

# THE ESA NAVISP Programme: current status

Budapest – 9th November 2021

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# NAVISP PROGRAMMATIC LINES

	ELEMENT 1	ELEMENT 2	ELEMENT 3
Content	<b>innovation</b>  generate innovative concepts, techniques, technologies and systems linked to the PNT sector, along the entire value chain.	<b>Competitiveness</b>  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.	<b>Support</b>  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
	<b>Italy</b>		<b>2,606,500.87</b>
	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
	<b>Total</b>		<b>79,714,668.30</b>

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
	<b>Hungary</b>		<b>3,087,013.16</b>
	Ireland		514,488.86
	<b>Italy</b>		<b>15,434,905.83</b>
	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
	<b>Total</b>		<b>85,334,900.80</b>

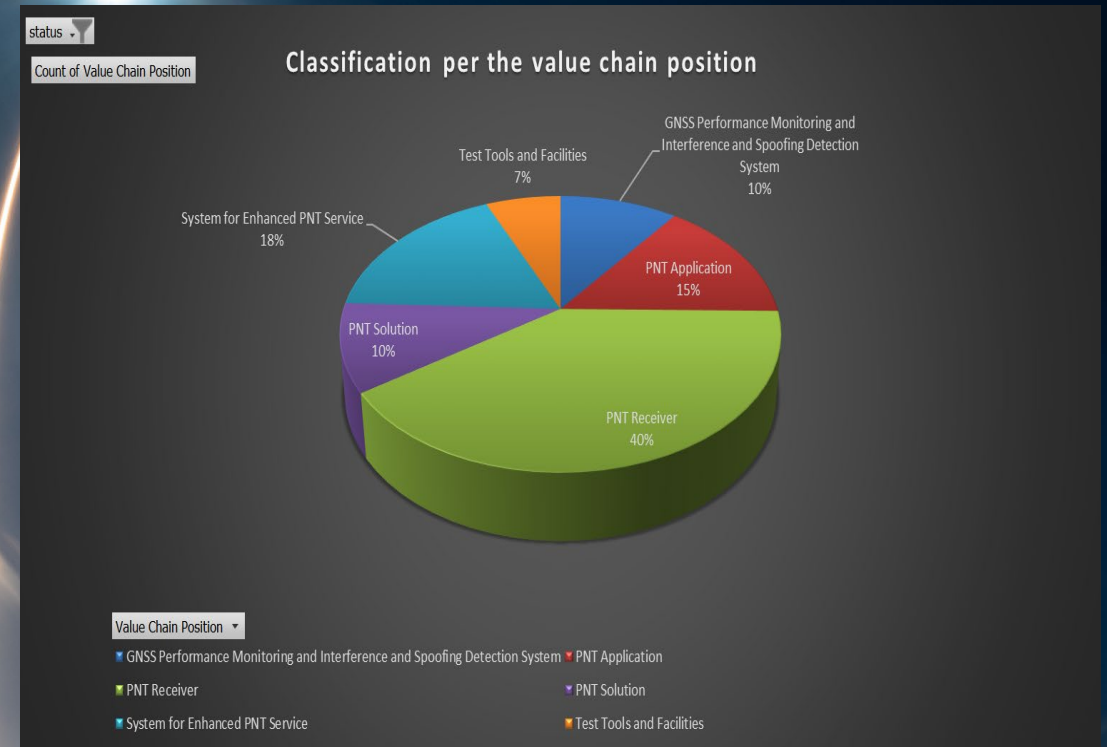
Hungary in Phase 2  
(2019 e.c.)  
1 M€ to Element 1  
1 M€ to Element 2  
1 M€ to Element 3



