



# Yellow Cats bij CGI: Spark Innovation Centre, 16 november 2017



Ingelaste Yellow Cats sessie bij CGI: Space Data Applications

# Agenda

Welkom!

CGI & Digitale Transformatie

Spark Centre

Hapje!

Data uit de ruimte

Break!

Inspiratie Case

Space Data 4 You?

Borrel

Victor

Rolf

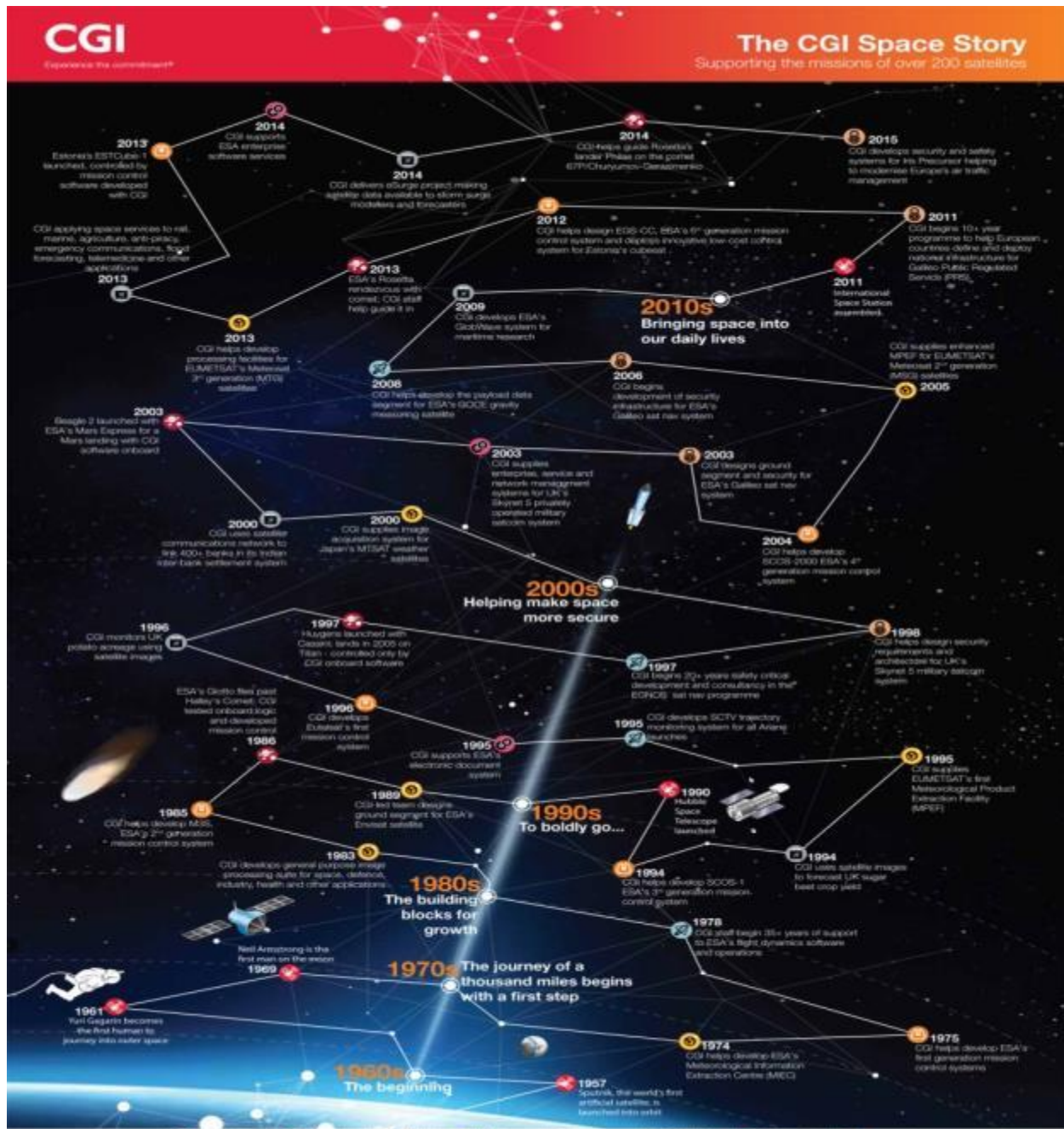
Rolf

Victor

Guest

Victor





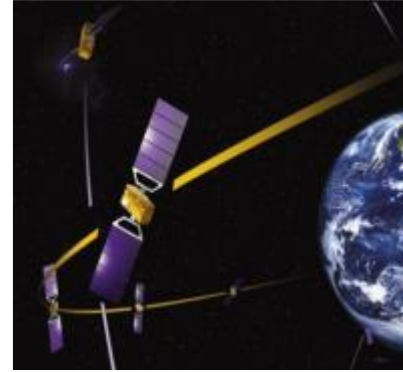


