2.2 Green Business Process Management: Modelling,Optimization, and Collaboration

Green business process management

- Green business process management (Green BPM) deals with the overall management of all internal and external processes of an organization from a green perspective.
- BPM is a well-established industry practice encompassing process modeling, reengineering, and optimization of processes, and the measuring, merging, and elimination of business processes.
- Green business processes are environmentally conscious business processes that are necessary, efficient, effective, agile, and measureable in the context of an organization.
- In the green process optimization exercise, processes are challenged for their necessity in the first place, others are optimized for efficiency, some others are made more

effective and agile, and all are measured in order to ascertain their carbon contribution.

- The exploration of processes in this manner leads tomany opportunities to improve and optimize them duringa green enterprise transformation.

Table 3: Basic Process Characteristics and Corresponding Green Connotation

Process Characteristic	Description	Green Business Connotations
Necessary	Challenges - theneed for the process in the first place.	Eliminating an unnecessary process eliminate its carbon contribution.
Efficient	Models the process to study its various activities/tasks.	Aims to reduce the carbon generation within the process by optimizing and/or eliminating the activities/tasks within the process
Effective	Ensures that the process is actually achieving the goals it is meant to achieve.	Substantial wasteful carbon is generated by a process that is not effective—as it does not achieve business goals.
Agile	Deals with the	An agile process will

	ability of the process to change itself in response to external and internal changes affecting the organization.	change easily and effortlessly in response to changing external situation
Measurable	Enables monitoring, control, and ascertaining the success of its optimization.	In addition to the standard process measures, such as cost, time, and quality, now the ―carbon content‖ of a process is measured.

- BPM approach in an organization and can be considered as a set of management and technology disciplines focused primarily on workflow and process automation that drives the implementation of optimized and sustainable business processes.
- Optimization of processes covers many aspects of the performance.
- Processes can be optimized to ensure efficient utilization of resources.
- Processes can be reengineered to creatively eliminate the use of some redundant or duplicate resources.
- Reengineering has been described as the fundamental rethinking and radical redesign of business processes to

achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service, and speed.

Green Reengineering

- Green BPM includes reengineering of business processes to optimize their emissions.
- Reengineering of processes to green processes will incorporate re-evaluation of processes and also an understanding and modeling of their supportinghardware, software, and people in order to cut down the carbon generated through them.

Seven Reengineering Principles

1. Organize around outcomes, not tasks.
2. Identify all the processes in an organization and prioritize them in order of redesign urgency.
3. Integrate information processing work into the real work that produces the information.
4. Treat geographically dispersed resources as though they were centralized.
5. Link parallel activities in the workflow instead of just integrating their results.
6. Put the decision point where the work is performed, and build control into the process.
7. Capture information once and at the source.

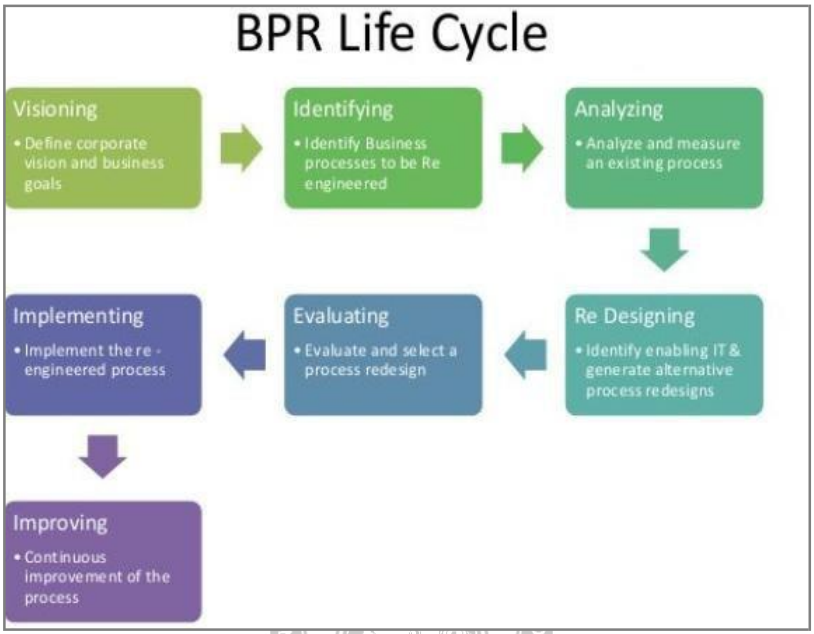

Figure 4: Life cycle of BPM

Green Processes: Individual, Organizational, and Collaborative

- Reengineering of business process to reduce their carbon contents has to happen at three levels: individual, organizational, and collaborative.
- These levels tend to be increasingly strategic, taking longer time and greater effort as the business movesfrom individual processes through to departmental- and organizational-level processes.
- Collaborative processes cut across multiple organizations and systems—making them even more challenging to be reengineered in the context of carbon reduction.

