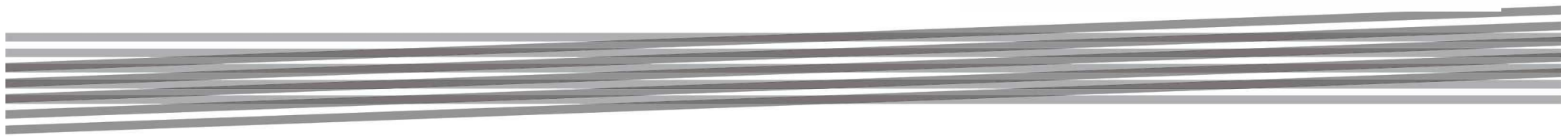
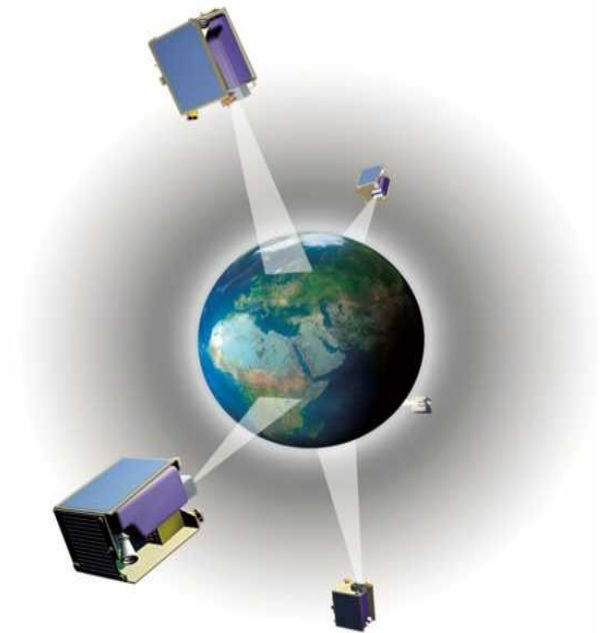




# RapidEye's Capabilities to support in Disaster Management & Emergency Response

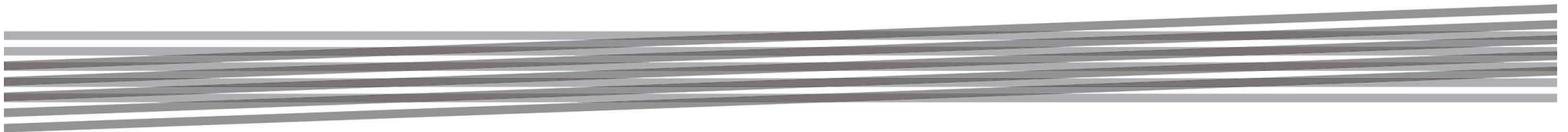
UN-SPIDER

Nicolas Heyer  
Bonn, Oct 14, 2008



## Agenda

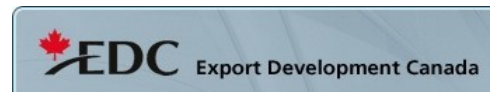
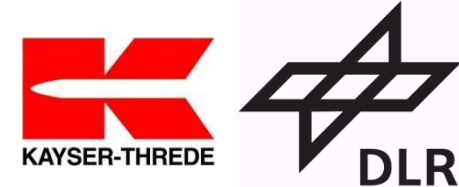
- > Company & System Overview
- > Case Studies
- > Support in Disaster Management



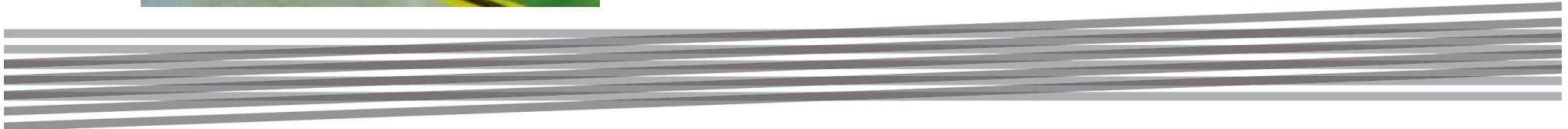
# Who is RapidEye?

- > **1996** Our business concept was designed by Kayser-Threde GmbH, based on a call for ideas of the German Space Agency (DLR)
- > **1998** RapidEye established in Munich as an independent company with seed financing from a few private investors and Vereinigte Hagelversicherung
- > **2004** With funding for our satellite constellation secured with the help of the EU, the State of Brandenburg and a banking consortium, RapidEye relocated to Brandenburg an der Havel.

CCC (Canadian Commercial Cooperation)  
– subcontracting with MDA in Vancouver – was contracted to build our ground and space segment

