

# Implementation of Skaiwatch predictive maintenance platform

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## 1 Motivation for Skaiwatch predictive maintenance platform

Skaiwatch as a predictive maintenance platform aims at bringing values to our customers by automating machine diagnostic and prognostic. The former specifies the type of faults incur by a machine, while the latter is concerned with the severity of the fault type, and is directly tied to the remaining useful life of an asset. Skaiwatch follows the vision of Karsten Moholt founder, which is continuous improvement, through innovation for customers satisfaction.

The goal is to implement a web based application available any where on any device. The application is a suit of software that facilitates the predictive maintenance pipeline through automation, from diagnostic, prognostic, remaining useful life estimation, recommendations, reporting to maintenance planing. The technology used in this project is mature and well established and is based on signal processing, statistics and probability, machine leaning, mathematical optimization, and web technology.

On the customers view points, the benefits are invaluable. The obvious one is cost saving. By knowing the current and future health state of a machine, the customers are immune to sudden breakdown or downtime, which could alt production and incur significant financial or even human cost. The previous point leads to confidence in the reliability of machines and is essential for machine based production. This allows business partners to rely on each other and creates an efficient and serene business atmosphere.

For Karsten Moholt view point, Skaiwatch is the response to continuous innovation in order to maintained its competitive advantage and avoid obseleteness.

## 2 Current status and future work

Currently, we have worked on one external and two internal projects, that resulted in understanding and formulating a predictive maintenance problem, presenting a solution through a demo web application, that automates machine faults detection.

The next step is to set a time line, plan and execute a project for a complete predictive maintenance platform, which we called Skaiwatch. The latter is centered on the following key Item:

1. An automated vibration tool box for bearing fault detection
2. An automated tool box for non rotating machines
3. A time series analysis tool box
4. An automated reporting application for recommendations, machines status and maintenance planning

### 3 Project founding and project Plan

#### 3.1 Project founding scheme

Implementation of the Skaiwatch predictive platform will be founded by the Research Council of Norway industrial PhD scheme. The latter finances 50% of the project cost and requires

1. A PhD candidate
2. A project manager
3. A project administrator

The scheme allows companies to collaborate with Universities for a research based project that brings values into private sector companies. The duration of the project is between 3 to 4 years.

The scheme does not require companies to directly contribute the remaining 50% of the project cost in financial cost, but in man hours (Salary of the project participant). The application process is simple and 3 weeks after submitting the application a feedback is given.

	2019	2020	2021	2022	2023
3 years	547 500	562 500	578 000	593 500	610 000
Support per month	45 625	46 875	48 166	49 458	50 833
4 years	410 625	421 875	433 500	445 125	457 500
Support per month	34 219	35 156	36 125	37 094	38 125

Figure 1:

Figure 1 shows the founding provided by the research council of Norway per year for the Industrial Phd scheme.

#### 3.2 Tentative project plan

### 3.2.1 Automated vibration analysis tool box

