Document of logical and accurate gap / gaps analysis by situation

Gap Analysis and make recommendations to it

Consulting engineering services project to study the

development of geographical information in the municipality of Medi

2013-07-21m

Document controls

The version for the document

Document name	Document logical and accurate gap / gaps analysis according to the current situation And make recommendations to it (Gap Analysis)
Document number	PED_34008-GIS Strategy-v1.0
Hand preparation	M. Hassan Jabaei
issue number	1.0
Release Date	4-09-14 143 H. Corresponding 2013-07-21m

Log changes

Date	The nature of the changes	Version	Source of change
M			

Reviews

The name	Occupation
M. Majdi Al-Banna	Geographic information systems consultant

Contents

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Project information

Project information	
project name:	Project "Consulting engineering services to study the development of geographical information in the Municipality of Madinah Region"
Project code:	34008
The executing agency :	Saudi Engineering Union Company is preacher and scholar
Project start date:	2013-03-13 PM
Project end date:	2013-08-13 PM
internal ☐	external ☒

the beneficiary		The project is sponsored by the Secretariat	M. Walid Barakat
The representative of the beneficiary		Project manager from the Secretariat	M. Akram Alsarani
Project manager from the implementing agency		Project Manager from the Implementing Entity:	M. Hassan Jabaei

The goal of the report

The strategic plan aims to define the goal that aspires to and the means to reach this goal, as this report presents the strategic plan for geographic

information systems in the Municipality of Medina. The strategic plan refers to the programs and initiatives that help develop and improve the work

and functions of the Municipality, and increase the appreciation of the residents and visitors of Medina for the Municipality's services. The programs

and initiatives have been designed in line with the challenges and opportunities that have been pointed out by the departments of the Secretariat,

or those identified through the analysis carried out on the current situation in the Secretariat. These programs and initiatives will generally

contribute to the benefit of Medina through the sustainable development of the following elements:

- Increase income for the Municipality through effective management and greater control of income sources such as licenses and investment

- Increase productivity and accuracy at work by organizing work and tasks and allocating responsibilities and roles, and through the

  presence of trained human cadres with high competencies

- Reaching a global level in development through the development and use of electronic systems based on new technologies such as

  geographic information systems technology

Increasing customer satisfaction through speeding up the implementation of services or by providing electronic services.
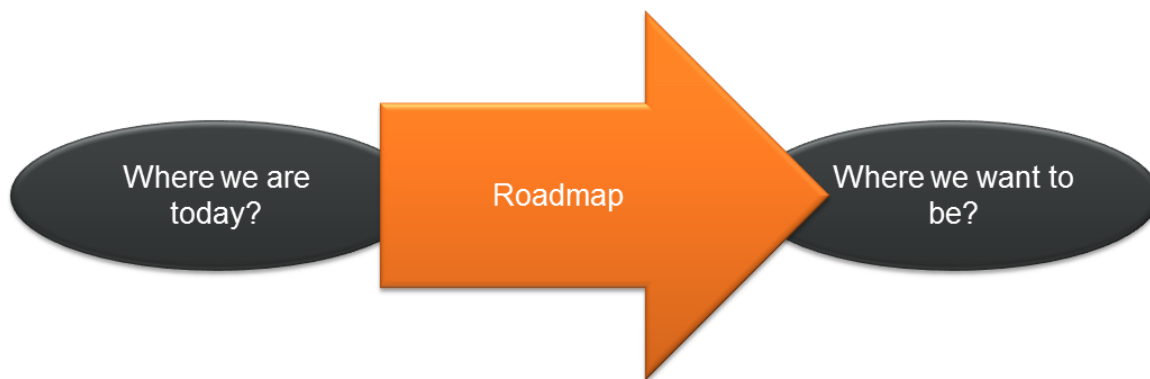
We recommend through this plan to follow the phased implementation approach of the proposed initiatives, as the plan's program will consist of a number of implementation phases, so that each phase represents a specific-scope project, with a known duration, calculated in the budget and depending on the circumstances, opportunities, and constraints of each project. As the GIS program progresses through the various stages, the GIS will increase its integration with the activities and workflow within the various departments and other departments.

It is expected that the benefits of these projects will start at the end of the first year and will last for five to ten years at least. Within this study, all project requirements of human cadres, training, equipment, data, etc. were identified, and all of their costs were calculated within the budget that was estimated. The percentage of spending is distributed over the five years, but the first years occupy the largest proportion as it includes projects related to establishing the infrastructure for geographic data and the base map.

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The methodology followed

The process of developing a GIS strategy begins with the end of the evaluation phase. The figure below summarizes the evaluation method

that was used to issue reports and evaluation documents that represent the most prominent source for this document.
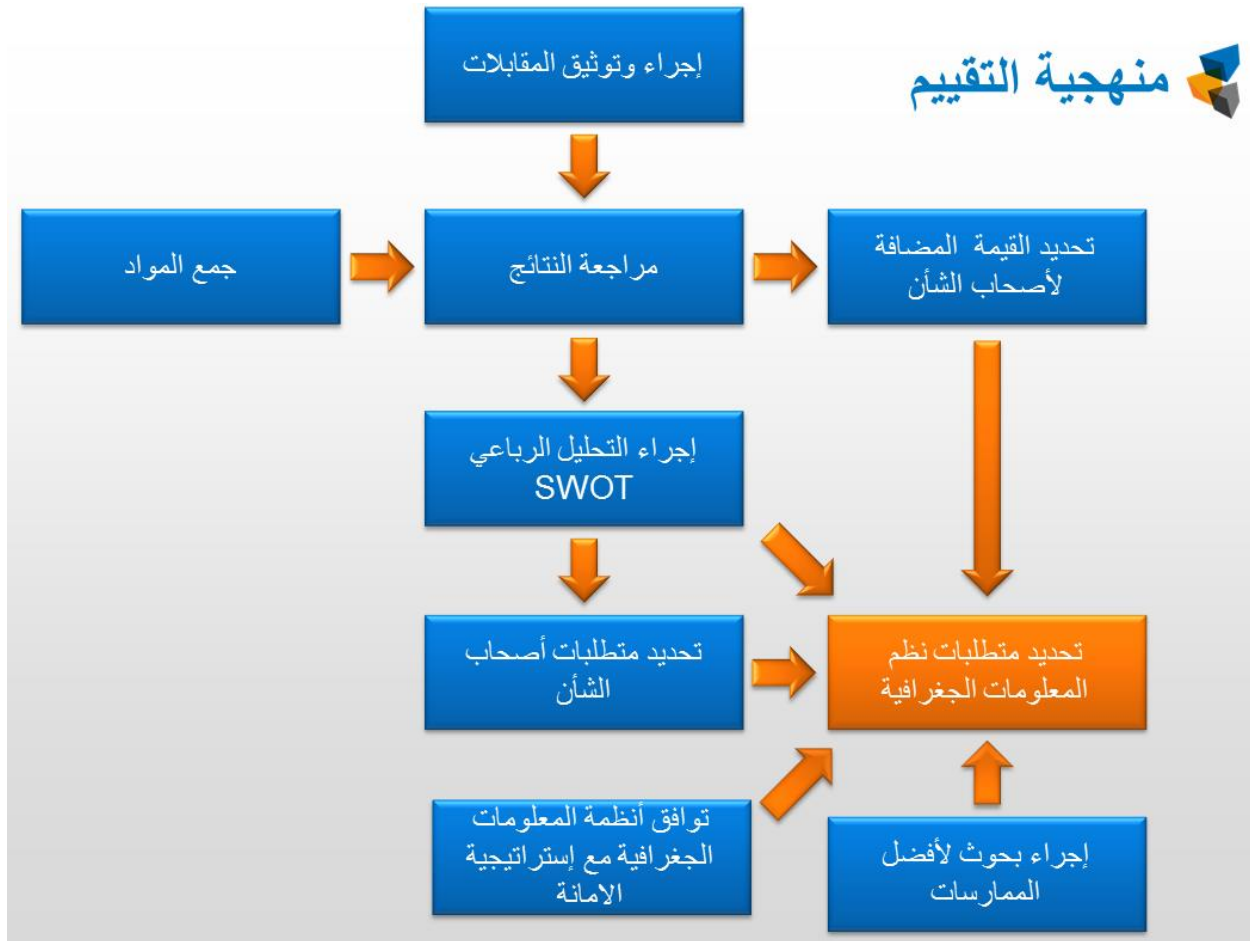
the shape 1: The evaluation method followed

