Developing a Scripted Approach to Planning Client-Based Strategic Modeling Sessions

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Abstract: Problems and opportunities facing public managers are increasingly complex, requiring inter-agency, cross-functional, and cross-boundary teams to engage in collaborative problem solving and strategic design. Facilitated face-to-face meetings with computer support in the room are a tool that can help public managers deal with ever more complex management and policy problems. This paper reports on a stream of research intended to create a knowledge base enabling modelers and mappers of varying levels of expertise to plan and execute multi-method strategic planning sessions, drawing on the experience base of experts who have been working in the field for many decades. We describe research that is developing two tools: Scriptapedia and ScriptsMap.

Keywords: ScriptsMap, Scriptapedia, Group Model Building, Strategic Planning, Complexity, Problem Solving
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1.0 Tools Empowering Public Managers to Address Complexity
Problems and opportunities facing public managers are increasingly complex, requiring inter-agency, cross-functional, and cross-boundary teams to engage in collaborative problem solving and strategic design. Facilitated face-to-face meetings with computer support in the room are one of a number of tools that can help public managers deal with ever more complex management and policy problems (Eden and Ackermann, 1998; Vennix, 1996; Richardson and Andersen, 2010). Recently, Eden et al. (2009) have been exploring multi-method strategic modeling approaches that combine strengths of several of these modeling traditions. This paper reports on a stream of research intended to create a knowledge-base enabling modelers and mappers of varying levels of expertise to plan and execute multi-method strategic planning sessions, drawing on the experience base of experts who have been working in the field for many decades. We describe research that is developing two tools: Scriptapedia and ScriptsMap.

Scriptapedia is an on-line resource that provides open-source access to descriptions of scripted interactions between modeler/facilitator teams and client teams. These scripted activities produce products, which may serve as inputs to other scripted activities that follow, or perhaps have the stature of deliverables to the client group.

ScriptsMap presents a visual display of sequences of group mapping and modeling scripts. ScriptsMap facilitates the development of a wide-range of executable plans for half-day, full-day, or two-day strategic planning and modeling sessions.

1.1 New Challenges Facing Public Managers

We are concerned with a specific class of policy problems that are now facing public managers and officials. These are problems that typically cross over boundaries—they are multi-jurisdictional; involve cooperation and collaboration among agencies and even public, private, and not-for-profit agencies; and often require expertise from several different technical specialties (e.g., service delivery specialists, financial managers, and community organizers). They are complex in that proposed first-order solutions in one quadrant can over time influence another quadrant of the problem to create new problems—that is, attempts to solve the problem can have the unintended consequence of making the problem even worse. The public cares about these complex problems and increasingly public participation is either desired or required in the solution of these problems. Academics have come to call these “wicked” problems.

Understanding, coming to grips with, and addressing this class of problem all require new modes of managerial behavior. Typically these problems are being addressed by a team of cross-agency and cross-jurisdictional managers who have
differing view of the problem, its consequences, and possible solutions. Managers need to have the tools to find common ground, to create consensus, to craft a “shared mental model” (Kim, 2009) of the problem and its solutions, and to move toward common ground.

While these challenges and the ways of approaching them are new, the demands for accountability, efficiency, and strong government performance remain the same. The public seeks managerial practices that are open and accountable, that lead to solutions that make efficient use of public resource and that create outcomes that are publicly measurable.

Working over the past twenty years, we have been working with teams of government managers to develop techniques for facilitating face-to-face meetings of cross agency teams of managers, making use of computer support in the room. These techniques are designed specifically to support cross-boundary management teams who seek to address wickedly complex problems and achieve results that are accountable, efficient, and lead to enhanced performance. The published evaluations of these techniques indicate that they are effective in meeting these goals (Rouwette, 2011; Rouwette et al., 2002), but they are complicated (have many pieces that need to be coordinated), can be expensive (requiring external facilitators and modeling experts), and can be hard to mount. Putting together trained teams of facilitators and modelers who have experience in working in these decision-making environments is especially complicated. The research reported in the paper builds on over a century of experience by the author team, seeking to create structured methods to make these computer-assisted, facilitated, face-to-face meeting of public managers more efficient, accountable, and able to enhance government performance.

1.2 Related Approaches in Strategic Planning and Management Science

This research belongs to a class of related projects, all of which are designed to define more standard and easy-to-implement “best practice” for facilitated meetings of management teams. In related work, Vreede, Briggs, and Kolfschoten (2006) defined “thinklets” rather than scripts as a basic unit of behavior of facilitated group meetings, defining a somewhat different boundary for the basic unit, for example paying more detailed attention to specific and contingent behaviors by the facilitator under different kinds of group response.

