



UiO : **University of Oslo**

dScience

Digital Resources for dScience Centre - @UiO

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Local (UiO) data science resources

- Requirements
- Local cloud
- Local HPC
- Local appnodes
- Educloud
- FAIR and Data Factory
- Some examples
- Questions / discussion

Data Science requires high quality data

To enable high quality data usage the IT department must deliver tools to enable

- Data curation
- Data quality information
- Data management
- Data exploration
- Databases
- Data transport
- Data sharing
- Data collection
- Flexibility
- Unlimited storage capacity
- Affordable price

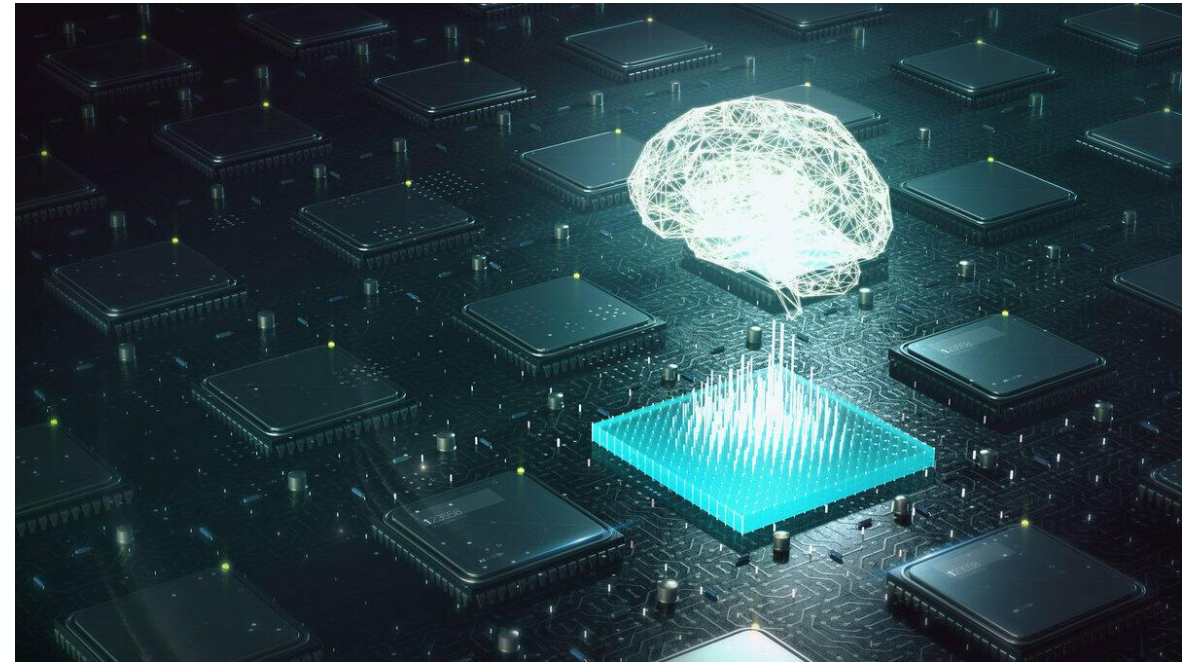


Data Science requires data analysis tools



To provide data analysis tools and hardware are needed

- Access to sufficient compute power as close to data as possible
 - Local, national or international
 - CPU
 - GPU
 - Other relevant accelerators
- An environment allowing collaboration
 - With any person
 - From anywhere
 - From any device
- Version control systems
- Required software and databases
- Required level of security
- Flexibility
- All the above at an affordable price



