

Software Carpentry og Data Carpentry

**opplæring i bruk og deling av forskningsdata
– for forskere, av forskere, ved UiO**

Lex Nederbragt

Centre for Evolutionary and Ecological Synthesis

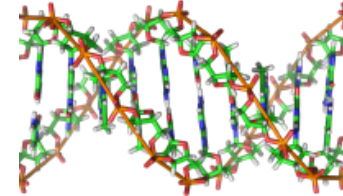
University of Oslo

lex.nederbragt@ibv.uio.no

Litt om meg

CEES

Centre for Ecological and
Evolutionary Synthesis



BMI

Biomedical Informatics group



University of Oslo



NORWEGIAN SEQUENCING CENTRE

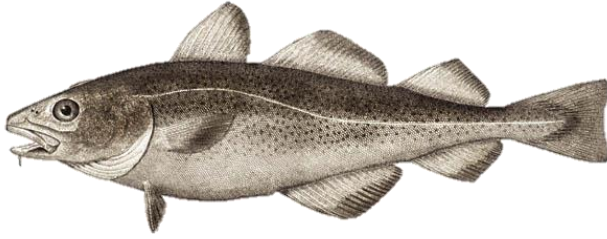


@lexnederbragt



flxlexblog.wordpress.com

Litt om meg



Litt om meg

 **Universitetet i Oslo**

For ansatte
 **Alt innhold**

Forsiden til Universitetet i Oslo English website

Søk i For ansatte

Søk

Fagråd for eInfrastruktur

Fagråd for eInfrastruktur er kompetanseressurs, innstillende organ og rådgivende arbeidsutvalg for UiOs Forskningsinfrastrukturutvalg på området eInfrastruktur.

Om fagrådet

Bakgrunn for utvalget, samt mandat og sammensetning.

→ [Om fagrådet](#)

Søk i
dokumenter

Søk

Kontakt

Fagråd for
eInfrastruktur kan
kontaktes via
[sekretariatet](#).

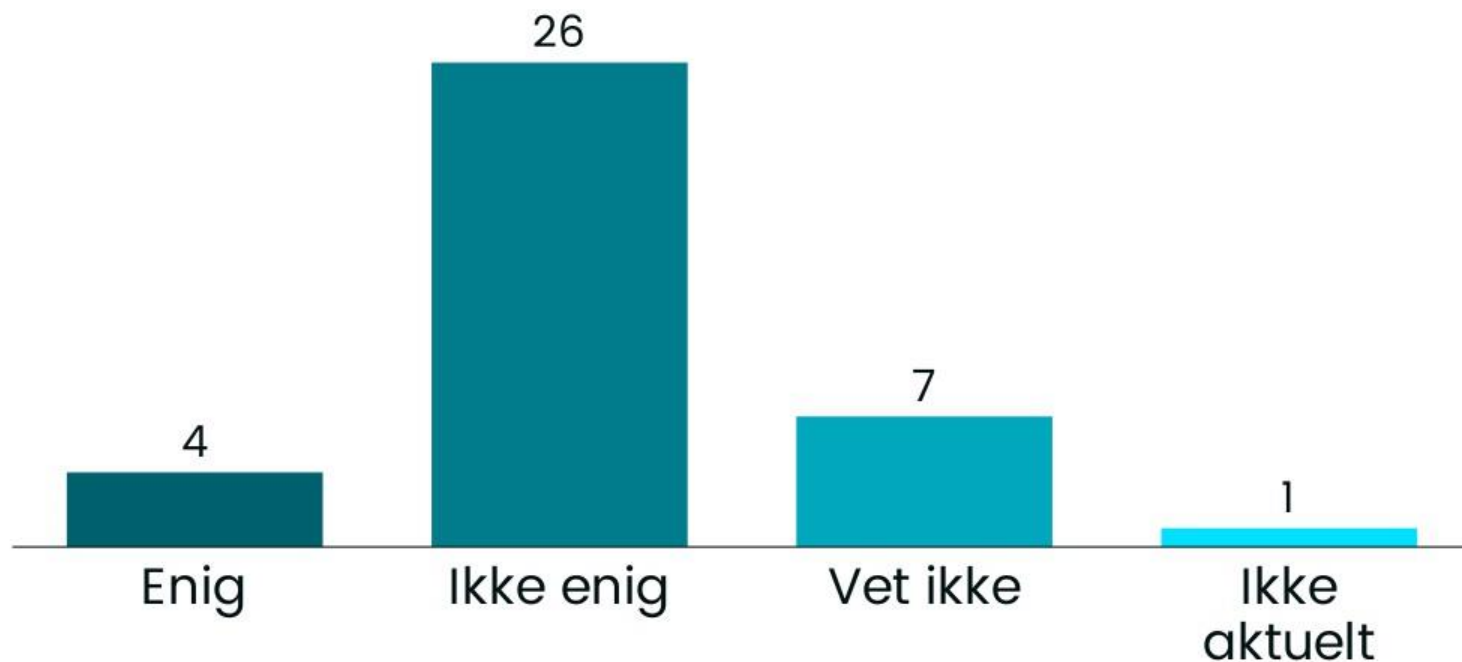
Quiz 1

Hvilken kompetanse trenger forskere for datahåndtering?



