

**ESA WORKSHOP ON
DEVELOPING THE EO SUPPLY
CHAIN WITH ESA MISSIONS**



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1. INTRODUCTION

This report is a deliverable of ESA contract 12976/6/98/I-DC carried out by ESYS for ESA ESRIN. The aim of this document is to report to ESA ESRIN the results of the workshop entitled 'Developing the EO supply chain with ESA missions' which was held at ESRIN in Frascati on 8th and 9th April 1999.

ESYS provided the ESA team with design, management and logistical support, both before and during the workshop.

In this report, no attempt has been made to analyse or interpret the key messages or ideas that emerged. The information has been structured, but within this there may be conflicting opinions or gaps in information and these provide the basis for further analysis by ESA.

1.1 Workshop objective

The development of a market for satellite EO products and services has been a critical issue for European and Canadian industry throughout the 1990s. The European Union and many ESA Member States have, through their own programmes, offered a variety of support mechanisms to encourage market development. ESA support for market-related activities utilising ESA missions has been channelled via the ERS exploitation activities and more recently the Data User Programme. Europe has seen some business successes and an overall growth in commercial revenues for data suppliers and value adding companies of around 10-12% per annum.

However, the "downstream" industry is today in a process of re-organisation - adjusting to a commercial reality in 1999 that is certainly much harder than the sector had hoped for in the early 1990s. The optimistic growth rates widely anticipated in the early 1990s have not materialised.

During the 1990s ESA has fostered remarkable progress in Earth Observation research and applications, particularly via the ERS Announcements of Opportunity. At the same time it has worked in close consort with ground segment operators, commercial data distributors, associated value-adding companies and their key customers to establish a global data supply chain for microwave data products and derived services. Data from ERS underpin a number of public services in weather forecasting and ice monitoring. ESA is also actively involved in training, education and promotion of EO services from its Member States on a global basis.

This experience has shown that ESA, acting on behalf of Member States, today occupies a key position as part of the EO supply chain. Within its EO exploitation programmes, ESA can initiate and support actions specifically geared towards the needs of downstream companies, who are themselves working to develop new business and market opportunities. ESA also has a central role in underpinning the

EO technology transfer process and, crucially, in assuring the long-term continuity needed for operational and market credibility.

Early 1999 provides a timely juncture at which to appraise the most recent experiences with ERS and to explore how the range of mechanisms available through ESA can be best exploited to support growth of the European EO supply chain in coming years.

To facilitate this, ESA initiated a two-day workshop on 8th - 9th April 1999 at ESRIN. Through a process of presentations and discussions, Delegates and key representatives from downstream industry worked together with ESA to establish a set of potential actions to assist the ESA Executive in implementing future market development and exploitation support activities for Earth Observation.

1.2 Attendees

The objective of consulting a balanced selection of representatives from the Member States, data distributors, value adding industry, users and ESA was achieved and a total of 70 people attended the workshop. The distribution of attendees by category of affiliation is given in Figure 1-1 and a list of attendees is attached in Appendix A.

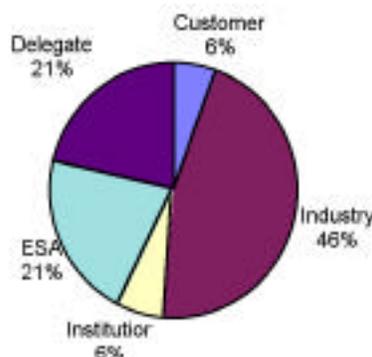


Figure 1-1: Distribution by category of affiliation

1.3 Programme

The Agenda for the workshop is included in Appendix B.

The workshop started on the evening of 7th April with a cocktail, which gave attendees the opportunity to introduce themselves and “break the ice”.

Through presentations from the various stakeholders, the first day of the workshop resulted in a number of key messages from the attendees to ESA. These are represented in Chapter 2.

Chapter 3 covers the points raised on Day 1 with regard to what the EO downstream industry needs to develop.

The main messages from day one were translated into a set of actions. This action plan was used as the basis for the debate on day two, where all attendees were invited to contribute to the issues they felt most urgently need addressing by ESA. Chapter 4 lists these actions.

Chapter 5 summarises the results and recommendations of the workshop as input to the ESA Executive's strategic development planning.

1.4 Attendee perceptions

At the start day one, all attendees were asked to complete a questionnaire about their view on the EO supply chain and ESA's role within this chain (Appendix C). 19 forms were returned, with the following affiliation distribution:

Delegate	4
EO service industry	11
Customer	1
ESA	3

The responses have been attached in Appendix C and a summary analysis is given below.

Status of the EO supply chain

The majority of respondents disagreed most with the statements that the EO supply chain:

- is mature, successful and poised for growth;
- is benefiting from increased concentration of business within fewer organisations;
- has a strong strategic direction.

The majority of respondents agreed that additional financial support is needed.

Relationship of EO suppliers with public sector investors in space technology

- most respondents agreed or strongly agreed that downstream industry is exposed to risk because of dependency on upstream providers.

Major issues facing the EO supply chain today

- the most important marketing issues are considered to be understanding the customer requirements, understanding the market and raising customer awareness;
- driving costs down, relationships with suppliers of EO data, new products and services and access to finance are considered the most important issues in production and operations aspects.

ESA's role within the EO supply chain

- the majority of respondents agreed that ESA could undertake more specific actions within the supply chain to meet the evolving needs of other players and especially downstream industry.

2. TAKE HOME MESSAGES

From Day 1, a number of key messages were given:

- there is a market for EO products and services. A steady progression rather than a major increased rate of growth is likely;
- data has enormous value for public good and therefore some participants stress we should be cautious about the drive for (only commercial) sustainability. Europe cannot ignore the value of having these tools in space and then cut them off because of too narrow a view of the “market”;
- it takes time to develop EO products and services. It is not a short-term activity to develop customers and products;
- we suffer a lack of operational data - there just is not enough of it at present;
- government and mission authorities need to work more closely together to understand their relative needs and expectations;
- there is much talk about funding satellites but not about the development of the whole supply chain. Relationship building between players in the supply chain needs improving - ESA is one player in this and can have an important impact on relationship building;
- data sales are not the only measures of success for the development of the EO supply chain;
- at the level of the specialised value adding community, assistance is needed and there are tasks for ESA to undertake;
- niche players (in the EO supply industry) can not handle risk and uncertainty alone;
- national programmes are valuable for developing niche applications. Funding and scope can be inadequate if the industry wants to develop something much bigger. National initiatives do not always help in getting global partners;
- ESA has to devote a balanced percentage of its overall budget for EO to promotion and product development. Currently these are too low.

3. DOWNSTREAM INDUSTRY NEEDS

From Day 1, a number of points were raised concerning what is needed for the EO downstream industry to develop.

3.1 Customer

The customer knows best:

- customers are risk adverse - off the shelf products are desirable as they reduce the risk;
- it is better to have more than one supplier in any area. It removes some risk for customers;
- payment on delivery is essential. To offer this, EO suppliers must anticipate demand;
- the supply process must attune to customers in time scales and buying process;
- there must be more flexibility to work with customers.

3.2 Product and service development

There is an essential need for further R&D:

- R&D should be continued by government or new innovative ideas will stop;
- there should be close cooperation in the development of new products and services for global markets. This helps to introduce new products and services, create awareness and build a track record in the global market.

3.3 Marketing

Further marketing is required:

- there is a distinction between addressing the existing markets to become more efficient and encourage existing customers to buy more and then developing new customers. The nature of partnership between the downstream industry with ESA will vary. ESA is likely to have a stronger role with new potential customer groups;
- we should encourage European initiatives to enable our various suppliers to work together and become more competitive internationally;
- the international status of ESA should be utilised for everyone's benefit;
- raising awareness and joint marketing activities are a good approach;
- CEO/SAI has done a lot of promotion. They have materials available for everyone to use.

3.4 Supply chain structure

With regard to the structure of the EO supply chain:

- we need to gather all expertise to develop the market together;
- we should focus on putting the right partners together to address the entire needs of market development;
- a more integrated approach between data and value adding suppliers - stronger vertical integration is needed. One weakness of our industry is that suppliers are separate from value adding;
- a recent CEO market survey shows some shortening of the value adding chain and a mixing of boundaries between the various players. US suppliers have no chain and go direct to market;
- partnerships are needed along the supply chain to access market, data and integrated EO with other services;
- interactivity between all parts of the supply chain is critical. The value adding industry is still fragmented with a dispersed and individual approach which makes it difficult to take advantage of the market.

3.5 New ground services for those developing the market

With regard to ground services:

- it is important to enlarge the archive of products available on a world wide basis. Better accessibility is needed to existing archives (assets). The lack of development of the geographical area data is due to a lack of access and awareness of what is available;
- set up qualified archives for the different market segments (so people can understand what is there and how it can be used);
- the importance of improving the archive was stressed. This implies acquiring data with intelligence in the decision making process;
- an understanding of who the buyers are is necessary right down the value chain. The supply chain needs to be able to adapt to and adopt innovative ways to deliver;
- we need a partnership with ESA for cost effective access to data and to assure the quality of the product;
- more rapid access to catalogues (and data) is needed- any day any time with a delivery time within hours;
- improve the acquisition process by introducing standard access mechanisms and security in requests for data;
- introduce the use of quick looks to enable simple and rapid selection.

3.6 Training and education

With regard to training and education:

- support training and education for specific markets (there are initiatives already, but it is a long process and we must take account of the evolution of the competitive environment for European and Canadian companies);
- government needs to educate industry which is currently not using EO - selling through partnership;
- promotion and education through schools is necessary to provide future recruits to the EO industry. At the moment recruitment is difficult and skills sometimes have to be imported.

3.7 New distribution channels / mechanisms

With regard to distribution channels / mechanisms:

- new distributor channels are important to enable access to new markets. Many of these do (will) not rely on EO only for their business;
- we need to capture the expertise of production entities and then supply this globally;
- use new technologies such as Internet, broadband and future mobile systems.

3.8 Integration

With regard to integration:

- we need to integrate more with the broader growth of the geographic information market;
- embedding of EO technologies into service industries is the only way ahead.

3.9 Relationships with upstream industry

With regard to relationships with the upstream industry:

- the actions of the upstream industry are important to what the downstream can achieve;
- there is a loop that must be made between the markets and back to the space manufacturers;
- data continuity is required. We cannot stop with the satellite assets we have today.

3.10 Overall

In overall terms:

- data prices do not necessarily need to be lower, but require a flexible and creative pricing mechanism;
- industry needs a fair and competitive environment;

- business needs continuity and long term reliability is important;
- external forces make the market fickle (e.g. fall in oil prices) but we need to be willing to stick with it;
- the market needs the commitment of the service supplier on a long term basis and this applies to all aspects of the EO supply chain;
- strong incentive schemes are required to achieve sales. Whatever measure you take, the value adding companies have to be motivated. What is the effectiveness of shared cost actions?

4. ACTIONS FOR ESA TO CONSIDER

Chapters 2 and 3 cover the key messages and the needs of industry which resulted from the presentations and discussions on the first day of the workshop. From these an action plan was produced which was used as the structure for discussion on the second day of the workshop.

Attendees were asked to discuss the following aspects of each of the actions:

- issues to address;
- time scale in which action needs to be taken;
- investment needs;
- urgency/priority;
- risks involved;
- how to measure the success;
- criteria for success.

Table 4-1 forms the action plan that was generated during Day 2. Not all aspects were discussed in the meeting and some cells are therefore blank at this time. However, these provide a good starting point for analysis by the ESA Executive.

	What should ESA do?	What must this address	Time scale for action	Investment needs (High, modest)	Urgency	Risks	How do you measure success?	Criteria for success
1.	Downstream consultation body to ESA	<ul style="list-style-type: none"> level of formality level of funding frequency of consultation full range of mechanisms (Internet, meetings, workshops, etc) focused to assist the Executive include "external" view of the EO supply industry focus on results and not process 	pilot for 2 years (say) and then evaluate	<ul style="list-style-type: none"> modest - concerted action approach 	very high priority	<ul style="list-style-type: none"> more bureaucracy unresponsive too broad and does not achieve any results ESA risks neutrality with industry 	<ul style="list-style-type: none"> more responsive actions and activities in ESA more specific information to delegates closer relations between downstream industry and Executive 	<ul style="list-style-type: none"> evolution in ESA activities has positive effect on downstream players
2.	Improving flow-through from AOs to broaden exploitation Addressed: <ul style="list-style-type: none"> making specific calls if suppliers have specific demands making connections with related science research (beyond EO) to offer a better science service for downstream players. Building bridges with other research activities 	<ul style="list-style-type: none"> reducing R&D costs for suppliers better communication - blur the boundaries between players make scientists aware of their responsibilities to bring results forward - more proactive "push" as well as "pull" broaden to R&D in related fields relationship building (for broader benefit) 	continuous throughout the AO programme	<ul style="list-style-type: none"> modest: a top-up of existing processes in ESA better use of what we have more research contracts in industry? 	immediate	<ul style="list-style-type: none"> if AOs too targeted, may miss new discoveries grouping too early increases activity in ESA too much putting too much onto budgets of small players too soon in the research process 	<ul style="list-style-type: none"> suppliers know what is going on effective connections increases activity in suppliers increasing number of science projects going through to exploitation 	<ul style="list-style-type: none"> reduces time route to exploitation greater connections (better partnerships) increased interaction with non-EO research

	What should ESA do?	What must this address	Time scale for action	Investment needs (High, modest)	Urgency	Risks	How do you measure success?	Criteria for success
		<ul style="list-style-type: none"> open calls to be more flexible to downstream industry 						
3	Focus on suites of tool/product/service/best practice to take new techniques further into the downstream	<ul style="list-style-type: none"> targeted coherent activities for specific markets - downstream suppliers priorities & link to consultation process (see 1) ESA and downstream working integrated and pulling together coherent lines of action within ESA in market facing activity feed into existing commercial distribution channels for software 	now for ERS and specific preparations for Envisat			<ul style="list-style-type: none"> clear role for ESA (if closer to market) IPR choosing the wrong themes or topics? not being sufficiently responsive loosing neutrality with industry 	<ul style="list-style-type: none"> downstream player criteria improved quality guarantees 	<ul style="list-style-type: none"> from the downstream
4	R&D on multi-mission/data fusion integration	<ul style="list-style-type: none"> overcoming artificial barriers between R&D for different technologies or missions. Has to come from the top taking us beyond just EO data learning from parallel markets broader 	a long term activity	<ul style="list-style-type: none"> opportunities to refocus or retarget some ongoing activities led by ESA opportunities to encourage alliances with Framework V 		<ul style="list-style-type: none"> too technology led 	<ul style="list-style-type: none"> EO suppliers can afford to take integrated services to market 	<ul style="list-style-type: none"> more integrated services available from EO suppliers

	What should ESA do?	What must this address	Time scale for action	Investment needs (High, modest)	Urgency	Risks	How do you measure success?	Criteria for success
		technologies, common infrastructure or standards to aid the integration <ul style="list-style-type: none"> connections with broadband telecoms services and multimedia 		and benefit from non ESA R&D funding				
5	Using international contacts to leverage new markets	<ul style="list-style-type: none"> benefiting from international agency status market technology (perhaps rather than satellite or specific companies) stamp of approval for small company sales person. Certification joint workshops and exhibitions downstream supply presentations for ESA to use internationally (electronic publishing & in-person) 					<ul style="list-style-type: none"> more sales from downstream organisation marketing 	<ul style="list-style-type: none"> to help increase credibility and acceptance of individual downstream companies
6	Target larger institutional customers for companies to follow-through	<ul style="list-style-type: none"> finding a European (or global) dimension to achieve critical mass 				<ul style="list-style-type: none"> conflicts with industry action conflicts with national agency 	<ul style="list-style-type: none"> more business opportunities for 	<ul style="list-style-type: none"> increased demand from institutional customers

	What should ESA do?	What must this address	Time scale for action	Investment needs (High, modest)	Urgency	Risks	How do you measure success?	Criteria for success
		<ul style="list-style-type: none"> building on the value of having a global tool responding to critical need validating/certifying the supply. Building credibility and offering continuity within UN, World Bank etc etc advice on financing and doing business with these institutes supporting alternative financing schemes 				<ul style="list-style-type: none"> activities not handing onto industry at the right time 	<ul style="list-style-type: none"> downstream industry to respond to winning against international competition 	<ul style="list-style-type: none"> winning profitable business by the supply chain
7	Flexibility to adapt the supply process (contribution by ESA) to the customer needs	<ul style="list-style-type: none"> ability to get data from anywhere in the world (not just Europe and N America) provision of evolution and flexibility to change being able to respond to changes much more quickly streamlining the decision process consider outsourcing (giving freedom for others in the supply 	Urgent attention	Significant change	Very high priority	<ul style="list-style-type: none"> policy impacts for ESA Europe gets completely left behind if we can't sort these fundamental issues issue being pushed under the table 	improved service levels	<ul style="list-style-type: none"> greater satisfaction for downstream suppliers greater use of ESA provided data within suppliers globally

	What should ESA do?	What must this address	Time scale for action	Investment needs (High, modest)	Urgency	Risks	How do you measure success?	Criteria for success
		chain to fix problems as they want) <ul style="list-style-type: none"> • mechanisms to select what to respond to • move basic services into operational domain 						

	What should ESA do?	What must this address	Time scale for action	Investment needs (High, modest)	Urgency	Risks	How do you measure success?	Criteria for success
8	Removing the gap between real time and off-line (weeks of delay) offering more of a continuum	<ul style="list-style-type: none"> • on-line services: immediate access to archive products (much less than 2 weeks) • linked to specific products/requests from the downstream • more tailored to specific applications • services built up for specific customers (esp real time) • more advanced services • choosing priorities 		Prioritising resources	Very high priority	<ul style="list-style-type: none"> • costs • impact on operations and logistics • losing market position to other missions 	<ul style="list-style-type: none"> • services enable new markets • services enable competitive advantage for EO suppliers • reducing risk to downstream suppliers 	
9	Archives , including: <ul style="list-style-type: none"> • responding to “out of area” opportunities - capacity building • building archives - evolving procedures for mission planning • qualified archives for different applications of market domains 	<ul style="list-style-type: none"> • archives with all supporting information • more intelligent scheduling of the satellite • strategic data sets (HLOP) • many aspects of SAR data service being improved. Make this more extensive 				<ul style="list-style-type: none"> • losing market position to other missions 	<ul style="list-style-type: none"> • reducing risk to downstream suppliers 	<ul style="list-style-type: none"> • increased business



	What should ESA do?	What must this address	Time scale for action	Investment needs (High, modest)	Urgency	Risks	How do you measure success?	Criteria for success
10	<p>Setting up new production chains to support a specifically identified business opportunity</p> <ul style="list-style-type: none"> more advanced quality 	<ul style="list-style-type: none"> achieving a compromise between a generic services and specifically tailored services calibrated/corrected data not sufficient important to do this in partnership specific relationships to improve market accessibility increasing off-the-shelf production (va have something to sell) help to remove risk from the customer. Takes out cost of data 			high	<ul style="list-style-type: none"> ESA transgresses too far into industry business and becomes competitive with it right targets and priorities must come from industry 	<ul style="list-style-type: none"> more off the shelf products for downstream to sell more innovative products enabled 	<ul style="list-style-type: none"> business growth
11	<p>Correlating training to business opportunities (moving from science and PR driven)</p>	<ul style="list-style-type: none"> taking existing training (institutional, science and developing countries) and evolve to next stage that is market driven variety of targets: schools, business community, supply chain providers, customers 	Long term	<ul style="list-style-type: none"> refocusing of resources that exist development of existing set of activities 		<ul style="list-style-type: none"> ESA have to remain connected to industry needs so it stays relevant and evolves as the supply chain changes appropriate relationship with industry 	<ul style="list-style-type: none"> higher awareness and skill levels in customers and recruits 	

	What should ESA do?	What must this address	Time scale for action	Investment needs (High, modest)	Urgency	Risks	How do you measure success?	Criteria for success
11	Continued	<ul style="list-style-type: none"> • training, education (schools and university) of future customers and awareness have important distinctions • graduate training schemes in ESA • awareness and education are higher priorities • lack of skilled labour for radar remote sensing (Canada) • organise events thematically - ESA in partnership with specific sectors, institutional players, etc 						
12	Forum for discussions between upstream and downstream industry	<ul style="list-style-type: none"> • importance of defining future missions from the downstream sector • don't put primes in the loop at the start • mechanism missing for bringing in views from downstream outside the Earth Watch and Earth Explorer 				<ul style="list-style-type: none"> • downstream industry doesn't use data from ESA mission - as they feel better served by other missions (particularly US) 	<ul style="list-style-type: none"> • improving operational streams of data for the longer term 	<ul style="list-style-type: none"> • business growth for downstream and upstream



	What should ESA do?	What must this address	Time scale for action	Investment needs (High, modest)	Urgency	Risks	How do you measure success?	Criteria for success
		<ul style="list-style-type: none"> programmes ancillary benefits of the science missions for the downstream 						
13	Broader standards forum	<ul style="list-style-type: none"> broader perspective on standards - applicability to the end products standards for commitment to deliver professional acceptance stamp of approval from ESA channel of communication to relevant bodies 					<ul style="list-style-type: none"> wider acceptance in the markets we are selling to 	
14	Data policy and pricing	<ul style="list-style-type: none"> respond flexibly to the market importance of strategic data sets how to involve value adders in the discussion ensure new services introduced are appropriately priced 						

Table 4-1: Action plan



5. RESULTS AND RECOMMENDATIONS

- 1 The ESA Executive should review the actions (Table 4-1) that evolved during the workshop and evaluate the appropriate response for ESA.
- 2 A White Paper should be prepared for the Programme Board Earth Observation to set out an integrated approach to support the EO downstream sector.



Appendix A: List of Attendees

	Family name	Christian name	Country	Company
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Customers

1	Colaiacomo	Lucio	Spain	WEU Satellite Centre
2	Routledge	Brian	Spain	WEU Satellite Centre
3	Valero	Juan Luis	Spain	WEU Satellite Centre
4	Ferrucci	Fabrizio	Italy	Protezione Civile

National delegates

5	Briggs	Stephen	United Kingdom	
6	Brown	Ron	Canada	
7	Castaldo	Amedeo	Italy	
8	Chouinard	Jean-Marc	Canada	
9	Fellous	Jean-Louis	France	
10	Frei	Urs	Switzerland	
11	Gredel	Jörg	Germany	
12	Herland	Einar-Arne	Finland	
13	Mariette	Véronique	France	
14	Mondre	Erwin	Austria	
15	Skrøvseth	Per Erik	Norway	
16	Spiero	François	France	
17	Thomas	Graham	United Kingdom	
18	Treschow	Marianne	Sweden	
19	Wahl	Manfred	Germany	

Industry

20	Boehm	Christoph	Germany	G.E.O.S. Ingenieurgesellschaft
21	Borg	Claus-Goran	Sweden	SSC
22	Cannizzaro	Giovanni	Italy	Telespazio
23	Capes	Ren	United Kingdom	NPA Group
24	Caporale	Mario	Italy	Telespazio
25	Coustere	Michel	France	Matra Systemes & Information
26	Dusart	Jean	Belgium	Eurosense International N.V.
27	Garcia	Felipe	Spain	Indra Espacio
28	Giampaolo	Donatella	Italy	Eurimage
29	Gontier	Eric	Belgium	Spacebel Informatique
30	Håkansson	Bertil	Sweden	Swedish Meteorological and Hydrological Institute
31	Haydn	Rupert	Germany	GAF Gesellschaft für Angewandte Fernerkundung mbH
32	Hoffmann	Christian	Austria	GeoVille GmbH
33	Howes	Sally	United Kingdom	ESYS Limited
34	Kühnen	Andreas	Germany	G.E.O.S. Ingenieurgesellschaft
35	Kuntz	Steffen	Germany	Remote Sensing Services GmbH
36	Lopez-Peña	Pedro	Spain	GMV S.A.
37	Mendel	Didier	Belgium	Eurosense International N.V.



	Family name	Christian name	Country	Company
38	Moreno	Victoriano	Spain	Indra Espacio
39	Muylaert	Raf	Belgium	National Geographic Institute
40	Richard	Gilles	France	Matra Systemes & Information
41	Sylos Labini	Giovanni	Italy	Planetek Italia
42	van Duivenbode	Linda	United Kingdom	ESYS Limited
43	van Speybroeck	Dirk	Belgium	VITO
44	Veck	Nicholas	United Kingdom	NRSC Ltd
45	Blair	Peter	United Kingdom	Racal Research Ltd
46	Campbell	Gordon	Italy	Serco Servizi
47	Hirschfeld	Alain	France	Spot Image
48	Maranesi	Marcello	Italy	Eurimage
49	McConnell	Patrick	Canada	Atlantis Scientific Inc
50	Press	Nigel	United Kingdom	NPA Group
51	Wensink	Han	the Netherlands	ARGOSS

Institution

52	Hubbard	Neil	Italy	European Commission, DG JRC, Space Application Institute
53	Maes	Willy	Belgium	European Commission DG XIII G3
54	Paterson	Robert	Italy	FAO Investment Centre
55	van Rooy	Dirk	Belgium	European Commission

ESA

56	Albani	Mario	Italy	ESRIN
57	Bissett-Olivieri	Margaret	Italy	ESRIN
58	Coulson	Stephen	Italy	ESRIN
59	Doherty	Mark	Italy	ESRIN
60	Duchossois	Guy	France	ESA HQ
61	Fea	Maurizio	Italy	ESRIN
62	Fusco	Luigi	Italy	ESRIN
63	Guignard	Jean Pierre	Italy	ESRIN
64	Hougs	Steen	France	ESA HQ
65	Kohlhammer	Gunther	Italy	ESRIN
66	Laur	Henri	Italy	ESRIN
67	Marelli	Livio	Italy	ESRIN
68	Marelli	Edoardo	the Netherlands	ESTEC
69	Pittella	Giancarlo	Italy	ESRIN
70	Zobl	Reinhold	the Netherlands	ESTEC



Appendix B: Agenda

DEVELOPING THE EO SUPPLY CHAIN WITH ESA MISSIONS

Workshop to be held at ESRIN, Frascati

7th - 9th April 1999

Workshop objective: To establish how ESA can be most effective within the evolving EO supply chain. This debate will be informed by the experiences of the service industry within the Member States and by the customer's perspective.

Draft agenda

Wednesday 7th April
Park Hotel Villa Grazioli, Frascati

- 19:00 Introductions and welcome
Livio Marelli, ESA
- 19:15 Workshop objectives and the challenge ahead
Dr Stephen Briggs, PBEO Chairman
- 19:30 Cocktails

Thursday 8th April
Main Conference Room, ESRIN

Day 1: Addressing the EO supply chain
Chairman: Mark Doherty, ESA

- 09:00 **Chairman's opening remarks**
The EO supply chain: a reference for the workshop
- 09:30 Discussion
- 09:45 **How is the supply chain shaping up and what is important for stimulating and responding to their markets?**
The data distributors' view:
- Delivering multi-mission services
Marcello Maranesi, Eurimage
 - Building global markets
Alain Hirschfeld, Spot Image
- 10:15 *Break for coffee*



- 10:30 **Key messages from commercial service companies:**
- Using partnerships to extend market reach
Han Wensink, ARGOSS
 - Product development cycles for the EO market
Nigel Press, NPA
 - Selling to organisational buyers in North America
Patrick McConnell, Atlantis Scientific Inc.
- 12:00 Discussion
- 12:30 Tour of ESRIN
- 13:00 *Lunch*
- 14:00 **What do buyers need from the supply chain?**
- Views from the customer perspective
- 15:00 Discussion
- 15:15 *Break for coffee*
- 15:30 **Now for something different**
- Snapshots from other industries
Gordon Campbell, Serco Servizi
- 16:00 Discussion
- 16:45 **Chairman's summary**
- 17:00 **Close**
- 19:00 **Workshop dinner**



**Friday 9th April
Main Conference Room, ESRIN**

Day 2: Stimulating the EO supply chain: What next?

Chairman: Dr Stephen Briggs, Chairman PBEO

- 09:00 **Chairman's opening remarks**
- 09:15 **With respect to ESA's presently committed missions, participants are invited to contribute to a structured debate addressing issues such as:**
- What are the opportunities and threats now facing EO suppliers in the ESA Member States?
 - What new mechanisms do we need to improve the outlook and the competitiveness of our suppliers?
 - Who is best positioned within the EO supply chain to activate these mechanisms and deliver positive change?
 - What are the time scales and where are the immediate priorities?
 - How can ESA be most effective within this evolving EO supply chain?
- 13:00 *Lunch*
- 14:00 **The framework for change in the EO supply chain: A synthesis of key elements identified during the workshop**
Mark Doherty, ESA
- 14:30 **Chairman's summary**
- 14:45 **Closing remarks**
Livio Marelli, ESA
- 15:00 **Close**



Appendix C: Questionnaire

What is your view on the EO supply chain and ESA's role within this?

Please indicate your affiliation	<input type="checkbox"/> Delegate <input type="checkbox"/> EO service industry (please indicate approximate size of revenue from EO products & services) <ul style="list-style-type: none"> <input type="checkbox"/> below 1 M euro per annum <input type="checkbox"/> 1-5 M euro per annum <input type="checkbox"/> over 5 M euro per annum <input type="checkbox"/> Customer today <input type="checkbox"/> Potential customer in the future <input type="checkbox"/> ESA <input type="checkbox"/> Other, please specify
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	Agree strongly	Agree	Unsure	Disagree	Disagree strongly	
How would you describe the current status of the EO supply chain in Europe and Canada?						Mature, successful and poised for growth Benefiting from increased concentration of business within fewer organisations Strong strategic direction Competitive in the global marketplace Business and profit oriented Has achieved a good balance between public service providers and private companies Successful in transferring technology from research institutes and universities In need of additional financial support
	Is there anything further you wish to add?					
How would you describe the relationship of EO suppliers with public sector investors in space technology?						The downstream EO suppliers are heavily dependent on space policy leading to unsustainable exposure on the business The downstream industry forms a major driver for public policy and enjoys a beneficiary relationship



	Agree strongly	Agree	Unsure	Disagree	Disagree strongly	
What are the major issues facing the EO supply chain today?						<p>Marketing aspects:</p> <ul style="list-style-type: none"> • Understanding customer requirements • Understanding the market • Raising customer awareness • Accessing new markets and promotion • Distribution channels and franchising <p>Production and operations aspects:</p> <ul style="list-style-type: none"> • Algorithm & product development • Quality • Driving costs down • Relationships with suppliers of EO data • Standards • Rolling out new products and services • Building flexibility into products • Access to finance
	Is there anything further you wish to add?					
How would you describe ESA's role within the EO supply chain?						<p>Adequate for today's situation</p> <p>Appropriate to meet the needs of the EO supply chain in the future</p>
Are there further actions that ESA should consider to assist the development of the EO supply chain?						

