DIII
Drone Infrastructure
Inspection and Interaction

Drones for Infrastructure Inspections and Interactions Research Group (DIII)

Projects: IFD Drones4Energy, H2020 Drones4Safety and Aerial-Core Projects)

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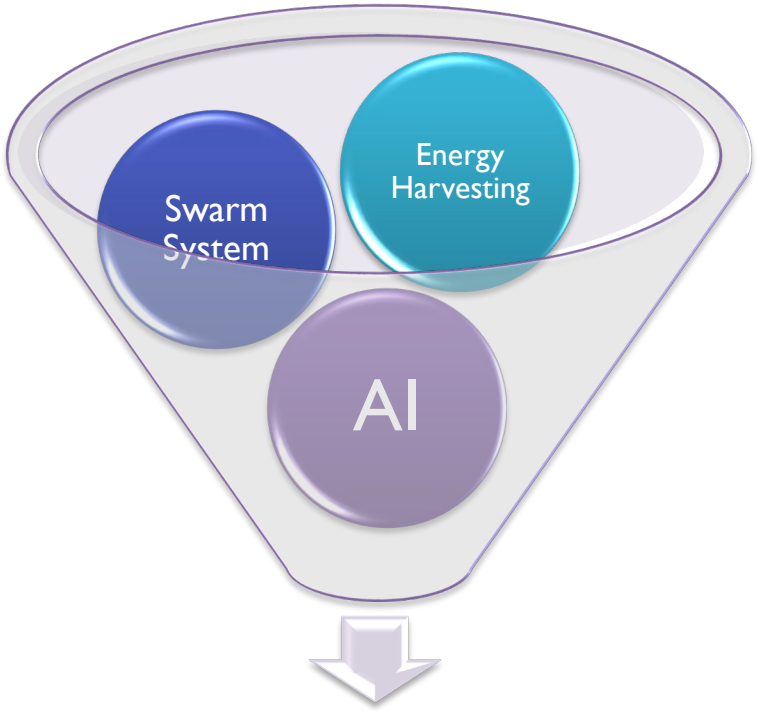
Today's Power line Inspection

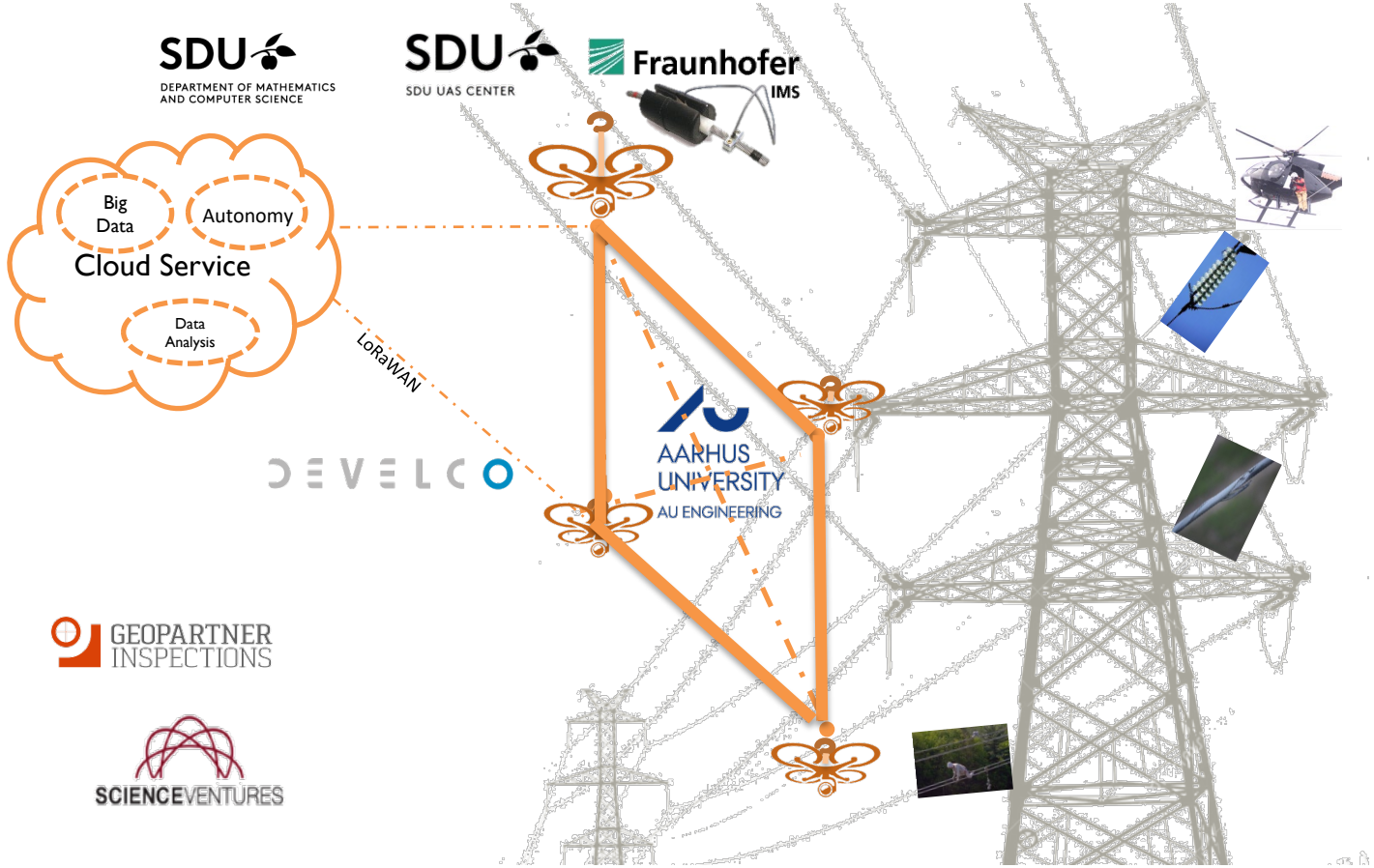
Funding: Innovation Fund Denmark with a grant of DKK 14 million (total budget of DKK 19 million including co-financing) [3M Euro]
Program: Grand Solutions

