RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

cnes
CENTRE NATIONAL D'ÉTUDES SPATIALES



05 – KOSMOS EVOLUTIONS

WHAT'S COMING NEXT ?

SIMON CORBIN (CNES)

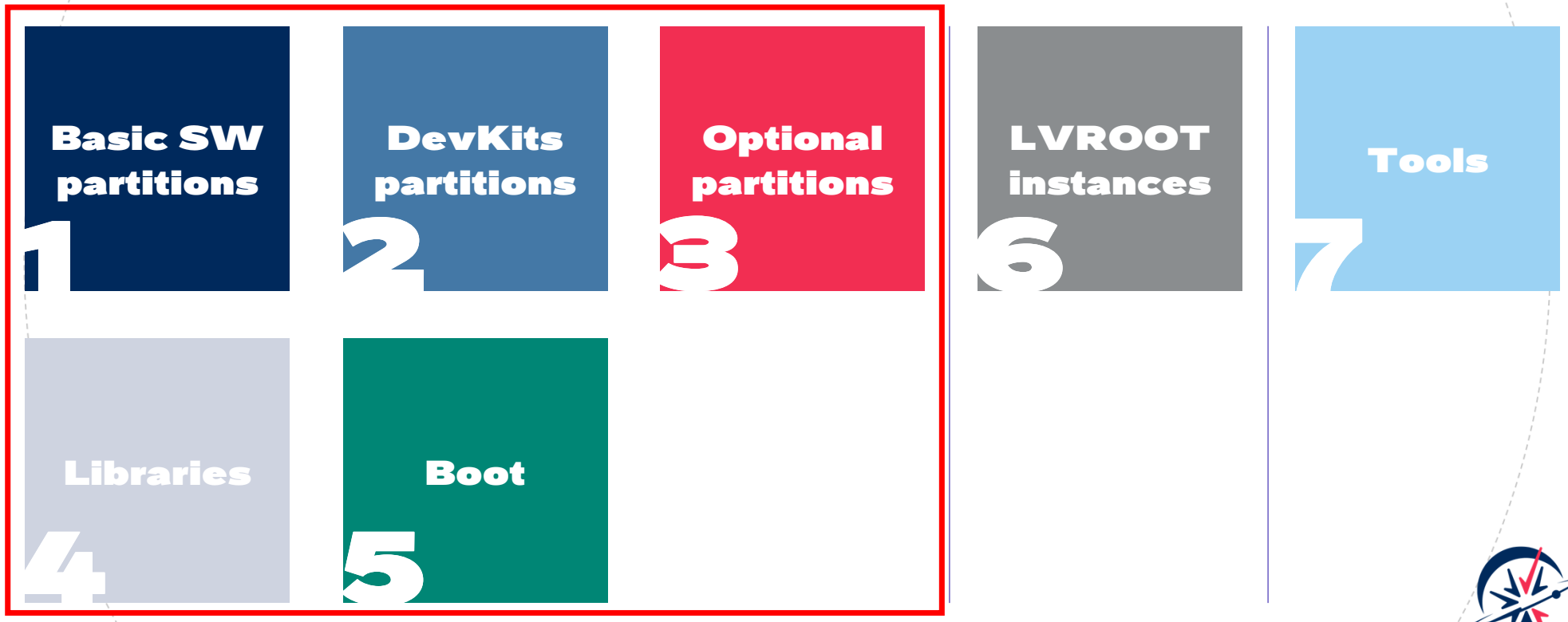
KOSMOS DAY 2026 - 24/09/2026

KOSMOS PRODUCTS OVERVIEW



KOSMOS Flight software

KOSMOS PRODUCTS OVERVIEW



KOSMOS EVOLUTIONS
1 – BASIC SOFTWARE (BSW)

Basic SW 1

Components	K-Day 2025 status	K-Day 2026 status	Comments
IOS	10.3.0	**10.4.1**	❑ Bugs correction ❑ libCI support ❑ New targets support
MMDL	10.3.0	**10.4.1**	
HSEM	10.3.0	**10.4.1**	

Targets	IOS	MMDL	HSEM
Zynq7000 (A9)	✓ ***(Kosmos 1.0)***	✓ ***(Kosmos 1.0)***	✓ ***(Kosmos 1.0)***
Versal (R5)	✓ ***(Kosmos 1.0)***	✓ ***(Kosmos 1.0)***	✓ ***(Kosmos 1.0)***
Versal (A72 32/64)	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*
SKE	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*
NG-ULTRA (R52)	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*
GR712 (LEON3)	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*
GR740 (LEON4)	⚠ *(Kosmos 1.2)*	⚠ *(Kosmos 1.2)*	⚠ *(Kosmos 1.2)*

