

## An Events-Based T&L Simulation Game

G. Michael McGrath  
*Victoria University*

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# An Events-Based T&L Simulation Game

## Introduction

Management games have a long history and an established place in business education (Benckendorff et al., 2015), particularly with the development of advanced simulation software packages and technology and with almost-universal access of modern students to powerful, personal computer technology. This paper details the results of early research and development work aimed at extending the design, development, implementation and validation of an automated teaching and learning (T&L) simulation game (SG) for use in an introductory Tourism and Hospitality (T&H) program at William Angliss Institute, Melbourne. The original game was designed to reinforce the T&L of sustainable tourism principles and its design and preliminary evaluation have been detailed by McGrath et al. (2015 and 2017). Results of early trials with the game have been encouraging and have motivated efforts to extend the use of such games and simulations beyond the sustainable tourism domain to other areas of T&H learning. In this paper, we report on one such stream of enhancements to our original SG: specifically, whereby we have players choose different event types as a means of economic development and destination rejuvenation.

## Background and Motivation

Simulations, as a form of role-play, are designed to provide students with opportunities to participate in real world decision-making without the associated risks. This learning tool has enjoyed a surge in popularity in recent years as it allows students to enhance employability through the application of critical thinking and decision-making skills (Douglas et al. 2008). Simulations involve and engage students in ways that supplement lectures, resulting in active learning that is beneficial to students (Singh, Mangalaraj, and Taneja 2010). As noted, SGs have long been used as learning aids in business education; see, for example, Gosen and Washbush (2004). Despite its popularity as a supplementary learning aid however, there is a surprisingly limited number of off-the-shelf pedagogical software available. The more popular games, such as Markstrat (Larréché, Gatignon, and Triolet 2010) and The Business Policy Game (Cotter and Fritzsche 2010), tend to be designed predominately for experienced managers and final-year postgraduate business degree students. Such simulations are complex and often rely on an advanced level of knowledge and experience that makes them unsuitable for use in subjects designed for undergraduate students and vocational students at certificate and diploma levels

While there is an array of simulations available for business education, many of them focus either on organization-based business management or specific business functions, such as marketing or event management (OLT 2017b). Within tourism and hospitality (T&H), the aforementioned focus on management and specific business functions has translated into a number of simulations being developed for hospitality education, particularly concentrating on hotel, airline and restaurant management. Such simulators include 'HOTS' and 'RevSim' (hotel management simulators), and 'AIRLINE Online' (airline management simulator), and typically focus on revenue, pricing and inventory management. Similarly, the predominance of simulations for specific business functions manifests itself in T&H as function-specific simulations, such as the use of marketing or corporate social responsibility simulations as supplements to lectures (OLT 2017a). The lack of T&H-focused simulations at undergraduate and lower levels, particularly those that use SD, is a gap that our current research and development simulation work seeks to address.

In addition, along with Senge (1990) and others, it is our contention that there are significant learning and personal development benefits to be gained by students through the acquisition of systems thinking knowledge and skills and that these transcend the objectives of any particular unit or course to the much broader domain of critical thinking beyond the formal education curricula (Maani and Cavana, 2000). Moreover, we believe that the earlier students are exposed to these concepts, the better. This demands, however, that students should be exposed to SD concepts progressively, in an integrated manner and at increasing levels of complexity as they move through successive levels of T&H education. Thus, to facilitate this objective, we employ the AQF as a broad guide (McGrath et al., 2019).

As noted, one set of enhancements to our original SG is based around the use of tourism events and festivals as a destination development engine. This enhancement approach was chosen as a way in which to inject more realism into our SG: a need that has come through strongly in student feedback from game trials to-date (McGrath et al., 2017). In the newer game, players must decide on which (if any) event options to adopt in an effort to boost destination visitor numbers and economic activity: both through direct event visitor expenditure and as a result of repeat visitation and increased destination exposure resulting from the events chosen (Gibson and Stewart, 2009).

A critical step in customising the SG for the events version was to determine the impacts (economic, environmental and social) for each available event type. Festival and events destination impacts is an area that has received considerable attention in the tourism and travel literature over the last two-three decades; particularly economic impacts.

