

# **THE ESCC POLICY AND STANDARD WORKING GROUP (PSWG)**

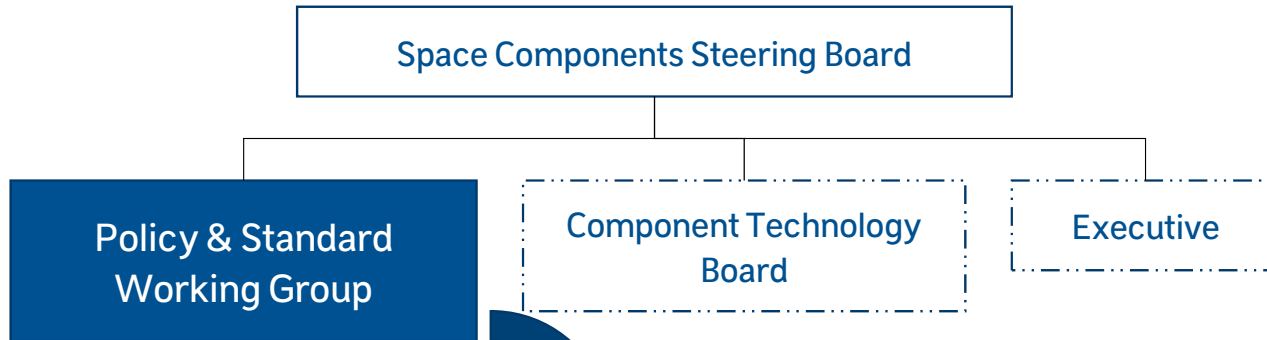
**ESCCON2021**

9 – 11 March 2021

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## PSWG Organisation & Mission



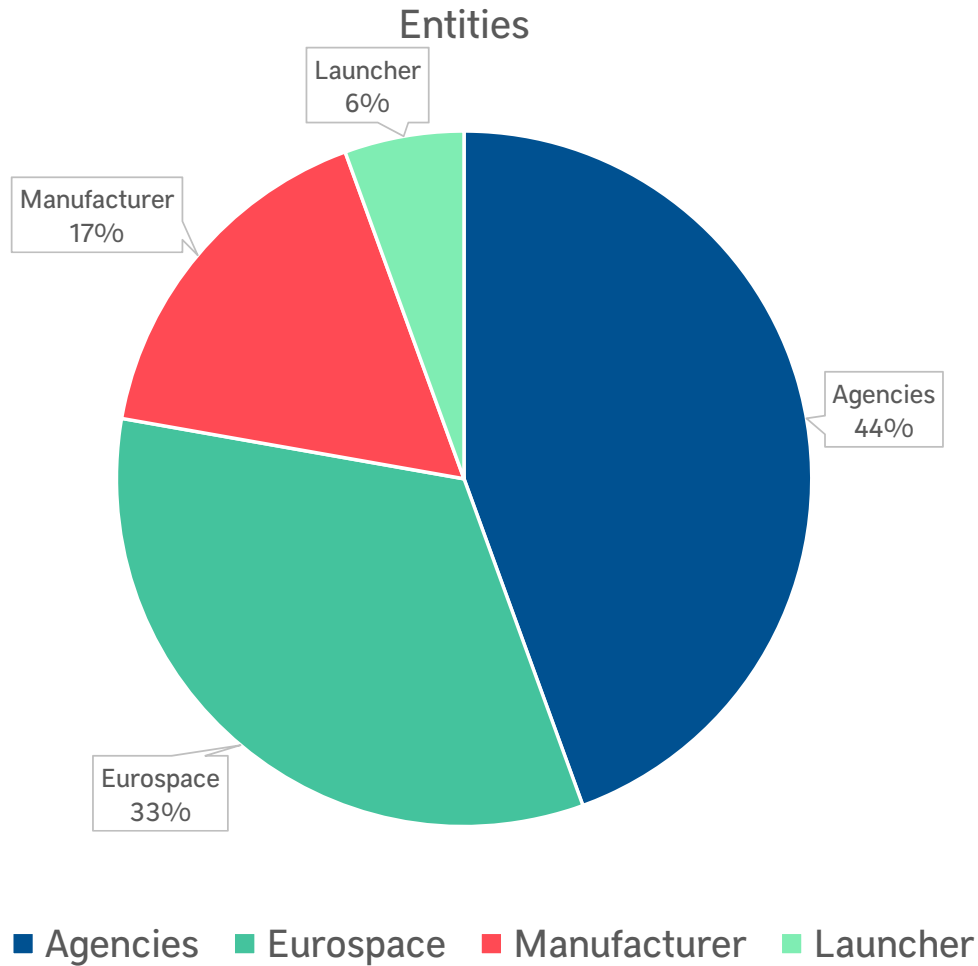
### PSWG Membership :