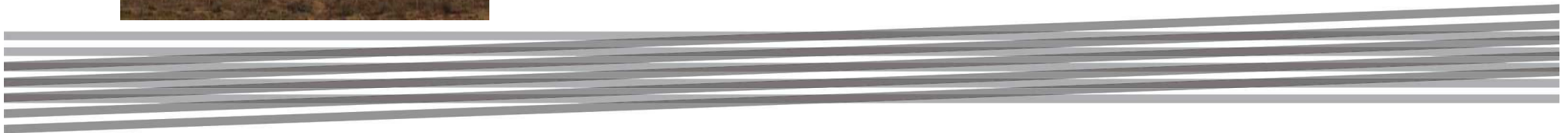


# Our Own Satellite System

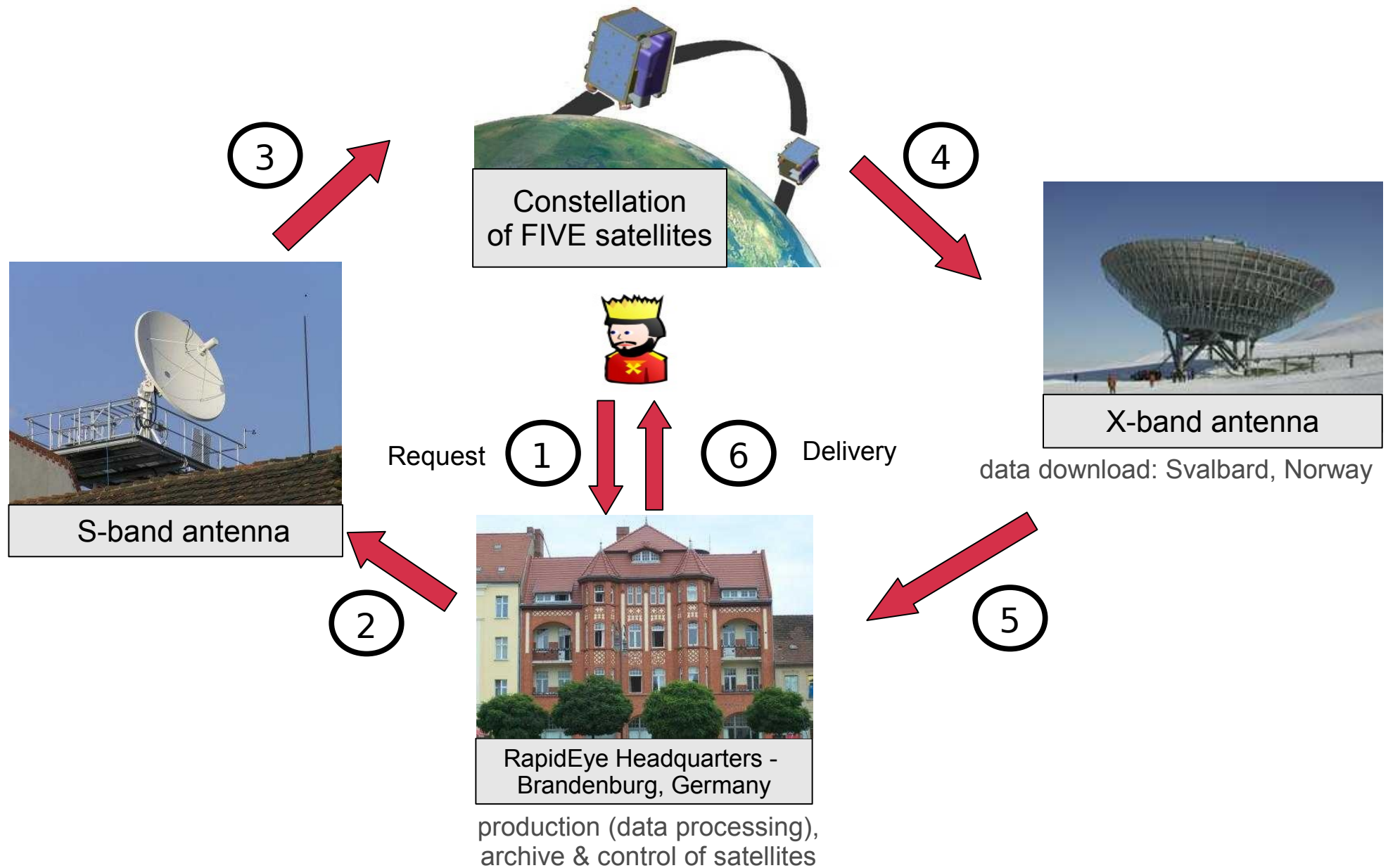


# Our Own Satellite System

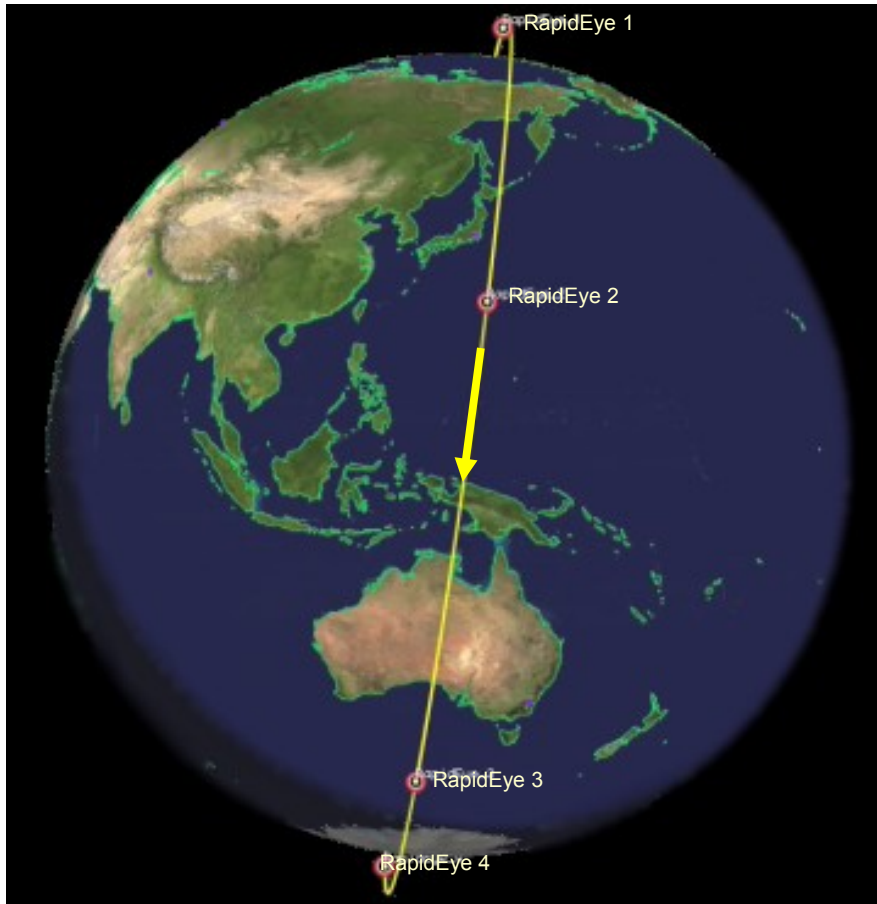
Successfully launched Aug 29, 2008 !!!



