

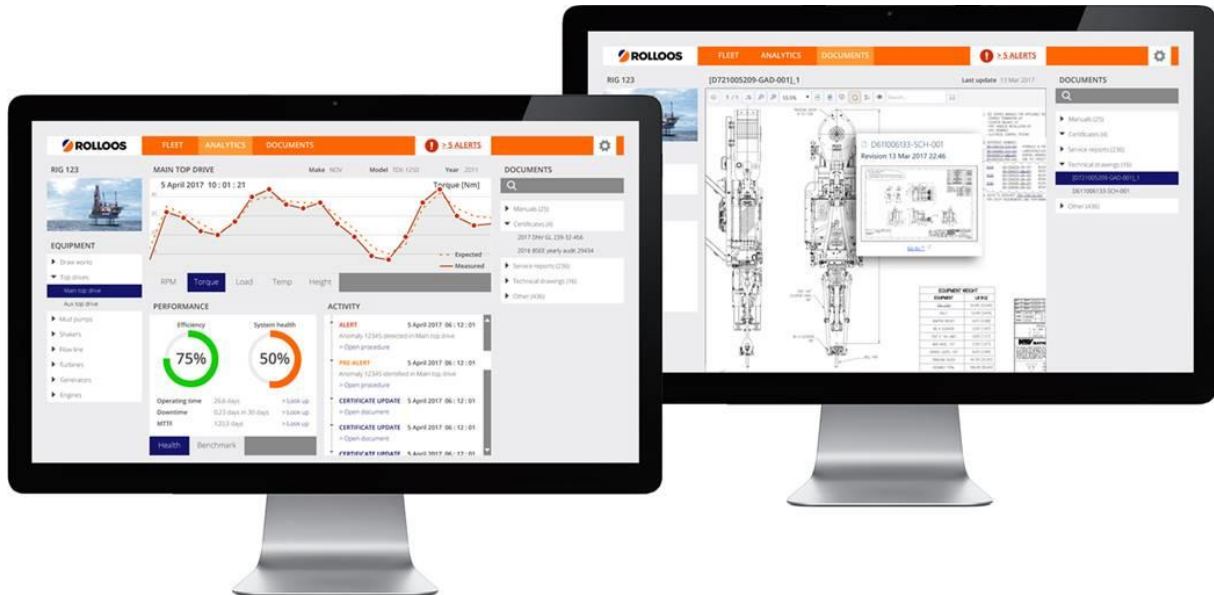
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## Rolloos Company case Joint Interdisciplinary Project Machine Learning

### 1 Introduction

Briefly describe the background of the company case:

- **What does the organization do?**  
We are developing innovative solutions for the offshore industry (wind, oil, gas). We enable our clients to centralize knowledge and experience by remote monitoring, sensing and (video) data analytics. From their central knowledge basis, we enable our clients to communicate to their offshore workforces via our private 4G/LTE systems. Our clients are companies like Shell, Pacific Drilling, Maersk Oil and offshore wind farms (consortia)
- **What recent (internal / external) developments led to selecting this case?**  
Our clients own and operate high value, complex and remote assets such as offshore windfarms, drilling rigs and platforms. On these assets all equipment is interconnected and to enable a holistic view, all the generated data need to be centrally stored and analyzed. The insights generated will enable huge costs savings due to efficient operations and maintenance schedules.
- **Describe the case as a problem statement**  
As we do not own any offshore platform ourselves, we need to build our own demonstration setup to demonstrate, test and validate our results. This will be portable and thus compact setup with a lot of data generating sensors to demonstrate and validate our capabilities
- **Benefits of the proposed change/opportunity**  
The benefits will be to gain more knowledge and insight, demonstrate our capabilities, enable internal training and validate operational outcomes
- **If possible include an image / drawing describing the case**  
The idea is to build a model of a part of a platform, for example a pump, compressor, electrical engine and a gearbox. One of the challenges is that it needs to be mobile (take by airplane) to demonstrate it at our clients' headquarters. An example of a dashboard can be found in the picture below.



## 2 Objective

### - Describe the objective

The objectives for the setup are:

- Design and build a test and demonstration setup of a mini-rig/plant with moving/rotating parts and sensors
- Setting up and configuring OSIsoft PI server with correct asset framework to enable data storage
- Connecting sensors to OSIsoft PI server to store data generated by sensors
- Design and build a machine dashboard
- If possible, create algorithms to detect operational status and anomalies with the assistance of our data analytics team.
- Delivering a script for a demonstration at client location including presentation

## 3 Scope

### - Location, asset, unit (be as specific as possible)

Project start and progress meetings will take place at our facility in Capelle aan den IJssel. The test setup needs to be mobile, so can also be built in Delft.

### - Provide several sub-questions that will need to be resolved as part of the problem statement

- Is it possible to validate the outcomes and manipulate outcomes to detect anomalies and act on it?

#### 4 Student selection

- **What faculties would fit this case:**
  - o Aerospace Engineering  
Control the setup and analyses results
  - o Mechanical, Maritime and Materials Engineering  
Design and build of test set up incl. selecting of sensors
  - o Civil Engineering and Geosciences  
Test setup should be focused on oil and gas applications or offshore wind
  
- **What specific capabilities are required?**
  - o Multidisciplinary interest, as it concerns both the conceptual design of an operational relevant setup as well as programming the actual system
  - o Analytical capabilities, as advanced algorithms are required to make the solution relevant and unique
  - o Intrinsically curious about new technologies, as it does not concern a replication of an existing solution

#### 5 Business coach

- **Who will coach the student team (if possible include a short bio)**
  - o Bram Masselink  
MSc Aerospace Engineering (TU Delft)  
Entrepreneur (founder of Lyceo and managing director of Rolloos)  
<https://www.linkedin.com/in/brammasselink/>
  
  - o Martijn Handels  
MSc Petroleum Engineering (TU Delft)  
Data Analytics Expert (Product Development Director of Rolloos Data Services)  
<https://www.linkedin.com/in/martijnhandels/>
  
- **Which department(s) will be involved?**
  - o Rolloos Data Services, which is a subsidiary of Rolloos

#### 6 Partner companies and research organizations

- **Mention any other companies involved in this company case**
  - o OSisoft
  - o Potentially Microsoft
  
- **Mention any research organizations involved**
  - o N/A