Google Inc's Grand Plans to Position itself as Green Leader

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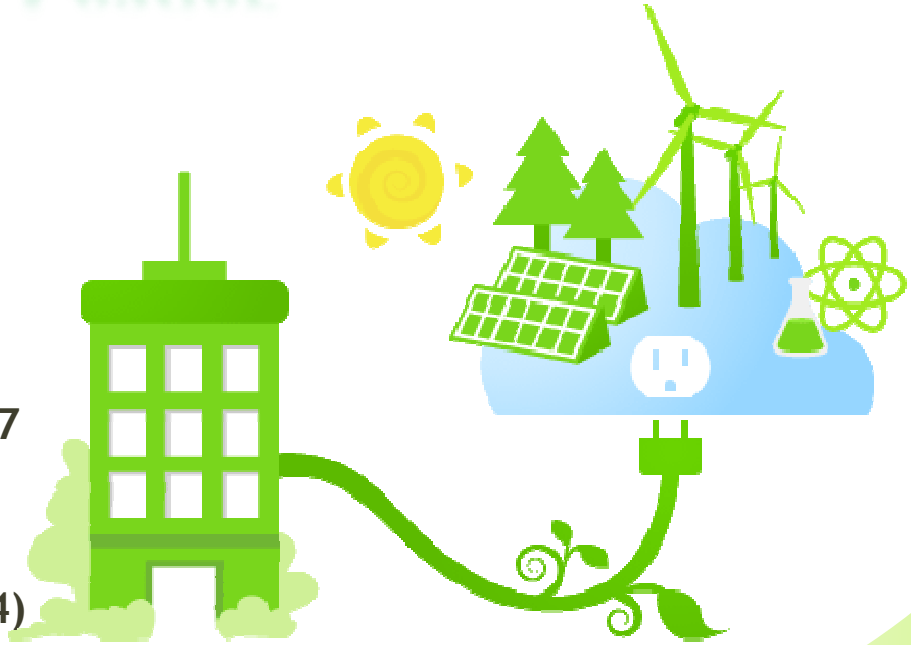


*Google Inc.

*Google – The idea, the inception

- Founded in 1998 by Larry Page and Sergey Brin, two Stanford computer graduate students.
- In 2000 Google became most popular search engine.
- In the same year came up with Google Toolbar ^ Google ad words.
- By the end of 2000 Google was being accessed in 15 languages.
- In 2001 -2002 acquired deja.com's Usenet Discussion Services, renamed as Google Groups. And also partnered with AOL.com
- In 2004 acquired orkut.com and also hit a milestone in search index hits with 6 billion items. And eventually went public by going with an IPO.
- In 2005- 2006 ,Google launched products like Google Maps, Google Earth ,Google Scholar ,Google talk and also Picassa Google Finance, Google News etc.
- Apart from being a good search engine, also assumed corporate responsibility of investing on energy plants.
- Announced an energy plan that cuts off greenhouse gas emission to half by 2030 – project worth $.4.4.Trillion.

Green IT

*Green IT

- According to Economic intelligence unit(EIU) IT is an important engine of economic growth for most countries.
- IT improved overall life , revolutionizing all aspects of economy and society.
- It increases productivity , created more employment ,assisted in development of new products including services and enhances quality of product.
- Along with IT, Internet and world Wide Web(WWW) –digital technologies improves overall way of business works.
- It is estimated that a typical PC and peripherals consumes
- ✓ 1000 watts of power
- ✓ Fuel economy rating is about “about 1 pound of coal to create , package, store and move 2 MB of data.

*Green IT

- 2 percent of CO2 emissions is because of ICT ,these includes PCs, servers ,cooling ,fixed and mobile telephony ,LAN ,office telecommunications and printers.
- Due to ICT carbon emissions increases 6% every year.
- With the current growth rate of IT industry ,estimated it will cross $3.5 trillion IT spending by 2011.
- Emissions would lead to double by 2020.

According to Forrester Research Analyst ,Doug Washburn

- By adopting green IT in industry , in addition to ”reducing the capital and operating expenses ,can also deliver financial value across the broader business.”
- Most organizations are motivated to pursue Green IT not because of financial implications rather than environmental concerns.
- For example Google.