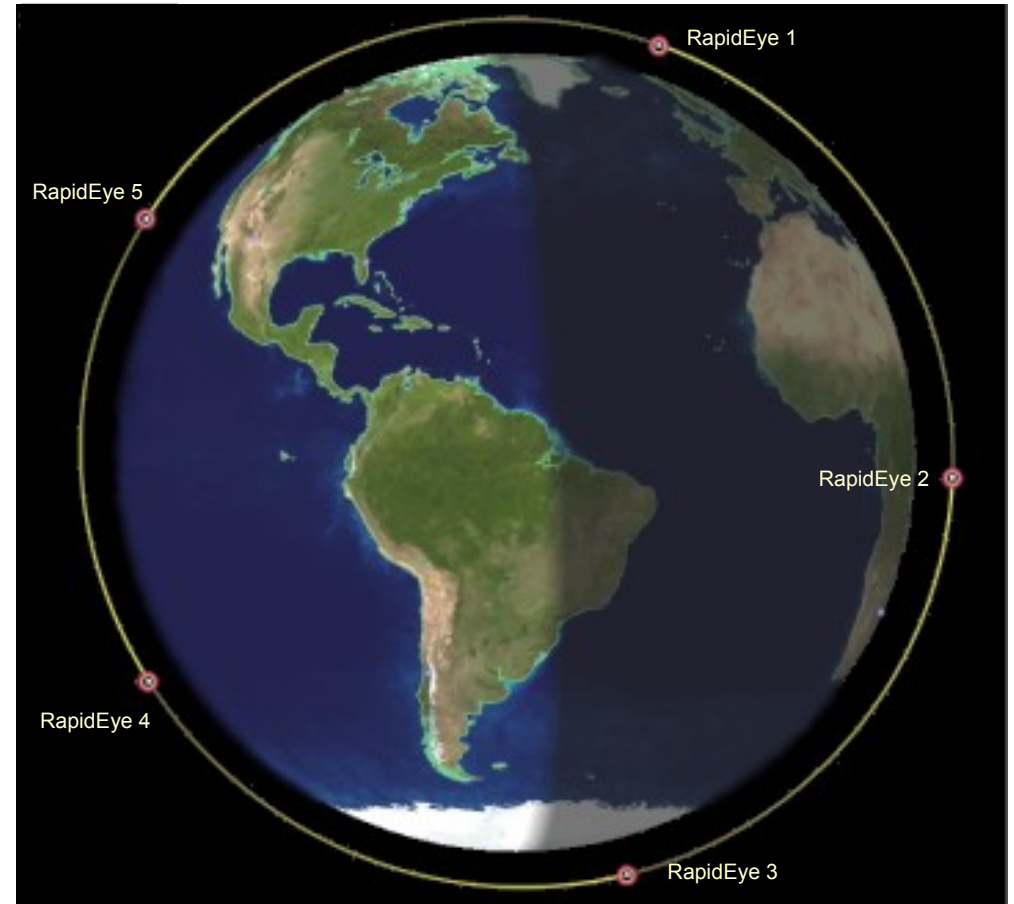
# Our Own Satellite System



# Orbit Characteristics



sun – synchronous orbit



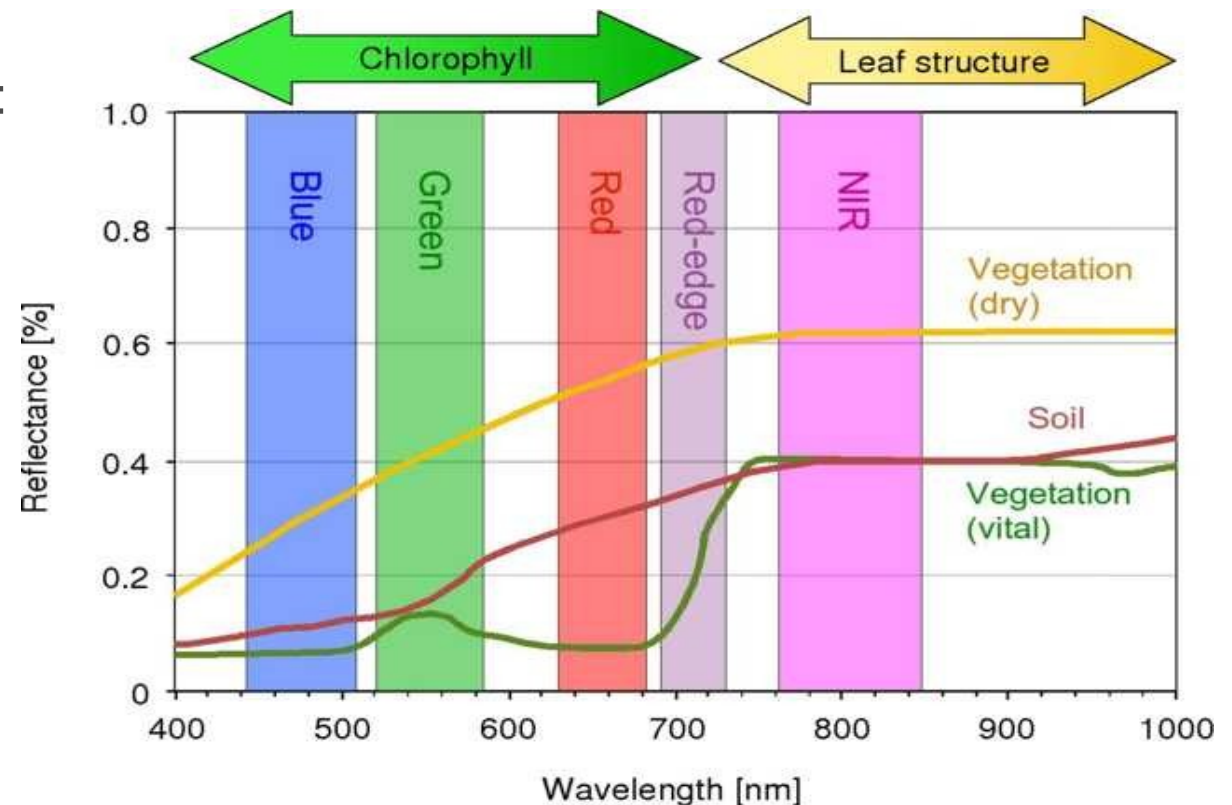
equally spaced in one orbital plane

# Competitive Advantage

RapidEye's satellites are the **first** commercial satellites to offer the **Red-Edge** band, which is sensitive to changes in chlorophyll content.