# CGI in Space

- Satellite Communications
- Satellite Navigation
- Earth Observation
- Satellite and Mission Control Systems
- Science, Operations / Facilities
- Space Security



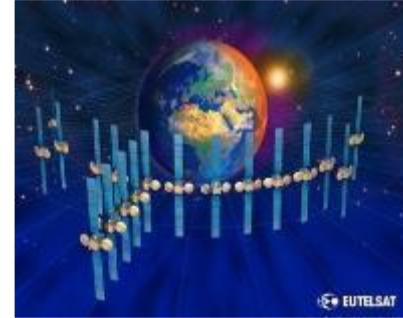
*Huygens onboard software*



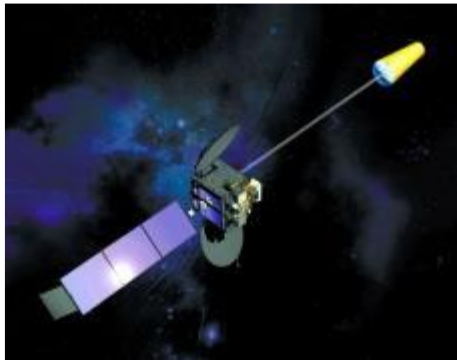
*Galileo cryptography and satellite control systems*



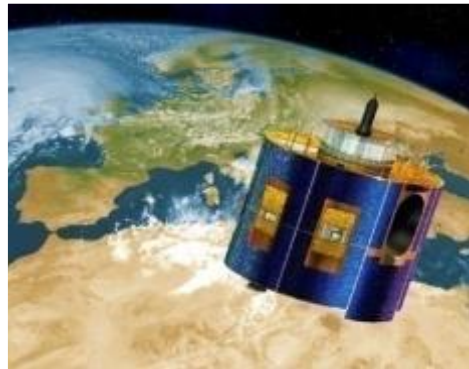
*Range safety trajectory monitoring for Ariane-5 launches*



