

# DeiC HPC-Forum

## Meeting 2022-3

24/08/2022 @ 10 – 12

Zoom: <https://deic.zoom.us/j/2909030409>

### Invited members and support:

- Members, present: Claudio Pica (SDU), Erik B Dam (KU), Hans Jørgen Aagaard Jensen (SDU), Kåre Lehmann Nielsen (AAU), Lars Nondal (CBS), Sven Karlson (DTU), Søren Besenbacher (AU), Thomas Bligaard (DTU).
- Members, absent (announced): Carsten Sørensen (CBS), Dan Søndergaard (AU), Martin Aumüller (ITU), René Jacobsen (DeiC).
- Members, absent (not announced): Lars Sørensen (AAU), Piotr Jaroslaw Chmura (KU), Thomas Schrøder (RUC).
- Support: Eske Christiansen (DeiC).
- Support: Adam Stahl (DeiC).

### Guests:

- ...
- ...

Minutes from last meeting (2022-2) added to meeting invitation.

Minutes by: Adam Stahl.

Item	Issue	Comments   Actions
1	<p><b>Information and approval of minutes from last meeting</b></p> <p>Approval:</p> <ul style="list-style-type: none"><li>A. Minutes from meeting 2022-2. Was approved by email.</li></ul> <p>Information items:</p> <ul style="list-style-type: none"><li>A. LUMI Status (Eske)</li><li>B. First call on national HPC resources. (Eske)</li><li>C. HPC landscape report to DeiC board March 2022 Attached (Hans Jørgen)</li></ul>	<p>→</p> <p><b>A:</b> LUMI-G is now "online". General availability is set to October but will probably be postpone to late November. Danish pilot projects now have access but meet a lot of internal compiler errors.</p> <p>The global trend is that FORTRAN is becoming less and less supported and we need to look further into it.</p> <p>Current challenges is that the software stack is not complete. we are missing libs and compiler environment. There is no consensus about how to run AI libs yet. Software crash in HPE stack, the interconnect is not as mature as we had hoped, we see MPI errors all over and no clear picture of why it is happening, the performance on GPU nodes is not as high as expected (could be a driver problem), and there is no MPI pinning at the GPU yet.</p> <p>LUMI-O and LUMI-F is currently not online after LUMI-G install, and LUMI-P is very unstable. There is no way to restore software runs from before LUMI-G install. On Cloud/demand was planned to be online for the summer 2022 but is not yet running.</p> <p>The LUMI-Lust team is working to get the software stack stable, getting AI libs in Python to run easily and support pilots and users (on LUMI-C). As well as working on a better internal process in the LUMI-LUST team.</p> <p>Most performance issues on LUMI-C are solved but it is still unstable. The HPC Team will follow the process closely.</p> <p>→</p> <p><b>B:</b> Call H2-2022 is just completed. We have granted resources to 22 projects. Statistics will be sent out after the DeiC board meeting on Friday. Deadline for</p>

		<p>next call is the 4<sup>th</sup> of October (midnight) please spread the word.  In the current call you can apply for 1 or 2 years. - We have not yet implemented the use of E-grant. We are working on a solution together with the ministry, but this call will be by secured e-mail as last time.</p> <p>All receivers of grants have received a grant letter. All rejected application have gotten a letter with a short explanation for the rejections. If the applicants need further explanation, they can contact the DeiC HPC Team through their local front office, and we will try to clarify what is missing in the application. We will write this into future rejection letters.</p> <p>The application round and process should be evaluated on next meeting, and the Forum will discuss approaches to handle entry level user applications (applications for small number of resources).</p> <p>→  <b>C:</b> Making researchers datasets available on all machine that they have access to, as a standard, will be extremely expensive. 99% percent of all researchers will only use one or two machines, and personal agreements can easily be made when users need access to specific dataset on another machine. We should not seek to have full data availability for all users on all machines they get access to by default.</p>
2	<p><b>Strategi for National Samarbejde om Digital Forskningsinfrastruktur</b>  Fra Gitte Julin Kudsk, direktør DeiC, den 10. august 2022:</p> <p>DeiCs bestyrelse har siden 2019 arbejdet på at indfri Strategi for Nationalt Samarbejde om Digital Forskningsinfrastruktur, som udkom i slutningen af 2018 som resultat af et samarbejde mellem Uddannelses- og Forskningsstyrelsen og repræsentanter fra universiteterne.  Langt de fleste af anbefalingerne er her i 2022 indfriet, og bestyrelsen vil derfor på et strategiseminar den 11.-12 oktober 2022 begynde arbejdet med en opdatering af strategien på basis af den nuværende status for samarbejdet. Som inspiration til dette arbejde ønsker bestyrelsen at modtage input fra de nedsatte referencegrupper omkring den fremtidige udvikling af samarbejdet og den nationale digitale forskningsinfrastruktur.  HPC Forum anmodes derfor om at komme med betragtninger og forslag til indsatsområder baseret på vedlagte oplæg. For at det kan indgå på bestyrelsesmødet ønskes materialet leveret til mig senest den 30. september 2022.</p> <p>Initial discussion, to be finalized at HPC Forum meeting 28. Sep. 2022.</p> <p>Oplægget er vedhæftet.</p>	<p>The Forum will form working groups to answer the three points: Strategy, KPI and Recommendations for the board.</p> <p>→  <b>Sovereignty:</b> Is about the risk of being too dependent on foreign technology (hardware + software), but it is also a geopolitical topic which in some cases can be a question about national sovereignty.</p> <p>It is difficult to see DeiC contribute to the topic of sovereignty in research, as it is more of a question for expert groups at the universities working into the European level.</p> <p>The problem should ultimately be solved on EU level. It is also a topic that include the whole European infrastructure (developers, suppliers, physical capital etc.) way beyond just HPC-infrastructure. DeiC can play a role as Danish representative in the more technical EU-committees. But we can't handle the process ourselves.</p> <p>HPC will provide recommendations for the DeiC board about which role DeiC should play in this Mega trend.</p> <p>→  <b>Digital development:</b>  Currently it is difficult to identify major chances in the technological</p>

