

ARTES 4.0 PLANNED ACTIVITIES SUMMARY TABLE (OPTICAL ACTIVITIES)

Activity Ref.	Title	Cost	Classification	Cost (K€) (Baseline)	Cost (K€) (Request)	Proc. Policy	Intended ITT issue quarter / intended ITT issue week	Closing date ITT	ITT (re-)issued	Status comment	originally approved in Work Plan
OPTICAL COMMUNICATION-SCYLIGHT											
SYSTEM/ NETWORK / PROTOCOLS											
System, Networking and Management											
3A.170	Optical feeder link site-diversity protocols for satellite constellation networks	500	B	500	0	C	Q4 2023				2023
3A.171	Optical communications in the 6G ecosystem	200	R	0	200	C	n/a				2023
Propagation											
3B.041	Assessment of reliable high data rate optical links under strong atmospheric turbulence conditions (SL.013) (re-issue)	200	B	200	0	C	Q4 2023			ITT to be re-issued	2020
3B.042	Demonstration of reliable high data rate optical links under strong atmospheric turbulence conditions (SL.015)	1,800	B	1,800	0	C	Q4 2023			proposed for cancellation	2020
SPACE SEGMENT - PAYLOAD											
Payload - System and Architecture											
5A.081	Demisability of critical components of optical communication terminals for satcom constellations in LEO	600	B	600	0	C	Q4 2023				2023
Antenna											
5B.221	Large rotation range, flexible pivot with hollow inner shaft	400	R	0	400	C	n/a				2023
5B.222	Coarse Pointing Mechanism (CPM) with 250mm aperture diameter	2,000	R	0	2,000	C	n/a				2023
RF Repeater and Signal Processing											
5C.480	ASIC/FPGA with 112 Gbps Optical I/Os	1,500	B	1,500	0	C1	Q4 2023				2023
Optical Repeaters and Photonics											
5F.014	Integrated photon sources for space based quantum telecommunications (SL.031) (re-issue)	750	B	750	0	C	Q4 2023		Y	ITT to be re-issued	2020
5F.018	WDM Laser Sources at 1064nm (re-issue)	1000	B	1000	0	C			Y	proposed for cancellation	2021
5F.019	Low-noise optical pre-amplifier at 1064nm (re-issue)	600	B	600	0	C			Y	awarded	2021
5F.020	WDM High-Power Optical Amplifier at 1064nm	2000	B	2000	0	C				proposed for cancellation	2021
5F.022	LEO / GEO Optical Switch Matrix 25x25	3000	B	3000	0	C			Y	proposed for cancellation	2021
5F.028	High extinction ratio amplitude modulators and pulse shaper electronics for quantum key distribution (QKD) (re-issue)	500	B	500	0	C1		13/12/23	Y		2022
5F.034	Quantum memory prototype for space (SL.054) (re-issue)	700	B	700	0	C			Y	negotiation	2022
5F.037	Computer Generated Holograms (CGH) for optical and quantum communication terminals	500	B	500	0	C1	Q4 2023				2023
5F.038	Lightweight onboard Forward Error Correction decoding for high data rate optical inter-satellite links	600	B	600	0	C	Q4 2023				2023
5F.039	High density optical fibre cable assemblies for photonic interconnections	500	R	0	500	C	n/a				2023
5F.040	High power pump laser modules for Erbium-Ytterbium doped fibre amplifiers	900	R	0	900	C1	n/a				2023
5F.041	Free-space coherent optical link for time and frequency transfer	1200	B	1200	0	C	Q4 2023				2023
5F.042	Development of a standardised process for photonic integrated circuits (PICs) and electronics integration technology	900	R	0	900	C1	n/a				2023
Optical Communication Terminals and Equipment											
5G.003	Space qualified faint pulse laser source for quantum key distribution (SL.012)	1300	R	0	1300	C	n/a				2020
5G.027	Wavelength division multiplexer (WDM) and de-multiplexer at 1550 nm for space applications (re-issue)	500	B	500	0	C			Y	negotiation	2022
5G.033	Aluminium mirrors for optical communications	400	B	400	0	C1				proposed for cancellation	2023
5G.034	Sun tolerant optical communication link acquisition and tracking	600	B	600	0	C		19/01/24	Y		2023
5G.035	Demonstrator for coherent free-space optical links with high spectral efficiency	600	B	600	0	C	Q4 2023				2023
5G.036	Space based links for the quantum internet	300	B	300	0	C1		15/12/23	Y		2023
5G.037	Multicast Optical Head Unit	2000	B	2000	0	C	Q4 2023				2023
5G.038	Optical communication telescope system with Tx/Rx separation	500	R	0	500	C	n/a				2023
GROUND SEGMENT											
TT&C/Satellite Ground Equipment and Support											

