L1 - What is an information system?

- Purpose: To provide accurate, timely and useful information
  - Each element must be present and all of the elements must work together

- An information system consists of FIVE PARTS, including:
  - People
  - Procedures
  - Software
  - Hardware
  - Data

- Information system (IS) = IT plus procedures, and people that produces & utilize information.
  - IT = hardware + software + data
    - Products
    - Methods
    - Inventions
    - Standards

- Avoid a common mistake: Do not try to buy an IS; you cannot do it.

- You can buy IT: Buy or lease hardware, license programs and databases, even obtain predesigned procedures. Ultimately, people execute those procedures to employ that new IT.

- Any new system requires training tasks, overcoming employees' resistance to change, and managing employees as they utilize new system.

- Information systems aid the Decision-Making Process:
  - Improve productivity
  - Monitor organizational performance
  - Planning and decision-making
  - Enhance Competitive Advantage

- Hardware
  - Monitor
  - Keyboard
  - Printers
  - Thumb drive
  - Hard disk
  - Scanner

- Software
  - Operating systems
  - Application software

  - Word processing
  - Spreadsheet
  - Database
  - Presentation graphics
  - Custom software

- Procedures
  - User manuals
  - Data entry procedures
  - Step-by-step guides
  - Guidelines
  - Workflows

- People
  - ICL: Knowledge, Skills & Abilities
  - Training & Certification
  - Requirements

- Data
  - Data: raw facts/usually with no inherent meaning
  - Not useful in decision-making process
  - Information: Processed data that conveys meaning and is useful to people/in the decision-making process
  - Examples:
    - Employee payroll report
    - Student grade sheet
    - Telephone bill statement

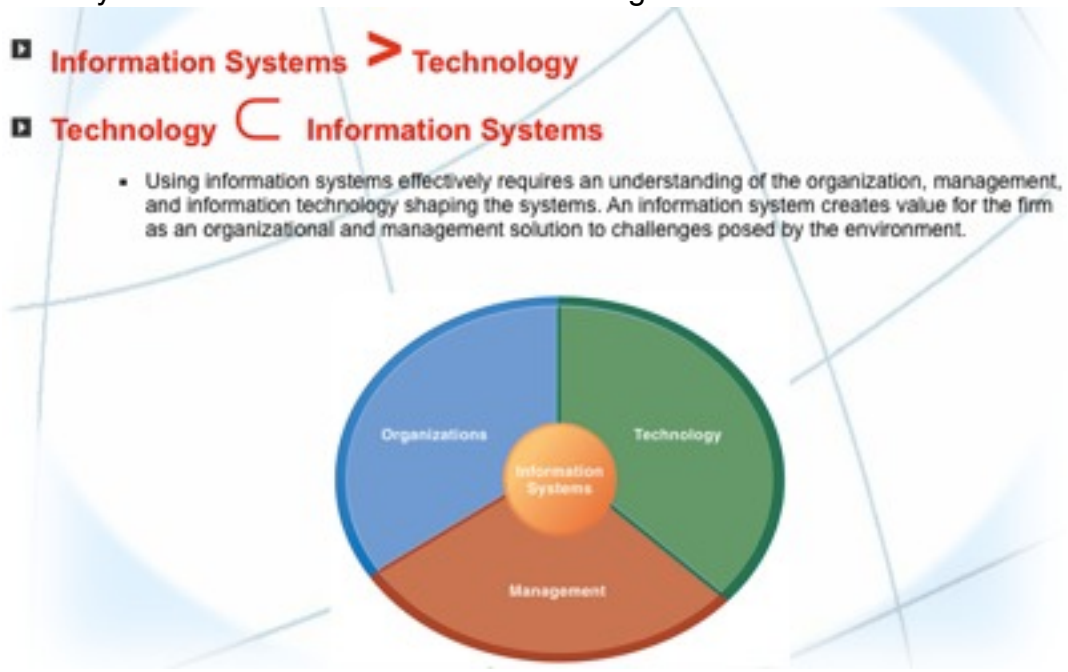
- Information system:
  - Set of interrelated component
  - Collect, process, store, and distribute information
  - Support decision-making, coordination, and control

- Data vs. Information:
  - Data are streams of raw facts
  - Information is date shaped into meaningful form
    - Example: Raw data from a supermarket checkout counter can be processed and organized to produce meaningful information, such as the totel unit sales of dish detergent or the total sales revenue form dish detergent for a specific store or sales territory.

- Three core activities of information systems:
  - Input: Captures raw data from organization or external environment
  - Processing: Converts raw data into meaningful form
  - Output: Transfers processed information to people or activities that use it

- Advanced information systems also incorporate one addition functionality
  - Feedback: Output returned to appropriate members of organization to help evaluate or correct input stage

- It is important to remember that these functionalities are not limited to technologies:
  - Can you think of these activities in a management context?



- Benefits of an IS education for a management student:
  - In today's workplace, it is imperative that IS work effectively and reliably.
  - IS managers DO NOT only work with the IT dept.: IS will be part of your job in other business functions such as Marketing, Operations, HR, Finance, Accounting etc.
  - As an IS manager for your business function, you will play a vital role in the implementation and administration of technology within your divisions and for the benefit of your organization.
    - You will plan, coordinate, and direct research on the computer-related activities of firms
    - You will consult with other managers, help determine the goals of an organization and then implement technology to meet those goals
    - You will coordinate with pertinent people about he technical aspects such as software development, network security, and Internet operations.

" Information technology and business are becoming inextricably interwoven. I don't think anybody can talk meaningfully about one without the talking about the other." - Bill Gates

- IS Courses Map well to various learning goals in a business education:
  - LG1: Understand, apply and integrate core management disciplines
  - LG2: Demonstrate critical thinking and decision making skills

