



**Web 2.0:
Concepts and
Applications
and *The Cloud***

What Is Web 2.0?

- Specific meaning of **Web 2.0** is hard to pin down.
- Generally refers to a loose grouping of capabilities, technologies, business models, and philosophies.
- Started when Amazon added “Customers who bought this book also bought...”
 - No grocery store would have “customers who bought this tomato soup bought...”

Comparison of Web 2.0 to traditional processing

Web 2.0 Processing	Traditional Processing
Major winners: Google, Amazon.com, eBay	Major winners: Microsoft, Oracle, SAP
Software as a (free) service	Software as product
Frequent releases of perpetual betas	Infrequent, controlled releases
Business model relies on advertising or other revenue-from-use	Business model relies on sale of software licenses
Viral marketing	Extensive advertising
Product value increases with use and users	Product value fixed
Organic interfaces, mashups encouraged	Controlled, fixed interface
Participation	Publishing
Some rights reserved	All rights reserved

Web 2.0 Overview

- **Web 2.0** has become characterized by applications that connect people and technologies that link data
- The Internet makes it possible to access information from any Internet-connected device
 - Web-based tools for collaboration
 - Web applications
 - Other technologies for sharing information
- With online collaboration, users are both creators and modifiers of content, dynamic and customized information feeds, etc
 - Wikis
 - Social networking sites
 - Blogs
 - RSS feeds
 - Podcasting

Other Characteristics of Web 2.0

- Value of site increases with users and use (Amazon reviews by users is an example)
- Organic user interface and [mashups](#) (more on this later)
- Participation and ownership differences
 - Traditional Web sites are about publishing
 - Web 2.0 is about participation
 - Traditional Web site lock down all legal rights to content
 - Web 2.0 sites lock down only some rights

Advertisizing in Web 2.0

- Google's Ad Words – vendors agree to pay certain amount for particular search words.
 - Workout studio might pay \$2 for the word *workout*
 - Someone Googles that term, Google displays link to the studio's Web site
 - If user clicks link, Google charges studio \$2. Can be limited to certain geographic area
 - Amount paid for a word can be changed from day to day (ie "spinning" is worth more just before spinning class starts.

Advertisizing in Web 2.0 continued

- Google's Ad Sense – Google searches organization's Web site and inserts ads that match content on that site
 - When users click on those ads, Google pays the organization a fee.
- Other Web 2.0 vendors offer services similar to Ad Words and Ad Sense.
 - i.e [Amazon affiliate program](#)

Computing in the Cloud

[What is Cloud Computing](#)

[Why Cloud Computing](#)

- Cloud computing describes how applications are stored and deployed on a network of Internet servers
 - Cloud represents the Internet
- Cloud computing service providers offer server space and processing
- Companies such as Google, Amazon, Microsoft, and Salesforce often operate these servers for many businesses

Computing in the Cloud

[The 3 Ways to Cloud Compute](#)




- Cloud computing includes three main areas of service:
 - **Infrastructure** as a Service (IaaS)
 - Delivery of a networked computing structure over the Internet
 - **Platform** as a Service (PaaS)
 - Delivery of a computing platform over the Internet
 - **Software as a Service (SaaS)**
 - **Delivery of software applications over the Internet**
- Cloud computing is more cost-effective

Infrastructure as a Service (IaaS)

- Consumers can store photos, music, documents, and other files in the Cloud
- Many Cloud storage providers offer limited storage for free, and charge an additional fee for more storage
 - Freemium business model

