

Disaster Dynamics: Hurricane Landfall

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ORGANIZATIONAL GOALS

ISSE Research Goals

Integrate human-environment interactions research with atmospheric and earth system dynamics research

Develop useable science products for education and decision-making

Develop conceptual frameworks for improved science-society interactions

Disaster Dynamics

Transform descriptive case studies into interactive learning tools for undergraduate and professional education

Teach concepts of complexity, resilience, and adaptation

Contribute to the design of hazard resistant and resilient communities

Target Audience

Undergraduates

Distance Education Students

Future Emergency Managers

Urban Planners

Lessons Taught

Systems thinking and complex systems

Human-environment interactions

Negotiation and collaboration

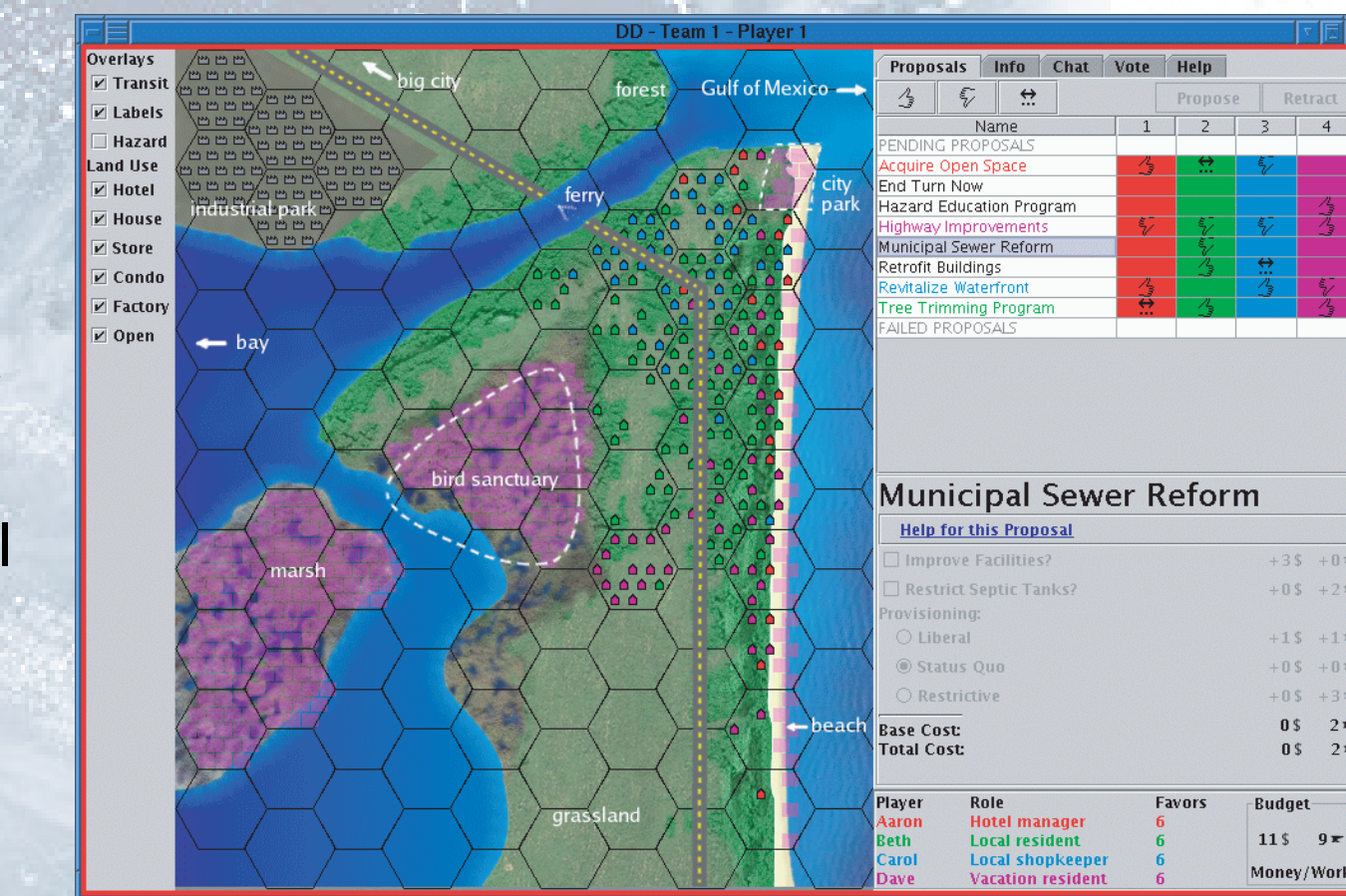
Decision-making under uncertainty (DMUU)

