

Cyprus spacE sectoR dEvelopment Study (CERES)

ESA contract 4000128594/19/NL/SC

20th September 2022



- This presentation will provide a summary of the outputs stemming from the CERES feasibility study.
- The CERES feasibility study outputs may be different to the ESA or Cyprus government positions.
- This presentation contains data or statistics that may be outdated in some areas.

To assess the development potential of Cyprus' industrial capabilities with potential in the space sector, its technologies and readiness to collaborate with the European Space Agency:

- Task 1: Mapping of Cyprus Industrial Sector with Potential in the Space Sector
- Task 2: Potential Development Scenarios
- Task 3: Roadmap of Cyprus Space Sector Development
- Task 4: Space Policy Recommendations

- Task 5: Cyprus Space Companies Web Database
- Task 6: Current and Future Needed Infrastructure Database

- Contractors: EMTECH and Geomatics
- Contract kick-off: 01 November 2019
 - initial contract duration: 9 months
 - Contract Change Notice for 2 additional tasks: 4 months
- Contract closure: Summer 2022



Task 1: Mapping of Cyprus Industrial Sector with Potential in the Space Sector

Table 6-1: Entities with interest in space sector

	Total Entities	Governmental	Industrial	Academic	Public Outreach
Contacted	101	24	58	13	6
Participated	29	3	18	5 ¹	-

Note:

Due to the low response rate to the survey, the weight of the CERES conclusions shall be assessed carefully.

Task 1: Mapping of Cyprus Industrial Sector with Potential in the Space Sector

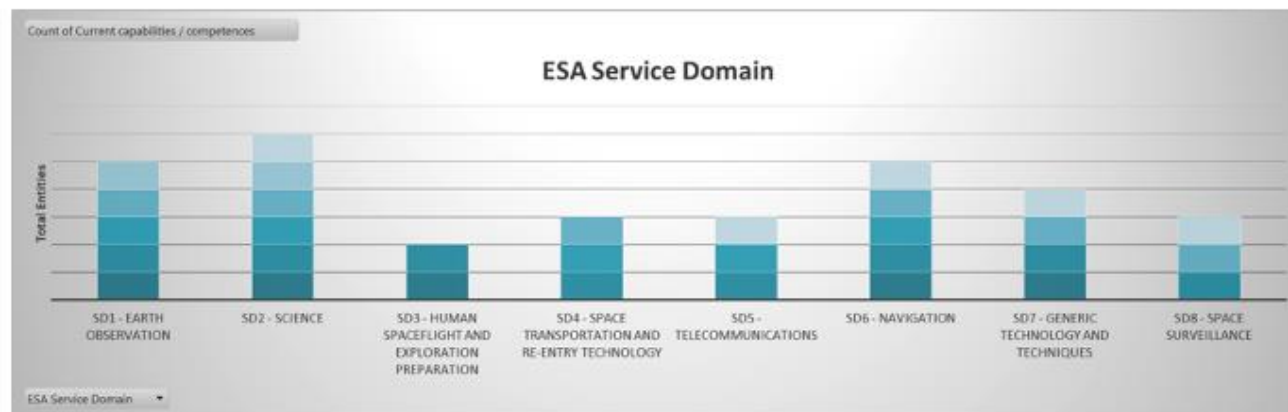
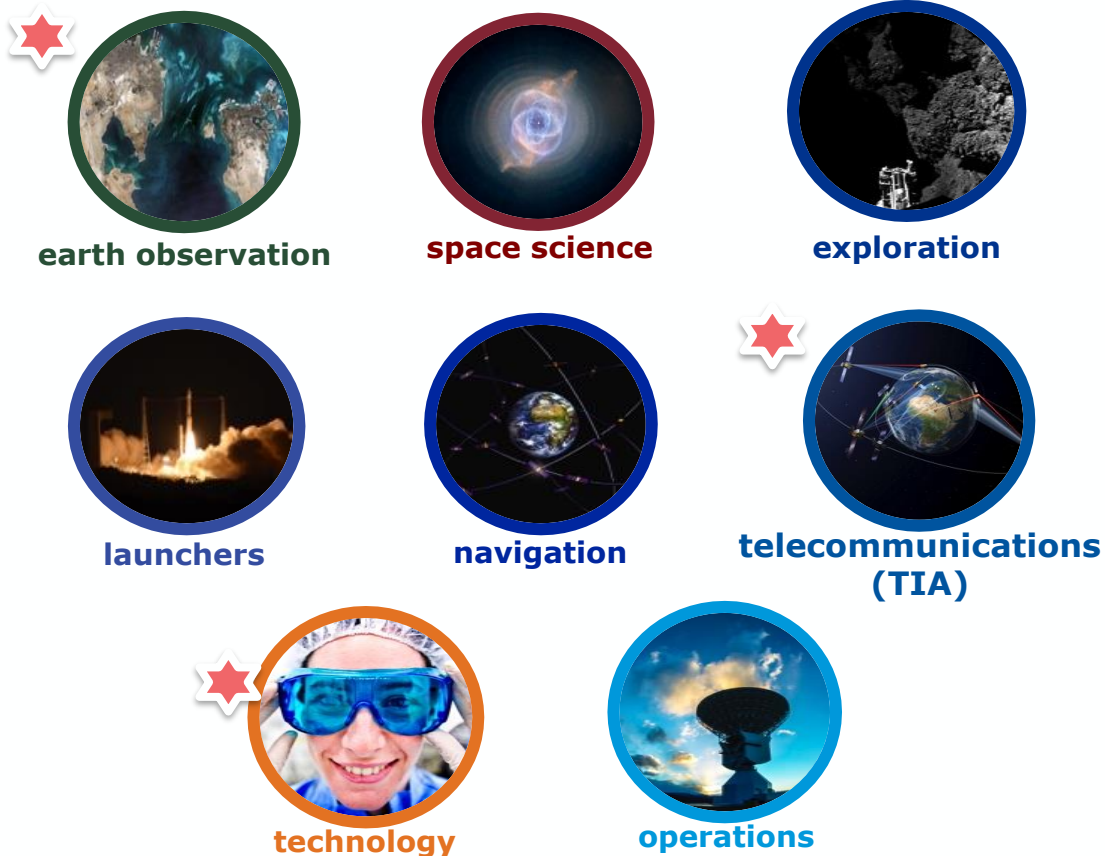


