

Case Studies

CHAPTER – 7

CASE STUDIES

7.1 Introduction

This chapter presents two case studies based on the proposed Green IT maturity model. These case studies show the efficacy of the proposed approach and actually assess the Green IT maturity level for two IT organizations viz., Persistent systems, one of the leading IT company and an ISO 9001:2008 certified IT organization (name not disclosed as per the non-disclosure policy of the organization) were considered for the application of the proposed model.

Each case study is organized in to various sections that explain organization's profile, application of Green IT maturity model, Green IT profiling and maturity assessment of the organization.

7.2 Case Study 1

7.2.1 Organization's Profile

Persistent Systems is a global IT company, founded in 1990 by Mr. Anand Deshpande with employee count above 5000. It specializes in software product development services and focuses on developing best-in-class solutions in next-generation technology areas: Cloud computing, Mobility, BI & Analytics, Collaboration across technology, telecommunications, life sciences, banking & financial services and healthcare verticals.

Going Green is an integral part of the organization and is observed in various operational fronts of the organization. According to the sustainability head of the organization "As an organization we believe that reducing global warming is our social responsibility and we must ensure that we make our planet a better place to live". The organization is making all their efforts to implement Green IT with a holistic approach with focus on all the three important dimensions of Green IT- governance, policy and

Case Studies

practices. The company has launched the Green Movement in which a number of initiatives have been taken. It is using a product called En-power that automatically switch computers to low power mode (Monitor Off / Standby / Hibernate / Shutdown) when they are idle / not in use. It has management review committee of ISO 14000 on his Green IT advisory team.

7.2.2. Application of Green IT Maturity Model

The company's initiatives in terms of governance, policy and practices have been illustrated in the table 7.1 below. The data regarding company's Green IT initiatives was collected in Sept 2013. ✓ indicates presence and ✗ indicates absence of a particular parameter/assessment indicator.

Table 7.1: Application of Green IT maturity model: Case study 1

Dimension: Green IT Governance				
Category	Parameter	Metric	Assessment Indicator	Metric
Basic	Spread Green IT awareness	✓	Employee Green IT forum/club	✓
		✓	Participation of employees in Green IT seminars/workshops	✓
		✓	Presence of Green IT at social networking sites/ blogs/intranet	✓
		✓	Publishing Green IT information on organization's website	✓
	✓	Responsibility allocation	Having Green IT volunteers / Green IT head like Sustainability Manager/ Sustainability Head	✓

Case Studies

Category	Parameter	Metric	Assessment Indicator	Metric
Intermediate	Budget allocation	✓	Percentage of organization's budget allocated explicitly for Green IT initiatives	✓
	Consultation of Green IT expert	✗	Engaging the service of a professional service provider regarding Green IT	✗
	Organization training	✓	Employees' training in Green IT	✓
	Role creation	✓	Having Green IT hierarchy for Green IT implementation in terms of Green IT steering panel/Green IT advisory team, Sustainability Manager ,Green IT volunteers and Green IT auditor	✓
	Target setting for carbon reduction	✓	Setting target for reducing IT carbon foot print in coming 3 to 5 years	✓
Advanced	Green IT promotion	✗	Association with Green IT groups like Green Grid/USGBC/ IGBC/any local group	✗
			Enforcing Green IT compliance on suppliers	✗
			Reward system for employees	✗
	Green IT review	✗	Green IT metrics	✗
			Green IT auditing	✗
			Analyzing IT energy bill separately from the overall corporate bill	✗

Case Studies

Category	Parameter	Metric	Assessment Indicator	Metric
			Green IT feedback mechanism in any form like Intranet portal to receive suggestions from anybody in the organizations	✘
	Green IT reporting	✘	Conducting Green IT annual meeting with shareholders	✘
			Publishing Green IT annual report in terms of annual Environmental report/ Sustainability report	✘
Green IT Dimension: Policy				
Category	Parameter	Metric	Assessment Indicator	Metric
Basic	IT usage reduction and energy efficiency	✓	Use of IT in an energy efficient manner	✓
			Printer optimization	✓
			Rightsizing IT equipment	✓
Intermediate	IT use (IT as an enabler) to reduce environmental impact	✓	Energy efficiency technologies	✓
			Travel reduction technologies	✓
	E-waste management	✓	Environmental friendly IT disposal	✓
			IT reuse	✓

