VISUAL STEP-BY-STEP CASE STUDY: PATENT TROLLS

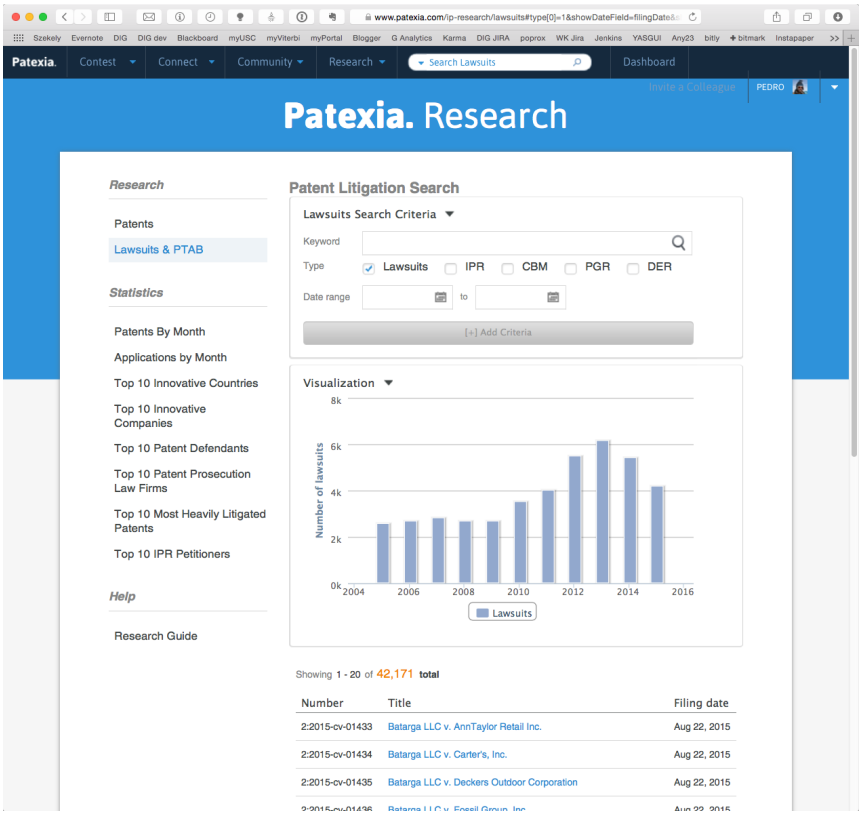
Let's apply the course concepts we have studied in an actual information extraction application

Opening prompt / problem statement

- Companies use patents to protect their intellectual property. Patent Trolls are companies that purchase patents and then threaten to sue many companies for patent infringement, looking to settle rather than go to court
    - Who are the patent trolls?
    - Which patents are being trolled?
    - Who are their victims?

