IAP Assessment Dossier

Final Report to ESA

August 20, 2012

telecommunications & integrated applications

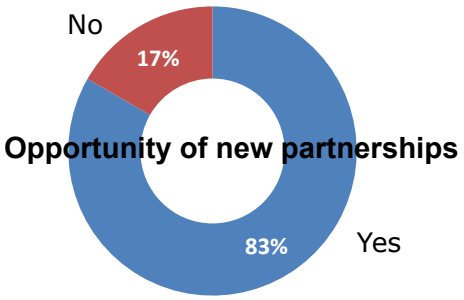
European Space Agency

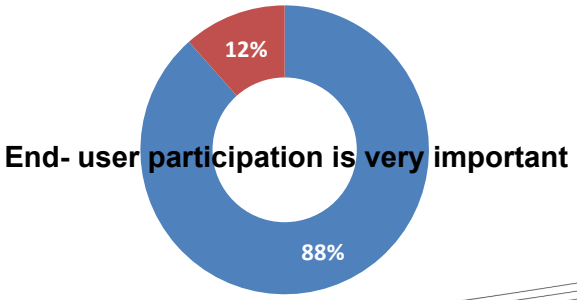
Contents

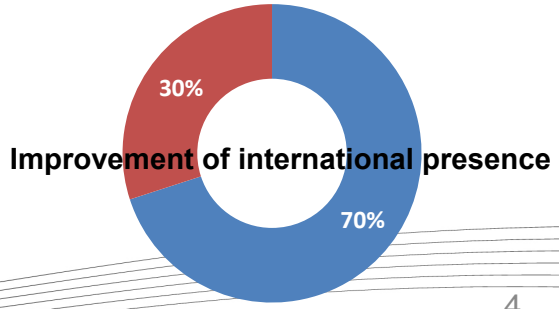
Executive Summary

Key findings of the consultation

- 32 organizations participating to IAP projects (feasibility & demonstration) were interviewed in 14 MS countries (UK participants consulted separately by ESA)
- A large part of IAP participants are not satellite specialists (40% of interviewees generate less than 50% of their sales in space)
- All participants are generally satisfied with IAP with respect to the expectations they had at the beginning of the projects
- End-user participation to IAP is key for the various benefits it brings, even better when end-users are officially part of the consortium
- Partnership benefit of IAP is high, mainly within the consortiums
- IAP gives or increases international credibility and visibility of participants
- IAP helped participants to understand better users' needs and to develop their product/service portfolio



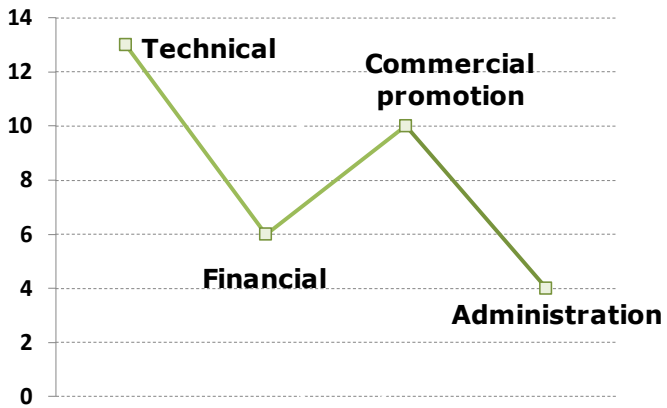




Key findings of the consultation

- All participants are satisfied overall with ESA support. Satisfaction is greatest for technical support and least for administrative support
- The IAP process is generally considered reasonably easy to understand and to follow throughout the proposal and execution phases
- Participants involved in two projects have found improvements between the two in terms of process, organization and information availability
- Government support to satellite service development by SMEs is unequal between the countries in Europe
- Gaps in national government supports include poor access to international markets, lack of support (financial & administrative) and initiatives not targeted enough to SMEs

"Very satisfied" votes for ESA support by type of support



Most appreciated in IAP

- Cooperation with end-users
- Integration of different technologies
- User-driven approach and market-orientation
- Small consortiums
- Work with ESA

Recommendations

The patchiness of national supports to SMEs across Europe and the multinational dimension of satellite services justifies multilateral programmes for satellite service development. IAP has been launched along this line with the intention to support service development up to the implementation of operational services. Such framework is unique in Europe for integrated satellite applications for SMEs

➢ *It is recommended that ESA supports more the service commercialization through risk sharing schemes with the service providers. Implementation support from ESA could include the facilitation of access to financing and the provision of satellite expertise*

End-user participation is key for IAP but it is a challenge to have them involved along the entire process

➢ *It is recommended that ESA supports more end users for service implementation in coordination with service providers (e.g. access to satellite data and bandwidth, satellite expertise provision)*

The 2nd phase of IAP will be designed taking account of the strengths & weaknesses of the 1st phase of the programme as identified through the consultation of participants

➢ *It is recommended to revisit the consultation with participants during the second phase of IAP (i.e. within 3 years) in order to collect lessons learned*

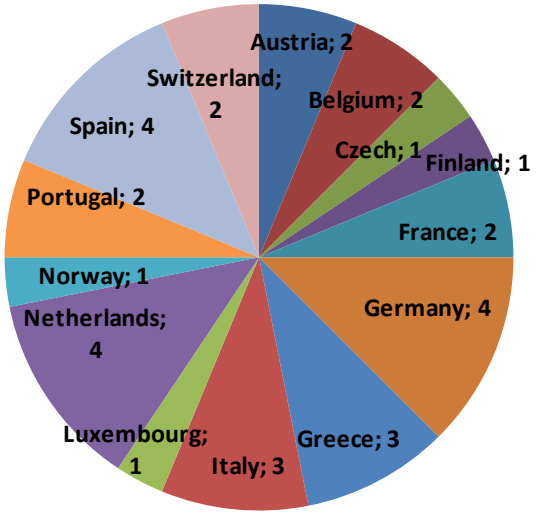
The economic multipliers of investment in satellite infrastructure are created by the multiplication of service providers and the growth of their activity

➢ *It is recommended that ESA develops an observatory of European satellite service providers to monitor the dynamics of this important segment of the value chain*

