

Capgemini 

ROBERT ENGELS

Insights & Data Global Business Line



Insights & Data Services



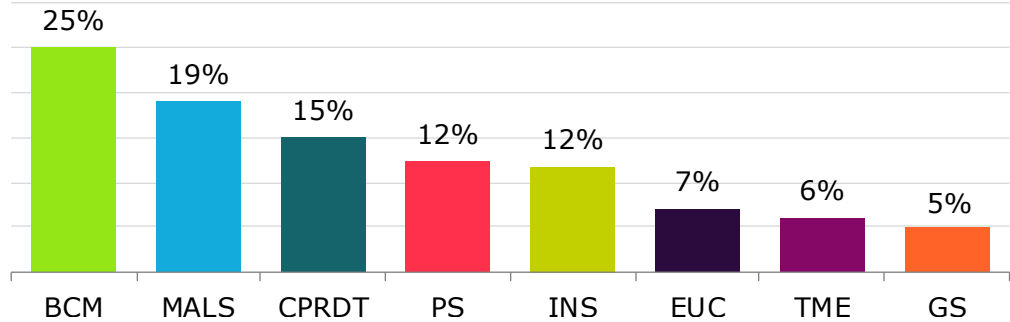
More than **16,000** people across **40** countries
11,000 people in India

Headcount assigned to main geographies

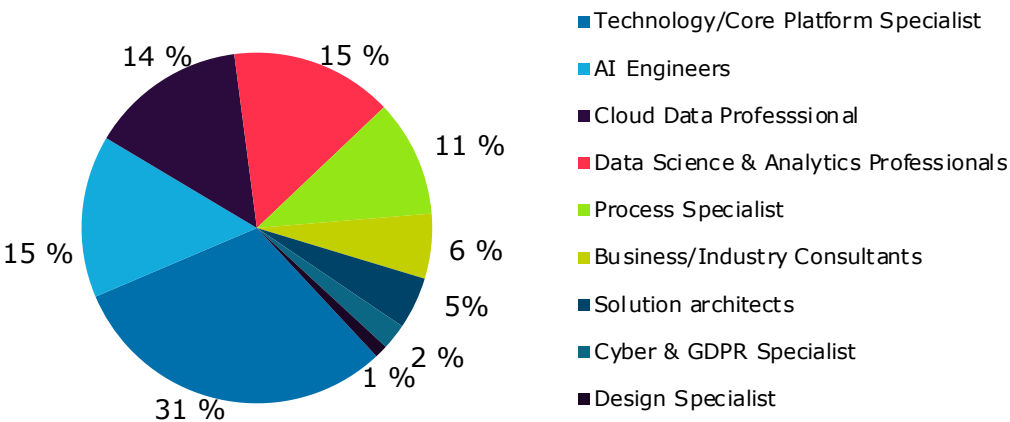
| | NA | WE | RoW |
|------------------------|-------|-------|-------|
| Personnel onshore: | 1.650 | 3.000 | 820 |
| Personnel offshore: | 5.850 | 4.700 | 680 |
| Total assigned to Geo: | 7.500 | 7.700 | 1.500 |

Sector Portfolio

View by Industry



Capability View



CAPGEMINI NORGE

Department for Data Science and Artificial Intelligence

EXPERTISE

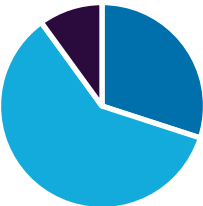


- NLP & SEMANTICS
- ADV. ANALYSE
- VIDEO/AUDIO ANALYSIS
- PLANNING & OPT.
- GENERAL ML



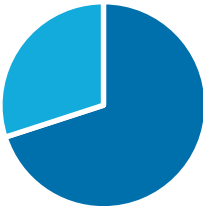
31 ML&AI experts (Norway)
(44+ MU Scandinavia)