Burgan and Mules (2001) argue there is a correspondence between the welfare economics paradigm of cost-benefit analysis (CBA) and the growth-based paradigm of economic-impact analysis (EIA). CBA evaluates alternative uses of public funds from an economy-wide perspective (rather than examining an individual project within a single organisation). This approach is needed where a project may have benefits (and costs) beyond the scope of an individual (as, e.g., in tourism). A public project should be undertaken if the consumer surplus (benefits) outweighs the opportunity cost (the cost in terms of value foregone if the funds were devoted to the best alternative). For example, the consumer surplus for a new highway project would be the total reduction in travel costs between two fixed points and the cost might be the travel cost reduction for some alternative highway proposal or a public transport alternative.

There is a distinction between public and private CBA in that, with public projects, the government is the investor and the benefits accrue well beyond the investing party to the wider community. Mishan (1988) suggests that where competing projects are being considered, the CBA with the highest benefit:cost ratio should be undertaken but cautions that this technique is inappropriate when substantially different proposals (e.g. a new hospital versus a freeway).

Another issue with CBA is that it is designed for use where a cost reduction is anticipated. Tourism promotion though, aims to attract tourists with the aim of boosting accommodation, dining, shopping etc. with no cost reduction as such. Also, much of the benefit from a tourism boost accrues to visitors from outside the area. As such, the major benefit to the local community comes from increased production levels and, consequently, producer surplus is the more appropriate benefit measure here. More formally, producer surplus represents the return to producers for units of production up to and including the last unit above and beyond the cost of resources involved in unit production. It assumes resources are used at their opportunity cost (Mishan, 1988).

Special events have an economic impact through the expenditure of visitors who would not have come but for these events (Burgan and Mules, 1992). Individual firms though, are unlikely to sponsor a special event because they themselves cannot capture all of the benefits. A cooperative is a possible alternative but, inevitably, some firms will opt out of any involvement, allowing others to do the work while sitting back and enjoying the benefits (the, so-called 'free-rider' problem). Thus, government funding is often used to promote tourism and tourism events and this must be taken into account in any CBA or EIA exercise.

With this approach, Gross Regional Product (GRP) is used to assess benefits and this corresponds to the increase in producer surplus plus the increase in payments to factors of production (see, e.g., Burns, Hatch and Mules, 1986). If the owners of the means of production are residents, this represents extra income that residents receive as a result of hosting an event. Thus, where resources are underused, an EIA becomes more relevant than either consumer or producer surplus as the measure of benefits arising from an activity. This is much the same as using Gross Domestic Product (GDP) as a measure of economic well-being.

Having settled on EIA as the primary analysis focus, the following issue must also be addressed: specifically, how does one deal with other benefits and costs typically measured under a more standard CBA approach. For example, major events often cause serious inconvenience to residents and this is sometimes assessed by putting a value on residents' lost time. Similarly, CBA involves the specification and estimation of a full range of benefits and costs (including indirect costs such as noise pollution and congestion). These types of factors can be estimated using opportunity cost or 'willingness to pay' valuation techniques. Whatever approach is employed however, EIA and CBA are, to a large extent, consistent (particularly where there are underused resources) and, indeed, the two approaches may be considered additive. Essentially, rather than arguing that a particular economic theory or technique is more appropriate than another, the focus should be on ensuring that the widest range of variables is evaluated and, moreover, that this is done as consistently as possible across different events and event types. This is the approach we have adopted in our SG enhancements. Further details are presented in later in this paper.

## **Research Approach**

Underpinning the simulation is the design science (DS) research methodology (Hevner, March, Park and Ram, 2004). With a DS research study, the major objective is not the building or confirmation/denial of theory per se, but the design, construction, implementation and evaluation of a research artefact (Goes, 2014). Such artefacts are comprised of constructs, methods, models and instantiations (March and Smith, 1995) and, as argued by Gregor and Hevner (2013: 345), a DS research project's contribution should be assessed in terms of problem maturity and solution maturity, with improvement involving the development of " ---- new solutions for known problems".

Hevner (2007) extends the earlier work of he and his colleagues in explicating that the DS research process consists of the following three iterative, interlinked phases: the relevance, design and rigor cycles, as illustrated in Figure 1. A key step in this process is evaluation and, as noted by Benckendorff et al. (2015), it is common with business T&L simulations to undertake this through monitoring key variables, including attitudes, self-efficacy and cognition, individual engagement, team dynamics/interaction, behavioural learning, subjective outcomes and objective outcomes. Thus, both subjective and objective measures must be captured and we employ a problem-based

scenario as one significant objective measure of the extent to which students have developed a better understanding of key concepts and processes. Results of our early evaluation work to-date are summarised in McGrath et al. (2017).