KOSMOS Flight software

KOSMOS 1.0 : available **today**
KOSMOS 1.1 "Spring edition" : available **March 2027**
KOSMOS 1.2 "Autumn edition" : available **October 2027**

More info : cnes.fr/projets/kosmos

KOSMOS EVOLUTIONS
2 – DEVKITS PARTITIONS

DevKits partitions 2

Components	K-Day 2025 status	K-Day 2026 status	Comments
CCDK	1.4.0	**1.5.1 / 1.6.0**	1.6.0 : Retrofit APPDKPUS
APPDKPUS	1.0	**1.1.1**	❑ Bugs correction ❑ libCI support ❑ New targets support
LINUXDK	NA	***Proto Dec. 2026***	APPDKPUS functional perimeter

Targets	CCDK	APPDK	LINUXDK
Zynq7000 (A9)	✓ ***(Kosmos 1.0)***	✓ ***(Kosmos 1.0)***	⚠ *No ECSS qualification*
Versal (R5)	✓ ***(Kosmos 1.0)***	✓ ***(Kosmos 1.0)***	--
Versal (A72 32/64)	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	--
SKE	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	--
NG-ULTRA (R52)	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	--
GR712 (LEON3)	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	--
GR740 (LEON4)	⚠ *(Kosmos 1.2)*	⚠ *(Kosmos 1.2)*	--

KOSMOS Flight software

KOSMOS 1.0 : available **today**
KOSMOS 1.1 "Spring edition" : available **March 2027**
KOSMOS 1.2 "Autumn edition" : available **October 2027**

More info : cnes.fr/projets/kosmos

KOSMOS EVOLUTIONS
3 – OPTIONAL PARTITIONS

Optional partitions 3

Components	K-Day 2025 status	K-Day 2026 status	Comments
AUTH	1.2.1	**1.3.1**	❑ Bugs correction ❑ libCI support ❑ New targets support
OBCP	1.0.0	**1.1.1**	
MASSMEM	--	**--**	Ask if interested !

Targets	AUTH	OBCP	MASSMEM
Zynq7000 (A9)	✓ ***(Kosmos 1.0)***	✓ ***(Kosmos 1.0)***	⚠ *Not qualified*
Versal (R5)	✓ ***(Kosmos 1.0)***	✓ ***(Kosmos 1.0)***	--
Versal (A72 32/64)	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	--
SKE	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	--
NG-ULTRA (R52)	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	--
GR712 (LEON3)	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	--
GR740 (LEON4)	⚠ *(Kosmos 1.2)*	⚠ *(Kosmos 1.2)*	--

KOSMOS Flight software

KOSMOS EVOLUTIONS

4 – LIBRARIES

Libraries 4

Components	K-Day 2025 status	K-Day 2026 status	Comments
libPUS (ISIS)	10.6.0	**10.7.1**	❑ Bugs correction ❑ libCI support ❑ New targets support
libPUS-C	0.1	**0.2**	
libGEN (libC/libPMU/libal)	--	**1.0.1**	
libmCS	1.2.0	**1.2.0 (Q)**	Qualified on zynq7000 (A9)

Targets	libPUS (ISIS)	libPUS-C	libGEN	libmCS
Zynq7000 (A9)	✔ ***(Kosmos 1.0)***	⚠ *(Kosmos 1.1)*	✔ ***(Kosmos 1.0)***	✔ ***(Kosmos 1.0)***
Versal (R5)	✔ ***(Kosmos 1.0)***	⚠ *(Kosmos 1.1)*	✔ ***(Kosmos 1.0)***	--
Versal (A72 32/64)	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	--
SKE	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	--
NG-ULTRA (R52)	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	--
GR712 (LEON3)	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	⚠ *(Kosmos 1.1)*	--
GR740 (LEON4)	⚠ *(Kosmos 1.2)*	⚠ *(Kosmos 1.2)*	⚠ *(Kosmos 1.2)*	--

KOSMOS Flight software

KOSMOS EVOLUTIONS

4 – LIBRARIES (LIBPUS ISIS / LIBPUS-C)