EDUCATION

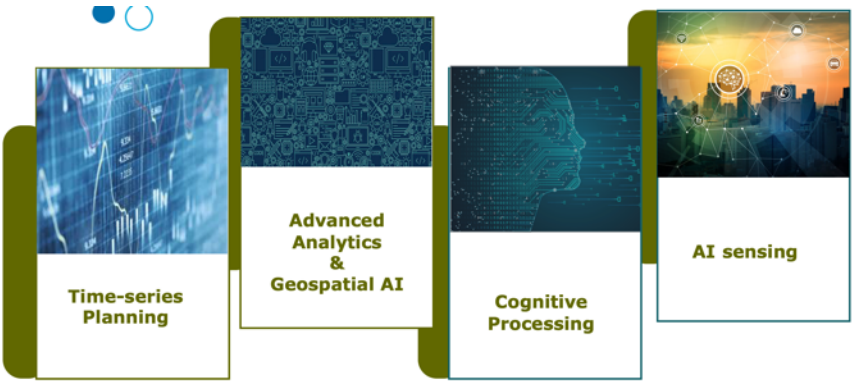


■ PhD ■ MSc ■ Other

GENDER



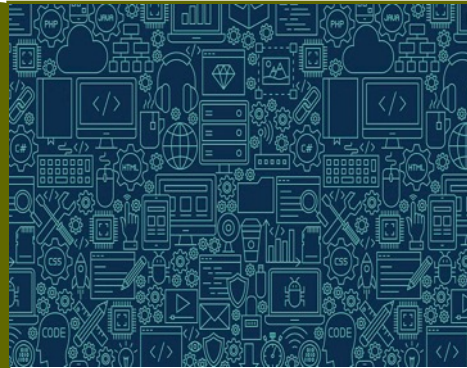
■ MALE ■ FEMALE



Groups at the Artificial Intelligence Department



**Time-series
Planning**



**Advanced
Analytics
&
Geospatial AI**



**Cognitive
Processing**



AI sensing



MACHINE LEARNING USE CASES IN FINANCE



Process Automation

- Chat bots
- Call center automation
- Paperwork automation
- Gamification of employee training etc



Security

- Fraud detection
- Monitoring
- Network security



Underwriting and credit scoring

- Augment human capabilities
- Scoring models
- Increase effectiveness
- Increase quality



Algorithmic trading

- Improve trading decisions
- Increase knowledge decisions are based upon (/w knowledge graphs, semantics and reasoning)

