

WP6 - POER

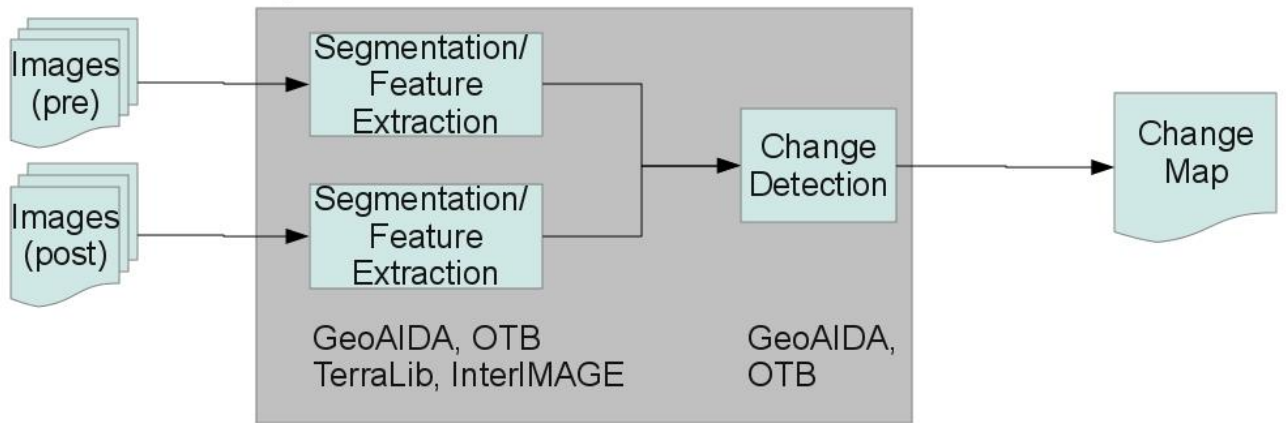
Original POER Processing chain

Depending on the type and availability of input data a total of three processing chains are developed. The processing chains can be decomposed into the following modules:

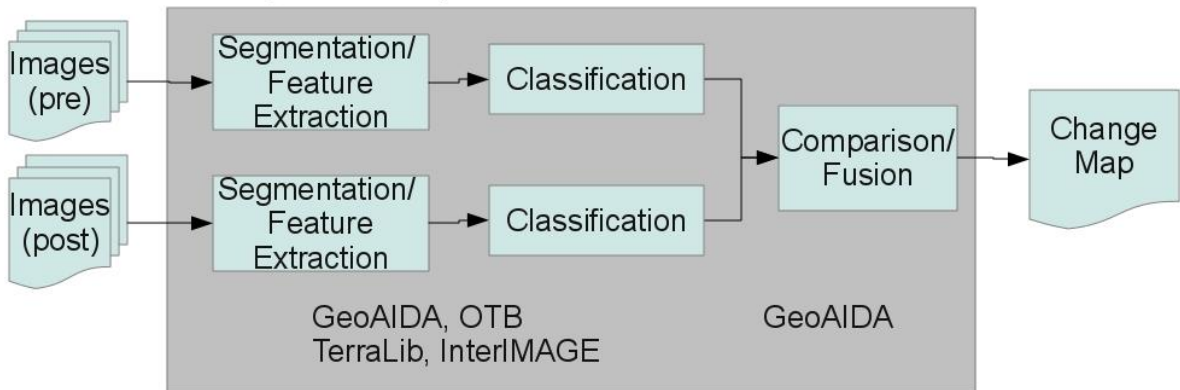
- Segmentation
 - According to the spatial resolution of the available input EO data a segmentation has to be applied to generate regions. Promising approaches are listed in the table (see below).
- Feature extraction
 - Extraction of features to generate a numerical description of primitives (pixel or regions). The choice of features is depending on the image classes to be classified. A list of possible pixel and object-based features is listed below in the table.
- Classification
 - Application of a classification algorithm on post event data to get information about the current state of a site. Supervised classification algorithms like SVM and CRF should be applied.
- Change detection
 - If pre and post event images are available change detection should be performed.
 - In the first scenario a simultaneous approach applying a conditional random field (CRF)-based change detection or a pixel-based change detection using statistical similarity measures can be applied. Additionally an object-based change detection using statistical similarity measures is possible.
 - The second scenario applies post classification change detection.
- Comparison/ Fusion
 - In the 2nd change detection scenario a fusion or comparison of two classifications has to be done.

The outputs can be change maps or maps that give information about the current situation of a site.

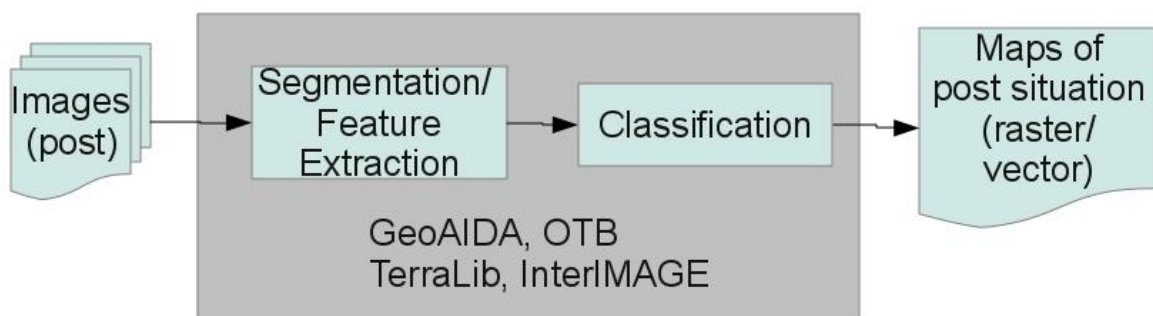
1st Scenario, change detection simultan



2nd Scenario, change detection post-classification



3rd Scenario, post-event data classification



POER version 1 implementation (May 2013)

N/A

Improvements in POER version 2 (May 2014)

- Integration of the graphical model (Bayesian Network) operator to InterIMAGE as software tool for multitemporal image analysis (Raul Feitosa, PUC-Rio, Tobias Klinger, LUH)
- Segmentation algorithms of SAR and optical imagery (Raul Feitosa, PUC-Rio)
- Segmentation Parameter Tuning Tool (SPT) (Raul Feitosa, PUC-Rio)

Improvements in POER version 3 (November 2014)

- Implementation of the 3rd scenario of the processing chain (post-event data classification) (Tobias Klinger, LUH)
- Application of the processing chain to test cases (Tobias Klinger, LUH)