



WORLD CLASS MAINTENANCE

Innovation Fieldlab Zephyros

*Towards Zero downtime and
Zero on-site maintenance*

Ferry Visser
Programma Leider Zephyros

Program:

- Welcome by DockWize, *Matthijs Lugtenburg*
- Update Fieldlab Zephyros, *Ferry Visser*
- Borssele 1 & 2 – Örsted, *Stefan de Bruijn*
- Wind op Zee up to 2030 – NWEA, *Hilbert Klok*
- Grid connection Offshore Maintenance – TenneT – *Martijn de Ruijter*
- **Coffee-break**
- Brainstorm / idea generation in subgroups
- Outcome subgroups, wrap-up and closure
- **Lunch**
- Possible transfer to EnergyPort Zeeland event

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Fieldlabs & projecten



Kennis & achtergrond

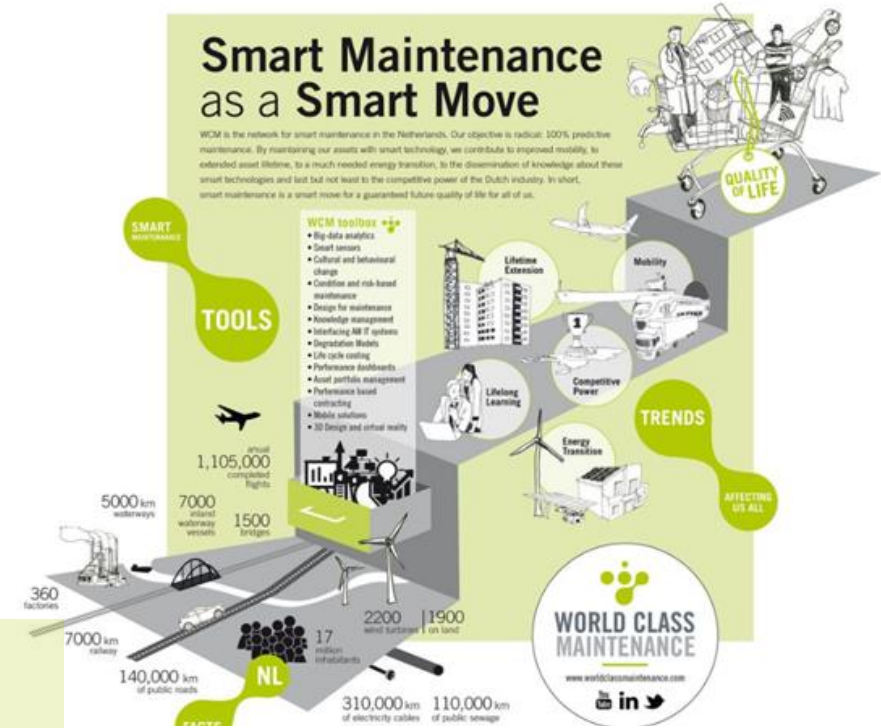


Lobby & politiek



Netwerk &
ledenvoordeel

- **The Network for Smart Maintenance**
- Development and execution of cross sectoral innovation projects
- Participation of Asset Owners, - Managers, Service Providers & Knowledge- and Education institutions, Government
- Development of Fieldlab programs for complete industry sectors



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Zephyros: Case for action

- Government puts great emphasis on offshore wind
- Focus is still on development and new construction
- Offshore wind industry is in pilot phase
- LCOE is largely determined by up-keeping (O & M) and this can be improved
- O & M is strongly logistically oriented and highly fragmented
- Need for Smart (remote) Maintenance
- Technology is available
- Cooperation is the solution (business, knowledge institutes, educational institutions)