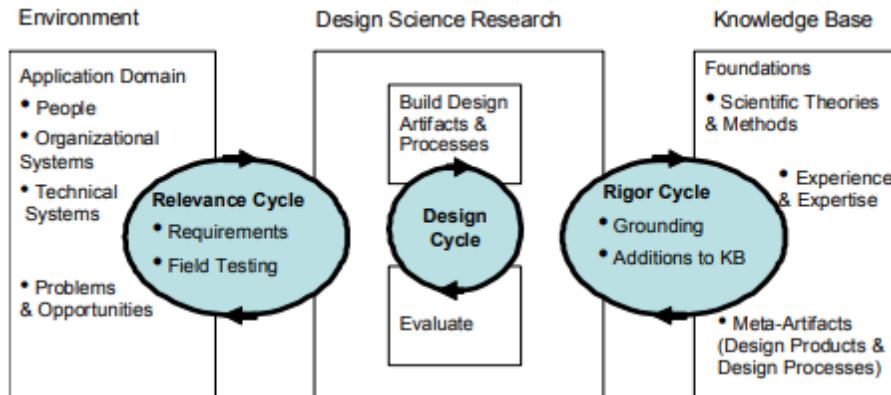


Figure 1: Design Science research cycles (reproduced from Hevner 2007: 16)

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To play the original SG, students are divided into syndicates and play the part of ‘destination management organizations’ (DMOs). They are required to manage green economy and tourism development investment decisions, plus decide on how much land should be rezoned from protected/rural to industrial/business/residential. The total simulated game time is 20 years, with each simulation period equivalent to one year and divided into 4x5-year segments. They receive reports on performance at the end of each segment and then make decisions on investment and land rezoning for the next 5-year simulation period. Performance is determined by net profit and other key indicators (e.g. environmental health and overall region attractiveness at game’s end). The initial version of the game has been implemented on the *PowerSim* systems dynamics simulation platform. Selections are made on the game’s control panel through the manipulation of three ‘sliders’. These are displayed in Figure 2.

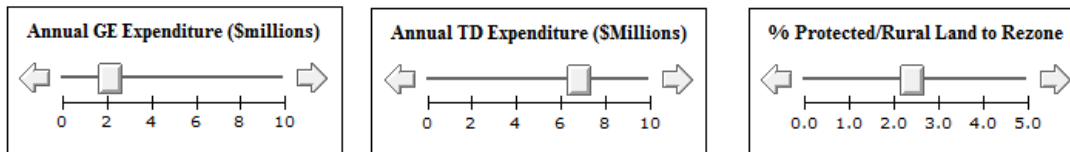


Figure 2: Initial simulation game – control panel (partial view)

The control panel for the enhanced events-based SG is presented in Figure 3. Players are still required to nominate how much protected land to release for development and what their annual GE expenditure will be but they now have to nominate which events they wish to support in the coming year and be more specific as to how they will use their GE expenditure. While most Australian events and festivals are run annually (Gibson and Stewart, 2009), players of our game must make a renewal decision at the beginning of each new year (i.e. once switched on, the default

is not that the event will continue until the option is deselected). This, we believe, mirrors what generally occurs in practice.

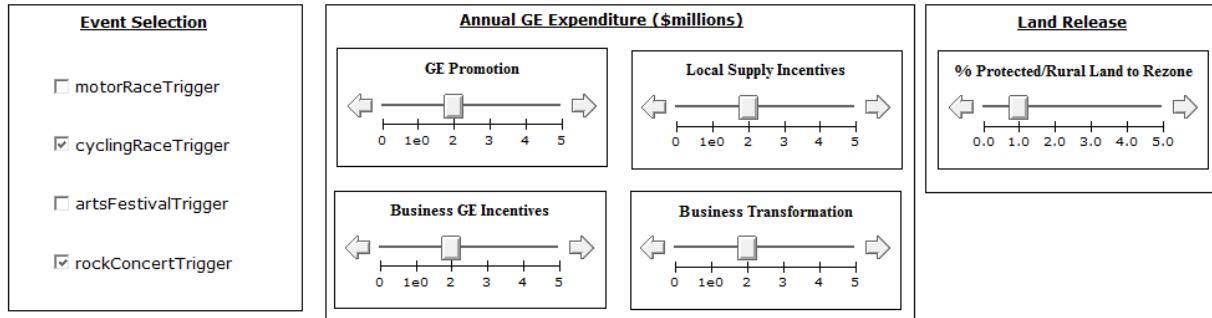


Figure 3: Events-based simulation game – control panel (partial view)