# NAVISP STATUS / The products

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

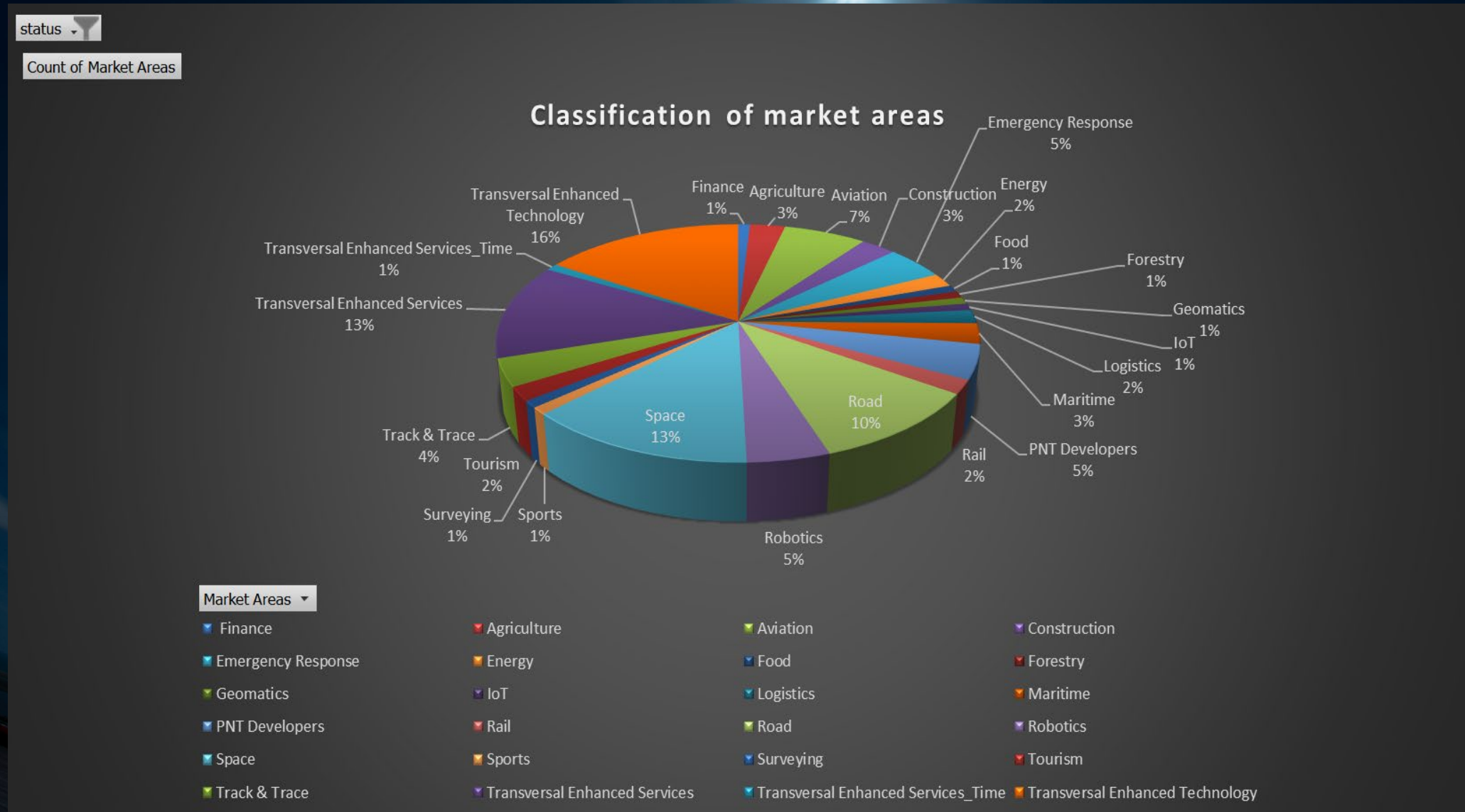
- **Receiver: antennas, hybrid techniques, multisystem receivers, for ground and space**
- **Transversal systems and services: GNSS Performance monitoring systems from space**
- **GNSS Enhanced services: High accuracy, authentication**
- **PNT applications in many sectors to improve PNT solution robustness,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



**200 activities!**

- Projects of different sizes and durations can be accommodated

# 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

Ph2					
Element	Contribution (€)	Contribution for Industrial Activities m.e.c (€)	Funds Committed m.e.c (€)	Other funds engaged m.e.c (€)	Remaining fund m.e.c (€)
	2019 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)**



- **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://esastarppublication.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](http://www.navisp.int) for more projects and opportunities