Insights & Data Global Business Line

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

Headcount assigned to main geographies

<table>
<thead>
<tr>
<th></th>
<th>NA</th>
<th>WE</th>
<th>RoW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel onshore:</td>
<td>1.650</td>
<td>3.000</td>
<td>820</td>
</tr>
<tr>
<td>Personnel offshore:</td>
<td>5.850</td>
<td>4.700</td>
<td>680</td>
</tr>
<tr>
<td>Total assigned to Geo:</td>
<td>7.500</td>
<td>7.700</td>
<td>1.500</td>
</tr>
</tbody>
</table>

Sector Portfolio

View by Industry

- BCM: 25%
- MALS: 19%
- CPRDT: 15%
- PS: 12%
- INS: 12%
- EUC: 7%
- TME: 6%
- GS: 5%

Capability View

- Technology/Core Platform Specialist: 31%
- AI Engineers: 15%
- Cloud Data Professional: 14%
- Data Science & Analytics Professionals: 15%
- Process Specialist: 11%
- Business/Industry Consultants: 6%
- Solution Architects: 5%
- Cyber & GDPR Specialist: 2%
- Design Specialist: 1%
Groups at the Artificial Intelligence Department

- Time-series Planning
- Advanced Analytics & Geospatial AI
- Cognitive Processing
- AI sensing
MACHINE LEARNING USE CASES IN FINANCE

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

- Fraud detection
- Monitoring
- Network security

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

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

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

Source: N-IX, 2019
MACHINE LEARNING DEVELOPMENT TEAM

Solution Architect  Big Data Architect  Big Data Engineers  Backend developers

Frontend developers  Data Scientists  Machine Learning Engineers  Business Intelligence Experts

Source: N-iX, 2019
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 etal interesting (extention of PAC learning with oracle querying)
Probably Approximately Correct Completion of Description Logic Knowledge Bases

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\textbf{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

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  - Data Virtualization Layer
Issues for our customers

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Issues for our customers

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Customer problem

Estimate validity of customer requests wrt law

Tasks
1. Model laws for domain
   1. https://lovdata.no
   2. Model contraints & 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 contraints
   2. Contraints on equipment
   3. Constraints on application area
   4. Tests to be made
   5. Proofs to be delivered
Data as an Asset – fase 1

[Diagram showing RDFify processes leading to SPARQL-API with applications connected to databases containing Name, Owner, Description, Rights, Version, Publish date information.]
Data as an Asset - fase 2

- RDFify
- Lifted Data Model
- Publish date
- Version
- Rights
- Description
- Owner
- Name

- API
- SPARQL
- Application₁
- Applicationₓ
- Applicationₙ
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.