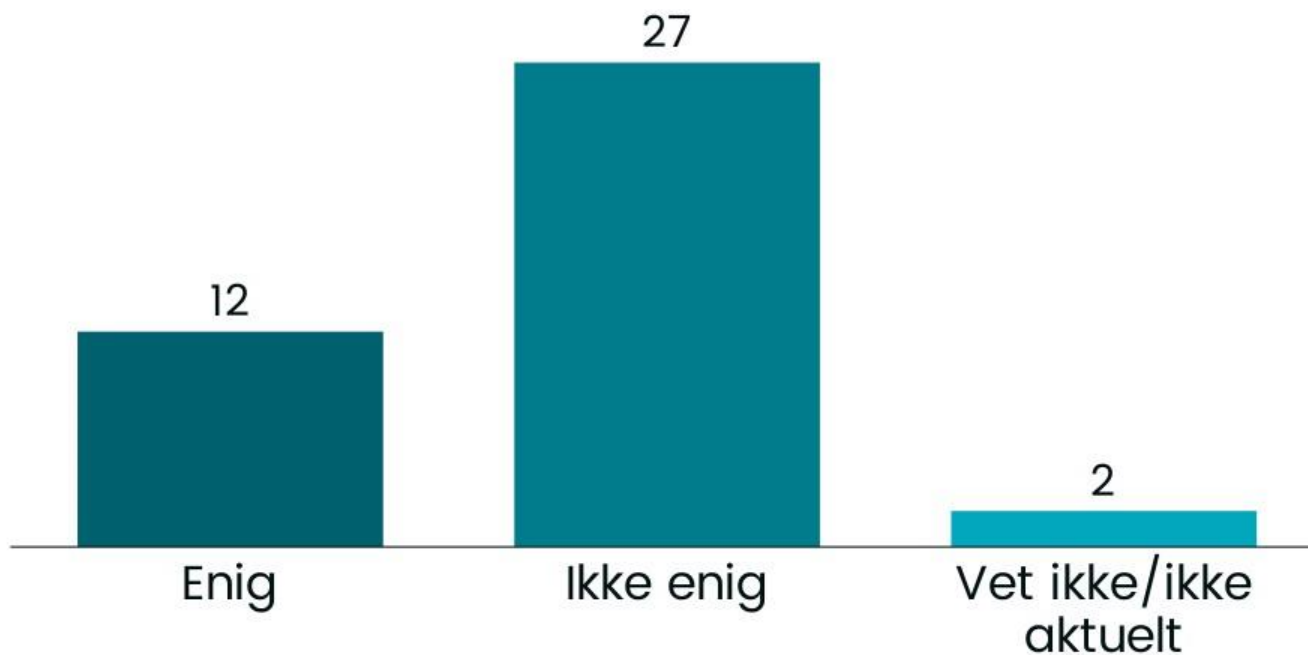
Quiz 2

Forskere jeg jobber med har den nødvendige kompetansen på datahåndtering



Quiz 3

Jeg har den nødvendig kompetansen om datahåndtering



UiO, 2015



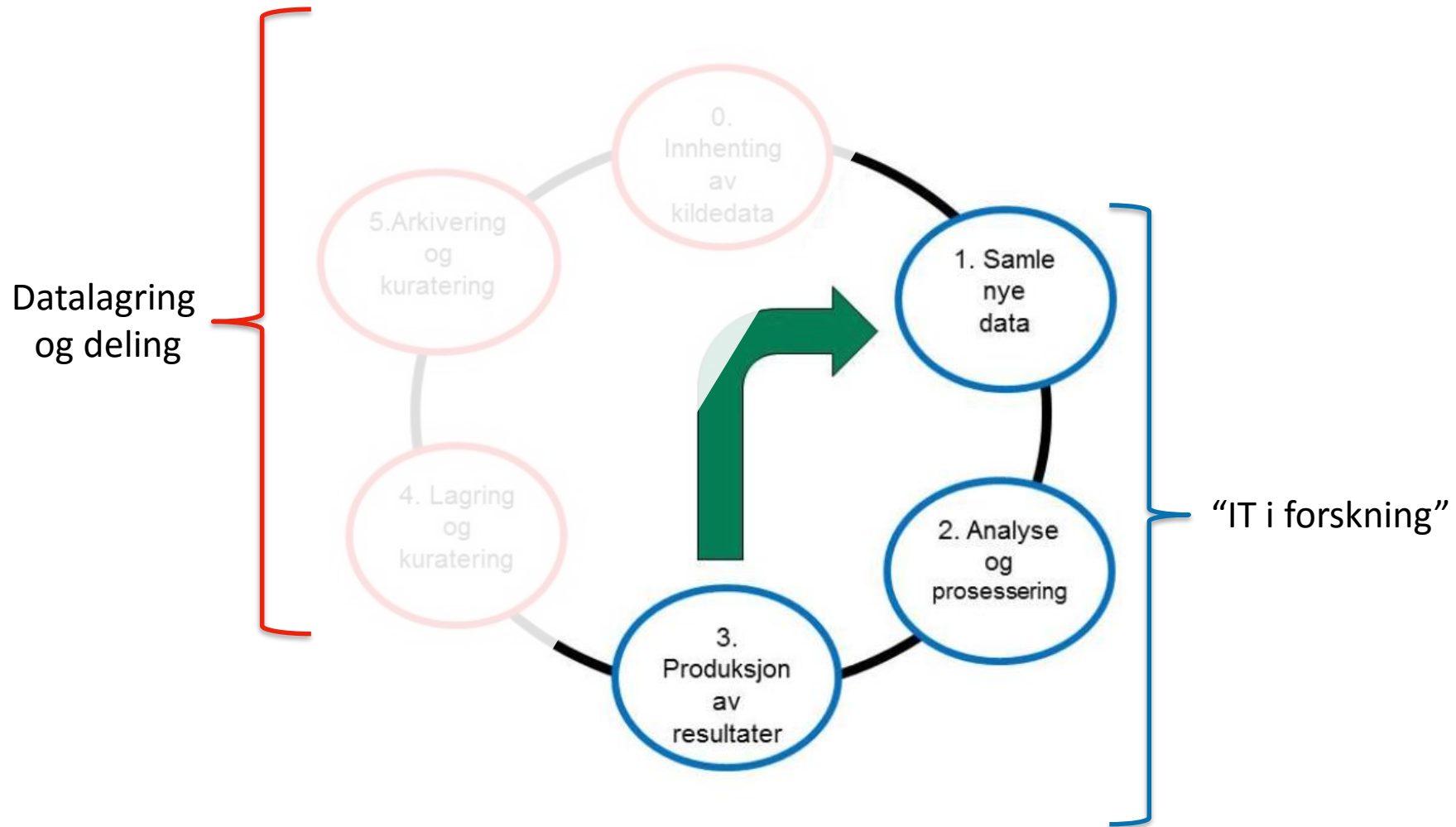
Dataeksplosjonen – en stor utfordring, og en gedigen mulighet!

Rapport fra arbeidsgruppen «Lagring og deling av forskningsdata» ved Universitetet i Oslo (UiO) 11.05.2015



Phaistos Disk, et eksempel på tidlig datalagring.
The Archaeological Museum of Heraklion (cc by-sa)

Forskningsdatakretsløp



Hvordan jeg ble 'datakyndig'

2007: infrastruktur bevilgning



GS FLX from Roche/454

?



Genome Analyzer from Solexa/Illumina

La oss prøve dem!

