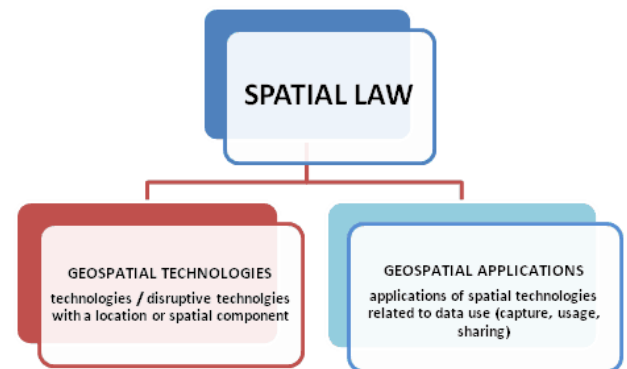


GIS Mind map: Broken Down & Investigated

1. Legislative Framework

- The legislative framework acts as a backdrop or an all-encompassing stage which highlights and aims to protect the professional ability and appropriate titles associated with research within the specific field.
- Legislation is one of the important instruments of government in organising society and protecting citizen. It determines amongst other rights, the possibilities of individuals and authorities to whom the legislation applies
- Geospatial technologies have a location component at the heart of their analysis which is often critical to privacy and security of both the government and private sector.



Whether it is being used for government, administration and functional purpose, or even emergency response, location technologies are the driving force of smooth operations, response and mitigation. However, with the accelerated progression of new technologies in the use of Big Data analytics, the applications have become diverse and seamless. Which in turn calls for a mechanism of policy implementation to ensure Appropriate use while safeguarding the ethics and responsibilities of practitioners within the field of work.

- Spatial Law is an area of law that deals exclusively with spatial technology and its applications. It is part of a government's policy making process for regulation of lawful, ethical and bona fide use of spatial technologies and practice areas. Spatial law would thus include legislations concerning the collection, visualization, distribution and use of spatial data using various geospatial technologies or other technologies with a location component.
- More specifically to South Africa The Geomatics Professions Act (19 of 2013) provides the framework along with all other relevant acts and forms a legal accountability within the industry. Being registered as a professional aids in your legal compliance and professional career along with CV boosting recognition certificates, the law acts as a resource for matters of dispute or misconduct.
- Furthermore, participation leads to CPD – Continual Professional Development, whereby members are kept up-to-date with current developments in this ever changing and evolving work environment

2. Communication & Understanding Needs

- Appropriate communications forms the bases of all knowledge sharing. Being able to communicate in such a manner that the expectations of the Client align with the Goals and Aims associated with the project, is key for the development of a successful endeavour.
- GIS does not just imply technical skill but also requires the ability to communicate.

Soft Skills such as teamwork, creative thinking and time-management lead to promoting your reputation as a professional in your field of expertise.

Whereas the Essential skills highlight one's professional and ethical approach to any task.

- Communication is the exchange of ideas, opinions and information, through written, spoken or visual means and actions to transfer one's needs to an achievable or at least reasonable outcome.
- The 7C's being, Completeness, Concreteness, Courtesy, Correctness, Clarity, Conciseness & Consideration, are a simple rule of thumb which can be used to aid in the collection of information being exchanged between a client and yourself
- Finally, Communication is a two-way street, which requires engagement on both ends to ensure a suitable outcome. Key elements include the use of appropriate business language, values and motivation along with appropriate leadership and management support structures to ensure that project prioritization is structured to the best possible outcome.

3. Project Management

- A Project is the temporary endeavour to create a new unique product
- A Project consists of a lifecycle, budget, unique activities (tasks), resources, responsibilities and teams.
- Management ensures the planning, executing, control and closing of aims and goals
- Whilst the project environment consists of those involved, being, the stakeholders, the client, your organization, competitors, technology and Regulations and Legislation set in place by government.
- Project management involves various benefits such as estimating a critical path for workflow, the seamless integration of contribution by others, aided by technology such as GITHUB. Improved accuracy of reporting through various individuals working on the same project and an increased response time

- Project management Aims to deliver a project on Brief, on Time and within Budget.
 - Project planning considers
 - i. Why (Problem/ idea)
 - ii. What (Deliverables)
 - iii. Who (Involvement)
 - iv. When (Timeframe)
 - Tools For project management include
 - i. Work breakdown structure (sub-dividing scope)
 - ii. Gantt Chart (to map progress against original timeframe)
 - iii. Resource planning (Equipment, Time, Quantity)
 - iv. And finally, a Critical Path (Roadmap)
4. Geospatial Strategy:
- Encompassing the planning and implementation of the critical path to ensure results
 - Models include the Drew Clarke's (Waterfall model)
 - Tomlins Content model and Schultz process model
 - Geospatial strategy aims to take a project from it current state to a new future state, through the implementation of skills, leadership, design and change management.
 - Resulting in the Assessment, future current solutions, strategy and critical roadmap including various trade-offs



Creation of a Roadmap to 'Bridge' the gaps from a Spoken Goal to a Final Product!

- **SCRUM:** is an Agile project management and strategy planning technique, involving adaptive planning, evolutionary development and continuous improvement.
- Unlike traditional models, SCRUM involves the overall scope of the project, creation of a shortlist of products and activities and short (weeklong) sprints whereby the various tasks are assigned to individuals and assessed by fellow team members.
- SCRUM promotes Courage, Focus, Commitment, Respect and Openness, through a structured Sprint planning (Prioritization and backlogging), The active Sprint (Period of focused work with a reflection or Stand up protocol), Sprint Review and discussion stage, Retrospective meetings and Improvement plans and A final Backlog refinement to ensure the quality of the final outcome.

5. Data Management, Methodology & Approach:

- Management of data involves the theories and techniques for managing the entire data lifecycle, from collection, conversion and storage to the Representation, referencing and sharing of data, as well as managing the long-term data archival and preservation
- Founded on the knowledge and skills with practice of the Body of Knowledge (Bok), along with the guiding principals to help determine the ethical status of your data, formed in the Code of Conduct by the SAGC. South African Geomatic Council, as well as the morals and 'rules' in place for individual and group members to assess between right and Wrong



- Database management is a vital control step in the data management, using keys of relations such as Unique, Primary and non-redundant, complex key structure, using SQL, a structured query language to manipulate the data.
- Data modelling is the abstraction of reality and comprises of a Conceptual model (talking to people), Logical models (data Primitives) and a physical model (disk storage)
- Uncertainty is the quantitative estimation of error present in data; all measurements contain some uncertainty generated through systematic error and/or random error.
- Uncertainty can arise in various steps of the modelling process, found in the conceptual, measurement and representation and Analysis phases. Error Propagation is the term keyed for the progression of errors throughout the workflow.
- Criteria for evaluating different kinds of uncertainty include, precision, specifications, realism, verification, model calibration, validity and credibility