

## MEMORANDUM

TO: Software Developers of SimCity 2000  
FROM: Technical Communication Specialists (TCS)  
DATE: February 20, 2001  
RE: Recommended Improvements to SimCity 2000 User Interface and Documentation

### Foreword

SimCity 2000 is an innovative simulation game that challenges a player to serve as a city planner and mayor who builds a city and keeps it growing. The game's educational, sociological, and economic components are likely to appeal to a broad audience, including people not usually attracted to computer games. The key to increasing revenues is to create game loyalty in new users. This involves engaging new users quickly and sustaining their long-term interest in SimCity 2000.

At the request of Software Developers, our team of Technical Communication Specialists (TCS) has been called in to evaluate SimCity 2000's existing Graphical User Interface (GUI) and documentation for usability problems that might keep new players from becoming loyal players. The purpose of this report is to present the usability issues we identified in the product and to offer solutions that can eliminate or ease these problems with improvements to the interface and documentation. This report will also discuss the best avenues of approach for documentation, suggest what media should be used (print or online), and make recommendations about incorporating various types of documentation resources in future versions of the product.

### Summary

To assess what a new user's experience might be the TCS team played SimCity 2000 first without and subsequently with documentation. We found that the GUI and existing support and documentation do not help the novice player learn the basic steps necessary for building a city. We concluded that the game's interface and documentation need upgrading to provide clear, concise, and basic information so the new user can successfully start a city and keep it growing.

We played the game in two sessions. In the first session we tried, as many users do, to play without documentation. In our second attempt, we used *SimCity 2000, The Ultimate City Simulator User's Manual* to confirm how a user might go about finding additional help. We catalogued both hindrances and breakthroughs in building our simple SimCities. Then we compiled our raw impressions (See attached list), analyzed the usability issues, and made recommendations for GUI and documentation changes.

A good interface communicates itself to the user intuitively. In the current version of SimCity 2000, however, the game's visual interface, especially the toolbar, suffers from clutter and a lack of clarity and direction. When the complex modeling underlying the game results in a complicated user interface, we expect that the documentation will compensate to reduce the user's confusion. The documentation's goal is to enable players to successfully start a city and keep it growing, thus making the first and early experiences with the game satisfying and pleasurable. Our joint experience and written observations show that the existing "reading-to-learn" documentation falls short of this objective.

Our focus in this report is to recommend solutions to the usability and support problems associated with the SimCity toolbar. We evaluated it according to several key criteria: Visual Clarity, Informative Feedback, Explicitness, and Quality of Help. To address the ease-of-use issues we identified, we propose the following upgrades to the existing documentation package using both print and online media:

- A printed **Quick Start Guide** that includes a game overview and tutorials.
- A printed **Toolbar Reference Card** that teaches the player how to use each toolbar icon.

- A **PDF User's Manual** that resides online and can be printed by the player. It will provide the conceptual information that the current print manual contains in a more reading-to-do format.
- **Online/Context Sensitive Help** where the player can receive helpful, relevant information by pointing to an area of the screen.
- **URL** link to the SimCity web site that offers dynamic, up-to-date help, access to a users' forum, FAQ (Frequently Asked Questions) section, a knowledge database, and upgrade information.

By providing SimCity 2000 customers with an effective interface and appropriate documentation, the company is likely to gain financial benefits such as higher sales, greater acceptance by users, lower support costs, and reduced need for revisions or modifications to the product after release.

## Discussion

### Usability Issues in SimCity 2000

Ease of use and a minimum comfort level are essential for any novice user of a software program. Users should be able to look at the screen as the program loads and not feel intimidated or confused by what they see. This level of comfort and ease of use requires a clear graphical interface with easily interpretable toolbars and menus.

After using SimCity 2000 the TCS team noticed several problems involving the visual nature of the interface. For the purposes of this report, we are concentrating our comments and suggestions on SimCity's toolbar. Most of the usability issues inherent in the game are found in the toolbar itself. Addressing these issues and offering solutions to them can vastly improve the game, both from an aesthetic and a usability viewpoint. We analyzed toolbar usability issues according to the following categories:

- Visual Clarity
- Informative Feedback
- Explicitness
- Quality of Help

#### Visual Clarity of the Toolbar

The toolbar is one of the most important elements in the SimCity interface. It contains most of the functionality necessary for building a city and ensuring that a population inhabits it and prospers within its limits. Inherent in the toolbar are several visual problems that impede novice users from understanding its functions.