Libraries 4

Implemented services	libPUS ISIS (10.7.1)	libPUS-C (0.2)
1 – Telecommand Verification	✓	✓
3 – Housekeeping and Diagnostic Data Reporting	✓	✓
4 – Parameter Statistics Reporting	✓	✗
5 – Event Reporting	✓	✓
6 – Memory Management	✓	✓
9 – Time Management	✓	✓
11 – On-board Operations Scheduling	✓	✗
12 – On-board Monitoring	✓	✓
13 – Large Data Transfer	✓	✗
14 – Packet Forwarding Control	✓	✗
15 – On-board Storage and Retrieval	✓	✗
17 – Test (ping)	✓	✓
19 – Event-Action	✓	✓
20 – On-board Parameter Management	✗	✓
21 – Request (Telecommand) Sequencing	✓	✗
140 – Parameter Management	✓	✗

KOSMOS Flight software

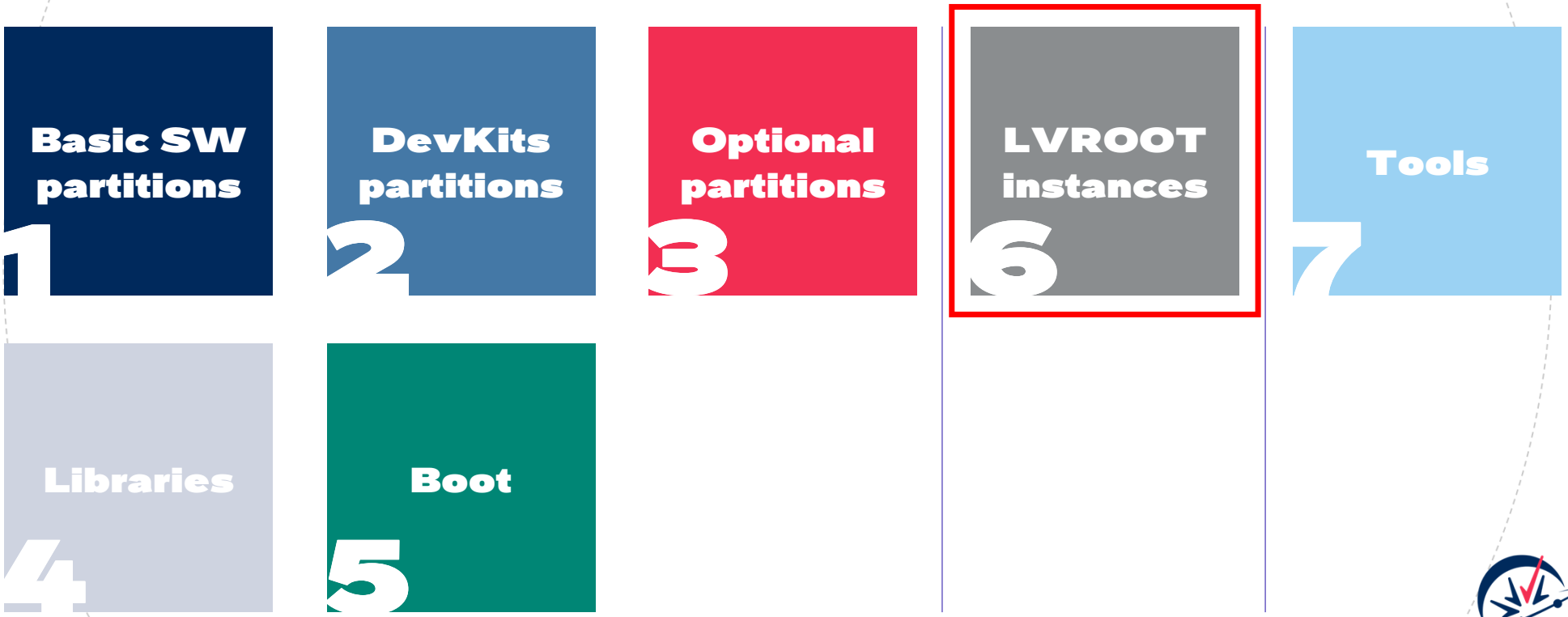
KOSMOS EVOLUTIONS
5 - BOOT

Boot 5

Components	K-Day 2025 status	K-Day 2026 status	Comments
ZBSW	1.4 (MMX)	**1.5.1**	❑ Qualified on Zynq7000 (A9)

KOSMOS Flight software

KOSMOS PRODUCTS OVERVIEW



KOSMOS EVOLUTIONS
6 – LVROOT INSTANCES

LVROOT instances 6

Instances	K-Day 2025 status	K-Day 2026 status	Comments
LVROOT	--	**1.2.1**	❑ Associated to KOSMOS 1.0
LVROOT-OBCP			
LVROOT-AUTH			

