Ensayo: A Collaborative Cyberinformation Portal for Emergency Management Training and Research

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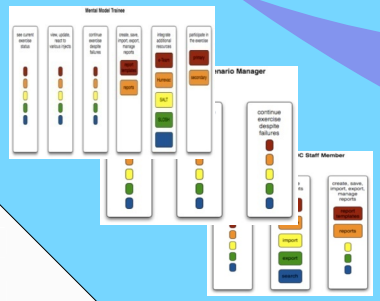
An Emergency Operations Center (EOC) is a secure location in which upper-level emergency managers gather together to prepare for, manage, and coordinate recovery activities in response to an emergency situation (e.g. hurricane, earthquake, tsunami).

In our research, we are designing and developing an EOC cyberinformation portal in which emergency managers can collaborate and train. It also serves as a research tool for cognitive scientists to study the decision-making process under emergency conditions.

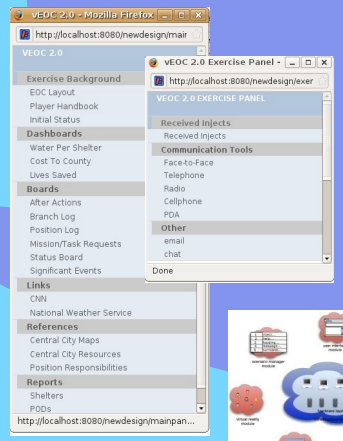
design methodologies

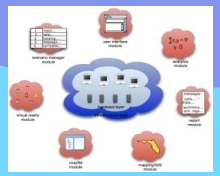
There are three main design methodologies that we employ in creating this prototype. The basic software design methodology is the agile software development model. This is a set of software engineering methodologies based on iterative design, in which we incorporate feedback from the previous design cycle into the current cycle. Another design methodology we employ is the use of mental models. Mental models are a tool to aid in user-centered design and a way to ensure that all functionality in our system maps to a genuine user need. Finally, we also use content, functionality, aesthetics, and usability design methodologies in our application design.



cyber training and collaboration

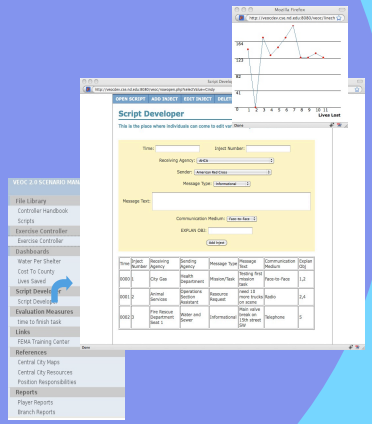
This cyberinfrastructure has several key elements. First, it offers a secure cyberenvironment in which upper-level emergency managers can train. Next, it offers many collaboration tools for emergency managers to simulate the software and practices of an actual EOC. These include various status boards, position logs, reports, links to external websites that are of use, status indicators, an artificially intelligent interactive advisor, a chat client, and an email client.





cyber research

The research cyberenvironment includes interfaces which allow the researcher to track user interactions, collaborations, impacts of critical decisions, and various additional measurements

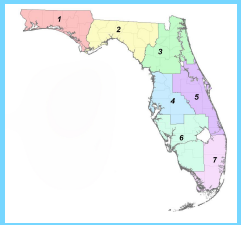


technologies employed

We have employed a variety of technologies. On the client side, technologies include XHTML, CSS, Dynamic HTML, AJAX, Reverse AJAX, and JavaScript. On the server side, technologies employed are PHP, MySQL, DOJO and the Jetty server.

expert validation

In order to validate the system and obtain an expert subject matter knowledge base, we are working with one of the foremost emergency operations centers in the country – the Miami-Dade EOC.



modified from http://www.deep.med.miami.edu/x439.xml

acknowledgements

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THE VIRTUAL EMERGENCY OPERATIONS CENTER

BY CYNTHIA NIKOLAI

OVERVIEW

- ☐ INTRODUCTION
- ☐ RESEARCH METHODOLOGIES
- ☐ TECHNOLOGIES EMPLOYED
- ☐ DESIGN METHODOLOGIES
- ☐ LIVE DEMO
- ☐ FUTURE GOALS
- ☐ QUIZ

INTRODUCTION

EMERGENCY OPERATIONS CENTER (EOC): SECURE LOCATION IN WHICH INDIVIDUALS COME TOGETHER TO PREPARE FOR, MANAGE, AND COORDINATE RECOVERY ACTIVITIES IN RESPONSE TO AN EMERGENCY SITUATION (EG HURRICANE, EARTHQUAKE, TSUNAMI)

