

## SPACE Project: Industrial Review

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*Date:* 06.12.2007

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# SPACE

Ref. SPACE FR\_IND  
Issue 1.0  
Page 2 of 10

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## CONTENTS

1. INTRODUCTION.....	5
1.1 Purpose and scope.....	5
1.2 Version Control.....	5
1.3 References.....	5
2. SPACE PARTNERS .....	6
2.1 Universities .....	6
2.2 Industrial Partners.....	6
3. SPACE PROJECT AND INDUSTRIAL OPINIONS ON THE RESEARCH .....	7
3.1 Other Specific Positive Comments / Aspects .....	8
3.2 Other Specific Negative Comments / Aspects .....	8



# SPACE

Ref. SPACE FR\_IND  
Issue 1.0  
Page 4 of 10

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## 1. INTRODUCTION

### 1.1 Purpose and scope

This document presents a summary review from an Industry perspective, and was coordinated by the SPACE Project Industrial Manager on behalf of the Industrial Partners. This document was written by the Industrial Manager at the conclusion of the SPACE Project and took account of partner inputs from the various industrial partners, both written and verbal. It may reasonably be viewed as the consensus view on the Project from the contributing "Industrials", although individual partners may hold differing individual opinions.

### 1.2 Version Control

VERSION	DATE	CONTENT
0.1	4 <sup>th</sup> December 2007	Incomplete Draft
1.0	6 <sup>th</sup> December 2007	Final issue

### 1.3 References

SPACE Full Proposal to EPSRC

Seamless Positioning in All Conditions and Environments – "SPACE" Faraday Objectives

## **2. SPACE PARTNERS**

### **2.1 Universities**

- University of Nottingham
- University College London
- Imperial College London
- University of Leeds

### **2.2 Industrial Partners**

- EADS Astrium (Industrial Coordinator)
- Civil Aviation Authority
- Leica Geosystems
- Nottingham Scientific Ltd
- Ordnance Survey
- QinetiQ
- Thales
- BAe Systems (withdrew at Project mid-point due to internal funding constraints, but nevertheless passed positive comments on the Project)
- Location and Timing KTN (Project Facilitators)

### **3. SPACE PROJECT AND INDUSTRIAL OPINIONS ON THE RESEARCH**

Industry was asked to comment on the research undertaken and its benefits, perceived or actual. This section presents such comment.

The specific SPACE Project aims were stated as:

1. Overcome the key technical barriers which prevent GNSS-based positioning systems fulfilling the 'Centimetres Everywhere' capability
2. Carry out the pre-development of the SPACE Testbed

In addition, there were a number of lower-level aims on the development of an integrated navigation filter, on study and design of integrity techniques, on advancing multipath mitigation, and others. In broad terms these can usefully be grouped under the above Objective #1.

Aim #1 was considered to be successfully achieved. Significant and novel work was undertaken by the Universities, aided and guided by the Industrial partners who provided support in addition to that provided by the academic leaders. The results as well as the manner in which the work was carried out were considered satisfactory by all partners. Consultation with Industry was good, with useful possibilities to share expertise from and with all partners as well as inclusion in the research programme of developmental and product-level equipment from some Industrial partners.

Aim #2 was considered to be successfully achieved. Significant work was undertaken, particularly in the latter phases of the project to produce working equipment that demonstrated multiple navigation systems, variously integrated and making use of the developed SPACE software. Certain aspects of the programme were obviously challenging in the final phases, particularly due to supervisory staff changes at one of the Universities; however the major aims were nevertheless attained. The working equipment is a good prototype on which to base decisions about the potential industrialisation of the Testbed.

Direct benefits cited by Industrial partners include:

- Provided valuable insight into state-of-the-art Navigation / Positioning research;
- Supported understanding of GNSS and other technologies in domains outside of individual Industrial backgrounds, supporting useful cross-fertilisation of ideas and technology;
- Helped support "Industrial" strategy development through growth of domain knowledge and potential;
- Stimulated research potentially leading to an operational GNSS Test Bed or Certification Facility;

### **3.1 Other Specific Positive Comments / Aspects**

- Developed professional relationships for potential future partnering / collaboration. This included both relationships between Industrials and Universities and relationships between participating Industrials.
- Continuation and strengthening of links with academia and industry partners in the positioning sector (and for some partners helped establish these contacts)

### **3.2 Other Specific Negative Comments / Aspects**

None.

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# SPACE

Ref. SPACE FR\_IND  
Issue 1.0  
Page 9 of 10

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## DOCUMENT CHANGE DETAILS

ISSUE	CHANGE AUTHORITY	CLASS	RELEVANT INFORMATION/INSTRUCTIONS
A	-	-	Initial Issue

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