



UNIVERSITETET
I OSLO

dScience

Artificial Intelligence in Twin Transition

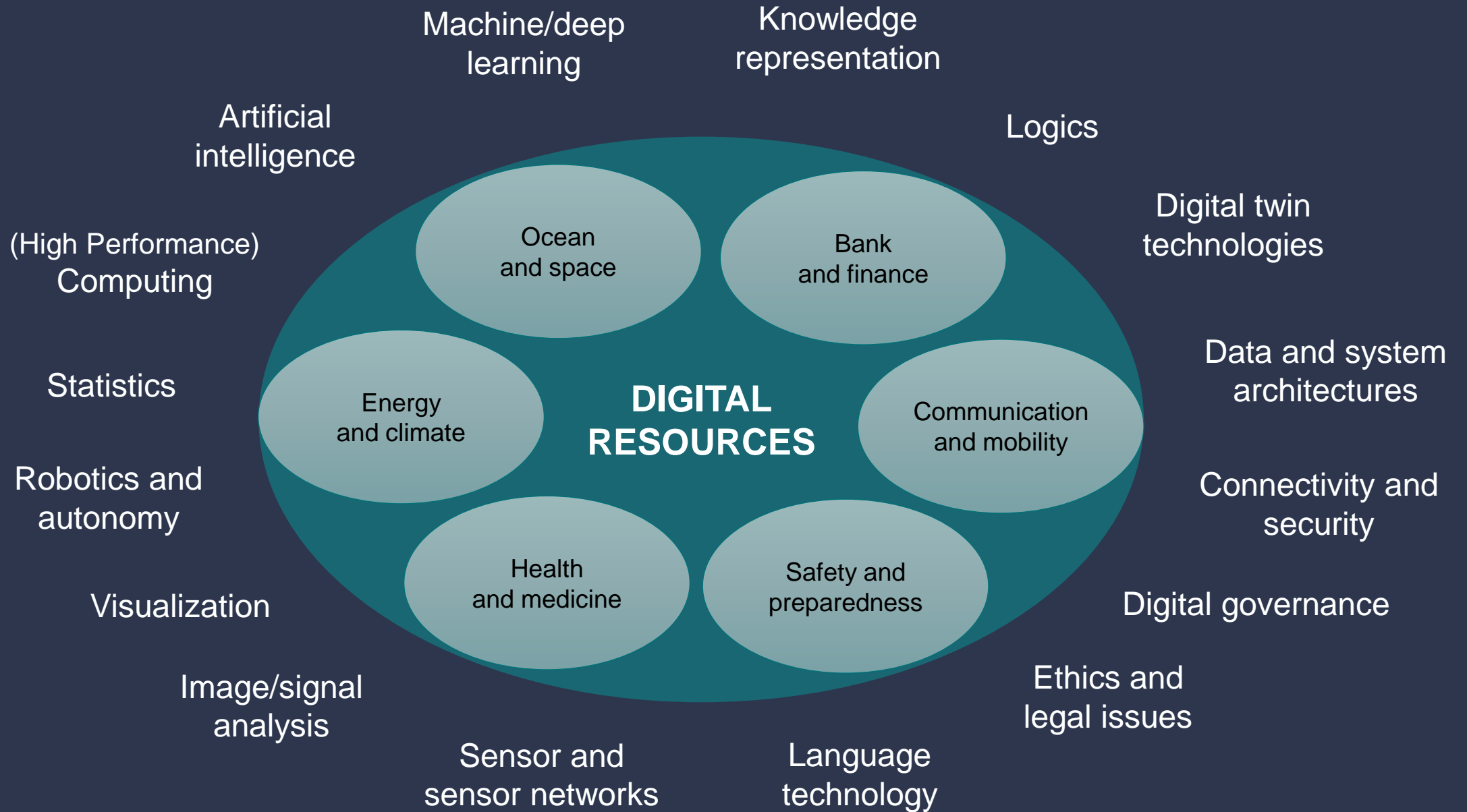
Morten Dæhlen
dScience, University of Oslo

Nordic Perspectives 2023
12 October 2023

The role of dScience - Centre for Computational and Data Science is to.....

