



# Configuração da FSoFIST para validação do Software de Recepção de Telemetria do MASCO

Workshop ATIFS  
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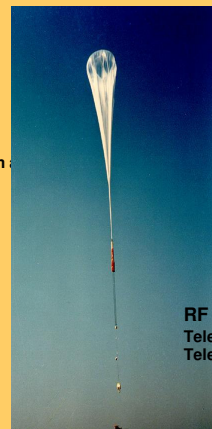
## MASCO Telescope



## MASCO Mission

**PURPOSE**  
Image the sky  
at X-ray energies  
( 30 hours at 42 km )

**SCIENCE**  
High-energy  
astrophysics  
research

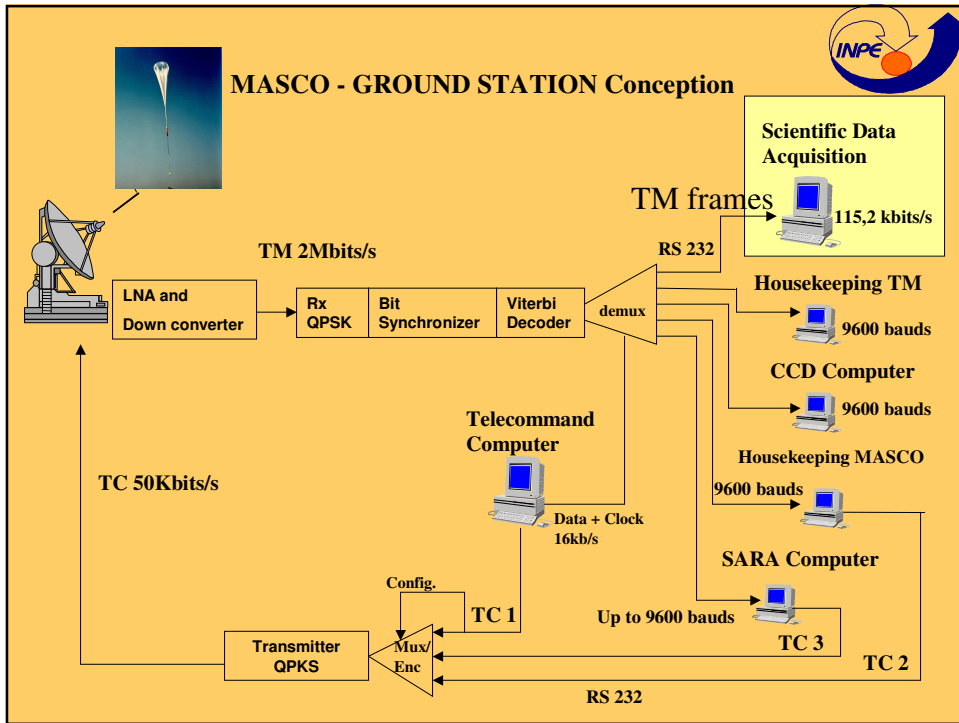


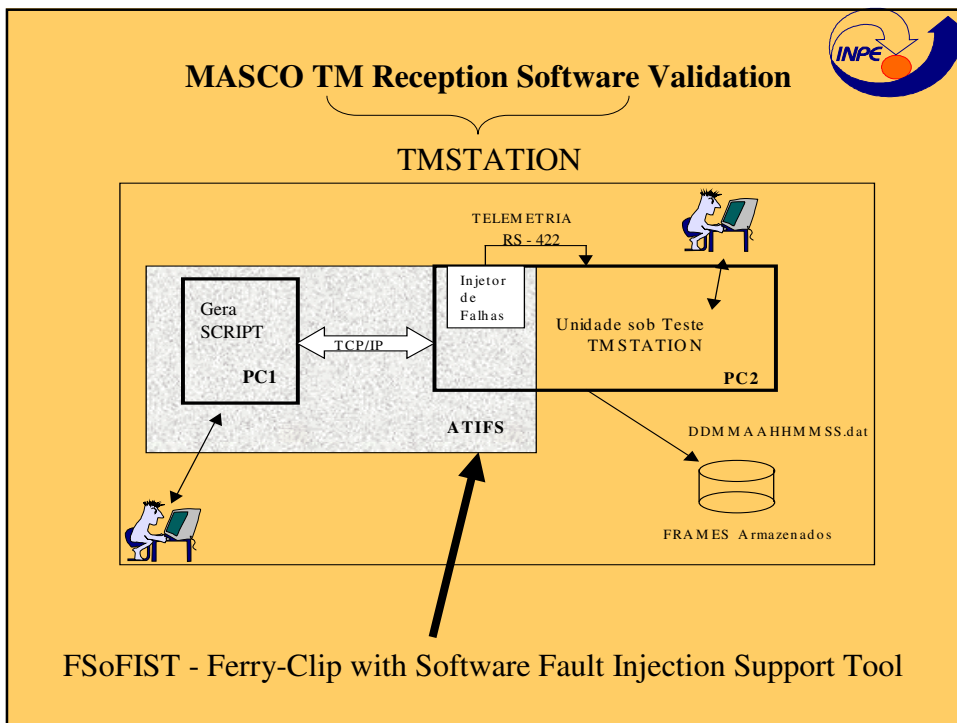
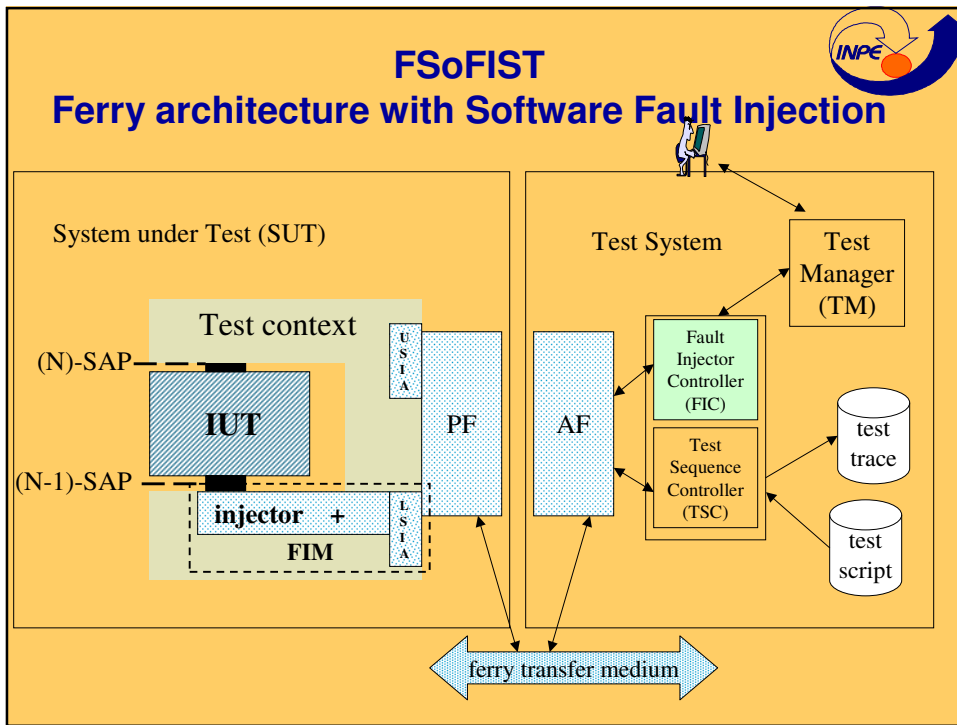
**MECHANICS:**  
2 ton, 2mx2mx7m  
Stabilized platform  
in a high altitude balloon  
1.2 million cubic meters

