

Mastering the challenges of industrial lidar-assisted model predictive turbine control

IEA Wind Task 32 – General meeting
Dr. Axel Schild, Zoom, November 2021



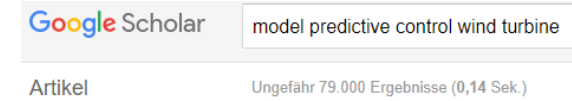
- **Axel Schild, 44 years old**
- **Senior Technical Consultant, Automation Solutions Energy Sector @ IAV GmbH**
- **Phd. in Control Theory, Field of Expertise is nonlinear model predictive control**
- **Over 15 years of industrial experience in model predictive control across diverse application domains**
 - Chemical/process industry applications
 - Automotive applications
 - Wind Energy applications
 - Energy management / infrastructure applications
- **Initiator & technology lead of large publically-funded project**



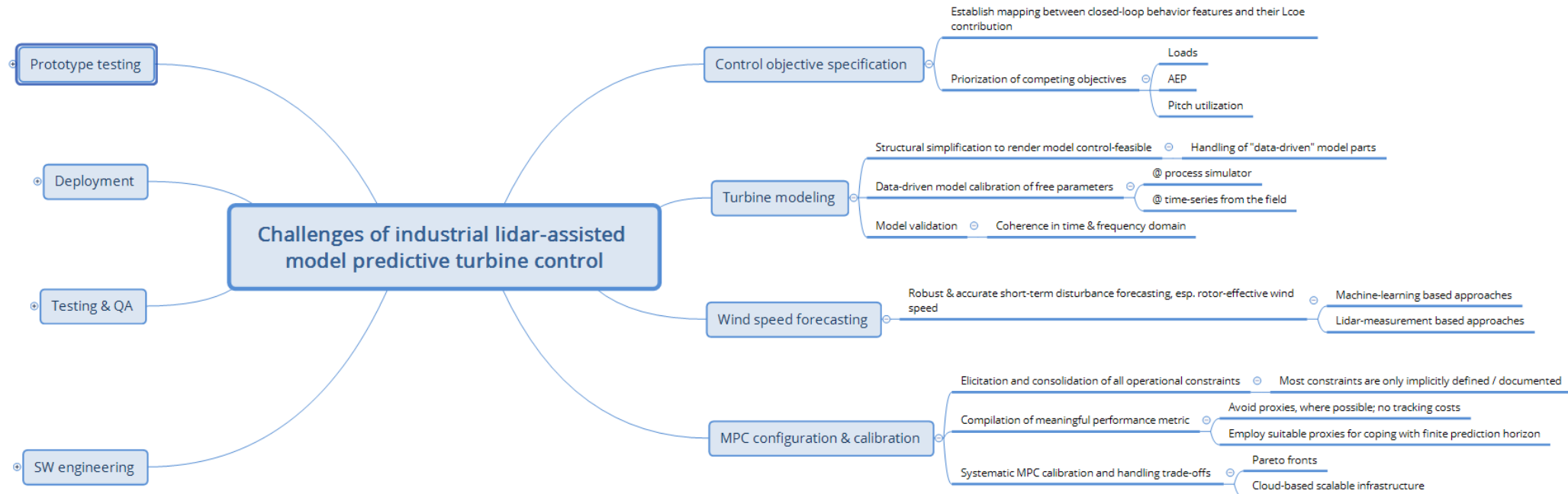
- **Discussion focus: Mastering (technical) challenges of industrial lidar-assisted model predictive turbine control**
- What are the current challenges?
 - What are solution components are existing?
 - What are open issues?

Challenges of industrial lidar-assisted model predictive turbine control

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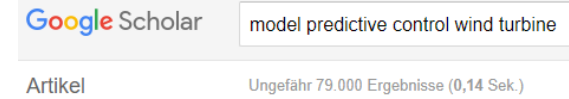
- ... implemented their solution ... ,“well”, on an office PC
→ because theory behaves so much nicer than reality!
- Along the way from a theoretical to a series solution, manifold **engineering** challenges must be overcome



