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POLITIQUE SCIENTIFIQUE FEDERALE - FEDERAAL WETENSCHAPSBELEID

RESEARCH PROGRAMME FOR EARTH OBSERVATION STEREO III

INITIAL REPORT

CONTRACT SR/00/372

SARSAR

Automatic redevelopment sites monitoring using SAR and OPTICAL images

Date: 23/09/2019

1 CONTENT

2 PARTNERSHIP INFORMATION

2.1 PROMOTOR (INSTITUTION)

CONTACT DETAILS

Name: Christophe RASUMNY

E-mail: christophe.rasumny@spw.wallonie.be

Tel: +32 (0)81 33 24 12

Cell phone: +32 (0)496 02 01 22

Department: Service public de Wallonie- Territoire Logement Patrimoine Énergie

Address: Rue des Brigades d'Irlande, 1- B-5100 Jambes, Belgium

URL: http://lampspw.wallonie.be/dgo4/site_portfolio/index.php

BELSPO LIAISON[1]

Name: Christophe RASUMNY

E-mail: christophe.rasumny@spw.wallonie.be

Tel: +32 (0)81 33 24 12

Cell phone: +32 (0)496 02 01 22

CONTACT DETAILS FINANCIAL OFFICER OF THE PROJECT

Name: Catherine FOUARGE

E-mail: catherine.fouarge@spw.wallonie.be

Tel: +32 (0) 81 33 21 51

[1] Day-to-day contact person for project information, promotional material, …

2.2 PROMOTOR (ROYAL MILITARY ACADEMY)

CONTACT DETAILS

Name: Xavier NEYT

E-mail: xavier.neyt@rma.ac.be

Tel: +32 (0)2 441 40 41

Department: Department of Communication, Information, Systems and Sensors

Address: Avenue de la Renaissance 30, 1000 Brussels, Belgium

URL: http://www.sic.rma.ac.be/

STAFF FUNDED BY THE PROJECT

Name: Mattia STASOLLA

E-mail: mattia.stasolla@rma.ac.be

Tel: +32 (0)2 441 38 16

Type of position[2] : Researcher

Type of contract: Fixed-term

STAFF NOT FUNDED BY THE PROJECT

Name: Xavier NEYT

E-mail: xavier.neyt@rma.ac.be

Tel: +32 (0)2 441 40 41

Type of position: Professor

CONTACT DETAILS FINANCIAL OFFICER OF THE PROJECT

Name: Thierry DEPREZ

E-mail: Thierry.Deprez1@mil.be

Tel: +32 (0)2 441 39 12

2.3 PROMOTOR (ISSEP)

CONTACT DETAILS

Name: Eric HALLOT

E-mail: e.hallot@issep.be

Tel: +32 4 229 83 16

Department: Remote Sensing and Geodata Unit

Address: Rue du Chéra 200 - 4000 Liège, Belgium

URL: https://www.issep.be/teledetection-et-geodonnees/

STAFF FUNDED BY THE PROJECT

Name: Sophie PETIT

E-mail: s.petit@issep.be

Tel: +32 (0)4 229 82 81

Type of position: Researcher

Type of contract: Fixed-term

STAFF NOT FUNDED BY THE PROJECT

Name: Dr. Eric HALLOT

E-mail: e.hallot@issep.be

Tel: +32 4 229 83 16

Type of position: Head of Unit

CONTACT DETAILS FINANCIAL OFFICER OF THE PROJECT

Name: Nathalie Canicatti

E-mail: n.canicatti@issep.be

Tel: +32 4 229 82 07

3 PROJECT INFORMATION

PROJECT WEBSITE

In progress

(POTENTIAL) STAKEHOLDERS

Service public de Wallonie- Territoire Logement Patrimoine Énergie

POTENTIALLY RELEVANT TREATIES, AGREEMENTS, DIRECTIVES, DECREES, ...

N/A

ESTIMATED DATE FIRST STAKEHOLDER MEETING

04/19

4 PURCHASE PLAN REMOTE SENSING DATA

The cost of satellite and APEX data is not part of the project's budget but can be charged separately to the programme after approval by the programme managers. The cost of UAV data, however, should be borne by the project or other resources.

