SIRIUS: Collaboration across the digital divides in the oil and gas supply chain

David Cameron

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The SIRIUS Centre

Eight years' financing from RCN
13 Industrial Partners (11 in 2017)
3 Leading Academic Institutions: Oslo, NTNU Trondheim, Oxford
Centre for Research-Based Innovation
Funding for 20 Ph.D. students
Innovation through prototypes and pilots
45 affiliated researchers

Equinor
DNV GL Schlumberger TechnipFMC
IBM SAP
Computas Evry
Dolphin Interconnect Numascale
Fluid Operations Kadme OSIsoft

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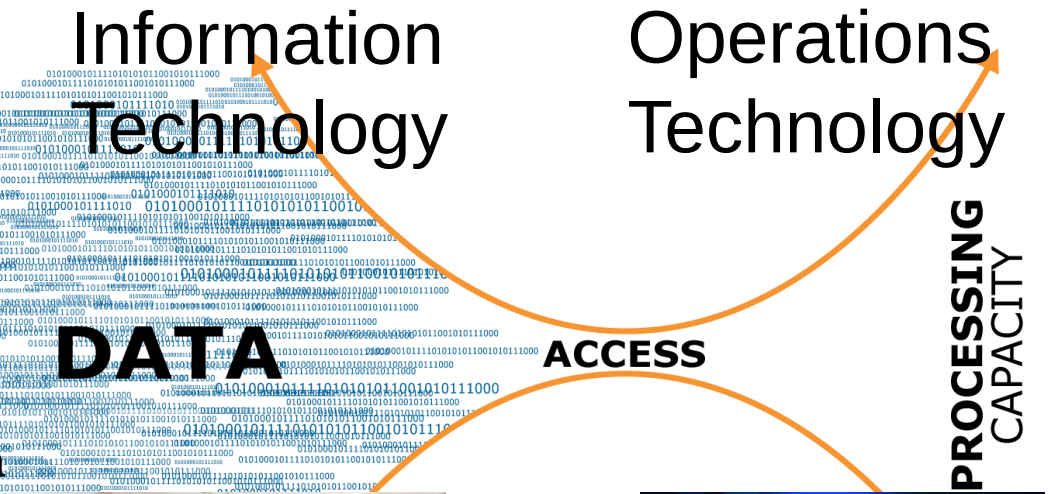
The problem of scalable data access

- 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



Accessing data is a technical and organizational bottleneck.

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

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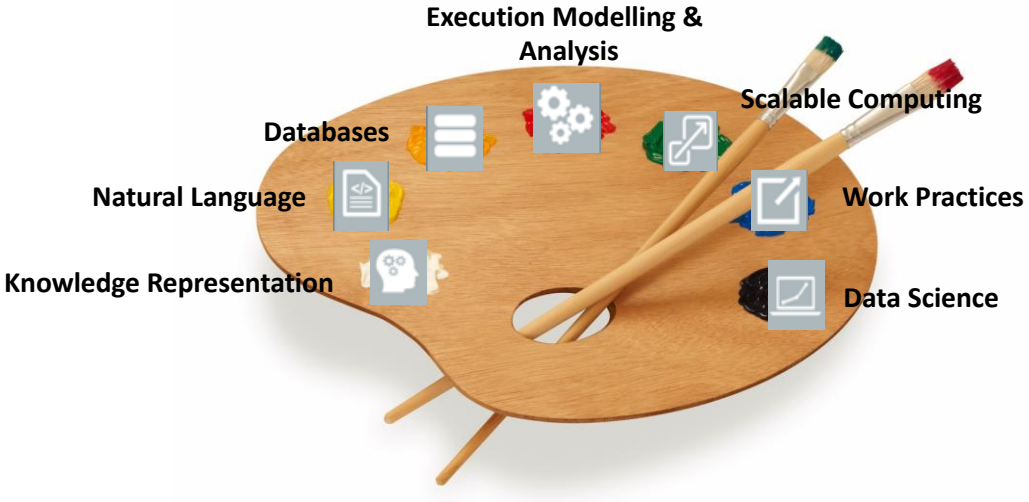
Strands and beacons