Importance of disaster recovery and the big/long picture

THE GAME

The Hurricane Landfall game is a networked negotiation and strategy game. Four players take on roles representing different interests in a small town.

The game takes place in the fictional town of Disaster Landing, a small town on a barrier island subject to hurricanes and other natural hazards.

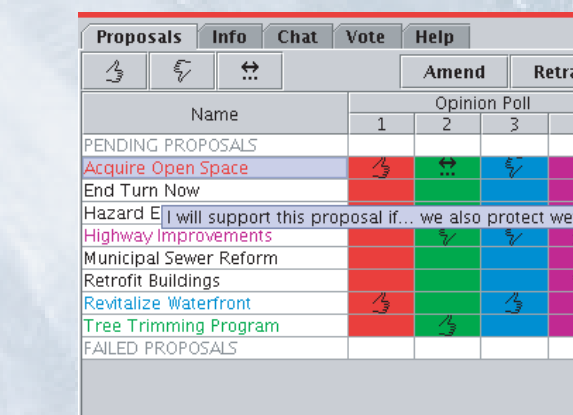


The players must negotiate collective responses to the aftermath of various disruptive events.

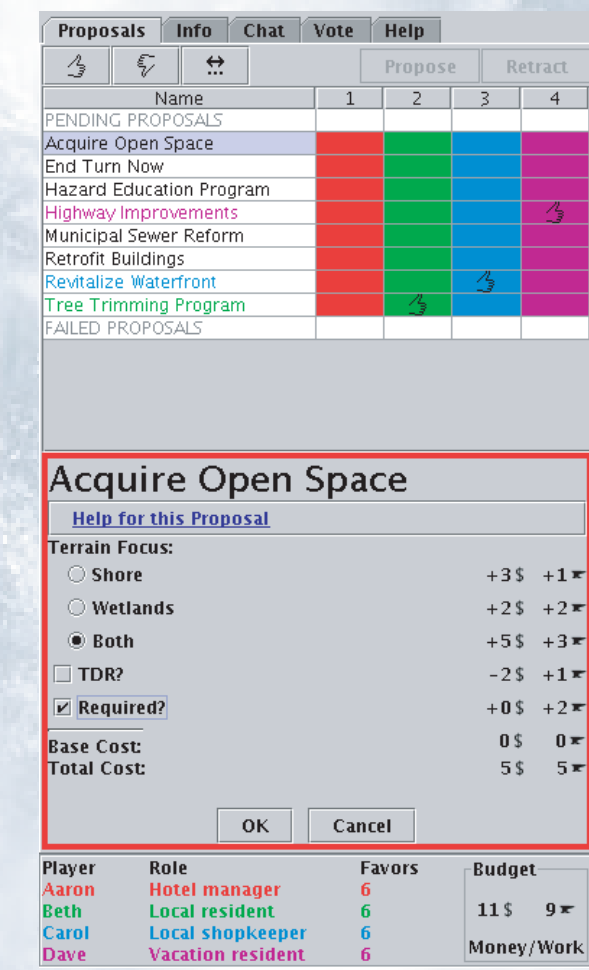
As the game proceeds, decisions made in previous turns interact with one another and the current situation to create complex new scenarios. Years pass between scenarios, allowing the players to discover the long-term effects of their decisions.