The Red-Edge band is used to:

- > Monitor Vegetation Health
- > Improve Species Separation
- > Measure Protein and Nitrogen Content



## Our Own Satellite System



The RapidEye system can:

- > Image more than 4 Million km<sup>2</sup> of earth daily (equal to Eastern USA)
- > image any point on earth daily
- > deliver products with 5 Meter pixel spacing

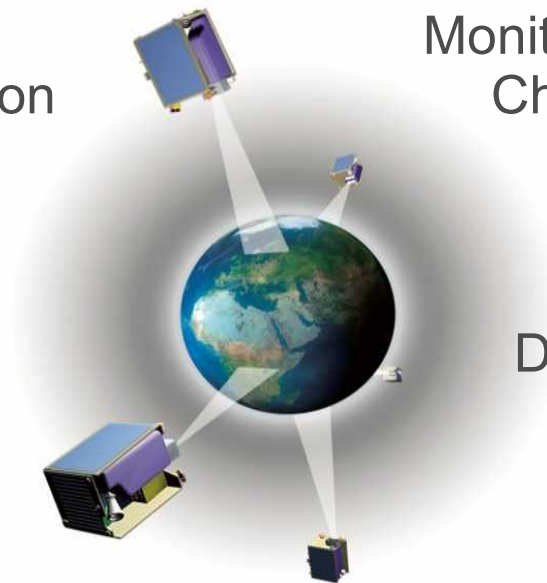
# What Are RapidEye's Core Capabilities?

Land Cover Analysis &  
Vegetation Identification

Monitoring &  
Change Detection

Feature &  
Boundary Extraction

Damage Assessment



Modeling &  
Production Estimation

**Multi-temporal analysis**

# Industry Specific Solutions



Agriculture



Forestry



Security &  
Emergency



Energy &  
Infrastructure

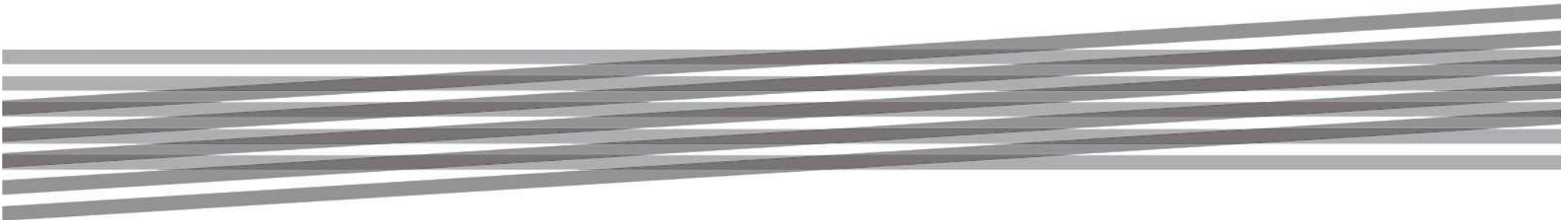


Spatial  
Solutions



Environment

# | Case Study – Flood Mapping



## Case Study – Elbe Flooding

- > Strong thaws on Elbe headwaters
- > Flooding of many villages

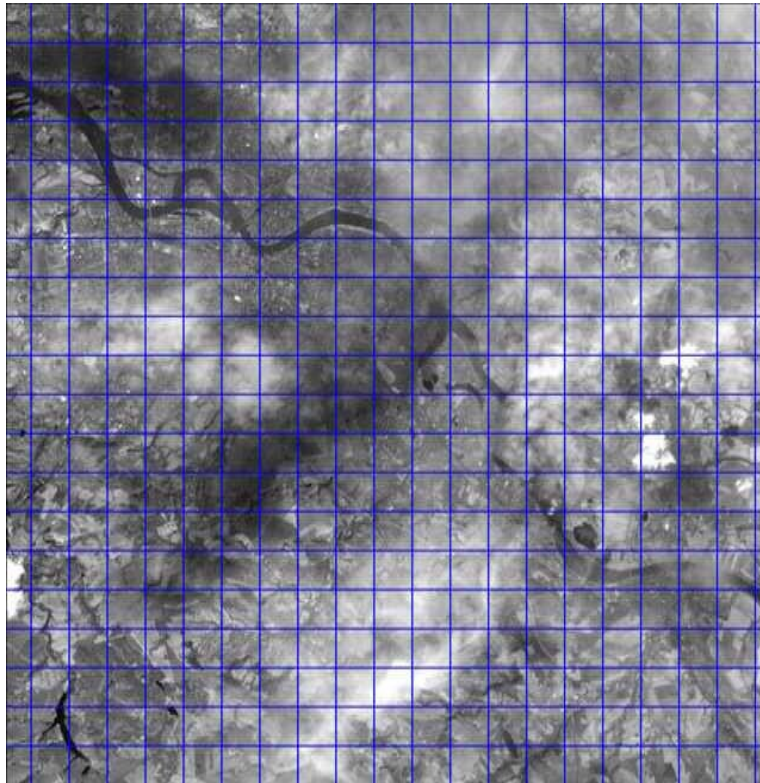


**Spring 2006**

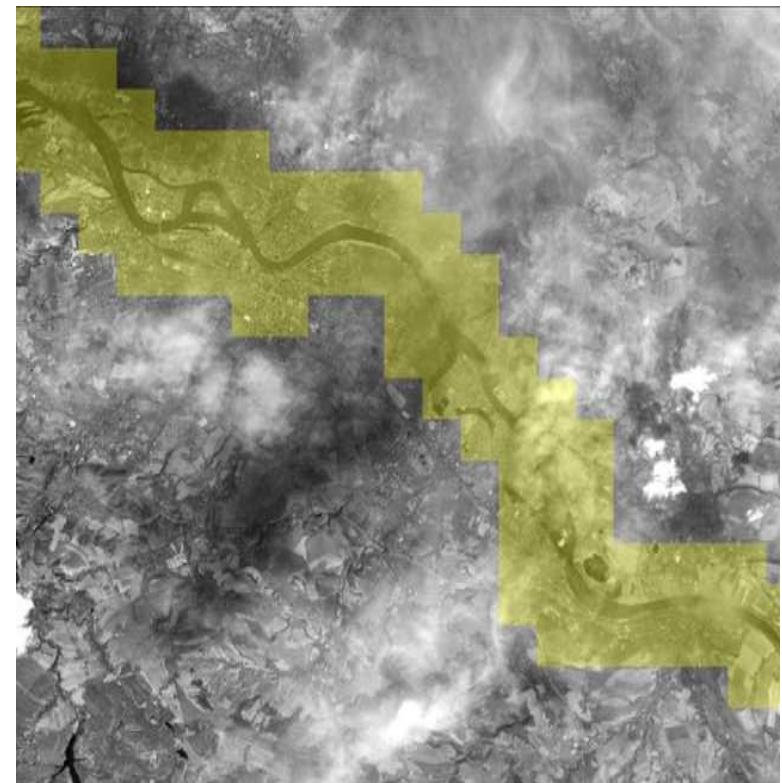


- > **IRSP6 LISSIII (02.04.2006)**
  - > Green, Red, NIR, SWIR
  - > 20 m ground resolution
- > **IKONOS (20.08.2002)**
  - > Blue, Green, Red, NIR
  - > 1 m ground resolution
- > **DTM 25**