Prøven

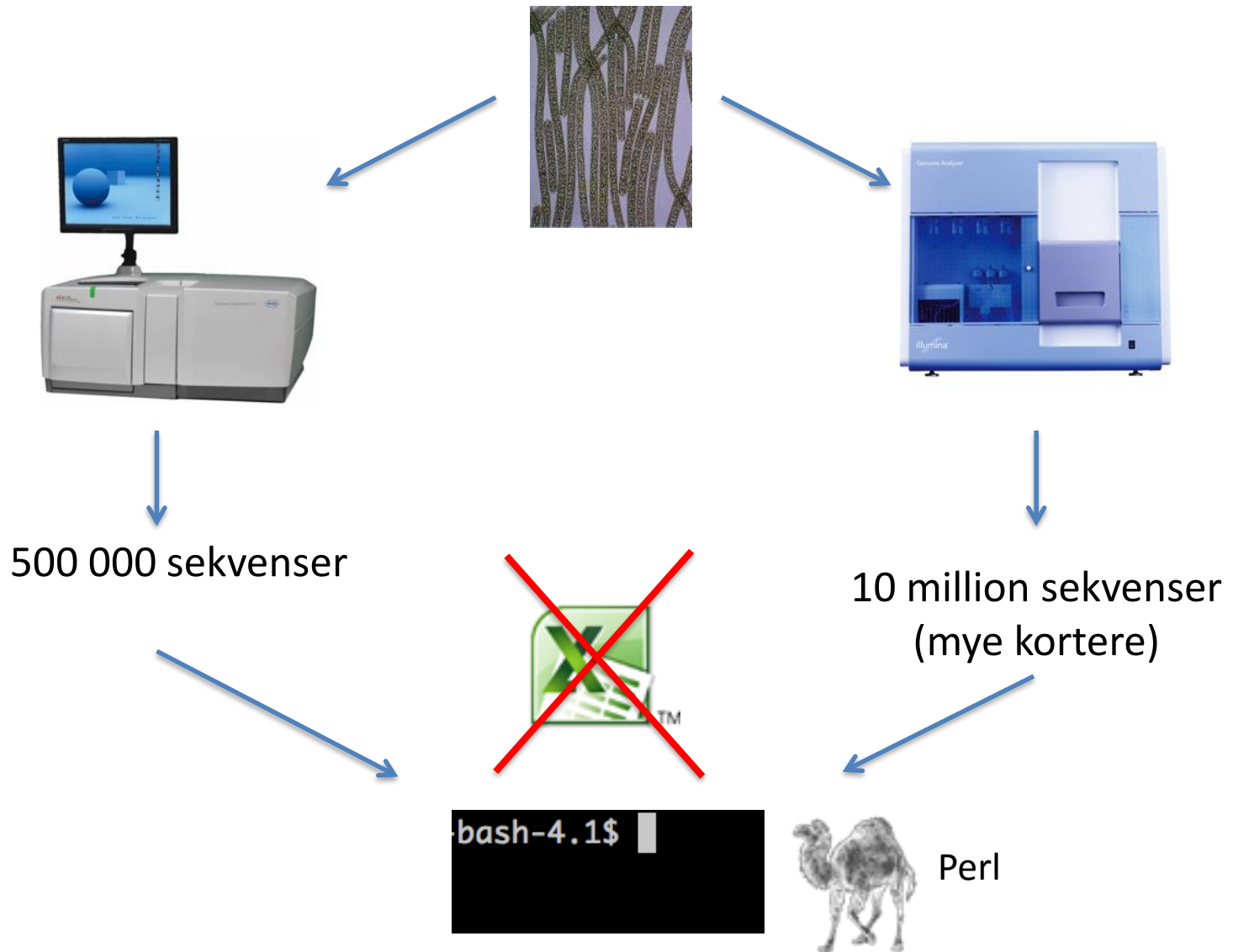
Planktothrix rubescens NIVA CYA 98

Cyanobacteria

(blue-green algae)



Planktothrix



Atlantic cod genome project

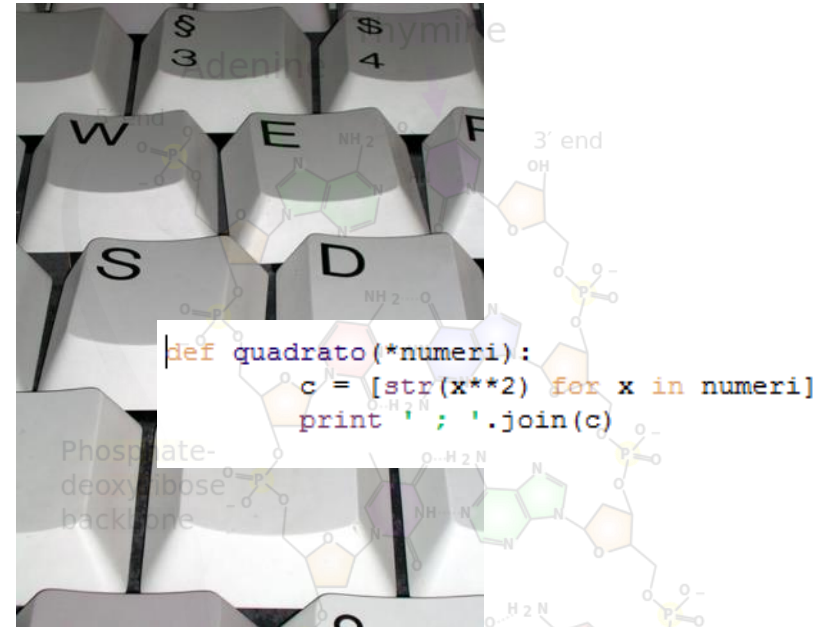


‘Tore torsk’

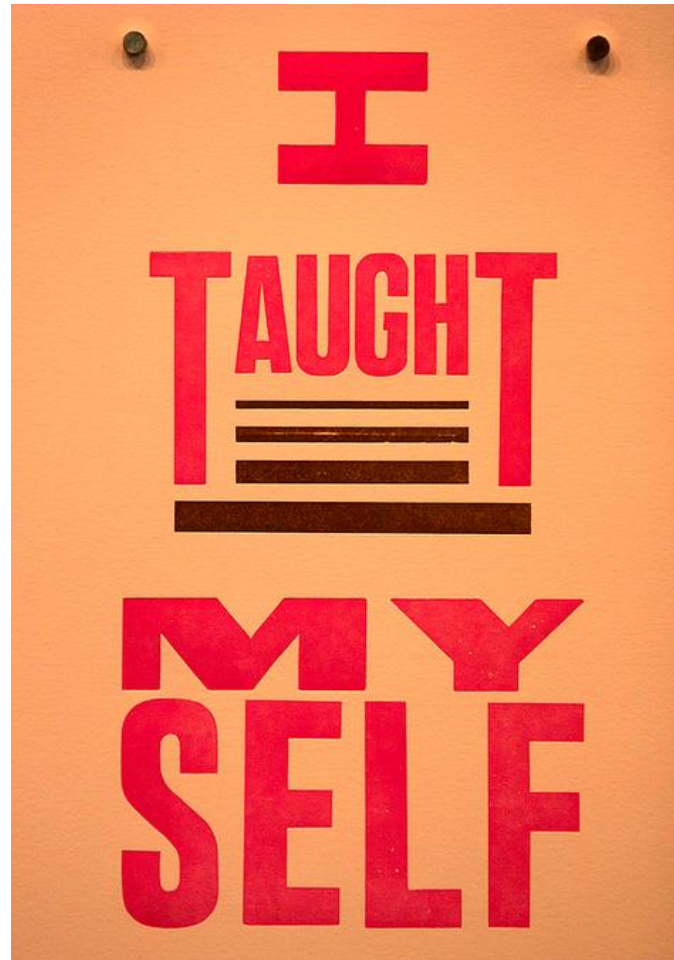
850 million bases (Mbp)

Se også <https://titan.uio.no/node/2168>

Ny kompetanse



Ny kompetanse



2012



Teaching basic lab skills
for research computing



Our Workshops ›

Find or host a workshop.



Our Lessons ›

Have a look at what we teach.

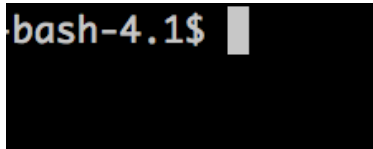


Get Involved ›

Help us help researchers.

En vanlig workshop

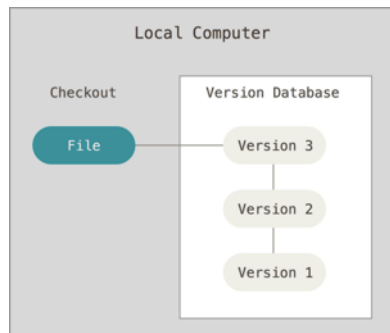
Unix shell



Python *eller* R



Versjonskontrol

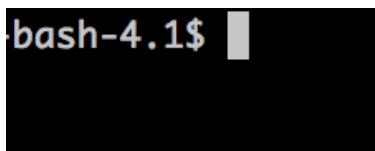


Databaser



En vanlig workshop

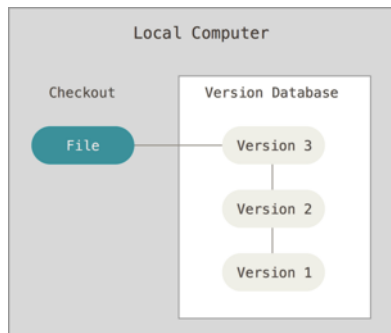
Automatisering



Modulær programmering



Sporbarhet, samarbeid



Datastrukturer, søk



2012



Lex Nederbragt

@lexnederbragt

Really looking forward to today's and tomorrow's @swcarpentry workshop here at @UniOslo. @gwwilson himself will be teaching!

