



SIRIUS: Innovation laboratories to support beacons for digitalization

26th November 2018,
Subsea Valley Workshop
David Cameron, Adnan Latif
Oslo



The SIRIUS Centre

Eight years' financing from RCN

13 Industrial Partners (11 in 2017)

3 Leading Academic Institutions

Centre for Research-Based Innovation

Funding for 20 Ph.D. students

Innovation through prototypes and pilots

45 affiliated researchers



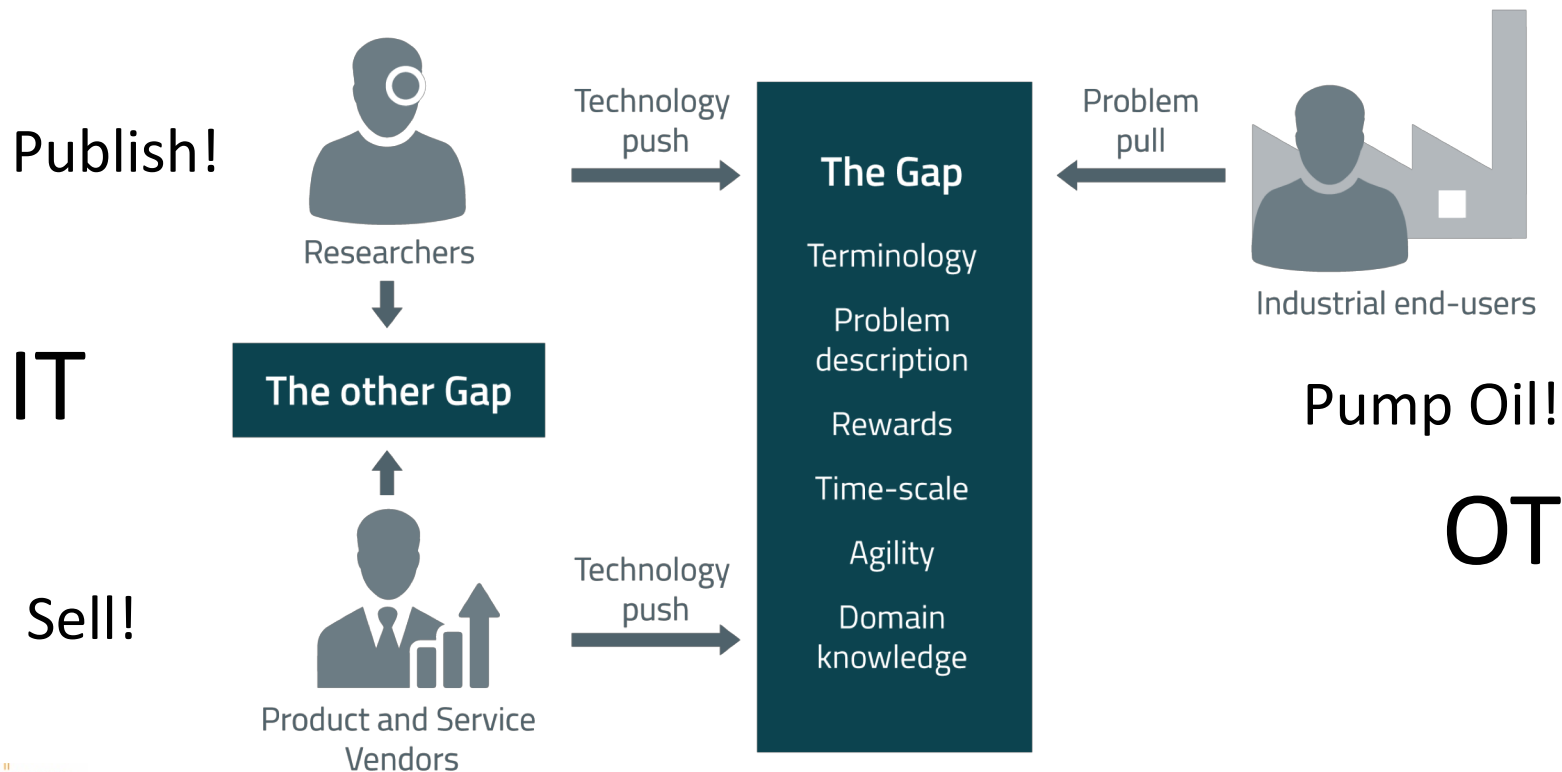
UiO : **University of Oslo**

simula





Building bridges to fill gaps





The problem of scalable data access

- Different formats
- Old software
- Complex, inconsistent data models
- Inefficient access methods
- Access and security
- Unstructured data
- Missing data
- Poor-quality data
- Too much data
- Manual work processes

IT

OT

DATA

ACCESS

PROCESSING
CAPACITY



Accessing data is a technical and organizational bottleneck.

