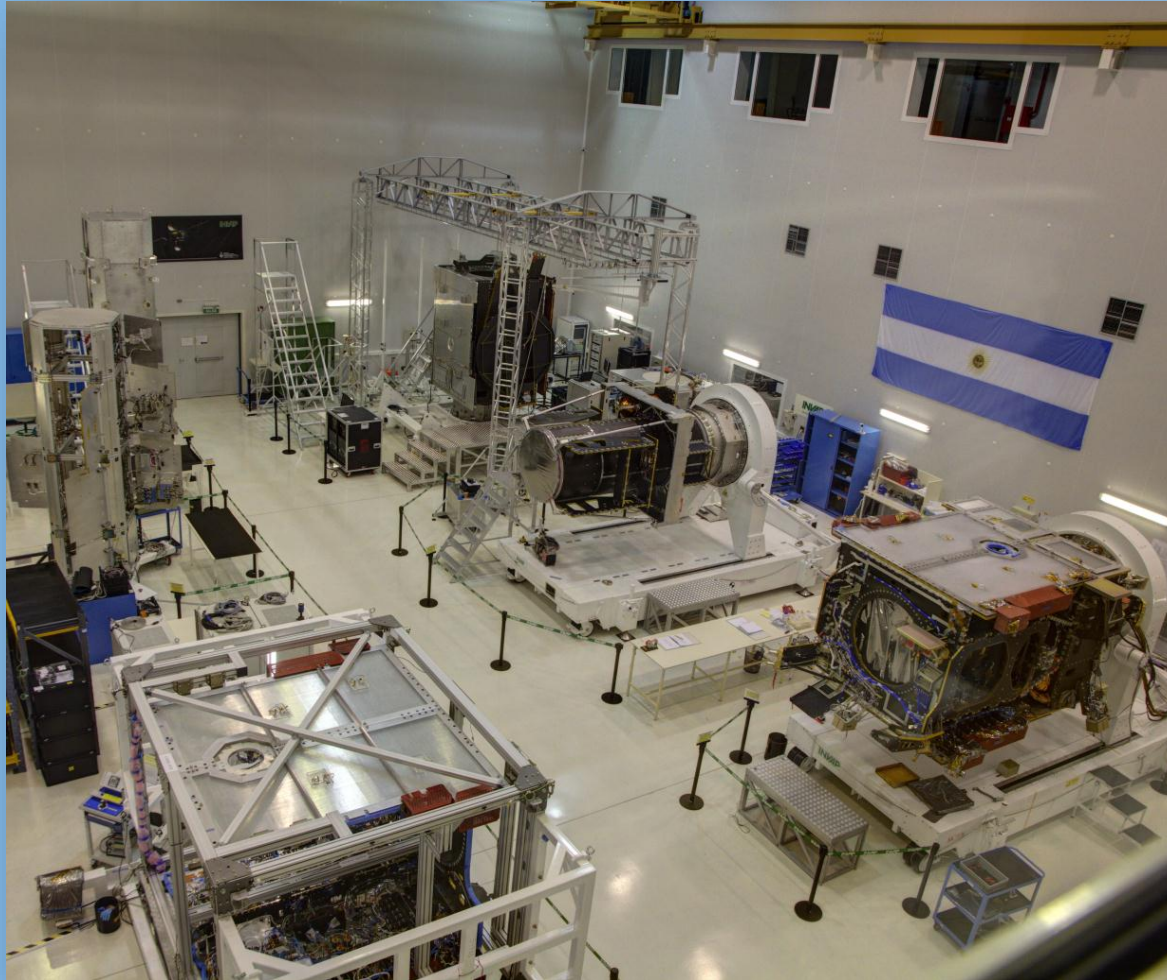


Quality and Space Activity in Argentina

Hugo Nahuys



Quality Leadership Forum

March 13 & 14, 2019

Radisson at the Port, Cape Canaveral, FL





Argentinian Space Agency



State owned telecommunications company



Satellite Prime Contractor

*Aerospace, Nuclear, Defense,
Alternative Energy, Medical
Equipment*



Space Center (Teófilo Tabanera)



Ground Control Center

(Benavidez, Buenos Aires, Argentina)