In the field of software engineering, a series of scripted (and often proprietary) approaches have been developed for leading a team of managers through a structured process to define a complex technical product—often in the form of a fully functional software system. The Joint Application Design (JAD) process of MGR Consulting (2006) or the CEC’s information engineering methodology guide (Computer and Engineering Consultants, Ltd., 1991) are two examples of such structured processes.
Often structured approaches to facilitated face-to-face computer-supported meetings are supported by specific fixed meeting room requirements such as the decision laboratory at ASU (Arizona State University, ASU Decision Theater) or generalized process requirements such as those described by Schuman and Rohrbaugh (1991).

More recently, the Army Corps of Engineers has put together a model-based group planning process called “Shared Vision Planning,” combining elements of structured group process with facilitation, systems modeling, planning principles, and structured approaches to collaboration (U.S. Army Corps of Engineers, Institute for Water Resources, 2009).

While our approach shares much in common with these catalogues of best practice, we also differ in some important ways. Both JAD and Shared Vision Planning are most often aimed at the design of concrete products—tangible deliverables in terms of an information system or a piece of physical infrastructure. We are interested more in a social deliverable in terms of agreement and alignment between members of the management team. Our “outputs” are models created by the group that have the dual nature of being “micro-worlds” of the problem under study while at the same time serving as “boundary objects” to crafting shared vision moving forward (Zagonel, 2002; Carlile, 2002; Black, Carlile, and Repenning, 2004).

1.3 Research Question Guiding Our Research

This research is designed to address a linked set of questions:

- How may scripts for activities in strategic planning sessions be precisely and behaviorally described to communicate best practice and facilitate strategic planning workshop design?
- Can we create a way for facilitators to customize the design of facilitated sessions to meet the specific needs of a given situation and client set?
- Can we provide more structured rules that will allow relatively inexperienced modelers and meeting facilitators to perform at the highest professional standard without serving an extended apprenticeship with a facilitation or modeling expert?
- How might managers and strategic planners who use differing modeling approaches best blend their methods to create added value for their clients in facilitated modeling sessions?

1.4 Organization of this Paper

The rest of this paper is organized into four sections. Section 2 contains a discussion of the Scriptapedia tool, beginning with a review of the specific domain of use for this tool—group model building sessions involving system dynamics models. This section then discusses a bit more how Scriptapedia came to be and ends with a more
complete explanation of what Scriptapedia is and how it works. Section 3 centers on ScriptsMap. After describing the methods used to develop the ScriptsMap, the section goes on to describe the tool in greater depth with special emphasis on how to use the ScriptsMap to design a strategy-planning or problem-solving workshop. Finally, the appendices give additional technical information on both tools.

2.0 Scriptapedia: A Catalogue of Scripts to Support Group Model Building

Scriptapedia originated as an idea for documenting and sharing group model-building techniques for system dynamics modeling efforts based on earlier work by Andersen and Richardson (1997). We begin with a brief review of what is system dynamics group model building, followed by a discussion of how Scriptapedia came into being.

2.1 What is (System Dynamics-based) Group Model Building?

Over the past fifteen years, since the development of icon-oriented software such as i-Think, Vensim, and Powersim, Group Model Building (GMB) has emerged as one of several ways to construct policy-oriented system dynamics models working directly with client groups. Group model building is a form of group decision support that involves a group of stakeholders working with a modeling team to solve a focused problem within a complex system. The classic components of group model building include key aspects of the model-building and refinement process in public view of the client group, developing and testing scenarios and strategic options with the client group, and facilitated discussion and analysis of results emanating from the system dynamics model. These group processes make extensive use of facilitation discussions and analysis with a diversified team of group facilitators and modelers typically present in the room.

Attempts to carefully define how to work with groups as part of the model building process have been a key component of the overall GMB effort for a long time. Stenberg (1980) described approaches for working with policy reference groups before GMB came to be defined as a formal activity and Roberts (1977) stressed the importance of interactions with client teams as a means to achieving effective implementation of model results. Richmond (1997) has described a Strategic Forum as a kind of small group whose purpose is to define and analyze a dynamic and complex problem around a formal system dynamics modeling effort. Vennix (1999) presented a classic statement of the Group Model Building method for system dynamics models. Soon thereafter a special issue of the System Dynamics Review edited by Vennix et al. (1997) gave an overview of the then state-of-the-art of GMB. Eden and Ackermann (1998) have described formal procedures for using software tools such as Decision Explorer and Group Explorer to structure group processes around formal model-building activities and Howick et al. (2006) have
documented procedures and scripts for formally integrating strategic scenarios into system dynamics models while working in formal GMB sessions with client groups. More recently, Andersen et al. (2007) presented a more comprehensive review of current research in GMB using system dynamics. Finally, Richardson and Andersen (2010) have described GMB using system dynamics as a specific case of the more general field of group decision and negotiation.

