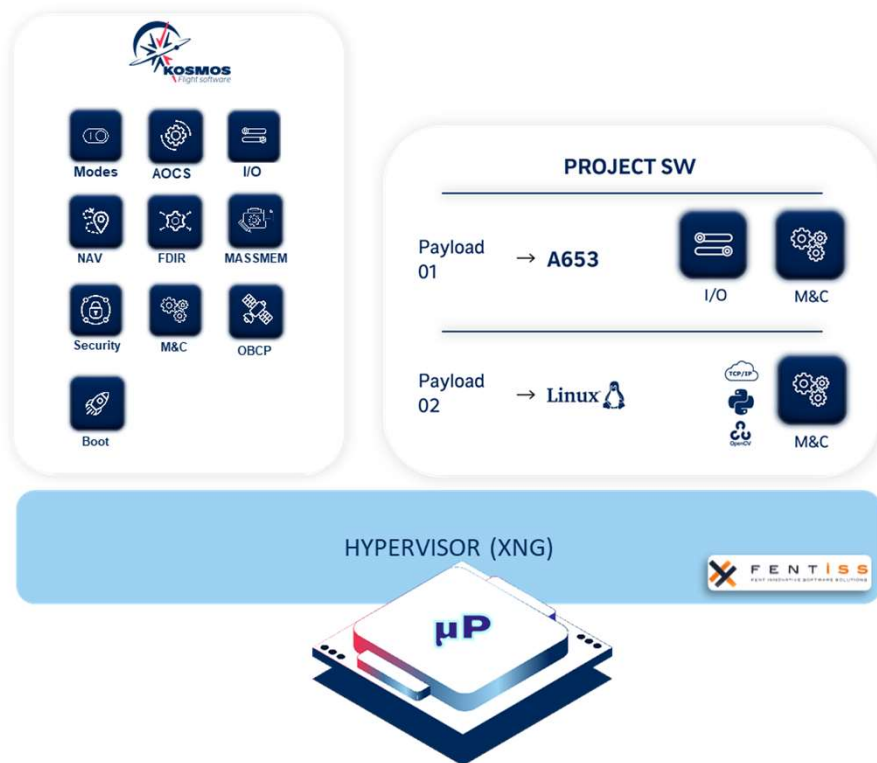




02 – KOSMOS AUJOURD'HUI

JULIEN GALIZZI (CNES)
KOSMOS DAY 2025 - 15/09/2025

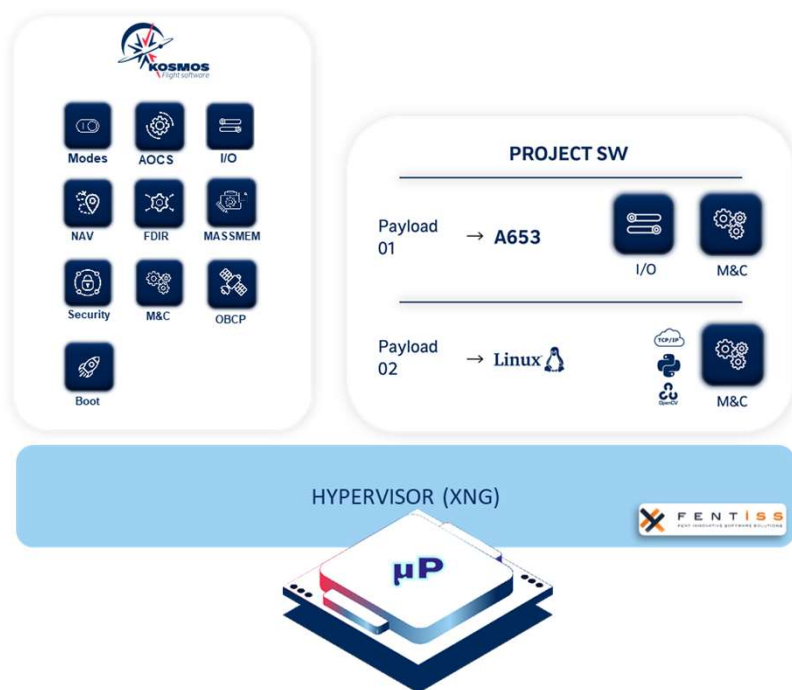
WHAT DO WE HAVE OFF-THE-SHELVES ?



Initial (and still active) KOSMOS objectives :

- Allow the reuse of recurrent functions on space computers in the form of libraries or partitions.
- Simplify their integration and guarantee their independence thanks to the modularity guarantees offered by the TSP / A653
- Allow users to focus on their application functions while benefiting from secure off-the-shelf standardized services.

