



Google Nuggets

- More than 350 million queries per 24 hours period
- Google has more than 8,000 employees and 1,100 job openings as of November 7, 2005
- Google has a thousands of servers that work like one big computer at a fraction of the cost of their competitors' systems and without traditional, expensive backup and restore processes
- Google's revenue is 12 times that of Autonomy-Verity merger ... with \$1 billion in pre-tax profit for Google
- Microsoft, Google, and "China" want to be just like Google.

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- Google's value is more than \$100 billion; Yahoo is about \$30 billion
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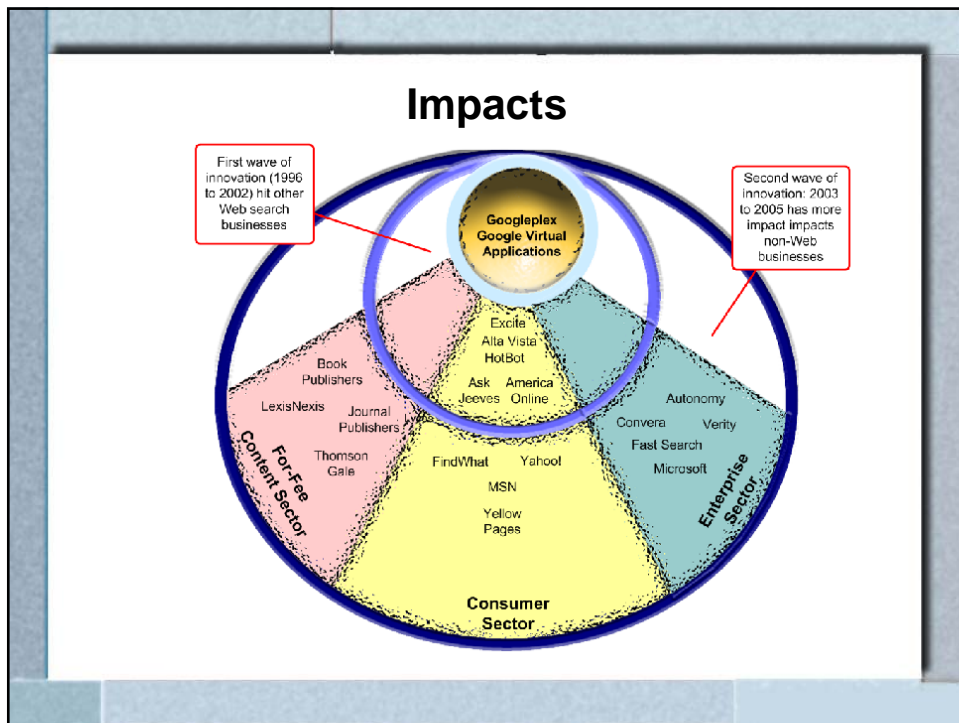
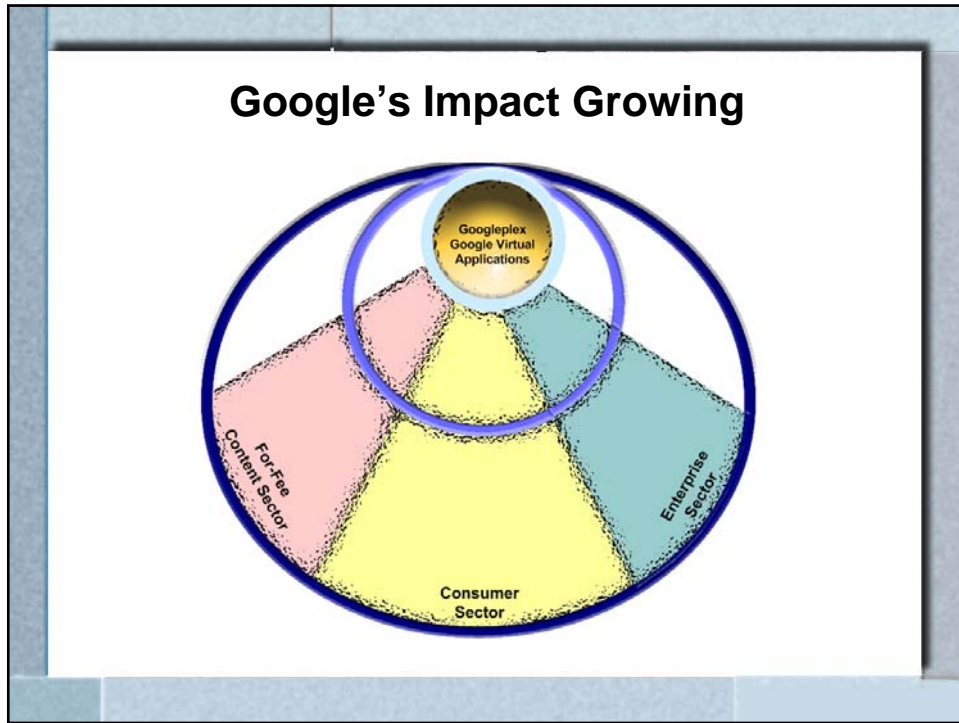
**If Google went out of business tomorrow,
Microsoft or Yahoo would hire
everyone.**