Context and opportunity

Patent research is a major application area



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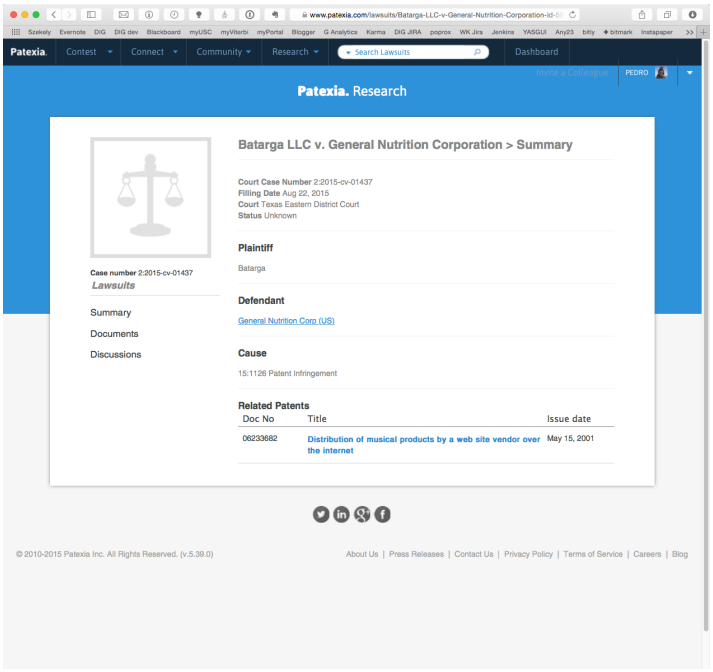
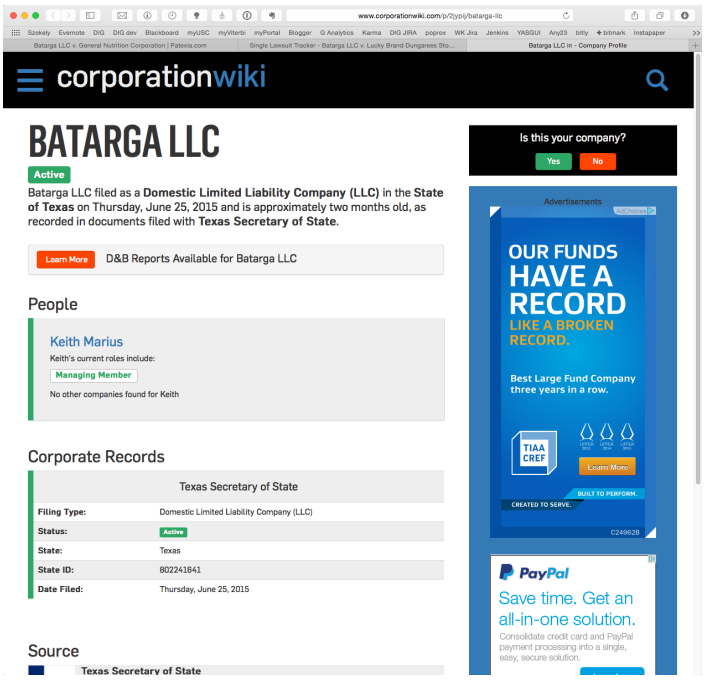
Example lawsuit





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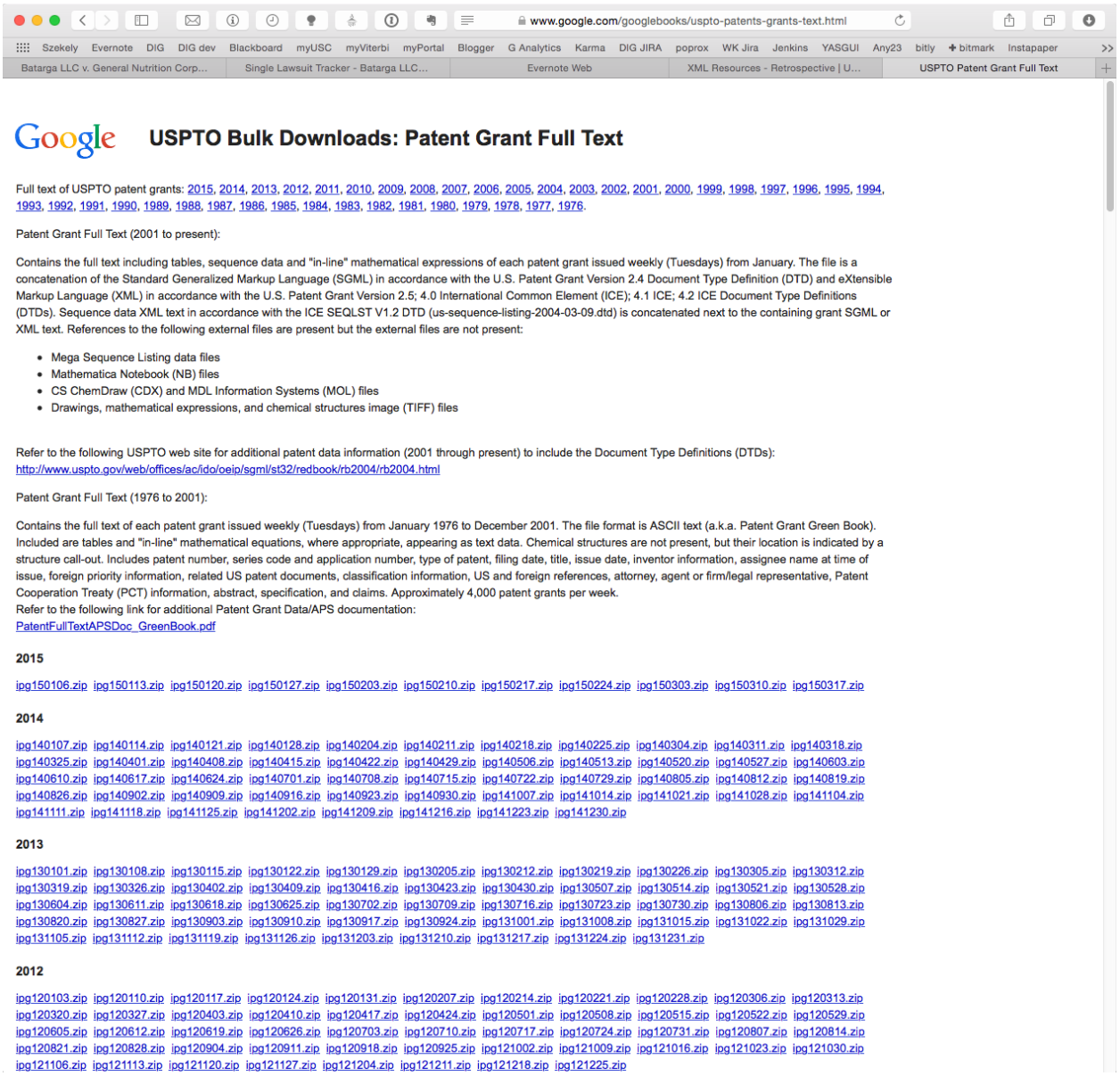
Downloading US Patent Office patents in bulk