7:30 AM - 17 Sep 2012

2012



Lex Nederbragt
@lexnederbragt

Exhausted but very inspired after a two-day @swcarpentry workshop. Need to digest, then implement. Then teach on, @gwwilson would say :-)

RETWEET
1



5:21 PM - 18 Sep 2012

2013

UiO sine første instruktører



Lex Nederbragt



Karin Lagesen

2015

UiO: realfagsbiblioteket



[< Realfagsbiblioteket](#)

Realfagsbiblioteket i Vilhelm Bjerknes' hus

[English](#)



2015-2017

2015

- 3 to-dags workshops

2016

- 5 to-dags workshops
- 9 en-dags workshops

2017 (til Juli)

- 3 to-dags workshops
- 9 en-dags workshops
- 8 “Research Bazaar” half-day workshops

15-30 deltakere per workshop

2017

uio.no/carpentry

For employees

≡ All content

Search in For empl

Search

< [Training](#)

Carpentry@UiO

To facilitate sharing and reusing of data among researchers
Software Carpentry and Data Carpentry, workshops are offered to
PhDs and researchers at UiO and OUS.

Upcoming UiO courses

29 [Carpentry workshop:](#)
Mar. [Python](#)

12 instruktører

12 faste hjelpere

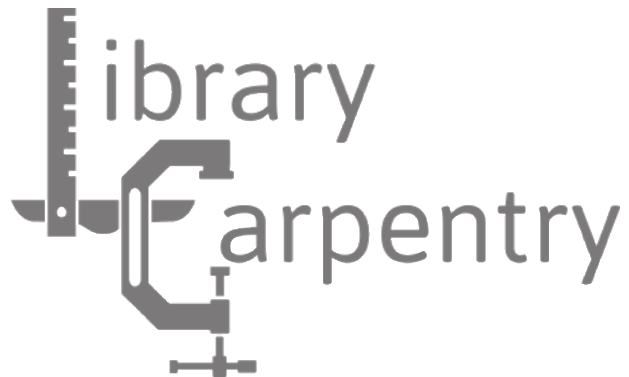
2017



software-carpentry.org



datacarpentry.org



librarycarpentry.github.io/

Carpentry workshops



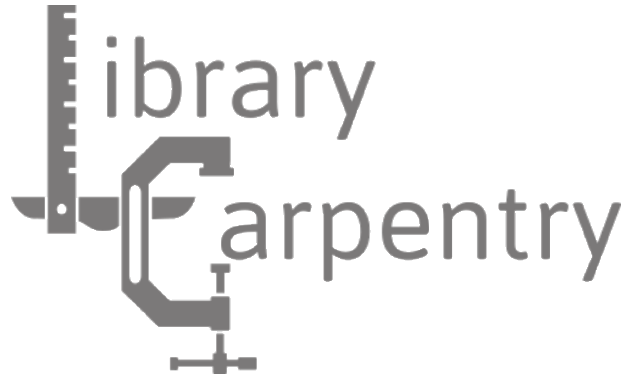
- The Unix Shell ✓
- Version Control with Git ✓
- Version Control with Mercurial
- Using Databases and SQL
- Programming with Python ✓
- Programming with R ✓
- R for Reproducible Scientific Analysis ✓
- Programming with MATLAB
- Automation and Make ✓

Carpentry workshops



- Ecology
- Genomics ✓
- Geospatial data ✓
- (Social sciences)

Carpentry workshops



- Data Intro for Librarians ✓
- The Unix Shell ✓
- Version Control with Git
- Working with data in OpenRefine ✓
- Databases with SQL ✓

Carpentry workshops

carpentry@UiO

Research Bazaar workshops

- Collaboration with GitHub ✓
- Zotero ✓
- OneDrive and OneNote ✓
- Jupyter Notebook and IPython ✓
- Big Data - pyspark ✓
- LaTeX ✓

Carpentry workshops

Hands-on



Instruktørene

Instructor Training

Over the last hundred years, researchers have discovered an enormous amount about how people learn and how best to teach them. Unfortunately, much of that knowledge has not yet been translated into common classroom practice, while many myths about education have proven remarkably persistent.

This two-day class has two goals:

- Introduce participants to a handful of key research findings and show how they can be used to help people learn better and faster.
- Introduce participants to the teaching practices that have been adopted by the Software and Data Carpentry communities, and the overall philosophy and procedures of both organizations in order to prepare them to teach at Software and Data Carpentry workshops.