*Satellite control facility for Eutelsat's fleet of 20+ satellites*



*MTSAT ground systems for Japanese Meteo Agency*



*MSG & MTG real-time meteo data processing*

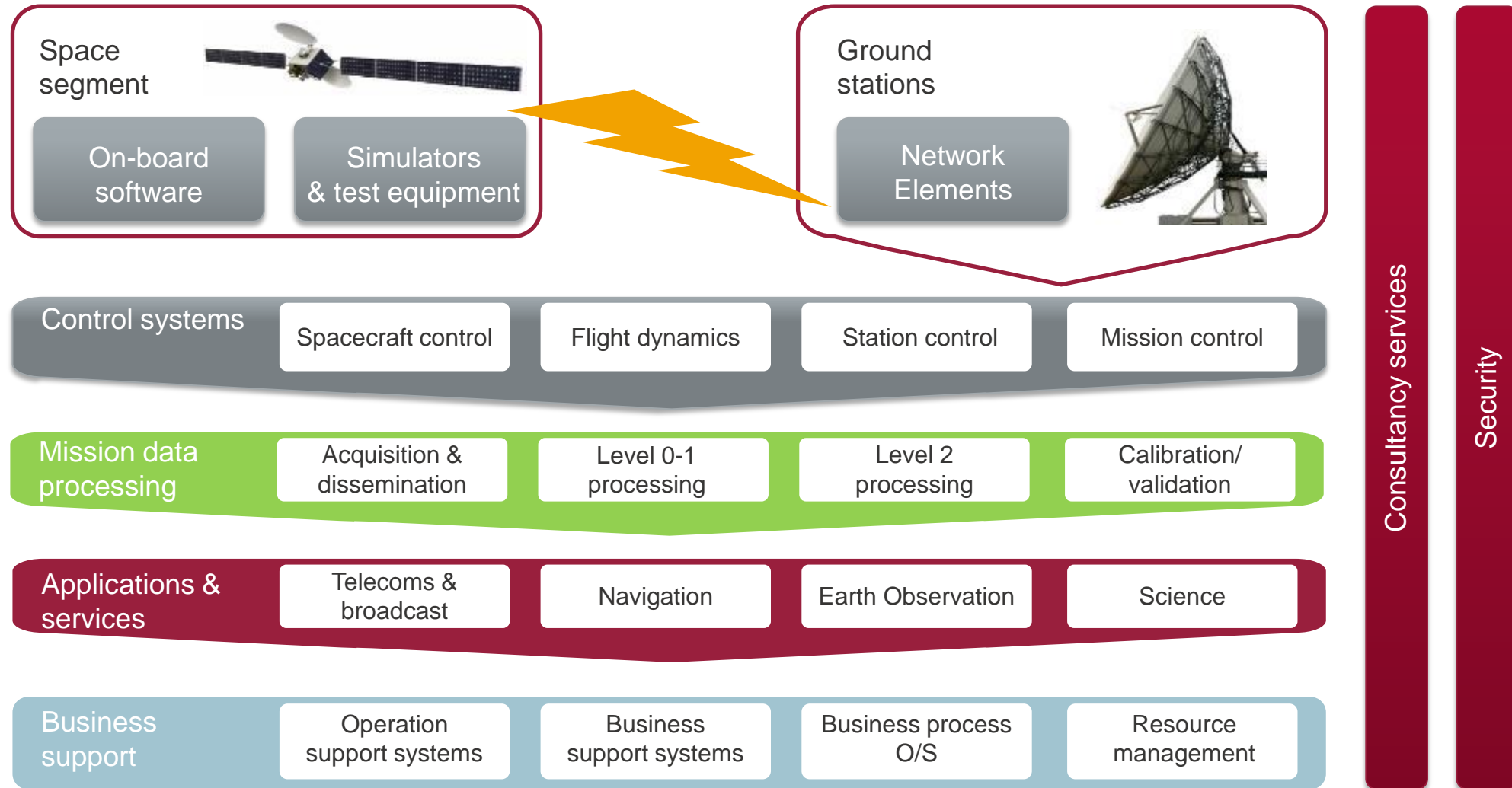


*Skynet 5 Ground Systems*



*Satellite control systems and operations*

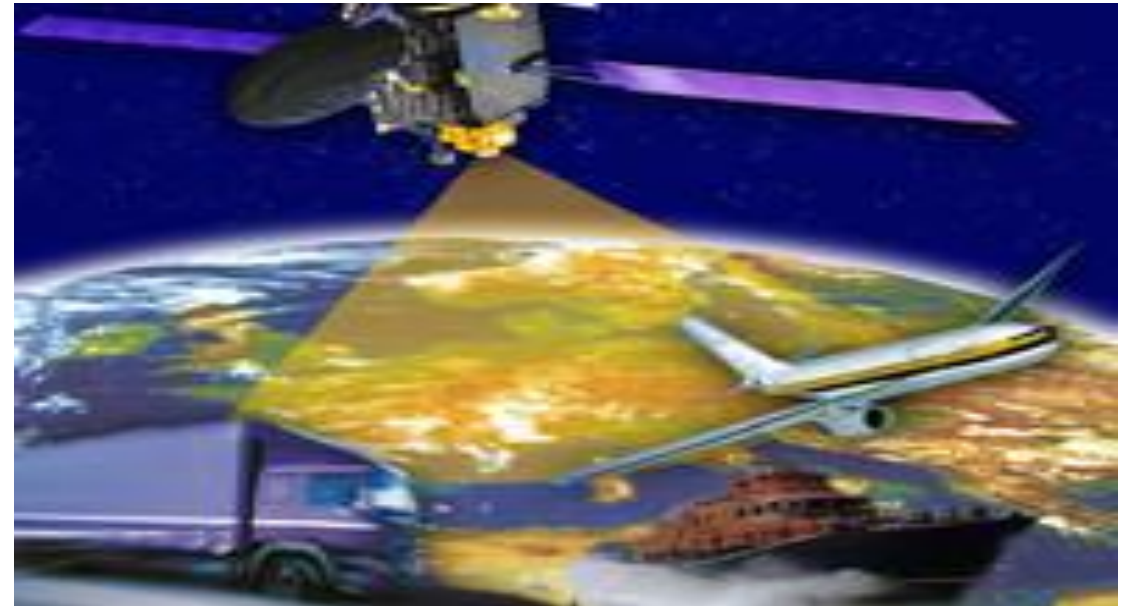
# From Sensor to User - what we do in space



