

1. STEREO PROJECT SHEET

(max 2 pages)

ACRONYM AND PROJECT CODE

Project type: Development of Applications

Duration: 24 months

Composition partnership:

Partner 1: Direction de l'Aménagement opérationnel - Service public de Wallonie (DG04)

Partner 2: Royal Military Academy (RMA)

Partner 3: Institut Scientifique de Service Public (ISSeP)

Study area: Automatic land monitoring by means of EO data.

RS data used: Sentinel-1 and Sentinel-2

Website: In progress

CONTEXT AND OBJECTIVES

The aim of the project is to develop an operational service to perform the automatic monitoring of “Redevelopment sites” (RDSs) using synthetic aperture radar (SAR) and optical images in order to detect changes that can then be confirmed and refined by on-site visit. “Redevelopment sites” (RDSs) are former industrial, commercial, social, real estate areas whose current condition is against the good management of the site or represents a deconstruction of the urban canvas. In the Walloon Region there are currently about 2000 RDSs on inventory.

METHODOLOGY

The proposed service is based on the exploitation of Sentinel-1 and Sentinel-2 images. The jointly use of SAR and optical data will allow us to have complementary information and improve the overall performance. Since the two types of products will be available at different times, an adaptive data fusion scheme will be adopted. For each RDS, different features (e.g. sigma nought, NDVI, BI, ...) will be computed and input into a rule-based classifier that will evaluate the presence of a change and determine its type and extent.

EXPECTED SCIENTIFIC RESULTS

The project is expected to demonstrate the effectiveness of EO-based automatic service and pave the way for a more extensive use of such technology in the Belgian administration.

SOCIETAL (INCLUDING ENVIRONMENTAL) RELEVANCE

As of this moment, the inventory of the RDSs is manually managed by the Walloon Region (DGO4), and each of the 2000 sites is reviewed through on field campaigns by a human operator. The use of an automatic service to prioritize the sites to visit will significantly improve the inventory update time and reduce costs.

EXPECTED PRODUCTS AND SERVICES

The expected output is an automatic service that will run on the Terrascope collaborative ground segment every month without manual intervention. Each run will produce a report containing the list of the sites that exhibit a change, which will be sorted based on the probability of change. Additional information, such as the period, the type and the extent of the change will be also provided. The DGO4 officers will then analyse the reports and decide what sites require on-site visits for further verifications.

POTENTIAL USERS

The developed service will be used by the «Direction de l'Aménagement opérationnel» in the department of «Aménagement du territoire et de l'Urbanisme» of the DGO4 («Direction générale opérationnelle de l'Aménagement du territoire, du Logement, du Patrimoine et de l'Énergie») of the Walloon Region.