*Google's Green Initiatives

- Installation of solar panels in MountainView which generates 1.6 MW of electricity
- Formation of google.org
- Predict and Prevent
  - $5 million given to InSTEDD to improve, detect and prepare for global health threats and humanitarian crises.
  - $2.4 million given to GHSI to prevent ,detect and respond to biological threat
  - More than $600,000 given to Clark university

  To develop a system to improve monitoring, analysis and prediction of the impacts of climate variability and change of ecosystems in Africa and Amazon

*Google's Green Initiatives

- Inform and empower to improve public services
  - Aim was to improve the delivery of essential public services such as education, health ,water and sanitation
- Fuel the growth of small and medium sized enterprises
- Develop renewable energy cheaper than coal (RE<C)
  - $10 million was given to eSolar which specializes in solar thermal power which replaces traditional fuels.

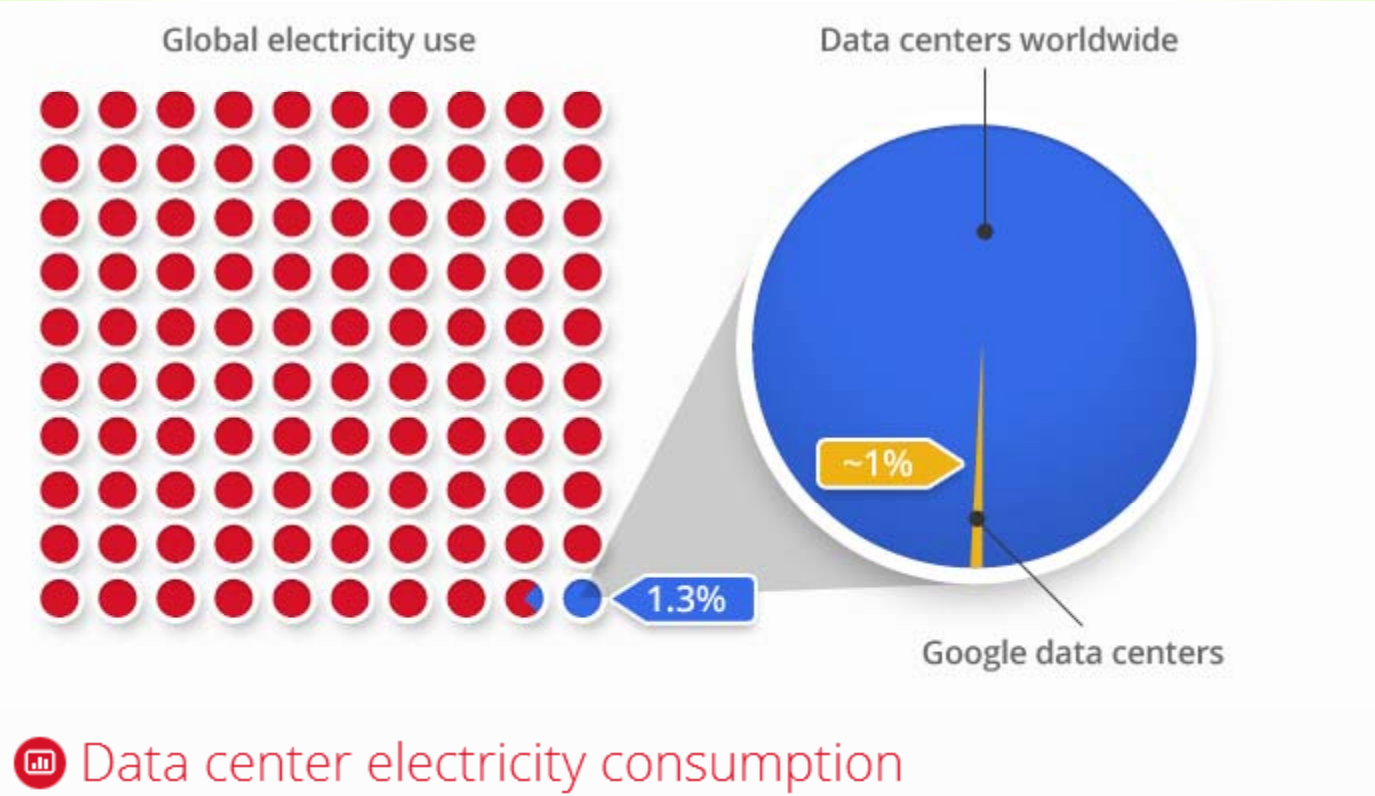
*Google's Green Initiatives

- Accelerate the commercialization of Plug-in vehicles (RechargeIT)
  - Recharge IT aims to reduce emission of CO2 and reduce oil use by accelerating the adoption of plug in hybrid electric vehicles and vehicle to grid technology.

