ATTIPIC project.

Avionique Très Intégrée pour Petites Plateformes Incluant des COTS

Objectives: Study a generic Avionics architecture (including embedded software) based on COTS as well as a production methodology to be competitive in small satellite platform market.
Make a POC on an architecture initiated by the CNES through their Darwin studies and find solutions to cover the identified locks.
Mount the solution in matured form for a transfer to the industrialization of the solution

6,5 M
euros

38
months

Thales, CNES, INRIA, SII, SYRLINKS, STEEI

20
Delivrables

Needs / Locks

- Market for mini-satellite constellations (50 to 250kg)
- Transition from space avionics to the use of Multicore SOC and COTS
- Be competitive compared to new low-cost players, while guaranteeing mission availability close to the state of the art in space.

Locks to solve:

- The use of COTS HW in a space environment,
- the centralization of avionics functions due to the duplication of CPU and memory resources,
- Define a reference architecture supporting different levels of criticality,
- the adaptability of generic cores and production tools to various avionics interfaces,
- Analysis of mitigation mechanisms to obtain a QoS,
- the operational maturity of fault tolerance,
- Predictability in a multi-core setting.

Technical approach

Identification and implementation of the techno necessary to use a multi-core SoC (hypervisor, FPGA chain), identification of services to be provided to facilitate application development (pre-integrated service framework) including mitigation mechanisms. Modelling work with Inria to support the development of an integrated system, with a focus on traffic congestion and system availability issues.

Demonstrate the ability to use these technologies for space through a POC to demonstrate the integration of new technologies and IPs associated with the characteristics of a SOC

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Annexes.