

Opportunities for applied R&D&I, industry projects implementation, prototyping and manufacturing with CASTRA

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2023

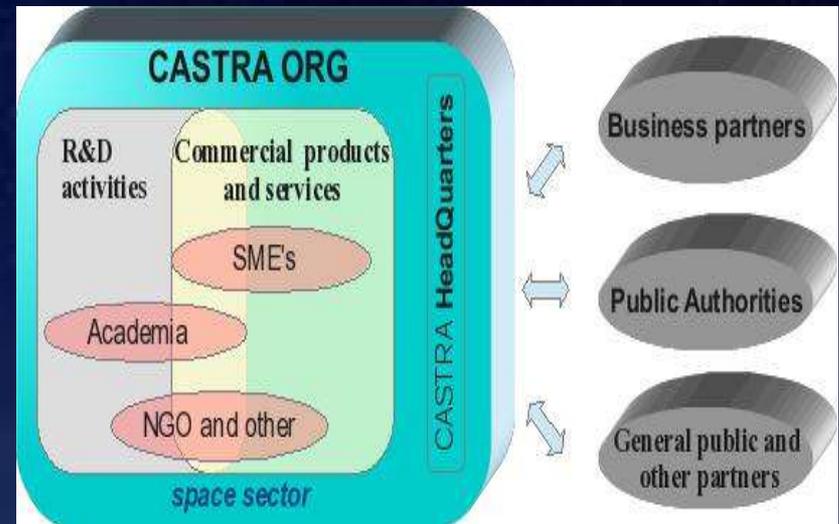




Who we are?

CASTRA is an independent NGO industry-driven consortia (cluster) of high-tech SME's, academic institutions and other interested stakeholders with expertise and capacity to jointly develop technologies, products and services in the aerospace domain and its applications serving society.

CASTRA's *vision* is to promote the research, innovation, technology and business developments in the aerospace sector to the benefit of society and to act as a major industry player.



“Together we are stronger” - Bulgaria's strategy to success

Examples of our high-tech SMEs industrial products and services with application in space projects

RADIATION HARD ASIC Design & Test

MEMS Sensors and actuators

GNSS tracking solutions

Moon base greenhouse simulation study

Embedded IoT systems

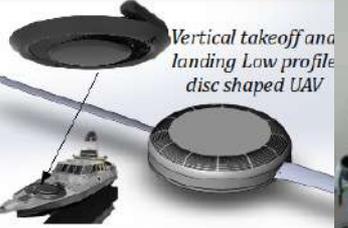
High-reliability digital electronic systems

Example of a federated modeling and simulations of space infrastructure & virtual reality tools

RF systems design



UAV systems



Vertical takeoff and landing Low profile disc shaped UAV

Satellite communication systems



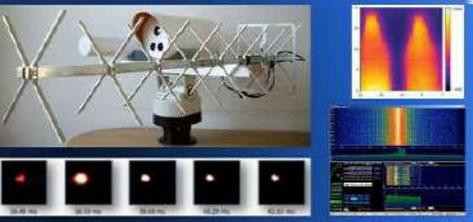
Jet UAV shooting targets

MW Antennas



carbon fiber products for automotive, space, robotics, consumer

Dron detection and counter measures system



FMCW panoramic drone radar



Multi-spectral camera prototype with integrated high-speed downlink



Small Sat platform & missions design. EO imaging and data comm payload development



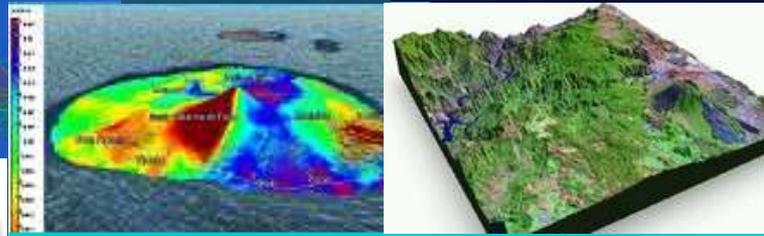
Design & manufacturing of specialized equipment and industrial systems



Software tools for multi-satellite systems analysis

AI & BigData tools for satellite based ICT systems

Multispectral and SAR remote sensing processing from air/space born sensors



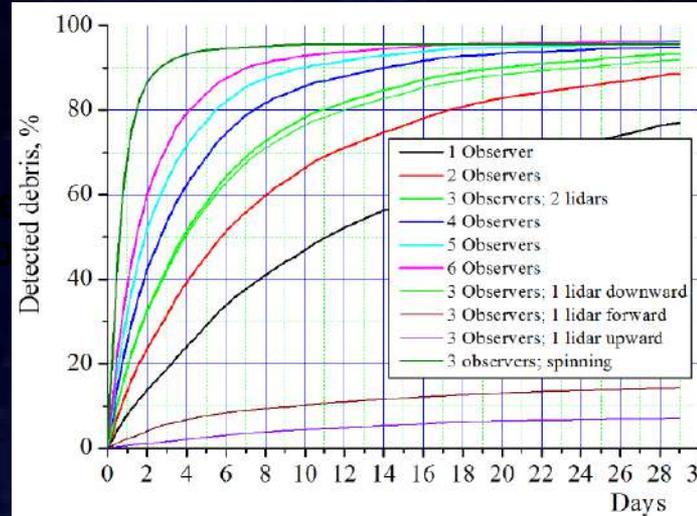
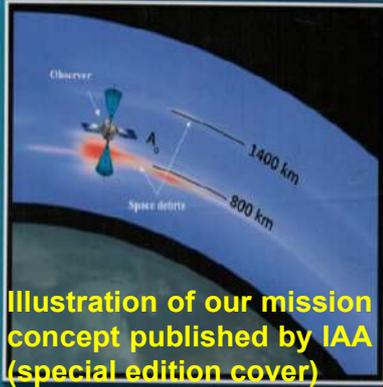
CASTRA's APPROACH TO COOPERATION

