

2021 ESA Clean Space Industrial Days

Copernicus Missions – Life Cycle Assessment



Index

1 Performed Work

2 Forthcoming Steps


3 Main Encountered Challenges

4 Foreseen Future Challenges

5 Improvement Suggestions

Thales Alenia Space Involvement in Copernicus LCA

Thales Alenia Space (TAS) is involved in Copernicus Missions both as Prime Contractor and as Sub-Contractor.

Thales Alenia Space as Prime Contractor 		Thales Alenia Space as Sub-Contractor 	
ROSE-L - Satellite	DON-I (<i>TAS-I Rome</i>)	CO2M - 3 Payload Instruments	DOS-F (<i>TAS-F Cannes</i>)
CIMR - Satellite	DON-I (<i>TAS-I Rome</i>)	CRISTAL - IRIS Instrument	DOS-F (<i>TAS-F Cannes</i>)
CHIME - Satellite	DOS-F (<i>TAS-F Cannes</i>)		

- / DON-I = Domain “Observation / Navigation” - Italy
- / DOS-F = Domain “Observation / Science” - France

• Copernicus LCA Activities / Performed Work

As Prime Contractor



Tailoring of "ESA LCA Guidelines" for B2/C phases → "LCA Practical Guidelines for Phases B2/C"

- LCI data:
 - Characterization of availability and maturity
 - Identification of sources and collection method
- Analysis of "ESA LCA Guidelines" applicability to B2/C phases
- Tailoring of potentially most time consuming guidelines (DQR, Cut-Off), to allow their optimized implementation, effort-wise

Creation of an "ESA LCA Database User Manual", covering:

- > Synchronization and configuration management of stakeholders LCA databases
- > Management of data confidentiality
- > Formalism and structure of datasets
- Interviews of stakeholders

As Sub-Contractor



Provision of preliminary LCI Data
(as per Prime Contractor questionnaire)

Copernicus LCA Activities / Forthcoming Steps

As Prime Contractor



Release of "LCA Practical Guidelines for Phases B2/C"

Release of "ESA LCA Database User Manual"

Implementation of "LCA Practical Guidelines for Phases B2/C", i.e.:

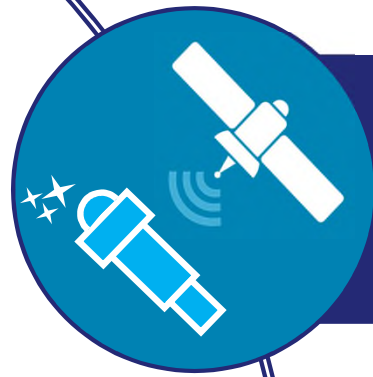
- Collection of LCI data from System Integrator and Equipment Suppliers
- Outsourced execution of modeling and LCIA
- Release of LCA Report

As Sub-Contractor



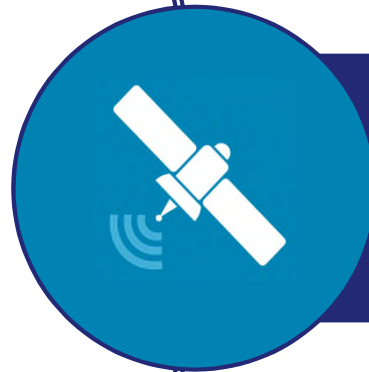
Provision of detailed LCI Data
(as per Prime Contractor questionnaire)

Copernicus LCA Activities / Main Encountered Challenges



Workload

Underestimation of required resources and budget, due to inexperience



Sub-Contractor Management

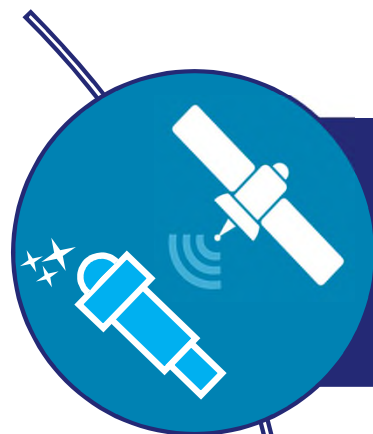
Inappropriate sub-contractors answer to LCA SOW SOC, due to LCA ignorance



