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 present:

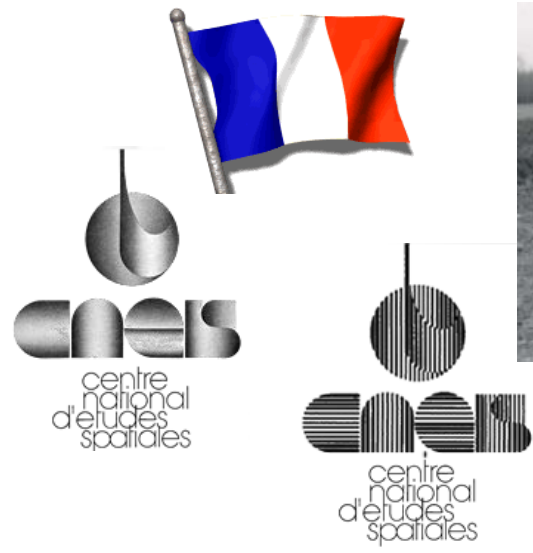
SCIENCES EDUCATION WITH PLANÈTE SCIENCES: A SQUADRON OF TOOLS AND PROGRAMMES TO GO ON SPACE CONQUEST



PLANETE SCIENCES & CNES: A PARALLEL EVOLUTION



1961



2002

1962



1977





ORIGINAL MISSION: SUPPORT TO AMATEURS





PLANETE SCIENCES TODAY

Associations
 Network
 Techniques
 Promotion
 Activities
 Sciences
 Europe
 France
 Practical
 Experimentation
 Project
 Youth
 Safety
 Clubs
 Leisure
 Management
 Team work
 Programmes
 Exchanges
 Events
 Contests
 Workshops
 Volunteers
 Pedagogy
 Summer camps
 Partners
 Ministries
 Organizations
 Space activities
 Meteorology
 Energy
 Astronomy
 Environment
 Robotics





SPACE CLUBS: WHO ARE THEY ?

SAME PASSION



SETS... FACIL... ESIEE ESPACE... EUREKA+... ESO... AERO IPSA... UCG...

SAME MOTIVATION





FIRST STEP TO SPACE: WATER ROCKETS

➤ **Because anyone can be a rocket scientist!**



1'000s rockets each year



WATER ROCKETS
From 6 years old, build a basic rocket from soda bottle and launch it to discover about action-reaction principle, stability and safety.



0.1km

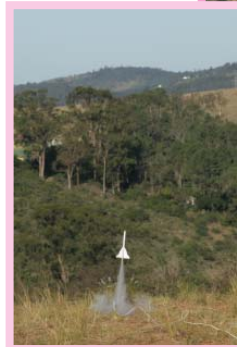


At school, in a summer camp, in a club



FIRST STEP TO SPACE: MICRO-ROCKETS

➤ Because anyone can be a rocket scientist!



50'000 rockets each year



MICRO-ROCKET

From 8 years old, design and build a small rocket from cardboard, plastic, and expect a flight above 100m. Experiment and learn about flight mechanism, stability in full safety.

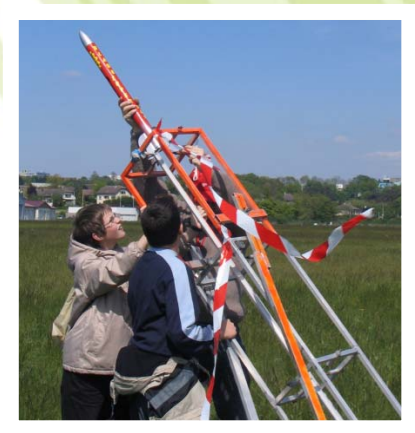
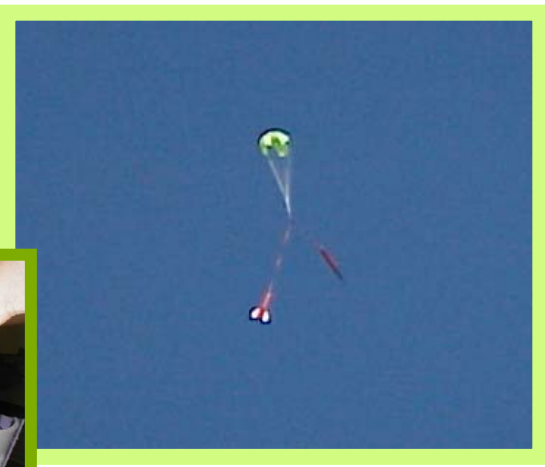
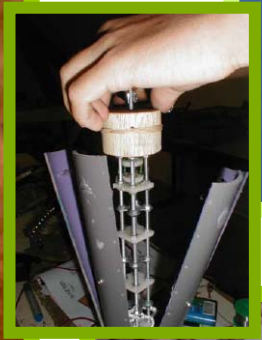
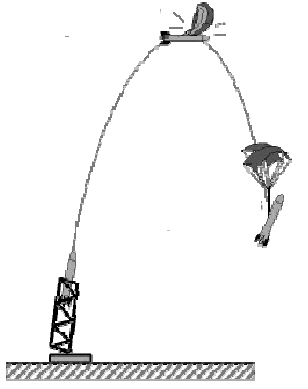
0.2km