<https://swcarpentry.github.io/instructor-training/>

Verdier

Åpen/deling



Pedagogisk grunnlag



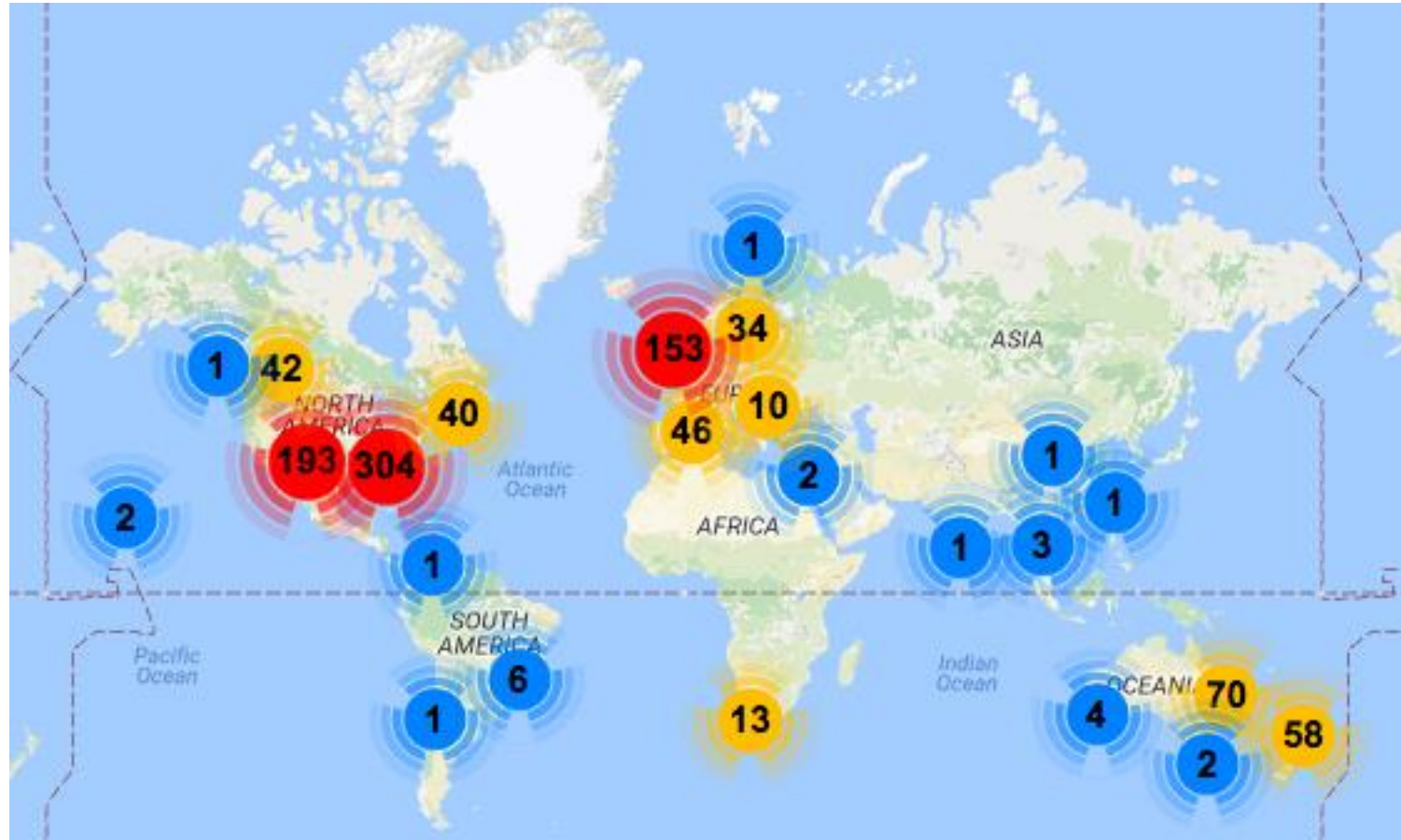
Inkluderende



Forskernærhet

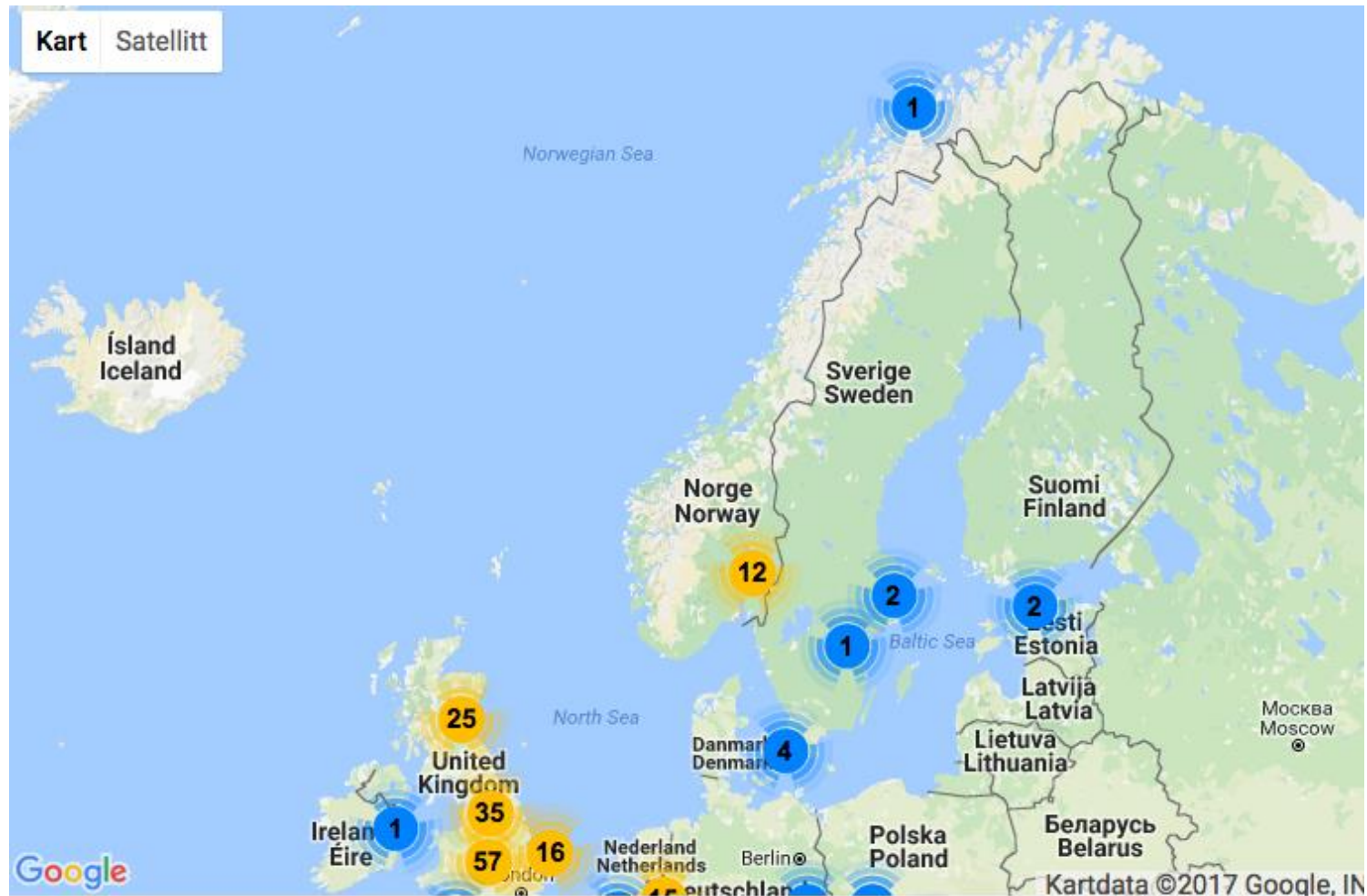


Instruktørene



<https://software-carpentry.org/team/>

Instruktørene



<https://software-carpentry.org/team/>

Best practices

OPEN  ACCESS Freely available online

 **PLOS** | BIOLOGY

Community Page

Best Practices for Scientific Computing

Greg Wilson^{1*}, D. A. Aruliah², C. Titus Brown³, Neil P. Chue Hong⁴, Matt Davis⁵, Richard T. Guy⁶[✉], Steven H. D. Haddock⁷, Kathryn D. Huff⁸, Ian M. Mitchell⁹, Mark D. Plumbley¹⁰, Ben Waugh¹¹, Ethan P. White¹², Paul Wilson¹³

doi: 10.1371/journal.pbio.1001745



Best practices

Good Enough Practices in Scientific Computing

Greg Wilson, Jennifer Bryan, Karen Cranston, Justin Kitzes, Lex Nederbragt, Tracy K. Teal

(Submitted on 31 Aug 2016 (v1), last revised 14 Oct 2016 (this version, v2))