Figure 6-1: Academia ESA Service Domain Capabilities

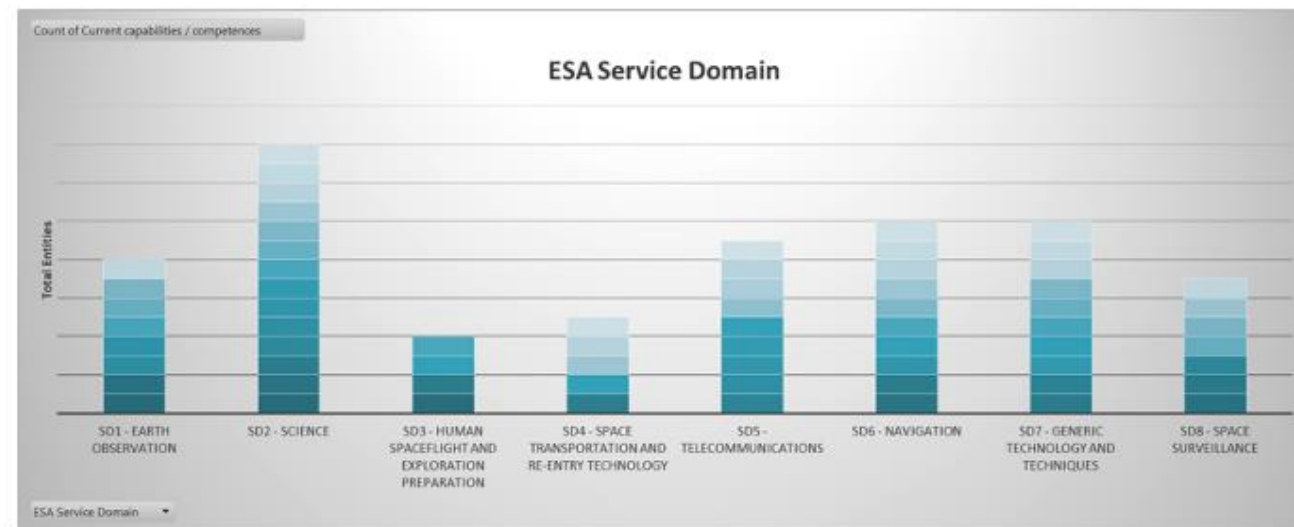


Figure 6-2: Industry ESA Service Domain Capabilities

Note: Discrepancy to data from PECS calls, where EO, Technology and telecommunication activities (★) dominate.