A number of consistent themes have characterized recent work on GMB. Several of these themes are described in more detail below:

**Teamwork in GMB.** Richardson and Andersen (1995) first defined their approach to using teams to support GMB. That early work concentrated on more clearly defining the various roles that must interact to create a smoothly functioning group modeling team. Five distinct roles (not necessarily connected to five distinct persons in the room) include (1) the facilitator/ elicitor who leads the group discussion and keeps a constant eye on the group process in the room, (2) the modeler/ reflector, the person or team in the room constantly paying attention to how the formal simulation model is emerging from the group discussion, often providing critical model-based comments and insights to the client group, (3) a process coach who is responsible for the creation of the overall plan for the day and for designing changes to this plan “on the fly” (often the role of the process coach is mostly performed before the GMB session begins and then handled by a person in one of the other roles during the meeting), (4) the recorder who makes a real time record of all the discussions and decisions being made by the group, and (5) the gatekeeper, a member of the client team who serves as a bridge between the modeling team and the client team, often serving as a voice and support for the meeting owner, the primary sponsor of the overall activity within the client group.

**Scripts as a Basic Unit of Behavior for Designing GMB interventions.** A second theme, basing GMB practice on pre-defined sets of scripted behavior, was first described in 1997 by Andersen and Richardson. The basic idea motivating scripts as an organizing framework for GMB activities was a need to be organized about interactions with a client team to make best use of group time and to assure that the overall process moved forward in an organized fashion, ultimately culminating in useful products and insights for the client team. The group agenda for the full duration of the planned meetings was to be divided into small segments of ten or fifteen minutes each with detailed plans for what the group would be doing within each such scripted time block. Typically the meeting would start with open-ended, problem-finding activities such as stakeholder mapping or group articulation of their "Hopes and Fears" for the overall project, or the formal introduction of simulation tools via the use of small “concept models” (Ghaffarzadegan, Lyneis, and Richardson, 2011; Richardson, 2006).

Subsequent scripted activities included exercises designed to draw out reference modes by drawing graphs of variables over time or various approaches to eliciting system structure from the client group. Scripts for a second or third meeting of the
group would include ways to review progress made at previous meetings as well as
scripts designed to facilitate the client group’s experimentation with a formal
simulation model to discover policy conclusions locked within the model’s
structure. Zagonel (Zagonel and Rohrbaugh, 2008; Zagonel et al., 2004) has
provided a detailed analysis of the genesis and practice of GMB activities within this
school of work and Luna-Reyes et al. (2006) published a soup-to nuts description of
how teamwork and scripted facilitation actually played out in a specific intervention
focused on providing homeless shelters in New York State.

2.2 How Scriptapedia Came to Be

Scriptapedia is based on a Wiki-based data collection method designed to capture
expert knowledge about how such facilitated modeling sessions take place. The
Scriptapedia is intended to create an open source tool for first capturing expert
knowledge and then continuing to update and refine that knowledge. The methods
involve convening open panels of experts who use these facilitated approaches to
capture their knowledge. The approach undergirding Scriptapedia is similar to the
approach for encoding knowledge used by the widely used Wikipedia.

The original concept was for an online resource similar to Wikipedia and other
forms of digital commons with functionality to develop and share GMB scripts in a
collaborative environment. After evaluating different approaches, an initial
prototype for Scriptapedia was developed based on Joomla, an open source content
management system. While the initial results were found to be promising, technical
limitations in how Joomla limited private collaborations in developing scripts led us
to explore other platforms for Scriptapedia including Plone and Drupal based
prototypes. Again, each showed promise in some areas, but would require a more
significant and sustained effort to develop.

Meanwhile, the need to have a centralized collection of scripts for Scriptapedia led
us to create a handbook that would be maintained and published online. This
approach offered a number of advantages in the short to medium-term. First, the
team felt that having Scriptapedia available as an online resource as soon as possible
was important to stimulate the distribution, sharing, and creation of scripts. Second,
it was already becoming evident from several group model building projects that
individuals new to system dynamics and GMB could readily engage with and create
workshops using the template provided in Scriptapedia. Thus, we decided to pursue
creation of Scriptapedia as an online handbook that could easily be updated and
distributed as an intermediate solution to launching Scriptapedia.

