Innkallingsnotat

Til:	UNINETT Sigma2 styre AS
Fra:	Gunnar Bøe
Forfatter:	Vigdis Guldseth
Kopi:	Ernst & Young
Dato:	13.04.2018
Gjelder:	Innkalling til UNINETT Sigma2 AS styremøte 2/18

Tid: Fredag 13. april, kl. 10.00 – 15.00
Sted: Radisson Blu Airport Hotel, Gardermoen

Deltakere:

Tor Holmen	UNINETT AS
Kenneth Ruud	UiT Norges arktiske universitet
Terese Løvås	NTNU
Nathalie Reuter	UiB
Morten Dæhlen	UiO
Øyvind Hennestad	Sintef
Juni Palmgren	Karolinska Institutt
Vigdis Guldseth	UNINETT Sigma2 AS
Gunnar Bøe	UNINETT Sigma2 AS

Saksliste:

Sak 13/18: **Godkjenning av dagsorden**

Forslag til vedtak: *Styret godkjenner dagsordenen.*

Sak 14/18: **Godkjenning av referat**
- Vedlegg: Referat fra styremøte 1/18

Forslag til vedtak: *Styret godkjenner referatet. Styret foreslår at NN og NN signerer referatet.*

Sak 15/18: **Habilitet**

Forslag til vedtak: *Ingen av styrets medlemmer erklærer seg inhabile i noen av styrets saker.*

Sak 16/18: **Årsoppgjør 2017** (Vedtakssak – 20 min)

Forslag til vedtak: *Styret godkjenner årsoppgjøret for 2017.*

Sak 17/18: **Norges deltakelse i EuroHPC** (Orienteringssak – 60 min.)
- Vedlegg: *HPC_Regulation_ST_5282_2018.pdf*
- Vedlegg: *Considerations for Norwegian participation in EuroHPC.pdf*

Forslag til vedtak: *Styret tar informasjonen til orientering.*

Lunsj 11.30

Sak 18/18: **Skisse til E-INFRA 2018-søknad** (Orienteringssak – 30 min.)
- Vedlegg: *Skisse for E-INFRA 2018 03-04 2018.pdf*

Forslag til vedtak: *Styret tar informasjonen til orientering.*

Sak 19/18: **E-INFRA 2030** (Orienteringssak – 15 min.)
- Vedlegg: *E-Infra 2013 Brev-Sigma2 utkast.pdf*

Forslag til vedtak: *Styret tar informasjonen til orientering*.

Sak 20/18: **Ny Samarbeidsavtale med universitetene?** (Orienteringssak – 15 min)
- *Vedlegg: Samarbeidsavtale om nasjonal e-infrastruktur.pdf*

Forslag til vedtak: *Styret tar informasjonen til orientering*.

Sak 21/18: **Sigma2 strategi** (Orienteringssak – 120 min)
- Gjennomgang av presentasjon

Forslag til vedtak: *Styret tar informasjonen til orientering*.

Sak 22/18: **Aktivitetsrapport** (Orienteringssak – 10 min)
- Vedlegg: *Sigma2 Aktivitetsrapport Q2.pdf*

Forslag til vedtak: *Styret tar informasjonen til orientering.*

Sak 23/18: **Eventuelt**

Referat

Møte: UNINETT Sigma2 AS styremøte 1/18
Dato: Mandag 12. februar, kl. 09.00 – 15.00
Sted: Radisson Blu Airport Hotel, Gardermoen, Oslo
Referent: Vigdis Guldseth

Deltakere:

Tor Holmen	UNINETT AS
Kenneth Ruud	UiT Norges arktiske universitet (På video, deltok på sakene 01-03/18 og 5-7/18)
Nathalie Reuter	UiB
Øyvind Hennestad	Sintef
Juni Palmgren	Karolinska Institutet
Terese Løvås	NTNU
Vigdis Guldseth	UNINETT Sigma2 AS
Gunnar Bøe	UNINETT Sigma2 AS
Stein Inge Knarbakk	UNINETT Sigma2 AS

Forfall:

Morten Dæhlen	UiO

Saksliste:

Sak 01/18	Godkjenning av dagsorden
Sak 02/18	Godkjenning av referat
Sak 03/18	Habilitet
Sak 04/18	Avtale om Tjenester for Sensitive Data
Sak 05/18	Planer og budsjett for Sigma2 2018
Sak 06/18	Anskaffelser
Sak 07/18	Ressursfordelingskomite: Dialog med RFK-leder
Sak 08/18	Evaluering av styret
Sak 09/18	Sigma2 årsberetning
Sak 10/18	Aktivitetsrapport
Sak 11/18	Økonomirapport
Sak 12/18	Eventuelt

Referat

Sak 01/18: Godkjenning av dagsorden

Det ble foreslått to saker under Eventuelt.

- Informasjon om oppdaterte varslingsrutiner i Sigma2
- Dato for ekstra styremøte i april.

Vedtak:
Styret godkjenner dagsordenen.

Sak 02/18: Godkjenning av referat

Vedtak:
Styret godkjenner referatene fra styremøtet 5/17 og forenklet styremøte januar 2018. Øyvind Hennestad og Juni Palmgren ble valgt til å signere protokollene.

Sak 03/18: Habilitet

Vedtak:
Ingen av styrets medlemmer erklærte seg inhabile i noen av styrets saker.

Sak 04/18: Avtale om Tjenester for Sensitive Data

Gunnar Bøe presenterte saken. Han la spesielt vekt på å informere om endringene i avtalen som er knyttet til prismodellen for TSD-tjenesten. Prismodellen samsvarer nå i større grad med de overordnede prinsippene i bidragsmodellen.

Bøe opplyste også om at avtalen vil bli gjenstand for reforhandling når TSD skal oppgraderes.

Fra styrets diskusjon:

Styret kommenterte på formuleringen i kapittel 1.6: «Ved vesentlige mangler i tjenesteleveransen vil man kunne trekke fra på årlig driftskostnad basert på skjønn og dialog»
Administrasjonens tilsvar var at formuleringen gjenspeiler at Sigma2 og USIT er samarbeidspartnere, og innebærer således lav risiko.

Styret ba også administrasjonen presisere ordlyden i forhold til kravene om at det skal være skriftlig varsling.

Vedtak:
Styret godkjenner avtalen med de kommentarer som fremkom i møtet.

Sak 05/18: Planer og budsjett for Sigma2 2018

Det er utarbeidet planer med egne prioriteringer og tilhørende budsjett for 2018 på åtte områder, som beskrevet i saksunderlaget. I tillegg til de åtte planene er det etablert en prosjektportefølje for samtlige prosjekter og aktiviteter som utføres i samarbeid med universitetene, inkludert norsk deltakelse i internasjonale prosjekter.

Rammene for 2018-budsjettet ble i hovedsak fastsatt i oktober, i forbindelse med søknaden om konkurranseutsatte midler til Forskningsrådet. Selskapet har til hensikt å gjennomføre en rullerende budsjettering i tråd med behovsutviklingen på ulike områder. Styret vil få løpende informasjon om prognoser.

Bøe viste også frem en matrise som fremviser status for KPI måloppnåelse i evalueringskriteriene. (ref. rapport til Forskningsrådet)

Fra styrets diskusjon:

Avansert brukerstøtte er et særlig viktig virkemiddel for å kunne hente ut gevinstene i den norske modellen for organisering av e-infrastruktur. Styret presiserte at Sigma2 derfor må fortsette å promotere dette tilbudet innenfor beregningstjenester og datalagring både til nye og eksisterende fagmiljøer.

Styret la vekt på at utadrettet kontakt med forskerne også er et ansvar som universitetene har. For forankring av bl.a. strategi og samspill mellom lokal aktivitet og Sigma2s aktiviteter, ble det foreslått å opprette en arena for dialog mellom Sigma2 og universitetene når det gjelder dette temaet, hvor relevante personer fra universitetets ledelse deltar.

Vedtak:
Styret godkjenner det overordnede utkastet til planer og budsjett for 2018. Styret ber administrasjonen initiere møter med ledelsen på universitetene, i tett samarbeid med selskapets styremedlemmer.

Sak 06/18: Status anskaffelser

Stein Inge Knarbakk orienterte om status for innkjøpsprosjektene ANS 2016 og ANS 2018, som presentert i saksunderlaget.

Administrasjonen foretrekker et ekstra styremøte i forbindelse med godkjenning av anskaffelsesstrategien for ANS 2018. 13. april ble foreslått som dato. Datoen må verifiseres med alle styremedlemmer.

Fra styrets diskusjon:

Styret diskuterte selskapets forhandlingsstrategi i forbindelse med erstatningsoppgjøret for forsinkelsene på Fram.

Vedtak:
Styret tar informasjonen orientering. Styret ber administrasjonen fortsette forhandlingene med leverandør av A1 (Fram) i tråd med fremlagt informasjon. Styret ber administrasjonen holdet styret løpende orientert om prosessen. Ved en eventuell disputt vil styrets involvering i saken forsterkes. Styret ber administrasjonen arrangere et ekstra styremøte den 13. april.

Sak 07/18: Ressursfordelingskomite – Dialog med RFK-leder

Knut Børve var invitert til styremøte for å orientere om Ressursfordelingskomiteens arbeid.

I sin presentasjon tok han utgangspunkt i RFKs egen rapport, som er inkludert i Sigma2s Framdriftsrapport til Forskningsrådet (Vedlagt sak 10/18). Nedenfor følger punkter fra presentasjonen:

- Da nåværende RFK- komite startet sitt arbeid i 2015, var ambisjonen å dra nytte av bredden i medlemmenes fagbakgrunn og utnytte konstellasjonens kompetanse. I praksis har det vist seg å være utfordrende å utøve et grundig faglig skjønn ved behandling av søknader. Dette handler først og fremst om at det har vært ulik fordeling av søknader på fagdisiplin. Dessuten har det vært noe varierende oppmøte på enkelte tildelingsmøter.
- Derimot er det av betydning å vite at vitenskapelig kvalitet i RFKs prosjekt-portefølje allerede har blitt grundig evaluert via Forskningsrådet og/eller internasjonale finansiører.
- Vitenskapelige publikasjoner som er produsert ved hjelp av Sigma2s e-infrastrukturressurser blir systematisk publisert i tidsskrift som har en høyere «standing», sammenlignet med gjennomsnittet i norsk forskning. Dette måles via en retrospektiv tilnærming gjennom rapporteringsverktøyet CRIStin. Det er riktignok ulik publikasjonstakt på ulike fagdisipliner.

- Det er en utfordring for RFK å behandle søknader fra institusjoner som ikke har tilgang til CRIStin. RFK har derfor bedt Sigma2 om å fortsette dialogen med CRIStin for å finne løsninger på dette problemet. ORCID som kilde til publisering kan også være et alternativ.
- Nye former for ressursuttak har også vanskeliggjort RFKs arbeid, for eksempel portal-prosjekter hvor autentiseringen ikke er tilstrekkelig dokumentert sett i lys av RFKs mandat og man kan dermed ikke følge opp bruken i forhold til f.eks. publisering.
- Man er nå inne i en periode hvor det er et gap på etterspørsel og tilgjengelig kapasitet. RFK starter derfor alltid med behandling av forskningsprosjekter med størst behov, mens små prosjekter vurderes og tildeles direkte via administrasjonen.
- RFK har, i samarbeid med administrasjonen, også jobbet mye med strukturering av tildelingsarbeidet, samt grensesnittet mot RFKs tekniske arbeidsgruppe, administrasjonen selv og sluttbrukerne. Intuitive verktøy for behandling av søknadene er viktig.
- RFK ønsker en tettere dialog med styret og foreslår at det etableres dialogmøter som en fast rutine en til to ganger i året, i etterkant av tildelingsrundene.
- Når det gjelder etablering av ny RFK-komite vil det være nyttig med en til to kontinuitetsbærere. Kjønn og kompetanse er også viktige kriterier.

Fra styrets diskusjon:

Kunnskapsdepartementet og Forskningsrådet har satt søkelyset på deling i forskningsdata. Styret ba RFK vurdere et sterkere fokus på denne problemstillingen for å understøtte myndighetenes arbeid, bl.a. knyttet til at aktuelle prosjekter har datahåndteringsplaner.

Administrasjonen viste til tidligere vedtak om ressurser til portaler på 6.8 Millioner CPU timer, som utgjør ca. 3%.

Styret pekte også på viktigheten av å ha en tett dialog med myndighetene når det gjelder bevilgninger til e-infrastruktur. I perioder med ressursknapphet er det viktig med lojalitet mot den nasjonale modellen, som muligens ikke er tilstrekkelig responsiv med tanke på den forventede dataeksplosjonen. Institusjonene bør derfor øke sine bidrag til Sigma2 i stedet for å bygge ut egen lokal kapasitet.

Vedtak:
Styret tar informasjonen til orientering.

Sak 08/18: Evaluering av styret

Administrasjonen hadde på forhånd sendt ut et skjema for evaluering av styrets arbeid. Dette ble gjennomgått i plenum.

Skjemaet består av åtte punkter som styremedlemmene skulle vurdere. Nedenfor følger en oppsummering av innspillene.

1. **Styrets oppgaver**

- Styrets oppfatning er at administrasjonen fremlegger relevante og betimelige styresaker.
- Styret besitter komplementerende kompetanse, inkludert juridisk kompetanse. Administrasjonen ble oppfordret til å fremlegge flere saker som omhandler foretakets rammebetingelser.
- Styret anser strategiske arbeidet som en løpende del av styrets arbeid. Administrasjonen bør hele tiden sette sluttbrukeren i sentrum og undersøke hvilke konsekvenser selskapets strategi har for disse. Dette danner grunnlaget for fremtidige beslutninger.

2. **Styrets saksunderlag**

- Styret mener saksunderlaget som blir fremlagt er solid og av høy kvalitet.

3. Styrets behandling av vedtak
- Diskusjonene i styremøtene oppleves konstruktive og bidrar til gode og riktig beslutninger.
- Administrasjonen har også stor nytte av styrets involvering.

4. Styrets kommunikasjons – og arbeidsform
- Styret fungerer bra som et kollegium.
- At styret har lykkes med å ha fokus på nasjonale løsninger fremfor lokale har vært og er en stor styrke for selskapet.

5. Styreleder
- Styreleder har fungert bra i sin rolle.

6. Styremøtene
- Styremøtene er interessante og produktive.
- Det er viktig med gode tidsangivelser ved utsending av innkalling, særlige relevant for tilreisende styremedlemmer.
- Styret setter pris på at saksunderlaget blir sendt ut i rett tid.

7. Styrets kompetanse
- Styremedlemmenes ansvarsposisjonen på egen institusjon varierer, hvordan kan det påvirke forankringen av styrets beslutninger på egen institusjon, og er det en viktig del av styremedlemmenes oppgaver? Forankring av styrets beslutninger på egen institusjon er ikke en del av styremedlemmenes oppgaver, det fremgår hverken av vedtektene til Sigma2 eller aksjeloven. Oppnevnelse som styremedlem er et personlig ansvar og slik sett er det ikke institusjonen som er representert.
- Dialogmøter med universitetsledelsen er viktig (ref. vedtak i sak 05/18)

8. Forbedringsagenda
- Styrekurs for nye styremedlemmer ble trukket frem som et behov.

Vedtak:
Styret tar informasjonen orientering.

Sak 09/18: Sigma2 årsberetning 2017

Vedlagt sakspapirene var et utkast til årsberetning 2017 for Sigma2.

Styret ba administrasjonen om å justere ordlyden i følgende setning:

> *Forskningsrådet bidrar med en årlig grunnbevilgning på 25 millioner kroner og universitetene bidrar med 50 millioner kroner.*

til

> *Forskningsrådet bidrar med en årlig grunnbevilgning på 25 millioner kroner og de fire eldste universitetene bidrar med til sammen 50 millioner kroner.*

Vedtak:
Styret tar informasjonen orientering.

Sak 10/18: Aktivitetsrapport

Gunnar Bøe orienterte fra aktivitetsrapporten. Det ble gitt utfyllende informasjon om Research Data Web, Sigma2s dialog med Havforskningsinstituttet, EOSC og EuroHPC.

Vedtak:
Styret tar informasjonen til orientering.

Sak 11/18: Økonomirapport

Gunnar Bøe presenterte økonomirapporten.

Vedtak:
Styret tar økonomirapporten til orientering.

Sak 12/18: Eventuelt

Det var meldt inn to saker under Eventuelt.

1. Dato for ekstra styremøte i april:

   Saken ble behandlet i sak 06/18

2. Informasjon om oppdaterte varslingsrutiner i Sigma2

   Sigma2 følger UNINETT-konsernets rutiner for varsling. Disse er diskutert med fagforeningene og er beskrevet i personalhåndboken. Rutinene skal også gjennomgås på allmøte for alle ansatte.

   Vedtak:
   Styret tar informasjonen orientering.

Memorandum

To: Sigma2 Board
From: Sigma2 administration
Author: Hans A. Eide, Gunnar Bøe
Date: 09.04.2018

Subject: Considerations for Norwegian participation in EuroHPC

Executive Summary

This document discuss the science case for EuroHPC and only covers the case for research needs for High Performance Computing (HPC) and does not include industry needs.

The European Commission (EC) holds that Europe's scientific capabilities, industrial competitiveness and sovereignty depend critically on access to world-leading HPC and data infrastructures to keep pace with the growing demands and complexity of the problems to be solved. This is also valid for Norway's scientific capabilities

Europe, including Norway, is lagging behind countries like USA, Japan and Kina when it comes to HPC, and EuroHPC is the EC's initiative to rectify this situation.

There is a very strong push from the EC to establish a Joint Undertaking (JU) for EuroHPC and it will most likely be established.

The EC have confirmed that there will not be any compulsory financial contribution from individual member states (MS) to participate in the JU, but highlight at the same time that utilization and participation in governance will be proportional, in some way, to MS contributions.

By joining the JU, Norwegian Scientists can get access to the EU share of the machine, but the access rights and mechanisms are yet to be defined.

A pre-exascale survey conducted in the summer of 2017 amongst the 10 largest HPC projects in Norway, researchers already utilizing large parallel codes, showed that there is a projected need for larger and faster HPC resources. It was also revealed that none of the projects presently have software ready to utilise pre-exascale systems, but that this could be in place by the time pre-exascale machines becomes available provided significant efforts in the area are undertaken.

One possibility is to offload the "largest/heaviest" HPC projects in Norway by buying access on EuroHPC pre-exascale systems, under the control of the Norwegian Resource Allocation Committee. This would be in line with the strategy for other large research infrastructures, and additionally improve the efficiency and quality of the overall national HPC services.

Based on current knowledge and experiences with related EU projects such as PRACE, we recommend that Norway joins the EuroHPC Joint Undertaking, and that further assessments are done regarding what financial contributions (for dedicated access) and in-kind contributions Norway should make and how.

Background

The European Commission (EC) on 11. January announced the European High-Perfomance Computing Joint Undertaking (EuroHPC JU). The plan is to pool European resources to develop top-of-the-range exascale supercomputers for processing big data, based on competitive European technology. The EuroHPC JU is a legal and funding entity which will enable pooling of the Union's and national resources on High-Performance Computer (HPC) with the aim of:

- acquiring and providing a world-class pre-exascale supercomputing infrastructure to Europe's scientific and industrial users, matching their demanding application requirements by 2020,
- developing exascale supercomputers based on competitive EU technology that the Joint Undertaking could acquire around 2022/2023, and that would be ranking among the top three places in the world.

The EuroHPC Joint Undertaking will be composed of public and private members:

- the European Union (represented by the Commission),
- the 14 Member States and associated countries which have already signed the EuroHPC Declaration,
- the representatives from the supercomputing and big data stakeholders, including academia and industry.

Other countries can join the Joint Undertaking at any moment, provided they contribute financially to its objectives.

The European HPC scene

The term 'High Performance Computing' (HPC) refers to the technologies and the use of powerful supercomputers (interconnecting in a single system or in close proximity of hundreds of thousands or millions of computing units working in parallel) to perform massive and fast computations that are so demanding that they cannot be performed using general-purpose computers. HPC methodologies include modelling and simulation, advanced data analytics and visualisation that are used for highly computational or data intensive tasks in a very wide range of scientific, engineering, industrial, business and public sector applications. HPC is at the core of major advances and innovations in the digital age where to out-compute is to out-compete. It is a key technology for science, industry, and society at large:

- HPC is an essential tool to address major scientific and societal challenges such as (to name just a few) the early detection and treatment of diseases, new therapies based for example on personalised and precision medicine; deciphering the functioning of the human brain; forecasting climate evolution; observing space; preventing and managing large-scale natural disasters; and accelerating the design of new materials.
- The use of HPC is having a growing critical impact on industries and businesses by significantly reducing design and production cycles, minimising costs, increasing resource efficiency, and shortening and optimising decision processes.
- HPC is also essential for national security and defence, e.g. in developing complex encryption technologies, tracking and responding to cyberattacks, deploying efficient forensics, and in nuclear simulations.

Europe's scientific capabilities, industrial competitiveness and sovereignty critically depend on access to world-leading HPC and data infrastructures to keep pace with the growing demands and complexity of the problems to be solved. Although the Union acted in 2012 to step up its efforts to ensure leadership in the supply and use of HPC systems and services this has been insufficient to date. As a result:

a) the Union does not have the best supercomputers in the world, and those it has depend on foreign HPC supply chains, exposing it to an increasing risk of being deprived of strategic or technological know-how for innovation and competitiveness;
b) the supercomputers available in the Union do not satisfy demand. To fill the gap, European scientists and industry are seeking access to top machines located outside the Union to process their data. This may create problems, in particular as regards the protection of personal and sensitive data e.g. commercial data or trade secrets), and the ownership of data, in particular for sensitive applications such as health;
c) Member States' and the Union's investments in HPC remain largely uncoordinated and the industrial take-up of HPC technology developments is low. As compared with competitors in the United States, China and Japan, the Union and its Member States are clearly underinvesting in HPC with a funding gap of EUR 500-750 million per year.
d) the Union is failing to turn its investments in technology development into European technology based HPC systems that it procures, i.e. it lacks an effective link between technology supply, co-design with users, and a joint procurement of systems; and
e) the failure to create a lead market in HPC means failure to create a competitive European HPC supply industry in a market projected to be worth around EUR 1 trillion in the next 10 years.