# Innovation in Applications

**Space applications:** the use of space data and services to deliver end-user value and/or public benefit.

- CGI delivers space applications using a variety of space data/services:
  - Earth observation
  - Satellite navigation
  - Satellite communications





Digital transformation  
**Helping clients become customer-centric  
digital organizations**





# Spark Innovatie Centre





Lift, 10<sup>de</sup> verdieping, linksaf!

*Bon Appetit*  
*Eet Smakelijk*  
*Enjoy your Meal*



A satellite with large solar panels is shown in orbit. The background features a stylized globe with binary code (0s and 1s) overlaid on it, suggesting data and technology. The overall color scheme is blue and white.

# Big Data from Space: Actionable Intelligence on Earth







# Russians Win Race To Launch Earth Satellite

## Man On Threshold Of Space Travel

By DANIEL F. GILMORE  
United Press Staff Correspondent

LONDON (UP)—The pulsating radio "beep" of the first manmade earth satellite signalled today to the world that man had crossed the threshold into the age of travel through space.

The Soviet Union announced it had won the race into space by launching an earth satellite Friday, a 184-pound, 22-inch globe now orbiting the earth at 18,000 miles an hour, 560 miles up.

Millions of persons throughout the world heard the "beep...beep...beep..." rebroadcast today by local stations and realized that man had taken his first faltering steps into the new era.

Launching of the satellite was a tremendous victory for science. It was a more tremendous victory for Soviet propaganda to be able to trumpet to the world the Russians were the first to break through the frontiers of space.

Bolsters ICBM Claims

Russian claims to

### — WEATHER —

WEST VIRGINIA—Partly cloudy with highest in the 60s today and Sunday. Lowest tonight 50 and 56 east portions.

VIRGINIA—Fair with lowest 45 to 50 west and north and 50 to 55 southeast portions tonight, Sunday mostly sunny and a little warmer. Tides on the coast and lower bay will run a foot or two above normal.

### How To Spot Satellite

By UNITED PRESS

Here's how to look for the Russian earth satellite which will be whizzing through the sky at 18,000 miles an hour.

The best time to spot it is at dawn or dusk when the sky is semi-dark. There is a chance that it could be seen if it travels across the face of the moon at night.

The best instruments to use are ordinary binoculars or telescopes. Powerful telescopes won't pick it up because of their narrow fields.

Through optical instruments, the satellite will look like the faintest star which can be seen with the naked eye.

Keep a sharp eye out. The satellite travels so fast it may appear on the horizon for only seconds and chances of spotting it have been estimated at one in a hundred.

### Epic-Making

### U.S. May Speed Up Satellite Program

By JOSEPH L. MYLES  
United Press Staff Correspondent

WASHINGTON (UP)—Army scientists caught flatfooted Russia's epic launching of the man-made moon, indicated the United States may speed its own earth satellite program also said that it as

Leaders of the U.S. satellite program also said that it as Russia rocketed its heavy pound satellite into a globe-dilling orbit with a rocket to "an intercontinental ballistic missile.

That could mean Russia duly has beaten this country frontiers of space, but also it has been called the "red weapon" for modern day war ICBM. This country has a tested a successful ICBM.

American diplomats co Russia had scored a notable agenda victory. The milita







# Wat is Aardobservatie ?

Het observeren en vastleggen van informatie over het aardoppervlak en daarboven

Deze informatie is afkomstig van:

- **Satellieten**
- Vliegtuigen
- UAV's
- Grondsensoren

Observatie vindt plaats mbv:

- Passieve Sensoren (Optische beelden)
- Actieve Sensoren (RADAR, LIDAR, Scatterometers, ...)





# Wat kan je zoal met Aardobservatie ?

Waterkwaliteit  
Stroming  
Stedelijke bebouwing  
Landschap structuur  
Begroeiing  
Traceren Schepen  
Hoogtemetingen  
Monitoren Infrastructuur  
Landbouw gewas metingen  
Warmte kaarten  
Oliedump detectie  
Luchtkwaliteit  
....  
....

HEEL VEEL.....



