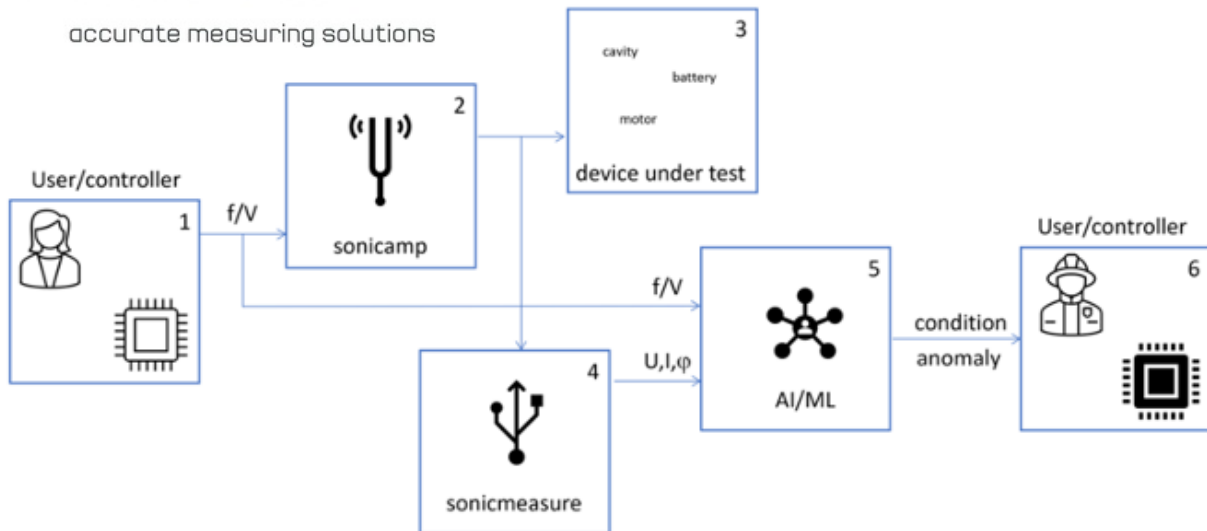


# AI FOR CONDITION MONITORING AND ANOMALY DETECTION

The data generated for process control in industrial environments becomes more and more important. usePAT has set out to improve this data collected for the task of data driven production in several ways, therefore it is of utmost importance to have

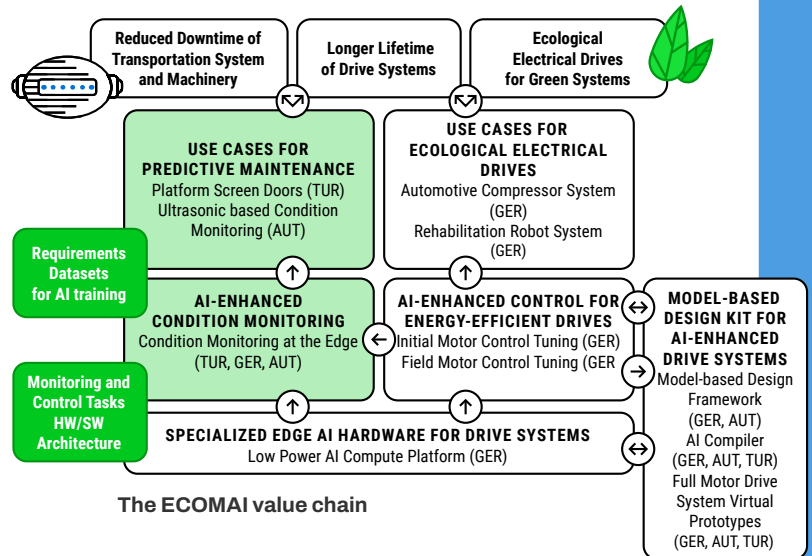
## USEPAT

accurate measuring solutions



The usecase provided by usePAT utilises the influence of a device under test (3), which is excited by ultrasonic vibrations on the driving signal provided by the sonicamp (2). This influence is observed by a sonicmeasure (4) device. More precisely the voltage  $U$ , the current  $I$  and the phase  $\Phi$  between them is recorded and fed into the AI (5) together with the set frequency  $f$  and volume  $V$ . The tinyML uses the data to estimate a measurement of the condition and equally as well the propability of an anomaly. The usecase is steered/initiated by a user/controller (1,6).

## Ecological Motor Control and Predictive Maintenance with AI



The ECOMAI value chain

a trustworthy offer for accurate measuring solutions in place. In the scope of project ECOMAI our use case is the observation of an excited liquid-filled volume to observe the changing condition of the medium and possibly detect anomalies by the help of an AI engine implemented in tinyML.

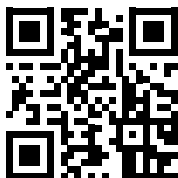
## CONSORTIUM PARTNER – INDUSTRY

usePAT is a spin-off of Vienna University of Technology founded in 2018 by a physicist, a chemist, a mechanical engineer and a business developer. All founders are fully engaged today to build an Austrian hidden champion supplying hardware to improve the stability, sensitivity and selectivity of industrial sensors. Our novel approach of ultrasound finds several process analytical technology (PAT) applications reaching from wastewater treatment to chemical industry, food & beverage and pharmaceutical production. The supplied add-ons are independent of the vendor of the probe or sensor and applicable to various measurement principles.

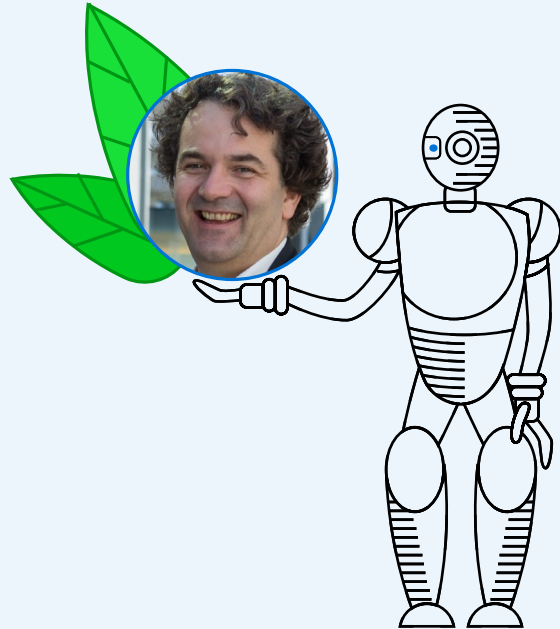
## COMMERCIAL VIEWPOINT

For usePAT the fields of application comprise any industrial production, where liquid media play a role. The qualification of a medium by the observation of the electrical response of an acoustically excited cavity is a novel technology, a patent has been filed. It will be the task of the next years to research the most important cases while targeting the world market.

Read more about  
ECOMAI



Stefan Radel, Managing Partner at usePAT GmbH, about the participation in the ECOMAI project:



“ usePAT products help our customers to improve their knowledge about their process in-line and real-time. This leads to optimized process control and increases the efficiency in respect to raw materials, energy, yield, quality, and production time. Moreover, worker’s safety is improved as no or less samples must be taken.

”

# USEPAT

accurate measuring solutions

Read more about usePAT  
<https://www.usepat.com/>