Task 1: Mapping of Cyprus Industrial Sector with Potential in the Space Sector

Meeting	Purpose	Companies attending	Date(s)	Location
Workshop #1	Half-day Workshop for Satellite Communication & Navigation (GNSS)	EMTECH and Communication & Navigation companies in Cyprus	21/10/2020	Nicosia
Workshop #2	Half-day Workshop for Earth Observation	GEOMATICS and Earth Observation companies in Cyprus	20/10/2020	Nicosia

- ESA programme overviews (Earth Observation and Technologies)
- Networking with LSIs
- PECS programme experience exchange

Tasks 2 and 3: Potential Development Scenarios & Roadmap of Cyprus Space Sector Development

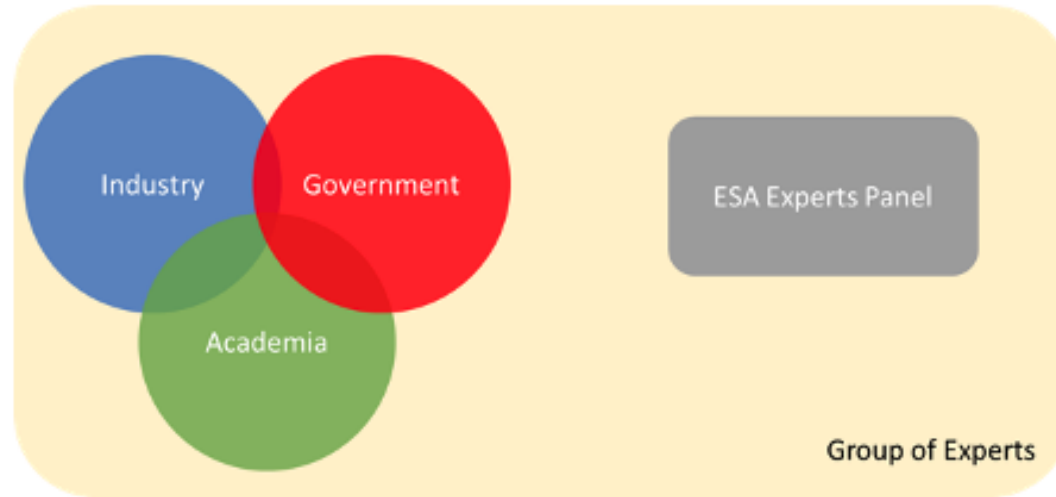


Figure 9-1: Group of Experts

Focus areas:

- Ecosystem & Technology
- Earth Observation
- Telecommunications

- Analyse space-related business scenarios using the SWOT analysis tool
- Action plan

Tasks 2 and 3: Potential Development Scenarios & Roadmap of Cyprus Space Sector Development

Ecosystem & Technology GoE

GoE's conclusions, actions & way-forward:

- increase in technology readiness level (TRL) needed
- improve infrastructure for space R&D
- increase in cooperation needed (nationally and internationally)
- strengthen workforce (i.e. create stimulating industrial environment with incentives to avoid brain-drain)

Table 9-1: Ecosystem GoE Key Members

Name	Entity	Phone No.	E-mail
Andreas Ioannides, Managing Director	AAI Scientific Cultural Services Ltd.	+357 22 460228	a.ioannides@aaiscs.com
Nikolaos Koutras, CEO	ADDITESS – Advanced Integrated Technology Solutions & Services Ltd.	+357 22 285102	management@aditess.com
Vasilis Drakonakis, Managing Director	AmaDema – Advance Material Manufacturing Ltd.	+357 22 262280	vassilis@amdmcposites.com
Nikolaos Livanos, Co-Founder	EMTECH Space P.C. (CY) Ltd.	+357 24 255501	nikolaos.livanos@emtech.global
Panayiotis Philimis, CEO	Cyprus Innovation & Research Centre	+357 22 282828	p.philimis@cyric.eu
Savvas Loizou, Associate Professor - Department Chair	Cyprus University of Technology	+357 25 002165	savvas.loizou@cut.ac.cy
Andreas Efstathiou, Vice Rector	European University of Cyprus	+357 22 713188	a.efstathiou@euc.ac.cy
George A. Danos, President	Cyprus Space Exploration Organisation	+357 22 357700	george@space.org.cy