- ❖ build an **internationally leading research community** in **computational and data science** at the University of Oslo
- ❖ deliver important digital contributions to the **green transition** of society and a sustainable future for all
- ❖ be a frontrunner in developing and maintaining **collaboration** between academia, industry and the public sector, including being a key player in the development of **Oslo Science City**

The landscape of dScience!



Research strength

100+ existing research projects

40+ research groups

320 (80) project-affiliated PhD students

36 network events in 2022 (1600 participants)

Access to infrastructure

TSD (sensitive data)

EduCloud (collaboration framework)

HPC clusters (Fox, Sigma2, LUMI)

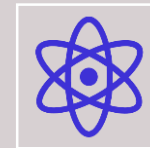
NRIS (national data storage)

EOSC (European Open Science Cloud)

Enablement of large-scale Initiatives



Integreat – Norwegian Centre for Knowledge-driven Machine Learning (Centre of Research Excellence funded 2023-2033)



DSTrain - Data Science Training (Marie Curie COFUND (EU) project 2024-2028. 36 Postdoctoral fellows)



Norwegian AI Cloud (National infrastructure funded 2023-2027)

Disruptions and disruptive technologies

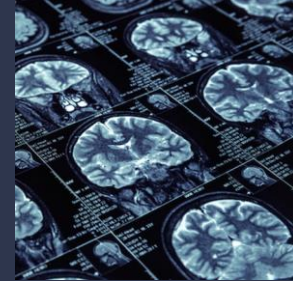
A disruption is a sudden and significant, often technology-driven, change in society or markets.

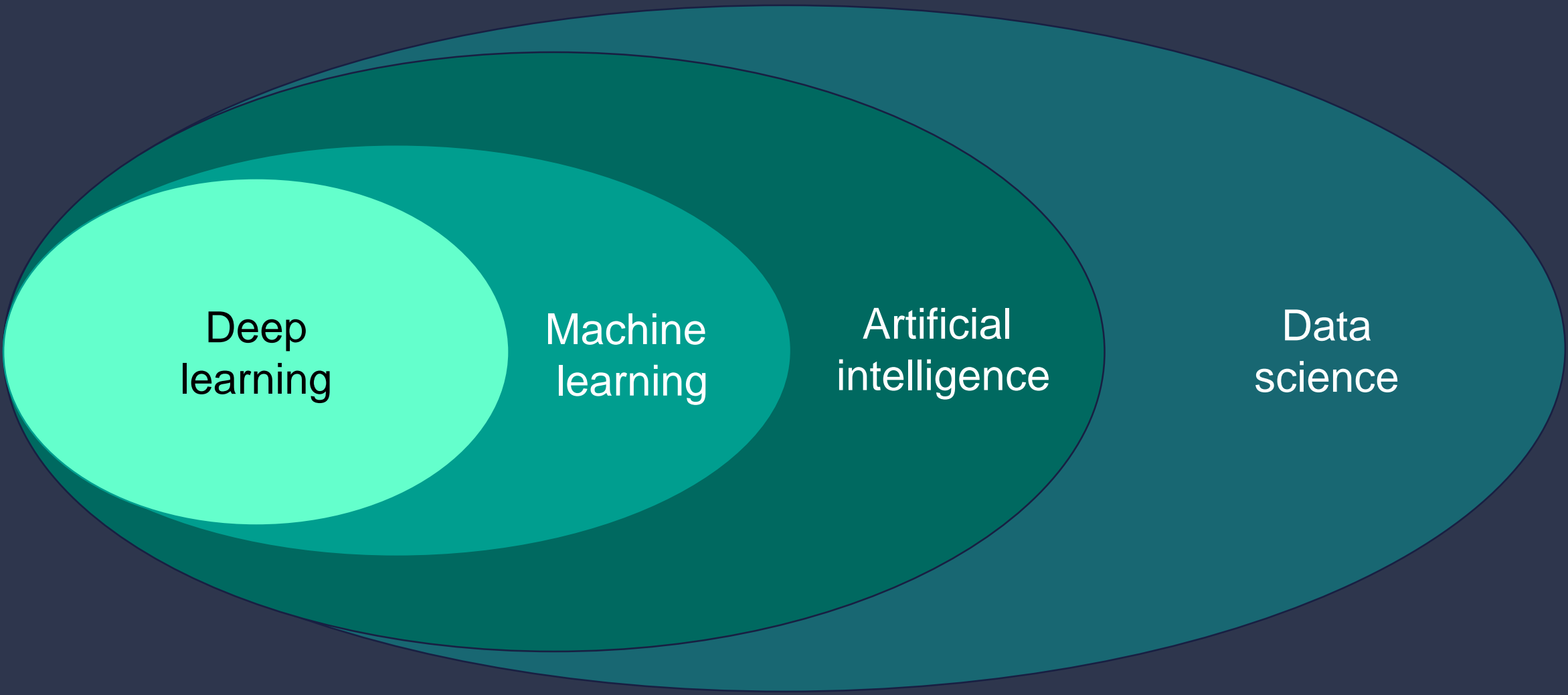
Disruptions are difficult to predict and often discovered long after they have occurred.