Drones4Energy Project

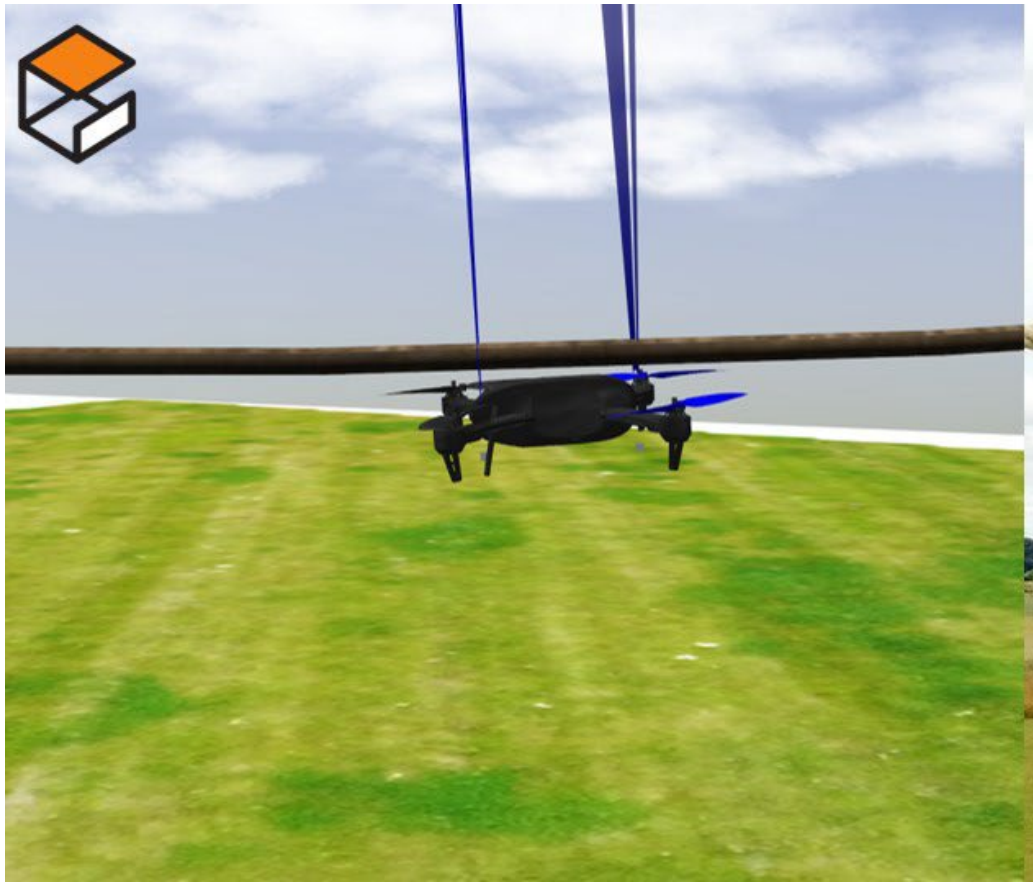
(https://drones4energy.dk/)

