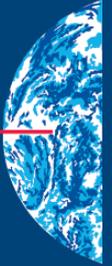


S P O T
I M A G E



Spot Image

Spot Image Service Continuity: Preflight Assessment of the Pleiades and SPOT Programs

*The Trusted Source
for Geo-Spatial Information*

Drew Hopwood
JACIE – March 17, 2010
SPOT Image Corporation

SPOT Image – Corporate Overview



- A Subsidiary of **EADS/Astrium Services**
- **Strong Global Presence**
 - 6 Subsidiaries & 1 Office
 - US Subsidiary in Chantilly, Virginia
- **Extensive Satellite and Imagery Resources**



- 2 Satellites in Operation
- Ground Station Network
- 2 Very High-Resolution Satellites
- Ensured Continuity of Services
- Distribution Rights for Other Satellites

SPOT 4 & SPOT5

43 Active Direct Receiving Stations (DRS)

Pleiades 1 & 2

Beginning Operation 2010-2011

SPOT 6 & 7 Continuity Program

FORMOSAT-2 & KOMPSAT-2

- **Strong Focus on Services**



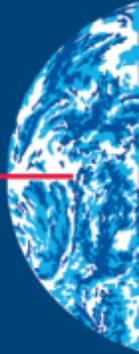
Our offering



- ▶ **Multiple Products & Services**
50 cm – 20 m optical imagery
Immediate web access
- ▶ **Unparalleled Archive**
20+ million images
- ▶ **Extensive, High Quality Basemap**
2.5 m SPOTMaps
- ▶ **High Quality DEM / DTED Level 2**
44 million km² of Reference3D
- ▶ **Strong Continuity Program**
Pléiades 1 & 2 and SPOT 6 & 7
Secured service until 2023



S P O T
I M A G E



A Unique
Constellation

Medium & High Resolution
Optical Satellites

6 Satellites

Pleiades 1 & 2
SPOT 6 & 7
SPOT 4 & 5

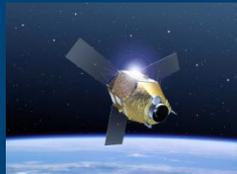
50cm Data
2m Data
2.5m-20m Data

1 Launch / year

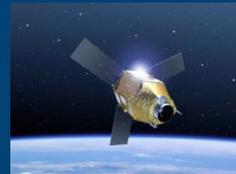
For the next 4 Years



Today



2010



2011



2012



2013

SPOT 4 & 5
2.5m – 20m

Pleiades 1
50cm

Pleiades 2
50cm

SPOT6
2 m

SPOT7
2 m

A continuity of service guaranteed until 2023

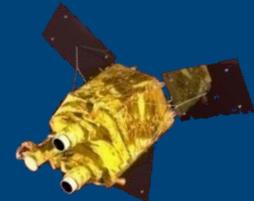
SPOT 6 & 7

... Coming 2012



Assuring SPOT data continuity until 2023

- ▶ 100% funded by EADS/Astrium
- ▶ 2m Panchromatic
8m 4-Band multispectral (Blue, Green, Red NIR)
- ▶ 60 km image swath
- ▶ 3 million km² per day / Satellite
- ▶ <10m CE90 Horizontal Accuracy
- ▶ Increased reactivity with 6 tasking plans / day

