

The potential of SAR and OPTICAL Sentinel images for the automatic monitoring of redevelopment sites

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Redevelopment Sites

- Redevelopment Sites (RDS) = real estate property
 - That was or is allocated to host an activity apart from housing
 - Whose current condition is against the good management of the site or represents a deconstruction of the urban canvas



Redevelopment Sites : Examples

Old « abattoir » in Wavre

2007



2014



Redevelopment Sites : Examples

Old « dépôt carburant » in Lasne

2010



2017



2012-13



2015

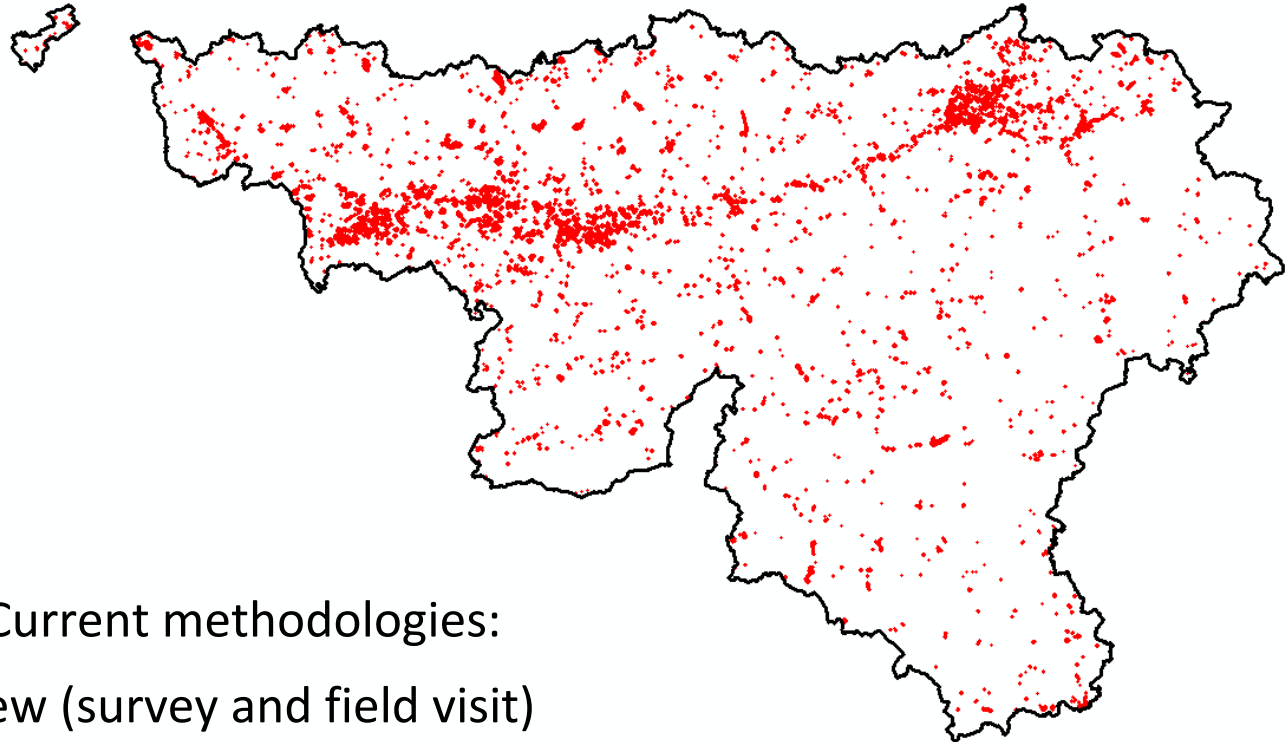


2018



Redevelopment Sites: Inventory

- 2,213 sites on 3800 hectares in 2017

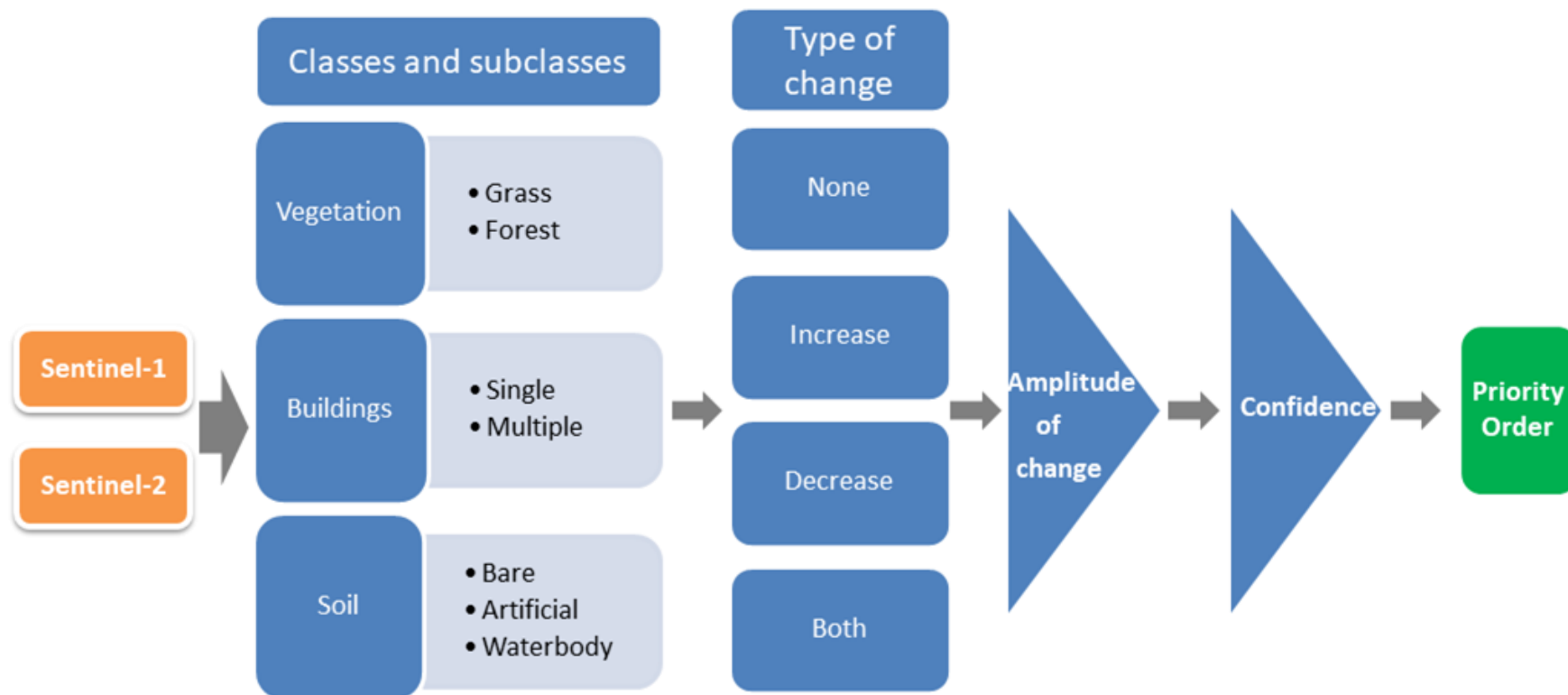


- Inventory update – Current methodologies:
 - Systematic review (survey and field visit)
 - Ortho-photos (photo-interpretation by an operator)

→ Need for automatic detection of changes

Answering the Users' Needs

- Manpower reduction for the update of the inventory of the RDSs
 - Easily identify sites that require further (manual) investigation
- Information that needs to be provided:

