

SERVICES ENABLED BY HIGH ALTITUDE PSEUDO SATELLITES (HAPS) COMPLEMENTED BY SATELLITES : Webinar



15/09/2017

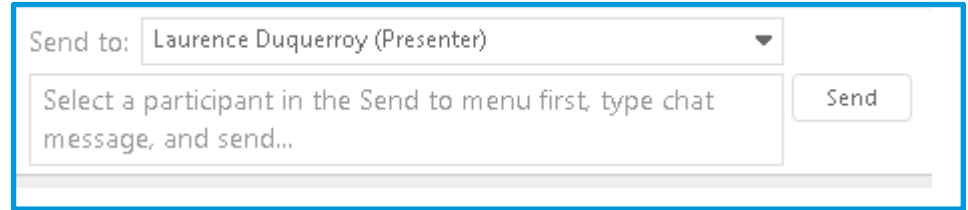
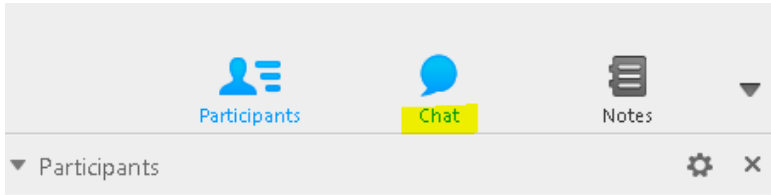
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AGENDA

- ESA overview
- What ESA Business Applications offers
- Background on HAPS applications
- ESA Initiative on HAPS
- HAPS Feasibility Study overview
- Eligibility
- Open Questions & Answers session

WELCOME BY ESA

- Welcome to participants
- Guidelines how/when to interact during the WebEx session:
 - Due to the number of attendees, **please keep your microphones muted at all times**
 - You can use the chat function anytime to **submit your questions to Laurence Duquerroy**. They will be addressed during the Q&A at the end of the Webinar



Purpose of ESA



“To provide for and promote, for exclusively peaceful purposes, cooperation among European states in **space research and technology** and their **space applications.**”

Article 2 of ESA Convention



ESA facts and figures

- Over 50 years of experience
- 22 Member States
- Eight facilities in Europe, about 2300 staff
- 5.75 billion Euro budget (2017)
- Over 80 satellites designed, tested and operated in flight





We enable and support the development of
business applications
that uses any space assets for services on Earth



