



Introduction to Web Data Management

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Trends in Web-design



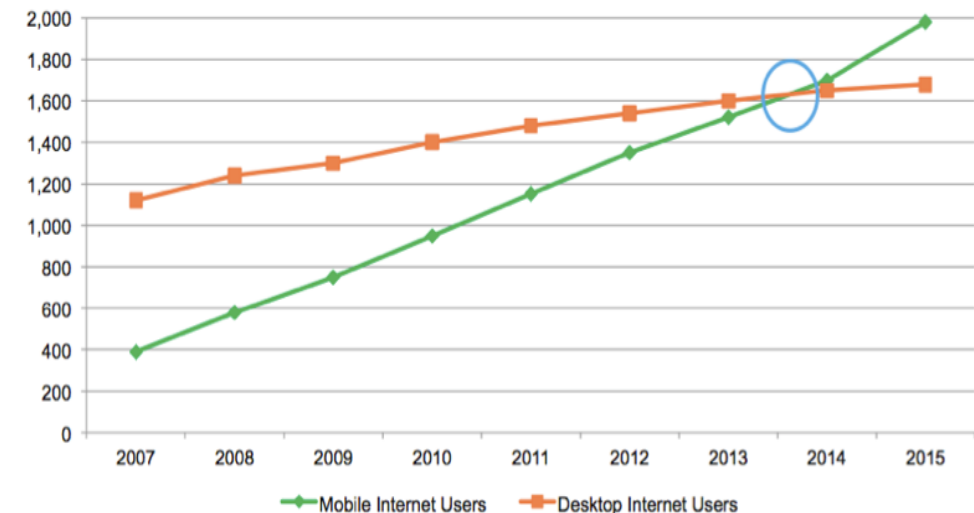


Responsive

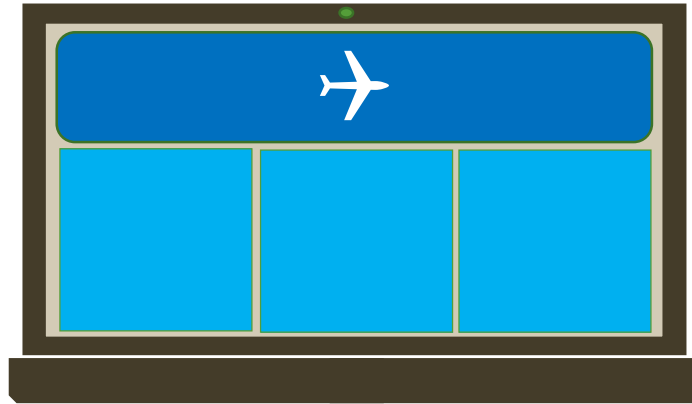
- Allow all users to browse your website perfectly, Regardless of the device's size.
- Devices market is changing. In 2014, more people accessed internet from cellphones/tablet than desktop/laptops.
- Neglecting the mobile audience means neglecting the majority of users.
- Google penalizes the non-mobile websites with lower ranking.

Mobile Web Usage Growing

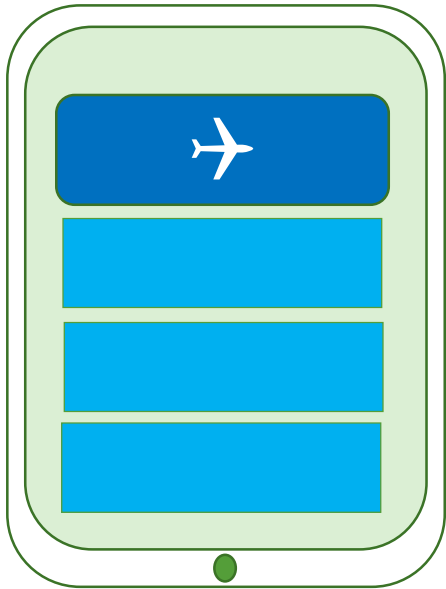
Forward Projection: Mobile Web Browsing vs. Desktop Web Browsing
(2007-2015)



