

An Investigation into the Application of GIS for Infrastructure and Facilities Management in Saudi Arabia

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Introduction

- Aim of presentation is to present a project proposal for research into GIS Use
- Global expansion in the use of computers with current trends towards use of expert systems
- GIS as one of the computer based decision support system is associated with many benefits- efficiency, cost savings, decision support information, etc

Introduction - Continue

- Potential and benefits has encourage adoption of GIS
- Some countries have lagged in adoption of GIS and Saudi Arabia is Among them
- The aim of the project is to research into GIS use in Saudi Arabia to find out the level of implementation, why implementation is lagging and how adoption of GIS can be encouraged

Presentation Format

- Introduction
- Review of GIS Development
- Objectives of the project
- Project Work and Methodology
- Schedule of Work
- Justification
- Utilization Plan

GIS- A Review of Development

GIS Development can be categorized into •
four phases based on emphasis in
research publications

Phase 1: Understanding the technology –

Phase 2: Establishing uses of the Technology –

Phase 3: Implementation problems and –
strategies

Phase 4: Integration of GIS into Planning and –
Organization process

Understanding Technology :)

Essential questions include: •

What is GIS –

A database management system designed •
to support the efficient storage and retrieval
of spatially referenced information (ESRI
(1990)

What are its functions –

Capture, storage and manipulation of data •
Use of stored data for analysis and display •
of results

References; rhind (1989), Huxhold (1991) ESRI (1990) etc –

Establishing Uses for the Technology : ٢

Emphasis here was on the report of case studies, identifying and extending uses •

Four defined areas of application emerged: street networks, natural resource management, land parcel management and infrastructure and facilities management •

Examples of published reports include Budic (1994), Chen (1994), Yeh and Batty (1990) and Yaakub (1990) •

: Implementation Problems ٣

Implementation was associated with many problems and so became the focus of research •

It was found that the cost of GIS Systems into operation was far higher than investments in hardware •

Basic guidelines and strategies for successful implementation were formulated (Budic 1994; Budic 1993; ١٩٩٠, Campbell 1992; and Laura

: Integration into Organization^ξ

- Technology has reached maturity, but problems of working with the technology at the organization level
- Low level of coordination in sharing and managing information
- Research interest has focused on how to fit GIS technology into the organizational process
- Reference include Budic (1997), Sui & Maggio (1999), Yates and Bishop (1998) Nedovic-Budic & Pinto (2000), etc

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Project Objectives

- Preliminary investigation show that GIS Utilization in S/Arabia is low
- The goal of the project is to establish state of GIS utilization for Infrastructure an facilities management and to identify problems of implementation and usage

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Project Objectives

- **Specific objectives of the project include**
 - Determine extent of GIS use by public institutions
 - Determine common and peculiar problems of implementation
 - Identify successful strategies
 - Undertake a pilot project for concrete experience of implementation
 - Prepare a manual providing guidelines and advise for institutions interested in implementation

Project Work and Methodology

- **The project work has been broken down into 3 – defined tasks:**

- **Task 1: Literature Review**
- **Task 2: Survey of Institutions**
- **Task 3: Pilot Project**

: Literature Review

Aims is to establish global experience in ●
usage and implementation, including ●
information from published sources on ●
S/Arabia

Focus on Technologies, implementation ●
strategies, system design, applications ●
and user reactions to the implementation ●
process and to the technology

: Survey of Institutions

Aim is to establish GIS usage in the ●
country

Will be carried out in two stages; ●
exploratory stage, and a detailed ●
investigation of selected cases

Emphasis in study will be to reflect ●
diversity in technology, application ●
and organizational environment

: Pilot Project

**Aim is to acquire a hands-on •
experience of implementation on a
limited scale**

**Project will involve the •
implementation of an infrastructure
management system for the university
dealing mainly with the main networks
of water, sewage, electrical, roads and
drainage system.**

Project Team

Project Staff •

Principally the PI and CI supported by Research staff •
and other personnel

Equipment •

Project will use both departmental resources and •
equipment provided for in project budget

Locations •

Project will primarily be based in the CED college •

Support & outside services •

Significant corporation from the project and •
maintenance department particularly for pilot project

Schedule

Task	Months																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
A. Literature Review	█	█	█	█																				
B. Expl. Survey of Instit.					█	█	█	█																
C. Detailed survey of instit																								
C. Pilot Project																								
User analysis																								
Conceptual Design																								
H/ware & S/ware selection																								
Data development																								
D. Manual preparation																								
E. Final Report Preparation																								
F. Progress Report submission																								

Justification

- Applied research with local and national implication
- At local level, will hopefully improve management of infrastructure, and strengthen the role of the university as a center of excellence in GIS; pilot project will provide a laboratory for both staff and students

Justification

At the national level, Provide the ●
necessary assistance for public
institutions to implement GIS and
thereby contribute to achieving
national policy objective of
improving maintenance and
management of facilities

Utilization Plan

Manual will be used as a basis for ●
extension services by the university to
institutions interested in GIS
implementation

Improve the ability of the University to ●
improve its short courses on GIS

Provide the faculty and students with an ●
avenue for continuous research using
pilot project

Thank you very much
for listening to the Presentation