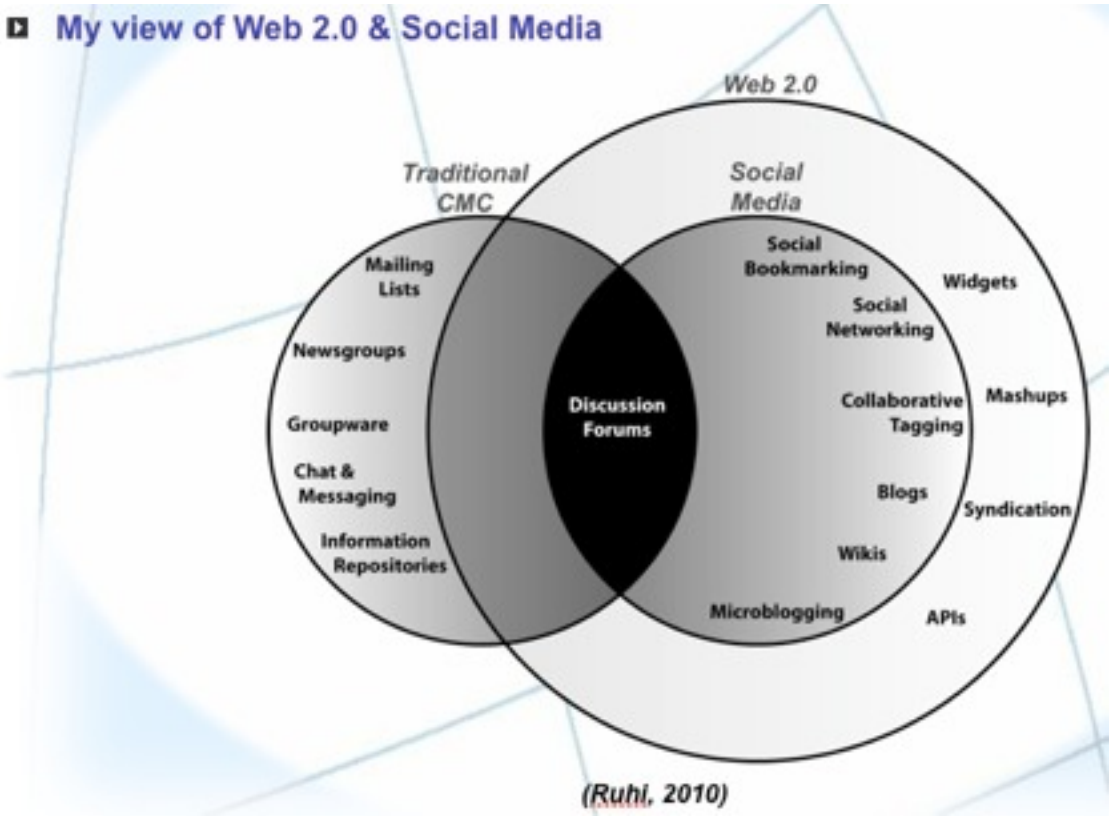
- Based on Robert Reich (former US Secretary of Labour):
  - Four skills required for most future job roles:
    - Abstract reasoning skills
    - Systems thinking skills
    - Collaboration skills
    - Experimentation skills
  - A good IS education is comprehensive across these skills

L2 - What is Social Media?

- Social Media: a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and the allow the creation and exchange of User Generated Content. (Kaplain & Haeanlein, 2010)

- Types of Social Media:
  - Social Networks: Facebook, Linkedin, Friendster
  - Blogs: Blogger, Wordpress, Tumblr
  - Microblogs: Twitter, Jaiku, FriendFeed
  - Discussion Forums: OffTopic.com, IGN Boards
  - Multimedia Sharing: Youtube, Slideshare
  - Content Aggregators: DIgg, Reddit
  - Social/Collaborative Bookmarking & Tagging: StumbleUpon, Diigo

My view of Web 2.0 & Social Media



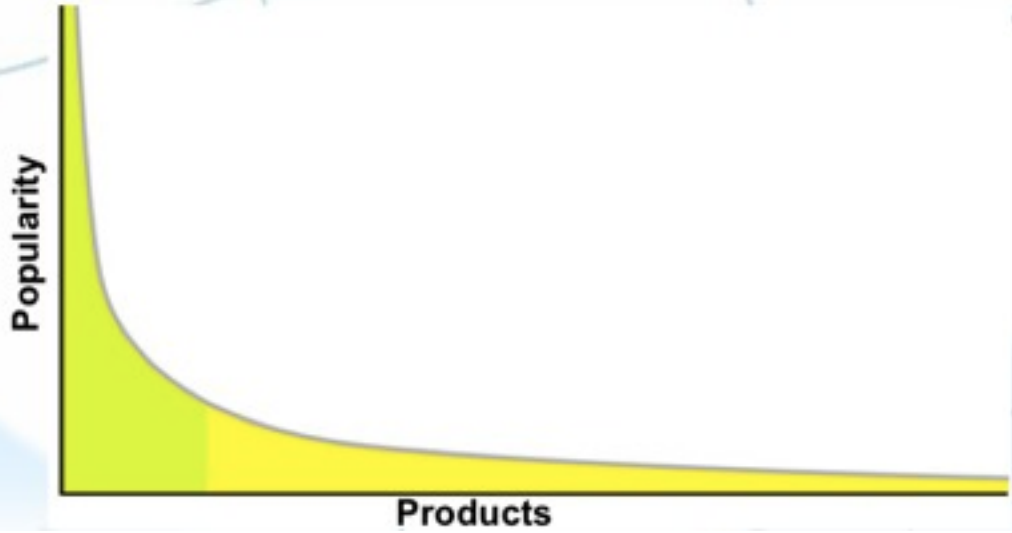
(Ruhi, 2010)

What Social Media Outlets?

- World of Mouth
  - An advancement of Word of Mouth:
    1. it disseminates the information quickly and globally;
    2. its digital aspect allows the original integrity of the message to remain intact; and
    3. it is traceable to an original source

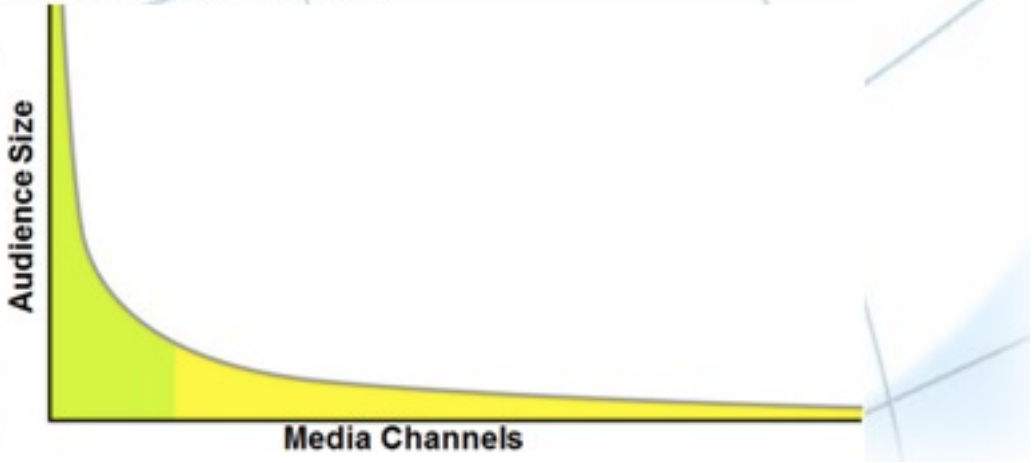
"The Long Tail: Why the Future of Business Is Selling Less of More" by Chris Anderson:

- **Applicable to online businesses:**
  - distribution and inventory costs of businesses successfully applying this strategy allow them to realize significant profit out of selling small volumes of hard-to-find items to many customers instead of only selling large volumes of a reduced number of popular items. The total sales of this large number of "non-hit items" is called "the long tail".



