



# WORLD CLASS MAINTENANCE

'Final Event'



Up to: 'Unmanned Maintenance'



# Program AIRTuB1 closure event



- 11.00    Opening, welcome, introduction and program  
          Where are we guests?  
          Pitches about sensory, drone- and crawler development  
          Explanation of demonstrations
- 12.15    Lunch and transfer to DroneCenter
- 12.45    Demonstration of the AIRTuB blade inspection operation in several parts
- 14.45    Transfer to auditorium
- 15.00    Pitches on data-collection & damage-classification, robotic coating of blade-transitions, Leading  
          Edge Erosion & aerodynamics and business-case development  
          The sequel: AIRTuB 2 - scope, partners & planning
- 16.00    Closure and drinks

# WorldClassMaintenance



Fieldlabs & projecten



Kennis & achtergrond



Lobby & politiek



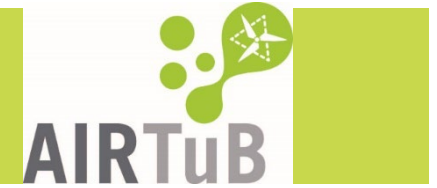
Netwerk &  
ledenvoordeel

## The Dutch 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



# What is AIRTuB ?



## AIRTuB (Automatic Inspection and Repair of Turbine Blades)

- TSE HER project with budget of € 4mio / subsidy of € 3mio
- Leadtime project 01-09-2019 till 31-12-2022
- 15 project partners / WCM project lead
- 8 workpackages
- 7 large dissemination events / > 300 live attendees / organized together with: De Blauwe Cluster, NWEA, TKI-WoZ, EnergyPort Zeeland
- Tangible results / prototypes
- Publications based on scientific research
- Strong basis for next steps



# Results in WCM Vector

- WCM Vector is the **learning community** of World Class Maintenance. It is an **interactive platform** ...
  - ...where **WCM project results**, in the form of **knowledge products: validated** project results, solutions and tools, are accessible for anyone.
  - ... where users are guided in the knowledge transfer process.
  - ... where users meet experts.
- WCM Vector is formed...
  - ...for anyone with a question about **Smart Maintenance**.
  - ...by all **participants** in WCM projects.
- AIRTuB project results
  - As the final report is being written, the **validated project results for AIRTuB** are being prepared for WCM Vector.
  - In the near future, all relevant **AIRTuB knowledge products** will be made available there.

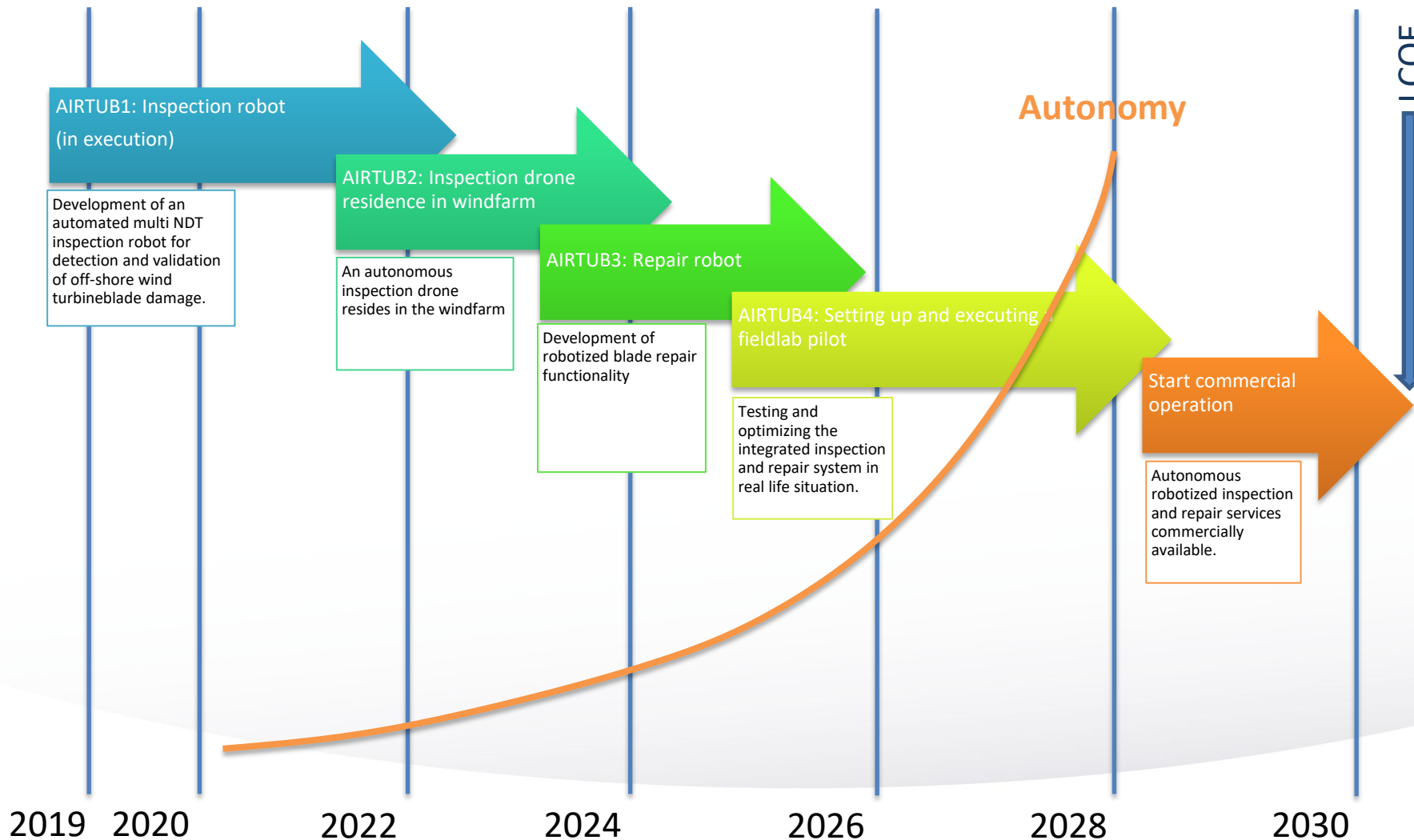






# AIRTuB *roadmap*

AUTOMATED INSPECTION AND REPAIR OF TURBINE BLADES



## Call for Action / Business Driver = Need for LCOE reduction

- Lifetime extension
- AEP improvement
- Maintenance logistics reduction
- Elimination of human presence offshore
- Reduction of pollution in the marine environment (also erosion particles)

## AIRTuB solution:

Fully autonomous robotized turbine blade maintenance by:

- Robotized inspection and repair system resident in windfarm
- Condition monitoring
- Frequent small high quality repair interventions

## Business model:

- Owner Operator (OO) contracts AIRTuB as a Service from Service Provider (SP)
- SP operates on performance contract with OO
- OEM of AIRTuB Equipment rents Robots to SP

## Involved partners:



# Living lab de KAAP Vlissingen

- Shared large-scale innovation test & demo facility
- Located at: Kenniswerf, Vlissingen



# Innovate together – JOIN US!



## [www.worldclassmaintenance.com](http://www.worldclassmaintenance.com)

Fieldlab Zephyros Steering Committee



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# Viable Offshore Wind (OW) requires Smart Maintenance



*Detect & investigate OW maintenance challenges*

*Stimulate & facilitate collaboration (triple helix)*

*Initiate & facilitate (funded) innovation projects*

*Facilitate testing and demo's in living labs*

*Provide expert judgement*

*Support knowledge development by sharing*

**WORLD CLASS  
MAINTENANCE**