Purpose of Zephyros

Substantial contribution to a sustainable world



Acceleration of energy transition



**Optimization of LCOE, Safety & Resources
Offshore-Wind**



More uptime



Remote O&M



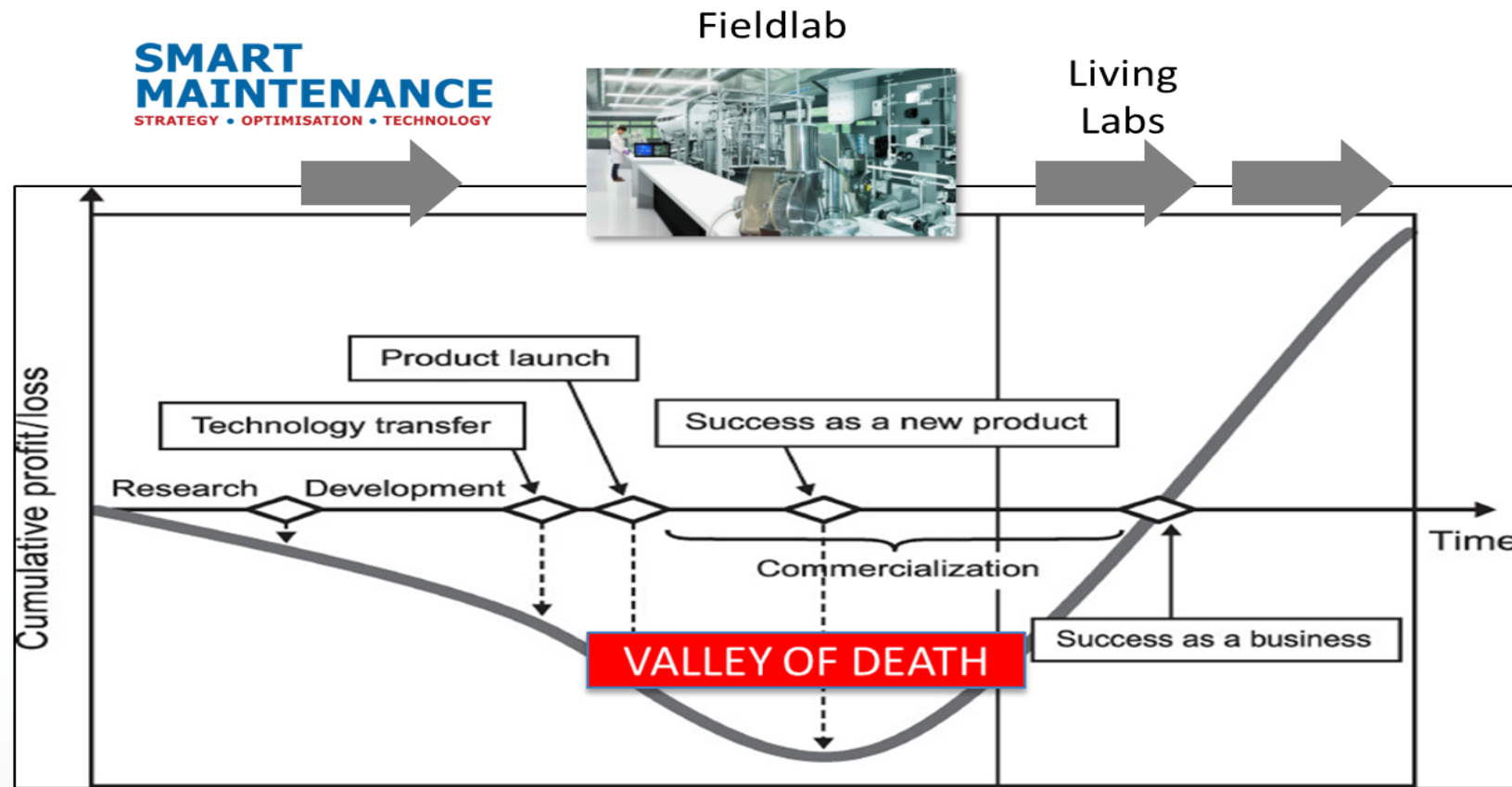
Longer lifecycle

Dot on the Horizon

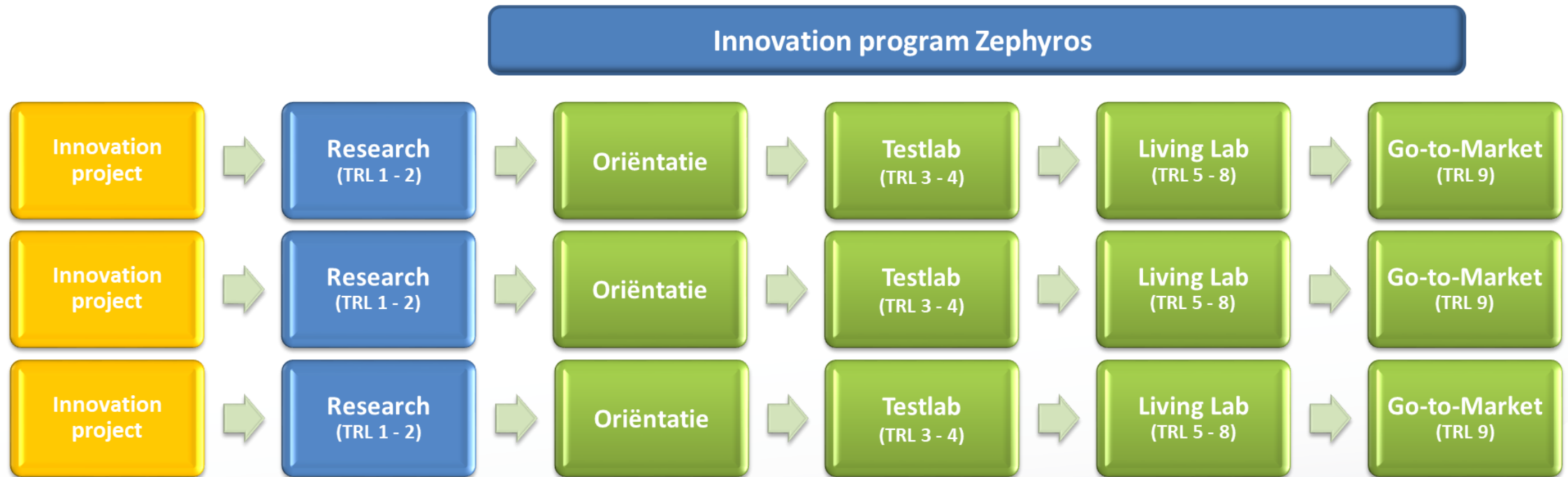
“Zero Downtime & Zero on-site Maintenance in Offshore Wind”



Smart Maintenance is the answer



Set-up of a WCM Fieldlab



Exposure of Fieldlab Zephyros

- TKI wind op zee Match Making dag 14-02-2018
- Bestuurlijk overleg Windtafel Provincie Zeeland 05-04-2018
- Netwerkbijeenkomst Kennis- & Innovatienetwerken Campus Zeeland 23-05-2018
- WindDays 13-06-2018
- Wind Europe 09-2018