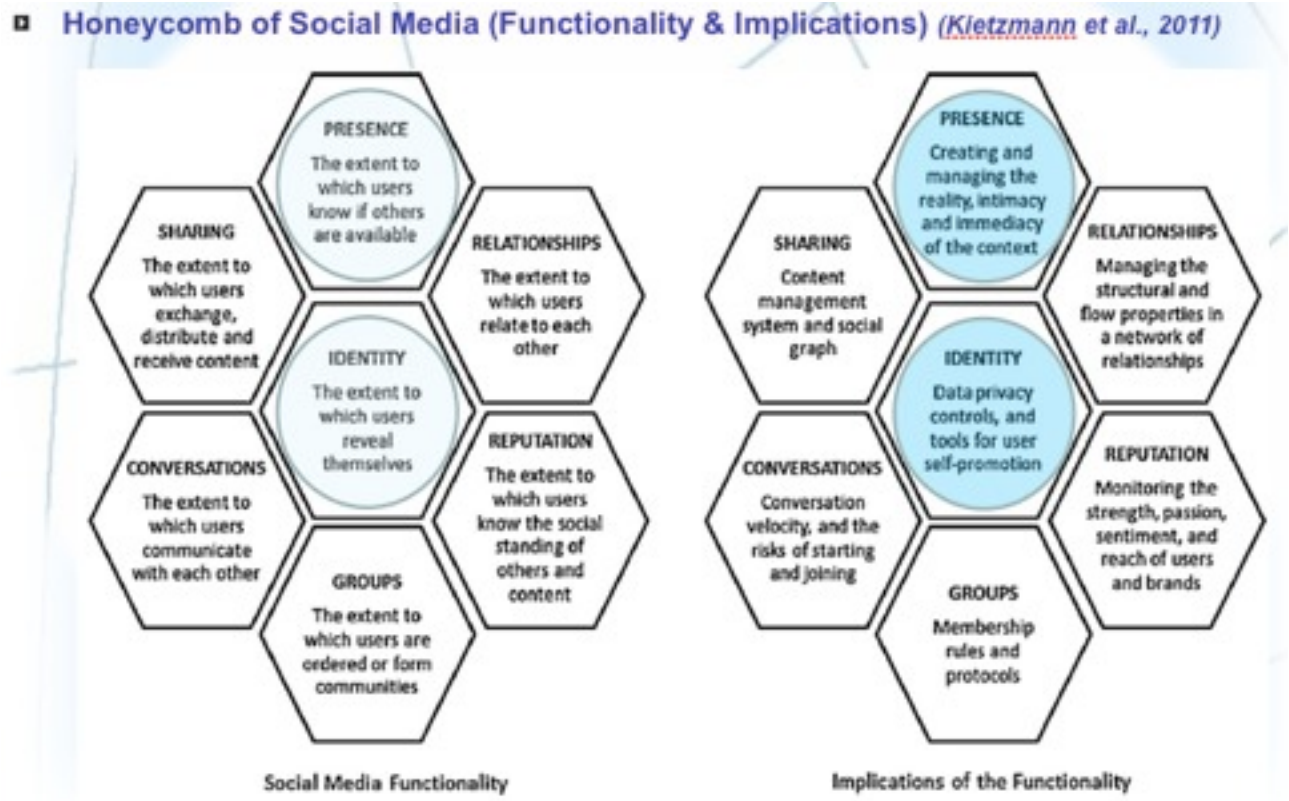
The Long Tail phenomenon can be used to explain fundamental differences between mainstream communication media (head) and social media (tail):

- **Eye-balls versus Interactions**
- **Monetary investments versus Time investments**
- **Transactions versus Relationships**
- **Corporate-control versus Crowd-control**
- **Broadcasting versus Listening**



