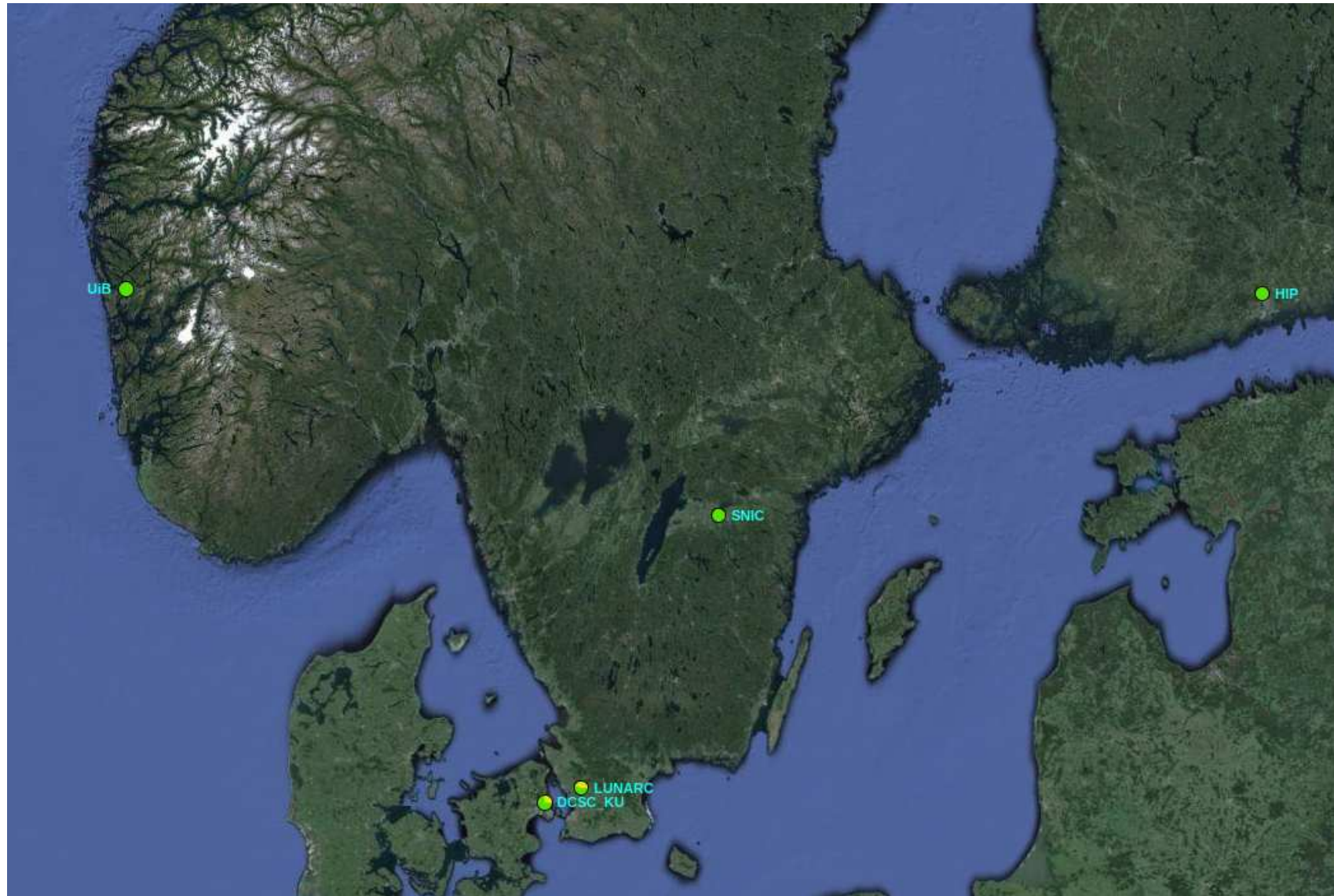
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## ■ HIP

- ◆ Run by Helsinki Institute of Physics (HIP)
- ◆ Virtual cluster, running on CSC's Cloud system cPouta

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## ■ HIP

- ◆ Run by Helsinki Institute of Physics (HIP)
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- ◆ Currently 184 cores. About to grow to 232 cores in not too distant future.

