Draft Discussion Document

Discussion document on research evaluation (Jan. 2002)

1.0 Introduction

The aim of this document is to stimulate some discussion on methods of evaluation of research and consideration of performance measures that can be applied to evaluating radio research projects managed by the RA.

2.0 Back ground (Programme and project management policy)

At Government level the main guidelines for business case development are approaches based on the HM Treasury Green Book and Treasury Task Force guidelines. The Green book is in the process of being updated. The policy relates to the development of a business case, by promoting a policy/standard, assigning responsibility, balancing risk and innovation, change management and ownership. This can be scaled up or down to fit the scale of the particular project.
The UK Government standard for IT projects management and most other types of projects is PRINCE 2, (A method covering the organisation, management and control of projects).

The DTI has an Innovation Services Directorate (IS), with a Technology, Economics, Statistics & Evaluation Directorate (TESE)[1] which is an interdisciplinary unit of economist, scientists and Engineers who are responsible for evaluating and monitoring technology programmes and advising on the formation of new programmes. [This unit tends to monitor large collaborative projects often with multimillion-pound budgets.]

Within the RA the technical research programme is managed via the Technical Forum (TF) by the Engineering & Research Unit (ERU) and there is a unified Agency research budget managed by ERU staff. The "mathematical programme" is managed directly by the Economics and Statistics Unit (ESU). The ESU also controls and commissions its own economic related projects.

3.0 Discussion

3.1 Technical project evaluation

Individual project officers manage almost all of RA projects with the Technical Forum (TF) committee covering checks on the project definition, approval and reporting process. There is a RA publication "Project Managers Handbook" for Project Officers to use as a guide for technical project management.

3.2 A process to assist evaluation

The RRAC may wish to consider the following process to focus on the strategic research objectives.
(1) As a first stage it is important to have clear strategic research objective and project objective.
(2) Some form of priority (selection) and check with what is currently ongoing in UK, Europe, etc.
(3) Plan and technical milestones (timescales)
(4) Some market or economic analysis of the benefit, over the timescale or lifetime of the research project.
(5) Top management audit of R&D projects (Role for RRAC?)

3.3 Indicators of performance relating to Research and Development

- Evaluation vs. basic R&D objectives, strategic objectives and project objectives
- R&D against technical achievement criteria, against cost and markets
- R&D priority vs. other projects (trade-off of objectives)
- R&D vs. competition
- R&D Technical milestones
- Analysis of market needs over the proposed product/ service life of R&D outcome

3.4 Simulation, Ranking and Selection

It may be possible to use some computer programme (statistical ranking and selection) to try and select and prioritise the research projects.

3.5 Current RA structure and interaction with RRAC

(See attached diagrams). The RRAC may consider that there needs to be some feed back between the RA's technical forum and the RRAC as part of a potential research evaluation process.

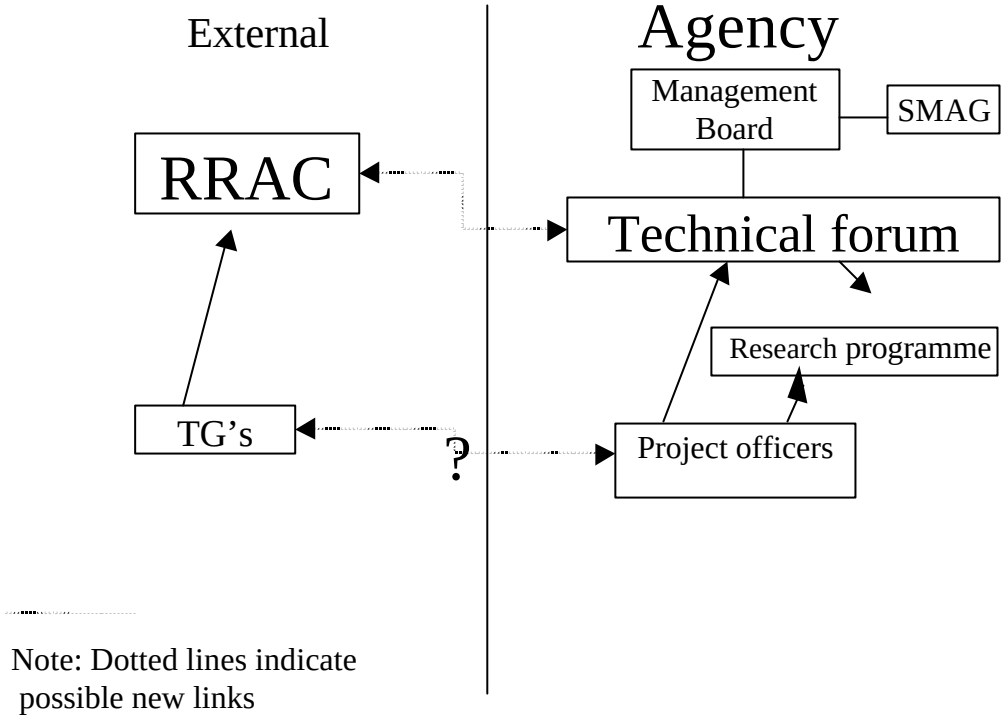
3.6 Economic indicators including "Real options"

ESU has instigated work to study whether "Real options" analysis could be used in research evaluation[2]. This has tried to evaluate the potential benefit of a research programme involving sunk costs in return for information obtained, which may then be used to make commercial decisions. The most critical element of this work is the modelling of inherent uncertainties, and there may be models based on strategic behaviour, or analysis of risk/failure that can be applied.
The RA plans to continue a further study in the area of real options and the ESU has looked at other economic driven prediction and evaluation methods including cost-benefit[3].

4.0 Summary

The RRAC is considering possible methods to evaluate research projects. A few performance indicators are listed as possible measures. Further discussion may need to look at the links and feed back between RRAC and RA's research evaluation structure.

Annex 1
Diagram of structure between RA and RRAC



References:
1.Technology, Economics, Statistics & Evaluation Directorate (TESE)
http://www2.dti.gov.uk/tese/
1.a (Office of Government Commerce, http://www.ogc.gov.uk/handbook/content/partb/b2.html)

2. "Evaluation of R&D expenditures", Sam Howison et al. (Oxford & Smiths Institute), July 10, 2000 (Report written for the Radiocommunications Agency)

3. "Final report on a study to conduct cost-benefit assessment of radio propagation research" R.Sweet, S. Wessemeyer, 25 October 1999, CTA027D008-1.1, (Consultant: Smith Group)

Annex 2
Committee structure as shown in "Research Review"