TAX MANAGEMENT ASSOCIATES, INC

DATA ANALYTICS WITH KNIME

v.3.4.0

QUALIFICATIONS & EXPERIENCE

WHO WE ARE

Tax Management Associates is a professional services firm that has served the interests of state and local government since 1979.

- 38 years of providing professional services to state and local taxing officials
- TMA works exclusively with government partners
- TMA is composed of 150+ employees in five main offices across the United States
- Our main focus is on revenue enhancement services for state and local jurisdictions and property tax compliance efforts

KNIME POWERED CUSTOM ANALYTICS

- TMA is a proud KNIME Trusted Consulting Partner.

Visit: www.knime.org/knime-trusted-partners

- Successful analytics solutions:
  - Fraud Detection (Michigan Department of Treasury)
  - Entity Discovery (multiple counties)
  - Data Aggregation (Louisiana State Tax Commission)

Open for Innovation
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KNIME POWERED CUSTOM ANALYTICS

- KNIME is an open source data toolkit
- Active development community and core team
- GUI based with scripting integration
  - Easy adoption, integration, and training
- Data ingestion, transformation, analytics, and reporting

FEATURES & TERMINOLOGY

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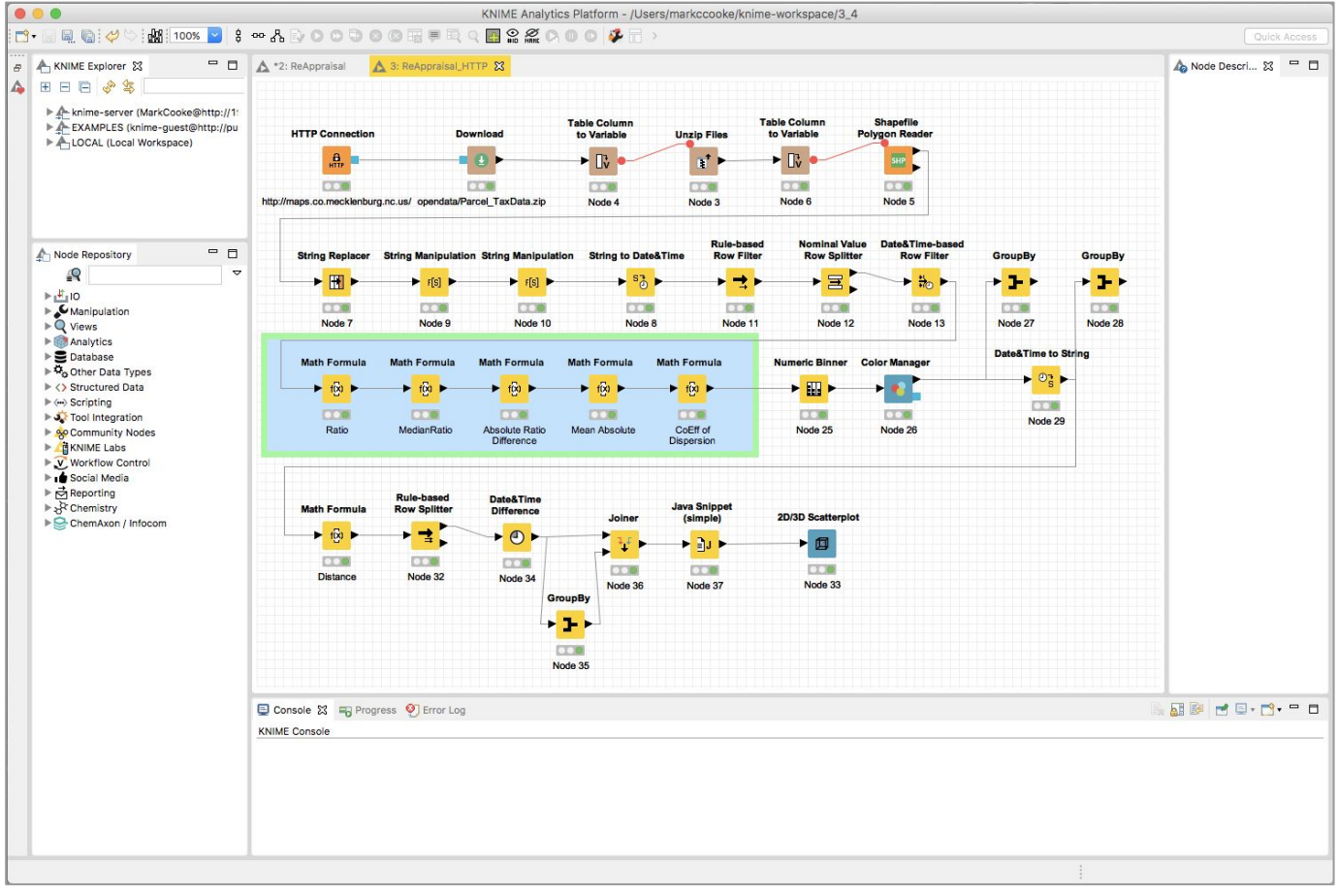
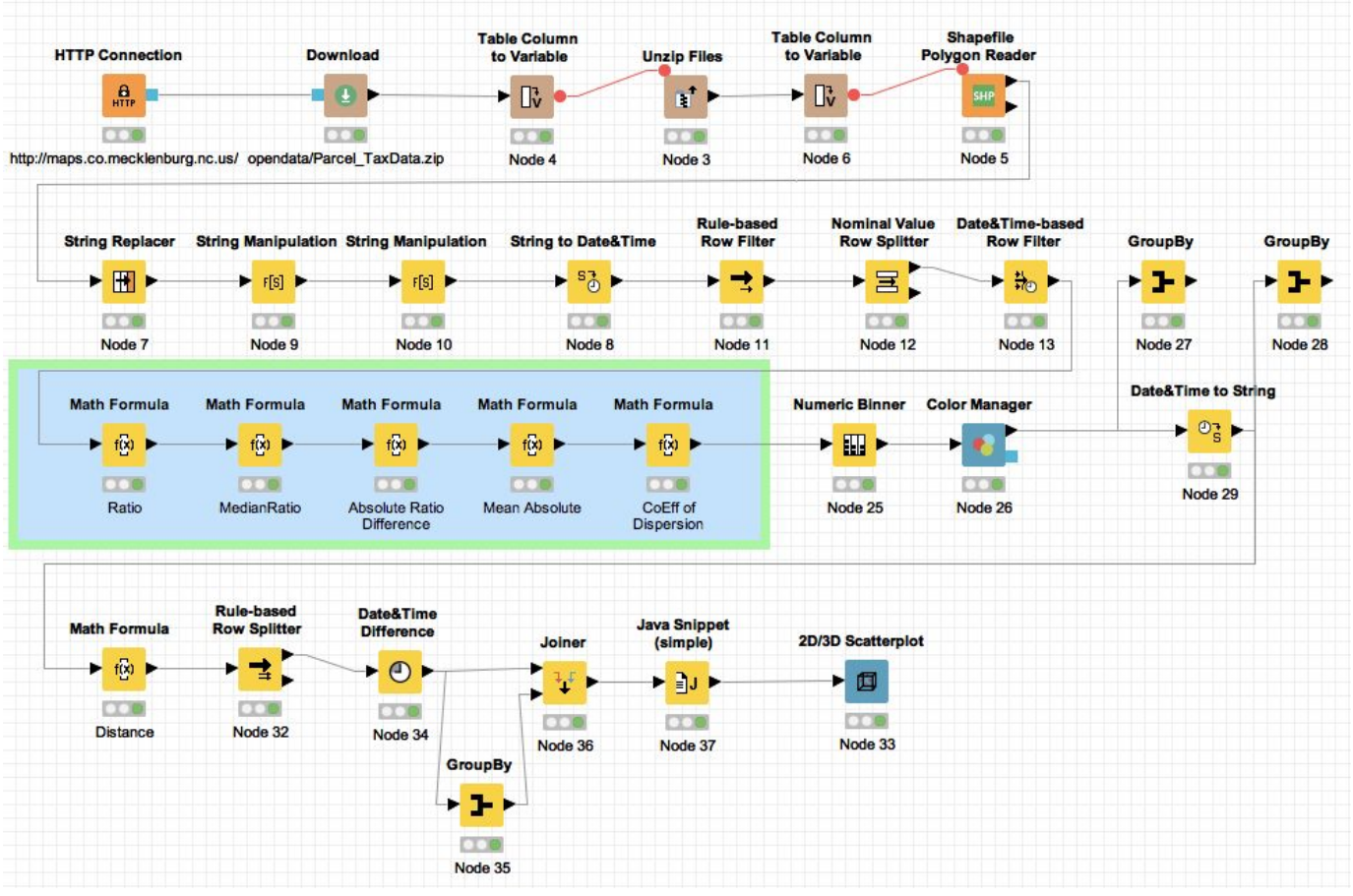
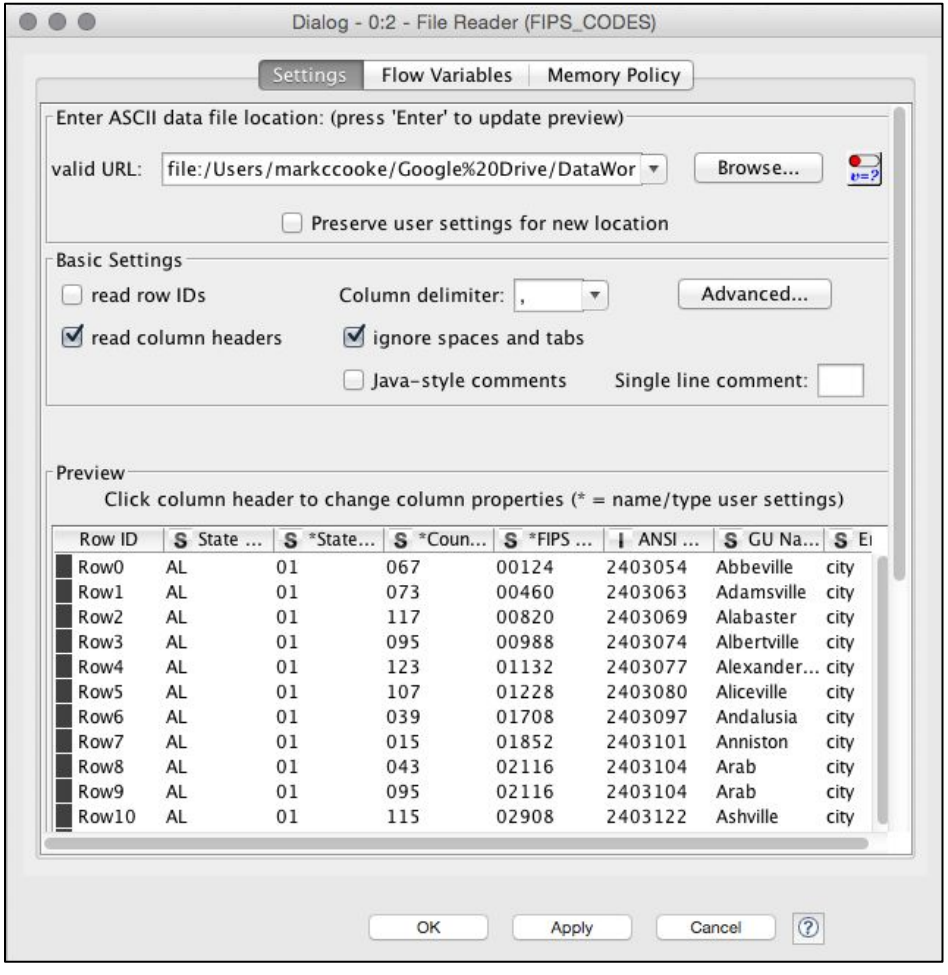
KNIME WORKBENCH



