

POLICY FRAMEWORK FOR MAXIMIZING THE INTEGRATION OF SPATIAL INFORMATION FOR DISASTER MANAGEMENT IN DIVERSE OPERATIONAL ENVIRONMENTS

Rifaat Abdalla, Ph.D. , P.Geo., GISP.

Associate Professor of GeoInformatics

Department of Earth Science

Sultan Qaboos University, Oman

OUTLINE

- Background
- Historical Challenge
- Our Approach
- Findings
- The Solution “What-if Scenario”
- Conclusions



BACKGROUND

- Emergency management has developed as the science of protecting life and property, utilizing a wide range of advanced technologies.
- The ongoing challenge in urban emergency management is enabling decision-makers to share information and implement unified policies.
- Many researchers have demonstrated that Geospatial Technology facilitates risk estimation and mapping, planning for route evaluation and categorization, and site selection for shelters, as well as providing a wealth of information on the areas where the population is concentrated and the distribution of various response groups i.e., medical facilities, firefighting and civil defense personnel, NGOs, and other stakeholders participating in emergency management operations.





BACKGROUND

- To investigate decision-makers' level of use of Web-based GISs: this study highlights mechanisms and procedures for the application of Web-based GIS technology in emergency management based on a gap analysis study of the requirements of emergency management decision-makers.
- To develop an emergency management data repository conceptual framework that addresses the standard guidelines associated with operational requirements for effective emergency management operations at the micro level.
- To develop a Web-based GIS to support emergency management decision-making with a focus on data application and policy interoperability.



HISTORICAL CHALLENGE

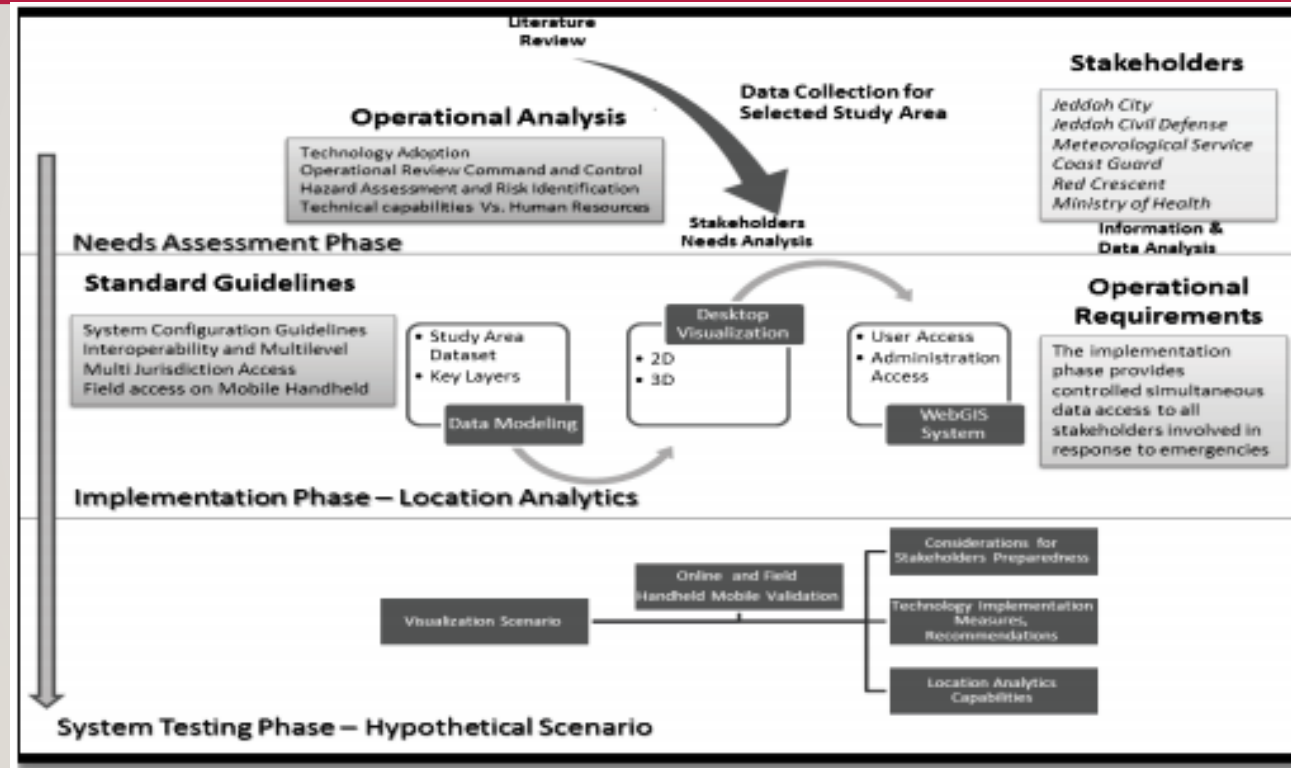
- Jeddah, located on the Red Sea coast, it is the second largest city and the biggest port in the Kingdom of Saudi Arabia. The city extends along a north-south axis on the western side of the Kingdom, and covers an estimated area of 5460 km², with an estimated population of over 2,801,481.
- Recent natural disasters in the city of Jeddah, including flash floods in 2009, 2011, and 2014, have devastated the city and had an extended impact on all the critical nodes.
- These events have confirmed the vulnerability of the population to various kinds of risks, raising questions about the level of preparedness in terms of data and policy interoperability