At school, in a summer camp, in a club

A STEP HIGHER: MINI-ROCKETS

➤ Because space must not remain a dream!



120 rockets
each year

MINI-ROCKET
From 14, team up to design and build a stable rocket capable to reach 600m with ejection of a slowing down system. Deal and experiment with mechanics, electronics.

At junior-high school,
in a summer camp, in a club



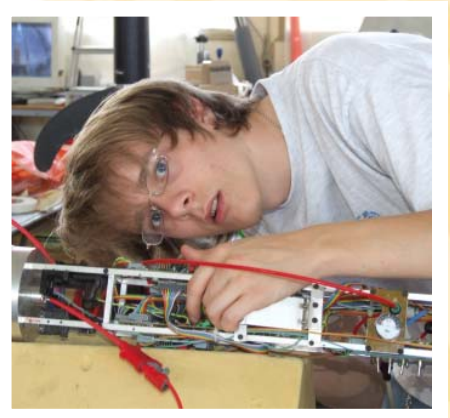
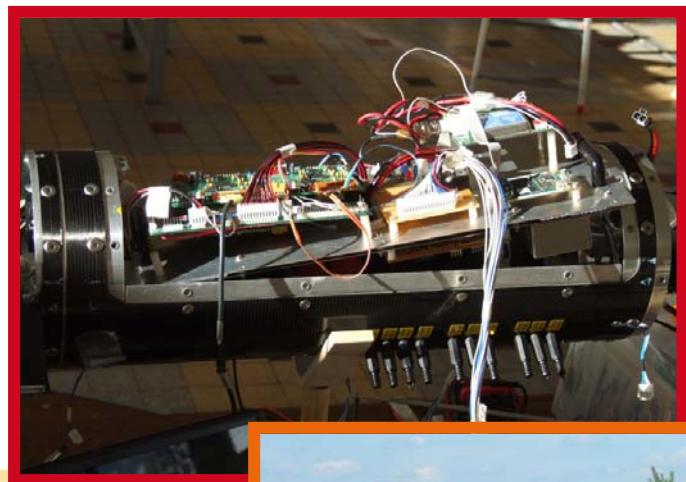
0.5km



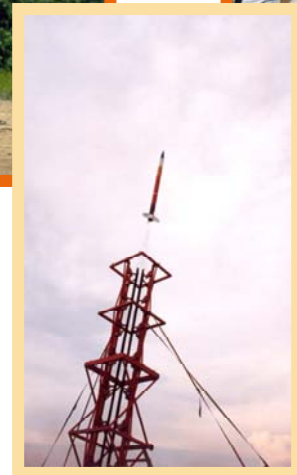


REACHING THE CLOUDS: EXPERIMENTAL ROCKETS

➤ Because space must not remain a dream!



20 rockets each year



EXPERIMENTAL ROCKET

From 16, team up to design and build your own 2m tall sounding rocket, including telemetry, and process data collected at 1.5 km.