KNIME WORKFLOW



KNIME NODES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Settings
Flow Variables
Memory Policy
Enter ASCII data file location: (press 'Enter' to update preview)
valid URL:
file:/Users/markccooke/Google%20Drive/DataWor
Browse...
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Basic Settings
read row IDs
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Advanced...
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ignore spaces and tabs
Java-style comments
Single line comment:
Preview
Click column header to change column properties (* = name/type user settings)
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Row0 AL 01 067 00124 2403054 Abbeville city
Row1 AL 01 073 00460 2403063 Adamsville city
Row2 AL 01 117 00820 2403069 Alabaster city
Row3 AL 01 095 00988 2403074 Albertville city
Row4 AL 01 123 01132 2403077 Alexander... city
Row5 AL 01 107 01228 2403080 Aliceville city
Row6 AL 01 039 01708 2403097 Andalusia city
Row7 AL 01 015 01852 2403101 Anniston city
Row8 AL 01 043 02116 2403104 Arab city
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Row10 AL 01 115 02908 2403122 Ashville city
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Apply
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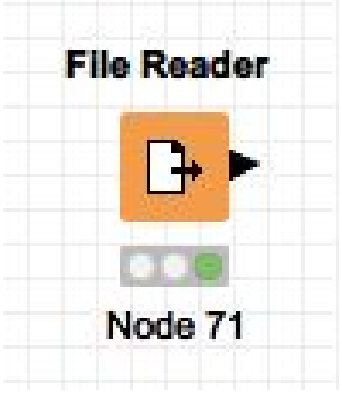
File Reader
Node 71

DATA TYPES & SOURCES

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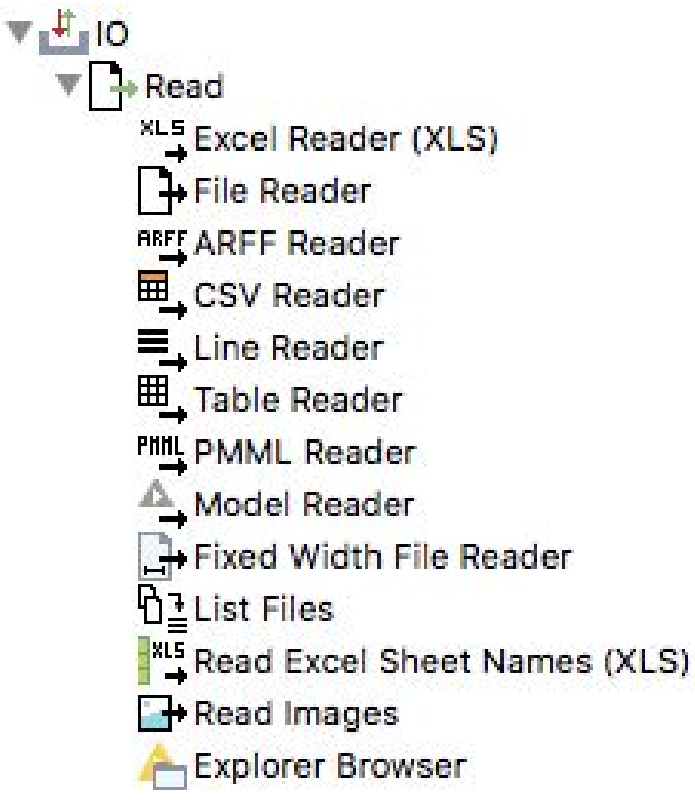
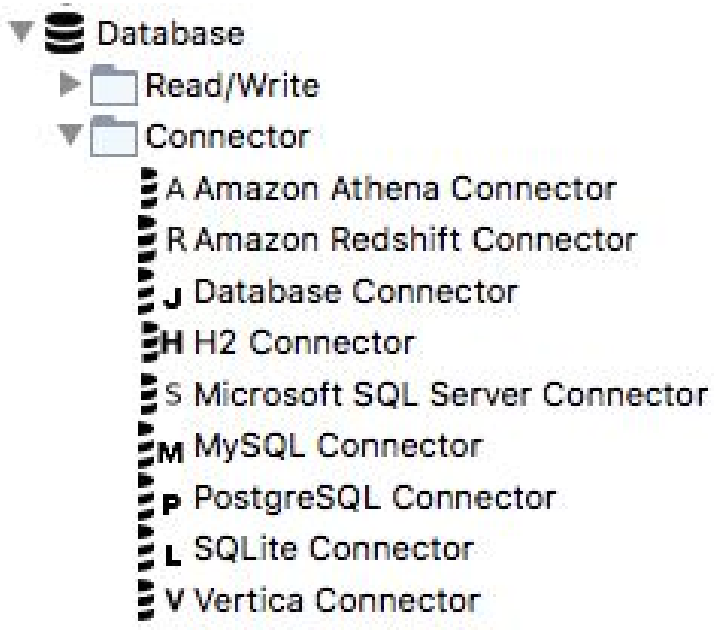
DATA AGNOSTIC

- Flat Files
- Xls/x Reader
- Fixed Width
- Text Files
- Image Files
- XML
- Shapefiles
- HTTP Requests
- RSS Feeds
- Custom API's/Curl
- Standard API's
- JSON