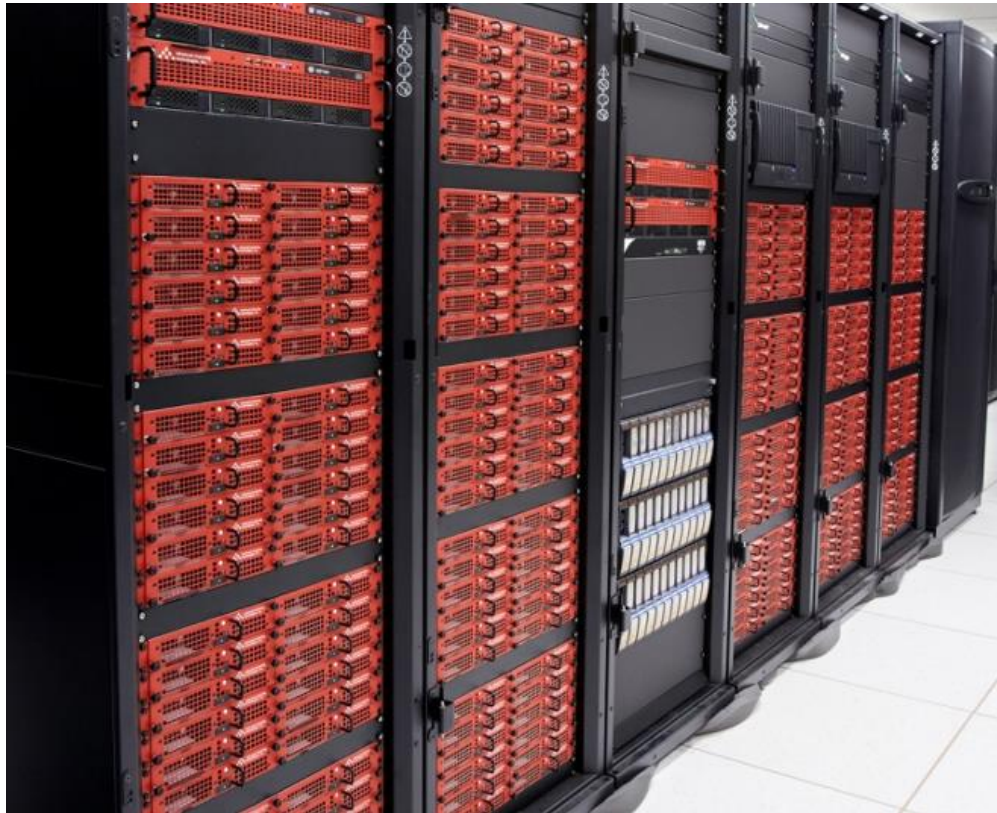


NREC

UiO : Universitetets senter for informasjonsteknologi

General infrastructure

- Physical servers - any type («appnodes»)
- Unlimited storage (object / file)
- Software
- Virtual servers (Vmware / OpenStack)
- GPU servers
- High capacity network
- Competence
- Norwegian Research and Education Cloud (OpenStack)
- <https://www.uio.no/english/services/it/hosting/iaas/index.html>



Local compute cluster (Supercomputer / HPC)

- 3500+ cores (AMD)
- 8 nVidia A100 cards
- Infiniband
- NVMe scratch disk
- GPFS storage system
- Easily expandable
- Interactive and batch processing
- Designed for cross institution collaboration in Educloud
- Production from 10th June, 2020





Educloud / Forskerplattformen (funded)

- Multi tenant → BYOD and open for any user
- Unlimited storage
- Computational power
- Analysis tools
- Databases (later)
- Data sharing
- Data collection
- Rapid development
- High security
- Self service
- Operational from 10 June 2021



Why Educloud

- Collaboration
- "Decoupled from UiO" – licenses
- Utilize UiO installed base
- No legacy
- Infrastructure as code
- <https://research.educloud.no>
(wait until 10th June to hit submit)



Educloud research

Collaborate with researchers on one single platform across borders. Experience true freedom on your research project