Integration Room



Anechoic and Near Field



Acoustic



Shaker



Thermal Vacuum Chamber



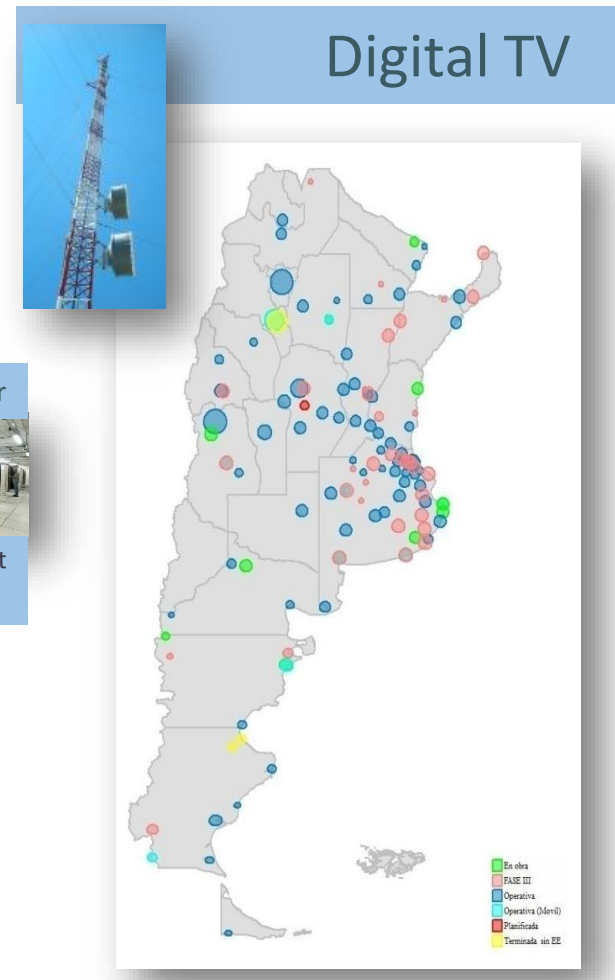