Will the new AI-solutions (generative methods) create disruptions?

Constantly
thinking about it!

Artificial intelligence is the collection of methods, algorithms, and technologies that learn from data and experiences and have the ability to perform physical and cognitive actions perceived as intelligent.





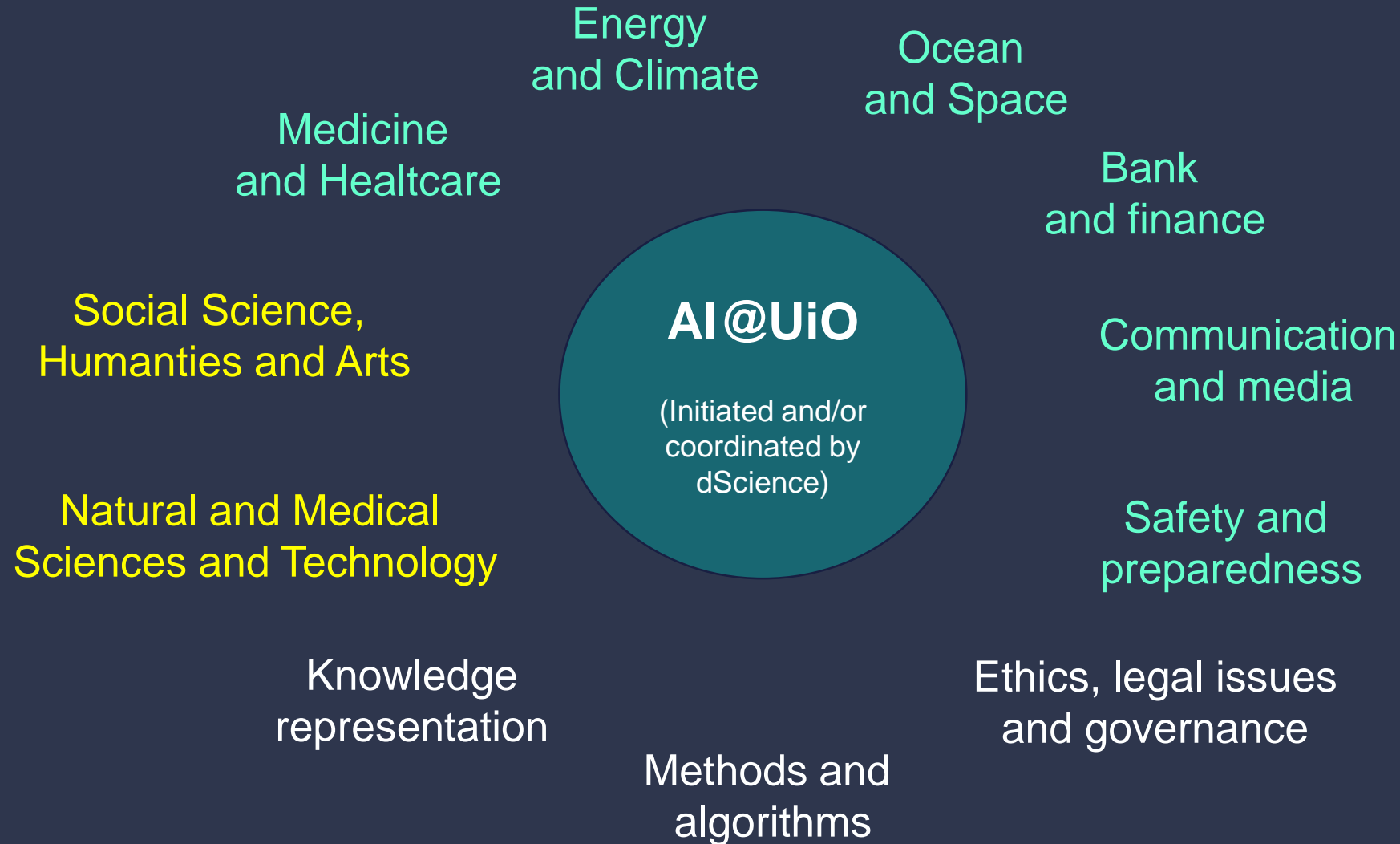
Deep
learning

Machine
learning

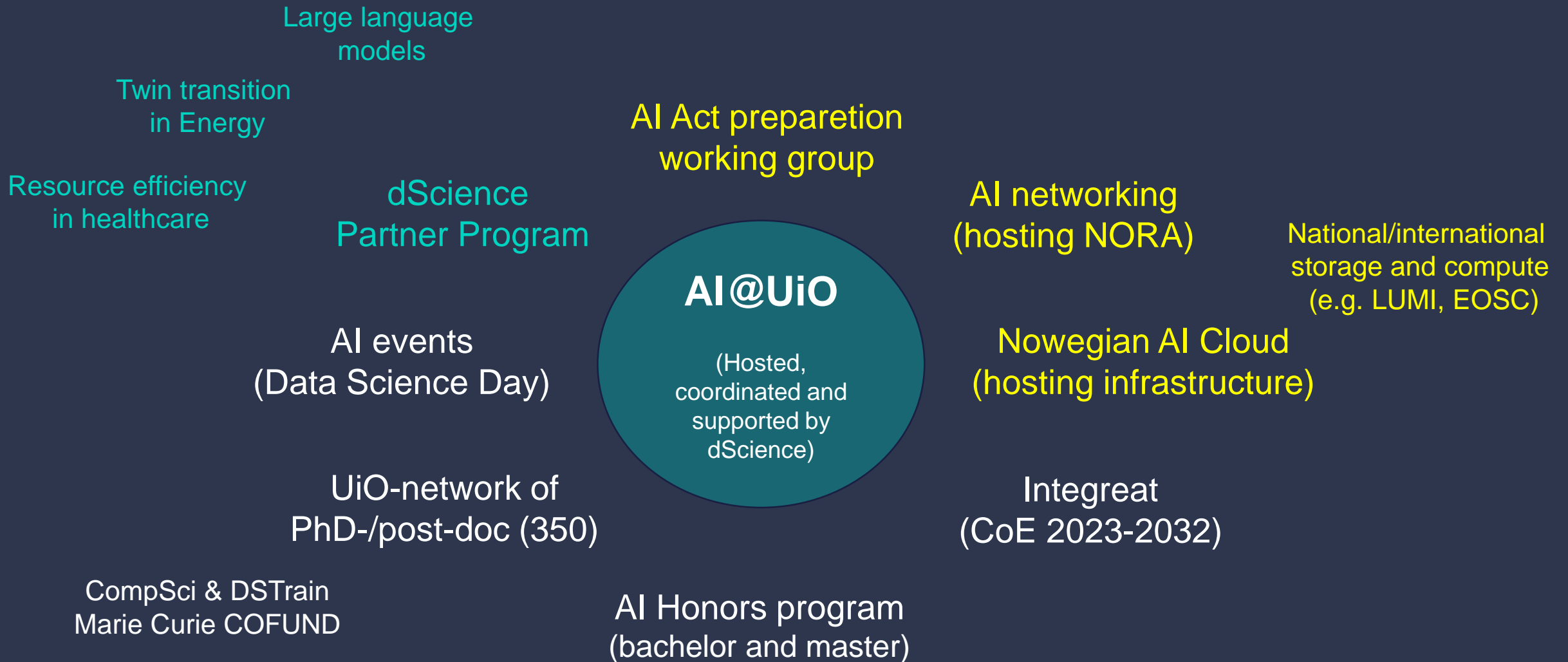
Artificial
intelligence

Data
science

AI@UiO – at a glance (Science and Applications)