KNIME DATA NODES

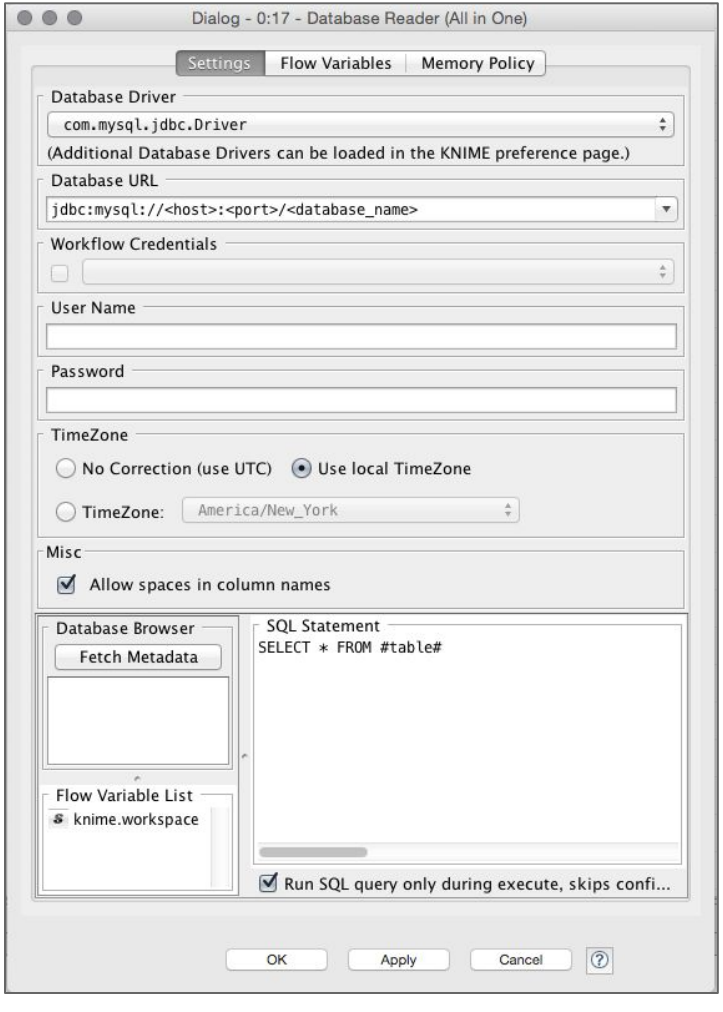


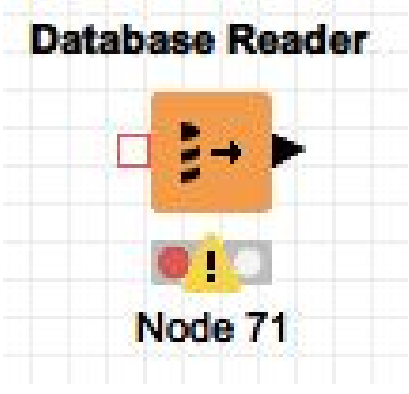


DATABASE AGNOSTIC

- Microsoft SQL
- MySQL
- Postgres
- SQLite
- Oracle
- IBM DB2
- Hadoop
- Any JDBC driver

KNIME DATABASE NODES





CORE DATA ANALYTICS FEATURES

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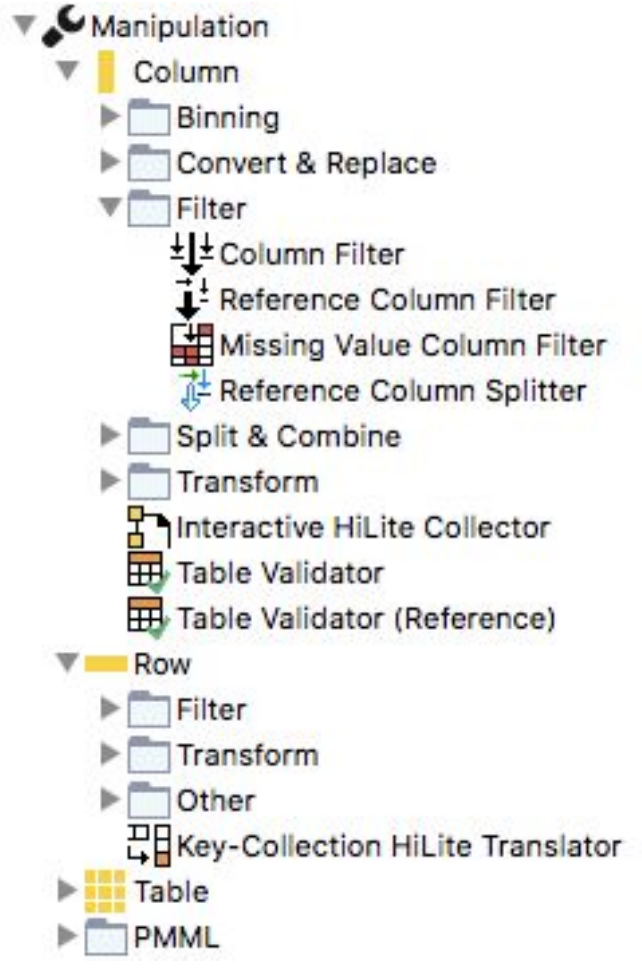
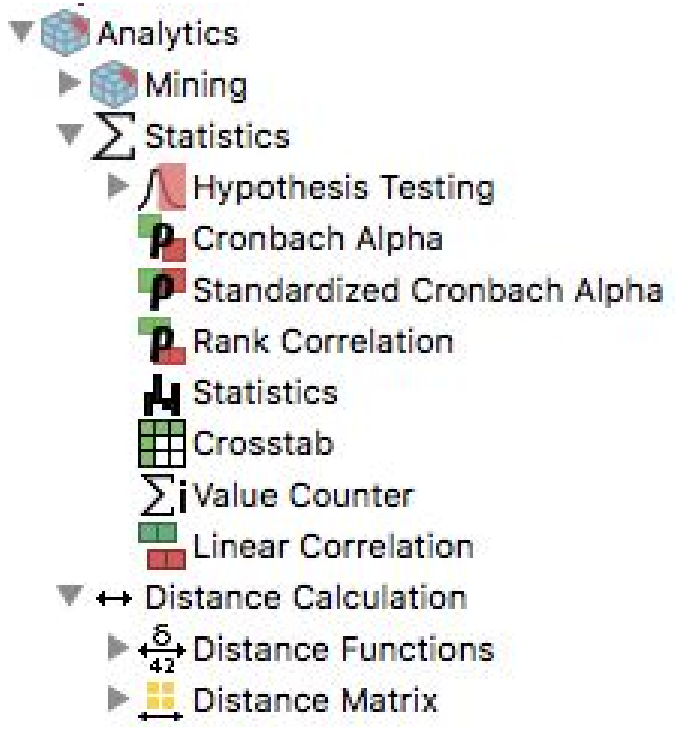
KNIME DATA ANALYTICS LIFECYCLE