L3 - Socialnomics

- Social Media Typology/Ecology & Use-Cases

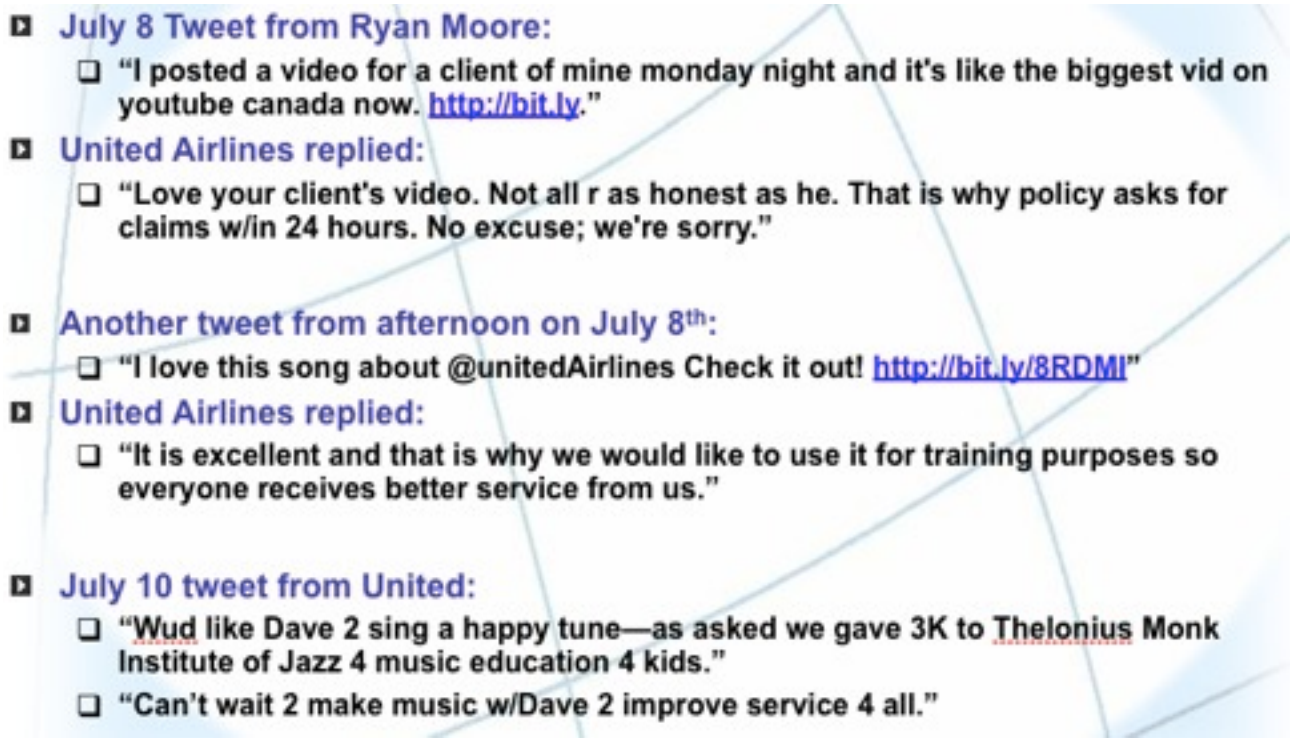


- Social Media Crisis:
  - a crises issue that arises in or is amplified by social media, and results in negative mainstream media coverage, a change in business process, or financial loss.

- Characteristics
  - Technology helps create a negative buzz around a brand, product, or service
  - Ground-up phenomenon that is largely out of the control of the business being affected.
  - Powered through emergent events: small low-level events, such as the interactions between a few consumers, can give rise to higher-level intensity, such as the development of new disparaging multimedia content and negative campaigns.

- **Extensive & Deliberated Use of Social Media:**
  - **Carroll's friend, Ryan Moore, posted the video to YouTube at about 10 p.m. on Monday, July 6.**
    - A small team of friends used Twitter to introduce their followers to the video.
    - They also tweeted to those on Twitter who had themselves tweeted about bad experiences with United Airlines, and to members of the media including Jay Leno, Jimmy Fallon, and Perez Hilton.
    - They posted the story to Digg and other social news sites to which people could submit stories and vote them up or down
- **What else worked in Dave's favor:**
  - **Dave Carroll's video was immediately picked up by Consumerist.com, a website affiliated with Consumers Union, America's leading not-for-profit consumer advocacy organization and the publisher of *Consumer Reports magazine.***
- ***What the event did for Dave:***
  - ***Became famous ... Increased sales... etc.***
  - **The *New York Times labelled Dave Carroll as "the Everyman symbol of the aggrieved traveler".***
  - **Dave Carroll formed many new business relationships with manufacturers like Taylor Guitars and Calton Cases, and service providers such as Mariner Partners and RightNow Technologies (customer experience software providers).**

- **United's first tweets on July 7, 2009:**
  - **"This has struck a chord w/us and we've contacted him directly to make it right."**
  - **"We have called him and the person who answered his phone scheduled a call for tomorrow morning."**
- **On July 8th, United offered Dave an apology and $1200 in repair costs and $1200 in airline vouchers:**
  - **The offer was declined, and United made a $3000 donation to a music school.**
- **Public Taunting continues on July 8 with no response from United:**
  - **"Why'd you guys have to go and break his guitar? http://bit.ly/rl2ef Stop being a bully and fess up!"**
  - **"You can say creatively that this has struck a chord with you but lets be real how do you plan on changing?"**
  - **"And since I'm on a roll, shame on you for taking over a year to bother . . . Too much truth in your baR?**



L4 - Thomas Friedman's "The World is Flat": Stages of Globalization

- Globalization 1.0 (from 1492 to 1800): Agent of Change: Globalization 1.0 focused on countries. (Medium-Sized World)

- Globalization 2.0 (from 1800 to 2000): Agent of Change: Globalization 1.0 focused on countries. (Small-Sized World)

- Globalization 3.0 (from 2000 to the present): Agent of Change: Globalization 3.0 focused on groups and individuals. (Tiny-Sized World)

- Globalization 3.0 created a new world that is characterized by:
  - Worldwide communication
  - Worldwide collaboration without barriers

- In Globalization 3.0, individuals and small groups play important roles:
  - Individuals who:
    - command more information
    - have more options
    - exchange information more conveniently
    - coordinate actions
    - influence (peers, companies, governments)

Thomas Friedman's "The World is Flat": Ten Flatteners (We focus on #4, 9 , 10, but should know all for the exam)

1. **Fall of the Berlin Wall** 1989, connects the European Union
2. **Netscape goes public** People are able to connect with each other, communication became easier
3. **Development of workflow software** Software became more affordable for people to use. Workflow became easier due to the use of software
4. **Uploading/open sourcing** Freedom of speech, everyone is able to share. Individual for globalization
5. **Outsourcing** Companies can outsource (ex. businesses in China & India, cost effective) lose job locally when outsource to other countries, other types of jobs can be created too. Reallocate resources, more operation work get outsourced, knowledge work more enhanced
6. **Offshoring** The movement of a business process done at a company in one country to the same or another company in another, different country.Lower cost of operation China joined World Trade Organization in 2001 (WTO), production of offshoring
7. **Supply Chaining** Walmart & Amazon are successful stories (lowest cost for customers)
8. **In-sourcing** Opposite of outsourcing, business decision made to maintain control of critical production or competencies. Insourcing is widely used in production to reduce costs of taxes, labor and transportation, bringing a third party outsourcer to work inside a company's facility.
9. **In-forming Use different types of search engines**
10. **The Steroids** Social media influences

- Up until the year 2000, the ten flatteners were semi-independent from one another.

- Around the year 2000, all the flatteners converged with one another.
  - This convergence could be compared to complementary goods, in theat each flattener enhanced the other flatteners; the more one flattener developed, the more leveled the global playing field became.

- After the emergence of the ten flatteners, a new business model was required to succeed.
  - while the flatteners alone were significant, they would not enhance productivity without people being able to use them together.
  - we are in a convergence of three powerful, technological forces:
    - Cheap and ubiquitous computing devices
    - Low-cost, high bandwidth
    - Open standards

- The creation of a global, Web-enabled playing field allows for multiple forms of collaboration - the sharing of knowledge and work - in real time, without regard to geography, or, in the near future, even language.

