

EO Service Sector Representation



Report T1: Analysis of Industry Issues

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The final version of this report will also be made publicly available via the eoVox web site (www.eovox.org) and sent directly to all participants in the study.

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Executive Summary

The European Space Agency (ESA) has initiated the eoVox activity to explore issues that affect the Earth Observation (EO) service industry sector in Europe and Canada.

eoVox is an opportunity for all companies to voice their viewpoint on the future of the European and Canadian EO service industry. The results of the study will subsequently serve as input to ESA in planning for the period 2008-13 to make sure that the needs of the industry are supported at the right scale, with the right mechanisms and of adequate duration.

This document concerns the first round of consultation with the EO Service Industry and has been prepared by ControlWare with contributions from EARSC, C-Core and LogicaCMG and provides results and analysis following 63 personal interviews with Earth Observation Value Adding Companies (EO VACs) and 11 EO related Associations in Europe and Canada. Throughout the report a number of “open issues” are mentioned, encouraging VACs to comment.

The main results from the interview phase of industry consultation are summarised below.

The case for improved representation

The majority of the VACs feel that the current representations for the EO downstream service sector are too weak and that their views and influence is out of balance with that of the larger space companies.

A stronger lobbying position to influence future programmes, public development funding and to address some of the real obstacles for market development such as lack of operational data supply constitute the strongest (upstream) drivers for Industry representation.

A stronger industry representation is likewise believed to be of benefit in addressing future market opportunities by establishing links to players outside the traditional EO industry (downstream).

Drivers that affect supply and demand in the EO Service Sector

Over 60% of respondents regarded GMES to be an important driver for future market development.

Many respondents believed GMES commercial spin-offs to be an important driver but just as many predicted a negative effect on existing commercial relationships and based on past experience, doubted possibilities for entering GMES “end-to-end” service chains created by players already active in GMES.

About half of all respondents regarded the development of innovative EO based services such as Location Based Services (LBS) and Geo-marketing as important drivers stressing the importance of applications taking advantages of synergy between different technologies.

Market Obstacles

Some companies report that there is a risk associated with operational access to data from EO missions relevant to VACs¹.

¹ However some do report the opposite, e.g. some EO services using ENVISAT ASAR with data access success rate close to 99%.

Many companies report that there is a risk if data continuity is not ensured for EO missions relevant to services that industry is offering today and in the future.

Industry needs adequate public support to develop their businesses and this requires adequate levels and types of support, at the right time, that matches the overall industry agenda.

This need must be properly communicated and explained to supporting institutions (e.g. the EC and ESA).

Industry Evolution

There are a number of recent disruptive developments concerning evolution of the industry that many VACs have not yet assimilated into their strategies, these include the impact of GoogleEarth, geo-spatial technology convergence and ubiquity, in-sourcing, off-shoring and new European policies impacting technical standards, high value jobs and corporate sustainability.

The keyword best summarising the future structure foreseen for the EO Industry is consolidation. Around 75% of respondents believed in industry consolidation where the value chain will be fused and, at the same time, some VACs are forming and will form closer collaboration in order to become stronger and remain competitive in the future.

It is believed that the overall market will grow and the interview responses confirm the growth trend estimated in the EOMD Industry survey study (Ref. 5).

It is expected that the larger companies will grow bigger through absorption and expansion. Their prevailing strategy will be to provide end-to-end systems and to deliver standardized GIS ready products directly to the end-user.

It is believed that some small VACs will be absorbed or bought up either by the big EO players or by complementary players or end user organisations (in-sourcing). Others will disappear, grow bigger by networking or sustain as niche players. At the same time new players will keep emerging due to low entrance barriers into the industry. VACs do not however necessarily see these changes as a threat or as a negative thing. Rather as a natural consequence of industry growth, this might also open up new opportunities.

Common Industry Issues

Answering questions on common industry issues, almost 80% of respondents believed that VACs could work together on the development of new products and services.

More than 60% of respondents thought that new types of markets could also be better accessed through collaboration between VACs.

Expectations for a Trade Association

Three main roles of an EO Trade Association have been identified, these are to act as a common voice for the industry, to establish synergies by facilitating collaboration with non-EO players to optimise the development of applications from synergistic technologies (e.g. satellite navigation/ communication, mobile technologies etc).and to promote the combined capabilities of the EO Service Sector.

A “wish list” of the main activities of an EO Trade Association, as compiled from the survey included:

- professional lobbying to influence future EO programmes;

- network facilitation;
- market intelligence gathering;
- export facilitation/support;
- communication on what is going on.

Feedback concerning development financing to support VACs

- Respondents were very positive about ESA EO application development projects (EOMD, DUE etc.) since they were seen as being uniquely tailored to small and medium sized VACs.
- Geo-return (ESA) was seen as an issue creating an imbalanced tendering process and given the capabilities of Europe and Canada, did not result in the optimal solutions which normally arise from free competition.
- Recommendations for further funding included testing new ideas, user demonstration, commercial market development and export oriented initiatives.
- Recommendations for improvement included less prescriptive SOW and more freedom and flexibility in proposal/project implementation to maximise on innovativeness and an introduction of a pre-screening service to minimise efforts lost due to the high level of competition.
- In some countries, e.g. UK, Portugal, Finland national funding for the development of EO applications is scarce.
- The EC funding programmes instruments, e.g. the large FP6 Integrated Projects were not regarded as a very efficient way of conducting applications development.

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1 Introduction

The EO Service Sector Representation project aims to improve market awareness and confidence in the EO service industry sector, by defining the combined capabilities and views of the sector, and using these to evaluate mechanisms for representation of the sector, supporting greater growth and prosperity of the overall European EO service industry.

This report is the output of Task 1 of the study (Evaluate Industry Issues). Figure 1-1 shows a summary of the high level project logic, and the position of this report in relation to other reports and tasks of the study.

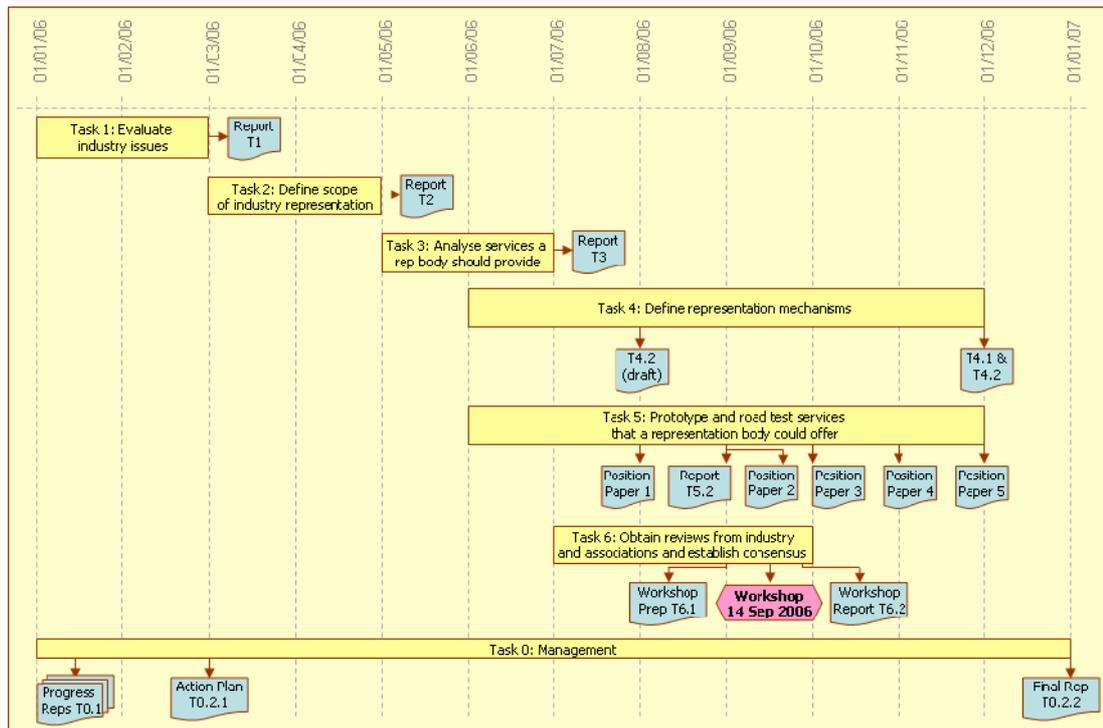


Figure 1-1: eoVox Study Logic and timing

1.1 Purpose

This document reports the results of industry consultation implemented through telephone and face to face (FTF) interviews with Earth Observation Value Adding Companies (EO VACs) and EO associations in Europe and Canada.

These interviews are the first step in a programme of open consultation.

The aim of the Task resulting in this report was defined as follows in the ESA SOW:

Liaise with and collect information from industry members, organizations and associations concerning the issues that a representation body should be addressing; consolidate input from the EOMD Survey of the EO service industry concerning industry representation.

Propose definitions of the possible Beneficiaries bases (i.e. VACs potential beneficiaries of a representation body, taking into account:

- *the EO services sector with its diverse constitutive elements*
- *the positioning of EO within the aerospace sector and, in particular, the space applications sector (EO, Navigation, Telecom)*

- *the positioning of EO within the geo-information (GI) sector*

Refine the existing characterisation of the EO services sector and propose possible Beneficiaries bases to be considered for the analysis of industry representation.

Perform the analysis of the interests, issues and needs for each category of player for each Beneficiaries base.

Identify major common issues concerning the development of the market for EO based services.

Identify key topics which are relevant to the EO sector and which represent important prospects for federating industry around common issues.

For these key topics identify and characterise common issues that can contribute to uniting the EO services sector for common strategic actions that industry representation can support.

Output a report that at least includes:

- *Categorization and characterisation of Beneficiaries bases*
- *Analysis of issues for each segment of the Beneficiaries base and of commonalities within issues*
- *Identification of key topics of EO applications and characterisation of common issues.*

1.2 Scope

This document covers the following topics:

Section	Description
Section 1	Introduction (this section): Defines the purpose and scope of this document and lists external references and abbreviations used.
Section 2	Methodology: Explains the questioning strategy, the method of approaching the VACs, the method of capturing, storing and analysing the information and how requirements for confidentiality will be ensured.
Section 3	Results of Industry consultation: Documents the results obtained from the process of consultation with the VACs
Section 4	Results of consultation with Trade Associations: Documents the results obtained from the consultation with the relevant industry associations.
Section 5	Outline possible scenarios for Industry representation. This section gathers and analyses the possible scenarios for representation, arising from the comments made by the VACs and associations.
Section 6	Summary. This section summarises the results of the industry consultation process, without drawing conclusions – which is the remit of later tasks and activities under this study.

1.3 References

No.	Title/Description	File Reference	Version
1	LogicaCMG Management Proposal for EO Service Sector Representation	UK/2004/7852	Issue 1.0 24/10/2005
2	LogicaCMG Technical Proposal for EO Service Sector Representation	UK/2004/7361	Issue 1.0 24/10/2005

No.	Title/Description	File Reference	Version
3	ESA Statement of Work	EOEP-EOMD-EOPS-SW-05-0001	Issue 1.0
4	Minutes of Negotiation and Kick-off Meeting	EC201705:07.01	Issue 1.0 15/12/2005
5	“The State and Health of the European EO Service Industry” VEGA Group, Booz Allen Hamilton.	EOMD.REP.0.18	Issue A 24/09/2004
6	Minutes of Progress Meeting 1	EC201705:07.03.01	Issue 1.0 16/03/2006
7	Report T1 Review Item Dispositions	EC201705:07.03.02	15/03/2006

1.4 Abbreviations Used

Abbr.	Description
BAH	Booz Allen Hamilton
DUE	Data User Element
EO	Earth Observation
EEA	European Environment Agency
EC	European Commission
EOMD	Earth Observation Market Development
FTF	Face to Face
VHR	Very High Resolution
GMES	Global Monitoring for Environment and Security
KOM	Kick Off Meeting
LBS	Location Based Services
TeleC	Tele-Conference
VAC	Value Adding Company
PSI	Public Sector Information
RIDs	Review Item Dispositions
SOW	Statement of Work

2 Methodology

2.1 Questioning Strategy

For the first round of industry consultation the following requirements were defined:

- Interviews are to be conducted either by phone or by face to face interviews
- no preparation needed for the person to be interviewed
- focus on a small number of issues
- a mix of semi-open and open questions.

The Interview Guide used for Industry consultation is included in Annex 1.

2.2 Sample Selection Strategy

The boundary conditions were set as:

- Minimum of 40 VACs to be consulted
- No more than 3 people conducting the VAC interviews to ensure the highest degree of homogeneity in analysing and comparing results

The VACs were selected randomly based on the following criteria:

- The company must be a true VAC, Earth observation value adding activities must be part of the business activities
- The company must be operated on a commercial basis
- The sample should represent as far as possible all ESA member states.

The initial list of companies to be contacted contained 70 VACs, at the end 63 VACs participated in the survey. The allocation of the VACs between the 3 interviewers was based on the following simple geographical criteria in order to minimise travel costs and time:

Southern Europe:	Mónica Miguel-Lago, EARSC
Northern Europe:	Birgitte Holt-Andersen, ControlWare
Canada:	Des Power, C-Core

Of the 63 VACs consulted 23 interviews were conducted in a face-to-face manner typically at the location of the VAC themselves. The rest were undertaken as telephone interviews. The table below lists all VACs interviewed.

GEOville	A	GMV	ES
Geospace GmbH	A	Indra Espacio S.A.	ES
Eurosense Belfotop N.V	B	INSA S.A.	ES
GIM, Geographic Information	B	Starlab	ES
VITO	B	Tragsatec	ES
Brockmann Consult	DE	CLS, Collecte Localisation Satellites	FR
EFTAS Remote Sensing	DE	Infoterra France (ISTAR now acrting)	FR
GAF AG	DE	Noveltis	FR
Definies	DE	SERTIT-ULP (institution providing)	FR
Infoterra GmbH	DE	GEOSYS	FR
RapidEye AG	DE	SpaceEyes (Sister with Geoimage)	FR
COWI (KAMPSAX)	DK	Geoimage (Sister with Spaceeyes)	FR
DHI Gras	DK	ACRI	FR
VTT	FN	MRC, Mediterranean Resource	FR
Jaakko Pöyry	FN	Geoapikonisis LTD	GR
ERA-Maptec Ltd	IR	Zoelectronic	GR
Argoss	NL	GEOTOPOS S.A.	GR
NEO- Netherlands Geomatics and	NL	Eurimage	IT
KSAT	NO	IPT, informatica per il territorio srl	IT
Nansen Environmental and remote	NO	Planetek Italia s.r.l.	IT
Comsine	UK	Spacedat s.r.l.	IT
Infoterra Ltd	UK	Telespazio S.P.A.	IT
NPA Group	UK	Tele-Rilevamento Europa: T.R.E.	IT
RSAC- Remote Sensing	UK	DigiUtopika	PT
Vexcel UK	UK	Critical Software S.A.	PT
Metria Miljoanalys (Lantmäteriet)	SW	Edisoft	PT
MFB-GeoConsulting GmbH	SCH	Borstad Associates	CND
sarmap	SCH	Dendron	CND
Altamira Information	ES	MDA Geospatial Services	CND
Aurensis	ES	AERDE	CND
Argongra	ES	Noetix Research	CND
Deimos Space	ES		

Table 2-1: List of VACs contributing to the survey to date (63)

2.3 EO Associations

A method similar to what was used for the consultation with EO VA Industry was applied to the consultation with Associations.

A list of 11 Associations was identified for interview (listed in Table 2-2) and an interview guide similar to the one used for the VACs was used (see Annex 2). The selected Associations all have a direct interest in EO, but at different levels geographically (national, European, global) and with emphasis on different steps in the supply chain: (research, aerospace, EO value adding, geospatial information).