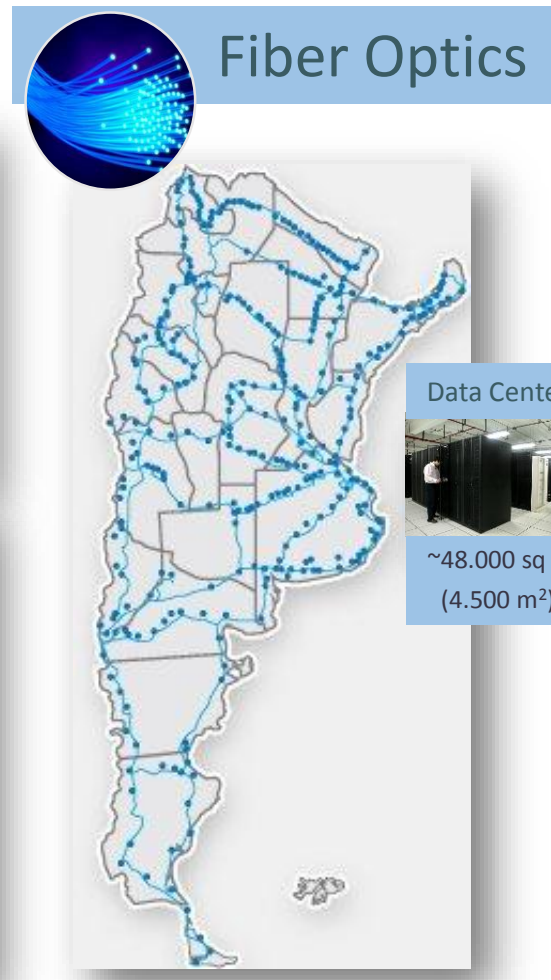
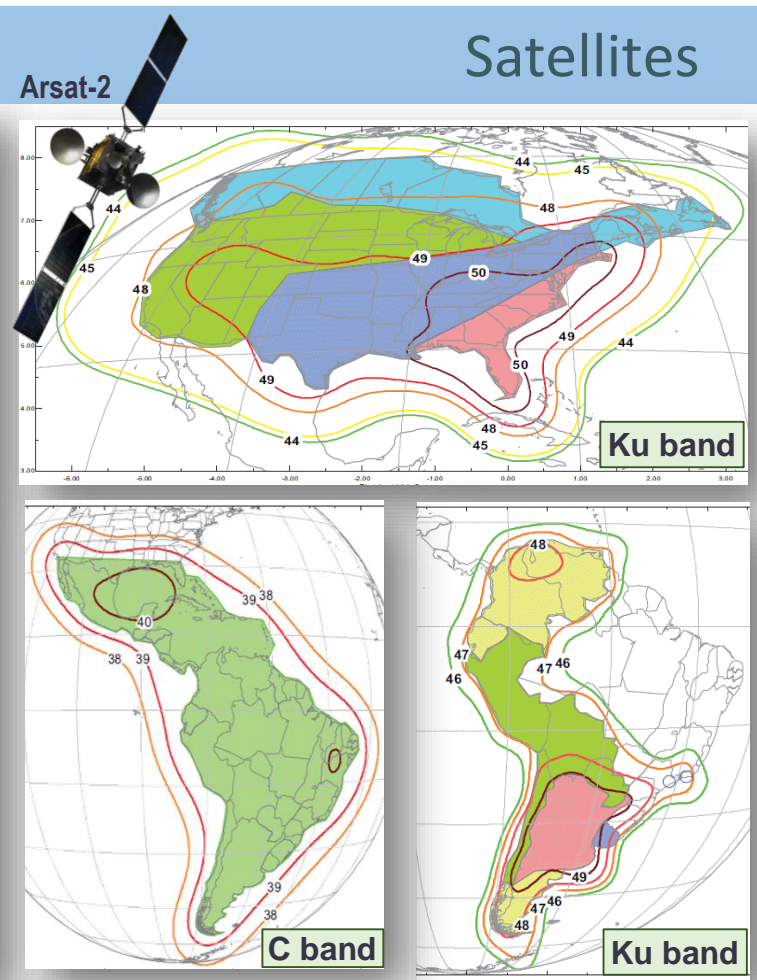
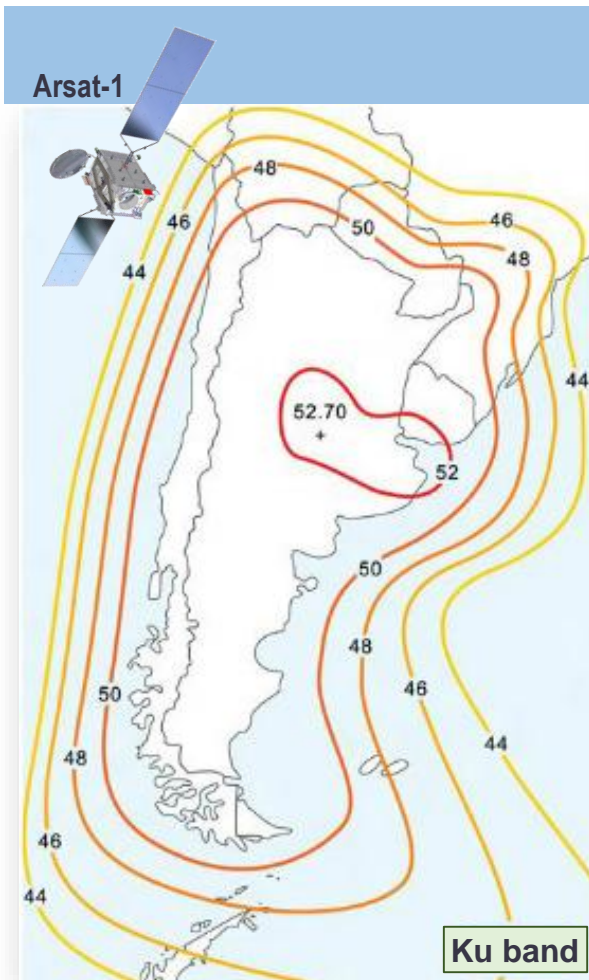
National Space Program