*Google's Green data centers

- Usage of smart of smart temperature controls which uses free cooling techniques
  - Using outside air or reused water for cooling
  - Redesign how power is distributed to reduce unnecessary energy loss
- Performance of each data center is measured by using comprehensive efficiency measurements
- Best Practices adopted
  - Measuring power usage effectiveness
  - Managing airflow
  - Adjusting the thermostat
  - Using free cooling
  - Optimizing power distribution

*Google's Green Data Centers



Reference:
http://www.google.com/green/bigpicture/#/datacenters/infographics

* **Google's Green Initiatives**
(wind power plant for data centers)

*Green initiatives by other trend makers

Facebook

- Facebook uses PHP which is easy for developers
- Hip-hop program converts PHP to C++ , this made programs more efficient cutting energy requirement by 50%
- Facebook made Hip-hop open source and a number of companies reported similar savings
- to power 100,000 home
- Major data centre at Prineville, Ore.
- Facebook shared its server and data center designs with its rivals – could save enough energy to power 100,000 homes (Open Compute Program)
  - ✓ Uses 38% less power than existing server farms
  - ✓ Could save enough energy s

*Green initiatives by other trend makers

Facebook

- Strategy is focussed on controlling PUE
  - ✓ Data centers typically operate at 1.5 PUE
  - ✓ Facebook's Prineville data center runs at 1.07
  - ✓ This would cut annual power budget from $10M to $6M
- Several customized designs and technologies, including stripping out non-essential parts from servers and other systems, such as paint and logos -- a move the company says has saved six pounds of materials per server
- If even a quarter of US data centers adhere to OCP specs, it would save power for more than 160,000 homes
- Facebook using coal power for its data centers
- To become a green company, Facebook needs to reduce gas emissions by reducing its dependence on coal and nuclear energy

*Green initiatives by other trend makers

Yahoo

- Lockport, NY data center is recognized as an exemplary energy efficient design based on low cost hydropower generated by the Niagara Hydroelectirc Power Plant
- The data center uses Yahoo Computing Coop(YCC) – needing significantly less energy and water than conventional data centers
- The unique shape of the building and the use of outside air-cooling for approximately ninety-eight percent of the year eliminates the need for expensive and energy-intensive chillers to keep the servers cool
- Yahoo! also plans to contribute $3.5M to a local community organization, Community Foundation for Greater Buffalo, over the next seven years

*Teams Findings on Google's Green Initiative

- Google did come up with initiatives to go green though many of them were reactive to peoples' comments. Eg. Blackle, Darkoogle etc.
- There have been a lot of criticism about their initiatives which Google has addressed.
- Google did come up with plans to invest huge money in going green.
- Analysts somehow didn't feel this was a right move in view of economic downturn.
- Google still continues to make efforts towards conserving and producing energy by means of its two new ventures, A Solar Energy plant of 266MW, in California & A Wind mill Project of 240 MW in Texas.
- Even with research by individuals suggesting Google search not being eco friendly, the companies other initiatives of getting into renewable power generation does help looking from a holistic view on Google Inc.
- Though there has been criticism from analysts and others about Google's initiatives, over a long run we do see Google as a Green Leader.

*Teams Recommendations

- An organization must be motivated to pursue Green IT due to environmental concerns not because of financial implications
- Optimized programming must be adopted to reduce computing time thereby the energy requirement
- Hydroelectric power which is clean energy must be considered to power data centers
- Organization's must share their Green IT learning, not create an IP around it if we have to save Mother Earth
- Setting up of data centers in colder climes can also be evaluated

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Thank You