Tasks 2 and 3: Potential Development Scenarios & Roadmap of Cyprus Space Sector Development

Earth Observation GoE

GoE's conclusions, actions & way-forward:

- maximize use of EO data and development of downstream applications
- increase in cooperation needed
- strengthen workforce (i.e. create stimulating industrial environment with incentives to avoid brain-drain)
- exploit geographical position and climate

Table 9-3: EO GoE Key Members

Name	Entity
Prof. Diofantos Hadjiimitsis, Managing Director of ERATOSTHENIS Centre of Excellence	Cyprus University of Technology
Prof Apostolos Sarris	University of Cyprus
Prof Petros Christou	Frederick University
Prof Julia Georgi	Neapolis University
Dr Kyriakos Themistocleous, Member of Executive Council	Cyprus Scientific & Technical Chamber (ETEK)
Mr Stelios Zervos	Ministry of Transport, Communications and Works – Public Works Department
Mrs Simone Papakostandinou	Cyprus Agricultural Payments Organisation (COAP)
Mr Heracles Papadopoulos	Ministry of Defence
Mr Lavrendios Vasiliades	Department of Fisheries and Marine Research
Mr Georgios Vassilas	Cyprus Land and Survey Department
Mr Nikolaos Koutras, CEO	ADDITESS – Advanced Integrated Technology Solutions & Services Ltd.
Dr Skevi Perdikou, Senior Engineer	Geofem
Mr Georgios Georgiou, CEO	Novatex Solutions
Mr Sotiris Alexandrou, Head of Satellite Systems & Services	Cyprus Telecommunication Authority (CYTA)
Mr Marcello Coradini, CEO	Space Systems Solutions – S3

Tasks 2 and 3: Potential Development Scenarios & Roadmap of Cyprus Space Sector Development

Telecommunications GoE

GoE's conclusions, actions & way-forward:

- Maximize use of existing satellite communication infrastructures
- enhance existing infrastructures
- strengthen workforce (i.e. create stimulating industrial environment with incentives to avoid brain-drain)