“Space Information Cycle” (To go to space to “watch the Earth”)

- Agriculture, fishing and forest
- Climate, hydrology and oceanography
- Environment and natural resources
- Cartography, geology and mining
- Disaster management
- Health applications

ARSAT
Telecommunications

ARSAT, is a company established by the Argentine Government by law in year 2006. Investment: 4 Billion US\$



- 2 GEO telecom satellites designed, integrated and tested in Argentina
- Teleport and VSATs services

- 15 years lifetime, 3 tons, 3,4Kw payload

- 20.000 mi (32.000Km) network
- +90% polulation

- 83 Digital TV Ground Stations
- 85% polulation.
- Complementary satellite broadcast

ARSAT satellite program challenges *(at program start in year 2007)*



Argentina joined the group of countries that are designing and manufacturing GEO telecom satellites: USA, Germany, France, China, Russia, Japan, Israel, India.

Experience

Satellite Prime Contractor
Earth Observation
(scientific)

Satellite Operator
GEO telecom
(commercial)

Technical complexity

High technical complexity
Low recurrence

High recurrence

Availability

According to mission

Critical (99,99%)

Lifetime

3 to 5 years

15 years

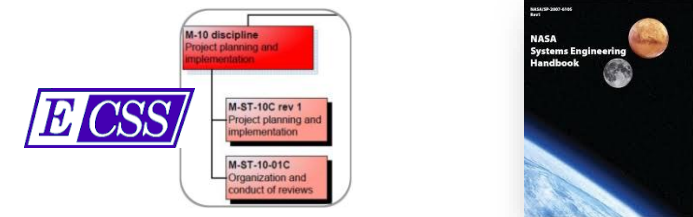
Standars



Applicable Standards:

- 2007: Arsat required INVAP ECSS standard.
- Also some USA: MIL-STD and MIL-HDBK
- Tailoring process discussed and implemented.

Design Reviews: Tailored process



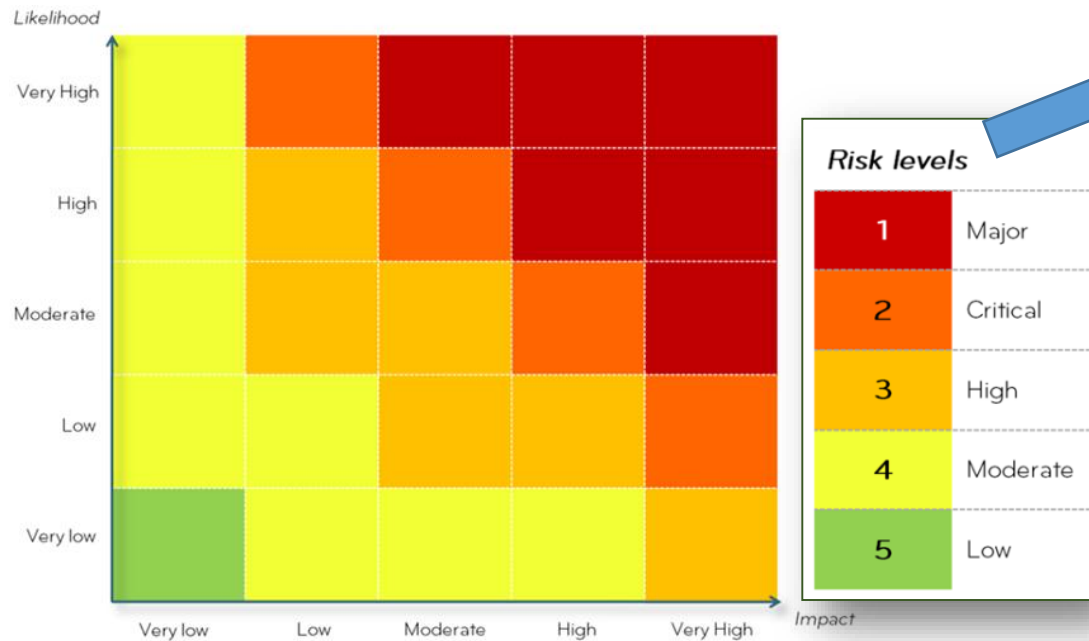
- Arsat QA generated Review Plans based on :
 - ECSS standard,
 - NASA System Engineering Handbook