1.5km

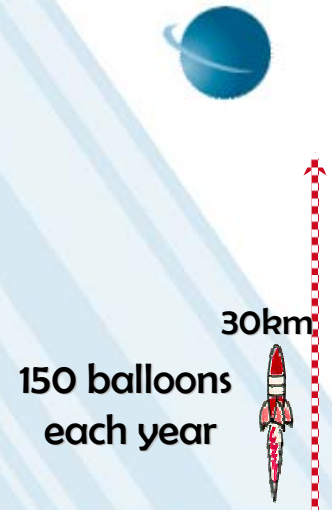
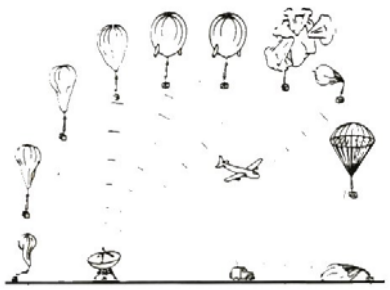


At high school, at university in a summer camp, in a club



FLIRTING WITH SPACE: WEATHER BALLOON

➤ Get a bird's eye view, and more!



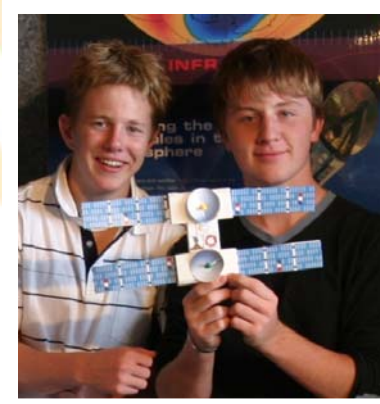
WEATHER BALLOON
From 10, team up to design and build experiments to be carried under a probe, flying above 30km. Learn about Archimedes, electronics, meteorology...

At school, at university
in a summer camp, in a club



NEED MORE SPACE?: WORKSHOPS

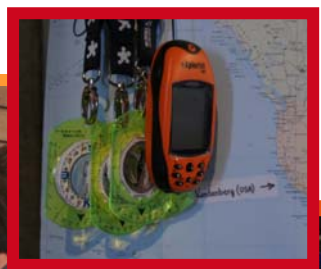
➤ A panel of space-related workshops



100s of workshops each year

- WORKSHOPS**
- GPS Safari
 - Build your satellite
 - Mission satellite control
 - Space art fresco
 - Space oceanography
 - Mars rovers

At schools, at holiday camps, at public events, in sensitive urban areas

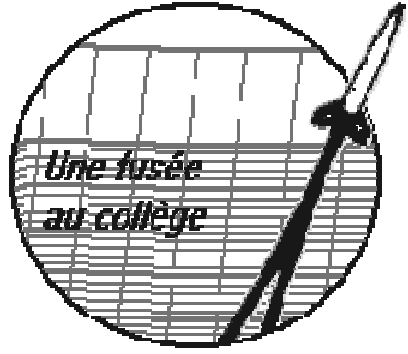


0.1km



NATION-WIDE PROGRAMMES: A ROCKET AT SCHOOL (UFAE)

➤ A space-related pedagogic school programme



20 schools,
90 projects
each year



UFAE
Deal with mathematics,
physics, mechanics,
electronics, media...
within a team, all
along the school year,
to build your
mini-rocket.

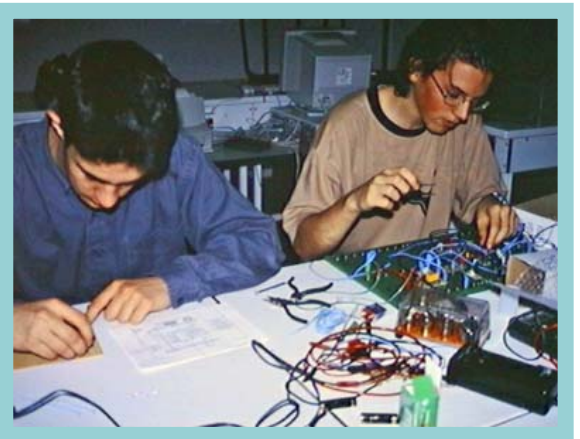
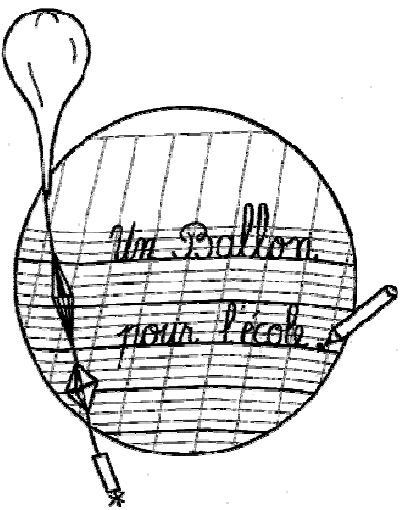
0.5km