SATELLITE DATA:

Type*	Area	Acquisition period	Amount
Pleiades	200 sq km	Every month / 24 months	9,600 EUR

AIRBORNE DATA (including UAV data which are not chargeable to the programme- please include financing source for those)

Type*	Area	Acquisition period	Amount
N/A	N/A	N/A	N/A

ESTIMATION OF COST OF REMOTE SENSING DATA REQUESTED FROM STEREO:

5 PURCHASE PLAN EQUIPMENT

Type*	Institute	Amount
Computer and hard disks	RMA	1000 EUR
Computer, network storage and computing system	ISSeP	4000 EUR

6 DATA MANAGEMENT PLAN[2]

The data provided by the developed service will not be directly available to the community. First, the DGO4 will process the information in order to determine what sites require on-site visits by DGO4 officers, who will then update the online catalogue of the RDSs that is publicly available.

7 STEERING COMMITTEE

7.1 COMPOSITION

NAME[3]

Fabio DELL'ACQUA

Research interests: Earth observation, geospatial data fusion, Synthetic Aperture Radar

CONTACT DETAILS

E-mail: fabio.dellacqua@unipv.it

Organization and Department:

University of Pavia, Department of Electrical, Biomedical and Computer Engineering

Address: Via Ferrata 5, 27100 Pavia, Italy

URL: http://tlclab.unipv.it/

[2] explain how project data will be made available to the community
[3] Add research topic covered by this expert and justification for your suggestion

NAME

Jan HAAS

Research interests: GIS and remote sensing, with focus on urbanization effects and environmental changes.

CONTACT DETAILS

E-mail: jan.haas@kau.se

Organization and Department:

Karlstad University, Department of Environmental and Life Sciences

Address: Universitetsgatan 2, 651 88 Karlstad, Sweden

URL: https://www.kau.se/en

NAME

Florence TUPIN

Research interests: Remote sensing, Image Processing, SAR and optical data fusion.

CONTACT DETAILS

E-mail: Florence.tupin@telecom-paristech.fr

Organization and Department:

Institut Mines-Telecom Telecom ParisTech, Image, Data, Signal Department

Address: 46 rue Barrault, 75634 Paris Cedex 13, France

URL: https://images.telecom-paristech.fr/

7.2 ESTIMATED DATE OF MEETINGS

04/19 - Kickoff Meeting

07/19 - Technical Meeting

09/19 - Technical Meeting

09/19 - SC Meeting

12/19 - Technical Meeting

04/20 - Midterm Meeting

10/20 - SC Meeting

12/20 - Technical Meeting

03/21 - Final Meeting

8 FEEDBACK ON THE EVALUATION OF PROJECT PROPOSAL

The majority of the comments from the experts who evaluated the project proposal were focusing on two main aspects: i) Methodology and ii) Validation.

i. The first remark concerning the proposed methodology was about the choice of a rule-based approach. For some of the reviewers, artificial intelligence (AI) would have been a better solution. Although we agree that AI is generally a good option for big data, we believe that in our case, the number of sites is not sufficient to justify the use of AI. In fact, the RDS dataset comprises some 2000 sites, but it is estimated that only 10% of them will experience changes on a yearly basis. Therefore, the number of training samples to employ in a machine learning process would likely not be sufficient, also considering the fact that part of the available samples should be used only to test the results. However, if required, some tests employing a machine learning approach could be carried out.
   A second remark was about the opportunity of using Sentinel data for the scope of the project, due to their limited spatial resolution. It is indeed true that for some of the RDSs, the spatial details provided by S1 or S2 data would not be sufficient to suitably detect changes. Nevertheless, the percentage of RDSs that would be affected ranges between 15% and 25% (considering S2 or S1, respectively), which we estimated to be acceptable compared to the great advantage of having free satellite data at high temporal resolution. The type and extent of changes provided by the proposed operational service will of course take into account these limitations.

ii. As regards the validation process, some reviewers had concerns about the availability of ground truth data. The current available ground truth is an inventory of the RDSs obtained by visual interpretation of orthophotos in 2013 (May/July), 2015 (April/June) and 2016 (June/August). This means that, being S1 and S2 both operational after June 2015, we will certainly be able to validate the results for the changes that happened between 2015 and 2016. Moreover, another campaign of orthophotos was carried out in 2018 and the results will be available before the end of the project to be exploited for the validation phase. Along with it, we have also requested the acquisition of Pleiades images every month, which should allow us to further enlarge the ground truth dataset.

9 PROJECT SHEET

separate document

10 COPY OF THE INTERNAL AGREEMENT (SIGNED BY ALL PARTNERS)

separate document

11 COPY OF THE AGREEMENT SIGNED WITH THE INTERNATIONAL PARTNER(S)

N/A