- **Clutter** – The toolbar is very cluttered with little organization or methodology. The icons are squeezed together very tightly and organized poorly making it difficult to decipher each icon and determine its purpose.
- **Lack of organization and confusion** – The lack of organization and emphasis according to function and the tight clustering of the icons make them difficult to choose and nearly impossible to use effectively.
- **Size and picture quality** – Many of the icons are small and the graphics used to describe their function are not intuitive and, in some cases, crude. This results in serious confusion for the user that delays progress through the game.

For example: The lightning bolt (power lines and power plant) icon was initially confusing. Because of the presence of the Disasters option on the menu bar, some of us thought that the lightning bolt symbolized the disasters that could be visited upon the city.

In addition, the zoning icons (residential, commercial, and industrial) were confusing because the graphics used to represent them were unclear. It was difficult to decipher which icon represented which zone because of the similarity of the images.

Visual Clarity issues provoke the following questions:

1. What do the toolbar icons represent?
2. How are they used and how do they figure into the creation of a city?

A printed reference card would answer these questions by showing each icon on the toolbar with an explanation of what the icon is and how to use it to build a city.

### **Informative Feedback of the Toolbar**

The toolbar is severely lacking in informative feedback. What little informative feedback there is, is not always helpful to the user. As you are using the software, informative feedback should be guiding you to the next step or giving you hints about the steps required in a procedure. SimCity's informative feedback presents itself at random, without any apparent pattern or reasoning. This further contributes to the confusion experienced by the user. The following list shows examples of these occurrences:

- Small windows containing hints or other information displayed when buttons were clicked on the toolbar, but the information presented was vague and less than helpful.  
Example: A message about a building a power plant kept appearing, yet it provided no information about how to build the power plant or where to place it.
- Clicking the “?” icon in the toolbar and running the mouse over the icons resulted in a help hint about the tool. The font used in the help box is blurry and hard to read. The feedback is limited, generally giving only a brief description of the icon without also giving any hints about how to use the tool effectively.

Informative Feedback provoke the following questions:

1. How can the pop-up hint windows be improved so they help users perform the tasks necessary for creating a city?
2. What is the best method for conveying important procedural and reference information to users as they view the toolbar and the screen?

The solution to these questions could come in the form of a context sensitive help system that provides important definitions and procedural tips for each icon and button on the screen.

### **Explicitness of the Toolbar**

Explicitness refers to how clearly the graphical interface and documentation define the overall purpose of the game. Specifically, this category addresses the toolbar's role as it pertains to these issues. When users begin the game, the first thing they see is the toolbar. Therefore, there should be some kind of overview of the toolbar that highlights the most important icons on the toolbar and the steps involved in using those icons to build the city.

The specific issues we discovered include:

- No sense of the overall structure of the game.
- No sense of the goal (except the vague idea to build a city).
- No idea of the parameters that a city must include.
- No game plan.
- None of the icons presented any guidance as to what they were for or how to use them.
- No clear sense of the starting point or sequence of tasks to get a city to function.

Explicitness provoke the following questions:

1. What is the best way to convey the overall purpose of the game?
2. How can the necessary steps be most accurately conveyed to the user?
3. What is the best way to explain each icon, its purpose, and its part in the sequence of steps necessary for building a city?

A **Quick Start Guide** could address these questions. It would provide an overview of the game, a list of the steps necessary for building a city, and detailed procedure for each step.

### **Quality of Help for the Toolbar**

This category addresses the usefulness of the help system that exists for the toolbar. We considered whether each icon is defined accurately and how each icon can be used to reach the goal of creating a functioning city. The most

obvious issue related to this category is a lack of useful online or print-based help explaining the usage of the various icons on the toolbar.

The specific examples we discovered include:

- Running the mouse over the icons and clicking the “?” icon in the toolbar resulted in a help hint about the tool. The font used in the help box was blurry and hard to read. The feedback was limited, generally giving only a brief description of the icon without giving any hints about how to use the icon effectively.
- The pull down menus, accessible by clicking on an icon and holding it for a few seconds, did not reveal any help or tutorials about how to use help.
- The help that was available, by holding the Shift key while clicking on an icon, was very general and gave no hints about how to use the icon or how important a given icon was in relation to other icons.

Quality of Help issues provoke the following question:

1. What are the most effective media for help based on SimCity’s interface and purpose?

Solutions could come in the form of :

- Context sensitive online help that displays tips, definitions, and procedures for each icon.
- A URL link to the SimCity web site, that contains discussion forums, FAQ’s, and the full user guide to SimCity.2000 in PDF format.
- A print-based **Quick Start Guide**.