Infrastructure as a Service: Computing in the Cloud

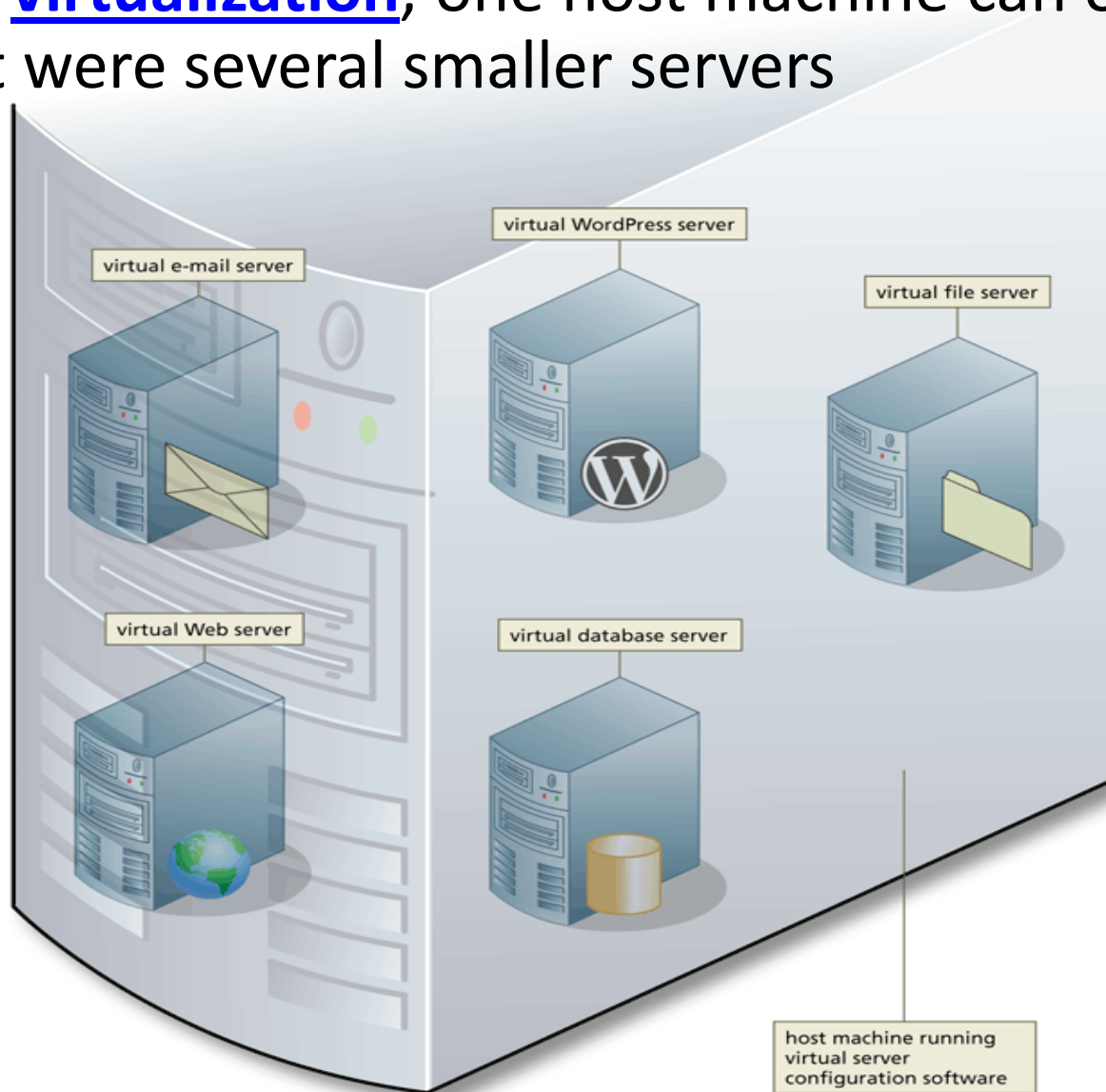
Table 6-1 Cloud Storage Providers

Provider	Logo	Features
Dropbox Dropbox		Provides Cloud storage using a client application which automatically synchronizes files stored in a Dropbox folder on the user's computer with the user's Dropbox storage space in the Cloud. This enables the most recent versions of a user's documents to be available across multiple computers on which the user has installed the client Dropbox application.
Windows SkyDrive		Provides Cloud storage with access on any Web-enabled computer or mobile device. A drag and drop interface simplifies uploading files from desktop to the Cloud. Integrated with your Windows Live account and Microsoft applications to promote collaboration on documents stored on SkyDrive.
ZumoDrive		Provides Cloud storage and synchronization services. Files are stored in a virtual disk drive on the user's desktop. Users may identify folders on their computer to associate with ZumoDrive. ZumoDrive integrates with iTunes so that users can stream music files stored on ZumoDrive to an iPhone or iPod Touch.

Infrastructure as a Service: Computing in the Cloud

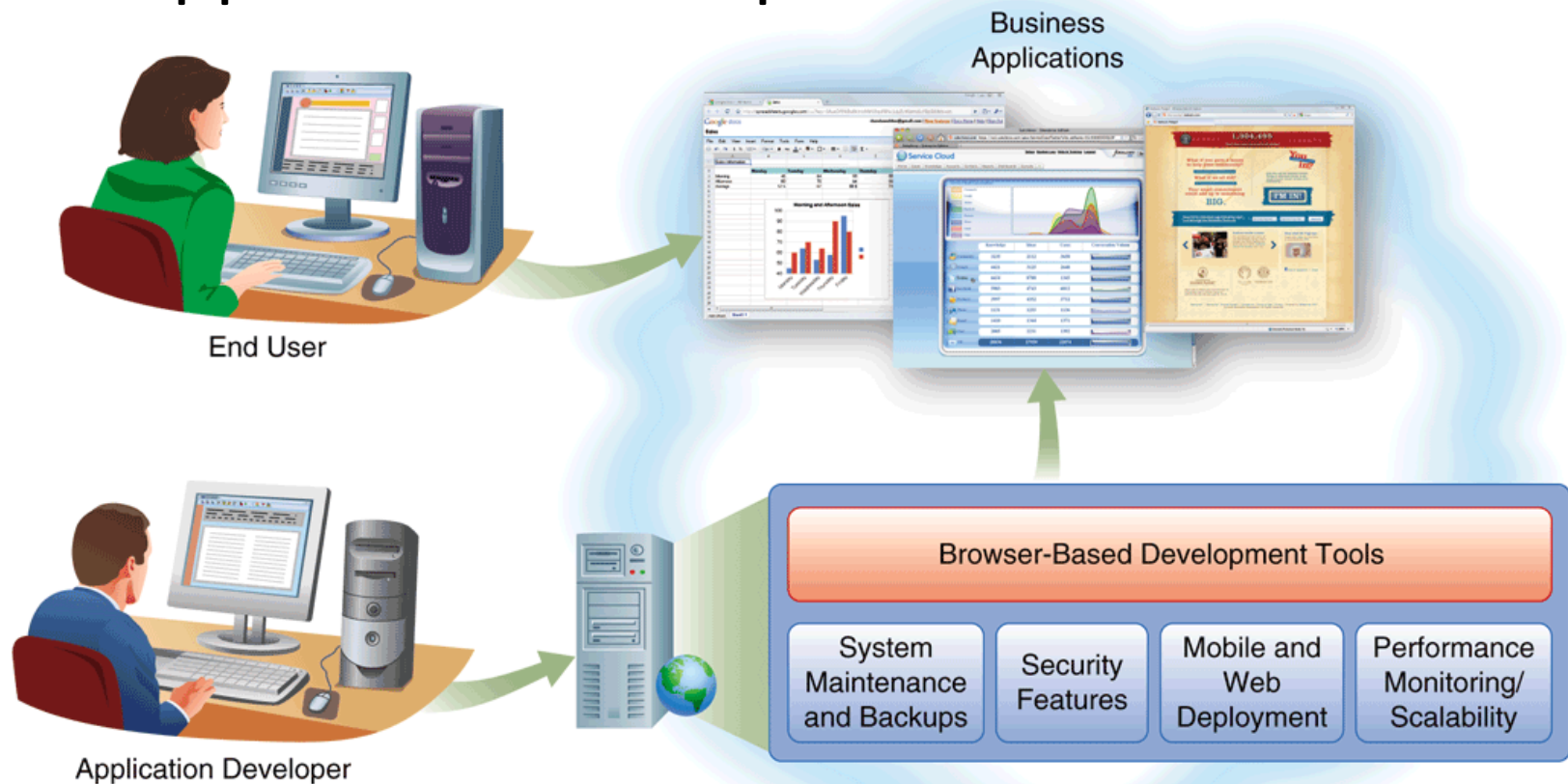
- Using [virtualization](#), one host machine can operate as if it were several smaller servers