We make poorer decisions and waste time on tedious work getting data.



Beacons built on a common foundation

WP1 Exploration

Geological assistant

*Subsurface data access &
analytics*

*Digital field & reservoir
management*

WP2 Operations

Integrated digital planning

Digital twins

Digital field development

WP3 Cross-domain applications

Personalized medicine

Environmental applications

WP4 Research Programmes

*Analysis of
complex
systems /
ABS*

*Ontology
engineering /
OTTR*

*Scalable
computing /
Melodic, Dolphin
& Numascale*

*Data science /
Data wrangling
toolbox,
Domain-
adapted NLP*

*Semantic integration
/ RDFox & Optique*

*Digital
transformation /
SIRIUS best
practices*

Access to Exploration Data

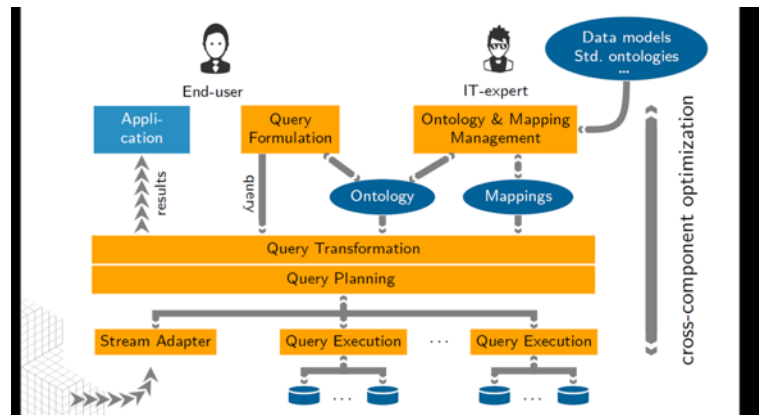
Student in Petroleum Geoscience: "I want all Gamma Ray logs from wells that penetrate Rotliegend deposits, with porosities larger than 25% between 3°E-12°E and 50°N-

SEARCH

DISKOS – CDA – DINO – JUPITER –
German NDR – local databases

Industry pain

- Bottleneck: Human experts need to translate queries for different database systems
- Access time to the requested data can be days or weeks



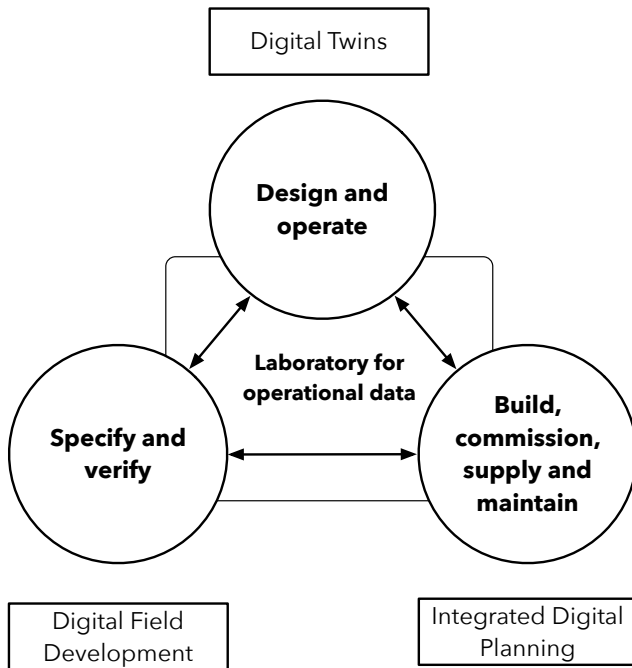
Semantic Integration of Databases:

- Graphical frontend to compose queries for geoscientists
- Query rewriting, ontologies
- Leverage outcomes of the EU project Optique



Our vision: beacon projects across the process operations supply chain

Operations Beacon Projects



Laboratory for Subsurface Data

- Collaboration platform for demonstrating data access to open data sources: with starting point in Volve data
- Support for collaboration with UFRGS in Brazil
- Implementation of Optique system on open(ed) data sources
- Platform to support data access from other researchers
- Interest also from system vendors (SAP, IBM) to support open innovation landscapes

Laboratory for Operational Data

- SIRIUS laboratory planned with contributions from partners OSIsoft, in projects with contributions from Computas, DNV GL and University of Oxford.

Some issues to be resolved (a few of many)

- DISKOS is an essential component, but we must find a suitable commercial model for non-academic access.
- Other data sources?
 - Other NDRs? Australia? US open sources?
- Our plans are modest, but can be a component or core in a more ambitious laboratory.
- Financing needed for developers and maintenance personnel.

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