Examples of benefits from investing in data infrastructures

EOSC Symposium, Nov 16, 2022

Forskningsrådet

Task group appointed by the Norwegian government

Investing in infrastructures for FAIR research data and public data particularly relevant for research

Leader: Professor Kenneth Ruud, Vice rector UiT/Director of Norwegian Defence Research Establishment (FFI)

«Show benefits that a comprehensive infrastructure could give to producers and users of data»

Research

Private sector

Society at large and citizens

International cooperation

Rapid information during crises

40 years of data =

- *Identification of corona virus*
- *Development of vaccine*

Also awareness of what more is needed!

Two expert groups have now delivered their recommendations to the Government

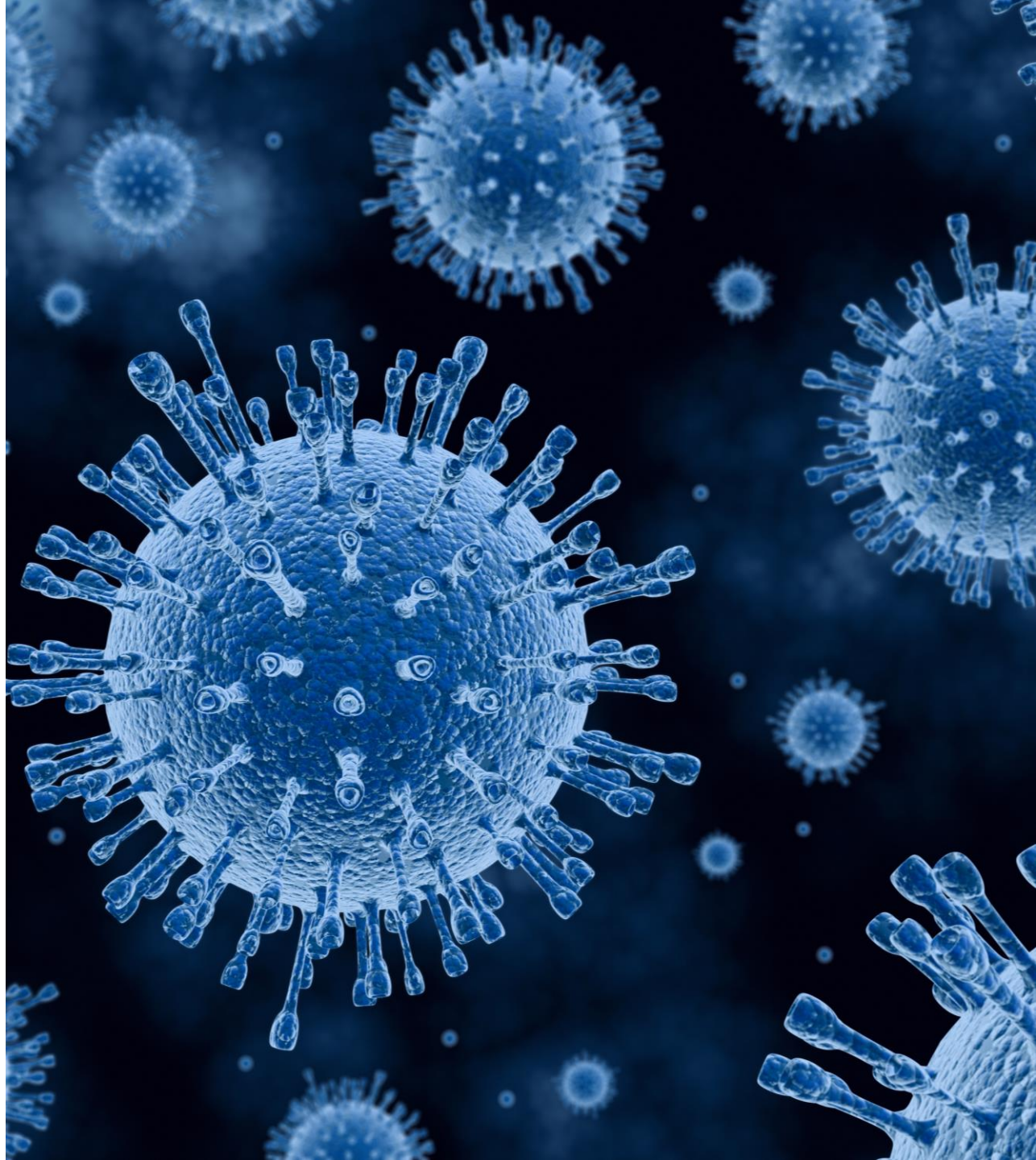
Artificial intelligence aids in world leading medical research