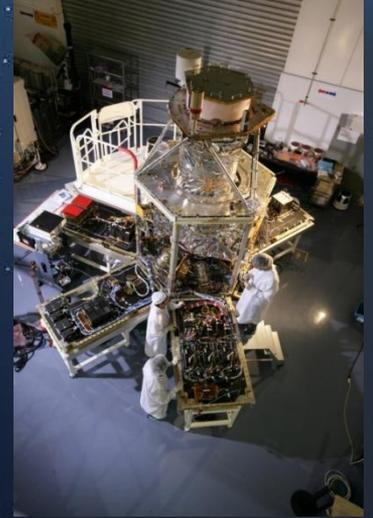
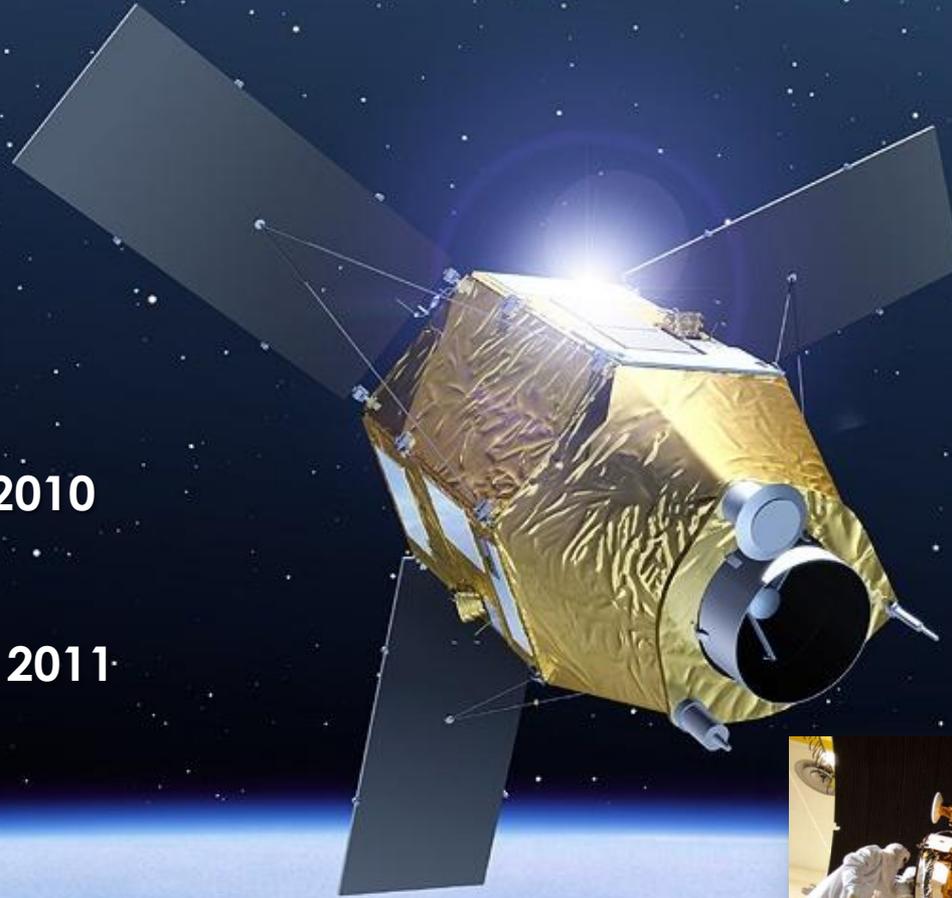




Pleiades Launch

Pleiades 1 | Q4 2010

Pleiades 2 | Mid 2011



Pleiades Imaging Instrument

Main Characteristics



Imaging Sensor

One Camera	1-Band Panchromatic 4-band Multispectral
12-bit	Pixel Depth, at Acquisition
Color Bundle	Standard Mode of Acquisition
3m CE90	Pleiades Accuracy, without GCPs, with refined Attitude data
20 km	Image Swath

Pleiades Product

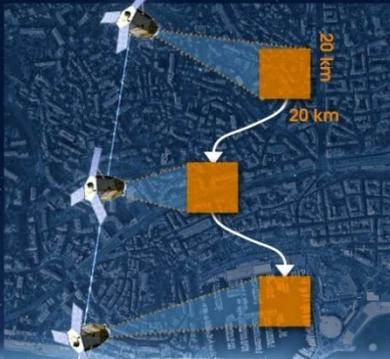
50cm	Pan Color 4-band (Pan-Sharpened)
2m	4-band Multispectral
Ortho-Rectified	A Standard Pleiades Product
JPG2000	Standard Format. Including RPC Model Metadata in DIMAP format