To address these issues, at the Digital Day in Rome (organised on 23 March 2017 as part of the 60 th anniversary celebrations of the Treaty of Rome), seven Member States – France,

Germany, Italy, Luxembourg, the Netherlands, Portugal and Spain – signed the EuroHPC declaration. They were subsequently joined by Belgium, Slovenia, Bulgaria, Switzerland, Greece and Croatia. The 13 countries agreed to work together and with the Commission in acquiring and deploying by 2022/2023 a pan-European integrated exascale supercomputing infrastructure (EuroHPC). Other Member States and associated countries were invited to sign the EuroHPC declaration.

The Norwegian HPC scene

Scientist in Norway have for many years been very advanced users of HPC. On a European level Norwegian projects have for many years been very competitive in achieving access to the most powerful HPC resources in Europe (PRACE Tier-0). For Norway it will be important to continue to have access to the best HPC resources in Europe.

The EuroHPC JU will enable Member States to coordinate together with the Union their supercomputing strategies and investments, with the goal to provide researchers with an ecosystem of resources for their various needs, in step with scientific development. The projected exascale systems of the EuroHPC JU will address the needs of a sub-set of science cases of really large, computationally speaking, science cases.

A survey conducted in the summer of 2017 amongst the 10 largest HPC projects in Norway, researchers already utilizing large parallel codes, showed that there is a projected need for larger and faster HPC resources. The survey respondents were from fields of geophysics/climate, solar/space physics and chemistry/material science. Common to these is the aspect of large complex and interconnected models that benefit from massive parallelism, and the greater capabilities of pre-exascale and exascale systems will generally allow for higher resolutions and/or more complex systems, in addition to greatly reduced execution times. This will allow for addressing several grand scientific challenges of great importance to society and environment.

All respondents reported that there is no software capable of utilizing exascale systems at present. The time-line for reaching such scales is generally estimated to be around five years, with a sizable effort going into research and development of software and model codes in parallel with hardware developments.

For this reason, it was generally held that it is important for the research community that a clear technological roadmap is made on whether to aim for a large degree of data distribution (which require significantly improved communication both in terms of bandwidths and, more importantly, latency) or to aim for larger per-processor and per-core memory (which will rely on high memory bandwidths). This would again require good mechanisms for creating synergies between research funders and HPC providers.

The survey respondents were generally of the opinion that access to such large systems should be based on peer review and be free of charge (for the researchers). One respondent additionally cautioned against allowing commercial use of the systems. Owing to the large costs involved and the fact that academic use of compute resources generally is free, it is difficult to envision soliciting significant funding for participation in the EuroHPC JU from research projects directly, but rather that funding must come from governmental and other high level institutions as a strategic investment.

All respondents pointed to the development of exascale computing capabilities as being a collaborative effort, including the science itself, supporting the notion of open software and data. Data management was highlighted as important overall, and in one respondent's view there should be one software engineer for each researcher.

Even if there are no projects in Norway with immediate need for exactable, there are still compelling reasons for consider participation, in particular for developing competence, applicable software and prepare projects for future participation.

Hardware development or systems for science

Information given by the commission indicates EuroHPC will have a significant portion of HW development, with the intention to have a European processor alternative. The EuroHPC Joint Undertaking will develop a clear strategy for innovation procurement of exascale machines based on competitive European technologies. By developing the prospect of creating a lead market for exascale technology in Europe, the EuroHPC JU will help the European industry take the risk to develop technology and components for such machines. Related to this are EU intentions related to Arificial Intelligence and Automotive industry. Thus, there could be interest from Norwegian industry actors.

It is beyond the scope of Sigma2 to assess Norwegian industry need related to hardware and the assumption of this memo is that there will be a significant/main part of EuroHPC JU dedicated to providing exascale systems for science.

Governing model

What has been proposed is that the governance structure of the EuroHPC JU will be composed of:

1. The Governing Board (representatives of the public members): will be responsible for the Joint Undertaking decision making, including funding decisions related to all the procurements and Research & Innovation (R&I) activities. Voting rights will be proportional to the financial contributions of its members.
2. The Industrial and Scientific Advisory Board (representatives of the private members -academia and industry): will be responsible for elaborating the R&I agenda on technology, applications, and skills development.

According to the proposed regulation the voting rights of the Participating States shall be in proportion to their actual financial commitment to the activities of the Joint Undertaking over the duration of the Joint Undertaking.

Funding model

The EuroHPC Joint Undertaking is foreseen to start operating in 2019 and will remain operational until the end of 2026. Its budget will consist of EUR 486 million from the present budgetary framework of the Union, and more specifically in both Horizon 2020 and Connecting Europe Facility (CEF) programmes. The EC hope the budget will be matched by a similar amount from the participating countries. The private entities should also provide in-kind contributions. The Joint Undertaking will provide financial support in the form of procurement or research and innovation grants to participants following open and competitive calls.

One of the challenges in terms of getting more countries to "sign up" for EuroHPC is to give the governments some more information/indications about what they can expect in terms of financial contributions. It is argued that there are no commitments in signing the EuroHPC declaration, but if EuroHPC is going to move forward we have to address the national contributions and the model for this. The PRACE community have significant experience dealing with the challenges related to this, since this was a very important part of the shaping of PRACE2.
Other principles discussed in PRACE2 should also be considered for EuroHPC e.g. transparency when in it comes to cost models, in-kind contributions, housing expenses etc.

The EU commission have confirmed that there will not be any compulsory financial contribution to participate in the Joint Undertaking.

Council of the European Union

Brussels, 12 January 2018
(OR. en)

5282/18

Interinstitutional File:
2018/0003 (NLE)

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COVER NOTE

From:	Secretary-General of the European Commission, signed by Mr Jordi AYET PUIGARNAU, Director
date of receipt:	11 January 2018
To:	Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of the European Union
No. Cion doc.:	COM(2018) 8 final
Subject:	Proposal for a COUNCIL REGULATION on establishing the European High Performance Computing Joint Undertaking

Delegations will find attached document COM(2018) 8 final.

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EUROPEAN
COMMISSION

Brussels, 11.1.2018
COM(2018) 8 final

2018/0003 (NLE)

Proposal for a

COUNCIL REGULATION

on establishing the European High Performance Computing Joint Undertaking

{SWD(2018) 5 final} - {SWD(2018) 6 final}

EXPLANATORY MEMORANDUM

1. CONTEXT OF THE PROPOSAL

• Reasons for and objectives of the proposal

The term 'High Performance Computing' refers to the technologies and the use of powerful supercomputers (interconnecting in a single system or in close proximity of hundreds of thousands or millions of computing units working in parallel) to perform massive and fast computations that are so demanding that they cannot be performed using general-purpose computers. High performance computing methodologies include modelling and simulation, advanced data analytics and visualisation that are used for highly computational or data intensive tasks in a very wide range of scientific, engineering, industrial, business and public sector applications. HPC is at the core of major advances and innovations in the digital age where to out-compute is to out-compete. It is a key technology for science, industry, and society at large:

– HPC is an essential tool to address major scientific and societal challenges such as (to name just a few) the early detection and treatment of diseases, new therapies based for example on personalised and precision medicine; deciphering the functioning of the human brain; forecasting climate evolution; observing space; preventing and managing large-scale natural disasters; and accelerating the design of new materials.

– The use of HPC is having a growing critical impact on industries and businesses by significantly reducing design and production cycles, minimising costs, increasing resource efficiency, and shortening and optimising decision processes.

– HPC is also essential for national security and defence, e.g. in developing complex encryption technologies, tracking and responding to cyberattacks, deploying efficient forensics, and in nuclear simulations.

Europe's scientific capabilities, industrial competitiveness and sovereignty depend critically on access to world-leading HPC and data infrastructures to keep pace with the growing demands and complexity of the problems to be solved. Although the Union acted in 2012 to step up its efforts to ensure leadership in the supply and use of HPC systems and services[1], this has insufficient to date. As a result:

(a) the Union does not have the best supercomputers in the world, and those it has depend on foreign HPC supply chains, exposing it to an increasing risk of being deprived of strategic or technological know-how for innovation and competitiveness;

(b) the supercomputers available in the Union do not satisfy demand. To fill the gap, European scientists and industry are seeking access to top machines located outside the Union to process their data. This may create problems, in particular as regards the protection of personal and sensitive data e.g. commercial data or trade secrets), and the ownership of data, in particular for sensitive applications such as health;

(c) Member States' and the Union's investments in HPC remain largely uncoordinated and the industrial take-up of HPC technology developments is low. As compared with competitors in the United States, China and Japan, the Union and its Member

[1] Commission Communication on *High-performance computing: Europe's place in a global race* (COM(2012) 45 final)

States are clearly underinvesting in HPC with a funding gap of EUR 500-750 million per year.

(d) the Union is failing to turn its investments in technology development into European technology based HPC systems that it procures, i.e. it lacks an effective link between technology supply, co-design with users, and a joint procurement of systems; and

(e) the failure to create a lead market in HPC means failure to create a competitive European HPC supply industry in a market projected to be worth around EUR 1 trillion in the next 10 years.

To address these issues, at the Digital Day in Rome (organised on 23 March 2017 as part of the 60th anniversary celebrations of the Treaty of Rome), seven Member States – France, Germany, Italy, Luxembourg, the Netherlands, Portugal and Spain – signed the *EuroHPC declaration.*[2] They were subsequently joined by Belgium, Slovenia, Bulgaria, Switzerland, Greece and Croatia. The 13 countries agreed to work together and with the Commission in acquiring and deploying by 2022/2023 a pan-European integrated exascale supercomputing infrastructure (EuroHPC*)*. Other Member States and associated countries were invited to sign the EuroHPC declaration.

The target set by the Union is to reach exascale performance, i.e. a performance level of computing systems capable of executing ten to the power of eighteen operations per second, by the years 2022 or 2023. The increase of computing power beyond the exascale would include post-exascale technologies and likely quantum computers. These are computing devices exploiting quantum physical effects, rather than the traditional transistors. As an intermediate step to reach exascale performance pre-exascale performance, i.e. 20% to 50% of the exascale performance, should be reached by 2019.

The countries signing the EuroHPC declaration recognised that there is an urgent need for them and for the Union to invest together in order to: acquire and offer to Europe's scientific and industrial users a leading-edge HPC infrastructure matching their demanding application requirements; and develop in Europe an own world-class exascale[3] HPC infrastructure by 2022/2023.

Achieving these objectives will require a new legal and financial instrument allowing two world-class pre-exascale machines of a few hundred petaflops[3] each to be procured (in 2019/2020) and made available to public and private users in order to develop leading scientific and industrial applications that will foster the development of a broad pre-exascale ecosystem in Europe. The instrument will also need to support the R&D and technology development required for co-designing competitive European exascale machines, including the first generation of a European low-power microprocessor technology, a key technology for reaching exascale capability in Europe by 2022/2023. The procurement of exascale systems would, however, not be part of the current proposal.

In summer and autumn 2017, the Commission carried out an impact assessment to identify the best instrument for achieving these goals, while promising the best economic, societal, and environmental impacts and safeguarding the Union’s interests. A Joint Undertaking was

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[2] http://ec.europa.eu/newsroom/document.cfm?doc_id=43815, https://ec.europa.eu/digital-single-market/en/news/belgium-joins-european-cooperation-high-performance-computing

[3] Measuring the 'floating-point operations per second' (FLOPS) of a computer qualifies the performance of a computer. One peta-flop (petascale machines) corresponds to ten to the power of fifteen FLOPS and one exa-flop (exascale machines) corresponds to ten to the power of eighteen FLOPS.

found to represent the best option. A Joint Undertaking provides a legal, contractual and organisational common framework to structure the joint commitments entered into by its participating members. It also provides its members with a firm governance structure and budgetary certainty. It can implement joint procurement and operate world-class HPC systems via the promotion of (in particular European) technology. It can act as the owner of the pre-exascale supercomputers funded jointly by its members and so facilitate non-discriminatory access to them. Lastly, it can launch R&D&I programmes for developing technologies and their subsequent integration in European exascale supercomputing systems, thus closing the chain from R&D to the delivery and operation of exascale HPC systems, and contributing to the development of a competitive European technology supply industry.

The EuroHPC Joint Undertaking will draw its funds from the current Multiannual Financial Framework (MFF) budgets already committed for HPC activities in the work-programmes for the last two years of Horizon 2020 and the Connecting Europe Facility. The EuroHPC Joint Undertaking will not rely on additional funding from the next Multiannual Financial Framework to achieve its objectives. Should funds become available in the next Multiannual Financial Framework, the Regulation of the EuroHPC Joint Undertaking would need to be amended in order to define a new mandate to cover the procurement and operation of the exascale infrastructure, the development of HPC technology coming after the exascale, and the procurement and operation of such a post-exascale infrastructure, including its eventual integration with quantum computing technologies. An amended, broadened mandate would be underpinned by a proportionate impact assessment in line with Better Regulation requirements.

How will the EuroHPC Joint Undertaking operate?

The activities of the Joint Undertaking will be grouped around two main pillars:

(1) **procurement and operation of HPC and data infrastructures**: acquisition of world-class supercomputing and data infrastructures, their deployment, interconnection and operation; and providing and managing access to these infrastructures for a wide range of public and private users, and

(2) **an HPC research and innovation programme**: supporting an R&I agenda for European HPC technology and know-how development; applications and skills development and a wide use of HPC.

Membership of the Joint Undertaking will be as follows:

– ***public members***: the Union (represented by the Commission) and the Member States and Horizon 2020[4] associated countries wishing to participate (Participating States). Currently, the Participating States are the 13 countries that have signed the EuroHPC declaration: France, Germany, Italy, Luxembourg, the Netherlands, Portugal, Spain, Belgium, Slovenia, Bulgaria, Greece, Croatia and Switzerland, but other Member States and Associated Countries may yet join them, and

– ***private Members***: representatives of HPC and Big Data stakeholders, including academia and industry. The associations ETP4HPC[5] and BDVA[6] representing the private entities in the contractual public-private-partnerships have submitted letters

[4] https://ec.europa.eu/research/iscp/pdf/policy/h2020_assoc_agreement.pdf

[5] http://www.etp4hpc.eu/

[6] http://www.bdva.eu/

of support for the implementation of the EuroHPC initiative and expressed their interest in contributing to the activities of the Joint Undertaking.

The governance of the Joint Undertaking will be structured as follows:

– *a **Governing Board*** (composed of representatives of the public members of the Joint Undertaking) will be responsible for strategic policy making and the funding decisions relating to the Joint Undertaking's procurement and R&I activities. In principle, members' voting rights and procedures will be in proportion to their financial contributions, and

– *an **Industrial and Scientific Advisory Board*** (composed of representatives of the private members of the Joint Undertaking). To avoid conflicts of interest, in particular with the procurement of pre-exascale supercomputers for the suppliers of high performance technology, this board will have an advisory role only and will include two advisory groups:

- a **Research and Innovation Advisory Group,** which will include representatives of academia, industry users and technology suppliers and be responsible for drawing up a medium- to long-term R&I agenda on technology and applications, covering the research, innovation, applications and skills development activities supported by the Joint Undertaking's R&I programme, and
- an **Infrastructure Advisory Group**, which will include experienced academic and user industry experts selected by the Governing Board and will provide it with independent advice on the procurement and operation of the supercomputers owned by the Joint Undertaking.

The EuroHPC Joint Undertaking will start operating in 2019. In 2019-2020 it will launch open calls for R&I proposals for funding HPC technology and application development activities. It will also procure two world-class pre-exascale machines of a few hundred petaflops and co-finance the acquisition of at least two additional machines of the order of a few tens of petaflops.

The Joint Undertaking will procure and own the HPC machines funded mainly by the Union. The Participating States will procure and own those funded mainly by themselves.

The Joint Undertaking will acquire its pre-exascale supercomputers in two steps:

– it will first select a hosting entity in a Member State participating in the Joint Undertaking that provides the necessary facilities to host and operate a supercomputer (typically a supercomputing centre). The Governing Board will establish the criteria for the selection of the hosting entity. The Joint Undertaking and the hosting entity will sign a hosting agreement setting out the entity's responsibilities in installing and operating the HPC machines. The pre-exascale supercomputers will be located in a Member State as the overall objective is to support the development of an integrated High Performance Computing ecosystem in the Union[7].

– secondly, the Joint Undertaking will launch the procedure to acquire the supercomputer to be installed and operated in the selected hosting entity.

[7] Article 3(1)(a) of the Council Regulation establishing the European High performance Computing Joint Undertaking

The Union financial contribution, under the current Multiannual Financial Framework, would be EUR 486 million, matched by similar amounts from the Participating States and the Private Members of the EuroHPC Joint Undertaking.

The Joint Undertaking will use these funds mainly to implement its activities under the two pillars (see above). In particular, the second pillar (the HPC Research and Innovation Programme") will address the programme-coordination inefficiencies that the Commission is currently experiencing as a result of having to implement the HPC strategy through separate work programmes (Horizon 2020 and the Connecting Europe Facility). The Governing Board will be responsible for:

- aligning the content and the timing of the various calls with the HPC strategic agenda;
- ensuring coherence between the topics of the calls; and
- putting in place the appropriate funding instruments to achieve the objectives, in particular innovation procurement to accompany the route from European HPC technology development to the procurement of European machines.

By using the Horizon 2020 rules, the Joint Undertaking will be able to introduce provisions to protect the Union's economic and strategic interests of the Union, i.e. protecting intellectual property (IPR) produced in the Union and first exploiting all EU-funded R&I results in the Union.

- **Consistency with existing policy provisions in the policy area**

The 2012 Communication on "*High performance computing: Europe's place in a global race*"[1] highlighted the strategic nature of HPC as a crucial asset for the EU's innovation capacity.

On 19 April 2016, the Commission adopted the *European Cloud Initiative*, as part of its Digitising European Industry strategy.[8] This involves the Commission and the Member States creating a leading European HPC and big data ecosystem, underpinned by a world-class HPC, data and network infrastructure. Such an infrastructure would help the EU to become one of the world's top supercomputing powers by 2022/2023 thanks to exascale supercomputers based on European technology.

- **Consistency with other Union policies**

On 10 May 2017, the Commission adopted a Mid-term review of the digital single market strategy[9], in which it announced its intention to propose, by the end of 2017, a legal instrument providing a procurement framework for an integrated pan-European exascale supercomputing and data infrastructure.

The policy intervention also builds upon the 'Digitising European Industr'y policy package (see above).

[8] Communication on *Digitising European industry – reaping the full benefits of a digital single market* (COM(2016) 180 final) and SWD(2016) 106

[9] COM(2017) 228 final

2. LEGAL BASIS, SUBSIDIARITY AND PROPORTIONALITY

• Legal basis

The legal basis of the EuroHPC Joint Undertaking initiative is Article 187 and the first paragraph of Article 188 of the Treaty on the Functioning of the European Union.

• Subsidiarity (for non-exclusive competence)

The growth in the importance of HPC for science and the public and private sectors in recent years has been accompanied by an exponential rise in the level of investment required to stay globally competitive. This has led to a widespread recognition that 'Europeanisation' in this area via a shared infrastructure and common use of existing capabilities would benefit everyone. This includes Member States that may have difficulties in creating self-sufficient national HPC infrastructures while they can make valuable contributions to and benefit from federated and interconnected EU-level HPC capabilities.

The scale of the resources needed to realise a sustainable world-class HPC infrastructure and ecosystem is beyond what individual Member States can afford. No single Member State has the financial means to acquire exascale computing capabilities and develop, acquire and operate the necessary exascale HPC ecosystem on its own and in competitive timeframes as compared with the current world leaders in this domain (the USA, China and Japan). Knowledge and resources available in the Union need to be brought together to build a leading-edge HPC ecosystem across all value-chain segments, while EU-level investments and resulting services must be coordinated if the Union's HPC computing and data infrastructures are to be on a par with those of its global competitors.

Cooperation exists already in some areas among Member States, industry and science. Examples include the PRACE[10] Association, the HPC contractual Public-Private-Partnership ETP4HPC, the Big Data contractual Public-Private-Partnership and GÉANT.[11] EuroHPC builds on these as the key investors in the EuroHPC signatory countries are already represented there.

Political support from Member States on EuroHPC has already been explicitly given by the Council, by the signatories of the EuroHPC Declaration, and by the European Parliament[12].

• Proportionality

The proposal complies with the principle of proportionality as set out in Article 5 of the Treaty on European Union, as it consists of an effective cooperation framework, suited to all intervention areas of this initiative, does not go beyond what is necessary to solve the problems identified and is proportionate to its objectives. More specifically:

- First, it sets up a joint procurement framework for an integrated world-class pre-exascale computing and data infrastructure in Europe, overcoming the fragmentation of national HPC investment plans and the difficulties of acquiring supercomputers based on European technology. It will pool resources from the Union, the Participating States and the Private Members. Funding for the EuroHPC Joint Undertaking is already available in the Union budget (commitments for HPC activities in the last two years of Horizon 2020 and the Connecting Europe Facility).

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[10] http://www.prace-ri.eu/

[11] https://www.geant.org

[12] European Parliament, Report on the European Cloud Initiative (2016/2145(INI)), Committee on Industry, Research and Energy, Brussels, 26 January 2017.

The need for additional funding from the Participating States and the Private Members will be limited as the proposal relies to a large extent on commitments or investment plans that they already have for the coming years;

- Second, the funding instruments are already available, i.e. Horizon 2020 and Connecting Europe Facility. Beneficiaries and participants will be faced with no additional administrative burden compared with the present situation, and
- Third, the initiative builds on existing initiatives such as PRACE, the contractual-Public-Private-Partnerships ETP4HPC and BDVA, and the HPC Centres of Excellence which will continue to play a decisive role in implementing the objectives of the Joint Undertaking. In the future it will rely on them to provide access to HPC capacities in Europe, support user communities in developing and adapting their applications in operating supercomputers.

- **Choice of instrument**

The creation and operation of a Joint Undertaking in which the Union participates requires a Council Regulation.

3. RESULTS OF STAKEHOLDER CONSULTATIONS AND IMPACT ASSESSMENTS

- **Stakeholder consultations**

Since the publication of the "European Cloud Initiative" Communication, which outlined the objectives of a European strategy on HPC, various steps have been taken to inform stakeholders of the objectives of the strategy and invite them to help shape it. The Commission has organized several workshops, including the Digital Day in Rome (23 March 2017) as have stakeholder organisations such as ETP4HPC, PRACE, and the European Science Cloud.