STUDY AREA



OUR APPROACH



OUR APPROACH

S.No	Question
1	What is the level of technology adoption in your organization?
2	What are the mechanisms that are in place when responding to emergencies?
3	Are there any specific procedures related to responding to situations linked historical hazard, based on previous hazard identification and risk assessment protocols?
4	What are the elements of a comprehensive emergency management approach available and in use by your organization?
5	What is the level of spatial decision-support in use by your department in case of emergency management operations?
6	What are the technical capabilities in form of Communication system, perspective and interactive visualization are available in your department.
7	What is the level of geospatial technology-based training for human resource in your department to combat emergencies?
8	Other there any policy-based coordination approaches such as interagency communication, when responding to emergencies?
9	What is the level of public participation and community-based response during historical extreme situations? and
10	What are the technology-based modes of response, with respect to Question 9, above?



FINDINGS

- Capabilities were analyzed regarding:
 - a) technology implementation measures,
 - b) stakeholder readiness, and
 - c) recommendations in relation to location analytic capabilities that were available for the purpose of disaster and emergency management.



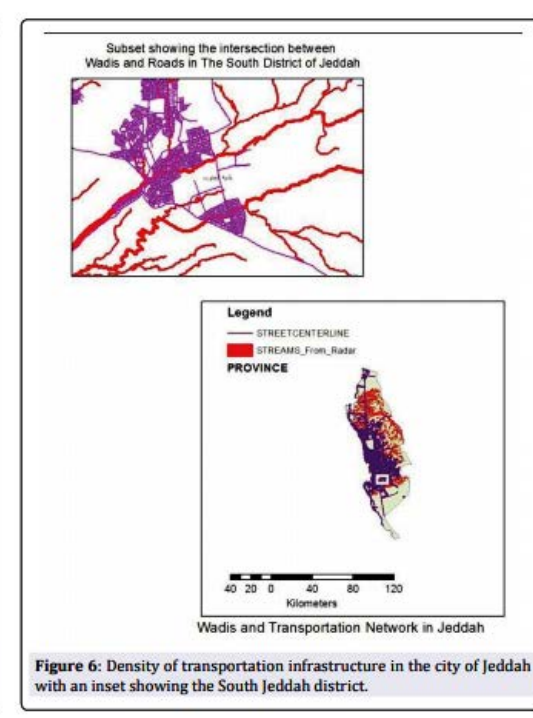
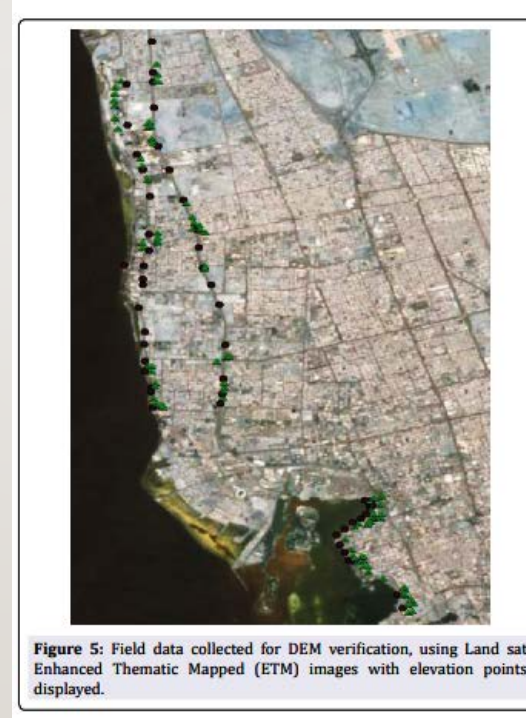