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Full text of USPTO patent grants: 2015, 2014, 2013, 2012, 2011, 2010, 2009, 2008, 2007, 2006, 2005, 2004, 2003, 2002, 2001, 2000, 1999, 1998, 1997, 1996, 1995, 1994, 1993, 1992, 1991, 1990, 1989, 1988, 1987, 1986, 1985, 1984, 1983, 1982, 1981, 1980, 1979, 1978, 1977, 1976.

Patent Grant Full Text (2001 to present):

Contains the full text including tables, sequence data and "in-line" mathematical expressions of each patent grant issued weekly (Tuesdays) from January. The file is a concatenation of the Standard Generalized Markup Language (SGML) in accordance with the U.S. Patent Grant Version 2.4 Document Type Definition (DTD) and eXtensible Markup Language (XML) in accordance with the U.S. Patent Grant Version 2.5; 4.0 International Common Element (ICE); 4.1 ICE; 4.2 ICE Document Type Definitions (DTDs). Sequence data XML text in accordance with the ICE SEQLST V1.2 DTD (us-sequence-listing-2004-03-09.dtd) is concatenated next to the containing grant SGML or XML text. References to the following external files are present but the external files are not present:

- Mega Sequence Listing data files
- Mathematica Notebook (NB) files
- CS ChemDraw (CDX) and MDL Information Systems (MOL) files
- Drawings, mathematical expressions, and chemical structures image (TIFF) files

Refer to the following USPTO web site for additional patent data information (2001 through present) to include the Document Type Definitions (DTDs):
http://www.uspto.gov/web/offices/ac/ido/oeip/sgml/st32/redbook/rb2004/rb2004.html

Patent Grant Full Text (1976 to 2001):

Contains the full text of each patent grant issued weekly (Tuesdays) from January 1976 to December 2001. The file format is ASCII text (a.k.a. Patent Grant Green Book). Included are tables and "in-line" mathematical equations, where appropriate, appearing as text data. Chemical structures are not present, but their location is indicated by a structure call-out. Includes patent number, series code and application number, type of patent, filing date, title, issue date, inventor information, assignee name at time of issue, foreign priority information, related US patent documents, classification information, US and foreign references, attorney, agent or firm/legal representative, Patent Cooperation Treaty (PCT) information, abstract, specification, and claims. Approximately 4,000 patent grants per week.
Refer to the following link for additional Patent Grant Data/APS documentation:
PatentFullTextAPSDoc_GreenBook.pdf