The Commission has had regular informal meetings with representatives of a core group of Member States that signed the EuroHPC declaration in March 2017 to discuss the roadmap and implementation of a joint European initiative on HPC. It also organized two workshops (5 and 26 October 2017), to which all Member States were invited where it presented presenting the objectives of the initiative and the proposed implementation model (Joint Undertaking) and asked Member States for their feedback and comments.

In August 2017, the Commission published a targeted consultation on a joint European initiative on HPC. This was advertised through social media, a website and targeted e-mail invitations. Views were sought from stakeholders considered to represent the European HPC community to the best extent, such as the scientific user communities of HPC infrastructures (e.g. the 29 large research infrastructures of the European Strategy Forum on Research Infrastructures (ESFRI), the PRACE scientific users, the European Data Infrastructure (EUDAT), and the European Grid Infrastructure (EGI)), ETP4HPC, BDVA, centres of excellence for supercomputing applications, supercomputing centres, HPC service providers, HPC access providers, HPC R&I associations and national and EU-funded HPC projects.

Almost 100 replies were received, some of which were the consolidated opinion of a stakeholder association. The outcome of the consultation was overwhelming support for a joint European initiative. It also revealed a broad consensus on the major HPC-related issues in Europe and the priorities for addressing them with scientific users, industrial users, supercomputing centres and the supply industry all expressing similar opinions.

- **Collection and use of expertise**

The Commission has experience in setting up and managing Joint Undertakings. In particular, it will benefit from the experience of implementing the Electronic Components and Systems for European Leadership (ECSEL) Joint Undertaking[13] in an area related to HPC, namely micro- and nano-electronics. The two Joint Undertakings have some industrial players in common and it is expected that the technology developments for the highly specialised of supercomputer markets will find their way into the mass-markets addressed by ECSL.

- **Impact assessment**

The Commission carried out an impact assessment of the following policy options:

– a baseline scenario (no policy intervention) including revision of the current instruments for achieving the objectives of the European HPC strategy;

– a European Research Infrastructure Consortium (ERIC), and;

– a Joint Undertaking.

Other options, such as a European Economic Investment Grouping (EEIG), Intergovernmental Organisations and Galileo-like structures were discarded as it was evident that their legal basis would not satisfy fundamental requirements for the implementation of a joint European HPC initiative.

The Commission examined the extent to which the three retained options would:

- be effective in achieving the objectives of the joint European initiative;
- meet the functional requirements of the legal and financial instrument;
- safeguard the interests of the Union, and
- have positive impacts on the economy, competitiveness, society and the environment.

In conclusion only the Joint Undertaking was considered to have the most positive impact on all those points.

The inherent risks of a public-private-partnership would be mitigated by the EuroHPC Joint Undertaking in the following ways:

– **procurement**: all the Joint Undertaking's procurement operations will be under the sole responsibility of the Governing Board (composed only of its public members). This will guarantee that sound procurement decisions can be made without interference of the Private Members (in particular of the HPC supply industry) either in the joint public procurement process for the pre-exascale machines or in decisions on how the public funds will be spent;

– **sound and timely implementation of activities**: the Joint Undertaking's objectives and tasks will be clearly defined and their implementation will be regularly monitored against well-defined deliverables and annually-set key performance indicators. Other measures will include an ex-post evaluation of its activities every two years, with corrective measures being implemented, as needed;:

  - **procurement programme**: The Joint Undertaking will benefit from the experience of many of its public members in procuring supercomputing

[13] http://www.ecsel.eu/

systems. Furthermore, the programme will be planned and monitored with the help of the members of the Infrastructure Advisory Group whom the Governing Board will select carefully so as to include experts experienced in procuring and monitoring the operations of national HPC machines.

- **R&I programme**: this will be designed and implemented in a similar way to the current HPC programme under Horizon 2020. It will be based on research and innovation agendas prepared by its Private Members participating in the Scientific Advisory Board of the Joint Undertaking (including representatives of the two contractual public private partnerships, ETP4HPC and BDVA).

– **investment risks**: the contribution of the Union budget to the Joint Undertaking is already available and most of the Participating States have already planned their HPC commitments or investment plans for the coming years. The mid-term evaluation of ECSEL, which had similar objectives demonstrated a large leverage effect as regards private investment: the Joint Activities led to additional private investment of 4.26 Euro for each euro of public investment.

On 25 October 2017, the Regulatory Scrutiny Board delivered a positive opinion with reservations on the Impact Assessment. The proposal takes into account the Board's recommendation by providing in Article 4 that the Joint Undertaking would operate with funding from programmes under the current Multiannual Financial Framework and by describing in Article 3 the objectives, and in Article 1 of the Annex (Statutes) the tasks, that the Joint Undertaking should fulfil. Lessons learnt from the set-up and management of existing Joint Undertakings, in particular through the recently concluded mid-term evaluation of ECSEL, have been taken into account. Both Joint Undertakings are similar in their structure and objectives; the main difference is the large procurement activities in EuroHPC which is absent from ECSEL. This difference explains the attribution of voting rights in proportion to the contribution of the participants, as reflected in Recital 25 of the EuroHPC proposal and Article 6 of its Annex (Statutes).

• **Regulatory fitness and simplification**

This proposal for a Regulation establishing a Joint Undertaking is in line with the Comission's *Better Regulation Guidelines*, in particular it proposes regulating only where necessary and in a proportionate manner. It follows the ECSEL model as far as possible, drawing on experience gathered in that context and taking into account the recommendations of the ECSEL mid-term review.

Setting up a EuroHPC Joint Undertaking would help to simplify implementation of the HPC activities currently implemented by the Commission through Horizon 2020. Commission would delegate power to the Joint Undertaking to implement the Union's HPC activities over two different programmes (Horizon 2020 and the Connecting Europe Facility) and three parts of the Horizon 2020 work programme (‘Future and Emerging Technologies’ (FET), ‘Leadership in Enabling and Industrial Technologies ICT’ (LEIT-ICT) and ‘Research Infrastructures’). This approach would alleviate the difficulties of synchronising and coordinating activities to achieve the objectives of the European HPC strategy, and reduce negotiations with four different Programme Committee configurations to a negotiation within a single Governing Board.

The proposal will benefit Member States, scientific users of HPC, industry (including SMEs), supercomputing centres and ultimately citizens. The Joint Undertaking will make Europe's HPC capabilities world-class, have a direct positive impact on societal challenges (e.g. health,

environment, climate, etc.), manufacturing and engineering, fundamental science, national security and safety, and foster a European supply industry for digital technologies.

4. BUDGETARY IMPLICATIONS

There are no additional budgetary implications under the current Multiannual Financial Framework, since the EuroHPC Joint Undertaking would draw its funds from the budgets already committed for High Performance Computing activities in the work-programmes for the last two years of Horizon 2020 and the Connecting Europe Facility. In total EUR 486 million would be available from both Programmes.

This is to be matched by the same amount from the Participating States, as part of their programmes to upgrade their national HPC infrastructure.

The private entities should provide a similar amount, as part of their current commitment to the contractual public-private-partnerships ETP4HPC and BDVA, for the remaining duration of Horizon 2020.

5. OTHER ELEMENTS

- **Implementation plans and monitoring, evaluation and reporting arrangements**

Once the two pre-exascale supercomputers go into operation, a mid-term evaluation will determine the effectiveness of the Joint Undertaking as a legal and financial instrument for achieving the objectives of the European HPC strategy. In particular, it will assess the level of the Participating States' and Private Members' participation in, and contribution to, the actions of the Joint Undertaking.

The Joint Undertaking will publish an annual activity report highlighting actions taken, corresponding expenditure, and the acquisition and operation of the HPC and data infrastructure procured and owned by the Joint Undertaking. Achievement of the general objectives will be assessed against the general key performance indicators for Joint Undertakings funded from Horizon 2020 and the key performance indicators specific to EuroHPC.

- **Detailed explanation of the specific provisions of the proposal**

Article 1 establishes the EuroHPC **Joint Undertaking**, specifying the **duration** and its **seat**.

Article 2 provides **definitions** of 'petascale', 'pre-exascale', 'exascale', 'supercomputer', 'hosting entity', 'hosting agreement', 'access time', 'acceptance test', 'Participating State', 'Private Member', 'affiliated entity', 'constituent entity' and user.

Article 3 specifies the general and specific **objectives** and **activities** of the EuroHPC Joint Undertaking.

Article 4 specifies the **Union's financial contribution** to the administrative and operational costs of the EuroHPC Joint Undertaking with funding from the **Horizon 2020** and **Connecting Europe Facility** Programmes.

Article 5 specifies the **participating states'** and **private members' funding contributions** to the administrative and operational costs.

Article 6 refers to the **hosting entity** which the Joint Undertaking is to entrust with the **operation of the pre-exascale** supercomputers and specifies the process whereby it is to be selected.

Article 7 sets out the contents of the **hosting agreement** laying down the roles and responsibilities of the hosting entity.

Article 8 provides that the **Joint Undertaking should be the owner of the pre-exascale supercomputers it procures** until the end of their economic lifetime when they are transferred to the hosting entity.

Article 9 sets out the **access conditions** for users of the supercomputers.

Article 10 specifies how the **European Commission** and the **EuroHPC Participating States** will be compensated for their financial contribution to the acquisition of the pre-exascale supercomputers: each contributor will be allocated a share of the total **access time in proportion to its financial contribution**.

Article 11 specifies the financial rules of the Joint Undertaking; these are in line with the **Financial Regulation**.

Article 12 specifies the conditions under which the Joint Undertaking will provide **commercial services**.

2018/0003 (NLE)

Proposal for a

COUNCIL REGULATION

on establishing the European High Performance Computing Joint Undertaking

THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 187 and the first paragraph of Article 188 thereof,

Having regard to the proposal from the European Commission,

Having regard to the opinion of the European Parliament,

Having regard to the opinion of the European Economic and Social Committee,

Whereas:

(1) Public-private partnerships in the form of Joint Technology Initiatives were initially provided for in Decision No 1982/2006/EC of the European Parliament and of the Council[14].

(2) Regulation (EU) No 1291/2013 of the European Parliament and of the Council[15] establishes Horizon 2020 – The Framework Programme for Research and Innovation (2014-2020), 'Horizon 2020'. It aims to achieve a greater impact with respect to research and innovation by combining Horizon 2020 and private-sector funds in public-private partnerships in key areas where research and innovation can contribute to the Union's wider competitiveness goals, leverage private investment and help tackle societal challenges. Those partnerships should be based on a long-term commitment, including a balanced contribution from all partners, be accountable for the achievement of their objectives and be aligned with the Union's strategic goals relating to research, development and innovation. The governance and functioning of those partnerships should be open, transparent, effective and efficient and give the opportunity to a wide range of stakeholders active in their specific areas to participate.

(3) In accordance with Regulation (EU) No 1291/2013[16] and Council Decision 2013/743/EU[17], support may be provided to joint undertakings established in the framework of Horizon 2020 under the conditions specified in that Decision.

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[14] Decision No 1982/2006/EC of the European Parliament and of the Council of 18 December 2006 concerning the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007-2013) (OJ L 412, 30.12.2006, p. 1).

[15] Regulation (EU) No 1291/2013 of the European Parliament and of the Council of 11 December 2013 establishing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020) and repealing Decision No 1982/2006/EC (OJ L 347, 20.12.2013, p. 104)

[16] Regulation (EU) No 1290/2013 of the European Parliament and of the Council of 11 December 2013 laying down the rules for the participation and dissemination in 'Horizon 2020 – the Framework Programme for Research and Innovation (2014-2020)' and repealing Regulation (EC) No 1906/2006 (OJ L 347, 20.12.2013, p. 81).

[17] Council Decision 2013/743/EU of 3 December 2013 establishing the Specific Programme implementing Horizon 2020 (2014-2020) (OJ L 347, 20.12.2013, p. 965).

(4) Regulation (EU) No 1316/2013 of the European Parliament and of the Council[18] established the Connecting Europe Facility (CEF). The CEF should enable projects of common interest to be prepared and implemented within the framework of the trans-European networks policy in the sectors of transport, telecommunications and energy. In particular, the CEF should support the implementation of those projects of common interest which aim at the development and construction of new infrastructures and services, or at the upgrading of existing infrastructures and services, in the transport, telecommunications and energy sectors. The CEF should contribute to supporting projects with a European added value and significant societal benefits which do not receive adequate financing from the market.

(5) Regulation (EU) No 283/2014 of the European Parliament and of the Council[19] established the guidelines for trans-European networks in the area of telecommunications infrastructure and laid down the sector specific conditions for the telecommunications sector.

(6) High Performance Computing qualifies as a project of common interest, in particular digital service infrastructure "access to re-usable public sector information – public open data", identified in Regulation (EU) No 283/2014. In accordance with Article 6(3) of Regulation (EU) No 1316/2013, the Commission may entrust part of the implementation of the CEF to the bodies referred to in point (c) of Article 58(1) of Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council [20].

(7) The Communication from the Commission entitled 'Europe 2020 A Strategy for smart, sustainable and inclusive growth'[21] (the 'Europe 2020 strategy'), endorsed by the European Parliament and the Council, emphasises the need to develop favourable conditions for investment in knowledge and innovation so as to achieve smart, sustainable and inclusive growth in the Union.

(8) The Communication from the Commission of 19 April 2016 entitled 'European Cloud Initiative – building a competitive data and knowledge economy in Europe[22]', calls for the establishment of a European Data Infrastructure based on leading-class High Performance Computing capabilities and the development of a full European High Performance Computing ecosystem capable of developing new European technology and realise exascale supercomputers. The importance of the area and the challenges faced by the stakeholders in the Union require urgent action in order to gather the necessary resources and capabilities to close the chain from research and development

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[18] Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) No 680/2007 and (EC) No 67/2010 (*OJ L 348, 20.12.2013, p. 129).*

[19] Regulation (EU) No 283/2014 of the European Parliament and of the Council of 11 March 2014 on guidelines for trans-European networks in the area of telecommunications infrastructure and repealing Decision No 1336/97/EC (*OJ L 86, 21.3.2014, p. 14).*

[20] REGULATION (EU, EURATOM) No 966/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2012 on the financial rules applicable to the general budget of the Union and repealing Council Regulation (EC, Euratom) No 1605/2002.

[21] COMMUNICATION FROM THE COMMISSION EUROPE 2020 - A strategy for smart, sustainable and inclusive growth, COM(2010) 2020 final

[22] COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS - European Cloud Initiative - Building a competitive data and knowledge economy in Europe, COM(2016) 178 final

to the delivery and operation of the exascale High Performance Computing systems. Therefore a mechanism should be set up at Union level to combine and concentrate the provision of support to the establishment of a world-leading European High Performance Computing infrastructure and for research and innovation in High Performance Computing by Member States, the Union and the private sector. This infrastructure should provide access to the public sector users, users from industry and users from academia, inlcuding the scientific communities being part of the European Open Science Cloud.

(9) The Communication from the Commission of 10 May 2017 on the Mid-Term Review on the implementation of the Digital Single Market Strategy - A Connected Digital Single Market for All[23], identifies High Performance Computing as a critical element for the digitisation of industry and the data economy. Substantial investments are needed to develop, acquire and operate supercomputers that rank among the top three in the world and no single European country has the resources to develop a full European High Performance Computing ecosystem alone. There is a need for the Member States, the Union and the private sector to coordinate their efforts and share their resources in order to meet the increasing demand for High Performance Computing, and to build up a strong High Performance Computing industry in the Union. The Communication proposes the creation of a legal instrument that provides a procurement framework for an integrated exascale supercomputing and data infrastructure.

(10) In order to equip the Union with the computing performance needed to maintain its research at a leading edge the Member States investment in High Performance Computing should be coordinated and the industrial take-up of High Performance Computing technology have to be reinforced. The Union should increase its effectiveness in turning the technology developments into High Performance Computing systems that are procured in Europe, establishing an effective link between technology supply, co-design with users, and a joint procurement of world-class systems.

(11) A Joint Undertaking represents the best instrument capable to implement the goals of the European High performance Computing Strategy as defined in the European Cloud Initiative[24], to overcome the present limitations, while offering the highest economic, societal, and environmental impact and best safeguarding the Union's interests. It can pool resources from the Union, the Member States and the private sector. It can implement a procurement framework and operate world-class HPC systems via promotion of technology, particularly European one. It can launch research and innovation programmes for developing technologies and their subsequent integration in European exascale supercomputing systems and contribute to developing a competitive European technology supply industry.

(12) The Joint Undertaking should be set up and start operating in 2019 to reach the target of equipping the Union with an pre-exascale infrastructure by 2020 and developing the necessary technologies for reaching exascale capabilities by 2022/2023. Since a development cycle of the next generation of technology typically takes 4-5 years, to stay competitive on the global market, the actions to reach this target have to start now.

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23 COM(2017) 228 final

24 COM(2016) 178 final

(13) The public-private partnership in the form of the Joint Undertaking should combine the financial and technical means that are essential to master the complexity of the ever escalating pace of innovation in this area. Therefore, the members of the Joint Undertaking should be the Union, Member States and Associated Countries (hereinafter referred to as "Participating Countries") agreeing on a joint European Initiative in High Performance Computing, and associations (hereinafter referred to as "Private Members") representing their constituent entities and other organisations with an explicit and active engagement to produce research and innovation results and keep the know-how in Europe in the field of High Performance Computing. The Joint Undertaking should be open to new members provided they make a financial contribution, including to administrative costs and accept the statutes of the Joint Undertaking.

(14) The Union, the Participating States and the Private Members of the Joint Undertaking should each provide a financial contribution to the administrative costs of the Joint Undertaking. Since, under the multiannual financial framework for the years 2014-2020 a contribution to the administrative costs by the Union can be frontloaded to cover the running costs only up to 2023, the Participating States and the Private Members of the Joint Undertaking should fully cover the administrative costs of the Joint Undertaking as of 2024.

(15) With a view to regaining a leading position in High Performance Computing technologies, and develop a full High Performance Computing eco-system for the Union, the industrial and research stakeholders in the ETP4HPC private Association have established in 2014 a contractual Public Private Partnership with the Union. Its mission is to build a European world-class High Performance Computing technology value chain that should be globally competitive, fostering synergies between the three pillars of the High Performance Computing ecosystem (technology development, applications and computing infrastructure). Considering its expertise and as it is bringing together the relevant private stakeholders in High Performance Computing the ETP4HPC private Association should be eligible for membership in the Joint Undertaking.

(16) With a view to strengthening the data value chain, enhance community building around data and set the grounds for a thriving data-driven economy in the Union the industrial and research stakeholders in the BDVA Association have established in 2014 a contractual Public Private Partnership with the Union. Considering its expertise and as it is bringing together the relevant private stakeholders of big data the BDVA private Association should be eligible for membership in the Joint Undertaking.

(17) The private associations ETP4HPC and BDVA have expressed in writing their willingness to contribute to Joint Undertaking's technological strategy and bring their expertise into the realisation of the objectives of the Joint Undertaking. It is appropriate that the private associations accept the Statutes set out in the Annex to this Regulation by means of a letter of endorsement.

(18) The Joint Undertaking should address clearly defined topics that would enable academia and European industries at large to design, develop and use the most innovative technologies in High Performance Computing, and to establish an integrated infrastructure across the Union with world-class High Performance Computing capability, high-speed connectivity and leading-edge applications and data and software services for its scientists and for other lead users from industry, including SMEs and the public sector. The Joint Undertaking should make efforts to reduce the

specific HPC-related skills gap. The Joint Undertaking should prepare the path towards building the first hybrid High Performance Computing infrastructure in Europe, integrating classical computing architectures with quantum computing devices, e.g. exploiting the quantum computer as an accelerator of High Performance Computing threads. Structured and coordinated financial support at European level is necessary to help research teams and European industries remain at the leading edge in a highly competitive international context by producing world-class results and their integration in competitive systems, to ensure the fast and broad industrial exploitation of European technology across the Union generating important spill-overs for society, to share risk-taking and joining of forces by aligning strategies and investments towards a common European interest. The Commission could consider, upon notification by a Member State or group of Member States concerned, that the Joint Undertaking's initiatives qualify as Important Projects of Common European Interest, provided that all relevant conditions are met in accordance with the Community Framework for state aid for research and development and innovation[25].

(19) In order to achieve its objectives in designing, developing and using the most innovative technologies in High Performance Computing, the Joint Undertaking should provide financial support in particular in the form of grants and procurement following open and competitive calls for proposals and calls for tender. Such financial support should be targeted in particular at proven market failures that prevent the development of the programme concerned, and should have an incentive effect in that it changes the behaviour of the recipient.

(20) In order to achieve its objective the Joint Undertaking should provide a framework for acquisition of an integrated, world-class, exascale supercomputing and data infrastructure in the Union, to equip users with the strategic computation resource they need to remain competitive and solve societal, environmental, economic and security challenges.

(21) The Joint Undertaking should be the owner of the pre-exascale supercomputers it has acquired. The operation of the pre-exascale supercomputers should be entrusted to a hosting entity, i.e. a legal entity in a Member State participating in the Joint Undertaking which provides facilities to host and operate a supercomputer. The hosting entity should ensure to the extent possible a physical and functional separation of the Joint Undertaking pre-exascale supercomputers and any other, national or regional computing systems it operates. The hosting entity should be selected by the Governing Board of the Joint Undertaking. The Joint Undertaking should remain the owner of the pre-exascale supercomputers until they are depreciated (typically after 4-5 years of operation). Then ownership should be transferred to the hosting entity for decommissioning, disposal or any other use and the hosting entity should reimburse the Joint Undertaking the residual value of the supercomputers.

(22) The use of the pre-exascale and petascale supercomputers should be primarily for public research and innovation purposes, for any user from academia, industry or the public sector. The Joint Undertaking should be allowed to carry out some limited economic activities for private purposes. Access should be granted to users established in the Union or an Associated Country to Horizon 2020. The access rights should be

[25] Communication from the Commission — Criteria for the analysis of the compatibility with the internal market of State aid to promote the execution of important projects of common European interest, OJ C 188, 20.6.2014, p. 4.

equitable to any user and allocated in a transparent manner. The Governing Board should define the access rights to the Union's share of access time for each supercomputer.

(23) The Joint Undertaking should support the acquisition of petascale computers by the Participating States, through the use of an appropriate instrument (e.g. public procurement of innovative solutions). The beneficiaries of this instrument should be the owners of the petascale computer. For each petascale computer the share of the Union's access time to each petascale computer should be directly proportional to the financial contribution of the Joint Undertaking to the eligible acquisition costs incurred by the beneficiaries.