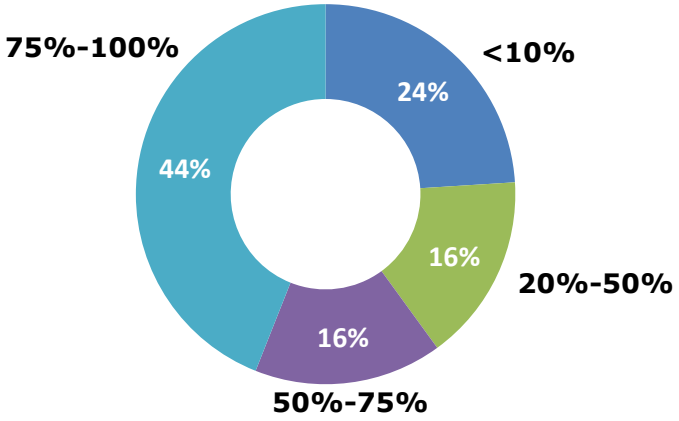
Lessons learned from IAP participation

by Participants and Member States

32 participants from 14 countries



Importance of satellite-related products/services in total sales



32 participants interviewed

- Representing 14 countries including Austria, Belgium, Czech, Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain & Switzerland

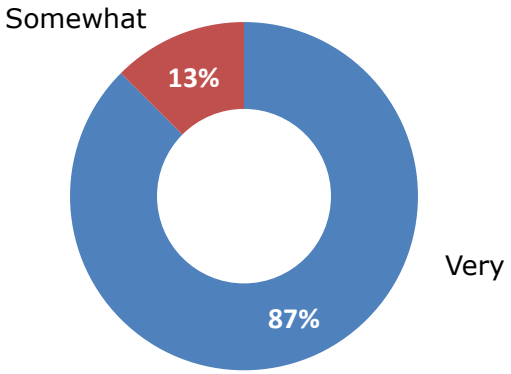
- Among 32 interviews, 50% (16) of participants are lead in the IAP projects, 38% (12) are partners in the projects and 13% (4) are end-users

- UK not included in the survey but a parallel study shows broadly similar results for SME participation to IAP

- 40% of interviewed participants are not satellite specialists, as satellite-related activities account for less than half of their total sales

Lessons Learned Participants

Importance of end-users participation



The participation of end-users in IAP is considered as very important by most of the interviewees for:

- understanding real market's need and requirement (e.g. timeframe required to launch a service)
- helping to define the suitable products and services to meet users' needs
- assessing the service pricing
- building the demo study in order to have a pre-operational service business model
- establishing relations with end-users which will also be potential clients

Quotations from the interviews

...The participation of end-user is critical to understand the real market's need and the necessary timeframe to launch such a service. E.g.: We got feedback from the end-users that we spend too much time to prepare for the launch of an internet portal of the service, the timing did not fit the agricultural cycle. We learned the lesson and improved the service launch timeframe in the second phase of our study….

...70% of end-users participants may adopt the product after the end of IAP to become real customer, highlighting the importance of end-use participation in the project. (This percentage is based on the feasibility study results.)

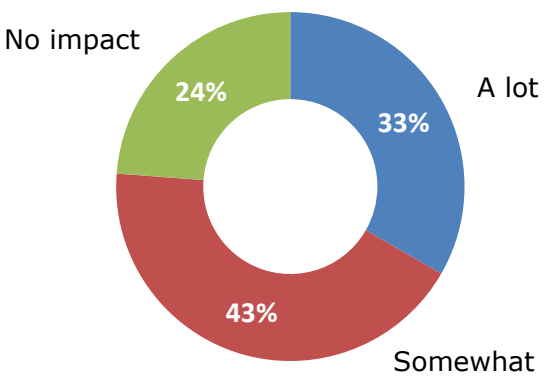
…it helps us to define the real user needs as well as to better adopt the technologies to be more suitable for the service deployment ….besides, the participation of end-user can help us to estimate if such an operational service would be profitable….

...The participation of end-user becomes the first reference client of the services, which is an important argument to commercialize the services in the future…

...The end-users also help us to promote the service in the industry, e.g. Our end-user is an energy company which help them to promote the service in the energy sector.

Lessons Learned Participants

Impact on the portfolio of product/ service offering



- Over 75% of the interviews consider that their participation to IAP had an impact on the nature of their product/service offering

- IAP notably helped the participants to understand better the users' needs and to develop their services portfolio

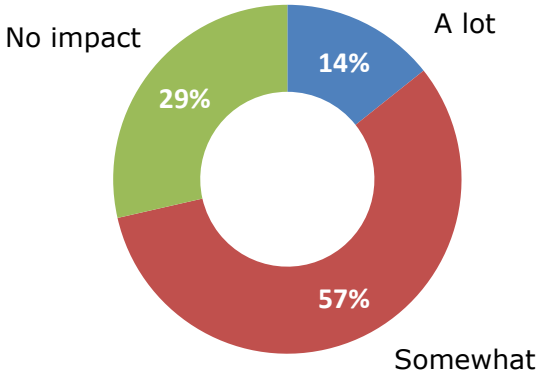
Quotations from the interviews

…Thanks to the participation of IAP, we have new portfolio of services offering…

… Learn a lot on the methodology to build up new service and to validate user requirement. We provide service to our own clients based on ESA methods to convert user requirement to specification and to design services by validating user requirements…

Lessons Learned Participants

Impact on quality of the product/ service offering



- 71% of the interviewees consider that their participation had a positive impact on the quality of their product or service offering

- Several participants mentioned that ESA methods helped structuring a better, more user-oriented, business plan

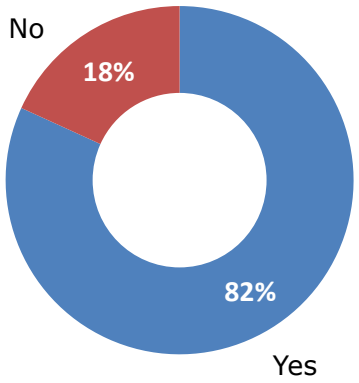
Quotations from the interviews

… The IAP helps us to improve the quality of services indirectly, because it helps us to learn a very structural procedure and approach to develop a business plan for service offering…