Research Excellence



Industrial Relevance

WP1 Exploration	*WP2 Operations*	*WP3 Cross-domain applications*
Digital Support for Exploration Processes	Planning	Personalized Medicine
Access to Exploration Data	Digital Twins	Arctic Earth Observation
Digital Field and Reservoir Management	Digital Thread	

WP4 Supporting technologies

Migration to the Cloud	Sustainable Large-Scale Ontologies	Cross-cutting Technology Stack

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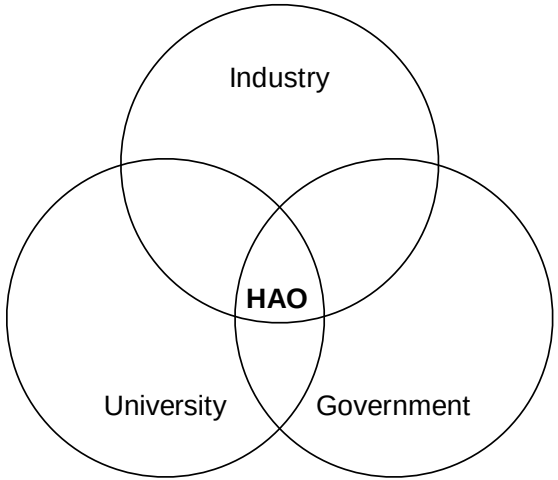
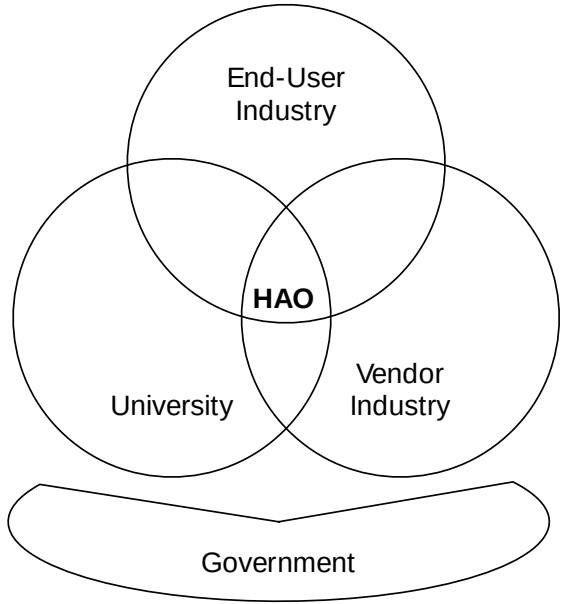
A variant of the triple-helix model: SIRIUS is a Hybrid Autonomous Organization (HAO)





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The boundary spanner

- Entrepreneurial professors with EU project experience
- Advocates and commissioners of research in companies
- Centre coordinator – industrial post-doctoral experience in university