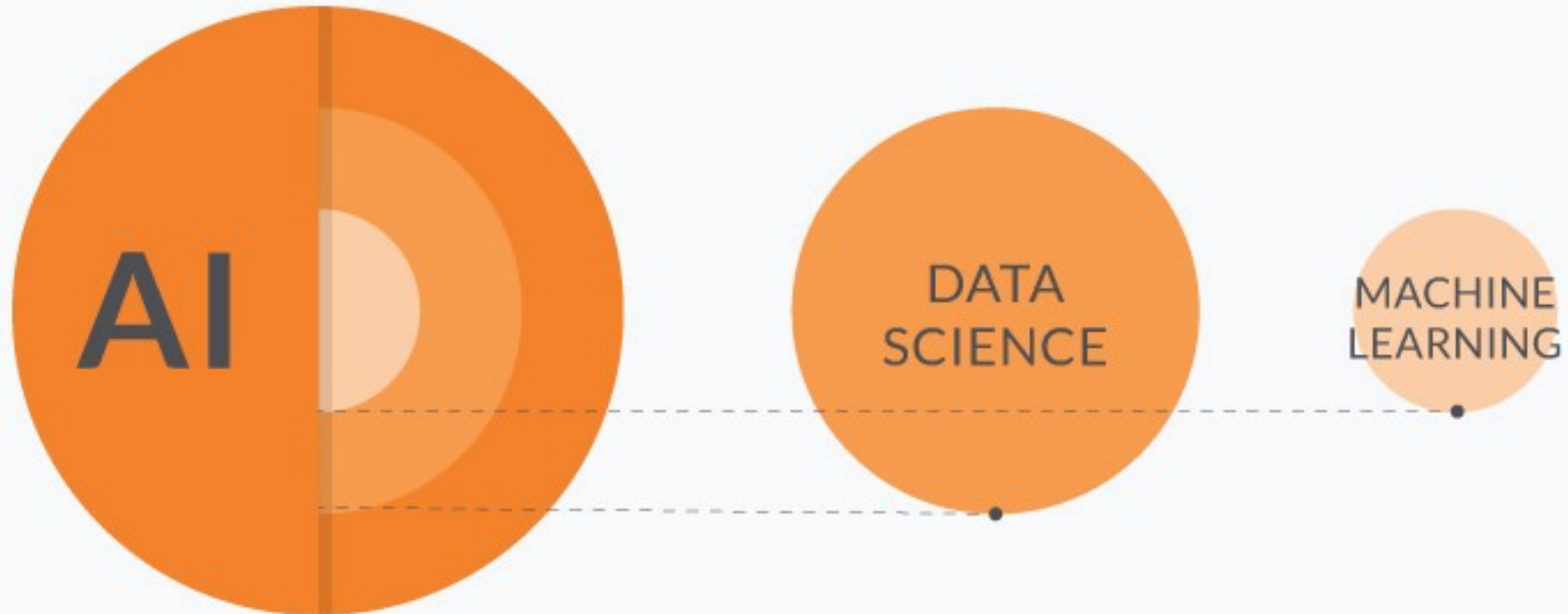


Robo-advisory

- Bionic advice
- Portfolio mgmt
- Financial product advisory
- Definition new products



AI TERMINOLOGY





MACHINE LEARNING DEVELOPMENT TEAM



Solution Architect



Big Data Architect



Big Data Engineers



Backend developers



Frontend developers



Data Scientists



Machine Learning
Engineers



Business Intelligence
Experts



Issues working with customers on «semantics»

- Ontology
 - Development
 - Quality
 - Inconsistencies
 - Inference of new «facts»
 - Alignment (with existing Tboxes)
 - Completeness of ontology (really covering what it should cover?)
 - Approach of Obiedkov et al interesting (extention of PAC learning with oracle querying)



Probably Approximately Correct Completion of Description Logic Knowledge Bases

Sergei Obiedkov¹, Barış Sertkaya², and Denis Zolotukhin¹

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`sergei.obj@gmail.com`, `ddzolotukhin@edu.hse.ru`,

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`sertkaya@fb2.fra-uas.de`

Abstract. We propose an approach for approximately completing a TBox w.r.t. a fixed model. By asking implication questions to a domain expert, our method approximates the subsumption relationships that hold in expert's model and enriches the TBox with the newly discovered relationships between a given set of concept names. Our approach is based on Angluin's exact learning framework and on the attribute exploration method from Formal Concept Analysis. It brings together the best of both approaches to ask only polynomially many questions to the domain expert.