Risk Management

Risks identified working with a satellite insurance broker

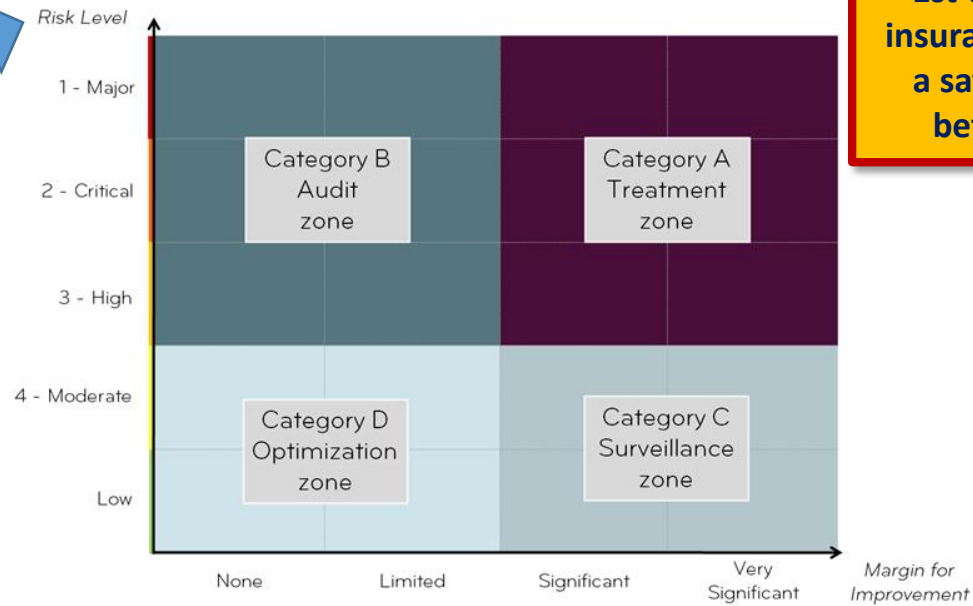
Top down approach

- Risk Mapping Analysis of the complete program



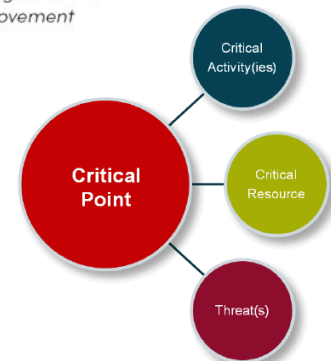
- *Arsat presented its satellite program to the insurance community since the beginning.*
- *Risk management was key for program success.*

1st time Long Term insurance coverage for a satellite platform before 1st flight.



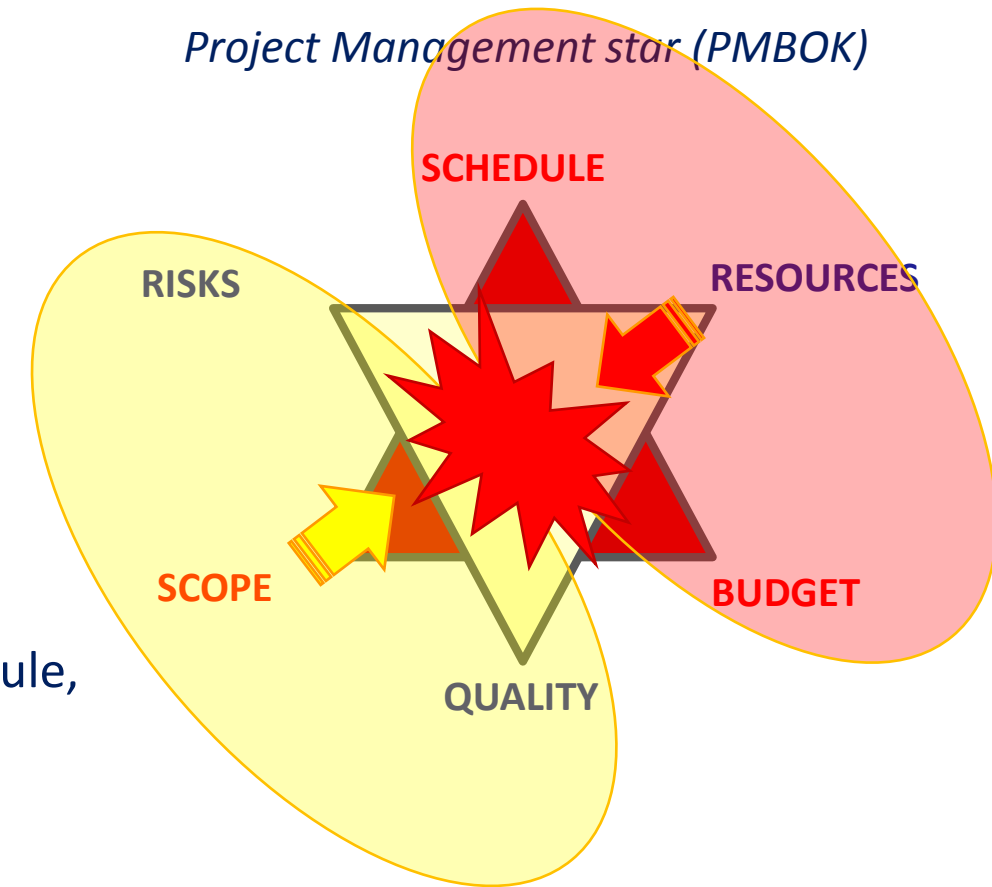
Bottom up approach

- Criticality Analysis done on all AIT (Assembly, Integration and Tests) tasks allowed to improve processes and procedures, to mitigate potential risks and to design contingency plans.
- Threat Analysis



Projects have forces that struggle and generate tensions

- The key to avoid failing due to avoidable reasons was to balance
 - Project Management,
 - System Engineering,
 - Quality.
- Closing non-conformances that affected significantly cost or schedule, was a challenge as dispositions have to be decided under a lot of pressure.





Gracias!
Thank you!