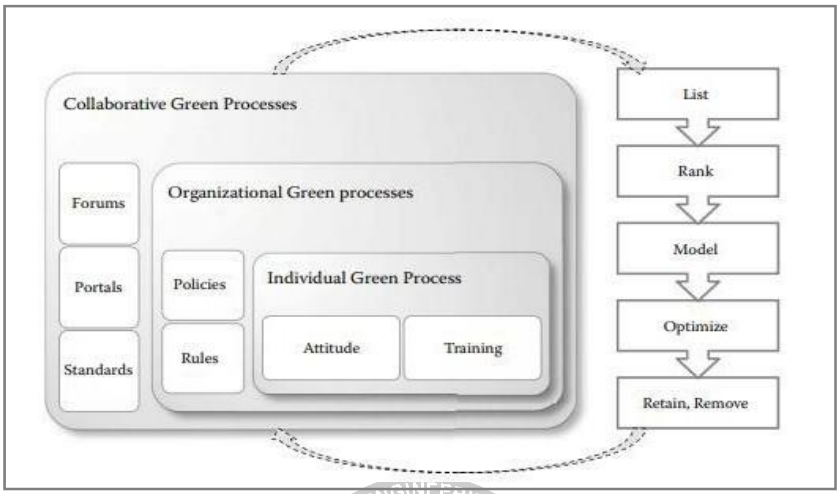

Figure 5: Individual, organizational, and collaborative green processes and their reengineering

Table 4:Green Process Categories and Their Carbon Impact

Green Process Categories	*Key Factors That Influence Carbon*	*Comments*
Individual	Attitude, Training	Personalized processes are influenced by attitude and training. Motivation of the individual may be based on personal value system, personal reward, and growth.
Organizational	Policies, Rules, KPIs	Dynamic creation and management of business rules that optimize processes. Metrics are crucial to demonstrate the ROI on investment for green enterprise.
Collaborative	Portals, Forums, Standards	Collaborative processes transcending organizational boundaries. Portals containing green knowledge, regulations across regions.

Green Business Analysis

- In green business processes, the role of business analysis activity, including the gathering of business requirements, understanding and modeling processes, process analysis and optimization, and testing prior to deployment are to be considered.

- A Green BA can play a dual role: First, modeling requirements for a Green IT project and, second,modeling existing processes for their optimization from a green perspective. BAs can ensure alignment of a Green IT technical solution (e.g., CEMS) with environmentally responsible business strategies.

- The Green BA involvement in a project promotes an understanding that even if certain business requirements are important to a stakeholder, they may not be still necessarily desirable in a solution if they are not aligned with the need to generate least carbon.

Green Requirements Modeling

- One of the major responsibilities of a Green BA is to undertake modeling of requirements for a green process or system.

- This requirements modeling can be considered as a sub discipline of systems engineering that is concerned with the behavior, quality attributes, and also technical constraints.

- Requirements modeling is widely recognized as both a challenging aspect of software development, as well as a crucial one, because it lays the foundation for all the subsequent project work.

- Green requirements modeling can be divided in two major parts— ***functional and nonfunctional (or operational).***

Functional requirements

- Are software requirements, describe the behavior that the software will have and the information the solution will manage.
- Functional requirements are associated with the required behaviors and operations of a system, defining its capabilities in terms of actions and responses.
- Functional requirements are frequently captured in the form of use cases.
- Green IT frequently impacts functional requirements as a consequence of new procedures or business rules emerging from corporate environmental policies and industry standards.

Non - Functional requirements

- There are requirements, however, that go beyond system behavior. These requirements describe the properties, attributes of the solution and are referred to as **nonfunctional requirements.**
- Examples of such requirements include availability, performance, usability, portability, robustness, etc., and they provide the design constraints for the project (e.g., technology or regulatory limitation).
- Green IT policies typically add nonfunctional requirements to software projects, imposing new demands in terms of quality attributes that become necessary or desirable, and also establishing new constraints.

Green IT Governance

- Green process management matures as proper business governance which align with performance governance, project governance, change governance, and IT governance and control is applied to it.
- An ideal way to do this is to incorporate green aspects within the existing governance structure within the organization.
- This can take shape of modifying the business process architecture, balance score card, and business policies for governance.