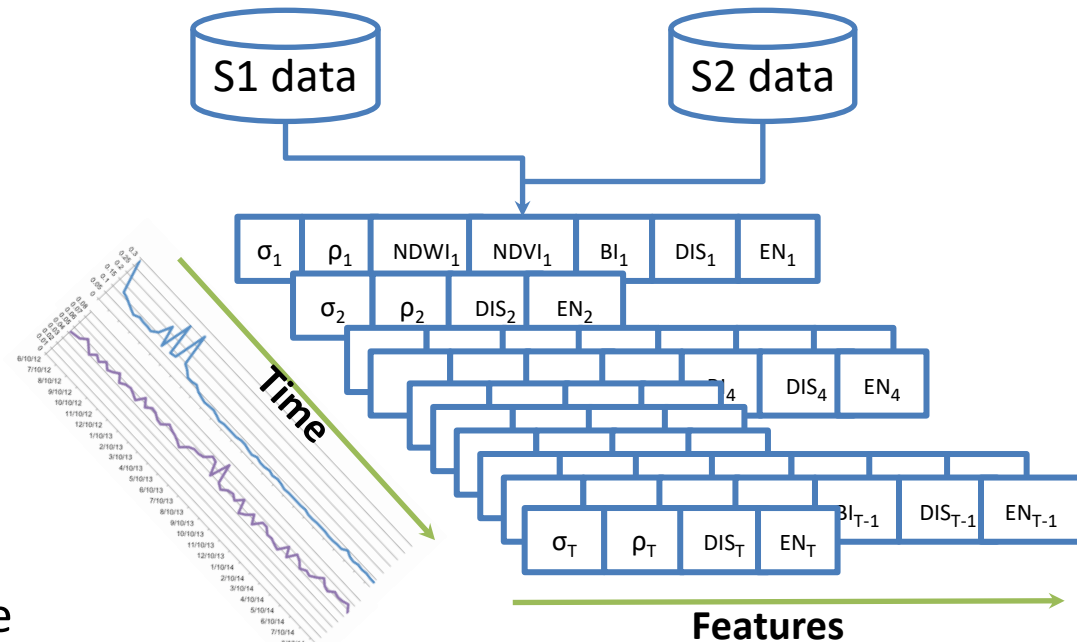


SARSAR Objectives

- To develop a method that provides a report of the changes in an automatic way:
 - For each sites
 - Using time-series
 - From satellite images at high temporal resolution
- To demonstrate the added value of SAR images from Sentinel-1
 - Provide high temporal resolution
 - Complement the information from Sentinel-2 multi-spectral images
 - Improve change detection performance

Methodology

- Exploitation of:
 - Sentinel-1 time series (sigma naught, textures, ...)
Not affected by cloud cover → higher temporal resolution
 - Sentinel-2 time series (spectral indexes, textures, ...)
- Process:
 - Extract feature vectors
 - Rule-based classification → Scenarios
 - Produce report & update state (of each site)
- Implementation in Terrascope:
 - Virtual machine
 - Preprocessed data available

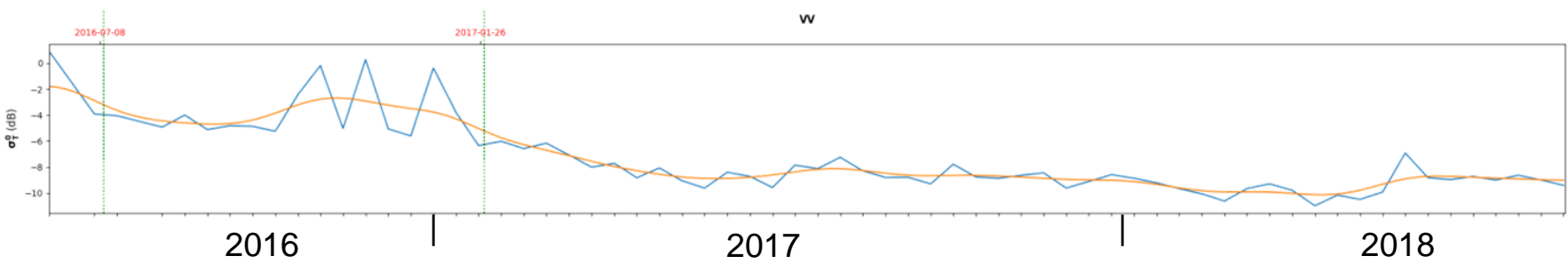


First results

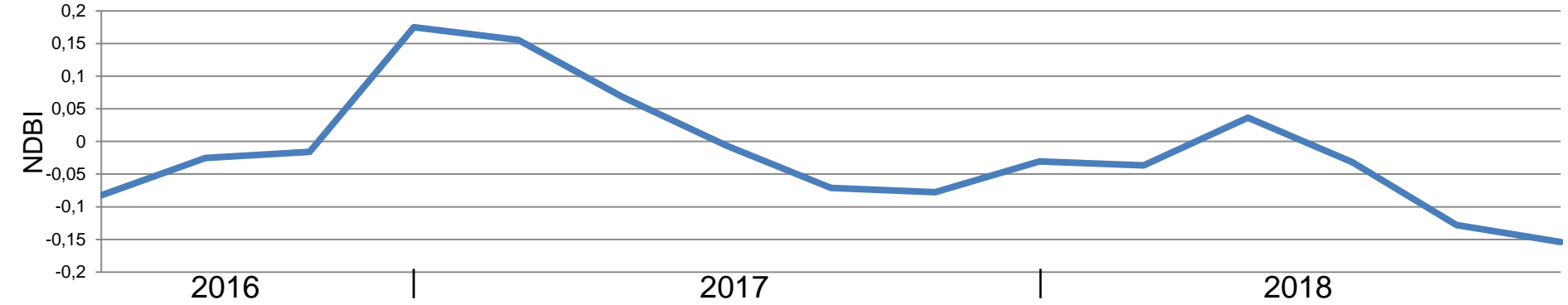
- Ortho-photos



- Sentinel-1



- Sentinel-2



SARSAR Project

- 2 years:
 - April 2019 → April 2021
- 3 partners:
 - SPW: Service Public de Wallonie - Direction générale opérationnelle de l'Aménagement du territoire, du Logement, du Patrimoine et de l'Énergie
 - RMA: Royal Military Academy
 - ISSeP: Institut Scientifique de Service Public - Cellule Télédétection et Géodonnées



THANK YOU