Case Studies

Category	Parameter	Metric	Assessment Indicator	Metric
Advanced	Advanced IT use (IT as an enabler) to reduce environmental impact Environmental friendly IT purchasing/sourcing	✓	IT software to monitor business's carbon footprint	✓
		✗	Energy efficiency	✓
			Compliance to applicable Green IT laws	✓
			E-waste reduction	✓
			Recyclable IT hardware	✗
			Vendor evaluation	✗
Green IT Dimension: Practices				
Category	Parameter	Metric	Assessment Indicator	Metric
Basic	IT usage reduction and energy efficiency	✓	Enforcing PC power management such as switching off the monitor and PC when not in use, using sleep /hibernate mode	✓
			Enforcing removal of screen savers	✓
			Enforcing data de-duplication	✓
			Enforcing removal of software bloats	✓
			Enforcing telecommunication strategies	✓
			Enforcing double side printing	✓
			Enforcing draft printing	✓

Case Studies

Category	Parameter	Metric	Assessment Indicator	Metric
			Preferring document sharing services(e.g. Google Doc) over printing multiple copies	✓
			Printing only what you need	✓
			Reducing font size for printing	✓
			Secure printing	✓
			Sharing printer	✓
			Using print preview before printing	✓
			Monitoring underutilized servers	✓
			Retiring energy inefficient hardware	✓
	Data center specific (Optional)	✓	Airflow management	✓
			Airside/Waterside economizer	✓
			Free cooling	✓
			Hot aisle/ Cool aisle data center layout	✓
			Install more energy efficient lights	✓
			Localized cooling	✓
			Upgrade to more energy efficient transformers and UPS	✓

Case Studies

Category	Parameter	Metric	Assessment Indicator	Metric
Intermediate	IT use (IT as an enabler) to reduce environmental impact	✓	Blade server	✓
			Cloud computing	✓
			Thin client	✓
			Virtualization	✓
			Remote conferencing	✓
			Remote support/online services	✓
	E-waste management	✓	IT Equipment recycling	✓
			Donate IT equipment	✓
			IT refurbishment	✓
Advanced	Advanced IT use (IT as an enabler) to reduce environmental impact	✓	Power down systems	✓
			Use of IT energy consumption calculator/ carbon emission management software	✗
	Environmental friendly IT purchasing/sourcing	✓	Preferring ink jet printer over laser printer	✓
			Preferring laptop over PC	✓
			Preferring LCD monitor over CRT monitor	✓
			Preferring LED (Light emitting diode) over CCFL(cold cathode fluorescent lamp) LCD monitors	✓

Case Studies

Category	Parameter	Metric	Assessment Indicator	Metric
			Shortening IT equipment refresh periods to gain access to more energy efficient equipment	✓
			Giving weight to environmental considerations in IT procurement such as ENERGY STAR, ROHS, EPEAT, WEEE etc. or local Eco-labeling	✓
			Preferring multifunction devices (to offer scanning, copying, printing) over printers	✓
			Preferring recycled printer cartridge	✓
			Preferring IT suppliers that offer take-back options	✓
			Preferring IT suppliers that have green track record	✓

7.2.3 Green IT Profiling

From the above table, following observations have been made about the Green IT initiatives taken by the company.

1. Green IT Governance

- The company spread Green IT awareness by encouraging employees for attending Green IT seminars, forming Green IT club to invite their suggestions, publishing Green IT related information on their website and discuss Green IT on social networking.

Case Studies

- It has Green IT hierarchy for Green IT implementation in terms of Green IT advisory team and sustainability manager to systematically implement Green IT.
- Budget is allocated specially for Green IT initiatives. Training programs on Green IT are conducted.
- The company also sets target for carbon reduction.