**RF**  
Telemetry: 1526 Mhz  
Telecommand: 1427 Mhz

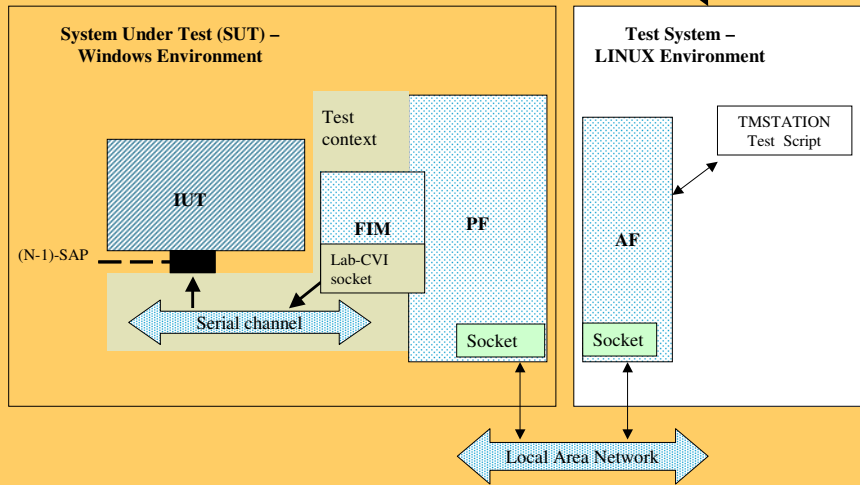
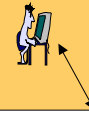
Science Telemetry data sent to ground: 134 Kbytes each 10 sec

1 frame

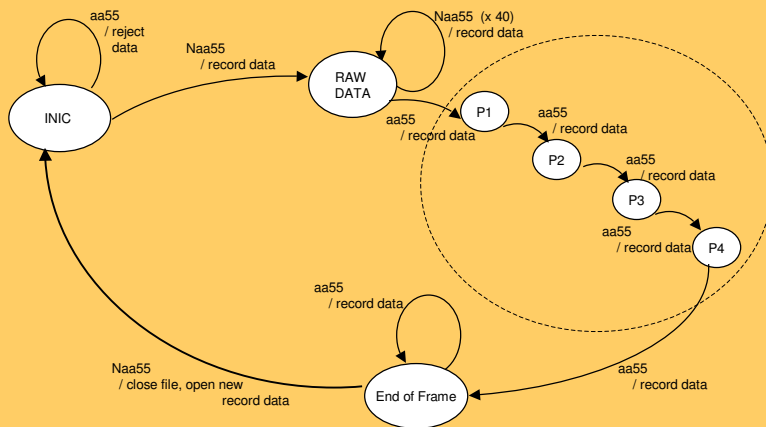




## FSoFIST configured for MASCO testing



## MASCO Telemetry Reception Software – view for testing



## Mimicking failures on RF downlink



In case of communication failure to ground, part of the frame might be missed resulting:

**Truncated frame:** a frame with reduced length is generated whenever part of the frame data field is lost, without affecting the “end of file” pattern

**Extended frame:** a frame with bigger length might occur if part of the “end of file” pattern is lost. In this case, the TMSTATION adds the next frame to the current frame data field.

- FSoFIST test execution supported conformance and fault injection tests.
- Both tests were based on a TELEMETRY.dat file containing a sequence of valid frames and were conducted by a test script.
- In case of fault injection tests, corruptions on the data file followed the script instructions to mimic communication faults. Two kinds of corruption were carried on:
  - words omission in the data field – **truncated frames.**
  - “end of file” pattern change - **extended frames.**



Number of frames in TELEMETRY.dat	Fault case	FSoFIST technique	Test Results: Status of the data files (frames)
6	Transient in 3 <sup>rd</sup> frame	corruption at "end of file" pattern	1 valid 2 valid 3/4 extended 5 valid 6 valid
7	Intermittent at 2 <sup>nd</sup> , 4 <sup>th</sup> , 6 <sup>th</sup> frame	Corruption at "end of file" pattern	1 valid 2/3 extended 4/5 extended 6/7 extended
5	Intermittent at 2 <sup>nd</sup> , 3 <sup>rd</sup> , 4 <sup>th</sup> frames	Omission of "end of file" patter	1 Valid 2/3/4/5 extended
3	Permanent	Byte omission on data field	1 truncated 2 truncated 3 truncated
5	Intermittent at 2 <sup>nd</sup> , 4 <sup>th</sup> , 5 <sup>th</sup> frames	Byte omission on data field	1 valid 2 truncated 3 valid 4 truncated 5 truncated
4	Transient at 2 <sup>nd</sup> , 3 <sup>rd</sup> frames	Byte omission on data field	1 valid 2 truncated 3 truncated 4 valid



## Campanha de Lançamento em Nova Nonte MG