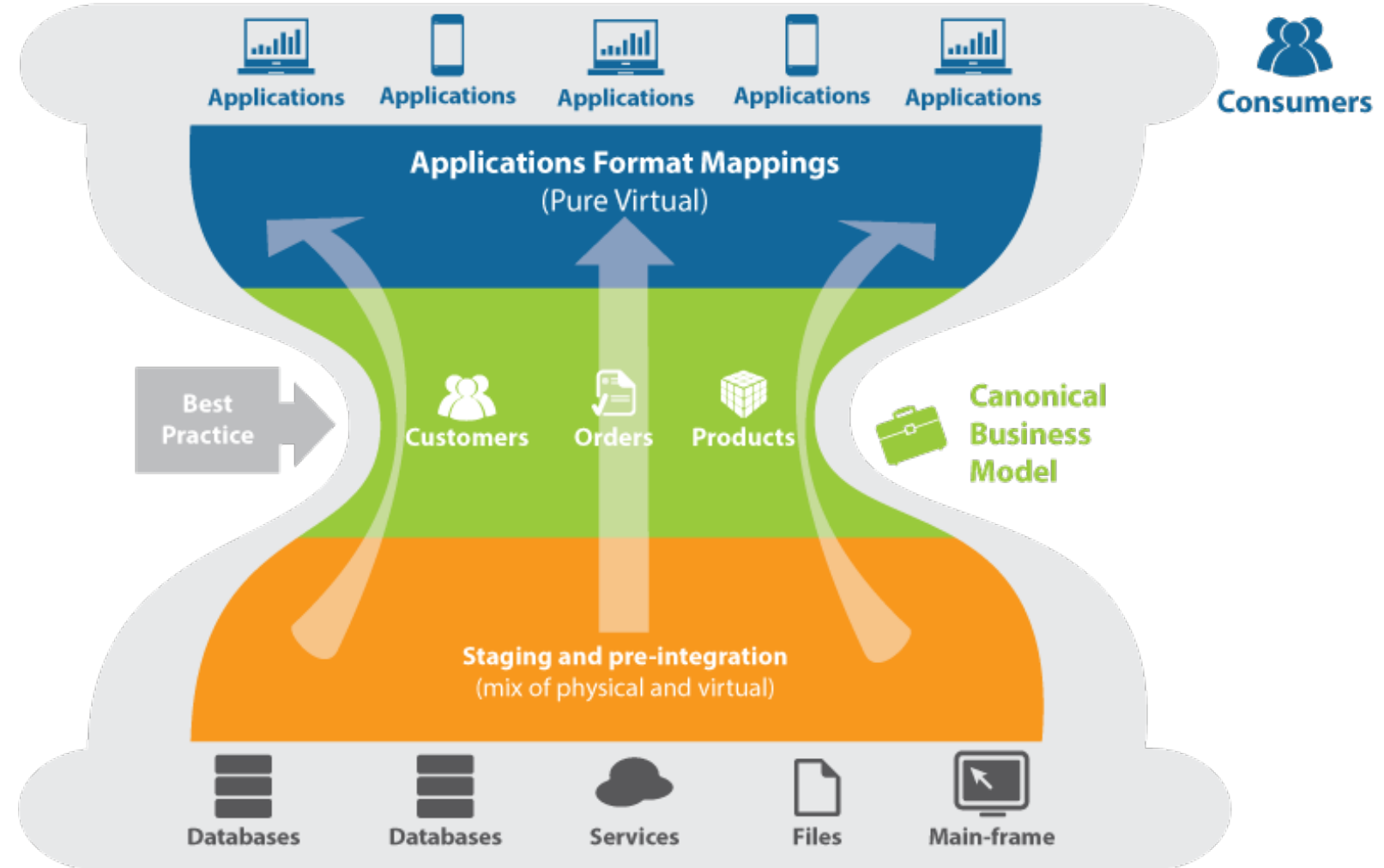
Issues for our customers

- Instance similarity or «same-ness»
- Ontology Based Data Access (OBDA)
 - Data Virtualization Layer
- Data Cleansing (cleaning & repair)
 - Constraint checking on lifted semantic data sets (example Mercedes Unfallforschung)
 - In combination with LOD?
- Domain modeling of constraints and implications <- using them in distributed systems (!)
 - RDF/RDFS/OWL + reasoning = partial solution



Issues for our customers

- Ontology Based Data Access (OBDA)
 - Data Virtualization Layer





Issues for our customers

- Data Cleansing (cleaning & repair)
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Issues for our customers

- Domain modeling of constraints and implications <- using them in distributed systems (!)
 - RDF/RDFS/OWL + reasoning = partial solution



Statistikk 2P (V2014)Klasse-Masseidelt 1 - For hånd

Frekvenstabell

| Skostr. | Frekvens (antal) | Relativ frekvens | Kumulativ frekvens | Relativ kumulativ frekvens |
|---------|------------------|-----------------------|--------------------|----------------------------|
| 36 | 3 | $\frac{3}{25} = 0,12$ | 3 | |
| 37 | 8 | $\frac{8}{25} = 0,32$ | | |
| 38 | 9 | $\frac{9}{25} = 0,36$ | | |
| 39 | 5 | $\frac{5}{25} = 0,20$ | | |
| sum | 25 | 1,0 | | |

BPG



Forskrift om fiske- og fangstfartøy under 15 meter største lengde

Innh

7. Radio

§ 64. Virkeområde

Dette kapittelet gjelder for dekkede fartøy og åpne båter med styrehus.

§ 65. Dokumentasjon som skal finnes om bord

Følgende dokumentasjon vedrørende radioutstyr skal finnes om bord:

| | Fjordfiske og Kystfiske | Bankfiske I og Bankfiske II |
|---|-------------------------|-----------------------------|
| IAMSAR volume III | X | X |
| Instruksjonsbøker for hvert enkelt radioutstyr | X | X |
| Kanalplan og frekvenstabeller for det aktuelle fartsområdet | X | X |
| Tillatelse til bruk av frekvenser (konsesjon/Licence) | X | X |
| Radiodagbok. Dekksdagboken kan benyttes som radiodagbok | X | X |
| GMDSS-dekningskart | | X |
| «GMDSS Operating Guidance for Masters of Ships in Distress Situations» | | X |
| ITUs «Manual for use by the Maritime Mobile and Maritime Mobile-Satellite Services» | | X |
| GMDSS-nødprosedyrer (skal være oppslått ved radiostasjonen) | X | X |
| Tegninger som viser radioarrangementet (antennetegninger, tegninger over radioutstyrets plassering i styrehuset og kablingsdiagram) | X | X |

§ 66. Sikkerhetssertifikat for radio

(1) Fartøy skal ha sikkerhetssertifikat for radiotelefon på fiske- og fangstfartøy.