(24) Limited use of the supercomputers by users carrying out economic activities for non-research applications should be allowed. Access time should be primarily granted to any user established in the Union or a country associated to Horizon 2020. The access rights should be allocated in a transparent manner.

(25) The Joint Undertaking governance should be assured by two bodies: a Governing Board, and an Industrial and Scientific Advisory Board. The Governing board should be composed of Representatives of the Union and Participating States. It should be responsible for strategic policy making and funding decisions related to the activities of the Joint Undertaking, in particular for all the public procurement activities. The Industrial and Scientific Advisory Board should include representatives of academia and industry as users and technology suppliers. It should provide independent advice to the Governing Board on the Strategic Research Agenda and on the acquisition and operation of the supercomputers owned by the Joint Undertaking.

(26) Voting rights should be, in principle, proportional to the financial and in-kind contributions of its members. Participating States should only have the right to vote on activities related to procurement of the Joint Undertaking if they contribute resources to the procurement activities respectively should only vote on activities related to the indirect actions if they contribute resources. The voting rights should be calculated on an annually on the basis of the actual contributions.

(27) The Union’s financial contribution should be managed in accordance with the principle of sound financial management and with the relevant rules on indirect management set out in Regulation (EU, Euratom) No 966/2012 and Commission Delegated Regulation (EU) No 1268/2012[26]. Rules applicable for the Joint Undertaking to enter into public procurement procedure are to be set in its financial rules.

(28) To foster a European High Performance Computing ecosystem, the Joint Undertaking should make appropriate use of the procurement and grant instruments, for example by using as appropriate pre-commercial procurement and public procurement of innovative solutions.

(29) In assessing the overall impact of the Joint Undertaking, investments from the Private Members should be taken into account, as in-kind contributions consisting of the costs incurred by them in implementing actions less the contributions by the Joint Undertaking. Those overall investments should amount to at least EUR 420 000 000.

[26] Commission Delegated Regulation (EU) No 1268/2012 of 29 October 2012 on the rules of application of Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council on the financial rules applicable to the general budget of the Union (OJ L 362, 31.12.2012, p. 1).

(30) In order to maintain a level playing field for all undertakings active in the internal market, funding from the Union Framework Programmes should be compatible with the State aid principles so as to ensure the effectiveness of public spending and prevent market distortions such as crowding-out of private funding, the creation of ineffective market structures or the preservation of inefficient firms.

(31) Participation in indirect actions funded by the Joint Undertaking should comply with Regulation (EU) No 1290/2013. The Joint Undertaking should, moreover, ensure the consistent application of those rules based on relevant measures adopted by the Commission.

(32) Provision of financial support to activities from Connecting Europe Facility programme should comply with rules of this programme.

(33) The financial interests of the Union and of the other members of the Joint Undertaking should be protected by proportionate measures throughout the expenditure cycle, including the prevention, detection and investigation of irregularities, the recovery of funds lost, wrongly paid or incorrectly used and, where appropriate, administrative and financial penalties in accordance with Regulation (EU, Euratom) No 966/2012.

(34) The Joint Undertaking should operate in an open and transparent way providing all relevant information in a timely manner as well as promoting its activities, including information and dissemination activities to the wider public. The rules of procedure of the bodies of the Joint Undertaking should be made publicly available.

(35) In order to facilitate its establishment, the Commission should be responsible for the establishment and initial operation of the Joint Undertaking until it has the operational capacity to implement its own budget.

(36) For the purpose of simplification, the administrative burden should be reduced for all parties. Double audits and disproportionate amounts of documentation and reporting should be avoided. For actions funded from the Horizon 2020 Programme, audits of recipients of Union funds under this Regulation should be carried out in compliance with Regulation (EU) No 1291/2013. For actions funded from the Connecting Europe Facility Programme audits of recipients of Union funds under this Regulation should be carried out in compliance with Regulation (EU) 1316/2013.

(37) The Commission's internal auditor should exercise the same powers over the Joint Undertaking as those exercised in respect of the Commission.

(38) The Commission, the Joint Undertaking, the Court of Auditors and OLAF should get access to all necessary information and the premises to conduct audits and investigations on the grants, contracts and agreement signed by the Joint Undertaking.

(39) Horizon 2020 should contribute to the closing of the research and innovation divide within the Union by promoting synergies with the European Structural and Investment Funds (ESIF). Therefore the Joint Undertaking should seek to develop close interactions with the ESIF, which can specifically help to strengthen local, regional and national research and innovation capabilities.

(40) All calls for proposals and all calls for tender under the Joint Undertaking should take into account the duration of the Horizon 2020 Framework Programme and Connecting Europe Facility Programme, as appropriate, except in duly justified cases.

(41) The Joint Undertaking should also use the electronic means managed by the Commission to ensure openness, transparency and facilitate participation in it. Therefore, the calls for proposals launched by the Joint Undertaking under Horizon

2020 funding programme should also be published on the single portal for participants as well as through other Horizon 2020 electronic means of dissemination managed by the Commission. Moreover, relevant data on, inter alia, proposals, applicants, grants and participants should be made available by the Joint Undertaking for inclusion in Horizon 2020 reporting and dissemination electronic systems managed by the Commission, in an appropriate format and with the periodicity corresponding to the Commission's reporting obligations.

(42) Since the objective of this Regulation, namely the strengthening of industrial research and innovation, the acquisition of pre-exascale supercomputers, and access to High Performance Computing and data infrastructure across the Union by means of the implementation, by the Joint Undertaking, cannot be sufficiently achieved by the Member States, but can rather, by reason of avoiding unnecessary duplication, retaining critical mass and ensuring that public financing is used in an optimal way, be better achieved at the Union level, the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality as set out in that Article, this Regulation does not go beyond what is necessary in order to achieve that objective.

HAS ADOPTED THIS REGULATION:

Article 1

Establishment

(1) For the implementation of the Initiative on 'European High Performance Computing' a Joint Undertaking within the meaning of Article 187 of the Treaty (the 'European High performance Computing Joint Undertaking', hereinafter referred to as "Joint Undertaking"), is hereby be established for a period until 31 December 2026.

(2) In order to take into account the duration of the European Framework Programmes for Research and Innovation (Horizon 2020), established by Regulation (EU) No 1291/2013 and the Connecting Europe Facility (CEF), established by Regulation (EU) No 1316/2013, calls for proposals and calls for tenders under this Joint Undertaking shall be launched at the latest by 31 December 2020. In duly justified cases, calls for proposals or calls for tender may be launched by 31 December 2021.

(3) The Joint Undertaking shall be a body entrusted with the implementation of a public-private partnership as referred to in Article 209 of Regulation (EU, Euratom) No 966/2012.

(4) The Joint Undertaking shall have legal personality. In all Member States, it shall enjoy the most extensive legal capacity accorded to legal persons under the laws of those Member States. It may, in particular, acquire or dispose of movable and immovable property and may be a party to legal proceedings.

(5) The seat of the Joint Undertaking shall be located in Luxembourg.

(6) The Statutes of the Joint Undertaking ('the Statutes') are set out in the Annex.

Article 2

Definitions

For the purposes of this Regulation, the following definitions shall apply:

(1) "acceptance test" means a test conducted to determine if the requirements of the system specification are met.

(2) "access time" means the computing time of a supercomputer that is made available to a user or a group of users to execute their programmes.

(3) "affiliated" entity means an entity as defined in Article 2(1)(2) of Regulation 1290/2013.

(4) "constituent entities" mean the entities that constitute each private member of the Joint Undertaking, as defined in that private member's statutes.

(5) "exascale" means a performance level of computing systems capable of executing ten to the power of eighteen operations per second (or 1 Exaflop).

(6) "hosting agreement" means an agreement, which may take the form of a service contract or other contract, concluded between the Joint Undertaking and a hosting entity to operate the pre-exascale supercomputers acquired by the Joint Undertaking.

(7) "hosting entity" means a legal entity established in a Member State participating in the Joint Undertaking which includes facilities to host and operate a pre-exascale supercomputer.

(8) "Participating States" means the countries that are members of the Joint Undertaking.

(9) "petascale" means a performance level of computing systems capable of executing ten to the power of fifteen operations per second (or 1 Petaflop).

(10) "pre-exascale" means a performance level of computing systems capable of executing more than 100 Petaflops and less than 1 Exaflop).

(11) 'Private Members' means the private associations that are members of the Joint Undertaking.

(12) "supercomputer" means any computing system having at least petascale computing performance.

(13) "user" means any natural or legal person, entity or international organisation that has been granted access time to use a Joint Undertaking supercomputer.

Article 3

Objectives

(1) The Joint Undertaking shall have the following overall objectives:

(a) to provide scientists, industry and the public sector from the Union or an Associated Country to Horizon 2020 with latest High Performance Computing and Data Infrastructure and support the development of its technologies and its applications across a wide range of fields.

(b) to provide a framework for acquisition of an integrated world-class pre-exascale supercomputing and data infrastructure in the Union;

(c) to provide Union level coordination and adequate financial resources to support the development and acquisition of such infrastructure, which will be accessible to users from the public and private sector primarily for research and innovation purposes;

(d) to support the development of an integrated High Performance Computing ecosystem in the Union covering all scientific and industrial value chain segments notably hardware, software, applications, services, engineering, interconnections, know-how and skills.

(2) The Joint Undertaking shall have the following specific objectives:

(a) to contribute to the implementation of Regulation (EU) No 1291/2013 and Decision 2013/743/EU, in particular Part II thereof, and to the implementation of Regulation (EU) No 1316/2013 and (EU) No 283/2014;

(b) to align strategies between Member States and the Union in a coordinated European High Performance Computing strategy and contribute to the effectiveness of public support by avoiding unnecessary duplication and fragmentation of efforts;

(c) to pool Union resources, national resources and private investment and bring the investments in High Performance Computing to a level comparable with its global competitors;

(d) to build and operate a leading-class integrated supercomputing and data infrastructure across the Union as an essential component for scientific excellence, and for the digitisation of industry, and the public sector, and for strengthening the innovation capabilities and global competitiveness for creating economic and employment growth in the Union;

(e) to provide access to High Performance Computing-based infrastructures and services to a wide range of users from the research and scientific community as well as the industry including SMEs, and the public sector, for new and emerging data and compute-intensive applications and services;

(f) to bridge the gap between research and development and the delivery of exascale High Performance Computing systems reinforcing the digital technology supply chain in the Union and enabling the acquisition by the Joint Undertaking of leadership-class supercomputers;

(g) to achieve excellence in High Performance Computing applications for world-class performance through development and optimisation of codes and applications in a co-design approach, supporting Centres of Excellence in High Performance Computing applications and large-scale High Performance Computing-enabled pilot demonstrators and test-beds for big data applications and services in a wide range of scientific and industrial areas;

(h) to interconnect and federate regional, national and European High Performance Computing supercomputers and other computing systems, data centres and associated software and applications;

(i) to increase the innovation potential of industry, and in particular of SMEs, using advanced High Performance Computing infrastructures and services;

(j) to improve understanding of High Performance Computing and contribute to reducing skills gaps in the Union related to High Performance Computing;

(k) to widen the scope of High Performance Computing usage.

Article 4

Union's financial contribution

(1) The Union financial contribution to the Joint Undertaking including EFTA appropriations shall be up to EUR 486 000 000, distributed as follows:

(a) EUR 386 000 000 from the Horizon 2020 Programme, including up to EUR 10 000 000 for administrative costs;

(b) EUR 100 000 000 from the CEF Programme;

(2) The Union's financial contribution referred to in point (a) of paragraph 1 shall be paid from the appropriations in the general budget of the Union allocated to the Specific Programme, implementing Horizon 2020, established by Decision 743/2013/EU.

(3) The Union's financial contribution referred to in point (b) of paragraph 1 shall be paid from the appropriations in the general budget of the Union allocated to the Connecting Europe Facility Programme established by Regulation (EU) No 1316/2013 and shall be dedicated exclusively to the acquisition of infrastructure.

(4) The budget implementation as regards the Union's financial contribution shall be entrusted to the Joint Undertaking acting as a body referred to in Article 209 of Regulation (EU, Euratom) No 966/2012 in accordance with point (c)(iv) of Article 58(1), and Articles 60 and 61 of that Regulation.

(5) The arrangements for the Union's financial contribution shall be set out in a delegation agreement and annual transfer of funds agreements to be concluded between the Commission, on behalf of the Union, and the Joint Undertaking.

(6) The delegation agreement referred to in paragraph 5 shall address the elements set out in Article 58(3) and Articles 60 and 61 of Regulation (EU, Euratom) No 966/2012 and in Article 40 of Delegated Regulation (EU) No 1268/2012 as well as, inter alia, the following:

(a) the requirements for the Joint Undertaking's contribution concerning the relevant performance indicators referred to in Annex II to Decision 2013/743/EU;

(b) the requirements for the Joint Undertaking's contribution in view of the monitoring referred to in Annex III to Decision 2013/743/EU;

(c) the specific performance indicators related to the functioning of the Joint Undertaking;

(d) the arrangements regarding the provision of data necessary to ensure that the Commission is able to meet its dissemination and reporting obligations as referred to in Article 28 of Regulation (EU) No 1291/2013 and Article 28 of Regulation No (EU) 1316/2013, including on the single portal for participants as well as through other electronic means of dissemination managed by the Commission;

(e) the arrangements regarding the provision of data necessary to ensure that the Commission is able to meet its dissemination and reporting obligations as referred to in Article 8 of Regulation (EU) No283/2014;

(f) provisions for the publication of calls for proposals of the Joint Undertaking also on the single portal for participants as well as through other electronic means of dissemination managed by the Commission;

(g) provisions for the publication of tenders for procurement of the Joint Undertaking in the Official Journal as well as through other electronic means of dissemination managed by the Commission;

(h) the use of and changes to human resources, in particular recruitment by function group, grade and category, the reclassification exercise and any changes to the number of staff members.

Article 5

Contributions of members other than the Union

(1) The Participating States shall make a contribution to the operational and administrative costs of the Joint Undertaking for at least EUR 486 000 000, including EUR 10 000 000 for administrative costs.

(2) The Private Members of the Joint Undertaking shall make or arrange for their constituent entities and affiliated entities to make contributions for at least EUR 422 000 000 to the Joint Undertaking , including EUR 2 000 000 for administrative costs.

(3) The contributions referred to in paragraphs 1 and 2 shall consist of contributions to the Joint Undertaking as set out in Article 15 of the Statutes.

(4) The members of the Joint Undertaking other than the Union shall report by 31 January each year to the Governing Board on the value of the contributions referred to in paragraphs 1 and 2 made in each of the previous financial years.

(5) For the purpose of valuing the contributions referred to in points (d), (e) and (f) of Article 15(3) of the Statutes, the costs shall be determined in accordance with the usual cost accounting practices of the entities concerned, to the applicable accounting standards of the country where the entity is established, and to the applicable International Accounting Standards and International Financial Reporting Standards. The costs shall be certified by an independent external auditor appointed by the entity concerned. The valuation method may be verified by the Joint Undertaking, should there be any uncertainty arising from the certification. In case of remaining uncertainties, the valuation method may be audited by the Joint Undertaking.

(6) The Commission may terminate, proportionally reduce or suspend the Union's financial contribution to the Joint Undertaking or trigger the winding-up procedure referred to in Article 25 of the Statutes if members other than the Union, including their constituent entities and affiliated entities, do not contribute, contribute only partially or contribute late with regard to the contributions referred to in paragraphs 1 and 2 of this Article.

Article 6

Hosting entity

(1) The Joint Undertaking shall entrust the operation of each individual pre-exascale supercomputer it owns to a hosting entity selected in accordance with paragraph 3 and the Joint Undertaking's financial rules referred to in Article 11.

(2) Pre-exascale supercomputers shall be located in a Participating State that is a Member State of the Union. A Member State shall not host more than one pre-exascale supercomputer.

(3) The hosting entity shall be selected by the Governing Board, based, inter alia on the following criteria:

(a) compliance with the general system specifications defined in the selection procedure;

(b) total cost of acquiring, operating and maintaining the pre-exascale supercomputer, splitting capital expenditure (CAPEX) and operational expenditure (OPEX);

(c) experience of the hosting entity in installing and operating similar systems;

(d) quality of the hosting facility's physical and IT infrastructure, its security and its connectivity with the rest of the Union;

(e) quality of service to the users, namely capability to comply with the service-level-agreement provided among the documents accompanying the selection procedure.

(f) prior acceptance from the hosting entity of the essential terms and conditions set out in the draft hosting agreement including in particular the elements set out in Article 7(1) and those defined in the selection procedure;

(g) provision of a supporting document proving the commitment of the Member State where the hosting entity is established to cover all the costs related to the operation of the pre-exascale supercomputer until its ownership is transferred by the Joint Undertaking to that hosting entity;

(4) The Joint Undertaking shall conclude a hosting agreement with each selected hosting entity prior to launching the procedure for the acquisition of the pre-exascale supercomputers.

Article 7

Hosting agreement

(1) The hosting agreement shall address in particular the following:

(a) the responsibilities of the hosting entity during the procedure for acquisition of the pre-exascale supercomputers, including the acceptance test of those supercomputers;

(b) the liability conditions for operating the pre-exascale supercomputer acquired by the Joint Undertaking;

(c) the quality of service offered to the users when operating the pre-exascale supercomputer, as set out in the service level agreement;

(d) the access conditions to the pre-exascale supercomputer, as decided by the Governing Board, in accordance with Article 9;

(e) the accounting modalities of the access times;

(f) the operation and maintenance costs to be covered by the Participating States;

(g) the conditions for the transfer of ownership referred to in Article 8(2);

(h) the obligation of the hosting entity to provide access to the pre-exascale supercomputers, while ensuring the security of the pre-exascale supercomputers, the protection of personal data in accordance with Regulation

(EU) No 2016/679, of privacy of electronic communications in accordance with Directive 2002/58/EC, of trade secrets in accordance with Directive (EU) 2016/943 and the protection of confidentiality of other data covered by the obligation of professional secrecy;

(i) the obligation of the hosting entity to put in place a certified audit procedure covering the operational expenses of the Joint Undertaking's supercomputer and the access-times of the users;

(j) the obligation of the hosting entity to submit an audit report and data on access time once a year to the Governing Board.

(2) The hosting agreement shall be governed by Union law, supplemented if necessary by the national law of the Member State where the hosting entity is seated.

(3) The hosting agreement shall contain an arbitration clause giving jurisdiction to the Court of Justice of the European Union.

(4) After the hosting agreement is concluded the Joint Undertaking, supported by the selected hosting entity, shall launch the procedures for the acquisition of the pre-exascale supercomputer in accordance with the financial rules of the Joint Undertaking referred to in Article 11.

Article 8

Acquisition and ownership of the pre-exascale supercomputers

(1) The Union financial contribution referred to in Article 4(1) shall only cover the acquisition costs of the supercomputers, not their operational costs.

(2) The Joint Undertaking shall be the owner of the pre-exascale supercomputers and associated infrastructure.

(3) Without prejudice to Article 24(4) of the Statutes, at the earliest four years after the successful acceptance test by the Joint Undertaking of the pre-exascale supercomputers installed in a hosting entity the property of the pre-exascale supercomputer may be transferred to that hosting entity upon decision of the Governing Board. In this case the hosting entity shall reimburse the Joint Undertaking the residual value of the supercomputers that is transferred.

Article 9

Access to the supercomputers

(1) The access to the supercomputers shall be primarily for research and innovation purposes falling under public funding programmes and shall be open to users from the public and private sectors.

(2) The Governing Board shall define the general access conditions and may define specific access conditions for different types of users or applications. The quality of service shall be the same for all users.

(3) Without prejudice to international agreements concluded by the Union, only users residing, established or located in a Member State or in a country associated to Horizon 2020, shall be granted access time, except if decided otherwise by the Governing Board in duly justified cases, taking into account the interests of the Union.

Article 10

Access time to the supercomputers

(1) Users shall be granted access to the supercomputers in accordance with paragraphs 2 and 3 of this Article.

(2) The share of the Union's access time to each pre-exascale supercomputer shall be directly proportional to the financial contribution of the Union to its acquisition cost in relation to the total cost of acquisition and operation of the pre-exascale supercomputer. The Governing Board shall define the access rights to the Union's share of access time.

Each Participating State shall be allocated a share of access time to each pre-exascale supercomputer that shall be directly proportional to the total value of its financial and in-kind contributions for the acquisition and operation costs of the pre-exascale supercomputer. Without prejudice of Article 12(3) the Participating State shall be responsible for defining the access rights for the users, in accordance with the access conditions defined by the Governing Board in accordance with Article 9(2).

Article 11

Financial rules

The Joint Undertaking shall adopt its specific financial rules in accordance with Article 209 of Regulation (EU, Euratom) No 966/2012 and Commission Delegated Regulation (EU) No 110/2014[27].

Article 12

Commercial services

(1) Specific conditions shall apply to industrial users applying for access right for private research purposes, non-research and innovation purposes or commercial purposes. This commercial service shall be a paying service, based on market prices. The level of the fee shall be established by the Governing Board.

(2) Revenues generated shall constitute a revenue for the Joint Undertaking budget that shall be used exclusively to cover operational costs of the Joint Undertaking.

(3) The total access time allocated to commercial services shall not exceed 10% of the total available access time of each supercomputer. The Governing Board shall decide on the allocation of the access time for commercial services.

(4) The quality of commercial services shall be the same for all users.

Article 13

Staff

(1) The Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Union laid down in Council Regulation (EEC, Euratom,

[27] Commission Delegated Regulation (EU) No 110/2014 of 30 September 2013 on the model financial regulation for public-private partnership bodies referred to in Article 209 of Regulation (EU, Euratom) No 966/2012 of the European Parliament and of the Council (OJ L 38, 7.2.2014, p. 2).

ECSC) No 259/68[28] ('Staff Regulations' and 'Conditions of Employment') and the rules adopted jointly by the institutions of the Union for the purpose of applying the Staff Regulations and Conditions of Employment shall apply to the staff of the Joint Undertaking.

(2) The Governing Board shall exercise, with respect to the staff of the Joint Undertaking, the powers conferred by the Staff Regulations on the Appointing Authority and by the Conditions of Employment on the Authority empowered to conclude contracts ('the appointing authority powers').