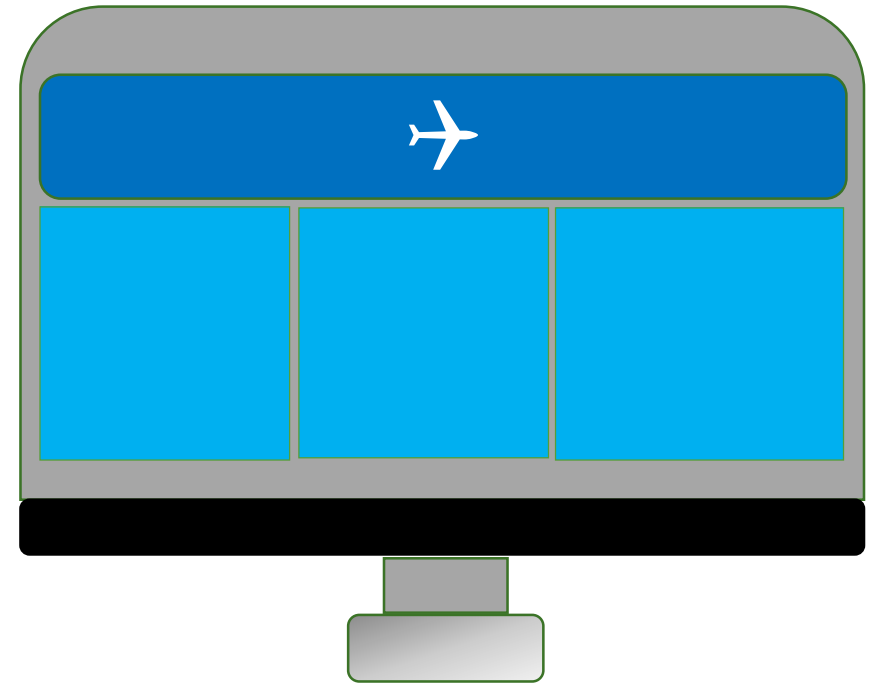
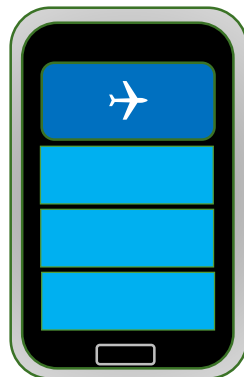
Source: Mary Meeker, Morgan Stanley, "Internet Trends," April 12, 2010



Try **bootstrap**, go to <http://getbootstrap.com/>, resize the screen many times, How dynamic is the design?