KNIME ETL FEATURES



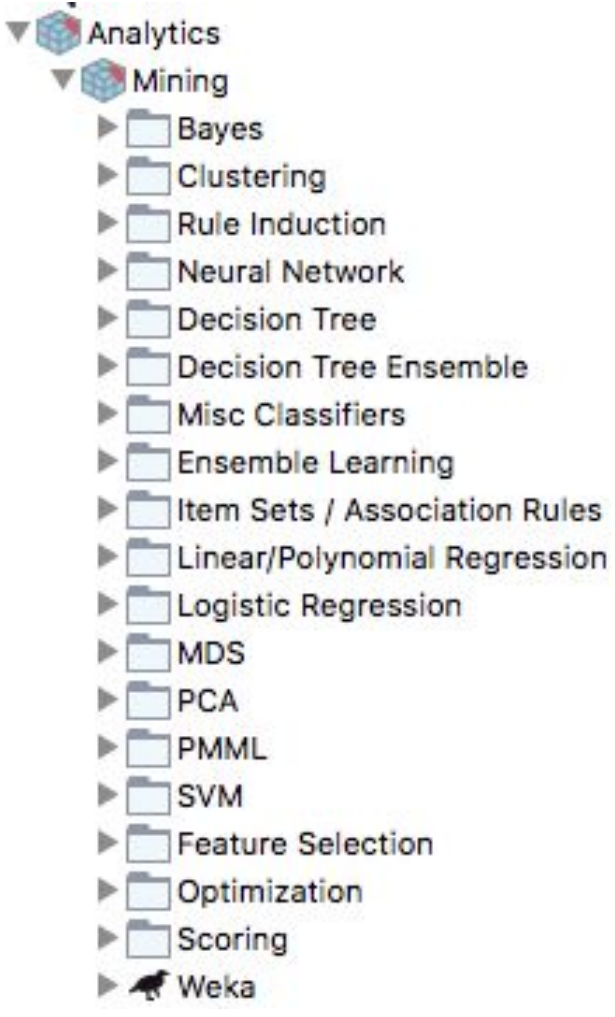
- Rule-based filtering and transformation
- Support for REGEX style replacements
- Map style reduction functions including statistical collapse
- Logical joins

KNIME STATISTICS



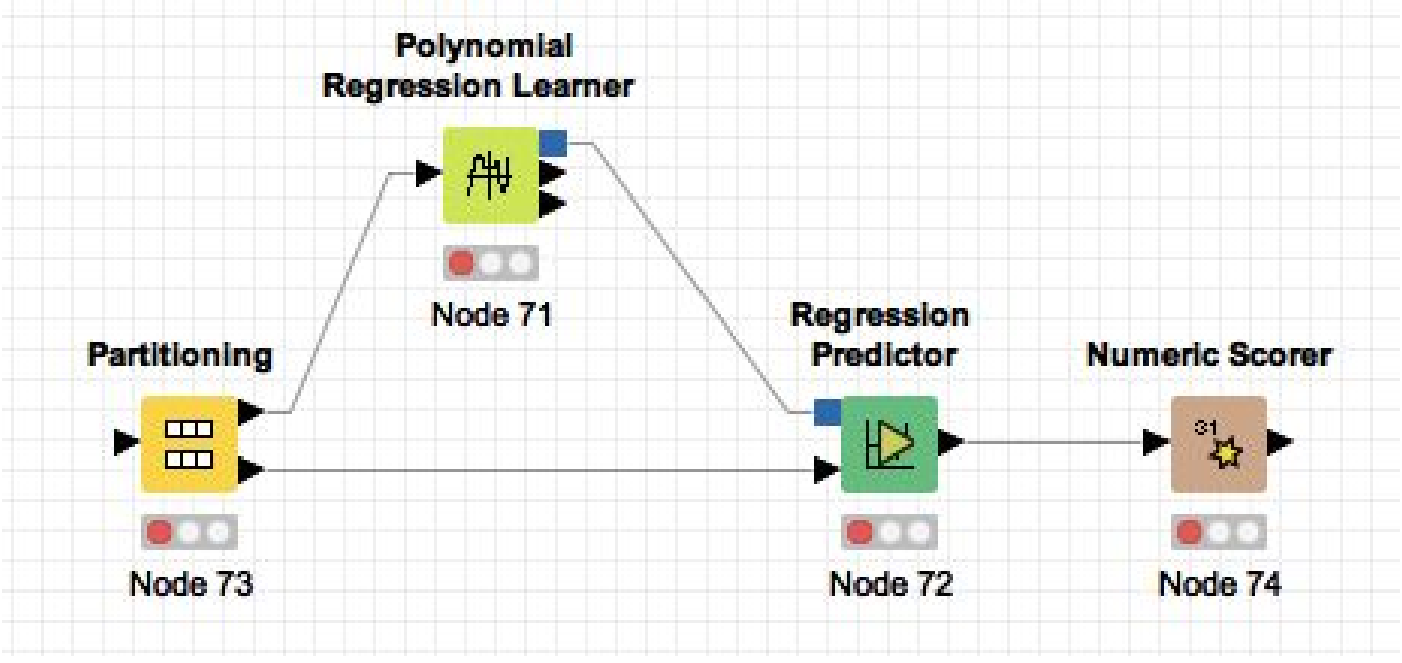
- "Statistics" node has base measures of distribution
- Linear correlation and dependency measures
- Many nodes also support statistical standards such as count, sum, mean, etc.

