Analyse and Design of Green It in Society Performance

Sudhakar Murugesan[1] Seenuvasan Arumugam[2]

1.Lecturer Dept of Information Technology, Valley View University, Ghana, West Africa, Dhaanish Ahmed College of Engineering, Chennai-601 301,Tamilnadu, India

2.Asst. Professor Dept of Computer Science and Engineering, Valley View University, Ghana, West Africa Dhaanish Ahmed College of Engineering, Chennai-601 301,Tamilnadu, India

E-mail : sudhakarmtech@gmail.com, seenuvasan.mecs@gmail.com

Abstract

The converging trends of society's desire/need for more sustainable technologies, exponentially growing power concentration within more computing devices, have predictably hard-pressed power and energy management into the forefront of computing design for purely economic reasons. The development of computer information and communication technology has continually affected the creation of new applications based on emergent technologies. The dark side of Moore's Law is our society's insatiable need to constantly upgrade our computing devices. As per Moore's law used demonstrates the potential benefits of reusing mobile phones by analyzing their design for accumulate energy. The key challenge is the propose of software that can adapt to excessive heterogeneity of devices. We also portray different types of heterogeneities among unusual generations of mobile phones and iPad including processing ability, storage source and various facial appearances. We propose insights to aid establishing a sustainable model of designing mobile applications for PC and Laptop reuse. Our approach to Extending Amdahl's law to categorize optimal power-performance configurations necessitate considering the interactive effects of power, performance and parallel overhead. The first wave of these efforts is commonly identified as "green computing" where the accent has been first and foremost make light of power usage for datacenters and technical equipments.

Keywords: Green IT, Moore's Law, Amdah's Law

Introduction

Climate change is one of the most compelling global challenges of our time. There has been a considerable increase in the average temperature of the earth in the past century. This rise in temperature is attributed to the effects of global warming brought about by the accumulation of greenhouse gases (GHG) in the atmosphere. The reason for increased GHG, mainly Carbon Dioxide (CO2), is because of the increased energy consumption which results in emission of pollutants. Natural calamities like typhoons, floods and changes in the sea levels are attributed to the CO2 fuelled greenhouse effect. It is estimated that during the last 30 years the CO2 emissions have gone up by 73%. India is ranked 5th amongst the countries in the list of global GHG emission, with USA and China contributing about 4 times emission than that of India. The Kyoto Protocol of 1997, which was signed by over 160 countries, including India, calls on all countries to reduce their emissions of greenhouse gasses by 5%, from the 1990 level, by the year 2012. Many governments around the world, including India have taken steps to reduce energy consumption and emissions. India is committed to reduce carbon intensity by 20-25% between 2005 and 2020.

Mainly information and communications technology (ICT) industry alone accounts for about 2% or 860 million tones of the world's greenhouse gas emissions. The main contributing sectors within the ICT industry include the energy requirements of PCs and monitors (40%), data Centers about 23% and fixed and mobile telecommunications contribute about 24% of the total emissions. Compared to the other sectors such as travel and transport, construction and energy production, the ICT sector is relatively energy-lean with telecommunications contributing just 0.7 percent or about 230 million tones of green house gas emissions. The challenge for the banking and telecom service providers, telecom equipment manufacturers and the government is to pursue growth in telecom networks, while ensuring that the 2.5 percent of global emissions does not significantly increase over the coming years.

The Global Scenario

Currently, the ICT sector globally accounts for 0.9 metric gigatons of 0047HG emissions annually, or about 2% of total global emissions; which includes personal computers, servers, cooling equipment, fixed and mobile telephony, local area networks (LAN) and printers.

Table 1. Global CO2 emissions

Global	Gigatons CO2e 2012	Gigatons CO2e 2020
Global CO2 emissions	40	51.9
Total ICT footprint	0.62	1.43
% of Global emissions	1.70%	2.80%

Short Survey of Relevent Literature:

The Green IT is two aspects to Green IT – the energy consumption and carbon footprint of the IT function, and the use of IT to reduce the energy consumption and carbon footprint of the whole organization, and of the planet.