Preprint: <https://arxiv.org/abs/1609.00037>



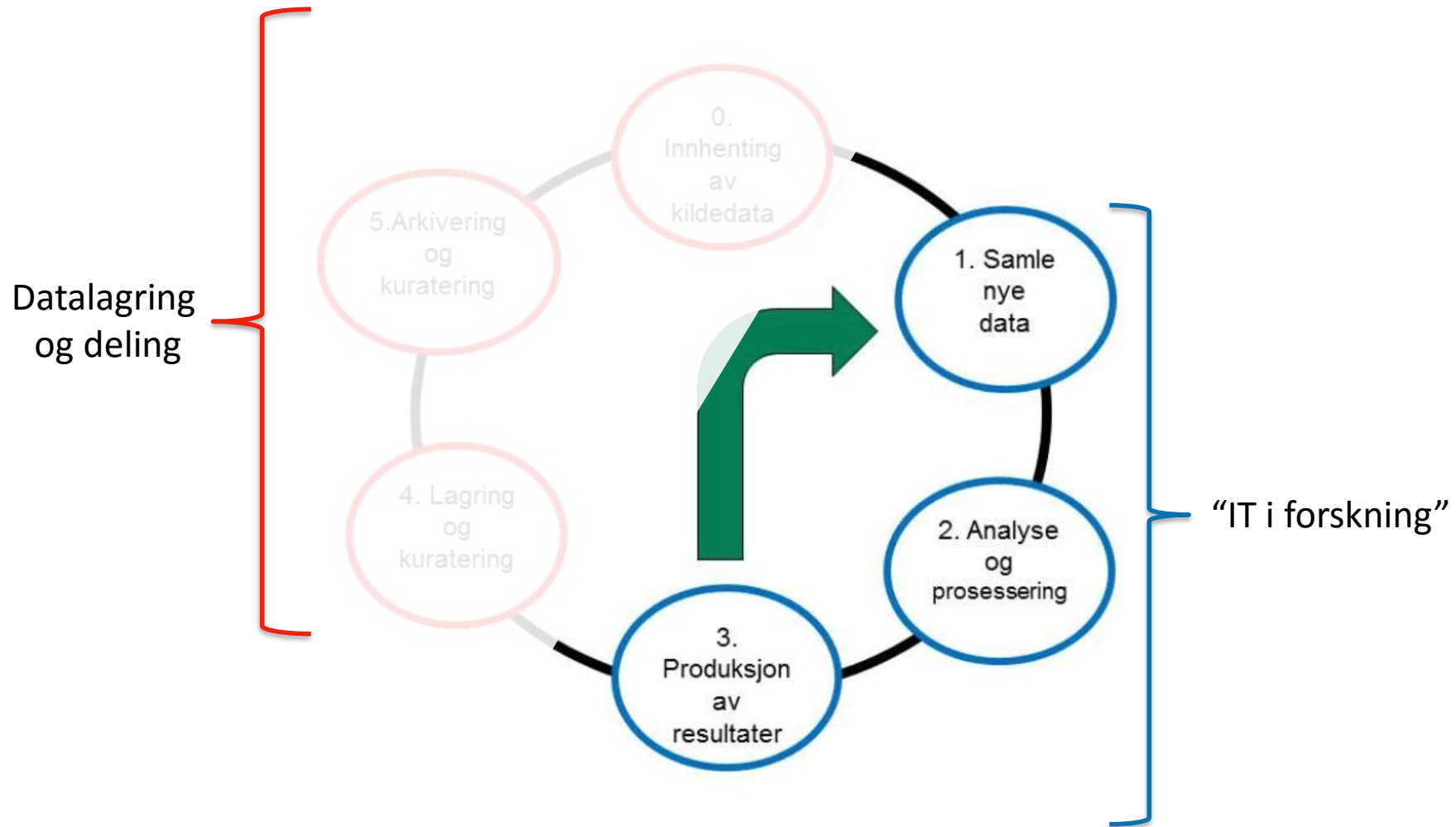
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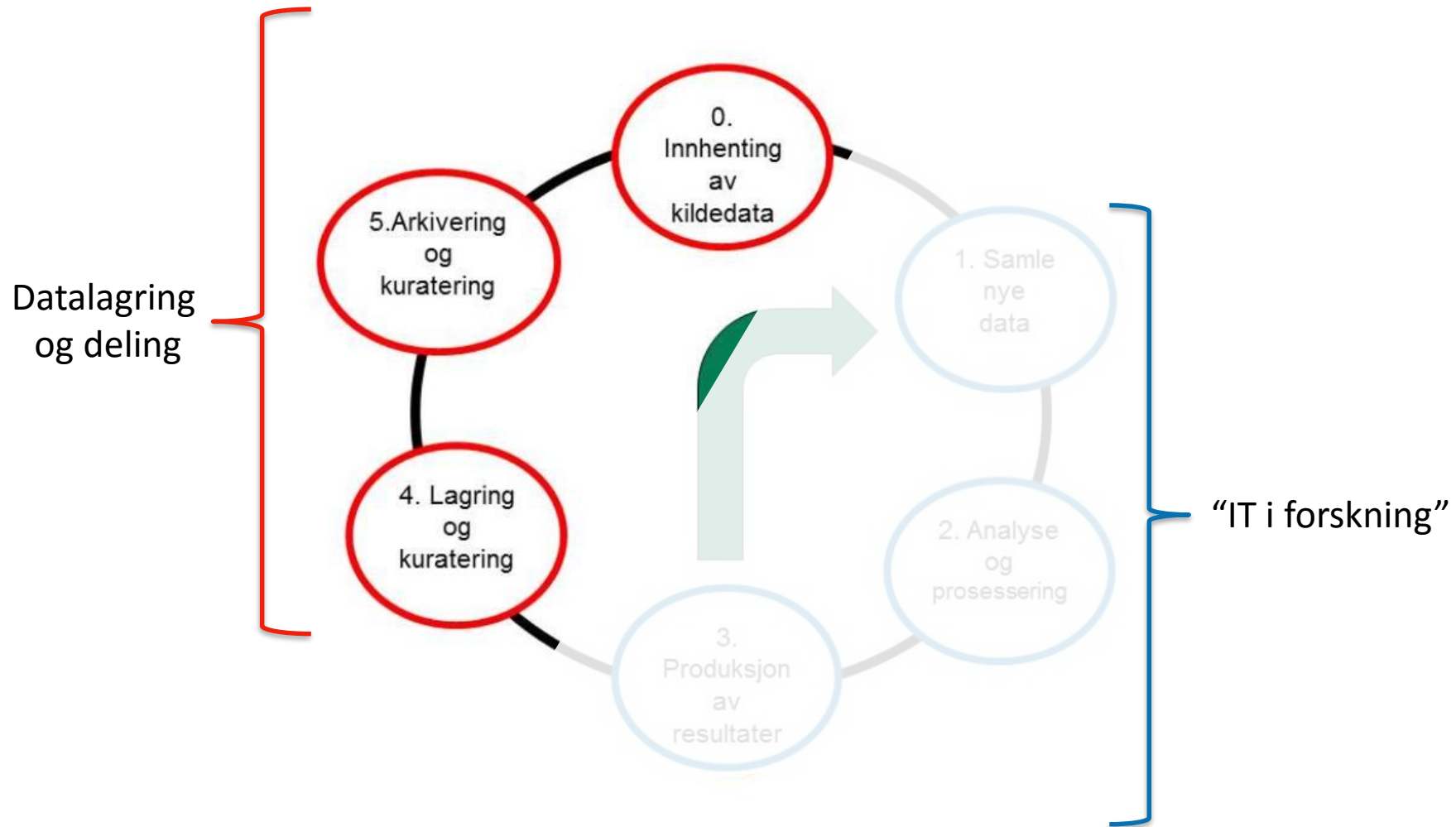
Lex Nederbragt

Centre for Evolutionary and Ecological Synthesis
University of Oslo

Forskningsdatakretsløp



Forskningsdatakretsløp



Kompetansegruppen forskningsdata



Dataeksplosjonen – en stor utfordring, og en gedigen mulighet!

Rapport fra arbeidsgruppen «Lagring og deling av forskningsdata» ved Universitetet i Oslo (UiO) 11.05.2015



Phaistos Disk, et eksempel på tidlig datalagring.
The Archaeological Museum of Heraklion (cc-by-sa)

UiO Research data management group

The group consists of staff from UiO IT services, Academic administration and the University Library. It exists to provide cross-departmental support for staff at UiO in need of information regarding research data management.

Contact us at: research-data@uio.no

Members of the group:

- [Margaret Fotland \(AA\)](#)
- [Live Kvale \(UL\)](#) (permisjon)
- [Elin Stangeland \(UL\)](#)
- [Gard Thomassen \(USIT\)](#)

Kompetansegruppen forskningsdata

Research data

Research data is registration/recording/reporting of numerical scores, textual records, images and sounds that are generated by or arise during research projects. Examples are: a spreadsheet and experimental results, a digital video of an interview or a scan of a historical document.

→ [Introduction to research data](#)

Funder policies

Data management policies from various funders.

Planning data

Guidance on creating a DMP.

Training

Course and carpentry training.