FENTISS COMPONENTS



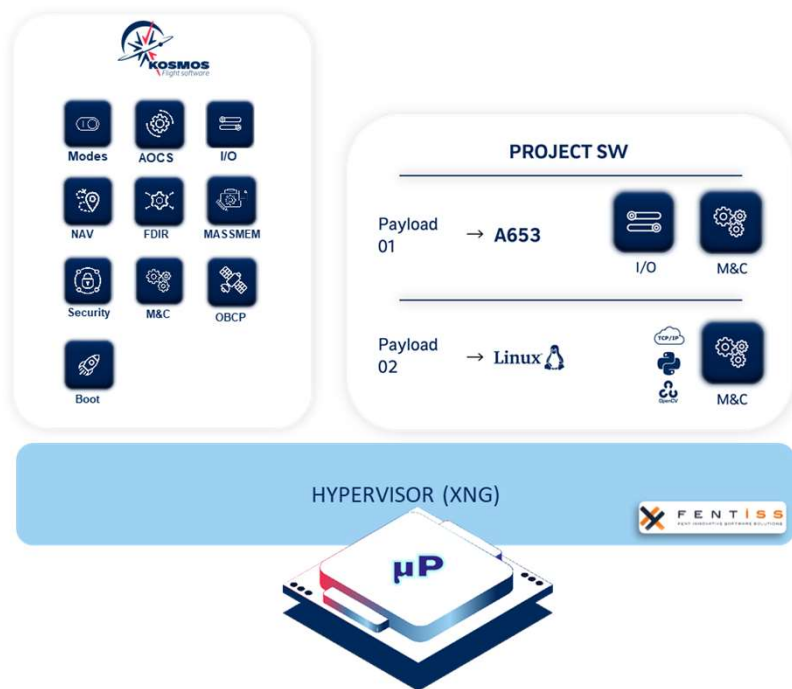
Target / Component

	XNG 	Lithos 	RTEMS 	Linux 	
GR712	X (SMP)	X	X	X	X
GR740	X (SMP)	X	X	X	X*
NOEL-V/GR765	X (SMP)	X	X	X	X*
NG-ULTRA	X (SMP)	X	X	Proto wo processe s support	X ongoing
AMD Zynq7x	X (SMP)	X	X	X	X
TMS570	X	X	X	No	
AMD Zynq UltraScale+	X* (HMP)	X	X	A53 only	X*
AMD VERSAL	X* (HMP)	X	X	A72 only	X Ongoing
SKE (Linux host)	X*	X		X	X ongoing

RADHARD

COTS

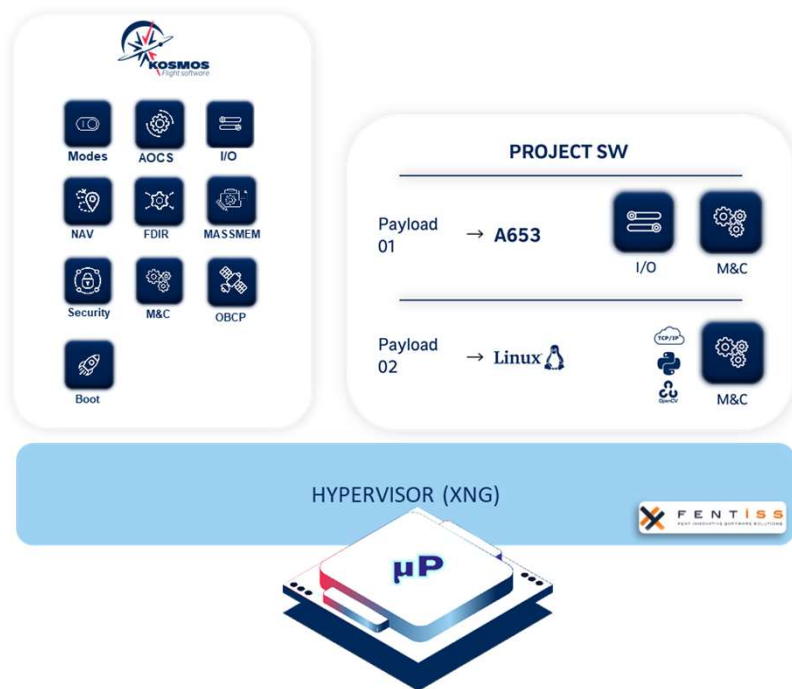
KOSMOS COMPONENTS



Components

ZBSW (Zynq BootSW)	X
Libal	X
Libpmugen	X
Libc	X
LibPUS ISIS	X
LibPUS C	Partial – ISIS perimeter on going
MMDL	X
HSEM	X
IOServer	X
AUTHSW (authentication decryption)	X
OBCPSW	X
MASSMEM	Proto – to be done

