SeSE
Swedish e-Science Education

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Some of my Experiences

1998-1999
2007-2010
2012-
2007
2010
2012-2013
UCHPC
SNIC: The Swedish National Infrastructure for Computing

- Uppsala University
- Linköping University
- KTH
- Umeå University
- Chalmers
- Lund University
SNIC Mission

Provide resources for Computation and Storage

Meet the needs of ALL researchers

Availability by open application procedure
... but also Training

Just a few Examples:

- VASP best practices, LiU February 2015
- MATLAB using SNIC clusters C3SE, Chalmers June 2014
- UPPMAX Intro Course, January 2015
- Scientific Visualisation Workshop, UPPMAX, November 2014
- OpenMP, Lunarc December 2014
- MATLAB using SNIC clusters HPC2N September 2014
- MPI, PDC November 2014
Training vs. Education

Training

Help users to use the tools & resources efficiently = less user support

Education

Field Specific & general Courses

HPC Software & Hardware

Theory of HPC Computation
What is eScience?
Two Research Schools become ONE

1996

1996

2004

2013

KCSE

Workshops/Seminars
Graduate Program
Multidisciplinary Research
International Contacts
HPC

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Some facts:

- More than 100 PhDs with skills in important application fields
- Preparation + Two weeks at the university + Project
- Critical mass of students and best teachers
- Courses in common format
- Programming & Numerical Analysis
- All six SNIC centres participated
Some facts:

- Students from Stockholm area
- Summer- and Winter schools
- Dual expertise: Scientific Computing & related applications
- Networking: academia & industry
- Special Courses in Computational Science and Engineering
- KTH
Collaboration between Two Research Initiatives

eSence

SERC

S3E
PDC CENTER FOR
HIGH PERFORMANCE COMPUTING
Mission

To provide education in fields where the use of e-Science is emerging

A meeting place for graduate students using e-Science tools and techniques

Identify areas where courses within e-Science are needed
A Typical Course

5 Credits
3 Weeks

Study at home university

Lectures & Computer Exercises

Project Work & Examination
Financing

Course
10 Students minimum

Development
80 000 skr

Giving
80 000 skr

Travel grants
10 x 6000 skr
Benefits for Graduate Students

- General Topics
- Networking
- Experienced Teachers
- Special Topics
- Access to top Resources
- Travel Grant 6 000

Generally No fees!!
### Courses, autumn 2013

<table>
<thead>
<tr>
<th>Course</th>
<th>Enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to programming in science and technology</td>
<td>65</td>
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<tr>
<td>Computational Python</td>
<td>28</td>
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<tr>
<td>Advanced programming in science and technology</td>
<td>19</td>
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<tr>
<td>Introduction to High Performance Computing</td>
<td></td>
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<tr>
<td>- PDC summer school</td>
<td>63</td>
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<tr>
<td>Numerical Solution of  Initial Boundary Value Problems</td>
<td>9</td>
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<tr>
<td>Scientific Visualisation</td>
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<tr>
<td>Stochastic Methods</td>
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## Courses

<table>
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<tr>
<th>Spring 2014</th>
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<td>Scientific computing</td>
<td>8</td>
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<tr>
<td>Electronic Structure Theory and Calculations</td>
<td>12</td>
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<tr>
<td>Introduction to GPU and accelerator programming</td>
<td>16</td>
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<tr>
<td>- for scientific computing</td>
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<tr>
<td>High Performance Computing</td>
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<tr>
<td>Advanced Molecular Dynamics</td>
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<th>Autumn 2014</th>
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<tr>
<td>- PDC summer school</td>
<td>56</td>
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<tr>
<td>Matrix Computations in Statistics and with Applications</td>
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</tr>
<tr>
<td>Introduction to programming in science and technology</td>
<td>18</td>
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<tr>
<td>Computational Python</td>
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<tr>
<td>Numerical Linear Algebra</td>
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<td>Scientific Visualisation</td>
<td>11</td>
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<tr>
<td>Scientific Software Development Toolbox</td>
<td>21</td>
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<tr>
<td>Winter School in Multiscale Modeling</td>
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<tr>
<td>Climate Modeling</td>
<td>15</td>
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<table>
<thead>
<tr>
<th>Courses, spring 2015</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Tools and Techniques for Simulation and Optimisation</td>
<td>Umeå</td>
</tr>
<tr>
<td>Introduction to Climate Modelling - module II</td>
<td>Stockholm university</td>
</tr>
<tr>
<td>High Performance Computing</td>
<td>Umeå</td>
</tr>
<tr>
<td>Performance Optimisation of Numerical Simulation Codes</td>
<td>KTH</td>
</tr>
<tr>
<td>Introduction to GPU and accelerator programming - for scientific computing</td>
<td>KTH</td>
</tr>
<tr>
<td>Big Data Analytics with Hadoop and Spark</td>
<td>Chalmers</td>
</tr>
</tbody>
</table>
Recent Events

PYTHON FOR MATLAB USERS
V47

SCIENTIFIC VISUALISATION WORKSHOP 2014
27,28 November, Uppsala University

WINTER SCHOOL IN MULTISCALE MODELING
1-12 December, KTH, Stockholm

SNIC USER FORUM 2014
15-16 December, Linköping
The Future?

Education!

Nordic School?
Have a Look at our Website!

http://sese.nu

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