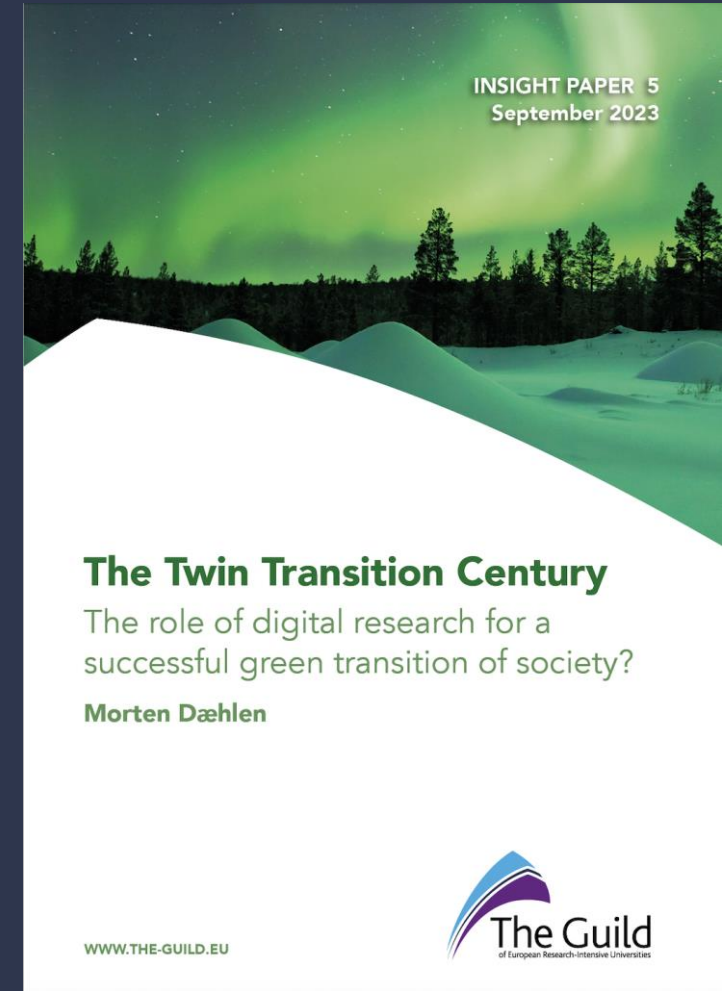
AI@UiO – at a glance (selected actions and projects)