At junior-high school, at high-school

NATION-WIDE PROGRAMMES: A BALLOON AT SCHOOL (UBPE)

➤ A space-related pedagogic school programme



30km
140 schools
each year



UBPE
Deal with mathematics, physics, electronics, meteorology, media... within a team, all along the school year, to build your balloon's experiments.

At school



SPACE PROPAGATION: TRAININGS

➤ Spread the practices, not just the word



30 sessions each year



TRAININGS
To master rocket flight mechanics, to master safety, to launch rockets, to become a telemetry expert, to learn about pedagogy, to become a trainer.



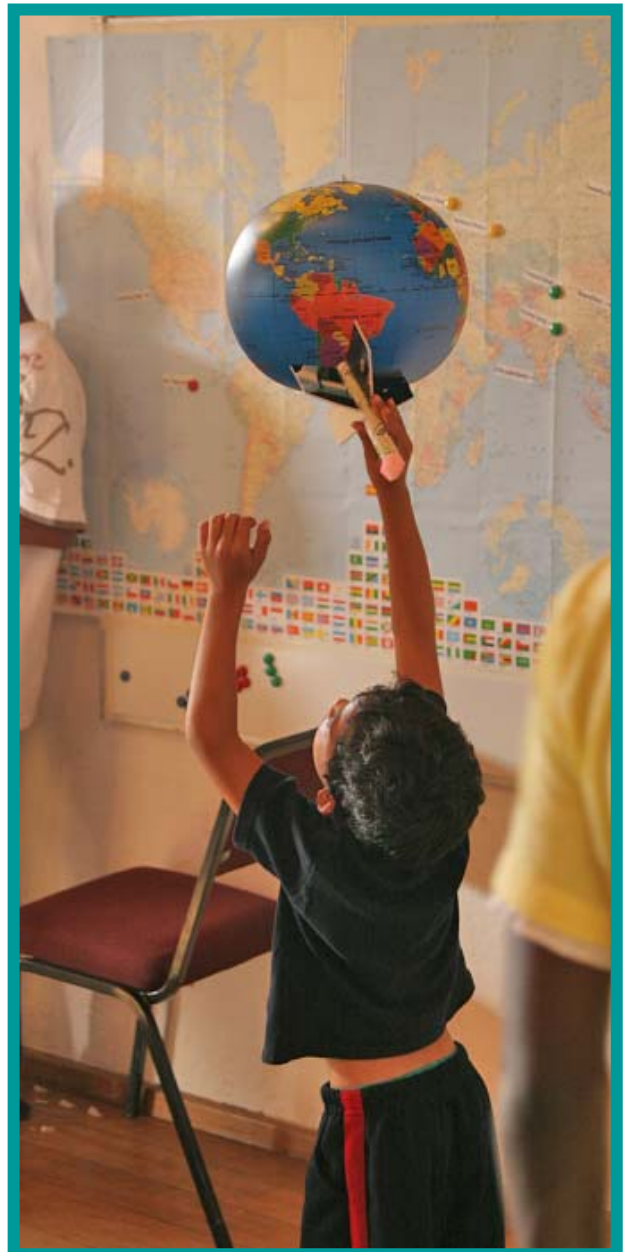
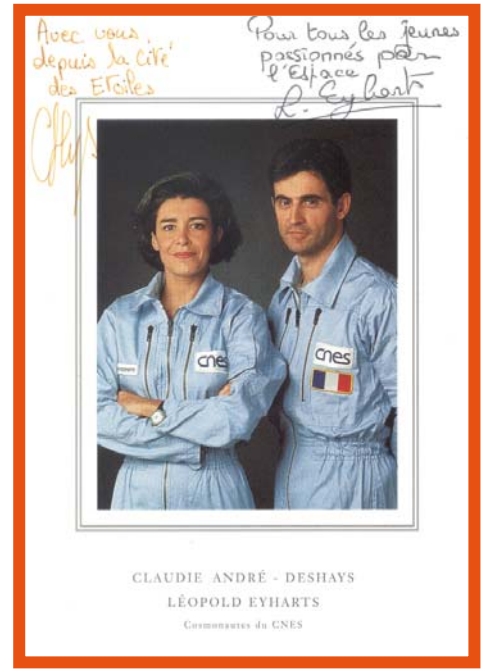
SPACE CONQUEST !



