

## 2.6 Green Information Systems: Design and Development Models.

### *What is GIS?*

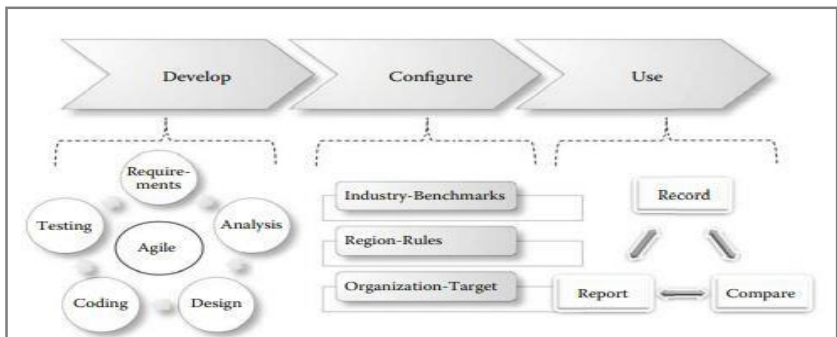
A GIS (or a CEMS (Carbon Emission Management Software) or EIS(Environmental Intelligence System)) is a software system that provides support to the business to implement its environment responsible business strategies (ERBS), it has processes and applications that help analyze that data, identify the trends, and, eventually, it has interfaces that present, report, and interact (and collaborate) with other external sources of carbon services and data.

### Phases in a GIS Development and Deployment

**Develop** — GIS needs to be developed by following agile practices and considering the important phases of a SDLC starting from requirements, analysis, design, and code to testing.

**Configure** — configuring GIS according to benchmarks and rules of organization. This would be an activity specific to each organization within each industry sector.

**Use** — Use of GIS will lead to ongoing recording of carbon data creation of reports as well as comparisons.



The features of a GIS that play a significant role in enhancing this ability of business to coordinate its environmentally responsible approaches can be listed as follows:

**Collecting environment-related data in real time.**

Enhancing the decision-making capabilities of senior management by collating and computing up-to-date information from varied external sources (e.g., government regulatory bodies and weather information) and feeding that into GIS.

GIS substantiates the green effort of the organization through the metrics, thereby providing positive feedback and impact on the employees' job satisfaction.

GIS can continuously identify and upgrade business processes and business practices in manufacturing, sales, and field support operations in order to make them environmentally responsible.

GIS provides feedback to customers and other external users of the business

Aligning office and home activities through GIS can be a tremendous boost to the organizational effort in improving its green credentials.

GIS extends the tools and techniques of business management and applies them to the environmental aspect of business.

GIS enables collaboration amongst businesses for the purpose of achieving environmental responsibilities.

## **Modeling and Architecting GIS—Requirements, Design, Implementation, and Testing**

### GIS Requirements

A typical GIS would involve two subsystems:

- Green organizational portal (GOP)
- Regulatory standards portal (RSP)

### ***Green Organizational Portal***

The GOP is made up of organizational data on its –green|| performance. These data are updated by the organizational representatives on an ongoing basis.

These data record the organization’s pollutant performance such as

- (a) heat generated by the desktop machines, data centres and network equipments within the organization,
- (b) carbon emissions in the petrol/diesel consumed by the organization, and
- (c) hazardous materials produced by the organization’s activities such as lead in batteries and mobile phones.

### **Regulatory Standards Portal**

RSP is a large portal that will be maintained by the government agency responsible for emission control within a country or region. The RSP will have to have detailed and continuously updated information on the pollutant categories that are producing the carbon emissions.

## GIS—Technical Requirements

In addition to functional requirements, GIS also has operational technical requirements.

They are listed as follows:

GIS should be able to run in a wide variety of platforms such as Windows, Unix, Linux, and so on.

GIS should be able to operate on a variety of hardware including PC, laptop, and mobile devices.

The data should be stored in a server located in a secure environment. However, network connectivity with the applications should be on a 24×7 basis.

GIS will be deployed as SaaS via internet.

GIS user access should be based on a secured identification and password.

Users will have levels of authorization and access which will be administered by system administrators.

The GIS should have a sophisticated firewall that would block unwanted connections from outside the organizational boundary.

GIS should incorporate encryption. Public key encryption is a preferred mode although secret key encryption can be considered for the sake of speed.

A virtual private network (VPN) would be established to ensure private communication between collaborating organizations using the same GIS.