- Flattener #4: Uploading/Open-sourcing
  - Self-organizing Collaborative Communities
  - Individuals as consumers and producers of content
  - Fast disemmination of information, news and events
  - Collaboration on open-source & free software

    - User-generated content:
      - term popularized in 2005
      - various forms of media content that publicly available and created by end- users.
      - 3 basic requirements for UGC: (OECD, 2007)
        - needs to be published either on a publicly accessible website or on a social networking site accessible to a selected group of people
        - needs to show a certain amount of creative effort
        - needs to have been created outside of professional routines and practices

    - Collective intelligence: people are computers who are connected and act collectively more intelligently than individuals, groups, or computers have ever done before

    - Ideation communities: platforms where customers can post news, stories, idea, case studies etc and other people can rate, vote for the best ideas, comment and share ideas etc.

- Flattener #9: In-Forming
  - An individual's ability to build and organize their own personal 'information-knowledge-entertainment' supply chain:
    - being able to search for knowledge and like-minded people and communities over the web.
    - all this is available at our fingertips without having to go anywhere (i.e. town halls, libraries or theaters).
  - Search engines provide access to information in multiple formats and multiple languages.
  - Share and disseminate information publicly or privately through websites, blogs, videos, podcasts etc.
  - Democratization of Information & the Free Culture Movement
  - Examples:
  - RSS (Rich Site Summary) (Really Simple Syndication):
    - A standardized data format to publish frequently updated works such as blog entries and news headlines.
    - Website material is made available to end-users or other sites through web feeds.
      - A web feed (or news feed) is a data format ed for providing users the frequently updated content.
      - Content distributors syndicate a wed feed, thereby allowing users to subscribe to it
  - RSS (Web) Feeds are usually accessed through an aggregator tool:

- Making a collection of web feeds accessible in one pot is known as aggregation, which is performed by an aggregator
- Aggregators can be scheduled to check for new content periodically. Web feeds are an example of pull technology, although they may appear to push content to the user /

- Flattener #10: The Steroids
  - Flatteners converging and getting turbo-charged through these enablers.
  - Keywords: digital, mobile, personal, virtual.
    - Digital: advancements in underlying hardware & computing processing power + software capabilities & features + communication standards & protocols
    - Mobile: wireless technologies enabling anytime anywhere access through multiple options (smart phones, laptops, tablets, 3G, Wifi, Bluetooth etc.)
    - Virtual: high speed, ease of use, and seamless connectivity facilitate communication and collaboration tasks
    - Personal: many technologies increasingly accessible and affordable for individual users
  - Flatteners converging and getting turbo-charged through these enablers
  - Keywords: digital, mobile, personal, virtual
  - What were the three specific examples of Digital Steroids cited by Friedman?
    1: Computing speed/storage/portability;
    2: Peer-to-peer features (IM, File sharing);
    3: Voice over IP (e.g. Skype)

L5 - What is Web 2.0?

- Some attributes of Web 2.0
  - The ability to tap into the collective intelligence of users
  - Data is made available in new or never-intended ways
  - Relies on user-generated and user-controlled content and data
  - Lightweight programming techniques and tools let nearly anyone act a Website developer
  - The virtual elimination of software-upgrade cycles makes everything a perpetual beta or work-in-progress. Applications can be designed quickly to meet changing needs

- Key take-aways or Web 2.0
  - Users can access applications entirely through a browser
  - An architecture of participation and digital democracy encourages users to add value to the application as they use it
  - A major emphasis on social networks and computing
  - Strong support for information sharing and collaboration
  - Rapid and continuous creation of new business models

- Extract from a long definition:
  - Software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while

providing their own data and services in form that allows remixing by others, creating network effects through an architecture of participation

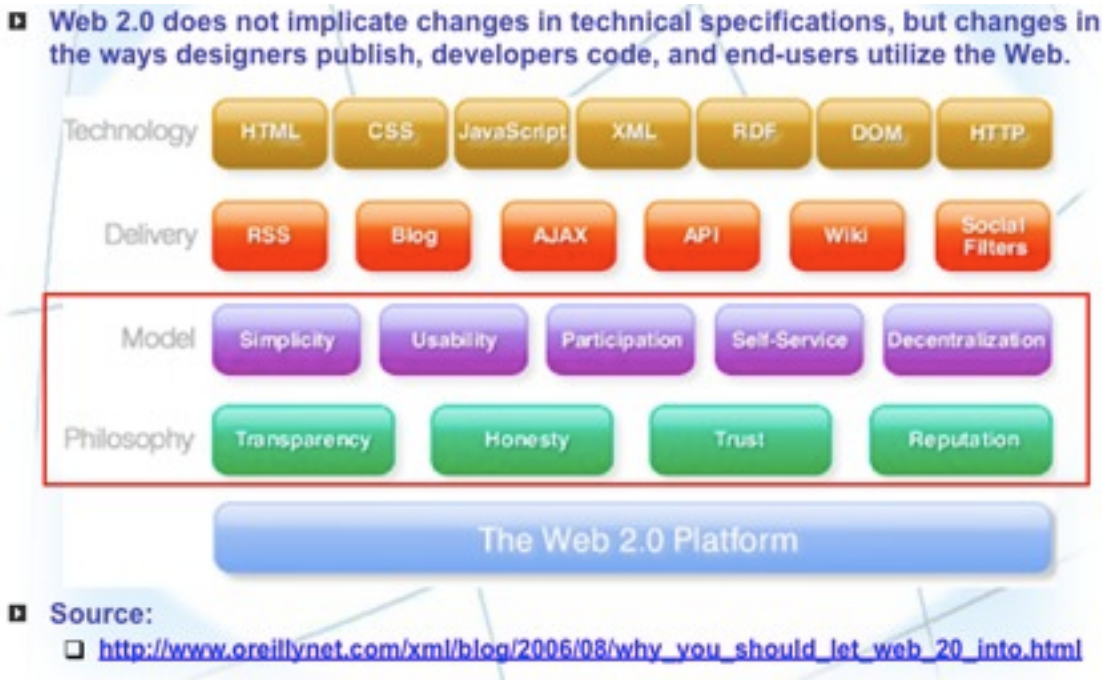
- Salient features of Web 2.0:
  - The Web as a Technology Platform in itself
  - Information sharing, collaboration and interactive functionality of web:
    - Interconnectivity and interactivity of web-delivered content!
  - Architecture based on participation

- Popular Examples of Web 2.0 based Applications:
  - Social Networking Sites, Video Sharing Sites, Wikis , Blogs, and Folksnomies
  - Mashups and APIs (Application Programming Interfaces).