… The IAP project helps us better 'shape' our new service offering. We have a more adaptable offering as we better understand the end-user requirements…

Lessons Learned Participants

Opportunity of new partnership



Participation to IAP did bring benefits to the participants:

- 82% of the interviewees entered into new partnership. Mainly with the partners of the IAP consortium

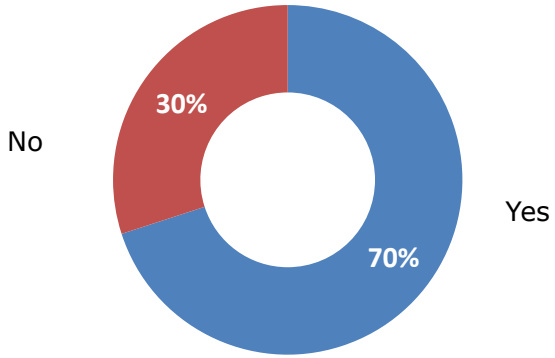
- A number of participants also stated that their participation to IAP helped them to develop relationships with end-users and to learn to know them better

Quotations from the interviews

… We did not know our end-users partners in IAP project, through the IAP, we work with them now. Even we do not yet direct contract with them today, we did establish long term partner with them…

… We did not know our IAP partner before, but we are discussing potential partnerships with the current partners for other new projects….

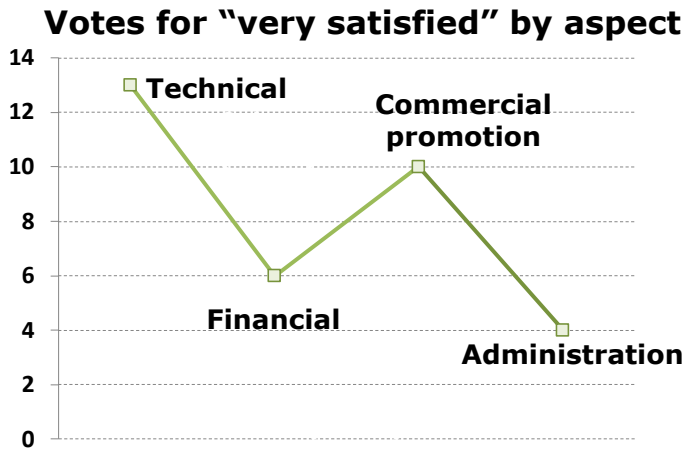
Improvement of international presence



- 70% of the interviewees have improved international presence. Mainly through IAP press release and partnerships with companies in other countries

- IAP has given to many of the interviewees an international credibility and visibility they did not have before

Satisfaction with ESA support



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. ..

We learned a lot through our IAP participation of building up service and validating user requirements. At present, we use the ESA method to convert user requirements to service specifications for our existing customers…

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

- The majority expressed a high level of satisfaction of ESA technical support

- 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 the fact that the feasibility and demonstration studies are not necessarily awarded to the same participants. They feel that this lacks fairness for those involved in the feasibility study

Most appreciated in IAP

• The **integration of different technologies**; The wide range of opportunities for the application of well-established satellite technologies; the challenging definition of new applications

• **Cooperation with end-users**; their involvement in the projects

• Opportunity for SMEs to develop sustainable tools and services; IAP helps a company to investigate the feasibility of a project, learn procedures and validate a business case

• The users-driven approach and the « market-orientation » of final results; **development of real operational services**; market study at the beginning of the project was very important

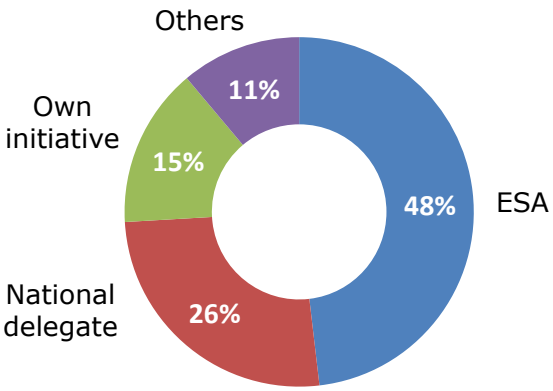
• Little investment required to validate some good ideas

• Small consortium of 4-5 companies

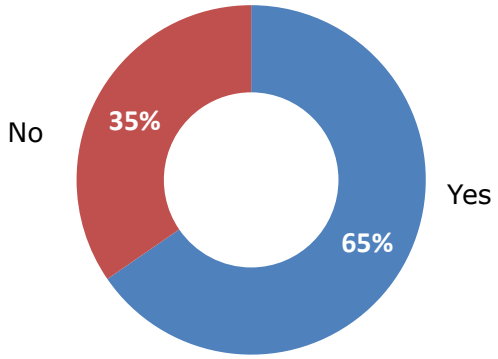
• The way ESA works with the participants (team work, workshops); the management instruments and methods made available by ESA; Open calls and not just ITTs

Proposal & execution phases

Knowledge of IAP project



Pre-existing relation with end users



The IAP process is generally considered reasonably easy to understand and to follow throughout the proposal & execution phases:

- Knowledge of IAP is predominantly ESA-related, either direct from ESA dissemination or from national delegates

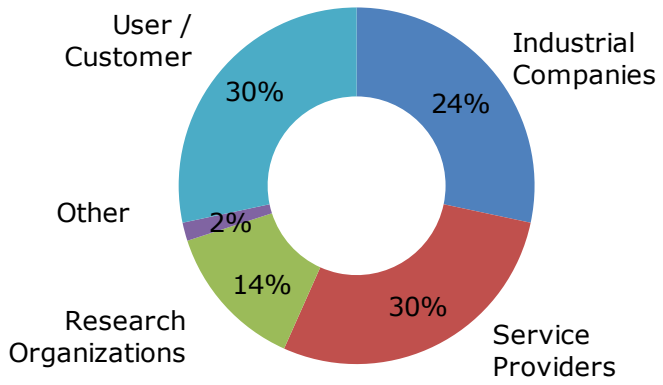
- Most of the interviewees ha previously established relations with end-user communities before participating to IAP

