

Fewer failures reduce costs: 5 million euros awarded for predictive maintenance with big data algorithms

A multidisciplinary team from the Eindhoven University of Technology together with several scientists and companies, receives five million euros from science funder NWO for the "*PrimaVera: Predictive maintenance for Very effective asset management*" project.

The PI of the project is Prof. Marielle Stoelinga from the University of Twente and from TU/e participate:

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Within this project, new big data algorithms will be developed to better predict disruptions to infrastructure and production resources and thus to better plan maintenance. This is the goal of predictive maintenance, e.g., no more train delays, power outages, or failure of production machines. The PrimaVera project represents a major step towards this goal.

The vision of PrimaVera is to make deployment of predictive maintenance **easier and more effective**. By using a holistic approach to the maintenance workflow, the team will develop accurate, scalable, and real-time health **diagnostics and prognostics** and turn these into **effective maintenance strategies** that can operate in complex and uncertain environments. Thereby, making major steps in realizing the promises of predictive maintenance: **better system performance at lower costs**.

While the building blocks for predictive maintenance (such as sensor technology, data analytics, and optimization techniques) exist, key elements for the successful implementation of PM are still missing. Especially, accurate **prognostic and optimization algorithms**, their scalability, as well as their **integration** and **automation**. As stated by the roadmap Smart Industries

“The challenge is to reconcile the perspective of the domain experts with their failure mode analyses with the perspective of the data analysts with their correlations between environmental and internal factors and degradation behavior. After that, [...] organizational collaboration in managerial decision-making [...] and scheduling of the chosen course of action, and also from the organizational deployment of these decisions.”

The PrimaVera program picks up this challenge, through a multidisciplinary team providing exactly the required expertise.

The ultimate goal of the PrimaVera program is to achieve in 2025 **intelligent assets**, connected through the Internet of Things, **continuously collecting** data on their **condition**, loading and environment, that **autonomously decide** whether and when they need a **specific type of maintenance**.

NWO provides the money within the framework of the National Science Agenda (NWA) Research along Routes by Consortia (NWA-ORC) call. On behalf of the Ministry of Education, Culture and Science (OCW), NWO has funded research in the context of the Dutch National Research Agenda since 2018. This science-encompassing funding round is aimed at making interdisciplinary research and innovation possible, so that societal and scientific breakthroughs come within reach.

PrimaVera is part of Research on Routes by Consortia (ORC). This encourages free research through open calls for multi-year research of broad, inter- and trans-disciplinary conventions with a (social) purpose, on scientific and/or socially relevant topics with a clear added value for a broad, national approach.

Consortium: TU Eindhoven (Department of Mathematics, Industrial Engineering and Innovation Sciences), University of Twente, Radboud University, Saxion University of Applied Sciences, The Hague University of Applied Sciences. Companies: Damen Naval Ship Building, Technobis, Dutch Railways, ASML, Royal IHC, Rolsch Asset management, ORTEC Consulting Group, Alfa Laval. Governmental bodies: Rijkswaterstaat, Water Authority De Dommel, Dutch Aerospace Centre