Chapter 9
A Comprehensive and Practical Green ICT Framework

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ABSTRACT

Most user organizations are implementing Green ICT to some extent. Some have adopted a deliberate policy, others are implementing it piecemeal as their ICT systems evolve. But many of them have not properly defined Green ICT, which means they cannot properly identify which areas to address. A comprehensive and practical Green ICT framework helps overcome this problem. Such a Green ICT framework can also provide metrics and measurements to guide its progress and ascertain its success. Measurement is important, because it enables benchmarking and comparisons, by quantifying the degree of implementation of Green ICT. User organizations can then be compared to each other, or to themselves over time, to determine the extent and effectiveness of their Green ICT strategies. A Green ICT framework can also enable different industry sectors and even nations to be compared.This chapter outlines a research-based yet highly practical Green ICT framework. My organization, Envirability has developed this framework in conjunction with RMIT University. It is based on a 4 x 5 matrix with four vertical "pillars": Lifecycle, End User IT, Enterprise and Data Center IT, and IT as a Low-Carbon Enabler. Each pillar lends itself to a five-level Capability Maturity Model metric which can be based on a detailed survey of the organization's policies and practices in each area. The five horizontal dimensions, or "actions" are applied across the four pillars: Attitude, Policies, Practices, Technologies and Metrics This chapter presents the framework and also outlines an approach to applying the framework to an organization to measure its Green ICT maturity by benchmarking its Green ICT activities.

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INTRODUCTION

This chapter outlines a research-based yet highly practical Green ICT framework. My organization, *Envirability* has developed this framework in conjunction with RMIT University. It is based on a 4 x 5 matrix with four vertical "pillars": Lifecycle, End User IT, Enterprise and Data Center IT, and IT as a Low-Carbon Enabler. These pillars break down further into smaller, manageable elements that can be applied. Lifecycle, for example, comprise the three components of Procurement, Recycle and Reuse, and Disposal. Across these four pillars are five "actions": Attitude, Policy, Behavior, Technology and Metrics. Such comprehensive framework, I believe, is vital to the application of Green ICT. This is so because Green ICT – sometimes called Green ICT – is heavily debated, discussed and analyzed, but there is little agreement on how it should be defined.

Once Green ICT is broken into its constituent components, it becomes possible to measure each component, using the Capability Maturity Model (CMM), a standardized way of quantifying the maturity of a process. These metrics are important for Green ICT because, as the old saying goes, you can't manage what you can't measure. We can take this further and say that you can't measure what you can't define. The metrics and measurements discussed in this chapter can be turned into a series of indices, which then allow organizations to be compared to each other, and to themselves over time.

This chapter explains the Green ICT framework we have developed, briefly examining each of its components. It also looks at the measurement – or benchmarking – process Envirability has developed to help organizations measure where they are in each aspect of their Green ICT process. The benchmarks are aligned with the Green ICT framework, allowing a granular approach to measuring Green ICT maturity. Such approach is a practical way of approaching Green ICT and lends itself to configuration in corresponding Carbon Emission Software Management (CEMS) tools (see a later chapter which I have co-authored).

Green ICT is often considered to be only about reducing the energy consumption and carbon footprint of the ICT function within the organization. ICT is a significant consumer of electricity worldwide, on a par with the airline industry. Therefore it makes sense, as emission reduction becomes desirable and even mandatory, that ICT users should look at ways of reducing the energy consumption of their systems.

Yet there is more to Green ICT than merely reducing the emissions from ICT devices within the organization. The "low hanging fruit" approach (ACS, 2009), which focuses on basic elements such as "switching off unused computers" is necessary but not sufficient to bring about a substantial reduction in the overall carbon footprint of an organization. That is why Green ICT in its entirety, as discussed here, is becoming an increasingly important issue. Green ICT goes beyond the ICT function and the ICT department – in many ways ICT, and Green ICT, is a central enabling technology to many aspects of sustainability. In very many cases ICT provides the measurement tool, the data repository, the reporting mechanism and the mitigation techniques that make sustainability possible.

WHY IS GREEN ICT IMPORTANT?

Green ICT is becoming an important issue for many reasons that directly affect organizations. This influence is not merely limited to being a good corporate citizen. Green ICT has the potential to positively influence the organization's bottom line. Consider, for example, the cost of data center power. These power expenses are soaring as electricity prices go up and new server technologies pack more and more processors, which consume more and more power, into less and