- How is it different from Web 1.0?

Web 1.0 vs. Web 2.0

Web 1.0	Web 2.0—the Social Web
Static pages	Dynamic pages
Author controlled content	User controlled content
Computers	Computers, cell phones, televisions, PDAs, game systems, car dashboards
Users view content	Users create content
Individual users	User communities
Marketing goal: *influence*	Marketing goal: *relationships*
Data: single source	Data: multiple sources, e.g., mashups



- Rich Internet Applications are a predominant feature of Web 2.0
  - Attributes:
    - web applications that have many of the characteristics of desktop software: e.g. powerful interfaces that provide the responsiveness of traditional desktop applications
    - typically delivered either through specialized browsers, browser plug-ins, or client virtual machines.
  - Uses:
    - rendering multiple forms of content (text, audio, video etc.) in an integrated fashion
    - engaging users via interactive user-friendly interfaces
    - performing complex data visualization, including dynamic charting or graphical presentation of data

- Social Media: Mobile & Web-based technologies that facilitate an interactive environment for individuals and communities to share, co-create, discuss, and modify user-generated content

- How is social media different form Web 2.0?
  - Social media is a subset of Web 2.0
  - Web 2.0 provides the technical and philosophical foundation or creating, implementing, and using social media applications and tools

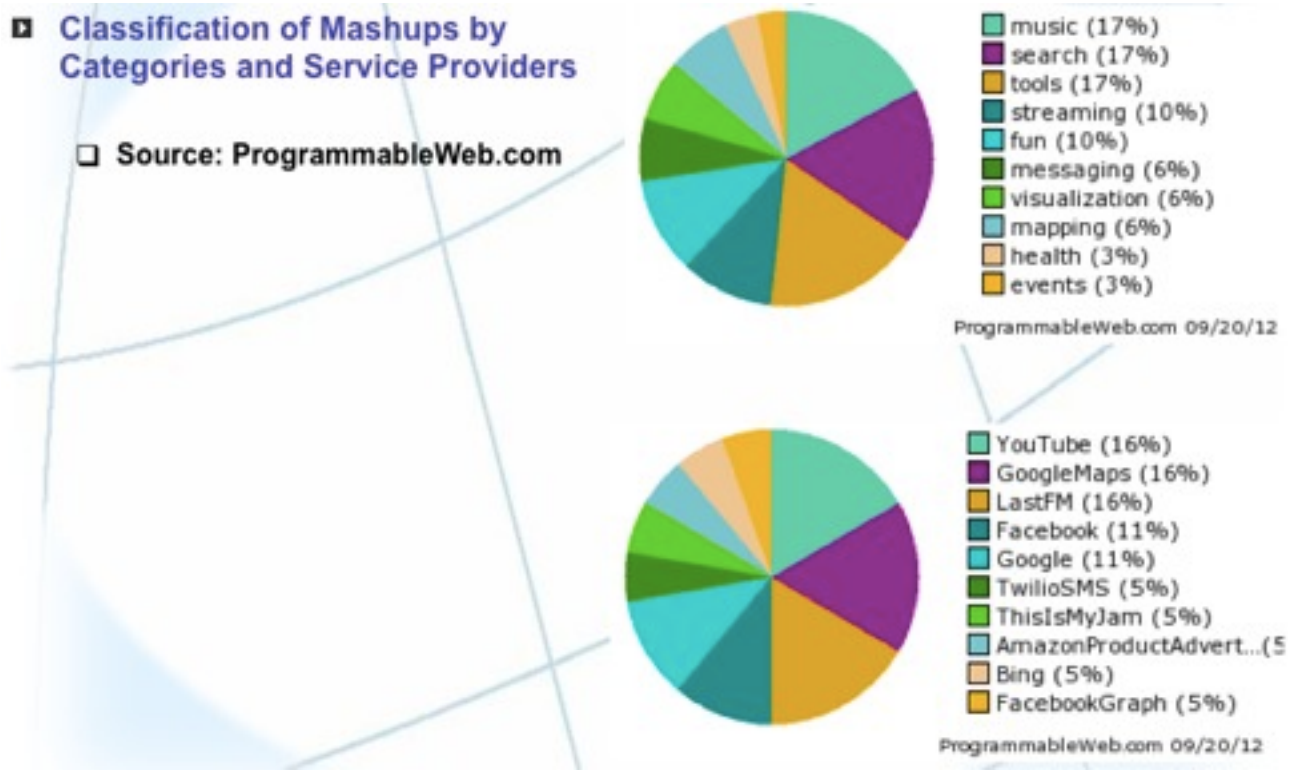
Table 1. Comparison of Web 2.0 and related legacy technologies.

Web 2.0 service	Related legacy service	Revolutionary?
Blogs	Bulletin board systems (BBS) and threaded news groups	Not particularly; however, greater ownership and easier use are possible.
Image sharing (such as Flickr)	Image sharing Web sites	No, but many more images are available now and it's arguably easier to search for them.
Wikis	Personal Web sites	Somewhat. Wikis may be useful in work groups and other moderated environments.
Really simple syndication (RSS)	None	Yes, due to RSS' ability to deliver granular news on demand.
Social networks	Personal Web sites	Not particularly. Admittedly, contemporary social networks are more user-friendly.
Mash-ups	None	Yes, because of their ability to combine content to form new content.
Podcasts and vodcasts	File servers with Web-exposed content	Somewhat, because of their ability to subscribe to chosen granular content.
Folksonomies	Legacy search engines (such as Webcrawler)	Yes, because of the power to find new information based on other users' searches.

L7 - What are Mashups?

- A mashup is a web application that combines data or functionality form more than one source into single integrated interface or tool:
  - Applications or interfaces generated by combing content, presentation, or application functionality form disparate sources

- Content used in mashups is typically sourced from a third party via a public interface or API
  - API
    - an abstraction that defines and describes an interface for interaction with a set of functions used by components of a software system
    - abstraction is the process of taking away or hiding or removing characteristics from an object in order to reduce it to a set of essential
    - for the consumer or user, abstraction helps focus on the essential elements with unwanted detail omitted



- The word “Mashup” originated in the music industry, where a mashup as a combination of two or more songs to create a new experience:
  - Typically, the vocal track of one song was combined with the instrumental background of another in this process

- The technology industry extended this definition to encompass a new class of applications that described the combination of two or more sources into an integrated application
- Mashups are applications generated by combining content, presentation, or application functionality form disparate sources.

