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**Opportunities for Postdoc or ECR internships at CAR**

**Options-based Lifecycle Evaluation**

The principle of life cycle evaluation is that when comparing alternatives the decision maker should not select the cheapest alternative but the one that is most economical over the longer term, taking account of both the initial cost and the future costs and benefits during the service life. It applies to buying a pair of shoes or developing a new airport. When the principle is applied it quickly encounters the problem of uncertainty around future costs and benefits. Most lifecycle evaluation studies ignore this uncertainty, but the results are unreliable. CAR has developed new techniques for lifecycle evaluation that take account of future uncertainty (see the book *New Generation Life-Cycle Costing: property and construction decision-making under uncertainty* by Ian Ellingham and William Fawcett, 2006).

CAR’s new approach to lifecycle evaluation is based on real options theories, adapted to long-lasting construction projects (infrastructure and buildings) where data is sparse. Software for options-based lifecycle evaluation was developed in the EC-funded CILECCTA project, in which CAR was a partner. It incorporates algorithms developed by CAR.

The new approach has been applied in a variety of demonstration projects, but has yet to become established as a consultancy service. The internship will focus on the challenge of developing a consultancy business based on the innovative technique, which is disruptive for established players who see no incentive to abandon their established but less powerful methods.

A Postdoc/ECR intern in this field could contribute at various levels. First, technical assessment of the existing lifecycle evaluation software’s performance and usability; second, appraisal of its strengths and weaknesses compared to established techniques for lifecycle evaluation; third, identifying potential clients for the new technique and ways of marketing to them.

If you would like to find out more about internships in Options-based Lifecycle Evaluation and whether it matches your career development plans, please contact Dr William Fawcett for an informal discussion.

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