

# MCL

## BladeWatch

*Project Overview*

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*FFG AI4Green Kick-Off, 8.5.2023*



Projekttitel: Bladewatch - Increasing Wind Power Availability through Energy-Autonomous Wireless Smart Sensors)

Förderschiene: FFG „AI for Green“ (1. Ausschreibung)

Start / Laufzeit: 1.10.2022 / 36 Monate

Gesamtkosten: €755.260,-

Projektkonsortium:

- Materials Center Leoben Forschung GmbH ([www.mcl.at](http://www.mcl.at)), Contact: [Lukas.Hanna@mcl.at](mailto:Lukas.Hanna@mcl.at)
- eologix sensor technology GmbH ([www.eologix.com](http://www.eologix.com))
- Know-Center GmbH ([www.know-center.at](http://www.know-center.at))

Projektziel:

*We aim at increasing availability and reducing cost of wind energy [..] by providing a software framework allowing the Condition Monitoring System designer to jointly evaluate energy harvesting strategies and partitioning strategies of modern ML-based wind turbine fault-detection algorithms.*



WSN Energy consumption is mostly defined by RF link activity.  
On-sensor event/anomaly detection could reduce the RF activity.

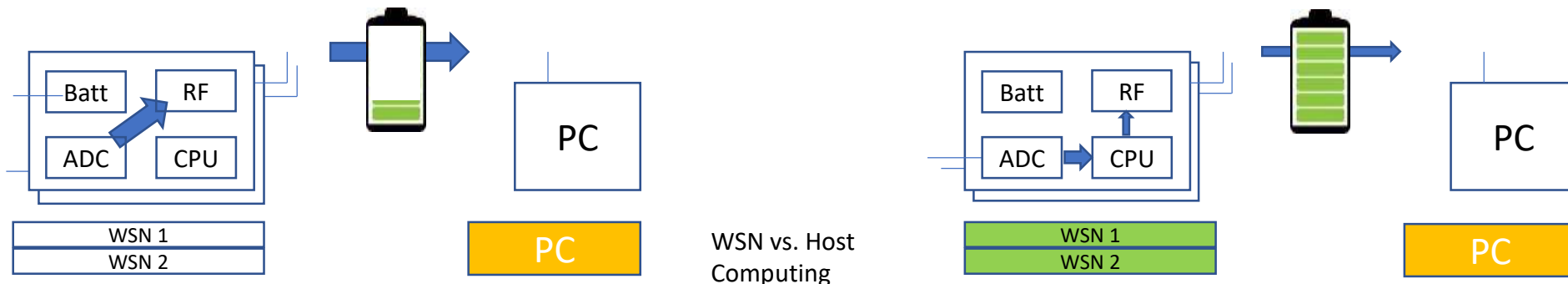
## Old: Sample-and-send WSN

- Sampling based on schedule or sensor threshold
- Samples are forwarded via RF link
- Data processing/event detection on receiver/host
- RF activity / energy consumption is defined by sampling frequency
- Acceptable only if sampling frequency is very low or measured signal captures fault to be monitored.



## New: Smart WSN

- Local (on WSN) anomaly/event detection (AD/ED)
- Post-processing / retraining on host
- Decouple sensing (always) from sending (on detected event)
- Challenge I: Identify ML AD/ED algorithms most suitable for embedded inference & complex multi-channel events
- Challenge II: Maximise local event detection quality for given total power budget

