

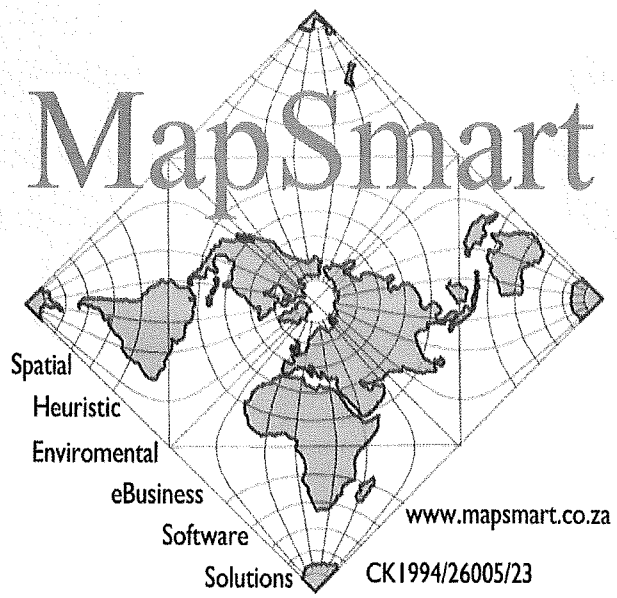
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Spatial decision support system for the selection of an overhead electrical transmission line corridor.

Kershaw, Claude Ian.

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Project Charter

Pilot Project: Suitability Map

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1. Management Summary

This project (creating a suitability map) is the first phase of a creating an optimal corridor selection system for electrical distribution facilities. The customer for this phase is Northern Land Development.

2. Document History

Version History

Version History		
Version Date	**Comments**	**Author**
2008-11-07	Initial Draft after first review session	C Kershaw

Documents Signoff

We are properly mandated to approve this document and agree to the contents thereof.

8/11/2008
Role: ESIGIS Manager Date
Name: Adri De La Rey

8/11/2008
Role: MapSmart Date
Name: Claude Kershaw

3. Understanding of customer needs

The main goal for this project is to investigate the possibility of developing a suitability map by considering multiple factors that influence the corridor selection process. This suitability map will assist with the selection of routes for the location of electrical overhead power lines or substations.

The necessity for a suitability map has grown as it has become increasingly difficult to obtain suitable routes/sites. In determining possible routes, many interested parties with conflicting objectives need to be considered. This project aims to minimize this conflict by facilitating a process where the requirements of all stakeholders can be addressed. This can be done by maintaining a suitability map as part of an environmental master plan. Multiple factors will be weighted and evaluated to produce the suitability map. All stakeholders will be given an opportunity to influence the suitability map thereby making the suitability map more credible and acceptable.

4. Objectives of project

Project Drivers

1. Select a corridor for an overhead electrical power line using spatial principles to:
    a. Reduce costs by reducing the time taken to evaluate alternatives.
    b. Consider environmental, engineering and socio-economic aspects.
2. Identify the criteria to be considered taking the following into account the:
    a. Availability of the data
    b. Reliability of the data
    c. Accuracy of the data
3. Determine the priorities of the criteria.
4. Determine the parameters of the criteria.
5. Conduct a pilot project to evaluate the accuracy of the suitability map.

Project Objectives

1. Optimise the route selection process by developing a model to create a suitability map.
2. Evaluate the model's ability to select corridors that will consider:
    a. Environmental factor/constraints
    b. Engineering factors/constraints
    c. Socio-economic factors/constraints

4.4 Critical success factors

The critical success factors are the measurable criteria set against project objectives in order to gain the ability to measure to which extent the project objectives have been met. The following critical success factors are applicable for this project.

1. Project schedule should be created.
2. All available data must be received.

3. Record held of incoming input data.
4. Measure the outcome of the project against the project scope.
5. Criteria prioritization and parameters must be agreed upon.

5. Project Scope

This paragraph defines the items that form part of the scope of this project. Anything not listed here will be deemed to be out of scope.

