



# DRONES4SAFETY

at the European Robotics Forum 2023  
Room 200 - Floor 2

Odense 15 March 2023  
11:05 h - 12:25 h

## AUTONOMOUS SELF-RECHARGING DRONES FOR INFRASTRUCTURE INSPECTION

### Programme

- |                         |  |
|-------------------------|--|
| 11:05 - 11:15<br>10 min | <b>Welcome, intro to the workshop</b><br>Emad Ebeid (SDU UAS)  |
| 11.15 - 11.30<br>15 min | <b>Automated recharging of the drone battery using energy harvesting</b><br>Gerd vom Bögel (Fraunhofer)                |
| 11.30 - 11.45<br>15 min | <b>Cloud services for autonomous UAV inspection mission management</b><br>Lea Matlekovic (SDU IMADA)                   |
| 11.45 - 12.00<br>15 min | <b>Drone design for autonomous outdoor powerline operations</b><br>Nicolaj Haarhøj Malle, Frederic Falk Nyboe (SDU)    |
| 12.00 - 12.10<br>10 min | <b>Towards long durability autonomous inspections with a drone swarm</b><br>Rune Hylsberg Jacobsen (Aarhus University) |
| 12.10 - 12.25<br>10 min | <b>Synthetic data in deep learning anomaly detection</b><br>Paolo Guzzini (Alteia)                                     |
| 12.20 - 12.25<br>5 min  | <b>Thank you, workshop closing</b><br>Emad Ebeid (SDU UAS)   |

The Drones4Safety is a Research and Innovation Actions (RIA) project under H2020 program, proposing an innovative solution that replaces the direct human involvement in railway and bridge inspections with a cooperative, autonomous and continuously operating drone system. The system develops artificial intelligence algorithms making drones able to detect infrastructure components and automatically recognize possible defects or anomalies through satellites and sensory data. Faults are reported to the drone operator via a cloud service system, which collects information and sends data back for scheduling the drone missions. The swarm-like collaborative drone system is conceived to ensure the inspection of different sides of the targeted infrastructure, while the energy harvesting from high-voltage and railway cables is expected to ensure the long-endurance of the operations.

### Expected results:



Safety and security increase of the civil transport system



Economic growth by unleashing in Europe new markets, industries, and high-added value jobs



Knowledge and acceptance within society for the steps described within U-Space



Implementation of resilient infrastructure, sustainable industrialization, and innovation



Contribution to reaching the global climate targets set by COP 21 Paris Agreement

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