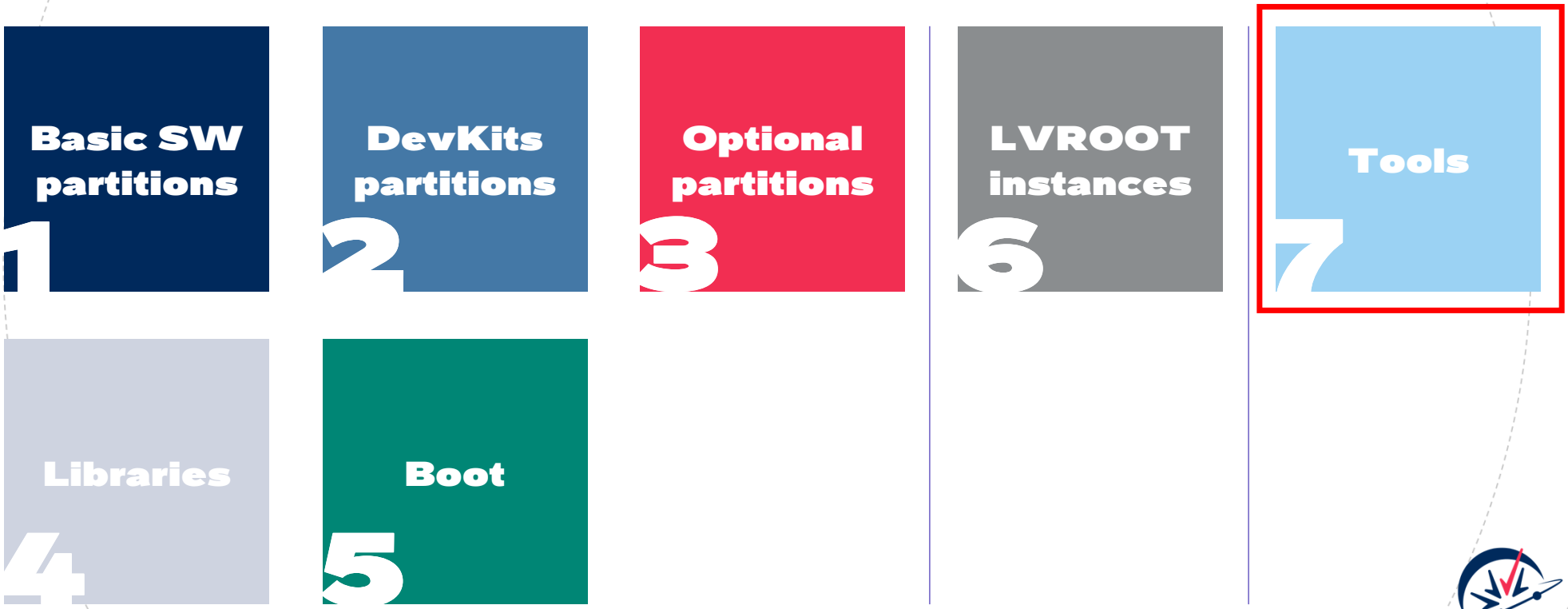
Targets	LVROOT
Zynq7000 (A9)	✔ ***(Kosmos 1.0)***
Versal (R5)	✔ ***(Kosmos 1.0)***
Versal (A72 32/64)	⚠ *(Kosmos 1.1)*
SKE	⚠ *(Kosmos 1.1)*
NG-ULTRA (R52)	⚠ *(Kosmos 1.1)*
GR712 (LEON3)	⚠ *(Kosmos 1.1)*
GR740 (LEON4)	⚠ *(Kosmos 1.2)*

KOSMOS Flight software

KOSMOS 1.0 : available **today**
KOSMOS 1.1 "Spring edition" : available **March 2027**
KOSMOS 1.2 "Autumn edition" : available **October 2027**

More info : cnes.fr/projets/kosmos

KOSMOS PRODUCTS OVERVIEW



KOSMOS Flight software

KOSMOS EVOLUTIONS
7 - TOOLS

Tools 7

Tools	K-Day 2025 status	K-Day 2026 status	Comments
libCI	1.1.4	**1.1.5**	Gitlab-CI support Library (Jenkins deprecated)
Target Manager New Generation (TMNG)	--	**1.0**	Should be available for KOSMOS Spring edition (March 2027)
Sandbox partition	--	**--**	To be properly cleaned/tagged