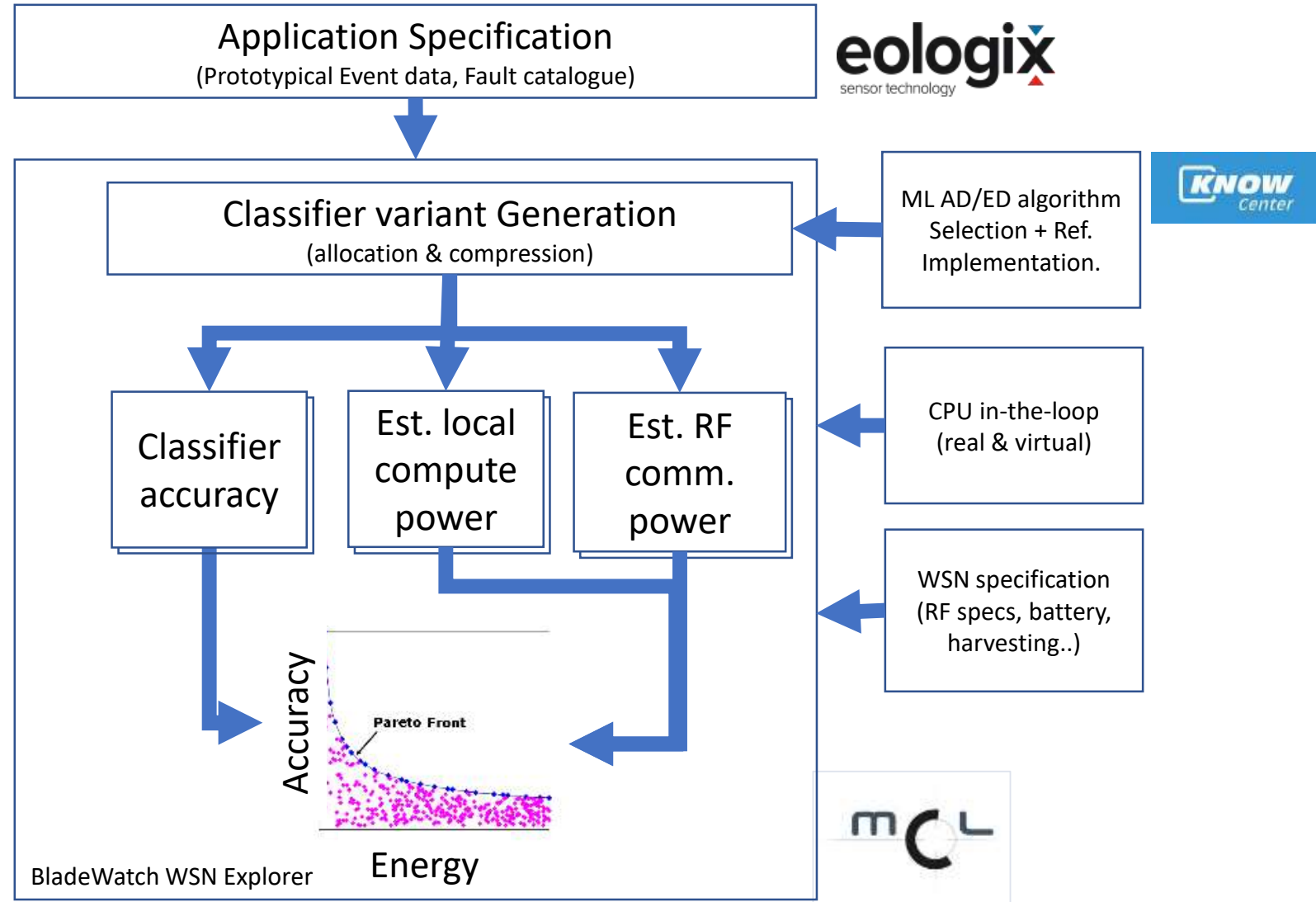


“ [...] providing a software framework allowing the CM System designer to jointly evaluate energy harvesting strategies and partitioning strategies of modern ML-based fault-detection algorithms.”

Deliverables:

→ BladeWatch WSN Explorer

→ Case Study



Projektstart war 10/2022  
Aktuell im 8. Projektmonat.

Zwei Tasks lt. Plan  
bearbeitet:

T3.1 Market Review →  
Grundlage für Entwicklung  
des Softwaretools für  
Energy Estimation

T6.1 Auswahl Fehlerfall →  
Auswahl von simulierbaren  
Fehlerfällen an Windrädern