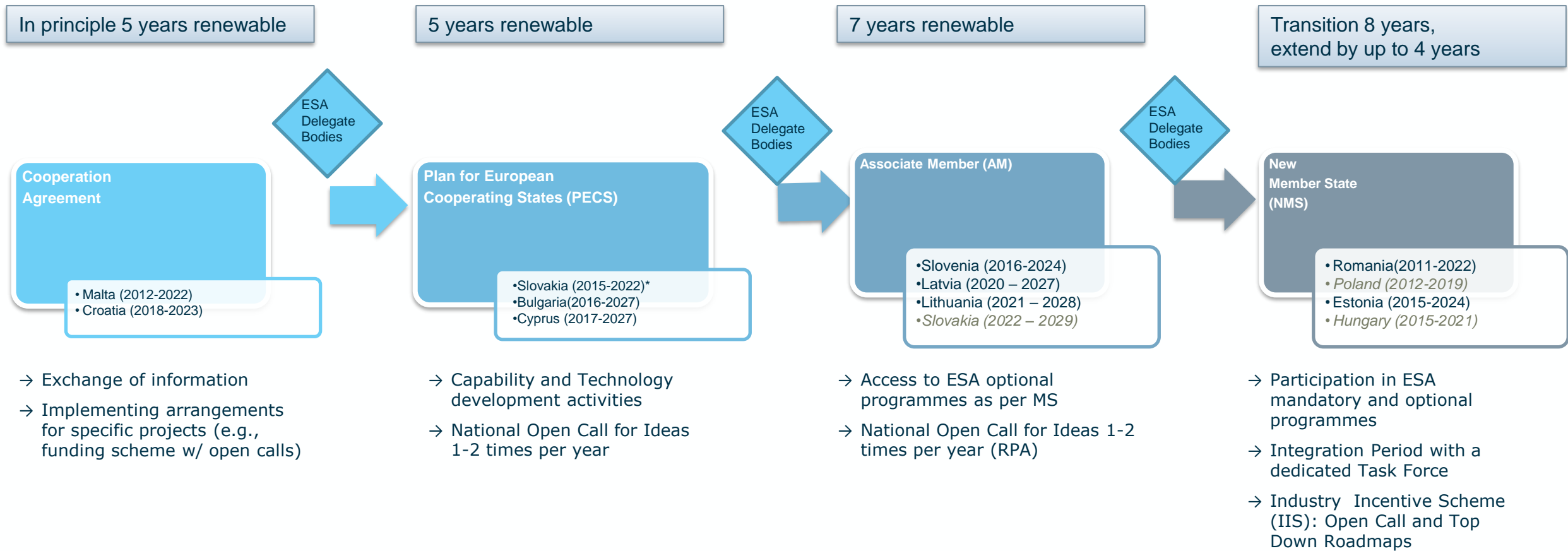
Table 9-5: Telecoms GoE Key Members

PARTICIPANTS		
ENTITY	NAME	EMAIL
Avanti HYLAS 2 Cyprus Ltd	Mr. <u>Marios Fotiou</u> , Director of Engineering	marios.fotiou@avanticyprus.com.cy
Cyprus Telecommunication Authority [CYTA]	Dr. <u>Sotiris Alexandrou</u> , Head of Satellite Systems & Services	sotiris.alexandrou@CYTA.com.cy
Hellas Sat Consortium Ltd.	Mr. <u>Kendeas Karantonis</u> , Hellas Sat 4 Program Manager	k.karantonis@hellas-sat.net
EMTECH Space P.C. (CY) Ltd.	Dr. <u>Maria Seimeni</u>	maria.seimeni@emetch.global
European University of Cyprus	Prof. Konstantinos <u>Katzis</u> , Deputy Dean	k.katzis@euc.ac.cy
Frederick University	Simos Nikolaou, Associate Professor	eng.ns@frederick.ac.cy
University of Cyprus	Stavros <u>Iezekiel</u> , Head of EMPHASIS Research Centre	iezekiel@ucy.ac.cy

Note: The CERES feasibility study outputs may be different to the ESA or Cyprus government positions.

- Development of national space programme and strategy, covering:
 - Public Outreach
 - Entrepreneurship
 - Infrastructure
 - Flagship Project
- ESA Membership

PECS/AM/NMS Countries and their status



*PECS extended in preparation to AM (Mar 2022 Council)