Tools

There is a world of resources on research data management you will find a selection here

<http://www.uio.no/english/for-employees/support/research/research-data/>

Carpentry workshops

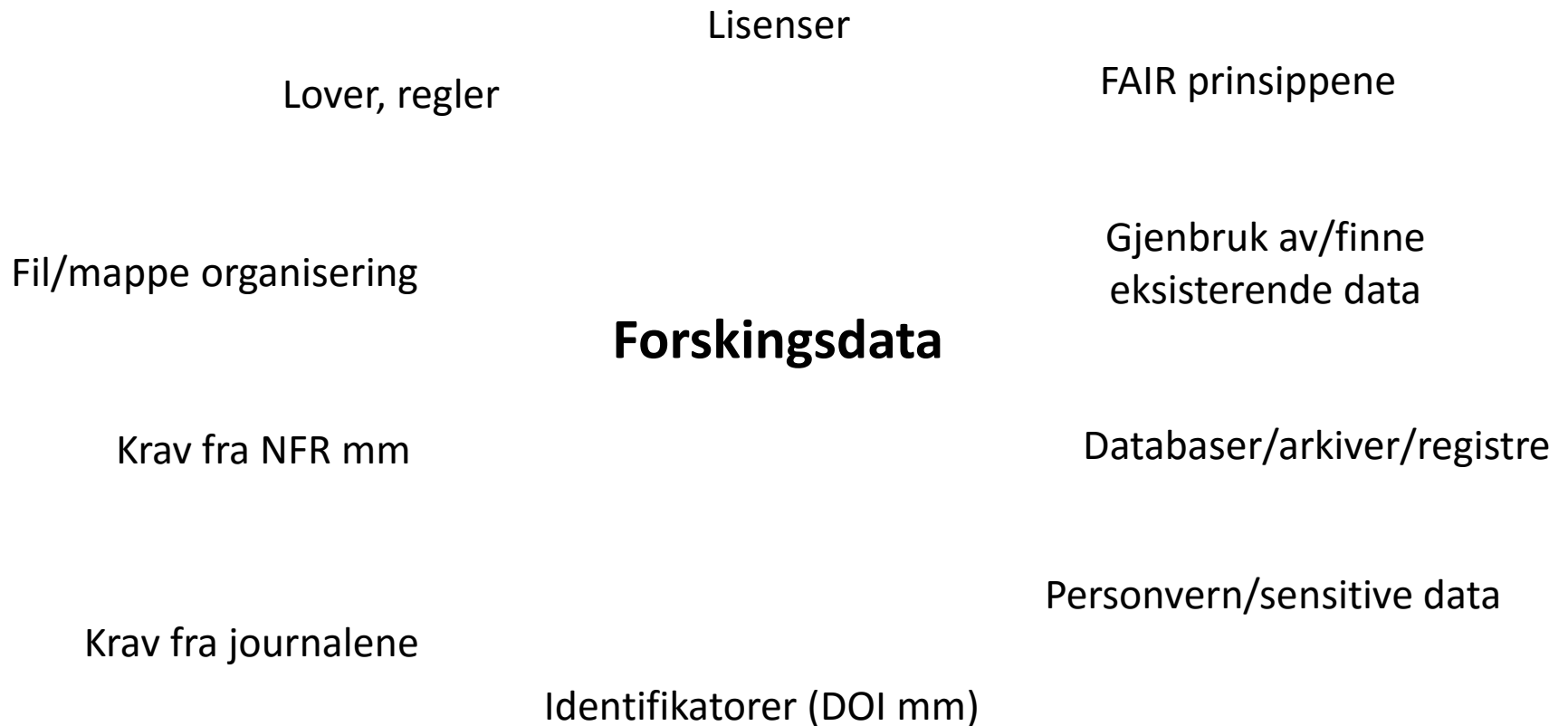


carpentry@UiO

- December 2016: Open Research data, with Sarah Jones, Digital Curation Centre
- Februar 2017 : Data management plans

Under utarbeidelse: 'Carpentrification' av kursmaterialet

Hvilken kompetanse trenger forskere for datahåndtering?