IT is a significant user of electricity, and is responsible for more than 2% of the world's carbon footprint – heavily on IT, such as banks and in many other white-collar industries, IT is often responsible for well over half of all electricity consumption.

In most countries surveyed, IT's power bill is only rarely included in the IT department's operational budget. In all countries nearly half have attempted to measure or calculate IT's power consumption, usually with a measure such us PUE (Power Usage Effectiveness) or its close relative DCiE (Data Center Infrastructure Efficiency). Those who have used "other measures" usually perform rough calculations based on the power bill.

Given that "you can't manage what you can't measure", this indicates that many organizations still have a long way to go to even begin to seriously address the issue of Green IT. Too many organizations have not started to think about the issues involved or, if they have, have not done much about it.

Finance/Business Services' overall Green IT Index (57.3) is only marginally higher than the overall Green IT Index for all industries across all countries. The data indicates that the Finance/Business Services sector is no better or worse than other sectors, but this is disappointing overall given the key role played by IT in these organizations.

Table 2. Global Footprint by sectors in gigatons of CO2

Emission by geography % of GTCO2e	2002	2011	2020
Telecom Infrastructure and devices	28	37	35
Data Centers	14	16	18
Banking PCs peripherals and printers	57	49	57

Mobile subscriber base crossed 7.5 billion marks in July 2012 and is expected to cross 9 billion by 2020. With increasing demand for telecom services, the energy consumption has also grown significantly and poses an environment challenge in terms of larger carbon emission footprint of the telecommunication industry. The total global carbon footprint of the ICT industry as a whole is in the order of 860 million tonnes CO2 which is approximately two percent of the global emissions. Of this, the contribution from global telecommunication systems mobile, fixed and communication devices are around 230 million tons CO2 or approximately 0.7% of global emissions.

EXISTING SYSTEM

Banking and Telecommunication IT sector spending in India is currently localized according to user population; for example, more than 70 percent of spending on servers and software. However, many fossil fuel and material resources are located in rural areas, which have fewer than 20 percent of computing users and accounts for less than 25 percent of IT spending in India.

Building up India's national cloud computing infrastructure over the next several decades. Because of recent advances in the banking and telecommunications infrastructure and network computing, moving the servers and datacenters to rural could be advantageous. There's not even a scientific answer to the question of how much energy a including energy used by the client device, network, and datacenter.

Data centre's today typically offer power management and cooling features including fans that speed up or slow down as needed, as well as more-efficient power supplies. Blade servers are more efficient than regular rack servers because blades share a single chassis, as well as power and cooling. IT is a significant user of electricity, and is responsible for more than 2% of the world's carbon footprint – heavily on IT, such as banks and in many other white-collar industries, IT is often responsible for well over half of all electricity consumption.for small and medium sized shopping centers. Express Shopping newsletter notifies the customers with recent promotions, and can provide convenience for shopping. Yet the newsletter imposes threat to resource and environment, for its

color ink printing paper.

ISSUES IN THE EXISTING SYSTEM

The following are the main issues obtained from the literature survey of Green IT. The Mobile Banking Vendor supplies the technology that integrates the mobile banking participants (MNO, banking systems, user applications, access channels) and facilitates the translation of the banking instruction from the consumer's mobile phone to that of a financial message that can be understood by the banking systems. The mobile banking vendor is often the catalyst for mobile banking in the market in that it promotes the business case of mobile banking to the MNO and the bank. The mobile banking vendors have also been the innovators behind mobile banking and have been doing mobile initiated transactions for around years. Spend more data storage space for data center are separate data ceters are using in different sector.

PROPOSED SYSTEM

Adopting green IT practices offers businesses and individuals financial and other benefits. IT operations achieve better energy efficiency through green initiatives, which financially benefit them, especially when electrical energy is at a premium and energy prices are rising.

Decentralized data centers the emission of CO_2 is high and the environment get polluted, by making reusable datacenters the information's or data's are shared by the MNO's. Through this we can avoid the high emission of CO_2, and the flexibility, availability and compatibility are increases. We can achieve this by using mobile micro money.

As per Moore's law used demonstrates the potential benefits of reusing mobile phones by analyzing their manufacturing and life-time energy. We are build modern mobile banking to sharing data center data with reusable resource and Branch free Banking Services.