- National delegates are generally considered supportive and easy to work with

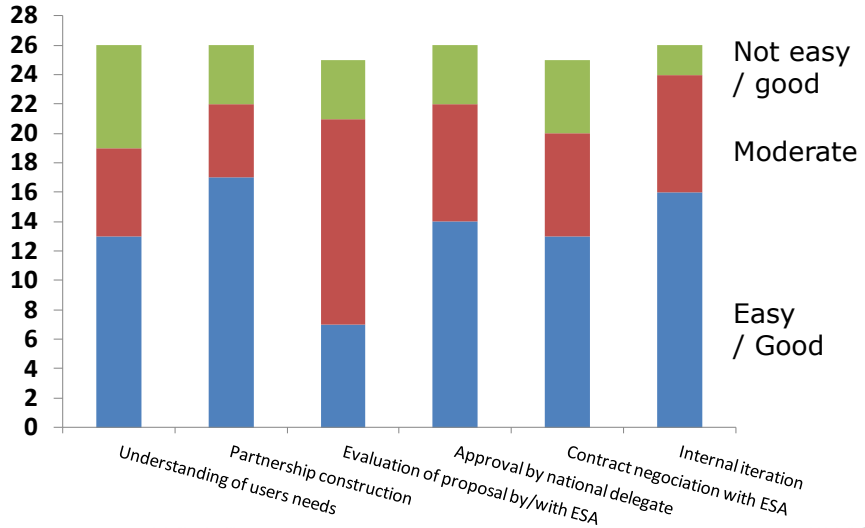
- Most participants find it is relatively easy to understand ESA requirements, establish ESA contract, communicate with ESA, build partner consortium and manage the project

Proposal & execution phases

Partnership for the proposal



IAP experience rating – proposal phase



Three categories of partners dominate for IAP participants: service providers, users/ customers and industrial companies

2/3 of the interviewees became associated with multiple types of partners for the proposals

The proposal phase is overall well rated by the interviewees, with the notable exception of the Evaluation phase by ESA.

The proposal phase is criticized for:

- submission deadline for open competitions does not allow enough time to build consortium & develop a strong bid
- too complicated in administrative aspects, especially for organizations without previous experience with ESA
- in some cases, ESA technical requirements are too strong

Challenges and difficulties during proposal phase

• **Proposal preparation**: two many details required. ESA's « format » to submit the proposal is more system/hardware focused than service/end-user oriented

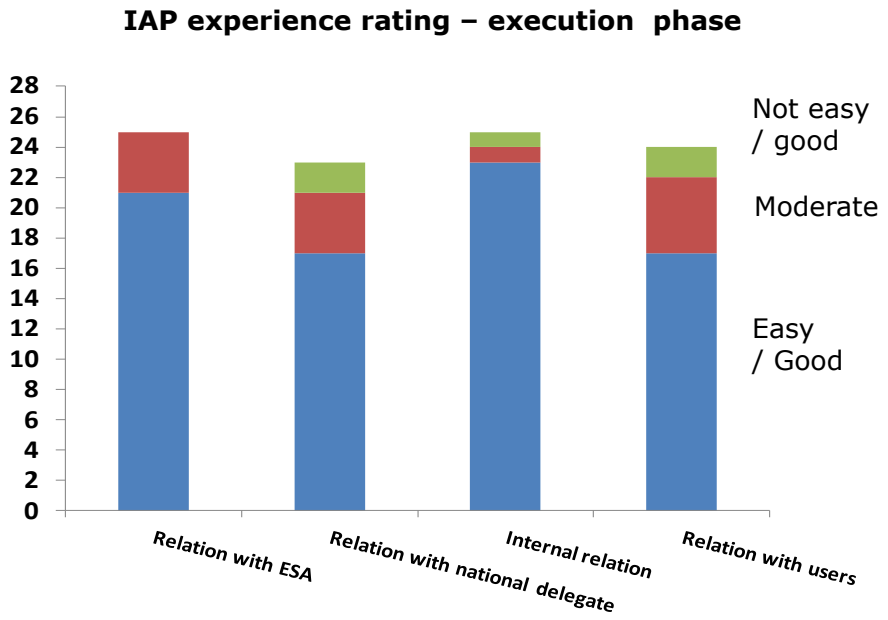
• **Getting a good understanding** of the study's purposes and of users' needs (typical difficulty to communicate between two communities: engineering and end-users; lack of clarity in users' requirements)

• **Timing issues:** get final approval by national delegate in due time. Slow process for approval, even in case of direct negotiation with ESA. Too much teleconf.

• **Construction of a partnership** (distribution of responsibilities) is relatively difficult. The consortium of partners must be set up before the RFP comes out, otherwise there is not enough time to find the right partners, especially end-users

• **Construction of a viable business plan** for a service without historical reference

Proposal & execution phases



The execution phase is rated better than the proposal phase. The proposal phase is sometimes perceived as difficult. But once the project is setup, the execution phase is a good teamwork with ESA and partners

One issue quoted for the execution phase is the monthly reporting (question of its cost/ benefit as it is time consuming for all partners of the projects)

Challenges and difficulties during execution phase

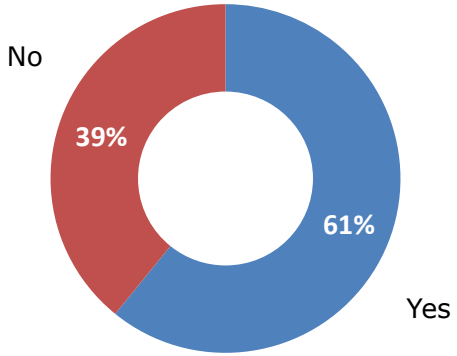
• **ESA requirements** (for open competition)
- the «Road Map» at the end of the feasibility study requires too much work in a short timeframe. A lot of details are not necessary before the launch of the demonstration project
- some participants have the perception that ESA asks the end-users to commit to purchase of services in the feasibility study