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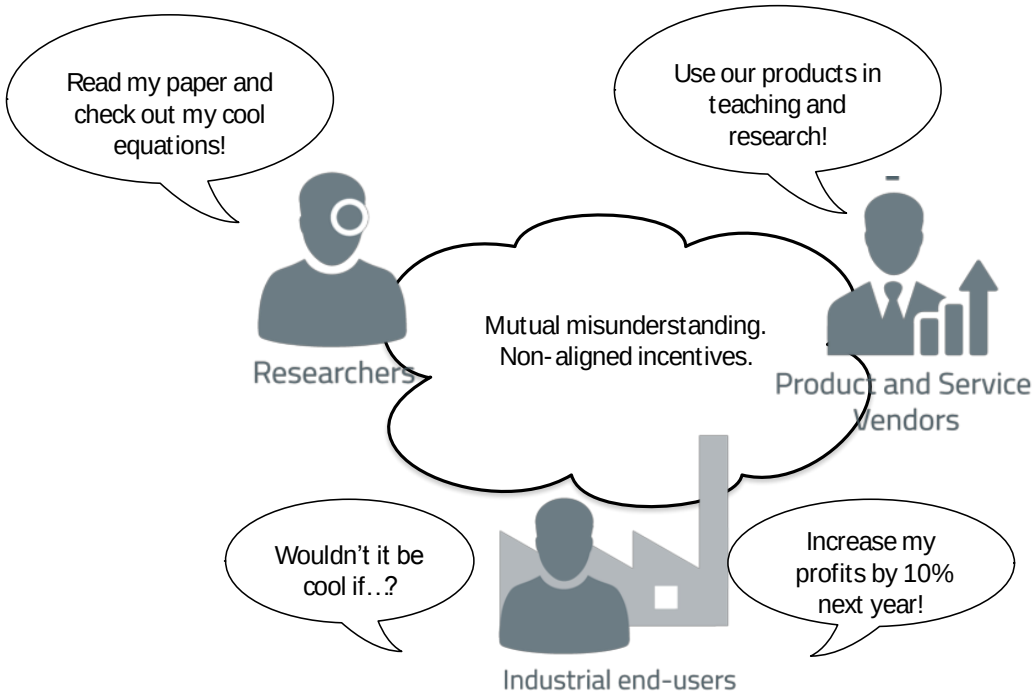
Challenges in the boundary spaces



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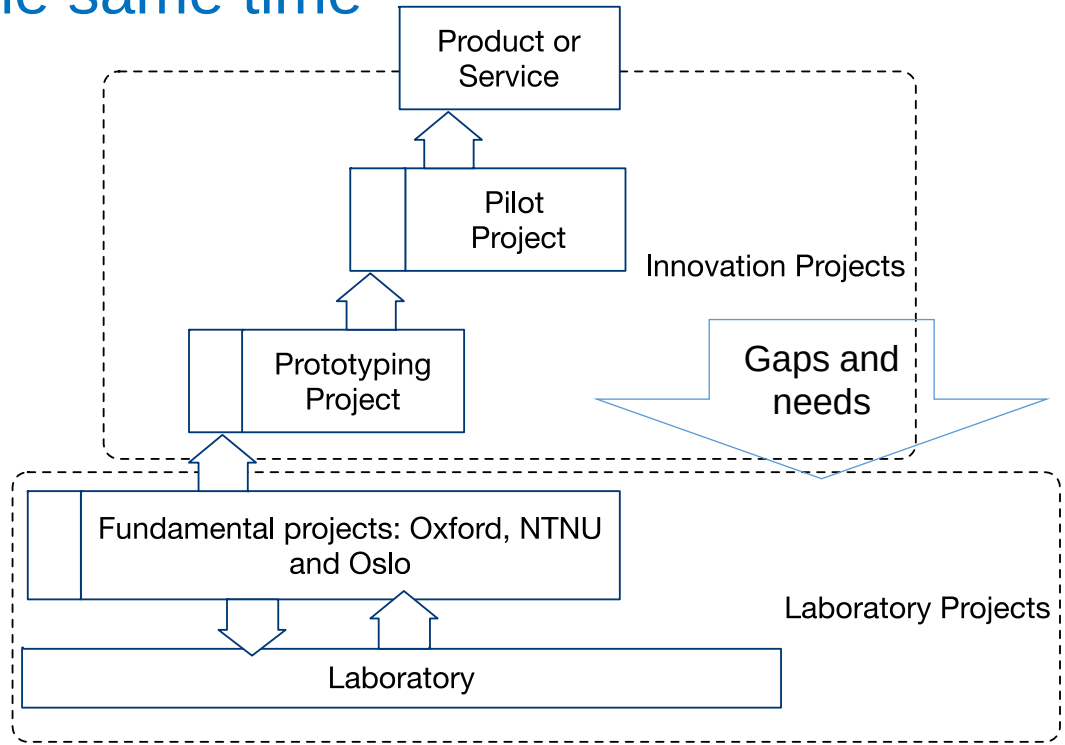
How we hope to do innovation and fundamental research at the same time