- Web Mashups are composite web applications partially constructed form the services and content from other web sites

- Mashups have an emphasis on GUI and programming-less specification
  - The concept of mashups originated from the understanding that the number of applications available on the web and the needs to combine them to meet user requirements are growing very rapidly

- Some Mashups may not be characterized as Composite Applications:
  - Mashups may also be used to access a single resource to mine data or migrate content (re-purpose existing data and information according to your needs)

- Creating mashups is all about finding data, functionality, and services and using them to both solve problems and create opportunities

- Web 2.0 movement talks bout cooperation, instead of control: mashup is created from several data sources and services, mashing up (combining, stitching together) the sources and services to create something new, or add value in someway.

- The popularity of mashups stems from emphasis on interactive user participation

- Mashups offer an informal, quick, low-barrier, and relatively effort-free integration that can be deployed with simple tools and techniques

- Mashup based web applications are often characterized by the way in which they spreads roots across the Web (sprouting metaphor), drawing upon content and functionality retrieved from data sources that lay outside of their own domain or organizational boundaries

- Mashups have been regarded as a disruptive technology:
  - "Mashups will be a major force in the next few years, with vendors such as IBM, Serena Software and Microsoft leading the way. The disruptiveness comes in the end-user environment, where business users with little technical ability will be able to create their own mashups and assemble them in dashboards. This will introduce security and privacy challenges for the IT industry." - Gartner Research

- Mashups provide immediate benefit at little cost

- Mashups encourage reuse of data and services

- Mashups offer a faster time-to-market when building new applications

- Mashups are about simplicity, usability, and ease of access. This simplicity has the upper hand over feature completeness or full extensibility.

- Mashups are about achieving programmatic access to almost unlimited data.

- The tools for constructing mashups have begun to reach a level of usability where even nontechnical users can build their own solutions

- Mashups are sometimes erroneously referred to as Web APIs (Application Programming Interface).

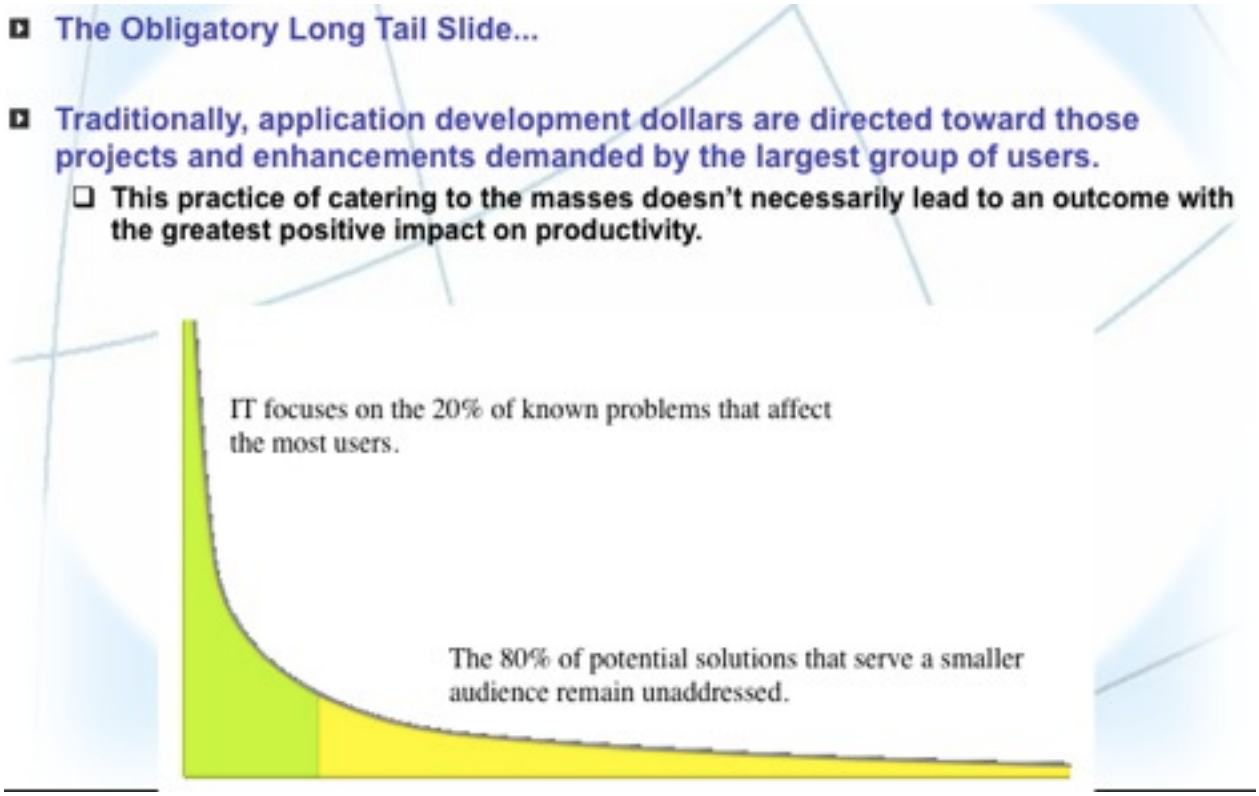
- What is an API?
  - is an abstraction that defines and describes an interface for interaction with a set of functions used by components of a software system.