[Video](#)



Platform as a Service (PaaS)





Application Development in the Cloud



PaaS facilitate deployment of applications without the cost and complexity of buying and managing the underlying hardware and software and hosting capabilities. PaaS provide all of the facilities required to support the complete life cycle of building and delivering web applications and services entirely available from the Internet.

Platform as a Service: Application Development in the Cloud

Table 6-2 Platform as a Service Providers

Provider	Logo	Description
Windows Azure Azure Video Azure		A Cloud operating system for developing and managing Web applications hosted on servers at Microsoft data centers. Integrated with Microsoft's software development tools.
Amazon Elastic Compute Cloud (EC2)		Provides resources to increase or decrease memory and processing power as needed in order to run Web applications over Amazon's computing environment.
Google App Engine Google App Engine		Enables the development of automatically scaled Web applications running on the same systems used for Google applications. Integrated with Google services including maps, calendar, and documents.
Force.com Force.com		Provides tools for developing and deploying Web-based business applications that run on the Salesforce.com platform.

Software as a Service

- [Software as a Service](#), part of the Web 2.0 movement, changes traditional thinking about how software is created, provided to users, and used to create value.
- Delivery model for software in which you pay for software on a pay-per-use basis instead of buying the software outright
 - Use any device anywhere to do anything
 - Bulk of processing occurs on servers throughout the Internet
 - Pay a small fee and store files on the Web
 - Access those files later with your “regular” computer
 - Makes use of an **application service provider**
 - SaaS companies clash with traditional software vendors that rely on traditional software programs to provide the bulk of their revenue.

Software-as-a-Service

- ***Application service provider (ASP)*** – supplies software applications (and other services such as maintenance, file storage, etc) over the Internet that would otherwise reside on customers' computers

Computing in the Cloud with Google Docs

- Integrated SaaS suite of Web applications
- Free service to customers
- Users can access documents from anywhere
 - Documents
 - Spreadsheets
 - Presentations
 - Folders
 - Forms
- Users can upload existing documents
- Users can collaborate with each other

Computing in the Cloud with Google Docs continued

- Cloud computing makes it possible for companies to offer Web-based versions of popular personal computer programs
 - Microsoft Office Outlook Web Access
 - **Google Apps - Replace Microsoft office?**
 - **Gmail, Google Calendar and Google Docs**
 - Google Calendar
 - Share your schedule
 - Get your calendar from your phone
 - Get event reminders via email or have text messages sent right to your mobile phone.
 - Gmail
 - [Google Docs](#)
 - [Google Reader](#)
 - **Stay up to date** Google Reader constantly checks your favorite news sites and blogs for new content.
 - **Share with your friends** Use Google Reader's built-in public page to easily share interesting items with your friends and family.
 - **Use it anywhere, for free** Google Reader is totally free and works in most modern browsers, without any software to install.
 - [Google Sites](#)

Computing in the Cloud with Google Docs

The screenshot shows a Google Docs presentation titled "Web20TechOverview" in a Windows Internet Explorer browser. The presentation content includes a table of contents with four slides: "Web 2.0 Technical Overview", "Tim O'Reilly's Compact Definition", "Web as a Platform", and "Web as a Platform". A "Share with others" dialog box is open, showing the "Invite people" tab. The dialog includes a text input for an email address (containing "<bobconselli@gmail.com>"), a "Subject" field (containing "Web20TechOverview"), and a "Message" field (containing "Hey Bob, Here's the presentation from class today."). There are radio buttons for "To edit" (selected) and "To view", a "Choose from contacts" link, a "Send a copy to myself" checkbox, and "Send" and "Add without sending invitation" buttons. Callouts point to various elements: "invite users to collaborate on this presentation" points to the "Invite people" tab; "specify whether these collaborators can edit or only view the presentation" points to the "To edit" radio button; "subject line of invitation" points to the "Subject" field; "invitation to share a presentation" points to the "Message" field; and "sends the invitation" points to the "Send" button.

Computing in the Cloud with Google Docs

displays options to share this spreadsheet with others or publish or embed it on the Web

people viewing this spreadsheet along with you

chat area to discuss the spreadsheet

Rhonda highlighted this cell

gray shading indicates to Rhonda that Bob is currently editing this cell

Payroll Spreadsheet - Mozilla Firefox

http://spreadsheets.google.com/ccc?key=0AITH5iALNHSRdFFIRzdKRUwZi9RQUZk

rhondawebber@gmail.com | New features | Docs Home | Help | Sign Out

Share Autosaved on 4:03 PM PDT

Viewing now:

bobconselli

bobconselli: Hey Rhonda, what happens if you change the number to sell for bonus to 15?

me: Let me enter that value. Hold on.

bobconselli: Cool. I'll add the formula to add up the total payroll.