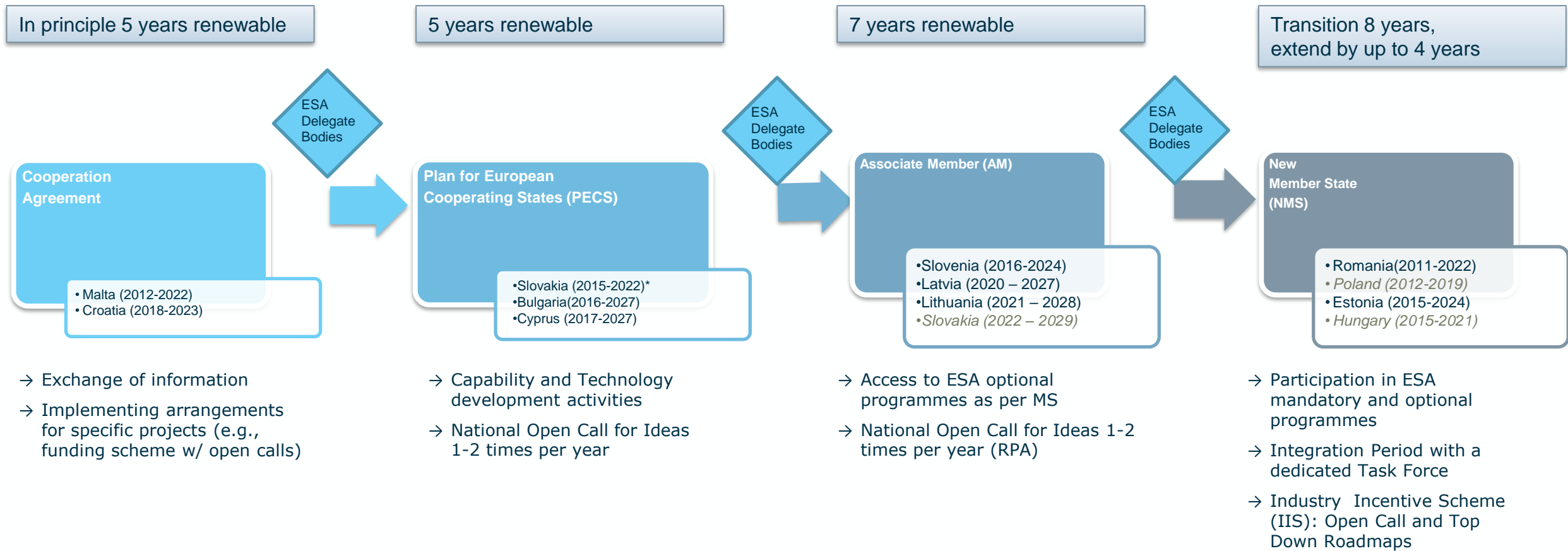


Cypriot Government has expressed clear interest to move to Associate Membership when ready.

- Change of status is dependent on acceptance by all ESA Member States, based on factual reporting of PECS results
- Change of status needs to have clear benefit to Cyprus and ESA
- Entities in Cyprus need to be demonstrably able to compete (and win) in optional programmes
- There needs to be sufficient 'depth' of capability and competences (and available funding!) to justify optional programme subscription
- There will be a second joint country report in 2024.

- Increase the cooperation and links between Cypriot industrial entities and potential customers of Cypriot entities with entities in ESA Member States and other EU countries: this is considered essential for sustainable business and getting into bid consortiums
- Finish (successfully and on time) the activities you win: Capability in Country Report is demonstrated through **finished** contracts only.
- Focus on developing mature recurring products and services that can be commercially exploited.
- Leverage the investments coming from the EU related to EO applications.
- Develop higher education courses that address topics relevant to space engineering and local industry in order to help secure sufficient local highly qualified workforce.

PECS/AM/NMS Countries and their status



*PECS extended in preparation to AM (Mar 2022 Council)



