Remote Image Management System

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Introduction

• During disasters, like forest fires, it helps to have a **real-time overview** of the terrain.
• This allows for quick and correct decisions based on **accurate live data**.
• Our remote image management system comprises
  • The **acquisition** and **transmission** of terrain data
  • The **processing** of the data in near real-time
  • The **presentation** of the processed data
Project Partners

- **VITO**: Java Master/Worker workflow for configuring and scheduling co-registration based composite generation jobs.
- **IncGeo**: C++ co-registration library
- **UGent**: C++ co-registration and composite generation algorithm

**VITO + UGent**: interface between "Sensor Input File System" and the VITO standard archiving workflow.

Presentation Overview
1. Introduction
2. Project Partners
3. Crisis Management
4. Image Registration
5. Results
Crisis Management

• When a disaster occurs, a plane is sent to **survey the area**, equipped with
  • Video camera
  • GPS (+ INS)
  • Transmission equipment
• The live video data is sent to a mobile ground **control station**.
• It is then sent to a **computation cluster**, where the frames are combined into a **mosaic**.
• The result is placed **online**, and visible from anywhere.
Image Registration

- Fast registration of 2 frames.

Maximization of $f(I_1, T(I_2))$, with $f = \text{mutual information}$

- Error detection.
  If the variance is higher than a user-defined quality setting, the registration is considered to be wrong.
Results

• The processed data is presented to the user as a **stitched image mosaic**.

• Example mosaic of 80 seconds of video data (2000 frames in total, about 200 used in this mosaic)