Press enter to send your message

Payroll					
Last Name	First Name	Hours Worked	Number Sold	Paycheck	Bonus
Andrews	Melinda	20	18	\$180	Bonus Pay
Benson	Kerrie	20	15	\$140	Bonus Pay
Chase	Tom	15	10	\$105	Flat Rate
Conselli	Brendon	15	16	\$160	Bonus Pay
Pang	Craig	20	10	\$140	Flat Rate
Webber	Rhonda	20	15	\$140	Bonus Pay
Totals:			84	\$865	

Advanced Cloud-Based Features of Google Spreadsheets

- Google Spreadsheets offers an online editor called Google Forms to create forms for surveys
- Users completing the survey view the form in their Web browsers
- Google Forms stores the form and any other data as part of the Google spreadsheet

Advanced Cloud-Based Features of Google Spreadsheets

(a) Screenshot of the Google Forms editor interface. The form title is 'Meeting Scheduler'. The instructions are 'We need to meet one night next week to work on our project. Please select all the nights that you are available at 7 pm.' The form type is 'Checkboxes'. The question text is 'When can you make a meeting?'. The options are Sunday, Monday, Tuesday, Wednesday, and Thursday. The 'Make this a required question' checkbox is checked. A 'Submit' button is visible at the bottom.

(b) Screenshot of the Google Forms viewer interface. The form title is 'Meeting Scheduler'. The instructions are 'We need to meet one night next week to work on our project. Please select all the nights that you are available at 7 pm.' The form type is 'Checkboxes'. The question text is 'When can you make a meeting?'. The options are Sunday, Monday, Tuesday, Wednesday, and Thursday. The 'Make this a required question' checkbox is checked. The 'Submit' button is visible at the bottom.

changes the background and theme used to display the form

adds a new question to the form

title of form and instructions for the user

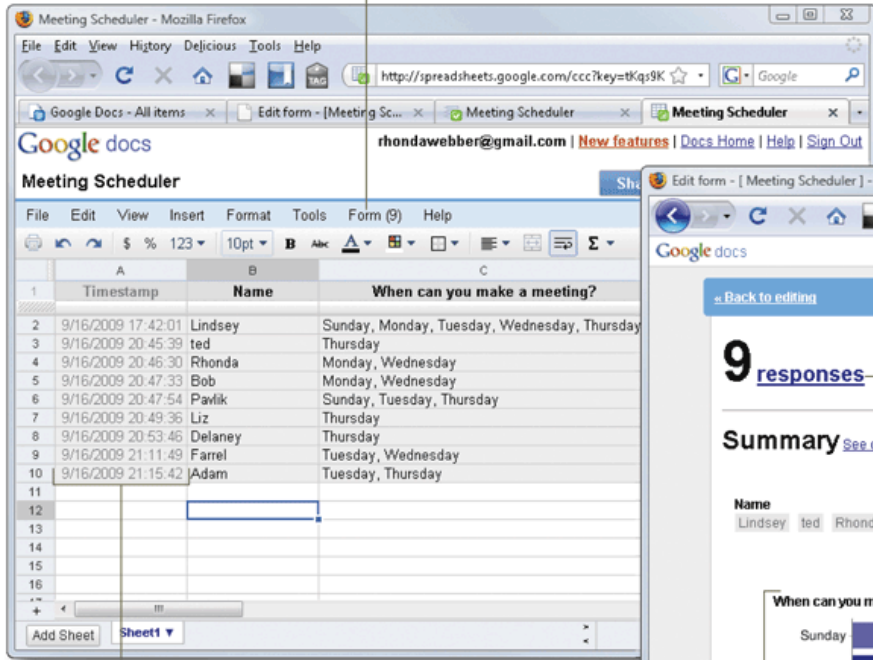
specifies the question type; options include text, checkboxes, and radio buttons

includes this question on the form

submits the response

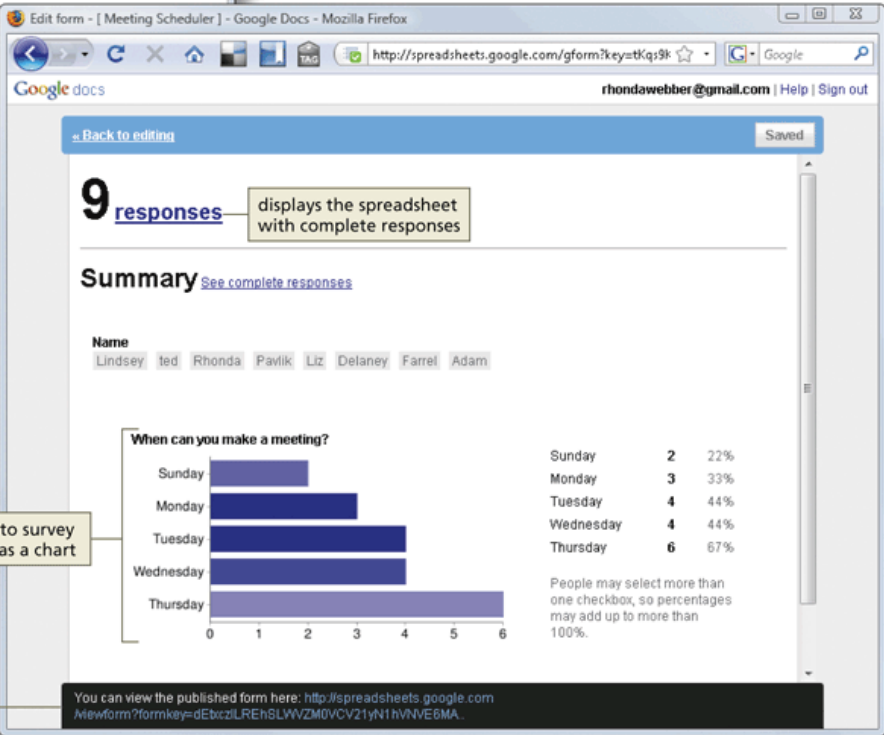
Advanced Cloud-Based Features of Google Spreadsheets

displays options for viewing, editing, and sharing the form, stopping form from accepting responses, and viewing a summary of responses



(a)