• **End-users**
- Time schedule on open competitions is too tight for the user consultation. Finding the end users and contacting them is a challenge. Relation with the users is challenging, especially when there are several users with sometimes opposite needs. It is hard to get user involvement, that must start very early in the projects

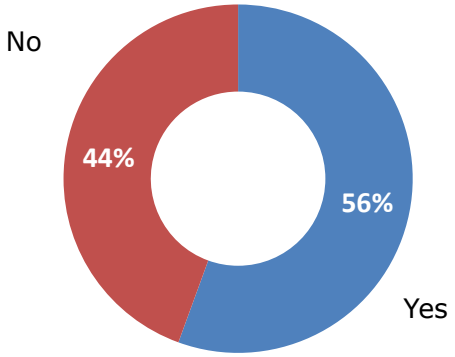
• **Timing issues**
- Delay in financing had negative impact on the project
- Preparation of the periodical meetings with ESA are time-consuming

National Innovation Policy

Support from national government



Can gaps in national support be overcome at multi-national level



Most of the interviewees have received support from their government to develop their capability in satellite services development or provision, notably through:

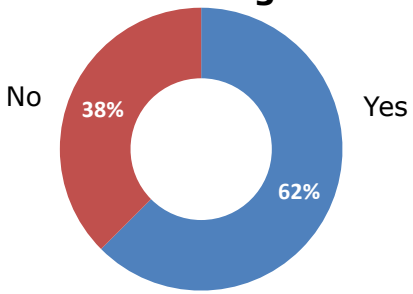
- National R&D grants
- Co-financing for project development
- Tax credit on R&D expenses
- Human resources support for targeted recruitments

Despite national support, a majority of interviewees consider that a multi-national scheme enables overcoming of the gaps that have been identified with national initiatives

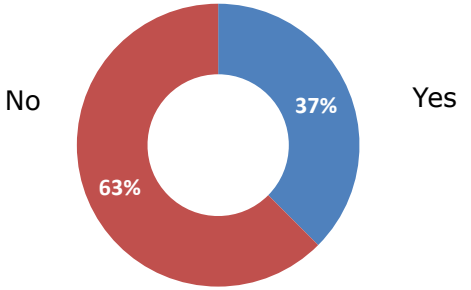
According to the interviewees, gaps at national level notably include access to international markets, lack of government support (either financially or at organizational level) and initiatives not targeted enough towards SMEs

National Innovation Policy

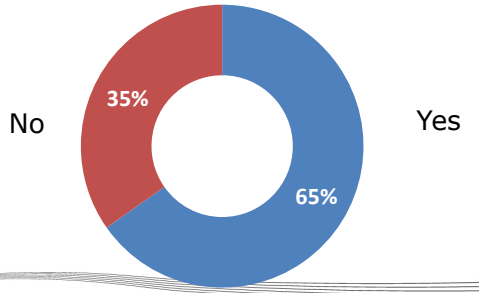
Involved in the development of satellite solutions with national government agencies



As a SME, does the organization receive specific support from the government ?



Is the organization part of a national cluster or an industry grouping ?



- Most participants have been involved in national satellite projects prior to their participation to IAP, essentially in cooperation with their national space agencies

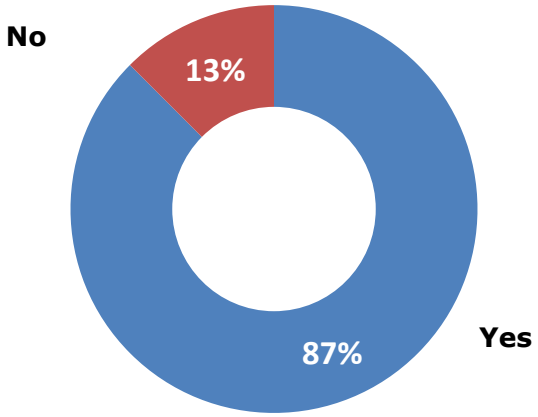
- Few of them benefit from special support to SMEs, which essentially consists in tax credit for R&D expenditure.

- Most interviewees are members of national industry associations or clusters, which are mainly considered as a tool for information gathering and networking as well as a support to marketing efforts

- Such groups also support the formation of industrial partnerships and raise the visibility of the organizations

General satisfaction & return

Overall satisfaction with participation to IAP



Some quotations from the interviews

…In the past, ESA has many scientific research projects, IAP is a new opportunity to bring R&D into operational…

…we are satisfied with the IAP, it is an important part of our national space program… but the contracts that our national participants won are not at the level of our contribution… local players have difficulties to be the prime in the consortium…

…IAP is the best program to test new ideas…

All but one of the 8 MS agencies interviewed are satisfied overall with their participations to IAP

One is disappointed because of the lack of return to national participants, as none of their project proposals was won

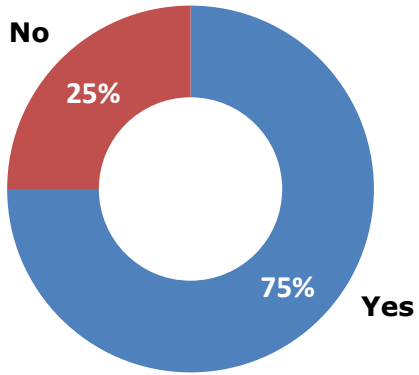
All MS appreciate the concept of IAP, especially its:

- application-driven approach
- focus on end users (bottom-up)
- open spirit to new ideas or concepts
- opportunity for SMEs
- idea to combine different technologies
- multi-organization project team

Status	#	Country
Interviews done	8	Austria, Greece, Ireland, Italy, Luxembourg, Norway, Portugal, Switzerland
Declined or no reply	7	Belgium, Czech, Finland, France, Germany, the Netherlands, Spain
Excluded from study	1	UK

General satisfaction & return

Closer contact between national agency and user community as a result of IAP



Some quotations from the interviews

…The IAP really reinforced our knowledge and relation with the civil protection community…

…Through IAP workshops we established contact and understand the needs of the navy and the coast guard…

…We learned a lot of the needs of police, coast guard, military and the transportation sectors… although the spending of those services will be cut due to the financial crisis, the knowledge will very useful for long term…