Get started with Educloud

Sign in



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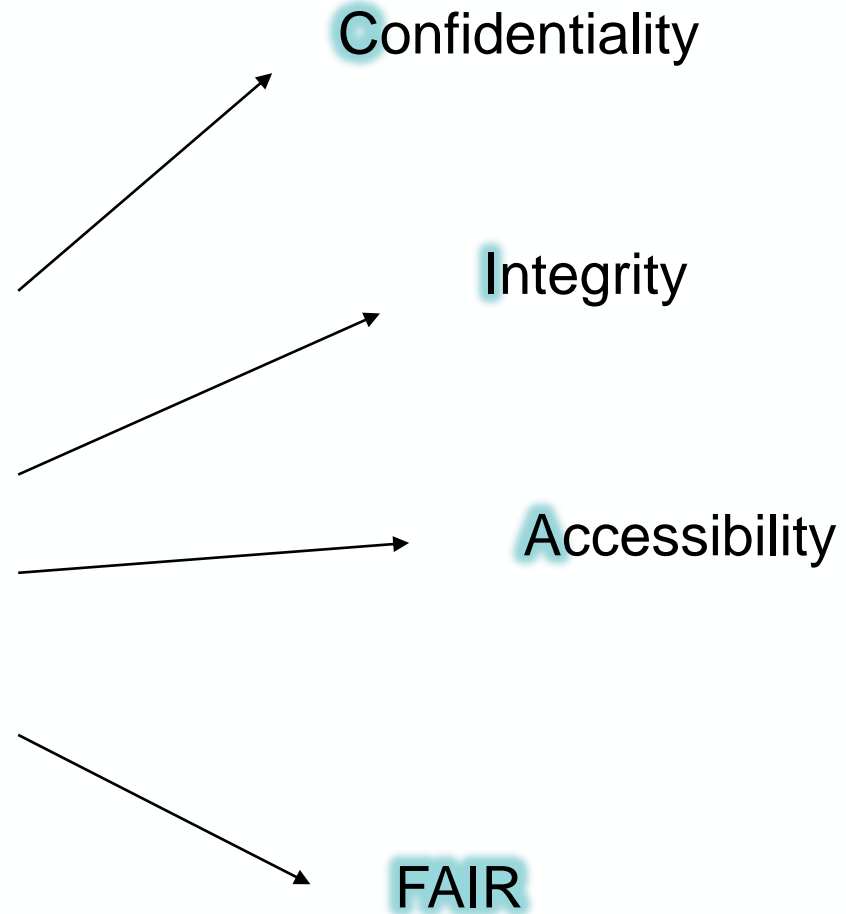


Challenges at UiO regarding storage

- UiOs central storage
- TSDs storage
- Educloud Storage
- OneDrive
- Google Drive
- Dropbox
- UiOs object storage
- Uninett Sigma2 storage
- Unknown and various local solutions
(Astro, USB, portable drives, cloudservices, private storage, etc)
- Various smaller solutions for data-collections

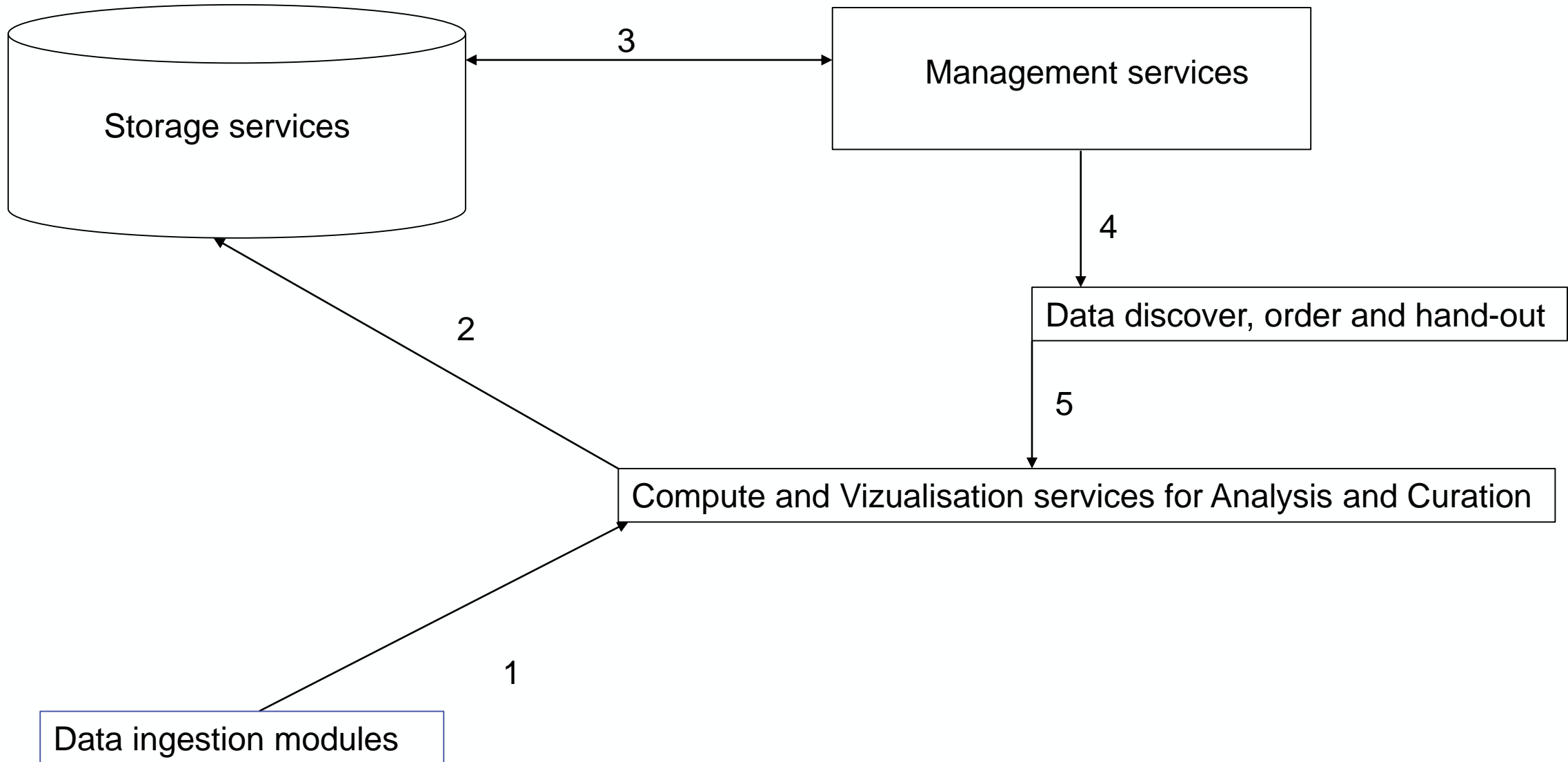
- ... and there are many people with meanings and large interest in this