# Details of Processing

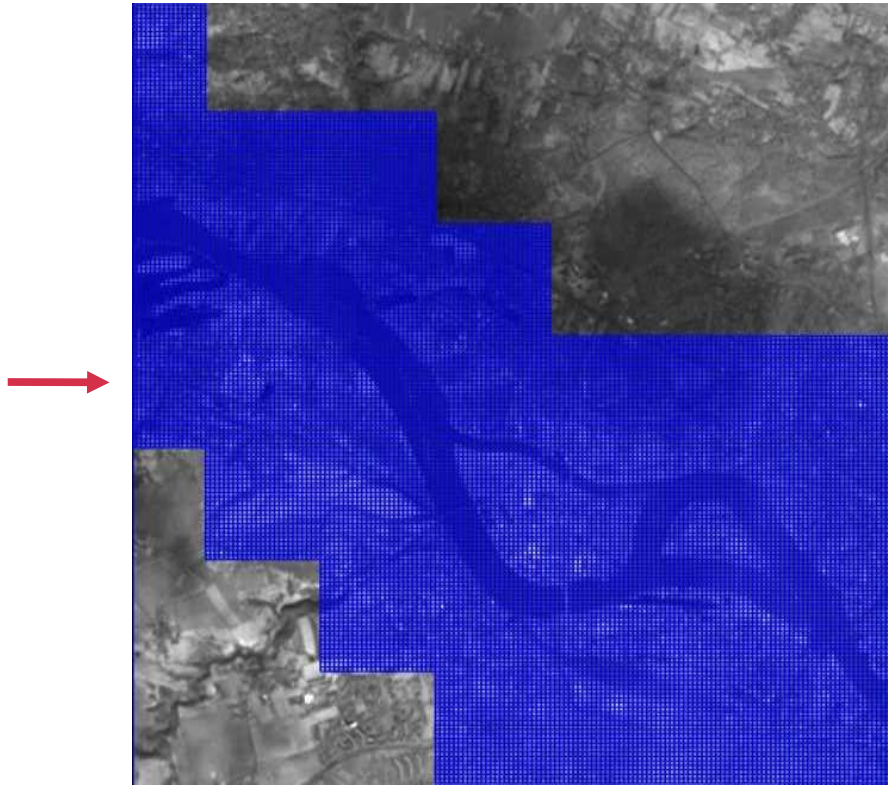


**Raw segmentation**

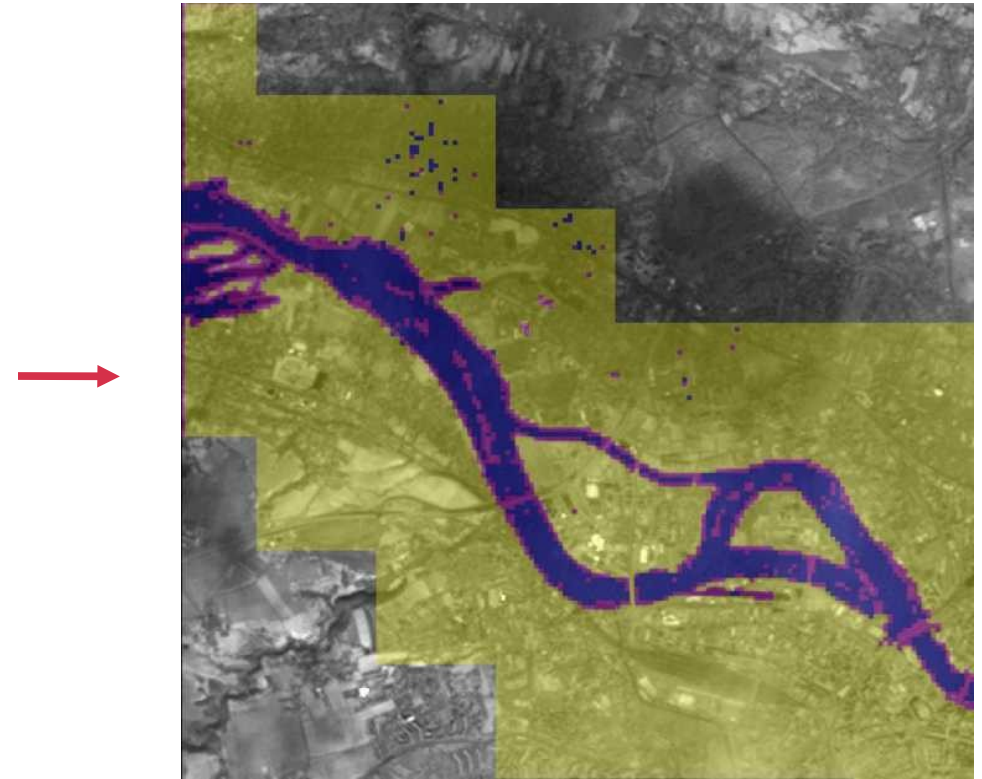


**Classification with Elbe Vector**

# Details of Processing



**Fine segmentation**



**Classification of Flood Candidates**

# Elbe Flooding – Spring 2006



# Elbe Flooding – Spring 2006



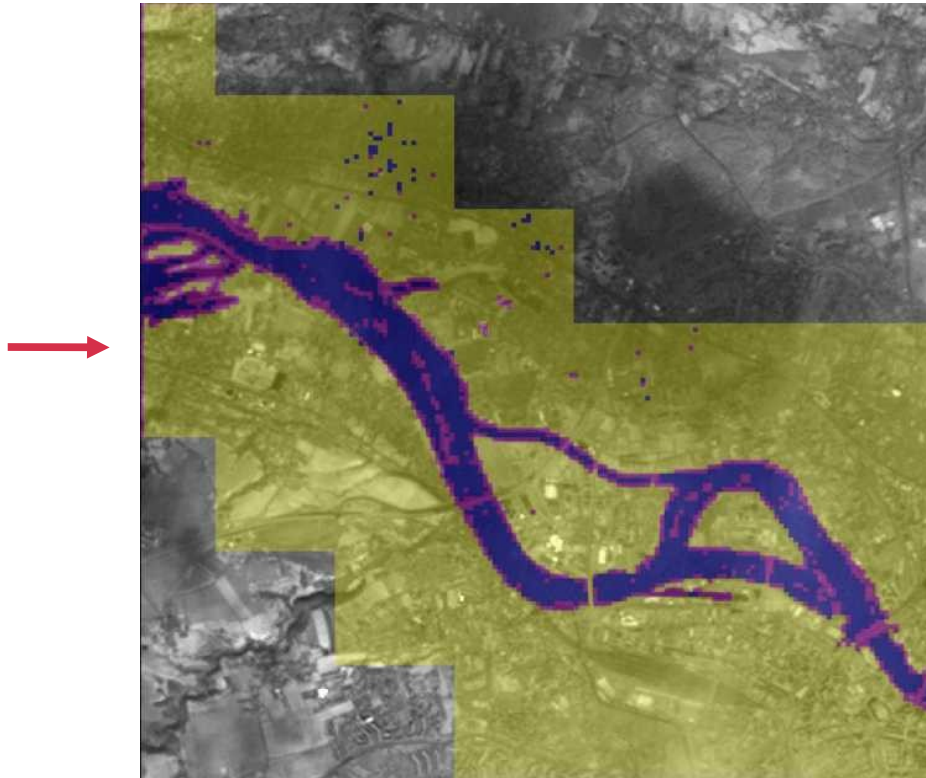
# Elbe Flooding – Spring 2006



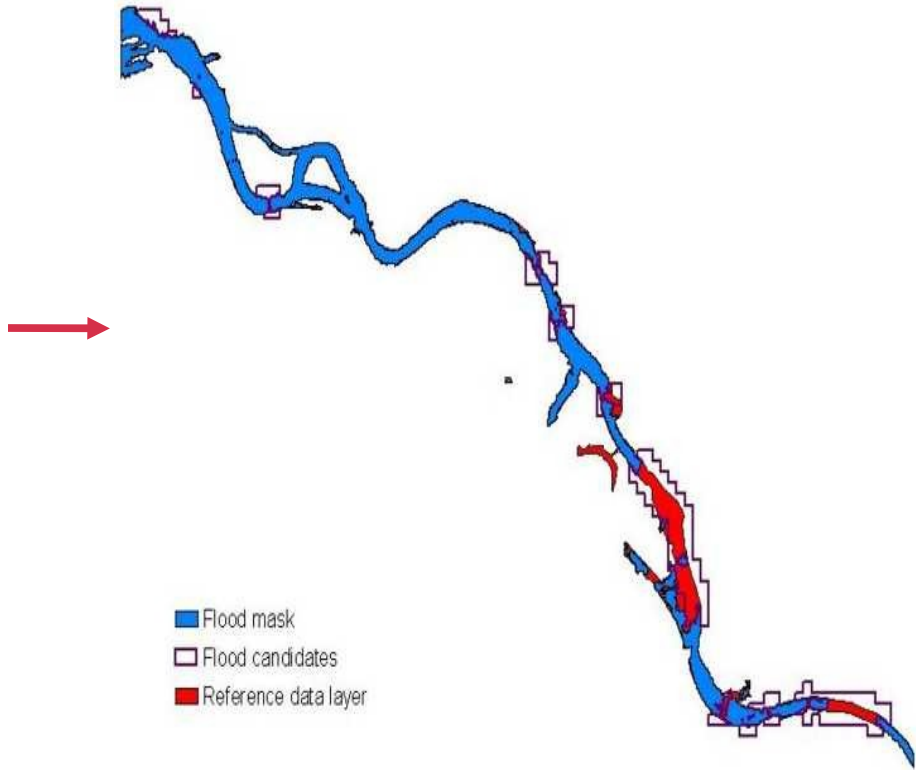