# Open Data

## Trend: Steeds meer AO data gratis beschikbaar

- Biedt nieuwe mogelijkheden en meer informatie maar wellicht ook nieuwe bedreigingen
- Veel AO data over NL nu al beschikbaar op het NL Satelliet Dataportaal – door overheid centraal ingekocht.
- Het ESA/EC COPERNICUS programma
- Nu zijn partijen als GOOGLE en AMAZON al bezig grote hoeveelheden AO data op te slaan en zullen dat binnenkort aan de markt aanbieden





# More Data

- Nieuwe missies en Cube Sats zullen nog meer informatie leveren
- Gaat over giga hoeveelheden data (Sentinel 2 sats – 800GB/dag)
- Integratie in GIS systemen \*GEO Enrichment\* \* Geospational Intelligence\*



# Satelliet Dataportaal NL

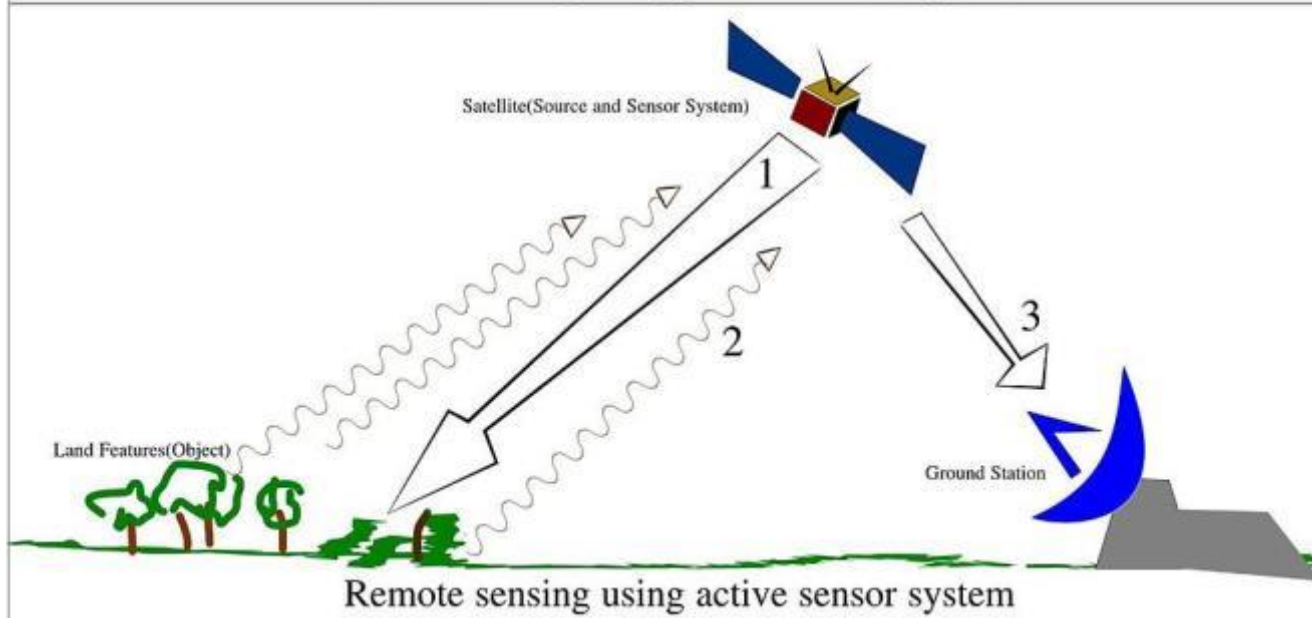
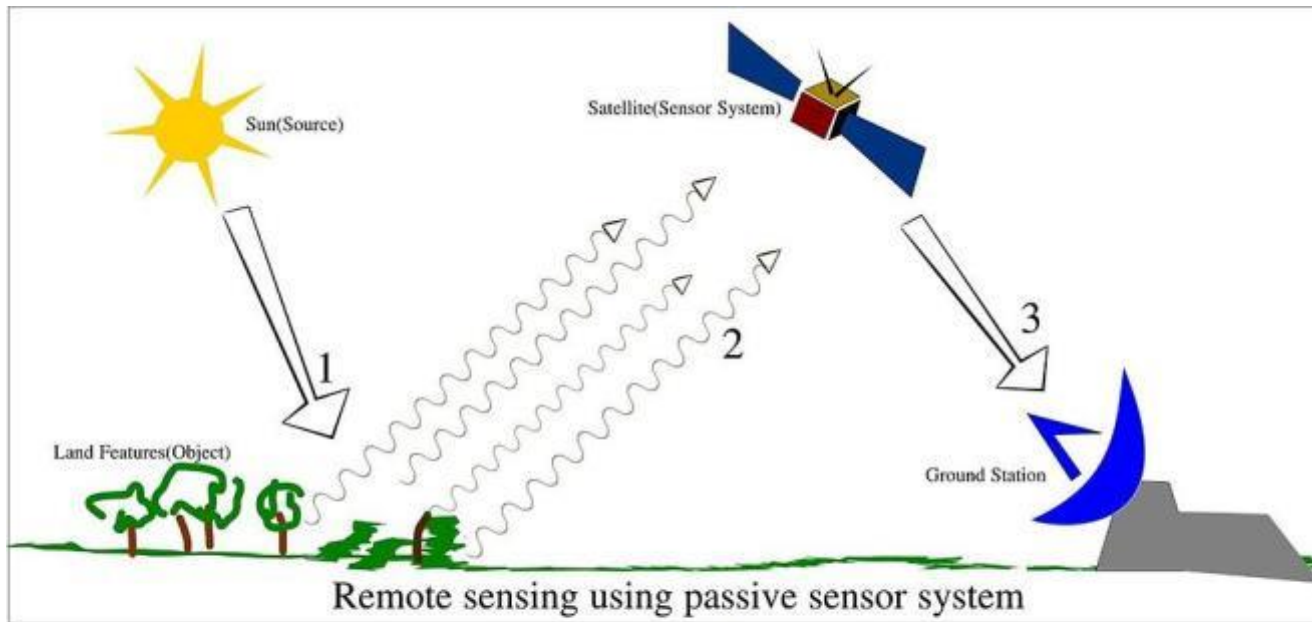
Satelliet	Periode	Banden	Resolutie
<a href="#">Formosat-2</a>	2012 - 2014	Blauw-NIR (Panchromatisch)	2 meter
<a href="#">Formosat-2</a>	2012 - 2014	Blauw, Groen, Rood, NIR	8 meter
<a href="#">SPOT-6 en 7</a>	2014 - heden	Blauw-NIR (Panchromatisch)	1,5 meter
<a href="#">SPOT-6 en 7</a>	2014 - heden	Blauw, Groen, Rood, NIR	6 meter
<a href="#">UK-DMC-2</a>	2012 - heden	Groen, Rood, NIR	22 meter
<a href="#">Deimos-1</a>	2012 - heden	Groen, Rood, NIR	22 meter