The figure below indicates the general methodology that was adopted in developing the strategic plan for geographic information systems:

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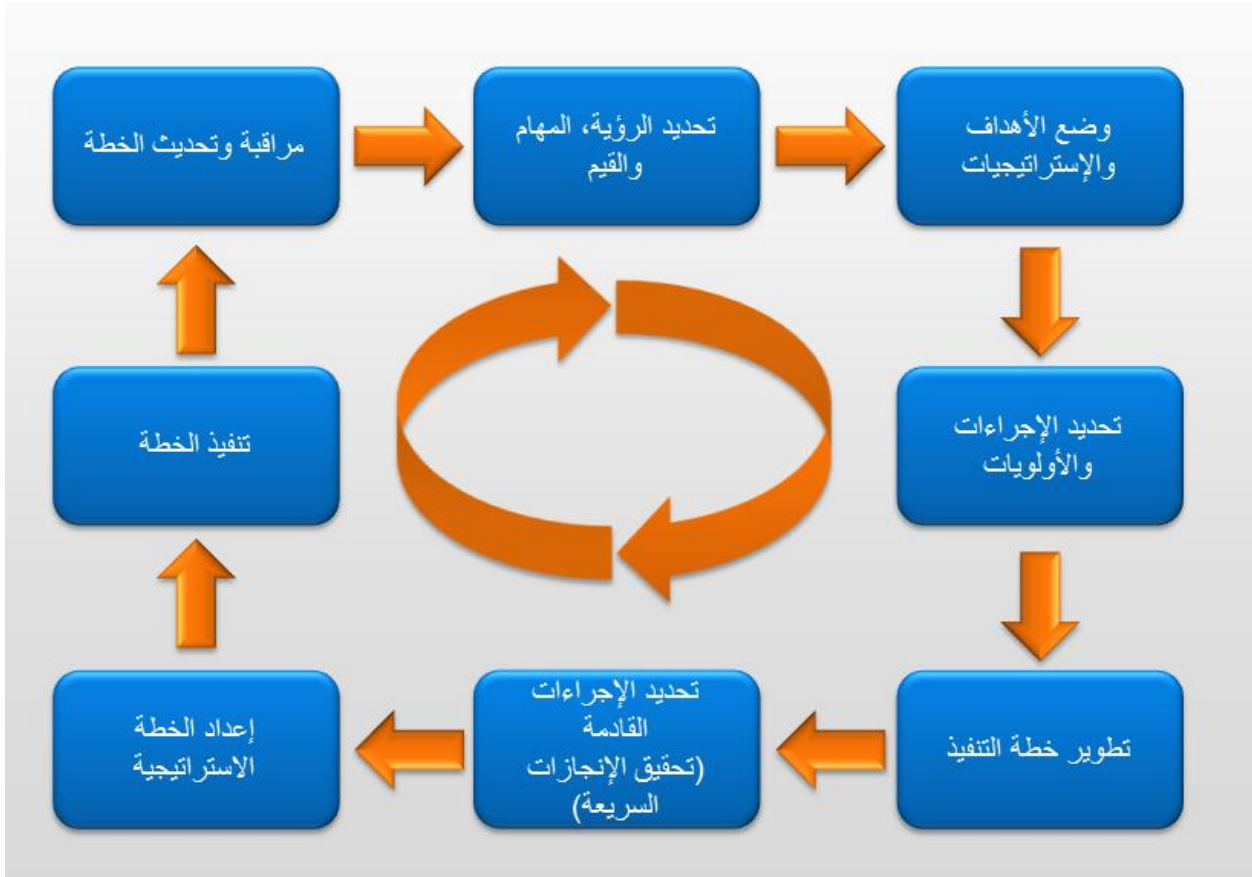
the shape 2: The general methodology that was adopted in developing the strategic plan

The steps include:

1. Define the vision, mission, and values associated with geographic information systems.

2. Defining the objectives of geographic information systems.

3. Defining procedures based on recommendations of stakeholders and setting priorities.

4. Development of the implementation plan based on the set priorities.

9. Determine the next step and actions to be taken to develop the "quick wins" of geographic information systems.

6. Drafting the strategic plan report.

7. Implementation and implementation of the plan.

4. Monitor the plan and update it periodically.

Structure of the report

This report is organized according to the following sections:

1. **an introduction:** This section explains the purpose of this report, the method used, and the contents of the report.

2. **Stakeholders:** It identifies the stakeholders from within and outside the Secretariat who will benefit or be affected by the implementation of the plan

    The strategy for geographic information systems in Medina Municipality.

3. **SWOT Analysis:** It lists strengths, weaknesses, opportunities, and threats.

4. **Pillars of Strategy:** Defines the vision, mission, and values   associated with GIS.

9. **Governing principles:** Defines the principles governing the work of the GIS team and their role in the city secretariat

    Al Munawara and the nature of their dealings with stakeholders.

6. **Strategic objectives of geographic information systems:** Defines strategic objectives for geographic information systems

    Within the strategic map of the Municipality of Medina.

7. **Program design:** Determines the GIS projects and programs reached during the evaluation period.

4. **Implementation plan:** Determines implementation plan based on established priorities and dependencies.

5. **Application and implementation:** Defines the steps for implementing the plan.

14. **Monitoring and updating:** Focuses on the steps needed to follow, monitor, and update the information systems strategy

    Geography.

11. **Appendices:** Appendix A: Projects Implementation Timeline

Stakeholders

The orientation in the work followed by the Medina Municipality is based on dealing with clients and serving them, as the actual implementation of the strategic plan for GIS depends mainly on the participation, follow-up and commitment of stakeholders ( ) *Stakeholders* Out. The successful implementation of projects that serve the strategic objectives identified within the plan will place the Geographic Information Systems Department and the General Administration for Information Technology in a more effective location for dealing with stakeholders and clients of the Secretariat, and will help activate the GIS technology and make it a useful tool in the various work that the Secretariat carries out And the services they provide.

The figure below shows the stakeholders associated with the GIS Department in Al-Madinah Al-Munawwarah Municipality:
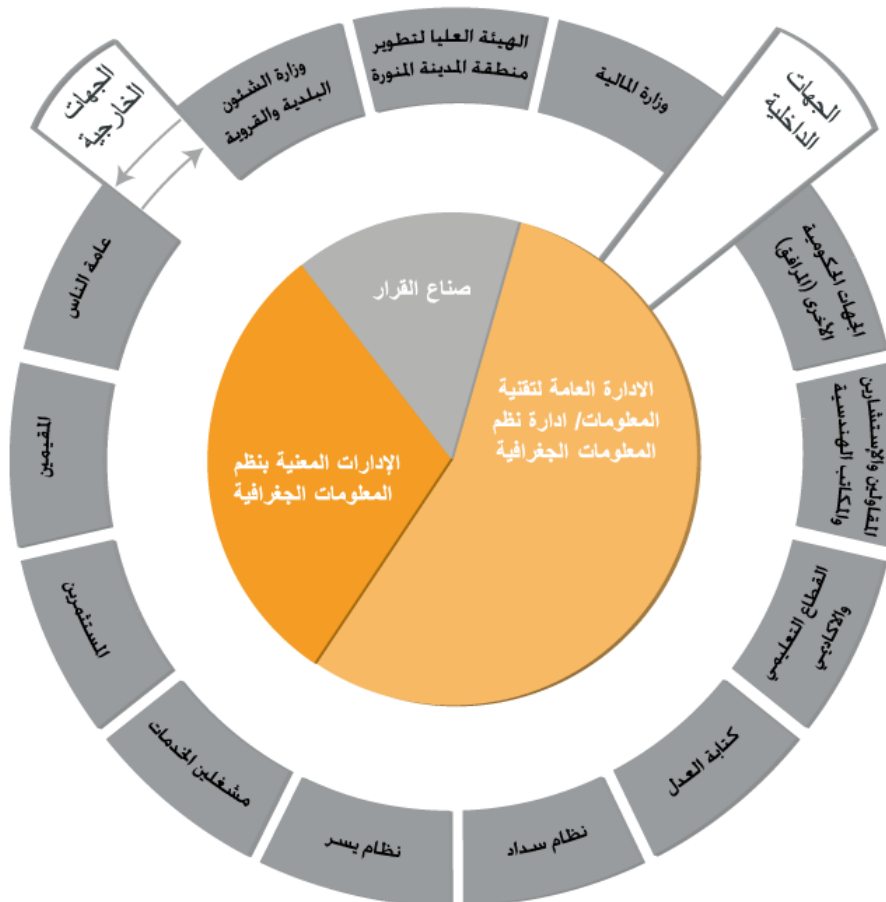
the shape 3: Stakeholders to manage geographic information systems