The Governing Board shall adopt, in accordance with Article 110 of the Staff Regulations, a decision based on Article 2(1) of the Staff Regulations and on Article 6 of the Conditions of Employment delegating the relevant appointing authority powers to the Executive Director and defining the conditions under which that delegation may be suspended. The Executive Director shall be authorised to sub-delegate those powers.

Where exceptional circumstances so require, the Governing Board may by decision temporarily suspend the delegation of the appointing authority powers to the Executive Director and any subsequent sub-delegation of those powers by the latter. In such cases the Governing Board shall exercise the appointing authority powers itself or shall delegate them to one of its members or to a staff member of the Joint Undertaking other than the Executive Director.

(3) The Governing Board shall adopt appropriate implementing rules giving effect to the Staff Regulations and the Conditions of Employment in accordance with Article 110 of the Staff Regulations.

(4) The staff resources shall be set out in the staff establishment plan of the Joint Undertaking, indicating the number of temporary posts by function group and by grade, as well as by the number of contract staff expressed in full-time equivalents, in accordance with its annual budget.

(5) The staff of the Joint Undertaking shall consist of temporary staff and contract staff.

(6) All costs related to staff shall be borne by the Joint Undertaking.

Article 14

Seconded national experts and trainees

(1) The Joint Undertaking may make use of seconded national experts and trainees not employed by the Joint Undertaking. The number of seconded national experts expressed in full-time equivalents shall be added to the information on staff resources as referred to in Article 13(4) in accordance with the annual budget.

(2) The Governing Board shall adopt a decision laying down rules on the secondment of national experts to the Joint Undertaking and on the use of trainees.

[28] Regulation (EEC, Euratom, ECSC) No 259/68 of the Council of 29 February 1968 laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Communities and instituting special measures temporarily applicable to officials of the Commission (OJ L 56, 4.3.1968, p. 1).

Article 15

Privileges and Immunities

The Protocol No 7 on the privileges and immunities of the European Union, annexed to the Treaty on European Union and Treaty on the Functioning of the European Union, shall apply to the Joint Undertaking and its staff.

Article 16

Liability of the Joint Undertaking

(1) The contractual liability of the Joint Undertaking shall be governed by the relevant contractual provisions and by the law applicable to the agreement, decision or contract in question.

(2) In the event of non-contractual liability, the Joint Undertaking shall, in accordance with the general principles common to the laws of the Member States, make good any damage caused by its staff in the performance of their duties.

(3) Any payment by the Joint Undertaking in respect of the liability referred to in paragraphs 1 and 2 and the costs and expenses incurred in that connection shall be considered as expenditure of the Joint Undertaking and shall be covered by its resources.

(4) The Joint Undertaking shall be solely responsible for meeting its obligations.

(5) The Joint Undertaking shall not be liable for the operation of the supercomputers it owns by the hosting entity.

Article 17

Evaluation

(1) By 30 June 2022 the Commission shall carry out, with the assistance of independent experts, an interim evaluation of the Joint Undertaking, which shall assess in particular the level of participation in, and contribution to, the actions by the Participating States, the Private Members and their constituent entities and affiliated entities, and also by other legal entities. The Commission shall prepare a report on that evaluation which includes conclusions of the evaluation and observations by the Commission. The Commission shall send that report to the European Parliament and to the Council by 31 December 2022.

(2) On the basis of the conclusions of the interim evaluation referred to in paragraph 1 of this Article, the Commission may act in accordance with Article 5(6) or take any other appropriate action.

(3) Within six months after the winding-up of the Joint Undertaking, but no later than two years after the triggering of the winding-up procedure referred to in Article 24 of the Statutes, the Commission shall conduct a final evaluation of the Joint Undertaking. The results of that final evaluation shall be presented to the European Parliament and to the Council.

Article 18

Jurisdiction of the Court of Justice of the European Union and applicable law

(1) The Court of Justice of the European Union shall have jurisdiction:

(a) pursuant to any arbitration clause contained in agreements or contracts concluded by the Joint Undertaking, or in its decisions;

(b) in disputes relating to compensation for damage caused by the staff of the Joint Undertaking in the performance of their duties;

(c) in any dispute between the Joint Undertaking and its staff within the limits and under the conditions laid down in the Staff Regulations and the Conditions of Employment.

(2) Regarding any matter not covered by this Regulation or by other Union legal acts, the law of the State where the seat of the Joint Undertaking is located shall apply.

Article 19

Ex-post audits

(1) Ex-post audits of expenditure on actions funded by the Horizon 2020 budget shall be carried out by the Joint Undertaking in accordance with Article 29 of Regulation (EU) No 1291/2013.

(2) Ex-post audits of expenditure on activities funded by the CEF budget shall be carried out by the Joint Undertaking in accordance with Article 24 of Regulation (EU) No 1316/2013 as part of CEF actions.

(3) The Commission may decide to carry out itself the audits referred to in paragraph 1and 2. In such cases, it shall do so in accordance with the applicable rules, in particular Regulations (EU, Euratom) No 966/2012, (EU) No 1290/2013, (EU) No 1291/2013 and (EU) No 1316/2013.

Article 20

Protection of the Union's financial interests

(1) The Commission shall take appropriate measures to ensure that, when actions financed under this Regulation are implemented, the financial interests of the Union are protected by the application of preventive measures against fraud, corruption and any other illegal activities, by effective checks and, if irregularities are detected, by the recovery of the amounts wrongly paid and, where appropriate, by effective, proportionate and dissuasive administrative sanctions.

(2) The Joint Undertaking shall grant Commission staff and other persons authorised by the Commission, as well as the Court of Auditors, access to its sites and premises and to all the information, including information in electronic format that is needed in order to conduct their audits.

(3) The European Anti-Fraud Office (OLAF) may carry out investigations, including on-the-spot checks and inspections, in accordance with the provisions and procedures laid down in Council Regulation (Euratom, EC) No 2185/96[29] and Regulation (EU, Euratom) No 883/2013 of the European Parliament and of the Council[30] with a view

[29] Council Regulation (Euratom, EC) No 2185/96 of 11 November 1996 concerning on-the-spot checks and inspections carried out by the Commission in order to protect the European Communities' financial interests against fraud and other irregularities (OJ L 292, 15.11.1996, p. 2).

[30] Regulation (EU, Euratom) No 883/2013 of the European Parliament and of the Council of 11 September 2013 concerning investigations conducted by the European Anti-Fraud Office (OLAF) and repealing

to establishing whether there has been fraud, corruption or any other illegal activity affecting the financial interests of the Union in connection with a grant agreement or a contract funded, directly or indirectly, in accordance with this Regulation.

(4) Without prejudice to paragraphs 1, 2 and 3, contracts and grant agreements, resulting from the implementation of this Regulation shall contain provisions expressly empowering the Commission, the Joint Undertaking, the Court of Auditors and OLAF to conduct such audits and investigations in accordance with their respective competences. Where the implementation of an action is outsourced or sub-delegated, in whole or in part, or where it requires the award of a procurement contract or financial support to a third party, the contract, grant agreement shall include the contractor's or beneficiary's obligation to impose on any third party involved explicit acceptance of those powers of the Commission, the Joint Undertaking, the Court of Auditors and OLAF.

(5) The Joint Undertaking shall ensure that the financial interests of its members are adequately protected by carrying out or commissioning appropriate internal and external controls..

(6) The Joint Undertaking shall accede to the Interinstitutional Agreement of 25 May 1999 between the European Parliament, the Council and the Commission concerning internal investigations by the European Anti-Fraud Office (OLAF)[31]. The Joint Undertaking shall adopt the necessary measures to facilitate internal investigations conducted by OLAF.

Article 21

Confidentiality

Without prejudice to Article 22, the Joint Undertaking shall ensure the protection of sensitive information the disclosure of which could damage the interests of its members or of participants in the activities of the Joint Undertaking.

Article 22

Transparency

(1) Regulation (EC) No 1049/2001 of the European Parliament and of the Council[32] shall apply to documents held by the Joint Undertaking.

(2) The Joint Undertaking's Governing Board may adopt the practical arrangements for implementing Regulation (EC) No 1049/2001.

(3) Without prejudice to Article 18 of this Regulation, decisions taken by the Joint Undertaking pursuant to Article 8 of Regulation (EC) No 1049/2001 may form the subject of a complaint to the Ombudsman under the conditions laid down in Article 228 of the Treaty.

Regulation (EC) No 1073/1999 of the European Parliament and of the Council and Council Regulation (Euratom) No 1074/1999 (OJ L 248, 18.9.2013, p. 1).

[31] OJ L 136, 31.5.1999, p. 15.

[32] Regulation (EC) No 1049/2001 of the European Parliament and of the Council of 30 May 2001 regarding public access to European Parliament, Council and Commission documents (OJ L 145, 31.5.2001, p. 43)

Article 23

Rules for participation and dissemination applicable to indirect actions funded under the Horizon 2020 programme

Regulation (EU) No 1290/2013 shall apply to the indirect actions funded by the Joint Undertaking from the Horizon 2020 funding programme. In accordance with that Regulation, the Joint Undertaking shall be considered as a funding body and shall provide financial support to indirect actions as set out in Article 1 of the Statutes.

Article 24

Rules applicable to the activities funded under CEF programme

Regulation (EU) No 1316/2013 shall apply to the activities funded by the Joint Undertaking from the CEF funding programme.

Article 25

Support from the host Member State

An administrative agreement may be concluded between the Joint Undertaking and the State where its seat is located concerning privileges and immunities and other support to be provided by that State to the Joint Undertaking.

Article 26

Initial Actions

(1) The Commission shall be responsible for the establishment and initial operation of the Joint Undertaking until it has the operational capacity to implement its own budget. The Commission shall carry out, in accordance with Union law, all necessary actions in collaboration with the other members and with the involvement of the competent bodies of the Joint Undertaking.

(2) For the purpose of paragraph 1:

(a) until the Executive Director takes up his duties following his/her appointment by the Governing Board in accordance with Article 7 of the Statutes, the Commission may designate a Commission official to act as interim Executive Director and exercise the duties assigned to the Executive Director who may be assisted by a limited number of Commission officials;

(b) by derogation from Article 13(2) of this Regulation, the interim Director shall exercise the appointing authority powers;

(c) the Commission may assign a limited number of its officials on an interim basis.

(3) The interim Executive Director may authorise all payments covered by the appropriations provided in the annual budget of the Joint Undertaking once approved by the Governing Board and may conclude agreements, decisions and contracts, including staff contracts following the adoption of the Joint Undertaking's staff establishment plan.

(4) The interim Executive Director shall determine, in common accord with the Executive Director of the Joint Undertaking and subject to the approval of the Governing Board, the date on which the Joint Undertaking shall have the capacity to

implement its own budget. From that date onwards, the Commission shall abstain from making commitments and executing payments for the activities of the Joint Undertaking.

Article 27

Entry into force

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels,

For the Council
The President

LEGISLATIVE FINANCIAL STATEMENT

1. FRAMEWORK OF THE PROPOSAL/INITIATIVE

1.1. Title of the proposal/initiative

1.2. Policy area(s) concerned

1.3. Nature of the proposal/initiative

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1.5. Grounds for the proposal/initiative

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2. MANAGEMENT MEASURES

2.1. Monitoring and reporting rules

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3.1. Heading(s) of the multiannual financial framework and expenditure budget line(s) affected

3.2. Estimated impact on expenditure

3.2.1. Summary of estimated impact on expenditure

3.2.2. Estimated impact on operational appropriations

3.2.3. Estimated impact on appropriations of an administrative nature

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3.2.5. Third-party contributions

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LEGISLATIVE FINANCIAL STATEMENT

1. FRAMEWORK OF THE PROPOSAL/INITIATIVE

1.1. Title of the proposal/initiative

Common European initiative on High Performance Computing- "EuroHPC"

1.2. Policy area(s) concerned

Policy area: Digital Single Market

Activity: European Data Infrastructure

1.3. Nature of the proposal/initiative

☐ The proposal/initiative relates to **a new action**

☐ The proposal/initiative relates to **a new action following a pilot project/preparatory action**[33]

☐ The proposal/initiative relates to **the extension of an existing action**

☒ The proposal/initiative relates to **an action redirected towards a new action**

The EuroHPC Joint Undertaking will draw its funds from the current Multiannual Financial Framework budgets already committed for High Performance Computing related activities in the different work-programmes of the last two years of Horizon 2020 and the Connecting Europe Facility.

1.4. Objective(s)

1.4.1. The Commission's multiannual strategic objective(s) targeted by the proposal/initiative

(a) Provide scientists, industry and the public sector from the Union or an Associated Country to Horizon 2020 with latest High Performance Computing and Data Infrastructure and support the development of its technologies and its applications across a wide range of fields.

(b) Provide a framework for acquisition of an integrated world-class pre-exascale supercomputing and data infrastructure in Europe;

(c) Provide Union level coordination and adequate financial resources to support the development and acquisition of such infrastructure, which will be accessible to public and private users from the public and private sector primarily for research and innovation purposes;

(d) Support the development of an integrated European High Performance Computing and Big Data infrastructure ecosystem covering all scientific and industrial value chain segments notably hardware, software, applications, services, engineering, interconnections, know-how and skills.

[33] As referred to in Article 54(2)(a) or (b) of the Financial Regulation.

1.4.2. Specific objective(s)

(a) Contribute to the implementation of Regulation (EU) No 1291/2013 and Decision 2013/743/EU, in particular Part II thereof, and to the implementation of Regulation (EU) No 1316/2013 and (EU) No 283/2014;

(b) Align strategies between Member States and the Union in a coordinated European High Performance Computing strategy and contribute to the effectiveness of public support by avoiding unnecessary duplication and fragmentation of efforts;

(c) Pool Union resources, national resources and private investment and bring the investments in High Performance Computing to a level comparable with its global competitors;

(d) Build and operate a leading-class integrated supercomputing and data infrastructure across the Union as an essential component for scientific excellence, and for the digitisation of European industry, and the public sector, and for strengthening the innovation capabilities and global competitiveness for creating economic and employment growth in the Union;

(e) Provide access to High Performance Computing-based infrastructures and services to a wide range of research, scientific and industrial users from the research and scientific community as well as the industry including SMEs, and the public sector, for new and emerging data and compute-intensive applications and services;

(f) Bridge the gap between research and development and the delivery of exascale High Performance Computing systems reinforcing the digital technology supply chain in the Union and enabling the acquisition by the Joint Undertaking of leadership-class supercomputers;

(g) Achieve excellence in High Performance Computing applications for world-class performance through development and optimisation of codes and applications in a co-design approach, supporting Centres of Excellence in High Performance Computing applications and large-scale High Performance Computing-enabled pilot demonstrators and test-beds for big data applications and services in a wide range of scientific and industrial areas;

(h) Interconnect and federate regional, national and European High Performance Computing supercomputers and other computing systems, data centres and associated software and applications;

(i) Increase the innovation potential of industry, and in particular of SMEs, using advanced High Performance Computing infrastructures and services;

(j) Improve understanding of High Performance Computing and contribute to reducing skills gaps in the Union related to High Performance Computing;

(k) Widen the scope of High Performance Computing usage.

1.4.3. Expected result(s) and impact

The EuroHPC initiative will enable Member States to coordinate together with the Commission their HPC investments and strategies. The end goal is to establish in the EU a world-class HPC and data infrastructure that Member States on their own cannot afford –in particular those with little or no significant HPC resources in place.

Member States will benefit from a world-class competitive infrastructure to provide improved public services and to support key policy making, e.g. strategic decision-making for energy, smart cities, civil protection, climate change, national security, cyber-criminality.

EuroHPC will provide European scientists with a world-class infrastructure, ensuring a European-wide access to supercomputers and data with a guaranteed high level of resources, indispensable to stay competitive in science.

Industry will see a reduction of R&D costs and development cycles, and produce higher quality products and services, for example in manufacturing and engineering industries (e.g. automotive, aerospace), health and pharma (e.g. drug discovery), energy (e.g. discovery of oil and gas resources, renewable energy generation and distribution). The initiative will also pave the way for new business and innovative applications in high added-value areas (e.g., in personalized medicine, bio-engineering, smart cities/autonomous transport, etc.), reinforcing the industrial innovation capabilities, in particular of SMEs.

European-wide initiative with a focus on the supply of a European source of HPC technology such as EuroHPC will have the necessary critical mass and a catalytic effect on the European suppliers. EuroHPC will provide a clear roadmap for technological implementation of leading-edge technologies in Europe and their integration in European systems, providing a unique opportunity for industry, including SMEs, to participate in the co-design and development of such new technologies and systems, and to develop IPR and solutions to be further used in their business endeavours. The benefits of this IPR will not be limited to HPC, but will span to broader sectors such as e.g. the ICT market within a few years of their introduction in high-end HPC – giving a competitive advantage to those developing them at an early stage.

EuroHPC would positively impact the workings of the European Commission. Currently, some the activities that EuroHPC will undertake are implemented through four different work-programme parts (e-infrastructures, FET, and LEIT in Horizon 2020, and through the Connecting Europe Facility annual Calls). This implementation of the HPC strategy is particularly complex (e.g. discussion with four committee configurations, synchronisation of budgets and activities with diverse budgetary and time constraints, etc.). The EuroHPC will provide a single structure to coordinate the different activities in synergy, and more importantly, will provide a single forum for strategic discussions with Member States and leverage EU and national efforts and resources.

EuroHPC will provide the appropriate frame to strategically plan for the further development of the European supercomputing centres, for example with a necessary European-wide planning of the different architectures across Europe (avoiding isolated and uncoordinated procurements that may end up in dependencies on single vendors and technological suppliers). In addition, the EuroHPC initiative will support the federation of these top-leading centres with a wider range of national (Tier-1) and regional (Tier-2) centres, providing a real pan-European infrastructure capable of responding to the increasing demands of scientific, industrial, public sector users, and other stakeholders.

1.4.4. Indicators of results and impact

- At least two pre-exascale computers jointly procured by 2019/2020.
- Computing hours made available for European researchers increase with respect to the hours currently available through PRACE.
- Oversubscription of the systems made available at European level significantly decrease below the oversubscription level of the PRACE Tier-0 in 2018.

-· The number of user communities served and number of scientists getting access to the European pre-exascale machines, compared to the number of scientists having to look for computing resources outside the EU increases above the level of 2018.

-· Degree of integration of European technology in the jointly procured machines, stemming from R&D developed with European funding programs.

· Competitiveness of European suppliers increases, measured in terms of global market share of European HPC systems, components and tools, and in terms of share of European R&D results taken up by industry.

-· Number of start-ups created out of HPC research.

- Contribution to next generation HPC technologies, measured in terms of patents, scientific publications and commercial products.

-· Number of European applications adapted to exascale systems.

-· Number of scientists, students, users (industrial and public administrations) trained.

1.5. Quantitative and qualitative improvement of the services offered to scientific communities compared to the current services offerd by organisations like PRACE). Grounds for the proposal/initiative

1.5.1. Requirement(s) to be met in the short or long term

The overarching objective is to provide European scientists, industry and the public sector with the latest HPC and data infrastructure and support the development of its technologies and applications across a wide range of fields. To reach this objective the following activities are foreseen:

1. Provide a procurement framework for an integrated, world-class, exascale supercomputing and data infrastructure in Europe.

2. Provide an EU level coordination and adequate financial resources to support the development and procurement of such an infrastructure;

3. Support the research and development of an integrated European HPC ecosystem, covering all scientific and industrial value chain segments (hardware, software, applications, services, interconnections and skills).

1.5.2. Added value of Union involvement

Reasons for action at European level (ex-ante)

The fragmentation of public HPC services across the EU and within MS leads to inefficient use of resources and only partial cross-border exchange of expertise. The increasing costs of building and maintaining HPC infrastructures require stronger governance at EU level and the rationalisation of HPC resources to reduce the current fragmentation.

HPC is an essential instrument to address societal challenges like health and security. Both are policies of shared European interest, as exemplified in the NIS Directive or the Cybersecurity Communication, addressing issues that do not stop at national borders. The level of security or the quality of public health in one MS depends from the situation in the rest of the EU.

HPC is fundamental to build the data economy. Controlling how the data is used, who has the ownership and right for exploitation, where it is stored, and who has access to it are sensitive

issues. It touches commercial and copyright issues, but also data protection and privacy issues. All these issues have been identified as political priorities in the Digital Single Market (DSM). Sending sensitive European data for processing in other regions of the world, where the high European standards of privacy, data protection, copyright, etc. are not necessarily respected, undermines the intention to gain sovereignty on European data and its exploitation.

The scale of the resources that are needed to realise a sustainable exascale level HPC infrastructure and ecosystem is beyond what national governments can nowadays afford to invest. No single Member State has the financial means to acquire exascale computing capabilities and develop, acquire and operate the necessary exascale HPC ecosystem on its own and in competitive time frames with respect to the USA, China or Japan. Member States and national actors have now realised that they will only be able to remain competitive through a joint and coordinated EU-wide effort – c.f. the EuroHPC declaration of 23.03.2017.

Expected generated Union added value (ex-post)

Acting at EU level we allow pooling the necessary investments and create the critical mass to acquire leading, next-generation, exascale systems which are in the order of hundreds of millions of Euros. It is only by working at EU-level and combining investments, knowledge and skills that Europe has a chance to keep-up to its competitors. At the same time, pooling the investments to jointly acquire exascale machines will create significantly higher return-on-investment (ROI) for each of the partial-owners of the machines, than the ROI of the full ownership of a lesser performing machine.

Availability of top class HPC systems would enable European players to further develop a whole range of present and future scientific and industrial applications that would require exascale performance. It would permit developing the necessary expertise, skills and capabilities for programming such systems efficiently and exploiting their full potential. It will also enable all European scientists, public administrations and industry to access this infrastructure and foster a wide range of cross-border collaboration and new products and services.

By bringing together the fragmented knowledge and the expertise existing all around, Europe can build the full supply chain for HPC systems: from technology components and systems to full machines. These are at the same time essential technologies in a variety of other mass markets (such as automotive, consumer electronics, servers, etc.). The transition to exascale computing, supported by joint EU/MS investments acting as lead market users, would provide an opportunity for the European supply industry to leverage on such investments and get access to new markets estimated to EUR 1 trillion.

Overall, the creation of a globally competitive HPC environment in Europe, triggered by public intervention, creates goods and services that are of a truly public value for European science and industry: It will help the private and the public sectors to create leading-edge science, technologies and solutions benefiting all areas of the economy and society, contributing to the EU's objectives of economic growth, jobs and competitiveness.