(b)



displays the spreadsheet with complete responses

responses to survey displayed as a chart

URL for the published form

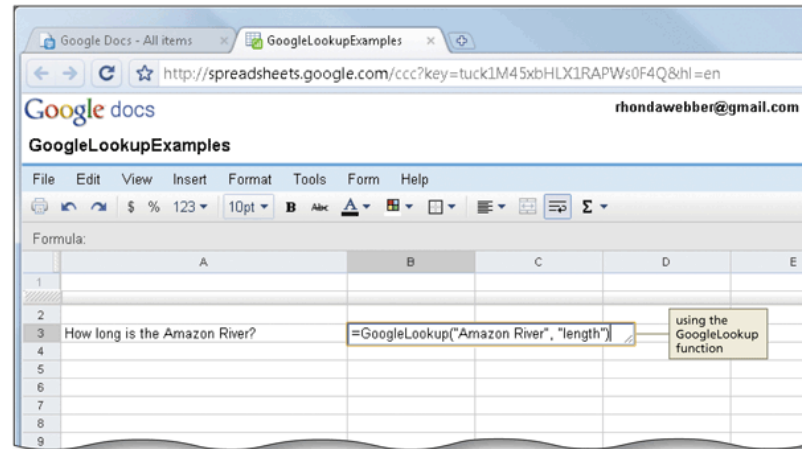
Google Spreadsheets adds a timestamp column that displays when each user completed the survey

Including Live Data from the Web in a Google Spreadsheet

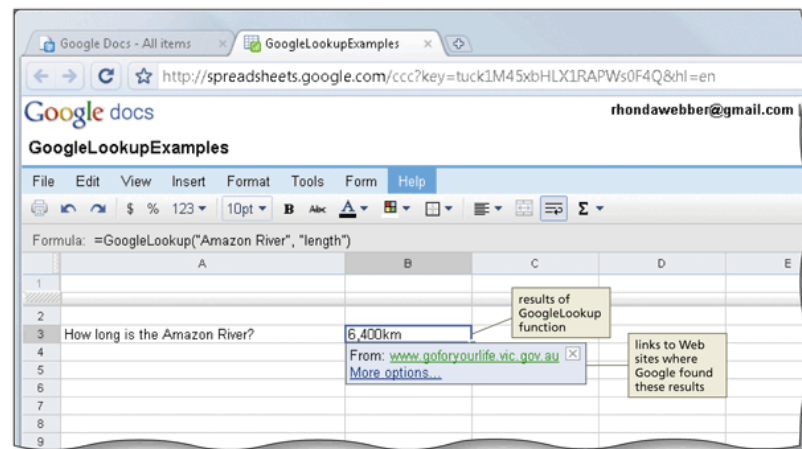
- Google Spreadsheets includes Web functions that look up information on the Web and insert the results in spreadsheet cells
 - GoogleLookup
 - GoogleFinance
 - [GoogleReader](#)
 - [GoogleTranslate](#)
 - ImportFeed
 - ImportHTML
 - ImportXML

Including Live Data from the Web in a Google Spreadsheet

(a)

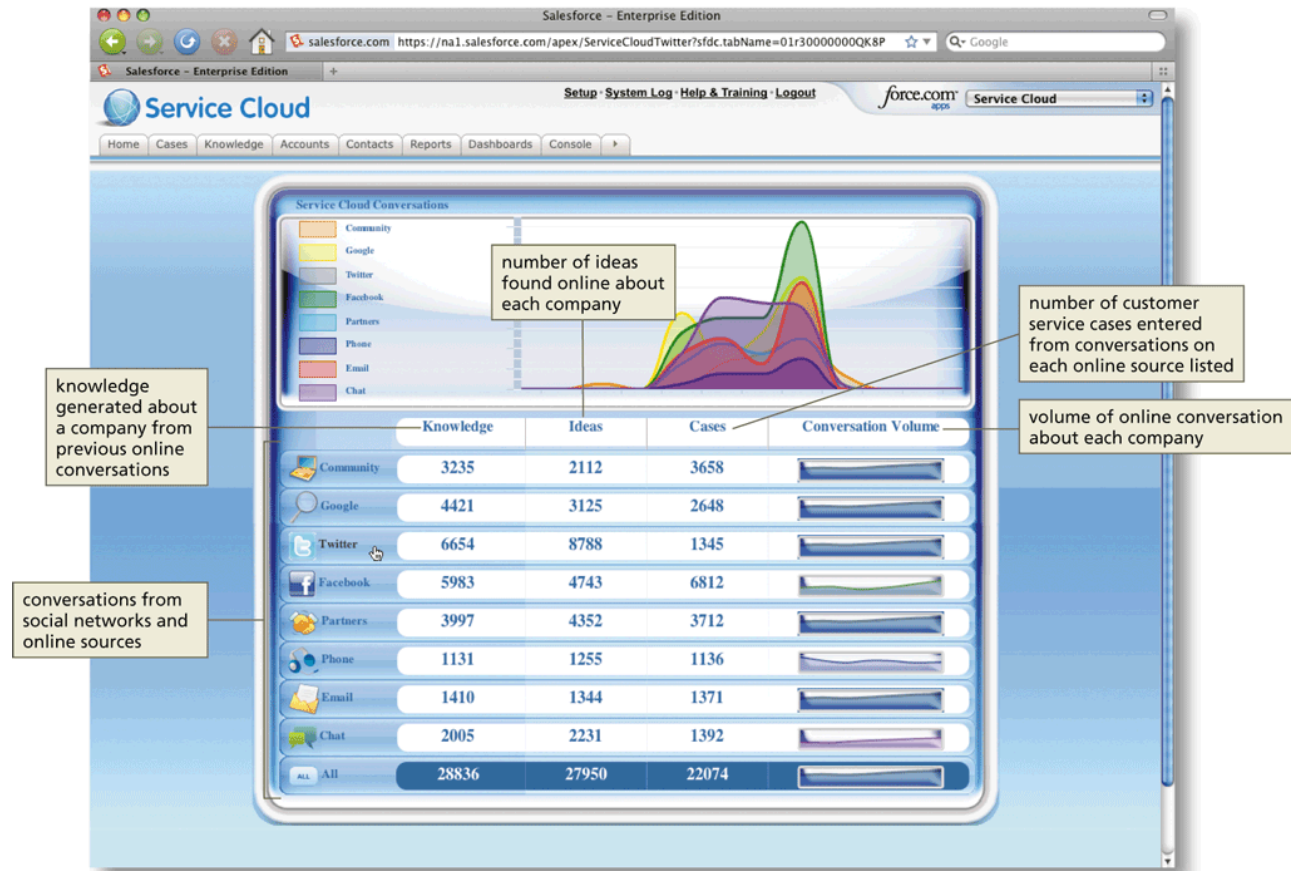


(b)