- 50cm Panchromatic
- 2m Multispectral, 4 bands



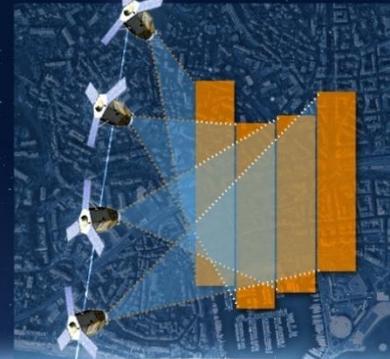
Target Collection



20-30 Targets per Pass

Up to 15 targets over
a 1,000 km orbit
segment

Single-Pass Strip Mapping



. Full 1x1deg Geocell
Coverage

. Up to 120 km swath
. Up to 21,600 km²

Stereo & Tri-Stereo



Up to 6,000 km²
of Stereo Collection
on a Single Pass

Multiple acquisitions over target on a single pass



Persistence Surveillance
Capability

Multiple shots over a
target within seconds
of interval

Pleiades – Collection Capabilities



Satellite Resources
dedicated to the
Commercial Market

1M+ km²

Daily Acquisition
Capacity with
2 Pleiades Satellites

Daily Revisit

Any point on the Globe

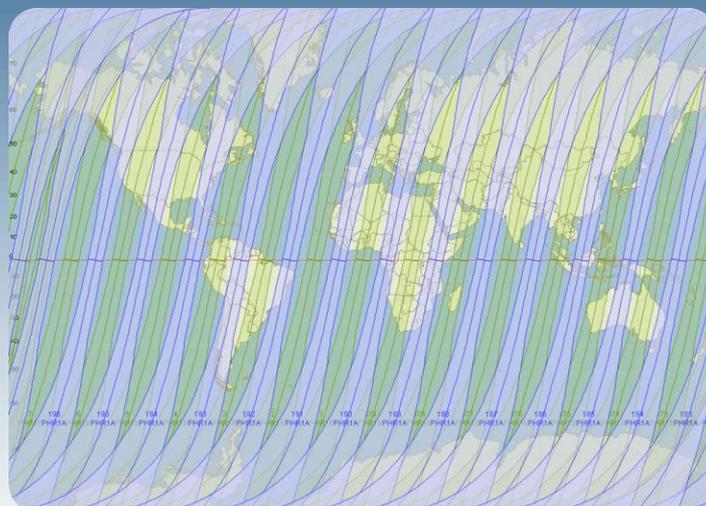
Using both Pleiades 1 & 2 satellites

+/- 40 deg Incidence Angle

Using +/- 30 deg Incidence Angle

Daily Revisit above 45 deg Latitude

1-2 day revisit between equator
and 45deg latitude



Pleiades Daily Operation



3 / Day

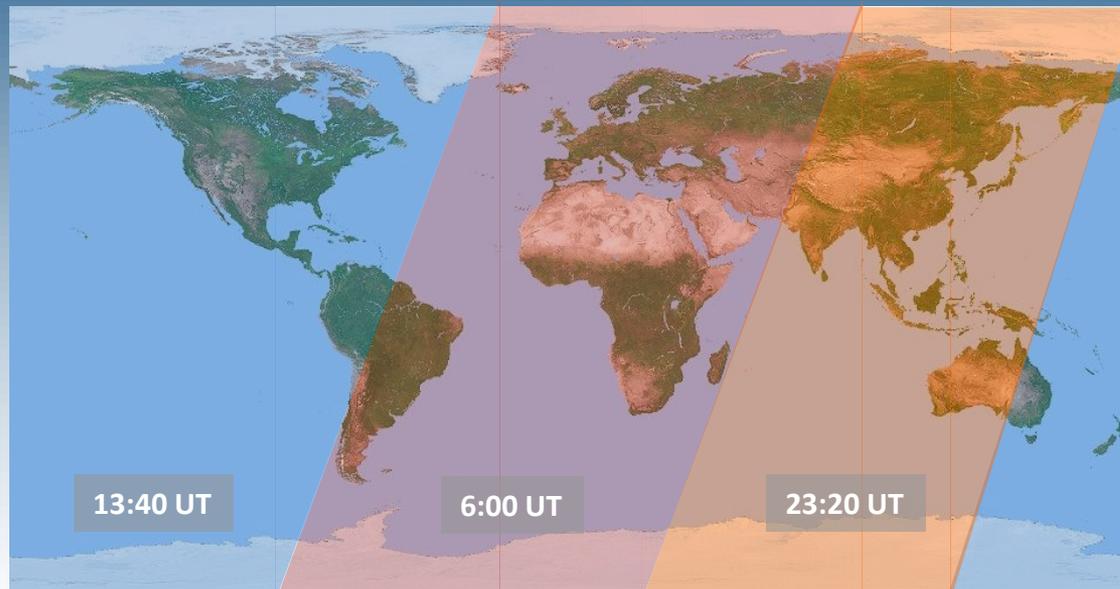
of Tasking Plans per Day per satellite
One every 8 hours