The round begins with a briefing describing the current situation. Each scenario is set during the recovery period that follows a disruptive event. What effect the event has on the town will depend on the players' decisions in previous rounds.



The game is played over the course of three scenarios, each of which should take 45 minutes or less (a single class period). The game has many features designed to speed play and negotiation, like the opinion poll, which shows the political landscape at a glance.



Game play consists of putting proposals up for vote, negotiating with other players, and voting on how to allocate the available budget. Each player can only propose a single version of each proposal, and can only make one proposal at a time.

Design Constraints

Lessons Taught

Target Audience

Minimal System Requirements

Multiplayer

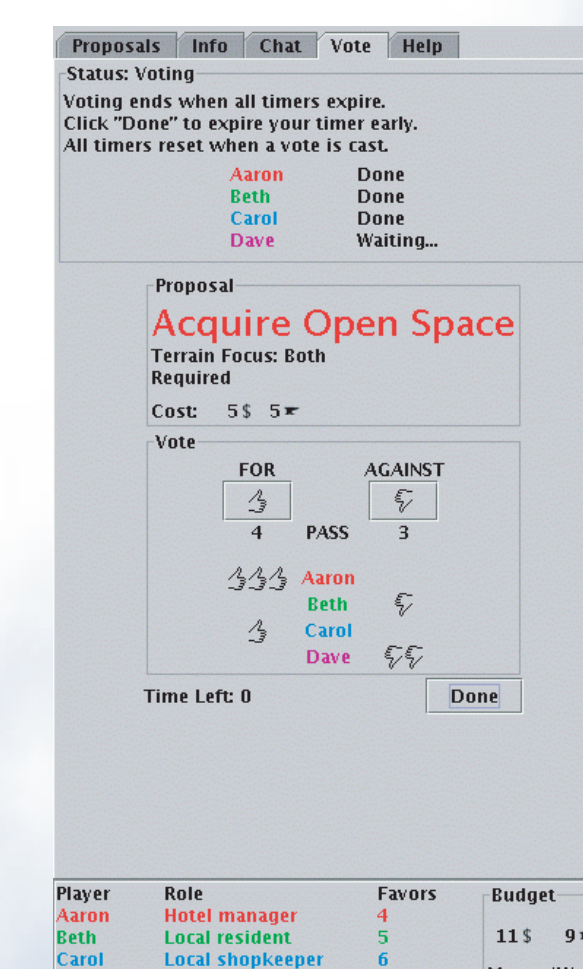
Fun!



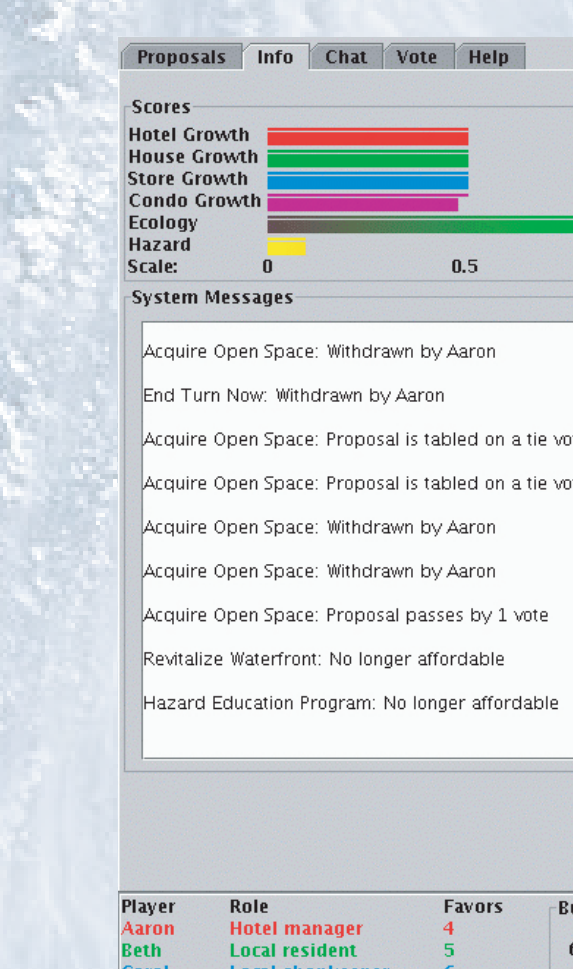
Why A Serious Game?