Veien videre

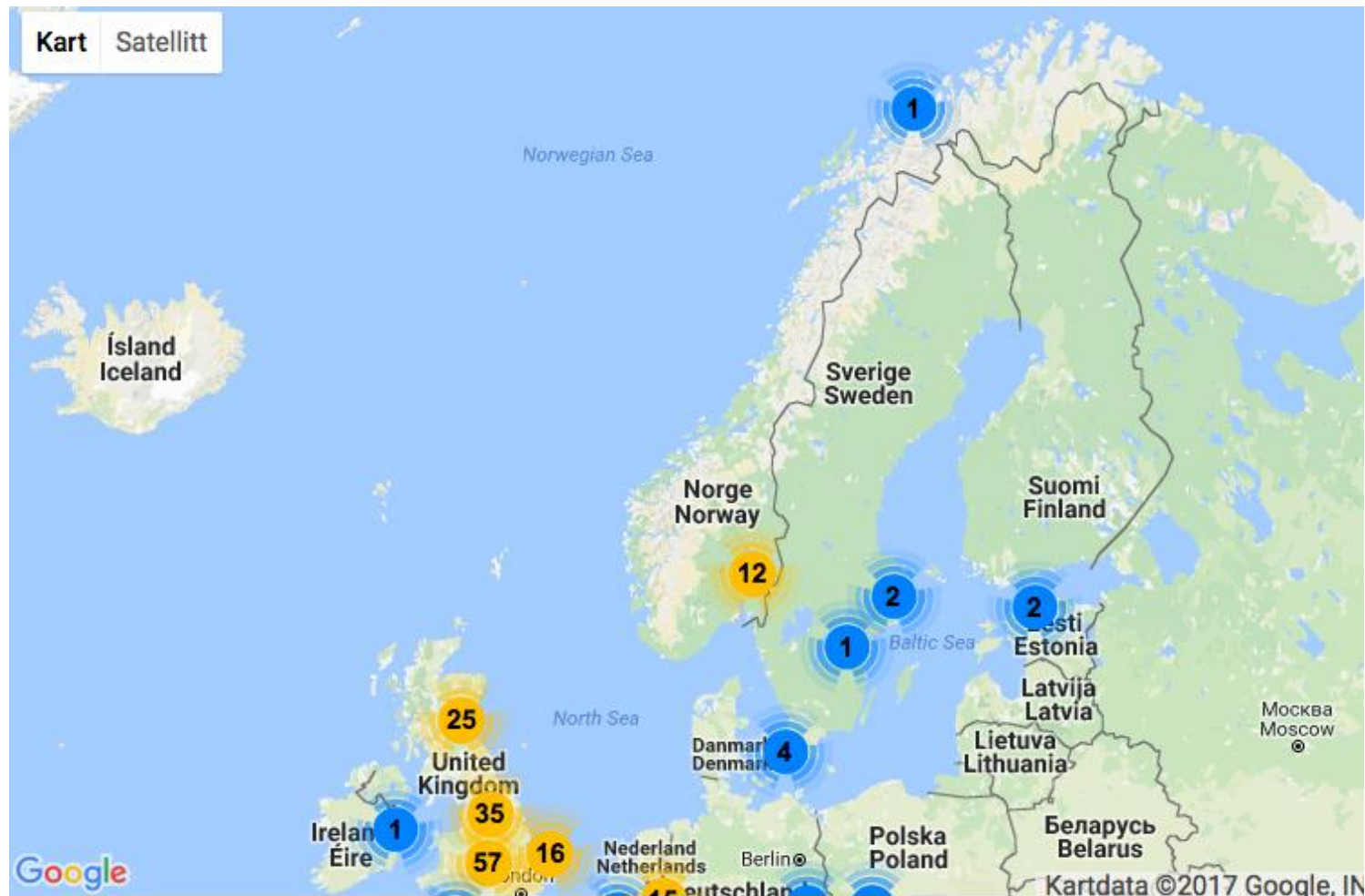
Tilby flere forskjellige moduler



... og bidra til utvikling av nye

Veien videre

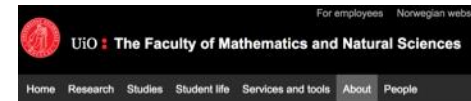
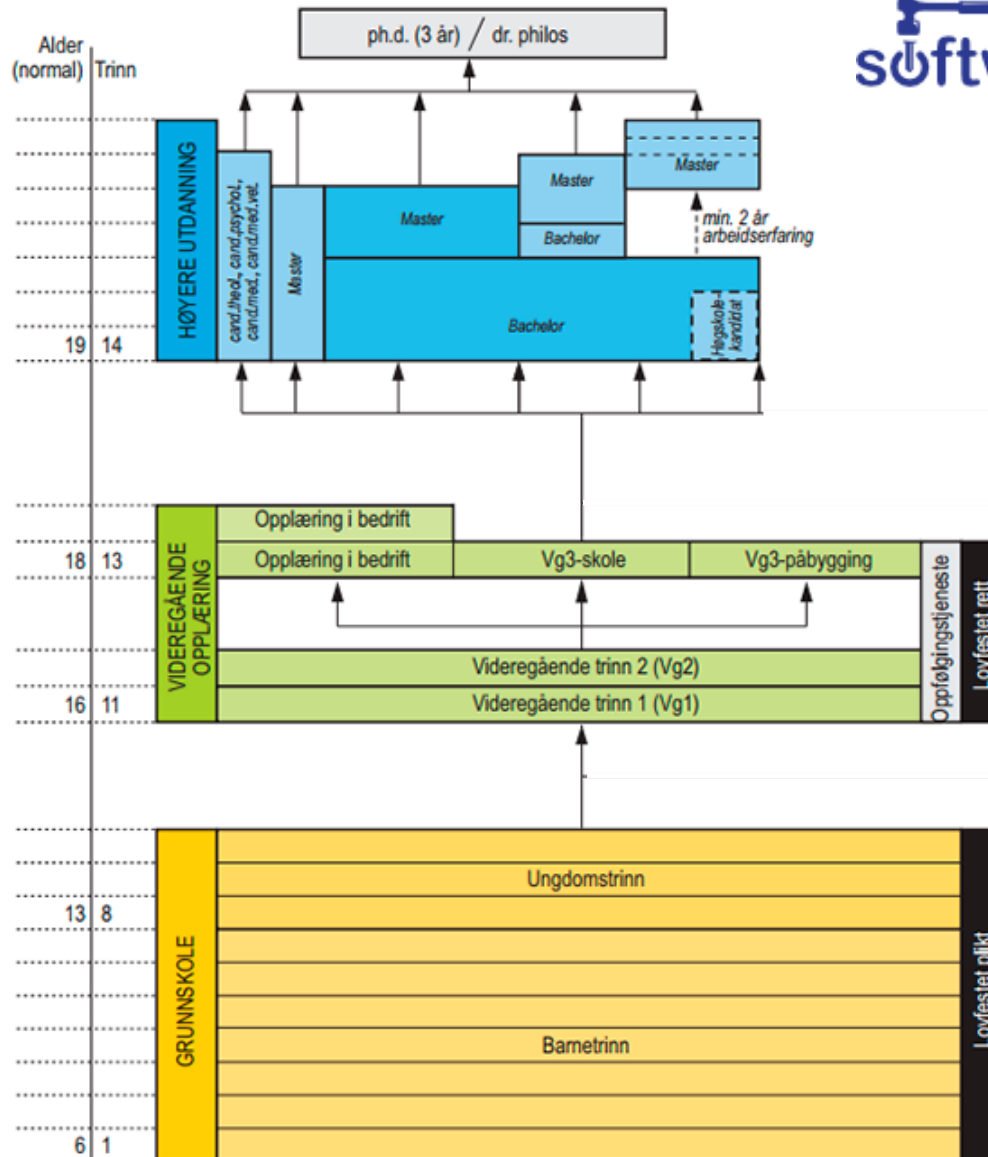
Norsk/nordisk perspektiv



Veien videre



software carpentry



About CSE - Computing in Science Education

Collaboration



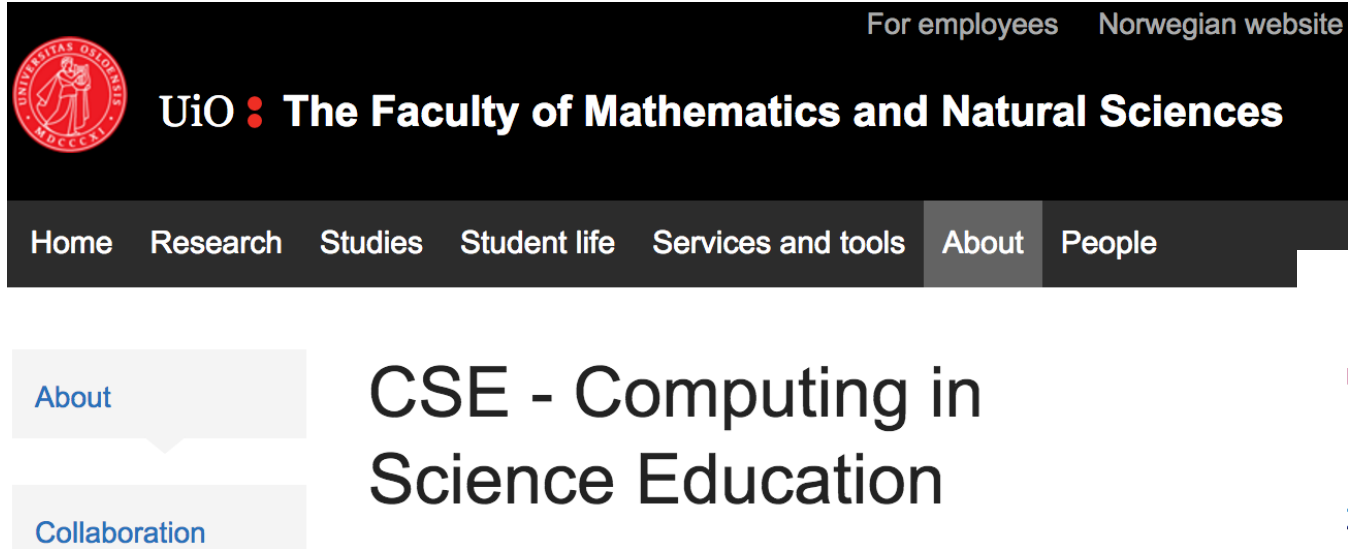
Du er her: regjeringa.no • Aktuelt • Koding blir valgfag på ungdomsskolen

Koding blir valgfag på ungdomsskolen

Pressemelding | Dato: 20.08.2015
| Nr: 38-2015



Veien videre



The screenshot shows the top section of the University of Oslo (UiO) website. At the top right, there are links for "For employees" and "Norwegian website". On the left is the red circular seal of the University of Oslo. Next to it, the text "UiO : The Faculty of Mathematics and Natural Sciences" is displayed. Below this is a dark navigation bar with links: "Home", "Research", "Studies", "Student life", "Services and tools", "About", and "People". The "About" link is highlighted. Below the navigation bar, on the left, are two light gray boxes with the text "About" and "Collaboration". To the right of these boxes, the text "CSE - Computing in Science Education" is prominently displayed.

For employees Norwegian website

 **UiO : The Faculty of Mathematics and Natural Sciences**

Home Research Studies Student life Services and tools **About** People

About

Collaboration

CSE - Computing in Science Education

<https://www.mn.uio.no/om/samarbeid/undervisningssamarbeid/cse/index.html>

Quiz 4

På området datahåndtering, hva ønsker du mer kompetansen på?

- Versjonshåndtering
- Programmering
- Metadata
- Filbehandling
- Datahåndteringsplaner
- Arkivløsninger
- Sensitive data
- Regelverk
- Forskningsetikk
- git, bash, python
- hva skal lagres hvor
- Sikker lagring av data
- Sikker lagring av sensitive data
- Hands-on, praktisk øvelse med data
- Programmering
- Hva skal lagres hvor
- Koding
- Alt
- Regelverket
- Koding
- Library carpentry
- Organisering av filer og mapper
- Versjonskontroll
- Tilgangsgrupper
- DMP
- sensitive data
- software carpentry
- Filbehandling
- Teknisk Regelverk
- SQL og databaser