1.5.3. Lessons learned from similar experiences in the past

DG CNECT has established in 2014 the ECSEL Joint Undertaking (COUNCIL REGULATION (EU) No 561/2014), as a result and merger of the two Joint Undertakins ARTEMIS and ENIAC, created in 2008. In 2017 the interim evaluation highlighted its strengths and weaknesses, which will be taken into consideration for the establishment of the EuroHPC Joint Undertaking.

The ECSEL interim evaluation revealed that the Joint Undertaking is effective in reaching its strategic objectives, similar to the intended objectives of EuroHPC:

- A tri-partite organisation of a Joint Undertaking, assembling the European Commission, the Member States and the private sector, allows strategic alignment of Member States, Industry and the European Commission.

- It mobilises large investments, in particular from the industry.

- It is successful fostering a European industry and the development of competitive, European high tech technologies.

However, the interim evaluation also identifies shortcomings that we intend to address in the establishment of the EuroHPC Joint Undertaking:

- synchronise national activities, harmonise participation rules, funding rates and procedures

- provide a global strategy and provide incentives for a more systematic take-up by industry of the European HPC R&D results.

1.5.4. Compatibility and possible synergy with other appropriate instruments

The scope of the initiative is complementing the activities running under Industrial Leadership, Excellence in Science and Research Infrastructures within Horizon 2020, as well as the "Open Data" Digital Service Infrastructure of the Connecting Europe Facility (CEF) Program.

1.6. Duration and financial impact

☒ Proposal/initiative of **limited duration**

– ☒ Proposal/initiative in effect from 01/01/2019 to 31/12/2026

– ☒ Financial impact from 2019 to 2020 for commitment appropriations and from 2019 to 2026 for payment appropriations.

☐ Proposal/initiative of **unlimited duration**

– Implementation with a start-up period from YYYY to YYYY,

– followed by full-scale operation.

1.7. Management mode(s) planned[34]

☐ **Direct management** by the Commission through

– ☐ executive agencies

☐ **Shared management** with the Member States

☒ **Indirect management** by entrusting budget implementation tasks to:

☐ international organisations and their agencies (to be specified);

☐the EIB and the European Investment Fund;

☒ bodies referred to in Articles 208 and 209;

[34] Details of management modes and references to the Financial Regulation may be found on the BudgWeb site: https://myintracomm.ec.europa.eu/budgweb/EN/man/budgmanag/Pages/budgmanag.aspx.

☐ public law bodies;

☐ bodies governed by private law with a public service mission to the extent that they provide adequate financial guarantees;

☐ bodies governed by the private law of a Member State that are entrusted with the implementation of a public-private partnership and that provide adequate financial guarantees;

☐ persons entrusted with the implementation of specific actions in the CFSP pursuant to Title V of the TEU, and identified in the relevant basic act.

Comments

2. MANAGEMENT MEASURES

2.1. Monitoring and reporting rules

By 30 June 2022 the Commission shall carry out, with the assistance of independent experts, an interim evaluation of the EuroHPC Joint Undertaking, which shall assess in particular the level of participation in, and contribution to, the activities of the Joint Undertaking by the EuroHPC Participating States, the Private Members and their constituent entities and affiliated entities. The Commission shall prepare a report on that evaluation which includes conclusions of the evaluation and observations by the Commission. The Commission shall send that report to the European Parliament and to the Council by 31 December 2021.

Within six months of the winding up of the Joint Undertaking, but no later than two years after the decision to wind it up, the Commission will conduct a final evaluation of the Joint Undertaking. The results of the final evaluation will be presented to the European Parliament and to the Council.

The Executive Director of the Joint Undertaking shall report annually to the Governing Board on the performance of the duties of the Executive Director in accordance with the financial rules of the EuroHPC Joint Undertaking.

Within two months of the closure of each financial year, the Executive Director shall submit to the Governing Board for approval an annual activity report on the progress made by the EuroHPC Joint Undertaking in the previous calendar year, in particular in relation to the annual work plan for that year. The annual activity report shall include information on the following matters:

(a) research, development, innovation actions and procurement carried out and the corresponding expenditure;

(b) acquisition and operation of infrastructure, including the effectively used access-times;

(c) the proposals and tenders submitted,;

(d) the proposals and tenders selected for funding.

2.2. Management and control system

2.2.1. Risk(s) identified

The main risk identified is incorrect payment of expenditure to participants.

The specific risk of conflicts of interest inherent to a Public-Private Partnership is addressed by a clear separation of decision powers between the Governing Board - setting the strategy and the work plans, determining the conditions for the calls for proposals and the calls for tender and deciding on the allocation of public funding.

Insufficient contributions from the Participating States puts at risk the acquisition or operation of the pre-exascale supercomputers, either the contributions are insufficient to acquire the supercomputers, to operate them over their economic lifecycle, or the contributions are insuficient to acquire supercomputers with a performance level that would rank them among the top three in the world.

2.2.2. Information concerning the internal control system set up

The Commission's internal auditor shall exercise the same powers over the Joint Undertaking as those exercised in respect of the Commission. Moreover, the Governing Board may arrange, as appropriate, for the establishment of an internal audit capability of the Joint Undertaking.

In compliance with Article 60 of Regulation (EU, Euratom) No 966/2012, the Joint Undertaking will respect the principles of sound financial management, transparency and non-discrimination and will guarantee a level of protection of the financial interests of its members equivalent to that required under that Regulation.

Ex-post audits of expenditure on indirect actions will be carried out in compliance with the Horizon 2020 Framework Programme as part of the Horizon 2020 Framework Programme indirect actions.

In order to protect the financial interests of the Union, the Commission will in compliance with the Financial Regulation supervise the activities of the Joint Undertaking, in particular by carrying out audits and evaluations on the programme implementation, apply procedures for the examination and acceptance of the accounts and exclude from Union financing expenditure disbursements which have been made in breach of the applicable rules. It may also suspend and interrupt payments if it detects financial or administrative irregularities.

2.3. Measures to prevent fraud and irregularities

Specify existing or envisaged prevention and protection measures.

The Commission or its representatives and the Court of Auditors have the power of audit, on the basis of documents and on-the-spot, over all grant beneficiaries, contractors and subcontractors who receive EU funds.

The European Anti-fraud Office (OLAF) may carry out on-the-spot checks and inspections on economic operators concerned directly or indirectly by such funding in accordance with the procedures laid down in Regulation (Euratom, EC) No 2185/96 with a view to establishing whether there has been fraud, corruption or any other illegal activity affecting the financial interests of the European Union in connection with a grant agreement or a contract concerning EU funding.

Without prejudice to the above, grant agreements and contracts resulting from the implementation of this Regulation shall expressly empower the Commission, the Court of Auditors and OLAF to conduct such audits, on-the-spot checks and inspections.

3. ESTIMATED FINANCIAL IMPACT OF THE PROPOSAL/INITIATIVE

3.1. Heading(s) of the multiannual financial framework and expenditure budget line(s) affected

- New budget lines requested

In order of multiannual financial framework headings and budget lines.

Heading of multiannual financial framework	Budget line	Type of expenditure	Contribution			
	Number	Diff./non-diff.	from EFTA countries	from candidate countries	from third countries	within the meaning of Article 21(2)(b) of the Financial Regulation
1a Competitiveness for growth and jobs	09 04 07 33 H2020 EuroHPC JU – Support expenditure 09 04 07 34 H2020 EuroHPC JU 09 03 05 CEF EuroHPC JU	Diff.	YES	YES	NO	YES

* The contribution to this budget line is expected to come from:

Commitment appropriations (EUR millions)

Budget line	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	TOTAL
09 01 05 01 Expenditure related to research staff	0.306	1.401	0.000	0.000	0.000	0.000	0.000	0.000	**1.707**
09 01 05 02 External staff for research	0.314	1.996	0.000	0.000	0.000	0.000	0.000	0.000	**2.310**
09 01 05 03 Other management expenditure for research	1.675	4.308	0.000	0.000	0.000	0.000	0.000	0.000	**5.983**
09 04 01 01 Strengthening research in future and emerging technologies	68.000	100.000	0.000	0.000	0.000	0.000	0.000	0.000	**168.000**
09 04 01 02 Strengthening European research infrastructure, including e-infrastructure	8.000	80.000	0.000	0.000	0.000	0.000	0.000	0.000	**88.000**
09 04 02 01 Leadership in information and communications technology	80.000	40.000	0.000	0.000	0.000	0.000	0.000	0.000	**120.000**

09 03 Connecting Europe Facility	40.000	60.000	0.000	0.000	0.000	0.000	0.000	0.000	**100.000**
Total expenditure	**198.295**	**287.705**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**486.000**

3.2. Estimated impact on expenditure

3.2.1. Summary of estimated impact on expenditure

Heading of multiannual financial framework	1a	Competitiveness for growth and jobs

EUR million (to three decimal places)

EuroHPC Joint Undertaking[35],[36]			Year 2019	Year 2020[37]	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	**TOTAL**
Title 1:	Commitments	-1	0.680	3.581	0.000	0.000	0.000	0.000	0.000	0.000	**4.261**
	Payments	-2	0.680	1.460	1.148	0.726	0.247	0.000	0.000	0.000	**4.261**
Title 2:	Commitments	(1a)	1.615	4.124	0.000	0.000	0.000	0.000	0.000	0.000	**5.739**
	Payments	(2a)	1.615	1.715	1.298	0.865	0.247	0.000	0.000	0.000	**5.739**
Title 3:	Commitments	(3a)	196.000	280.000	0.000	0.000	0.000	0.000	0.000	0.000	**476.000**
	Payments	(3b)	70.400	84.400	113.200	103.600	40.400	32.000	18.000	14.000	**476.000**
TOTAL appropriations	Commitments	=1+1a +3a	198.295	287.705	0.000	0.000	0.000	0.000	0.000	0.000	**486.000**

[35] Amounts in Titles 1 and 2 represent the EU contribution (up to 10M€) to the administrative costs of the EuroHPC Joint Undertaking. The other remaining part comes from contributions by the other EuroHPC members as shown in section 3.2.5. EU contribution is 100% in first year then progressively reduced.

[36] Payment appropriations for Titles 1 and 2 are based on a yearly consumption of all corresponding commitment appropriations, while for Title 3 they are determined by taking into account the nature of the indirect actions and their payment schedule (prefinancing, interim payments and payment of the balance).

[37] Titles 1 and 2 for year 2020 contain the commitments for the year and the frontloading of the commitments for the remaining years of the JU in the period 2021-2026.

for EuroHPC Joint Undertaking	Payments	=2+2a+3b	**72.695**	**87.575**	**115.645**	**105.191**	**40.894**	**32.000**	**18.000**	**14.000**	**486.000**

EUR million (to three decimal places)

DG CONNECT			Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	**TOTAL**
Human Resources (2 FTE STATUTORY AD, 1 FTE AC)[38]			0.346	0.346	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	**0.692**
Other administrative expenditure			0.000	0.000	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	**0.000**
TOTAL DG CONNECT	Appropriations		**0.346**	**0.346**	**p.m.**	**p.m.**	**p.m.**	**p.m.**	**p.m.**	**p.m.**	**0.692**

Heading of multiannual financial framework	5	'Administrative expenditure'

EUR million (to three decimal places)

DG CONNECT			Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	**TOTAL**
Human Resources (2 FTE STATUTORY AD, 1 FTE AC)[39]			0.208	0.208	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	**0.416**
Other administrative expenditure			0.000	0.000	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.	**0.000**
TOTAL DG CONNECT	Appropriations		**0.208**	**0.208**	**p.m.**	**p.m.**	**p.m.**	**p.m.**	**p.m.**	**p.m.**	**0.416**

[38] Covering the administration of the H2020 actions. The FTE costs are determined on the basis of the average yearly cost of AD (EUR 138 000) and AST (EUR 70 000) staff.

[39] Covering the administration of the CEF actions. The FTE costs are determined on the basis of the average yearly cost of AD (EUR 138 000) and AST (EUR 70 000) staff.

TOTAL appropriations under HEADING 5 of the multiannual financial framework	(Total commitments = Total payments)	**0.208**	**0.208**	**p.m.**	**p.m.**	**p.m.**	**p.m.**	**p.m.**	**p.m.**	**0.416**

EUR million (to three decimal places)

			Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	**TOTAL**
TOTAL appropriations under HEADINGS 1 to 5 of the multiannual financial framework	Commitments	=1+1a +3a	**198.849**	**288.259**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**487.108**
	Payments	=2+2a+3b	**73.249**	**88.129**	**115.645**	**105.191**	**40.894**	**32.000**	**18.000**	**14.000**	**487.108**

3.2.2. Estimated impact on EuroHPC Joint Undertaking's appropriations

– ☐ The proposal/initiative does not require the use of operational appropriations

– ☑ The proposal/initiative requires the use of operational appropriations, as explained below:

Indicate objectives and outputs ⇩			Year **2019**		Year **2020**		Year **2021**		Year **2022**		Year **2023**		Year **2024**		Year **2025**		Year **2026**		**TOTAL**	
			OUTPUTS																	
	Type	Average cost	Number	Cost	Number	Cost	Number	Cost	Number	Cost	Number	Cost	Number	Cost	Number	Cost	Number	Cost	Total number	Total cost
SPECIFIC OBJECTIVE No 1 Horizon 2020 — The Framework Programme for Research and Innovation (2014-2020)																				
- Output	Excellent Science – Future and Emerging Technologies	8.8	**9**	**68**	**10**	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**19**	**168**
- Output	Excellent Science – Research Infrastructures	44.0	**1**	**8**	**1**	**80**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**88**

- Output	Leadership in Enabling and Industrial Technologies – Information and Communication Technologies	30.0	**3**	**80**	**1**	**40**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**120**
Subtotal for specific objective No 1			**13**	**156**	**12**	**220**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**25**	**376**
SPECIFIC OBJECTIVE No 2 Connecting Europe Facility (CEF)																				
- Output	Information and Communication Technologies	50.0	**1**	**40**	**1**	**60**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**100**
Subtotal for specific objective No 2			**1**	**40**	**1**	**60**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**100**
TOTAL COST			**147**	**196**	**13**	**280**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	**476**

3.2.3. Estimated impact on EuroHPC JU's human resources

3.2.3.1. Summary

– ☐ The proposal/initiative does not require the use of appropriations of an administrative nature

– ☑ The proposal/initiative requires the use of appropriations of an administrative nature, as explained below:

Staffing numbers (in headcounts / FTE)

	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	**TOTAL**
Officials (AD Grades)	0	0	0	0	0	0	0	0	0
Officials (AST grades)	0	0	0	0	0	0	0	0	0
Contract staff	7	10	11	11	11	9	7	5	71

Temporary staff	4	4	4	4	4	4	4	3	31
Seconded National Experts	0	1	1	1	0	0	0	0	3
TOTAL	11	15	16	16	15	13	11	8	105

EUR million (to three decimal places)

	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	**TOTAL**
Officials (AD Grades)	0	0	0	0	0	0	0	0	0
Officials (AST grades)	0	0	0	0	0	0	0	0	0
Contract staff	0.25	0.7	0.77	0.77	0.77	0.63	0.49	0.35	4.725
Temporary staff	0.28	0.552	0.552	0.552	0.552	0.552	0.552	0.414	4.002
Seconded National Experts	0	0.078	0.078	0.078	0	0	0	0	0.234
TOTAL	0.521	1.33	1.4	1.4	1.322	1.182	1.042	0.764	8.961

In order to ensure headcount neutrality, in compliance with Point 27 of the Interinstitutional Agreement of 2 December 2013 which requires all institutions, bodies and agencies to reduce staff by 5%, DG CNECT will partly compensate the additional staffing in the Joint Undertaking by reducing the number of officials and external staff from its current staffing (i.e. establishment plan and external personnel currently in place). The precise modalities will have to be fine-tuned bilaterally and would have to be compatible with CNECT's headcount reduction related to the Luxembourg agreement on the establishment of a digital pole.

Estimated impact on the staff (additional FTE) – establishment plan

Function group and grade	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026
AD16								
AD15								
AD14	1	1	1	1	1	1	1	1
AD13								
AD12	1	1	1	1	2	2	2	2
AD11	1	1	1	1				
AD10								
AD9								
AD8					1	1	1	0
AD7	1	1	1	1				
AD6								
AD5								
AD Total	4	4	4	4	4	4	4	3
AST11								
AST10								
AST9								
AST8								
AST7								
AST6								
AST5								
AST4								
AST3								
AST2								
AST1								
AST Total	0	0	0	0	0	0	0	0
AST/SC 6								
AST/SC 5								
AST/SC 4								
AST/SC 3								
AST/SC 2								
AST/SC 1								
AST/SC Total	0	0	0	0	0	0	0	0

Estimated impact on the staff (additional) – external personnel

Contract agents	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026
Function group IV	1	1	1	1	1	1	1	1
Function group III	4	7	8	9	9	8	6	4
Function group II	2	2	2	1	1			
Function group I								
Total	7	10	11	11	11	9	7	5

Seconded national experts	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026
Total	0	1	1	1	0	0	0	0

Staff recruitment for 2019 (first year) are estimated to take place on average in July 2019 (i.e . only 50 % of the average cost is taken into account for that year).

3.2.3.2. Estimated requirements of human resources for the parent DG

– ☐ The proposal/initiative does not require the use of human resources.

– ☑ The proposal/initiative requires the use of human resources, as explained below:

Estimate to be expressed in full amounts (or at most to one decimal place)

	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026
Establishment plan posts (officials and temporary staff)								
09 01 01 01 (Headquarters and Commission's Representation Offices)	1	1	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.
09 01 01 02 (Delegations)								
09 01 05 01 (Indirect research)	2	2	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.
10 01 05 01 (Direct research)								
External staff (in Full Time Equivalent unit: FTE) [40]								
09 01 02 01 (AC, END, INT from the 'global envelope')	1	1	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.
09 01 02 02 (AC, AL, END, INT and JED in the Delegations)								
09 01 04 yy [41] - at Headquarters[42]								
09 01 04 yy [41] - in delegations								
09 01 05 02 (AC, END, INT – Indirect research)	1	1	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.
10 01 05 02 (AC, END, INT – Direct research)								
Other budget lines (specify)								
TOTAL	5	5	p.m.	p.m.	p.m.	p.m.	p.m.	p.m.

The human resources required will be met by staff from the DG who are already assigned to management of the action and/or have been redeployed within the DG, together if necessary with any additional allocation which may be granted to the managing DG under the annual allocation procedure and in the light of budgetary constraints.

Description of tasks to be carried out:

Officials and temporary staff	Membership in Governance bodies and monitoring/reporting of activities
External staff	Support to Officials

Description of the calculation of cost for FTE units should be included in the Annex V, section 3.

[40] AC = Contract Staff; AL = Local Staff; END = Seconded National Expert; INT = agency staff; JED = Junior Experts in Delegations.

[41] Sub-ceiling for external staff covered by operational appropriations (former 'BA' lines).

[42] Mainly for the Structural Funds, the European Agricultural Fund for Rural Development (EAFRD) and the European Fisheries Fund (EFF).

3.2.4. Compatibility with the current multiannual financial framework

– ☑ The proposal/initiative is compatible the current multiannual financial framework.

– ☐ The proposal/initiative will entail reprogramming of the relevant heading in the multiannual financial framework.

– ☐ The proposal/initiative requires application of the flexibility instrument or revision of the multiannual financial framework[43].

3.2.5. Third-party contributions

– The proposal/initiative does not provide for co-financing by third parties.

– The proposal/initiative provides for the co-financing estimated below:

EUR million (to three decimal places)

	Year 2019	Year 2020	Year 2021	Year 2022	Year 2023	Year 2024	Year 2025	Year 2026	**TOTAL**
EuroHPC Member States – contribution in cash to the administrative costs	0.000	0.000	0.679	1.326	1.973	2.252	2.043	1.727	**10.000**
EuroHPC Member States – contribution in cash to the operational costs*	70.400	84.400	113.200	103.600	40.400	32.000	18.000	14.000	**476.000**
Private Members – contribution in cash to the administrative costs	0.000	0.000	0.136	0.265	0.395	0.450	0.409	0.345	**2.000**
TOTAL appropriations co-financed	**70.400**	**84.400**	**114.015**	**105.191**	**42.768**	**34.702**	**20.452**	**16.072**	**488.000**

* in-kind contributions from EuroHPC Member States are also possible

[43] See Articles 11 and 17 of Council Regulation (EU, Euratom) No 1311/2013 laying down the multiannual financial framework for the years 2014-2020.

3.3. Estimated impact on revenue

– ☑ The proposal/initiative has no financial impact on revenue.

– ☐ The proposal/initiative has the following financial impact:

  – ☐ on own resources

  – ☐ on miscellaneous revenue

Mal for obligatorisk skisse til søknad om midler fra Nasjonal satsing på forskningsinfrastruktur

Kun søkere som har sendt inn obligatorisk skisse innen skissefristen 15. mai 2018 kl. 13.00 vil være kvalifisert til å kunne søke om midler fra Nasjonal satsing på forskningsinfrastruktur (INFRASTRUKTUR) som har søknadsfrist 10. oktober 2018.

INFRASTRUKTUR-søknader som ikke er basert på skisse sendt inn innen 15. mai 2018, vil bli avvist.

Hovedhensikten med denne obligatoriske skisserunden er å bidra til bedre nasjonal koordinering og samhandling mellom ulike institusjoner og forskningsinfrastrukturer. Forskningsrådet vil derfor offentliggjøre tittel, sammendrag, samarbeidspartnere og kontaktpersoner til de forskjellige skissene, slik at ulike miljøer med samme infrastrukturbehov lettere skal kunne kontakte hverandre og inngå samarbeid om søknader til den endelige utlysningen. Ved innsending av skisse samtykker prosjektansvarlig i dette.

Skissen må følge malen på neste side.

Besvarelsen skal ikke være på mer enn 6 sider totalt. Besvarelsen av punkt 4 skal ikke overskride 3 sider og besvarelsen av punkt 5 skal ikke overskride 1 side. Sideformatet skal være A4 med 2 cm marger, 11 pkt. skrift (Arial, Calibri eller Times New Roman) og enkel linjeavstand. Skissen kan skrives på norsk eller engelsk.

En skisse innsendt etter fristen 15. mai 2018 kl. 13.00, vil ikke kvalifisere for å kunne sende inn søknad til den endelige søknadsrunden.