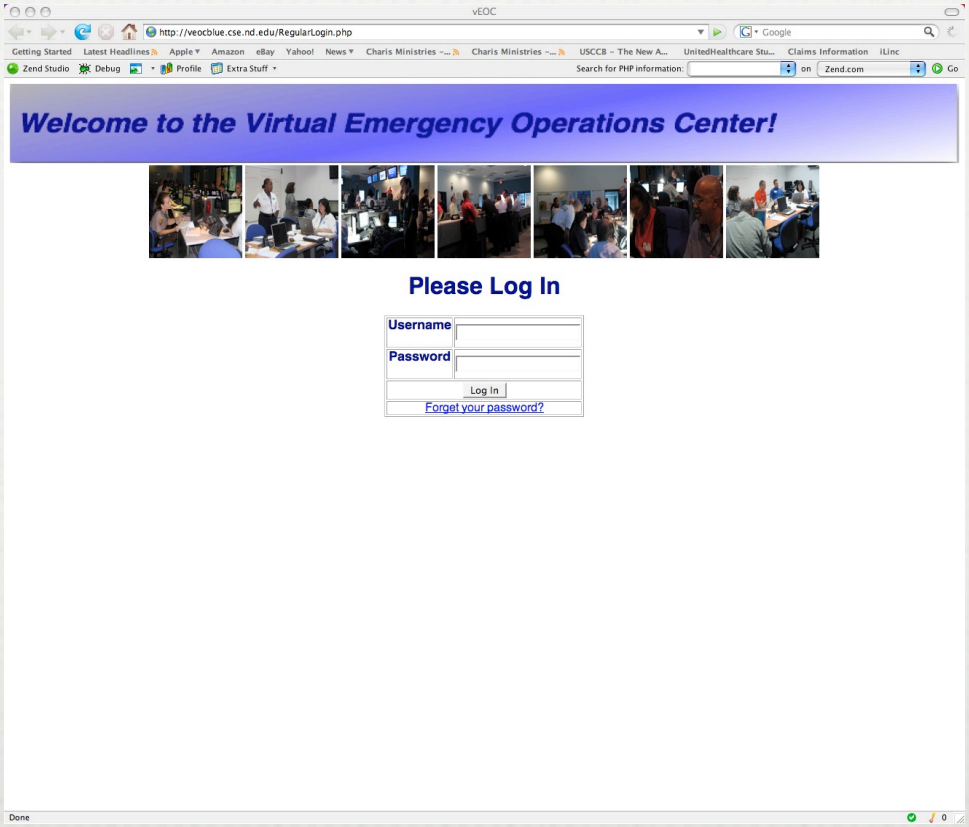
OUR RESEARCH

IN OUR RESEARCH, WE ARE WORKING WITH MIAMI-DADE COUNTY, FL, TO BUILD A VIRTUAL EOC FOR

- TRAINING EMERGENCY PERSONNEL
- RESEARCH INTO EMERGENCY MANAGEMENT DECISION MAKING
- VIRTUAL EMERGENCY MANAGEMENT

WORK SO FAR

- VIRTUAL EOC PROTOTYPE/PROOF OF CONCEPT



RESEARCH METHODOLOGY

- SEMESTER OF BACKGROUND READING INTO EMERGENCY MANAGEMENT, SIMULATION, TRAINING, DECISION MAKING, ETC
- COORDINATION WITH MIAMI-DADE COUNTY FOR REAL WORLD MATERIALS AND PROCEDURES
- CLASS ON E-TECHNOLOGY (XHTML, AJAX, CSS, PHP, SQL, WEB 2.0, AND DESIGN METHODOLOGY CONCEPTS)
- OBSERVATION OR AN EXERCISE EOC ACTIVATION
- UPCOMING: OBSERVATION OF A LIVE ACTIVATION

TECHNOLOGIES EMPLOYED

- XHTML, CSS, DYNAMIC HTML, AJAX
- PHP
- JAVASCRIPT
- MYSQL
- THIRD PARTY TOOLKITS: YAHOO UI
- VIRTUAL MACHINES: ALL DEVELOPMENT AND DEPLOYMENT IS BEING ACCOMPLISHED IN VIRTUAL MACHINES

DESIGN METHODOLOGIES EMPLOYED

- SOFTWARE ENGINEERING/SPIRAL DEVELOPMENT
- MODEL-VIEW-CONTROLLER (MVC) METHODOLOGY
- MENTAL MODELS ^
- FOUR INGREDIENTS OF APPLICATION DESIGN TO CREATE A PROTOTYPE*
  - CONTENT, FUNCTIONALITY, AESTHETICS, USABILITY

^BASED ON RESEARCH BY INDI YOUNG
*BASED ON RESEARCH BY CHRIS CLARK (KANEB LEARNING CENTER)

KEY FEATURES OF PROTOTYPE

- SECURE LOGIN
- DIFFERENT INTERFACES DEPENDING ON WHICH LOGIN YOU ARE
- AUTOMATED SCRIPTING
- MULTI-BROWSER COMPLIANCE
- MULTIMEDIA
  - NOW: AUDIO
  - FUTURE: INTERACTIVE VIDEO

LIVE DEMO

- TRAINEE CONSOLE: THE PERSON WHO IS BEING TRAINED

VEOC DEMO

FUTURE GOALS

- TIE UP LOOSE ENDS IN WHAT ALREADY IS THERE (EG BUTTONS THAT ARE THERE BUT HAVE NOT FUNCTIONALITY)
- IMPLEMENT INTERACTIVE ADVISOR
  - CREATE AGENTS TO SIMULATE HUMANS

QUESTIONS