Task 5: Cyprus Space Companies Web Database



Legal Name	Founded	Type	Size	Website	Contact Email	Service Domain											
						SD1 - Earth Observation	SD2 - Science	SD3 - Human Spaceflight & Exploration Preparation	SD4 - Space Transportation & Re-entry Technology	SD5 - Telecommunications	SD6 - Navigation	SD7 - Generic Technology & Techniques	SD8 - Space Surveillance				
AAI Scientific Cultural Services Ltd	2004	Industrial	Small	www.aaiscs.com	info@aaiscs.com												
ADITESS Advanced Integrated Technology Solutions & Services Ltd.	2011	Industrial	Micro	www.aditess.com	management@aditess.com	✓						✓					✓
AI ZeroCaliber Ltd.	2017	Industrial	Micro	www.aizerocaliber.com	info@aizerocaliber.com										✓		
AMDM - Advanced Materials Design & Manufacturing Ltd.	2013	Industrial	Small	www.amdmcomposites.com	info@amdmcomposites.com		✓		✓						✓		✓
Avanti HYLAS 2 Cyprus Ltd.	2011	Industrial	Small	-	webenquiry@avantiplc.com					✓					✓		
Blue Cherries, Strategy & Communication	2018	Industrial	Micro	-	mvilanidou@gmail.com		✓										
Cy.R.I.C - Cyprus Research and Innovation Center Ltd.	2013	Industrial	Small	www.cyric.eu	info@cyric.eu	✓						✓					
Cyprus Agricultural Payments Organisation	2003	Governmental	Medium	www.capo.gov.cy	commissioner@capo.gov.cy	✓											
Cyprus Telecommunications Authority	1954	Industrial	Large	www.cytaglobal.com	global@cyta.com.cy							✓					
Cyprus University of Technology	2003	Academic	Large	www.cut.ac.cy	savvas.loizou@cut.ac.cy	✓	✓										
Department of Agriculture	1896	Governmental	Medium	www.moa.gov.cy	director@da.moa.gov.cy	✓						✓			✓		✓
Ecliptic Defence and Space Ltd.	2020	Industrial	Small	www.ecliptic-ds.com	maria.konstantinou@ecliptic-ds.com	✓	✓					✓			✓		✓
EDEX - Educational Excellence Corporation Limited	1981	Academic	Large	www.unic.ac.cy	research@unic.ac.cy	✓	✓		✓			✓			✓		✓
EMBIO Diagnostics	2007	Industrial	Micro	www.embiodiagnostics.eu	info@embiodiagnostics.eu		✓					✓			✓		
EMTECH SPACE P.C (CY) Ltd.	2016	Industrial	Small	www.emtech.global	info@emtech.global			✓	✓						✓		
European University - Cyprus Ltd.	2007	Academic	Large	www.euc.ac.cy	info@euc.ac.cy		✓					✓					
EUSEBTON Ltd.	2015	Industrial	Micro	-	secretaryuseb@gmail.com	✓	✓								✓		
Frederick University	1965	Academic	Large	www.frederick.ac.cy	info@frederick.ac.cy	✓						✓			✓		✓
G&T G Novatex Solutions Ltd.	1999	Industrial	Small	www.novatexsolutions.eu	info@novatexsolutions.eu	✓	✓								✓		
Geofem Ltd.	2007	Industrial	Small	www.geofem.com	info@geofem.com	✓	✓					✓			✓		✓
Geological Survey Department of Cyprus	1950	Governmental	Small	www.moa.gov.cy	director@gsd.moa.gov.cy	✓						✓			✓		✓
Hellas Sat Consortium Ltd.	2001	Industrial	Large	www.hellas-sat.net	k.karantonis@hellas-sat.net							✓					
IREROBOT Ltd.	2017	Industrial	Small	www.irerobot.com	evagoras.xydas@irerobot.com		✓										
Netfon Services Ltd.	2000	Industrial	Small	www.netfon.com.cy	info@netfon.com.cy												
Public Works Department	1960	Governmental	Medium	www.mcw.com.cy/pwd	szervos@pwd.mcw.gov.cy												
Semacq Systems	2008	Industrial	Micro	www.semacqsystems.com	innovate@semacqsystems.com		✓					✓			✓		
Sigint Solutions Ltd.	1996	Industrial	Small	www.sigintsolutions.com	info@sigintsolutions.com	✓						✓			✓		✓
SignalGenerix Ltd.	2004	Industrial	Small	www.signalgenerix.com	info@signalgenerix.com		✓					✓			✓		
The Cyprus Institute	2005	Academic	Medium	www.cyi.ac.cy	m.manoura@cyi.ac.cy	✓	✓										
University of Cyprus	2016	Academic	Large	www.ucy.ac.cy	info.emphasis@ucy.ac.cy		✓					✓					
						14	15	1	3	12	11	17	8				

<https://dec.dmrid.gov.cy>



Task 6: Current and Future Needed Infrastructure Database

Note: The CERES feasibility study outputs may be different to the ESA or Cyprus government positions.

Short term needs:

- Upgrade high computational facilities
- Expand capabilities in UAV & robotics
- Upgrade testing & characterisation facilities

Long term needs:

- Expand satellite fleet and ground systems
- Expand high computational facilities
- Develop specialised testing facilities

Note: ESA does not currently have a mandate for UAVs

Table 3-1: Needed Infrastructure

Infrastructure	Application Areas	Entities	Scoring
Anechoic Chamber	EMI/EMC Testing Antenna Testing RF Testing	Ecliptic DS EMTECH Semaq Sigint Signal GeneriX University of Cyprus	10
Clean Room	Microwave Testing PCB Assembly Photonics Testing Pre-Flight Testing	Ecliptic DS EMTECH Semaq Sigint Signal GeneriX University of Cyprus	10
Cluster of Multi-core machines	Artificial Intelligence Data Analysis	DSRI EUC	4.17
Satellite fleet and Ground systems	Telecommunications	Avanti HYLAS Hellas Sat	2.91
Structural Testing & Quality Assurance Lab for Space Applications	Additive Manufacturing Testing Quality Assurance	AMADEMA Ecliptic DS Signal GeneriX CyRIC CUT	7.91
UAV Laboratory	Prototyping UAV	ADDITESS CMMI CUT Cyl CyRIC	6.67
UAV Mobile Command & Control Centre	UAV	ADDITESS CUT Cyl CyRIC	4.58

THANK YOU FOR YOUR ATTENTION!

