ENGINEERING

Peraton

ARROYO DATA MANAGEMENT SUITE

Efficient, Easy-To-Use Tools for Data Manipulation, Investigation, Analysis, and Management

THE CHALLENGE

We live in a data-saturated environment in which organizations, agencies, and enterprises are easily overwhelmed with large sets of messy, diverse, complex—and potentially quite useful—data. Leveraging the ever-increasing collections of data to extract insights and information requires efficient, easy-to-use tools for data manipulation, investigation, analysis, and management. Across diverse domains from health care, finance, and engineering to compliance, operations, and intelligence, the challenges are the same: analysts need to reconcile, correct, validate, and integrate data sets. They need both interactive capabilities to investigate and explore and high-performance processing at scale.

THE ARROYO SOLUTION

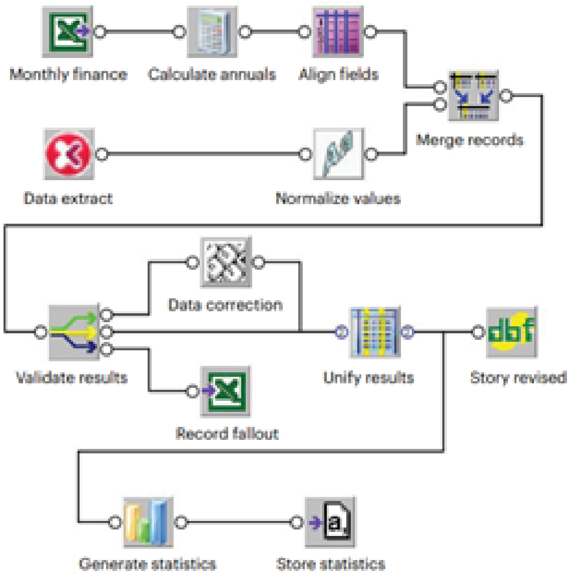
Peraton Labs' Arroyo data management suite provides an interactive, graphical environment for fast, code-free development of solutions to extract, transform, validate, explore, and analyze diverse data. Arroyo efficiently supports the full-spectrum of data management tasks from ingestion, normalization, combination, and reconciliation to geospatial analyses, visualizations, and sophisticated analytics and machine learning. Arroyo is a high-performance, all-purpose tool—scaling to meet demanding transaction volumes involving terabytes of data and billions of records. It reads, processes, and writes structured and unstructured data in diverse types, repositories, and formats.

The Arroyo suite of tools enables rapid data exploration, correction, modification, and management at scale and for large sets of varied data via:

- Easy-to-use graphical interface used to define, debug, execute, and visualize complex data manipulations
- Nearly 100 reusable, configurable building blocks (filters) in the Arroyo suite that provide customizable, built-in functionality to ingest, transform, validate, analyze, and output data
- Simple drag and drop construction, which makes development and debugging of sophisticated data management solutions (flows) an agile configuration task—not a strenuous coding process
- Fast review, update, and verification of flow behavior with real-time views and analysis of data flowing in and out of each filter within a solution flow
- Flexible, high-performance operations and bulk data processing via Arroyo's execution engine which can schedule and execute flows based on time, presence of data, and other factors
- Easy extensibility with full-featured scripting language to incorporate additional filters, enhanced visualizations, and new processing and analytic techniques in the user's language of choice

The simple Arroyo flow shown below demonstrates the construction of a basic data management process to:

- Extract, align, and normalize data from two disparate sources
- Merge the data and perform data validation, reconciliation, error detection, and correction
- Unify and store the cleansed data
- Create statistical summaries of the data and data processing, including uncorrectable errors, for use in reports and dashboard



Using Arroyo's drag and drop interface and its wealth of configurable filters, users create solution flows to read, modify, evaluate, and write data without programming. Arroyo flows enable quick, interactive data discovery as well as design and testing of data processing solutions for advanced analytics and bulk data management.