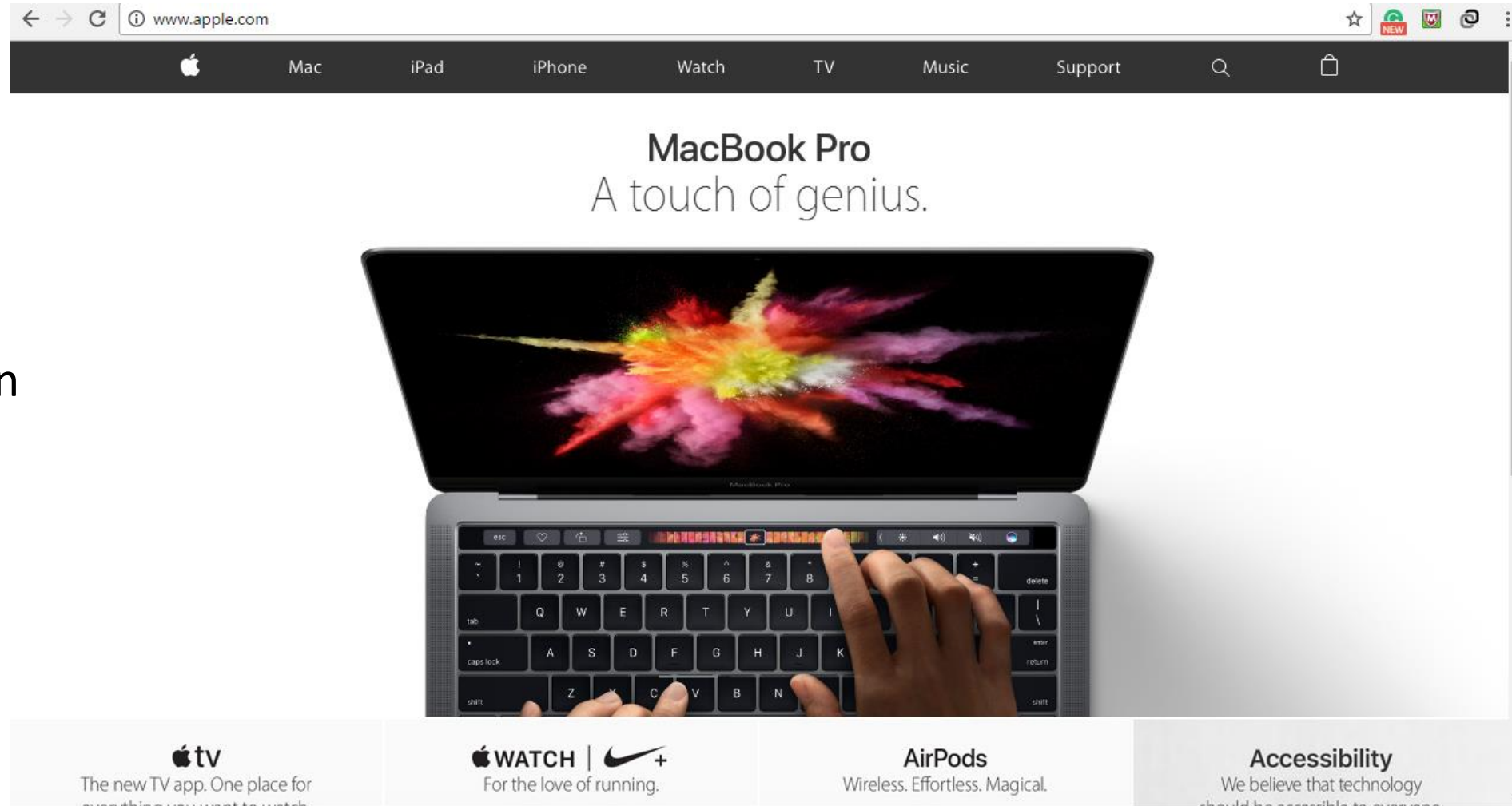


Responsive



Clear messages

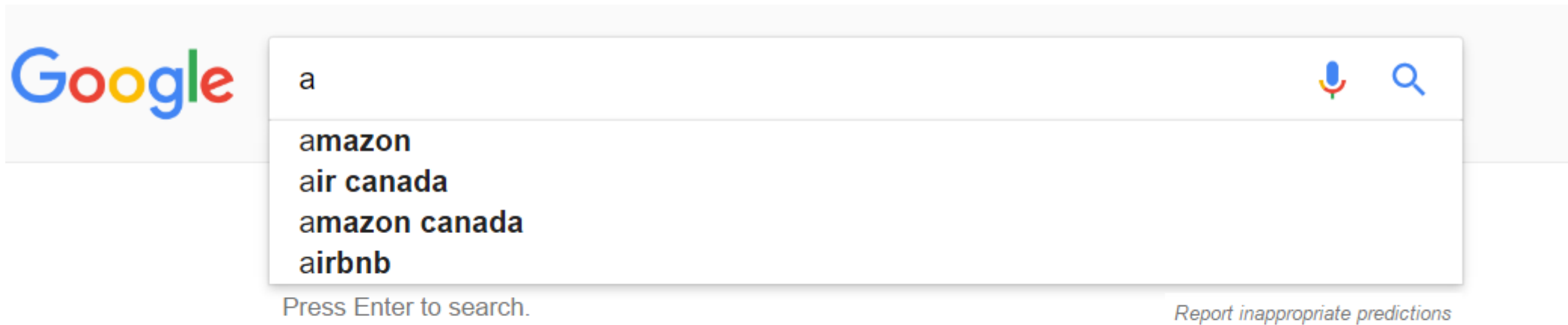
- Few words messages.
- No paragraphs in home page.



