

THE ESA NAVISP Programme: current status

Budapest – 9th November 2021

NAVISP PROGRAMMATIC LINES

Content	ELEMENT 1 innovation generate innovative concepts, techniques, technologies and systems linked to the PNT sector, along the entire value chain.	ELEMENT 2 Competitiveness ensure the readiness of the industry to effectively respond to emerging market opportunities by focusing its activities on products ready for the commercial or institutional market.	ELEMENT 3 Support Support to MS National Programmes
General principles for implementation of the activities	Competitive tender, 100% ESA funding on the basis of yearly work-plan	Continuous open call, unsolicited proposals, Thematic window, ESA co-funding	Continuous open call, unsolicited proposals, Thematic window, 100% ESA funding
Lead for the definition of the activities	ESA via call for ideas, NAVAC, stakeholders interactions, etc.	Industry	Member States

NAVISP Subscriptions CMIN16 and CMIN19

Phase 1			
ELEMENT	Country	Country Contribution	2021 e.c. (€)
OVERALL	Austria	1,875,472.92	
	Belgium	2,068,616.70	
	Canada	2,085,200.70	
	Czech Republic	2,290,949.21	
	Denmark	1,564,153.52	
	Finland	2,009,013.59	
	France	6,248,420.20	
	Germany	5,469,429.62	
	Ireland	1,042,600.35	
	Italy	2,606,500.87	
	Netherlands	1,040,804.88	
	Norway	5,221,337.24	
	Poland	2,189,460.73	
	Portugal	1,042,600.35	
	Romania	2,095,965.72	
	Spain	6,255,602.09	
	Sweden	740,246.25	
	Switzerland	2,602,981.75	
	United Kingdom	31,265,311.59	
	Total	79,714,668.30	

Phase 2			
ELEMENT	Country	Country Contribution	2021 e.c. (€)
OVERALL	Austria	1,029,010.88	
	Belgium	6,060,769.42	
	Czech Republic	3,086,945.25	
	Denmark	1,029,000.74	
	Finland	1,234,800.43	
	France	3,087,001.09	
	Germany	7,408,884.10	
	Greece	926,141.07	
	Hungary	3,087,013.16	
	Ireland	514,488.86	
	Italy	15,434,905.83	
	Netherlands	1,327,418.72	
	Norway	4,630,479.75	
	Poland	565,937.75	
	Portugal	1,543,466.59	
	Romania	3,087,015.58	
	Spain	5,144,888.62	
	Sweden	411,618.26	
	Switzerland	5,145,092.36	
	United Kingdom	20,580,022.34	
	Total	85,334,900.80	

Hungary in Phase 2
(2019 e.c.)