2.3 What is a Script in Scriptapedia?

The cornerstone of standardizing and disseminating GMB practice is the script
template. Comprised of 19 separate fields, the GMB script creates a method for
thinking about and documenting the nuts and bolts of a small piece of GMB. The
GMB template has gone through multiple iterations to improve clarity and
functionality. The goal was to create a template that would be easy to understand and use across different cultures and levels of group model building expertise. By creating a standard format for documenting a script, the template increases the transparency of GMB.

Figure 1 presents the current script template. See Appendix A.2 for a complete description of each field.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>(1-2 sentence brief overview)</td>
</tr>
<tr>
<td>Script Status</td>
<td>(Choose one and delete the bullets below that do not apply)</td>
</tr>
<tr>
<td></td>
<td>• Best practice: this script has been used many times and in different settings and has consistently produced the intended outputs.</td>
</tr>
<tr>
<td></td>
<td>• Promising practice: this script has been used a few times with good results, but needs additional refinement and testing</td>
</tr>
<tr>
<td></td>
<td>• Under development: this script still needs to be refined and tested</td>
</tr>
<tr>
<td>Context</td>
<td>(When should this script be used?)</td>
</tr>
<tr>
<td>Purpose(s)</td>
<td>(Delete the bullets below that do not apply)</td>
</tr>
<tr>
<td></td>
<td>• Framing the problem</td>
</tr>
<tr>
<td></td>
<td>• Initiating mapping</td>
</tr>
<tr>
<td></td>
<td>• Eliciting variables</td>
</tr>
<tr>
<td></td>
<td>• Deciding the reference modes for the study</td>
</tr>
<tr>
<td></td>
<td>• Eliciting feedback loops</td>
</tr>
<tr>
<td></td>
<td>• Eliciting stocks</td>
</tr>
<tr>
<td></td>
<td>• __________________</td>
</tr>
<tr>
<td>Primary nature of group task</td>
<td>(Delete the bullets below that do not apply)</td>
</tr>
<tr>
<td></td>
<td>• <strong>Divergent</strong>: activity designed to produced an array of different ideas and interpretations</td>
</tr>
<tr>
<td></td>
<td>• <strong>Convergent</strong>: activity designed to clustering and categorizing ideas and interpretations.</td>
</tr>
<tr>
<td></td>
<td>• <strong>Evaluative</strong>: activity designed to rank and choose between options and idea</td>
</tr>
<tr>
<td></td>
<td>• <strong>Presentation</strong>: activity designed to educate or update participants</td>
</tr>
<tr>
<td>Time</td>
<td>Preparation time:</td>
</tr>
<tr>
<td></td>
<td>Time required to complete steps in script:</td>
</tr>
<tr>
<td></td>
<td>Follow up time:</td>
</tr>
<tr>
<td>Materials needed</td>
<td>• (e.g. markers, overhead projector, flip chart)</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>to complete script</td>
<td>•</td>
</tr>
<tr>
<td>Inputs from other scripts</td>
<td>• (e.g. behavior over time graphs, concept model, or “none” if this is a starter script)</td>
</tr>
</tbody>
</table>
| Outputs from this script, distinguish between deliverables and products | • List specific products such as BOTG, system maps, etc and how these products will be used in the context of the whole project. Deliverables are physical products such as a electronic file or hardcopy of a system map  
• Interim outputs or products of primary interest to modeler  
• Deliverables of interest to group  |
| Modeling team roles required and expertise needed                   | • (e.g. Facilitator - expert in SD)  
•  
•                                                                                                                                 |
| Who is in the room?                                                  | • (list of people who should be in the room, e.g., “gatekeeper”, “modeler”, “clients”)                                                                                                                  |
| Steps                                                               | 1. (Detailed how-to’s explaining sequence of actions and who does them)  
2.  
3.  
4.                                                                                                                                 |
| Evaluation criteria                                                 | (How do you know that the script has been successful? E.g. behavioral changes of participants, learning goals achieved)                                                                                   |
| Author(s)                                                           | (First and last name of persons who originated the script idea and content; this may or not be the person completing the script template. Also include their email and the date that this version of the script was created , e.g., “Jane Smith, smith@university.edu March 2, 2010” ) |
| History & Basis for Script                                          | (This can include previous scripts, articles, other types of small group exercises, etc. The history should provide a name and date citation, and retain the entire history of the script, not just the previous version. ) |
| Revisions                                                           | (Briefly describe what changes have been made between this version and earlier versions. Also include the date of the current revisions. )                                                                 |
| References                                                          | (List any publications or references to additional documentation using this script and cited in the history of the script. For example, if this script is based on another script that was described in peer reviewed research, then mention this under the “History” field with an author/year citation, and provide the full reference here in the references field. ) |
2.4 Handbook of Scripts

Scriptapedia is a digital commons, and its creation has evolved into multiple phases. Scriptapedia consists of a collection of scripts organized by their status (best practice, promising practice, and under development). Scriptapedia also includes a glossary of terms, resources in system dynamics, a description of the different roles on a group model building team, the script template, and examples of session agendas using the scripts. Appendix A.3 provides an overview of the table of contents of the complete Scriptapedia.