#	Name	Country	Contact	Interviewed by
1	EARSC	European	Paul Kamoun (Chairman)	Birgitte Holt Andersen
2	EuroSpace	European	Alain Gaubert	Paul Kamoun
3	EUROGI	European	João Geirinhas (Secretary General from Jan 2006)	Matthew Stuttard
4	EARSeL	European	Rudi Goossens (Chairman)	Matthew Stuttard
5	EURISY	Int	Jean Bruston (Secretary General)	Monica Miguel-Lago
6	ISPRS	Int	Ian Dowman (President to 2008)	Matthew Stuttard

#	Name	Country	Contact	Interviewed by
7	AIPASS	I	Silvia Ciccarelli	Matthew Stuttard
8	AFIGEO	F	Yves Raillant	Paul Kamoun
9	Prospace	F	Norbert Paluch	Paul Kamoun
10	BARSC	UK	Matthew Stuttard (Chairman)	Birgitte Holt Andersen
11	The Alliance for Earth Observation	North America	Nancy Colleton (President)	Paul Kamoun

Table 2-2: List of Associations Participating (11)

2.4 Capture, Storage and Analysis of Information

The results of the interviews were either handwritten or captured electronically on the Interview Guide. All replies have been entered into a master EXCEL spreadsheet where complete confidentiality is ensured. The master EXCEL file will be destroyed upon completion of the analysis and only a copy containing non-traceable information will be kept and delivered to ESA.

Graphical, tabular and written analysis of the consultation with industry and trade associations is reported in chapters 3 and 4 respectively and resulting scenarios for the future needs of a Trade Association are discussed in chapter 5. Throughout the document, there are sections with “Open Issues” which raise questions/issues to be used as a basis for the next step in the process of open consultation.

3 Results & Analysis –Consultation with Industry

3.1 Overall Characterisation of Respondents

From the initial list of VACs, the consultation process revealed that some companies did not meet the criteria for being a true VAC and for some others, it proved impossible to get access for an interview. As a result, a total of 63 VACs were interviewed.

3.1.1 Ownership

Of the 63 VACs interviewed, more than half were “independent” companies (i.e., with internal, independent ownership). The other half was “dependent” companies, i.e., part/fully owned by a larger company.

	Independent	Dependent
Very Small VACs	16	5
Small VACs	16	10
Medium VACs	2	14
	34	29
	54%	46%

Figure 3-1: Proportion of Independent and Dependent VACs interviewed.

Of the 29 dependent companies, 8 were part of a larger software oriented company, 7 belonged to aerospace companies and 6 to research institutions. The figure below illustrates the full spread of ownership.

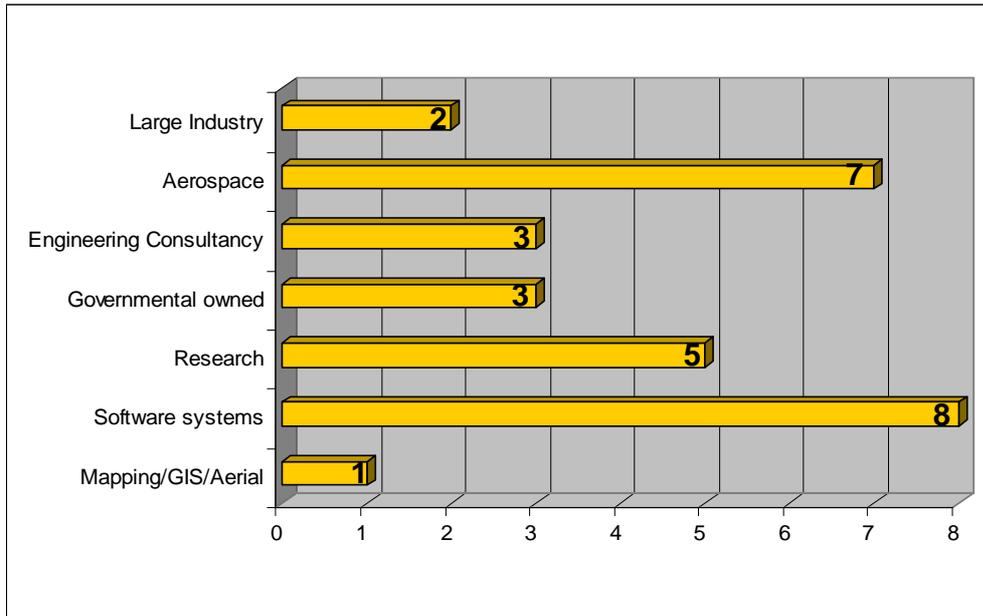


Figure 3-2: Ownership of Dependent VACs interviewed

3.1.2 Size of responding VACs

The size distribution of the 63 companies is illustrated in the figure below. The size definition is as follows:

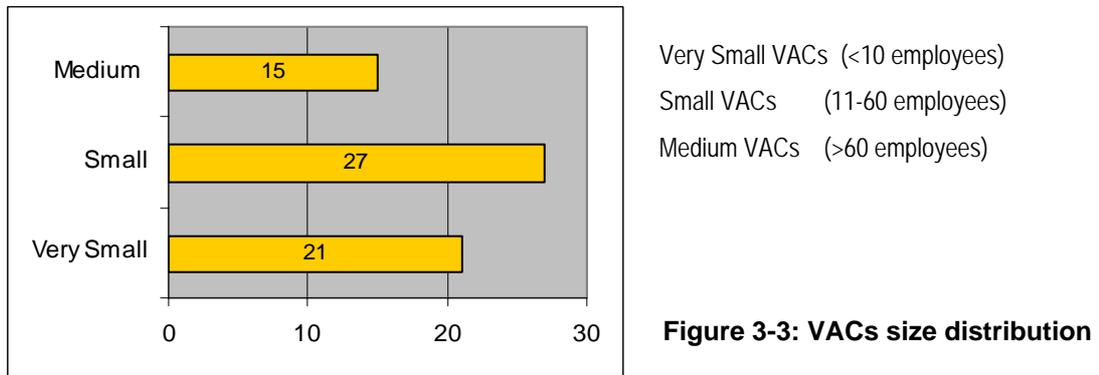


Figure 3-3: VACs size distribution

3.1.3 Geographical Distribution of responding VACs

The geographical distribution of all VACs interviewed is illustrated in Figure 3-4. A higher number of interviews (>5) were carried out for companies in France, Spain, UK, Germany, Italy and Canada – reflecting the larger number of value adding companies in these countries. Between 1 and 3 VACs were interviewed in other countries.

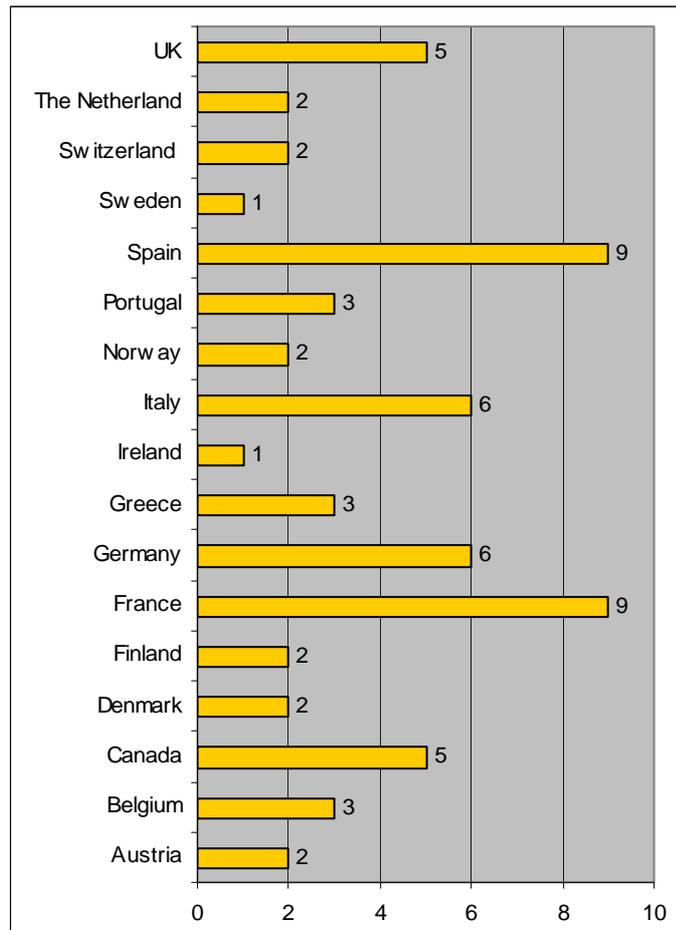


Figure 3-4: Geographical distribution of respondents

3.2 Drivers to affect supply and demand in the EO Service Sector

3.2.1 Observations concerning demand and supply drivers

The majority of the VACs are expecting the overall market for EO to grow which confirms the trend indicated by growth rate measurements made in the EOMD Industry Survey (Ref. 5). That study also estimated the Compound Annual Growth Rate (CAGR) for the EO industry to be nearly 18% between 2000 and 2002.

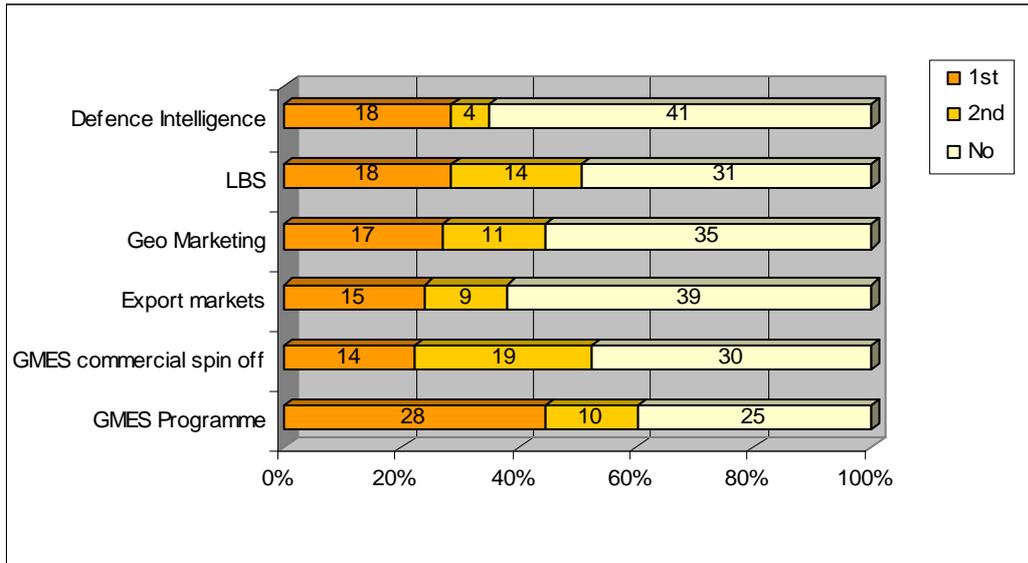


Figure 3-5: Future demand drivers

The GMES Programme and thereby the development of core GMES services primarily enabling growth in the public market are believed to constitute a major driver for the near future according to 60% of the respondents.

However individual views on GMES vary across types of player and the level of involvement in GMES. GMES may be a major demand driver but there seems to be a clear split between the views of small versus larger VACs where the latter are more favourable. Some VACs even see GMES as a threat. This is highlighted by the following quotations:

Responses to Question "Will GMES be an important driver in the future?"	Responses Made By
<i>GMES will be an important driver but mainly for the big players. Does not help small players.</i>	Very small VAC. Not active in GMES
<i>Politically speaking Yes. Practically speaking not sure if GMES will increase the overall market</i>	Small VAC. Active in GMES
<i>The roles are already given - the big companies are running the show</i>	Small VAC. Active in GMES
<i>It is positive that Governmental users are being organised to reach a critical mass of demand</i> <i>Geo return is killing an open tender process e.g. if one country is not participating in GMES then a service provider from that country cannot participate either</i> <i>Risk that GMES services will disturb already established commercial markets and we cannot isolate public from private services</i> <i>We need to have a clear profile of GMES to avoid wrong perceptions</i>	Small VAC. Active in GMES
<i>No GMES is only for the big players, nothing related to us...</i>	Very small VAC. Not active in GMES
<i>....difficult for small companies to get involved</i>	Very small VAC. Not active in GMES

<i>No GMES Programme just another excuse to build expensive satellites</i>	Small VAC. Not active in GMES
<i>Applications to support European Policies is the right approach as long as the CBA significance is there</i>	Small VAC. Active in GMES
<i>GMES provides a useful framework to develop these applications. Not sure to what degree it will actually develop the market as it is doubtful how this will be picked in terms of finding new funding sources in the future. It is a good way to demonstrate new data sources to users.</i>	Very small VAC. Active in GMES

Table 3-1: “Will GMES be an important driver in the future?”

The notion that GMES may foster commercial spin-off opportunities is believed by half of the VACs to be an important driver in the medium term. Discussions at interviews revealed the following reasoning:

- The anticipated increase in the level of demand from the institutional market will result in a lower unit price as a result of economies of scale, e.g. automation of image processing and general efficiency gains in the entire production line resulting in relatively lower unit costs.
- GMES will trigger the economic case for more satellites.
- The combination of standardised cheaper products and operational data supply will also open up commercial market opportunities.

Some responses concerning GMES commercial spin-off as a possible demand driver are provided below.

Responses to Question “Will GMES Commercial spin-off opportunities be an important driver?”	Responses Made By
<i>GMES Commercial spin off opportunities need to be supported in order to be developed</i>	Small VAC
<i>Yes due to more dedicated satellites</i>	Medium VAC
<i>no, it is too far ahead... and I am developing commercial business without GMES</i>	Very small VAC

Table 3-2: “Will GMES Commercial spin-off opportunities be an important driver?”

However, besides GMES the synergy with other technologies such as Navigation, Mobile/Satellite Communications and Geo-marketing are believed to constitute the main commercial market opportunities.

Responses on Geo-marketing and LBS as demand drivers	Responses Made By
<i>Geomarketing and LBS – Yes in another 5 years</i>	Small VAC
<i>Difficult due to lack of access to Public Sector Information (PSI)</i>	Small VAC
<i>Yes, integration of technologies is the way ahead.</i>	Small VAC
<i>No, there is already that synergy with GPS</i>	Small VAC

Table 3-3: Geo-marketing and LBS as demand drivers

The views on export markets as a potential market driver are very diverse. Around 40% of the VACs believe export markets will play a role but only in the longer term. Some of the concerns are listed below.

Comments concerning Export markets as a market driver	Responses Made By
<i>Export markets are difficult – perhaps in another 10 years</i>	Small VAC
<i>European companies do have a particular competitive advantage compared to local players</i>	Small VAC
<i>Not for us - we can only see 3-6 months ahead in terms of cash-flow</i>	Very small VAC
<i>Takes time...</i>	Medium VAC
<i>No, very complicated at social and political level</i>	Small VAC

Table 3-4: Export markets as a demand driver

As far as defence and security are concerned, about 35% of the VACs believe this as an important driver or at the same level as today. It seems this market is mainly of relevance for the larger VACs.

Of other important demand drivers, the following were mentioned and are sorted here by type of driver. The numbers in brackets indicates how often this demand driver was mentioned.

Commercial drivers	<i>Commercial markets (4)</i> <i>Media, digital mapping services (3)</i> <i>Urban environmental monitoring, Urban sustainability (2)</i> <i>Niche applications(1)</i> <i>Off shore (1)</i> <i>Agribusiness for sustainable development, e.g. to control worldwide food resources for the new decades (3)</i> <i>Natural resources exploitation, e.g. oil and gas (2)</i> <i>New business models, Google Earth, PPP (2)</i>
Institutional drivers	<i>National GMES service centres-> operational services continuation of services > continuation of satellites (1)</i> <i>European legislation e.g. Water directives (2)</i> <i>Geo standards, INSPIRE could be Important (1)</i> <i>Pollution control (1)</i> <i>Border control (1)</i> <i>Humanitarian applications (1)</i> <i>International Regulation/legislation: e.g. Kyoto protocol(1)</i>
Technological drivers Synergy	<i>Very high resolution data (50 cm or more)(1)</i> <i>Synergy with other technologies such as SatCom for fast data delivery (1)</i> <i>As input to Data assimilation forecast and modelling(1)</i>
Environmental drivers	<i>Climate change and thereby extreme weather events as it provides new opportunities for EO services, monitoring and forecasting and also to Trigger demand for dedicated satellites (global public good) (3)</i> <i>Environmental market in general (3)</i>

	<i>Marine ecosystems modelling (1)</i> <i>Crisis management (1)</i> <i>Risk management, geo hazards(3)</i>
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Table 3-5: Other identified demand drivers

3.2.2 Comments concerning demand and supply drivers

The identification of the GMES programme as a major demand driver perhaps reflects the fact that the EO VA industry “...is very highly dependent on public sector sales which account for 53% of industry revenue” (EOMD Industry Survey Study, page 304, Ref. 5). The study also states that this is more true for larger VACs rather than smaller VACs which would explain why larger VACs were in general more positive about the GMES programme than small VACs.

3.2.3 Open Issues concerning demand and supply drivers

The following questions remain open at the end of this exercise, and comment is invited from the industry and associations on these topics:

1. How can GMES be focused on serving large customers in the public sector whilst also engaging the skills of SMEs?
2. Is there a need to support commercial spin-offs from GMES? If yes, how?
3. What threats and opportunities will GMES create for commercial business and what measures can industry and agencies take to maximise commercial opportunities whilst minimising the threats?
4. What provisions can be put in place to ensure that EO applications research funding is not just devoted to GMES?
5. How can institutional funding best be directed so as to create sustainable commercial EO business in the public and private sectors?

3.3 Obstacles to market development

3.3.1 Observations concerning market obstacles

The dominating obstacle perceived by all VACs is the lack of operational data supply. Data suppliers were also interviewed during this process, and they indicated that operational data supply and cost were NOT obstacles. Consequently, it is perceived that data suppliers may be somewhat out of touch with the issues of VACs. Note however, that the number of data suppliers interviewed was very small and consequently, it is difficult to be conclusive on this issue.

At the other end of the spectrum, lack of R&D funding is seen as no hindrance for the majority of the VACs. The obvious exceptions being VACs based in countries where funding for EO application development activities has been low or reduced in recent years, e.g. Finland, UK, Canada, Greece and Portugal.

Obstacles					
	No	Med	Strong	NA	Total
Lack of R&D funding	26	8	10	19	63
Lack of Venture Capital	21	3	13	26	63
Lack of Operational data supply	8	3	30	22	63
Data costs	13	5	24	21	63
Market/user acceptance	15	9	18	21	63
Competition from 'conventional' services	19	10	12	22	63
Overselling	15	6	12	30	63

Table 3-6: Market Obstacles

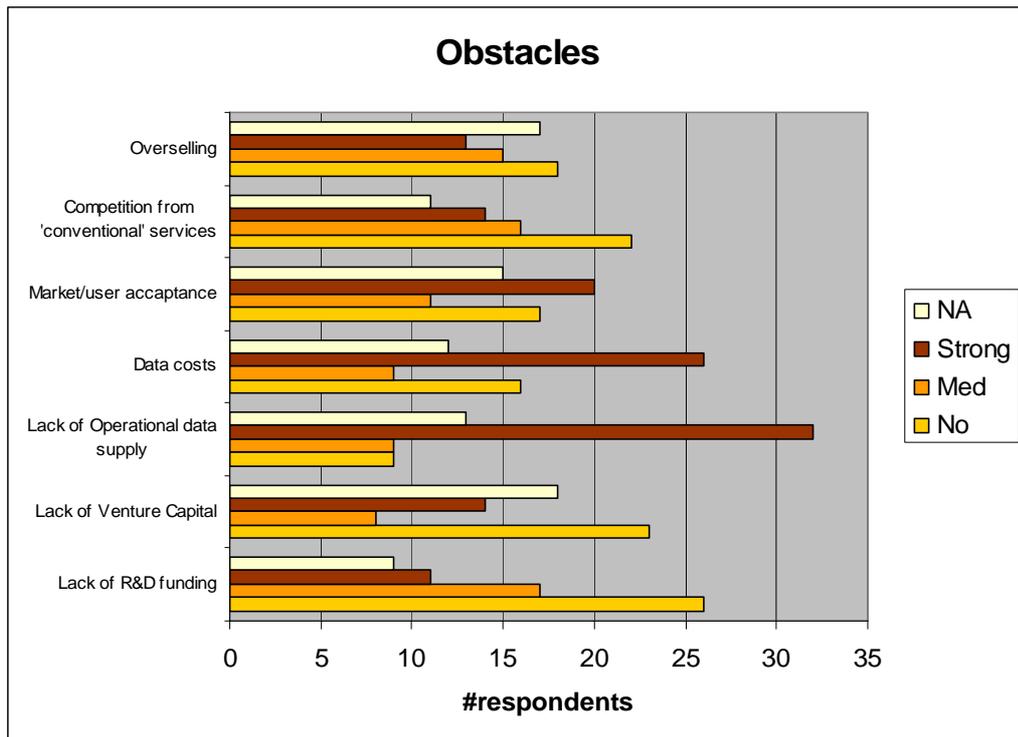


Figure 3-6: Market obstacles – graphical presentation

Further comments on market obstacles are collected in the table below.

Lack of R&D funding	<p>Lack of sustainable funding, Not much Finnish funding, EC we have not been successful, ESA high competition</p> <p>Strong, since R&D funding is controlled by big players. Access to funding is very competitive</p> <p>Lack of funding for demonstrations</p> <p>Strong, BNSC provides no funding</p> <p>No, only for specific issues like forestry</p> <p>Strong for Portugal, changing now</p> <p>There is actual funding enough it is more a matter of how it is being directed and used.</p>
Lack of Venture Capital	<p>Lack of investments for large scale production. R&D funding cannot be used for this.</p> <p>EO industry not yet attractive for venture capitalist - lack of cash flow</p>

	<p>Still perceived as too risky to attract Venture capital</p> <p>Strong; venture capital does not like technology</p>
<i>Lack of operational data supply</i>	<p>Since we cannot offer what the customer expects</p> <p>Really strong obstacle</p> <p>Strong (if we have more data we will have more market)</p> <p>The data is there but it is not utilised to its maximum</p> <p>Strong but rather the availability of data - to get access to the data is the missing link</p> <p>Depends mainly on ESA to guarantee</p> <p>Difficult to get worldwide access to near-real-time data (i.e. 2-3 hour turnaround) from ESA satellites</p>
<i>Data costs</i>	<p>This is only the perception in reality data costs is not a problem</p> <p>Yes VHR and Radarsat very expensive. Those owning the satellites have an advantage</p> <p>EO data costs fine, but PSI (e.g. met data) is high</p> <p>The problem is more lack of data policy. In the US data is free, from satellites paid for entirely by public money</p>
<i>Market and user acceptance</i>	<p>Mainly for commercial markets - here EOMD project helps</p> <p>Strong as long as we cannot offer operational data supply and the right data. For instance Ice service every day for the Caspian sea</p> <p>No, once the user knows the technology it is accepted</p> <p>Strong – the market doesn't know about the benefits</p> <p>Strong!!!! (GMES is popular because it is free, it is a service for the citizen) but who will pay for it?</p>
<i>Competition from traditional non-EO services</i>	<p>Yes from Airborne data</p> <p>Conservatism among the users</p> <p>Usually they are complementary</p> <p>In particular in terms of institutional constraints</p> <p>Institutional constraints/existing procedures and systems - they trust what they have</p>
<i>Overselling</i>	<p>Strong, we need to communicate in the right way</p> <p>No because the market is specialised and people know the limitations</p>

Table 3-7: Quotes on Market Obstacles

3.3.2 Comments concerning market obstacles

Since VACs purchasing data and data suppliers had different views concerning the continuation of data supply as market obstacle, it appears that data suppliers are out of touch with what VACs (and the market) really needs.

It is a bit of a paradox that lack of R&D funding is not seen as a hindrance for market development in particular since it is known that a considerable amount of the VACs total

turnover derives from public funding sources². However, this result has to be seen in its context, that while compared with other mentioned obstacles such as lack of operational data supply, availability of public funding is much less of a problem. The distinction between the real market and public development funding (ESA and EU funding) is extremely important for the VACs. They use this term themselves, ‘the real market’ and are obviously proud when they can state that in particular serve the ‘real market’. Public development funding, although still important for the economic stability of the VACs is sometimes likely to be regarded as a subsidy useful to develop new market opportunities, at other times it is seen simply as a way to acquire additional funding. Therefore public development funding is clearly an issue for the VACs as they are dependent upon it, at the same time they do not have much influence on how the scope and direction of public programmes from national, ESA and EU programmes are being defined. As the report will show in section 3.8.1 some respondents express their desire to have a more coherent and transparent funding strategy from R&D, application development and demonstrations to be coordinated between ESA and EU.

The consortium is aware of other obstacles to commercial development, which were not explored in the interview guide. For example lack of the right sort of people in the EO value adding world. Whilst there is a high proportion of highly qualified people in the VAC sector (shown by the EOMD Market Study) many of the most up to date and skilled people stay in the research world so there may be a shortage of leading edge technical skills in the commercial environment. In addition, due to its origins in public funding many parts of the EO VAC sector may still also be lacking in market-making and entrepreneurial skills, though there are some signs that this is changing.

3.3.3 Open Issues concerning market obstacles

1. How can industry elaborate its agenda to develop the market?
2. How can the interface between VACs and the public funding institutions be improved so that the funding becomes more efficient?
3. What skill sets are required to make the EO value adding sector more vibrant?
4. What are the barriers to true commercial market-making that can be solved collectively (upstream and downstream)?
5. What support from public development funding does industry need in specific areas such as science and algorithm development, standards, technology convergence (e.g. EO/comms/nav), infrastructure, data continuity, data access, data quality, market certainty, localisation for export markets, pre-competitive applications development and demonstration.

3.4 Industry evolution

3.4.1 Observations concerning industry evolution

It is very clear from the results that the EO Industry is aware of what is needed in order to move forward and ensure long term sustainability of service delivery. The figures below illustrate that the majority (76%) see VACs closer collaboration as a desired strategy and indeed a necessity to survive and compete with the big players.

² According to the EOMD Industry Survey, Ref 5, 22% of VACs revenue derives from public development funding.

	Yes	No	na	Total
VACs to form closer collaboration	48	6	9	63
	76%	10%	14%	

Below is a collection of the various viewpoints concerning closer collaboration among VACs. The viewpoints have been grouped according to the size of the VAC.

Viewpoints of Very small VACs
Yes, with VAC and other sectors
Yes, but not with companies in the same area, in different sectors
Yes in principle, why not...
In general the idea is good. It could be interesting the commercial partnership but case by case. VACs should decide the way in which they want to grow. "Small is beautiful". If you are in a large group then it will be difficult to manage your own situation.
Yes in one world market. It is important to see global but act local
Yes is the way forward
Both synergies are needed. Synergies provide more answers to the market, more fields to cover to bring solutions
Yes within the sector and within other sectors
Yes to join with outside companies. Geographical barrier is definitively an issue. Only country ventures if we have very complementary services
Yes. Because the industry is so fragmented that it has yet not managed to utilize the potential of the overall industry
Depends from many factors. Industry is changing with the years, but slowly and depending of the market
I don't know. It may help. Collaboration could help to promote business
No, you will never create market if you put everything in the same room
No, small companies should always exist, they are catalyst which speed up the process. They offer capacity building and know how to work with local institutions which is essential for the market to develop.
Viewpoints of Small VACs
Yes, we have to get away from the garage type companies
Yes, to make better use of scarce resources. Key to make the market grow. With GSE projects this is already happening
Yes. Too much competition and overlaps currently. Small VACs will be stronger if merging
Yes, but it already happening. We are already part of a larger company
Yes, we are already doing this. We are not a VAC but a service company
Yes but not with other VACs, complementary players to act as interfaces. In emerging applications areas also for credibility.
Yes, however we are not really interested in growing our company
Yes, definitively synergies with other sectors. Within the sector only with bigger companies
Yes, synergies very important. Need connections
VACs with laboratories & research (VACs- Research- Users) develop market
It depends from many factors
Yes but observing market necessities and with very specific companies

Yes, first with other VACs in order to form a group for a particular offer (small companies are getting together to form particular structures)
Yes, but mainly in complementary sector (navigation, GIS...)
Yes, both (closer collaboration with VACs and other sectors)
There is not a solution. Mainly the question is how to organise the market and market activities. It is a business problem from big entities to the small ones. Normally the needs of EO are present. More communication activates and then the market will flow also forming collaborations with the VACs
In principle Yes. But I am looking to put efforts and to find synergies in order to identify a European champion instead of lots of competitors supplying the same products (i.e. a product for ocean colour which will be the best one at international level.
yes, I agree on cooperation and synergies
yes, specialise integrating market to provide concrete results (square: Information services, GIS, data seller, VAC)
yes within the sector and within other sectors. Both options. Of course depends on precise actions
yes, ESA should promote partnerships, but leave it free for companies to decide (not possible to keep everyone happy in a consortium). Decide freely to come into partnership.
Less so with EO VACs and more so with companies that complement. There is a lot of overlap with EO companies so EO companies do not need to collaborate.
No, we are forced to, but not necessarily a good thing. If complementary maybe. If competitors then collaboration does not work.
NO, At commercial side makes sensible synergies and collaboration with partners not in the EO sector
No small VACs best for niche markets. We already work together.
No, it is artificial; there is no need to force. The cluster should be based on synergies. This is a problem for GMES GSEs (clients are outside).
Viewpoints of Medium VACs
Yes. Positive aspects of GMES e.g. forced to collaborate. New ideas to expand
Yes. Alone you are lost. Complementarity is the key word.
Yes. They will have to in order to keep up with the big companies. Vertical integration/complementary - not competing companies
Yes. We plan to work closely with niche players. Potentially to buy them up
Yes because they are too small. Collaboration in particular with other complementary sectors Establish good links with the big players
Yes Networking and partnerships in order to get bigger projects
Yes. Two possibilities: 1. VACs to be bought up 2. Networking
YES
Yes (merging companies)
Maybe yes, but that depends mainly on internal strategies from companies which should develop collaboration situations spontaneously
yes, in principle, for increasing business. Some competition is unnecessary, delivering services is complementary

Table 3-8: Views of the VA industry on closer collaboration

Likewise, the following figures show that the majority of respondents believe that the structure of the industry will change over the next 10 years.

	Yes	No	na	Total
Similar Industry structure in 10 years	15 24%	36 57%	12 19%	63

Below is a collection of the various viewpoints concerning the structural changes foreseen.

Viewpoints...	Viewpoints...
There will be a few big ones and few niche companies. Strong consolidation is already happening.	No real changes, no dramatic growth of the market, nothing like in other industries (GIS)
Waves of consolidation will take place - just like in other industries	Before data, now services, tomorrow operational services
Big ones bigger Small ones will either disappear, join together or will be bought up	Large expensive missions are out More dedicated flexible, low cost, missions End-users more involved
We are not really interested in growing our company	EO will be used in a broader GI context Solutions instead of technology
Many small VACs will disappear Average size of VACs will increase	Consolidation/concentration mainly driven by the public procurement of GMES services which will favour larger groups
Industry is maturing, Increased demand, direct sales are getting easier Automated processing leading to standardised products could pose a risk for small VACs although it also provides opportunities for add-on services	What has triggered this to happen: - Investment threshold has come down, e.g. satellites cheaper; - Technology has proven itself; - Processing cost has also become cheaper.
Consolidation will take place and both public and commercial business will take off.	Enlargement of scale vertical integration/complementary players
Large companies will take over smaller ones Due to low entrance barriers, new companies will always emerge	Consolidation: upstream players are absorbing smaller players. Downstream/market players are in-sourcing or absorbing specialised VACs
Market trends will determine industry structure	Some VACs are focusing on technologies, this is not sustainable The right approach is to focus on markets
Small VACs to grow in Niche markets Big companies are useful in managing large monster GSE projects, not a competitor to the small ones	Market is growing but not that fast. Big players are going in the direction of dominating the entire value chain (One stop shop, from satellites to final product)
Market will grow GMES is creating many high expectations However before we get the new sentinels (5-10 years) we risk losing the momentum	Market will grow Closer user collaboration Develop services which users really want Currently satellites are not built to satisfy users requirements

Table 3-9: Views of the VA industry on structural changes

3.4.2 Comments concerning industry evolution

There are a number of recent disruptive developments concerning evolution of the industry that many VACs have not yet assimilated into their strategies:

- Complementary players in related industries have entered the EO industry: notably Google Earth working with Digital Globe and TeleAtlas offering a compelling mass-market user experience overlain with a sophisticated business model based on advertising. Very recently Microsoft has perhaps confirmed the potential of this new model by acquiring the Vexcel Group of companies including Vexcel UK and Vexcel NL (previously Synoptics).
- Technological convergence and ubiquity – including broadband communications, positioning and navigation, grid technology and service oriented information architectures.
- In-sourcing at the level of public end-users as a result of standardised GIS ready products is also seen particularly in regional or national environmental agencies.
- Globalisation of labour markets coupled with high bandwidth communications permitting high value-added off-shoring.
- The impact of legislation and policy at a European and national levels: Lisbon, border controls, DG Information Society initiatives, INSPIRE, corporate sustainability – including the response of major industries to global climate change.

From the interviews the first clear tendency is the downstream integration lead by the two main players EADS/Infoterra and Alcatel/Telespazio/GAF taking full advantage of the GMES programme to optimise and make the entire value chain more cost efficient by high volume production of standardised and GIS ready products. In the slipstream of the big players we see a number of smaller often specialised VACs working closely with the bigger players usually a setting facilitated by the GSE or IP project. These bonds between the larger companies and smaller VACs can be of various strengths sometimes resulting in actual merging or absorption.

The second clear tendency is that smaller VACs are very aware of what is going on and are very conscious and generally open minded concerning their own future strategy. Interestingly enough these structural changes were not seen as a threat to their future existence rather perhaps as providing an opportunity for change.

However the perception is also that there is probably room for all types of players and that each type serves a specific purpose within the industry. The big ones to create the momentum needed to reach critical mass of demand and to justify the commissioning of new and dedicated operational satellites, which in turn will allow for operational data supply. Standardised GIS ready products to be integrated directly into the end-user production line could obviously be seen as a direct threat to the smaller VACs, however it might also create new possibilities for selling services to a broader customer base. Some possible strategies were mentioned:

- to stay on good terms with the big players
- networking with complementary players in order to expand
- to be bought up at the best price.

There are examples of where user organisations are acquiring EO capabilities by taking over VAC type companies. We refer to such a phenomenon as In-sourcing as opposed to Outsourcing. Examples of this are COWI Consult, a large Danish Engineering Consultancy type company which has bought up Kampsax (an aerial photography company) with extensive experience also in EO. Another example is the Finnish company Jaakko Pöyry also a large mainly forestry consultancy and service company which acquired Novosat in 2003 to strengthen in-house EO capabilities. Both companies are also involved in data sales.

3.4.3 Open Issues concerning Industry evolution

1. What can be done from the perspective of EU, ESA and an EO Trade Association to facilitate the process of consolidation to the benefit of the industry?
2. Is it important to encourage new companies to emerge or to attract new types of players to the industry, or is this perceived to be a natural process determined by market forces?
3. What new business models are now possible concerning exploitation of EO – building on the example given by Google Earth and Microsoft?
4. What are the dominant evolutionary drivers and how should the EO VA industry respond to them?

3.5 Identification of Common Activities for Industry

3.5.1 Observations concerning common activities for industry

In response to the question concerning areas in which VACs could work together in order to act bigger, the results presented in Figure 3-7 below require a some explanation since various caveats were added by the respondents. In addition, there was some confusion as to whether this was meant as potential activities for a Trade Association or as pure VAC to VAC collaboration schemes.

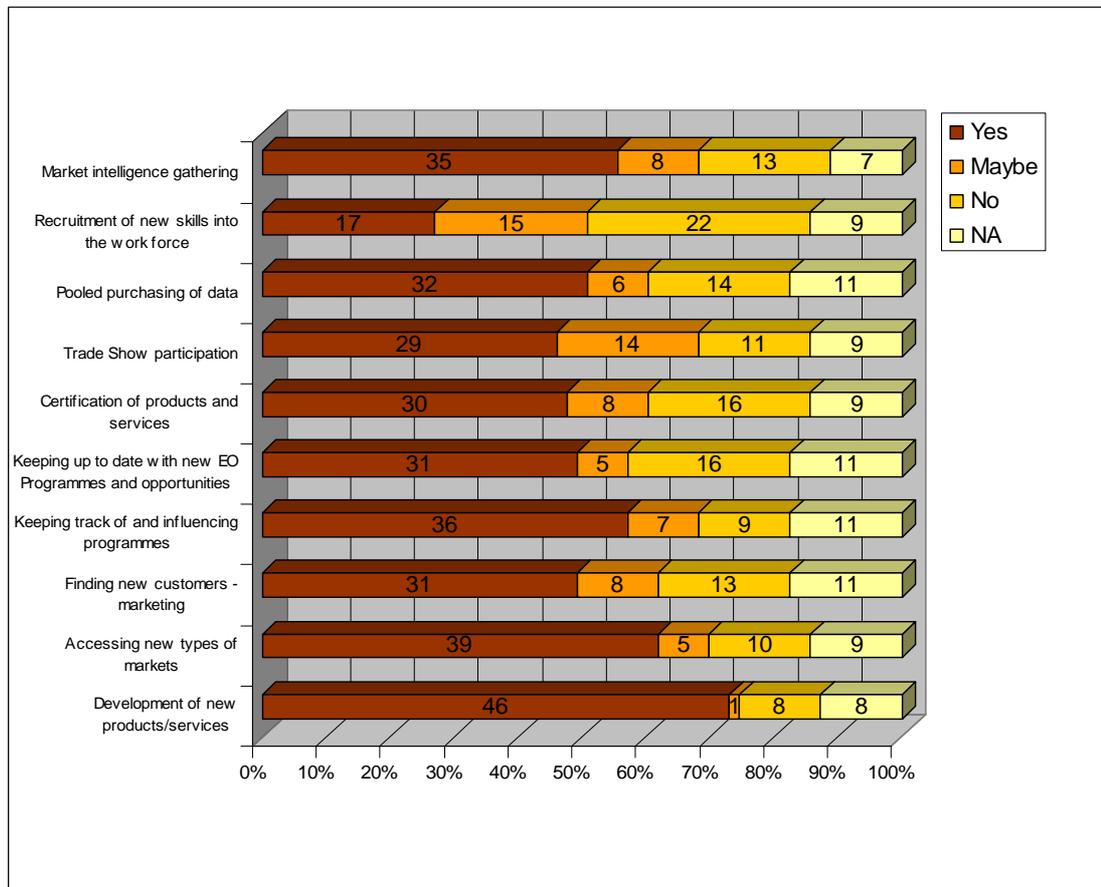


Figure 3-7: Areas where VACs feel they can work together

The table below highlights some comments behind the answers to possible generic tasks.

Area	Response
Development of new products and services	<p>Yes, if complementary</p> <p>No, due to IPR issues</p> <p>Yes, at a pre-competitive level</p> <p>Yes, we are doing what is required</p> <p>yes, but not with the sector</p>
Accessing new types or market	<p>Maybe if complementary</p>
Finding new customers	<p>Yes in teaming up with other companies</p> <p>No, this is my task</p>
Keeping track of and influencing	<p>Influencing yes. Keeping track is easy enough</p>

Programmes	
Certification of products and services	<p><i>Not so important, it takes too long</i></p> <p><i>Not convinced about certification</i></p> <p><i>Not an issue</i></p> <p><i>Validation Yes, certification No</i></p> <p><i>Certification if it makes sense</i></p> <p><i>Yes, but who will certify?</i></p> <p><i>Maybe, but it would have to be application and market specific. If a market needs certification, then it should be done for that</i></p>
Trade show participation	<p><i>Remote sensing trade shows are a waste of time. Cross sector trade shows Yes</i></p> <p><i>Maybe, but only my people can sell our products</i></p>
Pooled purchasing of data	<p><i>YES but it should not hinder other players e.g. new companies to get access to the same conditions. Not in a discriminating way.</i></p> <p><i>Maybe since the market is dominated by data owners</i></p>
Recruitment of new skills into the workforce	<p><i>Maybe, Commercial people are crucial to the business, but if I train them I will keep them for myself... maybe an ESA role but not VACs</i></p>

Table 3-10: Responses on Common Issues

3.5.2 Comments concerning common activities for industry

Activities that industry can do "in common" can be achieved by different means:

- Trade Association activities promoting combined EO capabilities, providing a common voice or establishing synergies.
- Application development activities that companies do in legally formalised teams, typically in (ESA or EC funded) activities (e.g. VAC-VAC teaming and VACs teaming with downstream industry). The configurations of formalized teams may vary according to the market maturity (R&D, demonstration, achieve market acceptance, integration of an EO component in a service portfolio (not necessarily using EO today).
- Horizontal activities to address industry wide issues such as industry presence (export), promotion, standardisation, certification, etc organised either as EC or ESA originated actions (such as EOMD) or in informal teams ('co-opetition' between companies/organisations)

Development of products and services came out as a strong desire as long as this is pre-competitive and done with complementary players. The same is true in some of the more out reaching activities such as accessing new types of market and in finding new customers.

The communication type activities, e.g. keeping track of and influencing programmes and keeping up to date with EO programmes and opportunities are also seen as non threatening or generic activities. In particular, the influencing issues are seen as important. In general, VACs are confident that they keep track of new funding opportunities through well functioning email services from relevant funding bodies.

The issue of certification raised a lot of discussion and is definitely not a straight forward question. Some do not believe certification is needed (perhaps because it removes

the commercial advantage of specialists, or because it adds a cost overhead). Others mentioned that there is a need to look at certification. Overall the need for certification is twofold: Firstly, there is a common issue for industry to define the liability for the services they deliver; secondly, there is a need for industry to demonstrate that their products and services are systematically within certain tolerances and are compliant with customer domain standards. The liability issue and the validation and quality issue are two elements that constrain the uptake of EO services today. With the endorsement by independent bodies that products and services are fit for purpose for the service being used, industry has something to gain as this can help increase user confidence and trust.

Pooled purchase of data was seen as a nice thought but practically impossible due to IPR issues. It could however be interesting to investigate if, for instance, a Trade Association on behalf of its members could negotiate a discount rate for certain data providers.

Recruitment of new skills into the workforce was also seen by some as an interesting thought, however probably not the most urgent issue. One proposed to have a common website where vacancies and jobseekers could announce themselves. This is already a function of the ESA EO portal.

The question concerning market intelligence gathering might have been slightly misunderstood as it could be perceived to be very specific customer information rather than what was intended: more market analysis on specific markets and market opportunities, such as specific country reports, or LBS market development trends etc. The results related to this issue therefore are believed to be somewhat underestimated and needs to be revisited.

3.5.3 Open Issues

1. What can be done to facilitate further collaboration among the VACs or complementary players in order to address common industry issues, as it is perceived by most VACs to be a good thing?
2. What drives the collaboration between the VACs and between VACs and complementary players? The market or projects?

3.6 Views, expectations and requirements for a Trade Association

3.6.1 Observations concerning requirement for a TA

Table 3-11 summarised the level of organisation in Trade Associations among the VACs. About half of the VACs are members of a National Trade Association (e.g. Chamber of Commerce, GI Association or similar). While 62% are members of an international Trade Association. Of these the majority are member of EARSC (56% of the total), others are EARSeL or GNSS network. Consequently the remaining are not reported to be member of any Trade Association.

	# resp.	% of total
Member of National Trade Association	32	51%
Member of International Trade Association	39	62%
EARSC member	35	56%

Table 3-11: VACs membership of Trade Associations

In response to the question whether current Trade Associations are too weak, it appears that there is a strong geographical bias. While more than 60% of respondents from the Canadian

and Northern European VACs answered positively to the question, less than 20% answered positively in Southern Europe. This might be influenced of EARSC undertaking the interviews in southern Europe leading to a skew in the replies. This is illustrated in Figure 3-8 below.

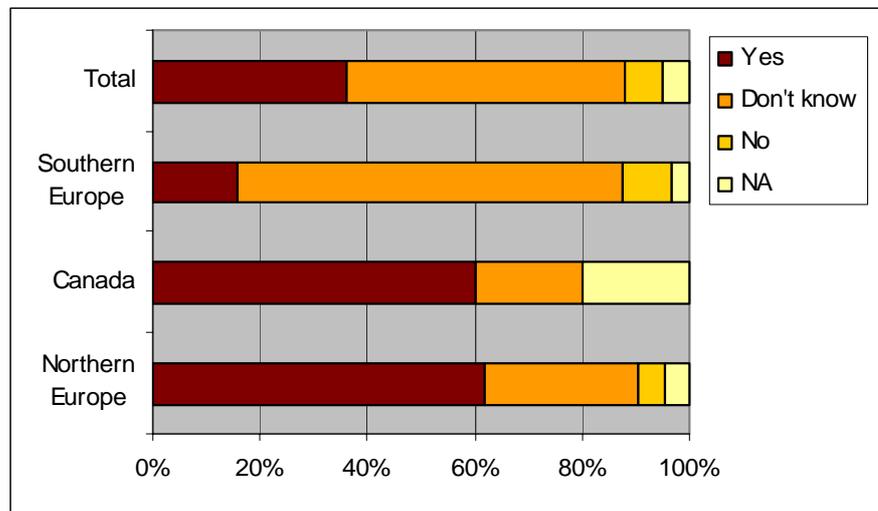


Figure 3-8: If current Trade Associations are too weak by regions

The EOMD Industry study (Ref. 5) defined three generic issues which were believed to allow VACs to act bigger and empower them in growing the market and to represent potential roles of a European wide Trade Association. Following the first round of industry consultation, these can be restructured to reflect the main goals of representation:

Promote combined EO capabilities of VACs	<i>To communicate the benefits of EO, and the combined capabilities of the EO service sector in Europe and Canada to new and existing vertical markets</i>
To act as a Common Voice	<i>To obtain and lobby for public development financing for developing the sector both for development of application and infrastructure. To voice industry's major concerns about access to data and continuity of such access in the future.</i>
To establish Synergies	<i>Establish links to parties outside the EO industry. Complementary players, e.g. GIS, navigation, etc To establish new types of business models to trigger demand for EO (e.g. Google Earth, Business Parks).</i>

Table 3-12: Generic Tasks for a Trade Association

The position of VACs towards such generic tasks is presented graphically below.

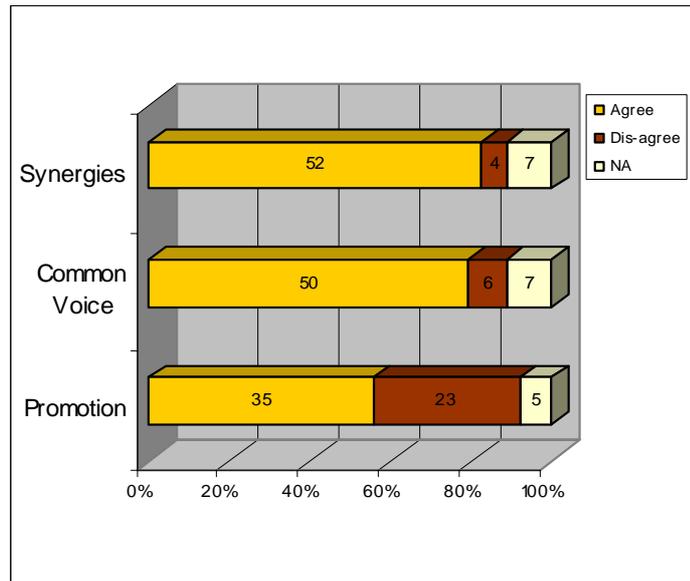


Figure 3-9: Level of agreement to the three generic tasks

While there is a general agreement with two of the roles, i.e. the need to have a common voice and a collective action towards establishing synergies to parties outside the traditional EO industry, the basic marketing issue was perceived as less relevant. There is a tendency that the larger companies are less concerned to have a TA to undertake basic marketing on their behalf as illustrated in Figure 3-10 below.

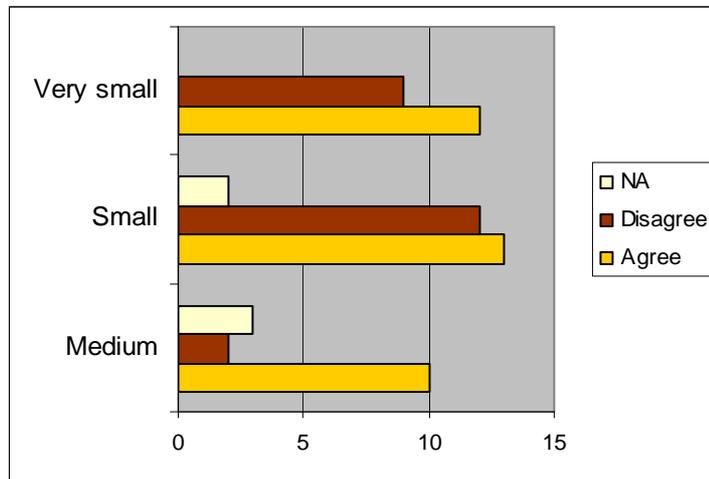


Figure 3-10: Position towards basic marketing according to size of company

A variety of points of view are presented in the tables below.

Representation – Examples of disagreement	Representation –Examples of agreement
<i>No - companies to do their own marketing</i>	<i>Agree, however language and local knowledge is important</i>
<i>No, difficult to agree, it is a very vague statement.</i>	<i>Agree but awareness using the right channels (ESA</i>

<i>Awareness should be intensive at global system & with different messages (we don't know where the market is coming from bottom-up or top-down) . The model should be 1st- training, education and 2nd- global advertising & marketing</i>	<i>should make links with Institutions at worldwide level and those Institution should spread the awareness). It should not include awareness-raising for technical people.</i>
<i>Disagree, I have concerns. There is no need to push. Caution to promote the technology because not all companies could do the same and then we come to overselling. Risk of overselling</i>	<i>Yes for the upstream chain, there is not a wide market. It is not a problem and one single message would be good. But a lot of caution for downstream (the service part) which should have different messages for different products and for different customers.</i>
<i>No, EO is not a sector, for us it is only a tool to help sectors to develop (i.e. Agriculture)</i>	<i>Agree but very difficult. Big consortiums already have lobbies. It could be very interesting for VACs to make a common position</i>
<i>Not agree. Different messages for different users</i>	<i>Agree But promoting general awareness BUT at very high political decision chain & education at public level. Not awareness to ESA</i>
<i>A single message is not effective for the market</i>	<i>Agree, awareness is good in general (i.e Google earth has been a revolution)</i>
	<i>Agree, the actual awareness of decision makers at EU level is rather limited.</i>

Table 3-13: VAC responses on a TA's role - Representation

Common Voice – Examples of disagreement	Common Voice – Examples of agreement
<i>Not agree, see Galileo example. We have put the lobbying voice in Galileo and Galileo Industries has collapsed for small VACs. Definitely that is the example how not to do things</i>	<i>EARSC is trying to play this role. Perhaps with the current consolidation of big players we will not need such a common voice in the future</i>
<i>NO, I do not believe in big lobbying to do everything and at the end give projects for big companies</i>	<i>Agree, lobbying already effective for GMES although situation wrt GMES future is unclear Small VACs needs a voice</i>
<i>Not agree because normally it is not a general representation, only bigger companies are represented</i>	<i>Agree BUT INDEPENDENCE Lobbying position, which should come from an independent institution as EARSC or ESA to other Institutions (World Food Programme, FMI, World Bank...).</i> <i>Unfortunately nowadays lobby exist but it is controlled</i>
<i>Not agree, If common voice, small companies will loose out. (Look at Galileo). GMES could learn from Galileo.</i>	<i>Agree BUT we should consider our business, not only ESA and EU. Institutional should be a channel to develop but not the unique user. Geo-information market exists and will exist without GMES.</i>
<i>Not agree for commercial</i>	<i>Agree, but networking lobby</i>
	<i>Public Entity which provides the common voice.</i>
	<i>Agree for Institutional where collective action is valid specially at European level,</i>
	<i>Again, the common voice which will share the same understanding of the business model. YES for upstream and caution for downstream (Companies are not able to do everything but caution is needed for the common voice)</i>
	<i>Yes, BUT larger companies do not share the same interest or concerns as smaller companies. If lobby, interests should be very</i>

	<i>contrasted</i>
	<i>Agree but the question is how to make the market strong?</i>

Table 3-14: VAC responses on a TA’s role - Common Voice

Synergies – Disagreement Examples	Synergies – Agreement Examples
<i>NO - companies to establish own collaboration schemes</i>	<i>Google Earth has created a lot of demand However an attractive market also attracts new players to result in increased competition</i>
<i>No we cannot be proactive</i>	<i>ESA is trying to do this in EOMD but not enough and sometimes too advanced.</i>
	<i>Agree but partnership is a commercial problem for each company to solve on their own</i>
	<i>Agree but domain per domain (don't know yet the impact of Google Earth)</i>
	<i>Agree, it is necessary to develop the industry (knowledge from industry to market & services)</i>
	<i>Agree, normally synergies will expand the market</i>
	<i>Agree. New types of business models. New needs, new offers, new packages. It is necessary to make lobbying</i>
	<i>Agree, we should invest in that direction</i>
	<i>Agree. EO market will not make profit without synergies outside.</i>
	<i>Agree, but would it work because of conflict of interest. Would have to be a very neutral body. Would be sceptical that it would work</i>

Table 3-15: VAC responses on a TA’s role - Synergies

A Trade Association should primarily be for EO companies but with strong links to the broader community to allow for development of synergies in the market place.

Only a few countries have a national EO Representation body, e.g. UK, France, Italy and Denmark. However many VACs are members of more general Trade Associations such as Chambers of Commerce, Aerospace SME associations, or GI related Associations.

Benefits of current memberships of Trade Association were not seen to be overwhelming, the main benefit mentioned was networking. Some VACs felt that many trade organizations were of dubious value although some did indicate the possible presence of immeasurable and intangible benefits.

In response to expectations for a European Trade Association in terms of desired activities and roles – the following list summarises such a ‘wish list’:

‘Wish’ list for a Trade Association
Professional lobbying to facilitate influence of future EO Programmes to serve the interests of its members in a neutral and fair manner
To facilitate Networking
Market intelligence/market studies

Export facilitation/support
Communication on what is going on

Table 3-16: Wish list

Main concerns or reasons mentioned for not being members, or what a Trade Association should not be concerned with:

What a Trade Association should NOT be concerned with	Times Mentioned
Should not be concerned with commercial activities, contact with users, business development for companies or our day to day business	11
Not only a voice for the large companies and should not be driven just to serve the aim of the big players. The large companies have too much influence, perhaps they should be excluded from a VAC trade association since small VACs are not being heard	8
Not be in competition with its members	4
Not be a club of friends or a talking club	4
The head should represent a true VAC	1
It should not be dominated by people who just want to build hardware	1
Not a forum for dreamers, we need to develop a real market	1
It's mandate should not be influenced by ESA	1

Table 3-17: What a Trade Association should not be concerned with

In terms of financing of such a Trade Association, there was general agreement that a basic membership fee is required. Although a few of the smaller VACs expressed concern about the current fees, the majority expressed willingness to pay if benefits are visible and tangible. It was also suggested by quite a number to have some sort of ad hoc payment for specific services, e.g. VACs to sign up for a specific market study or contribute to a Trade Show in a potential export market etc.

It was also suggested to seek additional funding through ESA and National governments and perhaps through contracts as long as it does not conflict with commercial interest of the members.

3.6.2 Comments concerning requirement for a TA

In response to the question concerning the level of agreement to the three generic roles of a Trade Association Basic Marketing scored relative low. Awareness rising, e.g. a presentation of the combined capabilities of the EO Industry as opposed to basic marketing might however have scored higher.

During the interviews it was communicated that one new Interest Group has been formed in order to act as a common representation and lobbying platform for all companies involved in the GMES Land projects (both GSE LAND/ESA and GEOLAND/EU).

3.6.3 Open Issues concerning requirement for a TA

1. How can the interests and views of smaller companies be better represented?
2. Why do some VACs not see a benefit or place for them in a Trade Association: are there specific barriers and how can they be overcome?

3.7 Feedback on future Public Development Funding

3.7.1 Observations concerning public funding requirements

Almost all the VACs interviewed have taken part in National, EC or ESA R&D programmes.

EC projects are in general terms not popular. Integrated Projects are seen as too big and inefficient. Except for the funding there is not much gained in participating.

On the other hand ESA GSE and EOMD projects are very popular and VACs want much more application development funding in the future as the EOMD activity is seen as being unique and in particular tailored to small and medium sized VACs.

The following comments have been collected regarding ESA application development:

Comments on future funding requirements	
ESA to stay present in GSE (open letter from EARSC in Oct 05) EOMD is good. End user involvement Small contracts favour small VACs	ITTs are too restrictive since a requirement is that the application has to be new and not funded before VAC specific (smaller projects) Allow for certain degree of freedom (not micro-management) Encourage bidders to work together if similar proposals are put forward - both could be funded/merged Why not have a pre-check service to encourage collaboration?
ESA should listen to end-users ESA to support accessing mandatory organisations: EC, FAO	Better cohesion between ESA GSE and EC fast track services Initiatives tailored for VACs
Smaller projects Budgets for scientific networks for scientists to provide for innovation and exchange of ideas Public administrations and schools	Too many documents/deliverables SoW too much of an engineering approach The feeling for the real issues is missing
Strengthen EOMD projects like Corporate sustainability Focus on commercial markets Fast precise focused projects where small VACS can lead and team up To create niche markets for the small VACs ESA EOMD should do the non-political initiatives	More EOMD type projects with focus on end-user demonstrations Size of contract and duration perfect Like the flexibility of ESA Only negative thing is the requirement that a given idea/project had not been done before
Proposal submitting is gambling There are too many criteria Make it simpler EOMD is very good for forming teams Focus on innovative ideas and to test new concepts	EOMD very good, but it should not be limited to ESA sensors Small efficient projects, quick, short procedure, e.g. get a customer involved and demonstrate
Very happy with the EOMD. Appreciate relatively	EOMD projects are good, but there is a tendency to

<p>small projects, focused, very useful</p> <p>There could be a better synergy between EOMD projects and GSE</p> <p>Innovator - excellent</p>	<p>try crazy ideas instead of focusing on some more sensible things that are actually sustainable.</p>
<p>EOMD is very good: it is the only programme to focus on innovative projects, engage with an end-users, and test new ideas</p> <p>Drawbacks: bidding is hard work and time consuming - a pre-screening service would be helpful</p> <p>When awarded a contract ESA asks an awful lot for the money, many deliverables, and high expectations from ESA side.</p> <p>Senior ESA staff are excellent - younger not much understanding for the real world, arrogant</p>	<p>GSE very good, but we have to be patient</p> <p>Interaction with users very positive also since it gives us better user requirements</p> <p>EOMD programme is a bit a Catch22:</p> <p>Without operational data supply difficult to develop the commercial market however it is not ESA mandate to provide operational data</p>
<p>Make strong & durable links with institutions. (Due defined (4years period) time durability on local institutions & governments, once that institutional representative is included on the project, the mandatory period is finalised)</p>	<p>Small size projects to promote quick applications (market is very flexible so there is a need to develop quick applications within the EOMD strategy; if 250 K€ budget, better distribution for example 4 project *62,5 K€ than 1 project*250K€</p>
<p>Strong institutional links as market strategy.</p>	<p>Reduce size of consortiums (will greatly reduce the administrative work)</p>
<p>ESA has proved to be effective in development of services. ESA has a more effective role than EU on applications support. We are quite uncertain of the position of EU. ESA should develop the political mandate for Applications & Services. It is a real concern at VAC level.</p>	<p>Too much administration and bureaucracy with Internal Reports. Industry should be more focused on project realisation.</p>
<p>Study first market opportunities and then develop applications.</p> <p>Links with other data providers</p> <p>Simplify the access to the EO data.</p>	<p>Public awareness on the new horizon of data applications: surveillance, early warning, illegal migration, insurance ...</p>
<p>Could have programmes that are more open rather than forcing projects to be on specific themes.</p>	<p>ESA-EOMD should be in close contact with VACs to understand the real market.</p>
<p>EOMD is good</p> <p>Leave subject open for the companies to explore, not too prescriptive</p> <p>Broader ESA: ESA too research oriented</p>	<p>EOMD good</p> <p>Projects should include a data acquisition budget, since archived data is not good enough to demonstrate the usefulness of NRT.</p> <p>More flexibility would be appreciated and not too prescriptive</p> <p>Do not waste so much money on overheads, writing documents, demonstration of progress at micro level, a matter of trust really.</p>
<p>Workshop for Users (awareness and communication) in potential benefit areas instead a persecution for users to be included on the projects.</p>	<p>The smaller VACs are important to avoid cartel like situations</p>
<p>Make strong & durable links with institutions. Due defined (4 years period) time durability on local institutions & governments, once that institutional representative is included on the project, the</p>	<p>Reduce size of consortiums (will reduce administrative work)</p>

mandatory period is finalised.	
ESA-EOMD should be in close contact with VACs to understand the real market	ESA should communicate more how the GMES services capability can be exploited. The role of small companies is uncertain.
Study first market opportunities and then develop applications Links with other data providers	Create a "User organisation" for understanding the USER side in finding the development of the services.

Table 3-18: Feedback to ESA on future funding requirements

3.7.2 Comments concerning future public funding requirements

Preferred orientation of future calls should in particular support the following actions:

Recommendations for further funding:	
Kick start development of commercial markets	To test new ideas
Innovative projects	Demonstration to a user
Export oriented initiatives	Development of commercial markets

Table 3-19: Recommendations for further funding

A number of recommendations for further improvement of EOMD are summarised below:

- SoW should not be too prescriptive on required thematic content but should allow for freedom and flexibility
- Keep number of deliverables and nugatory paperwork to a minimum and concentrate on the real issues. ECSS process is designed for space systems and tailoring it to VA demonstrations results in a very heavy overhead.
- A larger number of these contracts should be funded to allow for speculative high-risk initiatives and new companies that are inexperienced in EO and associated ESA programs.
- Introduction of pre-screening service to minimise efforts lost due to the high level of competition

Size and duration of contracts are seen as just perfect and tailored for smaller companies. VACs like the turn around time from ITT announcement to actual implementation, because it is relatively fast - at least compared to what is experienced from the EC side where the process takes at least nine months or even years.

3.8 Other comments to ESA

In response to the more open questions concerned with feedback to ESA a range of comments were collected. In order to provide the original sense of the comments it has been decided to present all statements as they have originally been recorded. As a consequence the list below is rather lengthy.

Comments concerning collaboration between EC and ESA	
EC projects are less tailored for small companies ESA to stay present in GSE (open letter from EARSC in Oct 05)	Better cohesion between ESA GSE and EC fast track services is required EC projects are bad

Large IP's are not efficient, for small VACs it is just a funding mechanisms: no concrete problem solving, no added value	ESA very good compared to EC and national programmes
ESA has proved to be effective on development of services. ESA has a more effective role than EU on applications support. We are quite uncertain of the position of EU. ESA should increment the political mandate on Applications & Services. It is a real concern at VAC level	FP7 is not clear: will it support operational service development to ensure the long term financing etc
Industry concerns on the EU role focus on applications. It is not clear how EU will develop those activities.	Concerned about continuity of GSE, that EC is suppose to take over further GMES service development
Comments concerning future orientation of ESA	
More funds on Applications & service development in order to develop new products and market. (Big invest in satellites and very little for services, that technology should be exploited and used).	ESA should listen to end-users For VACs and small countries: specific sensors, small satellites ESA to support accessing mandatory organisations: EC, FAO
ESA can facilitate the funding and development of satellites through concessions since the market can make the satellites cheaper (half price) than if contract is to go through the ESA machinery - but allow for real competition Sentinel projects are good - however they should not compete with US, better to complement and fill gaps	Risk that we miss the momentum of recent year's efforts in GMES service development and other market development initiatives due to the timing of the planned sentinels. We cannot wait 5-10 years!! We need 2 (high latitude) and min 3 (lower latitude) SAR satellite to provide daily ice information. The process needs to be speeded up.
ESA too research oriented	ESA should play a bigger role in VA segment , not only concerned with building satellites
Future Missions should be more operational ESA should approach strong synergies with other institutional players	Outside market should be deeply analysed. Not PUSH forward but PULL. ESA should be involve in all cycle (from building the satellite to applications)
Invest in better structure for market development	Would like to have more ESA programs. Applications development.
The Sentinels must be driven by user needs to ensure operability and long term data continuity ESA should do what they are good at - leave ground segment and data distribution to the market	We feel we do not have influence on programmes ESA should focus on building small satellites, more efficient
	ESRIN (or JRC) shouldn't become an operational center and thereby compete with industry
Comments concerning Geo Return	
Wish they wouldn't get bogged down in Geo-return issues.	Geographical return is very rigid in ESA
	Geo-return should not govern service development - the best capabilities and resources are not utilised to the maximum in this way.
Generally speaking I am very content with ESA - only problem is Geo-return	ESA has high quality of tendering but geographical return is a barrier for maturing the sector

Comments concerning Operational data supply, data access, data policy	
Operational and reliable data sources to establish core business & applications	Data access better coordinated and accessible.
Too much bureaucracy for DATA acquisition Industry provide profits and market, category 2 should be avoid ESA-EOMD together and Association should visit one by one all European companies and understand really their problems	Data access easily, reliable, capable is essential Concern: Bad service of ESA in distribution (category 1 category 2). Data older than 1 week should be free. Then Industry is able to produce more products.
Continuity of data (Short term: provision of new services and long term: GMES)	More availability of data will provide stability for the sector
Guarantee operational data (constant data flow) and long term services through a financial structure for applications	Data policy in commercialisation in order to create an open and flexible market ESA Financial mechanism very slow
ESA commitment to guarantee and to secure continuous & operational access to data. The industry will create market.	ESA should ensure the links between space infrastructure and services and applications.
ESA to move towards operational data services - it is crazy to launch expensive satellites and then fail on the data delivery	Strong need on data access to develop new services. (companies which are providing new applications should have easy data access)
Free data to create operational services	
Comments concerning ESA management and Red Tape/bureaucracy	
Strengthen the EMITS tool, a database or directory where you can find synergies with other companies (Business to Business applications)	Senior ESA staff are excellent - younger not much understanding for the real world, arrogant Impression that ESA is dictated by the big guys
ESA is too much oriented to manufacturing, should be more applications oriented if they want to develop the market and be effective on real EO industry (e.g. Fuegosat, mainly all money for ground segment and very little for applications)	Too much administration and bureaucracy with Internal Reports. Industry should be more focused on project realisation. ESA should follow up the National Contributions for Countries. Sometimes National contribution commitments are not real.
Internal communication between ESA departments (ESA-EO infrastructure and ESA-EOMD) and create synergies for companies who are developing infrastructure for ground segment to applications	Internal synergies with other ESA departments and divisions. As synergy is the right strategy to invest internal ESA and external within EO VACs companies. Profit will come from synergies
GMES should be reliable with no temporal gaps. Not all sources for GMES, ESA should find structure to cover gaps for the upcoming years.	ESA too big and too slow, reacting too slowly
The biggest impediment to small business is policy. Government agencies need a certain types of data, but are not prepared to access remotely gathered data. Policies need to be in place that mandate remotely accessed data. Trade bodies should help to form alliances or consortia for bidding on projects. Don't need another company database. Need personal contacts from a trade body.	Stop having preconceived ideas of how VACs should work together and which VACs work together. Should not get bogged down (concerned) on the minimum number of companies in the consortium... can the consortium do the job. ESA has best of intentions but sometimes the politics of Europe gets in the way.

	ESRIN management team is rather arrogant as they believe to have all the right answers beforehand
Comments concerning Power balance	
Looks like ESA favours big contracts with big companies	ESA is governed too much by big industry.
Sometimes I think that ESA is less interested in success of services and more interested in the next suite of satellites.	Relationship between ESA and VACs is getting too chummy. Ought to be a division of labour whereby industry outreach in EO sector ought to go beyond what ESA can do without being industry arm of ESA. At the same time there should be a good dividing line between core mandate of ESA and how far ESA feels it needs to go in its mandate in order to be successful.

Table 3-20: General feedback to ESA

4 Consultation with Associations: Observations and comments

Associations were interviewed as described in Section 2.3.

The selection included International, European and national societies and associations concerned with EO or geospatial information. Whilst the number of interviews was smaller than for the VACs, the representatives interviewed were speaking for the organisation.

4.1 Description of Associations

4.1.1 BARSC

BARSC			
Contact	Country	Type of Association	Number of Members
Matthew STUTTARD (Chairman)	UK	Remote sensing, Commercial, National - UK	19 companies (registered in England)

Members benefit	A point of contact towards government Privileged chain of communication to government Annual Conference allows for a platform to show members activities
Top 5 successful services	1) Lobbying - access to BNSC 2) Annual conference (speaking slots, free stand) 3) Annual lunch with high level speaker 4) email list 5) Out-reach activities, e.g. brochure, eNews, Newsletter
Strategy	We want to engage more with Research Org. and Governmental bodies and Primary funders of EO (e.g. Met Office, Env. Etc) No declared strategy towards EC and ESA National EO policy is split among a number of actors in the UK
Time scale	Strategy is discussed on an annual basis
Complementary to other EO associations	Yes on the whole. Members do not have time to be members of many associations. BARSC plays a niche role: EO in UK.
Membership fee	350 UK Pounds
Government funding	Not directly. Contribution to Brochure and workshop.
If Association can enter into Government Contracts	No

4.1.2 ISPRS

ISPRS			
Contact	Country	Type of Association	Number of Members
Prof. Ian DOWMAN (President)	UK	Remote sensing, Research, International	90 National orgs (Ordinary members with Voting rights) 10 Associate Organisations 50 Sustaining (e.g. Leica, ESRI, agencies) Not open to individuals

Members benefit	Congress every 4 years (reduced admission, free stands), free peer reviewed journal (one of the top 3 remote sensing journals)
Top 5 successful services	1) Meetings/ networking (including travel grants) 2) Journal 3) Technical commissions 4) Representation of RS in international for a (GEO etc) 5) Raising awareness (outreach)
Strategy	Yes. Sustain and develop the scientific programme, based on excellent research, expand international role with focus on developing countries, education and technology transfer.
Time scale	10 year strategic plan. 4 year mission statement.
Complementary to other EO associations	Yes. ISPRS does not have a lot to do with industry. Tried and failed to draw VHR companies into CEOS. Would like closer links but do not want research focus to be compromised by industrial vested interests. Represents national interests at international level.
Membership fee	Ordinary membership costs 140 euro to 3270 euros pa depending on number of active specialists represented. There is a similar scale for sustaining members. Regional members: 70 euros pa.
Government funding	None. ISPRS does not fund its congress. Congress is financed by the national host - which may obtain government support.
If Association can enter into Government Contracts	Yes, but it does not do commercial contracts. It enters into contracts for publication of the journal. ISPRS is a not for profit organisation registered in the USA.

4.1.3 EUROGI

EUROGI			
Contact	Country	Type of Association	Number of Members
Mr Joao Geirinhas (Sec Gen)	Portugal	GI / European (EU25 + CH, NO, Iceland, Russia, E. Europe)	22 national + 2 European. In 2007 membership structure will change to allow Sponsors (industry), Regional (e.g. GI Northern) and individual members.

Members benefit	Currently by federating the interests of national GI organisations at European level. Participation in EUROGI allows GI organisations to get involved and to build capacity, to develop networks and identify project opportunities.
Top 5 successful services	<ol style="list-style-type: none"> 1) Networking 2) Insert a user perspective into European policy (counters the strength of producer orgs - mainly national mapping agencies) 3) Outreach 4) Awareness raising and capacity building 5) Lobbying EC (less important), e.g. did not influence the FP programme.
Strategy	<p>Strategy: Develop advisory groups for each EUROGI objective: Datasets (Inspire), User access, Applications (GMES, Galileo, ESDI, showcases), Communication, External Affairs. Current focus is on changing the EUROGI statutes and strengthening links to Eastern Europe.</p> <p>Vision: Geographic information, with all its aspects, should become a fully integrated component of the European knowledge-based society.</p> <p>Mission: To maximise the effective use of geographic information for the benefit of the citizen, good governance and commerce in Europe and to represent the views of the geographic information community. EUROGI achieves this by promoting, stimulating, encouraging and supporting the development and use of geographic information and technology.</p>
Time scale	Objectives/Strategy are defined for 3 year periods but reviewed annually.
Complementary to other EO associations	Yes. Would want to work with a European EO body - build informal network and commit to common objectives.
Membership fee	'A' (voting) €7000 'B and C' (trial members) €3500 'D' pan European €1700 Fees for new member classes TBD. Revision in 2007.
Government funding	Yes. EC funded start up in 1994. National association hosts the secretariat and funds it. (Was NL cadastre, is

	<p>now the PO geog institute).</p> <p>In some cases national government meets the cost of their member participating.</p>
If Association can enter into Government Contracts	Yes. Best example is the GINIE project (with JRC) - an EC IST funded consultation activity closely linked to INSPIRE.

4.1.4 AIPAS

AIPAS			
Contact	Country	Type of Association	Number of Members
Giovanni Sylos Labini (Vice President of AIPAS)	Italy	Space (SMEs, Commercial, National, Italy)	25 all Italian SMEs

Members benefit	<p>Visibility of industrial policy at national (Italian) and European (ESA, EC) level.</p> <p>Representation of Italian SMEs to space prime contractors.</p> <p>Visibility by government and official bodies (Italian, EC, and ESA) of SMEs needs.</p> <p>Everyone supports SMEs in principle</p>
Top 5 successful services	<ol style="list-style-type: none"> 1) Lobbying 2) Internal communication 3) Establishing a common industry position on space (e.g. national contribution to ESA Green Book) 4) Partnering between members (e.g. building consortia) 5) Syndicate action (e.g. complaints to clients - does not expose one company in front of potential clients)
Strategy	AIPAS provides services to companies offering a diverse range of technical expertise and products, all targeted at space applications. The diversity of the Association's members is one of its key strengths because it can provide an invaluable resource to the SME that is looking for expertise that complements its own capabilities.
Time scale	Annual. Strategy is prepared each year for the assembly.
Complementary to other EO associations	Complementary. EARSC is more specific than AIPAS. A federation approach would be welcomed with foreign associations. Would see an MOU as a valuable instrument for shaping long term strategy.
Membership fee	<p>€2400</p> <p>For companies with < 15 staff €1200</p>
Government funding	Yes from national and regional government. Funding supports secretary, the web service and other AIPAS promotion.
If Association can enter into Government Contracts	Yes, it has carried out paid consultancy for regional government.

4.1.5 EARSeL

EARSeL			
Contact	Country	Type of Association	Number of Members
Rudi Goossens Mrs. Gesine BÖTTCHER	Belgium	Remote sensing, research, European	250 member organisations (no individuals)

Members benefit	Networking amongst members through various activities. Results in high level of collaboration. Symposium and SIG meetings (100 - 150 people) lead to about 2400 researchers meeting up each year.
Top 5 successful services	<ol style="list-style-type: none"> 1. Newsletter (internal) quarterly 2. Symposium for members 3. Special interest groups (13) e.g. Radar, developing countries, 3D, Fires, Forestry, Urban. 4. Publication of symposium proceedings (electronic) 5. Peer- reviewed proceedings
Strategy	Main goal is to stimulate research collaborations at European level (much research is still very national). New strategy of closer contact with ESA. Wish to influence the type and capability of sensors. Strong links with UNESCO provide routes into CSA, NASA and ISRO.
Time scale	1 year
Complementary to other EO associations	Yes. Concerned with science research. Not commercial. Can help bridge contact between research and commercial communities.
Membership fee	320 Euros If more than 10 researchers then 600 Euros.
Government funding	ESA and Council of Europe are sponsor members. However ESA funding has been stopped. UNESCO provides some funds for travel of board members. Majority of income is from fees and meetings, aim is to generate a small (€1k) annual surplus.
If Association can enter into Government Contracts	EARSeL is a not for profit organisation registered in Strasbourg. It is an NGO of UNESCO. It can contract.

4.1.6 AFIGEO

AFIGEO			
Contact	Country	Type of Association	Number of Members
Yves RIALLANT	France	EO / GIS	150

Members benefit	Local affiliation and reference to a global structure
Top 5 successful services	<ol style="list-style-type: none"> 1. Monthly newsletter 2. Executive secretary visit members and users locally 3. Web site with dynamic possibility for members to input documents 4. Working groups 5. Symposium
Strategy	Update statutes; Structure the profession
Time scale	2-5 years
Complementary to other EO associations	Yes
Membership fee	15 euros for individuals, 150 euros for SMEs, 5500 euros for institutions
Government funding	Through institutions membership
If Association can enter into Government Contracts	Yes

4.1.7 Alliance for Earth Observations

Alliance for Earth observation			
Contact	Country	Type of Association	Number of Members
Nancy COLLETON, Executive Director	North America	The alliance promotes the understanding and use of EO for societal and economic benefit.	21

Members benefit	Pull everyone resources toward the agenda of EO, share resources, try to impact non EO sector
Top 5 successful services	<ol style="list-style-type: none"> 1) Outreach (helping public better understand) EO capability 2) Forum for private sector input for national planning, private sector voice to government 3) Build partnership 4) Facilitate collaboration between companies and sectors (national drought info.
Strategy	Try to ensure that GEOSS stays highly visible In the process of putting together strategic plan

Time scale	2-5 years
Complementary to other EO associations	Yes, to insure that we have interoperable EO systems
Membership fee	3 levels: Non-governmental 1000 dollars , Midsize 5000 dollars, Large sponsor 10 000
Government funding	No
If Association can enter into Government Contracts	No

4.1.8 EURISY

EURISY			
Contact	Country	Type of Association	Number of Members
Jean Bruston, Secretary General	European Association, addressing worldwide community	Acting collectively to bridge space and society 1. communicate space benefits 2. promote space as tool for potential users/ benefits groups	40 organizations (space agencies, state bodies, industry, constituted user groups, universities)

Members benefit	Members decide on EURISY program & agenda. Framework for simplified partnership (i.e. flexibility on institutional barriers)
Top 5 successful services	<ol style="list-style-type: none"> 1) Active communication. Executive secretary visit members locally 2) Web site, newsletter with dynamic possibility for members to input documents 3) Open database of more than 4000 partners. Distribution tool (call for partnership) 4) Access to conferences and symposium
Strategy	Yes, 1) describing the position and role of EURISY on Space 2) describing the role as facilitator of international cooperation between space actor and space beneficiaries. The Mission of facilitator is focused on three main actors and developing specific programme for each (decision makers, groups of users, educators)
Time scale	3 years programme to accomplish the mission
Complementary to other EO associations	Yes, targets different groups of people, there is no competition. In general, the complementarities will reinforce the space applications in society
Membership fee	Different categories (Institutions, Associations, NGOs, Industry) which nowadays are being discussed. Range from 1000 - 10000 Euros

Government funding	No direct. Budget is divided: (1) permanent secretariat (membership fees) and (2) programmatic actions (ad-hoc manner) – where sponsorship by Governments is provided on a case by case basis.
If Association can enter into Government Contracts	Yes

4.1.9 EUROSPACE

EUROSPACE			
Contact	Country	Type of Association	Number of Members
Alain Gaubert, Secretary General;	European	Space	50

Members benefit	Discussion and Information Forum Promotion of space manufacturing industry
Top 5 successful services	<ol style="list-style-type: none"> 1. Publication of facts and figures 2. Participation in the ESA R&D harmonisation process 3. Working groups (GMES, Navigation, Security and Defence, Markets, ...) 4. Workshops 5. Position papers on R&T, GMES, Navigation, Security and Defence
Strategy	Enlarge to users, operators,...
Time scale	2-5 years
Complementary to other EO associations	Yes
Membership fee	6000 euros for companies less than 100 people, then from 6 000 to several tens of thousand of euros for bigger companies according to the number of Space employees
Government funding	No
If Association can enter into Government Contracts	Yes, all kinds of contracts possible

4.1.10 Prospace-I-Space

Prospace-I-Space			
Contact	Country	Type of Association	Number of Members
Norbert PALLUCH, Chairman	France - Coverage National / European / Worldwide	Space Industry and Applications	50

Members benefit	Information and networking
Top 5 successful services	1. News Magazine (Monthly, yearly) 2. Information Seminars 3. Missions to Export targets 4. Information watch 5. Exhibits
Strategy	Develop PROSPACE - I-Space Synergy Get more international Autonomy
Time scale	2-5 years
Complementary to other EO associations	Yes
Membership fee	From 170 euros per year to 4000 euros per year as function of size
Government funding	50% CNES
If Association can enter into Government Contracts	Yes

4.1.11 EARSC

EARSC			
Contact	Country	Type of Association	Number of Members
Paul Kamoun	European/ Canadian other EC collaborating countries	Remote sensing/EO European/Canada/other	70 of which 15 observers

Members benefit	Information Lobbying Focus on small companies Position papers to influence decision makers
Top 5 successful activities	1) Website 2) Newsletter 3) Workshops (2 per year) 4) Position papers for lobbying (1-2 per year) 5) Board members as point of contacts (not so visible as it is now)
Strategy	Target for 100 members Opening to other countries (associated with EU programmes) Closer collaboration with other trade associations
Time scale	Discussed at yearly annual assemble (June). Chairman elected every 3 years, nominated by the board and approved by general assembly
Complementary to other EO associations	Complementary to EUROSPACE which concerns upstream space companies, much larger industries, SW and HW
Membership fee	400 EURO
Government funding	No
If Association can enter into Government Contracts	Not as it is now

4.1.12 Observation concerning description of Associations

There are many similarities across the associations in both the successful activities and the member benefits. Analysis yields the following super-set of activities:

- Lobbying - upstream (meetings with officials, publication of position papers)
- Lobbying - downstream (meetings with customer groups, publication of position papers)
- Conferences/Workshops (members as speakers, exhibitors)
- Meetings/ networking (lunches, visit members)
- Member awareness raising (member email list, info watch service for members, info feeds to members)
- Out-reach activities (e.g. brochure, eNews, public Newsletter, web site, visits)
- Special interest groups
- Facilitate collaboration - across sectors
- Facilitate partnership - between members (member database, call for partners)
- Collect and publish industry facts and figures
- Export missions
- Capacity building
- Travel grants
- Technical journal

Activities/benefits such as a free technical journal and travel grants are not offered by the more commercially oriented associations.

Membership fee structures vary widely. In general associations trying to attract the biggest players (and which tend also to have well established full time secretariats) tend to have a sliding scale of fees and entry level may be quite high. The organisations oriented more towards EO VACs tend to have a low membership fee and a flat rate.

4.1.13 Comment concerning description of Associations

In some associations with a sliding membership fee scale, members paying a higher fee rate receive a greater range of benefits including more power and influence. In the EO VAC community this approach would disenfranchise the larger number of small VACs (see VAC comments in Section 3.6) – hence the prevalence of a flat rate.

4.2 Roles of Trade Association

4.2.1 Observations of roles of TAs

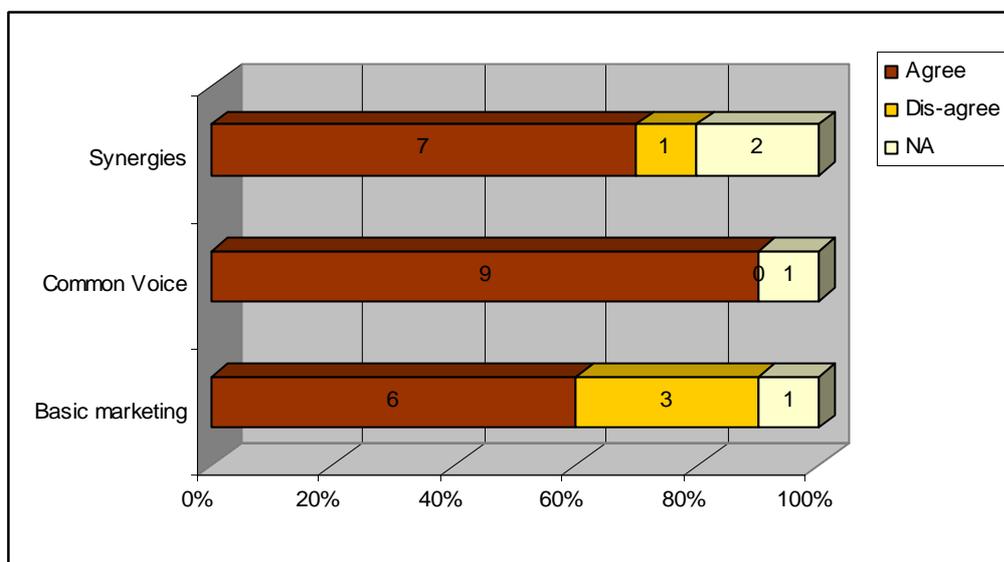


Figure 4-1: Level of agreement to three generic tasks

4.2.2 Comments concerning roles of TAs

Despite the diverse beneficiary bases of organisations there was strong agreement that the most important generic task is to establish a common voice (‘together we are stronger’).

A lower majority agreed that synergies are important (‘together we are smarter’) and those in favour of this role represented associations with a more diverse beneficiary base. This result was slightly different than that for the VACS which rated synergies as being as important as common voice.

A low majority agreed that basic marketing is important (‘together we can win more business’) and again, those in favour of this role represented associations with a more diverse thematic beneficiary base. It was quite strong for organisations with a smaller geographic territory (i.e. export market action). This was similar to the result for individual VACs.

4.3 Views on market opportunities

4.3.1 Observations concerning TAs views on market opportunities

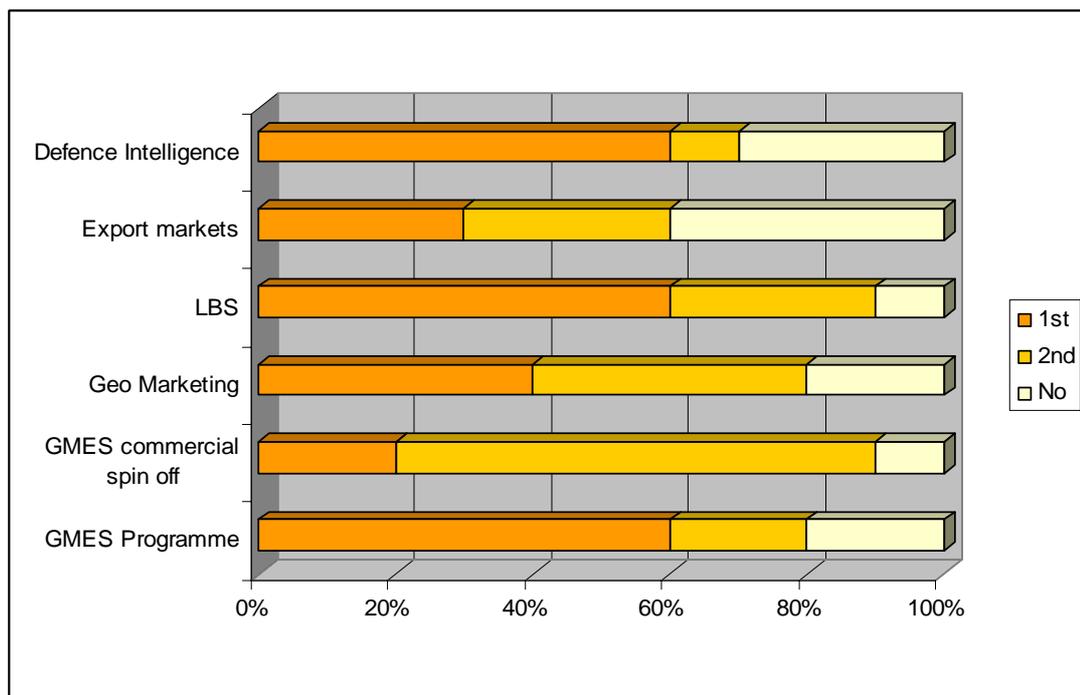


Figure 4-2: Market opportunities

Export markets and GMES spin-off scored quite low compared to VACs.

4.3.2 Comments concerning TAs views on market opportunities

The low expectation in exports reflected the view that some growth countries (India and China particularly) will do VA activities themselves. But it can also be noted that some companies are succeeding in selling services to these countries too.

In some areas (e.g. sub-Saharan Africa) the 'export' market tends to be more institutional (NGOs, UN etc).

4.4 Obstacles to market development

4.4.1 Observations concerning TAs views on market obstacles

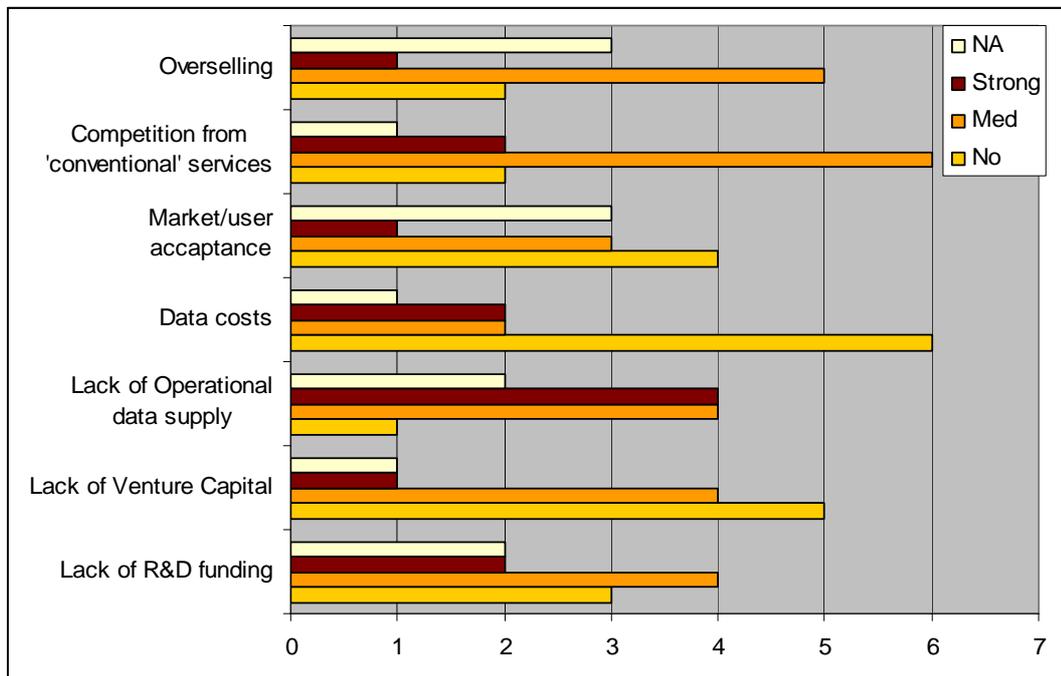


Figure 4-3: Main market obstacles as observed by TAs

Only a minority of the Associations see data costs as a problem but operational data supply is a major barrier.

4.4.2 Comments concerning TAs views on market obstacles

The Associations agree with VACs on operational data supply but disagree on data costs as a problem. It is likely that the respondents for Associations were considering medium resolution data and are not really exposed to issues surrounding the cost of commercial VHR data or high volumes of SAR data. This perhaps indicates that some associations may need to be more aware of commercial realities.

4.4.3 Open Issues concerning market obstacles

To what extent do members want the trade associations to really understand their business? The role of the EO trade associations has mainly been focused on lobbying and information circulation.

4.5 Future Structure of the EO Industry

4.5.1 Observations on TAs view on future industry structure

There was a general agreement that VACs should be encouraged to form closer collaboration.

VACs to form closer collaboration?	
Yes. To combine strengths of small companies.	Yes, domain will be less and less adapted for small structures
Yes. Across national boundaries.	Yes, it is a good idea in order to structure the market, consolidate, organise the profession, training
Yes To utilise synergy in geography and Complementarity in capabilities (GSE is a good example)	Yes and structure the market, consolidate, organise the profession, training

Table 4-1: Should VACs form closer collaborations

Half of the respondents are expecting consolidation of the industry to happen.

Structural changes to happen over the next 10 years	
Industry to consolidate A larger number of medium sized companies Some VACs to be absorbed	Yes. No reason to change. Funding mechanisms encourage small businesses.
Yes. But some mergers will happen and there may be more mid-sized companies and fewer small ones.	Yes. But some mergers will happen and there may be more mid-sized companies and fewer small ones.
Consolidation New groupings	Two scenarios: a) small companies will break up through merging & creating big consortiums b) new small & innovative companies

Table 4-2: Timescales for structural changes

4.5.2 Comments on TAs view on future industry structure

As for the VACs, the Associations expect quite rapid structural change, however they naturally take a more objective viewpoint – that new small VACs will arise, even if others are bought up or squeezed out.

Trade Associations seem to be unanimously in favour of enabling value chain consolidation and partnership. Whilst many VACs also favoured this, some did not. Again this reflects the slightly different view taken by trade associations of ‘what is good for the sector’ versus the view naturally taken by some VACs which was ‘what is good for my business’.

4.6 Activities to be shared among VACs

4.6.1 Observations concerning TAs view on activities to be shared

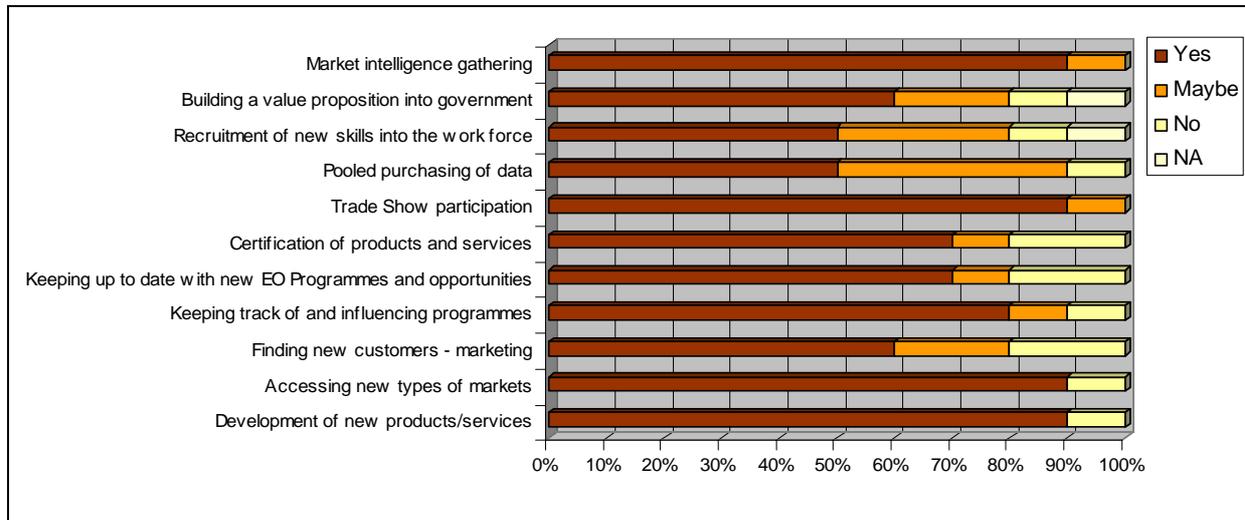


Figure 4-4: Activities VACs could potentially share

The highest scoring activities were intelligence gathering, trade show participation and accessing new types of markets and developing new products and services. This was followed by influencing programmes.

4.6.2 Comments concerning TAs view on activities to be shared

The response on the highest scoring items does not mean that a Trade Association should do all these things – this is about what VACs should do together, sometimes through partnering arrangements but sometimes through joint action. With regard to “Development of New Products and Services” this is about building the supply chain and geographic coverage, it is not about getting competitors to work together in the same market; The associations are very clear elsewhere that it is not their role to interfere in commercial activities.

Associations were broadly positive about the need for certification, but with caveats concerning immaturity of the market and adequate size of the market to support the additional burden of costs involved. It is noted that ESA has started an activity examining the certification of EO products & services; the plan is to road test three cases.

Regarding trade shows, the associations are keen on facilitating trade shows (i.e. putting them on). This does not necessarily imply that Associations aim to exhibit at trade shows on behalf of members.

4.6.3 Open Issues concerning activities to be shared

1. Currently specifications don't exist. Certification would give customers the means to compare similar products and see if they meet their needs. Rather than try to explain the detailed processes of EO to the market, a TA could help make clear what the products are, and what the specifications and price points are. It remains an open issue as to whether the technology and the market are both sufficiently mature to be 'commoditised' in this way.
2. There are a number of open questions around how a TA can access export markets.

3. Could a European TA act with national chambers of commerce to promote in specific Export markets? In general this is not considered possible, because Chambers of Commerce tend to be national, so a European TA could not engage with it without introducing a conflict of interest. However a TA could still assist trade delegations by disseminating information on forthcoming opportunities.
4. Can a TA help with IPR and Legal issues? The provisional position is that in the current small maximum size of membership prohibits this. However a TA can facilitate the flow of IPR between academia and VACs.

4.7 Trade associations role and expectations

4.7.1 Observations concerning role and expectations of TAs

Trade Association roles and expectations						
Name of Association	(A) If preference to work with EO companies only or (B) to be part of a broader community	Consider current Trade Associations to weak? Yes No Don't know	Dissemination of information towards public sector consultation	Policy on linking national with European associations	Need for both National and International	What a Trade Association should not be concerned with
BARSC	A	YES lack of transparency dominated by the big companies current changes to be continued	Y	We don't, but we should.	YES in UK Perhaps as a subgroup to an international body.	Representing individual companies Not to do the selling for companies
ISPRS	B. Light touch though.	yes – Not much 'clout', i.e. have slight influence, but no power.	Quarterly bulletin to members only. Changing this to a monthly column in GI mag and quarterly 'open' e-bulletin.	ISPRS has national members – which are associations. The national committee has one vote. Non voting members are also permitted (e.g. Regional member).	Yes	Should not do research – but should have a dialogue with academia.
EUROGI	A – there are still specific issues for EO.	don't know	Produce a draft statement, make request for comment by email. Go through a voting process on the final statement. The full formal process is rarely needed though.	Links are important to get a uniform message if possible. But accept that national orgs may have a valid and different view from the European org.	There is a genuine role for both. And in some cases a regional view – e.g. 'GI Northern' is led by Iceland, but by teaming together the Nordic countries have as strong a voice as Germany. They have managed to influence INSPIRE. Nordic and East European	Business should be left to the companies. Trade association should fertilise the market, but not act commercially within it.
AIPAS	Yes. EO companies do not currently have the same needs as Space, SI or GI companies. This could change if there was a critical mass of commercial EO applications.	Yes.	Make political statements, seek direct meetings with officials. Selective use of media and press.	AIPAS supports this strongly. The issues at each level are different.	Yes	Market issues. Must not interfere with competition and should not get involved in protectionism.
EARSEL	(A) Not too wide. Should focus on core business.	Yes. Needs more influence downstream. Upstream influence is OK.	Not prime purpose of EARSEL. If information is requested then EARSEL recommends appropriate experts among its members.	Yes. Very important.	Yes.	–
AFIGEO	(B)	Don't Know	Web site, events, clubs	Yes, to be fostered. Global domain.	Yes	Should not mix into industrial collaborations and competitions
Alliance for Earth Observations	(B) need to join broader community	Getting stronger	Large data base, web site, committees	Not applicable	Not applicable	–
EURISY	(B) Broader scope better	There is room from improvement. However associations do the best with the financial structure provided. Companies should not request services if they don't provide resources	Best option is active lobbying. Phone and visit personally. It is a lot of work.	Network of networks. European networks should realise on National ones (It is impossible to manage all actors by one organization)	Yes	Don't know. It is matter of internal strategy
EUROSPACE	–	Don't know	Position Papers	Foster links within well defined limits, such as rules on participations in meetings,...	Yes	A trade association should keep its independence as well as its members
PROSPACE – I-Space	Yes (B?)	Don't know	News and contacts	Adapt and be flexible	Yes	–
EARSC	A	Yes and no – we are improving We need to be stronger acceptance from below and above We need to be present in EC committees etc.		Work together on workshops etc		

Table 4-3: Roles of a Trade Association

4.7.2 Comments concerning role and expectations on TAs

There were very mixed views on whether EO stands alone as an interest group or should be part of a broader community.

The influence and particularly the power of trade associations was seen as being rather weak.

There is strong consensus on the need for national and international associations. The value of regional associations was also identified – for example where smaller countries have a common interest.

There is very strong consensus that trade associations should not act commercially or interfere in commercial markets.

The need for National and European associations arises to manage conflicts of interest: a National body needs to reflect national interests; and a European body can lobby at European level where national voices are very small. A European body should not lobby for or represent national level interests. Some countries do not have a national association, so they need the European one.

4.7.3 Open Issues concerning role and expectations on TAs

1. The issue of competition/overlap between associations was not exposed by these interviews. As membership levels are very small overall it is undesirable for Associations to be competing with each other for members. It is also important that Associations work efficiently for the benefit of members rather than becoming self serving organisations with duplicated roles. However, superficially similar associations can serve different interests in which case they need to work together. An open issue for the rest of the study is whether associations at the same geographic level should merge together³ or find ways of working together – it is possible to make a case that EO Value Adding should be a Special Interest Group (SIG) within a broader trade association (geographical information or aerospace).
2. The value adding activity in remote sensing is situated at the downstream end of the ‘space’ value chain, as such it has both horizontal and vertical market interests. Are there some vertical sectors that are large enough across VACs to merit domain specific outreach activity by the TA? (e.g. oil and gas, maritime, agriculture).
3. How can a TA help address export markets? Some information is expected from an ESA Markets study.
4. Can a TA help with IPR conflicts and Legal issues? The general feeling of the eoVox team is that this is not a suitable activity this could bring the association into conflict with members and EO trade associations are not large enough to be impartial. However this issue needs to be captured and analysed.
5. Should a TA help with facilitating the flow of IPR from academia to VACs? And if so, by what means?

³ The Photogrammetry Society and the Remote Sensing Society completed a successful merger 2001

4.8 Feedback concerning public development funding to support VACs

4.8.1 Observations concerning TAs views on future funding requirements

Name of Association	Funding model		
	Membership Fee	Government funding	If Association can enter into Government Contracts
BARSC	350 UK Pounds	None directly. Contribution to Brochure and workshop.	NO
ISPRS	Ordinary membership costs 140 euro to 3270 euros pa depending on number of active specialists represented. There is a similar scale for sustaining members. Regional members: 70 euros pa.	None. ISPRS does not fund its congress. Congress is financed by the national host which may obtain government support.	Yes, but it does not do commercial contracts. It enters into contracts for publication of the journal. ISPRS is a not for profit organisation registered in the USA.
EUROGI	A' (voting) €7000 'B and C' (trial members) €3500 'D' pan European €1700 Fees for new member classes TBD. Revision in 2007.	Yes. EC funded start up in 1994. National association hosts the secretariat and funds it. (Was NL cadastre, is now the PO geog institute). In some cases national government meets the cost of their member participating.	Yes. Best example is the GINIE project (with JRC) – an EC IST funded consultation activity closely linked to INSPIRE.
AIPAS	€2400 < 15 staff €1200	Yes from national and regional government. Funding supports secretary, the web service and other AIPAS promotion.	Yes, it has carried out paid consultancy for regional government.
EARSeL	320 Euros If more than 10 researchers then 600 Euros.	ESA and Council of Europe are sponsor members. However ESA funding has been stopped. UNESCO provides some funds for travel of board members. Majority of income is from fees and meetings, aim is to generate a small (€1k) annual surplus.	EARSeL is a not for profit organisation registered in Strasbourg. It is an NGO of UNESCO. It can contract.
AFIGEO	15 euros for individuals, 150 euros for SME's, 5500 euros for institutions	Through institutions membership	Yes
Alliance for Earth Observations	3 levels: Non-governmental 1000 dollars, Midsize 5000 dollars, Large sponsor 10 000	No	No
EURISY	Different categories (Institutions, Associations, NGOs, Industry) which nowadays are being discussed. Range from 1000- 10000 Euros	No direct. Budget is divided: (1) permanent secretariat (membership fees) and (2) programmatic actions (add-hoc manner) – where sponsorship for Governments for case by case event could be applied.	Yes
EUROSPACE	6000 euros for companies less than 100 people, then from 10 000 to several tens of thousand of euros for bigger companies	No	Yes, all kinds of contracts possible, SARL
PROSPACE – I-Space	From 170 euros per year to 4000 euros per year as function of size	50% CNES	Yes
EARSC	400EURO	No	Not as it is now

Table 4-4: Associations feedback to ESA

4.8.2 Comments concerning TAs views on future funding requirements

As for the VACs there are positive comments on the ESA application and market development programmes. However there are caveats that competition must be maintained – the aim of such funding must be to strengthen efficiency and competitiveness rather than to make industry dependent on institutional funding.

There were very varied responses on export, certification and venture capital, but quite high expectation of commercial spin-off from GMES.

5 EO Trade Association – likely scenarios for future needs

In its extremes the following scenarios can be outlined covering the broadest spectrum of future scenarios for a Trade Association.

STATUS QUO - SCENARIO What we have is fine – not much is going to change anyway!	Small VACs are likely to disappear anyway in a few years and the larger players do not really need a Trade association. EarSel is appropriate to network more scientific players, which is needed to ensure future innovation.
EO VOICE - SCENARIO 'Old EARSC on new bottles'	Support VACs to grow stronger through lobbying. Balance requirement of larger players and smaller players – both are necessary for the industry to expand Foster Innovation and entrepreneurship through influencing funding programmes (EOMD, EC Enterprise??)
REACH OUT - SCENARIO From EO to GI	Join the European GI Association as a subgroup. The future is integration of information and technologies – so let us be proactive.

Table 5-1: Broad scenarios for future Trade Association

Independent of the desired scenario or mission for a future Trade Association, a TA will have certain activities and certain services to offer to its members. Hence, “candidate missions” can be divided into candidate *activities* and candidate *services* potentially to be offered to its members. The activities of a TA should in particular focus on the common issues facing the EO Service Sector industry; common issues can be divided into market obstacles (e.g. lack of operational data supply, data costs, etc.), market development issues (e.g. influencing future public funding programmes, establishing links to players outside the traditional EO industry, liaison with complementary TAs, etc.) and industry robustness issues such as standardisation and certification. The candidate activities are the potential activities to be carried out by an EO TA. The candidate services are the services to be offered to its members.

The table below outlines potential candidate activities and services based upon common issues identified from Sections 3 and 4.

Common Issues	<i>Candidate Activities</i>	<i>Candidate services to members</i>	
Operational data supply Data costs and accessibility	Lobbying		<u>Communication:</u> -eNewsletter -emails <u>Member awareness raising</u> (member email list, info watch service for members, info feeds to members) Collect and publish industry facts and figures
	- EU	Position papers	
	- ESA	Position papers	
Market development	- Data providers	Data purchasing discounts	
	Influence future Public development funding	Interface with industry to understand funding requirements	
	Interface to complementary and downstream players	Workshops, outreach (e.g. brochure, eNews, public Newsletter, web site, visits)	
	Interface to complementary TA's, e.g. EUROGI	Workshops, outreach	

	Interface with EU Chamber of commerce	Export facilitation, e.g. exhibitions, interface to complementary markets	
	Presentation of combined capabilities, e.g. Yellow Page directory, newsletter	Interface to federate user's groups	
		Facilitate networking among VACs and complementary players (SIGs)	
Market Intelligence		Market prospect briefings Ad hoc report on request	
Certification	Coordination of certification requirements		
Human resources	Links to academia		

Figure 5-1: Candidate Activities and Services for a Trade Association

Candidate missions will be further elaborated in subsequent work packages in the eoVox study.

An initial view of the potential membership base (beneficiaries) is provided below.

Potential Membership base	Description
EO VACs	Commercial value adding companies active in utilising and adding value to EO data
Upstream actors	Aerospace TAs Data providers
Congenial actors	European Research Institutions EO/GI Research Associations European GI TAs
Downstream actors	User organisations
Complementary players	Actors active in related field to EO, e.g. GIS, aerial photography, navigation, software systems, etc
Possible sponsors	Pan-European R&D funding programmes

Figure 5-2: Potential Membership of a Trade Association

6 Summary

Since it is not the purpose of this document to draw any conclusions, this final chapter presents a summary of the main findings and analysis conducted.

Of the 63 personal interviews with EO VACs and 11 EO related Associations in Europe and Canada just under half of all interviews with VACs were conducted FTF and the rest were made by telephone. The Associations interviewed represent a cross section (upstream, downstream, commercial, research) with members in Europe and Canada.

These interviews are the first step in a programme of open consultation and thus care has been taken not to infer too many conclusions but rather highlight the “open issues” in order to encourage feedback from VACs and other stakeholders in advance of a workshop to be held in September 2006. These open issues are mentioned throughout the document and VACs are invited to comment. For convenience the ones related to the VACs are summarised below.

We strongly encourage the reader to comment on these open issues and to feed them back either by phone or email to any of the members of the eoVox consortium.

Open issues concerning demand and supply drivers	
1. How can GMES be focused on serving large customers in the public sector whilst also engaging the skills of SMEs?	<Your reply>
2. Is there a need to support commercial spin-offs from GMES? If yes, how?	
3. What threats and opportunities will GMES create for commercial business and what measures can industry and agencies take to maximise commercial opportunities whilst minimising the threats?	
4. Is there a risk that future application development funding will be channelled to the GMES programme through EC FP7, leaving very little opportunities for R&D activities outside the scope of GMES?	
5. What provisions can be put in place to ensure that EO applications research funding is not just devoted to GMES?	
6. How can institutional funding best be directed so as to create sustainable commercial EO business in the public and private sectors?	

Table 6-1: Open issues – demand and supply drivers

Open issues concerning market obstacles	
1. How can industry elaborate their agenda to develop the market?	<Your reply>
2. How can the interface between VACs and the public funding institutions be improved so that the funding becomes more efficient?	
3. What skill sets are required to make the EO value adding sector more vibrant?	
4. What are the barriers to true commercial market-	

making that can be solved collectively (upstream and downstream)?	
5. What support from public development funding does industry need in specific areas such as science and algorithm development, standards, technology convergence (e.g. EO/comms/nav), infrastructure, data continuity, data access, data quality, market certainty, localisation for export markets, pre-competitive applications development and demonstration.	

Table 6-2: Open issues – market obstacles

Open issues concerning industry evolution	
1. What can be done from the perspective of EU, ESA and an EO Trade Association to facilitate the process of consolidation to the benefit of the industry?	<Your reply>
2. Is it important to encourage new companies to emerge or to attract new types of players to the industry, or is this perceived to be a natural process determined by market forces?	
3. What new business models are now possible concerning exploitation of EO – building on the example given by Google Earth and Microsoft?	
4. What are the dominant evolutionary drivers and how should the EO VA industry respond to them?	

Table 6-3: Open issues – industry evolution

Open issues concerning common activities of industry	
1. What can be done to facilitate further collaboration among the VACs or complementary players in order to address common industry issues, as it is perceived by most VACs to be a good thing?	<Your reply>
2. What drives the collaboration between the VACs and between VACs and complementary players? The market or projects?	

Table 6-4: Open issues – common industry issues

Open issues concerning requirement for a Trade Association	
1. How can the interests and views of smaller companies be better represented?	<Your reply>
2. Why do some VACs not see a benefit or place for them in a Trade Association: are there specific barriers and how can they be overcome?	

Table 6-5: Open issues – requirements for a TA

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