# Elbe Flooding – Spring 2006



# Provision of Service



**Classification of Flood Candidates**



**Export as Vector File**

# | Case Study: Iowa und Illinois



**June 2008**

# | Case Study: Iowa und Illinois



**June 2008**

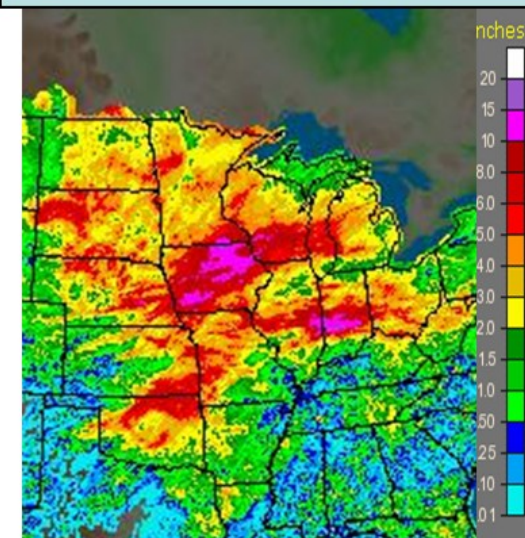
## Case Study: Iowa und Illinois

- > Heavy rain falls with saturation of water intake capacity of the soil
- > Loss of approx. 2.7 Billion Dollar of crops in an area of 2 mio. ha