100km



- Develop sciences and techniques scholarship
- Develop space culture and increase space awareness to ease space projects funding from state or private organizations
- Fly ever higher and achieve space dreams





BACKUP SLIDES: DO YOU WANT TO KNOW MORE?



DO NOT do it yourself!

What do we provide?

Registration	Clubs	Youth
Project	Experiments	Definition
Team work	Management	Pedagogy
Shells	Safety	Simulation
Contracts	Stability	Tutorials
Calibration	Recovery	Telemetry
Interpretation	Partners	CNES
Volunteers	Reviews	Advices
Controls	Campaign	Exchanges
		Launch

Debug - Controls - Approval - Set up in post

Engine - Countdown - Launch - Parachute - Recovery

Recovery of a 600 kg payload

CHRONO-METRE OF 'YOUNG'



I WANT TO MAKE A ROCKET...

➤ Do **NOT** do it yourself !

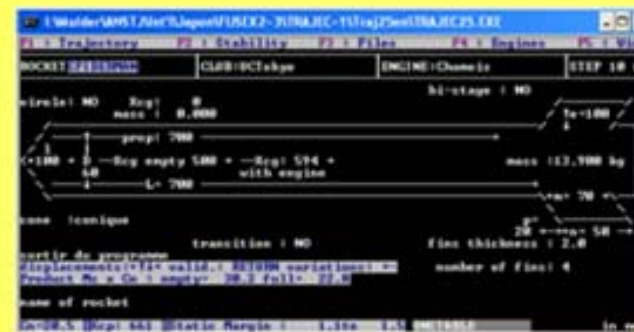
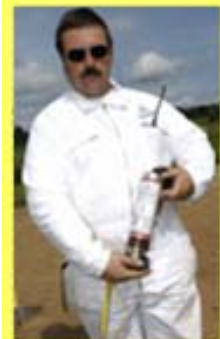


E-MAIL



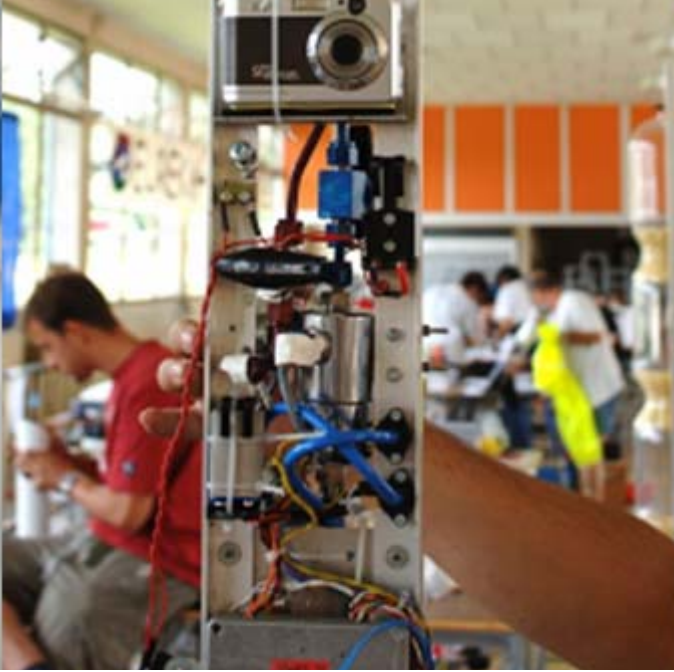
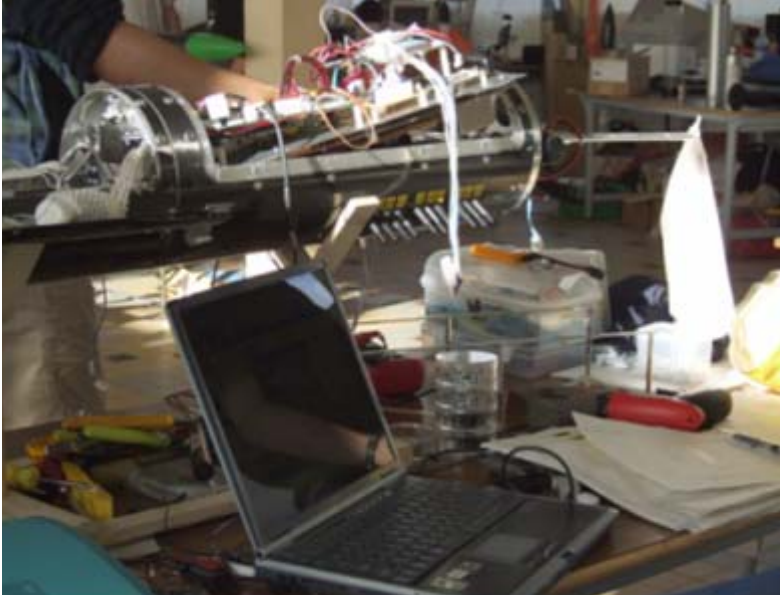
CENTRE NATIONAL D'ÉTUDES SPATIALES

