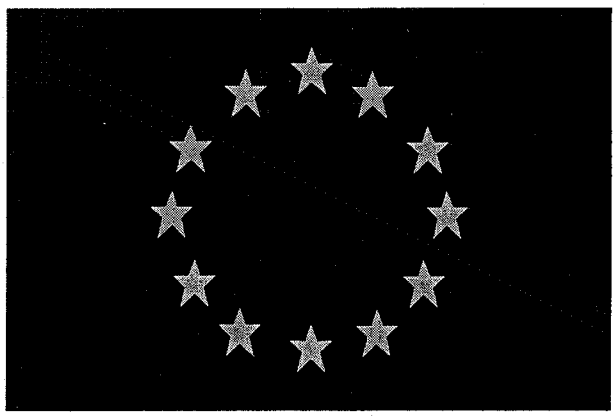
Cranfield UNIVERSITY

Eurilia (European Initiative in Library and Information in Aerospace)

Aerospace information needs in Europe: results of the post audit study



John Blagden, John Harrington and Heather Woodfield
Cranfield Information and Library Service

COA report No.9705
March 1997

College of Aeronautics
Cranfield University
Cranfield, Bedford MK43 0AL
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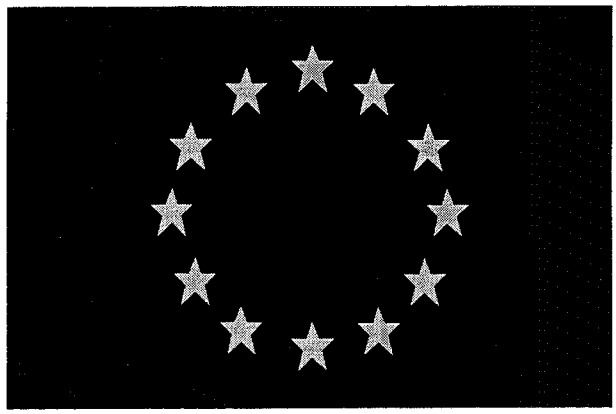

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College of Aeronautics
Cranfield University
Cranfield, Bedford MK43 0AL
England

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EXECUTIVE SUMMARY

This report is the final deliverable in the Eurilia project (European Initiative in Libraries and Information in Aerospace). The report presents the results of studies on:

- information seeking behaviour in the aerospace sector
- an evaluation of an innovative prototype software package that can search up to 25 Z39.50 compliant databases simultaneously
- an evaluation of a prototype full text system of some 200 aerospace dissertations, and
- the commercial potential of both the software and the full text system.

The main conclusions of these studies are:

- that academics and those working in industry have similar information seeking habits as do the respondents drawn from the five countries participating in the project
- that, despite the advances of the information revolution, users are encountering increasing difficulty in identifying and locating material that meets their information needs
- that there is a big increase in the use of Internet and generally a much more positive attitude towards electronic access
- that the evaluation of the Eurilia software and information service was generally positive (given its prototype nature) but that three key steps need to be taken to make it commercial

    i enlarge the information base
    ii enhance the functionality of the software
    iii offer document delivery.

It was agreed by the Eurilia consortium that TUD will use the Eurilia software as a marketing tool to front end and promote and increase the use and sales of their document delivery services.

The Eurilia consortium will also use the software to provide better access to aerospace holdings.

Finally the consortium will explore a number of other options:

- apply the Eurilia system to other sectors important to the EU economy
- enhance the document delivery functionality of the Eurilia client

- replace the image server with an open Web based Internet or Intranet for the aerospace sector

- develop a one stop quality information source for the sector.

1. INTRODUCTION

This report is the final deliverable (D7) of the Eurilia (European Initiative in Libraries and Information in Aerospace) project: a three year programme that aims to enhance information access and utilisation of information within the European aerospace sector.

The partners involved in this project, which ended in February 1997, were:

University of Limerick (UL), Ireland
Cranfield University (CU), UK
Technical University of Delft (TUD), Netherlands
Digital Equipment Corporation (DEC), Netherlands
Sup' Aero, ENSAE - Ecole National Supérieure de l'Aéronautique et de l'Èspace (SA), France
Instituto Nacional de Técnica Aerospacial (INTA), Spain

This project was funded by the EC Action Programme for Libraries.

From the outset the project has attempted to focus on user needs within the aerospace sector and the first section of this report summarises the key conclusions of the studies that were conducted at the beginning of the project, all of which focused on the aerospace user.

The second section of this report replicated the tests on users which were deployed in the first stage of the project to try to assess what changes had occurred in aerospace information seeking behaviour and attitudes. Section two also presents the results of a lengthy evaluation by users of the Eurilia software and the final section presents the results of the commercial study, which included both an extensive use of software specifically designed to test commercial viability, together with the results of users' views on the market potential of both the Eurilia software and the content of the system.

2. SUMMARY OF PRE-AUDIT PROJECT

2.1 Aerospace Information

In the conclusions to the extensive review that was conducted (Blagden 1994, CoA Rep No. 9404), it was stated that user input should be built around reactions rooted in specific information seeking events. This was incorporated in both the pre-audit interview schedules and the post-audit schedules. It was also noted in the review that any assessment of the system should be based on specific outcomes relevant to a particular information need and again this has been incorporated in the user evaluation of the Eurilia system.

Expectations, whether high or low, also have an important influence on any user responses to information questions and this is why an 'aerospace information literacy test' was used in both the pre- and post-audit stages.

A recurring theme in the literature was the wider and rapidly changing information environment in which user searching takes place. At each seminar held on Eurilia, this wider scene has been described (Harrington 1994), particularly in terms of the many resources now available on the Internet.

The review also confirmed that aerospace is a genuinely international industry and users tend to exhibit similar information seeking habits irrespective of their nationality. Most aerospace projects are very large and involve collaboration across many countries, but paradoxically it is also highly competitive with the added complication that many projects are militarily sensitive. These issues are currently being addressed by CU with their AIM project (Aerospace Information Management - United Kingdom) and CU and INTA in their participation in the IAIN project (International Aerospace Information Network). The IAIN project recognised the major role that NASA plays in aerospace information, whilst also understanding that there is a huge amount of information available elsewhere (particularly on the Internet), relevant to the European aerospace sector. One final point, the literature did not list any studies that specifically focused on the role that aerospace dissertations might play in enhancing aerospace R&D. The Eurilia project has, therefore, broken new ground in using the Cranfield dissertations as the information resource contained on the Eurilia system.

2.2 Commercial aspects

This study (Blagden 1994, CoA Report No. 9406) attempted to provide a framework by which the commercial potential of any Eurilia system could be judged. At the pre-audit stage this inevitably had to take a fairly theoretical perspective as the first prototype of the system did not lend itself to any commercial evaluation.

The pre-audit analysis reviewed cost benefit analysis, various marketing concepts, shadow pricing, costing, product and/or service options, pricing aspects and the potential market. Some notional cash flows were included in the report.

The report concluded that the Eurilia partners need to be clear about what business they are in, document delivery or information support, or both. Eurilia partners also need to be clear about

what markets they are attempting to address and what other options are available if a fully fledged commercial system does not appear to be viable.

2.3 Pre-audit results

All respondents in this pre-audit stage (Blagden, Harrington, Woodfield) had to pass an information literacy test and these results will be compared with the post-project results produced in section 3.2.2 of this report. However, it is worth noting in this section that the pre-audit study did not elicit significant differences either between countries or between the views of academia and industry.

As to be expected, the information literate users regarded access to information as of critical importance, with most users having access to a wide range of information resources. However, there did appear to be a significant incidence of difficulty in obtaining items identified in the information seeking process. This may have been the reason why around a third of information searches appeared unsuccessful and it has to be remembered that these searches were being conducted by users with a high degree of information literacy. There was strong support for full text systems, although less for dissertations.

Generally, in section 3.2.2, it will be interesting to compare the specific answers to the same set of questions as well as determining whether these overall conclusions are still valid three years later.

3. POST-PROJECT AUDIT

3.1 Software assessment methodology

It was considered appropriate, before conducting the evaluation of the Eurilia system, to conduct a brief review of the literature which gave some insight into effective strategies for evaluating the Eurilia system. A search was conducted on CU's on-line public access catalogue, together with the Inspec database.

Some of the key conclusions from this review were:

- It is important that interviewers stress that it is the software that is being evaluated and not the user. Great care should, therefore, be taken to put the users at their ease and to encourage users to comment without embarrassment on any problems that they encounter.

- The requirement to focus on all aspects of the system - legibility, wording, effectiveness of help screens, etc.

- The degree to which the Eurilia software mimics other interfaces of which users might have knowledge.

- The need to develop standard tests and to avoid user feelings of inadequacy by breaking this down into stages, if possible.

- The creation of an environment in which the user is encouraged to voice any criticisms and, therefore, to emphasise from the outset that all such criticisms will be presented anonymously.

The Bibliography in section 5 lists the references that we found to be of most use.

3.2 Post-project audit results

3.2.1 Information literacy test

It should be noted here that the interviewees are not representative of the sector and should be compared with a consumer panel or focus group - a technique much used in market research. The focus, therefore, in the pre- and post-project audit stages is on qualitative assessment of the Eurilia system from users with high expectations. This will be particularly important in assessing the commercial potential of the project - naive users could well give a falsely optimistic view of Eurilia's commercial prospects.

It should also be noted that the Pinelli studies (Blagden, September 1995) do give extensive data on information seeking behaviour in the aerospace sector. In any case, the naive user who is unaware of developments in aerospace information, particularly those involving new technology, may well disappear in the short and medium term. It would, therefore, be wrong to plan a future service on the views of users who may well disappear, or at least be in the minority in the not too distant future.

The Information Literacy test (Appendix A) is almost identical to the test used in the pre-project, except that the post-audit test includes references to the Internet. Again, to qualify for the interviews, those taking the test will need to produce 50% or more positive answers.

3.2.2 Information seeking behaviour

It was intended to use the same respondents in the post-project as in the pre-project audit. This would have controlled a key variable (the characteristics of the respondents)and, at the same time, given the project a longitudinal element. However, this proved not to be possible to any degree, because after three years almost everyone involved in the pre-project had moved jobs, changed addresses, etc. Another issue that Delft had to contend with was that a number of their respondents had been drawn from Fokker - a company which has subsequently withdrawn from manufacturing aircraft. Another problem encountered was that the Eurilia system was only fully available for testing towards the end of 1996, which shortened the time allowed to track down the original interviewees. The information literacy test did, however, ensure that a similar set of individuals were interviewed in the post-audit.

The interview schedules are shown in Appendix B and are almost identical to the ones used in the pre-project audit, again, however, with the inclusion of questions on the Internet. Not all questions were answered by all respondents, which accounts for the lower response rates in some sections of the schedules.

3.2.2.1 Overall analysis

In the commentary on these results particular emphasis will be placed on comparing total results in 1994 with total results in 1997 given the comparatively small number of respondents. In tables 1 to 4 respondents in the two years appeared to have a similar background. The respondents shown under government all worked for a research association and these have been subsumed in the later analyses under the academic heading. Again it has been assumed that any respondent who held either a doctorate or a Masters Degree would also hold a first degree.

Other work activity (tables 4 and 5) include:

'fly by wire'
electronic imaging
flight dynamics
air transport (table 5)
systems

Table 1: Distribution of responding organisations

	1994	1997
UK	11 (19.6%)	9 (20.9%)
Ireland	11 (19.6%)	10 (23.3%)
Holland	13 (23.3%)	4 (9.2%)
France	11 (19.6%)	10 (23.3%)
Spain	10 (17.9%)	10 (23.3%)
Total	56 (100.0%)	43 (100%)

3.2.2.2 Employing organisation

Table 2: Type of organisation

	1994	1997[1]
Academic	31 (55.4%)	26 (60.5%)
Industrial	25 (44.6%)	10 (23.3%)
Government		9 (20.9%)
Total	56 (100.0%)	45 (104.7%)

[1] Multiple responses

3.2.2.3 Academic qualifications

Table 3: Academic qualifications[1]

	1994	1997
First degree	48 (85.7%)	40 (93.0%)
Masters degree	36 (64.3%)	31 (72.1%)
Doctoral degree	18 (32.1%)	15 (34.9%)
Other qualification	12 (21.4%)	3 (7.0%)

[1] Multiple responses

3.2.2.4 Work Activity and Functional Specialism

Table 4: Work activity[1]

	1994			1997		
	Academic	Industrial	Total	Academic	Industrial	Total
Academic/teaching/ research	28	8	36 (64.3%)	27		27 (62.8%)
Design and development	6	20	26 (46.4%)	14	5	19 (44.2%)
Manufacturing production	1	4	5 (8.9%)	2	1	3 (7.0%)
Engineering maintenance	1	4	5 (8.9%)	2	2	4 (9.3%)
Air transport	2	3	5 (8.9%)	4	1	5 (11.6%)
Other work activity	2	5	7 (12.5%)	2	1	3 (7.0%)

[1] Multiple responses

Table 5: Functional specialisation[1]

	1994	1997
Design	11 (19.6%)	10 (23.3%)
Structures	7 (12.5%)	7 (16.3%)
Aerodynamics	10 (17.9%)	10 (23.3%)
Avionics	2 (3.6%)	3 (7.0%)
Materials	2 (3.6%)	5 (11.6%)
Space sciences	8 (14.3%)	4 (9.3%)
Other work activity	16 (28.5%)	8 (18.6%)

[1] Multiple responses

3.2.2.5 Importance of information access

Tables 6 and 7, as you would expect, show all respondents confirming the importance of scientific and technical information given that all respondents had passed the information literacy test. Tables 6 and 7 appear to show a significant increase in support for the importance of technical information in 1997. In table 7 one UK industrial respondent registered a 3 score* whilst in 1994 six respondents registered this score including five of the six industrial respondents.

Table 6: Importance of scientific and technical information

1994	UK	Ireland	Holland	France	Spain	Total
Of no importance						
	1	1	3	1		6 (10.8%)
	3	2	4		2	11 (19.6%)
Of critical importance	7	8	6	10	8	39 (69.6%)

1997	UK	Ireland	Holland	France	Spain	Total
Of no importance						
	1					1 (2.4%)
	3	5	1	4		13 (31.7%)
Of critical importance	4	5	2	6	10	27 (65.9%)

* Scores refer to each line of the tables 1 through to 5

Table 7: Importance of scientific and technical information

	1994			1997		
	Academic[1]	Industrial[2]	Total	Academic[1]	Industrial[2]	Total
Of no importance						
	1 (3.2%)	5 (20.0%)	6 (10.8%)		1 (10.0%)	1 (2.4%)
	4 (12.9%)	7 (28.0%)	11 (19.6%)	10 (23.3%)	4 (40.0%)	14 (34.1%)
Of critical importance	26 (83.9%)	13 (52.0%)	39 (69.6%)	21 (48.8%)	5 (50.0%)	26 (63.4%)

[1] Percent of academic respondents [2] Percent of industrial respondents

3.2.2.6 Recall last occasion when information used

Again there is a marked difference in the two years in that all the respondents replying to this question could recall exactly the nature of their last information seeking event. One respondent suggested that 'As I spend 80% of my time consulting information the question perhaps should not have been posed'. However, because of this apparent excellent recall, this should improve the credibility of the data shown in table 9.

The actual range of information sought was again very wide and included searches on the following topics:

aircraft structures
'electric' aircraft
optimisation
intake flows
stress analysis
costing of electronic components
cascade wind tunnel data
vibration of turbine blades
stain friction measurements
micro mechanics of composites
material standards
avionics

The pattern of sources used is somewhat similar in both years except in the emergence of the Internet as a key source. In analysing the open ended responses as you would expect NASA was a key source accessed via the Internet. It was also clear that a number of respondents were using a multiplicity of search engines (Alta Vista, Yahoo, etc) to search the Internet without any prior

knowledge as to which sources will be useful in answering these specific questions. US universities and aerospace company web sites featured in the Internet sources listed and other sources listed included:

Redoc
Sibil
Library of Congress
Inist
Lorebi

Table 8: Last occasion use of information recalled

1994	UK	Ireland	Holland	France	Spain	Total
Yes	11	2	12	11	10	46 (82.1%)
Recalled in general terms		9	1			10 (17.9%)

1997	UK	Ireland	Holland	France	Spain	Total
Yes	8	10	3	10	10	41 (100%)
Recalled in general terms						

3.2.2.7 Sources used on that occasion

Table 9: Sources used on that occasion*

1994	UK	Ireland	Holland	France	Spain	Total
Colleagues	5	6	7	4	2	24 (10.9%)
Material in own office	8	11	6	4	3	32 (14.7%)
Library	2	9	9	6	8	34 (15.5%)
Databases	5	8	1	6	8	28 (12.8%)
Books	3	11	5	9	7	35 (15.9%)
Periodicals	3	8	4	6	7	28 (12.8%)
Reports	2	8	7	6	5	28 (12.8%)
Other sources	3	6	1			10 (4.6%)

*Totals and percentages based on ticked responses, not respondents

Table 9: Sources used on that occasion*

1997	UK	Ireland	Holland	France	Spain	Total
Colleagues	5	6	1	5	1	18 (11.0%)
Material in own office	5	7		4	7	23 (14.1%)
Library	8	5	3	5	9	30 (18.4%)
Databases	1	4	2	7	5	19 (11.7%)
Books	2	6		5	6	19 (11.7%)
Periodicals	3	1	1	6	8	19 (11.7%)
Reports	4	7		4	2	17 (10.4%)
Internet	3	5	1	5	4	18 (11.0%)
Other sources						

*Totals and percentages based on ticked responses, not respondents

3.2.2.8 Ease of identification of relevant information

Table ten shows that in 1997 it appears to be getting more difficult to identify the information required with over half the respondents scoring 3 or less. This seems to be the case across all five countries with particular problems in Ireland and Spain. There are a number of possible explanations for this:

- enquirers having unrealistic expectations about the information sources
- as we move into an end user search mode the unaided user is going to find it increasingly difficult to effectively access these resources particularly in the 'anarchic' Internet environment
- the huge increase in information resources and different modes of access (CD-ROMs, Internet, dial-up, Opacs, etc).

Table 10: Ease of identification of relevant information on that occasion

1994	UK	Ireland	Holland	France	Spain	Total
Very difficult			1			1 (1.8%)
	1		1	1	1	4 (7.1%)
	1	3	2	2	2	10 (17.9%)
	4	3	6	5	6	24 (42.8%)
Very easy	5	5	3	3	1	17 (30.4%)

1997	UK	Ireland	Holland	France	Spain	Total
Very difficult					1	1 (2.4%)
	2	5	1		1	9 (22.0%)
	2	3	1	3	3	12 (29.3%)
	4		1	3	2	10 (24.4%)
Very easy		1		4	4	9 (22.0%)

3.2.2.9 Ease of obtaining information

Again it appears to be more difficult to obtain the information in 1997 with only 33% of respondents scoring 4 and 5, whilst in 1994 61% of respondents scored 4 and 5.

Table 11: Ease of obtaining information on that occasion

1994	UK	Ireland	Holland	France	Spain	Total
Very difficult					1	1 (1.8%)
	1	2	1		2	6 (10.6%)
	1	4	5	3	2	15 (26.8%)
	2	2	5	5	3	17 (30.4%)
Very easy	7	3	2	3	2	17 (30.4%)

Table 11: Ease of obtaining information on that occasion

1997	UK	Ireland	Holland	France	Spain	Total
Very difficult	1				2	3 (7.1%)
	1	2			1	4 (9.5%)
	3	6	4	3	5	21 (50.0%)
	3	1		5	1	10 (23.8%)
Very easy		1		2	1	4 (9.5%)

3.2.2.10 Success in meeting information needs

The somewhat depressing picture that has emerged so far is further confirmed in table 12 where a large proportion of the 1997 respondents recorded dissatisfaction with the final output of the search process. This again appears to show a marked deterioration in success rates when compared with 1994.

Table 12: Success in meeting information needs on that occasion

1994	UK	Ireland	Holland	France	Spain	Total
Hardly any use	1					1 (1.8%)
			1		1	2 (3.6%)
	1	2	5	5	3	16 (28.6%)
	5	6	7	2	5	25 (44.6%)
Extremely useful	4	3		4	1	12 (21.4%)

1997	UK	Ireland	Holland	France	Spain	Total
Hardly any use	1					1 (2.6%)
	2	4			4	10 (25.6%)
	3	4	2	6	1	16 (41.0%)
		1	1	3	4	9 (23.1%)
Extremely useful	2	1				3 (7.7%)

3.2.2.11 End user and mediated searching

One possible explanation for these results which was suggested earlier is the possible switch from mediated searching to direct end user searching. However this would not appear to be the case in that 1997 responses show a slight decline in direct end user searching.

Table 13: End user and mediated searching

1994	UK	Ireland	Holland	France	Spain	Total
Most done by self	8	8	8	3	8	35 (62.5%)
Half and half	1	3	3	7	2	16 (28.6%)
Most through intermediary	2		2	1		5 (8.9%)

1997	UK	Ireland	Holland	France	Spain	Total
Most done by self	2	9	1	3	7	22 (55.0%)
Half and half	4	1	1	3	4	13 (32.5%)
Most through intermediary	2		1	2		5 (12.5%)

3.2.2.12 Published information sources used

A similar general pattern of information searching is documented here as in table 9 except again the emergence of the Internet as a major information source in contrast to 1994 where there was no documented use of this facility.

Table 14: Published information sources used*

1994	UK	Ireland	Holland	France	Spain	Total
Online databases	8	9	4	8	7	36 (14.9%)
CD-ROM	4	9	1		1	15 (6.2%)
Printed indexes	5	10	6	4	5	30 (12.4%)
Library catalogue	9	8	10	3	8	38 (15.8%)
Books	11	10	8	8	6	43 (17.8%)
Reports	10	10	11	5	4	40 (16.7%)
Dissertations	7	7	5	6	1	26 (10.8%)
Other sources	6	5	1	1		13 (5.4%)

*Totals and percentages based on ticked responses, not respondents

1997	UK	Ireland	Holland	France	Spain	Total
Online databases	4	2		9	10	25 (12.2%)
CD-ROM	5	6	3	1	2	17 (8.3%)
Printed indexes	5	1	2	3	2	13 (6.3%)
Library catalogue	8	7	3	4	8	30 (14.6%)
Books	7	6	1	7	6	27 (13.2%)
Reports	7	7	1	6	6	27 (13.2%)
Dissertations	2	4		5	2	13 (6.3%)
Internet	4	7	2	4	5	22 (10.7%)
Other sources				1		1 (0.6%)
Journals	7	7	4	5	7	30 (14.6%)

*Totals and percentages based on ticked responses, not respondents

3.2.2.13 Value of full text electronic services

Table 15 appears to show a very significant change in attitudes towards electronic information with all 1997 respondents scoring 3 or higher.

Table 15: Value of full text electronic services

1994	UK	Ireland	Holland	France	Spain	Total
No help			1			1 (1.8%)
			2	1	1	4 (7.1%)
	4	1	1	1	1	8 (14.3%)
	3	2	3	5	4	17 (30.4%)
Very helpful	4	8	6	4	4	26 (46.4%)

1997	UK	Ireland	Holland	France	Spain	Total
No help						
				3		3 (8.8%)
	1		1	3		5 (14.7%)
Very helpful	8	8	2	3	5	26 (76.5%)

3.2.2.14 Use of dissertations

Tables 16 and 17 do not appear to show significant differences in attitudes towards academic dissertations but these attitudes will be further explored in the evaluation of the Eurilia system.

There was however one somewhat curious response in that all five industrial respondents claimed to use dissertations in 1997 whilst in 1994 almost half of industrial respondents recorded no use of dissertations. It is also curious that significant proportions of academic respondents in both 1994 and 1997 appear not to use dissertations.

Table 16: Use of dissertations

1994	UK	Ireland	Holland	France	Spain	Total
Yes	9	7	6	9	4	35 (62.5%)
No	2	4	7	2	6	21 (37.5%)

Table 16: Use of dissertations

1997	UK	Ireland	Holland	France	Spain	Total
Yes	6	9	2	6	2	25 (73.5%)
No	1	1	2	2	3	9 (26.5%)

Table 17: User of dissertations by type of organisation

	1994			1997		
	Academic[1]	Industrial[2]	Total	Academic[1]	Industrial[2]	Total
Yes	22 (71.0%)	13 (52.0%)	35 (62.5%)	19 (70.4%)	5 (100%)	24 (75.0%)
No	9 (29.0%)	12 (48.0%)	21 (37.5%)	8 (29.6%)		8 (25.0%)

[1] Percent of academic respondents [2] Percent of industrial respondents

3.2.3 Eurilia evaluation

In Appendix C the Eurilia evaluation interview schedules are given. These schedules were presented in draft form at the Eurilia meeting held in Toulouse in July 1996. These schedules were radically revised as a result of the discussions at that meeting and were subsequently piloted at CU towards the end of that year when the links between CU and TUD became robust and when further development of the software was frozen. Questions 9 through to 13 relate to the commercial potential of the project and the results of these are given in section 3.2.4. It should be noted again that not all respondents answered all questions so totals do not necessarily tally with total number of respondents.

At the beginning of the interview all interviewees were given a structured walk through the Eurilia system so that interviewees started with the same level of understanding of the system.

3.2.3.1

Question one used a pre-determined number of information resources (CU, TUD and the University of Wisconsin) to ensure that the test of the system was controlled and the actual question used was the last recalled information search referred to in table 8 in the information seeking behaviour section of this report.

Table 18: How well did the material retrieved via the Aerospace Group meet your information needs?

	UK	Ireland	Holland	France	Spain	TOTAL
Hardly any use	1					1 (2.4%)
	1	2		4		7 (16.7%)
	3	3	1	3	8	18 (42.8%)
	2	3	3	2	1	11 (26.2%)
Extremely well	2	1		1	1	5 (11.9%)

The results here would appear to be encouraging in that these three resources (CU, TUD, Wisconsin) were selected as a means of controlling the information source variable. These resources were then tested against an actual query and yet over a third of respondents were positive about the search output. A number of respondents commented that it did not generate as many hits as expected and clearly this is a general problem of expectations being overhyped by the information revolution in general and Internet in particular. Another respondent was unhappy that online public access catalogues did not provide abstracts. One other respondent reported that Wisconsin and TUD did not produce any hits but the information available at CU was very good. This comment emanated from a non-CU respondent! At UL all searches from the TUD collection yielded zero results. The interviewer at UL suggested that this may be due to how the search terms are handled by different servers.

Question two simply added the keyword Eurilia to the same question which confined the same search to the electronic file of CU dissertations.

3.2.3.2

Table 19: How well did the Eurilia material retrieved via the Eurilia system meet your needs?

	UK	Ireland	Holland	France	Spain	TOTAL
Hardly any use	2					2 (5.5%)
	2	1		8		11 (30.5%)
	2	1	2	1	9	15 (41.7%)
	2	1	2	1		6 (16.7%)
Extremely well	1				1	2 (5.5%)

The results here were slightly less encouraging with only 22% of respondents recording positive favourable results. However it has to be remembered that this was only a small file of some 200 dissertations and well over half of respondents clearly found some useful information contained in these documents. In the case of UL, problems were encountered in downloading images from the TUD server and this would appear to have been a problem of congestion on UL's network connection. This was a problem also encountered on the other Eurilia sites.

One respondent commented on the poor quality of the scanned images, another requested that the dissertations should include the date, language and the full name, and one other complained that the full title in the thesis list was not available. Researchers at UL were enthusiastic about being able to browse through CU dissertations particularly as this is an information category which in the past had been difficult to obtain.

3.2.3.3

Table 20: In general, how helpful would it be if academic dissertations were available in a searchable full text form?

	UK	Ireland	Holland	France	Spain	TOTAL
No help					1	1 (2.4%)
				1	3	4 (9.5%)
	3		1	2	3	9 (21.4%)
	1	5	1	4	2	13 (31.0%)
Very helpful	5	5	1	3	1	15 (35.7%)

Despite some of the difficulties of accessing the Eurilia file of CU dissertations, generally respondents were very enthusiastic about creating an electronic file of dissertations. One respondent questioned the wisdom of providing the full text of these documents and suggested that summaries of the dissertations would have been sufficient.

3.2.3.4

Table 21: How easy was the system to use?

	UK	Ireland	Holland	France	Spain	TOTAL
Very difficult						
		1		5		6 (13.9%)
	1	3	1	3	1	9 (20.9%)
	6	2	1	2	3	14 (32.5%)
Very easy	2	4	2		6	14 (32.5%)

The results here are encouraging in that virtually two thirds of respondents were very positive about the software. UL users in particular found the software quick and easy to use and the only problem occurred when users went back to edit a query: they were not able to remove one term as using 'clear' deleted all search terms. UL users were particularly impressed with the capability of the software to search multiple databases simultaneously. They were however critical of the fact that the system does not retain the most recent information in the memory, e.g. if the user takes down a list of hits and decides to go back into 'record view' the system has to pull down the list all over again. The same point applies to recently viewed images: the user cannot easily flick back and forth between images. Other respondents picked up these points and made the general point about the difficulty of navigating around the full text. Other points made were that the search engine was weak, there was a need for an interface to the Web, and generally the software needed more development work before it came to the marketplace.

3.2.3.5

Table 22: How useful were the help screens?

	UK	Ireland	Holland	France	Spain	TOTAL
Useless				2		2 (4.7%)
		1				1 (2.3%)
				2	1	3 (7.0%)
			2	1	3	6 (14.0%)
Very useful		1	1	1	5	8 (18.6%)
Did not use	9	8	1	4	1	23 (53.4%)

3.2.3.6

Table 23: Did you find the system commands easy to use?

	UK	Ireland	Holland	France	Spain	TOTAL
Very difficult						
				1		1 (2.3%)
	1	3	1	1	1	7 (16.3%)
	6	4	1	8	4	23 (53.5%)
Very easy	2	3	2		5	12 (27.9%)

3.2.3.7

Table 24: Were the error messages helpful?

	UK	Ireland	Holland	France	Spain	TOTAL
Very unhelpful	3					3 (7.0%)
					1	1 (2.3%)
	2	1	2	3	5	13 (30.2%)
		3	1	1	4	9 (20.9%)
Very helpful		1				1 (2.3%)
Didn't use	4	5	1	6		16 (37.2%)

3.2.3.8

Table 25: How helpful were the screen layouts?

	UK	Ireland	Holland	France	Spain	TOTAL
very unhelpful						
	1	1		3	2	7 (19.4%)
	1	2		7	5	15 (41.7%)
	2	3	1		2	8 (22.2%)
Very helpful	2	2	2			6 (16.7%)

Tables 22 through to 25 gave user views on help sources, system commands, error messages and screen layouts. In the case of the help screens the large number of respondents who did not use these during the trials would largely nullify the results presented in table 22. Users were however very enthusiastic about system commands (table 23) but again as so many respondents did not use the error messages (table 24) the results should be treated with caution. One respondent however claimed that the error message was incorrect when the wrong password was used.

The UL interviewer produced a comprehensive set of user reactions to a number of different aspects of the software and these are reproduced overleaf.

Viewing:

- *In "Recordview" some users found it irritating not to be able to scroll across the record (particularly in the subject headings) or expand the size of the window so that all information could be viewed.*
- *Some users found the navigation through documents lacked intuitiveness:*
    - *When the user selects a document for viewing they have to double click on the section they want to see, most users automatically clicked on the "Cancel" button as they expected an "OK" button at the bottom of the screen. (This was also requested by SA respondents.)*
    - *Some users found it difficult to navigate through scanned documents - they found it difficult to keep track of their position within the document.*
    - *In the event that the user came to the end of e.g., pg. 120 and wanted to go on to pg. 121 this sometimes proved difficult.*
    - *One user suggested including the Chapter and sub-section numbers to help improve navigation.*
    - *It was also suggested that the user should also have the option of "paging" or "scrolling" through the document rather than working through sections.*
    - *Some users had difficulties trying to identify which pages had diagrams on them.*

Buttons:

- *It was suggested by several users that the buttons in the "Imageview" screen should have notes attached to them which would describe the function of the button when the mouse was pointed at it (similar to ToolTips in all Microsoft products).*
- *In the "Recordview" screen some users expected to be able to click on the square box to add to bibliography, delivery list or image list rather than having to select the buttons underneath.*

General System Features:

- *In "Imageview" there is no indication that the system is doing anything when a record is selected - use of the "egg-timer" as with standard Windows products was recommended.*
- *When an image is "fetched" there is no option to stop the process mid-stream.*
- *Two users suggested being able to minimise the "Hierarchy" window in order to flick back and forth between it and the image being viewed.*
- *It was suggested that short-cut keys be incorporated for those with a preference for keyboard rather than mouse use.*
- *It was noted that there is no "undo" feature, particularly when setting up delivery list etc.*
- *It was also noted that no warning is given when the incorrect password is given e.g. for CU's Opac.*
- *It was noted in "Help" that there were no search features available or links within the help topics (most people did not need to use help).*

3.2.4 Commercial study

3.2.4.1 Introduction

At the meeting held with the auditors in Madrid it was emphasised that a fully fledged commercial operation was only one option, albeit an important one, in determining the future of Eurilia. Other options which would be reviewed would include:

- collaboration with other information players in the sector, e.g. the European Space Agency
- collaboration with a publisher and/or database producer
- collaboration with a software supplier, possibly from another sector
- seeking some form of subsidy from the aerospace sector to continue in a 'not for profit' mode
- discontinue the Eurilia project.

However, a detailed and rigorous analysis of the commercial option was undertaken and the results of this are given in section 3.2.4.2 and a sample page of the MDSS results is given in Appendix D.

Another important issue to be addressed in reviewing the future of Eurilia was to assess the two key elements in the project, namely the Z39.50 compliant software and the content of the system - the unique aerospace research archive contained at CU. User feedback on these two issues is presented in section 3.2.4.3

3.2.4.2 MDSS Business Insight Methodology

It should be noted that the data generated from the MDSS software was produced by TUD and then critically reviewed at a meeting held in Delft between TUD and CU staff. Some of the key tentative conclusions of this extensive analysis and review were:

- The investment returns based on the TUD financial projections did not satisfy the minimum criteria given in the Business Insight package. These minimum criteria were defined to be at least equal to the investment returns gained from the purchase of a government bond.
- That marketing and advertising capability was weak and would require significant further investment to bring it up to scratch and this would, in turn, exacerbate the poor financial performance.
- That there was scope for increasing prices significantly, but this was a conclusion that the Eurilia team rejected, particularly as later the analysis suggested that Eurilia's fledgling service could not support a high price.

- That we needed to develop a strategy in which it would be more difficult for our customers to switch to competitor products and/or services. Again the Eurilia team believed this might be difficult, given the already major established players in both the software and aerospace information markets.

- New technology will have a big impact on the market and any player in this market needs to establish a strong niche base as quickly as possible.

- Many of the main competitors are subsidised by government and this makes it difficult to operate a fully fledged commercial service.

- There was a need to put the Eurilia developments on a firm legal footing to which all members of the project team could agree.

- The package indicated that our approach to cost management was weak.

- Who is going to drive the development of Eurilia and the package suggested that strong effective management was clearly going to be a critical factor in bringing the software and/or the service to the market place.

It was, therefore, provisionally agreed that neither the Eurilia software nor a service based on the full text of the dissertations appeared commercially viable. However, a final decision would be taken when user reaction to the software and the service were obtained in the post-audit study, the results of which are given in the next section.

3.2.4.3 User input to the future of Eurilia

In addition to the feedback obtained on the content of the system and the functionality of the software which were given in section 3.2.3, a number of specific questions were asked about the commercial potential of the Eurilia project. The results of these questions are given below

Table 26: Do you believe the content of the Eurilia system has a commercial value?

	UK	Ireland	Holland	France	Spain	TOTAL
No value	1	1		4	1	7 (16.7%)
	3		1	3	1	8 (19.0%)
	2	2	1	2	6	13 (31.0%)
	2	6	2		1	11 (26.1%)
High value		1		1	1	3 (7.1%)

The results given here seem to confirm the tentative conclusions arising out of both the MDSS analysis and the Eurilia project team that the development of a fully fledged service based on

aerospace dissertations would have difficulty in surviving commercially. However, this does have to be tempered a little with the strong general support for developing such files (see Table 20 page 19) and that the 200 dissertation file is still very much at the prototype stage. Users require a much larger file in order to make more considered judgements about value and commercial viability. Some difficulties were also encountered (see Table 19 page 18) in gaining access to the TUD image server at the time these interviews were conducted (particularly in Ireland), and this may have also produced somewhat negative conclusions.

One respondent stated that the service would have considerable commercial value when it was ready for the market place. This is in contrast to many respondents who were judging the system as it was presented to them, rather than assessing the prototype's potential for subsequent commercialisation.

Another respondent also recognised the limited nature of the trial when he/she stated that the CU data on its own does not have a high commercial value. One respondent warned about competition, particularly from services available on the Internet and two respondents stated that it would only have commercial value if document delivery was included. One respondent somewhat optimistically perhaps, suggested that the Eurilia system could do for aerospace what Inspec and Compendex have done for electrical and general engineering.

Table 27: What do you believe your organisation would be prepared to pay per annum for access to the content of this system?

	UK	Ireland	Holland	France	Spain	TOTAL
Wouldn't subscribe	4			7	5	16 (43.2%)
£50 - £100	2		1	1	1	5 (13.5%)
£100 - £500	1	3	1	1		6 (16.2%)
£500 - £1000		4	1	1	1	7 (18.9%)
More than £1000	2		1			3 (8.1%)

Approaching half of all respondents would not subscribe to the service and only just over a quarter of all respondents were positive about the content. However, if this had been an extensive representative sample of potential European customers, then the fact that 57% might be willing to pay for the service and 27% would pay more than £500 per annum, would have been regarded as very encouraging. What organisations are actually prepared to pay, rather than what respondents believe their organisations might pay could turn out to be two very different sets of figures. One respondent stated that the figure he/she had indicated pre-supposed that this was an all inclusive charge and no supplementary payments were involved.

Table 28: Do you believe that the software developed on this project has a commercial value?

	UK	Ireland	Holland	France	Spain	TOTAL
No value	2			5	2	9 (21.4%)
	2	1		2		5 (11.9%)
	4		1	1	2	8 (19.0%)
		5	1		5	11 (26.1%)
High value	1	2	1	1	1	6 (14.2%)
No view		2		1		3 (7.1%)

In the piloting of this questionnaire some respondents claimed that they didn't have the expertise to make a judgement on software prices. Respondents therefore had the option of recording a 'no view' response. The responses themselves are very evenly spread and there doesn't appear to be a consensus on whether or not the software does have a commercial value.

Table 29: What do you believe your organisation would be prepared to pay as an annual licence fee for the use of the software?

	UK	Ireland	Holland	France	Spain	TOTAL
Wouldn't subscribe	5			7	2	14 (35.0%)
£50 - £100	2	1		1		4 (10.0%)
£100 - £500		3				3 (7.5%)
£500 - £1000	1	2	1	1		5 (12.5%)
More than £1000	1					1 (2.5%)
No view		4		1	8	13 (32.5%)

Although in the previous table there appeared to be a wide spectrum of views, when the question is posed in hard cash terms the responses appear more negative. Over 1/3 of respondents wouldn't pay anything for the software and another third were not prepared to express a view.

Table 30: Do you believe that the software could be used with other aerospace information sources to launch a commercial service?

	UK	Ireland	Holland	France	Spain	TOTAL
Yes	8	9		3	3	23 (57.5%)
No	1			3		4 (10.0%)
No view		1	1	4	7	13 (32.5%)

This was the most encouraging response of all in that well over half the respondents considered that the software could be used in collaboration with another aerospace information provider. One respondent believed that there were already better services available on the Net however.

Those responding positively suggested the following services which might be included in an enlarged Eurilia service (number in brackets list number of occasions greater than one that a service was mentioned).

- company catalogues
- NASA (5)
- wider coverage to include more academic dissertations
- SAE
- AIAA
- Cranfield reports
- SBAC reports
- Panavia R Specs
- Industry standards
- DTIC reports
- East European sources
- Defence Standards 970 series
- Mil specs (5)
- Military Handbooks
- Academic publications
- Company reports (2)
- Regulatory bodies, e.g. FAA (USA) and JAA (Europe)
- Din Standards (2)
- British Standards
- Aerospace publications from McGraw Hill
- Engineering Sciences Data -ESDU
- Royal Aeronautical Society publications
- Conference Papers (2)
- ASME Journal of Turbo Machinery
- ASME Papers (2)
- ASME Journal of Fluid Mechanics
- All aeronautical journals with abstracts

4 CONCLUSIONS

4.1 Changes in information seeking behaviour

The 1997 post-project information audit largely confirmed the results of the 1994 pre-project information audit in that there were no significant differences in information seeking behaviour in aerospace between either academic and industry, or between the five countries in which the audits took place.

The 1997 results also confirmed that respondents had difficulty in both identifying and obtaining information. Furthermore, the information obtained frequently did not meet the need that initiated the initial search. In comparing the 1997 results with 1994, the situation appeared to have worsened, which is surprising, given the large number of claims made for improvements in information access largely arising from new technology.

A key difference in 1997 compared with 1994 was the emergence of the Internet as a major aerospace information resource. There also appeared to be a much more positive attitude towards full text electronic files in general and aerospace dissertations in particular.

4.2 Evaluation of the content of the Eurilia system

It is clearly difficult to disentangle user views on a prototype system with a limited amount of data available with views on the potential that such a system has of being developed to meet the future information needs of the sector. However, the results of these evaluations were encouraging in that significant numbers of respondents obtained useful information in response to a specific enquiry from the TUD, CU and Wisconsin Opacs and the restricted file of CU dissertations.

What was even more encouraging was the large number of respondents who were very positive about using the software with other (or additional) aerospace information to launch a commercial service. Certainly this was a tentative conclusion that the Eurilia partners came to at their Toulouse meeting and the list of suggestions made by respondents was discussed at the final meeting of the Steering Committee which was held at Limerick.

It was also encouraging that some respondents stated that any Eurilia system should include document delivery which was another provisional conclusion arising out of our meeting at Toulouse.

4.3 Evaluation of the Eurilia software

Again it has to be emphasised that this is a prototype and respondents will not necessarily make allowances for this. Nevertheless it was most encouraging that an overwhelming majority of users found the system easy to use. Users in general and UL users in particular were impressed with the capability of the system to search a number of databases (up to 25) simultaneously.

In searching a large number of databases there is, however, some doubt as to retrieval effectiveness when the Eurilia software interacts with these Z39.50 servers.

Although users were generally very enthusiastic they did suggest a large number of enhancements to the software, including:

better navigation through the scanned images

the need for paging and/or scrolling facilities

better signposted buttons

the need for an 'egg timer' and other facilities that are standard features on Windows products

Clearly these suggestions would need to be addressed if the software is to be brought to the market place.

4.4 Commercial implications and the future of Eurilia

The MDSS software indicated that the Eurilia software and the service was not viable as it was presently constituted. The aerospace business tends to be dominated by big players (e.g. NASA and ESA) who are partly or wholly subsidised by government. Any Eurilia business would require considerably more money to put the organisation on a firm commercial footing and it has to be remembered that all the partners but DEC are operating largely in the public sector. DEC have indicated that their business interests have changed and they no longer wish to commercialise the software as envisaged in the original consortium agreement.

The respondents largely confirmed the views of the Eurilia team in that to make it commercially viable

- the software needs to be further developed to put right the problems identified by both the respondents and the Eurilia team
- the Eurilia database needs to be enlarged and the various suggestions made will be critically evaluated by the team
- any system will need to provide document delivery, and
- competition needs to be reassessed.

In the light of this, the Eurilia consortium has agreed to using the Eurilia client as a front end to the TUD document delivery service.

This would be achieved by TUD exploiting the Eurilia software by essentially using it as a marketing tool and front-end to promote and increase the use and sales of the Document Delivery Service. For instance, the Eurilia Opac access functionality could be made widely available free-of-charge, image browsing and fax page delivery could be provided on a reasonable annual subscription, and the full document delivery could be provided at TUD's standard rates and terms.

TUD indicated that they are interested in exploiting the results of Eurilia in this way, probably by extending the service with funding in other development projects. Their current thinking is to complete the Eurilia Client as the front-end element of their document delivery service. The back-end will be built on their internal Copystreet project (which is itself a spin out from Eurilia). This back-end document delivery commercial service will be called DocUTraiL. TUD aim to grow this to a bibliography of 12,000 periodicals and over 8 million records within 3 years.

To sustain the partnership after the project ended in February 1997, the Partners are acting as test sites for the TUD WALZ (Web access to Aerospace Libraries using Z39.50). This is a National project at TUD funded by the Dutch Institute for Scientific Information (IWI). This project will run from September 1996 to June 1997.

The Consortium also agreed that most Partners' exploitation of the Eurilia results will be in using the service for better access to aerospace holding and information sources, rather than commercially exploiting the system itself. However, further development of the Eurilia system, in which all Partners could participate, would be worthwhile, but would require extra development funding. These developments could include:

- Implementing and demonstrating the Eurilia system in other sectors, such as biotechnology possibly along with publishers in the area.

- Upgrading the Eurilia Client to Z39.50-V3, with extended items, Explain Service and integrate its document delivery into the open ISO ILL standard system.

- Replacing the original DEC proprietary Image Server with an open Web-based Internet or Intranet platform for the aerospace sector.

- Combining document delivery with a one-stop-shop of quality information sources for the aerospace sector.

- A review of client capability to run on a variety of different networks.

4.5 A concluding note on methodology

The before and after philosophy of the original Eurilia proposal was underpinned by the desire to ensure that the Eurilia system was built around the needs of the client. The Information Literacy test proved to be a useful device in ensuring that respondents were likely to be sophisticated, rather than naive users of aerospace information. The focus was on collecting qualitative data and the 1994 and 1997 studies have generated a great deal of useful information, particularly in terms of software enhancements and possible ways of enlarging the Eurilia database.

The concept of using identical respondents in both studies was a valid one, but proved impractical because of the long lapsed times between the two studies and the time pressures to complete the post-project audit before the end of the project.

Users are not always in a position to comment on prices or the commercial potential of products and services. Many respondents stated as much in their answers. There is also the danger of what people state they are prepared to pay being not the same as what they and/or their institution will actually pay when presented with a real life product.

It is, however, believed that this approach of conducting qualitative research before and after any EC project concerned with the development of information products or services is one that could sensibly be incorporated in future EC studies suitably modified on the basis of the experience gained on this project.

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INFORMATION LITERACY TEST

Are you aware of the following information sources?

		Yes	No
1.	**Reference Books**		
	Janes All the Worlds Aircraft	☐	☐
	International ABC Aerospace Directory (Interavia)	☐	☐
	Flight International Directory Part 1 & 2 United Kingdom/ Mainland Europe	☐	☐
2.	**Journals**		
	Aerospace	☐	☐
	AIAA Journal	☐	☐
	Aviation Week & Space Technology	☐	☐
	Flight International	☐	☐
	Interavia	☐	☐
	Journal of Aircraft	☐	☐
	La Recherche Aerospatiale	☐	☐
3.	**Abstract Journals**		
	International Aerospace Abstracts (IAA)	☐	☐
	Scientific and Technical Papers (STAR)	☐	☐
	Engineering Index	☐	☐
4.	**Technical Report Series**		
	National Advisory Committee for Aeronautics (NACA)/ National Aeronautics and Space Administration (NASA)	☐	☐
	Advisory Group for Aerospace Research and Development (AGARD)	☐	☐
	American Institute for Aeronautics and Astronautics (AIAA)	☐	☐
	Office National d'Etudes et de Recherches Aérospatiales (ONERA)	☐	☐
	Royal Aircraft Establishment (RAE)/Defence Research Association (DRA)	☐	☐

National Lucht en Ruimtevaartlatoratorium (NLR)	☐	☐
Deutsche Gesellschaft für Luft und Raumfahrt (DGLR)	☐	☐

		Yes	No
5.	**Electronic databases**		
	NASA	☐	☐
	European Aerospace Database	☐	☐
	NTIS	☐	☐
	Compendex	☐	☐
	Inspec	☐	☐
	NATO - PCO	☐	☐
	Flightline	☐	☐
	McGraw-Hill Aerospace Database	☐	☐
6.	**Internet Aerospace Sources**		
	NASA	☐	☐
	European Space Agency	☐	☐
	World Wide Web Virtual Library: Aerospace	☐	☐
	World Wide Web Virtual Library: Aviation	☐	☐
	Aerospace Engineering (University of Michigan) Subject Guide	☐	☐
7.	**Other sources**		
	Engineering Science Data Unit (ESDU) datasheets	☐	☐
	British Standards Institution (BSI) aerospace series	☐	☐
	Defence Standards (DEF STANS)	☐	☐
	Military Specifications (MIL SPECS)	☐	☐

APPENDIX B

INFORMATION SEEKING BEHAVIOUR

1. Type of organisation in which you work (interviewer tick only one box)

   Academic ☐

   Industrial ☐

   Government ☐

   Other please specify

2. Education (interviewer tick all appropriate boxes)

   First degree ☐

   Masters degree ☐

   Doctoral degree ☐

   Other please specify

3. Which of the following BEST describes your key work activity? (interviewer tick as many boxes as appropriate)

   academic/teaching/research ☐

   design and development ☐

   manufacturing production ☐

   engineering maintenance ☐

   air transport ☐

   Other key activity - please specify

4. If you could only use <u>one</u> term to characterise your area of work would it be (interviewer only tick one box)

Design ☐

Structures ☐

Aerodynamics ☐

Avionics ☐

Materials ☐

Space Sciences ☐

Other - please specify

5. In your job how important is it for you to have access to scientific and technical information (interviewer please ring appropriate number)

of critical importance				no importance
5	4	3	2	1

6. Can you recall the last occasion that you used scientific and technical information in your job (interviewer tick only one box)

Yes ☐

No ☐

(Yes answers) Please state nature of that use

(No answers) Please state a task on which you are currently working which requires aerospace information

7. On that occasion* which sources did you use (tick all appropriate boxes)

Colleagues	☐
Material in own office	☐
Library	☐
Databases	☐
Books	☐
Periodicals	☐
Reports	☐
Internet	☐ - Please specify sources used
Other	☐

*If users can't recall, re-phrase question 7 to 'generally' (deleting 'on that occasion')

8. On that <u>specific</u> occasion, how easy was it to (for yes answers to question 6), or generally how easy is it to (for no answers to question 6) (interviewer please ring appropriate number)

(i) identify source of relevant information

very easy				very difficult
5	4	3	2	1

(ii) obtain that information

very easy				very difficult
5	4	3	2	1

and

(iii) how well did the supplied information meet your need

extremely well				hardly any use
5	4	3	2	1

9. When searching for information do you (tick one box)

- do most searches yourself ☐
- do half yourself and half through an intermediary ☐
- do most searches through an intermediary ☐

10. When searching for published information, either personally or through an intermediary, which of the following sources do you use (tick all appropriate boxes)

	Yes	No
on line dial up databases	☐	☐
CD-ROM services	☐	☐
library catalogues	☐	☐
printed indexes	☐	☐
books	☐	☐
journals	☐	☐
reports	☐	☐
dissertations	☐	☐
Internet - please specify sources used	☐	☐

Other please specify

11. Would it be helpful if the full text of relevant documents was available in a searchable electronic form? (ring appropriate number)

very helpful				no help
5	4	3	2	1

12. Can you recall an occasion when you have had to consult for information purposes (not academic supervision or assessment) a PhD or Masters Degree dissertation (tick one box)

Yes	No
☐	☐

APPENDIX C

EURILIA EVALUATION

The following points should be noted

> Important to emphasise that it is the software that is being tested, not the users - encourage the user to comment freely - results will be presented anonymously.

At the beginning of the exercise all interviewees will be given a structured walk through the system so that all interviewees start at the same level of knowledge. This will, in effect, be a demonstration by the interviewer of how the system works using the help screens.

Earlier the user indicated an interest in topic X (answer to question 6, Appendix B). What we would now like the **user** to do is to search for useful information on this topic using a predetermined group of aerospace information providers available on the Internet, which included CU, TUD and the University of Wisconsin.

As the user starts to conduct the search, explain that you will provide help if they get stuck. Please record all requests for help as these will be presented in the final report.

When the search is completed, ask the user to answer question one. Then repeat the search using the identical search strategy, but adding the additional key word Eurilia. This will produce a subset of the output providing access only to Cranfield dissertations.

Then continue working through all other questions - you should work on the basis of each interview taking up to 45 minutes.

Complete search

1. How well did the material retrieved via the Aerospace Group meet your information needs

extremely well				hardly any use
5	4	3	2	1

2. How well did the **Eurilia** material retrieved via the **Eurilia** system meet your information needs

extremely well				hardly any use
5	4	3	2	1

3. In general, how helpful would it be if academic dissertations were available in a searchable full text electronic format

very helpful				no help
5	4	3	2	1

Could interviewers note the number of dissertations retrieved in response to the query as a proportion of total hits.

4. How easy overall was the system to use

Very easy				Very difficult
5	4	3	2	1

5. How useful were the help screens

Very useful				Useless	Didn't use
5	4	3	2	1	☐

6. Did you find the system commands easy to use

Very easy				Very difficult
5	4	3	2	1

7. Were the error messages helpful

Very helpful				Very unhelpful	Didn't use
5	4	3	2	1	☐

8. How helpful were the screen layouts

Very helpful				Very unhelpful
5	4	3	2	1

9. Do you believe that the **content** of the Eurilia system has a commercial value

High value				No value
5	4	3	2	1

10. What do you believe your organisation would be prepared to pay per annum for access to the content of this system

More than £1,000	£500 - £1,000	£100 - £500	£50 - £100	Wouldn't subscribe
☐	☐	☐	☐	☐

Interviewers should emphasize that questions 11, 12 and 13 are concerned with whether the **software** has any commercial value. If possible try to get answers to all of these questions. However, in the pilot it became clear that some users were not able to give answers to these questions because they had no knowledge of the market for software. If this occurs in the post audit study, please tick the 'no view' box.

11. Do you believe that the **software** developed on this project has a commercial value

High value				No value	No view
5	4	3	2	1	☐

12. What do you believe your organisation would be prepared to pay as an annual licence fee for use of the **software**

More than £1,000	£500 - £1,000	£100 - £500	£50 - £100	Wouldn't subscribe	No view
☐	☐	☐	☐	☐	☐

13. Do you believe that the software could be used with other aerospace information sources to launch a commercial service

Yes ☐ No ☐ No view ☐

If yes please specify information sources.

Any other comments.

APPENDIX D

Analysis Summary

A. Preface

As an enterprise the Eurilia Consortium appears to have a limited number of the **attributes** necessary for success. On a scale of 1 to 100, the functional aspects of the Eurilia Consortium rate as follows:

62 - **Key Management**
80 - **Service Development**
61 - **Service Delivery**
49 - **Marketing/Sales**
40 - **Customer Service**

The Eurilia Consortium will be promoting its services, in particular Eurilia Aerospace & Aviation Information SR, to a market segment defined to include prospects that are mostly past customers of the Eurilia Consortium, composed mostly of **medium size to large organizations**, who are more **value instead of price** sensitive and who could have a positive **attitude** about purchasing the service. The economics, business and cultural **climate** supporting sales to this market segment appears to be strong.

Eurilia Aerospace & Aviation Information SR, rated on technology, image, user benefit, ease of use and competitive differentiation is considered **average** and will be in **competition** with services or alternatives offering comparable capabilities.

Business Insight has rated the Eurilia Consortium's potential for implementing each of the generic strategies as:

STRATEGY & POTENTIAL

Cost Leadership - poor
Differentiation - poor
Focus - average

The analysis indicates that the costs to achieve significant **market penetration** will probably be reasonable and the **profit potential** over the analysis period is analyzed as being just average at the best.