- Gastcollege minor offshore renewable energy Hogeschool Zeeland 13-09-2018
- WCM Jaarevent 09-10-2018
- Energy Port Zeeland bijeenkomst 01-11-2018
- NWEA ALV 09-11-2018
- Contacta Zeeland 11-2018
- Nieuwjaarsbijeenkomst Nederlandse Wind Sector 16-01-2019
- TKI wind op zee Match Making dag 14-02-2019

Innovation Projects under development



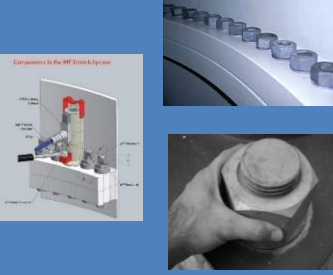
AIRCtuB

(Automatic Inspection and Repair of TurbineBlades)



Data Tower

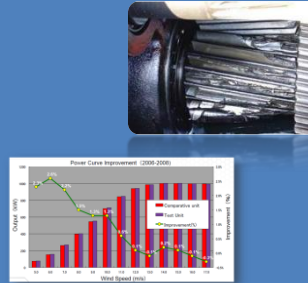
(Central offshore-wind data-analytics for decision support)



Offshore Wind Bolting

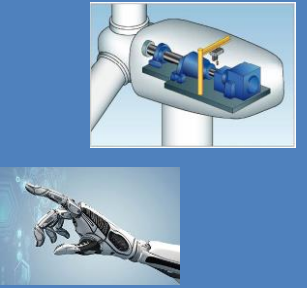


Supply Chain Optimization



Smart Lubrication

(autonomous lubrication inspection & conditioning)