ARTES 4.0 PLANNED ACTIVITIES SUMMARY TABLE (OPTICAL ACTIVITIES)

Activity Ref.	Title	Cost	Classification	Cost (K€) (Baseline)	Cost (K€) (Request)	Proc. Policy	Intended ITT issue quarter / intended ITT issue week	Closing date ITT	ITT (re-)issued	Status comment	originally approved in Work Plan
6A.086	Development of a simulator for the assessment of atmospheric scintillation at optical frequencies	300	B	300		C		14/12/23	Y		2023
Ground Network Operation Control and Gateway											
6B.111	Turn key quantum communication optical ground station controller for self-sufficient stations	900	R	0	900	C1	n/a				2023
6B.113	Machine learning algorithms for network management in optical satellite constellations	400	B	400	0	C	Q4 2023				2023
6B.114	Autonomous laser safety system for optical feeder link supporting optical and quantum communications (re-issue)	500	B	500	0	C1		21/12/23	Y		2023
Optical Ground Stations and Equipment											
6C.007	Reliable LEO Optical Feeder Link demonstration (re-issue)	2500	B	2500	0	C			Y	ITT to be re-issued	2021
6C.008	Aircraft detection system for Optical Ground Stations (re-issue)	500	B	500	0	C			Y	negotiation	2021
6C.013	Holomonadas observatory upgrades for optical and quantum communication (re-issue)	450	B	450	0	C			Y	ITT to be re-issued	2021
6C.015	Optical ground beacon laser system (re-issue)	700	B	700	0	C2			Y	negotiation	2022
6C.018	Lunar optical communication photon counting receiver	3,000	R	0	3000	C2	n/a				2022
6C.019	Polychromatic laser guide star system for optical feeder-links	2,000	B	2000	0	C2			Y	proposed for cancellation	2022
6C.020	Atmospheric turbulence effect mitigation by secondary mirror actuation	2,000	R	0	2000	C1	n/a				2022
6C.034	Optimal control algorithms for Adaptive optics in Free Space Optical Communications	800	B	800	0	C		24/11/23	Y		2023
6C.035	End-to-end Adaptive Optics bi-directional modelling tool for optical feeder links	300	B	300	0	C1	Q4 2023				2023
6C.036	Angular building wobble compensation for optical ground stations	700	R	0	700	C	n/a				2023
6C.037	Avalanche photodiodes for low-noise applications in Optical/Quantum communications at 1550nm	500	B	500	0	C1			Y	negotiation	2023
6C.038	High bandwidth laser source for reliable long term operation in gain-switching mode for quantum communication	400	B	400	0	C1	Q4 2023				2023
6C.039	Atmospheric Single-Source Turbulence Profiler for Both Night and Daytime Conditions	750	B	750	0	C	Q2 2024				2023
6C.040	Novel cost efficient laser system for Sodium guide star generation	500	B	500	0	C1		30/11/23	Y		2023
6C.041	Wavefront sensor for operation under strong atmospheric turbulence	500	B	500	0	C1	Q4 2023				2023
6C.042	Optical turbulence mitigation system based on spatial mode recombination	600	B	600	0	C1	Q4 2023				2023
6C.045	Makerspace for Hungarian optical ground infrastructure	200	B	200	0	C	Q4 2023				2023
TOTAL (k€)		45,050		31,750	13,300						

(*) R activity for which a request for initiation has been received

Please note: **Baseline (B)**: these activities will be automatically initiated.

On Delegation Request (R): these activities will only be initiated on the explicit request of at least one delegation.

Procurement Policy definitions:

C : Activities in open competition without any further restrictions.

C1: Activities in open competition limited to non-Large System Integrators (LSIs) as prime. LSIs are allowed to participate as sub-contractors.

C2: Activities in open competition, where a significant participation of non-LSIs is requested.

C3: Activity restricted to SMEs & R&D organisations, preferably in cooperation.

C4: Activities in open competition, subject to the SME subcontracting clause.

https://www.esa.int/About_Us/Business_with_ESA/Small_and_Medium_Sized_Enterprises/Opportunities_for_SMEs/Procurement_policy_on_fair_access_for_SMEs_-_the_C1-C4_Clauses