2. Green IT Policy

- The company has Green IT policy consisting of important parameters like IT equipment usage reduction and energy efficiency, IT use to reduce environmental impact, data center optimization and e-waste management.
- The policy does not focus on environment friendly purchasing of IT equipment, though parameters like energy efficiency compliance to applicable Green IT laws and e-waste reduction are considered while purchasing IT equipment.

3. Green IT Practices

- The company implements majorly all the practices at various stages of IT – purchase, use, disposal.

7.2.4 Maturity Assessment of the Organization

Table 7.2 presents the maturity assessment of the organization.

Table 7.2: Maturity assessment of the organization: Case Study 1

Green IT Dimension	Maturity assessment	
	Achieved	Criteria for level 4 (As per the proposed model)
Green IT governance	<ul style="list-style-type: none"> • 100% assessment indicators for BASIC category • 80% assessment indicators for INTERMEDIATE category 	<ul style="list-style-type: none"> • Approx. 60% to 80% of assessment indicators for BASIC and INTERMEDIATE category parameters

Case Studies

Green IT Dimension	Maturity Assessment	
	Achieved	Criteria for level 4 (As per the proposed model)
	<ul style="list-style-type: none"> • 0% assessment indicators for ADVANCE category 	
Green IT policy	<ul style="list-style-type: none"> • 100% parameters with all assessment indicators for BASIC category • 100% parameters with all assessment indicators for INTERMEDIATE category • 50% parameters for ADVANCE category 	<ul style="list-style-type: none"> • 100% parameters with 100% assessment indicators for BASIC category • 100% parameters with approx. 75% assessment indicators for INTERMEDIATE category
Green IT practices	<ul style="list-style-type: none"> • 100% assessment indicators for BASIC category • 100% assessment indicators at INTERMEDIATE category • 92% assessment indicators at ADVANCE category 	<ul style="list-style-type: none"> • Approx. 60% to 80% of assessment indicators for BASIC and INTERMEDIATE category parameters

Looking at the assessment criteria defined as per proposed maturity model, the company is at **Level-4 Managed level**. The company can be described as “**GREEN IT ENHANCERS**”

In order to move to **Level-5 Optimized**, the company needs to focus on the following areas:

1. The company needs to focus on environment friendly purchasing by considering it in the policy.

Case Studies

2. Though the company is taking good efforts in Green IT governance, effectiveness of Green IT adoption needs to be measured and reviewed in the form of Green IT metrics, Green IT auditing and strong feedback mechanism.
3. Association with some Green IT group, reward system for Green IT initiatives and Green IT reporting can promote Green IT in the organization.

The researcher had an opportunity to share this assessment with the company and the responsible authorities expressed their agreement with this assessment.

7.3 Case Study 2

7.3.1 Organization's Profile

Case B is an IT solution provider company founded in 2009 with employee count 180+. It is an ISO 9001:2008 certified organization. It is pioneer in E-commerce, Finance & Logistics Management and healthcare IT.

Going Green is observed in various operational fronts of the organization like celebrating environment day, planting trees, switching off the lights when not in use and donating IT hardware. According to the IT infrastructure manager of the organization, Green IT is essential in near future and requires more awareness. Law enforcement by government and more knowledge about Green IT can help them to adopt Green IT in a systematic way. This shows their concern about the environment and willingness to implement Green IT in their organization.

7.3.2 Application of Green IT Maturity Model

The company's initiatives in terms of policy, practices and governance have been illustrated in the table 7.3. The data regarding company's Green IT initiatives was collected in Nov 2014. ✓ indicates presence and ✗ indicates absence of a particular parameter/assessment indicator.

Case Studies

Table 7.3: Application of Green IT maturity model: Case Study 2

Green IT Dimension: Governance				
Category	Parameter	Metric	Assessment Indicator	Metric
Basic	Spread Green IT awareness	✘	Employee Green IT forum/club	✘
		✘	Participation of employees in Green IT seminars/workshops	✘
		✘	Presence of Green IT at social networking sites/ blogs/intranet	✘
		✘	Publishing Green IT information on organization's website	✘
	✘	Responsibility allocation	Having Green IT volunteers / Green IT head like Sustainability Manager/ Sustainability Head	✘
Intermediate	Budget allocation	✓	Percentage of organization's budget allocated explicitly for Green IT initiatives	✓
	Consultation of Green IT expert	✘	Engaging the service of a professional service provider regarding Green IT	✘
	Organization training	✘	Employees' training in Green IT	✘
	Role creation	✘	Having Green IT hierarchy for Green IT implementation in terms of Green IT steering panel/Green IT advisory team, Sustainability Manager ,Green IT volunteers, Green IT auditors	✘
	Target setting for Carbon Reduction	✘	Setting target for reducing IT carbon foot print in coming 3 to 5 years	✘