Old apple website – too much of text



Dynamic content



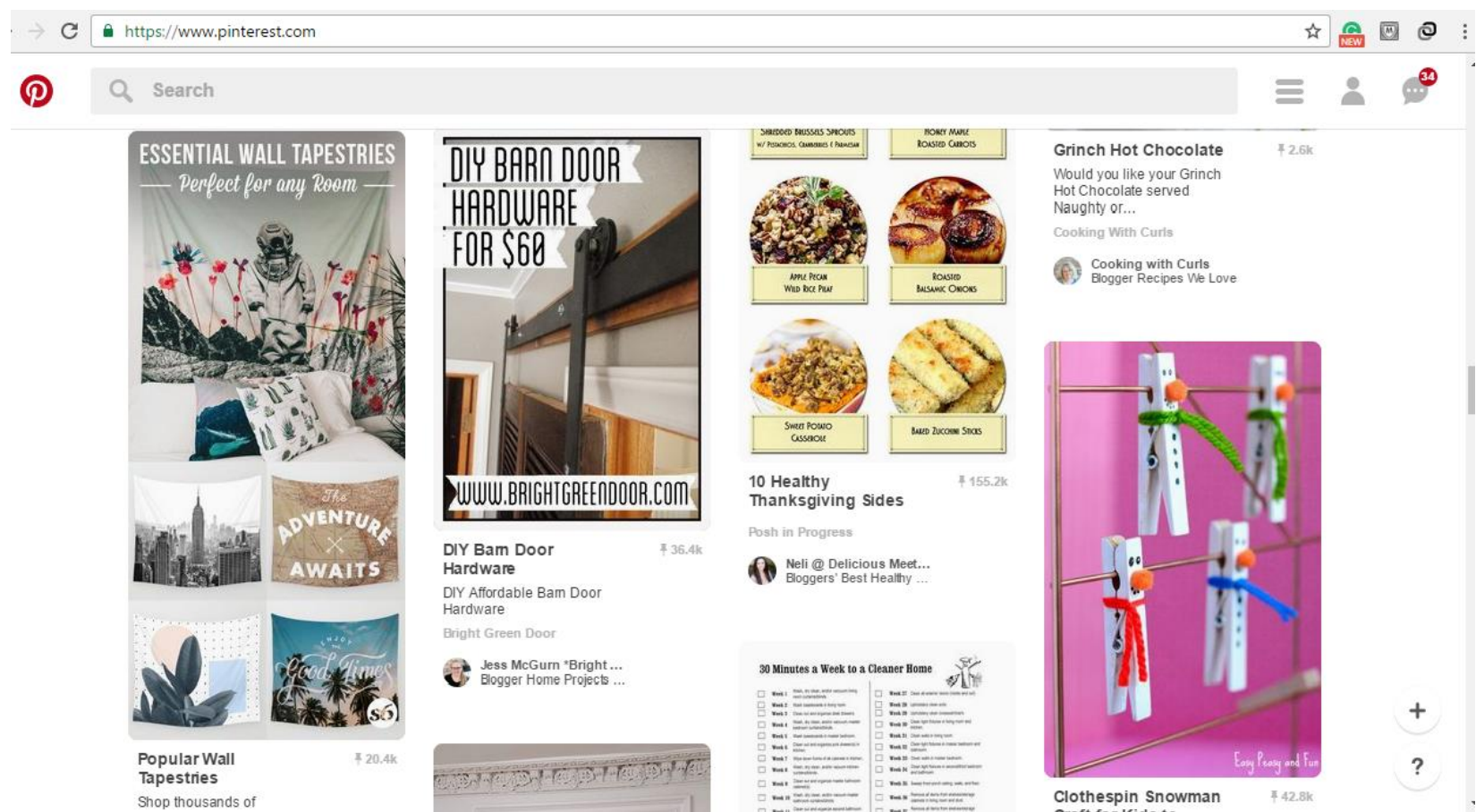
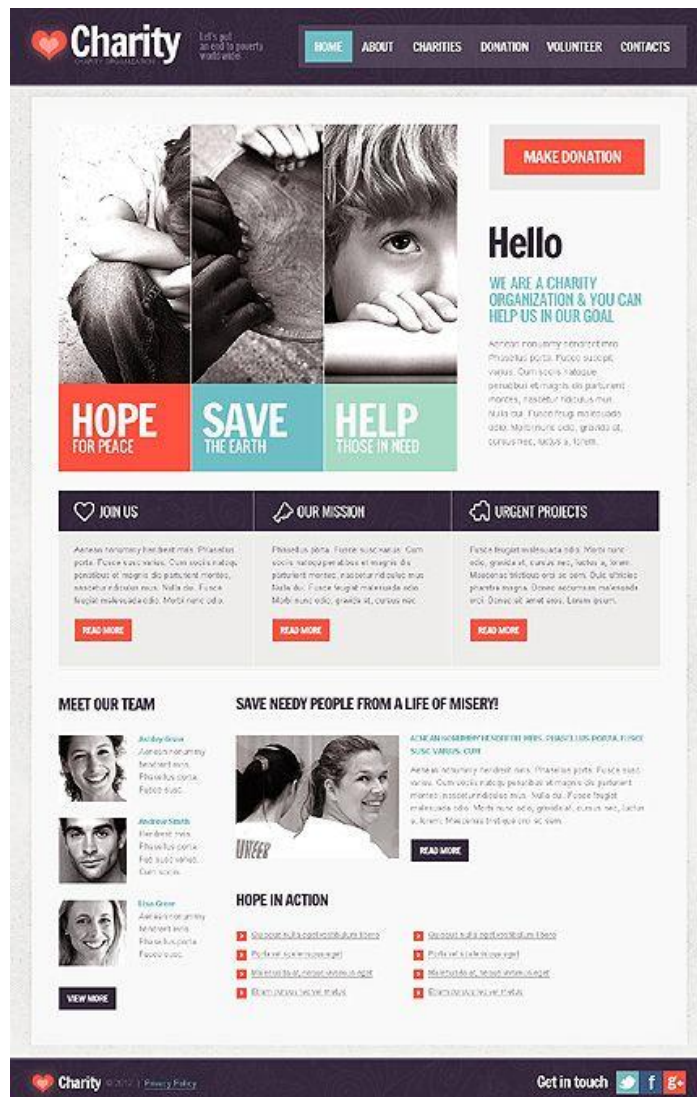
Multiple messages/stories