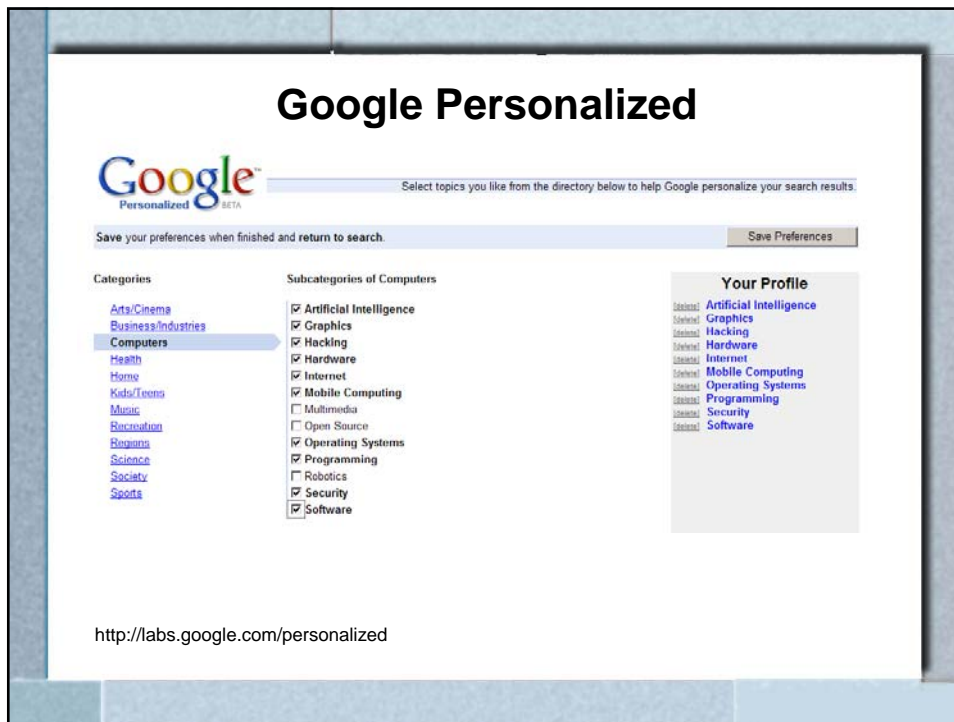
What would this group build?

Google, Version 2



**With Google, traditional security
is not enough and not in step
with Google's technological changes**





Historical Context

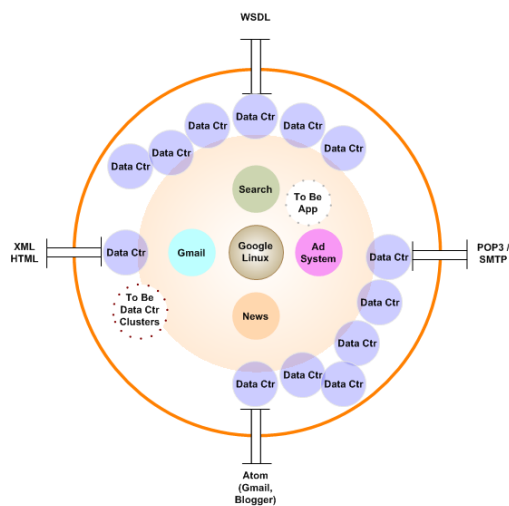
	1964: IBM	1984: Microsoft	2004: Google
Architecture	Glass Room Computer	Desktop Computer	Network Computer
Software	Assembly Language - PL/I	BASIC	Open Source
Performance Improvement	Buy More IBM Hardware	Wait for Intel	Google Linux and File System + Commodity Hardware