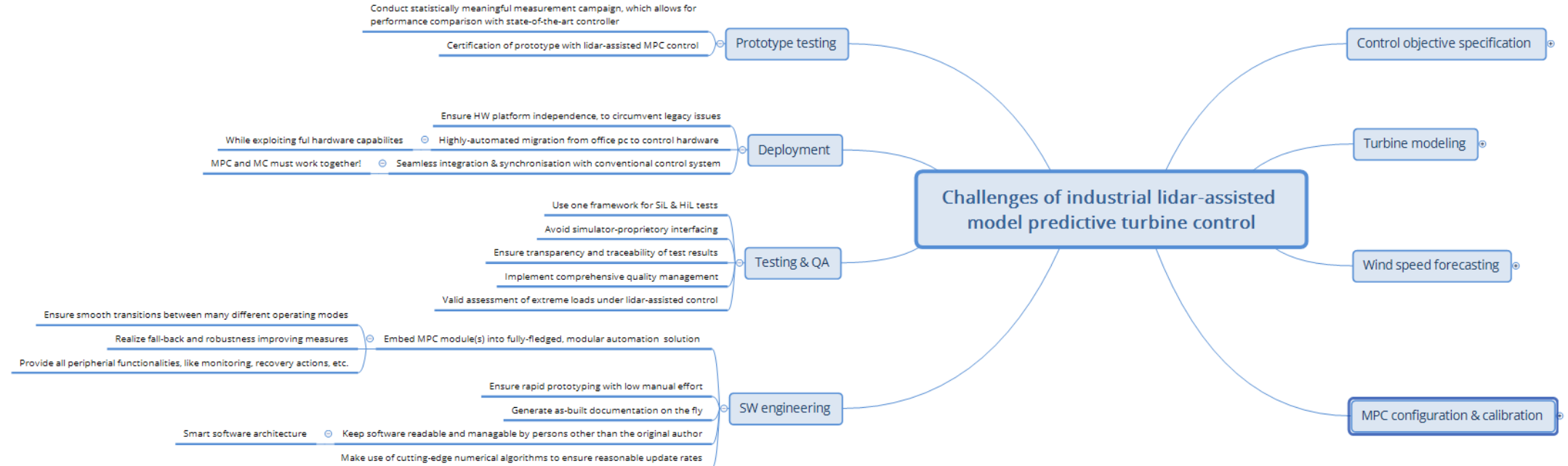
→ The more methodological obstacles to overcome

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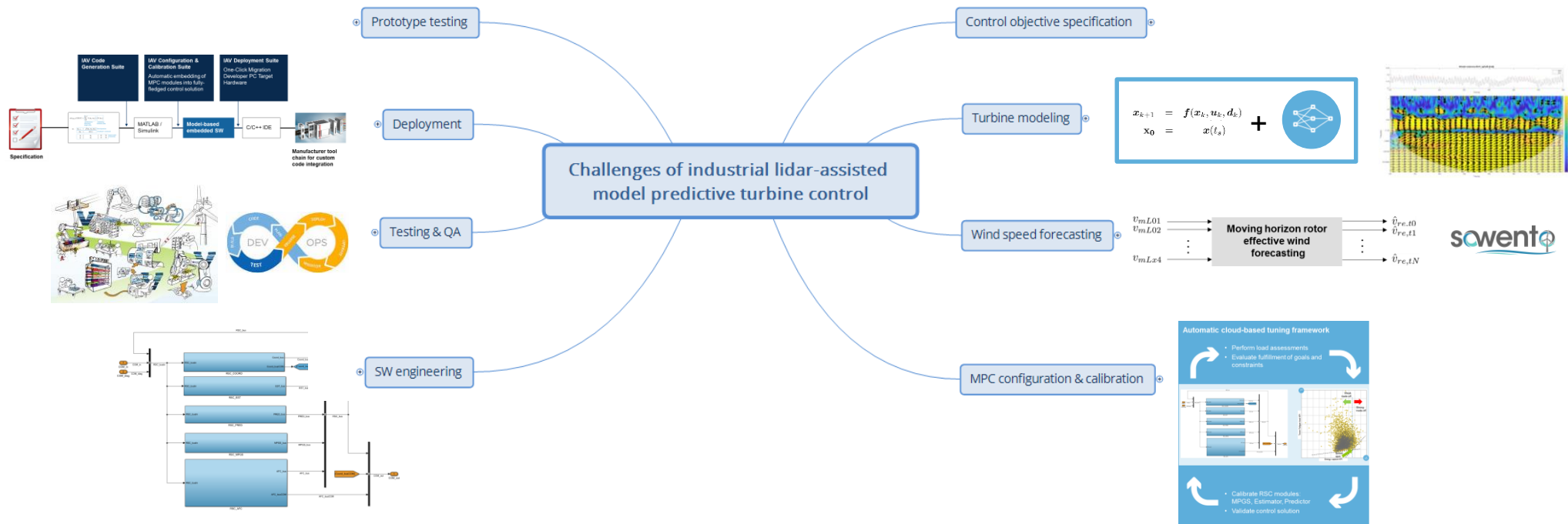


→ The more practical obstacles to overcome

An industry-grade technology platform is critical for making MPC a mass market solution

Developing & maintaining such a technology platform requires numerous experts and is very time-consuming & costly...

- ... if each market player develops this platform all for himself



→ Lidar-assisted MPC should be perceived as an technological enabler for differentiating from competition via designing & implementing the best operating strategy, not a goal by itself

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