NeIC 2013
Concluding remarks and closing

Nordic eInfrastructure Conference | 16 May 2013 | Pentti Pulkkinen

Contents

A decade of Nordic eInfrastrucure collaboration

- **2003**: Grid computing, technological push
  - LHC construction had been decided in the 1990's
    - an unprecedented experiment (also) in terms of data production
      - → **tools** had to be developed
    - WLCG, distributed data analysis and storage
  - early NDGF
    - pilot phase, initiative from **research funding agencies**, evaluation
    - goal to build a Tier-1 and also expand outside HEP
    - middleware development, ARC
    - role of **national eInfrastructure providers**
    - NORDUnet selected as host

  |

A decade of Nordic eInfrastrucure collaboration, II

- 2007-8: eScience, tools and methods in all fields of science
  - **establishing NDGF as a Nordic node in WLCG**, 2nd evaluation
  - national strategies and programmes in eScience
  - HPC collaboration, Open access are common practice
  - European Framework: ESFRI and e-IRG, EGI
  - eNORIA, action plan → Nordic eScience Globalisation Initiative (NeGI)

- 2012-13: almost teenager NeIC, new research fields, new strategy
  - NordForsk as host
  - **Bio and Medical Sciences**
  - Other new areas to come?
  - e-Infrastructure providers: from National strategies to (common) Nordic strategy?

Observations

- Nordic collaboration:
  - Successful Nordic organizations must be **flexible** ← only activities bringing added value are launched

- eScience and eInfrastructure in general
  - simulations and other data/computationally intensive research is now real science! It was not so a while ago
  - eInfrastructure is not research and does not have goals itself, the **scientific** goals are important

- WLCG
  - Importance of sustainability for Tier-1: LHC will be running for about 15 years
  - Data stream will increase (no wonder, so will capacity) but still challenging. Only one event in 10000000000000 will be interesting!

Observations, II

- Humanities
  - Long collaboration tradition, a wide variation of activities
  - With eScience tools emerging, also here both data (e.g. archive digitalization) and computationally intensive areas (e.g. linguistics)
  - Philosophical questions: definition of (Research) Infrastructure. What about eInfrastructure?

- Cloud computing
  - Users are the driving force, they must be served.
  - It may happen that researchers with money (e.g. in terms of research grant) choose those services they want ← how to structure eInfrastructure services in the future
  - Business opportunities

  |

Observations, III

- Data services
  - The increasing need of data management
    - Create/capture, store, describe, identify, register, discover, access, exploit
    - services for sensitive data
  - EISCAT – a major Nordic research data producer
  - Long-term funding!

Lessons learned

Session I. Opening

Session Summary

- High degree of trust in the Nordics, e.g. for government and for research.
- NeIC has strong political support.
- People are the key part of e-Infrastructure.

Lessons Learned

- As scopes of scientific challenges expand, the need for organizing *international* collaborations increases.
- Trust is key for information security, and e-Infrastructure must work to maintain and keep earning that trust.
- Nordic perspective will enable e-Infrastructure engagement in new areas.

Future Directions

- Nordic actors (such as NeIC and NORDUnet) must add on the top of the national levels, and represent the Nordics in a larger context.
- NeIC is framework for collaboration, not a company.

Session II. WLCG

Lessons Learned

- Boundaries between WLCG sites are breaking up → more flexible and efficient operations emerging.
- You need a computer for a short time, rent it. Otherwise buy your own.
- e-Infrastructure efforts for other sciences failed due to low level of ambition, and nobody was requesting the features (provided by the grid) at the time.

Future Directions

- There is a need for human expertise:
  - Code optimisation, to make ATLAS code more efficient, for example using code optimisation, vectorization, better algorithms, GPUs, etc.
  - Deal with increased event size, reduce content, reduce data redundancy.
  - Reduce memory footprint.

Session III. Digital Humanities

Lessons Learned

- Language processing has become internationally competitive thanks to high-performance computing.
- More and more disciplines without HPC tradition are going computational.

Future Directions

- Too many projects in social sciences and humanities are addressing the same issues in the same way.
- Nevertheless, ERIC structure is well adopted
- Application support or advanced user support would be very helpful in digital humanities.

Opportunities

- Creating a Nordic dataset/service index in the style of data.gov would be helpful.

Session IV. Cloud computing

Lessons Learned

- Don't repeat the mistakes from the Grid with very complex software.

Future Directions

- Users in academia will use the cloud whatever happens.
- Organizations have the chance to adopt strategies **now**.

Opportunities

- Opportunity for a Nordic cloud industry
- Opportunity for academia to use cloud resources with all its advantages

Session V. Data services and technologies

Lessons Learned

- We are all in data business
- Researchers need data services
  - Best served on national or regional level ← Nordic!
- CERN example should be studied

Suggestion for NeIC

- NeIC as discussion platform

Conclusions

- We have entered into the third path of science
- The Nordic countries is a natural playground for research infrastructure collaboration with international and national
- **The Nordic countries have many joint goals but we are not too similar**
- There is political support
- **People are the key part of e-Infrastructure.**
- There are success stories, we are not starting from scratch
- There are huge potentials in European and global context

THANKS

- Main collaborators **UNINIETT Sigma** and **NTNU**
- In partcular **Vigdis Guldseth** for local coordination
- **UNINETT** for excellent communication services
- **NORDUnet** for streaming and web support
- **CSC, DelC, RHnet, SNIC, UNINETT Sigma, HP, Hitachi, Intel**
- **Organization commitee**
- **Students**
- **Speakers** and **chairs**

  |

THANKS

- Main collaborators **UNINIETT Sigma** and **NTNU**
- In partcular **Vigdis Guldseth** for local coordination
- **UNINETT** for excellent communication services
- **NORDUnet** for streaming and web support
- **CSC, DelC, RHnet, SNIC, Sigma, HP, Hitachi, Intel**
- **Organization commitee**
- **Students**
- **Speakers** and **chairs**

AND NOW…