The following table lists the list of stakeholders for managing geographic information systems and the benefits that can be exchanged between the two parties:

rating friends Matter	Stakeholders	Values offered to clients (What will the GIS team do)	What is expected of stakeholders?
Makers the decision	His Excellency the Secretary Agents His Excellency Secretary	• Securing an updated geographic central database • High credibility • Disseminating and applying the latest technologies of geographical solutions that support the work of the Secretariat • Simplified and seamless geographic information system with business methodologies to support operations • Ensure seamless integration between geographic information systems and business systems Provide monitoring of all activities in the secretariat from • Through panels, thematic maps and results provide a • mechanism for evaluating and measuring the performance of the secretariat and its operations • Providing a mechanism to easily exchange data with stakeholders inside and outside the Secretariat • Provide specialized spatial analyzes of data • As well as operational information to support decision-making	• Provide support and guidance Ensure that all decision-makers at higher administrative levels are fully aware of GIS and its uses as an element Essential in the field of work • Ensure that all departments in Medina Municipality support GIS Ensure that all managers and decision-makers in the Municipality of Madinah are aware of geographic information technology and how it can be used as a basic element in their respective fields of work Ensure that the departments of Medina Municipality have sufficient resources to use And update Organized Geographical information • Provide guidance and follow-up in time

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rating friends Matter	Stakeholders	Values offered to clients (What will the GIS team do)	What is expected of stakeholders?
			Suitable for solving problems that cannot be solved at the technical level • Provide support in setting data use and publishing policies
Departments	• Planning Urban • Label And numbering • Valleys And torrents • Studies And designs • Studies And planning Structural • Gardens And beautification • the health Environmental • Stores • safety And services	• Provides an updated geographic central database • High credibility • Dissemination and application of the latest geospatial technologies supports the work of the Secretariat • Simplified and seamless geographic information system with business methodologies to support operations • Ensure seamless integration between information systems Geographic and business systems • Provide institutional and departmental geospatial applications • Ensure seamless integration between geographic information systems and business systems • Secure access to GIS data, maps, information summaries, and statistics • Providing specialized spatial analyzes of data in addition to operational information to support decision-making •	Collaborate with the geographic information systems team in developing and managing the suitable Persistent To content data Geography Spatial (Tables or drawings) • Ensure the continuous updating of the data to use the developed system effectively • Be proactive in identifying any opportunities or issues and informing the GIS team to act or participate in the decision • Cooperating with the GIS team in analyzing the needs of the divisions and departments and determining the required support and plans for building and strengthening capacities in GIS.

rating friends Matter	Stakeholders	Values offered to clients (What will the GIS team do)	What is expected of stakeholders?
	the public • Lands • Investment	Both • Providing a mechanism to easily exchange data with stakeholders inside and outside the Secretariat • Spreading awareness of geographic information systems and training on using the system • Providing advice and specialized technical support. • Providing geographic information systems that would help provide better services to clients inside and outside the secretariat.	Linking geographic information systems To enter Element Spatial for Institutional Applications Other • Appointing a person or persons from each department to be the liaison and coordination between the department and the Department of Geographical Information Systems • Actively participate in awareness-raising events, technical committees and working groups when needed and on an ongoing basis
	• Technology Director the information	• Providing an updated, centralized, database of high credibility • Dissemination and application of the latest geospatial technologies supports the work of the Secretariat • Provide a mechanism to easily share data with inside and outside the Secretariat • Ensure compliance with technology standards • Promote business sector technology solutions	• Providing support in managing the geographic information system • Managing backup operations and the GIS database • Providing support in securing the budget of stakeholders For geographic information systems • Providing support in the integration of information systems Geographic information and systems Information Technology

rating friends Matter	Stakeholders	Values offered to clients (What will the GIS team do)	What is expected of stakeholders?
		the information • Ensure the most appropriate connection between bases is secured **Institutional and geospatial data** • Ensure optimal activation of the geographical component Spatial in departmental and institutional applications	• Providing the required hardware and software Ensure that the link requirements are included in the design of the databases and the systems available in the secretariat. Ensure that the GIS management is in the secretariat • It has the resources to maintain and operate the geographic information
	Director and staff • Management Organized the information Geography	• Provide training and ensure capacity building and strengthening Appropriate and knowledge transfer Providing an updated, centralized, database of high credibility • Dissemination and application of the latest geospatial technologies supports the work of the Secretariat • Providing a mechanism to easily exchange data with stakeholders inside and outside the Secretariat	• systems and maintain and update the geographical database Spatial And guarantee Their quality Providing support and training in geographic information systems for users Honestly • Coordinate data sharing with users outside of the Secretariat • Needs And requirements Development of geographic information • systems Maintenance of a manual for geographic information systems for all data Geography Spatial the basic

rating friends Matter	Stakeholders	Values offered to clients (What will the GIS team do)	What is expected of stakeholders?
			• Maintaining standards for geographic information systems data • Determine the latest technology and research its value and utility for the Secretariat
	Commission Supreme To develop an area	• Secure access to Medina's geographical database Centralized updated high credibility	• Implementation Standards data Set by the Ministry of Municipality and Rural Affairs and used by the Municipality of Medina • Provide access to the latest GIS data
	Pay	• Ensure the seamless integration betweenSystems bouquets the geographic information app and the payment system	• Offer support in resolving any payment issues.
	Ease	• Providing an updated, centralized, database of high credibility • Disseminating and applying the latest technologies for geospatial solutions Supports the work of the Secretariat • Simplify business processes with information systems Geography To support Processes And services e • Ensure seamless integration between information systems Geography and electronic services • Provide a mechanism to easily share data with	• the support importance Projects And initiatives Organized the information Geography • Provide Standards And requirements Related Regulated the information Geography

rating friends Matter	Stakeholders	Values offered to clients (What will the GIS team do)	What is expected of stakeholders?
		Stakeholders inside and outside the Secretariat • Sharing of the Municipality's systems, experiences and lessons learned with other municipalities	
	Ministry Affairs Secretariat and village	• Follow the Ministry of Municipality and Rural Affairs standards (data, systems, metadata, applications, software, and hardware) Secure access to a credible, up-to-date geo-central database • Providing a mechanism to easily exchange data with stakeholders inside and outside the Secretariat	• Provide satellite images and recent aerial photos • Provide the latest versions of the standards
	Ministry of Finance		• Support in financing initiatives and projects Organized the information Geography
	Entities Government Other (The facilities)	• Secure access to a credible, up-to-date geo-central database • Simplify geographic information systems with business processes and provide access to • Ensure the continuous updating of the data of stakeholders outside the participating secretariat • Use the developed system In work procedures • Providing automated work procedures to facilitate interaction between the Secretariat and other stakeholders	