From Dave Rejeski (SGS '04):

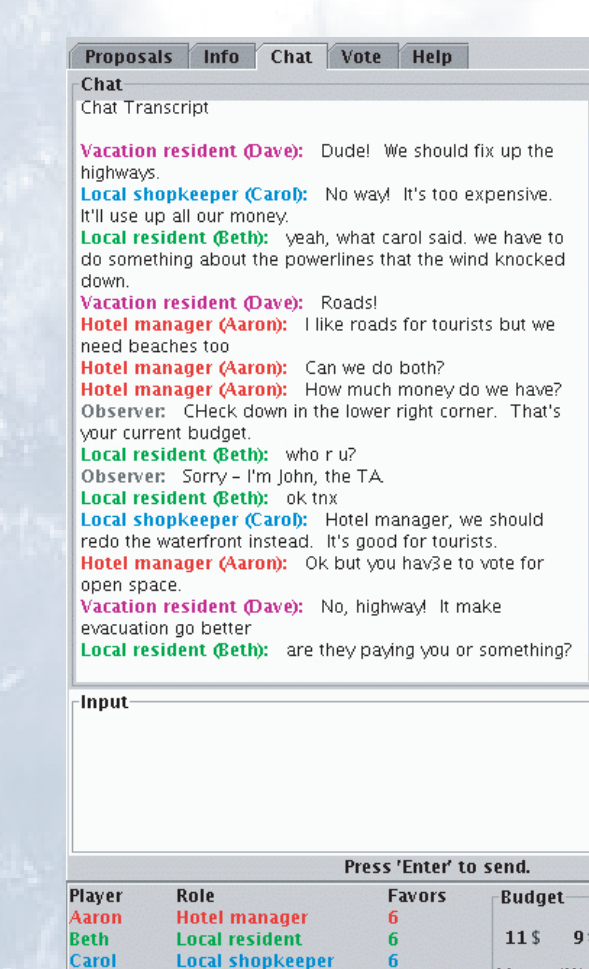
- Topsight (seeing the whole picture)
- Soft Failure (consequence-free experimentation)
- Collective Wisdom (study from many perspectives)
- Practice Surprise (frontal cortex exercise)



Voting is timed, to prevent filibustering and keep the game moving even if one player's connection fails. Players can buy extra votes using "favors"; managing this limited resource teaches them to pick their battles.



After a proposal is passed, it is enacted right away. Different scoring metrics reflect the proposal's effect on various aspects of the game world. Early decisions can often constrain later options in unexpected ways.



Networked play means players can be in the same room or miles away from one another. In-game chat supports negotiation between distant players, and allows the instructor to comment, too. Chat also seems to help players identify with their roles.