- **Carrousels** or **Story slider**: Usually it has many points or right/left arrows to switch between big pictures(messages) in the middle of the home page.
- It's a controversial to use it or not. However, if you need to send multiple stories in the main page, it does the work.
- Some designers will argue that it is confusing the user, and slowing down the browsing (more loading time).
- For big businesses it may be a must (Apple, Microsoft, etc.)



www.uwindsor.ca

Grids (alternative to story sliders)



Content

- **Up to date information**, The website should always reflects the business updates.
- Trustworthy source of information.
- No long page forms.
- The content focuses on the viewer/clients needs, people look for **seconds** at the content, before deciding to continue browsing or leave the site.
- **Font contrast** and proper text/background coloring are important for user experience.
- Pictures and videos content with nowadays high-speed internet are good ways to send the messages.

- **No broken links.**



Incorporating social media

- Social media is essential for nowadays communication.
- Build brand advocates who will attract new customers.
- Boost a business sales and/or browsing traffic to the website.
- Which platform(s) to choose?

Bad designs

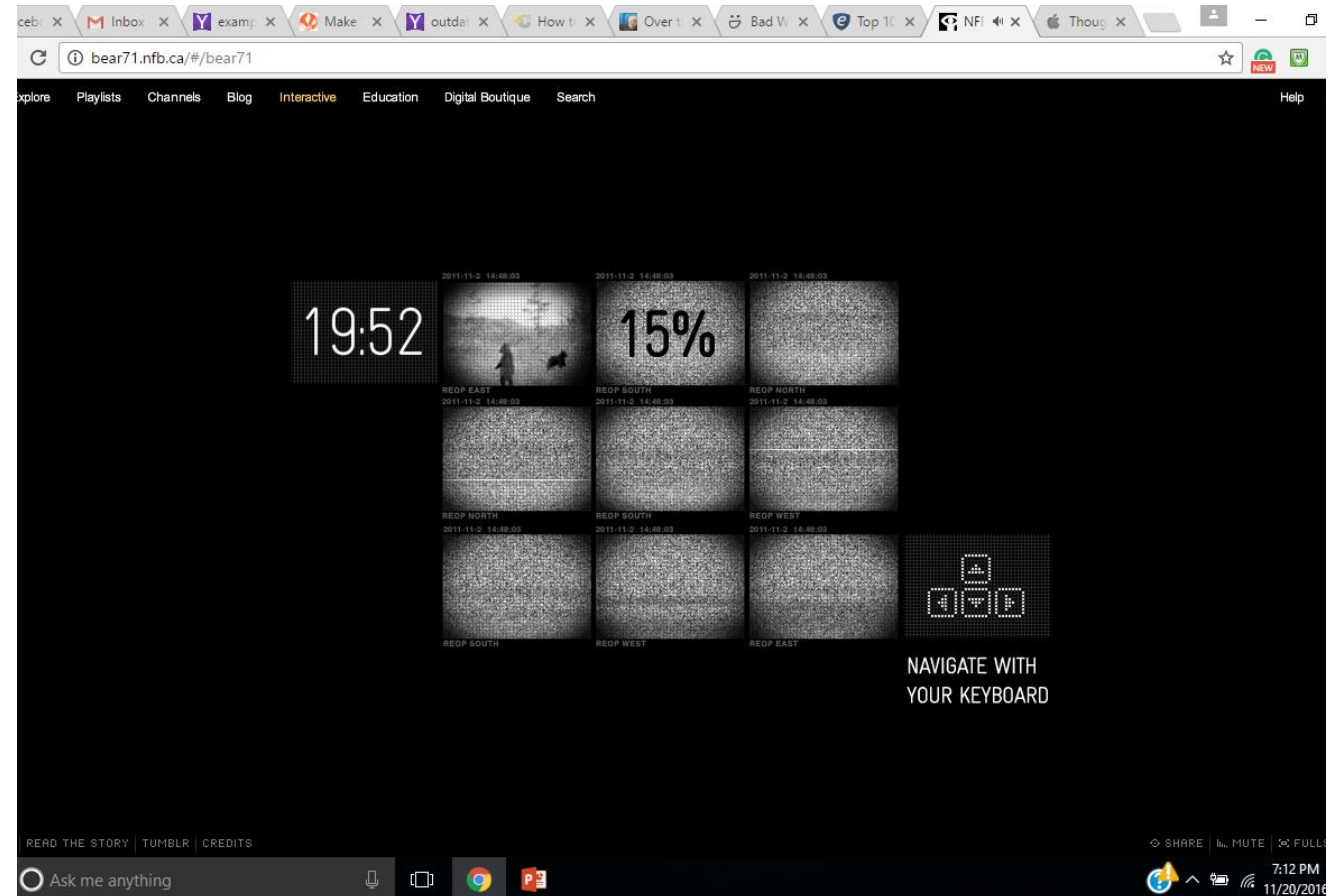
- A lot of blank space.
- Over the top website.
- For some other bad designs check the following:

<https://watchthem.live/bad-website-design-examples/>



Outdated designs

- Adobe flash websites!!
- Look what apple says about adobe flash websites.
- <https://www.zdnet.com/article/apple-says-goodbye-to-adobe-flash-in-safari-technology-preview/>
- Flash website is an old trend.
- Try to open flash website on iPhone/iPad using safari, what do you get as a message?



Footer



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Languages

English



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blackberry.com/home.html

“ The Web is fundamentally designed to work for all people, whatever their hardware, software, language, culture, location, or physical or mental ability”

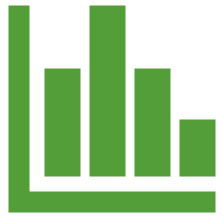
- w3.org

Accessibility

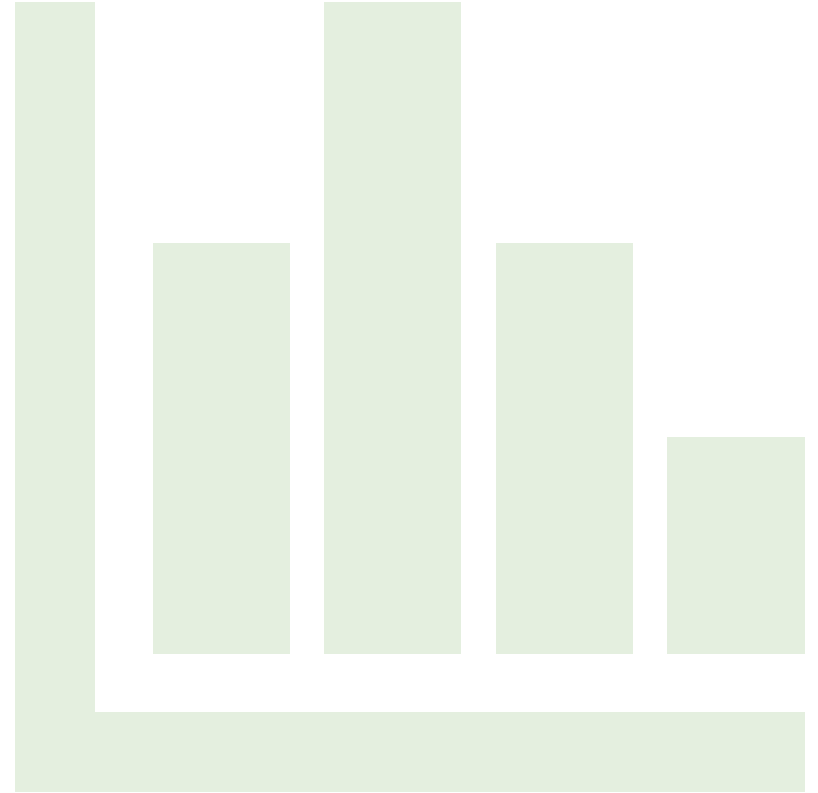
- Download NVDA screen reader, <http://www.nvaccess.org/download/> for blind people support, it reads the menus, instructions, etc.
- alt = “something” in HTML elements, makes the element readable, or replace the item with “something” text when the browser fails to load the item.
- Standard Browsers have many features to support people with disability.
<https://support.google.com/chromebook/answer/177893?hl=en>

Useful blogs & resources

- <http://smallbusiness.chron.com/website-outdated-45999.html>
- <http://olddogwebdesign.com/portfolio.html>