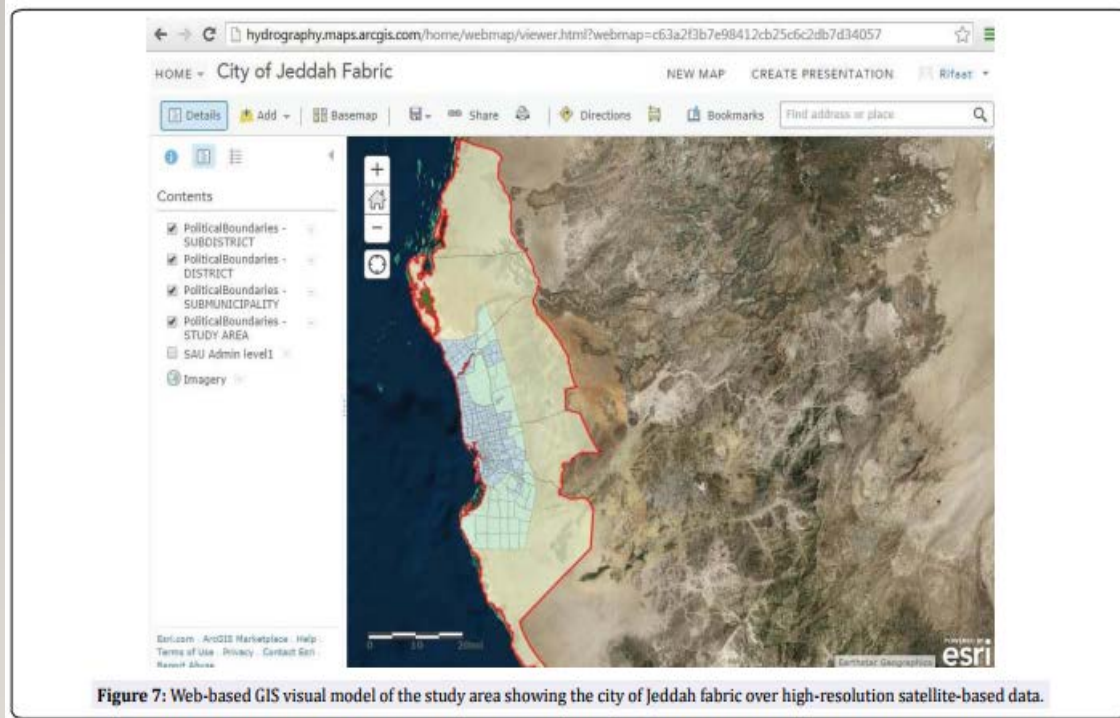
FINDINGS AGAINST CHARACTERISTICS

- Availability
- Usability
- Scalability
- Robustness
- Agility
- Standardization
- Mature Policies
- Transparent Systems
- Fast Procurement and Deployment
- COLLABORATION and SHARING



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THE SOLUTION “WHAT-IF SCENARIO”



CONCLUSIONS

- We investigated the level of technology adoption used to support decision-making in disaster and emergency management operations in the city of Jeddah.
- The development of a mock scenario to validate the usability of the system and to propose a solution to issues identified in the needs-assessment study included three stages:
 - a) scenario development,
 - b) online validation of the scenario area, and
 - c) the consideration used for system development.
- The objective of this phase of research allowed for examining and providing recommendation related:
 - a) data and systems interoperability,
 - b) capabilities in the first and second phases of data integration of background datasets that enable timely access and updates, and
 - c) capabilities relating to field data collection and visualization.
- The what-if scenario developed has provided means for ideal solution in dealing with emergency management operations in the city of Jeddah, through interoperability.




Rifaat Abdalla

Introduction to Geospatial Information and Communication Technology (GeolCT)

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THANK YOU!

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