➤ What do we provide ?





DID YOU SAY EXPERIMENTAL ROCKET ?





FROM DREAM TO REALITY



A dream on paper...



... becoming reality





A LAUNCHING CAMPAIGN: A TEAM



Pyrotechnics, Safety, Telemetry, Energy, Recovery, Coordination, Entertainment, Transport, Welcome, Controls, Expertise, International relations, Equipment, Launching, Public, Organisation, Logistics, Partners....



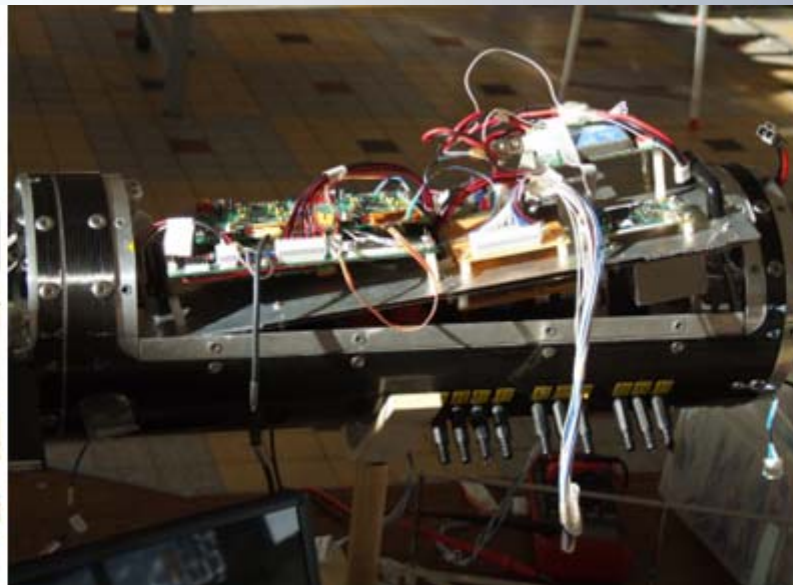


A LAUNCHING CAMPAIGN: FINAL PREPARATION



Debug

...



Controls

...



Approval

...

Set up in pad ...

CLUB	PROJET	MECANIQUE	Expérience	RECUP	Vol. SIMULÉ	Score Cl. Vol.	RESULTAT
STS	Solaris						
Furo	Flying canvas						
Graf	Horus V						
GSA	XXX						
SATE	Hermes	3					
STS	ALQHA	OK	OK	OK	OK	3000	
KIT	KIT-06						
UC6	UC6-06	3					





A LAUNCHING CAMPAIGN: COUNTDOWN & FLIGHT



Engine...