ScriptsMap provides two functions that complement Scriptapedia. First, ScriptsMap presents a knowledge base indicating how a sequence of scripts can be knitted together to create a full workshop of up to two days duration. These workshops will have an explicit focus around products being created in one script and then being re-used in one or more subsequent scripts.

A second advance of ScriptsMap is that it is a multi-method map that moves beyond simply using system dynamics as the base modeling technique. ScriptsMap originated as collaboration between Eden and Ackermann (expert in their Journey Making approach to model-based strategy development) and Richardson and Andersen (expert in system dynamics).

3.1 Methods Used to Create ScriptsMap

The ScriptsMap development, as intimated above, came out of a combination of Action Research (Eden and Huxham, 2006) and case study review (Eisenhardt, 1989). Both pairs of authors, acting independent of one another, had been extensively engaged with working with clients on policy and strategy making situations and had used these opportunities to both practically reflect upon the interventions and subsequently detect recurring patterns (as an informed case study review). These reflections provided the bedrock for the joint conversations which were augmented by the authors providing one another with research notes, a priori designs, relevant extant literature and the resultant outputs from the workshops. From these reflections emerged a range of possible combinations recognising not just the how but also some consideration of the what and why.

As part of the research effort, two interventions were created for this study that made use of a joined multi-method approach. Both of these workshops had been carefully designed in detail – providing useful insights in both the process of their creation (through the discussion emanating from the synthesis of the methods) but also offering a design for post-intervention review. A particular benefit of these
specific intervention workshops was being able to have all four of the authors present at each workshop. This provided not only a common experience set but also scope for one or more of the authors at any time to act as an intelligent observer and stand back from the demands of facilitation. Observation techniques included creating photographic records of the intervention, time-stamped process notes as well as real time reflection. The clients were also fully involved, providing comment on the designs, ‘on line’ feedback during the interventions and detailed and considered perspectives during the reviews. The post-intervention review included taking cognisance of the products of the workshops as well as observer generated material and client contributions. The review was a deliberate attempt to stand back from the detail and specificity of each workshop and begin to consider at a more abstract level the forms of integration, including activities, combinations and outcomes.

However, the aim of the ScriptsMap development process is not to produce a “final product” but rather act as a framework to support both conversations about, and designs for, workshops. It is thus a framework designed to facilitate a conversation that spans the boundaries that separate the perspectives of the different modellers’ boundary objects (Carlile, 2001; Black, Carlile, and Repenning, 2004) which while not intending to be comprehensive encourages deeper understanding and learning. The deeper understanding and learning led to the design gradually gaining stability.

3.2 What is ScriptsMap?

In order to effectively provide a framework for workshop design, ScriptsMap adopts a set of conventions that easily can be utilised to facilitate the design of any a policy making workshop. These conventions on first glance appear obvious but emerged slowly and certainly after experimenting with a range of possible conventions. The basic building block of a workshop is a “script.” Figure 1 contains a small portion of ScriptsMap shows the structure of ScriptsMap.

Scripts are activities that typically take 20-50 minutes of workshop time and have a clear beginning and end. A script is represented in ScriptsMap as a rectangle. Examples in Figure 1 include “thinking about the problem dynamically – do graphs over time” or “initial issue elicitation/gather,” or “ladder up to goals.” Each of these activities is a well-defined script in the tool kits of the facilitators who have created ScriptsMap. The scripts are written as short statements which can quickly be read and should, with reference to the available literature on the methods, be easily understood. Many, but not all of these scripts have been described in more detail in the Scriptapedia.

Following each script in the map is a product, an outcome useful to the facilitators and sometimes the client group. ScriptsMap distinguishes two kinds of products: outcomes of a script that are of serious interest to the client group are considered deliverables; they function as “take-aways” for the group. Other outcomes of
scripted activities may not be of particular lasting interest to the client group but are important stepping stones for the facilitators to use as inputs to follow-on scripts; we call these intermediate outcomes simply products. In Figure 1, “Graphs over time clustered,” the “Issue map,” “Emergent goals” are all products. “Agreed own goals system from emergent goals,” and “Agreed measures of performance” are deliverables, as they would represent important group agreements and possible points of closure for the client group. The conventions in ScriptsMap are that deliverables are represented as ovals, while products that serve merely as intermediate outcomes providing input to other scripts are represented in plain text.