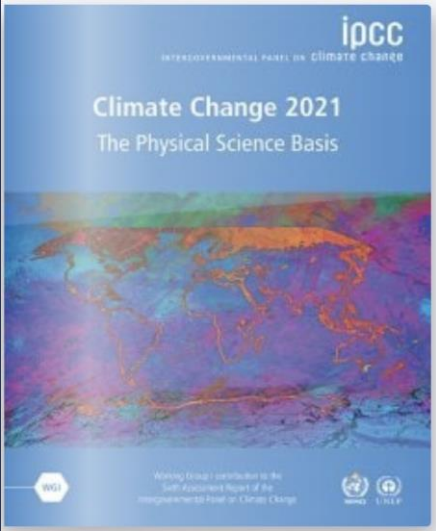
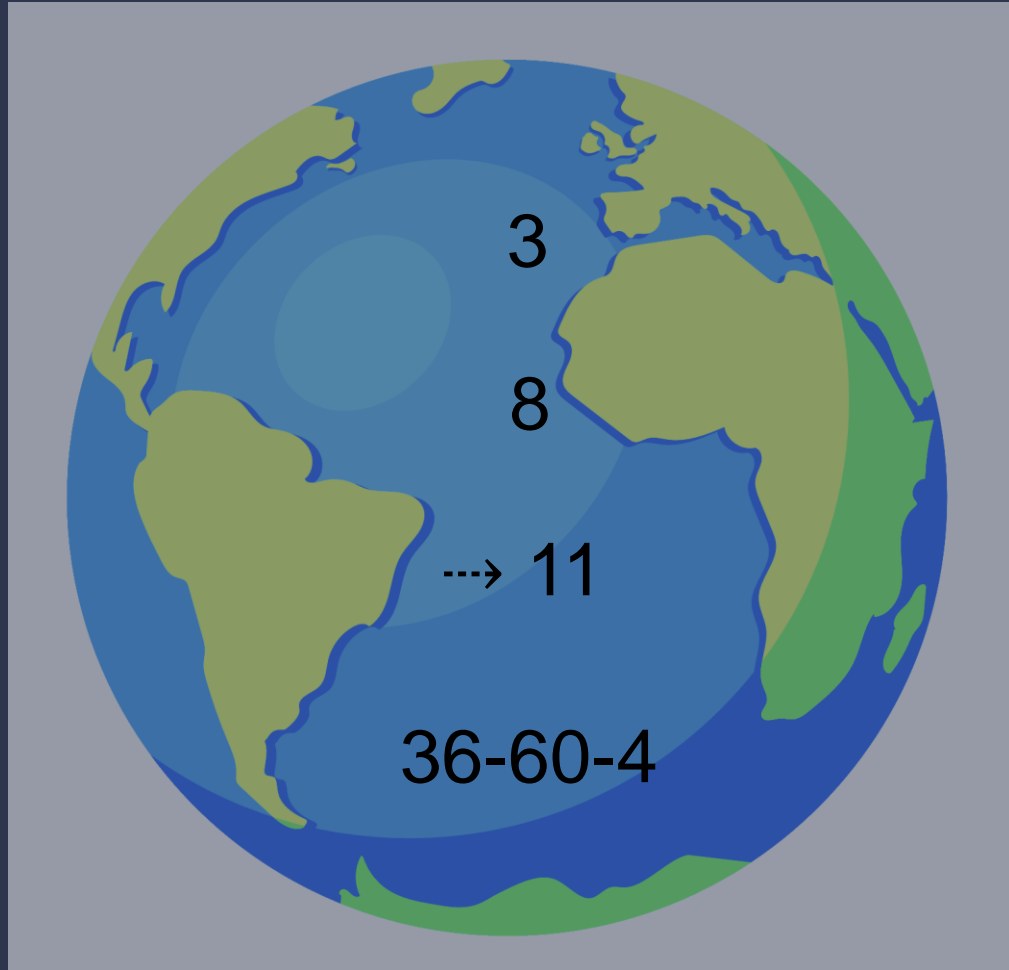


Artificial Intelligence in Twin Transition?

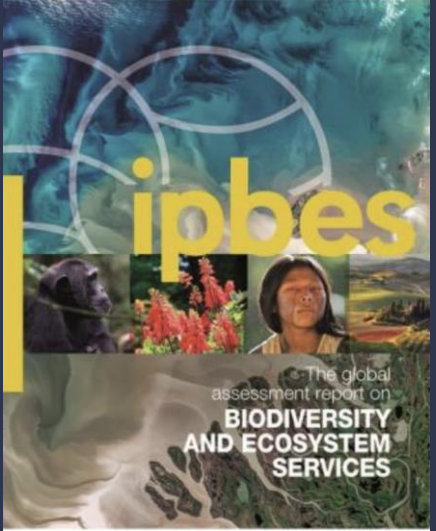
What should be Europe's digital research and innovation agenda to achieve a successful green transition of society?

How can we ensure that the «digital part of the world» becomes greener?