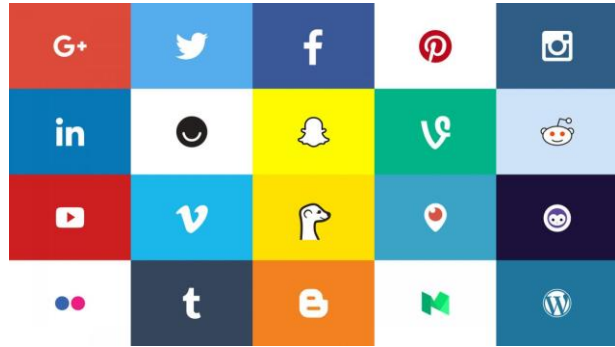
Data life Cycle





Canadian
Cancer
Society

Société
canadienne
du cancer



University
of Windsor

SickKids

THE HOSPITAL FOR
SICK CHILDREN



Statistics
Canada



Pre-Processing

File Systems

Data Structures

Database

Data Analysis

Machine
Learning

Statistics

Big Data Analysis

Visualization

Web services

Dashboards

Publications

Extracting
Information

Archiving

Data warehouse

Cloud
Computing

In this Course

- How to store, access, modify, exchange, visualize data on the Web?



Databases

Types of Databases

- To select the **proper database** for a project/business, it is important to understand the purpose and the features of each type:
- There are 2 Models of the database:
 1. **Relational databases:** those databases usually use SQL protocol to access/modify/store data
 2. **Non-relational databases:** non-relational structure, usually they don't use SQL
- Relational databases usually work with **structured data** (i.e. Tables, views), while non-relational databases usually work with **semi-structured data** (i.e. XML, JSON).
- SQL (Structured Query Language) is a language for querying and maintaining the database.

Relational databases

- **Relational databases:** the most common usage for each type

1. large enterprises databases(mostly)

- Oracle
- Microsoft SQL Server
- IBM DB2
- MySQL

2. Web-based applications

- MySQL

3. Database on small devices/Apps (for phones, watches, etc)

- SQLite

*Note MySQL is used for different purposes, it is opensource, very compatible with free source web applications as being part of LAMP (Linux, Apache, MySQL, and PHP).

Relational databases

- **Relational databases:** which can also be called relational database management systems (RDBMS) or SQL databases.
- A relational database is organized based on the relational model of data, as proposed by E.F. Codd in 1970.
- This model organizes data into one or more tables (or “relations”) of rows and columns, with a unique key for each row.
- Strengths of RDBMS: simplicity, robustness, flexibility, performance, and compatibility in managing generic data.

Complexity

- For large databases, especially ones used for web applications, the main concern is **scalability**.
- As more and more applications are created in environments that have massive workloads (i.e. Amazon), their scalability requirements can change very quickly and grow very large.
- With scaling 100-1000 servers, the **complexity** of the Relational structure of RDBMs comes to the show.
- Conclusion, Complexity of RDBMs drastically reduces their viability as platforms for **large distributed systems**.

Non-relational Database

- ***Non-relational databases***, also called NoSQL databases, These databases are usually grouped into four categories:
- Key-value stores: These databases pair keys to values.
 - **Redis, Memcachedb.**
- Graph stores: These excel at dealing with interconnected data.
 - **Neo4j.**
- Document stores – These databases store records as “documents” where a document can generally be thought of as a grouping of key-value pairs. Keys are always strings.
 - **MongoDB, CouchDB.**