- ✓ **IDENTIFY MATCHING / COMPLIMENTARY BUSINESS VALUE CHAINS OF COMMON INTEREST**
- ✓ **ESTABLISH JOINT R&D AND B2B INTERACTION BASED ON THE CAPACITY AND EXPERTISE OF THE PARTNERS**
- ✓ **DEVELOP JOINT B2B AND B2C PROJECTS IN THE TECH VALUE CHAIN**
- ✓ **DEFINE AND IMPLEMENT A JOINT PRODUCT/SERVICE**

“Together we are stronger” - Bulgarians strategy to success

1) Multi-Satellite Based Space Debris Surveillance Mission

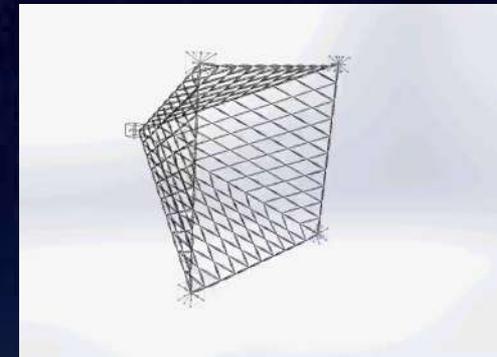
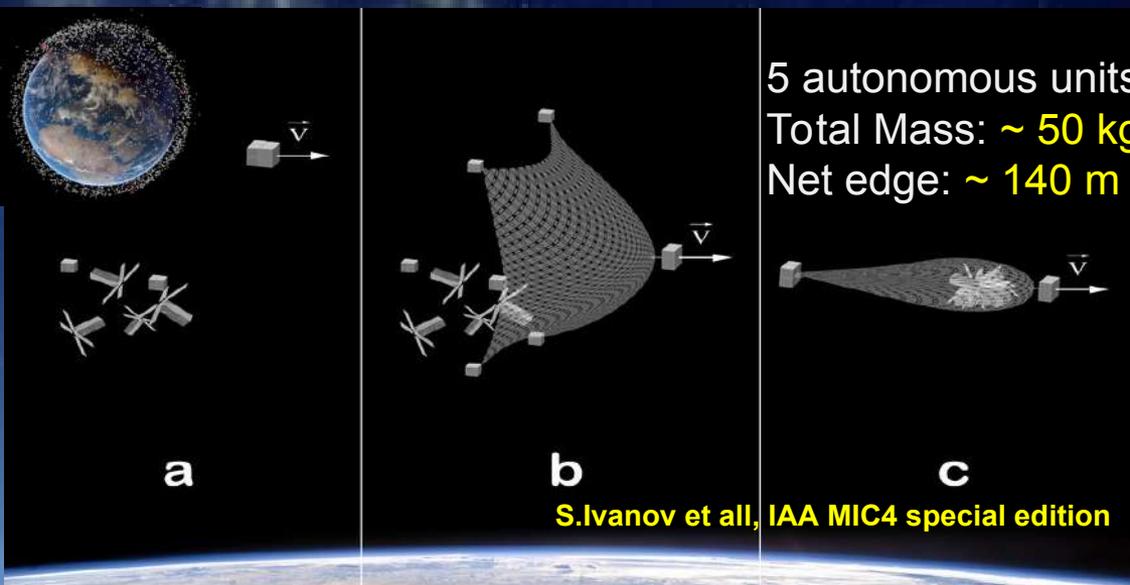
Innovative Ideas on Micro/Nano-Satellite Missions and Systems
 Report on
 - Deorbit Device Competition (DDC)
 - Mission Idea Contest (MIC4)



Lidar and multispectral meta material optical sensors (current ESA project) payloads for in-orbit space debris surveillance are in development. Mission design supported by EDA in 2016

The feasibility modeling study indicated the high efficiency of operating novel multi-satellite sensors for achieving high space debris detection coverage in short times.

2) Space Debris Removal using a small satellite swarm system



The model of the swarm ↔ net In-orbit behaviour and flight profile revealed the feasibility of the mission design concept

A journey of a thousand miles begins with a single step ! 千里之行，始於足下 (qiānlǐ zhī xíng, shǐ yú zúxià)

Laozi

LET US DO IT TOGETHER !



Neil Armstrong, the first man on the Moon, has never visited Bulgaria but the Bulgarian space engineer Prof. Widen Tabakoff was a key contributor to the Apollo program