Skissen lastes opp som vedlegg (prosjektbeskrivelse) via Forskningsrådets elektroniske søknadsmottak.

INFRASTRUKTUR-skisse nr: (Fylles ut av Forskningsrådet)

1.Tittel og kontaktinformasjon

INFRASTRUKTUR-arbeidstittel	E-INFRA 2018
Vertsinstitusjon	UNINETT Sigma2
Kontaktperson ved vertsinstitusjon (navn, tlf. og e-post)	Gunnar Bøe
Partnerinstitusjoner	UiO, UiB, NTNU, UiT

2. Kategori (det kan krysses av for mer enn én)

- ☐ Avansert vitenskapelig utstyr og utstyrsfasiliteter (2–200 mill. kroner)
- ☐ Vitenskapelige databaser og samlinger (2–200 mill. kroner)
- ☐ e-infrastruktur (2–200 mill. kroner)
- ☐ Deltakelse i internasjonal forskningsinfrastruktur (ESFRI eller andre)
- ☐ Grunnfinansiering av drift
- ☒ Storskalafasiliteter over 200 mill. kroner (gjelder vurdering av infrastrukturer som krever mer enn 200 mill. kroner offentlig finansiering som finansieres av Norges forskningsråd. Vurderingen danner grunnlag for rådgivning til departementene)

3. Hovedområde(r) infrastrukturen vil betjene (det kan krysses av for mer enn ett)

- ☐ Bioressurser
- ☐ Bioteknologi
- ☒ e-Infrastruktur
- ☐ Havteknologi og maritim innovasjon / Maritim teknologi
- ☐ Humaniora
- ☐ IKT
- ☐ Klima og miljø
- ☐ Medisin og helse
- ☐ Miljøvennlig energi
- ☐ Nanoteknologi og avanserte materialer
- ☐ Petroleum
- ☐ Samfunnsvitenskap
- ☐ Annet:…….

Hvis det er krysset av for flere områder, hva er de(t) viktigste:

4. Kort beskrivelse av infrastrukturen (maks 3 sider)

Beskrivelsen skal svare kort på følgende:

- Hva infrastrukturen består av (type utstyr, personell, mm)
- Hvilke tjenester infrastrukturen skal levere
- Hvilke brukermiljøer infrastrukturen er tenkt å skulle betjene (fagområder og type brukere)
- Om dette er en ny infrastruktur eller en oppgradering/utvidelse av en eksisterende infrastruktur
- Om infrastrukturen er lokalisert (på ett sted) eller distribuert (flere noder lokalisert på ulike steder), og hvor eventuelle noder skal plasseres
- Hvordan denne infrastrukturen relaterer seg til allerede eksisterende infrastruktur (vil den være et supplement/komplementær, vil den inngå i et samarbeid med eksisterende infrastrukturer)
- Om det vil være behov for ressurser til datalagring, beregninger eller andre e-infrastrukturtjenester
- Om skissen gjelder deltakelse i internasjonalt infrastruktursamarbeid, skal det fremgå om dette gjelder en infrastruktur som er lokalisert utenfor Norge (i så fall hvor) eller om dette gjelder investeringer i en norsk node som i en distribuert internasjonal infrastruktur

Hovedelementer:

1. B1 Utvidelse: Ca. 25 MNOK
2. A2 HPC Maskin: Ca. 200 MNOK
3. Lagring, ny eller signifikant utvidelse: Ca. 50 MNOK
4. Tjenesteplattform, ny (avhengig av om man går for ny lagringsløsning) elle signifikant utvidelse: C. 10 MNOK
    - Delsum: 285 MNOK

Tilleggselementer:

5. EuroHPC: Ca. 7 MNOK
6. Kjøp av skytjenester (HPC og/eller lagring): Ca. 5 MNOK
7. Prace: Ca. 3 MNOK
8. Utvidelse av TSD: Ca. 10 MNOK
    - Delsum: 25 MNOK

Totalt Investeringsbehov: 310 MNOK

Egenfinansiering: Ca. 2x20 MNOK = 40 MNOK

Fra forskningsrådet: 310 – 40 = 270 MNOK

Søknadsbeløp E-INFRA 2018: 270 MNOK

5. Foreløpig budsjett og kostnader (maks 1 side)

Sett opp en skisse til budsjett (tabeller pluss forklarende tekst) for finansiering for etablering/oppgradering som antyder

- total kostnad for prosjektet
- beløpet dere har tenkt å søke om fra Forskningsrådet

Type kostnader	**Beløp i NOK**
Personellkostnader og indirekte kostnader	
Direkte kostnad til utstyr	
Andre kostnader	
Totalkostnad	

Finansieringskilder	**Beløp i NOK**
Egen finansiering	

Forskningsrådet	
Andre finansieringskilder	
Total finansiering	

Merk at beløpene kan endres ved senere innsending av endelig søknad.

Gi en kort beskrivelse av kostnader og finansiering, inkl. om dette kun gjelder kostnader til etablering/oppgradering eller om det er tenkt søkt støtte også til drift.

6. Liste over kontaktpersoner

Liste over kontaktpersoner (navn, telefon, e-post) for hver av partnerne. Forskningsrådet vil kontakte disse ved behov.

Universitet i Oslo, v/rektor
Universitet i Bergen, v/rektor
Norges teknisk-naturvitenskapelige universitet, v/rektor
Universitet i Tromsø, v/rektor
UNINETT Sigma2 AS v/daglig leder

Vår saksbehandler/tlf.	**Vår ref.**	**Oslo,**
Ulrike Jaekel/90823797	18/161	7.4.2018
	Deres ref.	

Utredning av behov for nasjonal e-infrastruktur for forskning frem mot 2030

Det er grunn til å tro at stadig bedre måle- og sensorteknologi, mer omfattende målinger, kunstig intelligens og maskinlæring, økt fokus på datadrevet forskning og mer avanserte verktøy for dataanalyser vil føre til en betydelig økning i behovet for tungregning og lagring og tilgjengeliggjøring av store mengder data. Dette gjelder ikke bare fagområder som tradisjonelt har forholdt seg til tungregning og store mengder data. Stadig flere forskningsfelt genererer og bruker data og tungregning. Dataene genereres både eksperimentelt og gjennom beregninger, eller de innhentes fra kilder utenfor forskningens tradisjonelle domene.

E-infrastruktur for forskning omfatter utstyr, drift og relaterte tjenester for tungregning, datalagring, programvaresystemer og høyhastighetsnettverk, avansert kompetanse og brukerstøtte, samt verktøy for effektiv arbeidsflyt og programvare for simulering og analyse av data. Norske forskningsinstitusjoner har i dag en god og kostnadseffektiv samordning av sin e-infrastruktur for forskning og høyere utdanning. Nye investeringer, oppgradering og drift skjer i all hovedsak gjennom UNINETT AS og dets datterselskap UNINETT Sigma2 AS (kalt «Sigma2»).

Sigma2 hadde i 2017 et budsjett på ca. 164 mill. kr, hvorav investeringer i utstyr utgjør 62 % og det øvrige er drift, utviklingsarbeid og avansert brukerstøtte. Finansieringen kommer fra langsiktige tjenesteavtaler med NTNU, UiB, UiO og UiT (50 mill. kr pr. år) og en langsiktig grunnfinansiering fra Forskningsrådet (25 mill. kr pr. år). I tillegg har Sigma2 en konkurranseutsatt finansiering som omfatter søknadsbaserte tildelinger fra Forskningsrådet og internasjonale kilder. En liten, men økende, del av Sigma2s inntekter kommer fra FoU-prosjekter som mottar tjenester fra Sigma2.

Sigma2 utfører jevnlige brukerundersøkelser og disse viser et sterkt økende behov for e-infrastruktur-ressurser. Estimater fra Sigma2 tilsier at behovet for datalagringsresurser dobles omtrent hvert 2,5 år, og at behovet for beregningsresurser dobles hvert 3,5 år. For å holde tritt med utviklingen vil norske forskere ha behov for stadig nye og bedre supercomputere, samtidig som slike regneanlegg eldes og dermed ikke blir kosteffektive i drift. Behovene for investering i e-infrastruktur vil trolig allerede fra 2020 bli større enn det dagens finansieringsordninger kan bære.

Etter initiativ fra UiO-dekan Morten Dæhlen, UiT-prorektor Kenneth Ruud og Sigma2-leder Gunnar Bøe, hadde vi et uformelt møte med de nevnte kolleger i Forskningsrådet rett før jul. Forskningsrådet har etter dette hatt uformell kontakt om problemstillingen med NTNU-forskningsdekan Tor Grande så vel som UiB-dekan Helge Dahle. Alle indikerer at etableringen av en arbeidsgruppe til å analysere disse utfordringene er en god idé. Forskningsrådet vil med dette brevet ta saken et skritt videre.

Norges forskningsråd/
The Research Council of Norway
Drammensveien 288
Postboks 564
NO–1327 Lysaker

Telefon +47 22 03 70 00
post@forskningsradet.no
www.forskningsradet.no
Org.nr. 970141669

Med utgangspunkt i at Sigma2 i dag i all hovedsak er finansiert av Forskningsrådet og de fire universitetene som mottar dette brevet, foreslår vi i første omgang at Forskningsrådet, disse universitetene og Sigma2 tar denne saken videre.

Etablering av arbeidsgruppe

I samråd med de ovenfor nevnte kollegene foreslår vi altså at Forskningsrådet, de fire universitetene og Sigma2 sammen etablerer en arbeidsgruppe som skal se nærmere på utfordringene skissert ovenfor. Målet med arbeidet kan være en oppdatert og helhetlig nasjonal strategi for videreutvikling og finansiering av e-infrastruktur for forskning og høyere utdanning i Norge i perioden 2020-2030.

Forskningsrådet kan, i tillegg til å delta i arbeidsgruppen, påta seg å organisere gruppens arbeid (innkalle til møter etc.). Men vi kan ikke påta oss ansvaret for å skrive gruppens rapport. Her må flere i gruppen bidra, eller det må engasjeres en person med gode skriftlige kommunikasjonsferdigheter og god kunnskap om e-infrastruktur.

Arbeidsgruppen bør ikke være for stor, men samtidig ha bred kompetanse og inngående kjennskap til problematikken som her reises. Vi foreslår derfor at gruppen består av en til to representanter fra hver av de fire universitetene og én fra Sigma2. Videre bør gruppens medlemmer ha god forankring i strategisk ledelse ved sine respektive institusjoner. Medlemmene bør dessuten dekke bredden av fagområder som i betydelig grad anvender data og e-infrastruktur, innen f.eks. kjemi, fysikk, geofag, klimaforskning, meteorologi, IKT, helse, bioinformatikk, biomedisin, samfunnsvitenskap og humaniora.

Vi foreslår at Universitetene og Sigma2 selv utpeker sine respektive representanter. Arbeidsgruppens forankring i sektoren tilsier at dens medlemmer ikke vil motta noe honorar fra Forskningsrådet.

Mandat for arbeidsgruppes arbeid

Vi foreslår at arbeidsgruppen selv, i starten av sitt arbeid, definerer, avgrenser og ferdigstiller sitt mandat for arbeidet. Heri ligger også behovet for å avgrense arbeidet vis-a-vis andre pågående, nasjonale prosesser som etableringen av en ny plattform for helsedataanalyser. I tillegg må arbeidsgruppen forholde seg til prosesser og eksisterende tilbud i det Europeiske e-infrastruktur landskapet.

Selv om vi ikke foreslår et mandat, har vi følgende innspill vi tror kan være retningsgivende:

- Definere, konkretisere og avgrense nasjonal e-infrastruktur, relaterte tjenester og andre begreper som vil bli brukt i arbeidsgruppens mandat og fremtidige rapport.
- Utarbeide og begrunne et realistisk estimat på behovet for e-infrastruktur i perioden 2020-2030, inklusive behov for kompetanse og støttetjenester.
- Inkludere problemstillingens faglige bredde med utgangspunkt i nåværende og fremtidige brukere.[1]
- Inkludere tilgang til både nasjonale og internasjonale resurser. Eksisterende nasjonale og internasjonale rapporter kan utgjøre en basis, men relevante FoU-miljøer bør konsulteres i tillegg.
- Foreslå finansieringsstrategi som kan legge til rette for en forutsigbar og robust investering, fornyelse/oppgradering, drift og videreutvikling av nasjonal e-infrastruktur og relaterte tjenester.
- Vurdere bærekraftige finansieringsmodeller inkludert justerbare og robuste mekanismer for kostnadsdeling mellom nasjonale finansiører (departement og Forskningsrådet), institusjonene og de prosjekter og forskergrupper som er brukere av e-infrastrukturen og de relaterte tjenestene.
- Vurdere muligheten for å dekke deler av de nasjonale e-infrastrukturbehovene gjennom internasjonalt samarbeid og/eller kjøp av tjenester fra kommersielle, internasjonale leverandører.
- Innhente høringsuttalelser på en første versjon av rapporten som vurderes og eventuelt innarbeides.

[1] Som et startpunkt for kartlegging av relevante brukermiljøer kan man ta utgangpunkt i Sigma2 sine brukerdata, samt vurdere om forskningsmiljøene som ikke står på denne listen ennå kan være blant de relevante fremtidige brukermiljøene.

Utvalgets rapport vil inngå i institusjonenes og Forskningsrådets kunnskapsgrunnlag for anbefalinger til finansierende myndigheter vedrørende behov og strategi for finansiering av nasjonal e-infrastruktur og relaterte tjenester i perioden etter 2020.

Forskningsrådet ber om tilbakemelding på forslaget om å etablere en arbeidsgruppe som her foreslått. Hvis dere er enige i forslaget, hadde det vært fint om dere kunne utpeke medlemmer innen utgangen av april slik at arbeidsgruppen kan komme i gang med sitt arbeid rett før eller etter sommerferien.

Med vennlig hilsen
Norges forskningsråd

[Gjenstår å innhente signatur]

Kopi til: Gunnar Bøe
Helge Dahle
Kenneth Ruud
Morten Dæhlen
Tor Grande

Notat

Til: UNINETT Sigma2 styre AS

Fra: Gunnar Bøe

Forfatter: Gunnar Bøe

Kopi: Ernst & Young

Dato: 13.04.2018

Gjelder: Sak 20/18: Fornying av Samarbeidsavtale med universitetene?

Fornying av Samarbeidsavtale med universitetene?

De 4 eldste universitetene har en samarbeidsavtale med Sigma2 som dekker leveranse og videreutvikling av e-infrastrukturtjenester og finansiering for dette fra universitetene.

Avtalen sier følgende om endring:
«Avtalen inngås for en periode på minimum 10 år, fra 1.1.2015 til 31.12.2024. Hvert femte år, første gang innen 1.1.2020, kan avtalen forlenges med ytterligere fem år[1]. Forut for beslutning om forlengning skal det gjennomføres en evaluering som beskrevet i kapittel 3.3.

Endring av avtalen kan skje etter enighet mellom partene sine styrende organer, eller den de bemyndiger, når partene finner det nødvendig, innenfor de rammer som er beskrevet i kapittel 3.3.

Når det gjelder endring i finansiering sier avtalen: «beslutning om eventuell justering av finansiering skal gjøres innen 30.09.2019 gjeldende for perioden 01.01.2020 – 31.12.2024.»

Administrasjonen ønsker å se arbeidet med fornying av samarbeidsavtalen i sammenheng med planene for evaluering og møter som skal avholdes med ledelsen ved universitetene.

Planene for evalueringen er som følger:

- Godkjenning av mandatet: April 2017
- Bestilling av underlagsmateriale fra Sigma2 September 2017
- Evalueringskomiteen oppnevnes: Oktober 2018
- Frist for Sigma2 selvevaluering: Desember 2018
- Evalueringskomiteen møtes 1. gang: Januar 2019
- Evalueringsrapporten ferdig: Juni 2019
- Evalueringsrapporten styrebehandles i Forskingsrådet og deretter av de fire universitetene August – September 2019
- Evalueringsrapporten oversendes til KD: Oktober 2019

Forslag til vedtak:
Styret tar informasjonen til orientering.

[1] Arbeidsgruppens underlag til rektormøtet, datert 6/11-2013, side 3

UNINETT Sigma2	**Samarbeidsavtale om nasjonal e-infrastruktur**
	KONTRAKT NR: 15/00068-2

UNINETT Sigma2 AS
org.nr. 814 864 332

og

Norges teknisk-naturvitenskapelige universitet
org.nr. 974 767 880

Universitetet i Bergen
org.nr. 874 789 542

Universitetet i Oslo
org.nr. 971 035 854

UiT Norges arktiske universitet
org.nr. 970 422 528

Versjon: 1.0
Dato oppdatert: 18.02.15

1 Bakgrunn

UNINETT Sigma2 AS (Sigma2) er opprettet med nytt mandat som gir et utvidet ansvar for e-infrastruktur. Selskapet finansieres av Norges Forskningsråd (Forskningsrådet) og de fire universitetene Norges teknisk-naturvitenskapelige universitet (NTNU), Universitetet i Bergen (UiB), Universitetet i Oslo (UiO) og UiT Norges arktiske universitet (UiT), heretter kalt de fire universitetene.

2 Avtalepartnere

Avtalen inngås mellom Sigma2 og de fire universitetene NTNU, UiB, UiO og UiT.

Med brukere menes alle brukere av alle tjenester. Med kunder menes de hos samarbeidspartnerne som er gitt mandat til å forhandle og endre avtaler mellom partene, delta i evalueringer og forbedringsarbeid.

3 Overordnede føringer

Formålet for Sigma2 er utarbeidet av Forskningsrådet og de fire universitetene i fellesskap og er som følger[1]:

- Sigma2 skal drive strategisk og kostnadseffektiv utvikling, innkjøp, koordinering og drift av nasjonal e-infrastruktur for forsknings- og undervisningsformål
- Sigma2 kan initiere og delta i internasjonal samarbeid om e-infrastruktur
- Sigma2 kan inngå samarbeidsavtaler med og selge tjenester til aktører innenfor en nærmere spesifisert målgruppe
- Sigma2 skal ivareta interessene til de institusjonene som yter tilskudd til organisasjonens drift og investeringer, og drive virksomheten slik at den er økonomisk bærekraftig på kort og lang sikt

Bakgrunnen for denne avtalen er etablering av et samarbeid mellom Sigma2 og de fire universitetene om leveranse og videreutvikling av e-infrastrukturtjenester. Målet med samarbeidet er at det tilbys tjenester som er varige, forutsigbare og kosteffektive, slik at nytteverdien for norsk, akademisk forskning blir størst mulig.

3.1 Målgruppe og tjenester

Primær målgruppe for oppgaver som utføres og tjenester som leveres som del av samarbeidet, er universiteter, høyskoler og andre institusjoner som er heleid av staten og har forskning eller undervisning som et av sine formål. Sigma2 skal være disse institusjonenes virkemiddel for å utføre e-infrastruktur-relaterte oppgaver og tjenester i egenregi.[2] Dersom det ikke går utover den primære målgruppens behov for e-infrastruktur og det er mulig innenfor kravet om egenregi kan det som del av samarbeidet også selges tjenester til forskningsinstitutter og forskning innenfor kommersielle virksomheter[3]. Dette er sekundær målgruppe.

[1] Samme formål som i arbeidsgruppens underlag til rektormøtet, datert 6/11-2013, side 2
[2] Se arbeidsgruppens underlag til rektormøtet, datert 6/11-2013, side 1 og i Forskningsrådets underlag fra advokatfirmaet Simonsen Vogt Wiig AS, datert 4/4-2013.
[3] Arbeidsgruppens underlag til rektormøtet, datert 6/11-2013, side 2

De nasjonale tjenestene for regnetid, lagringskapasitet og avansert brukerstøtte skal fordeles til forskningsprosjekter av en ressursfordelingskomite (RFK) med et mandat godkjent av Sigma2 sitt styre. Medlemmene av RKF utpekes av Sigma2 sitt styre. Enheter i den primære målgruppen skal i tillegg kunne kjøpe slike tjenester[4], ved eventuell innføring av brukerbetaling.

Den sekundære målgruppen kan få tildelt tjenester dersom det aktuelle forskningsprosjektet har støtte fra Forskningsrådet og når opp i RFK sin evaluering. All annen leveranse av tjenester til den sekundære målgruppen skal skje ved salg basert på full kostnadsdekning.

Tjenestene som skal tilbys målgruppene er spesifisert i vedlegg 1.

3.2 Tjenesteproduksjon[5]

Avansert brukerstøtte (se vedlegg 1) skal i all hovedsak bli utført av tilsatte i den primære målgruppen. Øvrig tjenesteproduksjon, samt administrative og koordinerende oppgaver, kan utføres av ansatte i de samarbeidende organisasjonene, kjøpes i markedet eller en kombinasjon av disse.

Når Sigma2 kjøper tjenester fra den primære målgruppen skal reelle, faktiske kostnader ligge til grunn, og prisen på tjenestene skal baseres på de samme prinsipper som ved søknader om midler til Forskningsrådet.

3.3 Finansiering

Finansiering av samarbeidet skal skje gjennom følgende:

- Langsiktig finansiering fra Forskningsrådet gjennom prosjektavtale
- Langsiktig finansiering fra de fire universitetene gjennom denne samarbeidsavtalen
- Konkurranseutsatt finansiering fra Forskningsrådet
- Salg av tjenester

De langsiktige bidragene kan benyttes til alle deler av samarbeidets formål. Midler fra konkurranseutsatt finansiering og salg av tjenester skal brukes til investering i nytt utstyr.

Tidsperspektivet for den langsiktige finansiering skal være 10 år, fra 01.01.2015 til 31.12.2024. Prosjektets langsiktige finansiering kan justeres hvert femte år, første gang med virkning fra 1.1.2020. Fordeling mellom universitetene kan justeres oftere, se kapittel 5.2 e.

Forut for beslutning om justering av finansiering skal det gjennomføres en evaluering.[6] Evalueringen skal gjennomføres av Forskningsrådet og de fire universitetene som også skal etablere kriteriene for denne evalueringen innen 01.06. 2015. Første evaluering skal ferdigstilles innen 30.06.2019 og beslutning om eventuell justering av finansiering skal gjøres innen 30.09.2019 gjeldende for perioden 01.01.2020 – 31.12.2024.

Neste evaluering skal ferdig stilles innen 30.06.2024 med eventuell justering av finansiering innen 30.09.2024 gjeldende for perioden 01.01.2025 – 31.12.2029. Dette 5-årige mønster gjentas videre.