1 M€ to Element 1

1 M€ to Element 2

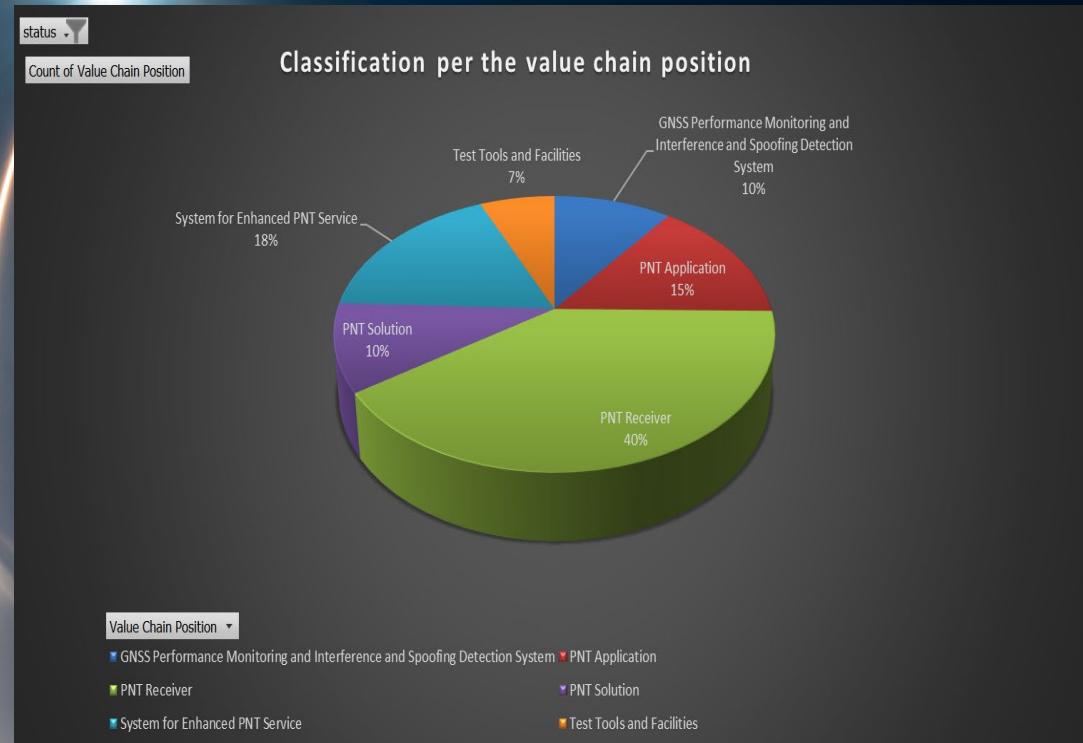
1 M€ to Element 3

NAVISP STATUS / The products

- **The projects cover a wide spectrum of products, all along the value chain:**

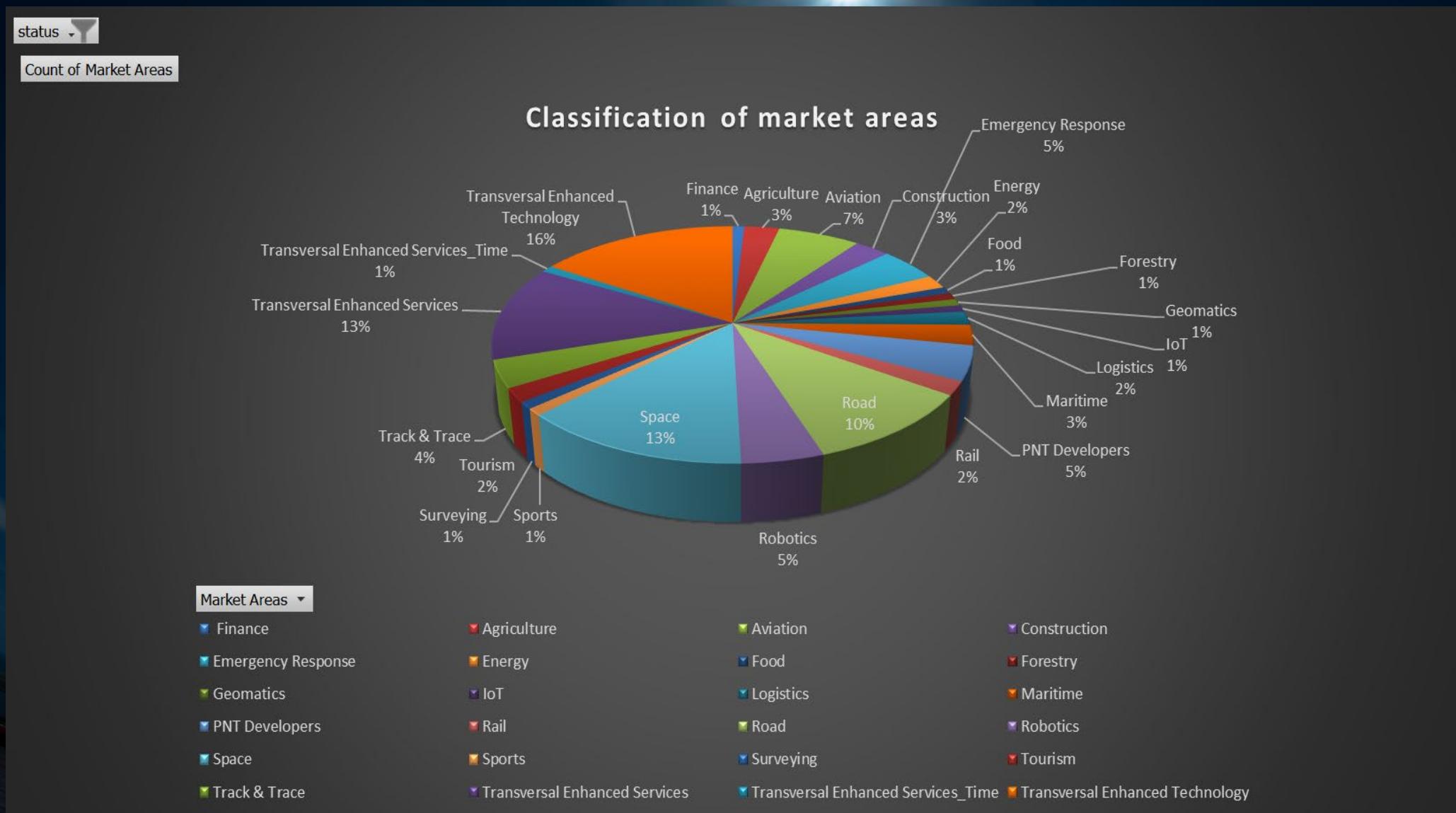
- **Receiver: antennas, hybrid techniques, multisystem receivers, for ground and space**
- **Transversal systems and services: GNSS Performance monitoring systems from space**
- **GNSS Enhanced services: High accuracy, authentication**
- **PNT applications in many sectors to improve PNT solution robustness, ubiquity, resilience**
- **Test facilities and simulators**