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- ◆ HEPSPEC06: 19.54

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## ■ HIP

- ◆ Run by Helsinki Institute of Physics (HIP)
- ◆ Virtual cluster, running on CSC's Cloud system cPouta
- ◆ Currently 184 cores. About to grow to 232 cores in not too distant future.
- ◆ HEPSPEC06: 19.54
- ◆ A "quick-and-dirty" setup, but it's operational (unlike the HIP's CMS@cPouta project ...)



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## ■ SNIC

- ◆ National Supercomputer Center, Linköping, Sweden

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## ■ SNIC

- ◆ National Supercomputer Center, Linköping, Sweden
- ◆ Backend: Slurm
- ◆ Big cluster, used for lots of non-WLCG related stuff too
- ◆ Used to be 96 cores for ALICE; starting a few weeks ago: 144 cores.

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- ◆ HEPSPEC06: 15.925

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- ◆ HEPSPEC06: 15.925
- ◆ Also takes care of the SE-SNIC-T2 storage.

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### ■ LUNARC

- ◆ Center for scientific and technical computing for research at Lund University, Lund, Sweden

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- ◆ Backend: Slurm
- ◆ Big cluster, used for lots of non-WLCG related stuff too
- ◆ ~ 378 cores shared by ALICE and ATLAS.
- ◆ HEPSPEC06: 20.87

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- ◆ ~ 378 cores shared by ALICE and ATLAS.
- ◆ HEPSPEC06: 20.87
- ◆ SE-SNIC-T2 computing.
- ◆ Suffers from scheduler oddities, providing vey uneven amount of resources for ALICE.



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- DCSC/KU
  - ◆ Kbenhavns Universitet

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## ■ DCSC/KU

- ◆ Kbenhavns Universitet
- ◆ Backend: ARC / Slurm (since last summer)
- ◆  $\sim 1054$  cores shared with ATLAS.
- ◆ Heterogeneous cluster; oldest node  $\sim 10$  years old.
- ◆ Average HEPSPEC06: 14.43

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- ◆ Heterogeneous cluster; oldest node ~ 10 years old.
- ◆ Average HEPSPEC06: 14.43
- ◆ No expansion of the cluster currently planned; will use their money to replace old nodes as they die.
- ◆ Some scheduling-adjustments to give more resources to ALICE promised, however.
  - Mix of single core and multicore jobs seems to cause trouble

