Chapter 10
Open Modelling for Simulators

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ABSTRACT

This chapter motivates and discusses the process of making a simulation model available for others to freely inspect and use. Firstly, it outlines the three reasons why this is necessary: democratic right, scientific scrutiny, and public value extraction. Then it describes the basic steps for doing this, including: making code comprehensible, documentation and licensing. It then describes some further things one might do when releasing a complex model to help ensure it is understood and re-used appropriately. It briefly looks at some tools and approaches to help in all this, and ends with a discussion about the change in underlying “modelling culture” that is needed.

INTRODUCTION

While preparing and making ones simulation model public might be at the last thing on the mind of its developer, this is a crucial step in terms of the public benefit to be gained from their effort. This chapter looks at this in the context of simulation modelling, discusses the arguments for it and then outlines some of the necessary steps to make it effective. In particular, it aims to do the following.

• Motivate the reader as to the importance of open modelling practices
• Help the reader understand the various steps that are necessary to making this a reality
• Suggest further steps to help ensure that particularly complex models are understood
• Describe some tools and approaches that will aid in this process
• Discuss some of the underlining changes to the “culture of modelling” needed

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BACKGROUND

The phrase “Open Data” has become a banner under which a campaign has developed to make the data gathered by various institutions available to the public with relatively light conditions upon its subsequent use (Auer et al. 2007). The campaign has focussed upon publicly funded institutions, such as government authorities and universities but has also included government subcontractors and even private companies.

Open Data allows for the development of several benefits, namely that the data are available for checking against other sources of evidence; that any mistakes or distortions are more likely to be detected; it allows a better understanding of the recommendations that such institutions make through access to the underlying data; it allows a deeper democratic debate; and finally the extraction of further value from that data is possible via subsequent use, allowing for a wealth of secondary services to be built.

The reasons put forward against opening access to data might include worries over privacy; the wish to protect internal processes; the subsequent reluctance to collect data that might be embarrassing in the first place; the cost of preparing data for release; and a wish to commercially exploit or sell the data themselves. However, it is being increasingly realised that data can be a valuable public asset and that the people who have ultimately paid for the data have a greater right to it than the particular institutions who created it.

Here we intend the phrase “Open Modelling” to be similar to that of “Open Data”, except that in this case it is indicated that it is the models rather than the data that are to be made widely accessible. Thus Open Modelling is the practice of making ones models available to others. Here we are mostly concerned with simulation models, but a lot of what is discussed below would apply to any kind of complex model.

MAIN FOCUS OF THE CHAPTER

The Purposes of Open Modelling

Similar to Open Data, Open Modelling has the potential to deliver a number of benefits to wider society, with the underlying motivations of democratic right, scientific scrutiny and public value extraction, which are now discussed.

Democratic right. Citizens have a right to understand how the decisions that affect them are made. If models are being used as part of the policy development process, then the formulation of those models will have an impact on those decisions. In this case, if citizens are not to be disadvantaged in the debate over policy, they need access to the same range of evidence and tools as those proposing policy, including the details of any models used.

There are two, closely related, arguments against this: that the wider public will not be able to understand such models (so it is a waste of time to provide access), and that they will misinterpret/use them (in other words, these matters are best left to the institutional experts). However these arguments could be made against the release of any technical or statistical data. In practice what happens is that a variety of specialists from pressure groups or academia, who have the skills, will inspect, analyse and critique the models and present their conclusions to each other and, if they have enough public import, to a wider audience. These practices mediate the understanding and critique of models, just as academics and journalists might do for other technical information. The value to the wider public is still real, even if it is (as with many aspects of life) mediated and provided by an “ecology” of information analysts,

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