rating friends Matter	Stakeholders	Values offered to clients (What will the GIS team do)	What is expected of stakeholders?
	Universities	• Secure access to a credible, up-to-date geo-central database	
	Contractors And consultants	• Secure access to a credible, up-to-date geo-central database • Providing tools to facilitate interaction with the Secretariat and exchange of project data • Provide data standards	• • Providing GIS data or AutoCAD drawings in a GIS environment that conforms to data standards in Al Madinah Municipality • Provide information on project progress in accordance with the requirements of the secretariat and in a timely manner
	Operators Services	• Secure access to a geographical database • Centralized updated high credibility • Providing automated work procedures to facilitate interaction between the Secretariat and other stakeholders • Simplify geographic information systems with business processes and provide access to • Stakeholders outside the secretariat, the participants • In work procedures	Providing GIS data or AutoCAD drawings in a GIS environment that conforms to data standards in Al Madinah Municipality Use the developed system Report operations and their status
	Population	• Development of automated electronic services to improve City operations and services • Provide access to spatial data through the Internet or from devices •	• Use of systems • Submit suggestions for improvements Encouraging the use of geographical indications

rating friends Matter	Stakeholders	Values offered to clients (What will the GIS team do)	What is expected of stakeholders?
		Portable • Provide a system for reports, complaints and suggestions	Digital and electronic portal for information systems Geography To be honest Medina
	the public	• Provide access to spatial data through the Internet or from devices • Portable • Providing the necessary tools and applications that can be used to guide visitors to Medina (digital guide)	Encouraging the use of the digital geographical directory and the electronic portal for information systems Geography To be honest Medina
	Investors	• Provide access to spatial data through the Internet or from devices • Portable • Automate and optimize the investment process • Providing the necessary tools and applications that can be used to guide visitors to Medina (digital guide)	Use the developed system • Encouraging the use of the digital geographical directory and the electronic portal for information systems Geography To be honest Medina

schedule 1: A list of stakeholders and mutual benefits

SWOT analysis

Quadratic analysis (*SWOT Analysis* As a general strategic analysis tool, it aims to define the following:

- Elements of Power, which is translated from the word srtgnertS

- Weaknesses, translated from sgssngSSgS keyword

- Opportunities, an expression of siittrunprpgS

- Threats, sttgsrS

Through a study of preparing the strategic plan for geographic information systems, the SWOT analysis was implemented based on the following

axes:

- Customer Hub (*Customer*

- The axis of internal operations and work procedures (*Internal Business Process*

- Training axis ( ) *Learning and Infrastructure*

- Axis of financing (*Financial*

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures	A strength element	Almost all departments of Medina Municipality use staff on programs Geographic information systems support their development	Developing a training plan And all ESRI programs New

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures		Medina Municipality has been using the information systems component of geographic strength for more than ten years	Develop an engagement plan Stakeholders to keep Take care to support them And share them
Processes Interior And work procedures		Most of the business procedures that take place in the departments of the Medina Force component depend in their use on systems Geographical information	Developing a training plan Employees on ESRI programs and all new programs
Processes Interior And work procedures		An element of strength GIS has been linked with apps Business procedures for Medina Municipality	Developing a training plan Employees are on programs And all ESRI programs New
Processes Interior And work procedures		Some element of data is only available in AutoCAD format, and no data merging and uploading plan is provided Double converted and linked with the Mapinfo database	Data collection and development and uploading plan is provided Database design Upload and merge data

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures	The process	There are no specific standards and measures that help facilitate component of AutoCAD data conversion to information systems is weak Geography	Development of standards and metrics AutoCAD data and GIS, So it is distributed And share it within the secretariat Medina or Their contractors from Contractors and consultants
Training	Element	There is insufficient functional staff to manage information systems. Geographical weakness	Developing a capacity building plan for the systems personnel team Geographical information And city secretariat departments The other Medina
Processes Interior And work procedures	A need	component of Medina Municipality for a vulnerability reporting system	Developing a capacity building plan and providing the necessary training
Training	an item Weakness (contractors)	Human resource recruitment is done through contractors	Developing a capacity building plan for the systems personnel team Geographical information And city secretariat departments The other Medina
Learning and structure the basic	The element	of the need for the Medina Municipality staff for training courses is to implement a capacity-building vulnerability plan to use geographic information systems	And provide the necessary training

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures	Element Poor	Data problems: • Repetition of spatial data • The data is incomplete • The lack of correlations between layers and tables to validate and correct them • data accuracy problems • The need to develop data quality control processes QAQC	, Data review and development Plan to check it out. making sure --- Implement a data validation project
Processes Interior And work procedures	an item The weakness	The base map is currently available in the City Municipality of the Munawara is not up to date	Review the basemap And develop a plan for modernization Own data --- Map data update Basically based on Updated general outline For Medina and its environs
Processes Interior And work procedures	Element of strength	Aerial photographers of the cities of Medina and Yanbu are available at the Municipality of Medina for the year 2412	The use of aerial photos To verify the correctness of the data and update it accordingly. It should also be reviewed and scrutinized Status for aerial photos Available, develop a plan For aerial photos required

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures	An Element Strength For each layer, there is only one owner with Layers and Update permissions Selected to be edited		Developing a plan for the owners permissions Responsibilities for each department
Processes Interior And work procedures		The Medina Municipality has a business flow system to review the system, the element of strength of modifications and approval	automation of the data review And approval processes
Customers	Element of strength	Many services available to clients are automated	Definition and analysis of requirements For electronic services And a plan to develop it
			Implementing the electronic services development plan
Training	Element of strength	The Municipality of Medina has modern computers with good specifications. Also, all programs used in the departments of Medina Municipality are being permanently upgraded	There is no need for additional hardware for users

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures	The element	of most of the business procedures of Medina Municipality is the weakness of the undocumented	Documentation of operations procedures Work as they are, reviewing and improving them. Some Business procedures need To re-engineer to be Easier. Then the application workflow is modified accordingly
Training	an item	Some Usage-based Map Info applications Weak geographical information systems have been operated, but in the form of geographic information systems incomplete	Incorporate and improve standards Currently available applications Independent and integrated to function On the ESRI environment
Processes Interior And work procedures	The element	A data dictionary describing the data model is not available. layers and tables available in the database are double Geography	Review, improve and document Database design

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures	an item weakness	The lack of specific standards and criteria for developing data to be distributed	Development of standards and metrics AutoCAD data and GIS, And share it within the secretariat Medina or Their contractors from Contractors and consultants
Processes Interior And work procedures	the data strength	All departments of Medina Municipality support sharing of the base map, but within Specific permissions	Developing procedures and processes Share data
Financing	The power	Medina Municipality is able to finance various component of benefit GIS projects To various departments	Secure annual funding According to the implementation plan Systems strategy Geographical information

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures		The Medina Municipality component is not satisfied with the architecture of the System Architecture weakness	Review requirements And the needs of the city secretariat Al Munawara and Design are the latest technology in architecture To the system. Which includes Hardware, systems software Geographic information, Third-party products, Remote sensing programs and others. Implement all that was included in the engineering plan System architecture
Processes Interior And work procedures		The element of the layer of streets of the Municipality of Medina is the development of a network of streets for the city double equipped for navigation	Munawara is equipped for navigation
Processes Interior And work procedures		The element of the unavailability of applications built for use on devices and the development of a plan to develop mobile vulnerability	Definition and analysis of requirements For mobile device applications, Applications Implement a development plan Mobile devices applications

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures		Medina Municipality needs updated data Element for water and electricity services and other weaknesses Other government	Developing procedures and processes Share data
Training		The security and protection applications component of Al Madinah Municipality Weak Al Munawwarah needs to be developed and improved	Application needs review The protection available at Medina Municipality, in addition To design and develop security and protection tools
Processes Interior And work procedures	an item weakness	Geographic information systems are not used for planning	Definition and analysis of requirements And information systems needs Geo-planning Design and implementation of tools And systems to use systems Geographical information To plan
Processes Interior And work procedures	an item Double and upgraded	The applications currently available in the Municipality of Medina, which are currently available for old applications, are not easy to use and need to be upgraded	Incorporate and improve standards which are currently Geographic information systems Independent and integrated to function On the ESRI environment