MOBILE MICRO MONEY:

Individuals will use micro money in place of hard cash at all the access points – to make purchases, to transfer money etc, This would mean replacing hard cash with micro money in the hands of people. Therefore it is important that micro money should satisfy some basic properties of physical money to be robust and fool proof. Some important characteristics of micro money should be

Double Spending :
Must allow spending of e-cash only once, safeguards must be in place to prevent counterfeiting.

Transferability
It should be independent and portable i.e. it should be freely transferable between any two parties regardless of network, software/hardware or storage mechanism. And most importantly it should be convenient.

Divisibility
With divisibility we mean the ability to make change. So micro money will come in rupees or smaller denominations that can make high-volume, small-value transactions on the Mobile phone practical. Mobile micro money will be stored like fungible talktime, which is separate from the air talk time, provided already by the MNO. MNO would issue micro money to the individual in exchange for cash deposit, which is held in an account under the individual's name. Individuals can spend the micro money for all kinds of transactions, if they know the UID number of other party with whom they are transacting. Transactions like buying commodities, buying airtalktime, paying utility bills, transferring money to other mobile micro money accounts etc can be easily done. Individuals can access their mobile micro money accounts using a simple SMS based application on their mobile phones.

Opening of Mobile Micro Money

Any individual interested in opening mobile micro money account has to approach the retail shop, working on behalf of MNO or the correspondent of MNO. The necessary documents to open mobile micro money account should be similar and not as stringent as the current KYC norms of banks.

ARCHITECTURE AND DESIGN OF PROPOSED SYSTEM
Activate Mobile Micro Money account:
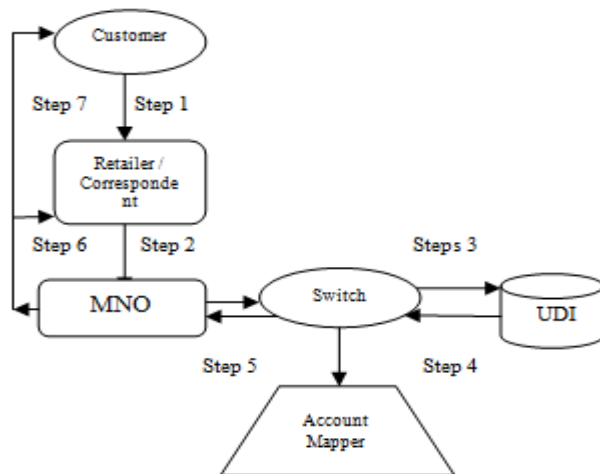
Fig 1: Activate Mobile Micro Money account

Step 1: Customer has to approach the nearest retailer shop or the correspondent of MNO to enable the mobile micro money account. Customer gives his UID number, mobile number and other KYC details to the retailer/Correspondent of MNO.

Step 2: Retailer/Correspondent sends the information electronically to the MNO.

Step 3: MNO sends request to verify the customer's details to UIDAI server through SWITCH.

Step 4: MNO verifies the UID number of the customer with the UIDAI Server.

Step 5: Mobile micro money account is created by MNO.

Step 6: MNO stores the mobile micro money account details, customer's mobile number and UID number in the Account Mapper.

Step 7: Both the customer as well as the retailer/correspondent is intimated via message on their mobiles.

Cash Deposit for Mobile Micro Money

Consider the case when retailer and customer belong to the same MNO. Following are the steps involved in the process of depositing cash.

Step 1. Retailer gets the information about UID number and the amount to be transferred from customer.

Step 2. Retailer sends the information to MNO through the SMS based application.
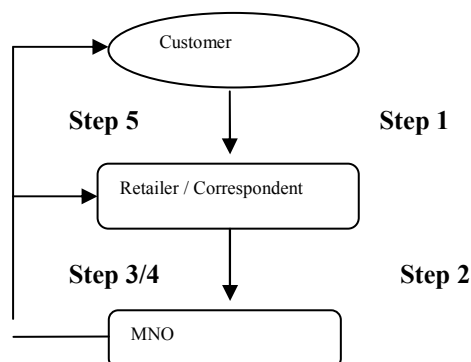
Fig 2: Cash Deposit for Mobile Micro Money

Step 3. MNO has the database of all the individuals who have enabled mobile micro money accounts under it, by using UID number, MNO gets the details of mobile micro money account number of customer.