Nacelle Robotics

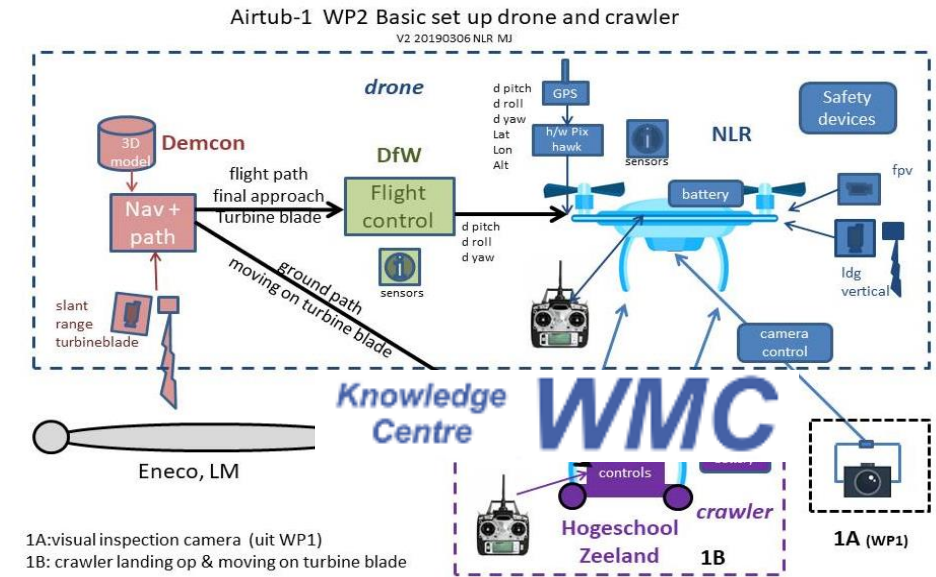
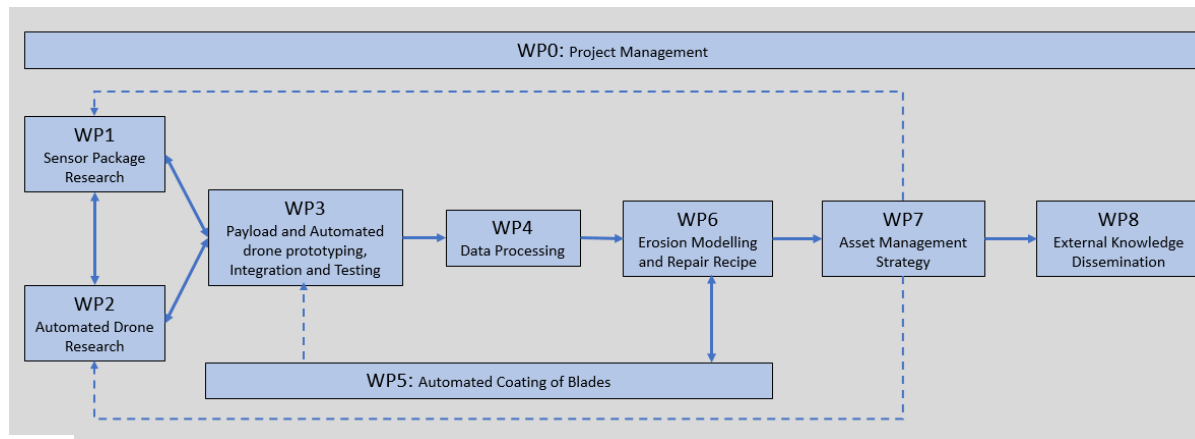
(autonomous inspections and repairs)

UNIVERSITY OF TWENTE.



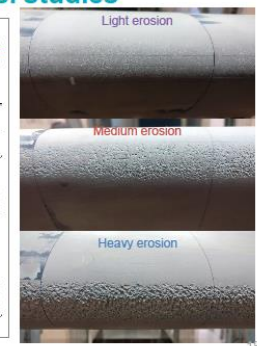
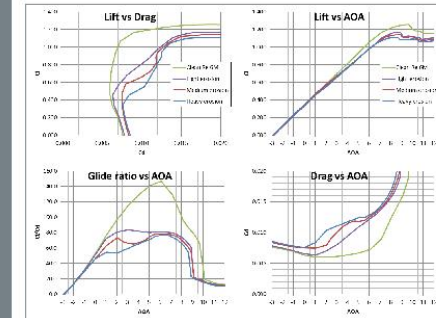
Zephyros AIRTuB

- Proposal submitted to RVO
- 16 partners
- € 4 Mio



1A: visual inspection camera (uit WP1)
1B: crawler landing op & moving on turbine blade