(2019-2022)





LOCATOR - Lightweight and Low-Cost Autonomous Drone System for Overhead Cable Detection and Soft Grasping



Iversen, Nicolai ; Schofield, Oscar Bowen ; Ebeid, Emad. / **LOCATOR - Lightweight and Low-Cost Autonomous Drone System for Overhead Cable Detection and Soft Grasping**. 2020 IEEE International Symposium on Safety, Security, and Rescue Robotics (SSRR),. editor / Lino Marques ; Majid Khonji ; Jorge Dias. IEEE, 2020. pp. 205-212

Autonomous Power Line Sensor Unit Deployment (Drones4Energy Drones)

Iversen, Nicolai ; Kramberger, Aljaz ; Schofield, Oscar Bowen ; Ebeid, Emad. / **Pneumatic-Mechanical Systems in UAVs: Autonomous Power Line Sensor Unit Deployment**. IEEE International Conference on Robotics and Automation 2021 (ICRA). IEEE, 2021.

https://youtu.be/AuaSbteg72A

AI Drone for Continuous Inspection

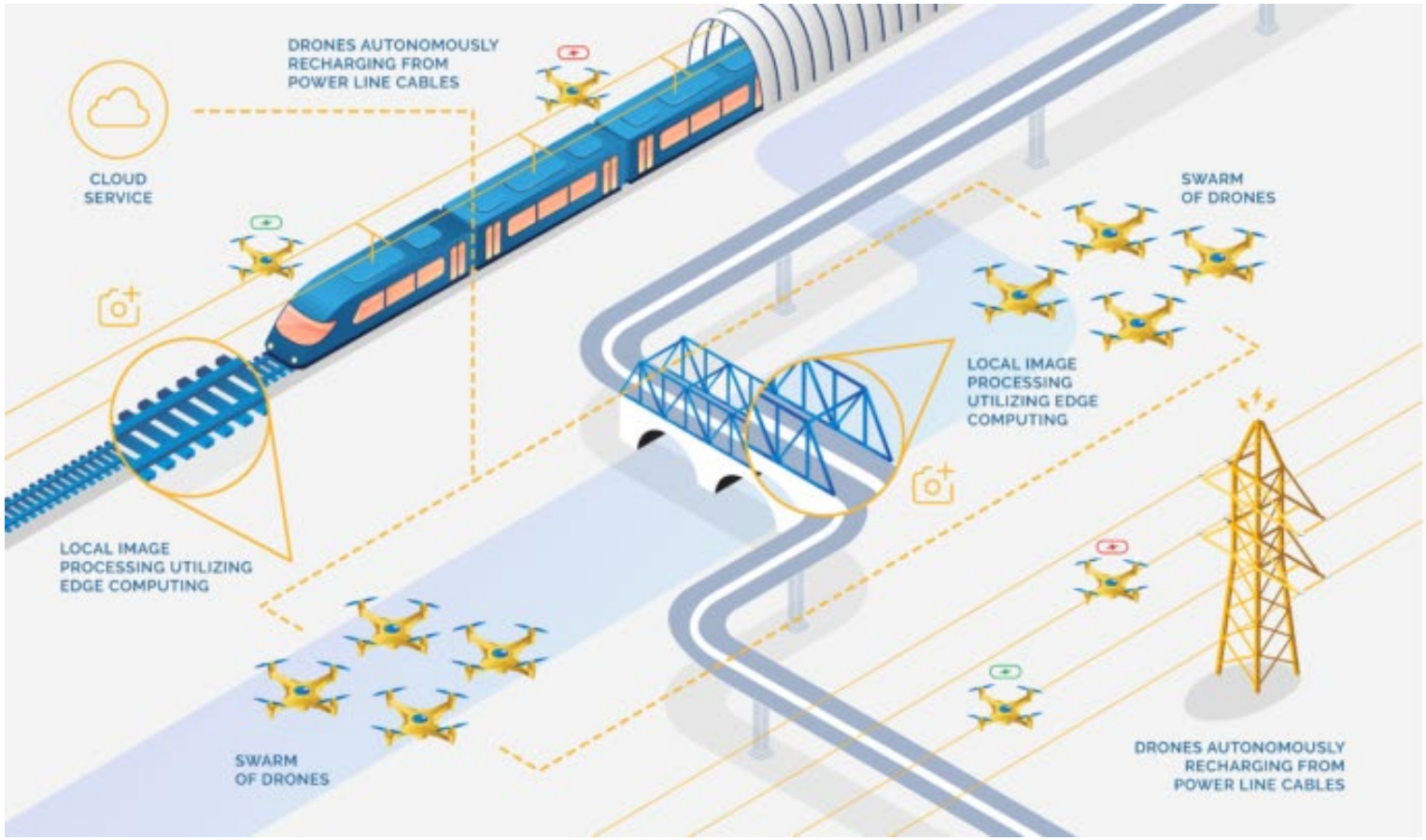
Iversen, Nicolai ; Schofield, Oscar Bowen ; Cousin, Linda ; Ayoub, Naeem ; Vom Bögel, Gerd ; Ebeid, Emad. / **Design, Integration and Implementation of an Intelligent and Self-recharging Drone System for Autonomous Power line Inspection**. 2021 IEEE/RSJ International Conference on Intelligent Robots and Systems. IROS, 2021.

