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THROUGH TECHNOLOGY



# ARTES Applications ~ the benefits of the IAP Programme

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# Background: The need for and purpose of IAP



- Greater investment in and use of space services and applications are key to strategic and economic development across Europe:
  - The space industry is an important driver of economic growth and of high-tech skills and research.
- Growth can be achieved by combining space capabilities such as Satnav/EO/Satcoms and by using space services and applications in concert with ground-based capabilities – i.e. Integrated Applications (IAP).
- The aim of the IAP is to reinforce and extend the impact of the space sector by reaching out to new users with new, space-based services and applications.

# The Business Case for IAP: Potential for major growth (1)



1. ESA has assessed the potential for IAP in two ways:
  - Top-down assessment of growth prospects of global and European Satcoms, GNSS and EO markets; and
  - Bottom-up analysis of case studies addressing new IAP market opportunities.
2. The top-down analysis highlights the sustained >9% growth of downstream space services over the past decade but:
  - DTH-TV accounts for 65% and growth has slowed to ~5%;
  - There is big potential broadband Satcoms and rapid growth in location-based services based on GNSS;
  - EO shows promise for broader consumer and business markets but revenues are tiny compared to Satcoms (2% vs 76%).
3. Overall, there is a need to develop new markets and applications.

# The Business Case for IAP: Potential for major growth (2)



1. The bottom-up analysis analysed sectors that meet these criteria:
  - a. Huge near and long-term potential for space-based services;
  - b. Pan-European benefits;
  - c. New capabilities are needed to realise the opportunity and can be delivered by IAP.
  
2. Leading opportunities are:
  - **Offshore renewable energy**
  - **Carbon trading and forest certification**
  - **Insurance and re-insurance**

# The Business Case for IAP: Potential for major growth (3)



Also sectors with increasing potential for combining and coordinating space-generated and terrestrial data:

**Security**, e.g. for critical national infrastructure and civil protection; increased dual use between 'security' and 'civil' applications;

**'Smart' or 'connected' urban developments** ~ a wide variety of applications in the fast growing area of intelligent urbanisation. Viz. the TSB Raptor project for a single, integrated and data-orchestrating platform, which opens the possibility of combining and coordinating space-generated and terrestrial data.

# Intelligently connected cities



This occurs as tiny inexpensive sensors mounted on buildings and infrastructure as smart walls, carried in moving vehicles, integrated with wireless mobile devices such as telephones, and attached to other devices, continually collect data from the human activities around them and energy from the environment.

Ubiquitous networking allows input of information everywhere and distribution of the information to wherever it may be needed – to the edges of networks as well as to central points. Further, distributed memory and processing capabilities enable effective use of this information in local contexts.

# Most promising markets: Implications for IAP



1. Potential for major economic impact:
  - There are several very big growth markets for European industry, each with a clear need for new services and applications.
2. Timescales are appropriate for IAP, with a near-term need for services in 2-5 years and long-term potential for successive new applications.
3. Requirement is for integrated solutions:
  - These markets are already served to some extent but the identified needs are beyond the capabilities of individual space technologies.
4. Commercial users in these markets tend to be impatient with:
  - bureaucratic delays and artificial constraints;
  - “one size fits all” or space-centric approach;
  - engineering or science-led systems looking for a market;
  - being asked to commit resources for studies (but they will facilitate development of tailored solutions by SPs who know their needs).
5. Two surveys of industry participating in IAP support these findings:
  - Fine-tuning of IAP will enable greater market penetration.

## 1. Respondents' views state that:

- “there is enormous potential” for IAP as “an applications programme that lowers the barriers for potential users... to enter the market;”
- “the requirement to deliver a sustainable service is sound and should be retained;”
- “the mix of open-call and ESA-initiated tenders is good and should continue, though with slightly more ESA-initiated activities”.

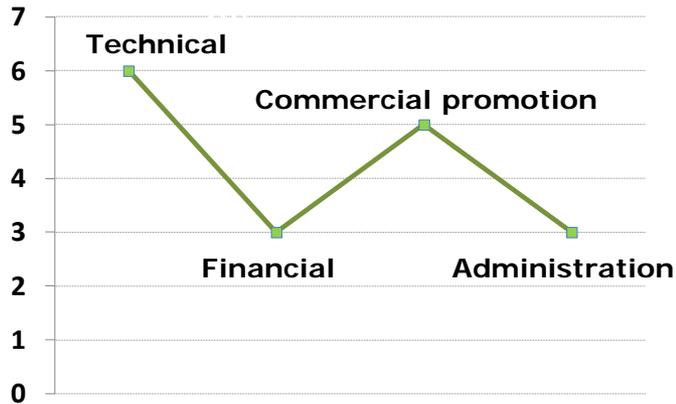
## 2. Involving users is key but ESA sometimes requires too heavy a commitment from them, especially for feasibility studies:

- The definition of user commitment varies widely and should be determined principally by the users.
- The study logic should be flexible, in line with users needs, not a standard approach derived from satellite development.