## **Discussion of Documentation Medium and Packaging Recommendations**

The on-line help features and printed documentation currently bundled with SimCity 2000 are not helpful to the novice user who wants to learn the basics of the game quickly. TCS’s primary goal is to produce clear, concise, easily accessible documentation that illuminates the initial steps required to start a city and keep it growing. To accomplish this goal, we favor a minimalist approach to documentation that empowers the player by providing just enough information to stay engaged with the game. TCS believes that if players experience early success they will feel more comfortable to explore all the features, options and game modes of this sophisticated, simulation game.

Our second goal is to keep the users satisfied. As users become more experienced they require more in-depth information about game. TCS recommends that users access this conceptual help through features on a SimCity web site.

Based on our review of the SimCity 2000 software and identification of usability issues we generated a series of questions about how to improve the functionality of the toolbar. The answers or solutions to the following questions informed the recommendations that follow for improving SimCity 2000’s interface and documentation for the novice user.

1. What do the icons represent?
2. How are they used and what roles do they play in the creation of a city?
3. What will improve the pop-up hint windows so that they help users perform the necessary tasks for creating a city?
4. What is the best method for conveying important procedural and reference information to users as they view the toolbar and the screen?
5. What is the best way to convey the overall purpose of the game?
6. What is the clearest way to convey the necessary procedural steps to users?
7. What is the best way to explain each icon, its purpose, and its part in the sequence of steps necessary for building a city?
8. Based on SimCity’s interface and purpose what media would be the most effective for delivering help to the user?

### **Documentation Medium (Print or Online)**

TCS proposes that the most effective way to bundle the information that addresses the needs of the broadest audience is through limited print documentation and substantial online support. The dynamic and interactive online

support includes both context-sensitive help windows built into the software and access to a SimCity web site with more extensive information.

## Print Documentation

The print documentation will consist of the following:

- A **Quick Start Guide** that defines what a functioning city is, articulates the game's objective, and outlines the sequence of the procedures needed to build a successful city where Sims come to live. It is here that the documentation should articulate that, at its most elemental, a SimCity must contain:
  - a residential zone for the Sims to live in
  - an industrial zone for the Sims to work in
  - a commercial zone for the Sims to shop and conduct business in
  - a power plant for a source of power
  - a series of power lines to get power to the zones
  - a series of roads for Sims to travel between work, home and shops

The guide's purpose is to minimize the confusing visual aspects of the initial user experience and to focus the user's strategy of action. A print document is easier and more efficient in providing an overview of the game. It neither diverts the user from the main city view nor contributes to more screen clutter. The guide also incorporates the tutorials contained in the current user's manual. The guide also presents additional scenarios, such as disasters, and refers users to the SimCity web site and online PDF manual for more detail.
- The **Toolbar Reference Card** contains a diagram of the toolbar with callout boxes containing the definition and usage of each icon. It provides the necessary orientation to the game's complicated toolbar. In addition, a series of screen shots provide the user a snapshot of the overall visual interface – first with bare terrain and finally with an operating SimCity. Again, online clutter is reduced and the user can stay focused on the game itself.

TCS cautions against information overload. Novice users cannot immediately comprehend the many advanced features and options available in this sophisticated simulation. While we want all users to experience a level of success, we do not want to eliminate the fun of discovery. More experienced gamers will likely want the challenge of figuring things out for themselves. TCS adheres to the adage “a guide by the side, not a sage on the stage.” This user-centered approach aims to satisfy all knowledge levels, while remaining faithful to SimCity's basic principle of open-ended play with unlimited configurations of cities.

## Online Documentation

The industry trend for software documentation is toward dynamic, interactive online help and support that encourages users to access information on-demand. In supporting the idea of a “reading-to-do” approach, in which users trigger the information they need in the moment, TCS recommends the following online documentation:

- **Online/Context Sensitive Help** that allows the user to click on a part of the screen or on an icon and receive a definition of the area or a tip on how to perform the functions listed under the icon.
- A URL link to the SimCity web site that offers the user more dynamic and interactive online support in keeping with the latest industry trends. The web site would contain:
  - A **PDF User's Manual**, that is a source for more conceptual help and can be downloaded and printed if desired. This conceptual help allows the more experienced user to begin making educated guesses about planning, building and governing the city. Nonetheless, a reading-to-do approach must extend to this medium as well. The user is motivated to “do” and the manual should contribute to this momentum. Recommendations for redesigning the manual include: (1) replacing the table of contents with a thematic outline, (2) creating a comprehensive index, (3) breaking down chapters into smaller chunks so important information is more accessible, and (4) emphasizing headings and sections so they are more prominent. A search feature on the web site will allow the user to quickly locate the sought-after information. The PDF manual is designed with print standards and specifications, and remains available in print design because

users continue to want a hard copy of the software's documentation. TCS recommends that a hard copy of this PDF manual be designed as an after-market software reference guide. By no longer printing the manual, Software Developers will reduce updating, production, and shipping costs.

- Additional support features that include a gamers' discussion forum, a FAQ (Frequently Asked Questions) section, access to a knowledge database, and other tips and "cheats." The SimCity URL would be prominently displayed on all documentation: the online help, the software CD, the Quick Start Guide and the Toolbar Reference Card. With the ability to toggle between the game and the web site, users can learn the latest tips and keep informed about software upgrades, while playing the game.

## Packaging Recommendations

While TCS acknowledges the industry trend toward "no printed documentation," we nonetheless recommend that the most effective packaging solution would include both print and online elements:

- A printed **Quick Start Guide** and **Toolbar Reference Card** should be bundled with the software to orient the novice player. This small printed booklet would help the user both play the game and access help simultaneously. This documentation is more task-oriented and offers procedures to follow a specific sequence of steps to building a basic city.
- The online help should be packaged within the software so users have access to the online help as soon as they load the software. In addition to the resident online help, there should be a prominent URL link to SimCity's web site within the software and all documentation.

## Implementation Strategy

TCS recommends the following product changes for the next quarter:

- The revised SimCity 2000 software should contain context-sensitive help and the printed **Quick Start Guide** and **Toolbar Reference Card**.
- The existing printed user's manual should be reworked and posted as a PDF file on the SimCity web site. It is recommended that this online trend continue in future versions of SimCity and that all documentation encourage users to link to the SimCity web site for more resources.

Some suggestions for further improvements follow:

- Improvements to the visual interface including more clearly drawn toolbar icons, increased space between icons, and grouping of icons by theme and function.
- The creation of a new help icon called "City Planning Office" where users can pose technical planning questions to a panel of experts or advisors such as a city planner, budget analyst or civil engineer.
- Animated 'So Now You Are the Mayor' movie with an overview of the user's role in the game.
- Animated, multi-skill level tutorials within the online help
- Newspaper feature enhancements that provide context sensitive help based on what is happening in the user's city at that moment.

## Conclusion

TCS believes that good game design is not just about an "idea" but also about effective implementation of the idea. By providing users of SimCity 2000 some measure of control over how to play the game, the game's replay value increases. Novice users will want/need some instruction on how to begin. Over time, as users become more adept at manipulating the tools, they are apt to explore other features of the game. By meeting all users' needs on-demand, there is the potential of building a loyal fan base that will buy into the brand franchise created by SimCity. By providing SimCity 2000 customers with an effective user-centered interface and documentation, the developers of SimCity 2000 may gain financial benefits such as increased sales, improved acceptance by users, reduced support costs, and reduced need for revisions or modifications to the product after release.

## Attachment: Compiled Raw List of Usability Problems

### Visual Clarity

Overall, there are two main problems with the visual aspects of SimCity:

- Clutter and aesthetically unpleasant screens
- Confusing Icons

#### Clutter

- Problems with the map (getting a good look at it, gauging the scale/size of it).
- Problems with the way the map looks [what is this “diagram” which looks like land with some trees and water built with little squares. The boxes, which in the manual are called tiles and that each represent  $x \times x$  ], are aesthetically unappealing. Are they ‘building blocks’ (Lego blocks?)]
- Problems with the amount of data/information on the screen and no indication where to begin or how it supports or relates to other information.
- Issues with the design of the screens.
- No emphasis or clarity.
- Where do I begin
- No place to focus.
- Too much clutter.
- Issues with zooming into the screen. Zoom tool did not zoom in close enough to be effective.
- Cluttered toolbar

