Project RADIUS

Ka and Broadband Communications Conference 2022

radius

EUSPA
European Union Agency for the Space Programme

RADIUS: RAIWAY DIGITALISATION USING DRONES

This project has received funding from the European Union Agency for the Space Program under the Horizon Europe research and innovation programme under grant agreement No 101004192

Project concept

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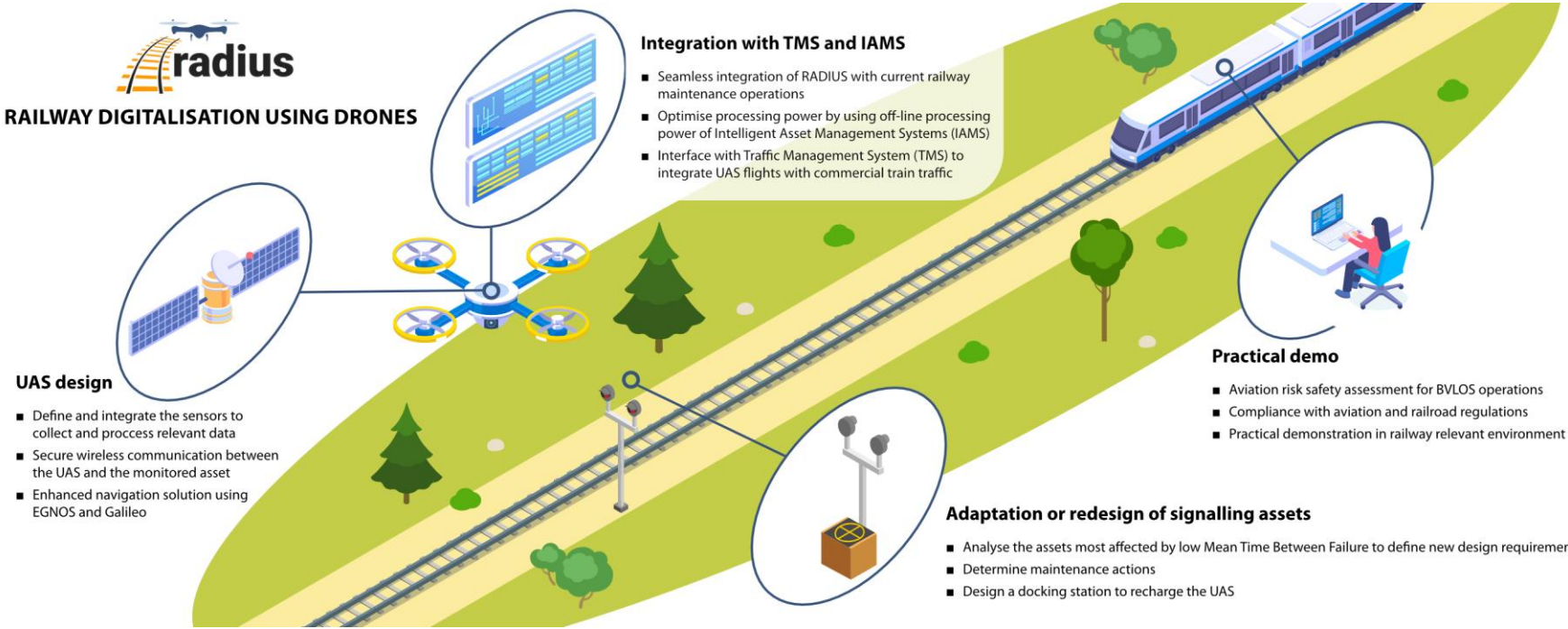
RAILWAY DIGITALISATION USING DRONES



Integration with TMS and IAMS

- Seamless integration of RADIUS with current railway maintenance operations
- Optimise processing power by using off-line processing power of Intelligent Asset Management Systems (IAMS)
- Interface with Traffic Management System (TMS) to integrate UAS flights with commercial train traffic

UAS design

- Define and integrate the sensors to collect and proccess relevant data
- Secure wireless communication between the UAS and the monitored asset
- Enhanced navigation solution using EGNOS and Galileo

Practical demo

- Aviation risk safety assessment for BVLOS operations
- Compliance with aviation and railroad regulations
- Practical demonstration in railway relevant environment (TRL 6)

Adaptation or redesign of signalling assets

- Analyse the assets most affected by low Mean Time Between Failure to define new design requirements
- Determine maintenance actions
- Design a docking station to recharge the UAS

Project Timeline

January 2021	Project start
August 2021	System and architecture specification
April 2022	Initial release of the RADIUS payload components
June 2022	Initial release of the UAS prototype, ready to be tested
September 2022	First version of redesigned UAS-friendly signalling assets and docking station
January 2023	Full RADIUS implementation
June 2021	Test and validation of the RADIUS prototype in railway relevant environment
December 2023	Project end

Project benefits

More frequent inspections

Increasing the frequency of inspections enables using preventive measures that increase the life span of signalling assets

Cost reduction

The RADIUS system will be easier to use and will reduce the initial investment and the running costs to maintain railway infrastructures

Safety increase

RADIUS will increase the safety of the maintenance operations and also the operational safety of the railways

New business models

The RADIUS concept can be extended to other activities and markets creating new service provision business models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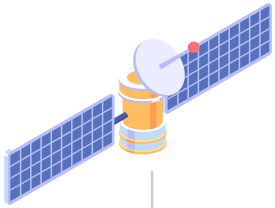
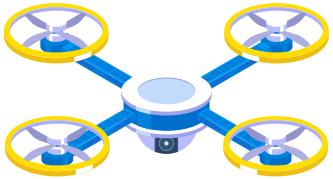
RADIUS EGNOS BASED ENHANCED NAVIGATION SYSTEM



EGNOS corrections



Vision system

Infrared system

CSM radar system

Data fusion and obstacle detection

UAS movement task

Path planner

Avoidance strategies

Thank you!

https://projectradius.info