Case Studies

Category	Parameter	Metric	Assessment Indicator	Metric
Advanced	Green IT promotion	✘	Association with Green IT groups like Green Grid/USGBC/ IGBC/any local group	✘
			Enforcing Green IT compliance on suppliers	✘
			Reward system for employees	✘
	Green IT review	✘	Green IT metrics	✘
			Green IT auditing	✘
			Analyzing IT energy bill separately from the overall corporate bill	✘
			Green IT feedback mechanism in any form like Intranet portal to receive suggestions from anybody in the organizations	✘
	Green IT reporting	✘	Conducting Green IT annual meeting with shareholders	✘
			Publishing Green IT annual report in terms of annual Environmental report/ Sustainability report	✘
	Green IT Dimension: Policy			
Category	Parameter	Metric	Assessment Indicator	Metric
Basic	IT usage reduction and energy efficiency	✘	Use of IT in an energy efficient manner	✘
			Printer optimization	✘
			Rightsizing IT equipment	✘

Case Studies

Category	Parameter	Metric	Assessment Indicator	Metric
Intermediate	IT use (IT as an enabler) to reduce environmental impact	✘	Energy efficiency technologies	✘
			Travel reduction technologies	✘
	E-waste management	✘	Environmental friendly IT disposal	✘
			IT reuse	✘
Advanced	Advanced IT use (IT as an enabler) to reduce environmental impact	✘	IT software to monitor business's carbon footprint	✘
	Environmental friendly IT purchasing/sourcing	✘	Energy efficiency	✘
			Compliance to applicable Green IT laws	✘
			E-waste reduction	✘
			Recyclable IT hardware	✘
			Vendor evaluation	✘
Green IT Dimension: Practices				
Category	Parameter	Metric	Assessment Indicator	Metric
Basic	IT usage reduction and energy efficiency	✓	Enforcing PC power management such as switching off the monitor and PC when not in use, using sleep /hibernate mode	✓
			Enforcing removal of screen savers	✓
			Enforcing data de-duplication	✘
			Enforcing removal of software bloats	✓
			Enforcing telecommunication strategies	✓
			Enforcing double side printing	✓

Case Studies

Category	Parameter	Metric	Assessment Indicator	Metric
			Enforcing draft printing	✓
			Preferring document sharing services(e.g. Google Doc) over printing multiple copies	✓
			Printing only what you need	✓
			Reducing font size for printing	✗
			Secure printing	✗
			Sharing printer	✓
			Using print preview before printing	✓
			Monitoring underutilized servers	✓
			Retiring energy inefficient hardware	✓
	Data center specific (Optional)	NA	Airflow management	
			Airside/Waterside Economizer	
			Free cooling	
			Hot aisle/ Cool aisle data center layout	
			Install more energy efficient lights	
			Localized cooling	
			Upgrade to more energy efficient transformers and UPS	
Intermediate	IT use (IT as an enabler) to reduce environmental impact	✓	Blade server	✗
			Cloud computing	✓
			Thin clients	✗
			Virtualization	✗
			Remote conferencing	✓
			Remote support/ online services	✓