Business Applications in the Cloud

- The [Salesforce Service Cloud](#) allows businesses to pay as they use services, instead of owning comparable software. [Video](#)



Linking Data between Web Applications

Web sites such as MSN, iGoogle, and myYahoo are examples of **portal** pages which present information from diverse sources in a unified way

Portal pages display customized online content from different sources on the same page

The image shows a screenshot of an iGoogle portal page. The browser address bar shows the URL <http://www.google.com/ig#max7>. The page features a search bar with the text "iGoogle" and "Google Search" and "I'm Feeling Lucky" buttons. Below the search bar, there are several widgets and sections:

- Home**: A sidebar with links to YouTube, Date & Time, Weather, NYTimes.com, NPR: News, Music, CNET News.com, and Wired Top Stories.
- Weather**: A widget for Boston, MA, showing a current temperature of 58°F and a forecast for the next four days (Thu, Fri, Sat, Sun).
- Date & Time**: A widget showing the current date and time: Thu SEP 17.
- YouTube**: A widget with a search bar and a video player showing a group of people on a car.
- CNET News.com**: A widget displaying news headlines such as "Facebook break leads to burglary suspect" and "Microsoft sues over malicious online ads".
- Wired Top Stories**: A widget displaying news headlines such as "Sprint's Hero Has Buff Software, Feeble Hardware" and "5 Industry Collisions We'd Like to Throw".
- Chat**: A widget for chat with friends in iGoogle!
- NPR: News, Music, Daily Quiz**: A widget with a search bar and a video player showing a group of people on a car.

Annotations and callouts:

- A blue arrow points to the search bar area.
- A callout box says "click and drag title bars to rearrange content items" with lines pointing to the title bars of the Weather, Date & Time, and YouTube widgets.
- A callout box on the left says "weather content" pointing to the Weather widget.
- A callout box on the left says "content from CNET News" pointing to the CNET News.com widget.
- A callout box on the left says "content from Wired magazine" pointing to the Wired Top Stories widget.
- A callout box on the right says "video content from YouTube" pointing to the YouTube widget.
- A callout box at the bottom says "audio content from National Public Radio" pointing to the NPR widget.

APIs (Application Programming Interface)

- Created by a company or organization that wishes to share its data with third-party applications.
- By providing a well-documented, well-defined interface, third-party programmers can build applications and services that rely on that particular API specification.
- By making APIs public, companies can gain a greater audience for their data or services
- Third-party developers may, for example, develop applications that the API provider had never even thought of.
- A good example of a company providing APIs is Amazon.com,
- The benefits to Amazon are obvious,
 - thousands of third-party Web sites create new and interesting ways for Amazon products to be displayed and interacted with – something that would not be possible without such APIs being made available.

Example of an API

- **Google Maps API**
- After the success of reverse-engineered mashups such as chicagocrime.org and housingmaps.com, Google launched the Google Maps API¹ to allow developers to integrate Google Maps into their websites.
- It is a free service, and currently does not contain ads, but Google states in their terms of use that they reserve the right to display ads in the future.¹
- By using the Google Maps [API](#), it is possible to embed Google Maps site into an external website, on to which site specific data can be overlaid.

Creating New Applications from Data in the Cloud

Mashups

- **Mashups** are Web applications that combine content or data from multiple online sources into new Web applications
- Contents are continually updated
- Content for mashups often comes from Web feeds and Web services
- Amazon uses mashup technologies to aggregate product descriptions with partner sites and user profiles, commentaries, and images.
- Travel sites, such as Travelocity, Kayak, Matador, and Travature, integrate standard content (such as airfare search engines, travel guides, maps, and hotel reviews) with comments, ratings, and images from users.
- Creating mashups usually requires significant Web development experience
- Mapping mashups are the most popular type of mashup
- HousingMaps.com Craigslist and MapQuest
- SpotCrime.com
 - SpotCrime displays the locations of criminal incident reports on a Google Map to illustrate where crime takes place in a neighborhood.

RSS Feeds



RSS feed – provides frequently published and updated digital content on the Web

- **Really Simple Syndication** is a family of web feed formats used to publish frequently updated works—
 - blog entries, news headlines, audio, and video—in a standardized format.
- An RSS document includes full or summarized text, plus metadata such as publishing dates and authorship.
- **Web feeds** benefit publishers by letting them syndicate content automatically.
- They benefit readers who want to **subscribe to timely updates from favored websites or to aggregate feeds** from many sites into one place.
- RSS feeds can be read using software called an "RSS reader", "feed reader", or "aggregator", which can be web-based, desktop-based, or mobile-device-based.
- The user subscribes to a feed by entering into the reader the feed's URL or by clicking an RSS icon in a web browser that initiates the subscription process.
- The **RSS reader checks the user's subscribed feeds regularly for new work, downloads any updates that it finds**, and provides a user interface to monitor and read the feeds.

User Generated Content (UGC): Blogs, Wikis and Social Networking in Business

- Reach out and market to **potential new customers**.
 - Facebook sites to market their product to specific groups on Facebook.
- **Support** and give added value to **existing customers**.
 - A software company could have a blog that discusses in-depth use of a software product.
- Within their company to **communicate between departments and share knowledge**.
 - A company **wiki** could be set up as a **repository of expert information**.