IAP is generally considered very positive in connecting national space agencies with the end user community:

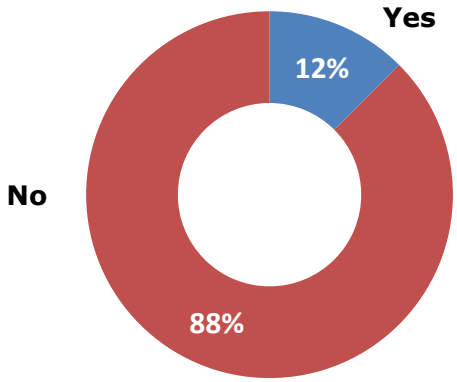
- ¾ (or 6 MS) stated that they entered into closer contact with end-user community through IAP

- Two end-user categories dominate in the quotation from MS agencies:
  - All government bodies in relation with national security such as navy, coast guard, border control, customs, police and civil protection
  - Infrastructure-related sectors such as transportation

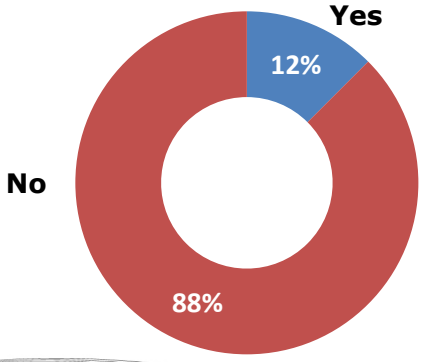
- The requirements of government users are much better understood by MS than the ones of non-government end-users

Mandate & nature of MS agencies

Dedicated national structure to promote the usage of satellite systems



National program to identify or federate government demand for satellite services



Half of the 8 MS interviewed have a space agency or a space office while the other 4 manage space activities through a supervisory ministry:

- In both cases, the promotion of the usages of satellite systems is within the mandate of the agency or ministry in charge of space. Only Austria's space agency is part of a dedicated structure

Although government users form a significant part of IAP end users, only 1 of the 8 MS interviewed has a dedicated program for addressing government demand for space-based services (Italy)

National Support to SMEs and to Satellite Services

Situation of national support to SMEs and satellite services reviewed in 15 IAP countries through desk research (UK was considered separately by ESA):

- Support actions in Austria part of the national space programme
- Regional support in Belgium through space cluster
- Several support actions in France, in relations with CNES and the geographic clusters driven by the aerospace/defense integrators
- Support actions in Germany driven by satellite navigation
- Newly established space cluster in Greece
- More specific support actions in Italy recently
- A space cluster in Luxembourg managed by the Innovation Agency

Other Findings MS

- Specific support scheme of the NSC in Norway
- Portugal's support only through FP7
- Call for Proposals of the Swiss Space Office, involving academic and industry partnerships
- Development of the Netherlands's downstream space sector, a key objective of the national space strategy, is supported by the Space Office
- No specific support identified in the Czech Republic, Finland, Ireland, and Spain

Needs & Opportunities for IAP

Suggestions of improvement for IAP

• **Scope of the programme**
- Include public and societal projects and not only commercial activities
- Better focus on user needs, end-users as true IAP project participants
- IAP should better coordinate with ESRIN, and look what has been done at ESRIN
- Not all applications really require a combination of satellite technologies

• **Evaluation/selection criteria**
- Quicken the evaluation procedure; simplify it
- ESA should reduce its expectations during the proposal phase
- The project should start with the end-user requirement and market study, instead of having it at the end

• **Timescale**
- Need to consider the timescale of the end-user market (sometimes it does not match with IAP's timeline, e.g. in agriculture)
- For promising projects, time could be extended to enhance the project's value
- Reduce time for ESA to validate the proposal
- Implement flash studies as first step
- Extend tender opening periods (8 weeks instead of 6)

Suggestions of improvement for IAP

- **Timescale (continued)**

- If the service provider can demonstrate a clear project concept, it should directly go to demonstration study. If necessary to have a feasibility study, it should not last more than 3 months. The time between the idea and the operational service should not exceed 24 months

- **Others**

- Simplify all administrative steps; some technical documents could be simplified
- It could be easier to have continuity between feasibility and demo projects
- Allow for proposals to be submitted online

Government actions are needed to reduce the obstacles to the development of satellite services

- **At national level**

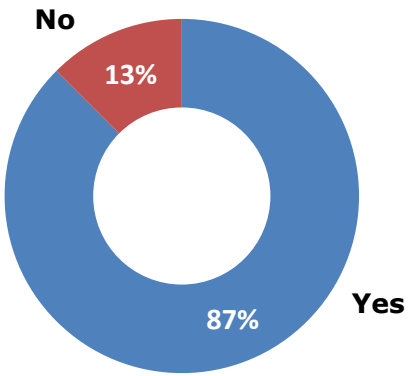
- Government departments could be more proactive and be potential users
- Improve SME involvement
- Improve credit/funding, including R&D
- The government should support EO services at operational level
- Better EO data accessibility
- Listen and answer the needs of the industry

- **At multinational level**

- Develop products and services within collaborative frameworks
- Reduce the cost of proposal and administration of co-funded projects
- Need of data continuity; have standardized and operational data, with open access
- Improve synergy between the different ESA branches
- Improve SME involvement
- European investment in space should be raised, with a particular focus on applications
- Regulation as a market driver (e.g. a new regulation in agriculture to put satellite services as a viable source of information)
- Easier data access

IAP focused areas of interest for MS

Any specific area you want IAP to focus on in the future



Quotations from the interviews

…End user community is not developed in our country…I would like to see more end users in the future…

…we see definitely needs for satcom-EO combined services in fire protection, border control, military and coast guard…

…we prefer to keep the subject very open, and we welcome innovative ideas…energy and transportation will anyway be a focus area…

…we have to find end users before developing any application…

Most interviewed MS are in countries with small territory and population, and therefore:

- The end-user communities (both government and civil) are generally small within the country
- Most potential users are not aware of the benefits of satellite services, and market education will be necessary for the coming years