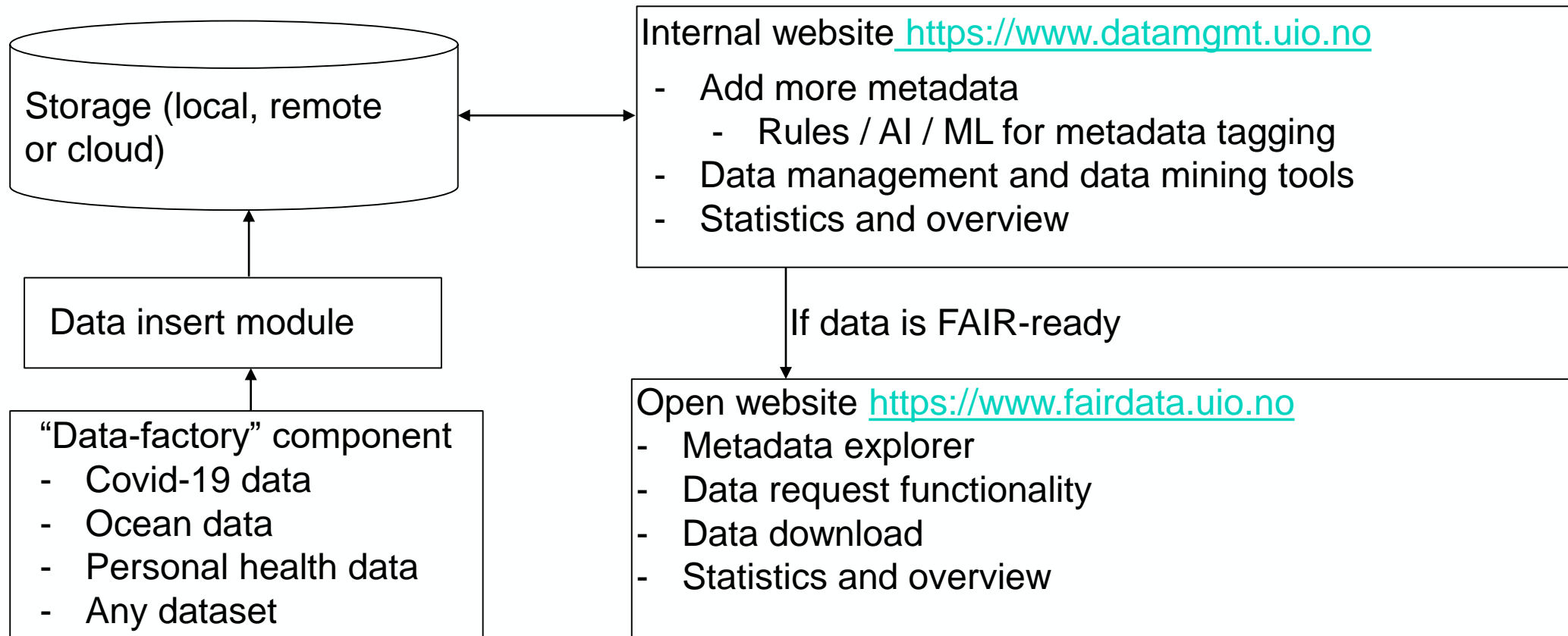


..and of course; low cost, large volume & high performance

Data Factory & FAIR platform



Data factory and FAIR platform – planning phase





Picture courtesy University of Stavanger

- UiO hub for competence and end-user services on
 - large scale data mgmt
 - high performance computing
 - synthetic data