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## ■ UiB

- ◆ Backend: Slurm
- ◆ ~ 750 cores
- ◆ HEPSPEC06: 12.12

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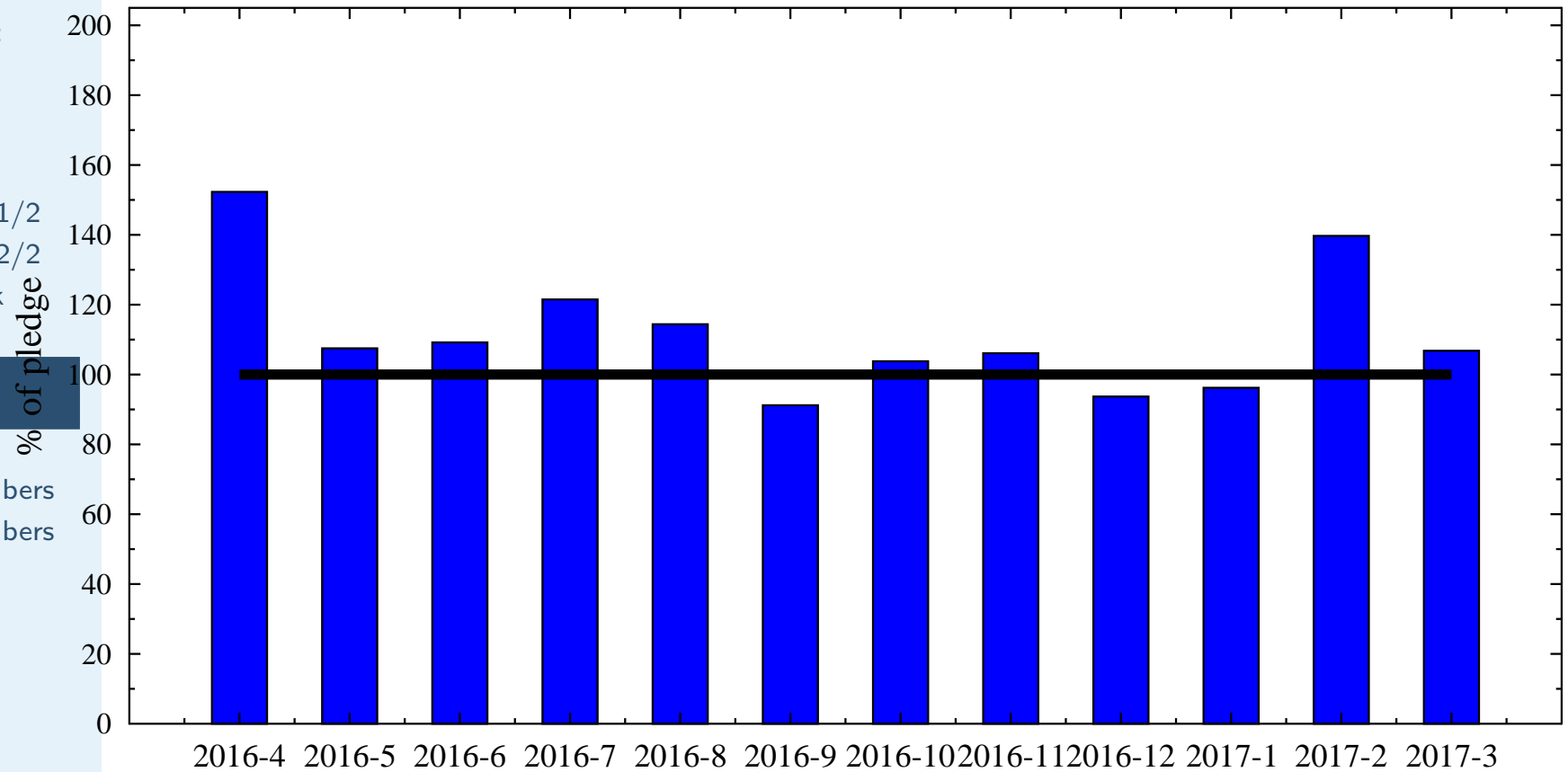
Questions?

## ■ UiB

- ◆ Backend: Slurm
- ◆ ~ 750 cores
- ◆ HEPSPEC06: 12.12
- ◆ Future: Waiting for decision from funding agencies