The majority (87%) of MS have an idea of the potential end users in the country where IAP can focus on in the future. Most mentioned areas include energy, transportation, maritime surveillance, border control, coast guard, environment monitoring, remote & emergency communications (e.g. Arctic and mountain)

More than half of the MS expect more funding at European level (ESA and the Commission)

National support to SMEs in MS countries

National support to SMEs (1)

• **SME importance in national economies varies significantly from one country to another in Europe**: the share of SMEs in industrial value-added is above the EU average of 58.4% in 8 countries. It is especially high (> 70%) in Italy, Greece and Norway

• **Some countries have specific regional development initiatives**: Alpine region in Austria, Switzerland and Italy, Wallonia in Belgium, Midi-Pyrénées in France, Lazio in Italy. The regional development initiatives in Austria, Belgium, France, Germany and Italy are linked to aerospace and/or ICT clusters

• The 4 largest aerospace countries in Europe outside the UK (France, Germany, Italy and Spain) are also the largest for space. Belgium and the NL are exceptions (large and small space investment respectively, while both are high in aerospace)

• Italy appears to be the sole country to have an industrial association targeted to aerospace SMEs

• Support to the ICT sector provided in Belgium, the Czech Republic, Finland, Greece (through EC structural funds), Luxembourg, Portugal and Switzerland. Finland had the highest ICT share of GDP (9.1%)

(1) Analysis carried out from desk research by country (see pages 36 to 39)

National support to SMEs

• If all countries support innovation for SMEs to different degrees and through various schemes, **innovation support to satellite technology or service development is not systematic** (no specific support identified in 4 countries)

• Most of the clusters are driven by aerospace/defense but space clusters in Austria (for EO), Belgium, Germany (satnav), Luxembourg and Greece. Unequal support of the space clusters for the development of satellite applications

• **National programs to fund satellite applications implemented in 7 countries**: Austria, France, Germany, Luxembourg, Norway, Switzerland and the Netherlands. Specific mechanisms for navigation in France and Germany

• **Few countries support diversified satellite applications**. Others are more specialized (satnav in Germany, EO in Norway and the Netherlands) according to existing capabilities, national topics of interest and involvement in ESA programmes

• CNES has been the most involved to support satellite applications. Significant support of the space agency or the space office is also provided in Italy, Norway, Switzerland and the Netherlands

Selected indicators for 15 IAP countries

Country	SMEs in industrial value added (2010)[1]	Space budget (2011)[2]	Space employment (2010)[3]	Aerospace employment (2010)[4]	ICT share of GDP (2007)[5]
Austria	61.4%	65M€	320	7,100	3.8%
Belgium	58.2%	188M€	1,446	9,900	4.9%
Czech Rep.	55.7%	15M€	na	8,100	na
Finland	54.9%	52M€	150	8,000	9.1%
France	56%	3,147M€	12,082	193,100	4.4%
Germany	53.8%	1,421M€	6,112	132,700	4.7%
Greece	71.7%	27M€	na	4,800	2.7%
Ireland	47.9%	19M€	26	3,000	na
Italy	71.3%	804M€	5,095	51,600	3.9%
Luxembourg	69.8%	15M€	31	na	na
Norway	79.2%	85M€	293	4,500	na
Portugal	67.2%	19M€	118	4,500	na
Spain	67.9%	294M€	2,526	38,500	3.9%
Switzerland	na	103M€	796	7,300	na
The Netherlands	62%	143M€	794	20,100	na
UK	50.2%	580M€	3,555	151,100	6.7%

[1] Source : SBA Fact Sheets, EC Enterprise & Industry, 2010- EU average is 58.4%
[2] civil and military space budget. Source: Euroconsult data base
[3] Source: Eurospace trade association (upstream industry only, excluding satellite operators and service providers)
[4] includes defence industry. Source: Aerospace & Defence Industries Association of Europe (ASD)
[5] Source: European Commission, Information Communications Technologies (ICT) country profiles, 2010

Space-related support to SMEs by country

Support	Description	Funding
AUSTRIA		
National Space Applications Programme (ASAP)	Funded by the Research Ministry, managed by the Austrian Space Agency. Focus currently on Earth observation and navigation. It addresses scientists and research institutions, as well as commercial companies, including SMEs.	8 calls for proposals issued since 2002, with a total funding budget exceeding €50 million for more than 200 R&D projects.
Austrian Settlement and Alpine Environment Cluster	Part of the Austrian National Space Programme, it combines the forces of industry, applied research, university institutes and user organisations to develop EO-based services.	
BELGIUM		
Wallonie Espace	Since October 2003, this association has been the space cluster of the Walloon region, favouring the exchange of information and creating new space products/services, especially through inter-regional networks (ERA-Star, ESI-Net...).	
CZECH REPUBLIC		
	No specific support identified	
FINLAND		
	No specific support identified	
GERMANY		
GATE	A facility of the DLR offering test capabilities for developers and users of the upcoming European satellite navigation system.	
Regional initiatives in satellite navigation	14 regional initiatives to ensure opportunities in the SatNav market, in particular for innovative SMEs, by providing information and financial/logistical support. Supported by the SatNav-Forum, managed by the Ministry of Transport and coordinated by the DLR.	
BavAIRia	An aerospace and satellite navigation cluster providing business contacts, project management services and consulting for start-ups.	