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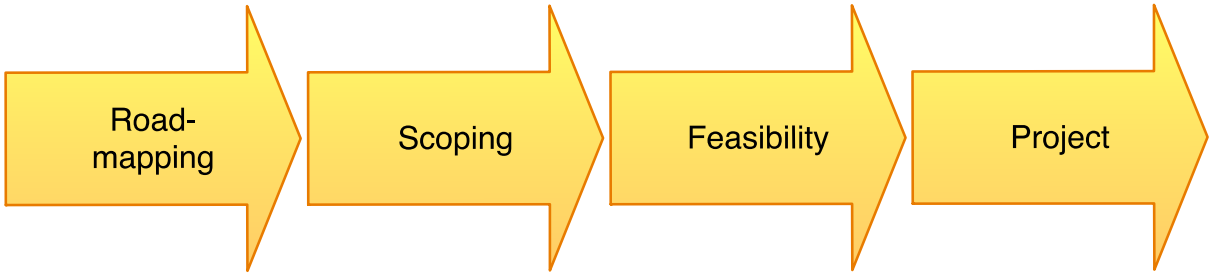
With a defined innovation pipeline



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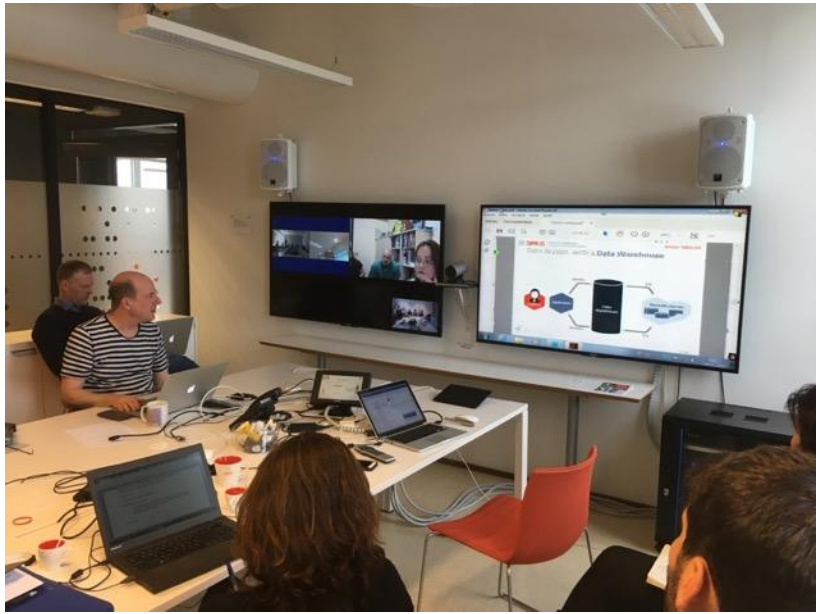
Challenges in collaboration and remote work



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Digital Twins

Industry Pains:

- “Everybody” is offering a digital twin.
- Fragmented systems, siloed perspectives and overload of data.
- Systems are difficult to configure, maintain and scale.
- Challenges in work practices, security and alignment to business.

