Sustainable Portable Computing

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Sustainable Portable Computing: Valuable materials after recycling

Outline:

- ***Introduction***
  - * Portable electronic device life cycle
  - * Electricity consumed by portable devices on the grid
- ***Why E-recycling is important***
  - * Cell phone recycling rate
  - * Hazardous material from portable devices
  - * Valuable Materials after recycling

Sustainable Portable Computing

Outline

- ***What the Information Technology field is aiming for***
    * The need for more sustainable portable devices
    * Proposed Solutions: Thin-client & Cloud Computing
- ***Conclusions:***
    * Benefits of Cloud Computing
    * Suggestions

Portable electronic device life cycle

Manufacturing Production

Portable Device Manufactured

Portable Device purchased & used

Consumer Recycled Device

Valuable Material

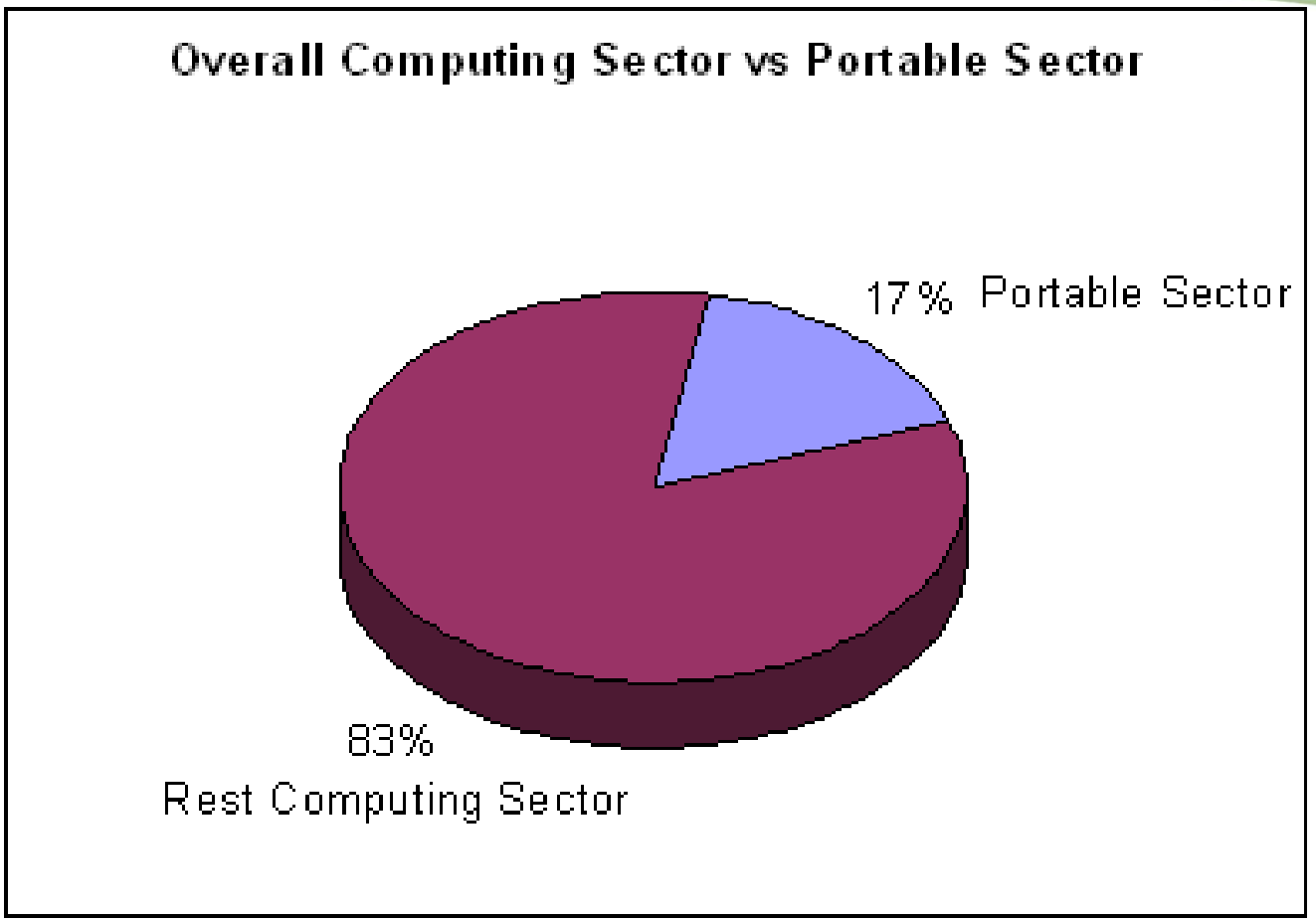
Consumer Trashed Device

Huge amount of E-waste

Global Toxic Emergency

Introduction:

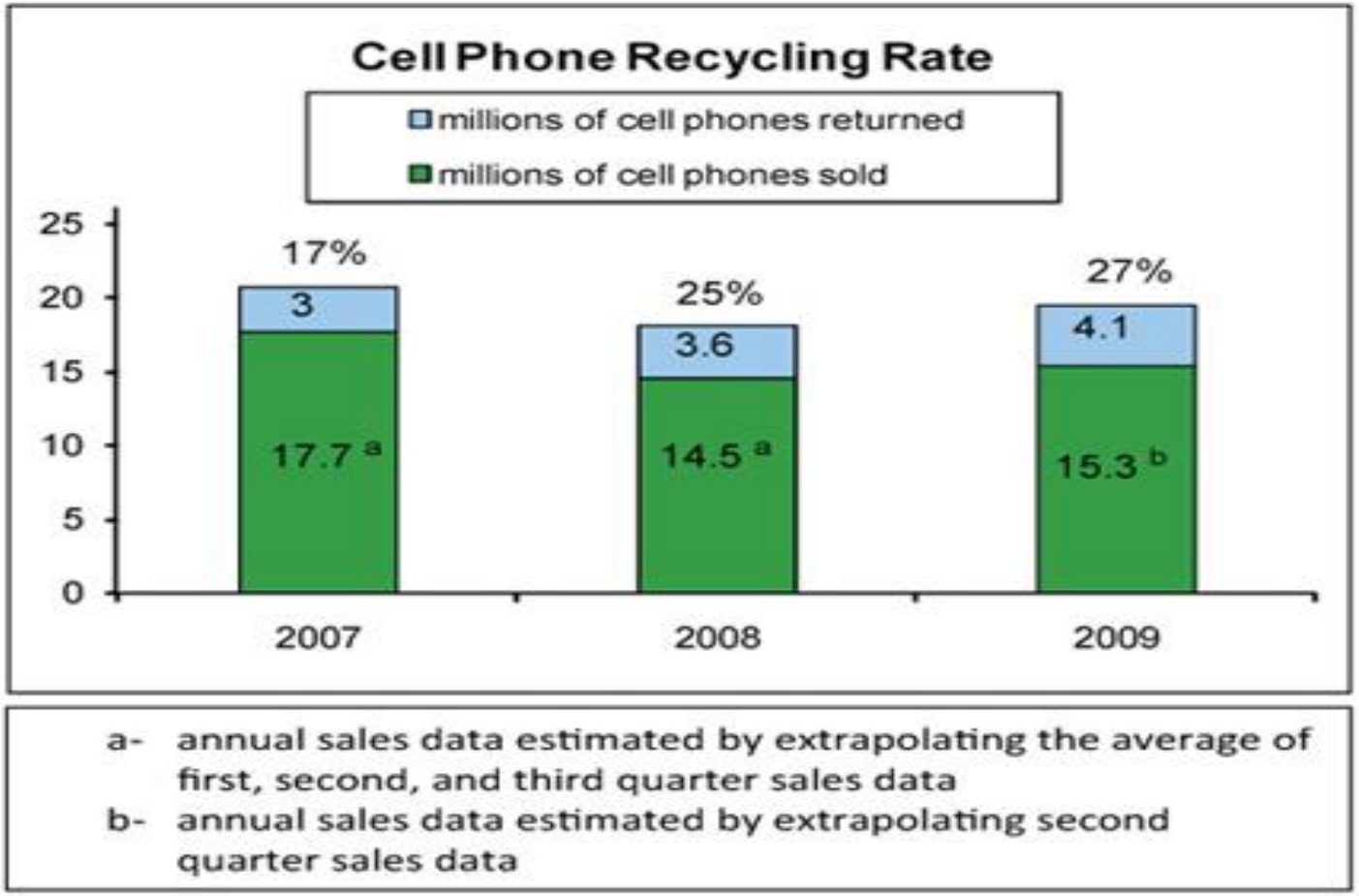
Electricity consumed by portable devices on the grid



Source: Accounting for energy consumption of personal computing using portable devices.