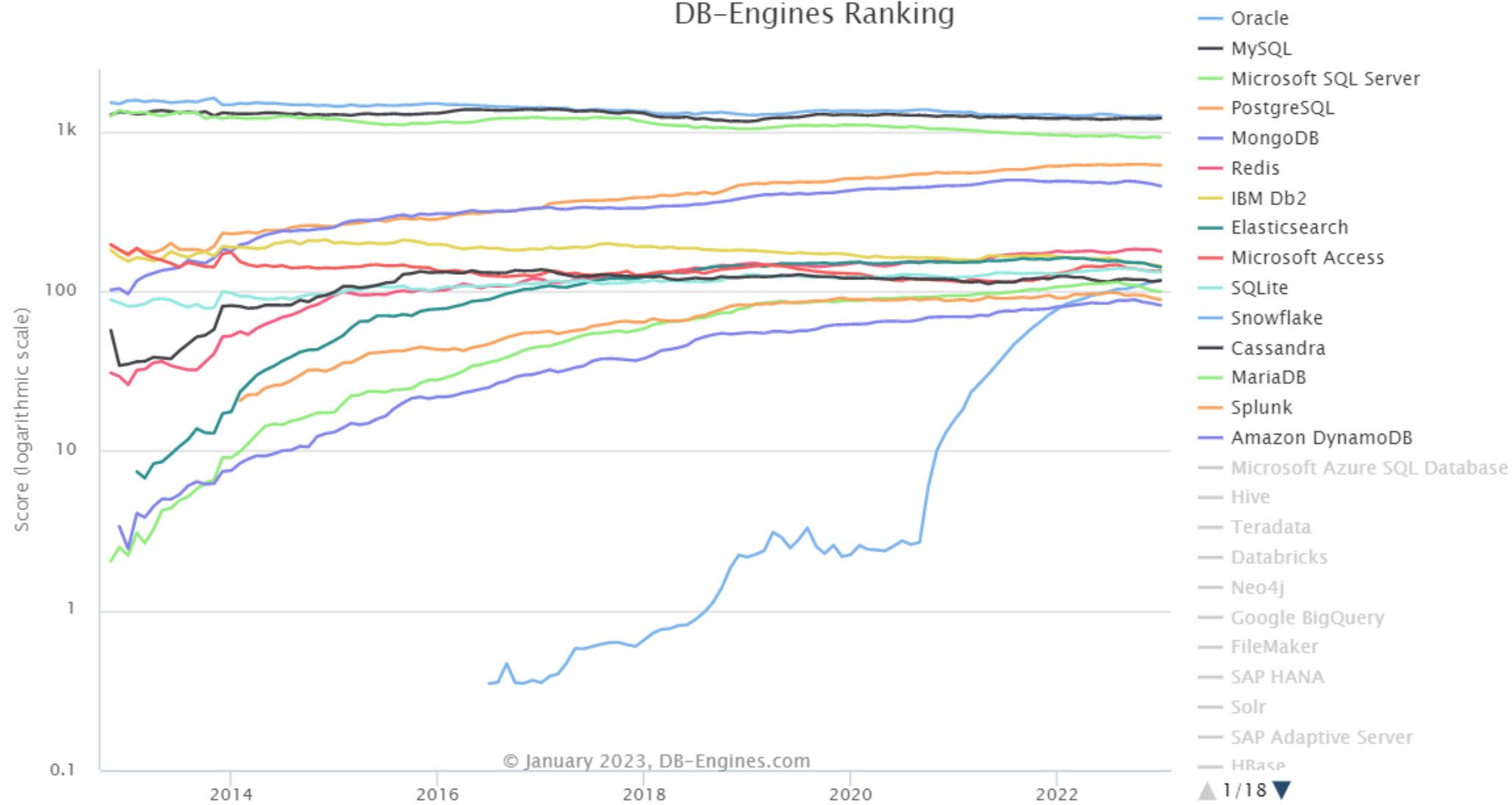
Relational no-SQL database (Exception)

- It is also called **Column stores database**: it is a relational database that stores all the data in a particular table's rows together on-disk, making retrieval of a particular row fast.
- Column stores database that do not use SQL.
- Examples: HBase and Casandra.

Strengths of non-relational databases

- *Simplicity of design.* Not having to deal with the relational structure.
- *Better “horizontal” scaling* to clusters of machines, which solves the problem when the number of concurrent users of the application.
- *To easily capture all kinds of data “Big Data”* which include unstructured and semi-structured data.
- Faster than relational databases.
- Easier and cheaper to maintain:
 - NoSQL databases usually use clusters of cheap commodity servers
 - Servers can be added or removed without application downtime

DB-Engines Ranking



Click at a system in the legend
to hide or show its trend line

Score algorithm

- **Method of calculating the scores of the DB-Engines Ranking:**
 - Number of mentions of the system on websites.
 - General interest in the system.
 - Frequency of technical discussions about the system.
 - Number of job offers, in which the system is mentioned.
 - Number of profiles in professional networks, in which the system is mentioned.
 - Relevance in social networks.
 - More https://db-engines.com/en/ranking_definition

Brainstorming

- Select a website and criticize the design, look for any inconsistency, white spaces.
- What kind/brand of databases you recommend for the following:
 - A website for a startup?
 - Amazon?
 - An app for diet plans that have relationships with daily exercises / activities?
 - University of Windsor?

References

- Codd, E. F. (1970). A relational model of data for large shared data banks. *Communications of the ACM*, 13(6), 377-387.
- https://db-engines.com/en/ranking_trend
- <http://www.jamesserra.com/archive/2015/08/relational-databases-vs-non-relational-databases/>

References

- "Principles of Web Design 6th Edition by Joel Sklar - Ch. 2." Insert Name of Site in Italics. N.p., n.d. Web. 28 Dec. 2016
- <http://www.purelybranded.com/insights/web-design-or-web-development-whats-the-difference/>
- <https://www.pinterest.com/>
- www.w3schools.com
- www.Amazon.com