KOSMOS Flight software

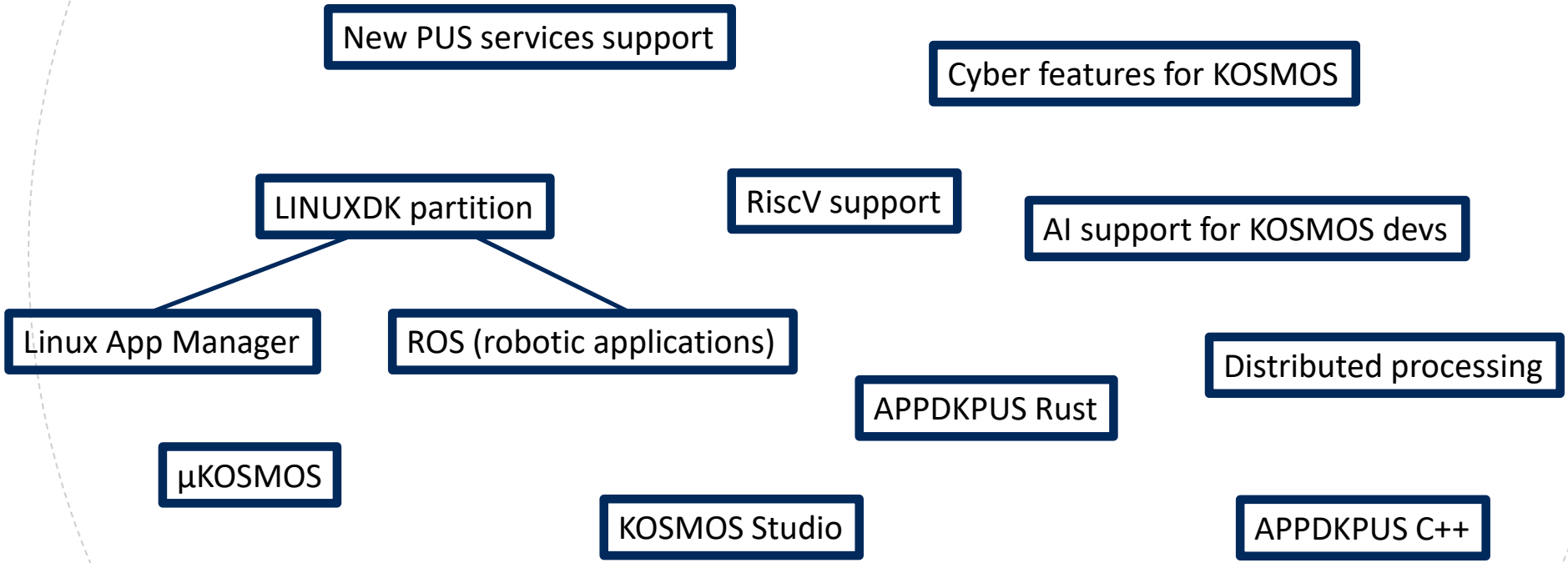
KOSMOS EVOLUTIONS
UPCOMING RELEASES

Spring edition 1.1 – March 2027	Autumn edition 1.2 – October 2027
▪ New supported targets : • Versal (A72 32/64) • NG-ULTRA (R52) • GR712 (LEON3) • SKE ▪ Support for libPUS-C ▪ Target Manager New Generation (TMNG)	▪ New supported target : • GR740 (TBC) ▪ New libPUS-C services support (TBC)

Share your thoughts by filling out the survey at the end of the day !

KOSMOS Flight software

KOSMOS EVOLUTIONS
SHAPING THE FUTURE – WHAT'S COMING NEXT ?



Share your thoughts by filling out the survey at the end of the day !

KOSMOS Flight software

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

cnes
CENTRE NATIONAL D'ÉTUDES SPATIALES

KOSMOS DAY

QUESTIONS ?

Implemented services	libPUS ISIS (10.7.1)	libPUS-C (0.2)
1 – Telecommand Verification	✓	✓
3 – Housekeeping and Diagnostic Data Reporting	✓	✓
4 – Parameter Statistics Reporting	✓	✗
5 – Event Reporting	✓	✓
6 – Memory Management	✓	✓
9 – Time Management	✓	✓
11 – On-board Operations Scheduling	✓	✗
12 – On-board Monitoring	✓	✓
13 – Large Data Transfer	✓	✗
14 – Packet Forwarding Control	✓	✗
15 – On-board Storage and Retrieval	✓	✗
17 – Test (ping)	✓	✓
19 – Event-Action	✓	✓
20 – On-board Parameter Management	✗	✓
21 – Request (Telecommand) Sequencing	✓	✗
140 – Parameter Management	✓	✗