Case Studies

Category	Parameter	Metric	Assessment Indicator	Metric
	E-waste management	✓	IT Equipment recycling	✓
			Donate IT equipment	✓
			IT refurbishment	✓
Advanced	Advanced IT use (IT as an enabler) to reduce environmental impact	✗	Power down systems	✗
			Use of IT energy consumption calculator/ carbon emission management software	✗
	Environmental friendly IT purchasing/ sourcing	✓	Preferring ink jet printer over laser printer	✗
			Preferring laptop over PC	✓
			Preferring LCD monitor over CRT monitor	✓
			Preferring LED over CCFL LCD monitors	✓
			Shortening IT equipment refresh periods to gain access to more energy efficient equipment	✗
			Giving weight to environmental considerations in IT procurement such as ENERGY STAR, ROHS, EPEAT, WEEE etc. or local Eco-labeling	✗
			Preferring multifunction devices (to offer scanning, copying, printing) over printers	✗
			Preferring recycled printer cartridge	✗
Preferring IT suppliers that offer take-back options	✓			
Preferring IT suppliers that have green track record	✗			

Case Studies

7.3.3 Green IT Profiling

From the above table, following observations have been made about the Green IT initiatives taken by the company.

1. Green IT Governance and Policy

- The company does not have Green IT policy. This indicates that there are no guidelines that can provide a focused direction and a systematic approach for implementing Green IT.
- The company does not have Green IT governance except budget allocation for organizing environment day or planting trees.

2. Green IT Practices

- The company implements majorly all the practices at IT use and disposal stage.
- Practices related to advance IT use and IT purchase are adopted to little extent.

7.3.4 Maturity Assessment of the Organization

Table 7.4 presents the maturity assessment of the organization.

Table 7.4: Maturity assessment of the organization: Case Study 2

Green IT Dimension	Assessment	
	Achieved	Criteria for level 2 (As per the proposed model)
Green IT Governance	<ul style="list-style-type: none">• 0% assessment indicators for BASIC category• 20% assessment indicators at INTERMEDIATE category• 0% assessment indicators for ADVANCE category	<ul style="list-style-type: none">• Organization has insufficient understanding of Green IT. Its implementation can be termed as ad-hoc

Case Studies

Green IT Dimension	Assessment	
	Achieved	Criteria for level 2 (As per the proposed model)
Green IT policy	<ul style="list-style-type: none"> No policy 	<ul style="list-style-type: none"> In spite of inefficient knowledge, the organization has intentions to adopt Green IT It initiates with few of the practices with little bit of governance At this level the organization seeks for more awareness Presence of any combination of three dimensions with lesser extent of Green IT implementation as compared to level 3
Green IT practices	<ul style="list-style-type: none"> 88% assessment indicators for BASIC category 67% assessment indicators for INTERMEDIATE category 33% assessment indicators for ADVANCE category 	

Looking at the assessment criteria defined as per proposed maturity model, the company is at **Level-2 Initial level**. It has intentions to adopt Green IT. It initiates with few of the practices with little bit of governance. Due to lack of awareness and inadequate skill, the company implements it in an ad-hoc manner. The company can be described as **“GREEN IT SEEKERS”**

In order to move to **Level-3 Basic level**, the company needs to focus on the following areas:

- The company needs to focus on all the three Green IT dimensions- policy, practice and governance in order to have systematic and planned Green IT implementation.
- Employees need to be encouraged to take more initiatives.
- Organization can spread more Green IT awareness by
 - Encouraging their employees to attend seminars/workshops on Green IT

Case Studies

2. Forming Green IT club to suggest, identify and spread Green IT practices
3. Discussing Green IT at social networking sites/ blogs/intranet
4. Publishing Green IT information on organization's website

The researcher had an opportunity to share this assessment with the company and the responsible authorities expressed their agreement with this assessment.

Summary

This chapter illustrated two typical case studies with different employee size. Green IT profiling consisting three important Green IT dimensions: governance, policy and practices have been developed after applying the proposed model for both the cases. Organizations were evaluated based on the assessment criteria defined as per maturity model. Case 1 is at level-4 Managed level and can be described as “GREEN IT ENHANCERS”. Case 2 is at level-2 Initial level and can be described as “GREEN IT SEEKERS”.

Recommendations were made for both the cases to achieve the next level. The levels achieved by both the organizations correctly reflected the actual Green IT maturity of these IT organizations and hence provided them a good roadmap for achieving necessary and sufficient Green IT maturity.

The case studied thus endorsed the proposed maturity model. The assessments were validated as they were agreed by the responsible authorities of the organizations.