

# **Health Advisor**

## An Online Game for Managing Healthcare Delivery

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The healthcare system in the U.S. is clearly complex with many stakeholders operating quasi-independently to serve competing interests and constituencies<sup>1</sup>. Consequently, systemic changes are difficult to implement and evaluate. Healthcare innovations may succeed or fail based on reactions of this diverse set of agents. Piecemeal investments or reforms to improve healthcare have seldom affected the overall enterprise. A broader set of ideas and initiatives are needed to affect sustainable, valuable change.

### **Health Advisor**

The Tennenbaum Institute is developing, with partial support from IBM, an online game for managing healthcare delivery – **Health Advisor**. Each player manages a set of clients through the healthcare system with a goal of maximizing the value of outcomes – the average health state of his or her clients divided by the costs of achieving this state. This goal is pursued by talking with agent-based clients about their health state, accessing information of the performance and costs of alternative providers, assigning clients to providers, and monitoring results.



### Online Entry to **Health Advisor**

As with most games, **Health Advisor** players compete to achieve the highest score. They can employ various strategies for managing the progression of patients' health states from normal to symptomatic to chronic to acute, thereby achieving either a less-threatening state, recovery, or death. They can inform these strategies by accessing a wide range of patient and provider information.

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<sup>1</sup> Rouse, W.B. (2000). Managing complexity: Disease control as a complex adaptive system. *Information • Knowledge • Systems Management*, 2 (2), 143-165.

## Research Objectives

The primary objective of the *Health Advisor* is to support research focused on assessing the impact of information on healthcare delivery strategies and, consequently, health states and costs. A secondary objective is focused on potential applications in education, ranging from health benefit functions in enterprises to student education in medical, nursing, public health, and business schools.

The targeted audience is quite broad. Our near-term goal is to pilot test the game with professionals in medicine, nursing, and administration. This is, in part, intended to validate our models and databases of disease states, state-dependent symptoms, and alternative courses of treatment. We also value the insights gained from such pilot studies relative to making the game interesting.

Our longer-term goal is to create a game that is compelling to a broad cross-section of society, particularly those attracted to “serious” games. Our research paradigm is premised on the notion that a large number of people addressing a problem is likely to result in a handful of novel and important ideas for improving healthcare delivery. To this end, the game is designed to capture players’ strategies and assess the performance of these strategies.

## Game Development

*Health Advisor* is being developed using the organizational simulation architecture shown below<sup>2</sup>.

Facilitation, e.g., Training, Advising, Guiding
User Interface, e.g., Large Screens, Voice, Gestures
Organizational Story, e.g., Aging Population
Characters, e.g., Patients, Doctors, Vendors
World Model, e.g., Hospital, City, Economy
Distributed Simulation Software
Hardware, e.g., Computers, Networks

## Architecture of *Health Advisor*

This architecture is intended to provide the flexibility and scalability to enable evolution of *Health Advisor* to include multiple types of players, including providers of information services, insurance, and marketing services.

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<sup>2</sup> Rouse, W.B., & Boff, K.R. (Eds.). (2005). Organizational simulation: From modeling and simulation to games and entertainment. New York: Wiley.