-.Somavat, V.Namboodiri

Why E-recycling is important: Cell phone recycling rate



Source:
http://www.dtsc.ca.gov/hazardouswaste/universalwaste/cellphonerecycle.cfm

Why E-recycling is important

Hazardous material from portable devices

Source of E-Waste	Hazardous Constituent	Health Effect
Computer Monitor	Lead	Damage to nervous system and kidney
Printed circuit board, Chip resistors & semiconductor	Cadmium, Mercury	Accumulated in liver and Kidney Chronic Damage to Brain
Motherboard	Beryllium	Lung Cancer
Front Panel of CRT	Barium	Muscle weakness, Damage to heart

Why E-Recycling is important: Valuable materials after recycling

- Plastics
- Aluminum
- Gold
- Silver
- Copper
- Iron

6000 Handsets = **US $15000**

What the Information Technology field is aiming for

The need for more sustainable portable devices

- Devices with fewer toxic material
- Longer lasting
- More recyclable
- More Modular (with various replaceable parts)
- Less Power consumption

Proposed Solution

- Thin client
- Cloud Computing

What the Information Technology field is aiming for

Cloud Computing & Thin Client

Thin client is a software module installed on the devices in order to access all the applications installed on the server.

Thin clients are made up of lesser hardware components as it only requires manipulating and displaying the application.

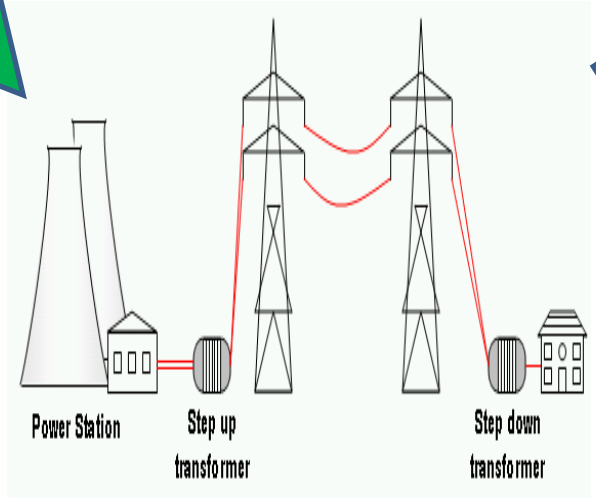
Conclusions: Benefits of Cloud Computing

- *More sustainable*: Longer life for the devices.
- *Lesser Hardware* and Mechanical components compared o the tradition devices.
- *Lighter weight* longer battery life.
- Thin clients provides *Safety of data* during the loss or misplacement of the device. As the data is usually stored on the servers.
- *More recyclable* than traditional portable devices.

Conclusions: Benefits of Sustainable Devices

Longer Life

- **Lesser power consumption by the grid.**
- **Less manufacturing cost.**



- **Lesser E-waste.**
- **Better Environment**

CONCLUSIONS: SUGGESTIONS	LAPTOP	SMART/CELL PHONES
Turn OFF your WiFi and Bluetoooth when not not in use	X	X
Dim your display	X	X
Shut down the unwanted process running behind when you are on battery	X	
Use hibernation instead of stand by mode	X	
Keep the battery cool	X	X
Remove the battery when the device runs on power	X	
Lower the graphics usage by reducing the resolution and shutting the unwanted fancy and l=flashy themes, wallpapers	X	X

Suggestions

Recycle

Renew

Reuse

- Locate your local electronics recycler
- Locate a local recycling bin or container
- Mail your portable devices to a electronic waste specialist.
- **Educate Your Friends and Family about E-Recycle Benefits.**