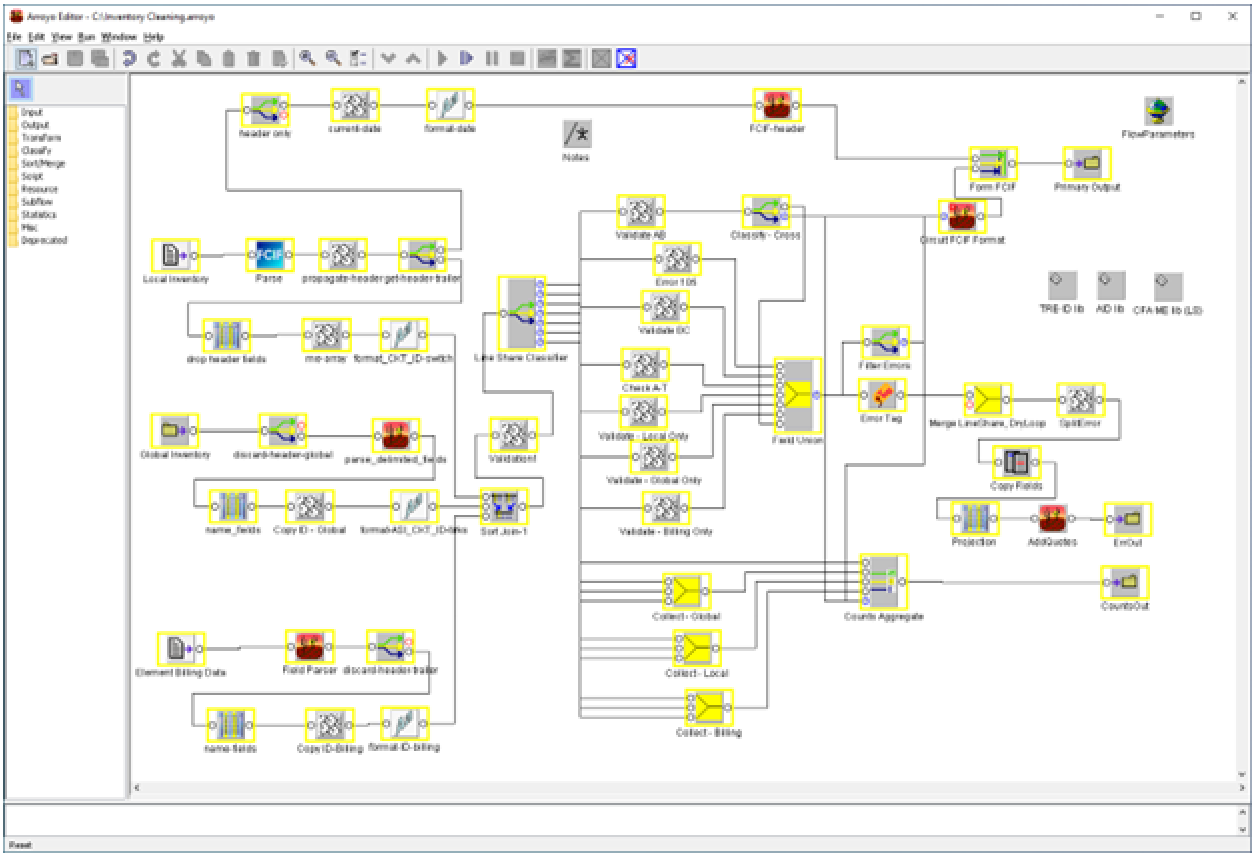
Arroyo runs on Windows and Unix and is flexible and extensible:

- More than 30 configurable input/output filters support read/write operations from local files, remote (web-based) sources, local or remote databases, and distributed Hadoop file systems
- Easy processing of diverse data in the form of flat files (raw text, delimited data, fixed-width data), structured files (HTML tables, XML, JSON, spreadsheets), databases (JDBC, XBase file), and messages (JMS)
- Customizable filters for geo-spatial operations and visualizations, including 2D, 3D, and maps
- Comprehensive suite of text analytics capabilities enabled via seamless Python integration
- More than 40 configurable processing filters for efficient sorting, classification, comparison, cleansing, modifying, and unification of data
- Simple, comprehensive scripting capability so users can develop and add new features and functionality using choice of language
- Full set of machine learning capabilities available via the Python scikit-learn suite, including a wide range of machine learning algorithms and preprocessing capabilities used to generate train/test splitting and perform n-way cross-validation and results scoring
- Flexible output filters that produce analytic results, plots, and statistical results in standard formats for use in reporting and dashboards

Arroyo, as shown below, enables the rapid development, debugging, and validation of complex data processing solutions (flows) without programming. The user-friendly graphical interface makes solution development straightforward via drag-and-drop construction. The resulting Arroyo data processing and management flows can be run interactively for investigation and analysis and executed at scale using Arroyo's high-performance execution engine.

THE ARROYO ADVANTAGE

Automation is critical to cost effectively resolve data quality and transformation issues. Our Arroyo data management suite automates data extract, transform, and load activities allowing visual exploration of data for pattern detection. With Arroyo—you can efficiently support the full spectrum of data management tasks. Contact us at info@peratonlabs.com to learn more about the Arroyo suite of tools and our capabilities in data analytics and machine learning.



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