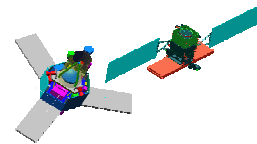


ORFEO Preparatory Programme

WG3 « Mapping and Land planning »
Synthesis

Jean-Philippe Cantou



Pleiades information day Spot Image – 10th of June 2006

1

Reference cartographic data :

geographic data layers for general use...

- metric precision topographic data : orthoimage, heights
- semantics & topology : building, hydro, transportation, perennial land cover
- administrative : boundaries, cadastre, place names, road classification

operational image processing requires heavy means ...

- mapping vast territories => acquisition planning / image validation boucle
- contractual deadlines => image supply guaranteed
- metric terrain precision => GCP, DTM
- ...

Land use planning sectors

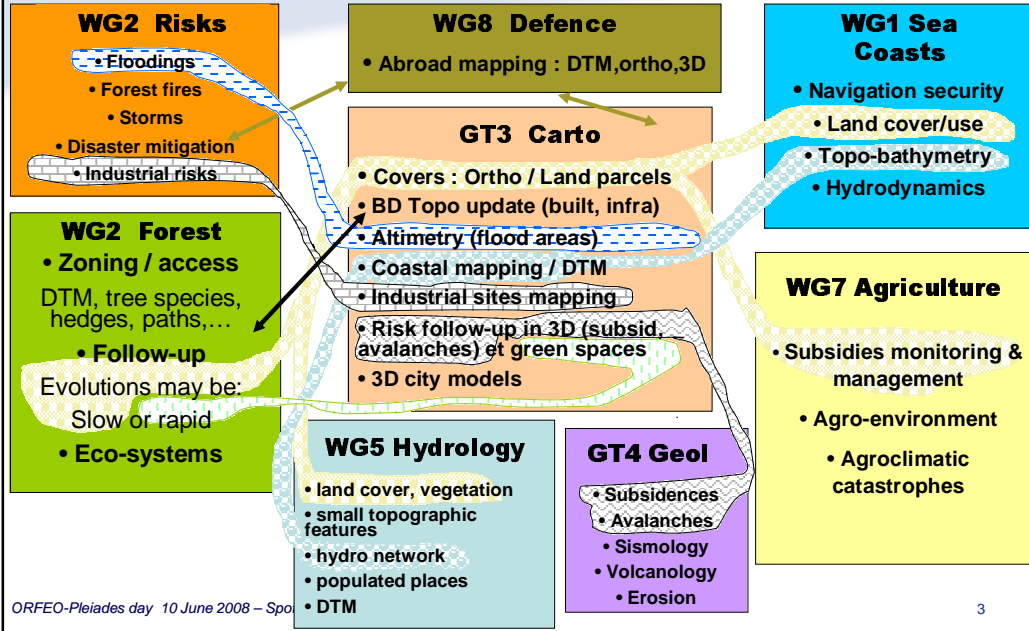
Transportation, urban planning
Environment, Agric,

Other thematic / scientific devlpts



ORFEO-Pleiades day 10 June 2008 – Spot Image

2



WG3 contributors / areas of activity

IGN-F : base national mapping

IGN-B : idem

Belgian regions : contracting authority in high scale cartography

RGD-Savoie : collect and distribution of geographic data

LCPC : urban planning, road maintenance, hydraulics

CSTB : urban noise simulation, 3D virtual reality

SNCF : land slides along railroads

INERIS : mapping of risk sites

WG 3 main expectations (early 2006)

- **CosmoSkyMed : a limited potential**
 - ◆ small movements detection
 - ◆ DTM in equatorial areas
- **Pleiades in Europe : advantages = revisit and coverage, along track stereo**
 - ◆ 70 cm colour orthoimage systematic cover with renewal < 3-5 years
 - ◆ Early warning source for building & network updating => endeavour on methodology
 - ◆ 3D City model generation (not in the core of towns), multi-views for facade texturation
 - ◆ Surveillance of sensitive areas (coast, flood plain) potential TBC % aerial photo < 50cm
 - ◆ Land cover follow-up of evolutive areas : potential TBC % 2m colour & wide swath
- **Pleiades in emerging/developing countries :**
 - ◆ Medium to high scale mapping and updating (1:25 000 to 1:10 000)
 - ◆ Urban mapping

WG 3 : situation mid-2008

- **CosmoSkyMed :**
 - ◆ still waiting for stereoscopic data...
- **Pleiades in Europe by 2010**
 - ◆ *The context slightly changed :*
 - ◆ Attractive image geoportals for all
 - ◆ Mapping agencies : Ortho 50cm / 3 year cycle generalized all over national territories (institutional demand,...)
 - ◆ EuroDEM, Reference3D height/GCP data
 - ◆ GMES urges for european integrated geo-information at 5m precision
 - ◆ 10-20 cm aerial surveys cover cities
 - ◆ *Need to review Pleiades target priorities...*
 - ◆ Ortho layers in 2010 : Pleiades 70cm / aerial 50cm to challenge with 1 m ground accuracy demand ?
 - ◆ 3D models : change detection and city model quality control rather than generation
 - ◆ Surveillance of sensitive areas (coast, flood plain) : stereoscopic viewing has high potential
- **Pleiades in emerging / developing countries**
 - ◆ Still high potential, in urban cities (DTM and 3D models)

Main requirements in terms of products/services (1)

1. Geographic data base generation :

- Colour image 50cm GSD / 1m terrain geocoding / revisit capacity
- Altimetry : DTM < 1m in σZ
Industrialized countries : sensitive areas (flood plains, coasts)
Developing countries : « Alti database »
- 3D city models generation
- Detailed mapping of coastal areas
- Rural cadastre in emerging countries (orthoimage as input)

completed actions
on going actions

2. Early warning / Updating of geographic data

- Visual : Alert for infrastructure detection / stereoplotting in 3D
- Automatic : Change detection of buildings
- Land cover : follow-up of urban sprawl

Main requirements in terms of products/services (2)

3. Risk site monitoring :

- Networks (railroad, highways) : subsidences, impact of floods
- Public works : follow-up of their impact on environment
- Urban trees : follow-up of their phytosanitarian status
- Coastal : follow-up of land cover (compliance with protection laws)
- Mountains : snow extend, avalanches, lake level, stream regime surveillance

completed actions

4. Thematic mapping / Site design and planning

- Towns : classification of built-up (+heights), natural, artificial places
- Feasibility studies : land cover map, slope map, geology
- Natural hazard assessment for industry, resort site : flooding, geology, land slides

5. Virtual reality – 6. Telecoms (3D vector city models)

- Urban environment design and mapping : street / facade / building materials
- 3D Scene display : virtual object integration in 3D textured models / animation

Sites

- **Aerial simulations / 3D geometric reference available**

 - Toulouse

 - Amiens

- **Quickbird images / 2D investigations**

 - Geneva

 - Drôme département