



# Take 5 Users Day

## Introduction

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**October 2<sup>nd</sup>, 2013**

# Introduction

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The aim of the workshop today is to present:

- Take 5 experiment and first results by CNES (4 presentations)
- Studies using Take 5 images and first results by users (17 presentations)

**A second event is planned next year** to present all the results of the studies using Take 5 images.



# Preparation and progress of Take 5 experiment

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F. Daniaud (CS-SI), D. Clesse (CapGemini), V. Poulain (Thalès), M. Huc (CESBIO), J. Recoules (AKKA), L. Bray (Thalès), S. Maitrel (APAVE), S. Calmen (TELESPAPIO), D. Krzyzanowski (TELESPAPIO), A. Alcaraz (TELESPAPIO), J. Mazenc (Thales), J. Bijac (ASTRIUM-Geo), B. Montfort (ASTRIUM-Geo)

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# Summary

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- **Context**
- **Constraints and technical choices**
- **Progress of Take 5 experiment**
- **Feasibility study**
- **Conclusion**

# Context

## Call for ideas before SPOT4 disposal to lead technical experiments on the satellite

- Issued among CNES satellite specialists
- Aim :
  - ◆ To increase the understanding of a past behavior of the satellite, or past anomalies (technical tests)
  - ◆ To evaluate the ageing of the components
  - ◆ To test operation satellite systems at their limits
  - ◆ To validate new methods (operational, image quality ... issues)

## SPOT4/Take 5 experiment was proposed by the CESBIO

- To change SPOT4 orbit to a high repetitivity orbit in order to have in-flight simulation of future Sentinel-2 mission during several months => a new mission for SPOT4
- Atypical technical experiment by its nature and its duration

A key point confirmed the interest of the mission in July 2012 and the end of SPOT4 commercial mission was planned in January 2013

=> 6 months to study the feasibility and prepare the experiment

# Constraints and technical choices

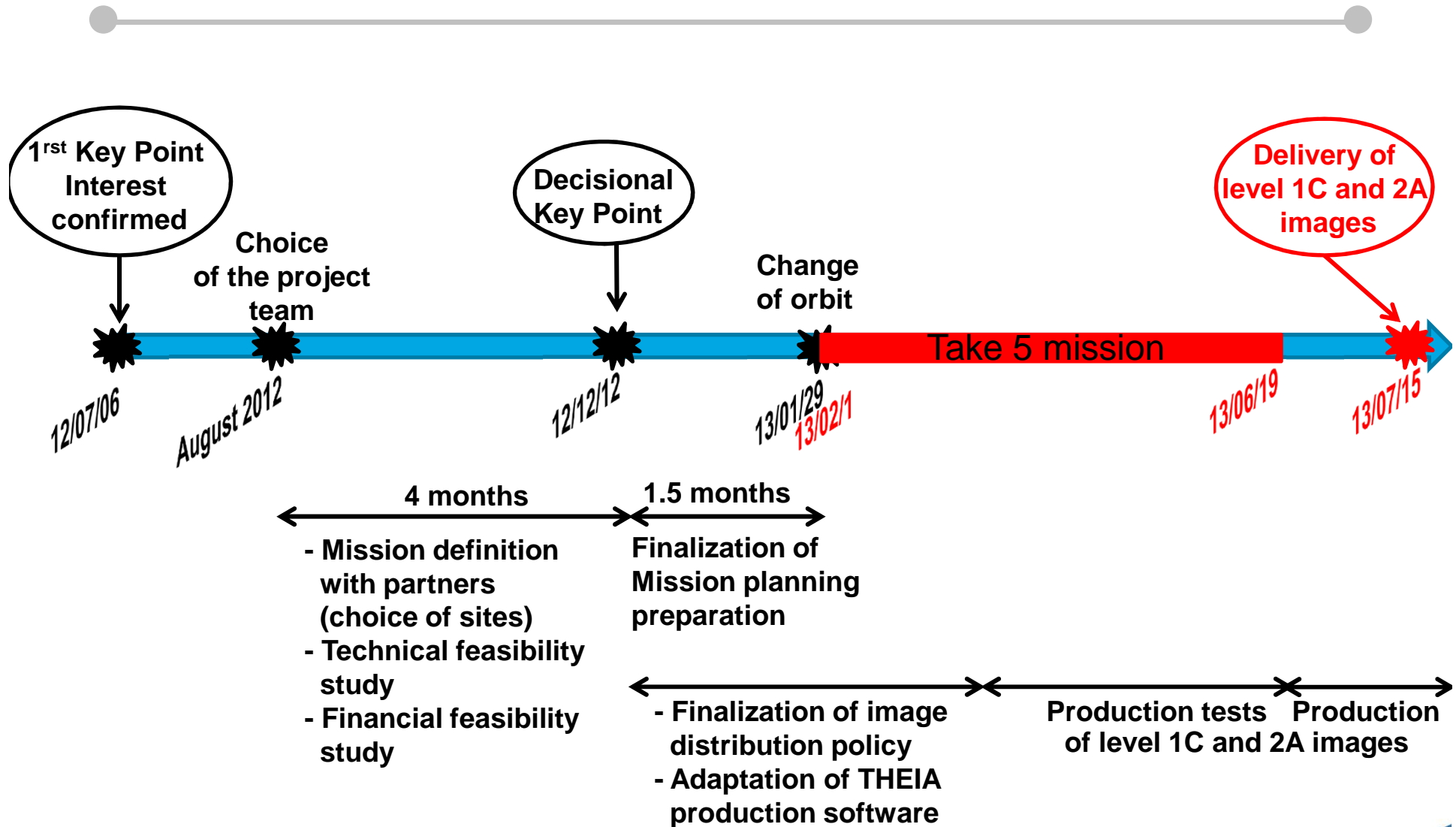
## Main constraints:

- Delay (6 months) and resources (human resources and budget) not compliant with significant changes in the existing onboard and ground systems
- Respect of CNES end-of-life policy : propellant reserve just sufficient for end of life operations

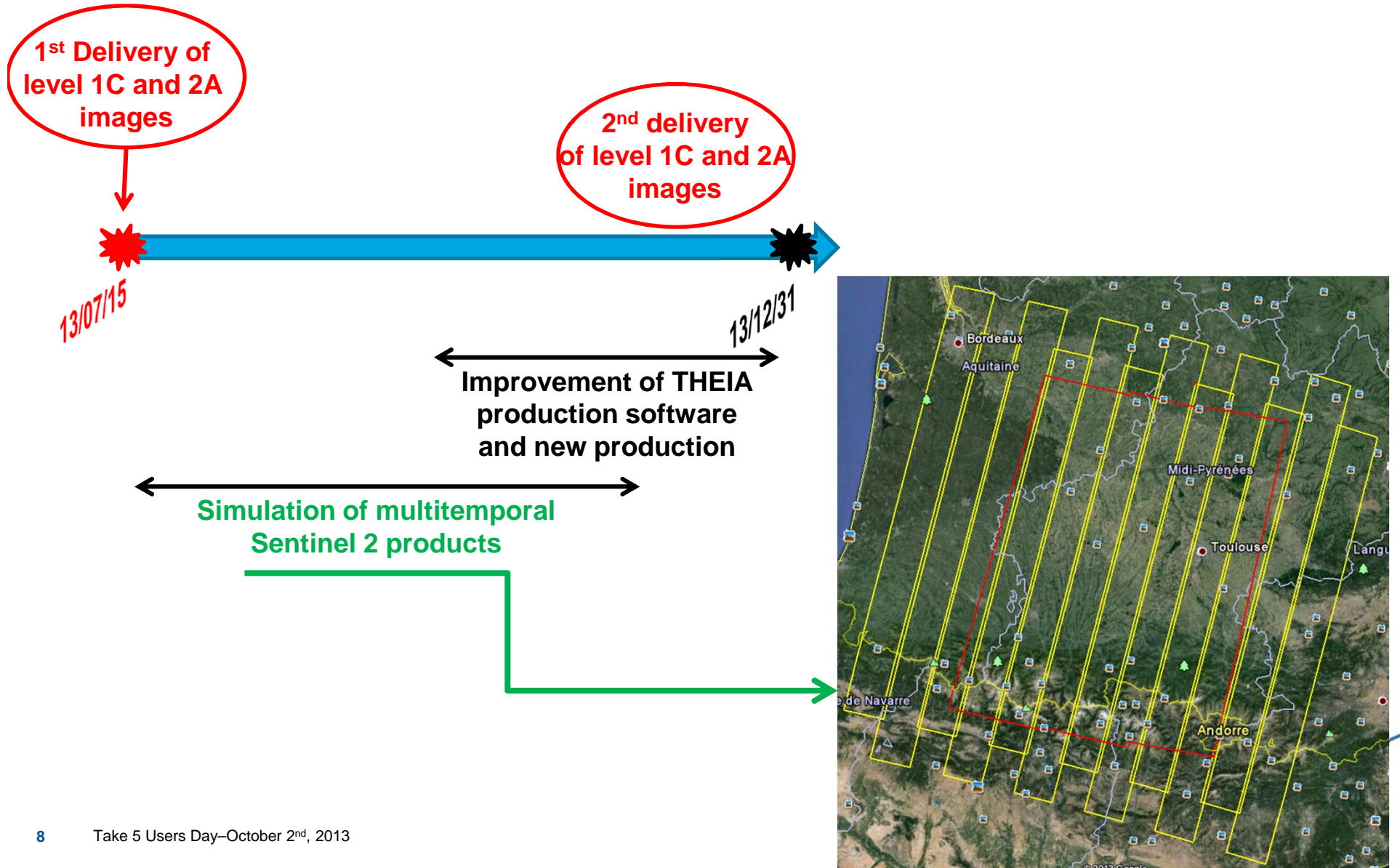
## Technical choices:

- Role of CNES during the experiment:
  - ◆ Operation of the spatial component: the same as in commercial life + Manual Tasking plan elaboration and detection of S and X-band passes scheduling conflicts and jammings with other satellites
  - ◆ Production of level 1C and 2A images (THEIA framework)
- Role of ASTRIUM-GEO (commercial ground segment):
  - ◆ Images acquisition
  - ◆ Images inventory, production to level 1A and cataloging
  - ◆ Level 1A images supplying to CNES and partners

# Progress of the Take 5 experiment 1/2

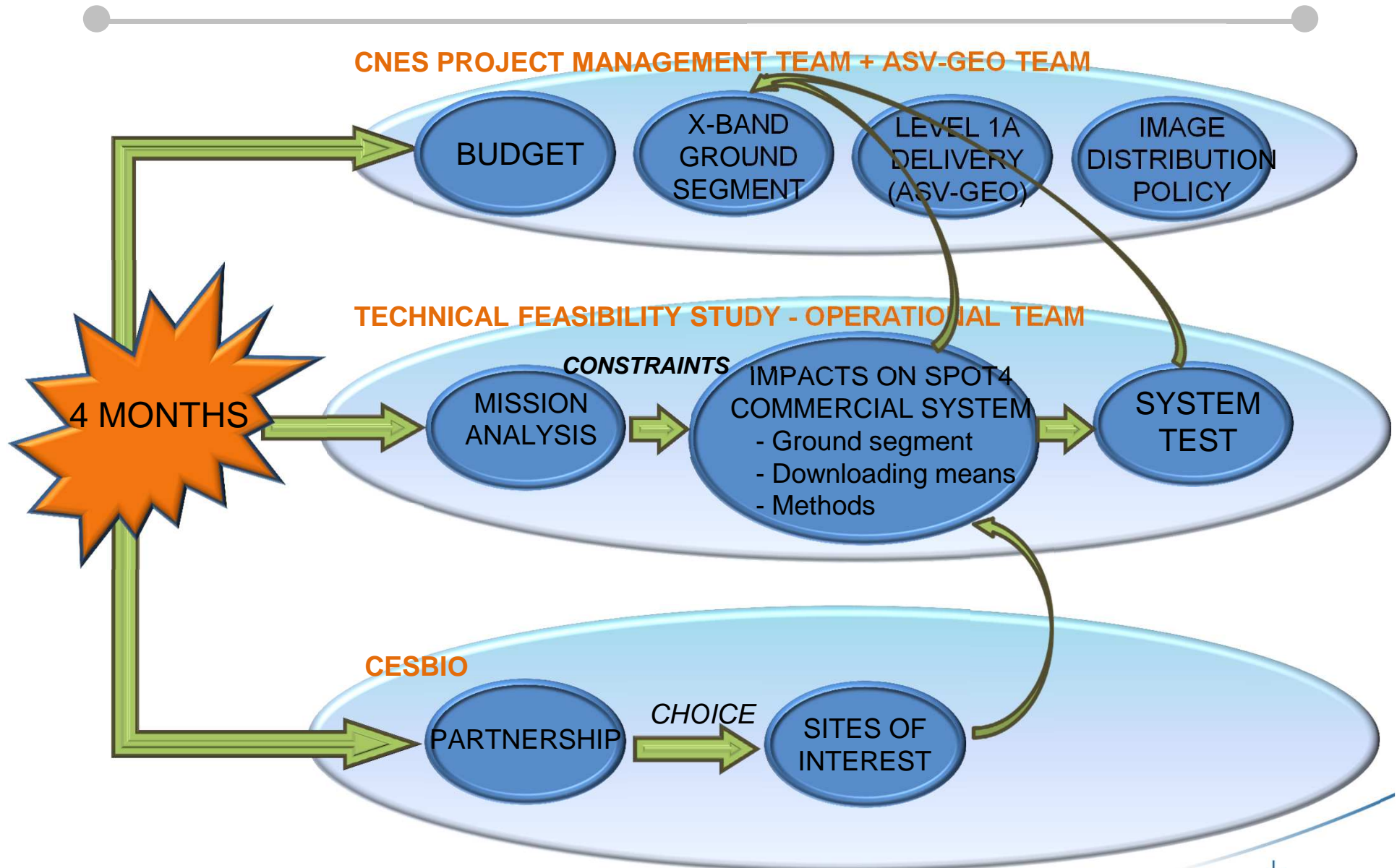


# Progress of the Take 5 experiment 2/2





# Feasibility study



# Technical feasibility study

## Spatial component side:

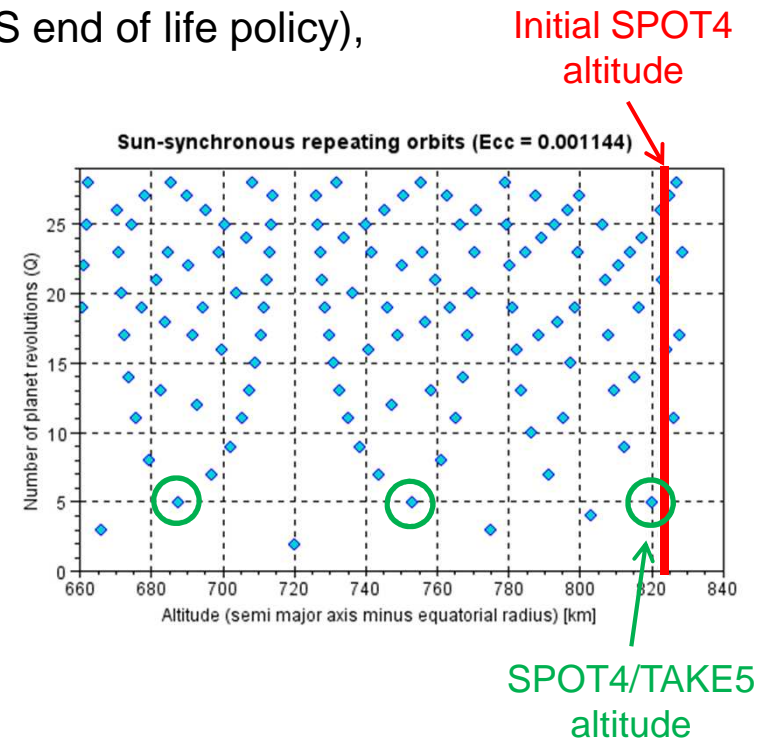
- Mission analysis and operational realisation:
  - ◆ orbit choice, strategy to reach Take5 orbit,
  - ◆ study of propellant balance sheet (respect of CNES end of life policy),
  - ◆ study of local hour drift impact,
  - ◆ tasking plan elaboration, downloading study,
  - ◆ Study of S and X-band jammings
  - ◆ system software updates, ...

## Commercial component side:

- Technical feasibility study (new orbit, new interfaces with CNES control center)

## System test => validation of:

- ◆ software updates,
- ◆ capability to acquire all the sites of interest
- ◆ mission feasibility
- ◆ compatibility between spatial and commercial components



# Conclusion

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Take 5 experiment = a real challenge,  
realised thanks to a very motivated team!