5.1 Provision of resources

Provide resources to fulfil functional roles to deliver the project:

1. Project Manager: ESIGIS
2. Subject matter expert:
    a. MapSmart: Spatial Multi Criteria Decision Making
    b. Northern Region: GIS, Environmental Management, Line design, Network Planning, Rights Acquisition.

5.2 Deliverables

1. The outcome of this project is a concept. This concept is to prove that a suitability map could be useful for corridor selection. It is envisaged that a suitability map that is correctly maintained will assist with identifying areas that should be avoided and therefore could be used as part of the regions long term master planning process.

6. Project Approach

6.1 Quality

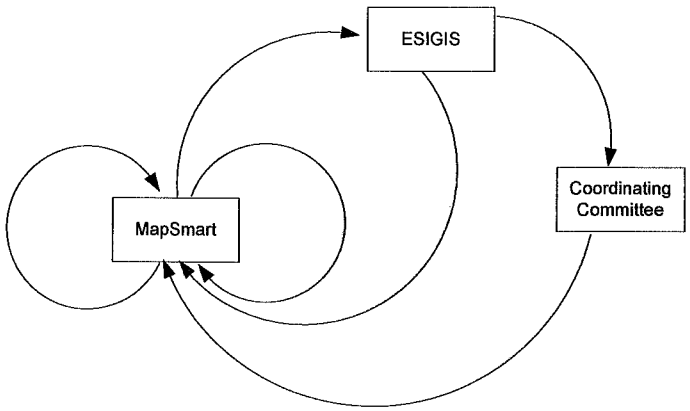
6.1.1 High level requirements

1. Mechanism for developing a process to create the suitability map.
2. Mechanism to identify and prioritize the factors/constraints (criteria).
3. Produce a suitability map that is interpretable by the stakeholders.
4. Mechanism to share results.
5. Be able to demonstrate the principles of the project by using reduced criteria.
6. Sensitivity analysis.
7. Generate metadata for all the output data.

6.1.2 Process

The process of deriving the suitability map will be iterative:

1. MapSmart will evaluate the model to determine its suitability for creating a suitability map.
2. ESIGIS will evaluate the work done by MapSmart and assist in obtaining requirements.
3. The Coordinating Committee will evaluate the overall applicability of the suitability map.



7. Project Organization

7.1 Project Team

1. MapSmart:
    a. Claude Kershaw
2. ESIGIS:
    a. Mmbengeni Makungo
3. Northern Region:
    a. Spatial: Carol Mendoza, Erina Visagie
    b. Environmental: Josiah Zungu
    c. Project Engineering: Siebert Labuschagne
    d. Network Planning: Wickus Erasmus
    e. Rights Acquisition: Caroline Erasmus
    f. Land Development Expert: Keith Webber

7.2 Roles

7.2.1 MapSmart

MapSmart will be responsible for the following:

1. Construct a decision model in ArcGIS 9.1.
2. Evaluation of the model's ability to accommodate Eskom's requirements.
3. Demonstrate the principles used in selecting a corridor using Spatial Multi Criteria Analysis. A reduced set of criteria will be used for the demonstrations.
4. Execute the model and document the results.

7.2.2 ESIGIS

ESIGIS will be responsible for the following:

1. Project managing the project.
2. Communication between the stakeholders.
3. Provide the data needed to build the suitability map.
4. Facilitate and arrange workshops and meetings.
5. Evaluate work done by MapSmart.

7.2.3 Land Development Northern Region

Land Development Northern Region will be responsible for the following:

1. Assist with selecting criteria (including factors and constraints).
2. Assist with determining the priority (weights) of these criteria.
3. Evaluate the suitability map.

8. Stakeholders

The primary stakeholders are Eskom Northern Region Land Development and ESIGIS.

9. Project schedule

ESIGIS will maintain a Ghant chart that includes all milestones, time frames and resources responsible to execute the tasks.

10. Dependencies

1. Data
2. Availability of the SME's

11. Risks

ID	Risk	Impact (L, M, H)	Probability (L, M, H)
1.	The suitability map is not useful.	M	M
2.	Availability, Reliability and Accuracy of data.	H	M
3.	Selection of correct criteria	H	L
4.	Allocation of criteria parameters	H	L
5.	Availability of SME's	H	L