

SAMURAI

Safe Multicopter for Reliable Aviation

Roman Beder
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Vienna, 27th of March 2025

Kurzdarstellung der Konsortialpartner



UAS Technikum Wien, Vienna
Embedded and Cyber-Physical Systems
Main Contribution
Embedded Software Design, Sensor
Communication, Flight Control Design



University of Klagenfurt, Klagenfurt
Digital Control Technology
Main Contribution
Minimal Equivariant State Estimation,
Localization and Control, Ground Truthing
Facility (Dronehall)



twins GmbH, Ampass
UAV Flight Services
Main Contribution
UAV Frame Assembly, Propulsion
System Design, UAV Flight Test



Infineon Technologies Austria AG, Villach
Semiconductor Development and Manufacturing
Main Contribution
ESC Development, Power Distribution Board
Design

Ziel des Projekts

- **Goal 1: Safe Flight-Control Firmware**
 - redundant flight-control firmware, safety mechanisms, integration of minimal equivariant state estimation algorithms
 - test and evaluation of multicopter flight-control firmware
- **Goal 2: Safe Electronics**
 - safe and reliable high-power electronics
 - automotive-grade embedded components (microcontrollers, sensors)
 - redundancy of flight control hardware and sensors

Ziel des Projekts

- **Goal 3: System Integration**
 - test and evaluation of the multicopter platform
 - documentation of the test cases
 - stress and limitation testing of the multicopter platform
- **Goal 4: Safe Hardware**
 - Y-Frame Hexacopter, lightweight fiber composite materials, optimization of structural stability and performance

Arbeitsplan/Zeitplan/Umsetzung

- **WP1 - Project Management**
 - Technikum Wien, Project Life-Cycle
- **WP2 - Concept Development**
 - Infineon, 10/2024 - 02/2025
- **WP3 - Design**
 - Infineon, 01/2025 - 07/2025
- **WP4 - Implementation and Assembly**
 - Technikum Wien, 12/2024 - 01/2027
- **WP5 - Integration, Validation and Test**
 - twins, 12/2026 - 09/2027
- **WP6 - Dissemination and Exploitation**
 - University of Klagenfurt, Project Life-Cycle

Angestrebte Verwertung (Wissenschaftl. Partner)

- UAS Technikum Wien
 - integration into Bachelor/Master degree programs/projects; dissemination at international conferences; lays the foundation for follow-up research projects
- University of Klagenfurt
 - integration into Bachelor/Master theses projects; support for a PhD student; dissemination at international conferences/journals; patenting and spin-off formulation

Angestrebte Verwertung (Industrie Partner)

- Infineon Technologies
 - increase aviation competencies & increase share in (aviation) market as supplier of semiconductor components
- twins
 - build safer and more reliable drones; strengthen commercial viability; shorter and more cost-effective certification processes lead to lower prices for airborne services

Kontakte

- SAMURAI Consortium, FH Technikum Wien
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- Infineon Technologies Austria AG
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- twins GmbH
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- Project Website(s)
 - [FFG Project Database](#), [SAMURAI Website](#)