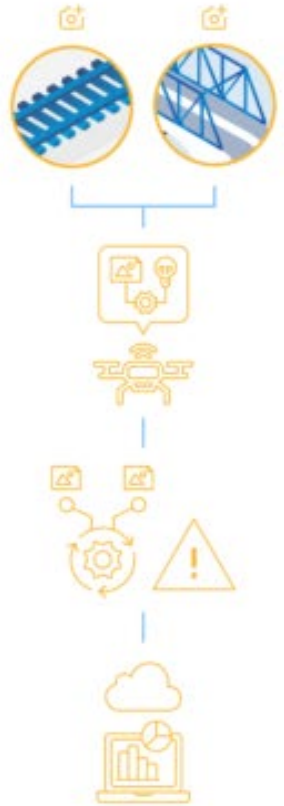
Patent: Emad Ebeid, **Failsafe powerline engagement system for a drone or for an aerial robot**, EP Patent WO2021048201

https://www.youtube.com/watch?v=RPOxezvIBLk

Main Research Activities

https://www.youtube.com/watch?v=4c5utNIk3Hw





This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°861111.

Light-weight Sensors for Overhead Cable Detection

Malle, Nicolaj Haarhoj ; Nyboe, Frederik Falk ; Ebeid, Emad. / **Survey and Evaluation of Sensors for Overhead Cable Detection using UAVs**. 2021 International Conference on Unmanned Aircraft Systems, ICUAS 2021. IEEE, 2021. pp. 361-370 (2021 International Conference on Unmanned Aircraft Systems, ICUAS 2021).

https://www.youtube.com/watch?v=keq51pOEn0k

This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°861111.

Master Thesis: Accurate Autonomous Landing on Target Object for Drones Accelerated with FPGA

Balint Kővári; Ebeid, Emad / **MPDrone: FPGA-based Platform for Intelligent Real-time Autonomous Drone Operations**. 2021 IEEE/RAS SSRR.

https://youtu.be/haIMd0PNrdU YouTube

This project has received funding from European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No°861111.

Drone Infrastructure Inspection and Interaction Group (DIII)

https://www.sdu.dk/diii

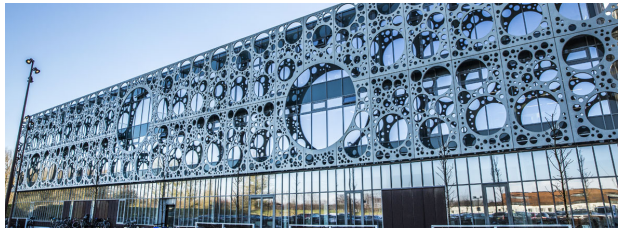
DIII
Drone Infrastructure Inspection and Interaction

Competencies:

- Drone embedded system design and integration
- Autonomous navigation and tracking of cables
- Disturbance rejection and EMI mitigation
- Energy harvesting and recharging from powerlines

Current participation in:

- Coordination of H2020 Drones4Safety project
- Coordination of IFD Drones4Energy project
- Partnering in H2020 Aerial-Core project



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Thank you

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