Step 4. It then performs the appropriate action of debiting retailer's micro money account and crediting customer's micro money account.

Step 5. An SMS is send to both customer and retailer involved in the transaction.

Cash Transfers in Mobile micro Money

Any person with basic knowledge of operating mobile phone should be able to do cash transfer independently without any help from retailer. In the initial stages, handholding and support must be given by the retailers/ Correspondent in training individuals on operating mobile micro money accounts.

Consider the case when both the beneficiary and the customer involved in the transaction belong to the same

MNO. In this case following step by step process would take place.
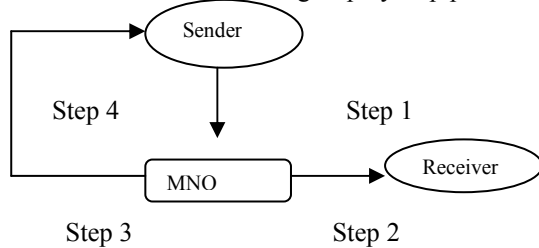
Fig 3: Transaction belong to the same MNO

Step 1: Customer enters the UID number of the beneficiary and the amount to be transferred, in the SMS based application (which is installed on the mobile phone).

Since the beneficiary also belongs to the same MNO, MNO gets the details of the beneficiary like micro money account number directly, by doing query on its own database using UID number.

Step 2: MNO debits customer's mobile micro money account.

Step 3: MNO Credits beneficiary mobile micro money account.

Step 4: An SMS is sent to both the beneficiary and the customer about the transaction status. Now consider the scenario when the beneficiary and the customer belong to different MNO's.

IMPLIMENTATION

Today India's GDP is witnessing growth of the order of 7.8% per year. This rapid growth and transformation has not only evoked a sense of optimism but also a sense of hysteria due to the widening disparities between the rich and the poor. Many developing nations are grappling with the problem of non inclusive growth and hence the term "inclusive growth" has now become the new policy mantra for India. By the term inclusive growth, we essentially mean a phenomenon of sustained economic growth across broad sectors to reduce poverty effectively by way of creating productive economic opportunities for the poor and vulnerable sections of the society. Access to low cost finance, especially by the rural and the unbanked is a prerequisite for productive employment, economic growth, poverty alleviation and social cohesion.

Government of India, along with RBI has taken up many initiatives aimed at financial inclusion such as Lead Bank Scheme, Self Help Groups, Business Correspondent Models, 'no-frill accounts' etc. Despite these initiatives, the impact on the ground seems to be limited and non uniform. Even with near total control over the banking sector for more than two decades, financial inclusion of the needy segments of population has not been possible.

Basic financial services are still an unrealized dream for millions of people in India, even more so for people in rural and remote areas. As per National Sample survey data, 45.9 million farmer households in the country out of a total of 89.3 million households do not have access to credit, either from institutional or non-institutional sources. Only 27% of total farm households are indebted to formal sources (of which one-third also borrow from informal sources). In other words, 73% of farm households do not have access to formal credit sources. A quick look at data given in Table1 exemplifies a declining trend of rural bank branches as a percentage of total number of bank branches.

There are several reasons for the low financial inclusion, of which, the major issues listed below need further introspection for future course of action.

1. Number of active accounts continues to be small and banks find it difficult to operate large number of tiny accounts and micro transactions profitably

2. Limited presence of banks in rural areas

3. High information barriers and low awareness in rural areas

4. Lack of clear identity-documentation for the poor, to establish their identities to the banks

5. Even where the network presence is established a delivery mechanism in the form of staffing and processes employed for customer acquisition/servicing have not been of the desired quality

Finally the fourth model entails the mobile operator to be the legal account issuer, operating under some kind of micro money license. In the previous three models, the bank delegates certain functions to a mobile operator while this model allows mobile operator to delegate fund management to a bank while retaining the account management of customers.