SOW Requirements

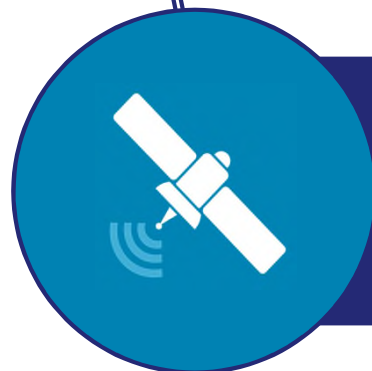
Late and “too complex” additional tailoring requirements from ESA

Copernicus LCA Activities / Foreseen Future Challenges



Data Collection

Involvement and efficiency of Equipment / Component Sub-Contractors

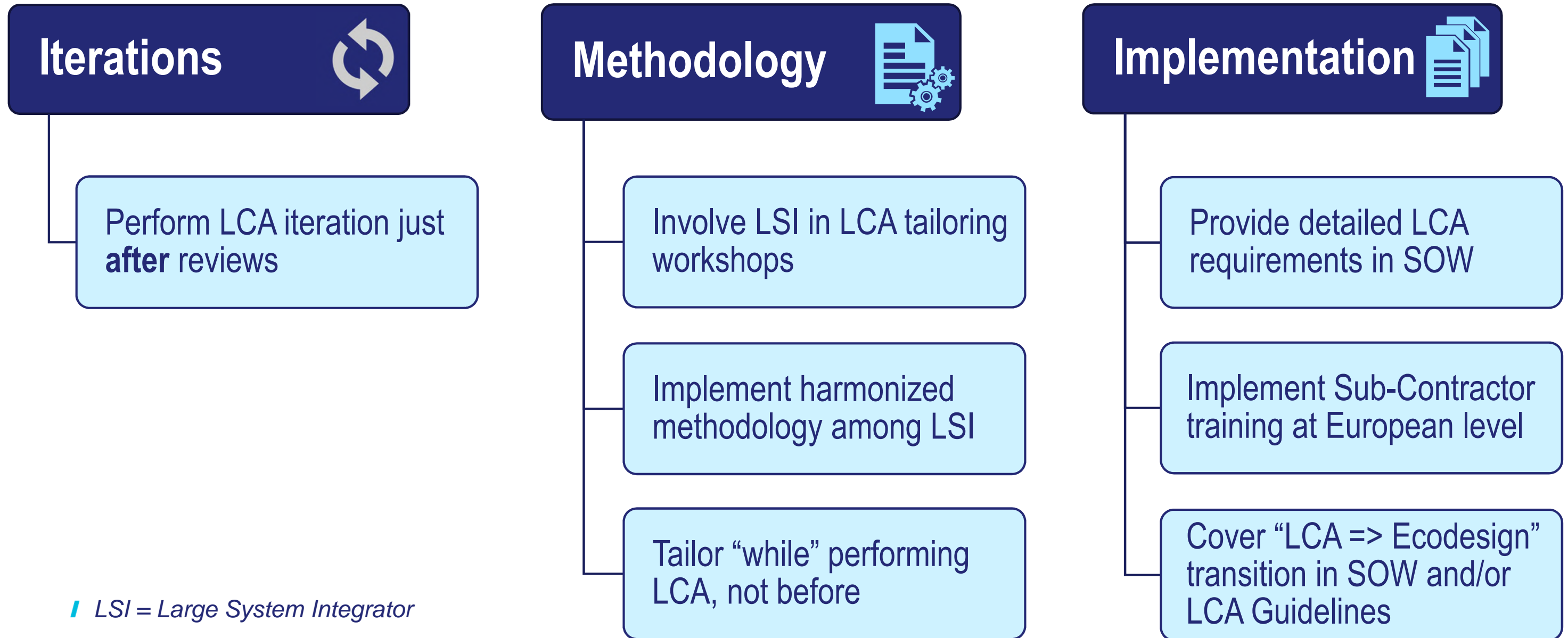


Management of Confidential Data



Database Synchronization

Copernicus LCA Activities / Improvement Suggestions



LSI = Large System Integrator

LOG OF CHANGES AND APPROVAL

Issue	Log of change - Description	Date
001	Creation	15 Sep 2021

Actors	Approval - Name and role	Date
Written by	M Giuliani / JL Reynaud	15 Sep 2021
Verified by	JL Reynaud	20 Sep 2021
Approved by	JM Payssé	20 Sep 2021