Customer problem

Estimate validity of customer requests wrt law

Tasks

1. Model laws for domain

1. <https://lovdata.no>
2. Model constraints & implications

2. Model objects

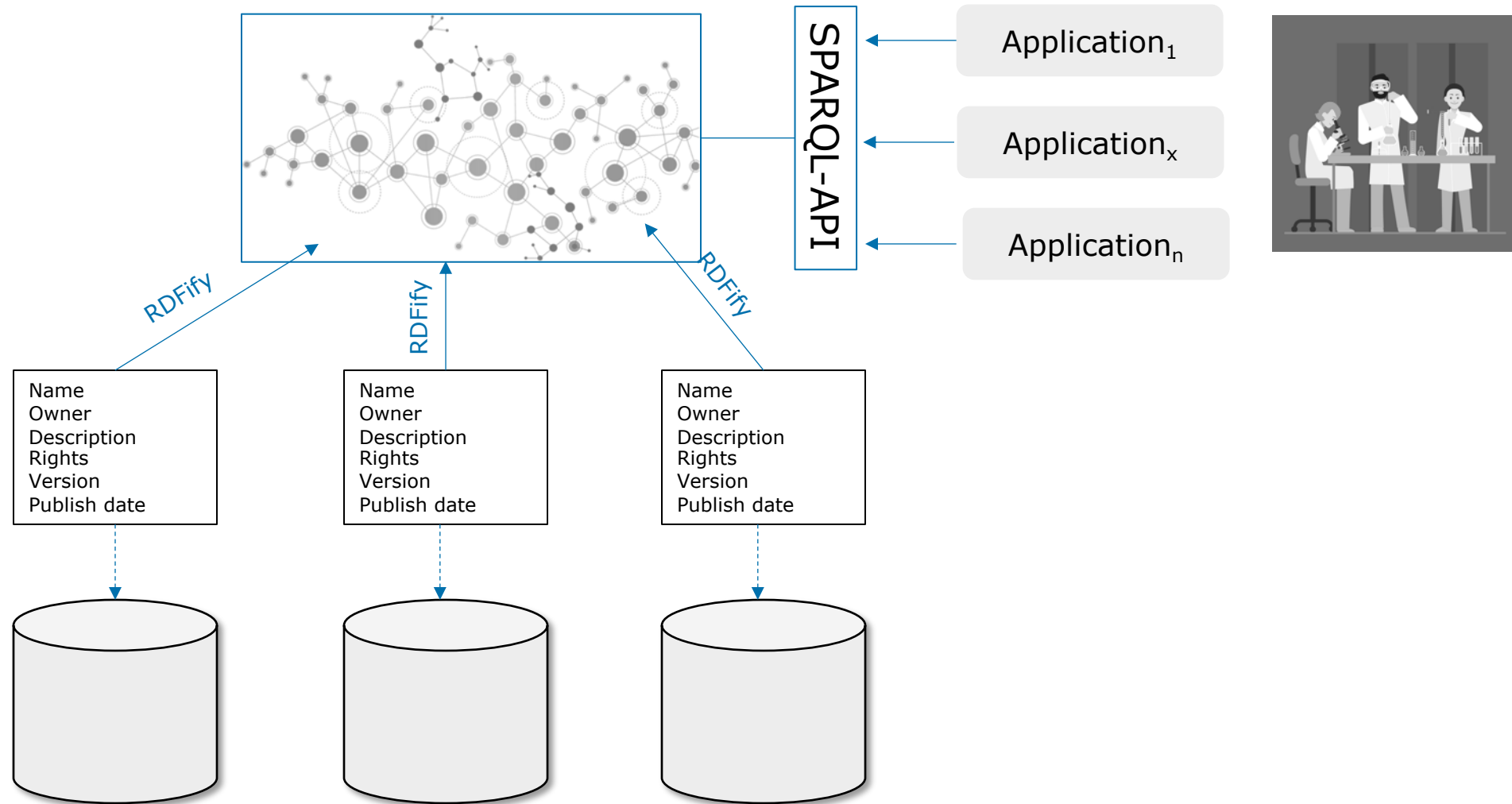
1. Ships/vessels: various features like length, crew size, engine, area of application etc