Common Types of UGC

- Ratings and surveys
- Opinions
- Customer stories
- Discussion groups
- Wikis
- Blogs
- Video
- [Crowdsourcing](#)

Benefits of UGC

- Social network users are three times more likely to trust peers' opinions over advertiser claims.
- Increases loyalty to company site and brand loyalty
- Increases brand involvement, interaction, intimacy, influence
- Discussion groups share advice and assistance.
- Provides useful information for product marketing and development

UGC Applications


Application	Example
Sale (ratings, reviews, recommendations, stories)	www.amazon.com
Marketing (crowdsourcing)	www.ryzwear.com
Product support (problem solving, Q&A, advice, applications)	www.msdn.com
Product development (research and development)	www.spore.com www.ryzwear.com
UGC as bait for advertising	www.youtube.com www.funnyordie.com
UGC as part of product	www.finewoodworking.com www.woodenboat.com

Crowdsourcing

- Crowdsourcing organizations [example](#) involve their users in the design and marketing of their products.
- Shoe startup company RYZ (ryzwear.com) (see next slide) sponsors shoe design contests to help it understand which shoes to create and how to market those designs.
- Example: **Netflix announcement of reward for technology solution to its movie recommendation**
- Crowdsourcing combines social networking, viral marketing, and open-source design, saving considerable cost while cultivating customers.
- The crowd performs classic in-house market research and development and does so in such a way that customers are being set up to buy.

[Video](#)

Design by Crowdsourcing



DESIGN / VOTE / SHOP / COMMUNITY

how it works / download templates / upload designs

username
password
Log In SIGN UP →

DESIGN THE CHOSEN ONE

RYZ ISN'T LIKE OTHER BRANDS THAT DICTATE WHAT'S STYLISH AND COOL. WE WANT YOU TO TELL US. OR BETTER YET, SHOW US.


Our designs are created by artists, DJs, poets, students, dreamers, doers and other unique individuals like you. But that doesn't stop them from achieving design immortality – or sharing in the profit, each winner receives \$1000 + \$1 for every pair we sell online.

We'll post the design entries online and let our community decide what's hot and what's not. The design that receives the most votes wins. It's produced and sold to adoring fans from around the world. Bragging rights and a share of the profits included.

Yes, this is a popularity contest – and like all democracies, participation is important. So download your template, create your design, then tell everybody you know to vote early and often. And may you RYZ to the occasion.

GET STARTED AND DOWNLOAD A TEMPLATE

RYZ hi top



Download Template

COMPETITION CYCLE

CONTEST 4

Contest Begins
07/10/08

Submission Deadline
07/30/08

Voting Starts
07/31/08

Voting Ends
08/20/08

Winners Announced
08/25/08

27 days left in the competition

SUBMITTING A DESIGN IS EASY
→ LEARN HOW IT WORKS

COMPLETED YOUR DESIGN?
→ UPLOAD IT TO YOUR DESIGN WORKSPACE

UGC Videos

- YouTube is famous for hosting UGC videos provided as bait for advertising.
- Some sites include UGC as part of the product.
 - The magazines *Fine Woodworking* and [Wooden Boat](#) both include UGC video as part of their product offerings

Impact of UGC

- Increases conversion rates (the ratio of visitors who convert website visits into desired actions [sale])
- Conversion rates are higher for products with less-than-perfect reviews than for products with no reviews at all.
- UGC to post answers to questions, articles, best practices, blogs, code samples, and other resources
- Return rates fall dramatically as number of product reviews increases
- Videos provide bait for advertising
- Some sites include UGC as part of the product

Risks of Using Social Networking and User-Generated Content?

- Junk and crackpots
- Inappropriate content
- Unfavorable reviews
- Mutinous movements
- Dependency on Social Network (SN) vendor
 - Vulnerable to reliability and performance
 - Vendor may own content
 - Vendor may remove site

Fundamentals of Social Networking

- Social networking (SN)—interaction of people connected by friendship, interests, business association, or other common trait and supported by Web 2.0 technology
- SN support N:M communication and social collaboration

How Can Businesses Utilize Social Networking Groups?

- Types of SN groups
 1. Public—anyone can find the group by searching and anyone can join it.
 2. Invitation—anyone can find the group by searching, but he or she must be invited to join.
 3. Private—the group cannot be found by searching, and members must be invited to join.
- Businesses can use SN groups to strengthen relationships among customers and to create possibility of viral marketing.

How Can Businesses Utilize Social Networking Groups?

- Traditional business communication is unreliable.
- SN communication is more reliable.
- Viral messaging reaches more people, faster, cheaper, and more personal.
- A company could expand its viral marketing by inducing (viral hook) customers to get their friends to form a relationship with the company.
 - Finding proper viral hook is critical
- Common ways companies form SN relationships with customers are groups and applications.

How Can Businesses Utilize Social Networking Applications?

Social networking application

- A computer program that interacts with and processes information in a social network
- Examples:
 - Survey Hurricane, a Facebook application created by Infinistorm (www.infinistorm.com).
 - Users who install that application on their page can survey their friends on topics of interest.
 - [New York Times quiz](#)
 - Applications for buying and selling items, comparing movies, and so on

Sentiment Analysis [Demo](#)

- Wikipedia defines [sentiment analysis](#) as the process that “aims to determine the attitude of a speaker or a writer with respect to some topic.”
- Automated sentiment analysis is the process of training a computer to identify sentiment within content through [Natural Language Processing \(NLP\)](#).
- Various sentiment measurement platforms employ different techniques and statistical methodologies to evaluate sentiment across the web.
 - Some rely 100% on automated sentiment
 - Some employ humans to analyze sentiment
 - Some use a hybrid system.
- The social media health of a brand is how it’s public sentiment compares to that of its competitors.
 - If your sentiment is 20% negative, is that bad? It depends.
 - If you see your competitors with a roughly 50% positive and 10% negative sentiment, while yours is 20% negative, that probably merits investigation to understand the drivers of these opinions.

