Green it at city university – city green monitor

Education, University

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Abstract

One of the main initiatives which have been employed by the City University within the InformationTechnology(IT) department is that of the Green Monitor, where a computing room has been set up by a group of students aimed at recording data from an environmental perspective (Green Dragons, 2014). This initiative is both effective now and in the long run, with wider possible uses in the future. This initiative is currently in its infancy, with the wider use under analysis here, as to how it can foster Green IT, going forward. The aim of this research is to develop this resource further and to create both policies and technology that will allow the IT department to support the Green Initiative across the City University, as well as across other institutions.

Introduction

The first issue which needs to be determined in this proposal is what precisely is meant by Green IT and what the impact of Green IT initiatives can be on an organisation or wider groups of organisations. In accordance

with the guide produced by the Chartered Institute for IT, BCS (O, Neill, 2010) states that:

" Green IT is a collection of strategic and tactical initiatives that directly reduces the carbon footprint of an organisation's computing operation… However, Green IT is not just focused on reducing the impact of the ICT industry. It is also focused on using the services of ICT to help reduce the organisation's overall carbon footprint"

This basic definition presents some interesting points of discussion, before going on to look at the precise nature of the work being undertaken here. Firstly, the issue of Green IT is thought to be linked to the workings of organisations and not to individuals themselves. This raises an important question from the outset: focussing on an organisation may be a false approach due to the fact that so many devices are now used by individuals and not as part of an organisation at all. Secondly, there is the notion that strategic and tactical initiatives may refer to a different approach to the strategies that may be seen as relevant for Green organisations, such as Greenpeace, thus creating a disparity in the overall objectives to be pursued. Finally, it is also noted in this definition that IT itself can be seen as a positive step towards environmental management, with factors such as the ability to work from home reducing travel emissions. This potential benefit of IT is not to be ignored and should be considered alongside the environmental costs. Moreover, O'Neill then goes on to argue that it is also necessary to look at the whole process of IT, including the manufacturing, transportation and

disposal, not simply at the emissions and consumption when the item is operative.

For the purposes of this research and in looking at the areas of Green IT projects within the City University, it is important to consider how the success or otherwise of the initiative may be judged. Bearing in mind the aforementioned discrepancy between strategy and tactical initiatives that may be pursued by the Chartered Institute of IT and the approach taken by environmental groups there is an immediate difficulty in producing a coherent plan for providing Green IT. In accordance with the BCS and the work by O'Neill, Green IT should be focussing on some key areas.

Firstly, he argues that the area of Green IT should look at changing the ethos andculturewithin an organisation, so as to make sure that the corporate agenda of a company or organisation is reflective of the Green IT aim. As part of this, there should be initiatives in place to ensure that teams and individuals are able to enact Green IT initiatives that are established by the wider group. In addition, Green IT practices should be built into the wider organisationalgoalsand processes, so that the infrastructure is purchased with Green IT in mind. By contrast, Greenpeace looks at Green IT as a means of pulling together energy efficiency and renewable energy, which is a somewhat different approach from that taken by the organisational strategy. In reality, and for the purposes of this analysis, a combined definition is to be pursued, with the suggested definition of Green IT being a set of realistic and practical measures which can ensure that IT is developed in such a way that is sustainable, energy efficient and friendly to theenvironment. It is this

definition that will be considered for the purposes of the project being undertaken here.

1. 1The Project at City University

Monitoring devices created as part of this initiative are used in order to calculate the CO_2 emissions within the room itself. Using this information, energy consumption can then be ascertained. The aim of this initiative is to ensure that the students and staff across the University understand the impact that each computing hour has on the environment. This is, therefore, an initiative aimed at improving the environmental position in relation to the IT function and understanding how simple actions such as shutting down the PC at the end of the day or turning down the brightness on a monitor can have an impact on the CO_2 emissions (Curry et al., 2012).