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures	Element There is no unified central repository for data in a unified and constantly updated secretariat, the weakness of Medina		Central warehouse development For data information systems Geography
Processes Interior And work procedures	Element The Medina Municipality has an updated data form that is not reviewed, improved and documented weaknesses that are updated and do not match the existing data structure.		Database design
Training	An element of strong	Currently Medina Municipality is developing networks contact with all municipalities and governorates within the scope of the engineering plan Medina region	Implementing all architectural requirements for the system
Training	Element of strength	Madinah Municipality is currently in the process of purchasing licenses for ESRI products	Implement all that was included in the engineering plan System architecture
Processes Interior And work procedures	Element Not available Geographic information systems applications that support weak analysis and decision-making processes		Definition and analysis of requirements Geographic information systems For analyzes and fast taking the decision Design and implementation of GIS tools help In analysis and decision-making

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures	an item Some of the data is available in hard copy		The need to compile and evaluate Paper data. And well Need to convert data And upload them to the database Geography
Training	The functional cadre in the secretariat's departments has employee experience on programs, which is a strength in geographic information systems, as some of them are Experts in the use of geographic information systems		Developing a training plan SRI and all programs New
Training	The Medina Municipality component is in need of staff with weak experience and technical capabilities in GIS		Developing a training plan Employees are on programs And all ESRI programs New
Training	an item weakness	The employees of Medina Municipality are facing technical problems in the engineering plan in applications that hinder them in completing the daily work	Implement all of what has been listed System architecture
Processes Interior And work procedures	The element of some geographic data is up-to-date without a confirmation that its metadata is correct		Review, document and distribute Business procedures to update data. The metadata should also be verified as needed

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures	an item weakness	The workflow of some business procedures is long and business to complete	Documentation of business procedures ## As it is, Review and improve it. Some procedures need a lot of time To re-engineer to be Easier. The application business flow will then be modified accordingly
Processes Interior And work procedures		The element of street numbers and road signs is not updated, especially for map	Geographic layer development road signs. Double the base Available in Medina and its environs
Processes Interior And work procedures	an item weakness	Some streets have no physical numbers	Review and complete the street numbering process
Processes Interior And work procedures		Some staff members in Medina Municipality double that they use Google Maps to locate them	Map explorer development, It reads data from a central data warehouse

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the hub	The degree of influence	Vision		Action
Processes Interior And work procedures	an item weakness	No lift line layer available	Witchy	Special layer development For spatial elevations And areas heights. this is Class will be done Use it to develop a map Three-dimensional city Munawara.
Processes Interior And work procedures	Element of strength	Medina Municipality is using some form tools		Review and evaluate tools Currently available models And study the possibility of linking them to geographic information systems
				Develop a plan to link modeling tools with geographic information systems
				Implement a plan to link modeling tools with geographic information systems

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures	an item weakness	Medina Municipality needs to develop a remote sensing system	Review requirements And the needs of the city secretariat Al Munawara and Design are the latest technology in architecture To the system. Which includes Hardware, systems software Geographic information, Third-party products, Remote sensing programs and others.
Processes Interior And work procedures	an item weakness	Data modifications for GIS are complex and difficult	Definition and analysis of requirements Modify and update data Using information systems Geography Design and implementation of geographic information systems tools that Assists in analysis and decision-making

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures	A threat	Medina Municipality is not connected to the Ministry of Municipality and Rural Affairs. This makes the process of sharing and sharing data difficult	Development of mechanisms and structures Data substratum, than It helps with ease of sharing data and distributing information
Processes Interior And work procedures		The Medina Municipality force component is using the navigation system to develop Global to collect data from websites	Review, improve and document ## Database design procedures for collecting Data from system devices Global Navigation, Extraction Data and upload
Processes Interior And work procedures		The element of lack of a geographic system for determining the location of investors is weakness	Definition and needs analysis And information systems requirements The geography that pertains Investments Design and implementation needs And information systems requirements The geography that pertains Investments

the hub	The degree of influence	Vision	Action
Processes Interior And work procedures	Opportunities	The ability to take advantage of data and applications to provide geographic services	-
Processes Interior And work procedures	Opportunities	Establishing partnerships between the public and private sectors to operate some services	-
Processes Interior And work procedures	Opportunities	Obtaining the support of those who facilitate the provision of electronic services	-
Processes Interior And work procedures	A threat	Collaborate and share data with other government agencies	-
Customers	A threat	Citizens may not be able to use online services	-
Processes Interior And work procedures	A threat	Availability of human resources in the market	-

schedule 2: SWOT analysis

Pillars of the strategic plan for geographic information systems

Vision

See Medina Municipality

' To be the pioneer in providing excellent municipal services in the Kingdom "

Vision of the Geographic Information Systems Department

Securing innovative geographic information systems solutions to provide municipal services on a global level

the message

Medina Municipality message

We provide excellent municipal services to satisfy our customers and we are keen to develop our resources to achieve with our partners the

development and development of the Medina region.

Geographic information systems department message

Ensure availability of data and rapid access to reliable information to improve efficiency and enhance cooperation within and outside the

Municipality of Medina

Value

Values   of Medina Municipality

- Achieve total quality

- Inculcate and develop public awareness

- Maintaining the safety and health of the

- environment. Excellence and upgrading the level of secretariat services

- Preserving the identity and privacy of the Medina region

- Developing the Al Madinah Al Munawarah region in urban, economic and social

- terms. Providing a suitable work environment and developing the capabilities and skills of the Municipality's employees

Values   of geographic information systems management

- Quality at work: Commitment to providing high quality services that exceed customer expectations

- Sustainable development: Looking forward to raising the standard and enhancing the services we provide

- creativity and innovation: Create innovative ideas

- Effective communication with others: Benefiting from the experiences of others and benefiting others from our experiences

- Teamwork and cooperation: Ensuring a healthy, creative and productive work environment based on cooperation between business personnel

- Mutual respect, commitment and honesty in dealing with others: Commitment to carrying out business on time and acting with integrity

  and good faith

The basic principles of the work of the geographic information systems team

The GIS team will assume the following responsibilities:

- Operation, maintenance and support of geographic information systems in Medina, including unified central databases.

- Managing geographical and spatial information and ensuring the continuity of its commitment to the required standards and frameworks, and emphasizing its accuracy, consistency, completeness and timeliness.

- Managing and supporting GIS initiatives in Medina Municipality. Providing practical

- support to the administrations and individuals of Medina Municipality.

- Encouraging the development and use of integrated systems rather than stand-alone systems.

- Facilitate, organize, sponsor, and support the optimal utilization of GIS technology and data related to it in Medina Municipality and throughout the Medina region.

- Improving GIS performance to support the operations of the Medina Municipality through assessment and investigation of stakeholder needs.

- Develop simple jobs internally and outsource major improvements.

- Managing and supervising GIS projects while they are implemented by contractors. Promote technology

- values   and share data.

- Promote awareness of geographic information systems and facilitate their learning in Medina Municipality.