Figure 1: An excerpt from ScriptsMap, showing scripts and products alternating up along three potential workshop paths to “Agreed measures of performance.” Those statements with boxes are scripts, those statements without boxes are products, and those statements with ovals are deliverables. The statements in italic represent those scripts and products ‘belonging’ to one pair (strategy), whereas those in standard font represent the other pair’s contributions (system dynamics). Where statements appear in bold, these are new, combined scripts. The ‘dotted’ arrows reflect that the statement, script or product, can be combined with other scripts and products not displayed on this excerpt. For example, and noted below, the product ‘graphics over time clustered’ feeds into two other scripts. Note that a script marked as [S] is a “starter-script” – a possible initial script with no preceding scripts.
In terms of the framework’s conventions, an analogy might help clarify the relationships between a script, a workshop design, and the *ScriptsMap framework*. Think of a script, as an individual LEGO® piece. Each piece has its own special shape and form, enabling it to be used for a number of different purposes. A workshop design is a finished LEGO construction—an artefact (design) that has been built by clicking together any number of the Lego pieces. The *ScriptsMap* framework therefore corresponds to a manual for the full box of LEGO pieces. The *ScriptsMap* framework contains general instructions for creating any number of final workshop designs (LEGO constructions) by specifying in what order particular pieces (LEGO pieces) can be linked together. Thus, for example, it is likely that there are a number of possible workshop designs (constructions) that can be built from one specific starting script.

Because both research pairs involved in the development of *ScriptsMap* have been able to map their work into a common framework, we have been able to study the raft of individual scripts and products and explore designs that integrate both bodies of work. These integrated scripts and products are differently coded (using bold) in *ScriptsMap*. These are, as far as the authors are concerned, important new ways of working in that they create a new synthesis of the two methods providing added value to clients. In Figure 1, the bold script “Select key dynamic variables” is one such integrated activity in which the authors combine their approaches. The deliverable “Agreed measures of performance” is also presented in bold text to flag it as the outcome of a script integrating multiple methods. Appendix B gives a more complete view of what the full *ScriptsMap* looks like.

### 3.3 How is *ScriptsMap* Used to Design a Workshop?

Figure 2 is a beginning design for a strategy development workshop with a hypothetical public agency interested in designing a performance measurement system. It was developed using the fragment of *ScriptsMap* presented in Figure 1. The column labeled “Products” presents a sequential list of interim products plus a final deliverable, “Agreed key performance indicators”, all of which are listed as outputs of scripts in Figure 1. The column labeled “Public Agenda” names a group activity associated with the script that produces the product in the same row.

Note that the agenda shown in Figure 2 is not the only sequence of scripts (pathways through Figure 1) that can generate the final deliverable, “Agreed key performance indicators”, indicating that the *ScriptsMap* does not provide a straightforward and unambiguous method to design a workshop. The workshop designer must bring her or his own experience coupled with knowledge of client requirements to create a workable design. While *ScriptsMap* does structure the design process, it does not eliminate the need for judgment, art, and craft.
<table>
<thead>
<tr>
<th>Time</th>
<th>Public Agenda</th>
<th>Facilitator Notes</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Initial issue elicitiation/gather</td>
<td>Starter script. Use group explorer to elicit issues</td>
<td>Issue map</td>
</tr>
<tr>
<td></td>
<td>Extract central issues</td>
<td>Analysis of map to identify issues with many in- and/or out-links</td>
<td>Most central issues</td>
</tr>
<tr>
<td></td>
<td>Consensus testing ranking exercise</td>
<td>Use ranking facility of Group Explorer</td>
<td>Refined set of key issues</td>
</tr>
<tr>
<td></td>
<td>Thinking about the problem dynamically - do graphs over time</td>
<td>Starter script but here in context of refined key issues. Have group graph and cluster plots of key variables over time</td>
<td>Graphs over time clustered</td>
</tr>
<tr>
<td></td>
<td>Select key dynamic variables</td>
<td>Activity will use refined set of key issues and graphs clustered over time</td>
<td>Agreed key performance indicators as deliverable product</td>
</tr>
</tbody>
</table>

Figure 2: Framework of a Design for a Workshop to Obtain Agreed Measures of Performance for a hypothetical public agency

## 4.0 Discussion and Implications

We have discussed two new tools that can be used by public managers and consultants to support strategy design and problem-solving workshops in facilitated and face-to-face settings with computer support in the room. We believe that this research will increase the efficiency and effectiveness of public management practice by providing:

**Tools to empower groups to address complexity.** When faced with inter-agency and cross-jurisdictional problems that require cross-boundary collaboration, public managers are relying on facilitated face-to-face meetings, often using in-the-room computer support to provide deepened analytic capabilities. By enhancing our ability to conduct such meetings, the research reported in this paper adds to the efficiency and effectiveness of public management practice.