- A standards-based semantic backbone for digital twins
- Faceted data access and semantic user interfaces for usable twins
- Domain-adapted interpretation of unstructured information in twins
- Formal simulation of complex twin deployments and architectures

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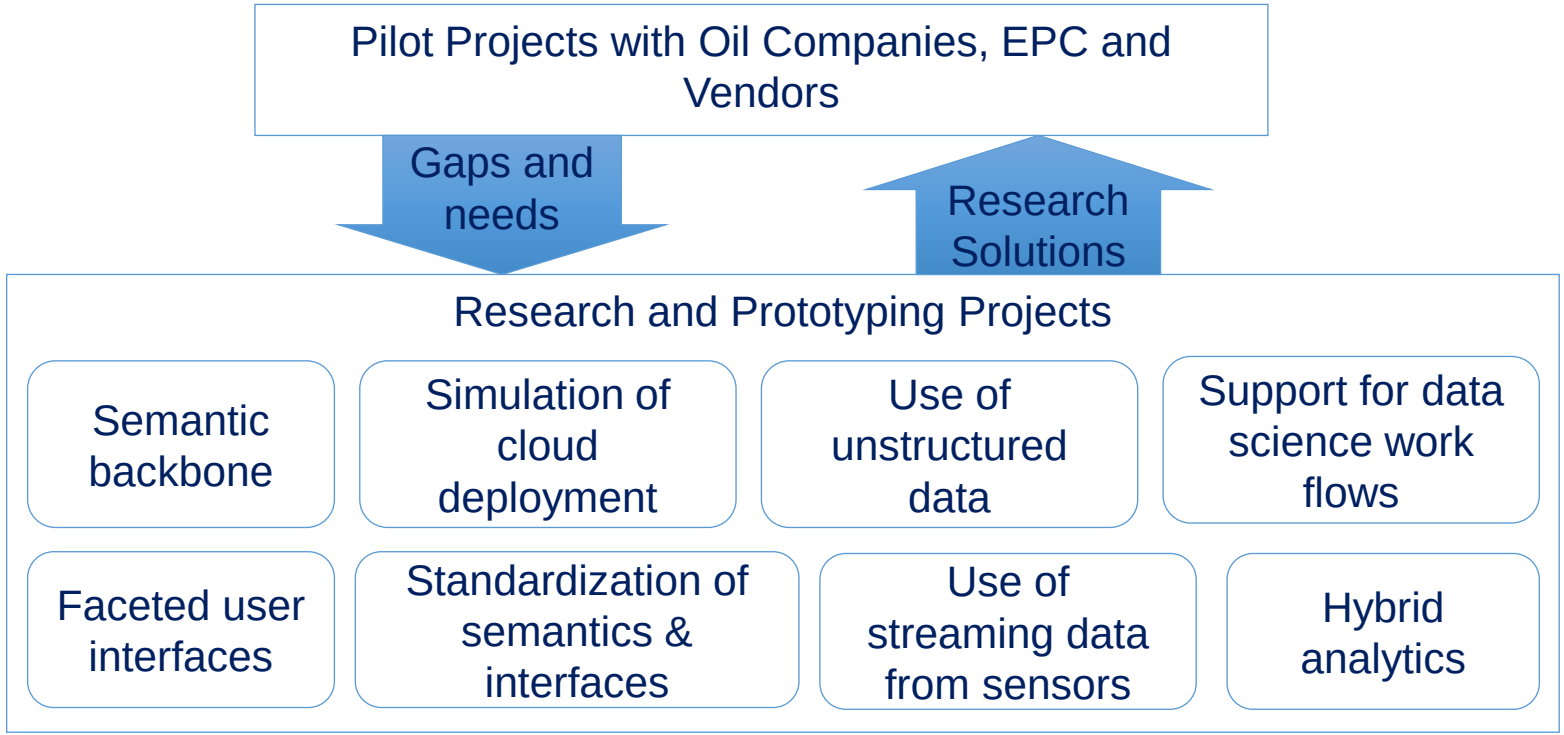
Digital Twin Research Strategy



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Conclusions

- Recognize role as hybrid autonomous organization
- Encourage and employ boundary spanners
- Use a matrix to link projects (societal challenges) to strands (academic homes)
- Use a staged innovation process: conversation and scoping is hard intellectual work

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