KNIME MACHINE LEARNING



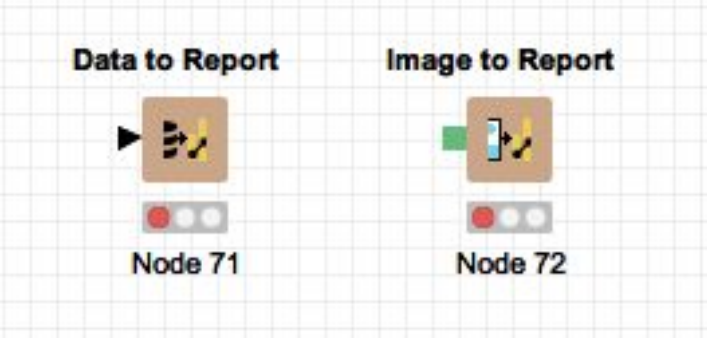
- Base KNIME supports most machine learning algorithms
- These are extended through partner implementations and scripting languages (R, Python, Weka, etc.)
- Data partitioning and multiple folds

KNIME Machine Learning



KNIME REPORTING

- Generates reports in office document formats, PDF, and HTML
- BIRT Tool as part of the Eclipse framework
  - Native part of the KNIME workbench
- Extends data visualization capabilities
- Auto-distribute by email, or publish to websites



ENHANCEMENTS & EXTENSIONS

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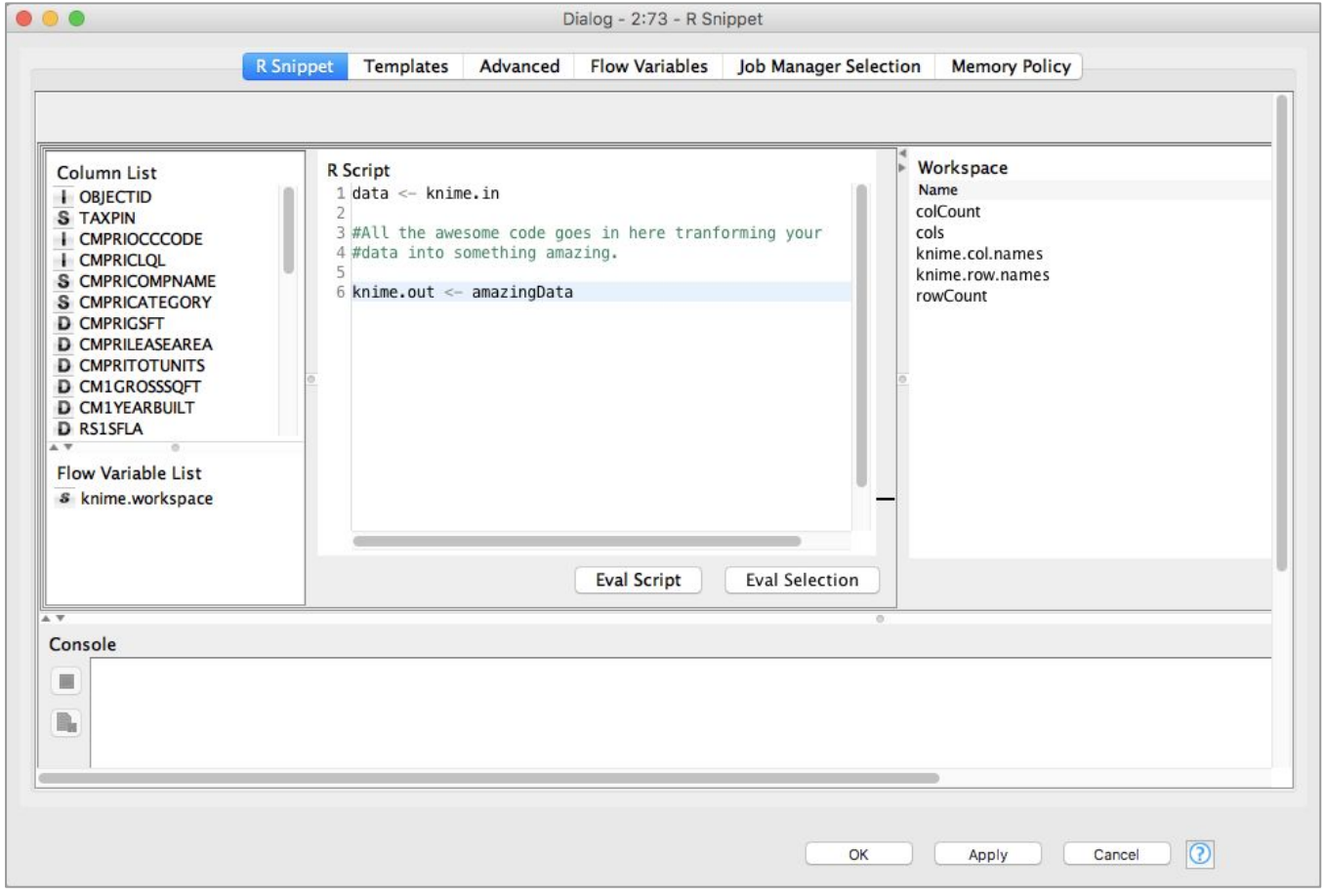
KNIME Enhancements

- Community Contributions
  - Third party approved KNIME nodes
- Integration for Popular Languages
  - Python, P, Java, Javascript, Perl

KNIME R INTEGRATION



WHAT IS R ANYWAY?