**Messrs. McNealy and Ellison talked
about the network computer...**

**Google built it and some of the
hottest virtual applications...**

The Google Compter





**Google is changing the
nature of software applications now...**

Virtual Applications

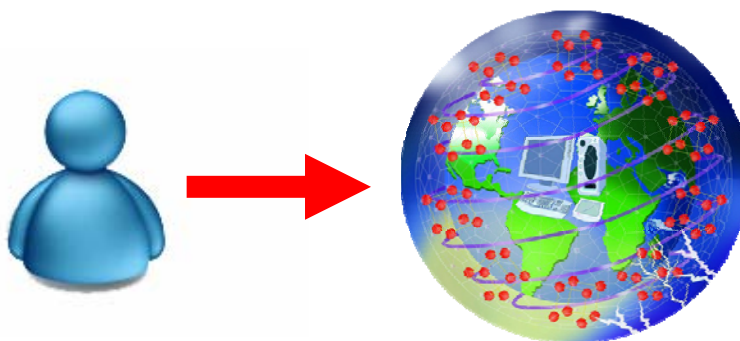


Illustration from <http://emeagwali.com/speeches/future/internet/>

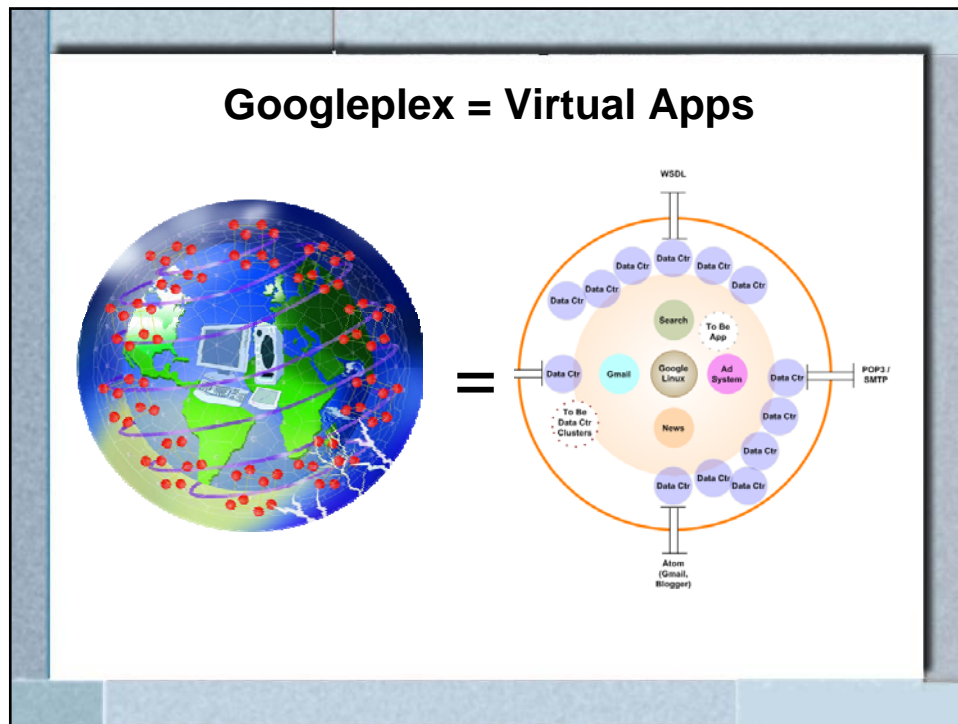
Users don't know what is running where.

System administrators don't know what Google captures and monitors.

Competitors don't grasp the data monitoring advantage Google has.

A Virtual Application: The Future

- User has a device:
 - PC
 - Handheld
 - Mobile phone
- Some code or 'stub' on the device
- Other code "out there" on the Internet
- Broadband makes user experience like using a standard PC with software on that PC



Key Differences

- App provider can do fuzzy monitoring:
 - Session cookies
 - Persistent cookies that expire at a future time; e.g., 2038
 - Aggregate users' actions into one pool
 - Cluster to defuzzify data
- With user permission, app provider can do fine-grained monitoring:
 - User by identifiers
 - Apply analytic processes to a user or users with similar behaviors
 - Crosstab the fine-grained data with the fuzzy data

Examples of Fuzzy Google Apps

- Google Froogle
- Google Groups when searched
- Google Search
- Google Uncle Sam
- Google Universities

Examples of Less Fuzzy Services

- Google AdSense
- Google AdWords
- Google Developer Program
- Google Fusion (ig, MySearchHistory, Personalized)
- Google Toolbar

Interesting Services

- **Google Appliance:**
 - Hardware replaced on 24-month cycle
 - Certain support provided by connecting Appliance to a comms line; e.g., dial up modem
- **Desktop Search with interaction option okayed**
 - Mingles Google Internet “hits with local machine “hits”
 - “Enterprise” version offers for-fee support option
- **Google Personalized**
 - Results filtered by preference
 - Stateful
- **Google Print**
 - Persistent cookie
 - User device – Googleplex interaction to ensure user’s compliance with copyright restrictions on page images

Google Is Upfront

- License agreements for each service
- Short, clear, and forthright
- Data collection addressed

The Burden Falls **NOT** on Google

- The individual—accepting “pushed” code
- The organization—putting in place:
 - Training
 - Personnel
 - Automated “diagnostics”
- The security officer
 - Policies
 - Procedures
- The IT staff
 - Architecture
 - Processes (finding, deleting, monitoring)

Some Organizations...



Summary

- Google is part of the IT landscape for the foreseeable future
- The software environment is undergoing a phase change
- Emergence of virtual applications requires a fresh look at security and acceptable use guidelines
- Adapt to the virtual application environment quickly
- Institutionalize best practices for virtual apps.

Actions

- Review what's being used by your people
- Perform an IV&V on existing policies and procedures for:
 - Virtual applications
 - Hygiene on devices in green and red zones
 - Training programs
- Adjust security

Arnold IT

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