The goal of the state of the art is to establish an inventory of the existing technologies and to see their underlying potential of their utilization in the project.

==Compostion of the OBC==

OBC is the brain of the CubeSat. It is based on a microcontroller connected to the subsystems via a serial data bus and HW device.

A real time OS (RTOS) that manages all the software applications, starts the microcontroller and provides the flight software CubeSat (FSW).

===Hardware===

To select the best microcontroller, we have to take care about many things such as power consumption, temperature, operating voltage, I/O and serial bus compatibility to avoid some issues

Microcontrollers are available from different manufacturers in variants supporting 8-bit, 16-bit and 32-bit word length. 8-bit and 16-bit architectures were favoured in CubeSat technology because many of the embedded and real time applications at the time were not critically dependant on memory, power or speed and the amount of data to handle was sufficient.

With time, more products and applications started to require increased processing capability. It became clear that a migration from 8 and 16-bit to 32-bit core architecture was necessary, although the complexity remained an issue. This is why for the moment there is more CubeSat's OBC developped with a microcontroller 16-bit.

===Software===

The software component controls the processor, its operation and control functionality. A real-time operating system (RTOS) is a multitasking operating system for real-time applications. RTOS such as: FreeRTOS (Advantage: free, open source, lightweight, reliable, compatible with MSP 430 microcontroller type). This is the OS used by the Liege University students for their CubeSat Oufti.

==Architecture of the OBC==

[[File:OBC.PNG|frame|center|Basic functional diagram of a CubeSat internal organisation (Souce: http://digitalknowledge.cput.ac.za/jspui/bitstream/11189/1307/1/Lumbwe\_T\_Final2013.pdf)]]

The OBC architecture is essentially based on the connectivity between subsystems within the CubeSat. This simply means that the microcontroller’s peripherals are configured according to the data flow within the CubeSat’s computing scheme.

== Download the State Of the Art - OBC ==

[[File:ON-BOARD-COMPUTER-OF-THE-CUBSAT\_version\_2.pdf]]

== References ==

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