		<p>development during the next four years that could influence the strategic level. The scope should be longer to significantly influence the HPC- strategy.</p> <p>However, the current trend of raised demand for GPU power should be expected to continue. And Quantum computing should be expected to influence the HPC strategy by 2028.</p> <p>→ <b>Security.</b> There will be a role for DeIC in developing, distributing, and coordinating security protocols. We should expect security to become more complex in the years to come.</p> <p>In EU there we will see a dramatic move towards higher security standards, and DeIC should be a part of that development. Even though DeIC might not have the needed competences for now.</p> <p>Security should however be handled by other Forums.</p> <p>→ <b>Sustainability.</b> Machine learning, AI and deep learning have been driven HPC for several years. From at sustainable point of view we cannot let the models keep growing. Also, from a democratic point of view, we must be aware that computing science is not becoming something that only Google and Facebook can do because they have the biggest machines.</p> <p>Sustainability could also be about Ethical sustainability. For example, the right to be represented in (computer) science, or the right to get out of projects GDPR wise. . If this is the case DeIC should be part of it. FAIR data is one contribution to the ethical dimension.</p> <p>Energy and power consumption is big part of sustainability, and there should be transparency to it (how much energy is used).</p> <p>Danish National HPC generally want to use as many resources (Watts) as possible, but we should also be able to justify the use. We run machines to do exemplary research, not just for the sake of computing.</p> <p>DeIC should consider and include ethical concerns when handling applications, so researchers justify their resource use etc. this should be written into the applications. However, this might be a topic for Science Forum to handle.</p> <p>→ <b>Bonus topic. Stability of the HPC Landscape.</b> The Forum recommend that a solution is found to secure stability of financing to HPC.</p>
--	--	---

		<p>One move in that direction will be the new juridical frame for DeiC as well as new contract with the consortiums. Hopefully this process will lead to a more stable HPC environment.</p>
3	<p><b>Key Performance Indicators</b> The DeiC board has asked HPC Forum to suggest KPI's for the national HPC centers.</p> <p>Initial discussion, to be finalized at HPC Forum meeting 28. Sep. 2022.</p> <p>See attachment with minutes from DeiC board meeting March 2022.</p>	<p>→</p> <p>Key performance indicators could be <b>Users</b> e.g., Numbers of user/per month, diversity of users (by university, gender, research areas etc.), <b>Utilization</b> e.g., "load" on facility by hours, interactivity of aps, numbers of project (in total and new users pr. month), number of applications for resources (granted and rejected), amount of data stored etc.</p> <p>GDPR compliance should always be considered when collecting KPI data.</p> <p>Usefulness of HPC for research should be measured (e.g., trough numbers of HPC publications). Again, to justify the use of resources.</p> <p>It is important to separate metrics and KPI, when collecting data. A KPI is something that can be influenced. It does not make sense to measure development in something we cannot influence.</p> <p>User surveys and interviews could be very valuable to evaluate the user experience.</p> <p>When giving input for the strategy it would be good to have the KPI's at hand. To understand what the users need.</p> <p>Maybe we should have different KPI's for the board and for the HPC Forum.</p> <p>The Forum members should ask their universities about, how they want us to measure the value they get for their money in the future.</p>
4	<p><b>Recommendations to the DeiC board regarding strategy for HPC investment in DeiC in the coming years</b> Initial discussion, to be finalized at HPC Forum meeting 28. Sep. 2022.</p> <p>See attachment with minutes from DeiC board meeting March 2022.</p>	<p>→</p> <p>We should follow the demand (and supply) for GPU's on T1 closely. For beginners we could have a single GPU setup, for advance users we should have multiple a GPU setup.</p> <p>However, these two things do not exclude each other's. Multiple GPU's can be sectioned, and they are generally cheaper to buy. So, a multi-GPU setup may have many advantages.</p> <p>We should also be aware, that most users don't care about the technical setup, but they care about whether they can run third party applications like Google or Deep Mind Easily on the GPU's.</p> <p>The problem here is often that the applications use a lot of memory.</p> <p>The possibility of running batches on the machines should be utilized more.</p>
6	<b>AOB.</b>	<p>→</p> <p>Formation of working groups: 1. Strategi for national samarbejde og digital forskningsinfrastruktur. 2. Key Performance Indicators 3. Recommendations for the DeiC board</p>

		<p>regarding strategy for HPC investment in DeiC in the Coming years.</p> <p>Hans Jørgen and Claudio will join the working groups as well as Erik and Svend. Hans Jørgen will be coordinating the working groups.</p> <p>CBS would have to find a new HPC Forum member since Carsten Sørensen is a CBS member of DeiC.</p>
--	--	--

Contacts:

- Eske Hjalmer Bergishagen Christiansen (DeiC HPC Director), [eske.christiansen@deic.dk](mailto:eske.christiansen@deic.dk), +45 9351 0048.
- Hans Jørgen Aagaard Jensen (HPC-Forum Chairman), [hjj@sdu.dk](mailto:hjj@sdu.dk)