- **Projects of different sizes and durations can be accommodated**



200 activities!

NAVISP STATUS /The market areas



NAVISP STATUS /The Economic Operators

out of 150 companies of Element 2:

- 82 companies belong to other economic sectors than space.
- 68 companies have never worked with ESA before.
- 21 consortia composed by a mixture of public/private entities (large/SME/universities and research centres)
- 13 consortia with international partners



Space penetrating new sectors



Attracting new comers



Business networking among different stakeholders



internationalisation

HUNGARY IN NAVISP

Element	Contribution (€) 2019 e.c.	Contribution for Industrial Activities m.e.c (€)	Funds Committed m.e.c (€)	Other funds engaged m.e.c (€)	Remaining fund m.e.c (€)
Element 1	1,000,000	874,689	78,815	-	795,874
Element 2	1,000,000	874,631	1,035,397	-	160,766
Element 3	1,000,000	874,641	-	-	874,641

HUNGARY IN NAVISP

ID	Title	Company Involved	Role	Phase	Total Project cost(€)	Total Project Price to ESA (€)	Prime/subco Price to ESA (€)	Country	Status
EL1-035	Machine-Learning to model GNSS systems	Integricom	Prime	Phase 2	N/A	249,852	77,225	NL	Activity ongoing
		Iguassu	Subco	Phase 1			93,812	CZ	
		GeoX Kft.	Subco	Phase 2			78,815	HU	
ID	Title	Company Involved	Role	Phase	Total Project cost(€)	Total Project Price to ESA (€)	Prime/subco Price to ESA (€)	Country	Status
EL2-098	Galileo signals in Hungary	Infobex	Prime	Phase 2	669,390	535,397	521,366	HU	Activity ongoing
		FORGEO Ltd	Subco	Phase 2			14,031	HU	
EL2-109	ANTI-GNSS SP_S	SAGAX	Prime	Phase 2	625,000	500,000	400,000	HU	Activity ongoing
		Pro Environ Kft	Subco	Phase 2			100,000	HU	

HUNGARY IN NAVISP



EL1-035 – Machine-Learning to Model GNSS Systems

Status: On Going

Activity Code: NAVISP-EL1-035

Start date: 06/10/2020

Duration: 18 Months

assess usability of machine learning (ML) techniques in support of GNSS system simula

EL2-098 – Providing Galileo Signals for ground Navigation

Hungary Status: On Going

Activity Code: NAVISP-EL2-098

Start date: 01/06/2021

Duration: 12 Months

nation-wide GNSS RTK correction signal service in Hungary which involves Galileo GNSS delivered information. The proposed development focusing on the user segment – intend to bring tangible benefit to the customers of the surveyor, agricultural, UAV and automotive industry markets.