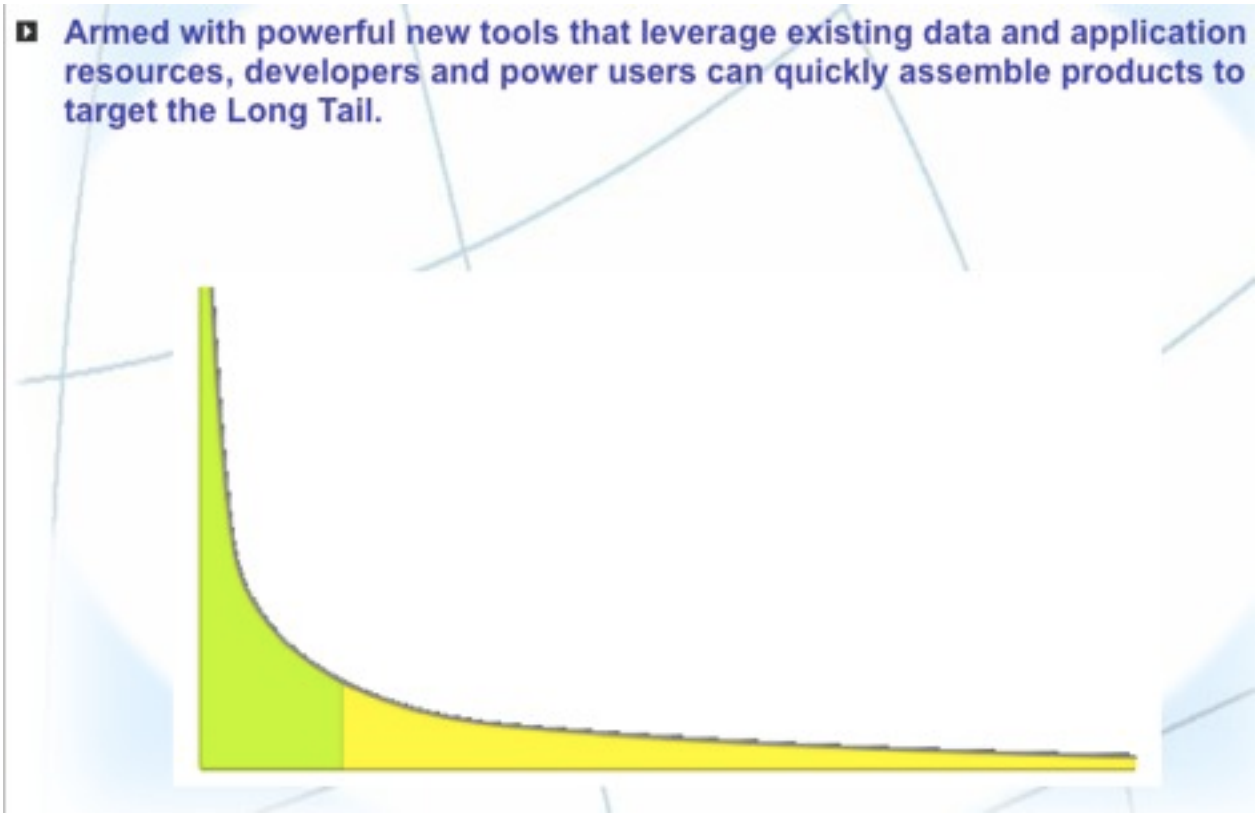
- Abstraction is the process of taking away or hiding or removing characteristics from an object in order to reduce it to a set of essential characteristics.
- For the consumer or user, abstraction helps focus on the essential elements with unwanted detail omitted.

• An API may include details about the calling conventions, protocols and format of data transfers, but hide details about internal algorithms and program computations.

- Relationship between Mashups & APIs:
  • Mashups: Composite Applications
  • APIs:
    - The mechanism to get the applications to talk to each other
    - The mechanism to send messages back and forth between applications

- Interactive Example: Tarpipe.com (A Web Publishing API): Provides access to APUS to Aggregate Social Networking Service Streams





L8 - Philosophical Foundations of Enterprise 2.0

- Enterprise 2.0 refers to Web 2.0 technologies used for some business purpose:
  - Promote collaboration and knowledge exchange among employees, consultants and company partners
  - Advertise and build brand awareness

- Business use of Web 2.0 technologies:
  - Recruiting and professional networking
  - Marketing, promotion, and sales
  - Internal collaboration and communication
  - Supply chain management 2.0

- Organizations had communicated with their audiences using a broadcast model: messages flowed from sender to receiver.

- Newer model is the conversation model: where communication flows back and forth between sender and receiver

- Online communities (aka Virtual Communities) can be used as a platform for:
  - Selling goods and services
  - Promoting products to prospective customers; e.g. advertising

- Prospecting for customers
- Building relationships with customers and prospective customers
- Identifying customer perceptions by “listening” to conversations
- Soliciting ideas for new products and services from customers
- Proving support services to customers by answering questions, providing information, etc.
- Encouraging customers to share their positive perceptions with others; e.g., word of mouth

- Groundswell: “..spontaneous movement of people using online tools to connect, take charge of their own experience and get what they need - information, support, ideas, products, and bargaining power - from each other.”

- New way of thinking is captured in a list of 95 statements called the “Cluetrain Manifesto”
  - Markets are conversations
  - There networked conversations are enabling powerful new forms of social organization and knowledge exchange to emerge
  - As a result, markets are getting smarter , more informed, more organized. Participation in a networked market changes people fundamentally.
  - People in networked markets have figured out that they get far better information and support form one another than form vendors

Social Media Monitoring & Measurement

- Tool-Based Metrics:
  - Metrics a company uses are determined by what the company is trying to achieve
  - In some cases, a company will define its objectives based on a specific Web 2.0 tool

- Tactical Metrics:
  - Another way for organizations to define their objectives for social media is by tactical objectives
  - Based on these tactical objectives, companies can develop specific actions that support the objectives and then monitor progress

  - Examples of Tactical Objectives:
    - Increase traffic to our Web site by 10%
    - Increase requests for product information via our Web site by 15%
    - Increase number of people who create a user account on our Web site by 12%

- Strategic Metrics:
  - aim to more fully capture the potential of social media than what is described by focusing on a specific Web 2.0 tool or tactical objectives
  - 5 Categories of Social Media Use Objective:
    - Listening: Pay attention to what customers are saying online

- Talking: Communicate with your customers by engaging in conversations
- Energizing: Encourage customers and fans to spreads the word through ratings, reviews and other positive “buzz”
- Support: Provide information and online resources, such as users forums, knowledge bases and other tools
- Embracing: Invite customers to generate ideas for new products and services

Towards Web 3.0

- Characteristics of Web 3.0:

- Web 3.0 = (4C + P +VS)

- Where
  - 3C = Content, Commerce, Community
  - 4th C = Context:
    - defines the intent of the user; for example, trying to purchase music, find a job, or share memories with friends and family
  - P = Personalization:
    - refers to the users’s personal characteristics that impact how relevant
  - VS = Vertical Search:
    - refers to a search strategy that focuses on find information in a particular content area, such as travel, finance, legal, and medial