**Tools to add consistency to and improve standards of practice.** When faced with life-threatening decisions under time and performance pressures, other professions such as airline and fighter pilots and hospital surgeons reply on a number of task-structuring heuristics such as checklists and process maps to increase the quality and consistency of professional practice. *ScriptsMap* and
Scriptapedia can similarly increase consistency and improve practice for experienced modelers, facilitators, and teams of public managers.

**Tools to assist and train novice modelers and facilitators.** Not all modelers, facilitators, and teams of public managers are experienced in using face-to-face computer-supported strategy design and problem solving workshops, and gaining experience can be expensive, time consuming, and error prone. The tools presented in this paper can decrease the time, expense and number of errors required to gain full competency by structuring the learning process.

**Faster, more analytic, and cheaper workshops.** For all the reasons cited above, these tools can make facilitated strategy workshops cheaper and easier to put on quickly while maintaining high quality analytic ability due to model-building capabilities being in the room. In addition, long-term performance is further enhanced as experienced professionals continue to share experiences, creating a collectively accumulating shared knowledge base.

**Tools to support research.** The tools that we have presented can more completely articulate and structure a view of good or even best practice. This structuring can help researchers who are trying to evaluate the effectiveness of the workshops or test the relative effectiveness of subcomponents (i.e., scripts) between workshop designs.

**Toward multi-method group decision support.** Finally, we believe there are multiple untapped benefits to be gained when it becomes easier to create workshops that blend the strengths of two or more modeling approaches. This work, especially the ScriptsMap, helps to create such blended workshops by laying out clearly how multiple approaches can be combined and by providing structured tools to help researchers and practitioners skilled in one modeling or facilitation tradition learn to work in another complementary tradition.

5.0 **References**


Arizona State University. ASU Decision Theater. (nd). A state-of-the-art visualization and research epicenter for decision-making in uncertain times; at [www.decisiontheater.org](http://www.decisiontheater.org); accessed May 18, 2011.


MGR Consulting. 2006. Newsletter. 3(4); at [www.mgrconsulting.com](http://www.mgrconsulting.com).


Appendix A.1: Definitions of Fields in the Script Template

Name of Script. The name of the script should clearly indicate the script’s content. Frequently scripts are named after the output they produce or the type of activity they describe. For example, the ‘Hopes and Fears Script’ outlines how to conduct the ‘Hopes and Fears’ exercise. As the number of scripts increases, proper naming will become more important.

Description. This field provides a brief synopsis of the activity and what the script is meant to accomplish. It serves as an abstract for the script.

Script status. Since script creation is often a collaborative and iterative process, this field recognizes the different stages of script development as determined by the Scriptapedia editorial board. Best Practice scripts have been used multiple times and in multiple settings and are generally considered effective. Promising Practice scripts have been tried a few times and in a more limited range of settings. The authors are still improving the process and may make further edits to the script. Under Development scripts indicate initial ideas for a GMB activity or a script that has been tried only once or twice. Such scripts should not be tried by others yet.

Context. The context field specifies where in the GMB process this particular script fits. Since GMB projects are comprised of multiple scripts, the context explains whether the script should be used at the very beginning, after a particular script, to wrap a project up, etc.

Purpose. A script’s purpose distills its main goal into a few words. Multiple scripts may have the same purpose, essentially describing different ways to accomplish or build towards the same goal. The purpose frequently depends on the script’s context. A script may have more than one purpose; however, if the script has too many purposes, this could be an indication that it needs to be divided into separate scripts. Examples of possible script purposes are: Framing the problem; Initiating mapping; Eliciting variables; and Deciding the reference modes for the study.

Primary Nature of Group Task. This field comes from research on group tasks. Depending on the context and purpose of a script, the modeling team will engage participants in a different type of group task. Divergent activities produce an array of different ideas and interpretations (e.g., Behavior Over Time Graph Script). Convergent activities guide participants through clustering and categorizing ideas and interpretations (e.g., __). In evaluative activities, participants rank and choose between options and ideas (e.g., __). Lastly, there are times when the modeling team must explain system dynamics concepts or update the group on products and deliverables; such activities fall into the presentation category. A script may include different types of group tasks; however, if the script appears to contain significant
elements of both convergent, divergent, and evaluative group tasks, this may be an indication that the script needs to be divided into separate scripts.

**Time.** This field describes how long the script should take to complete. The field is divided into preparation time, execution time, and follow-up time.

**Materials Needed to Complete Script.** This list of supplies should be comprehensive and include everything that the facilitators or participants would need to complete the script, e.g., colored markers, flipcharts, handouts, etc.

