

Space and Airborne Mined Area Reduction Tools

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Introduction



In countries where landmines are predominantly laid as clusters and singles rather than as patterned minefields, at most 50% (often less than 10%) of the suspected areas are actually mined.

Mine clearing is a highly time-consuming and dangerous task. One of the most important issues in afflicted countries is to reduce suspected areas prior to implementing clearance. Previous and ongoing research has shown that current methods for information extraction from remote sensing data are not adapted and validated for mine and/or minefield detection.



The main goal of SMART is to provide innovative tools to Mine Action Centres (MACs) in South Eastern Europe for faster, cheaper and safer suspected area reduction, using satellite and/or aerial imagery. These tools will help the human analysts in their interpretation task for deciding whether an area is mine-suspected or not.

Indicators

A list of potential indicators of mined areas has been drawn on the basis of expert knowledge and field missions. Some examples:

Remains of military activity, e.g. trenches



Landscape features with a strategic value, e.g. river banks



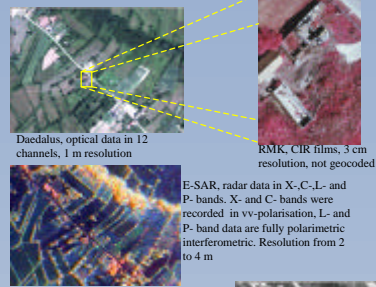
Areas avoided by the local population, e.g. unused agricultural land



The list also includes bunkers, bridges, unused tracks, crossroads, drainage channels, shores of ponds, edges of forests, electricity poles, low stone walls, soft edges of hardtop roads, tank holes, etc

Remote sensing data

Airborne data : Data recorded during the 2001 flight campaign over 3 test sites in Croatia

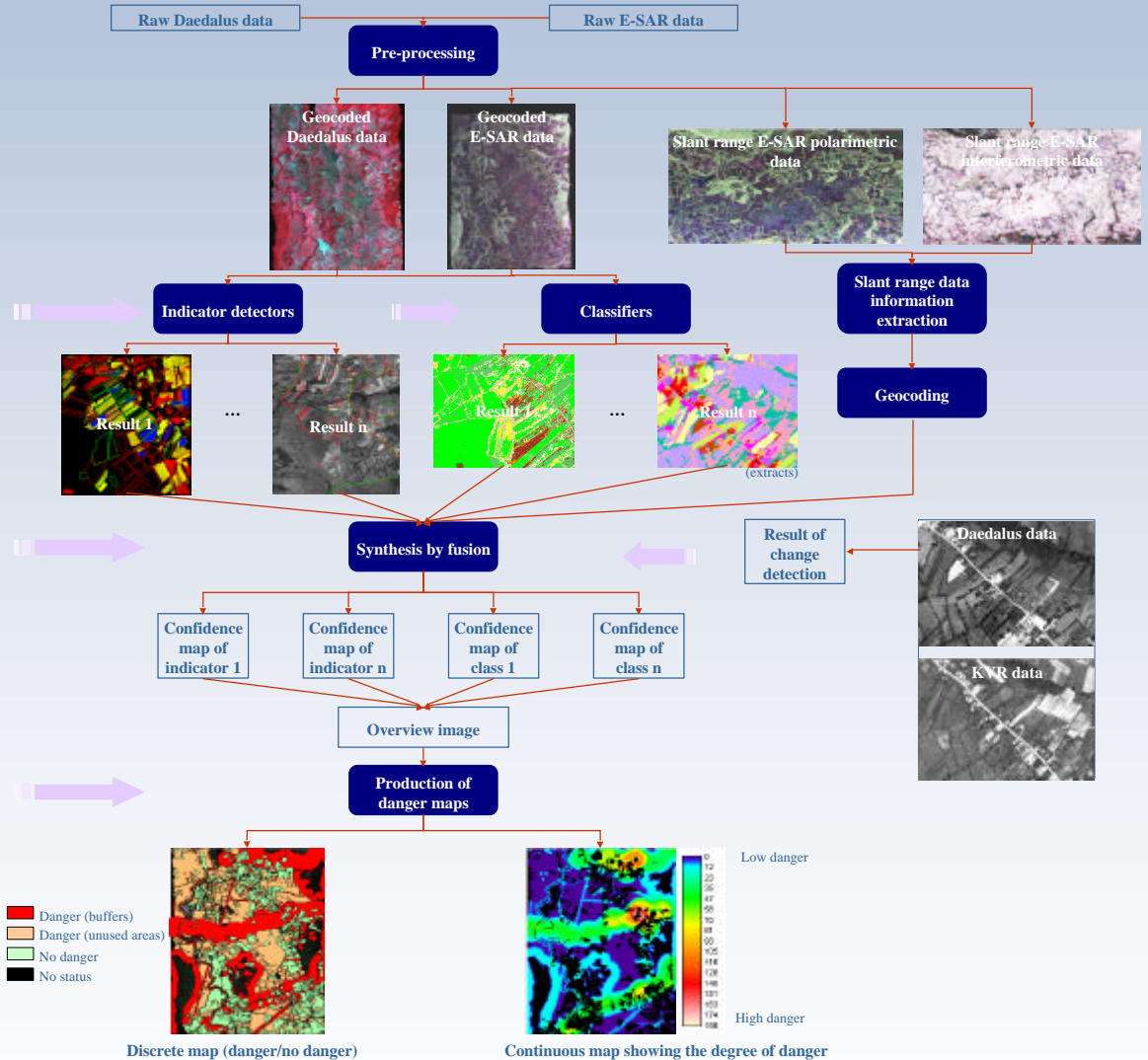


Satellite data:

KVR data recorded before the conflict (2 m resolution)



Functional description of the SMART GIS-based system



Pre-processing includes system corrections, radiometric and geometric processing, polarimetric and interferometric processing

Contextual information

Description of the indicators, training set, RMK, ...



Characteristics of the sensors, topographic maps, agricultural data, ...



Geographic data from end-user's Mine Information System, knowledge of mine-laying process, ...

Results

The project is ongoing and first results have been achieved in indicator detection and classification. Each result is validated individually and results are compared to each other.

The end-user, i.e. the Croatian Mine Action Centre (CROMAC), will perform the final validation of the danger maps in the field by demining sample areas.

Acknowledgments

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For further information

See <http://www.smart.rma.ac.be/>



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