

Partnering Opportunity

Profile status : Published

Technology Request

Austrian company seeking drone operator knowhow and technical equipment for a new inspection solution

Summary

An Austrian company has developed a disruptive digital inspection platform for infrastructure. They seek operators of drones with expertise to capture high resolution image data. Partners sought are research organisations or companies of any size for a service agreement or a technical cooperation agreement.

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Details

Description

The Vienna-based company is a spin-off of an Austrian corporate manufacturer of innovative cranes and working platforms. It has been founded in 2019 to further develop a totally new concept for digital inspection of infrastructure by deployment of image-based technologies using Red-Green-Blue (RGB) and/or multispectral imaging.

Currently, inspection of infrastructure such as bridges, tunnels, buildings and roads is done with the help of cranes, working platforms and professional climbers, which has several drawbacks:

- is expensive (transport and rent of heavy equipment as well as staff to manoeuvre it)

- is potentially unsafe and dangerous for climbers
- may deliver incomplete image coverage because of non-accessibility of sites, even when performed by professional climbers

The company has set the ground for an entirely new solution overcoming these drawbacks by developing a web-app platform for digital inspection of infrastructure. High-quality image data captured by UAVs (Unmanned Aerial Vehicles) are the basis for complete and reliable digital inspection.

The image data is used for :

1. the generation of a 3D model for visualization, Building Information Modelling (BIM) and georeferencing of damages in 3D.
2. automated damage identification by the use of artificial intelligence (AI)

End users of the solution are engineering consultants and asset owners such as public and private railway and highway operators.

This newly developed concept will:

- substantially lower costs by deploying drones instead of heavy equipment which also reduces the number of staff needed
- divert the risk of accidents from climbers to equipment
- enhance completeness of coverage by skilfully steering UAVs even to inaccessible sites
- enhance quality of image data by being able to equip UAVs with a number of high-resolution cameras

In addition, the market potential of this solution is huge considering the high number of bridges, tunnels and roads that need to be inspected on a regular basis.

For digital inspection the structure of the infrastructure has to be entirely captured with high-resolution (ground sampling distance (GSD) < 0.5mm) cameras and sensors. Using a virtual representation providing the overall general and material conditions as well as all specific damages found by AI, the quality and completeness of the images are the basic requirement in this operation.

The company requests services for the acquisition of such data using UAVS, i.e. the partner should be able to capture data in the air by appropriate means such as UAVs. A reasonable expertise in the area of photogrammetry and civil engineering would be beneficial. Data capture for structure inspection with UAVs is much more difficult in terms of complexity than pure image or video capture for multimedia purposes. Therefore, profound expertise in structured data capture with UAVs and additional hand-taken images is needed.

The Austrian company expects from the partner to deliver photos according to the requirements: the needed GSD in general will be <0.5mm. It will provide novel data capture strategies to ensure completeness of the coverage and resolution. Therefore, the partner needs an understanding of photogrammetric principles (resolution, sharpness, overlap).

Also needed is a highly skilled pilot to operate the drone to ensure quality of images and coverage. Data capture on structures is a highly complex task for drone pilots regarding the onsite situations (line of sight may be obstructed, complex geometric structures, vegetation occlusion).

The company seeks to enter long-term partnerships in a service agreement or a technological cooperation agreement where skills and quality of the service provider will be enhanced by training and knowledge transfer.

Technical Specification or Expertise Sought

Expected is experience in capturing infrastructure image data with the use of UAVs and by manual image

capturing for the purpose of inspection and 3D model generation.

This includes:

- survey planning (preparation of paper work, coordination with infrastructure owner, etc.)
- hardware preparation (selection of UAVs and camera-lens system, ground control points, global navigation satellite system - real time kinematic (GNSS RTK))
- documentation (assigning of images to sub structures in field protocol, weather, moisture).
- On the hardware side it is possible to use self-developed equipment as long as the UAV is able to capture images in all directions including upwards and downwards.
- In addition, basic knowledge in photogrammetry is required to achieve optimum image configuration and overlap for completeness and feasibility of 3D model generation.
- UAV steering within only a few meters distance to structure is normal operation mode, meaning the UAV pilot must be trained to follow structures vertically and overhead.

Therefore, service providers with high knowledge in the field of UAV operation are needed.

Remuneration of the service varies from project to project and will be negotiated on a project-base.

Stage of development

Available for demonstration

Keywords

Technology

01003003	Artificial Intelligence (AI)
02006005	Construction maintenance and monitoring methods & equipment
09001007	Optical Technology related to measurements
09001008	Other Non Destructive Testing
09001009	Sensor Technology related to measurements

Market

09003001	Engineering services
09007004	Engineering and consulting services related to construction

NACE

M.71.1.2	Engineering activities and related technical consultancy
M.71.2.0	Technical testing and analysis

Network Contact

Issuing Partner

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Open for EOI: **Yes**

Dissemination

Relevant sector groups

Sustainable Construction

Client

Type and Size of Organisation Behind the Profile

Industry SME 11-49

Year Established

2019

Already Engaged in Trans-National Cooperation

No

Languages Spoken

English
German

Client Country

Austria

Partner Sought

Type and Role of Partner Sought

The partner sought can be a research organisation or a company of any size. The company should be open for a strategic alliance in the form of a service agreement on a long-term basis.

A technical cooperation agreement is also possible to further the development of the image-based AI-supported inspection of infrastructure by cooperating with a partner possessing the technological expertise requested.

Type and Size of Partner Sought

SME 11-50, University, R&D Institution, SME <10,>500 MNE, 251-500, SME 51-250,>500

Type of Partnership Considered

Services agreement
Technical cooperation agreement

Attachments