# CPU resources, pledgewise

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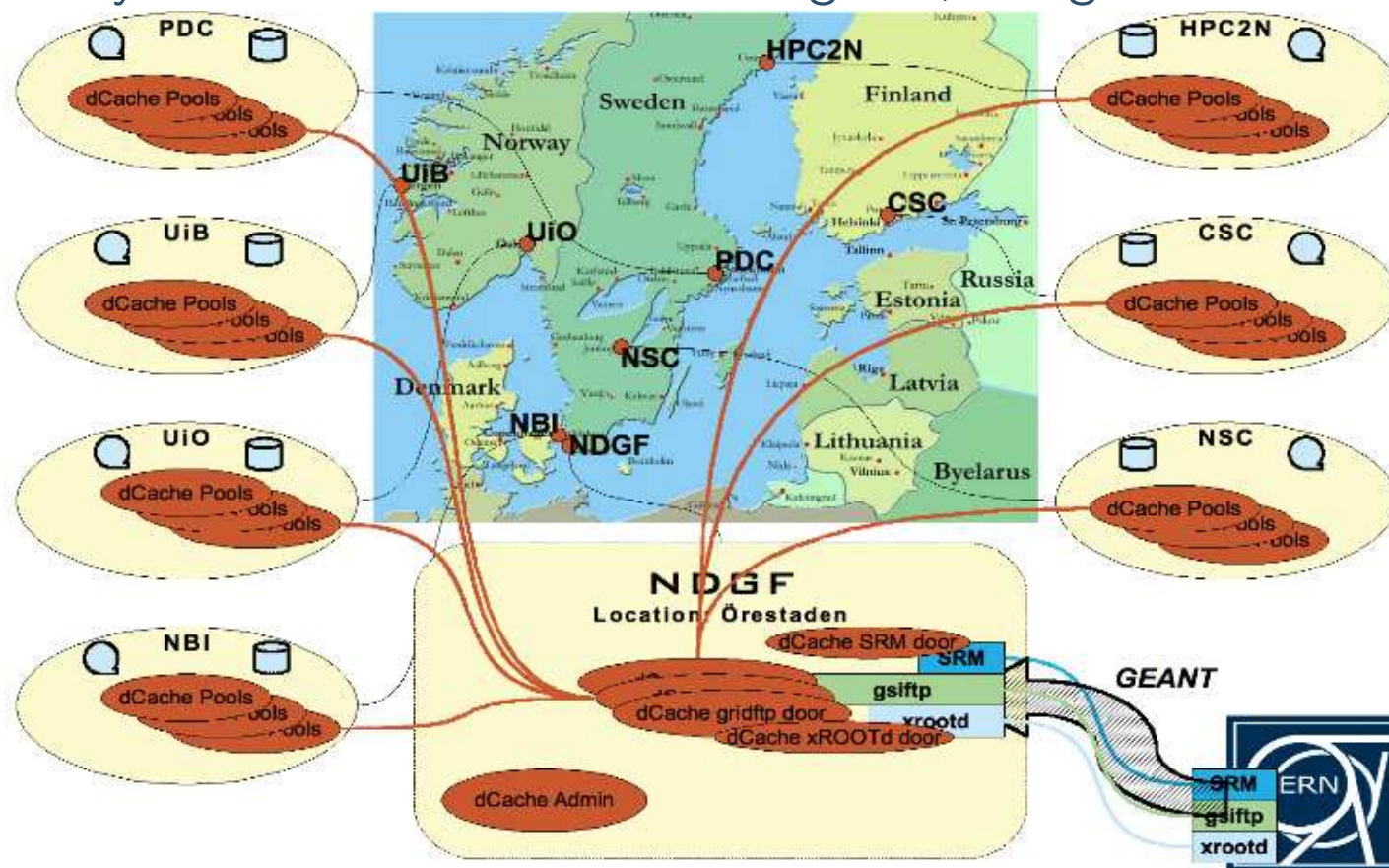
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## Storage

Storage in numbers  
Storage in numbers  
Questions?

- Many small sites looks like one big site, using dCache



- Lets us hide problems on one site by keeping data on other sites.
  - ◆ (at least, almost ...)



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## NDGF-T1

### ■ Disk:

◆ Pledge: 2510 TB (2020 TB last year)

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## NDGF-T1

- Disk:
  - ◆ Pledge: 2510 TB (2020 TB last year)
  - ◆ Currently available: 2324.5 TB

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### ■ Tape: (aka "the big unknown")

- ◆ Pledge: 1320 TB (1150 TB last year)

## NDGF-T1

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- ◆ Some more waiting for funding decision.

### ■ Tape: (aka "the big unknown")

- ◆ Pledge: 1320 TB (1150 TB last year)
- ◆ Currently available: "?"
- ◆ Additional uncertainty factor: the Bergen situation ("waiting for funding decisions")

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## SE-SNIC-T2

- Disk:
  - ◆ Pledge: 400 TB
  - ◆ Currently available: 400 TB



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## SE-SNIC-T2

- Disk:
  - ◆ Pledge: 400 TB
  - ◆ Currently available: 400 TB
  - ◆ Future: Disks may be replaced, but capacity will (probably) stay the same

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