Satelliet	Periode	Polarisatie	Resolutie
<a href="#">Radarsat-2</a>	2012 - 2015	VV+VH	25 meter
<a href="#">Radarsat-2</a>	2012 - heden	HH+HV	25 meter
<a href="#">Radarsat-2</a>	2015 - heden	HH	5 meter
<a href="#">Radarsat-2</a>	2015 - heden	VV	5 meter



Panchromatisch beeld uit 2002 van de Verboden Stad en het Plein van de Hemelse Vrede in Peking, China. Het beeld is afkomstig van de QuickBird-satelliet [Quickbird]







***SPACE VALIDATION LAB***





# Space Validation Lab: The customer journey



Customer

Value Chain

Validation of a solution containing space

Build the solution

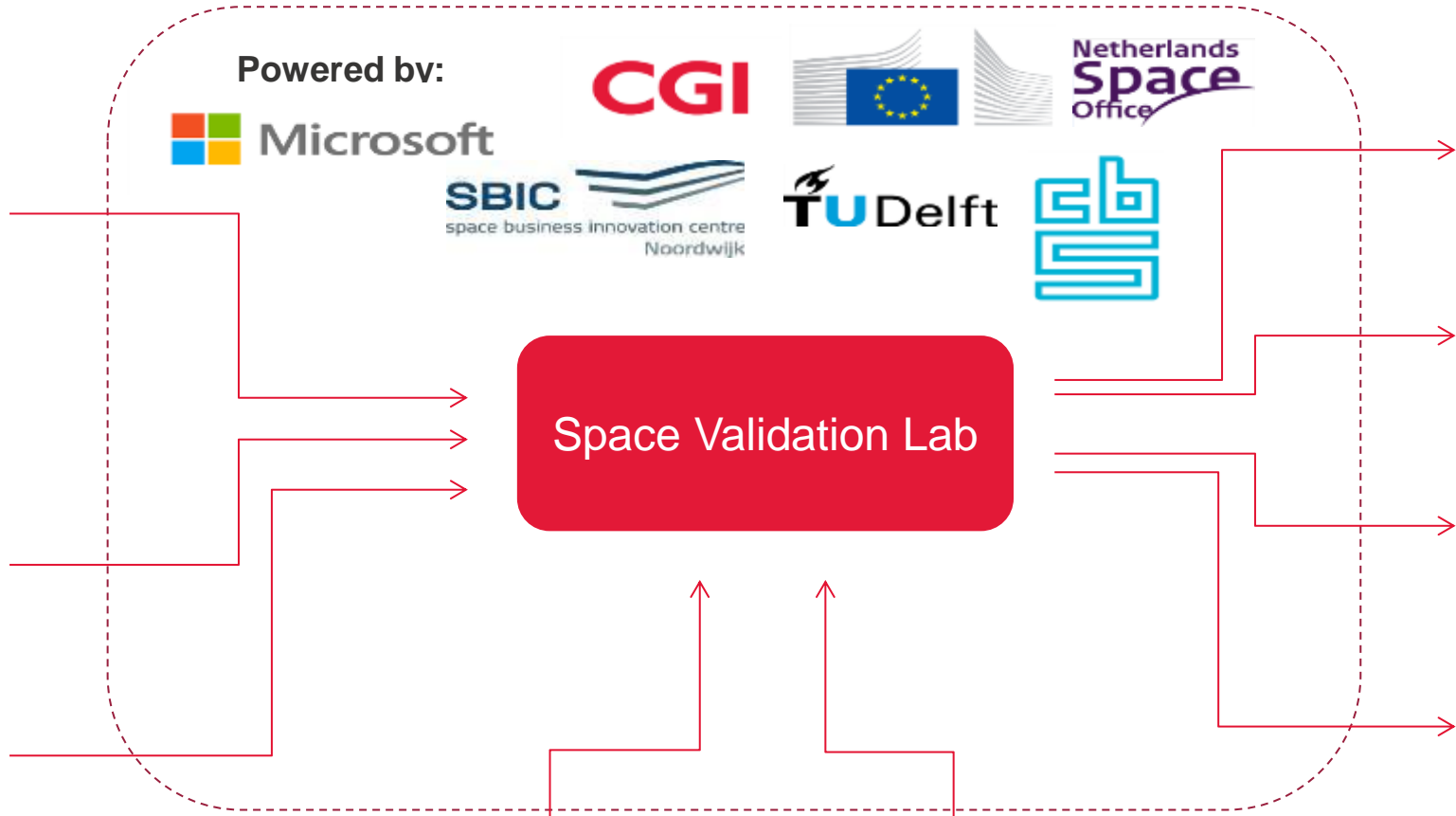
# CGI



# CGI

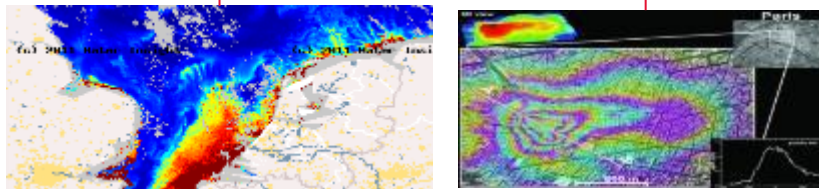
# Space Validation Lab

## Sources/ sensors



## Clients

## Value Added Companies



# Case: Greenhouse monitor





# Greenhouse Early Warning / Kasmonitor

**Summary:**

**Client:** PinC Agro / Achmea

**End Customer:** Greenhouse Farmers

**Pain:** sub-optimal yield and crop-quality (control of) due to greenhouses being impacted by environment issues

**Gain:** Asset-management improvement of greenhouses, initially with respect to waterbassin algae blooming & subsidence



Following a inspirational #DigitalDay session in the Rotterdam Spark Innovation Centre, PinC Agro shared insights on how their customers can be supported.

CGI put in place a demo to show capabilities. The Demo was shown to both PinC Agro / Achmea as was as to a set of end-customers.

