

### Introduction

From 1997 until 2000 the daily increase of built-up area was 129 ha while the German population remained constant. This land consumption rate shall be reduced to 30 ha per day until 2020.

In this context the Federal Ministry of Education and Research (BMBF) generates the support program "REFINA" (Research for the reduction of land consumption and sustainable surface management).

One of the funded research projects is the "development and trial of semi-automatic and automated methods for surveying and assessing settlement and traffic areas using remote sensing". This project is coordinated by EFTAS Remote Sensing.

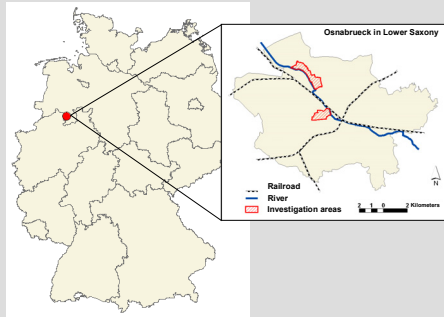


Fig. 1: Investigation areas in Osnabrueck

### Research objectives

Development of semi-automatic and automated methods for a faster and cheaper integration of image information into the urban planning process on test sites in Osnabrueck (fig. 1).

Building	no vegetation	sealed
Asphalt surface		
Concrete slabs		
Paving		
Gravel / balast	vegetation	unsealed
Sand / cinder		
Soil		
Sparse vegetation		
Grassland		
Tall forb		
Shrubbery		
Hedge		
Tree		
Wood		
Water		

Fig. 4: Object classes

### Embedded tasks

- Area-wide survey and preparation of actual and historical image information.
- Analysis of the usability of new satellite sensor- and camera systems for high precision monitoring.
- Analysis of Historical area development by multi-temporal analysis from 1935 until 2005 (fig. 2).

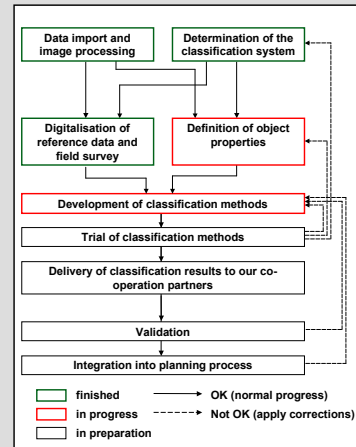


Fig. 3: Process chart (current state)

### Project status

Major pre-processing steps were finished (fig. 3: marked green) and object classes were defined (fig. 4).

Development of object-orientated classification methods is in progress (fig. 3: marked red) based on segmentation techniques (fig. 5).



Fig. 2: Aerial images for historical area development

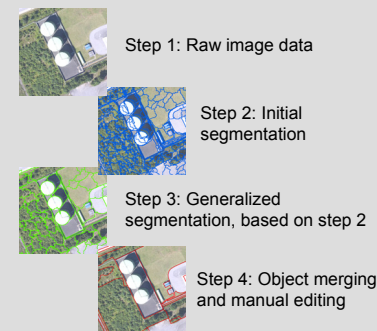


Fig. 5: Different segmentation steps

### Co-operation partners

- University of Applied Science Osnabrueck (Poster: Soil evaluation as an appliance of brownfield revitalisation)
- City of Osnabrueck
- State Authority for Mining, Energy & Geology of Lower Saxony (LBEG)