Bearing in mind the previous analysis of what precisely is meant by Green IT, it can be seen that the initiative as it currently stands within the City University deals with a minimal area of Green IT initiatives and requirements. The broader Green IT initiate needs to consider more than just the monitoring of the CO_2 emissions of the IT department. That said, this starting point provides the information that is necessary in order to be able to further the initiative into a working and sustainable policy, in the future. This initiative is an information gathering initiative which allows the University and then wider organisations to monitor the impact of their behaviours, in such a way that may influence behaviours, in the future. This paper will look at the strategy and concepts associated with power management in Green IT, before then going on to consider the likely behaviours and changes that

are going to ensue, as a result of this Green IT initiative and then to draw conclusions on the impact of the initiative as the final section of the report.

Power Management Concept within Green IT

The notion of Green IT was established substantially by Murugesan, in 2008, stating that Green IT involves a wide range of activities, including designing, using and manufacturing not only the use of the computers, but also any systems associated with the renewal or purchase of such items, so that there is a minimal impact on the environment (Murugesan, 2008). Taking this on board alongside the earlier recognised area of Green IT, it can be argued that the issue of power management is a part of the overall objective which needs to be dealt with fully, before other aspects can be achieved. Without the knowledge that this type of monitoring produces, a wider IT strategy will equally not be possible. For example, if the research indicates that a certain type of screen is substantially better for the environment, then the next stage could be to roll out the provision of these screens across all departments within the University.

There is a suggested indication from this perspective, that a monitoring initiative such as the one under discussion here is a suitable area for Green IT and arguably the crucial first step, as it is impossible to put in place improvements without understanding the changes and impacts, in the first place. A key strategy within this area of Green IT is to put in place approaches and processes that offer greater sustainability. For example, in this case, the use of remote monitors within the IT department could then be rolled out to usage in any other department which uses IT, or any other item

that could be used more effectively to improve sustainability. Information is the lifeblood of any future initiatives that can be established.

It is further noted that, in any modern IT system, there is a mixture of technology, people, hardware and networks. Therefore, any area of Green IT needs to consider all of these factors; for example, user behaviours and the broader impact on networks and hardware also need to be brought into the equation. Consider, for instance, the Advanced Configuration and Power Interface (ACPI) which is a standard used across the entire industry to allow the operation systems to change and control the way in which the power-saving aspects operate, so that the system to a certain extent manages itself (Therien, 2011). This can be done in an entirely automated way, or can allow users to set tolerated levels, for example, how long until a monitor goes onto " energy saver". These strategies and approaches are critical to the monitoring area, as this is ultimately the aim of monitoring, so that changes can be put in place to improve overall sustainability.

Possible Uses and Recommendations

Having put in place monitoring through remote sensors, the IT department is now able to provide information to the next stage of the network, in order to develop mechanisms that will allow the IT itself to manage and improve the environmental impact that computers have. For example, it is shown that CRT monitors use more power than slimmer LCD monitors and having an understanding of a link such as this allows the University (and other organisations) to make decisions at the purchasing stage that will impact on what happens in the longer run. Similarly, it is noted that LCD monitors will

use a cold cathode fluorescent bulb as a general source of light, with some of the newer displays using different technologies, such as LEDs, to ensure that less electricity is used (Infoworld, 2009).

Fundamentally, the aim of monitoring in this way is to ensure that there is a greater understanding obtained of the usage of electricity by simple activities, so that this can then be used firstly to influence user behaviours and secondly can then be used to develop technologies which will create automatic controls within the technology items themselves. The first element of this research policy is to understand what information has been gathered, before then formulating it in such a way that can produce clear policy guidelines for the University to then import into the wider policies and strategies which it is required to undertake, over a longer period of time. Continuous data gathering and monitoring then allows for the company or organisation to establish and improve its policies, as and when required, and as part of continuous improvement.

Conclusion

In conclusion, this report indicates that one relatively simple initiative of monitoring the electricity usage within an Information Systems laboratory can lead to information which is then vitally important across a wide range of departments. For example, understanding that a change in the technology of a monitor can reduce electricity usage and improve sustainability will then allow companies and organisations to change their choice of monitors, over a period of time, and to train users to amend their use of the monitors by reducing brightness, all of which will come together to improve Green IT

across the campus. Future research in this area could then look at using the information gathered as a means of then developing a policy for the future BASED on the information rather than simply having the gathering of information as an agenda in its own right.

References

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