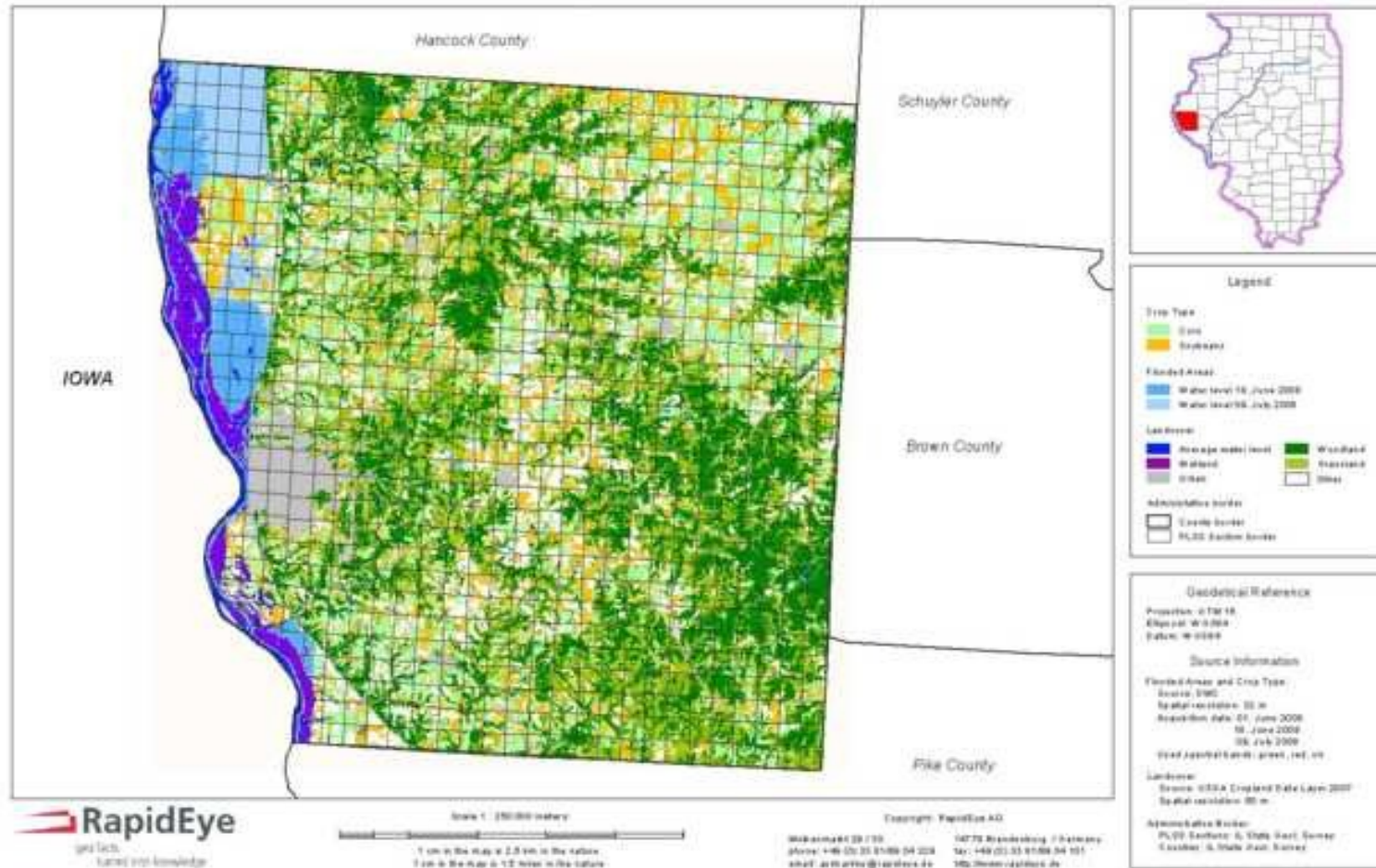
**June 2008**

**14-Day Precipitation**  
(ending 8 a.m., EDT, June 12, 2008)



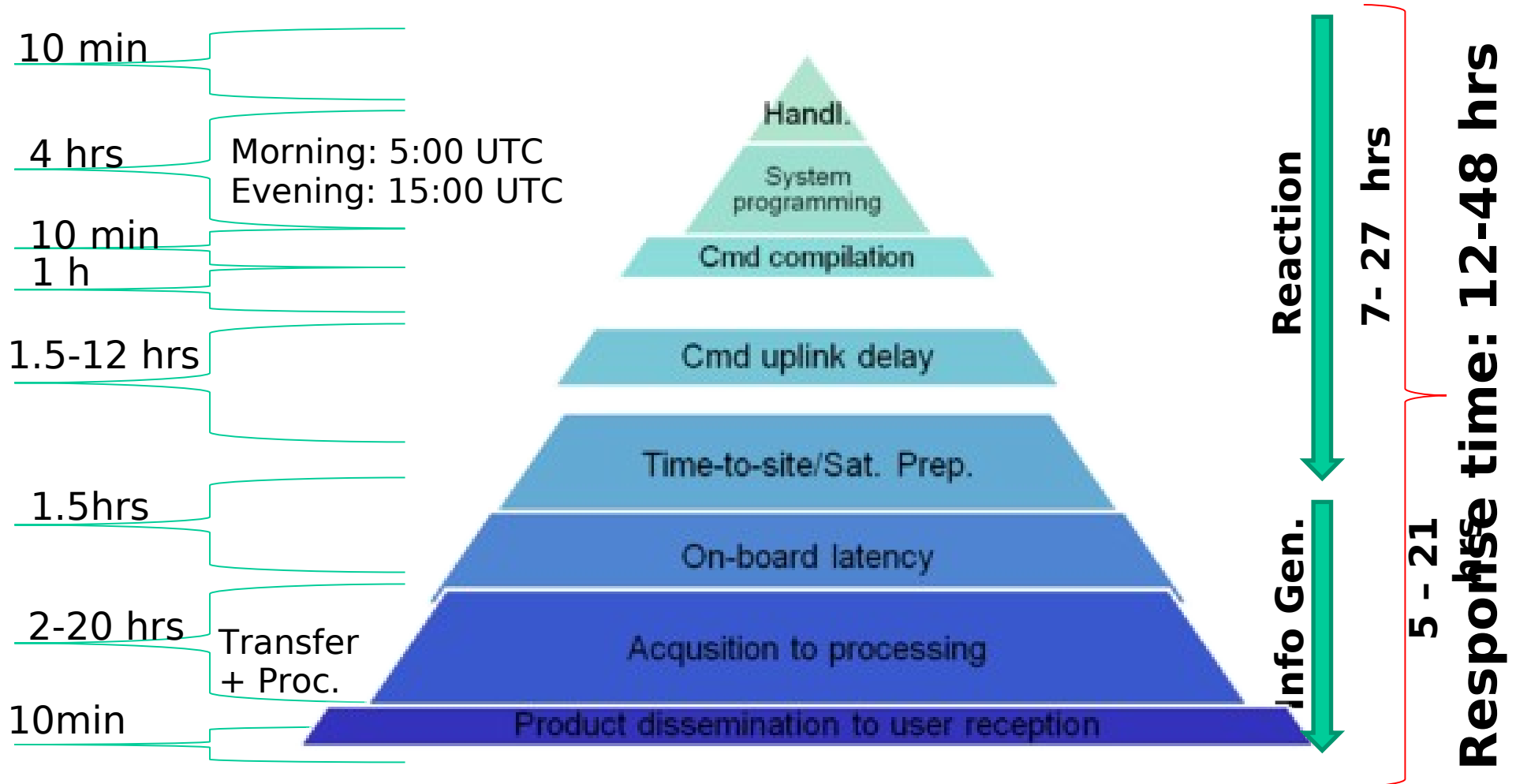
# Case Study – Result

**US Midwest 2008 Flooded Areas with Distribution of Corn and Soybean Fields  
Adams County / Illinois**



DMC campaign (Red, Green, NIR; 32 m ground resolution  
June, 1 & 18, July 5, 9, 22, 27

# Emergency Response Scenario



**|** The RapidEye system supports



**... in the Damage Assessment**



Before....



...after a landslide

**(Change) Detection of unexpected events**

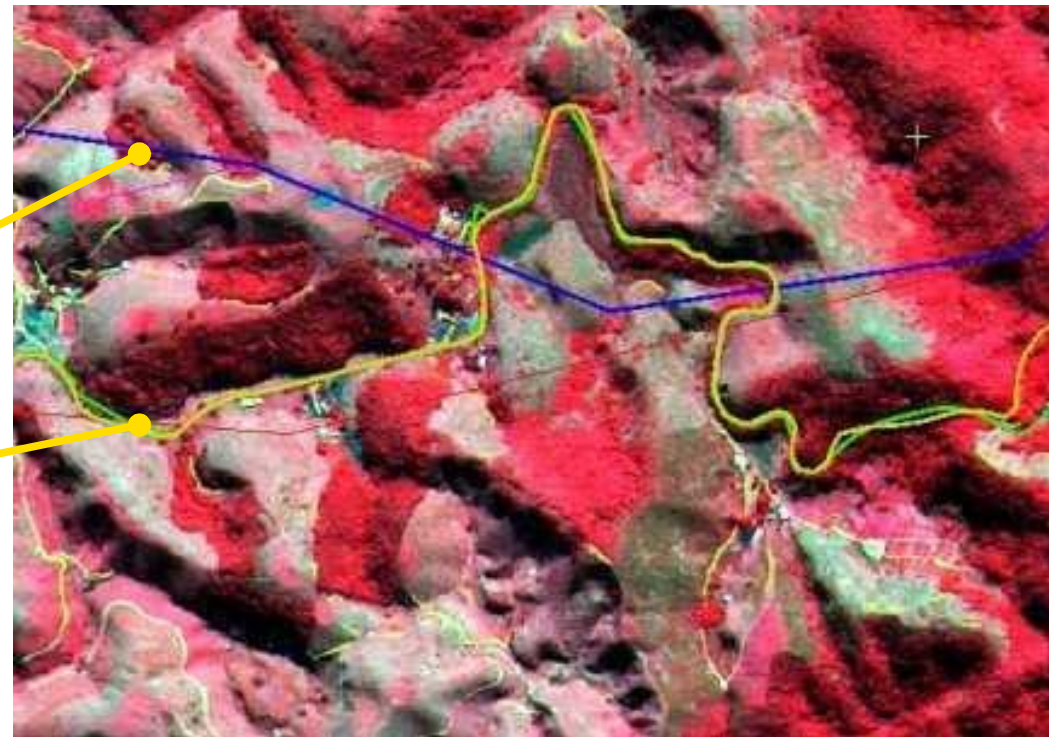
# Correction of Road Vectors



> Updating of road vector data bases is done by using the highly automated RapidEye road correction approach

Provided road vector

corrected road vector



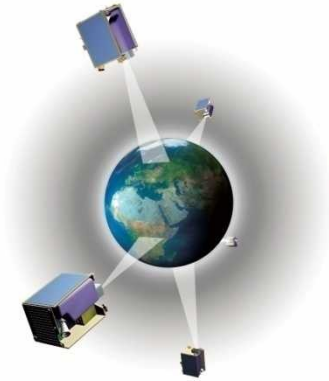
# | Your benefits.....



- > Reliable imagery source
- > Change Detection
- > Thematic Mapping
- > DEM generation above 60 degree latitude
- > Cartography
- > Instant Information in emergencies
- > Multi-temporal layers for visualization tools
- > Validation of very high resolution imagery
- > Pan-sharpening