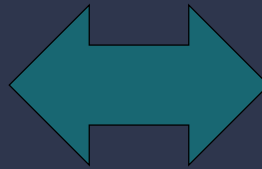


IPCC
The Intergovernmental
Panel on Climate Change



IPBES
The Intergovernmental
Science-Policy Platform
on Biodiversity and
Ecosystem Services

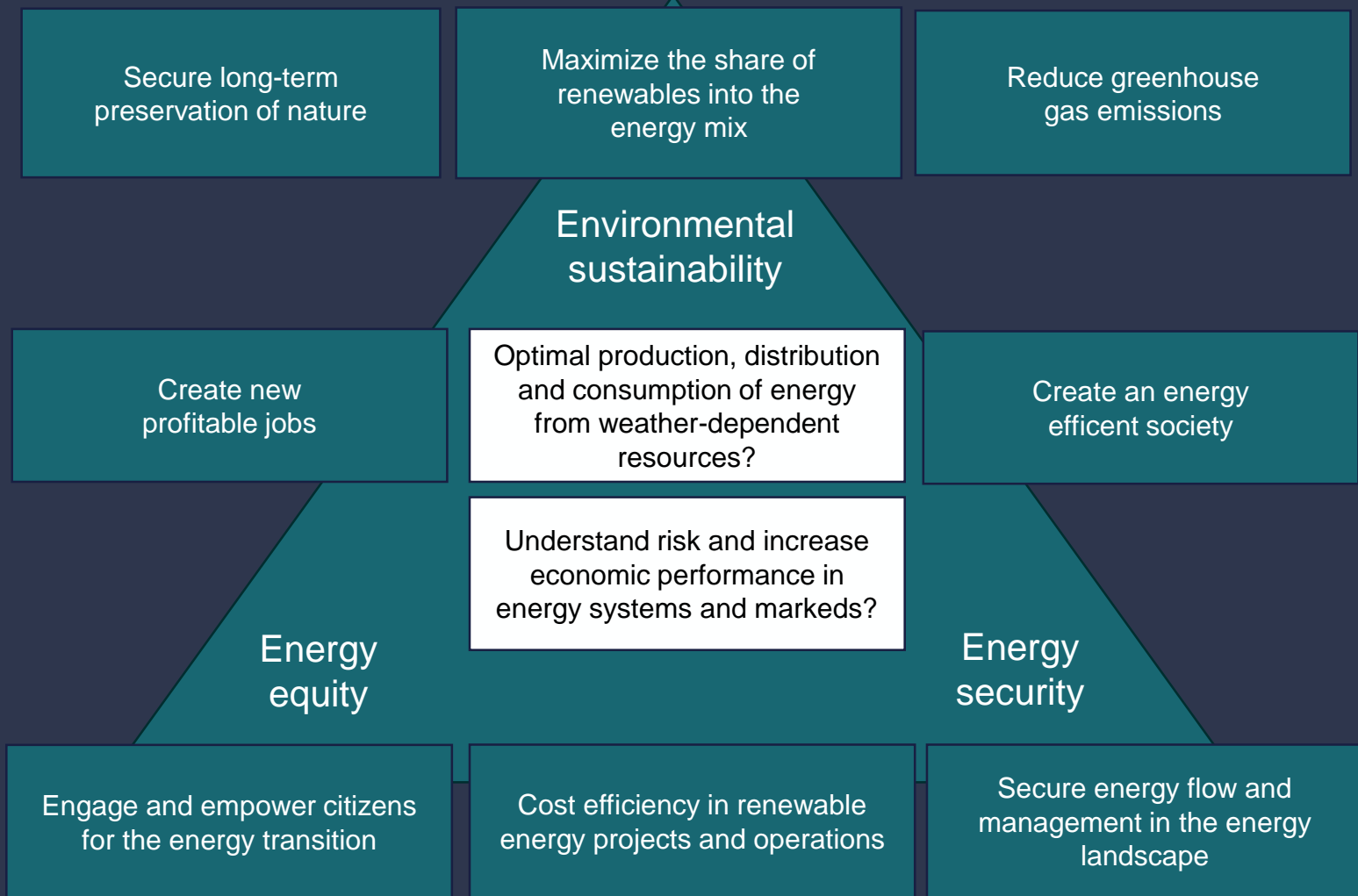
The digital transition
of society consists all processes at all levels in society producing and applying infrastructure, services, applications and human behavior that depend on digital representation of knowledge and computer power.