- Providing human cadres with technical competencies and qualifications in work and leadership who have the knowledge and skills required in the technology of geographic information systems in order to activate the use of technology in a good way to secure

- an effective and reliable means of access to maps and geographical information related to Medina Activating communication and

- sharing geographical data with external government and private agencies

Map of the strategic plan and its objectives

الخريطة الاستراتيجية لنظم المعلومات الجغرافية

العملاء			
C4 توفير دعم فوري	**C3** تحسين إنتاجية الادارات المختلفة	**C2** الارتقاء بوعي المواطنين حول خدمات بلدية للمدينة المنورة	**C1** ضمان توفير خدمات بلدية ذات مستوى عالمي

العمليات الداخلية				
P5 تعظيم استغلال موارد نظم المعلومات الجغرافية	**P4** تعظيم استخدام نظم المعلومات الجغرافية والوعي بها	**P3** تحسين العمليات	**P2** توفير أنظمة مطلوبة لاستخدامها من قبل المستخدمين	**P1** ضمان الوصول إلى معلومات موثوقة

التدريب			
L4 تحسين التواصل وعمل الفريق	**L3** الابقاء على جهوزية الكوادر المؤهلة والمدربة	**L2** التطوير المستمر لمهارات الكوادر البشرية	**L1** تأسيس بيئة معلوماتية متكاملة

التمويل	
F2 تأمين تمويل لنظم المعلومات الجغرافية	**F1** استخدام الموارد بفاعلية

the shape 4: The strategy map

The table below shows the objectives of the strategic plan of the Municipality of Madinah according to the map shown above:

code	the hub	Target
C1	Customers	Ensuring municipal services on a world class level
C2	Customers	Improve and enhance citizens' awareness of the services of the Municipality of Medina

| code	the hub	Target
C3	Customers	Improving departmental productivity
C4	Customers	Provide immediate support
P1	Processes Interior	Ensure reliable information
P2	Processes Interior	Providing systems required for use by users
P3	Processes Interior	Improvement operations
P4	Processes Interior	Maximizing the use of geographic information systems and spreading awareness among users
P5	Processes Interior	Maximizing the utilization of GIS resources for consulting, development, maintenance, operation and support
L1	Training	Create an integrated information technology platform
L2	Training	Continuous improvement of employees, by developing knowledge, skills and competencies
L3	Training	Attracting, retaining qualified and trained employees,
L4	Training	improving communication and teamwork
F1	Financial	Efficient use of resources
F2	Financial	Securing appropriate financing for geographic information systems

Schedule 1: Objectives of the strategic plan

The geographic maturity of the Medina Municipality aims to help determine its position in the spatial data infrastructure field, to define its path towards geographical maturity and to monitor progress.

According to the assessment of the current situation of geographic information systems in the Municipality of Madinah and for the special study prepared by the consultant to develop the strategic plan for GIS in the Municipality, it was found that the Municipality of Madinah falls within the level of number 3, i.e. the administrative level, as most departments have applications that depend in their use on systems Geographical information.

Maturity and advancement to higher levels will be gradually achieved, as each stage will be taken towards its prepared and designed goal within the strategic plan. The strategy is expected to be fully implemented within five years, as the level of maturity is expected to reach No. 9, i.e. the national or regional level.

The figure below indicates the geographical maturity of the Municipality of Medina, where the gray rectangle shows the current level of geographical maturity of the Municipality of Medina, while the orange rectangle shows the level of geographic maturity expected to be reached after the strategy is fully implemented within the next five years.
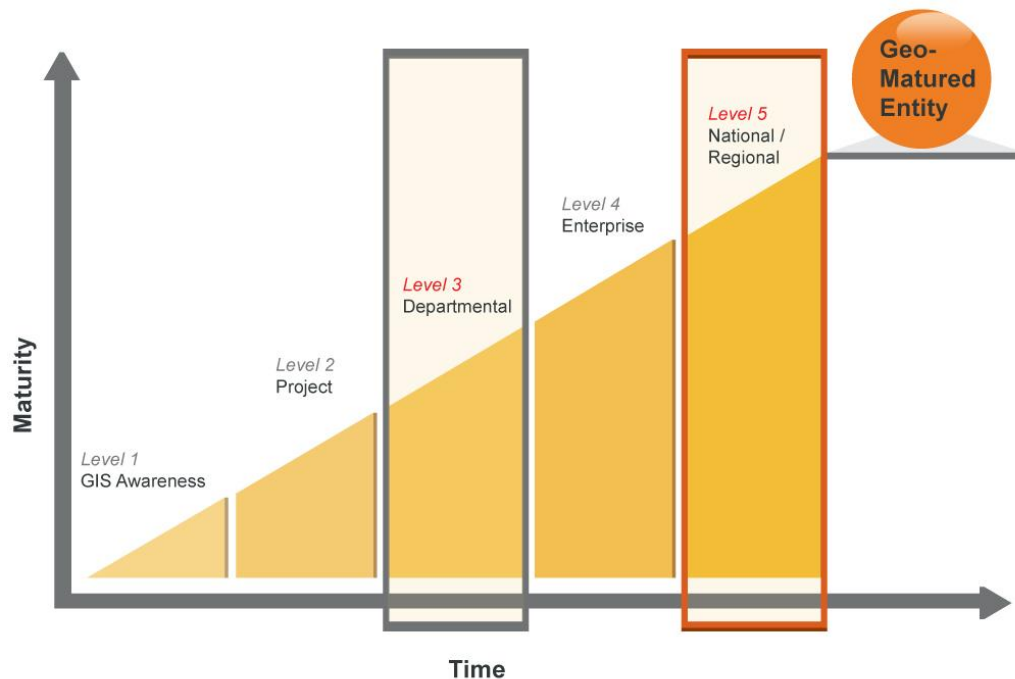
the shape 5: The level of geographical maturity of the Municipality of Medina

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Designing plan programs and projects

The strategic plan has been prepared based on an assessment of the requirements of the Municipality's departments and an analysis of their work

and services provided, taking into consideration the existing technical infrastructure (hardware, software and networks) and the existing human cadres.

In an integrated institutional environment such as that which the Medina Municipality aspires to, the geographic information system adds a new

spatial dimension to many applications and systems, even if the geographical dimension is not central to those applications and systems.

During the implementation of the works, the basic elements of the strategic plan were studied and evaluated, which consist of the following:

the shape 6: Elements of basic geographic information systems

Spatial & Tabular Data

The multiplicity of data is the guide of Hajdar Al-Asadas to renew the system of geographic information, so that a number of reviews and the

presentation of available data will be carried out with the determination of the number of statements against and the example, and this is the same

in terms of the relevant issues, the details and the loss of the proposals for the multiplicity of them, the development of the required threat, and the threat of the effort.

Software and Applications

As well as data durations, as well as the duration of the existing programs and applications. There has been a prolonged application and review of

the number of programs and applications related to the various geographic information systems.

The possibility of disbursement is threatened, and a suggestion of new programs that need to be renewed within the period of time for periods of service or payment of trust services.

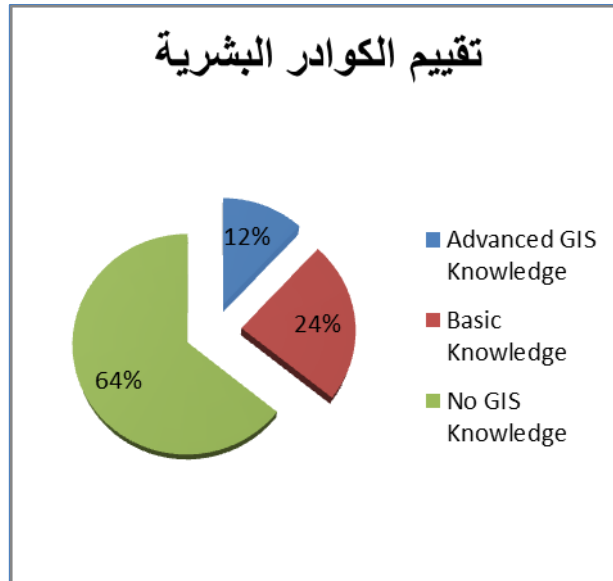**System Architecture (Computing Infrastructure)**

The current situation has been evaluated at the GIS Center at the Deanship to the extent of extending the equipment, programs, networks, expressing opinions and submitting proposals to improve and develop the Computing Infrastructure in a manner consistent with the needs of the Center and the current and future secretariat.

Technical staff

Which is considered one of the most important elements that the strategic plan depends upon. There has been a review and analysis of the capabilities of the staff, and the presentation of proposals for the development of the organizational structure, the identification of unique functions of work, the analysis of the capabilities of the staffing staff, and the progress of the proposals and recommendations for the organization of the recruitment and recruitment process goals.

The employees of the Municipality of Medina can be classified in terms of the level of experience with GIS as follows:

- Modest level of knowledge of geographic information systems, where the staff may have very little knowledge of geographic information systems, or not at all. This level represents 64% of the total employees, which is the largest percentage.

- A level of knowledge of the basic rules of geographic information systems, where this level represents 24%, as appropriate courses must be provided for the technical staff to become at a better level in geographic information systems, which directly helps in the effective use of geographic information systems and how to benefit from them.