3. Run/deduce what parts of law apply to a specific vessel

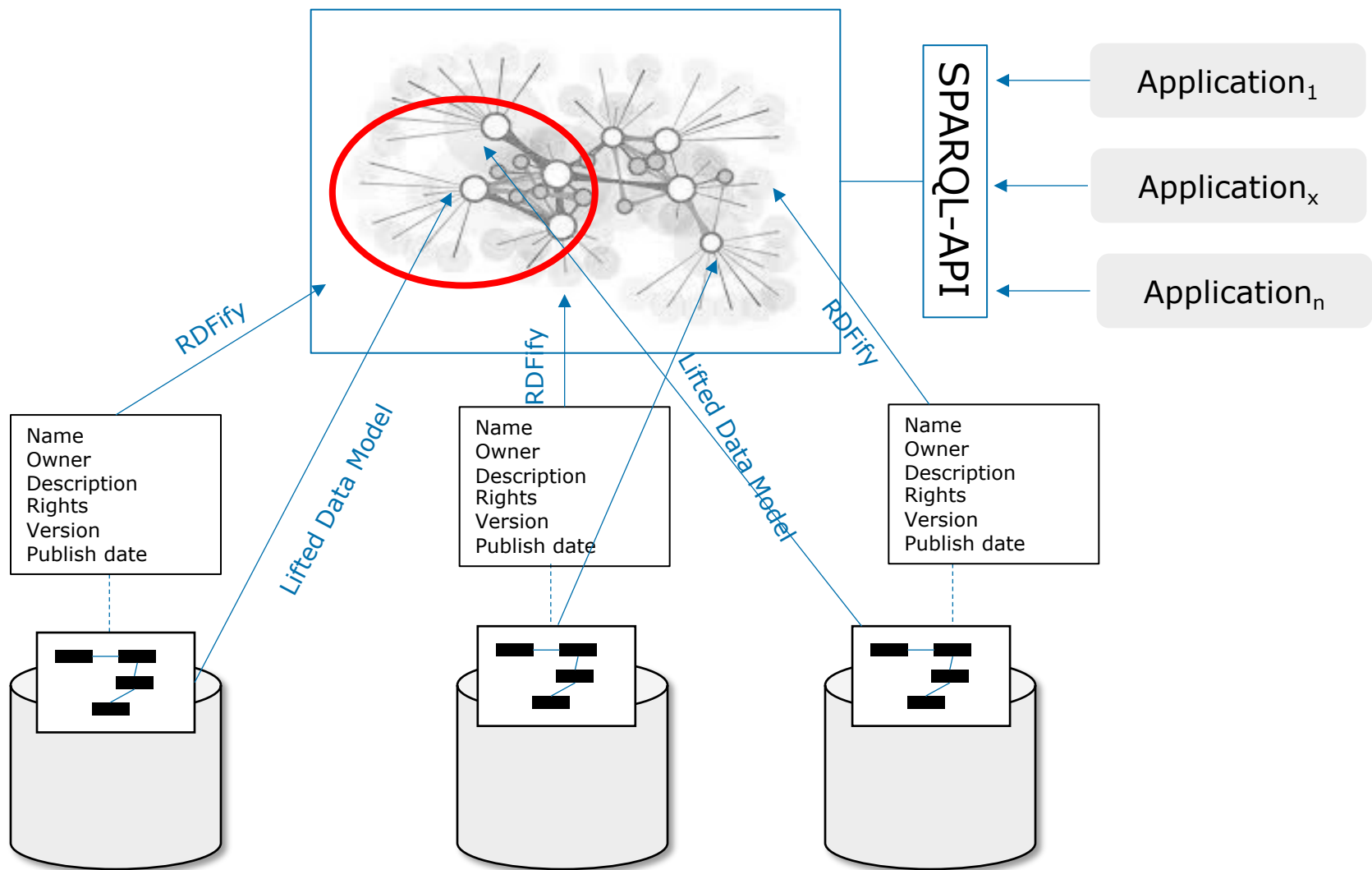
1. Geographic constraints
2. Constraints on equipment
3. Constraints on application area
4. Tests to be made
5. Proofs to be delivered



