

Development of a Prototype GIS Utilizing CAD Data for Emergency Planning and Response.

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Background

“To respond intelligently requires significant levels of spatial awareness only attainable through the use of a GIS” (Johnson & Davenhall, 2005 p. 10)

During a crisis, effective emergency response includes incident and hazards mapping, establishing priorities, developing action plans, and implementing the plan to protect lives, property and the environment. GIS allows emergency response managers to quickly and effectively access and visualize critical information by location. The use of a GIS to share information can improve the effectiveness of disaster personnel to coordinate and implement emergency efforts. (Enders and Brandt 2007)

The integration of disability relevant data into GIS is a must for emergency planning and response. Knowing where people with disabilities live on WWU campus will help emergency managers more quickly locate those people and prepare for any possible environmental obstacles that are not present for a person without a disability.

“GIS and geospatial data are rapidly becoming primary tools in government and the private sector because they provide visual, integrated, intelligent, analytical and cost effective solutions in support of these diverse areas...”(NSGIC, 2006). GIS tools for the government and private sector may also need some form of security protections from misuse of data. “The intranet provides advantages for secure sharing and analysis of restricted geospatial information within respective agencies”(Croner 2003). Providing the visualization tools via the WWU campus intranet would be a potential solution to restricting access to the data.

Western Washington University is where roughly 12,000 students plus faculty come to work or study. There are many different facilities and buildings with different

structural designs and different functions on Western's campus. There are chemistry, biology and computer labs, lecture room and offices, art and physical recreation/education facilities as well as other specific room uses. Chemicals, lab equipment, computers all pose a hazard or possible loss of property in times of emergencies. Not to mention those students who are living on campus with a disability may not be able to evacuate without assistance. Implementing a GIS to provide emergency management important spatial information during a time of emergency would be an excellent use of GIS technology.

Objective: The specifics of this project are to (1) convert CAD data of one floor of Artzen Hall into a polygon Shapefile that will be georeferenced to its actual location on WWU campus. Each room will then be (2) named appropriately and provided attributes from the WWU Building Database from WWU EH&S. Those attributes include fire alarm and elevator controls, tunnel and roof access, natural gas and other notable physical concerns for emergency management personnel and will be (3) linked to a corresponding point Shapefile that is also linked by room name to the polygon shapefile.

The last step will be to prepare the GIS for use by Emergency Personnel. To do this I will (4) investigate the use of ArcIMS and Google maps for online/intranet distribution or ArcReader for a static database. There are also many possible projects that can stem from the conversion of WWU buildings CAD data into GIS.

Figure 1: This is a .dwg CAD file of Artzen Hall Concourse drawn in Arcmap. Several polygons exist for rooms, however most are polylines that will need to be converted into polygon form and georeferenced.