#### Confusing Icons

- Icons were hard to decipher. Some seemed obvious e.g. trees, roads, water lines, power lines etc., but others were obscure.
- There is no indication on how to use the icons unless you know about the Help feature (holding the Shift key down as you click on the field).
- Examples include:
  - The lightning bolt (power lines and power plant) initially confused me because I saw the Disasters option on the menu bar. I figured the lightning bolt symbolized the disasters you could visit on the city.
  - The zoning icons (residential, commercial, and industrial) were confusing because the graphics used to represent them weren’t clear.
- In general, the toolbar was pretty difficult to decipher and navigate through.
- Buttons are rather small and graphics are crude and chunky.
- The toolbar icons aren’t well organized. Separation of map elements (trees, roads) vs. reporting elements somewhat clear. Why can't this be separated out into sidebars that can be hidden or minimized until you need it?
- Tool bar does not have an obvious flow; one icon's function does not necessarily lend itself to making sense of what the next icon's function.

### Informative Feedback

The main issue seems to revolve around the following:

- Windows appearing out of nowhere (i.e. budget window), with no indication of how the window is supposed to help you:
- Smaller windows pop up when I clicked on some buttons but they were never helpful, no relevant info. How do I get started?
- Budget window keeps appearing:
  - Lots of info but how do you access it and use it?
  - Doesn’t tell me any details about how my money had been spent. (i.e. cost of power plant, cost of laying water pipes, etc.)
  - Why does the cursor change to a face of person who is tipping his hat?
- A resolution error window pops up in the middle of the screen when the game is first started. It blocks the selection list for either starting a new city or loading a saved one and stays on the screen for several seconds.

- Small hint windows keep popping up:
  - Periodically, other windows would open with newspaper articles and town official's comments, none of which made any sense in context. For example, (power plant, police \$2, water shortage). These boxes have a strange icon at the end of the text – looks like a snowflake. But I click and click and nothing happens.
  - Random message boxes appear – why and what do I do about them?
  - The message about a power plant keeps appearing. It took me awhile to figure out that I needed to build a power plant in order to go any further. But I couldn't figure out how to build one.

## Explicitness

The problems included in this section revolve around the following:

- Lack of an overview or big picture of the game
- Lack of a sequence of necessary steps to successfully build a city.
- Lack of help or help doesn't explain in enough detail

### Lack of Overview

- No overview of the game
- No "context," some sort of framework needed in which to build the city.
- Had no sense of the overall structure of the game, no sense of the goal (except the vague sense that I was to build a city), no idea of the parameters of what a city needed to include, no game plan at all. None of the menus or icons seemed to present any guidance
- The language was not clear. The intent was not clear. The subject was not clear.
- Lack of fundamental pieces of information. What is a city? Set expectations at the beginning.

### Lack of Sequence/Steps

- What is the "sequence" of tasks to get a city to function? What is the starting point?
- Once you've got a city going, how do you maintain it? How do you get it to thrive?
- How do you keep the Sims happy once they move in, so they don't leave?
  - Example: After setting up the power, water, and the zones, Sims began to come and build houses, office buildings and factories. However, after a while, the Sims would leave with no indication as to why they were leaving.

### Lack Of Help Or Useful Help

- Examining the pull down menus does not review any help or tutorial.
- What is a good ration for the zones once you create them? Which do you build first? For example, are you supposed to have 20% residential, 50% industrial, and 30% commercial? There is no indication how much of each type of zone you should build. So I ended up having too much residential and not enough industrial or commercial.
- I finally notice the "?" in the tool box and using the mouse can hover over the icons and get a brief message about the tool. The help box is not visually very clear – the type/font is blurry. The feedback is limited (okay this is a "such and such" but how do I use it to construct my city?)
- Smaller windows pop up when I clicked on some buttons but they were never helpful, no relevant info. How do I get started?
- All the text was same font in the content blocks made it hard to read.
- Another problem I had stemmed from trying to build the power plant. I had to get help from Terry in order to figure out that I had to click on the power icon and hold it until the selection boxes displayed. Then I could select the power plant button and build the power plant.
- I didn't think to try out the "help" icon, in some measure because it didn't stand out visually. When I finally did (in my second session), it shed no light on the process as a whole, but offered brief descriptions of icons.
- I was confused by the RCI graph. Supposedly it shows which zones are over- and underbuilt. According to the graph, it implied that I had a lack of industrial zone and enough residential, when in fact, I had plenty of industrial and no residential at all.
- Info. provided wasn't related to what I was looking for...

- The so-called charts that were supposed to help me keep track of zoning percentages and population density were all but indecipherable to me. Every time I called up one of these charts, the information I saw made no sense to me. Finally, I just gave up looking at these things because they frustrated me so much.