Spatial Thinking and Spatial Information Systems in the Middle East

Spatial Informatics Initiative of Turkey
Spatial Thinking

• All of us think spatially some times. Don't we?
• Spatial thinking begins with the ability to use space as a framework.
• An object can be specified relative to its own basic structure, or to other objects in the environment.
• Spatial thinking concerns the shape of objects their location in space and their relation to each other and the path they take to move.
• All things are related, but nearby things are more related than distant things
Spatial Analysis

- Methods that study features using their topological, geometric, or geographic properties.
- Spatial position is very important in analyzing problems.
- Cartography and surveying plays a big role in any Spatial Analysis.

Original map by John Snow showing the clusters of cholera cases in the London epidemic of 1854. The pump is located at the intersection of Broad Street and Little Windmill Street.
Spatial Thinking in the Middle East

• In MEA children in suburbs know about their neighborhood at the age of 5 and could find their way back home on their own.
• Children in MEA learn about objects shapes and colors through working with those in an early age. They relate objects to locations and properties.
• Some children have to learn how to be independent, and physically capable of doing what an adult can do all at the same time.
The Middle East was once home to the world’s most advanced societies, its people skilled at mathematics, astronomy, science, and medicine.

- Ibn al-Haytham (965-1040) explored momentum, gravity, and optics 600 years before Galileo was accused of heresy for arguing that the Earth orbited the Sun.

- During the 16th century, the Ottoman astronomer Taqi al-Din made astronomical tables that were considered at least as accurate as those of fellow 16th-century astronomer Tycho Brahe of Denmark.
An Overview of IT Infrastructure in the Region

- Access to technology parallels the inequality in lifestyles throughout the region.
- Oil-poor countries do not have the economic resources to take advantage of these new technologies.
- The ability to access new technology is related to both economic resources and political openness.
- The region was introduced to computers by 50’s but the IT awareness started by late 60’s.
- Telecommunications have been greatly improved throughout the region over the past 10 years, Cellular phones are increasingly popular in most of the countries in the Middle East, providing telephone access in more remote communities as well as in crowded urban areas.
Data & Information in the Middle East

- Due to security reasons Data Exchange was and still restricted in many of those countries.
- Map production and sharing is still the main problem and is controlled by military agencies.
- The quality of data varies, and in most of those countries no common standard for the quality control is applied.
- A small number of metadata (information about what data exists) are available.
- Internet provided new and varied sources of information to people in the Middle East who once had access only to government-controlled media.
In 1982 City of Baghdad started the first attempt to build a Capital Area Development Information System. A Base Map was executed and Inventory of all Utilities were mapped. ESRI technology was used to digitize those maps and a GIS Department was established in 1986.
Beginnings of GIS in Kuwait City

• In early 1980’s Kuwait city started its own digital mapping and now owns a municipal GIS portal. [http://gis1.baladia.gov.kw](http://gis1.baladia.gov.kw)
OTHER PIONEERS

• The Royal Jordanian Geographic Center (RJGC) was established in 1975
• By mid 1980's, Jordanian Department of Land and Surveys to use computer based methods in map production.
• In 1986, the first project of GIS for production of a digital basemap application in Cairo.
• The Survey of Israel (SOI) began the construction of a comprehensive Geographic Information System (GIS) in 1989 now going towards 3D Cadastre
Winners

• GIS Awareness in Lebanon started in 1990, and GIS has been used to map the war damages and track changes in 1999 and now Lebanon owns a portal.

• The state of Qatar won the 1992 Exemplary Systems in Government Award (ESIG) from the Urban and Regional Information Systems Association (URISA) in the corporate systems category. Egyptian Cabinet Information & Decision Support Centre, Socio-Economic Indicator won NSDI/Data Partnership Systems Award in 1997 for City District Housing License and Tax Collection Information System.

• National GIS concept started in UAE in 1990, and Abu-Dhabi SDI was born in 2006.
Main Changes in the last 40 years

- Data Management
- Application Development Technology
- Data Dissemination Technology
- Open Standards
- More Data Security Methods and Applications
- Organizational Changes
- Social Awareness and Involvement
All started with a Basemap project in 1992 and Utility Inventory in 1997. The Abu Dhabi Spatial Data Infrastructure (AD-SDI) is a program of the Government of Abu Dhabi, administered within the Abu Dhabi Systems and Information Centre (ADSIC) e-government program. The last product is the AD Geospatial Portal.
Use of Spatial Information for a Green City in the Middle East
The current main issues for most of Middle East countries in terms of spatial data infrastructure development include but not limited to:

- Data acquisition: Use of different datum and reference systems
- Data quality: The quality of data varies, and no common quality control standard is applied.
- Lack of Standardization
- Data sharing: Data Sharing is limited in many of those countries.
- Integration: Although the technology has solved most of integration problems there is the fear of failure that stops most of agencies from going forward in integrating their systems.
Non Technology Related Issues Problems

• Coordination:
  • Lack of coordination between agencies and governmental departments.

• Cooperation:
  • The lack of cooperation between managers and technical staff due to differences in understanding the whole processes of implementation.
  • The lack of cooperation between agencies and governmental departments.

• Communication:
  • Lack of communication between IT staff and decision makers
Challenges

• Low levels of national IT usage at present which needs to be increased,
• Low level of Spatial Information public awareness, must develop methods and campaign for public awareness.
• Low finance support in many of those countries for Spatial Data Acquisition and Spatial Systems at present.
• Multiple upcoming technologies needed to be issued for the successful implementation of a comprehensive Spatial System.
• No clear task descriptions for spatial information sharing Roles and Responsibilities should be defined.
What to do

- Make public aware of GIS, through seminars in schools and universities.
- Seek financial support from the highest levels of government.
- Oil poor countries seek financial support from International Aid programmes.
- Seek support from NGO’s and Universities in making people aware of Spatial Information and its impact on their lives.
- Involve every government department and NGO’s in design and implementation of a National Spatial System.
- Establish National Standards for GIS implementation.
Conclusion

• The Spatial Data Infrastructure is a driving force for economic and social development in the Middle East, and while the whole world is going towards a global spatial information society it is essential for Middle East countries to build their own information society and SDI initiative.

• The current main challenges for Middle East countries in terms of spatial data infrastructure development will include data acquisition, data quality, standardization, data sharing and integration.
Thank You

Teşekkürler

Dank

Merci

شكراً

Gracias