What we offer

ESA Business Applications



FINANCIAL SUPPORT



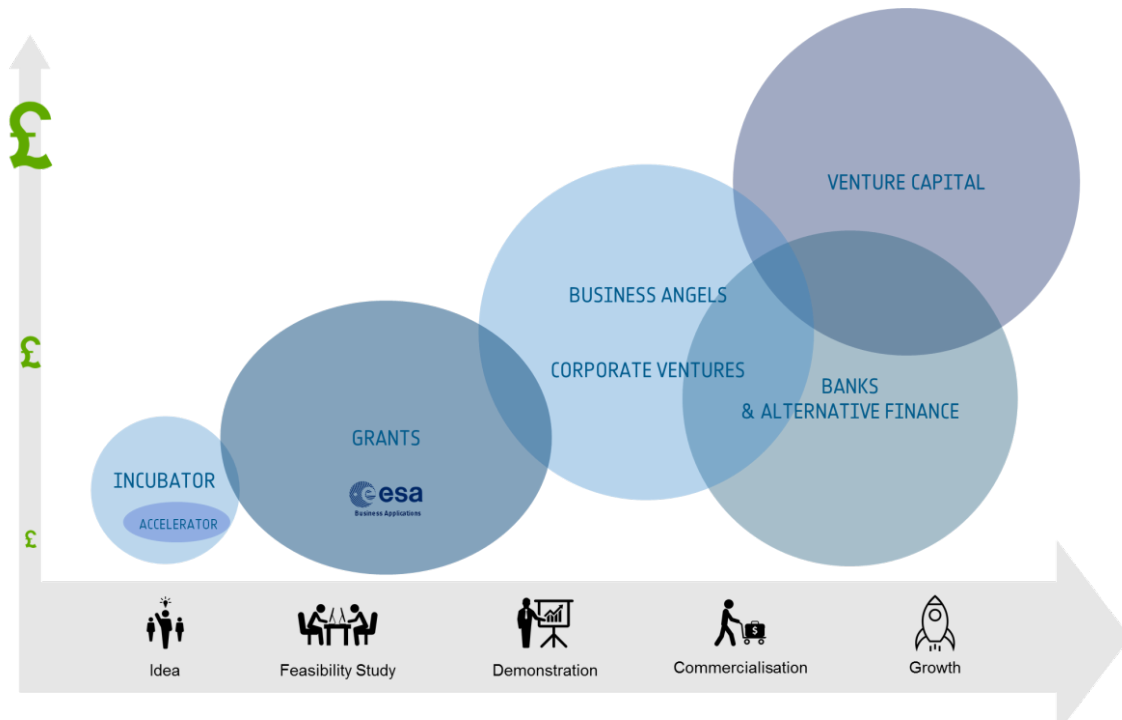
TECHNICAL & BUSINESS EXPERTISE



ESA BRANDING & PROMOTION

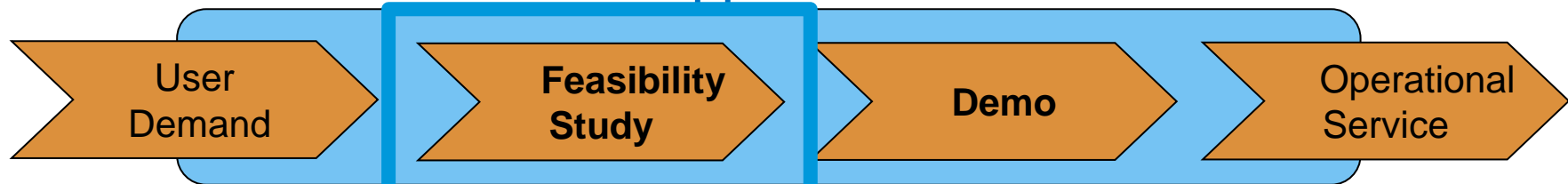


NETWORK & PARTNERSHIP BUILDING



Artes-apps.esa.int | European Space Agency

ESA Business Application involvement



User with demand but no contact to industry

Contact us:

- business.esa.int
- conferences
- ambassadors
- call for user ideas

Funding by ESA:

- 100% - ESA initiated activities in close collaboration with users / customers
- 50% ^{1/2} - Partner / industry initiated activities in close collaboration with users / customers
- 75% Kick-Start Activities: 60 k€ per activity theme calls by ESA

Funding by ESA:

- 50% ¹ - Partner / industry initiated activities in close collaboration with users / customers

Support etc.

- 1) Funding for SMEs up to 75%, decision of funding level by national delegations
- 2) For Feasibility Studies only: Work carried out by universities and research institutes and justifying no further commercial interest in the final solution may be funded 100% by the Agency



Feasibility Study
SERVICES ENABLED BY HIGH ALTITUDE PSEUDO
SATELLITES (HAPS) COMPLEMENTED BY SATELLITES



HAPS are aircraft positioned above 20 km altitude, in the stratosphere, for very-long-duration flights counted in months and even years. These unmanned aircraft may be airplanes, airships or balloons.

A number of HAPS development projects have recently reached more advanced development stages in particular in Europe, which indicates that first operational services could be expected by 2018 - 2023.

The use of HAPS is considered for a variety of applications, such as maritime and land surveillance, environmental monitoring, land border control applications, telecommunications, emergency/public safety communications, intelligent transportation systems, etc

HAPS could offer advantages and complementary applications over satellites, terrestrial infrastructures and Remotely Piloted Aircraft Systems (RPAS), at relatively low cost.

Significant uptake of HAPS is expected in the medium/long term (Market volume for HAPS is estimated to grow at 11% CAGR attaining over USD 7 billion by 2024 ¹)

¹ <https://www.gminsights.com/industry-analysis/high-altitude-platform-hap-market>

The European Space Agency has recently initiated a number of activities in view of preparing an ESA programme for HAPS for the next Council Ministerial in 2019.

These activities are aimed at getting an understanding of:

- technology gaps,
- user communities' requirements,
- market opportunities
- industry expectations
- technical and business risks
- regularity risks, constraints and needed actions
- etc

Next event : Workshop "Towards an ESA Stratospheric High Altitude Pseudo-Satellites (HAPS)" <http://www.haps4esa.org>

09 - 10 October 2017, NH Leeuwenhorst Hotel, Noordwijkerhout, The Netherlands

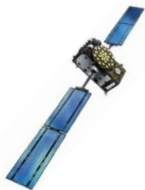
ENABLERS FROM SPACE

Satellite Communications (SatCom)



- to deploy and remotely command and control HAPS, offering a higher flexibility in their mission
- to relay remote sensing data collected by HAPS' payload to the ground
- to relay data between gateways and HAPS, when HAPS is used for providing broadband/broadcast connectivity

Satellite navigation (SatNav)



- for navigation purposes, relying on GNSS systems and possibly complemented with satellite augmentation systems such as EGNOS
- for geo-localising EO data collected by HAPS sensors

Satellite Earth Observation (SatEO)



- to provide an enhanced operational picture to end users, via the fusion of data collected by remote sensing satellites with data from HAPS

FS "SERVICES ENABLED BY HIGH ALTITUDE PSEUDO SATELLITES (HAPS) COMPLEMENTED BY SATELLITES" invitation to tender.