2015

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2014

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2013

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2012

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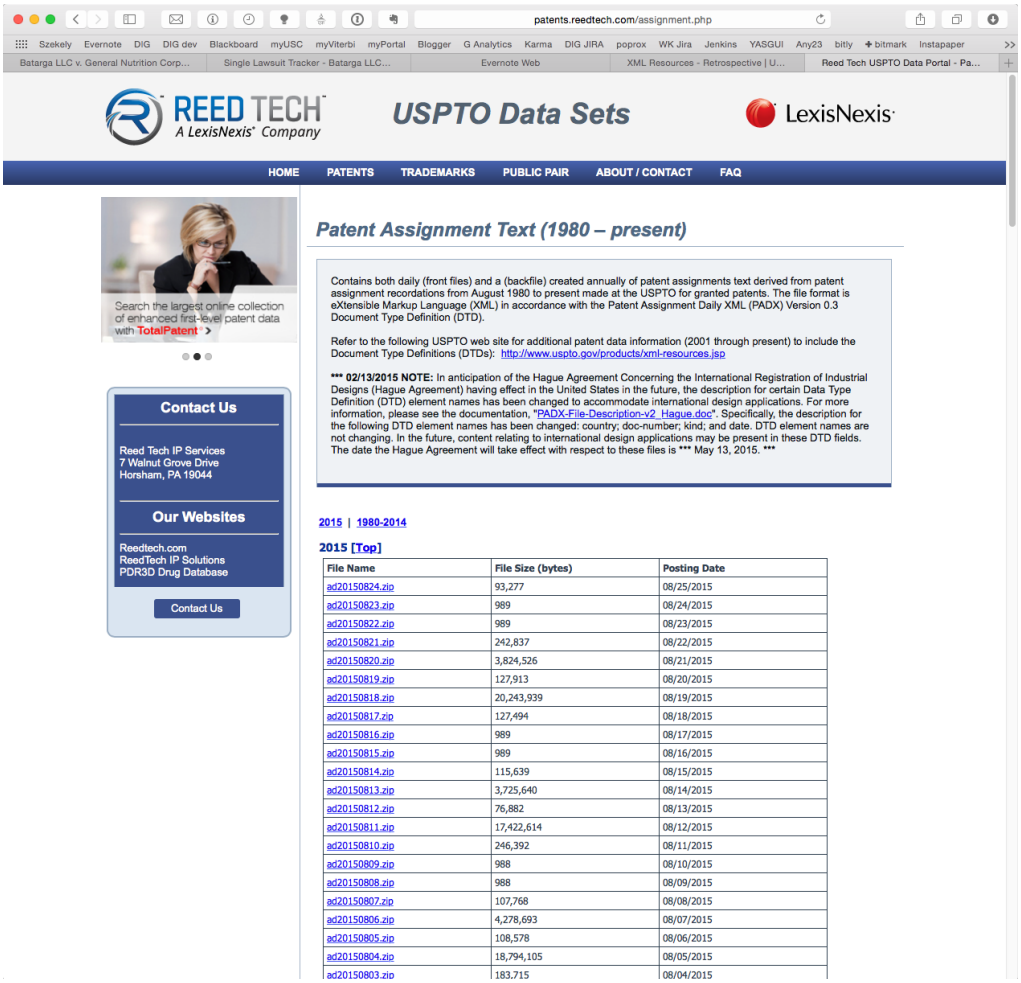
https://www.google.com/googlebooks/uspto-patents-grants-text.html

http://patents.reedtech.com/assignment.php



Case Questions

1) The last visualization shows that the bulk patent dataset is divided up into many files. How would you go about automatically downloading all of those using a script?
2) Patent files contain images, abstracts and text, among other elements. What aspects are expected to be useful for this case?
3) Draw an information integration pipeline (the class diagram is a guide only) and specify the technologies you will use at each stage of the pipeline.
4) Recall the three original questions we specified in the prompt. Using the material provided in the case study, and the architecture you drew in Q3, how would you go about providing decision support for those questions to an interested user?
5) Is a traditional database (i.e. relational database) or knowledge graph infrastructure more appropriate for this problem? Why or why not?