- An advanced level in geographic information systems, where this classification represents 12%. The majority of them are developers of applications or geographical databases and their data.

Consulting engineering services project to study the development
of geographical information in the municipality of Medina

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the shape 7: Evaluation of human cadres in the secretariat

Procedures

Weak and poorly studied work procedures undermine the capabilities of the system and prevent it from being used or utilized appropriately. It also

puts the system and its data completely in place, in order to destroy the danger of distant cities in the city of information, and to the extent to which

it praises the possibility of illegal and organized access to data.

Evaluate the current situation and visualize the future reality

The following figure shows the current situation in the secretariat for GIS elements with regard to hardware, software, GIS

applications, GIS users, owning geographical data and supporting geographic information systems:
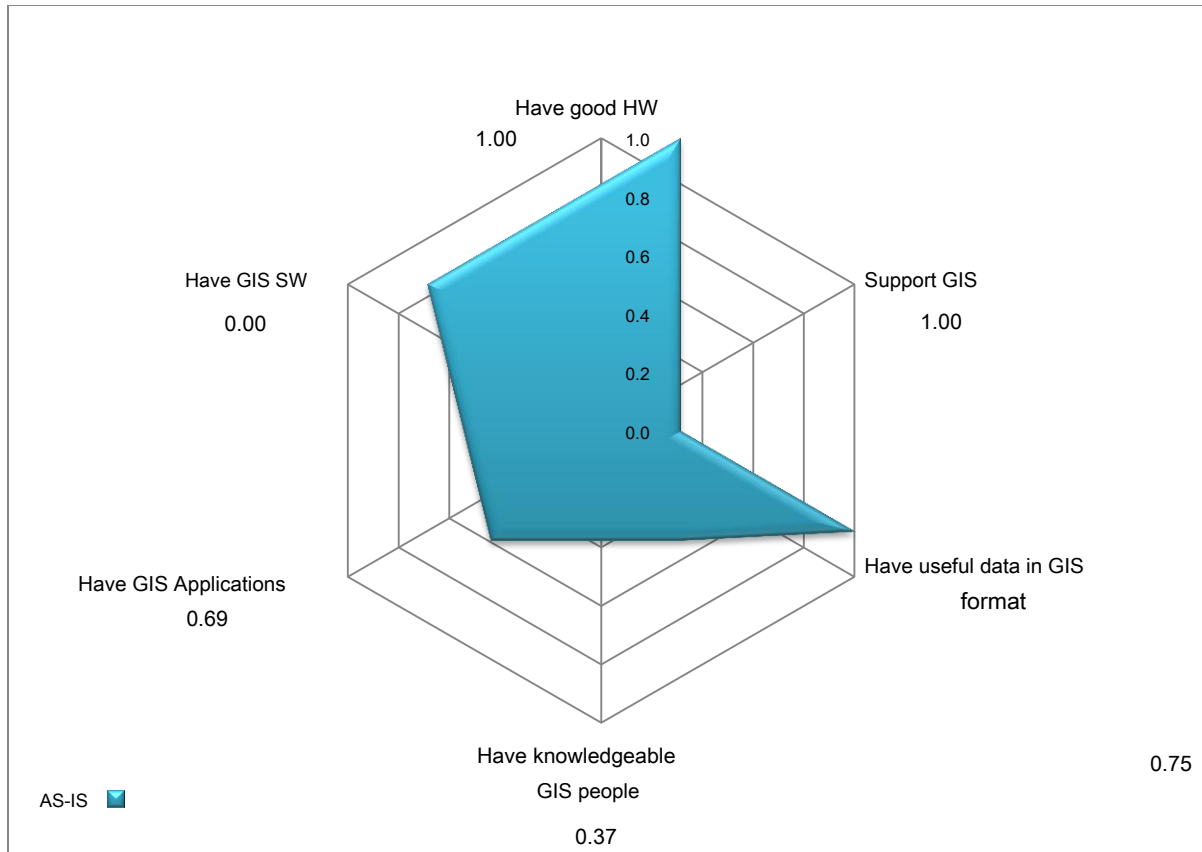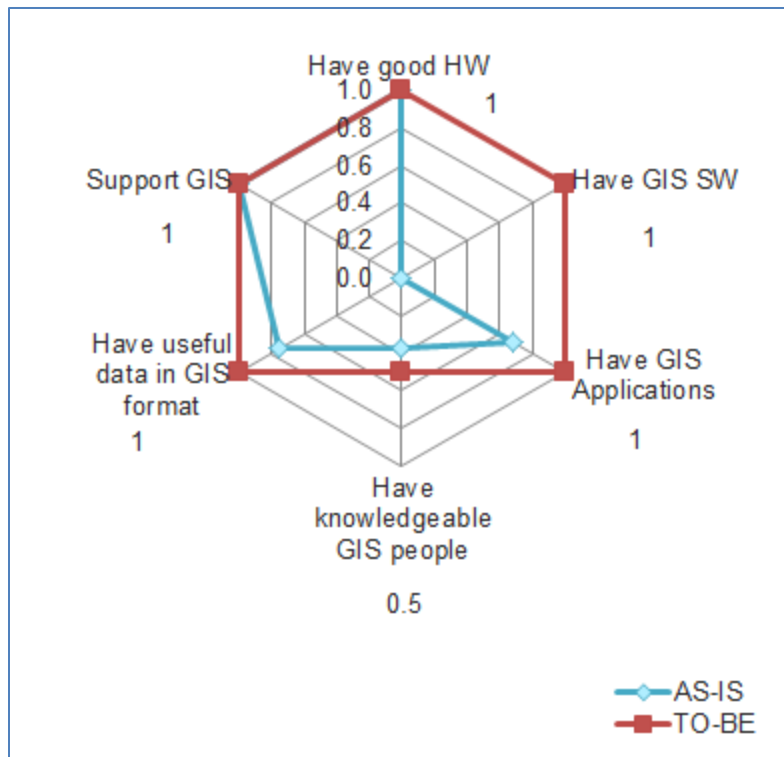
the shape 8: The current state of the elements of geographic information systems

The figure above shows the following elements:

- **Devices (Have Good HW): Yes** All devices currently available to the departments are suitable for the future development of geographic information systems

- **Programs:** There is currently no use of ESRI products within the Medina Municipality.

- **Geographic Information Systems Applications (Have GIS Applications): a** Administrations are in dire need to use geographic information systems and their applications, which include updating layers, modifying, sharing data, setting permissions for layer owners, and others. Currently, Medina Municipality has a set of applications based on the use of geographic information systems using Mapinfo products, which has a set of technical and technical functions. The applications currently available need to be developed to include technical functions that help users perform their daily work easier and faster. Whereas, the main goal is to reach the development of existing applications, improve their performance, add the functions of each department and make them highly flexible.

- **GIS users (Have knowledgeable GIS people):** There are many people in the Municipality of Medina who have different levels of experience with GIS. The level of expertise is distributed among the departments that were interviewed, from what is most moderate to good.

- **Have useful data in GIS format:** Most of the data available at the Municipality of Medina is prepared for use by geographic information systems. Where there are aerial photos, base map layers such as administrative borders, real estate and other layers that are used according to the needs of the departments. It was also evident during the interviews that the departments needed to update the spatial and descriptive data for all layers of the basemap and other layers for the departments. New data must be scanned and added on geographical layers to be used in daily business. Also, all geographical data in the Municipality of Medina are available in the format of Mapinfo. All data must be converted to be compatible with ESRI products. The main goal is to obtain spatial and descriptive data of high accuracy updated periodically, in addition to creating new layers containing the information required by the departments of Medina Municipality.

- **Support GIS:** All departments of Medina Municipality concerned with geographic information systems support the use of geographic information systems to facilitate daily business.

Shows   The following figure shows two figures: The first drawing is in blue, which represents the current status of the Municipality with regard to the elements They were detailed above, and the second drawing in red color represents the future reality of the basic elements of the geographic information systems that are intended to be reached:

the shape 9: Draw the current and future status of the elements of geographic information systems

The following sections explain the various programs and projects that will be implemented in Medina Municipality.