Each of the different types of GE expenditure have positive impacts on the destination’s environmental health but the extent varies and so does the time for impacts to occur, as shown in Figure 4. For example GE promotion has a strong immediate impact but little from year-2 onwards, while business transformation expenditure takes around five years to have its maximum impact. While the selection of the particular types of GE expenditure employed in our SG is well-grounded in the tourism literature (see e.g. Choy, 1992; Cooper, 1995; and Agarwal, 2002), we could find very little quantitative research to guide our actual parameter assignment. Thus, the assignments displayed in Figure 4 are based mainly on whatever qualitative results we could find and intuition. We do not see this as presenting a major problem as the essential purpose of our SG is not to provide actual business planning forecasts but T&L. As such, this issue (i.e. parameter assignment) can be employed by course instructors as a useful discussion anchor.

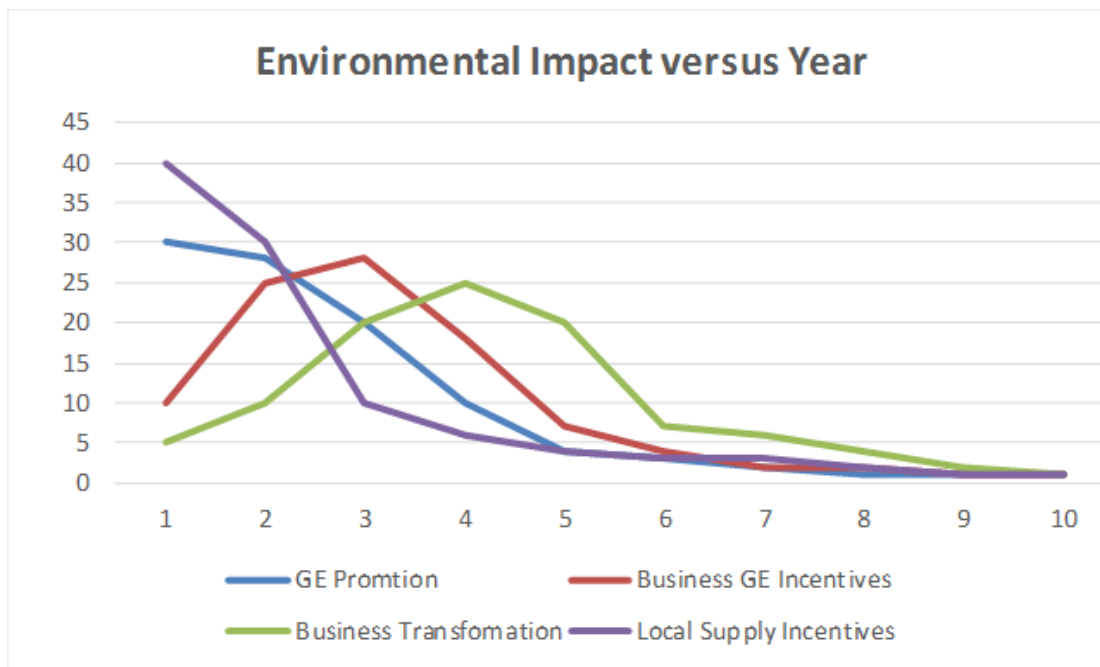


Figure 4: GE environmental impacts (by % over a 10-year period)

Similarly, impact-time relationships have been developed for each of the event options available and these have also been factored into the SG. Again, a certain amount of logical inference was used in the specification of these relationships but most of this is grounded in the event impact evaluation literature. A major source employed here was the comprehensive review of Australian festivals and events conducted by Gibson and Stewart (2009). This led to the selection of the event options players may choose: specifically, a motor race, a cycling race, an arts festival and a rock concert. These were chosen because the empirical evidence suggests (Gibson and Stewart, op cit.) that each event type has somewhat different economic, environmental and social impacts. These are outlined in the full paper, along with a justification for the specification of each of the key SG model relationships.

## Conclusion

This extended abstract has outlined details of a T&L SG that uses events and festivals as a vehicle for destination development and rejuvenation. Each different event type has substantially different economic, environmental and social impacts and these must be factored into the computer simulation. Where possible, the extant T&H literature has been used to guide the specification of key model variables and relationships but, where hard data was not available, this process has had to rely on inferences from qualitative research and 'best guess' intuition. Ultimately, player/student experiences and learning in ongoing SG trials will be the paramount indicator of how successful this activity has been.

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