Space-related support to SMEs by country

Support	Description	Funding
FRANCE		
CNES Technical Competence Centres (CCT)	Networks of specialists (including users) structured around the main scientific disciplines used in the space sector. One of them is dedicated to space applications.	
Calls for projects on innovating space applications	Issued by CNES every two years (first one in 2009). The projects must be led preferably by SMEs. In 2009, 10 projects were financed for a total of €2 million.	Up to €100,000 for applicative R&D projects and €300,000 for service demonstration projects.
Aerospace Valley	Non-profit association to develop competitiveness of the aeronautics, space and embedded systems in Midi-Pyrenees & Aquitaine. Two strategic business sectors oriented toward space applications. Priority actions toward SMEs.	
ULISS	Calls for projects issued by the Ministry of Industry since 2006 to develop and demonstrate services using Galileo signals.	Grants to SMEs a subsidy rate of 45% of their project's cost.
GUIDE	Innovation platform to facilitate the development, by SMEs, of satellite geo-location applications starting in 2012. Offers R&D services including tests, training, and assistance to strategy.	€8.5 million, of which €2.8 million provided by public entities.
AESE (Aeronautics, Space, Embedded Systems)	Technological Research Institute, to be operational in 2014. The aim is the industrial development and/or the development of services by pooling public and private research capabilities.	Equally funded by the State (as part of the "Investments in the Future" program) and industry.
Techno' Start	An initiative of the association "Bordeaux Technowest" created in 2012 to support startups of the aeronautics, space, defence and energy sectors at a very early stage.	€50,000 at the foundation of the company, doubled during the phase of development.
GREECE		
Space cluster	Established in June 2012, to provide support services for the exploitation of space technologies and finance R&D on priority technologies with NSFR resources. It comprises 15 members.	

Space-related support to SMEs by country

Support	Description	Funding
IRELAND		
	No specific space support identified	
ITALY		
AIPAS	Association created in 1998 to promote the interests of aerospace SMEs. Provides networking and collaborates with ASI for the definition of a policy towards SMEs.	
Aerospace Technological District of Lazio	The most important Italian aerospace district, established in 2004 by the Ministry of Economy, the Ministry of Research and the Lazio region. It supports industrial research, technology transfer, start-up creation, seed and venture capital for SMEs.	€62 million over 2004-2009 €20 million over 2010-2013
ASI policy	The space agency is engaged in a 3-year cooperation agreement with the national space industry associations to promote an industrial policy toward SMEs. 2 thematic ITTs have been issued for them in 2009-2010. Special attention is paid to services and applications.	Each Call is funded at €5 million
LUXEMBOURG		
Space cluster	One of the five clusters managed by Luxinnovation as part of the Luxembourg Cluster Initiative (LCI). It gathers companies and public research institutes and supports all actors in the field of space technologies. In 2011, Luxinnovation created a working group on Location Based Services (LBS) gathering members of the Space and ICT clusters.	
Luxlaunch	A support programme set up in 2006 by the Ministry for Higher Education and Research (MESR), to help industry and research organisations to identify market opportunities in space-based applications. It consists in small-scale preparatory studies (6 months, maximum of €150,000). Up to 6 studies are funded per year, selected through Call for Ideas. Once per year, a workshop is organised where the results of the studies are presented.	
NORWAY		
NSC support scheme	The Norwegian Space Centre supports the development of products and services. In 2010, 31 companies received support.	€7.5 million in 2010 (of which 9.6% for services)

Space-related support to SMEs by country

Support	Description	Funding
PORTUGAL		
FCT and GPPG	The Foundation for Science and Technology (FCT) and the FP7 Promotion Office (GPPQ) may support space applications and services through annual calls for funding and assistance to companies for participation in EC's FP7 calls.	
SPAIN		
	No space support mechanism identified	
SWITZERLAND		
Call for Proposals of the Swiss Space Office (SSO)	Two calls, issued in 2010 and 2012, aimed at selecting innovative ideas that have a clear potential for space products and services/applications. The preparation of new technologies for user-funded applications in the field of Earth observation, satellite navigation and telecommunications is one of the 5 priorities of the 2012 Call.	The ceiling funding for each study retained is CHF250,000 (€208,000).
THE NETHERLANDS		
3 subsidy programmes of the Netherlands Space Office (NSO)	- Prequalification ESA Programmes (PEP), to prepare for ESA tenders. - User Support Programme Space Research (GO), to stimulate the scientific use of space infrastructure. - Principal Investigator Preparatory Programme (PIPP), in preparation of future PI roles in the science programme.	
EO data portal	A satellite data portal hosted by the NSO since March 2012. Raw data is available freely, to help develop service industry in view of the operational phase of GMES. The goal is a 5% annual increase in use of space data and in the development and use of applications. The downstream use is still very limited in the Netherlands.	
Space Match	An annual event (in its 8th edition) organized by the NSO, ESA and TNO, and supported by Enterprise Europe Network Netherlands. It aims to establish a bridge between space research and commercial business development, with a special focus on high-tech SMEs.	

Economic multiplier of space spending

Space returns are generally measured as a multiple of space spending at different levels (for the contribution to ESA, for a given satellite system, for the total of national spending). Multiples typically range between 1.4 (Belgium) and 4.8 (GMES). France is an exception at 19 because of a large space industry and a large satellite operator (Eutelsat).

Luxembourg's return of investment in satellite infrastructure is not measured as a multiple of government spending but relatively to the national GDP. The figure highlights the economic importance of SES while the satellite industry upstream is not developed in Luxembourg.

Country	Source	Sector	Multiplier	Rationale
European Union	Booz & Co, 2011: CBA for GMES	Earth Observation	**4.8**	Total benefits of GMES between 2014 and 2030 are estimated at €70.5 billion for a total investment of €14.8 billion
	French Minister in charge of space activities	Satellite Navigation	**4.1**	Galileo is expected to generate €90 billion in commercial revenues between 2012 and 2032 for a total cost of €22 billion over the same period
France	CNES: 2010 Annual Report	Space (General)	**19**	Each € invested in space infrastructure generates €19 of new business in operational applications and services
Norway	OECD, 2011: The Space Economy at a Glance (based on national sources)	Space (General)	**4.7**	For each million Norwegian kroner of governmental spending at ESA and for national programs, the Norwegian space sector companies have on average generated an additional turnover of NOK 4.7 million
Belgium		Space (General)	**1.4**	In 2010, for each € million of governmental support through ESA, it was found that €1.4 million have been generated by the Belgian space industry
Denmark		Space (General)	**3.7**	[…] each € million of Danish contributions to ESA has generated a turnover of €3.7 million on average
Luxembourg	Euroconsult for the MESR in 2012	Satellite systems & services	**Not a multiple but a % of GNP**	Satellite-related sales at 4.3% of GDP in the country while the European average is 0.1%. When considering only the satellite industry upstream (i.e. excluding satellite operators), sales at 0.02% of the GDP in Luxembourg while the European average is 0.06%