Understanding protein function is crucial in medical research for development of e.g. drugs

Manual investigation expensive and time consuming: Up to one year and 100.000 Euro for a single protein

2020: AI algorithm developed to predict the shape and function of new proteins. All human proteins mapped.

2021: The owner, DeepMind, decided to release the algorithm. Installed by Norwegian research groups and now available for mapping other species.



Great values lost by not sharing data

Lack of reproducibility well known problem in medical research.

Investigations in the US: Up to 50% of studies not reproducible. 25% of this caused by unavailability of data.

At best: Expensive research is of little or no value.

At worst: Results of invalid research are put into clinical use.

microdata.no

- *Data behing official statistics immediately available to researchers and government agencies at a very low cost.*
- *Built-in security = Working on sensitive data without access on individual level*

1. *Many find what they are looking for*
2. *If you need the actual data, use microdata.no to identify what you need = more precice orders and quicker delivery*

Study from 2022 on teachers:

- Data only from microdata.no

- Alternative: 3-4000 Euro and 2-4 months delivery time

Satellittdata.no

- *National data hub (part of European network) giving users access to satellite imagery from the Copernicus Sentinel satellites*
- *Applications: Surveillance of marine traffic, oil spill, snow coverage, weather forecast, flood warning, avalanche warning, detection of bug infestations in forests, …*
- *Data available a few tens of minutes after satellite passing*
  => possible to take action to avoid catastophies
- *Funded by the Norwegian Space Centre, developed and operated by Meteorologisk institutt.*

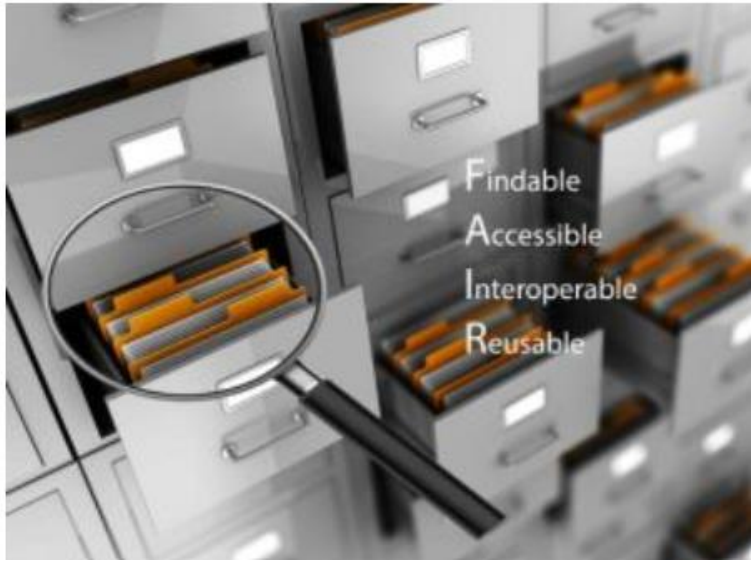
DigiFarm

From Earth to the Clouds

- Start-up helping farmers and agricultural companies increase yield and reduce cost
- Deep neural network models
- Discovering field limits, avoiding manual work
- Planning fertilization
- Automated reporting to authorities

FAIR qualitative data

Institute for Teacher Education, University of Oslo
Professor Kirsti Klette



- Video material from classrooms
- Time consuming work to create metadata
- The videos cannot be shared openly, but the metadata can!
  Result: 57 master these, 22 PhDs, demo material for the teacher education

QUALI-FAIR

New project raising awareness on benefits of FAIR data in disciplines working with qualitative data