[4] Arbeidsgruppens underlag til rektormøtet, datert 6/11-2013, side 3
[5] Arbeidsgruppens underlag til rektormøtet, datert 6/11-2013, side 2
[6] Arbeidsgruppens underlag til rektormøtet, datert 6/11-2013, side 3

Dersom andre universitet går inn med langsiktig finansiering i den første fem års perioden, vil deres andel bli 1/24, og den totale rammen vil bli økt tilsvarende. Andelen til eventuelle andre deltagere fra den primære målgruppen vil være gjenstand for drøfting mellom organisasjonen og den mulige deltakeren[6].

4 Formål og ansvarsforhold

Formålet med avtalen er å beskrive partenes forpliktelser, finansieringsrammer og ytelser som del av samarbeidet.

Sigma2 skal ha ansvaret for leveranse av tjenestene. Der de fire universitetene har det utførende ansvar for leveranser, reguleres dette gjennom egne avtaler mellom Sigma2 og det enkelte universitet. Tjenestene leveres i form av egenregi som definert i vedtektene for Sigma2.

Strategisk arbeid skal skje i Sigma2 med involvering og deltakelse fra de fire universitetene. Dette skal inkludere:

- Prioritering av videreutvikling og etablering av nye tjenester
- Type/arkitektur for nye regneanlegg og lagringssystemer
- Plassering av utstyr
- Driftsmodell for tjenester og utstyr
- Risikobetraktninger

Formål med slikt arbeid er å fremskaffe underlag for endelig beslutning i Sigma2 sitt styre. De fire universitetene er representert i styret som definert i vedtektene for Sigma2.

5 Partnernes forpliktelser

Denne delen omhandler de forpliktelsene avtalepartene påtar seg gjennom denne avtalen.

5.1 Sigma2 sine forpliktelser

Sigma2 sin rolle i partnersamarbeidet er som leverandør og koordinator av felles aktiviteter, presisert i følgende punkter:

a. Levere tjenester som beskrevet i egen tjenestebeskrivelse (Vedlegg 1)
b. Anskaffe nødvendig utstyr og lokalitet for tjenesteproduksjon
c. Lede strategiarbeid
d. Forvalte og videreutvikle tjenester
e. Administrere fordeling av Forskningsrådets CPU-timer og lagringsområder etter nasjonal prioritering og vitenskapelig vurdering gjennom Ressursfordelingskomiteen(RFK). Universitetene bestemmer selv hvordan deres andel av ressursens skal anvendes. Ny andelsberegning skjer ved hver investering
f. Rapportering av ressursuttak på tjenester, kvalitet på tjenester og utviklingstiltak
g. Brukerundersøkelser som skal måle brukertilfredshet og brukes til evaluering og forbedring av tjenestene
h. Koordinering av deltakelse i internasjonalt samarbeid (PRACE EUDAT, NeiC, etc.)

i. Koordinere opplæring i bruk av tjenester og tiltak for ytterligere utbredelse av tjenestene

j. Bruke ressurser til avansert brukerstøtte ved hvert av de fire universitetene

5.2 Universitetene sine forpliktelser

De fire universitetene sin rolle i partnersamarbeidet er å ivareta universitetene sine strategiske interesser, representere brukerne sine behov, bidra med finansiering av tjenestene og personell-ressurser, presisert i følgende punkter:

a. Levere ressurser til felles aktiviteter og prosjekter (for eksempel forbedring og videreutvikling, innkjøp) etter egne avtaler

b. Levere ressurser til avansert brukerstøtte etter egne avtaler

c. Deltakelse i avtalte samarbeidsarenaer

d. Administrere avtalte lokale ressurser på nasjonale anlegg i henhold til egne publiserte retningslinjer

e. Bidra med finansiering i henhold til forpliktelser som avtalt, på en årlig sum av NOK 50 000 000 (femti millioner norske kroner), med følgende fordeling:

   i. NTNU: NOK 12 500 000 (tolv-komma-fem millioner norske kroner)

   ii. UiB: NOK 12 500 000 (tolv-komma-fem millioner norske kroner)

   iii. UiO: NOK 18 750 000 (atten-komma-syttifem millioner norske kroner)

   iv. UiT: NOK 6 250 000 (seks-komma-tjuefem millioner norske kroner)

   Fordeling av finansiering mellom de fire universitetene baseres på hvor stor andel institusjonene har brukt av den nasjonale e-infrastrukturen de siste 5 år. Når de fire universitetene er enige om justering av fordeling, kan de velge å endre fordelingen av sine bidrag innenfor de avtalte NOK 50 000 000.

   Betaling av kontant beløp fordelt likt på hver termin, skal skje hvert tertial med betaling 10/3, 10/7, 10/11 basert på faktura fra Sigma2.

6 Kommunikasjon og informasjonsdeling

Det skal minst avholdes ett årlig møte for oppfølging av avtalen (Kundemøte) i henhold til avtalt rapportering og brukerundersøkelse. Deltakere skal være en representant for hver av de fire universitetene og relevante representanter fra Sigma2. Sigma2 er ansvarlig for å arrangere disse møtene. Representant fra hvert universitet listes i eget vedlegg (Vedlegg 2). Status på tjenestene rapporteres til kundemøtet

7 Varighet, endring og tvister relatert til avtalen

Avtalen inngås for en periode på minimum 10 år, fra 1.1.2015 til 31.12.2024. Hvert femte år, første gang innen 1.1.2020, kan avtalen forlenges med ytterligere fem år[7]. Forut for beslutning om forlengning skal det gjennomføres en evaluering som beskrevet i kapittel 3.3.

[7] Arbeidsgruppens underlag til rektormøtet, datert 6/11-2013, side 3

Endring av avtalen kan skje etter enighet mellom partene sine styrende organer, eller den de bemyndiger, når partene finner det nødvendig, innenfor de rammer som er beskrevet i kapittel 3.3. Endringer i tjenestebeskrivelse i Vedlegg 1 gjøres når partene er enige om dette.

Uenigheter eller tvister i forhold til avtalens innhold, skal først forsøkes løst mellom partene i minnelighet, før de behandles av partene sine styrende organer, eller den de bemyndiger.

8 Signaturer

NTNU, organisasjonsnummer:

974 767 880

For NTNU:
(Sted/dato, underskrift, tittel)

…....., den ……..……..

.....

.....

UiB, organisasjonsnummer:

874 789 542

For UiB:
(Sted/dato, underskrift, tittel)

…....., den ……..……..

.....

.....

UiO, organisasjonsnummer:

971 035 854

For UiO:
(Sted/dato, underskrift, tittel)

…....., den ……..……..

.....

.....

UiT, organisasjonsnummer:

970 422 528

For UiT:
(Sted/dato, underskrift, tittel)

…....., den ……..……..

.....

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Sigma2, organisasjonsnummer:

814 864 332

For Sigma2:
(Sted/dato, underskrift, tittel)

…....., den ……..……..

.....

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Kontrakten er undertegnet i 5-fem eksemplarer hvorav hver part beholder 1 eksemplar.

Versjon: 1.0
Dato oppdatert: 18.02.15

Notat

Til:	UNINETT Sigma2 styre AS
Fra:	Gunnar Bøe
Forfatter:	Vigdis Guldseth
Kopi:	Ernst & Young
Dato:	13.04.2018
Gjelder:	Sak 22/18: Aktivitetsrapport

Aktivitetsrapport for perioden 1. februar 2017 – 1. april 2018

Administrasjon og ledelse

Myndighetskontakt:
Det har blitt gjennomført et kontaktmøte mellom Sigma2, Forskningsrådet, Kunnskapsdepartementet, Nærings- og Fiskeridepartementet og Kommunal og Moderniserings-departementet. Møtets tema var fremtidig finansiering av nasjonal e-infrastruktur. På sikt vil investeringene til Sigma2 nærme seg 200 millioner kroner, som er grensen for hva Forskingsrådet kan tildele gjennom sine programmer. I tillegg til interdepartementale møter har Sigma2 også jevnlige kontakt med Forskningsrådet.

Forskningsrådet har påbegynt et større strategiarbeid for å diskutere Strategi for e-infrastruktur i Norge frem mot år 2030. Sigma2 deltar i dette arbeidet (*Mer informasjon i styresak 19/18*).

Veikart for forskningsinfrastruktur:
Sigma2 er særlig framhevet som viktig nasjonal e-infrastruktur i Norsk veikart for forskningsinfrastruktur 2018, som ble nylig oppdatert av Norges Forskningsråd. Veikartet er en oversikt over infrastrukturprosjekter som vurderes av Forskningsrådet til å ha stor strategisk betydning for norsk forskning, og som holder svært høy faglig kvalitet.

INFRASTRUKTUR-program:
Det endelige tildelingsbeløpet for den reviderte søknaden om konkurranseutsatt finansiering i E-INFRA 2016-programmet, er på til sammen 115.1 millioner kroner. I tillegg har Forskningsrådet bevilget 27 millioner kroner til søknaden fra NeIC, som Sigma2 er prosjektleder for. Sammenlignet med Forskningsrådets forrige tildeling på 75 millioner kroner, er dette å anse som en betydelig økning.

Forskningsrådet har også offentliggjort ny utlysning av konkurranseutsatte midler i INFRASTRUKTUR-programmet i 2018. Nytt i denne søknadsrunden er at det stilles krav om innlevering av en skisse av søknaden, med frist innen 15. mai. *(Mer informasjon i styresak 18/18)*

Strategi:
Vi har i perioden arbeidet videre med Sigma2s nye strategi *(Mer informasjon i styresak 21/18).* Sigma2 avgir også time-ressurser til arbeidsgruppen som jobber med ny strategi for UNINETT AS, i tillegg til tema relatert til forskning, i KDTOs strategirelaterte 100-prosjekt. Prosjekt 100 er etablert for å få en rask oppstart av oppgaver knyttet til myndighetsrollen til KDTO, ref. vedtektene til det nye tjenesteorganet.

Bidragsmodellen:
Vi har i perioden ferdigstilt et oppdatert utkast av bidragsmodellen og sendt denne ut på høring til universitetene. Det er også produsert en egen nyhetsartikkel om bidragsmodellen, som er formidlet til alle våre sluttbrukere. Implementering av bidragsmodellen, og responsen fra ovennevnte høringsrunde, vil fremlegges for styret på neste styremøte, den 4. mai.

Evalueringskriterier:
Status for måloppnåelse av KPI-ene, som selskapet skal måles på i evalueringen, har høy oppmerksomhet internt i Sigma2. Frist for å fremskaffe relevant dokumentasjon til bruk i evalueringen er 1. september.

Personal:
Vi har gjennomført en 2-dagers selskapssamling den 4. og 5. april. Dagene ble benyttet til teamutvikling og strategiarbeid. Nytilsatt prosjekt-controller Carl Thomas Stene begynner i selskapet 1. mai.

Møtevirksomhet:
I siste rapporteringsperiode har Sigma2-ansatte gjennomført eksterne møter med følgende eksterne aktører og interessenter:

Dato	Interessenter	Tema
14.02	e-IRG	Kontaktmøte
16.02	RFK arbeidsgruppe	Arbeidsgruppemøte
27.02	NDN2018	Programkomite
28.02	NTNU HPC Seminar	30 år med Tungregning
01.03	Lenovo	Kontaktmøte
01.03	PRACE Council	Council-møte
02.03	RFK	Tildelingsmøte 2018.1
05.03	ANS 2018	Referansgruppe-møte
05.03	SFF Hylleraas	Kundemøte (Benchmarking)
05.03	IMB	Kundemøte (Benchmarking)
06.03	NordForsk	Nordic Cloud Computing
06.03	NARMA	NARMA-konferansen
08.03	NVIDIA	Software-meeting
12.03	Referansegruppe for e-helse	Referansegruppe-møte
12.03	CSC	Erfaringsutveksling anskaffelser
12.03	KDTO	Bibsys' BIRD-løsning
13.03	Nordisk møte i regi av NeIC	EuroHPC
13.03	NDN2018	Programkomite
14.03	NTNU	Kjøp av CPU-tid på Vilje
15.03	Metasenteret	Ledermøte
16.03	Nasjonal training gruppe	Kick-Off
20.03	EuroHPC	Sherpa meeting
21-23.03	Research Data Alliance	Konferanse
09-10.04	Metasenteret	Metasenter-samling
10-11.04	UNINETT Fagdager	Lagring og Skyteknologi

Anskaffelser

Anskaffelser 2016:
Som en del av evalueringen av ANS-2016 er det planlagt en «Lessons Learnt» sesjon for delprosjekt Housing 18. April i Trondheim. IT-direktørene ved UiB og UiT har bekreftet sin deltakelse. Tore Aalberg er engasjert som tredjeparts fasilitator for prosessen.

Avsluttende kontraktsarbeid med leverandøren for Fram pågår fremdeles. KPMG bistår selskapet i dialogen om evt. erstatning for forsinkelsene på Fram. Det har også vært gjennomført møte med Bygg og Eiendom og IT-avdelingen ved UiT om status for varmegjenvinning av Fram.

Anskaffelser 2018:
Det har i perioden vært flere møter i den tekniske arbeidsgruppen, samt prosjektets Referansegruppe, for å oppnå konsensus om Technical Solution Strategy. Arbeidet ble noe forsinket etter at referansegruppen ikke godkjente første utkastet fra arbeidsgruppen. Anskaffelsesstrategien fremlegges for styret den 4. mai. Planen er å åpne anbudskonkurransen i starten av juni.

NIRD-oppgradering:
Bruken av NIRD har økt mer enn planlagt og ressursen er overbooket med 14%. Mer disk er bestilt og oppgradering av NIRD med 1.1 PB ekstra (ca 20%) blir gjennomført i løpet av april.

Tjenestekoordinering

Data Management Tool:
Tjenesten er ferdigstilt og en større lanseringskampanje av merkenavnet *easyDMP* er planlagt gjennomført i uke 17, sammen med EUDAT. DMP-verktøyet er tilpasset FAIR-prinsippene, som er en del av retningslinjene i Horizon 2020. Vi har også gjennomført møter med KDTO ang. integrasjon av easyDMP mot Bibsys' BIRD-satsning.

Research Data-web:
Domenet for NSDs og Sigma2s webportal for Research Data er reservert og websiden blir snart tilgjengelig. Sigma2 er i dialog med KDTO for å få de til å ta en koordinerende rolle og eierskap til portalen, og følgelig inkludere andre leverandører også.

NIRD Operations: Arbeidet med å flytte prosjektsspesifikke tjenester og arkiv-tjenesten fra NORSTORE til NIRD er nå fullført, men lanseringen av nye tjenester er forsinket. Den gamle NORSTORE infrastrukturen blir faset ut.

Beregningstjenester:
Det er høy last på våre anlegg. Re-bygging med Intel 2018-kompilatorene løste Bergen-kjemikernes problemer. Noen prosjekt har også vært rammet av et I/O problem som det er gjort en korrigering for, men ikke alle har fått testet dette. Enkelte prosjekt har fått ekstra tid på Vilje for å avhjelpe dette.

Ressursallokering

Periode 2018.1:
Til sammen 250 ulike forskningsprosjekter har fått tildelt i overkant av 290 millioner CPU-timer på HPC-anleggene på RFKs tildelingsmøte den 2. mars. Antallet tildelte CPU-timer vil øke når vi ser det endelige resultatet av behandlingen av for sent innsendte søknader. Omsøkt kvote på disse søknadene er i underkant av 8 millioner CPU-timer.

Alle Sigma2s HPC-maskiner er dermed fullt allokert. RFK valgte derfor å tildele til sammen 14.7 mill. CPU-timer på NTNU-maskinen Vilje. Dette vil avhjelpe kapasitetsmangelen innenfor det ordinære HPC-tilbudet, men innebærer en viss risiko på grunn maskinens levealder og faren for tekniske problemer.

På lagringsmaskinen NIRD har mer enn 100 prosjekter fått tildelt 6.7 PB. Dermed er også NIRD helt fullbooket ved periodestart. Kapasiteten utvides når oppgraderingen av NIRD er ferdigstilt.

Vi mottok til sammen 20 nye søknader denne perioden. Dette betyr at brukermassen og prosjektporteføljen fortsetter å øke jevnt og trutt. Alle HPC og lagringskvoter ble effektuert innen fristen 1. april.

Ny RFK-komite:
Mandatet til nåværende RFK-komite går ut på dato ved årsslutt, og vi har startet prosessen med å etablere ny komite. Alle nåværende medlemmer er forespurt om de ønsker å delta i en ny periode. Det planlegges en to-dagers samling for RFK til høsten hvor komiteen vil diskutere spørsmål av mer prinsipiell karakter som de ønsker å videreformidle til den nye komiteen.

Avansert brukerstøtte:
Vi har i perioden mottatt to nye søknader om avansert brukerstøtte, fra henholdsvis Uni Climate og SINTEF Trondheim. Det arbeides med en ny strategi for AUS-tjenesten til Sigma2 som tar sikte på redusere nåværende AUS-kategorier. Forslaget til policy fremlegges for RFK og styret i september.

Sigma2 brukerstøtte:
Antallet brukerstøtte-saker i RT i siste rapporteringsperiode er 575. Totalt antall saker i 2018 er 864. Tilsvarende tall for 2017 er henholdsvis 385 og 854.

Formidling og opplæring.

Opplæring:
Det er flere aktører som er involverte i arbeidet med å tilby HPC-kurs i Norge. Det eksisterende tilbudet er bra, men til dels fragmentert. Vi har et ønske om å etablere et tettere samarbeid mellom disse aktørene. Målet er å etablere en helhetlig nasjonal opplæringstjeneste, og utvikle en portefølje av kurs som dekker et variert spekter av våre brukeres behov. En idemyldring for ny nasjonal satsning på training, med universitetenes training-ansvarlige, Software Carpentry og NeICs Code Refinery-prosjekt, gjennomført 16. mars. Strategiarbeidet for opplæring har også blitt presentert på Metasenter-samlingen.

Kurs:
UiO gjennomførte semesterets HPC-kurs for e-infrastrukturbrukere i uke 12. UiO har også tatt initiativ til arbeid for å utvikle et generisk training-materiale for våre HPC-brukere, basert på Software Carpentry-pedagogikk.

UNINETT Fagdager:
Sigma2 har avgitt ressurser til programutformingen for UNINETT Fagdager, herunder sporene for lagring og for skyteknologi. Vår egen Metasenter-samling ble arrangert back to back med Fagdagene. 45 personer fra universitetene, som er involverte i arbeidet med nasjonal e-infrastruktur, deltok på Metasenter-samlingen.

Utadrettet virksomhet:
Sigma2 deltok med flere presentasjoner på NTNUs seminar *30 år med tungregning*, den 28. april. Programmet er tilgjengelig på NTNUs websider

Nyhetsbrev:
Årets andre nyhetsbrev ble ferdigstilt og sendt ut før påske.

Web:
Innholdet på de generelle informasjonssidene for lagringstjenesten er revidert. Utarbeidelse av tjenestebeskrivelser for to nye tjenester, DMP-tool og AUS Lisasons pågår.

Støttetjenester utvikling

Metacenter Administrative System var gjenstand for en større oppgradering 9. februar, inkludert en tredobbel oppgradering av Django-versjonen og endring av datamodellen som hovedelementer. Django-oppgraderingen ble fremtvunget av at nåværende versjon som vi kjører på, slutter å få sikkerhets-oppdateringer i april i år. Endringene i datamodellen kommer for å støtte at personer kan ha flere tilhørigheter (og feide-brukere), samt at flere prosjektledere har etterspurt muligheten for å ha flere assistent-roller på sine respektive prosjekter.

Driftsorganisasjonen i Metasenteret begynner å finne sin form, men det er fremdeles noe bevegelse av personer inn og ut av de ulike teamene. I den sammenheng foretar vi registrering av personer i de systemene UNINETT leverer, som SCM, RT og Zabbix.

Det har også blitt jobbet på integrasjonen mellom MAS og objekt-lagringen på NIRD, som har kommet et godt skritt videre mot ferdigstilling.

Internasjonale prosjekter

PRACE:
PRACE 6 IP er i støpeskjeen og Sigma2 har muligheten til å påvirke innholdet slik at vi kan matche 6IP aktivitetene med egne interesser. I den forbindelse har vi utarbeidet og sendt inn forslag til en ny arbeidspakke: "Forward looking softwares" i samarbeid med Metasenter-ansatte ved UiO. Hensikten er å utvikle en case rundt BiFrost. Vi har også deltatt på det det første Management Board-møtet i regi av 6IP.

EUDAT:
EUDAT2020 ble avsluttet i Februar 2018 og avsluttende rapportering er under arbeid. Vi har også arbeidet videre med integrasjon easyDMP til EUDAT's tjenesteportefølje.

NEIC:
Vi deltok på NeIC styremøte. Estland kan bli ny deltaker i NeIC-samarbeidet. Detaljert info om prosjektene som Sigma2 og Metasenter-ansatte deltar i, i regi av NeIC, er tilgjengelig på NeICs websider.

Nordic Health Registry working group:
Sigma2 avgir ressurser til en ny arbeidsgruppe i regi av NordForsk. Arbeidsgruppen skal diskutere sky-baserte løsninger for å kunne håndtere og dele registerdata i de nordiske landene. Sigma2 har bidratt til et dokument som beskriver relevante løsninger i de forskjellige landene. TSD er vårt forslag til mulig løsning.

Research Data Alliance (RDA):
TSD-arbeidet i EUDAT avsluttes samtidig med EUDAT2020 prosjektet. Det har vært et mål å kunne finne en ny diskusjonsarena for denne tematikken. Sigma2 har bidratt med en søknad om en dedikert BoF (Birth of Feather)-seksjon i det neste RDA-møte i Berlin i mars 2018 og den ble godtatt.

EuroHPC:
Vi har deltatt på et felles nordisk møte i Helsinki ang. Nordens posisjonering mot EuroHPC. Det har vært en rekke uavklarte spørsmål knyttet til EURO-HPC-prosjektets innhold og forventet finansieringsbidrag. Det ble oppnådd enighet på møtet og et felles brev er sendt til EU-kommisjonen. I tillegg deltok Sigma2 EuroHPC Sherpa møte i Brussel arrangert av EU-kommisjonen, der ytterligere planer for EuroHPC ble gjennomgått. *(EuroHPC er egen styresak 17/18)*

Forslag til vedtak:
Styret tar informasjonen til orientering.