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SIMULATION VISUALIZATION ISSUES FOR USERS AND CUSTOMERS

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ABSTRACT

The use of fancy graphics can have a mesmerizing effect on simulation novices and, as such, may blind the user to the actual capabilities and valid usages. The visualization of simulations are distinct from other computer graphic media because they are a representation of an abstract of reality (the model) as opposed to a representation of reality. This extended abstract provides examples of visualization usages that could have a potential negative impact on users' understanding of the simulation. The associated poster will continue on to discuss some of the possible solutions to the issues of poor visual rhetorical choices and provides an aid for non-experts in the form of a "cheat sheet" designed to allow a non-expert user insight into some visualization problems and tricks. The focus on non-experts stems from these authors' belief that simulation users, and not the experts, will shape the ultimate future of Modeling and Simulation.

1 INTRODUCTION

Mentioning the words "computer simulation" to a lay-person usually conjures up images of pixelated entities moving around on a monitor's screen. The visualizations are often the only part of a simulation that decision-makers see, and expectations of visual complexity are high due to rapid advances in graphic generation as seen in the computer-game and film industries. Since visualization does not directly affect the simulation or its underlying model, it is often seen as a secondary consideration; however, what is presented in the visualization can affect the decision-maker's understanding of the system and ultimately, the decisions they make. Thus understanding how a visualization affects a decision-maker is vital to ensuring that simulation remains a used and helpful tool for future generations.

The abstract outlines some of the current issues encountered in Modeling and Simulation (M&S) visualization. It is suggested that non-expert decision makers make use of a cheat-sheet to help them spot the different usages (and misusages) of visualization in M&S products.

2 CHEAT SHEET

The function of the cheat sheet is to encourage non-experts to consider how the visualization operates and if it fulfills their expectations and look for ways in which it might be problematic. It targets some of the common visualization problems. Fundamentally, what the chart asks users to do is to make certain that the affordances of the object (what it visually suggests that it *can* do) align with what it in fact does do (Gibson 1986, Norman 2004). This is the most common problem with visualizations that utilize fancy graphics. Additionally, the cheat sheet asks if common cultural expectations about things like color (e.g. blue means water) align with the user expectations or if not are deviations adequately explained (Spinuzzi 2001). These basic functions should allow a non-expert to determine what, if any, mismatches occurring the visualization between what is visually represented and what the simulation can actually do. A cheat-sheet example is shown in Figure **1**.

Figure 1: An example of a graphical cheat-sheet

Figure **1** shows a graphical version of the cheat-sheet includes graphical examples of visualization consideration that users should look out for. However, by including graphical example, we might end up negatively influencing the user about the simulation in unintended ways. For examples, consider the case where lower resolutions graphics are used in the simulation than those presented in this cheat-sheet. The user might reject the simulation as it does not seem meet the "standard" presented in the cheat-sheet.

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