- Eurospace (Airbus D&S, Alter, TAS, TESAT)
- Agencies (ESA, DLR, CNES, ASI, UKSA)
- Manufacturers (ATMEL-Microchip, ST, Vishay Exxelia)
- Launcher : Ariane Group

### PSWG mainly aims at :

- ✓ Approving new ESCC generic specifications
- ✓ Improving the ECSS standards regarding component procurement

## PSWG Members



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## Document Change Reviews

ROADMAP OF "PSWG" ACTIVITIES

	Stat	Open Date	Closure Date	Achieve lead time	2021												2022												2023		
					J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M
					PS93			PS94					PS95			PS96			PS97			PS98					PS99	PS100			
<b>DCRs (Document Change Review)</b>																															
DCR Open																															
318	O	12/12/2022		2 m																											
318	O	12/12/2022		2 m																											
DCR Closed																															
287 (ESCC 6001/001 - plastic modules)	C	-	03-déc	18 m																											
289 (ESCC 6001 - plastic modules)	C	-	03-déc	18 m																											
1349 (ESCC 3503 - oscillators)	C		-	6 m																											
1369 (ESCC 9000 - microcircuits)	C		-	3 m																											
1370 (ESCC 9000 - microcircuits, flip chip)	C		-	17 m																											
1373 (ESCC 2053600 - EVI relays)	C		07/05/2021	5 m																											
1375 (ESCC 5000 - active discrete IGA)	C		-	10 m																											
1377 (ESCC 2265000 - active discrete IOL)	C	-	16/07/2021	15 m																											
1408 (ESCC 3408 - RF cable assemblies)	C		07/05/2021	3 m																											
1409 (ESCC 3402 - RF coaxial)	C		07/05/2021	3 m																											
1410 (ESCC 3202 - isolators & circulators)	C		07/05/2021	3 m																											
1411 (ESCC 3404 - power dividers, couplers & combiners)	C		07/05/2021	3 m																											
1415 (ESCC 3603 - Relays Electromagnetic RF Coaxial Switch Latch)	C	07/04/2021	-	3 m																											
1455 (ESCC 22500 - Guidelines for DD radiation)	C	14/09/2021	05-oct	1 m																											
1478 (ESCC 3503 - oscillators)	C	11/02/2022	18/03/2022	1 m																											
1232 (ESCC 3008 - filters)	C	01/02/2020	27/06/2022	28 m																											
1380 (ESCC 3405 - Filtered Connectors)	C	04/04/2022	10/11/2022	7 m																											
1456 (ESCC 3603 - RF relays, RF switch)	C	04/10/2022		4 m																											
1488 (Several documents)	C	08/06/2022		8 m																											
1497 (ESCC 21300 - definition)	C	10/03/2022	14/06/2022	3 m																											
1510 (ESCC 3601 & 3602 - Relays)	C	08/06/2022	10/11/2022	5 m																											
1515 (ESCC 12300 - EPPL)	C	02/11/2022	10/11/2022	0 m																											
1323 (ESCC 21001 - DPA [capacitors])	R	-		17 m																											

Accelerating the sequence of activities with the same level of confidence

## PSWG Activities

	Stat	Open Date	Closure Date	Achieve lead time	2021												2022												2023																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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Noordwijk, 23 March 2022