Programs and projects

The projects are classified into five main programs:

the shape 11: Classification of projects

The tables below show a comprehensive list of all projects that have been identified based on the needs of stakeholders.

Note: After reviewing the GIS strategy by the Secretariat, the comments of decision-makers regarding project priorities will be taken and accordingly an updated implementation plan will be presented.

Program 1: Organizational Strengthening

Project code	project name
O01	Development of the geographic information systems management structure
O02	Develop GIS team processes and procedures across departments
O03	Training and capacity building

Project code	project name
O04	Awareness and publicity

Program 2: Infrastructure strengthening

Project code	project name
I01	Evaluation and planning to strengthen the infrastructure for projects.
I02	Implement an infrastructure development plan for projects.
I03	Continuous development and evaluation

Program 3: Developing and Sharing a Data Warehouse

Project code	project name
D01	Developing a geographical data
D02	warehouse, developing data standards
D03	and procedures, updating the base map
D04	Cadastral map update
D05	Development of the naming and
D06	numbering system Expanding the data warehouse

Program 4: Business Process Enhancement

Project code	project name
A01	Medina explorer
A02	Security and user rights control. Synchronization
A03	of geographical databases
A04	Connect applications with geographic information
A05	systems to enhance operations procedures
A06	Project executive panel display system

Project code	project name
A07	The development of the GIS portal, the
A08	development of the application of geographical
A09	communications, the development of the process of updating the data
A10	Developing a field monitoring
A11	system Developing a navigation system
A12	Development of the urban observatory
A13	system, the land information system
A14	Project tracking system
A15	Road implementation follow-up
A16	system, health certification system
A17	Regulation of violations and inspection
A18	Building permit system
A19	Coordination system and excavation
A20	licenses Development of a data
A21	management system Investment system
A22	Regional scheme system
A23	City view in 3D system
A24	Development of risk system, emergency
A25	management system, pollution management system
A26	Irrigation management system
A27	Landscaping and beautification
A28	system, rainwater network
A29	management system, lighting network system
A30	Facility management system
A31	Pest control system. Development of
A32	electronic services system. Development
A33	of modeling tools

Program 5: Business Innovation

Project code	project name
B01 Developing a partnership plan between the public and private sectors	
B02 Defining and planning geographical products	
B03 Implementation of the geographical products plan	

Methodology for defining projects

The following elements will be defined for each of the projects identified:

- project name

- Project number: The number assigned to the project

- Project description: General explanation of the project

- Project Objectives: The goals presented by the project or program

- The priority of project implementation within the strategic plan: The priority was determined based on the difficulty of implementing the

    project compared to the benefits provided by the project to the secretariat:

    o Strategic priority based on objectives. Strategic priority

    o according to stakeholders. Frequency of use.

    o

    o Ease of development.

    o The risk associated with development.

    o Relative cost associated with development.

- Execution period: The time period required to implement the project

- Stage: The proposed stage for implementing the project, where each stage represents several months.

- Timelines and factors that the project depends on: Any constraints or dependencies that affect the success of the project or program

    implementation are listed in this section.

- The human cadres required to implement the project: Determine the total cadres and the months of work required to carry out the project.

- Estimated cost: which was calculated based on the number of human cadres and specializations required to implement each project, in addition to the hardware and software costs.

Description of projects

This section deals with each project according to the specifications that were explained in the previous section.

Note: This section will be completed after the Secretariat approves the projects proposed by the consultant.

Executive Plan

Implementation plan

The purpose of the implementation plan is to clarify how the plan is to be applied on the lands of the lands that are located within the elements that are destined to be determined as "destroying the programs and the projects." In addition to this, the management of the plans is tightening the number of sequences of the sequence of time for the implementation of the strictest projects that are determined within the strategic plan, the duration of implementation,

Criteria for preparing the operational plan

When preparing the implementation plan, the following criteria and factors were taken into consideration:

- The time period for implementing the project was determined based on the nature of the project (continuous or one task), the effort required to implement the project, and the extent to which the Secretariat needs to benefit from the project outputs for its work or other projects dependent on it

- The human cadres and specializations required to implement each project were determined based on the quality of the project and the time period for its implementation.

- The estimated value of implementing the project was determined based on:

  o Personnel costs based on number by disciplines (man months)

  o Hardware and software costs required (for some projects)

- The start time for implementing each project was determined based on the following factors:

  o The priority identified based on the difficulty of implementing the project versus the expected benefits

  o Results of the survey on the opinions and views of departmental managers and stakeholders

  o Projects on which the implementation of other projects of high importance depends

  o Projects that benefit the largest number of departments

Criteria for prioritizing projects

Projects were prioritized based on the following criteria:

- Strategic priority according to objectives: These are the goals that will be achieved through project implementation. Matrix was composed (**Matrix** It shows each project and its associated goals. When a project achieves a specific goal directly, it scores two (2) points, and when it achieves it indirectly, it scores one (1) point.

- Strategic priority according to users (lowest = 1 and highest = 9): which is defined based on the needs of Medina Municipality, as deduced from meetings with departments.

- Frequency of use based on the number of stakeholder departments that will use the applications.

- Ease of development (hard = 1 and easy = 9): It is calculated depending on the duration of the project and the effort required to complete it compared to others.

- The risk index is related to the risk of development (high risk = 1, low risk = 9).

the mission	Values The risk
Training, hardware and software	9
procurement and advisory services	4
Development	3
data	2
Field survey	1

- The relative cost indicator is related to the project development cost (high risk = 1, low risk = 9), which is calculated based on the cost of

  the project compared to other projects.

Execution schedule

The timetable for the implementation of projects has been prepared based on the criteria mentioned above, as each project is distinguished by

a different color and includes the following elements: (See Appendix No.

- The projects it depends on

- project number

- Duration of the project

- The stage during which the project is proposed to be implemented

Quick wins

This section describes the range of quick wins. A "bid book" will be issued directly and as a preliminary result of this study. It will also include a

group of projects that can be implemented in a short period of time and will be of great benefit to the Secretariat and the management of

geographic information systems

Program 1: Organizational Strengthening

Project code	project name
O01	Development of GIS management structure Training
O03	and capacity building
O04	Awareness and publicity

Program 2: Infrastructure strengthening

Project code	project name
I01	Evaluation and planning to strengthen the infrastructure for the calculation of projects

Program 3: Developing and Sharing a Data Warehouse

Project code	project name
D01	Development of a geographic data warehouse

Program 4: Business Process Enhancement

Project code	project name
A01	Medina explorer
A02	Security and user rights control. Synchronization
A03	of geographical databases
A04	Linking applications with geographic information systems

Application and implementation

The implementation of the strategic plan and the implementation plan includes the following:

1. Approval of the strategic plan and implementation plan

2. Identify a leader for the strategic plan, and he may be the director of geographic information systems

3. Securing the necessary funding

4. Providing the necessary cadres

9. Support and accelerate the recruitment process related to geographic information systems

6. Support and speed up the bidding process

7. Disseminating the plan and circulating it in the Municipality of Medina:

- Presenting the results of the strategic plan for geographic information systems to all stakeholders, internally and externally

- Conducting lectures and workshops to spread awareness of geographic information systems

- Highlighting the benefits that will be reaped by the Municipality of Medina when implementing the GIS strategy and implementing various projects

- A one-page business flyer summarizing the strategic plan and distributing it to all employees. It will include: vision, mission, values, and goals

- Printing posters about the strategy and spreading it throughout Medina Municipality.

4. Conducting periodic sessions with the stakeholders to keep them informed of the latest developments

Monitoring and updating

As the Medina Municipality begins implementing the GIS strategy, the Municipality must monitor the progress of the plan and update it periodically. Consequently, the following tasks are to be performed through the Strategic Plan Manager:

- Track the status of the implementation plan

- Issue a status report for the implementation plan and the level of progress made

- Carrying out a periodic review of the strategic and implementation plan, along with evaluation and continuous updating

Accessories

Appendix A: Projects Implementation Timeline