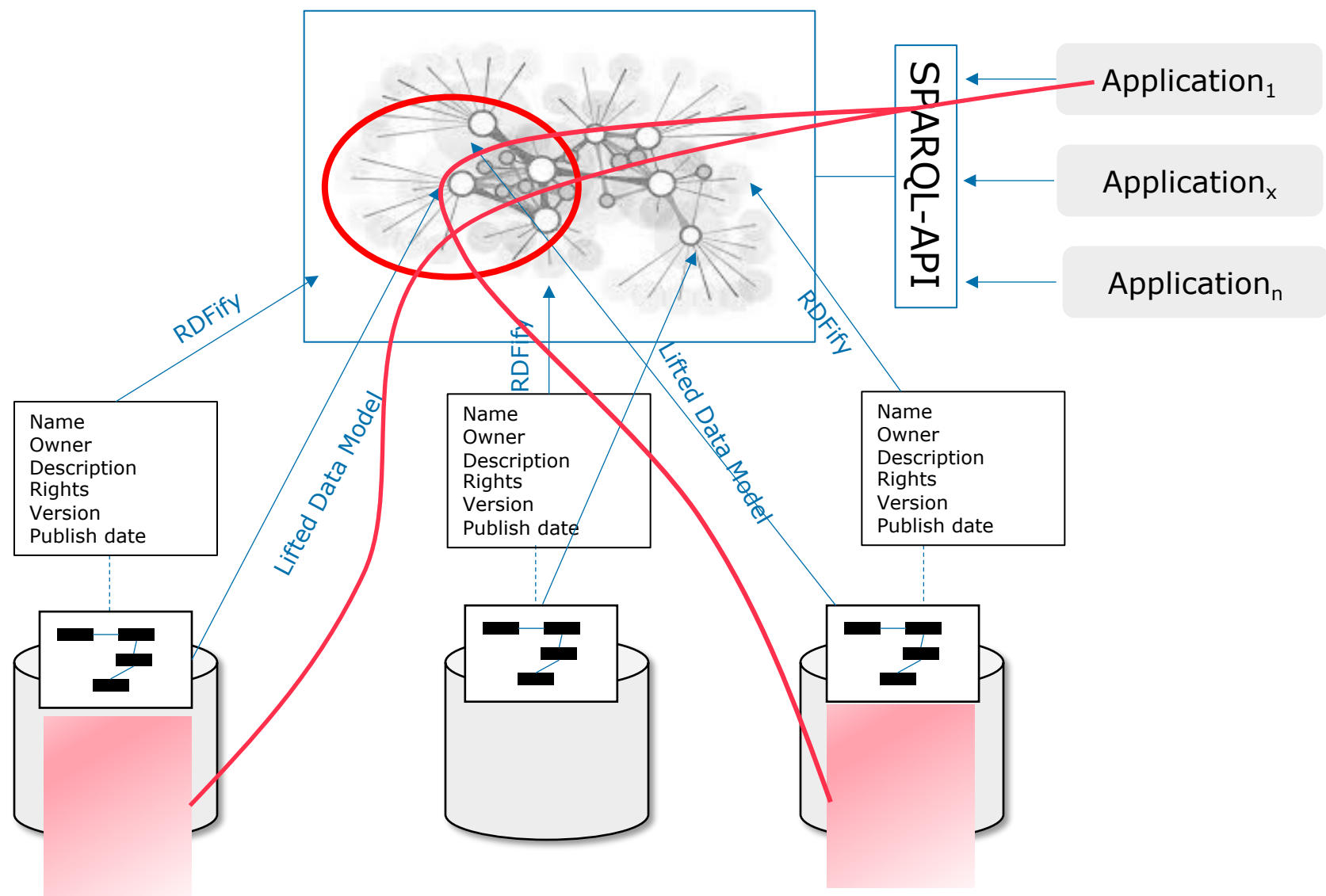
Data as an Asset – fase 1



Data as an Asset - fase 2



Data as an Asset - fase 3



We have a unique take on creating business impact with insights



Vision

Applied Insights and AI are the key drivers of **success in the digital era**

Mission

We partner with our clients to create and deliver exactly the **capabilities & solutions** that they need to thrive on data

Promise

We deliver real **business outcomes**, covering **end-to-end at scale**, harnessing **ethics & trust**



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