- > .....

Spectral Bands	Blue	440-510 nm
	Green	520-590 nm
	Red	630-685 nm
	Red Edge	690-730 nm
	NIR	760-850 nm
Satellite Altitude	630 km	
Ground Sampling Distance (Nadir)	6.5 m	
Pixel Size (orthorectified)	5 m	
Tile Size	25 x 25 km <sup>2</sup>	
Swath Width	77 km	
Revisit Time	DAILY (<20 degree roll angle)	
Equator crossing time	11:00 a.m. (approximately)	
Image Capture Capacity	4 Million km <sup>2</sup> DAILY	
Radiometry	12 bit	

## Strenghts



- > Satellite Owner & Operator

**→ Reliable, up-to-date data availability**



- > Downloading of collected imagery – 4 mio. sqkm every day – to our system designed to quickly process and categorize this imagery

**→ Rapid Response and Fast Growing Archive**



- > Provision of near-real-time data to easily integrate into any GIS system

**→ Full Control of Value Chain**



 RapidEye™

Thank you very  
much for your  
attention !

# Contact Us



Nicolas Heyer  
Email: [heyer@rapideye.de](mailto:heyer@rapideye.de)  
FON: + 49 3381 8904 513



Molkenmarkt 30  
Brandenburg an der Havel  
Germany

Phone: + 49 3381  
8904 555

Fax: + 49 3381 8904  
101

Toll Free (US): 1- 800- 940-  
3617

email: