

# Mapping Aerospace Capabilities in the South East

A report for



centre of excellence for aerospace and defence in the south east

by

## cogentSi

COGENT STRATEGIES INTERNATIONAL LTD  
KILLYLUNG HOUSE HOLYWOOD DUMFRIES DG2 0RL SCOTLAND  
Telephone 01387 720462 Email [info@cogentSi.com](mailto:info@cogentSi.com)

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## Contents

1	Executive Summary .....	3
2	Introduction .....	7
3	Capabilities .....	11
4	Locations .....	16
5	Company Characteristics.....	23
6	Productivity .....	24
7	Investment.....	25
8	Trading Profiles .....	26
9	The Managers' Views.....	35
10	Future Challenges .....	42
11	Appendix 1 - Methodology .....	47
12	Appendix 2 – Working Paper : Questionnaire Analysis.....	54
13	Appendix 3 - Database Query Facility .....	55
14	Appendix 4 - News Chronology.....	58

## 1 Executive summary

This study has sought to provide the Farnborough Aerospace Consortium with a greater understanding of the make-up of the Aerospace industry in the South East of England and the issues which it faces.

Three outputs have been provided:

- A capability database with querying, sorting and display attributes.
- A working paper providing a detailed analysis of an Aerospace company survey investigating capabilities, profiles and attitudes within the industry.
- Finally, this report which brings together the strands of the capability mapping, the company survey and a number of interviews with industry participants.

As would be expected, in view of current world events, the overall picture is of an industry undergoing major change with the particular features being the current intense pressures in the civil markets contrasting with the increased military opportunities.

The irony is that the contrasting fortunes of the civil and military sides of the industry are both being shaped by the *same* global events.

The challenges which face South East companies are common in many cases to the other parts of the UK - as we collaborate and compete with our European partners (particularly Germany and France) and those in the United States.

These challenges need to be addressed from different angles:

- Some can be addressed by the individual companies themselves.
- Others will need collaboration between companies and with other (academic and public) bodies.
- There is, of course, a role for national government and its agencies.

The FAC, with its strong links across the whole of the industry, is well positioned to facilitate the changes required.

To summarise these challenges for South East Aerospace, the SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis overleaf brings together the issues in a concise manner.

<b>Strengths</b>	<b>Opportunities</b>
<ul style="list-style-type: none"> <li>• Large number of companies with numerous capabilities and skills.</li> <li>• Relative strength in 'defensible' i.e. more advanced technological sectors</li> <li>• A strong heritage of knowledge/experience/credibility in the industry, which still has a solid foundation today.</li> <li>• The industry makes a major contribution to the South East economy – in terms of jobs and wealth creation for the region.</li> <li>• The discussions brought out wide spread evidence of flexible working practices.</li> <li>• Generally, the UK Government's management of the economy is well received in terms of providing stability on which to make decisions.</li> <li>• Innovation of UK Aerospace companies (based on patent filings in the US) companies is strong.</li> <li>• The presence of European, UK and regional aerospace and defence headquarters</li> <li>• The strong IT base in the region</li> <li>• The influence of London and Heathrow airport</li> <li>• The region's academic and research facilities</li> <li>• New tools are available, including FAC itself and other development mechanisms including this report and the databases it is drawn from</li> </ul>	<ul style="list-style-type: none"> <li>• Greater networking and partnerships between companies for larger contracts. Currently companies (particularly smaller operators are 'isolated' and 'defensive').</li> <li>• SME base can adapt to the future requirement for smaller, more flexible players responsive to quickly changing markets. The IGT report mentioned this as being on of the key areas to get new products to market quicker.</li> <li>• The improving Airbus market share within civil aviation with have positive effects in the supply chain.</li> <li>• The Governments Air Transport White Paper provides grounds for long term optimism with growth in infrastructure and aeroplanes.</li> <li>• As the UK's second busiest airport, Gatwick airport can be developed further.</li> </ul>

<b>Weaknesses</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Limited manufacturing presence of larger Aerospace operators. Certain other regions of the UK and Europe have more intense concentrations around major hubs of activity.</li> <li>• Relationships between the academic sector and the business community (especially smaller companies) are weak, the institutions predominantly working with the larger operators – whether they are elsewhere in the UK or abroad.</li> <li>• South East and UK infrastructure is generally weak with the exception (in the South East) of access to the major airports with the required global destinations.</li> <li>• The future provision of labour from schools and colleges with appropriate skills needs to be addressed. There is too much emphasis on the ‘degree’ and ‘softer’ subjects (rather than engineering, for example). More vocational/practical qualifications would deliver a more balanced labour pool.</li> <li>• There is a ‘strategic leadership deficit’ in SMEs</li> </ul>	<ul style="list-style-type: none"> <li>• There is evidence of a capabilities gap developing between US and Europe due to increases in spending in the United States over recent years.</li> <li>• Overall investment levels need to improve to keep pace with global competition. Some evidence in this survey of increases in investment, but other studies have shown that it is still generally behind our major competitors.</li> <li>• Increasing levels of UK and EU legislation are proving to be inhibiting for existing businesses and will only strengthen the position of the emerging economies.</li> <li>• There is limited access to the major foreign markets compared to the ease with which foreign competition can compete in the UK on a level playing field.</li> <li>• The US wants to extend its ‘circle of friends’ so that Britain’s position as main strategic partner is under threat.</li> </ul>

Clearly all sectors of the industry are subject to increasingly intense global pressures. However, it is important that we recognise the most 'defensible' sub-sectors, where these are, and what can be done to nurture them.

The study has highlighted that the South East has certain locations – particularly in the south and west of the region – which are strong in a variety of advanced manufacturing areas. Due to the technological and intellectual inputs prevalent in these areas, they are defensible – although other 'less-sophisticated' economies are quickly catching up.

Further work is required to nurture these clusters of businesses to ensure survival in the short term and that they can thrive in the medium and long term. The key areas are as follows:

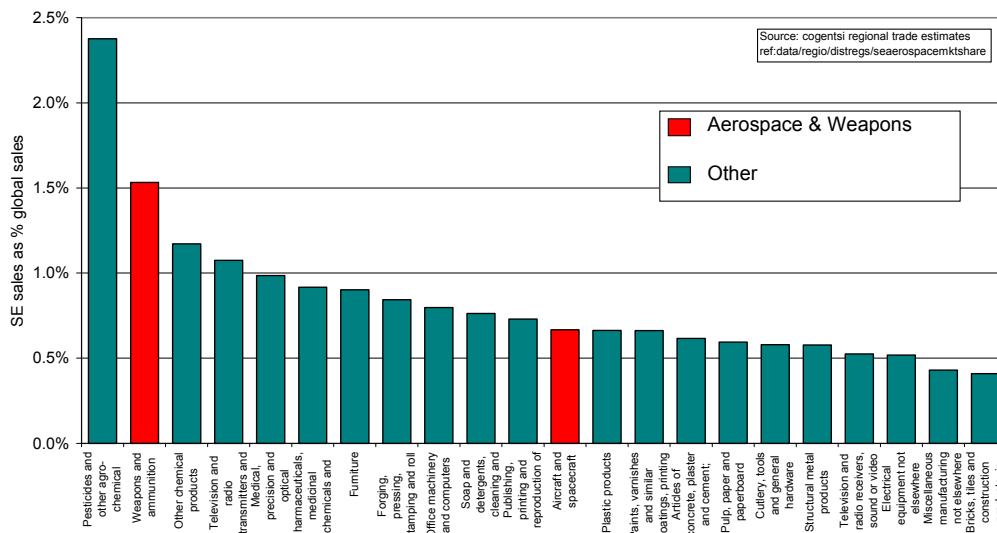
- Extend the work already undertaken in this study to a more detailed level specifically targeted at these defensible sectors
- Develop mechanisms for the businesses and sectors to network
- Explore the current weak links with the strong academic sector to foster relationships
- Discuss the role of the large companies in cluster development
- Begin to address the 'strategic/leadership' deficit issues to fully recognise and address the threats
- Evaluate the current cluster strengths and weaknesses versus specific benchmark regions in each particular niche sector
- Develop a detailed action plan with measurable key performance indicators

## 2 Introduction

The aerospace industry in the South East is a crucial contributor to the region and the UK as a whole, from a number of perspectives.

The South East represents just over 0.4% of the global economy. However, 22 of its manufacturing industries (from 77 listed) have a larger share than this in world markets. Of these, the chart below shows that 'weapons' and 'aerospace' are key contributors coming in 2<sup>nd</sup> and 12<sup>th</sup> positions respectively.

Global leaders: SE manufactures with a high share of global markets



In terms of value added, the table opposite breaks out 'Weapons' and 'Aerospace' to illustrate that their combined contribution is £2.8bn.

To put this in context, this represents some 2% of the entire South East gross value added.

### Aerospace and weapons - value added

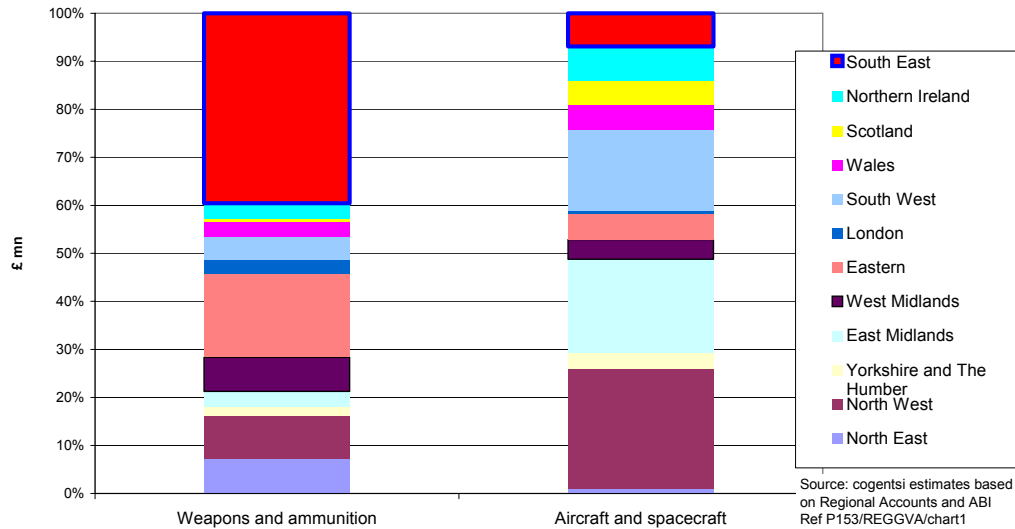
	Aircraft and spacecraft	Weapons and ammunition	Totals
Core global Value added (\$bn)	380	42	422
SE share of global market	0.45%	1.67%	
SE (\$bn)	1.7	0.7	2.4
SE (£bn)	1.1	0.4	1.5
Supply chain Value added (\$bn)	360	38	398
SE share of global market	0.52%	0.44%	
SE (\$bn)	1.9	0.2	2.0
SE (£bn)	1.2	0.1	1.3
<b>Totals (SE £bn)</b>	<b>2.2</b>	<b>0.5</b>	<b>2.8</b>

Source: cogentsi regional trade estimates

Ref: p153\Aeroweapons.xls\VA

The strength of the South East can also be compared with other UK regions. As the following chart shows, the region is dominant in manufacture for military purposes and has a significant presence in aerospace:

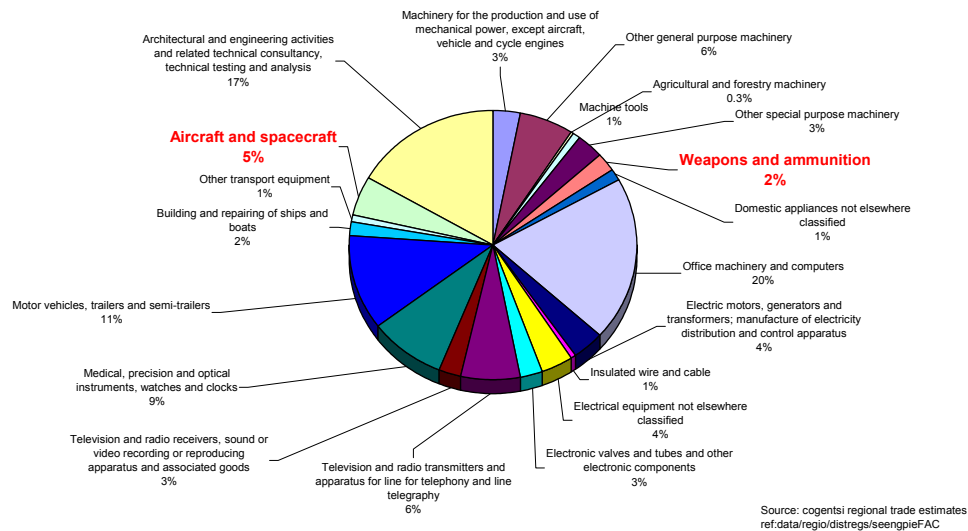
Regional distribution of UK Gross Value Added



These charts refer only to 'frontline' aerospace and defence manufacture: they do not show, for example, producers of software or metal castings, even if these are wholly oriented to aerospace, because the classification is based on the Standard Industrial Classification. In fact only half of firms who considered themselves sufficiently 'aerospace' to take part in the study are actually manufacturing – and some of them will not be classified as aerospace – so the importance of aerospace significantly exceeds these values.

Turning to the generation of income for the region, the pie chart below shows the industries generating trade surpluses. Again, the two areas of 'aerospace' and 'weapons' feature, with aerospace particularly prominent.

Engineering industry sales from the South East



When the key statistics above are put alongside the strong links with other related industries (eg marine, instruments and controls, ICT manufacturing sectors), and the world renowned research conducted within the universities in the region, it is clear that the Farnborough Aerospace Consortium (FAC) does indeed represent a prized asset not only to the South East but to the United Kingdom as a whole.

To help companies in the region build on these strengths, the FAC recognised the need to better understand the characteristics, capabilities and attitudes of the South East Aerospace industry.

This study has addressed that need from a number of perspectives:

- **Capabilities** – what the companies do (broad 'functional' areas, specific areas of business, materials used in their business processes)
- **Locations** – mapping of the company geography and identification of the key concentrations
- **Characteristics** – the size of the participants measured in terms of turnover and employee numbers
- **Productivity** – the revenue per employee
- **Trading Profile** – the trading patterns with other parts of the UK and overseas
- **Investment** – how much are the companies investing for the future, and in which particular areas

- **Attitudes** – what do the industry’s managers think about the issues affecting business

Two primary vehicles were used to collect data: questionnaires and interviews with industry participants taken from the FAC’s own company database. The methodology is described in Appendix 1.

This report presents the results of this work.

### **Other outputs produced during this study**

This report highlights the key findings of the questionnaire analysis and contains a number of the graphical outputs. Considerably more detail can be found in the *Questionnaire Working Paper* issued to FAC in December 2003 (a breakdown of the subject matter of this working paper is provided in Appendix 2). It may be helpful to have the working paper to hand as certain sections in this report have been summarised from the fuller detail in the earlier paper.

To make the information collected as accessible as possible for the staff of FAC, a *Database Query Facility* was designed. This enables the selection of a company and a comprehensive display of its contact details, line of business and capabilities. A description of the system’s functionality is contained in Appendix 3.

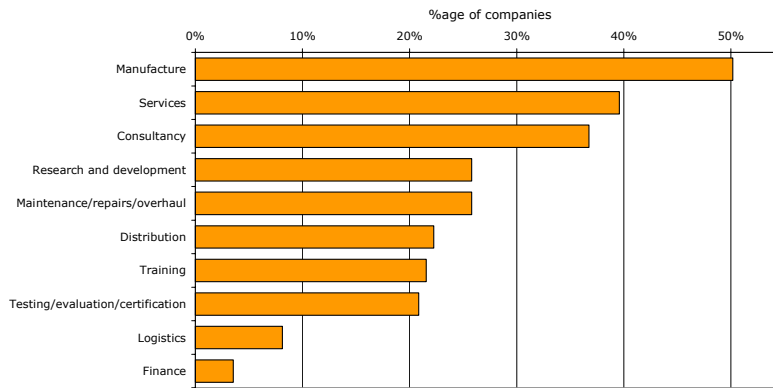
### 3 Capabilities

The capabilities information collected has allowed FAC to map the abilities of the companies in the South East from three perspectives:

- Functions – these are broad areas of operation (eg manufacturing, training).
- Specific areas of business – these relate to more precise definitions of the actual work conducted by the business (eg electronics, tooling).
- Materials used in the processes (eg metals, elastomers).

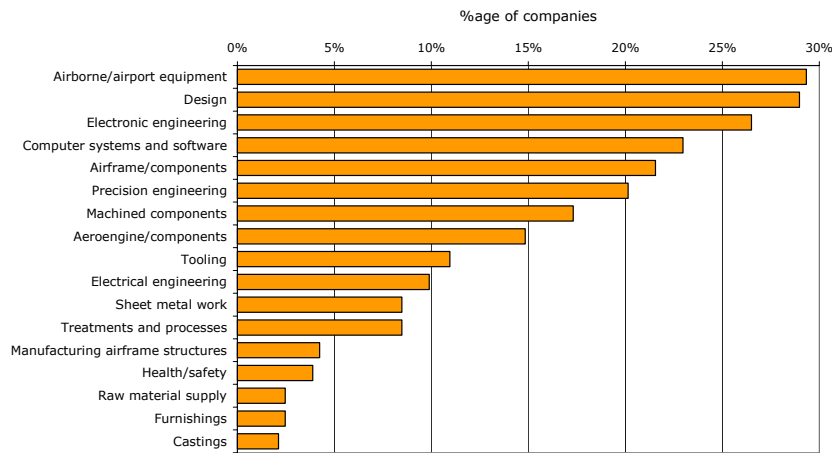
Using the questionnaire data, the three charts below illustrate the companies' participation in each of the areas. Note that respondents may well have ticked more than one area depending on their various business operations.

### Functions



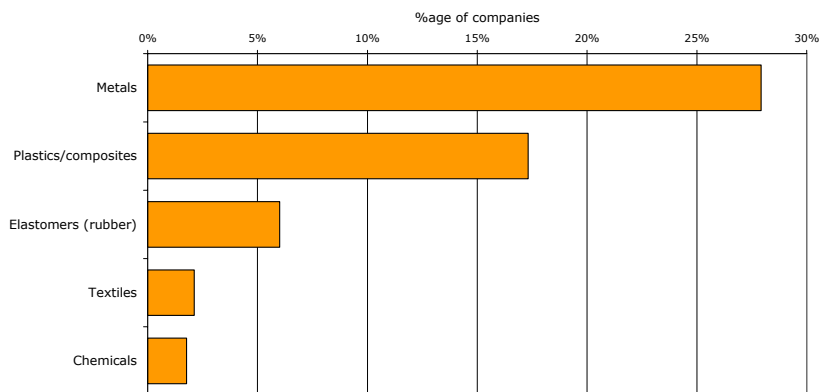
Source: cogentsi FAC Survey  
 Ref: P153\Questionnaire\SNAP data All Coys\Functions

### Areas of Business



Source: cogentsi FAC Survey  
 Ref: P153\Questionnaire\SNAP data All Coys\AreaBus

### Materials used in processes



Source: cogentsi FAC Survey  
 Ref: P153\Questionnaire\SNAP data All Coys\Materials

### 3.1 General comments

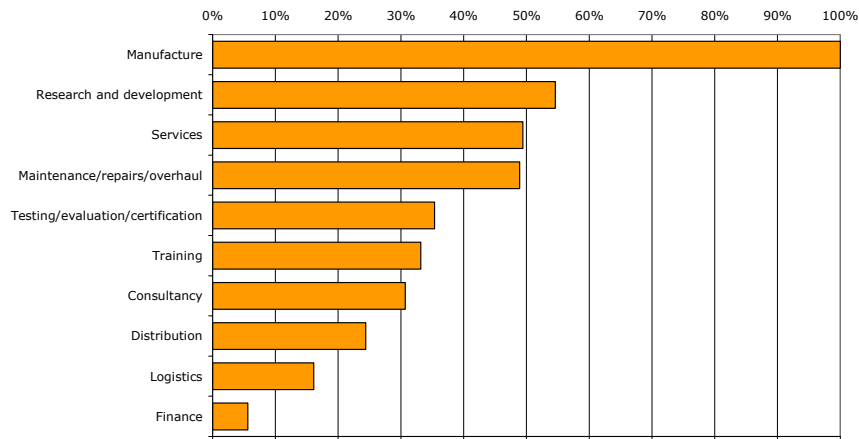
- There is still a strong manufacturing sector with over 50% involved - the biggest individual 'functional' sector.
- However, the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> biggest functional sectors are 'services' based (ie services generally, consultancy, R&D) indicating that these areas are collectively bigger than manufacturing and growing.
- 25% of companies are involved in maintenance, repair and overhaul (MRO) – this is a more lucrative area than initial manufacture. Companies in the interviews discussed later mentioned this as an area into which they want to expand.
- Manufacture of airborne/airport components is the single largest specific area of business.
- Catching up, though, are design, electronics, and computer systems and software which are the next biggest areas of business.
- 25% of companies are involved in some form of research and development. The investment section (Section 7) illustrates that the amount invested in this area is set to be greater than capital equipment in 2004.
- Services – 'softer' – areas are therefore very evident, it will be interesting to monitor this trend over time.
- Of the materials used within processes, 'metals' is clearly the most prominent with nearly 30% of respondents.

### 3.2 Weighted analysis

The above analysis is limited in that it does not take account of the size of the companies involved in each of the sectors. Therefore a company with ten employees working in numerous sectors is over represented compared with a company of one hundred employees involved in just one area. The three charts have therefore been replicated overleaf with a weighting based on the number of employees in each company.

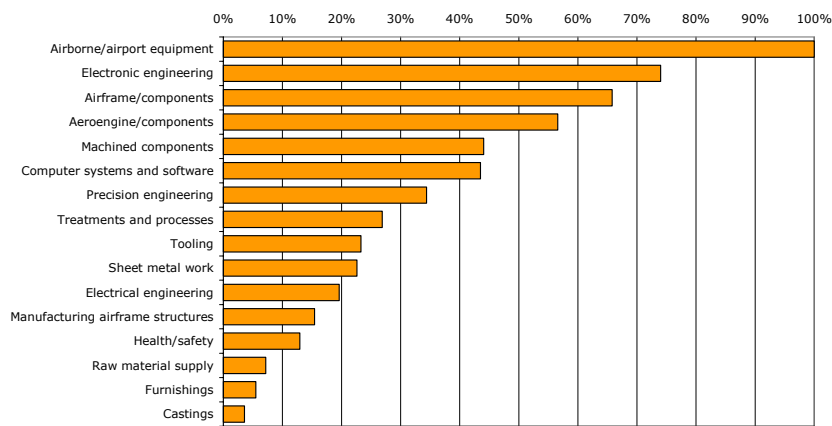
The percentage scale takes the largest sector on the above basis as 100% and shows the other sectors' strength relative to this.

Functions



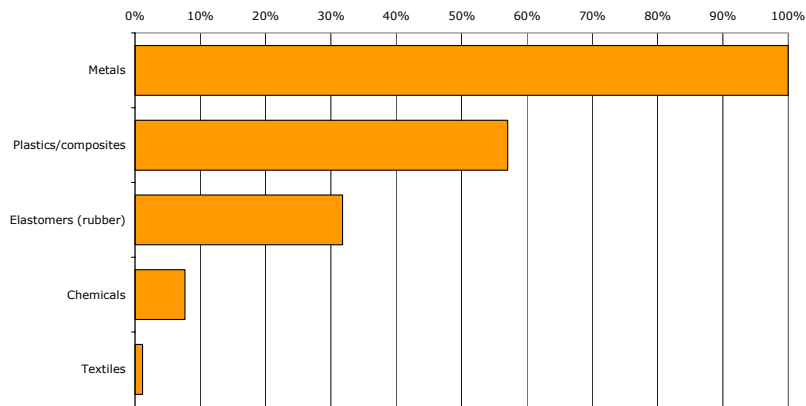
Source: cogentSI FAC Survey  
Ref: P153\Questionnaire\SNAP data\Area weightings

Areas of Business



Source: cogentSI FAC Survey  
Ref: P153\Questionnaire\SNAP data\Area weightings

Materials used in processes



Source: cogentSI FAC Survey  
Ref: P153\Questionnaire\SNAP data\Area weightings

The alternative charts above bring out the strength of manufacturing in the functional diagram.

In relation to specific areas of business, two themes are evident

- There is a real strength in the more advanced/technologically dependent sectors: electronics, computer systems, software
- The region's profile as a 'components' supplier also comes clearly through. This is developed further in Section 8 where we look at the balance between the region's customers and suppliers.

## 4 Locations

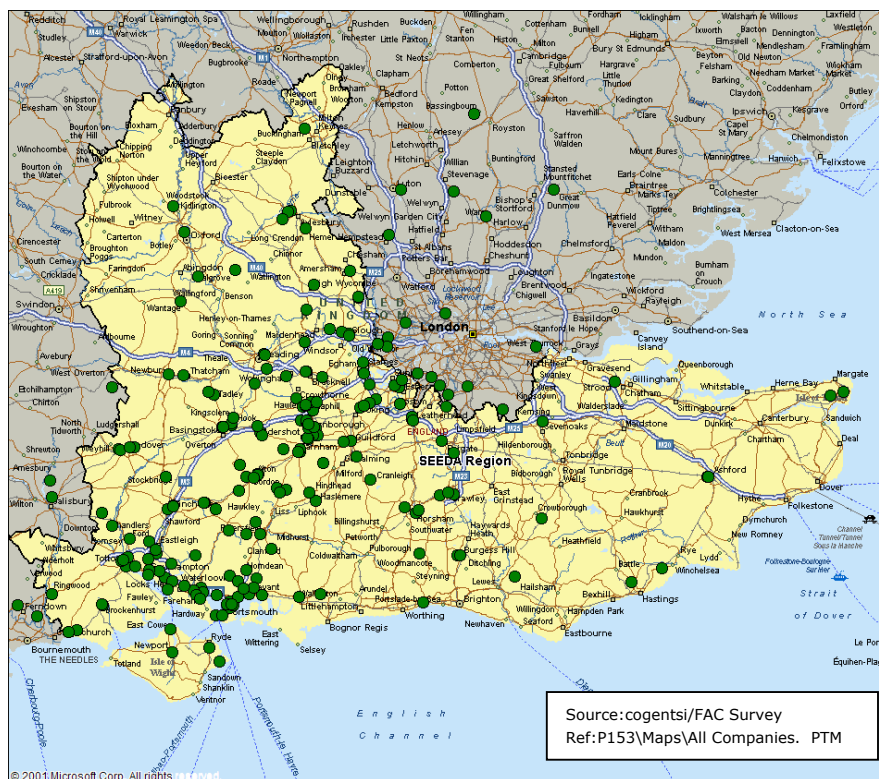
The data from the survey has been interfaced with mapping software to produce a geographical view of the industry.

### 4.1 Company locations

The map below illustrates where the companies responding to the survey are located – a single dot per postcode.

The yellow highlighted area represents the South East Government Office region, the area for which SEEDA is responsible.

Note that there are companies outside this area which are present on the FAC Database. In fact, there are even a small number of other respondents outside the area mapped below (eg Preston, South Wales – perhaps due to company relocations).



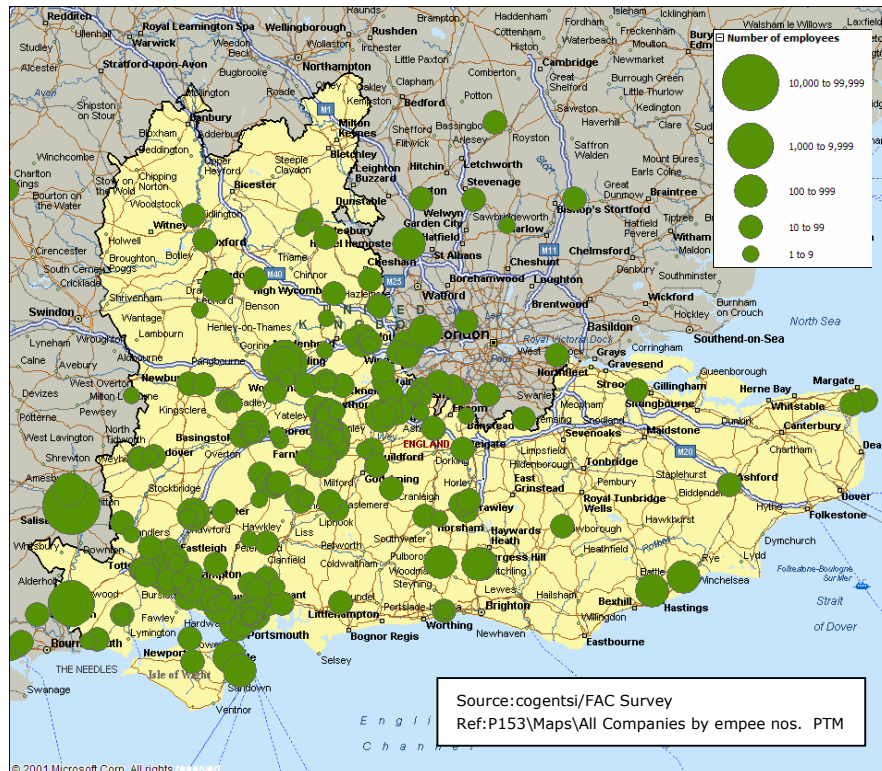
The striking image is that the companies are hugely weighted towards the west of the region with an additional draw towards the south.

There are indications of strength to the west of the surveyed area (ie the South West region) despite only a relatively small number of companies being present in this survey, and the focus of the South West’s aerospace activity being around Bristol and Yeovil.

### 4.2 Locations weighted to size of business

Here, each business has been allocated to a 'bubble' according to the size of its operation judged by number of employees.

The concentration in the South and West of the region is again apparent.



### 4.3 Clusterettes

The concept of 'clusterettes' was introduced during the study to highlight localised geographical centres of aerospace activity.

The clusterettes were arrived at by assigning each company to its 'post town' postcode area (eg GU for Guildford). Each of these areas was then analysed in terms of its overall aerospace strength. This was done by totalling the number of positive responses in the Functions and Specific Areas of Business on the questionnaire (ie the numbers below are a product of the total number of businesses in each area and the total number of functional/specific areas of business in which they operate).

#### Clusterette concentrations

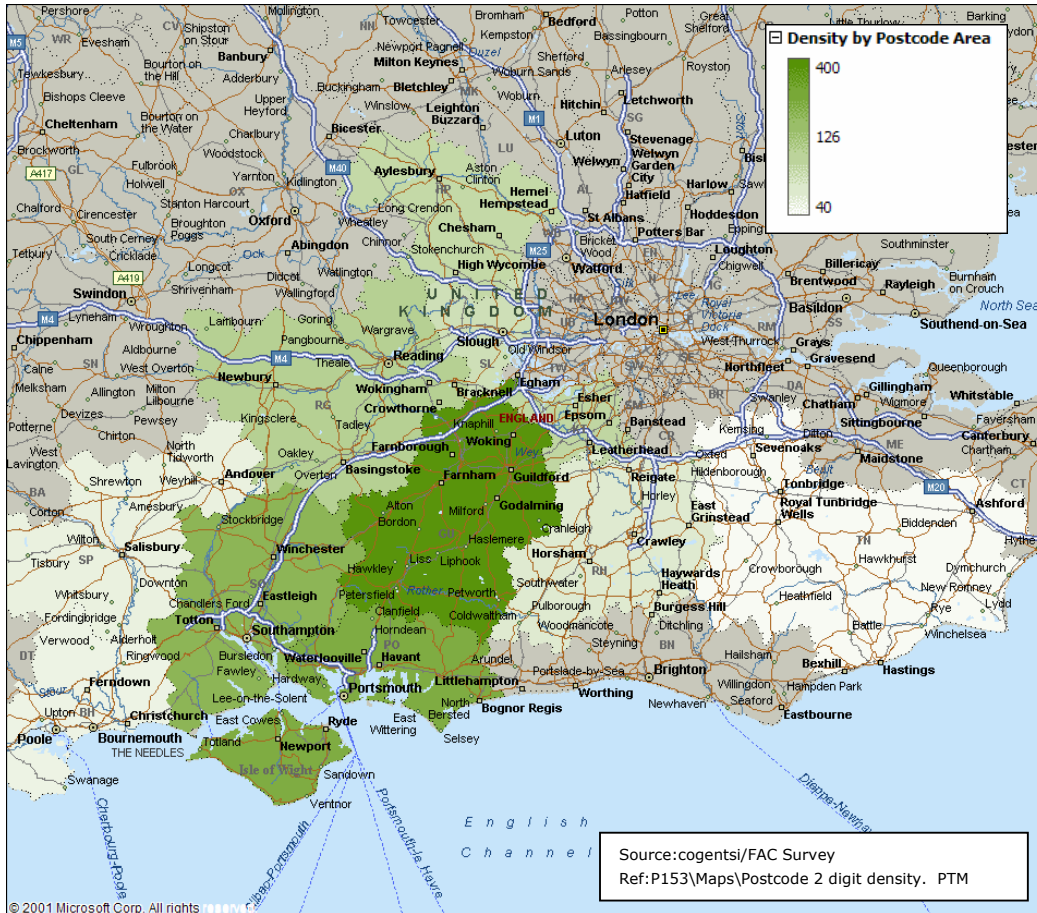
- 'High concentration' clusterettes (strength from around 200 upwards) exist in the Guildford and Southampton/Portsmouth areas.
- 'Medium concentration' clusterettes (strength from around 50 to just under 200) are present in Bournemouth, Salisbury (note these are outside the South East area and would no doubt be even stronger if all 'South West' companies were included), Hemel Hempstead, Kingston, Reading/Slough and Tunbridge Wells.

Area	Location	Strength
BA	Bath	2
BH	Bournemouth	50
BN	Brighton	17
BS	Bristol	13
CF	Cardiff	24
CM	Chelmsford	10
CR	Croydon	1
CT	Canterbury	9
CV	Coventry	2
DA	Dartford	7
EX	Exeter	2
GL	Gloucester	16
GU	Guildford	373
HP	Hemel Hempstead	90
KT	Kingston-upon-Thames	92
LU	Luton	6
ME	Maidstone	8
MK	Milton Keynes	9
NW	London North West	2
OX	Oxford	16
PO	Portsmouth	229
PR	Preston	12
RG	Reading	107
RH	Redhill	60
SG	Stevenage	15
SK	Stockport	2
SL	Slough	78
SN	Swindon	9
SO	Southampton	192
SP	Salisbury	54
TN	Tunbridge Wells	43
UB	Uxbridge	15
W1	London West	4

Ref : P153\questionnaire\postcode area density.xls\summary

Source : cogentsi/FAC questionnaire

To illustrate the density, we have geographically mapped according to colour – the deeper the green, the stronger the clusterette.



For clarity, on the 'bubbled' map below, we have circled the clusterettes indicated by the strengths (orange for high strength, yellow for medium).



#### 4.4 Clusterette strength by sector

The preceding tables and charts in this section have been built up from the data on the following two pages. These have been included as they show not only which geographical areas have an *overall* strength, but also in which functions, specific areas and materials.

The numbers, as mentioned earlier, are the amount of 'positive responses' in each postcode area.

Specific Area of Business	Computer systems and software	Airborne/airport equipment	Design	Furnishings	Machined components	Manufacturing airframe structures	Tooling	Treatments and processes	Sheet metal work	Airframe/components	Aeroengine/components	Precision engineering	Raw material supply	Health/safety	Electrical engineering	Electronic engineering	Castings
Bath	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bournemouth	1	5	4	0	1	1	1	1	2	3	2	2	0	0	1	2	0
Brighton	1	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
Bristol	0	0	1	0	1	0	0	0	0	1	1	0	0	0	0	2	0
Cardiff	1	2	2	0	1	0	0	0	0	0	2	1	0	0	0	2	0
Chelmsford	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0
Croydon	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Canterbury	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	1	0
Coventry	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Dartford	0	1	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0
Exeter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gloucester	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	1	0
Guildford	17	22	19	0	11	3	8	9	10	15	14	12	4	3	7	16	1
Hemel Hempstead	1	4	4	0	4	4	1	1	3	6	6	4	1	1	2	2	1
Kingston-upon-Thames	4	3	6	1	3	1	3	2	2	1	2	3	1	2	2	4	1
Luton	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0
Maidstone	0	1	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0
Milton Keynes	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
London North West	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oxford	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Portsmouth	8	13	10	0	7	3	6	8	4	11	11	8	2	2	2	6	0
Preston	1	1	0	0	1	0	0	0	0	1	1	1	0	0	0	0	0
Reading	4	5	9	1	4	0	4	3	0	5	3	3	0	1	2	6	1
Redhill	3	4	5	1	3	0	2	0	0	2	3	1	0	0	2	5	0
Stevenage	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Stockport	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Slough	4	5	5	0	5	0	2	2	3	4	3	5	0	0	1	4	0
Swindon	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Southampton	5	8	14	1	5	1	4	2	1	8	4	5	0	0	6	11	1
Salisbury	1	3	3	0	3	1	2	2	2	3	2	2	1	1	0	1	0
Tunbridge Wells	3	3	3	0	1	0	1	0	0	0	1	2	0	0	0	3	0
Uxbridge	1	0	2	0	0	0	0	0	0	0	0	0	0	1	0	1	0
London West	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
<b>60</b>	<b>86</b>	<b>101</b>	<b>4</b>	<b>54</b>	<b>14</b>	<b>38</b>	<b>30</b>	<b>27</b>	<b>64</b>	<b>58</b>	<b>51</b>	<b>10</b>	<b>12</b>	<b>30</b>	<b>78</b>	<b>6</b>	

Ref : P153/questionnaire/postcode area density.xls\$summary

Source : cogentsi/FAC questionnaire

Functional Areas	Functional Areas										Materials Used		
	Manufacture	Services	Distribution	Consultancy	Training	Research and development	Maintenance/repairs/overhaul	Finance	Logistics	Testing/evaluation/certification	Plastics/composites	Metals	Elastomers
Bath	0	1	1	0	0	0	0	0	0	0	0	0	0
Bournemouth	4	2	1	3	0	1	5	1	0	0	2	4	1
Brighton	4	1	1	1	1	0	1	1	1	0	1	0	1
Bristol	2	1	1	0	0	0	1	0	1	1	0	0	0
Cardiff	2	3	0	2	1	2	0	0	0	2	0	1	0
Chelmsford	0	1	0	1	1	1	0	0	0	1	0	0	0
Croydon	0	0	0	0	0	0	0	0	0	0	0	0	0
Canterbury	2	1	0	0	0	0	0	0	0	0	1	0	0
Coventry	0	1	0	0	0	0	0	0	0	0	0	0	0
Dartford	0	0	1	1	0	0	0	0	0	0	0	0	0
Exeter	0	1	0	0	0	0	0	0	0	1	0	0	0
Gloucester	1	1	1	1	0	1	2	0	1	0	1	1	1
Guildford	30	21	16	21	19	19	19	2	10	15	8	18	4
Hemel Hempstead	6	5	2	4	5	2	5	1	1	4	3	6	1
Kingston-upon-Thames	9	8	4	7	1	3	5	0	1	3	3	6	1
Luton	1	0	0	0	0	0	0	0	0	0	1	1	0
Maidstone	0	0	1	0	1	0	0	0	0	0	1	1	0
Milton Keynes	1	2	1	1	0	1	1	0	0	0	0	0	0
London North West	0	0	0	0	0	0	0	0	0	0	1	0	1
Oxford	2	2	1	1	1	1	2	0	1	1	0	1	0
Portsmouth	16	21	7	13	11	9	11	3	4	10	6	15	2
Preston	1	0	0	1	1	0	1	0	1	1	0	0	0
Reading	10	9	2	6	2	4	4	2	1	6	4	6	0
Redhill	8	2	2	3	2	3	3	0	0	0	2	3	1
Stevenage	2	1	0	2	0	2	1	0	0	1	1	0	0
Stockport	0	0	0	1	0	0	0	0	0	0	0	0	0
Slough	9	6	0	3	3	3	2	0	0	1	1	7	0
Swindon	1	0	0	1	0	1	1	0	0	1	0	0	0
Southampton	15	11	8	16	7	11	10	2	5	8	9	9	5
Salisbury	3	4	1	3	4	3	1	1	1	2	1	3	0
Tunbridge Wells	3	3	1	4	2	4	2	0	1	2	1	3	0
Uxbridge	3	1	0	2	1	1	1	0	0	0	1	0	0
London West	0	0	0	0	0	0	1	0	0	1	0	0	0
	<b>143</b>	<b>114</b>	<b>56</b>	<b>101</b>	<b>65</b>	<b>75</b>	<b>81</b>	<b>14</b>	<b>29</b>	<b>63</b>	<b>49</b>	<b>87</b>	<b>18</b>

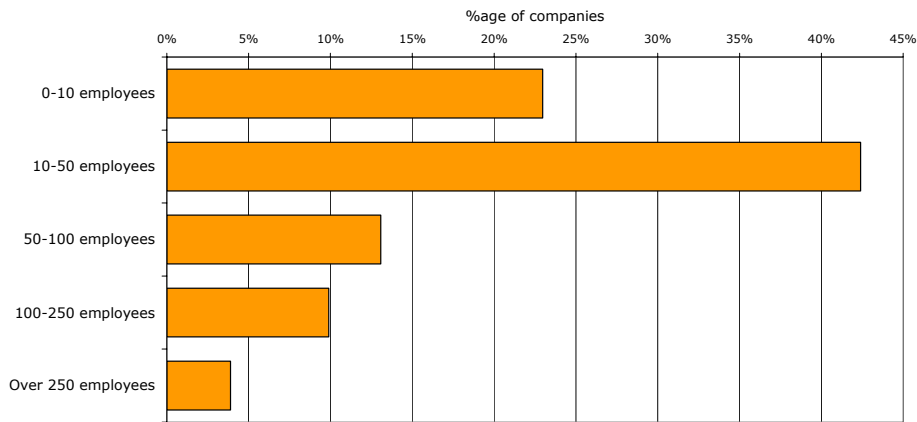
Ref : P153\questionnaire\postcode area densit Ref : P153\questionnaire\postcode area density.xls\summary

Source : cogentsi/FAC questionnaire

## 5 Company characteristics

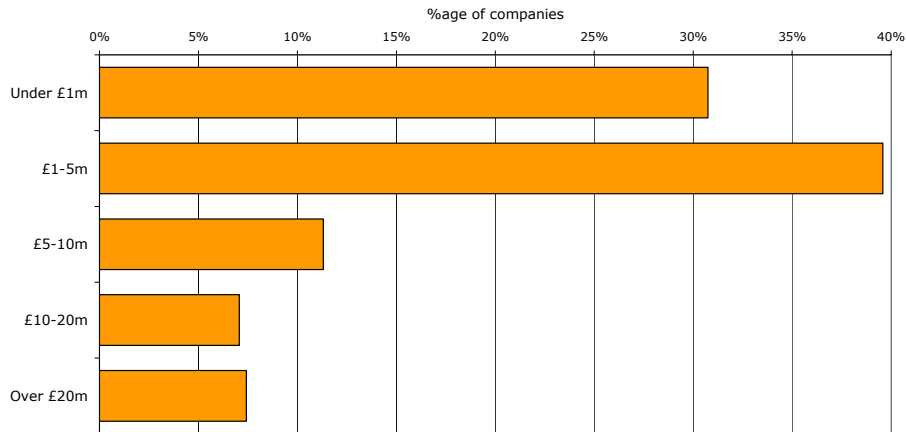
In this section we have grouped all companies responding by number of employees and turnover bands.

### Employee bands



Source: cogentSi FAC Survey  
 Ref: P153\Questionnaire\SNAP data All

### Turnover



Source: cogentSi FAC Survey  
 Ref: P153\Questionnaire\SNAP data All Coys\Turnover

There is a clear weighting towards the lower ends of the bands. Upwards of 70% of the companies have 50 or fewer employees (ie a total of the first 2 categories in the top chart) and correspondingly 70% have a turnover of £5mn or less.

A 'typical' profile emerges of a company with 10 to 50 employees and a turnover of £1mn to £5mn.

## 6 Productivity

The employee numbers and turnover data provided by the survey enabled us to calculate a simple measure of productivity: *turnover per employee*.

Note that certain company entries where incomplete data was returned were excluded from the analysis.

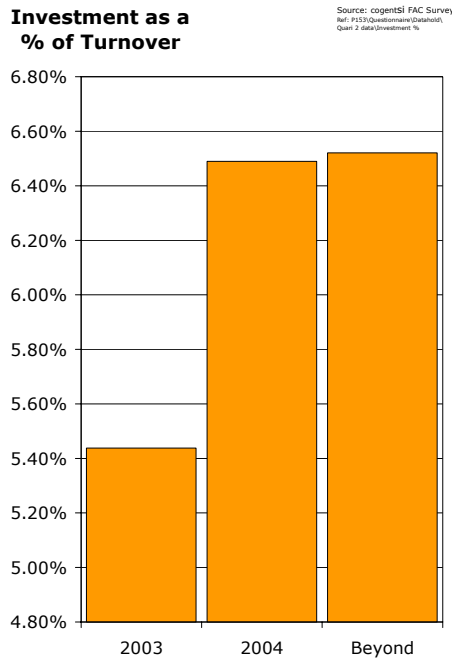
The table illustrates the following points.

- Computer systems, software, design, electronics are clearly at the top end of the range.
- Castings and raw material supply also feature highly, but it is important to note the very low number of responses which have been used in these areas, which could lead to inaccurate data.
- Generally speaking, the service areas are particularly prominent, as are Logistics and Distribution.
- Clearly, manufacturing areas – generally speaking – are lagging behind.
- In terms of materials used in manufacturing processes, chemicals generate significantly higher revenue per employee than others.

Specific Area of business	Turnover per employee (£'000s)	Turnover per employee
Computer systems and software	<b>£217</b>	<b>£216,667</b>
Castings	<b>£162</b>	£162,389
Design	<b>£150</b>	£149,982
Electronic engineering	<b>£136</b>	£136,327
Raw material supply	<b>£122</b>	£121,944
Aeroengine/components	<b>£119</b>	£118,953
Airborne/airport equipment	<b>£118</b>	£118,263
Tooling	<b>£114</b>	£114,223
Airframe/components	<b>£110</b>	£109,996
Machined components	<b>£92</b>	£92,468
Electrical engineering	<b>£91</b>	£91,263
Precision engineering	<b>£91</b>	£90,843
Manufacturing airframe structures	<b>£85</b>	£85,387
Health/safety	<b>£75</b>	£75,101
Sheet metal work	<b>£75</b>	£74,857
Treatments and processes	<b>£73</b>	£72,984
Furnishings	<b>£62</b>	£61,538
<b>Functional Area</b>		
Distribution	<b>£234</b>	£234,322
Consultancy	<b>£222</b>	£221,703
Logistics	<b>£177</b>	£177,466
Services	<b>£177</b>	£177,337
Research and development	<b>£171</b>	£170,897
Maintenance/repairs/overhaul	<b>£148</b>	£147,985
Manufacture	<b>£117</b>	£117,487
Testing/evaluation/certification	<b>£104</b>	£104,132
Training	<b>£98</b>	£97,533
Finance	<b>£80</b>	£79,956
<b>Companies using specific materials</b>		
Chemicals	<b>£114</b>	£113,661
Plastics/composites	<b>£87</b>	£87,437
Metals	<b>£87</b>	£87,212
Elastomers (rubber)	<b>£82</b>	£81,862
Textiles	<b>£36</b>	£35,849

Ref : P153\questionnaire\Toverperempee.xls\summary  
Source : cogentsi / FAC questionnaire

## 7 Investment



From the evidence of the survey data, there is a clear move towards increased investment in 2004.

The chart opposite indicates that it is set to move from around 5.4% of turnover, a full percentage point higher to over 6.4%.

In addition, the responding companies are expressing optimism that these increased levels should be sustainable in the years ahead.

With regard to the broad areas of investment, respondents were asked to categorise their spending into each of the areas in the table to the right. A fourth area was included, that of 'productivity initiatives' (eg lean manufacturing) – however, no definitive figures were returned for this area. Nevertheless, R&D and Capital Equipment are clearly the major beneficiaries of the investment.

<b>Investment 2004</b>	
R&D	50.1%
Capital	44.3%
Training	5.6%

## 8 Trading profiles

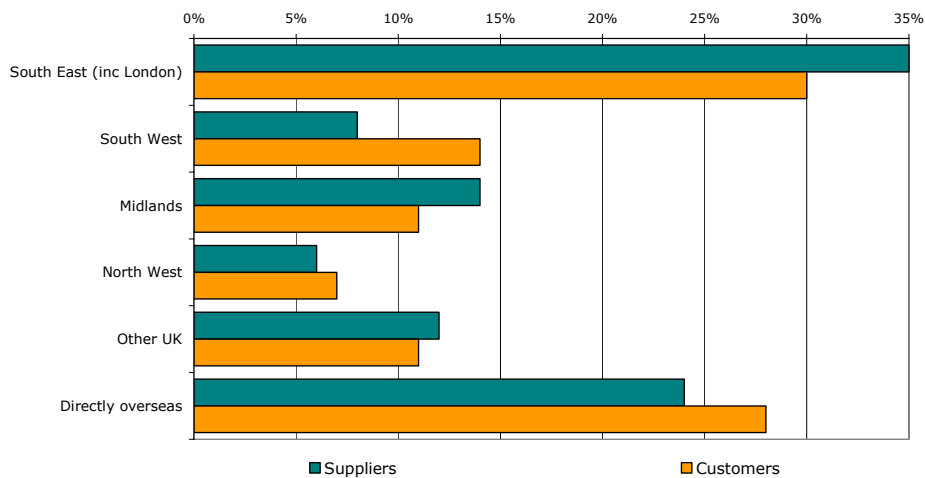
A particular area of interest is how the South East Aerospace Industry trades – from three perspectives business to business within the South East, South East to/from other parts of the UK, and the South East to/from overseas.

Here, we have taken the turnover supplied by the respondents and multiplied this by their percentage of business conducted with each of the regions below:

- South East (inc. London)
- South West
- Midlands
- North West
- Other UK
- Directly Overseas

The first four UK regions were pulled out separately due to their significance in the industry.

### Suppliers/Customers



Source: cogentsi FAC Survey  
 Ref: P153\Questionnaire\SNAP data All Coys\Supp-Custs

- The local market (South East and London) is by far the biggest single market with 30 to 35% of suppliers and customers to South East Aerospace businesses.
- The links with the North West are relatively low.
- A quarter of the business is directly overseas (this is discussed later in Section 8.2.7).
- The regions profiled have similar proportions of customer/supplier dealings with companies in the South East. The exception to this is the South West where there is a clear trade balance in favour of the South East (Around 14% of customers versus 8% of suppliers). This imbalance is true across all specific areas of business (Section 8.2.2).

### 8.1 Regional trading highlights

The following six sub-sections chart the individual trading relationships with the aforementioned areas. They have all been included as they do make particularly interesting reading.

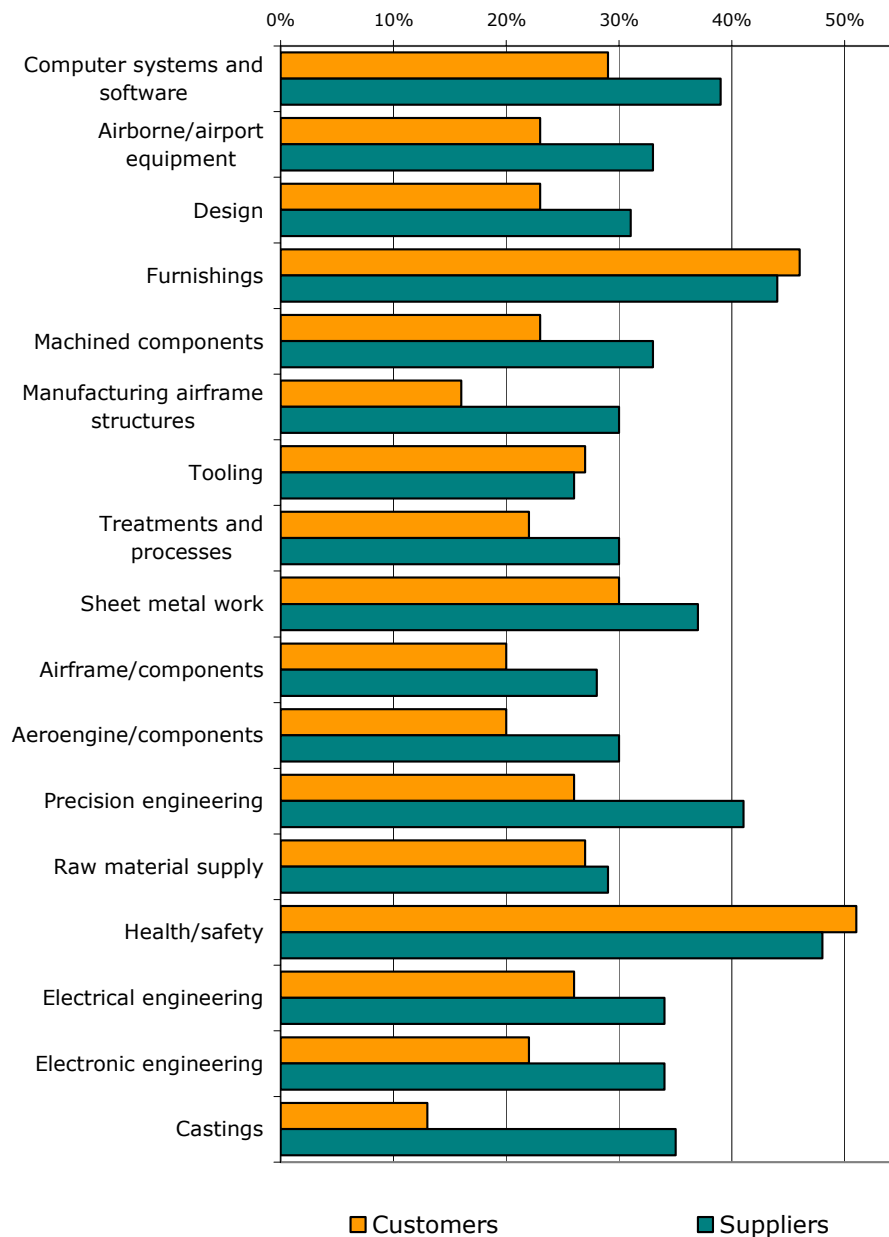
A quick glance across them reveals some interesting information:

- The previously mentioned tendency towards *customers* in the South West rather than *suppliers* – across all areas of business. This will be due to the supply of components to BAE, Westland, Airbus and Rolls Royce.
- Clear evidence of the supply of ‘hard’ goods (eg tools, metal work) from the Midlands. This picture is reversed with the North West ie the South East is largely a supplier of these hard areas as well as other ‘service orientated sectors’.
- With regard to direct trading links overseas, a clear bias exists towards exporting manufactured products over the import of them into the South East region.
- However, in the areas of raw materials and castings, these have a tendency to be imported.
- Again, concerning overseas business, the South East has a definite trading surplus in the more ‘Advanced’/‘Technical’ areas such as Electronic Engineering, General Design, Computer Systems etc.

## 8.2 Specific areas of business

### 8.2.1 Trading with other business in the South East

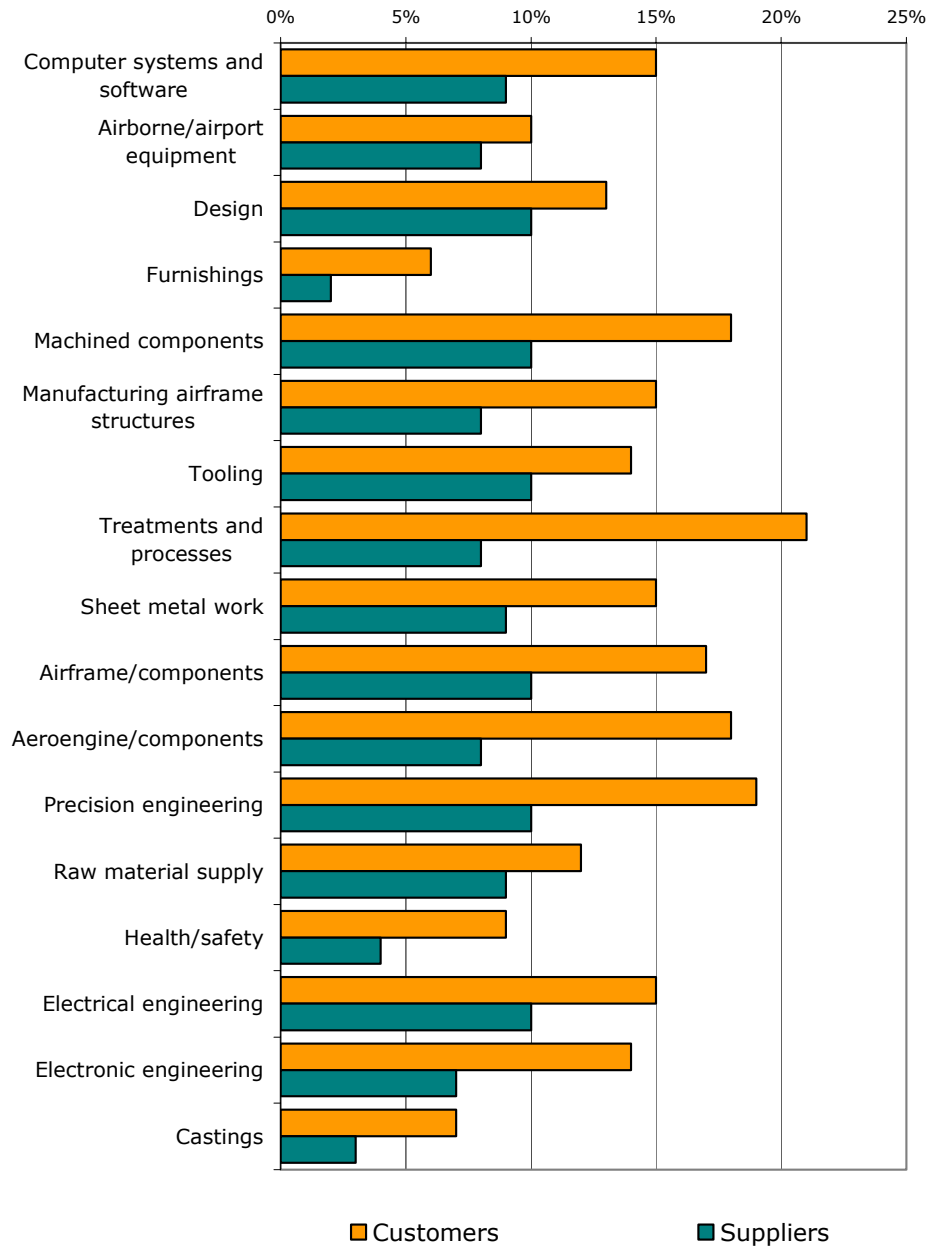
#### South East (inc. London)



Source: cogentsi FAC Survey  
 Ref: P153\Questionnaire\Trading Profiles\SE

## 8.2.2 Trading with businesses in the South West

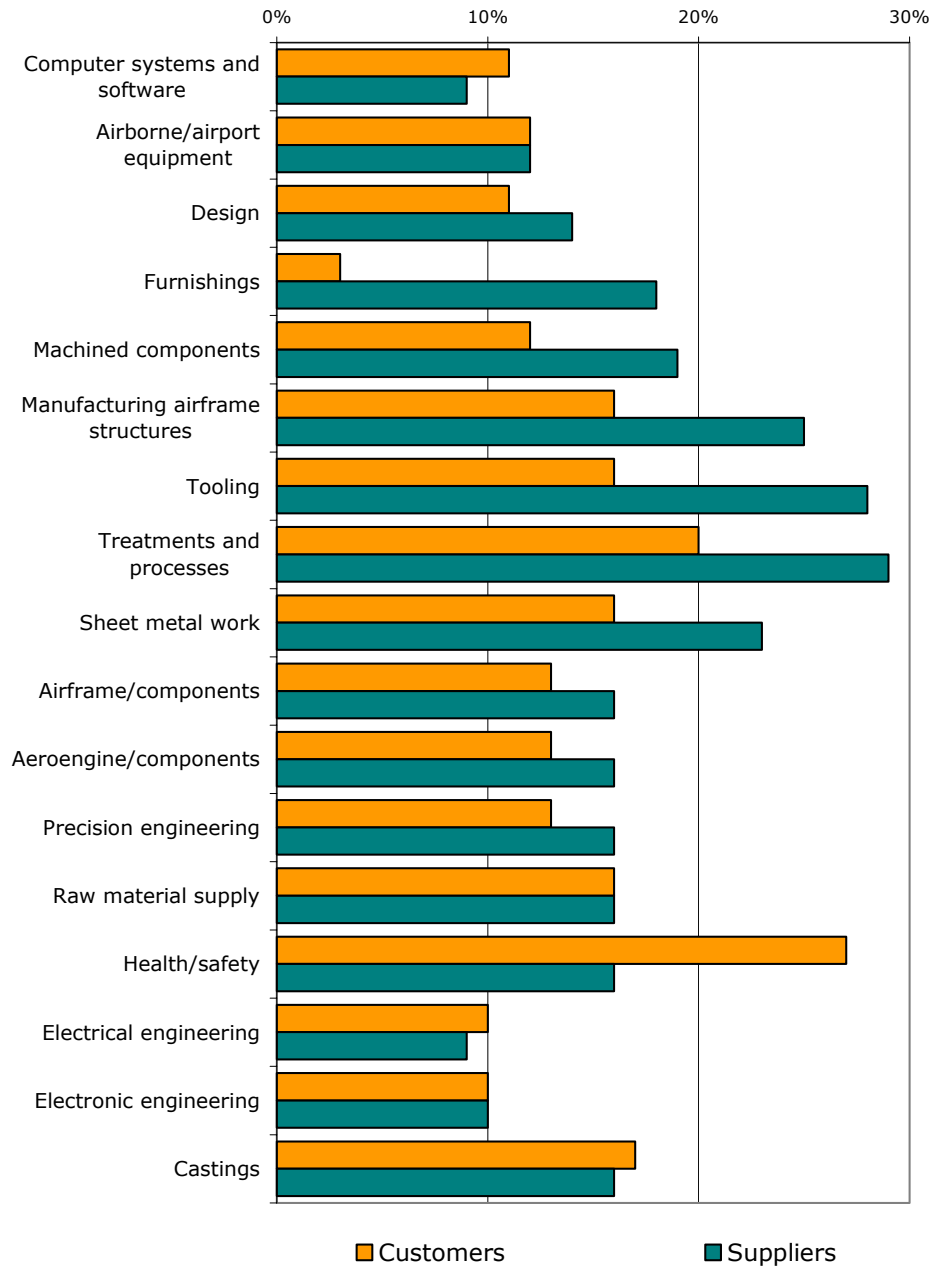
### South West



Source: cogentsi FAC Survey  
 Ref: P153\Questionnaire\Trading Profiles\SW

### 8.2.3 Trading with businesses in the Midlands

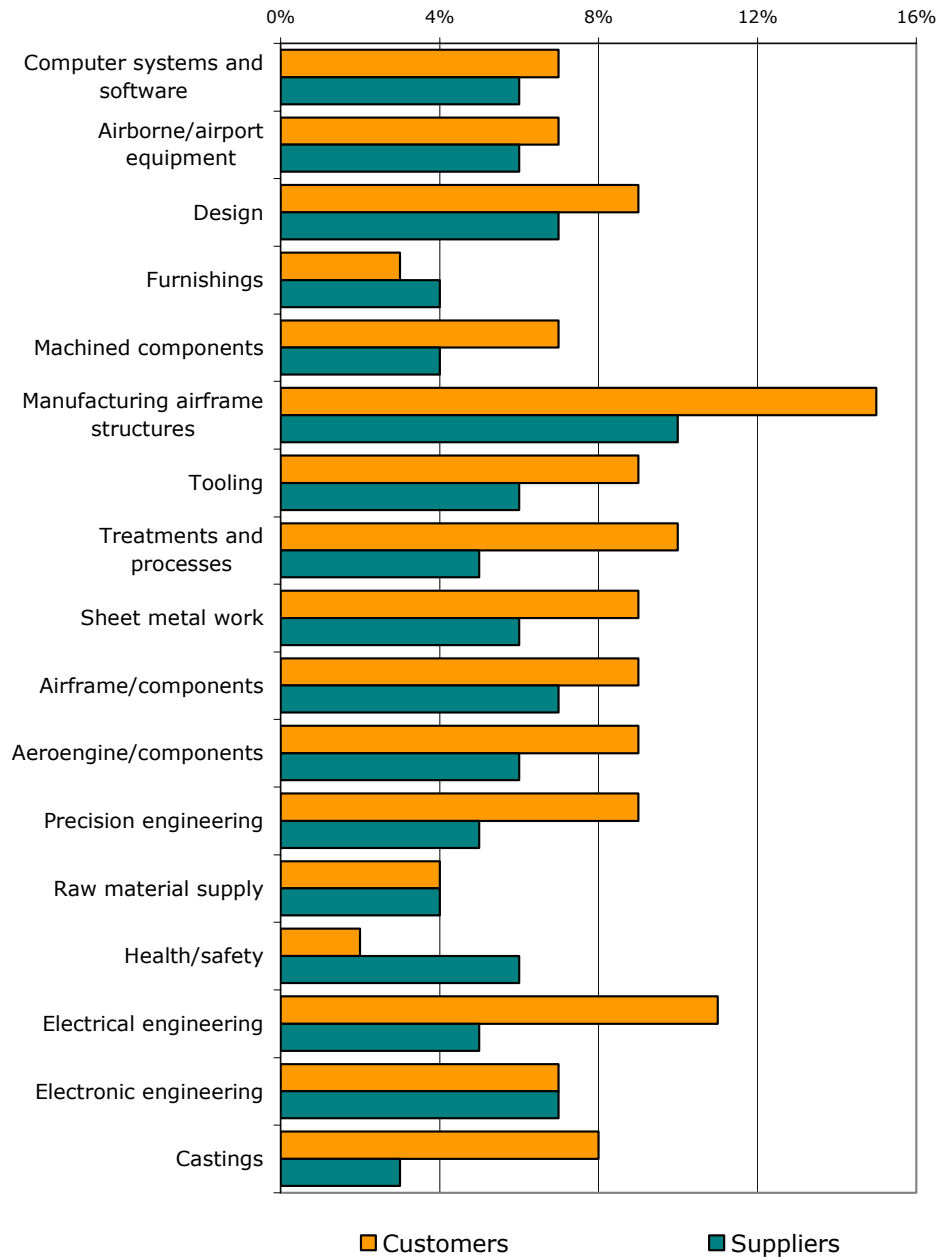
## Midlands



Source: cogentsi FAC Survey  
 Ref: P153\Questionnaire\Trading Profiles\Midlands

### 8.2.4 Trading with businesses in the North West

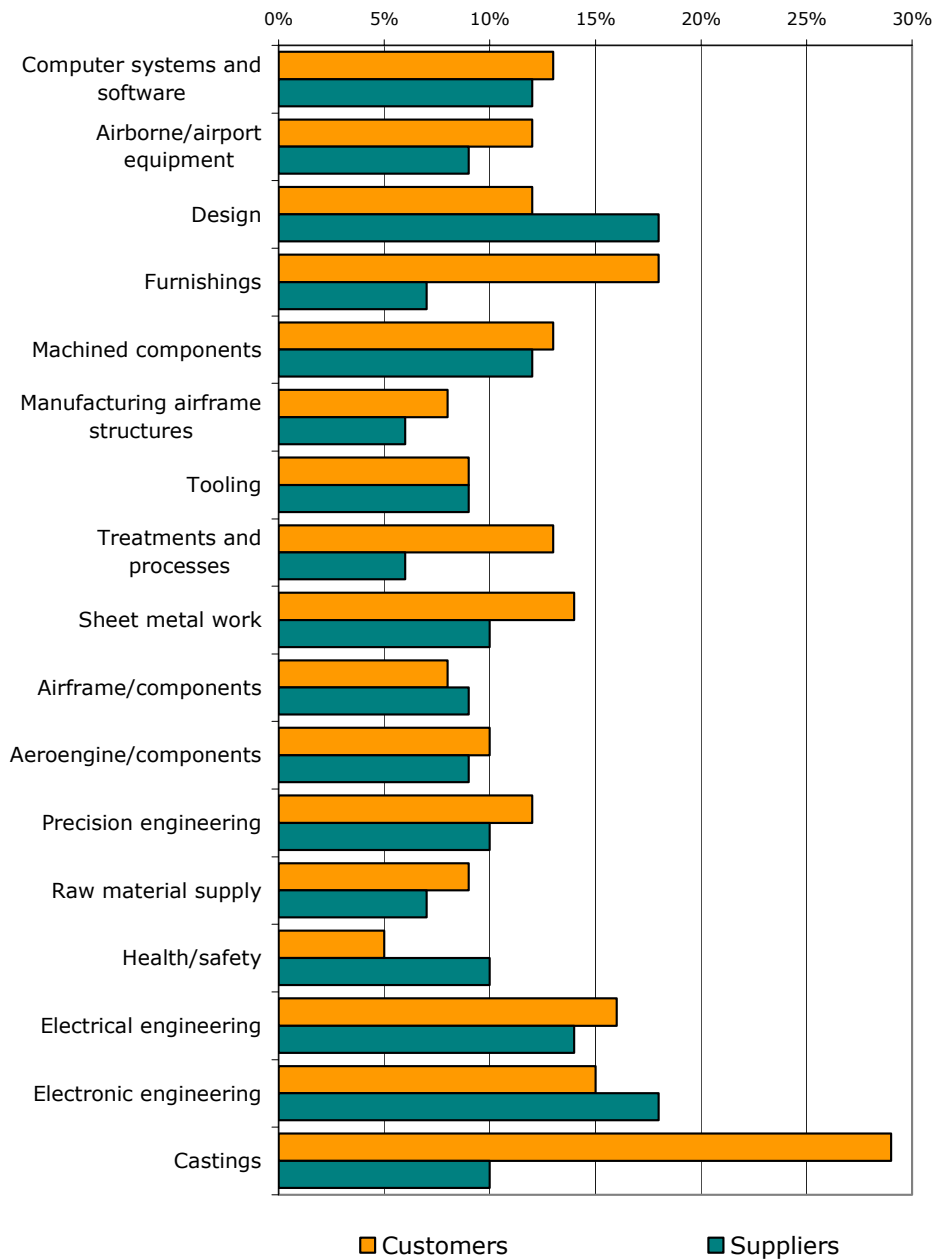
#### North West



Source: cogentsi FAC Survey  
 Ref: P153\Questionnaire\Trading Profiles\NW

### 8.2.5 Trading with businesses elsewhere in the UK

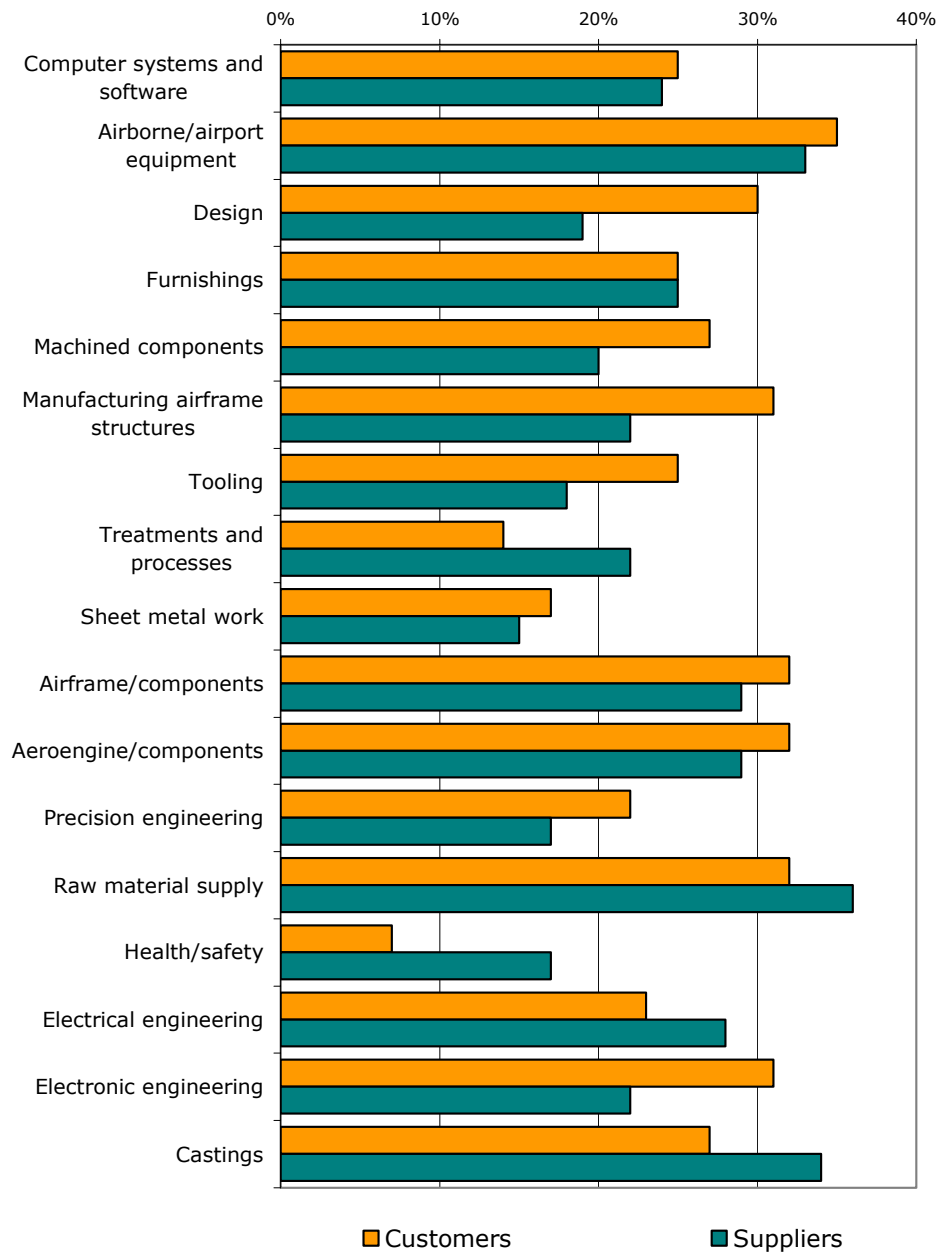
#### Other UK



Source: cogentsi FAC Survey  
 Ref: P153\Questionnaire\Trading Profiles\Other UK

## 8.2.6 Trading with businesses directly Overseas

### Directly overseas

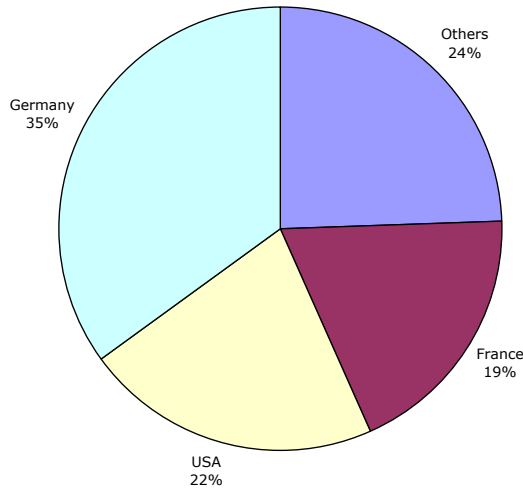


Source: cogentsi FAC Survey  
 Ref: P153\Questionnaire\Trading Profiles\Overseas

### 8.2.7 Commentary on overseas trade

The destinations of business within the UK are illustrated in the preceding charts. However, here we have separated out the key export markets for those involved in overseas business. Quite clearly, the big three of France, Germany and USA dominate with around three quarters of the business.

**Export customers - % of business**



Source: cogentsi FAC Survey  
Ref: #1531\Questionnaire\datahold\Quari 2\data\Export %

## 9 The managers' views

The study sought to establish the current attitudes of managers across a range of business related issues to back up the 'hard data' collected elsewhere in the survey. Three methods were used to do this:

- The questionnaire contained a series of tick boxes in which respondents could indicate their level of optimism.
- They were then given the opportunity comment on the score they had given.
- This information was supplemented by comments made during interviews and conversations as part of this study and those collected during the Aerospace section of the Advanced Manufacturing study conducted recently for SEEDA.

### 9.1 Questionnaire data

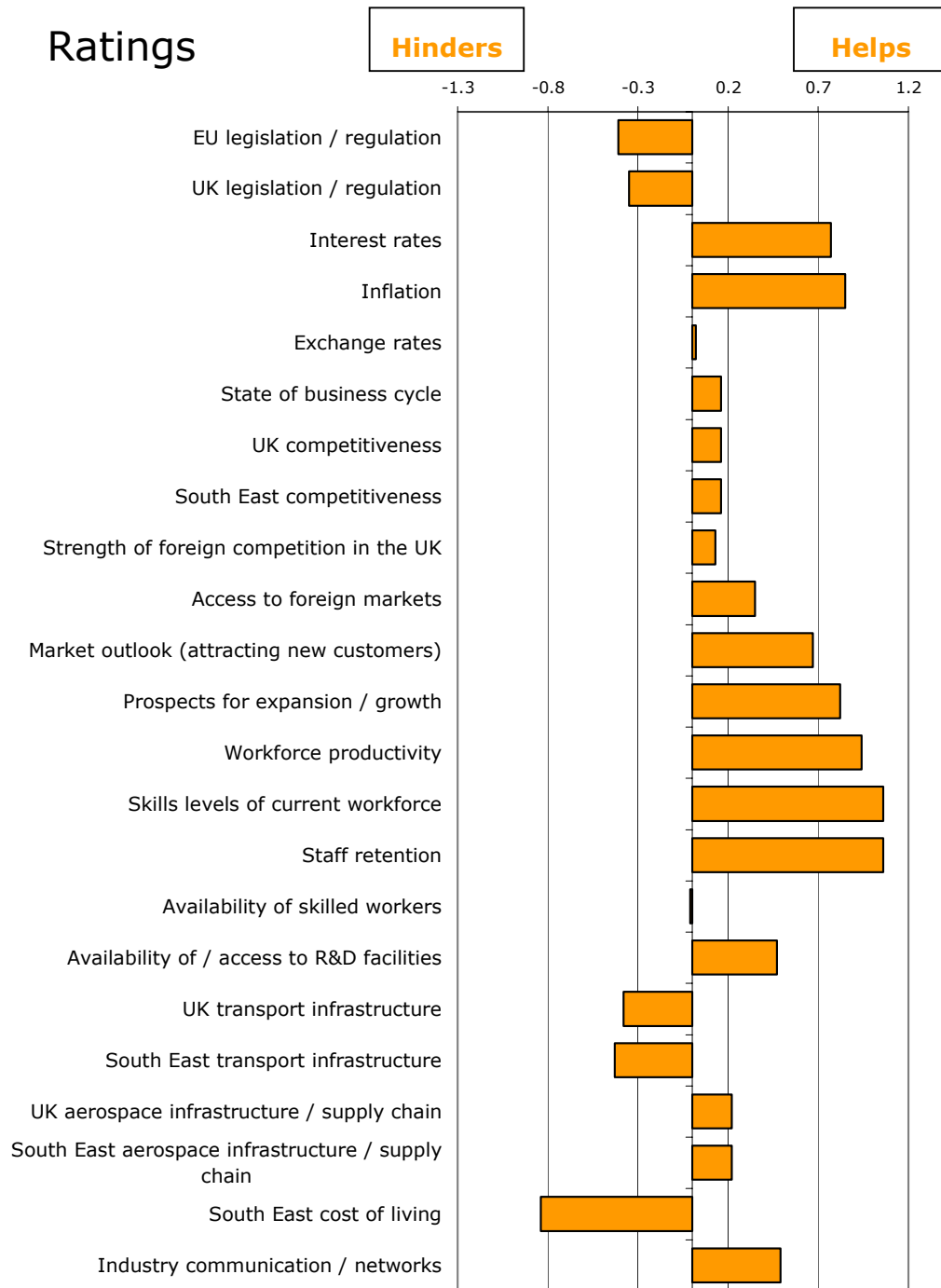
The questionnaire asked the respondents to indicate their views on a range of issues from 'Very Negative' to 'Very Positive'. We converted the responses to numerical ratings on the following basis:

Very Negative	-2
Negative	-1
Positive	1
Very Positive	2
Don't know/Not Applicable	0

- By totalling up the responses, we arrived at the following overall ratings.
- As a guide, we have included the 'Helps' and 'Hinders' legend at the top of the chart as a reminder of the relative positive and negative scales.

The chart below represents a consolidated view of all of the respondents.

# Ratings



Source: cogentSi FAC Survey  
 Ref: P153\Questionnaire\SNAP data All Coys\Ratings

## 9.2 Analysis of questionnaire data and discussions

To provide a common framework for analysis of the above data and the

*cogentSi for Farnborough Aerospace Consortium*

interviews, we have divided the response areas into three broad headings 'Groundings', 'Enterprise' and 'Markets' (GEM). These classifications are used extensively by cogentsi in understanding and comparing the competitive strengths of industrial clusters. This analysis can lead to a numerical measurement of **GEM** potential (the *potential* competitiveness of an industrial cluster); this report does not cover this process although it can be done.

Taking each of the **GEM** areas in turn, the following sub-sections provide a commentary drawing from the information provided by all respondents (the chart above), the distinctions within this data for specific areas of business (a comprehensive breakdown by areas of business was provided in the questionnaire response working paper) and the discussions and interviews.

### 9.2.1 Groundings

*Groundings are the inputs to the economic machine - the basic resources available to the business: its people and their skills, management, technology, knowledge and infrastructure.*

The earlier ratings chart indicates that overall respondents are negative regarding the legislation affecting industry; but from an economy perspective are positive regarding interest rates and inflation. They are generally very encouraged by the quality of their workforce but have some concerns about the availability of skilled workers. Finally, regarding infrastructure, they are critical of transport in the South East (and the UK as a whole) and the cost of living, but have a more favourable view of the supply chain.

Below we have summarised some of the key points which have been raised by individual questionnaire respondents and interviews (all of the individual comments made by questionnaire respondents are contained in the earlier questionnaire response working paper).

- Strong evidence of 'flexible' working practices - part time working, home working, employees from elsewhere in the country splitting time in the South East with home/field working (in keeping with tight labour market and high cost of living).
- Many 'specialist' staff are used within the processes employed. Concerns exist that the pool of labour will dry up as schools/colleges do not supply people with relevant skills, and as redundancies occur (often due to market downturns and re-location to cheaper sites), people re-train in alternative occupations and are ultimately unwilling/unavailable to return if required.
- Local universities are a good supply of graduates in 'softer' subjects, not so much for 'harder' engineering.

- Support exists for apprenticeships with the majority either currently or recently operating schemes.
- Regarding initial sources of funding for investment, this is invariably from reserves (with access to the parent company – where appropriate – as a second option). This is a risky business as the high capital intensity of the aerospace industry sector is balanced with the volatility of the markets.....yet, of course equipment has to be updated to remain competitive in a global market place.
- Responses regarding the road/rail infrastructure are interesting. Despite the congestion and delays, the companies do not consider this to be a major issue. This is because the levels of production are relatively low for the majority of firms. Were they involved in volume production, it would be a different picture altogether. As it is, the access to mainland Europe is excellent for the region as are the airport facilities for air-freight.
- However, 'social' infrastructure found some criticism – particularly in relation to hospitals, schools, police. Not enough is being done to facilitate improvements to conditions for companies or individuals – resulting over time in the SE being a much less desirable location in which to live and work. This is especially important when considering the region in a global context versus other major clusters around the world.
- Criticism is also levelled at the South East planning authorities. They appear to have a 'reluctant' attitude to granting permission for new manufacturing development. This appears to stem from the perceived negative environmental impacts, potential local objections etc (other parts of the UK are more enthusiastic) – this is a big problem as in most cases the South East is the logical place with the presence of the skills, know-how, research back-up etc.
- Roughly 50/50 split between leasehold and freehold premises with no pattern for particular sectors.
- Costs of housing and business premises are significant factors in attracting staff into the area and operating generally.
- Some concerns were expressed that increased levels of UK (and European) legislation are causing some customers to re-locate (presumably outside the EU region).
- Some evidence in recent discussions that Sterling's strength against the Dollar is starting to affect business.

### 9.2.2 Enterprise

*Enterprises (the companies) constitute the machine for economic activity - related and supporting businesses, alliances and partnerships, membership organisations and networks, strategy and competition.*

We refer back to the 'enterprise' related elements of the general ratings chart at the beginning of this section. Respondents have a marginally favourable view of South East (and UK) competitiveness, as they do of the influence of foreign competition in the UK. They are far more positive of the prospects for future growth (reflected in the increased investment levels reported in Section 7) and the strength of industry communication and networks.

Below we have summarised some of the key points which have been raised by individual questionnaire respondents and interviews (all of the individual comments made by questionnaire respondents are contained in the earlier questionnaire response working paper).

- For the supply of raw materials used in the processes, a clear picture emerges. Agents/distributors in the UK are used, although the materials themselves originate abroad. The companies claimed they would need to be much larger to go direct to the original suppliers.
- Respondents appear to know their competition, although little evidence of collaboration with similar businesses in fact a protectionist attitude exists.
- Arrangements with agencies/distributors are common-place around the world to exploit emerging markets.
- From the smaller business perspective, there is minimal contact with universities and colleges. A firm view exists that universities only want to deal with large OEM, blue chip organisations where there is a more even exchange of ideas and a larger pot of money exists.

This view is backed up with the opinion that the academic/business relationship is very good with the larger companies and less so as the size of firm decreases. The reasons being resources - time, manpower, facilities etc.

- Regarding education generally, the view prevails that the Government's obsession with degrees is to the detriment of industry generally (".... . students are 'forced' down this route to achieve a 'quota' of 50% of leavers going into higher education").

The implications are that those who would be better taking more vocational qualifications do not do so which leaves businesses short

of 'technician' level people. Also the degree courses are consequently harder to run as a greater range of abilities are now having to be catered for – this disadvantages those with medium to higher abilities. Therefore employers are seeing a lowering of ability from new qualified graduates.

- Tough market conditions exist currently; despite most businesses operating at the 'quality'/'specialist' ends of their markets, price is still key.
- Strategically, the respondents talked generally of moving into more 'technologically' driven market with less emphasis on price. More specifically, companies mentioned greater emphasis on more lucrative maintenance, repair, overhaul contracts (as opposed to original manufacture).

### 9.2.3 Markets

*The Markets absorb the outputs of the enterprises – this section deals with access to local and global markets, and relationships with customers.*

We refer back to the 'markets' related elements of the general ratings chart at the beginning of this section. Access to foreign markets is viewed as a reasonable positive, and the overall market outlook is distinctively favourable.

Below we have summarised some of the key points which have been raised by individual questionnaire respondents and interviews (all of the individual comments made by questionnaire respondents are contained in the earlier questionnaire response working paper).

- Larger operators selling directly into UK/foreign Original Equipment Manufacturers (OEM), however the majority are selling into domestic and overseas markets through agents.
- Companies spoke of the open door for foreign operators to tender for UK Government contracts whilst the situation is not reciprocated (particularly in US and France). The route for foreign business is to be a sub-contractor for one of the major companies based in the respective country. UK businesses consequently have a greater dependence on domestic business.
- Marketing is an issue for the companies interviewed. Few are large enough to employ numbers dedicated sales/marketing personnel at home and abroad. As such, there is a dependence on agents (especially abroad) to generate business – this brings its own negatives as these people almost always market other companies' goods as well, and tend not to have a full understanding of the attributes of what are often complex products.

- There is a view that general military cutbacks have resulted in excess stocks flooding markets at heavily discounted prices.
- One respondent was critical of the use of cheaper commercial components which in some areas are not fit for purpose – particularly in commercial aircraft. “The silicon products/devices being used are designed for mobiles and PCs not for use at 35,000 feet”.

## 10 Future challenges

To conclude this report, the key strands of opinion and the hard data collected from the survey need to be brought together. This will provide the FAC with some of the important areas for future focus and whether they are currently perceived as a positive or a negative.

Before we do this, however, we thought it would be useful to provide a sense of perspective from the global market place. For this purpose, a chronology has been prepared of the important events reported in the press over the past year or so. The following synopsis brings out the main points although a more detailed month-by-month breakdown is provided in Appendix 4.

The overall picture is of an industry undergoing major change with the particular features being the current intense pressures in the civil markets contrasting with the increased military opportunities.

The irony is that the *same* global events are shaping both sides of the industry – with contrasting fortunes.

### 10.1 News headlines

Civil Aviation	Defence
NATS debt re-structuring due to reduced aviation revenues.	BAE claims its long term future lies in a partnership with another global player – probably in the US.
Airliner orders generally falling although Airbus more buoyant.	Defence spending on the increase (especially in the US) due to successive military campaigns.
EADS cuts shareholder dividends and more jobs (due to recessions in civil aviation and commercial satellites).	Questions over Europe’s defence industries capability to capitalise on this (in particular US) growth in expenditure.
Optimism for Bombardier and Embraer in the <i>regional jet</i> sector.	US Government’s commitment to additional defence R&D is forging a gap between US and Europe.
End of an era – Concorde ends commercial flights.	BAE’s dilemma in trying to plug the above capabilities gap by teaming up with a US partner or strengthening European its ties.
Longer term optimism for the industry with the publication of the	Government’s policy to support British jobs and industry is tested in

<p><i>Future of Transport White Paper</i> which recommends airport expansions.</p>	<p>the RAF contract for a new Trainer (the Hawk eventually winning through).</p>
<p>Aerospace at the forefront of UK innovation with more patents registered in the US than any other sector.</p>	<p>Negotiations to re-structure the manufacturing of Phase II of the Typhoon to remove duplication and generate efficiencies.</p>
<p>European Ariane programme breaks even after 3 years of losses securing Europe’s autonomous access to space.</p>	<p>RAF re-fuelling contract awarded to EADS group.</p>
<p>Publication of the report by Aerospace Innovation and Growth Team (IGT) provides a long term vision for the future.</p>	

### 10.2 Aerospace in the South East - SWOT analysis

Adding the above perspective to the data collected in the study, the industry in the region has been assessed in the form of the SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis overleaf.

It paints the picture of a sector making a significant positive contribution to the economy.

There are particular strengths in specific areas of advanced manufacturing and the region is a clear ‘net exporter’ of this output to other parts of the UK and beyond.

Opportunities exist for much closer working between organisations (both between businesses themselves and between businesses and the academic institutions).

The business base has an ample supply of small and medium sized businesses which the IGT team recognised as being important in terms of flexibility and responsiveness to market changes.

However, a more significant presence of larger companies actively involved in manufacturing processes would benefit the region.

There is concern regarding the general infrastructure and the capabilities of the future labour supply.

More generally, there is concern regarding the advancement in capabilities in the US, and the ability of the UK and Europe to compete in the long term.

<b>Strengths</b>	<b>Opportunities</b>
<ul style="list-style-type: none"> <li>• Large number of companies with numerous capabilities and skills.</li> <li>• Relative strength in 'defensible' sectors, ie more advanced technological sectors</li> <li>• A strong heritage of knowledge/experience/credibility in the industry, which still has a solid foundation today.</li> <li>• The industry makes a major contribution to the South East economy – in terms of jobs and wealth creation for the region.</li> <li>• The discussions brought out wide spread evidence of flexible working practices.</li> <li>• Generally, the UK Government's management of the economy is well received in terms of providing stability on which to make decisions.</li> <li>• Innovation of UK Aerospace companies (based on patent filings in the US) companies is strong.</li> <li>• The presence of European, UK and regional aerospace headquarters</li> <li>• The strong IT base in the region</li> <li>• The influence of London and Heathrow airport</li> <li>• The region's academic and research facilities</li> <li>• New tools are available, including FAC itself and other development mechanisms including this report and the databases it is drawn from</li> </ul>	<ul style="list-style-type: none"> <li>• Greater networking and partnerships between companies for larger contracts. Currently companies (particularly smaller operators are 'isolated' and 'defensive').</li> <li>• SME base can adapt to the future requirement for smaller, more flexible players responsive to quickly changing markets. The IGT report mentioned this as being on of the key areas to get new products to market quicker.</li> <li>• The improving Airbus market share within civil aviation with have positive effects in the supply chain.</li> <li>• The Governments Air Transport White Paper provides grounds for long term optimism with growth in infrastructure and aeroplanes.</li> <li>• As the UK's second busiest airport, Gatwick airport can be developed further.</li> </ul>

<b>Weaknesses</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>• Limited manufacturing presence of larger Aerospace operators. Certain other regions of the UK and Europe have more intense concentrations around major hubs of activity.</li> <li>• Relationships between the academic sector and the business community (especially smaller companies) are weak, the institutions predominantly working with the larger operators – whether they are elsewhere in the UK or abroad.</li> <li>• South East and UK infrastructure is generally weak with the exception (in the South East) of access to the major airports with the required global destinations.</li> <li>• The future provision of labour from schools and colleges with appropriate skills needs to be addressed. There is too much emphasis on the 'degree' and 'softer' subjects (rather than engineering, for example). More vocational/practical qualifications would deliver a more balanced labour pool.</li> <li>• There is a 'strategic leadership deficit' in SMEs</li> </ul>	<ul style="list-style-type: none"> <li>• There is evidence of a capabilities gap developing between US and Europe due increases in spending in the United States over recent years.</li> <li>• Overall investment levels need to improve to keep pace with global competition. Some evidence in this survey of increases in investment, but other studies have shown that it is still generally behind our major competitors.</li> <li>• Increasing levels of UK and EU legislation are proving to be inhibiting for existing businesses and will only strengthen the position of the emerging economies.</li> <li>• There is limited access to the major foreign markets compared to the ease with which foreign competition can compete in the UK on a level playing field.</li> <li>• The US wants to extend its 'circle' of friends.</li> </ul>

### *10.3 The next steps*

Clearly all sectors of the industry are subject to increasingly intense global pressures. However, it is important that we recognise the most 'defensible' sub-sectors, where these are, and what can be done to nurture them.

The study has highlighted that the South East has certain locations – particularly in the south and west of the region – which are strong in a variety of advanced manufacturing areas. Due to the technological and intellectual inputs prevalent in these areas, they are defensible – although other 'less-sophisticated' economies are quickly catching up.

Further work is required to nurture these clusters of businesses to ensure survival in the short term and that they can thrive in the medium and long term. The key areas are as follows:

- Extend the work already undertaken in this study to a more detailed level specifically targeted at these defensible sectors
- Develop mechanisms for the businesses and sectors to network
- Explore the current weak links with the strong academic sector to foster relationships
- Discuss the role of the large companies in cluster development
- Begin to address the 'strategic/leadership' deficit issues to fully recognise and address the threats
- Evaluate the current cluster strengths and weaknesses versus specific benchmark regions in each particular niche sector
- Develop links with other South East clusters, so that the region's stronger sectors support each other
- Develop a detailed action plan with measurable key performance indicators

## 11 Appendix 1 - Methodology

The primary data collection device used during the initial phase of the study was an electronic questionnaire distributed to the companies on the FAC's database during October and November 2003. Around 130 companies without email address were contacted with a postal questionnaire. A copy of the questionnaire is in **Section 11. 3.**

After the initial request, four reminders were issued and the table below summarises the response.

<b>Response category</b>	<b>Numbers</b>
Survey returned	325
Survey promised	29
Not an aerospace related business	13
Not located in the South East - no survey	1
Do not wish to participate	8
	<u>376</u> 39%
Yet to reply	<u>577</u> 61%
Total FAC database (953 includes the removal of 2 duplicates)	<u><u>953</u></u>
Source:cogentsi/FAC survey	
Ref:P153\Questionnaire\Response Summary.xls	

A total of 325 returned surveys provided an excellent sample upon which the study was based.

Discussions during the project meetings highlighted the need for some additional data collection. As a result, two supplementary sheets were used (the last two sheets of the questionnaire in Section 11. 1) in the latter stages of the reminder process. These provided additional data for 28 companies.

The data collected was analysed using 'SNAP' software which is specifically designed for this kind of analysis. The resulting outputs in the report were SNAP exports into Microsoft Excel and Mappoint.

The second phase involved the integration of more 'qualitative' data from discussions and interviews held specifically for this project and during the Aerospace related interviews of the Advanced Manufacturing project for SEEDA. The results of this phase fed largely into Section 9 of this report.

11.1 Questionnaire Design

<b>Farnborough Aerospace Consortium - Resource Matrix</b>	
<b>Contact Details</b>	
Company Name	
Address	
Postcode	
Telephone	
Fax	
Email	
Website	
Primary Contact	
Title	
Secondary Contact	
Title	

**Please indicate with 'Y' your areas of operation**

<b>Specific areas of business</b>		<b>Functions</b>	
Computer systems and software	<input type="checkbox"/>	Manufacture	<input type="checkbox"/>
Airborne/airport equipment	<input type="checkbox"/>	Services	<input type="checkbox"/>
Design	<input type="checkbox"/>	Distribution	<input type="checkbox"/>
Furnishings	<input type="checkbox"/>	Consultancy	<input type="checkbox"/>
Machined components	<input type="checkbox"/>	Training	<input type="checkbox"/>
Manufacturing airframe structures	<input type="checkbox"/>	Research and development	<input type="checkbox"/>
Tooling	<input type="checkbox"/>	Maintenance/repairs/overhaul	<input type="checkbox"/>
Treatments and processes	<input type="checkbox"/>	Finance	<input type="checkbox"/>
Sheet metal work	<input type="checkbox"/>	Logistics	<input type="checkbox"/>
Airframe/components	<input type="checkbox"/>	Testing/evaluation/certification	<input type="checkbox"/>
Aeroengine/components	<input type="checkbox"/>		
Precision engineering	<input type="checkbox"/>	<b>Materials</b>	
Raw material supply	<input type="checkbox"/>	Plastics/composites	<input type="checkbox"/>
Health/safety	<input type="checkbox"/>	Metals	<input type="checkbox"/>
Electrical engineering	<input type="checkbox"/>	Elastomers (rubber)	<input type="checkbox"/>
Electronic engineering	<input type="checkbox"/>	Textiles	<input type="checkbox"/>
Castings	<input type="checkbox"/>	Chemicals	<input type="checkbox"/>

**Line of business (maximum 60 words)**

Number of employees at this site

Turnover for last full year (£mn)

**Industry Outlook - confidential**

**How do you view the current business climate? For each of the issues below, please insert a 'Y' in one of the boxes to indicate your experience and provide brief comments where appropriate.**

	Very negative	Negative	Positive	Very positive	Don't know/not applicable	Further comments
EU legislation/regulation						
UK legislation/regulation						
Interest rates						
Inflation						
Exchange rates						
State of business cycle						
UK competitiveness						
South East competitiveness						
Strength of foreign competition in the UK						
Access to foreign markets						
Market outlook (attracting new customers)						
Prospects for expansion/growth						
Workforce productivity						
Skills levels of current workforce						
Staff retention						
Availability of skilled workers						
Availability of/access to R&D facilities						
UK transport infrastructure						
South East transport infrastructure						
UK aerospace infrastructure/supply chain						
South East aerospace infrastructure/supply chain						
South East cost of living						
Industry communication/networks						

**Broadly speaking, what percentage of your business is done with which area?**

	<b>Customers %</b>	<b>Suppliers %</b>
South East (inc. London)	<input type="text"/>	<input type="text"/>
South West	<input type="text"/>	<input type="text"/>
Midlands	<input type="text"/>	<input type="text"/>
North West	<input type="text"/>	<input type="text"/>
Other UK	<input type="text"/>	<input type="text"/>
Directly overseas	<input type="text"/>	<input type="text"/>

**Please provide any additional comments you would like to make in the box below.**



**What are your main areas of Research and Development?**

Research Area	Annual (£)		
	2003	2004	Beyond

**What training programmes do you have in place?**

	Annual (£)		
	2003	#	Beyond

**What plans do you have for capital investment in 2004?**

Investment Area	Annual (£)		
	2003	2004	Beyond

**What productivity initiatives do you have in place/have taken part in (e.g. lean manufacturing)?**

	Approximate Annual Benefit (£)		
	2003	#	Beyond

## 12 Appendix 2 – Working paper : Questionnaire analysis

After the conclusion of the questionnaire phase, an interim paper was produced with the results. The headlines have been brought forward into this report. However, there were two areas of great detail which were included in the earlier output.

### *12.1 Industry issues from a sectoral perspective*

Section 9. 1 of this report shows the results of the questionnaire which asked companies to indicate their views on a range of industry issues. This section delivered the top-line results in a consolidated form *for all respondents*.

What is interesting, however, is to see how the views on these issues differ between companies involved in different sectors: eg would respondents in manufacturing have a different outlook on UK competitiveness to those in logistics? Although some of these types of issues have been discussed in this report, the interim paper provides the detailed charts.

### *12.2 Functional profiles*

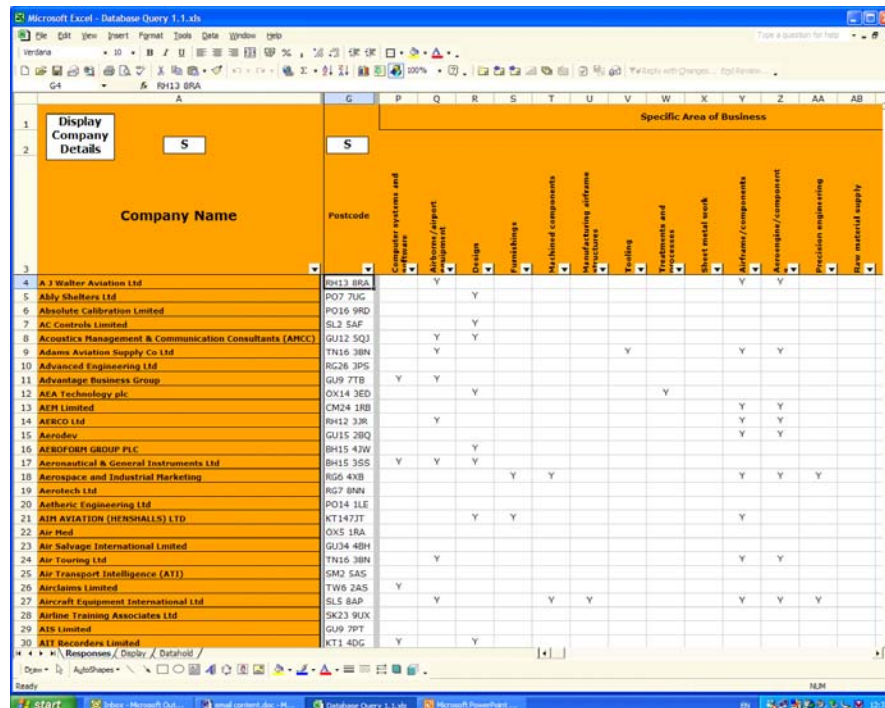
This report provides a wealth of information on company size, turnover, geographical location, capabilities, trading links etc. However, as mentioned above we have focused on the head-line results. The interim paper provides an extra level of detail in that each functional area (eg training, logistics, manufacturing) has its own *Functional Profile*. This consists of a five page summary of charts and tables based just on the respondents in each particular functional area.

### 13Appendix 3 - Database query facility

Access to the survey information captured was made available to FAC staff with a Microsoft Excel based model which allows the user the 'sort' and 'filter' the company list, select a company, and display all of its key details and responses to the survey on screen.

The following slides have been extracted from the model to demonstrate the functionality.

The spreadsheet opens on the 'Responses' sheet



Before selecting an organisation to display its details, filtering & sorting can be activated, as follows :

The screenshot shows a Microsoft Excel spreadsheet titled 'Database Query 1 - 1.xls'. The spreadsheet has columns for 'Company Name', 'Postcode', and a 'Specific Area of Business' section with various sub-categories. A dropdown menu is open under the 'Specific Area of Business' header, showing options like 'All', 'PO7 7U (Custom...)', 'PO16 9 (Banks)', and 'GU12 5QJ (Banks)'. An arrow points to the dropdown arrow.

**Specific Area of Business**

Company Name	Postcode	Computer systems and software	Aircraft/airpart	Design	Furnishings	Marketed components	Manufacturing software	Workshops	Tooling	Treatments and access	Aircraft metal work	Adhesives/composites	Aerospines/component	Avionics engineering	Raw material supply
4. A J Walther Aviation Ltd	PO13 8	Y										Y	Y		
5. Abdy Shalters Ltd	PO7 7U	Y		Y											
6. Absolute Calibration Limited	PO16 9	Y		Y											
7. AC Controls Limited	GU12 5QJ	Y	Y	Y											
8. Aeronetics Management & Communication Consultants (AMCC)	TN16 3BN	Y	Y						Y			Y	Y		
9. Adams Aviation Supply Co Ltd	RG26 2PS														
10. Advanced Engineering Ltd	GU9 7TB	Y	Y												
11. Advantage Business Group	OX14 3ED			Y						Y					
12. AEA Technology plc	CM24 1RB											Y	Y		
13. AEM Limited	RH12 3JK											Y	Y		
14. AERCO Ltd	GU15 2BQ											Y	Y		
15. Aerodex	BH15 43W			Y								Y	Y		
16. AEROFORM GROUP PLC	BH15 3SS	Y		Y											
17. Aeronautical & General Instruments Ltd	RG6 4XB				Y	Y						Y	Y	Y	
18. Aerospace and Industrial Marketing	PO14 1LE														
19. Aerotech Ltd	RG7 8NN														
20. Aerthens Engineering Ltd	PO14 1LE														
21. AIR AVIATION (HENDON) LTD	KT14 47T	Y	Y											Y	

To filter, in this instance by a 'specific area of business', click on the small arrow pointing down underneath the heading. Select 'Y' and the system will display all of the entries on the database in this sector. To turn off this functionality, click on the arrow again & click on 'All'

The screenshot shows the same Microsoft Excel spreadsheet, but now the data is sorted by 'Turnover per employee (£/pa)'. The 'Specific Area of Business' section is now titled 'Functional Profile' and 'Materials used in Processes'. There are 'S' buttons above the 'Number of employees on this site', 'Turnover for last full year (£m)', and 'Turnover per employee (£/pa)' columns. Arrows point to these 'S' buttons.

**Functional Profile**

**Materials used in Processes**

Company Name	Postcode	Design	Research and development	Maintenance/repair/overhaul	Business	Logistics	Testing/evaluation/verification	Production/composites	Metals	Plastics (colours)	Textiles	Adhesives	Number of employees on this site	Turnover for last full year (£m)	Turnover per employee (£/pa)
4. A J Walther Aviation Ltd	PO13 8												100	40	400
5. Abdy Shalters Ltd	PO7 7U	Y	Y										12	1	83
6. Absolute Calibration Limited	PO16 9												0	0	#DIV/0!
7. AC Controls Limited	GU12 5QJ	Y	Y										40	3	75
8. Aeronetics Management & Communication Consultants (AMCC)	TN16 3BN						Y						3	0.45	150
9. Adams Aviation Supply Co Ltd	RG26 2PS												34	7	205
10. Advanced Engineering Ltd	GU9 7TB						Y	Y					8	1.2	150
11. Advantage Business Group	OX14 3ED												150	10	66
12. AEA Technology plc	CM24 1RB	Y	Y	Y				Y	Y	Y			100	11.6	116
13. AEM Limited	RH12 3JK												80	14	175
14. AERCO Ltd	GU15 2BQ			Y									40	5.6	140
15. Aerodex	BH15 43W												0	0	#DIV/0!
16. AEROFORM GROUP PLC	BH15 3SS												60	10	166
17. Aeronautical & General Instruments Ltd	RG6 4XB	Y	Y	Y									85	7.6	89
18. Aerospace and Industrial Marketing	PO14 1LE								Y				1	0.9	900
19. Aerotech Ltd	RG7 8NN	Y											11	5	454
20. Aerthens Engin	PO14 1LE														
21. AIR AVIATION	PO14 1LE														
22. Air Med	PO14 1LE														
23. Air Salvage Int	PO14 1LE														
24. Air Touring Ltd	PO14 1LE														
25. Air Transport I	PO14 1LE														
26. Airclaims Limit	PO14 1LE														
27. Aircraft Equip	PO14 1LE														
28. Airline Training	PO14 1LE														
29. AIS Limited	PO14 1LE	Y											0	0	#DIV/0!
30. AIT Recorders Limited	PO14 1LE						Y						12	1.2	100

To sort, this is done by pressing 'S' button above the field required. This will automatically sort the data allowing you to target the required organisation.

Once you have identified the required organisation, the following actions display the data :

This screenshot shows a Microsoft Excel spreadsheet titled 'Database Query 1.1.xls'. The spreadsheet contains a list of companies in column A and various operational data in columns B through Z. Row 12 is highlighted, corresponding to 'AEA Technology plc'. A button labeled 'Display Company Details' is located in cell B1. An arrow points from this button to the highlighted row. Another arrow points from the number '12' in column A to the same row. A text box explains that clicking the number highlights the row, and clicking the button displays the company information.

The screen for the organisation is displayed. This can then be viewed on-screen or printed. The screen is designed to fit on 4 pages of A4 although some minor adjustments may be required for individual printers.

This screenshot shows the detailed view for 'AEA Technology plc' within the 'Farnborough Aerospace Consortium - Resource Matrix'. The spreadsheet is divided into several sections: 'Contact Details' (Company Name, Address), 'Please indicate with 'Y' your areas of operation' (listing specific areas of business and functions), and 'Materials used in Processes' (listing materials like Plastics/composites and Metals). Two buttons are visible: 'Return to select another company' and 'Print Details'. Arrows point from text boxes to these buttons, explaining their functions.

## 14 Appendix 4 - News chronology

### December 2002

- NATS (National Air Traffic Services) debt to be re-structured which will ultimately pave the way for a £1bn investment over the next 10 years. This is required to service the forecasted increase in flights from 2 million currently to 3 million in 2011/12.

Part of NATS problem is that the recent fall off in flight numbers has seriously affected revenue. To address this, easing of the price cap is to be introduced – in line with a number of other nations across Europe.

### January 2003

- Boeing and Airbus broadly neck and neck new orders and deliveries (at around 300 orders and deliveries). Both numbers substantially down on previous years for Boeing, Airbus down in orders but on a par with previous years for deliveries.
- BAE 'committed' to finding a partner in North America, convinced that there will only be 2 or 3 major players in the not too distant future.... and it intends to be one of them. Further reports suggest possibilities of a merger with Boeing.

### March 2003

- European Aeronautic Defence and Space company (EADS) cuts dividend by 40% due to recession in civil aircraft industry. (Airbus is 80% owned by EADS with the other 20% owned by BAE). In addition 1,700 jobs axed in its space division, on top of 1,600 in 2002. This is due to a collapse in commercial telecommunications satellite orders, problems and delays in developing new satellites, and the costs of rectifying the heavier version of the Ariane 5 rocket (which failed on its first mission).
- Reports of the treasury's move to block BAE's bid for the Hawk Trainer and put the contract out to tender. It claims that BAE are unwilling to pick up cost overruns, which could be substantial based on other projects.
- BAE merger saga runs on with Thales denying reports of merger talks. Meanwhile BAE insists a North American link is the only way forward.

## May 2003

- EADS announces that the value of its defence order book would double to around \$47bn following the signing of the development and production contract for the A400M military transport aircraft.

## June 2003

- FT Special Aerospace Report:
  - Clear distinction in the fortunes of the civil and defence sides of the industry. Many airlines into a 3<sup>rd</sup> successive year of losses, whilst recent military campaigns have led to large increases in government defence spending.
  - Many airlines are struggling to find the finance for new aircraft, successful low-cost operators facing fewer problems.
  - Signs of resilience in the 'regional jet' sector as airlines order smaller aircraft to reduce capacity on routes with tighter margins.
  - End of Concorde's commercial flights announced.
  - General emphasis on greater efficiency and improving operating economics – development of 'super-efficient' Boeing 7E7 (mid sized), Airbus 380 (longhaul).
- Airbus eases ahead against rival Boeing, announcing 197 new orders in 2003 (including a commitment from Emirates for 45 A380s) against Boeing's 35.
- 'Regional'/small jet manufacturers Bombardier and Embraer report optimism in the market place with US Airways and Jet-Blue placing orders.

## July 2003

- Boeing hits back with an order for 100 737s and up to 10 717s with US AirTran Airways.
- Hawk jet decision imminent as the 2 government camps dig in. On the one side Trade and Industry Secretary Patricia Hewitt, Defence Secretary Geoff Hoon and Deputy Prime Minister John Prescott. On the other the Chancellor of the Exchequer Gordon Brown and also the Prime Minister. In the end, Hawk prevails with the Defence budget having to cover any overruns.

- The 4 partners in the Eurofighter Typhoon project negotiate restructuring of manufacturing to eliminate duplication and generate efficiencies in the delivery of the second phase.
- More commentary on BAE's dilemma:
  - The UK has been fostering European links over a long period of time with a view to strengthening the industry in a global market place. The Government from this point of view would prefer closer ties or merger with European partners.
  - BAE argues that over the past decade, the US has moved ahead in the technology race and the only way for the UK's primary defence group to catch up is to tie up with one of the major US operators – even if this means relinquishing control of the business.

### August 2003

- Rolls Royce buys the electrical controls business of VT group, hopeful of securing additional work on the Royal Navy's 2 new carriers. It is already confident of winning around £300mn of work to supply the gas turbines.
- According to a report of patent filings in the US, the aerospace industry is the UK's most innovative. The UK aerospace industry scored 7.4% of the US number (followed by pharmaceuticals 5.5% and chemicals 4.9%).

### November 2003

- Military aircraft refuelling contracts in the news. Boeing ties up with BAE guaranteeing it £400mn of work on future 767 manufacturing if the RAF awards the US group the new refuelling contract. This could then be worth as much as £2bn for BAE if the US Air Force decides to replace its tankers with 767s.
- The battle for the £13bn RAF contract between EADS and Boeing widely reported (contract awarded to EADS in the new year).

### December 2003

- A £2bn scheme to build a 2<sup>nd</sup> runway and terminal at Stansted airport aimed at doubling capacity to 50mn passengers a year within 10 years announced by BAA.

## **January 2004**

- The European Ariane rocket programme breaks even after 3 consecutive years of losses - on the back of a restructuring programme backed by European governments to guarantee Europe's continuing autonomous access to space.
- Internal board rumblings reported at BAE with some sceptical about its public strategy for a US partner (Paolo Scaroni – outgoing non-executive director, voicing these concerns). Options for an independent future or one with closer European ties should be pursued with equal vigour.