Megoldás a háttérből

HUNGARY IN NAVISP

EL2-109 ANTI-GNSS Spoofing Solution for autonomous vehicles

Status: On Going

Activity Code: NAVISP-EL2-109

Start date: 01/10/2021

Duration: 18 Months



Pro Environ Kft

anti-spoofing solution for GNSS signals in the form of a small antenna and related signal processing components and algorithms that will interface with the GNSS chipsets and control software platforms of autonomous vehicles

➤ Further interests under discussion (potential activities in EI3):

- **Integrated Galileo reference infrastructure and technology development for height modernisation (Satellite Geodetic Observatory)**
- **Innovation Lab for GNSS/PNT Applications (NI)**

Open Opportunities before CMIN22/EI1



- WorkPlan 2021
 - Currently open ITTs of WP2021
 - EL1-056: ADVANCED ALGORITHMS AND TECHNIQUES FOR RESILIENT TIME PROVISION: closing date 25/11/21
 - Intended ITT's

NAVISP ID	Title	Budget (K€)	ITT publication
EL1-052	Robust navigation of airborne autonomous systems with carrier phase of ARNS signals	600	Q4-21
EL1-054	Monitoring timing signals from space. A novel approach for a worldwide robust time and synchronisation capability	450	Q4-21
EL1-058	Demonstration of GNSS position bounding using satellite uplinks	450	Q4-21
EL1-060	Novel privacy preserving PNT processing techniques	450	Q4-21
EL1-061	Navigation payload demonstrator of future LCNS satellites	1000	Q4-21
EL1-062	Lunar surface PNT Beacon demonstrator	800	Q1-22
EL1-055	Attitude control of autonomous ships navigating in ports	600	Q1-22
EL1-059	Application of photonics technology for PNT user equipment	600	Q1-22

- Work Plan 2022: 8 ITT to be approved at PB NAV on 18 Nov 2021

- The tendering process in EL1:
 - ITTs issued on ESA-STAR according WorkPlan Calendar approved by Delegations
 - Letter of Support



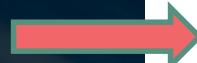
Element 2 : open opportunities

- Permanent open Call for Proposals **AO10516**
- Current thematic window on «**Assisted GNSS with Imaging sensor and 3D models** »
- Open call:
 - <https://esastarpublication.sso.esa.int/ESATenderActions/details/6883>
 - Thematic window, published as **Clarification 6** of the Open Call
- Process **initiated by the Tenderer**
- A procurement **two step** process with **Letter of Support**
- Contract awarded in **direct negotiation**
- Activities **co-funded** (according to size of the company, up to 80% for SME)
- **Wide spectrum** of products developed

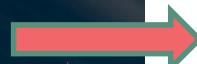


Element 3 : open opportunities

- Implemented through a permanent open Call for **Proposals AO 9427**
- Process initiated by **the Tenderer**
- A procurement **two step process with Letter of Support**
- Contract awarded in **direct negotiation**
- Activities **fully funded** (prime institutional)
- **Wide spectrum** of products developed
- **Current thematic window** on «Assisted GNSS with Imaging sensor and 3D models »



Open call: <https://esastar-publication.sso.esa.int/ESATenderActions/details/6691>



Thematic window, published as **Clarification 4** of the Open Call



- An opportunity for the penetration of space in other economic sectors : NAVISP is key to support the main challenges of our societies (*green mobility, autonomous transportations, drones and robotics, IoT*) and it is an instrument to implement the space economy
- The dedicated support offered by ESA facilitates the new entrants and the new comers in space

www.navisp.int for more projects and opportunities