

*Developing An Integrated Infrastructure  
Management System (IIMS): A Decision Support  
System (DSS) For Power Networks*

Presented By

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# Introduction

- The huge demand on processed information to make decisions about industrial processes has led to the establishment of decision support systems (DSS) which helps make decisions easier for the decision makers.
- Public Works departments, such as Power Companies should benefit from this DSS to provide more efficient and high quality service.

## Introduction: Continued

- Excessive seasonal power demand (especially in the GCC countries and the middle east) on the power generation systems and distribution networks, can have serious and catastrophic impact on local economies .
- Strategic Power Management means proper planning against such extreme pressures on the system. The current scenario in **California** is a living testimony to the opposite.

## **A Decision Support System**

- A Decision support system is an interactive computer-based system intended to help managers make decisions.
- A DSS is an information system that ameliorates the time in which decisions can be made as well as the consistency and the quality of the decisions, expressed in characteristic quantities of the field of application

## **Infrastructure Management System IMS**

- IMS is a Decision Support System (DSS) for a specific Infrastructure application
- Decision Support Systems (DSS) originally evolved to help business environment decision making.
- Later customization to fit utilities and public works management environment created the IMS

## Integrated Infrastructure Management System (IIMS)

- Infrastructure Management System (IMS) is only one element of the larger **IIMS**.
- IIMS scale is regional or country wide.
- Information from other systems will be transferred over a network ( Network Based System ).
- Standardization of data format transfer.
- Works very well for e-commerce ( SPAN), security, and defense systems.

## The Integration of Different Models in IIMS

- Modular Modeling System (MMS).
- Flexible DSS.
- Spatial Decision Support Systems (SDSS).
- Sequentially Linked Models.
- Criteria of the Infrastructures:
  - **Physical Assets**: Capital Investment
  - **Product/Service Delivery**: Ability to perform
  - **Quality of Service to Users**: Physical size and condition
  - **Cost-Effectiveness**: Services delivered per (Dhs) spent on Infrastructure

## The Integration of Different Models in IIMS Continued

- Individual models will be created for these infrastructures ( in this case Power generation and Distribution) based on these **FOUR CRITERIA** .
- The integration of the models is the **IIMS**

## Tasks For Developing the **IIMS**

- Universal Location Referencing System (GPS) ( Uniform Data Format).
- Infrastructure Data Transformation.
- Infrastructure Geographic Representation:
  - **Automated Mapping (AM)**
  - **Geographic Information Systems (GIS)**
- Country or Regional Networking.
- Dynamic Segmentation.

## **Working Concept of IIMS**

- The Decision Maker (Manager)
- Decision Workplace
- Intra Models Communication in IIMS
- Regional or Country Network
- Networking System Reliability
- Backup Support System (Auxiliary)
- Client Server Based Network systems
- **GEOMania /SDM ( Spatial Data Manager)**  
**GEOMania Millennium Server; GEOMania web;**  
**GEOFMS; GEOCable; and other applications.**

## **Customized GIS Applications**

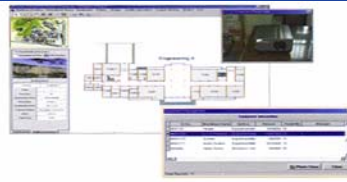
- Emergency Disaster Rescue
- Traffic Effects Analysis
- Facility Management
- Network Management
- Radio Management & Analysis System
- Environment Analysis Management
- Numeric Map Management
- Store Management
- Delivery Management

## Advantages of the **IIMS**

- Comprehensive Control System.
- High Cost-Performance.
- Support Client/Server.
- Real Time Decision Making.
- Universal impact System
- Early Warning Mechanism

## Concluding Remarks

- **IIMS** is needed in GCC Power Networks
- **IIMS** is effective power management system
- **IIMS** is Cost-Effective
- **IIMS** is Promising in (SA) but incomplete yet
- Computer technology can make **IIMS** a reality
- GIS technology is essential for the success of **IIMS**
- **IIMS** is the only way to avoid Blackouts in this era of increasing demand on Power



#### **Facility Management**

It controls water-supply facilities, power facilities, communication facilities and manages facility providing company, construction company and replacement time of facility in the campus.