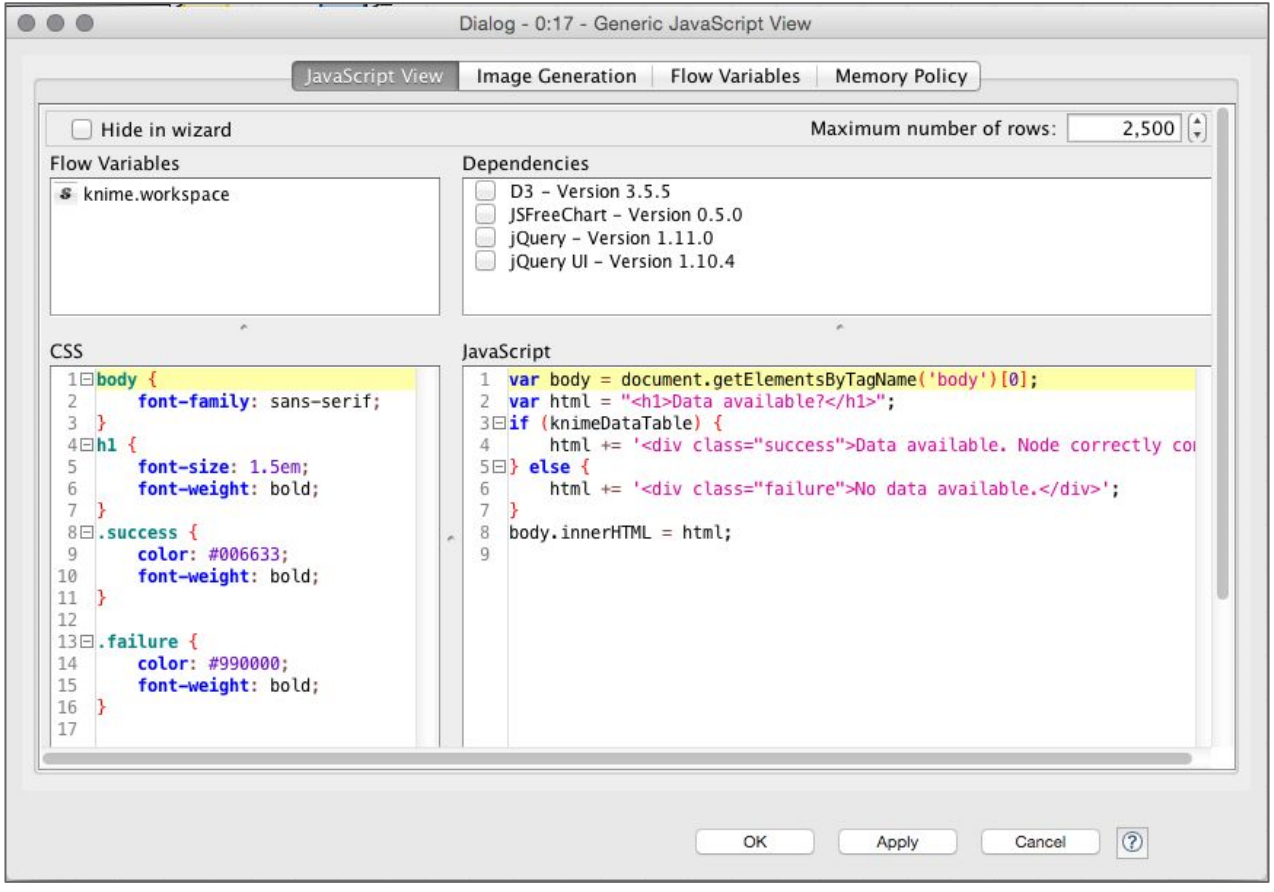
R is a programming language developed principally for data analytics and statistics.

Visit: https://www.r-project.org

- R supports graphical representations as well, and has been extended to reporting and web applications