The green transition
of society is about reducing greenhouse gas emissions, preserving and restoring nature, reversing environmental degradation and ensuring that the energy of the future comes from renewable sources.

The twin transition

is about how the dynamics and strength of the digital transition affects the green transition of society, and how these two transitions mutually influence each other and should be combined in the coming years.



Twin Transition in ENERGY

Mission Management

Reporting System

Operational Planning

Control Mechanism

Energy Management

Energy flow

Component Handling

Robust and adaptive energy transition at the edge



Cost reduction and optimization of renewable energy projects and operations

A climate-friendly digitised society

Green computing

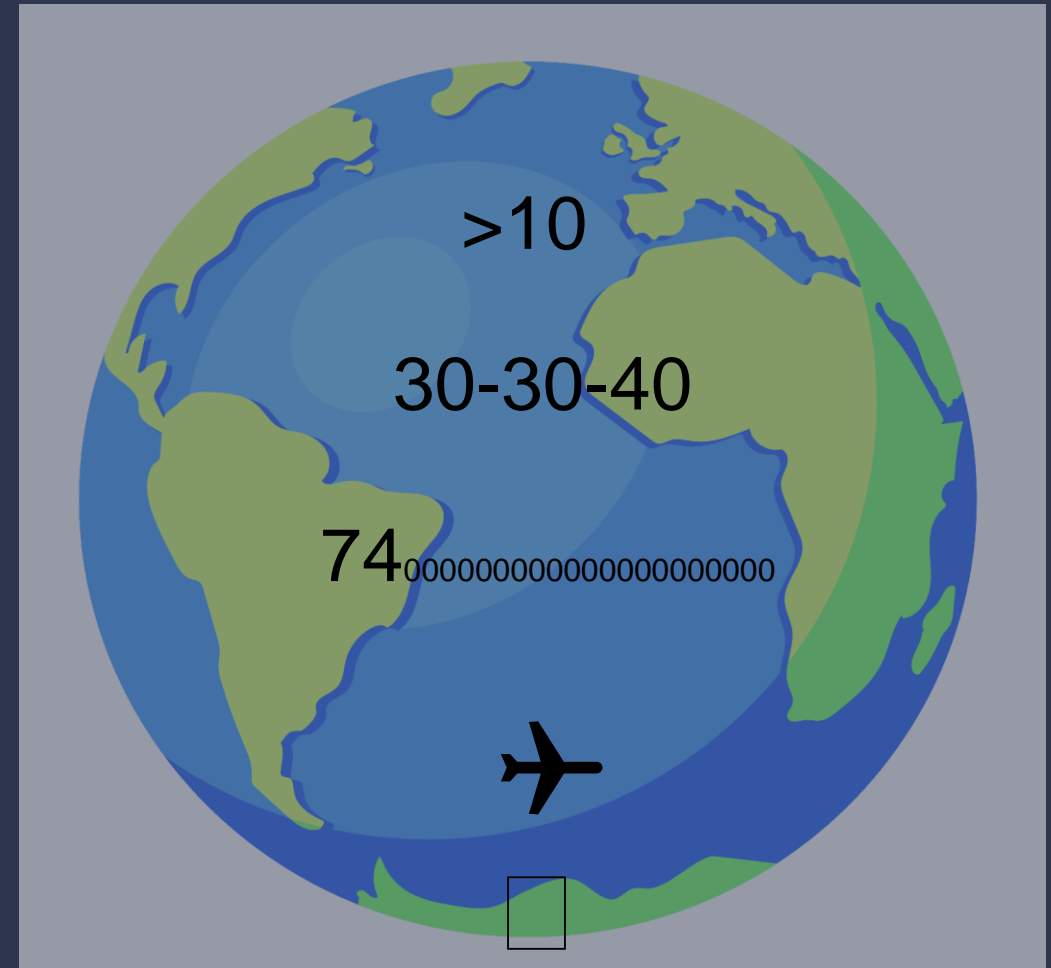
Efficient algorithms

Data sharing

Edge intelligence

Digital waste and recycling

Efficient hardware



Thanks!