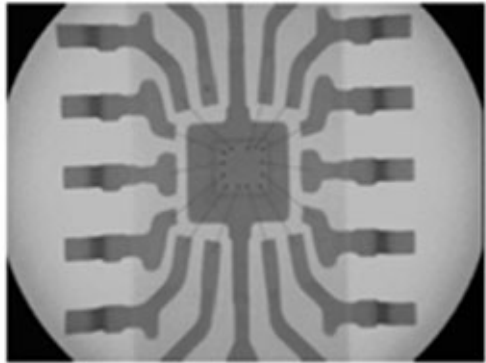
ESA-TECQE-LE-2022-000974

**ESCC Executive Public Notice (EEPN-2022-1 Issue 1)**

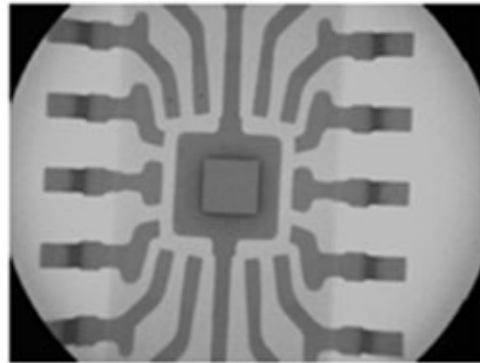
**Subject: Counterfeit risk awareness due to global shortage of EEE & PCB**

**To: European Space Community**

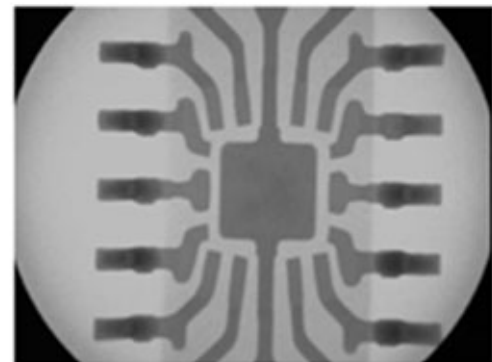
## PSWG Activities



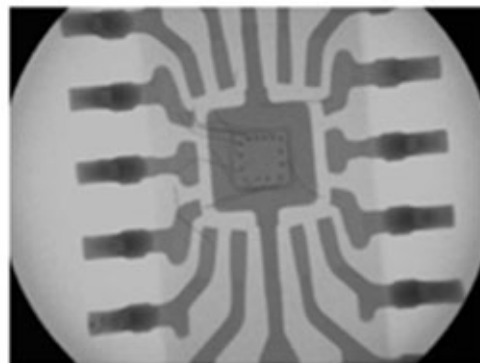
Nearly



No Bond Wires



No Die



No Comment

**ALTER**  
TECHNOLOGY

**It is essential to follow the requirement  
as given in ECSS-Q-ST-60C**

### **Risk Mitigation (list not exhaustive):**

- Analysis of Certificate of Conformity from the manufacturer.
- Checking of packaging and labels.
- 100% external visual inspection.
- 100% electrical test.
- DPA (adequate sample number)

## **ESCC9000P: generic specification for space plastic encapsulated microcircuits**

- **Conderned categories:**
  1. Monolithic Microcircuits, wire-bonded, plastic encapsulated
  2. Monolithic Microcircuits, flip-chip, organic substrate
  
- The consolidated draft of the generic is approved by PSWG
  
- Some tricky points but solutions agreed
  - More than 20 members in the Working Group

A further possibility for the manufacturers:  
ESCC9000P for SiP ?

## ESCC 6001: Non-hermetic Memory Module

Built on top of the existing ESCC Process Capability Approval (PCA)

A paradigm shift in the ESCC system

Introduction of 3Dplus modules in the ESCC system:

- ☐ Modules manufactured with COTS add-ons
- ☐ How to qualify these modules in our system?
  - ✓ Single Phase Qualification
  - ✓ Radiation testing
  - ✓ Requirement for add-on components
  - ✓ Creation of Charts



Already published in December 2021



## ECSS Standard: ECSS-Q-ST-60-13 for COTS procurement

### 3 main topics:

1. Authorization of pure tin parts without retiling ✓
2. Automotive level recognition ✓
3. Commercial passive parts introduction ✓

### Main difficulties:

- ✓ How to measure trust in a part ?
- ✓ Passive COTS => High diversity of parts technologies.

