

Concept for Structural Health Monitoring software as a service

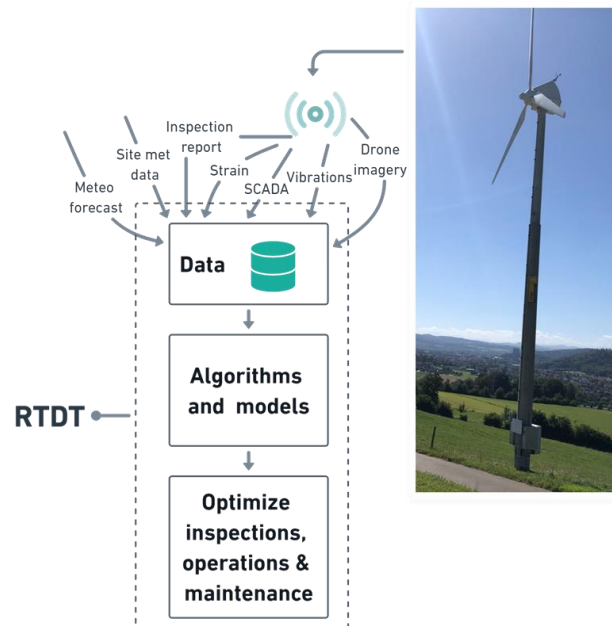
Challenge submitted by ETH Zurich. Chair of Structural Mechanics and Monitoring

CHALLENGE QUESTION

What could an ideal wind turbine health monitoring system look like?

GOAL

Prepare a list of recommendations for what an ideal wind turbine health monitoring system could look like.



MOTIVATION

You are the owner of a small wind farm and are interested in monitoring-driven condition assessment of your wind turbines. This involves the process of collecting in-situ data from an in-service wind turbine and "mining" that data for information that informs decisions about the structure's state of health, faults, damage, abnormal operation, and remaining useful lifetime. In-situ data collection could involve the native SCADA system on board a wind turbine, an independent measurement system installed by a third party and/or via non-destructive testing and inspection by technical staff.

EXPECTED OUTCOMES

A recommendation for what a wind turbine health monitoring system could look like: What an UI/UX design might look like? What data an owner/operator might want to visualize? Should the user have complete freedom to plot any raw data stream from the wind turbines? What type of analysis should be included in such a system? Should the user be able to code their own analysis/models? What would a summary report of a wind turbine health contain? Should such a monitoring system come pre-configured for the end-user, or should the user be able to configure all the monitoring dashboards by themselves? Should such an application be web-based or installed on the local desktop?

WHO THE CHALLENGE IS SUITABLE FOR

Monitoring and measurements specialists, engineers, researchers, students, asset owners.