**Inputs from other Scripts.** Scripts are meant to build upon each other so that the end goal of the GMB project can be attained. Thus, inputs represent the products or outputs of previously executed scripts or offline work by facilitators and modelers that are needed before the current script can be implemented. It should be noted that some scripts may not require any inputs, particularly if it is very early in the GMB process.

**Outputs from this Script.** Successfully implemented scripts produce outputs, which are divided into two categories. Products are ___. Deliverables are ___. An output may be of interest solely to the modeler or it may be something that is shared with the entire group. In addition to listing the script’s outputs, this field should also include a description of how each output is relevant to the overall project and how it will be used in the future.

**Modeling team roles required and expertise needed.** When filling in this field, authors should refer to the definitions of GMB roles included in Scriptapedia. The system dynamic expertise required for each role can vary depending on the difficulty of the activities within the script.

**Who is in the room?** This field also specifies which participants need to be present (e.g., is it the entire group or a subset of stakeholders?)

**Steps.** This field describes in detail each step of the activity and specifies which role is doing what. For example, “Facilitator sets up task by asking participants to write short descriptions of resources available within the system.” Steps should be thorough so that anyone can follow them without needing additional explanation. If it is important to use specific language during the facilitation it should be included in the steps.

**Evaluation criteria.** This field should outline indicators of a successful script implementation. That is, how would someone using this script for the first time know if they have done the script correctly? The evaluation criteria are often linked to the intended outputs and can also include behavioral changes in participants or the attainment of certain learning objectives.
**Author(s).** Authors are the individuals who created the script, not the person filling in the script template, though they may be the same. This field gives credit to those individuals who came up with the ideas and activities captured in the script. Authors should be documented with their first and last name, their email, and the date that this script was first created, *e.g.*, “Jane Smith, smith@university.edu March 2, 2010”. In some cases, a script may have been created and used for some time before it is finally documented in Scriptapedia; in such cases, the date should reflect when the script was first created, not when it was entered into the template.

**History & Basis for Script.** GMB practitioners often draw upon previous scripts, articles, other types of small group exercises, etc. when developing a new script. This field should capture this development process, providing a name and date citation for influential resources (complete citations should be entered in the *References* field below). As a script is revised or adapted, it is important to retain the entire history of the script, not just the previous version.

**Revisions.** This field is used to keep track of the iterative process of script writing. It should describe any major differences between the current script and the original script, as well as the date the current revisions were made. If significant enough changes have been made between the original and the current version, then it may qualify as an entirely new script.

**References.** This field gives the full citation for any publications or resources referenced in the script, particularly in the *History* field. For example, if a script is based on another script that was described in peer reviewed research, then mention this under the *History* field with an author and year citation; then provide the full reference in this field.
## Appendix A.2: Sample Script for “Hopes and Fears” Exercise

### Hopes and Fears

| Description: | Process elicits hopes and fears around group model building |
| Context: | At the beginning of a group model building project. |
| Primary nature of group task: | Divergent |
| Time: | Prep time: none  
Time during session: 30 minutes  
Follow-up time: none |
| Materials: | • Two different colors of office paper (8.5 x 11) with enough for multiple sheets for each participant  
• Thick markers  
• Blue "painters" masking tape |
| Inputs: | None |
| Outputs from this script: | List of participants hopes and fears |
| Roles: | Community facilitator with good group facilitation skills and knowledge of the local language and topic. |
| People in the room: | All participants and members of the core modeling team |
| Steps: | 1. Participants are given several sheets of paper in each color. The community facilitator explains that they will be writing their hopes and fears for the project, and then sharing them with the group. 
2. The community facilitator states which color represents hopes and which represents fears. 
3. In a round-robin fashion, each participant then reads one fear and one hope. The community facilitator takes each hope and fear that the participant has read and posts it on the wall. After each participant has had a chance to share once, the community facilitator goes around the room until everyone has shared all of their hopes and fears. 
4. The community facilitator then tries to identify some of the themes of the hopes and fears. Recorders write down the hopes and fears. |
| Evaluation criteria: | Participants have shared both their hopes and fears for the upcoming project; participants understand the overall themes of the hopes and fears. |
| Authors: | George P. Richardson and David F. Andersen |
| History: | None |
| Revisions: | None |
Appendix A.3: Table of Contents for Scriptapedia

Scripts

Best practices

Promising practices

Under development

Appendix A: Glossary

Appendix B: Additional Readings in System Dynamics

Appendix C: System Dynamics Modeling Software and Online Resources

Appendix D: Roles in Group Model Building

Appendix E: Script Template
Appendix B: A More Complete View of the Whole ScriptsMap