Goals Shape Design

Negotiation → Multiplayer

Distance education → Networking support

Classroom setting → Short turn length

Educational users → Minimal requirements

Teaching points → Game content & complexity

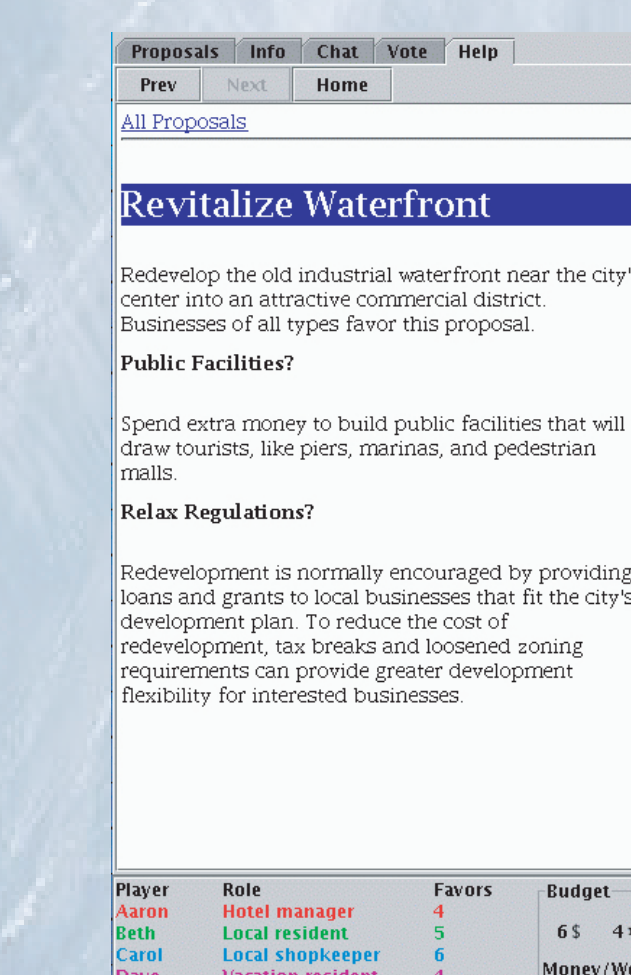
Fun → Balance difficulty & transparency

Good match to subject matter

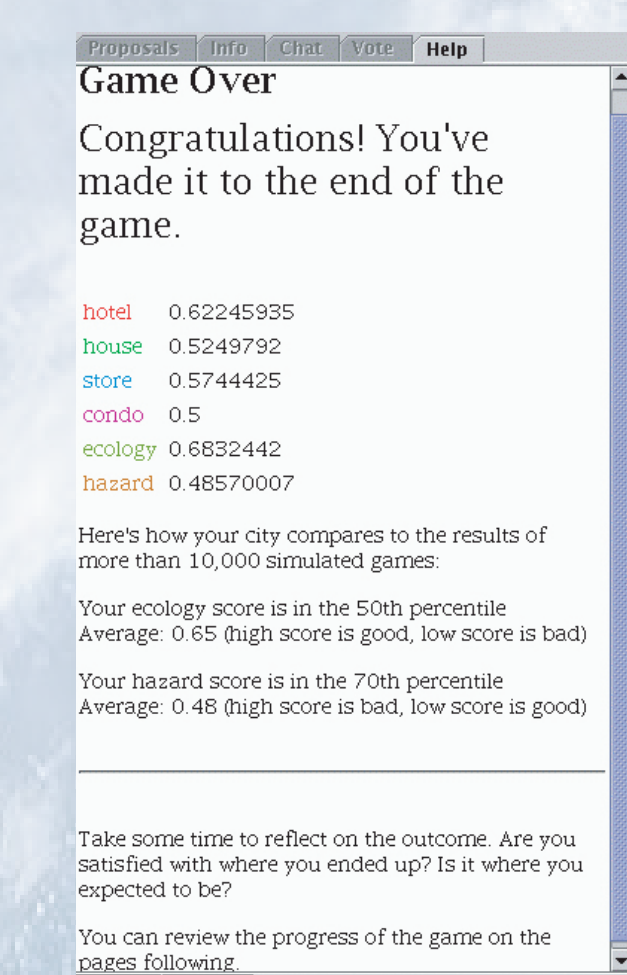
Experiential learning

Engaging and memorable

Motivates participation



The game's help system provides instructions on how to play, as well as detailed information about each proposal and a summary of the scenario briefing.



Much of the learning associated with a serious game happens afterwards. A debriefing at the end of the game helps the students to reflect on their experiences and gives the instructor an opportunity to guide them in a discussion focusing on the lessons taught by the game.