

## 0.1 Cascading

Cascading is an open source data processing project started in early 2008. Cascading functions as a workflow workhorse within the Apache Hadoop platform and serves as an alternative API to MapReduce. The Cascading Ecosystems includes multiple project extensions for compatibility with multiple languages, platforms, and functions[1]. Originally written in Java, the Cascading platform can be run on any JVM and includes extensions for application development using Scala or Clojure. The open source platform and all extensions are available through the Apache Public License[7].

## 0.2 Elasticsearch

The central engine to the Elastic product line, Elasticsearch is a distributed, RESTful search engine designed to grow with growing data. Elasticsearch is capable of searching and storing multiple data types, including numeric data, text, geo, and varying levels of structured data. In addition to the ability to search in real-time, Elasticsearch is capable of analysing queried results. Elasticsearch's use is compatible with multiple languages such as Curl, Java, Python, C, PHP, Perl, JavaScript, and more[2].

## 0.3 JMP

JMP (pronounced "Jump") is an enterprise level statistical analysis tool developed by SAS. The JMP software package is designed to handle every data-involved stage from acquisition to presentation. JMP is capable of complex analysis and can provide the user the back-end software code generated to produce the visualized results. A single JMP license is available for 1,785 USD [6]. JMP Pro is an even more capable version of JMP with more advanced analytics and predictive modeling with cross-validation--available for 14,900 USD[4].

## 0.4 Openchain

Openchain is a blockchain ledger technology designed to be built in seconds and deployed on an enterprise scale for the purposes of managing asset transactions. The Openchain technology uses a distributed client-server architecture rather than the slower peer-to-peer proof of work concept originally adopted by early blockchain technologies. Openchain can serve as a stand alone ledger or can be scaled as a side-ledger to existing blockchain platforms [5].

## 0.5 Scribe

Scribe is a server, originally developed and maintained by Facebook in 2008, that serves as an aggregator for streaming log data. The Scribe server is deployed within each node of a network and sends the aggregated log data to a central server for analysis. The data is interpreted by the Scribe servers via a two-string input by a client: the category or direction, and the message itself. Scribe has been deployed on thousands of servers on a single network and is robust to network errors and failures [3]. Scribe is available via the Apache License v.2.

## References

- [1] *Cascading* | *Cascading*. Web. URL: <https://www.cascading.org/> (cited on page 1).
- [2] *Elasticsearch: RESTful, Distributed Search and Analytics* | *Elastic*. Web. URL: <https://www.elastic.co/products/elasticsearch> (cited on page 1).
- [3] *facebookarchive* | *scribe*. Web. URL: <https://github.com/facebookarchive/scribe> (cited on page 1).
- [4] *JMP Pro*. Web. URL: <https://www.sas.com/jmpstore/products-solutions/jmp-pro/prodJMPPRO.html> (cited on page 1).
- [5] *Openchain - Blockchain technology for the enterprise*. Web. URL: <https://www.openchain.org/> (cited on page 1).
- [6] *Statistical Software* | *JMP Software from SAS*. Web. URL: <https://www.jmp.com/> (cited on page 1).
- [7] Chris Wensel. *Cascading*. Web. URL: <https://github.com/cwensel/cascading> (cited on page 1).