4-hour Rush

Deadline for Urgent/Rush Programming
Request Submission

**20-min
Direct Tasking**

Lead time before submission of the
programming request using Direct Tasking
Mode





Pleiades Terminal

**SPOT Image Turn-key Solution
for Pleiades Direct Reception**

Task, Receive, Process Pleiades data



Direct Tasking

**Give the User the “joystick” to task Pleiades
satellite**

Task Pleiades 20 min before satellite pass

Dedicated Programming Access Unit

**Manage your own Collection requirements
Submit and build collection deck from your
receiving station**

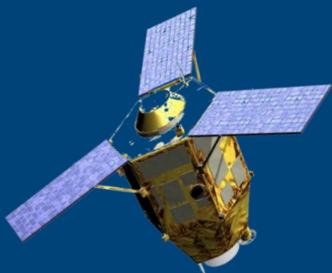
Image Processing Unit

50cm-Ortho Production

Mosaicking Capability

30min / Ortho-scene processing time

- ☑ Give the User the “Joystick” to Task Pleiades
- ☑ Ability to Submit programming request up to 20min before the actual path
- ☑ Capability available for Pleiades Ground Station Users



T-24 hours

User Reserves an Orbit Slot (minimum 2 mins)

**User-Specific
Tasking Plan**

User has full control of the collection over the reserved slot, using the Pleiades “Programming Access Unit”

T - 20 min

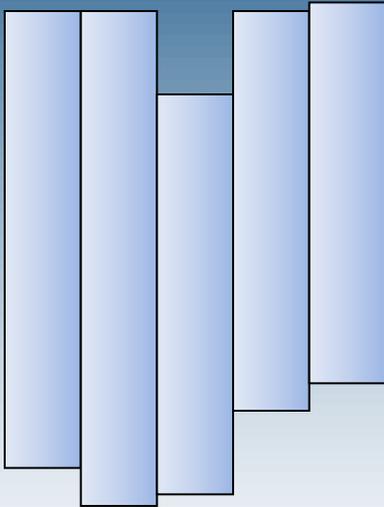
Cut-off time for submission of the final programming request by the User

- Data Uplink to the satellite - 2 Modes:
 - By the User' S-band uplink antenna
 - By SPOT Image, using Kiruna Station
- Data Downlink & Exploitation by the User using Pleiades Terminal

- ☑ Automatic Mosaic Production
- ☑ DTED Level 2 used as Reference
- ☑ Option to Integrate SPOT Reference3D DTED Level 2 as reference

- ☑ Accuracy 3m CE 90
- ☑ Performance 2-3 Hours for production of a 60x60km Mosaic

Same- pass Mosaic Collection



Pleiades Data



© CNES 2009 - Pleiades Simulated Data

Accessing
Pleiades Data



$\$/\text{km}^2$

Service Level
Agreement

Direct Reception
(Ground Station)

AOI-Based

Data Ordering &
Delivery

Color Bundle
P+XS

All Collections

3m CE90

Expected Accuracy
(No GCPs)

50cm
Ortho-Product

Standard Pleiades
Product

Constellation Operation



- ▶ Two Satellite Constellations
- ▶ A Consolidated Collection Approach
- ▶ Common Exploitation Ground Segment

Medium & High Resolution Data

Optimize Data Collection
Sensor Queuing SPOT6/7 => Pleiades

Streamlining Data Production & Dissemination

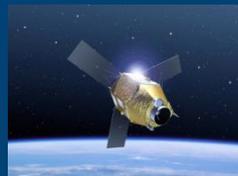
6 Satellites

Pleiades 1 & 2
SPOT 6 & 7
SPOT 4 & 5

50cm Data
2m Data
2.5m-20m Data



Today



2010



2011



2012



2013

SPOT 4 & 5
2.5m – 20m

Pleiades 1
50cm

Pleiades 2
50cm

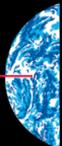
SPOT6
2 m

SPOT7
2 m





SPOT
IMAGE

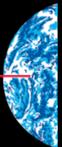


Pleiades Data

50cm, Color, Ortho



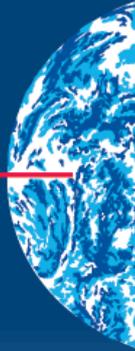
SPOT
IMAGE



Pleiades Data

50cm, Color, Ortho

S P O T
I M A G E



Pleiades
Spot the detail

www.spot.com

SPOT Image Corporation
14595 Avion Parkway
Suite 500
Chantilly, VA