Due to the positive feedback received on the demo, a proposal is in preparation to, with support of the Ministry of Economic Affairs, investigate feasibility of turning this capability into a service, the Greenhouse Early Warning System or Kasmonitor

1: customer specific dashboard on actual situation, trends and alarms

2: Insight screens for further research: Algae Blooming through Chlorophyll detection

3: Insight screens for further research: subsidence of greenhouses & water bassins

4. Flexible early warning system based on a If This Then process, allowing the customer to be warned as required, per call, text-message, email or directly to the maintenance support company

# Case: Migration Radar



# Case: Port asset-management





# Area and Location

06 May 2017



02 June 2017



21 June 2017



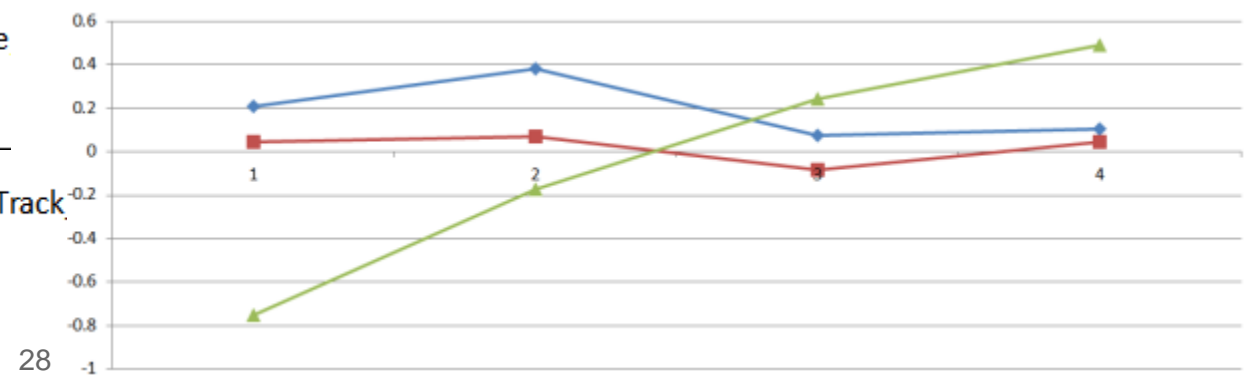
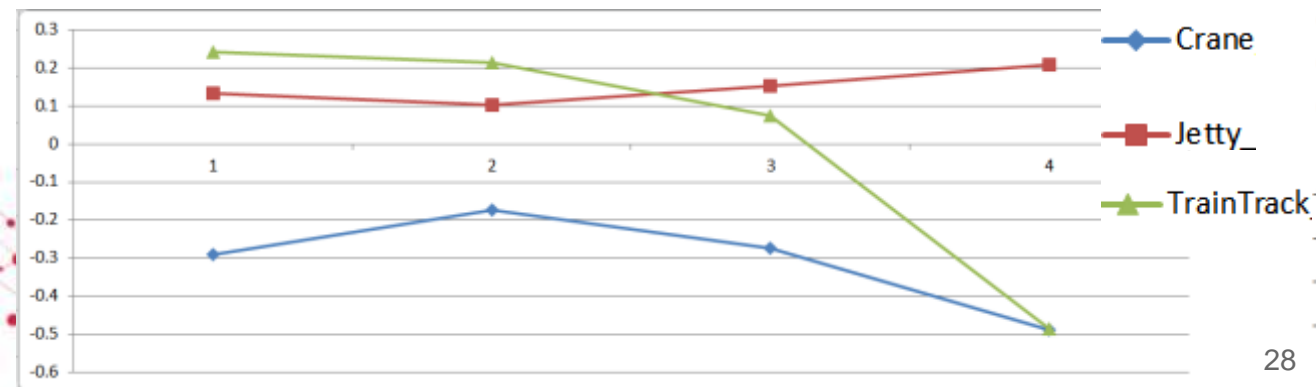
# Relative Deformation Movements in Jetty, Crane, Traintracks pixels



Difference of Image June 02 – May 06



Difference of Image June 21– June 02





# Special Guest: Marnix







get in the  
flow



**THANKS FOR  
YOUR ATTENTION  
AND  
PLEASE DON'T ASK  
TOO MUCH**



# Our leadership role

To **create an environment** in which we enjoy working together and, as owners, contribute to building a company we can be proud of.