Countdown ...

Launch...

Parachute...

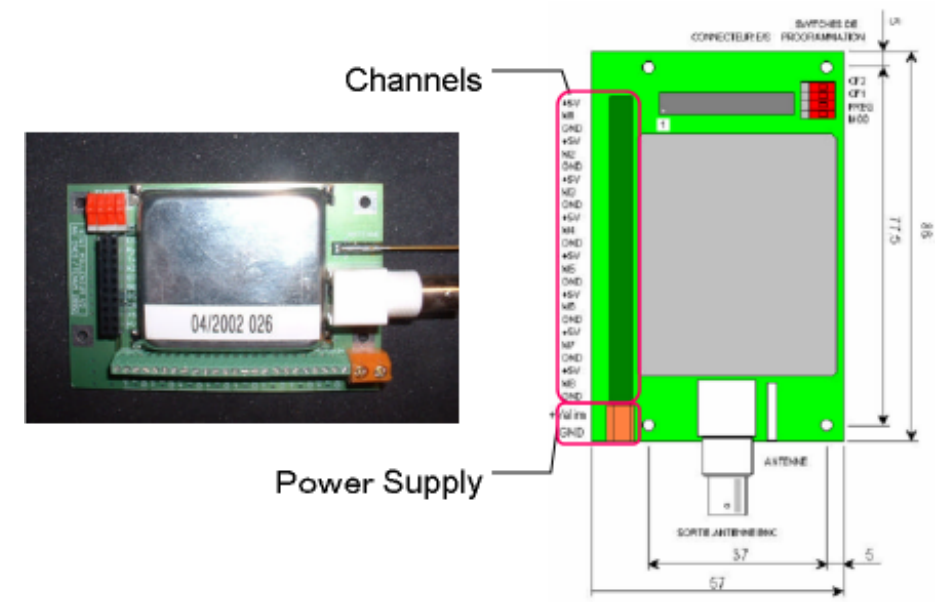
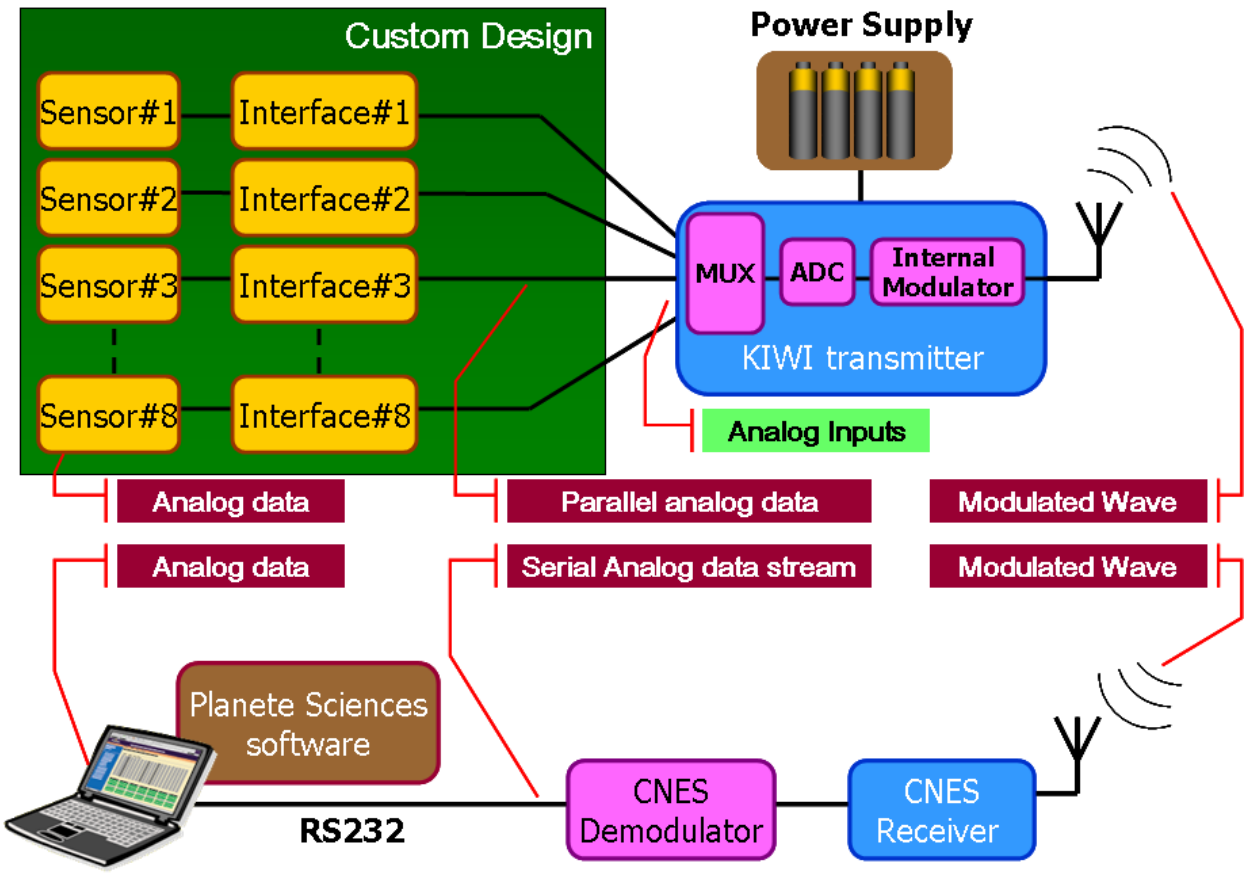
Recovery