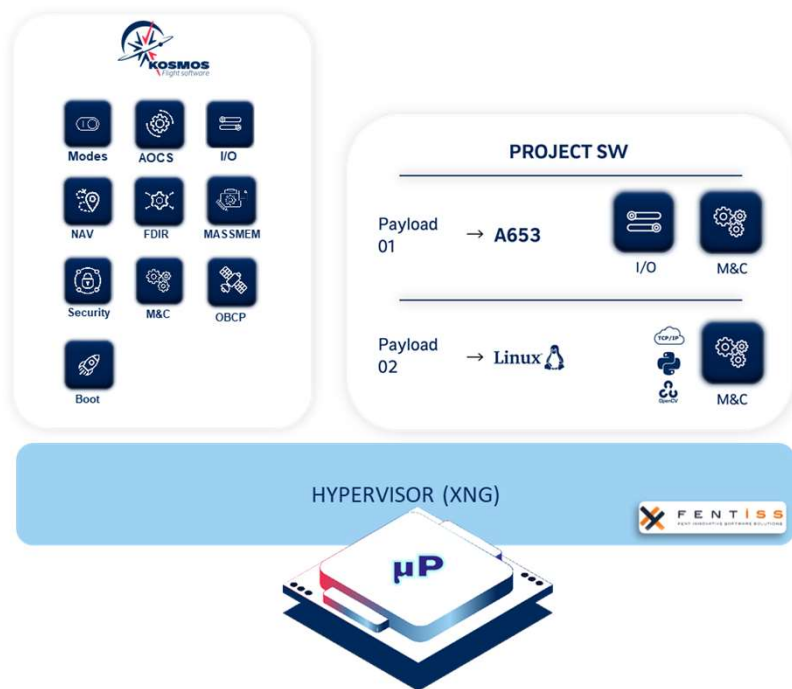
KOSMOS DEV KITS



Components

CCDK	X
APPDK	X
lv_root	X
NAVDK (orbit propagation)	To be done
COADK (Autonomous Orbit Control + collision avoidance)	To be done

USABLE (AND ALREADY USED) IN KOSMOS



Components

libmCS (GTD)	X
GRBoot (Cobham) BootSW on GR7x processors	X
BL0/BL1 NG-ULTRA (NX)	Missing BL2 to handle multi-version – not yet used with KOSMOS

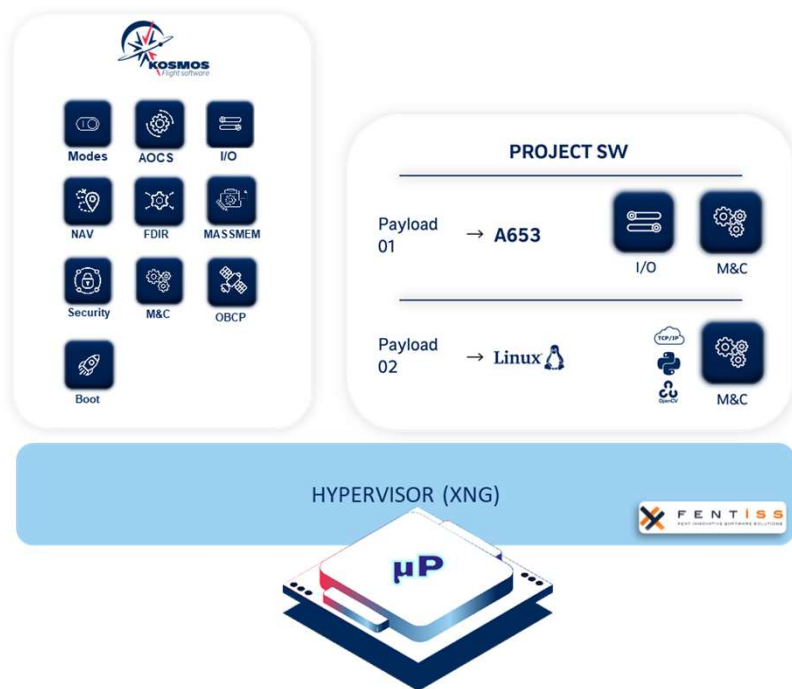
DRIVERS



Components

GR7xx	Spacewire, 1553
AMD Zynq7x, US+, VERSAL	Spacewire, I ² C, UART, SPI, 1-wire, S-BAND
NG-ULTRA	TBD

TOOLING WITH KOSMOS



Tools

Sandbox and TestLogChecker	X
Target Manager	X
Automated tests with Basiles and SDB	X
Gitlab-ci flows for standalone partition tests, quality gate, integrated SW	X