A few results from foam model studies



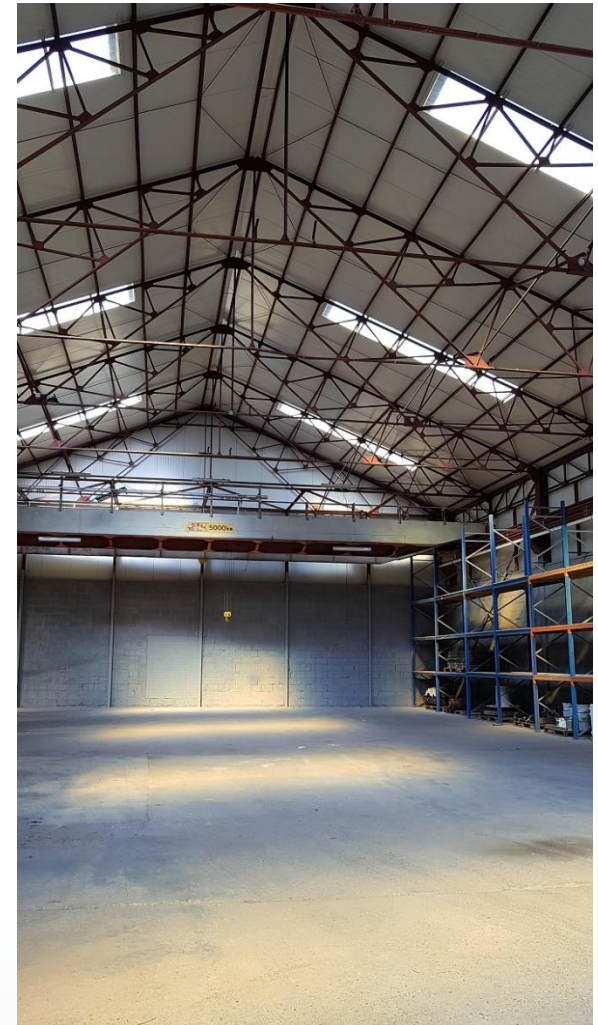
LM WIND POWER

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Test & Demonstration Centre

- Location: kenniswerf Vlissingen
- Looking for partners
- How to finance? (OP Zuid call??)

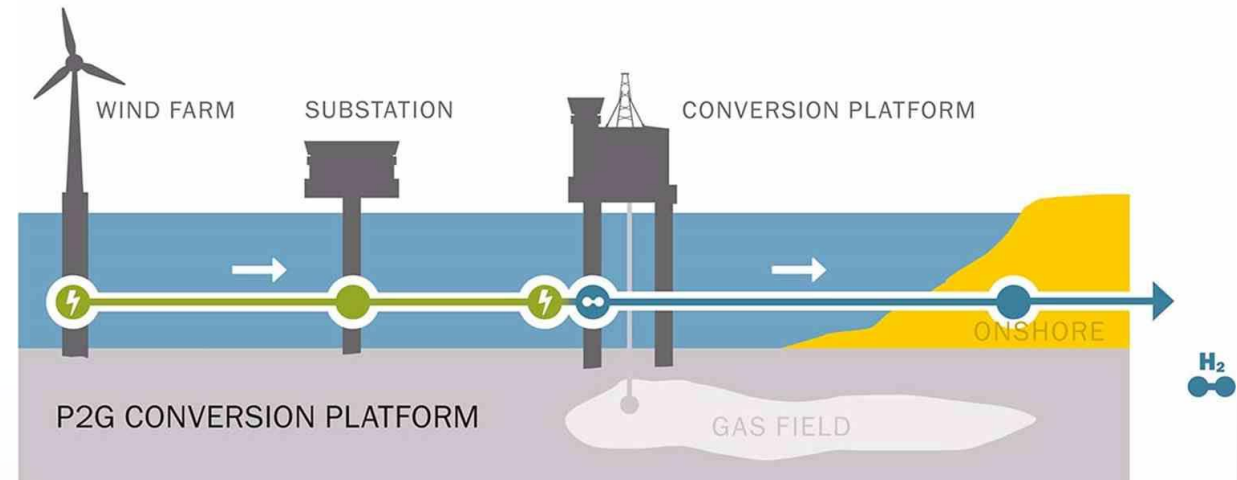


Added value of WCM Zephyros

- Retrieve and assess ideas / concepts from the market within the objectives of Zephyros and making so-called project 'pre-proposals'
- Approaching parties and form consortia for the further development and execution of innovation projects
- Organize the accompanying project management, project financing and report to the financing organizations
- Communicate about the program & projects and continuously develop the network
- Operate the Human Capital Agenda.

Extension to Renewable Energy Innovation

- 2020 onwards
- Distribution networks
- Storage
- Conversion (power to gas)



Innovation together – JOIN US!!

Het Fieldlab ZEPHYROS wordt mede mogelijk gemaakt door:



www.worldclassmaintenance.com