Services for Sensitive Data (TSD) – an IT Platform

- Multi tenant
- Unlimited storage
- Computational power (HPC)
- Analysis tools
- Databases
- Data sharing
- Data collection
- Data publication
- Digital Dynamic Consent Service
- Rapid development
- High security
- Self service

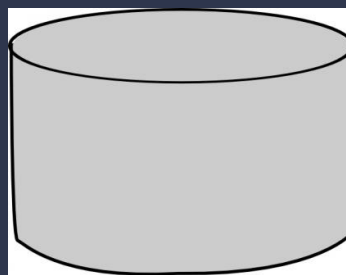
IT-platform architecture



Fast dev. } «Lightweight IT»

Routing, firewall, integration architecture, API and authorization

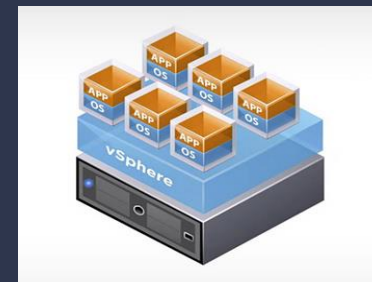
Slow development } «Heavyweight IT»



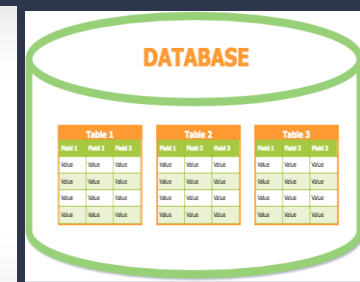
Storage



HPC



VMware



Databases

TSD research example



SØK 🔍

MENY ☰

te ut tran

Forside > Kliniske studier > Risiko for å bli smittet av koronavirus i Norge

Koronastudien

Risiko for å bli smittet av koronavirus i Norge

Oslo universitetssykehus undersøker hvordan koronaviruset sprer seg i Norge og inviterer alle til å delta.

Informasjon om deltakelse

Studien er åpen for inkludering fra 27.03.2020

[Kontaktinformasjon](#)



spesielt med dem
idie.



Nors
smit

Risiko for å bli smittet av koronavirus i Norge – på arbeidsplassen og i samfunnet



Tiden du er
Søraas bak

Relevante behandlinger

→ [Covid-19](#)

virussykdommer som sesonginfluensa og

TSD research example

Østlandssendingen TV Radio Tips oss Sosiale medier

Babyer skal hjelpe til med å forebygge allergi

Allergi er blitt den nye folkesykdommen i Norge. Nå skal Oslo universitetssykehus forebygge allergier gjennom et forskningsprosjekt med spedbarn.



OLJEVANN: Iben Lerflaten på tre måneder er en av babyene som bader i vann dryppet med olje som en del av forskningen.
FOTO: LISE MERETE OLAUSSEN / NRK



Lise Merete Olaussen
Journalist



Lotten Christiansen
Journalist

Oppdatert 18.04.2016, kl. 09:50



Artikkelen er mer enn ett år gammel.

<https://oslo-universitetssykehus.no/avdelinger/barne-og-ungdomsklinikken/preventadall>

Distrikt Mer ▾

Sørlandet TV Radio Feature Tips

App skal hjelpe mot morgenkvalme

Gravide som sliter med kvalme kan snart få hjelp av en app. Den skulle gjerne de nybakte mødrene Charlotte og Marthe Moland Rui hatt tilgang på i sine svangerskap.



Søstrene Charlotte (t.v.) og Marthe Moland Rui med yngstebarna Lotta (4 md.) og Elian (to uker) på fanget. Begge har slitt med mye kvalme i svangerskapene sine.