Table 8-1-1: Procurement test table for ceramic capacitors chips

Ceramic capacitors chips								
Automotive grade	Class 1	Class 2	Class 3	Category	Test type	Sample size	Test Procedure	Specific Test condition
AEC-Q grd 0/1	X	X	X	Evaluation	Construction Analysis	5	ESCC21001	
AEC-Q grd 0/1	X	X	X	Evaluation	Temperature characterization	5	ESCC3009 8.10	
AEC-Q grd 0/1	X			Evaluation	Life Test 2000h	40	ESCC3009 8.6 + 8.9	2000 hours - 2 Un
AEC-Q grd 0/1	X			Screening	Complete screening	100%	ESCC3009 chart F3	
AEC-Q grd 0/1	X	X	X	LAT	DPA	3	ESCC21001	
AEC-Q grd 0/1	X	X		LAT	Life Test 1000h	20	ESCC3009 8.6 + 8.9	1000 hours - 2 Un

Extract of the ECSS-Q-ST-60-13

Procurement test file for automotive capacitors

✓ Document published in May 2022

However, discussion planned on how to keep **this standard up-to-date**

## ECSS Standard: ECSS-Q-ST-60C rev.4 EEE components

Rev.3 already updated in May 2022 to match ECSS-Q-ST-60-13 rev.1:

- ✓ Update on PPBI
- ✓ List of forbidden EEE components
- ✓ Use of pure tin on a case-by-case basis with risk mitigation
- ✓ EQM components requirement

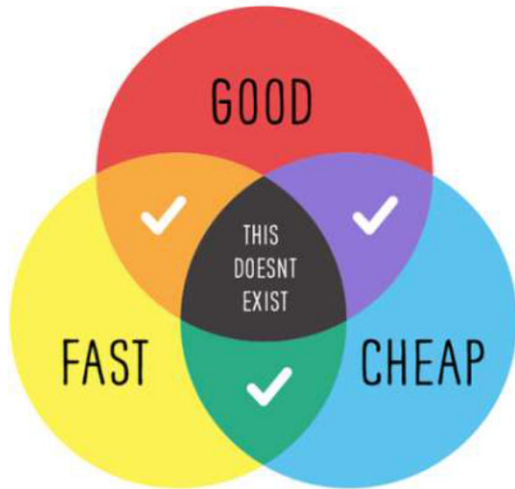


### Working Group in process to propose a new update:

- ✓ Update on FPGA and forbidden families
- ✓ Update on level tables and addition of photonic families
- ✓ DCL Template ?
- ✓ ...

Draft will soon be opened for public review

## New context



### 1. Readability – trustworthy:

ESCC is a kind of brand. Confidence in the ESCC parts quality shall be high.

### 2. Parts manufacturer oriented:

ESCC shall support European component suppliers

### 3. Parts customer oriented:

ESCC shall support space projects by providing innovative and competitive parts and bring added value in the supply chain

To find the right balance between these drivers is a challenge  
To continue to produce a consistent set of standards