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Involved Users/Stakeholders



The European Maritime Safety Agency (EMSA), Frontex and the EU Satellite Centre (SatCen) have agreed to support the ESA study and provide user requirements and guidance for the services of their interest.

Application domains of interest



Maritime situational awareness and maritime surveillance: pollutions monitoring; vessel detection, monitoring and identification; support to search and rescue; support to Coast Guard Function activities by providing wide area coverage and extended endurance; HAPS for complementing RPAS and EO Satellite operations; HAPS relay communications networks for RPAS and EO satellite



Border surveillance in the pre-frontier area (including high seas, coastal areas & ports) for increased situational awareness, support to Search and Rescue (SAR) activities, evidence collection and early warning.



Support to ISR (Intelligence, Surveillance and Reconnaissance) activities, for border and maritime surveillance, treaty verification, cross-border crime monitoring, (Near Real Time) crisis monitoring and management of natural disasters (floods, wildfires, earthquakes).



Other examples of domains of application

Telecommunications applications

- Emergency communications
- Broadband Access
- Mobile internet- 5G type applications
- Communications for Intelligent Transportation Systems.

EO applications

- Air pollution monitoring
- Humanitarian operations
- Forestry, fisheries, etc, monitoring

Navigation applications

- GNSS Augmentation support
- Navigation support



- Identify, define and assess technically and economically potentially sustainable services relying on HAPS complemented by satellites
- Identify and reduce technical and commercial risks related to the implementation of these services
- Consolidate user /customers requirements and engage with relevant customers and other stakeholders for further involvement
- Propose recommendations and define a roadmap for service(s) implementation and demonstration, and prepare a potential follow-on demonstration project

Main requirements

- ➔ Services having the potential to be implemented operationally and become sustainable by 2018-2023 (preliminary business case identified).
- ➔ Involvement of at least one space asset (SatNav, SatCom, SatEO)
- ➔ Study focused on a reduced number of services (max.3)
- ➔ Contractor team should be interested in developing and commercialising considered services and have relevant capabilities. Involvement of potential service provider in the project team will be an asset.
- ➔ Customer/user-driven study (user involvement required)

- Bidders interested in studying services of interest for EMSA, Frontex or/and SatCen are asked to perform a pre-assessment of their needs and requirements in their proposal.
- Bidders may also target other application domains/services and engage with different potential users/customers (User letter(s) of interest to be provided in the proposal)

Tasks and key facts

Main tasks

- User/customer consolidation and user requirements definition
- Service and System Definition
- Viability analysis (economic and non-economic aspects)
- Implementation roadmap

100% funding, €200k

Duration: 9 months

Several parallel contracts possible





Funding eligibility

- Open to any organisation, residing in any of those states that subscribed to the ARTES IAP programme (to date: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxemburg, The Netherlands, Norway, Poland, Portugal, Romania, Sweden, Switzerland and the United Kingdom)
- **Letter of Authorisation from bidding team's national delegation(s) is needed and must be submitted as part of the Bidder's proposal. Without this letter, the proposal is not eligible.**
- The contacts of the National Delegations can be found at <https://business.esa.int/national-delegations>



Call for Proposals



- The Call for Proposals will be issued in **early Q4 2017** on **EMITS** (<http://emits.sso.esa.int/emits/owa/emits.main>)
- Follow updates in **EMITS** and **ESA business application website** <https://business.esa.int/> & subscribe to the newsletter!
- The proposal submissions shall make use of the new **ESA-STAR** system which will allow the **submission of proposals electronically**
- Companies shall register beforehand by completing the **online questionnaire** on the “ESA-STAR registration” website (<https://esastar-emr.sso.esa.int/>)
 - For general information about how to do it, see the “esa-star” Registration User Manual http://esamultimedia.esa.int/docs/business_with_esa/CG-EM-ORR-S-16_End_User_Manual_v1.2.pdf



OPEN QUESTIONS & ANSWERS SESSION

In case of further questions and comments (before tender opening), please contact Laurence.Duquerroy@esa.int



ESA Business Applications

→ SPACE IS OPEN FOR BUSINESS

<https://business.esa.int>

Laurence.Duquerroy@esa.int

<https://business.esa.int/funding/intended-tender/services-enabled-high-altitude-pseudo-satellites-haps-complemented-satellites>