FOTO: HEIDI DITLEFSEN / NRK



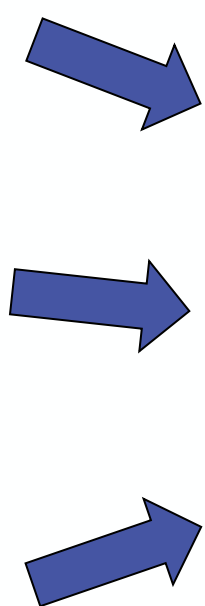
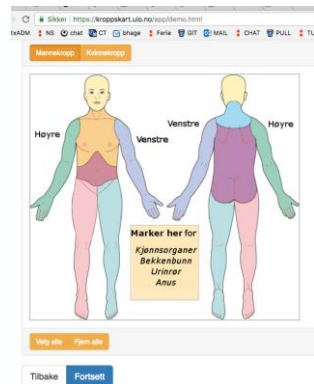
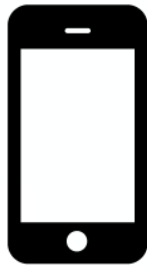
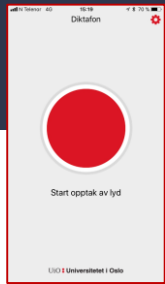
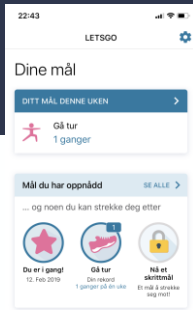
Heidi Ditlefsen

Journalist

Publisert 19. aug. 2018 kl. 09:13



Artikkelen er mer enn to år gammel.



UiO : Universitetet i Oslo Meny ☰

📄 Skjemaet lagrer personinformasjon. Les mer ⌵

Diktafon test ID daffi

Skjema for mottak av filer fra diktafon-appen

lydfil

Velg fil

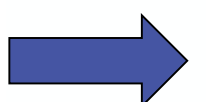
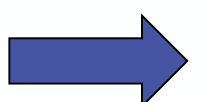
Maks 30 MB

kommentar

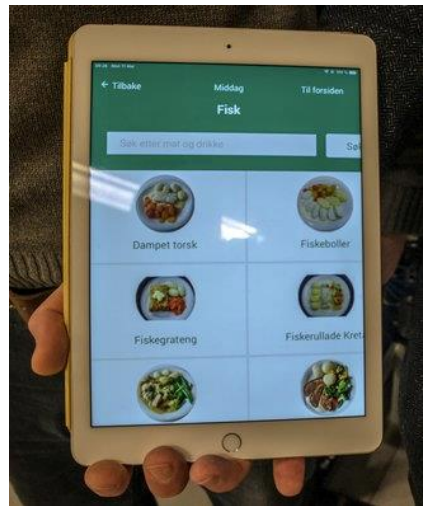
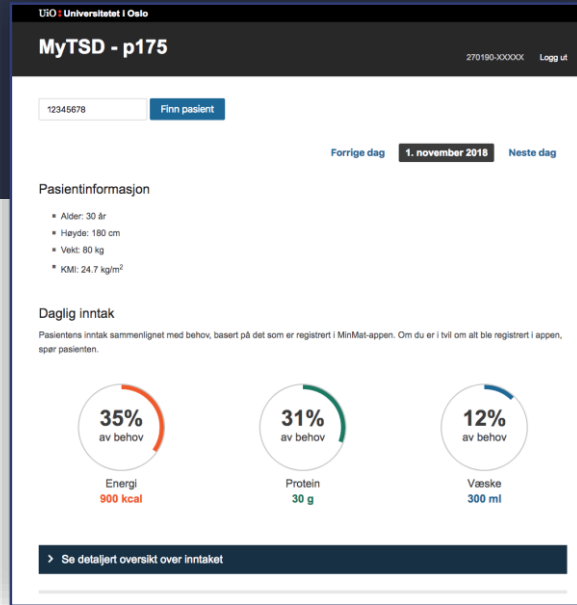
app-id

Send

TSD research example



«MinMat» project at Oslo Univ. Hospital



Some “appnode” examples



Appnode : a “special server for research”

- CanCell SFI
- High energy physics (3 servers)
- Small special cluster for CEES sequencer
- NMR data cruncher for T. Nyman
- Cryo-EM data crunched for NCMM (Fox integrated)
- NIPH / Biostatistics for computing the “R” number
- Vaccibody, Benchmark, Nofima, Cicero



More cross institution/border collaboration

More cloud usage

More people have more data

More sensors produce data

Instruments produce more data

Algorithms scale to accelerators

Focus on FAIR

More computing needed anyway, and the Life Science building will make it even more so.

Questions in Q&A and direct – raise hand



Contact: itf-sjefer@usit.uio.no