## New context

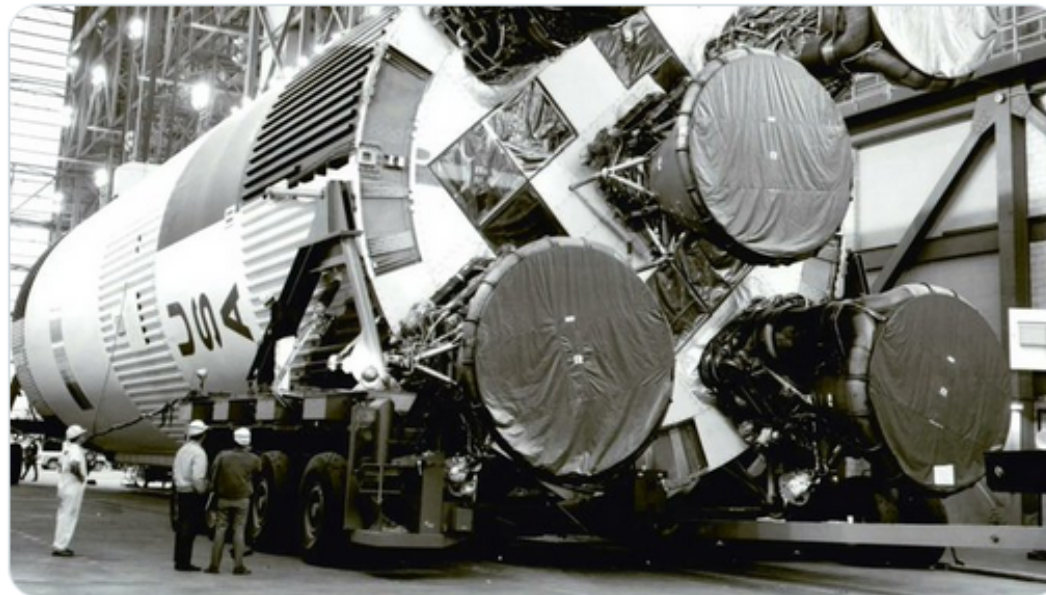


Fermat's Library  
@fermatlibrary



At its peak, the Apollo program was consuming 60% of all chips manufactured in the United States

[Traduire le Tweet](#)



3:07 PM · 20 sept. 2022 · Buffer

## We know what to do



**Eric Lagadec** ✓  
@EricLagadec

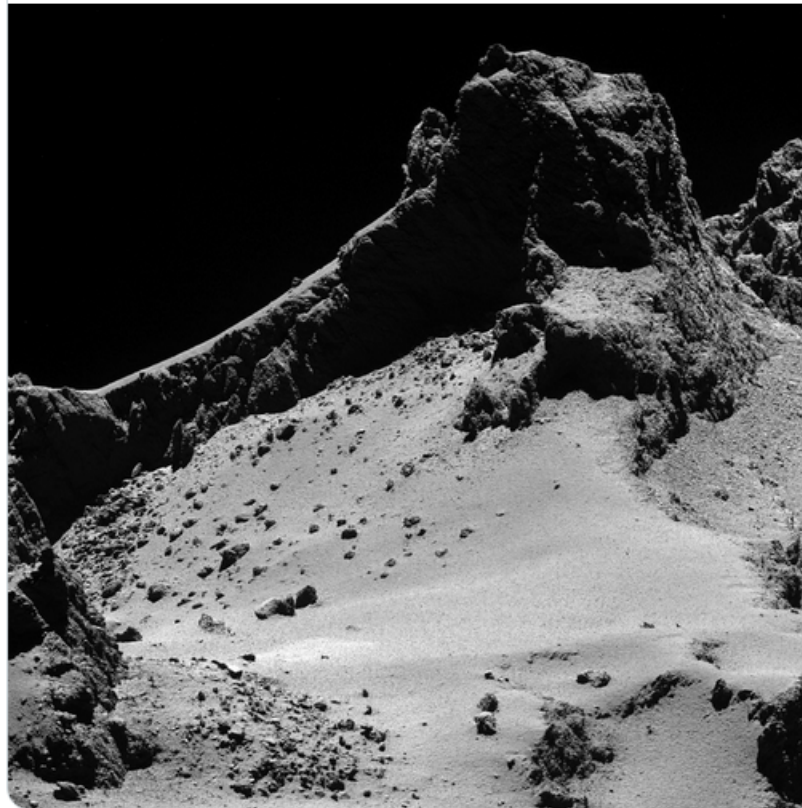
Imaginez que l'humanité a été capable de poser une sonde sur une comète à plus de 500 millions de kilomètres de la Terre et d'obtenir cette image.  
Peut être qu'il y a encore de l'espoir, quand on travaille ensemble on peut faire des choses hallucinantes!



**Paul Byrne** @ThePlanetaryGuy · 2 mars

This is the surface of a comet.

[Afficher cette discussion](#)



8:00 PM · 2 mars 2023 · 650,7 k vues

**THANKS FOR YOUR ATTENTION**

**THANKS AS WELL TO THE PSWG MEMBERS**