3. Commercial users want a quick solution to business needs, which requires a faster process for IAP proposal approval:
  - A good target would be 6 months from submission of outline proposal or approval of Open Competition by JCB to contract/kick-off.
  - Accept a more concise outline proposal, especially for Feasibility Studies;
  - The distinction between FS & Demo Projects should be retained but encourage more projects to go straight to Demo phase.
  - If a FS proceeds to a DP it should do so with minimum delay e.g. a similar approach to the Fast Track Feasibility Studies.
  
4. There is a major opportunity for greater development of applications based on navigation ~ GNSS.

## Satisfaction of ESA support

Votes for "very satisfied" by aspect



### Some quotations from the interviews:

*...the technical support from ESA is great...*

*...We are happy to see that ESA has made some efforts to simplify the administrative process for the IAP project...*

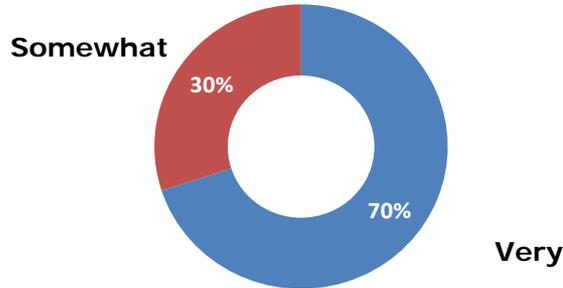
*...ESA provides excellent commercial promotion... we had opportunities to put our name on the ESA website and participated in some events. ...*

All interviewees stated that they are rather satisfied overall with ESA support:

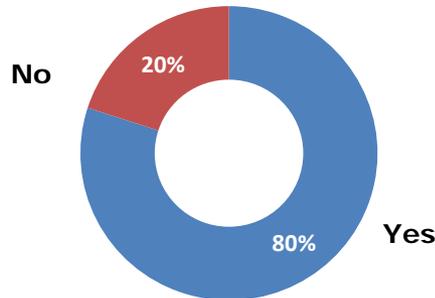
- The majority expressed a high level of satisfaction WITH ESA technical support
- A number of participants said they expect more funding from ESA, although the current funding is ok for most
- Support on commercial promotion is appreciated by most participants, although some (especially for feasibility studies) stated that the support is not significant
- A few interviewees stated that the overall administrative aspect is still complicated
- Some participants are not satisfied with FS and demos being awarded to different participants, which lacks fairness for those involved in the feasibility study.

## Lessons learned from IAP

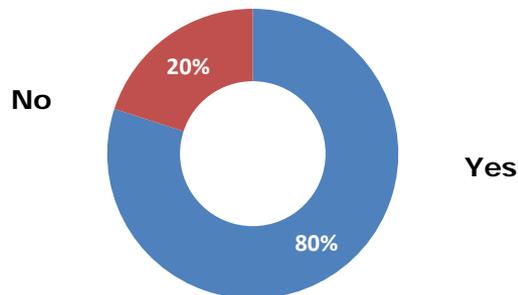
### Participation of end-users



### New partnership



### Improvement of international presence



The participation to IAP does bring benefits to the participants:

- 80% of interviewees have improved international presence, mainly through IAP press release and partnerships with companies in other countries
- 80% have entered into new partnerships, mainly with members of their IAP consortium

The participation of end-users in the IAP is considered as very important to:

- understand real market's need and requirements;
- help define suitable products and services to meet users' needs;
- assess service pricing
- establish relations with end-users who will also be potential clients.

1. Securing continued high growth depends upon new markets that require more powerful integrated solutions.
2. To be successful, space activity must demonstrate that it can integrate with operational services required by a wider user community, in ways which are more innovative, effective, resilient and viable than terrestrial alternatives.
3. ESA has a privileged observation point, from where novel opportunities for space based applications and services, new user groups and specific research and industrial capabilities can be identified, assessed, supported and promoted.
4. In the UK, the 'Harwell cluster' should enable ESA, ISIC and the TSB 'Space Catapult' to work more closely together in order to maximise the leverage of resources and networks:
  - This can bring Pan-European benefits to all IAP stakeholders.