This requires MNO to obtain an micro money license from the regulator to issue e-money. M-Pesa model of Kenya is a very good example for this model, where Safaricom accepts deposits of cash from customers with a Safaricom cell phone SIM card and who have registered as MPESA users. Thus in exchange for cash deposits, Safaricom issues mobile e-money, measured in the same units as money under the user's account.

CONCLUSION

A lot of people are talking about Green IT, and a lot of people believe it is necessary, but these words are rarely translated into significant action. The survey results clearly show that, for every industry in every country, and for every aspect of Green IT, the average level of maturity is comparatively low. There is much room for improvement.

This report attempts to define Green IT by examining its separate components, and to quantify its implementation by applying metrics to performance in each of those components. This methodology illustrates the variable and patchy nature of Green IT implementation – an organization, or industry sector, or country may do well in one area but poorly in another.

This highlights one of the key issues in Green IT – responsibility. Green IT is such a large topic that it extends far beyond the data center or the IT department. It also affects, and is the responsibility of, end users and lines of business within the organization, the procurement function, and middle and senior management.

Sustainability, in all its aspects, is a key business driver in the 21st century. There is an increased realization across society that business practices and individual behavior needs to change. IT has a major role to play. As a major contributor to global carbon emissions its needs to get its own house in order, but more importantly the IT function needs to be more significantly involved in enabling the transition to a true low carbon economy.

REFERENCES

Graeme Philipson - founder of Connection Research to discuss research he had conducted for Fujitsu on the present and future of Green IT.

Zhiwei Xu – Chinese Academy of Sciencies, Beijing 0018-9162/12 @ 2012 IEEE .

Telecom Regulatory Authority Of India www.trai.gov.in

Bank branch rules – by Reserve Bank of India ww.rbi.org.in/Scripts/righttoinfoact.aspx

Department of Statistics and Information Management Banking Statistics Division-Uniform Code Section http://rbidocs.rbi.org.in/rdocs/Content/PDFs/RBILIS130910.pdf

Goodfriend, M. & McCallum, B. T. (2007), `Banking and interest rates in monetary policy analysis: A quantitative exploration', Journal of Monetary Economics 54(5), 1480{1507. Hamermesh, D. S. & Pfann, G. A. (1996), `Adjustment costs in factor demand', Journal of Economic Literature 34(3)

Cathles LM, Brown L, Taam M and Hunter A. (2012). A commentary on 'The greenhouse gas footprint of natural gas in shale formations' by R.W. Howarth, R. Santoro, and A. Ingraffea, Climatic Change, doi:10.1007/ s10584-011-0333-0.

Selected Asian Economies: Real GDP, Consumer Prices, Current Account Balance, and Unemployment – World Economic Outlook (WEO) by IMF, September 2011.

Zhiwei Xu – Chinese Academy of Sciencies, Beijing 0018-9162/12 @ 2012 IEEE .

Report of Committee on financial inclusion, RBI, 2008; From ww.rbi.org; Retrieved on September 5, 2011.

Microfinance India , State of the Sector Report – 2011 , Sage publications

http://www.accessdev.org/downloads/State_of_the_Sector_Report_2009.pdf.

Financial inclusion : State of the sector report , 26th Skoch Summit 2-3rd June 2011, Mumbai, From www.skoch.org; Retrieved on September 19, 2011.

Annual Report of TRAI 2009-2010 and Information note to the Press (Press Release No. 35 /2011) ; From http://www.trai.gov.in/traiannualreport.asp.

http://uidai.gov.in/ Mr.Nandan Nilekani at FICCI Seminar on 'Aadhaar'

http://businesstoday.intoday.in/story/aadhaar-numbers-uid/1/18203.html.

Transforming Access to Finance in Developing Countries through Mobile Phones: Creating an Enabling Policy Framework by Mr. Ignacio Mas, Senior Advisor, Bill & Melinda Gates Foundation, Draft submitted to Banking and Finance Law Review.

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:
http://www.iiste.org

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: http://www.iiste.org/journals/ All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: http://www.iiste.org/book/

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library , NewJour, Google Scholar