  EXAMPLES:
  - R Markdown
  - Shiny

KNIME JAVASCRIPT INTEGRATION



COMMODITY EXTENSIONS

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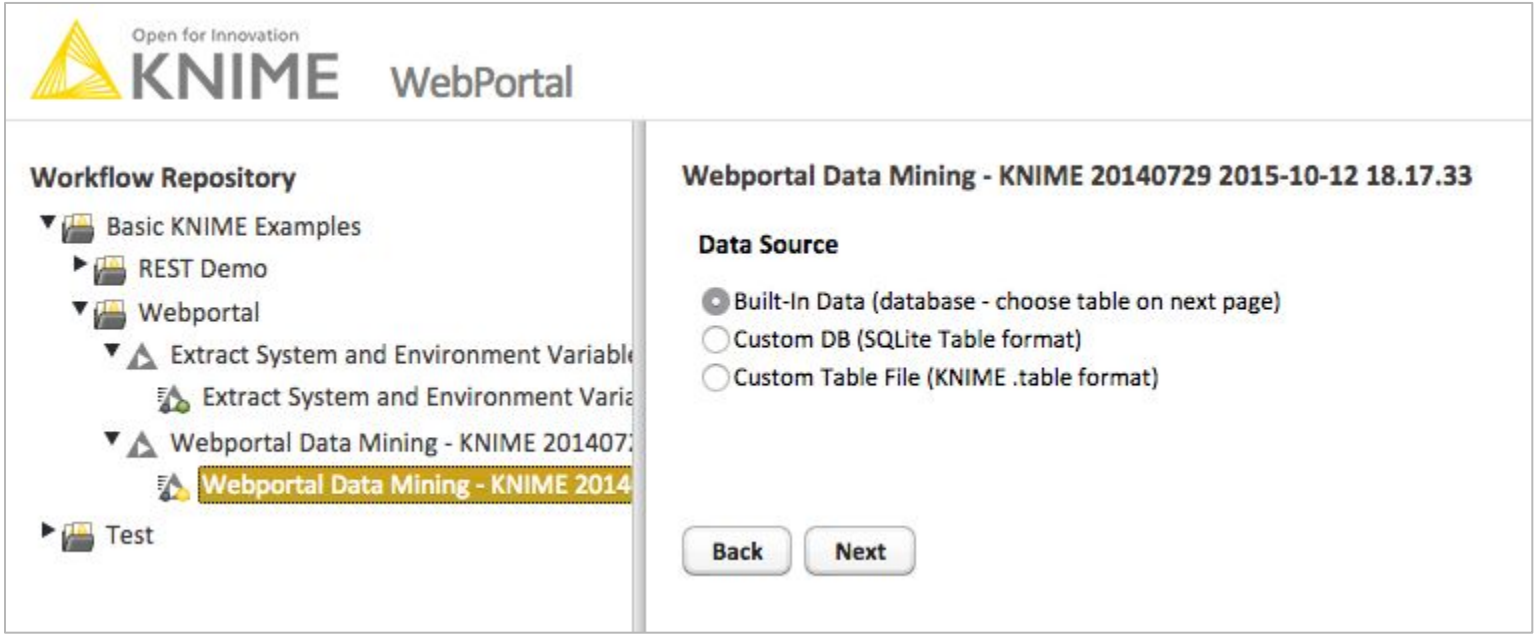
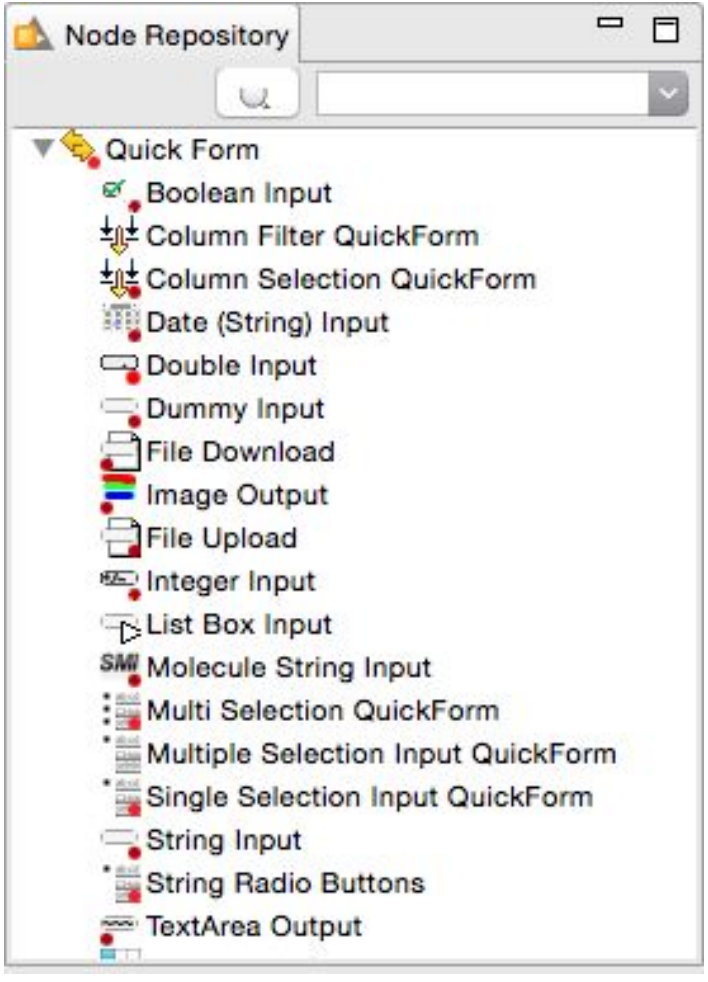
KNIME SERVER

- Teamspace: collaboration and shared routines
- “Chron jobs” and remote execution
- Inbuilt web-services for remote access, configuration, and execution (Parameterized URL execution calls)



KNIME WEBPORTAL



- End-User initiated workflows
- Generates a webpage to represent the workflow and options
- End-User selections configurable from inside workflows

INNOVATION & DATA ANALYTICS

USE CASE

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DATA ANALYTICS USE CASES

DATA AGGREGATION

- Combine data from different sources, local or remote
- ETL data into a single repository for querying/analytics

BUSINESS INTELLIGENCE

- Data intelligence and reporting over large aggregated datasets
- Automated reusable workflows for standardized reporting

DATA ANALYTICS USE CASES

PREDICTIVE ANALYTICS

- Discover patterns across time or entities
- Ability for insight across very large datasets

KNIME ANALYTICS

- Advantage of being a data agnostic aggregator
- Ability to work through very large datasets with little hardware
- Access to complex algorithms with easy tools

THANK YOU FOR WATCHING

Tax Management Associates appreciates your time.

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Mark.Cooke@tma1.com

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