TELEMETRY SYSTEM: "KIWI"

General overview of a 8 ANALOG channels transmission with KIWI

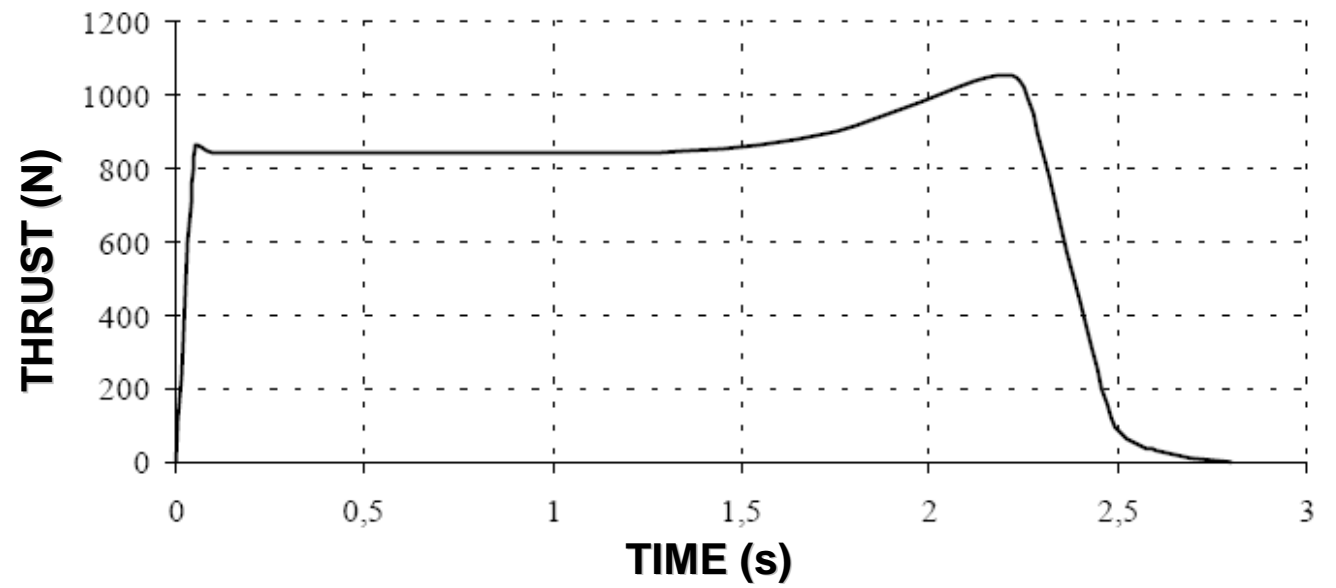




ENGINE: EXAMPLE OF "CHAMOIS"



UCG06





UFAE

Formations

Minif

Micro