

# Matching Science and Business

A Case Study of the Microgravity Application Programme at the European Space Agency.



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# Executive summary

## *Quintessence*

The stakeholders' appreciation and perceived effectiveness of ESA's (European Space Agency) Microgravity Application Programme (MAP) were researched upon ESA's request. In general, stakeholders have a very positive appreciation of the programme, while some aspects need improvement. Though many MAP-projects have not come to a formal closure yet, applications and business perspectives as a result of MAP are summarised. Several recommendations are made.

## The Microgravity Application Programme

The Microgravity Application Programme is an ESA research programme that fosters cooperation in research projects between European scientists and industry. The MAP deals with life and physical sciences in microgravity conditions and specifically to facilitate the development of applications. The projects of the MAP have a strong research base and cover various research subjects and disciplines. Stakeholders of the Microgravity Application Programme are national and local government bodies; academia (universities and institutes) and industry (multinationals, large companies and SMEs) in Europe. All participate in the MAP financially by contributing either cash or by in-kind or in-house investments.

In total there are about 400 organisations participating in the MAP of which 200 academia and 202 industry partners of which there are 88 multinationals, 14 large companies and 100 SMEs. Of the multinationals participating in the MAP 40 belong to the TOP 500 R&D spenders in either Europe or the rest of the world. This means that 20% of the industry partners in MAP is a highly innovative multinational.

## Scope and Objective Study

The main focus of this evaluation is firstly to analyse the appreciation and the effectiveness of the MAP. Secondly, participants were asked to assess the likelihood of applications from MAP research findings. The results of these focal points might serve as considerations for decisions about the continuation of the programme. The quality of the research per se, is not addressed in this evaluation, since a separate evaluation of this matter is conducted.

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<sup>1</sup> A comparison of the current participants in the MAP to the EU R&D Investment Score Board was executed: European Commission (DG JRC). *Monitoring industrial research: the 2004 EU industrial R&D investment scoreboard*, volume 2, company data, 2004

## Method

The performance of ESA's MAP has been assessed with the data from 32 structured face to face interviews and from 53 returned questionnaires (no overlap in respondents). Eight criteria of the so called 'Science to Business' approach were used to determine the effectiveness and appreciation of the programme. This model contains criterion that justify, motivate and establish interaction between big science and industry.

This evaluation should answer the following questions to determine effectiveness:

1. Does the approach meet the Science to Business criteria? (Chapter 4)
2. Can the ESA HME Science to Business approach be considered effective because it leads to applications and/ or business perspectives for the stakeholders? (Chapter 5)

### *Answer 1*

The approach chosen by the ESA HME directorate is very effective with respect to the strategic, deliverables, technical, educational and relational criteria. The approach is less effective regarding the financial, epistemic (IPR) criteria and not effective for the political criterion.

### *Answer 2*

The MAP has led to applications and is expected to lead to more applications according to the majority of the industry (78%) and academic (98%) stakeholders. Space agencies are less convinced of this ability. Concerning business perspectives, 59% (industry and academia) confirm that these have resulted from the MAP, 30% believe that business perspectives will result and only 9% do not believe so.

## Future

All current participants confirm that they want to continue their participation in the MAP and are able to do so financially. Also new industrial parties have shown an interest in future participation in the MAP.

#### The Conclusions Summarised:

- >> The ESA HME directorate is effective in facilitating the development of applications in the MAP;
- >> The MAP has led to applications and is expected to deliver more applications;
- >> The MAP has led to business perspectives for academia and industry and is expected to contribute further to the business perspectives of the participants;
- >> Industry and academia want to continue their participation in the MAP in second extension;
- >> The ESA HME directorate can attract new industrial participants to the MAP;
- >> Not all stakeholders are well informed about the MAP;
- >> Communication about the MAP with all stakeholders must be improved.

#### The Recommendations Summarised:

- >> Continuation of the MAP
- >> Longitudinal tracking of the results of the MAP
- >> Benchmarking of the MAP to similar programmes to enable comparison of effectiveness
- >> Monitoring of the market by the ESA HME directorate
- >> Co-definition of the programme by the participants
- >> Promotion of projects with application potential and outlook on business perspectives
- >> Active pursuit of new industry candidates for the programme
- >> Investigation of organisation design for IMPRESS-like projects
- >> Streamlining of IPR regulations
- >> CrossMAPping; exchanging of information between MAP projects
- >> Improving communication with stakeholders, especially space agencies
- >> Integration of regional technical initiatives