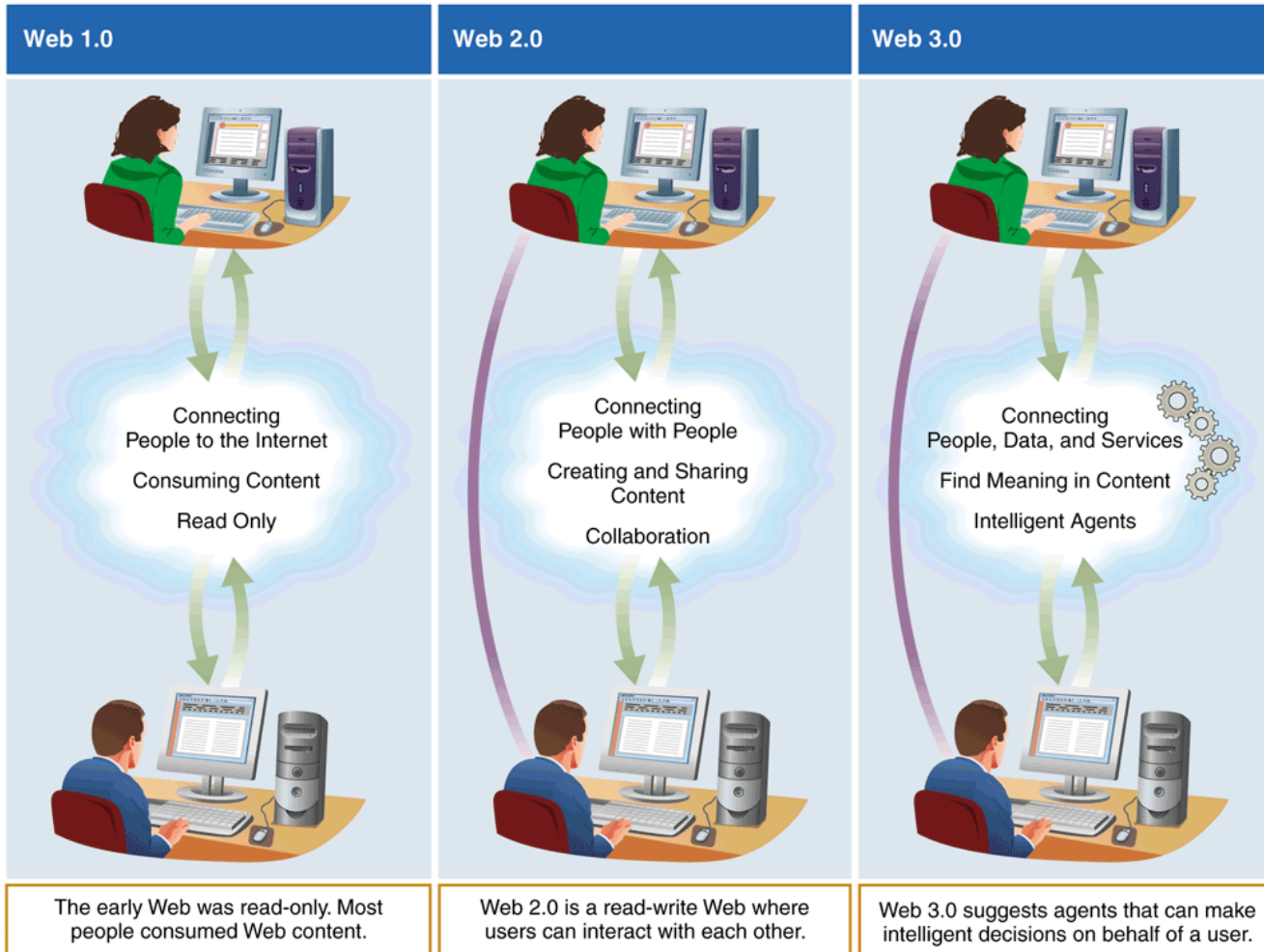
Web 3.0

- Web 3.0 is the vision of the next generation of the Web in which all of the information available on the Web is woven together into a single experience.
- The related movement called the Semantic Web is a collaborative effort to add a layer of meaning to existing information to reduce the amount of human time spent in searching and processing that information.
- This potentially could have huge effects on businesses as simple analysis becomes mechanized, requiring fewer humans to perform this basic task.

Linking Data in Context: A Prelude to Web 3.0 and Beyond

- Web 3.0 is the name that is being used to describe emerging trends that allow people and machines to link information in new way
 - Personal Web assistants called **Agents** can make decisions and take actions based on a user's preferences
- Many describe Web 3.0 as the rise of the Semantic Web
 - Intelligent software tools can read Web pages and discern useful information from them

Linking Data in Context: A Prelude to Web 3.0 and Beyond



Linking Data in Context: A Prelude to Web 3.0 and Beyond



2020?

- Expect that technology will enable voice and video to be integrated into social networking.
- Speak your tweets and have a program translate your voice message into text? Jott.com already offers a limited version of that service.
- Tweet your video? Twitvid.com
- What will social networking do to management?
 - implication of remote collaboration is that there are fewer opportunities for face-to-face informal conversations
- What will microblogging do to employee evaluation and compensation?
 - potential for sensitive work information to be publicized on microblogging sites such as Twitter
- What will happen to language? Writing skills?

Summary

- Cloud computing combines the convenience of Web hosting with the flexibility of IaaS, PaaS, and SaaS
- Web 2.0 companies provide Web services so that others can access their data to create new applications and mashups that run in the Cloud
- Web 3.0 will mark the shift to a Semantic Web