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What's New

Bernd Wiswedel
KNIME

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Outline

- “What’s new“ presented in two use cases, presented by the team

- Questions/Discussions/Concerns: Find us!
- Demo booths in the registration area

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What's new - Agenda

- Too much to show it all.
- Some highlights:
  - Audio Processing
  - Text Processing
  - Analytics & Scripting

  } Use Case 1: IMDB Reviews

  - KNIME Server
  - Cloud Offerings
  - Guided Analytics

  } Use Case 2: Census Data

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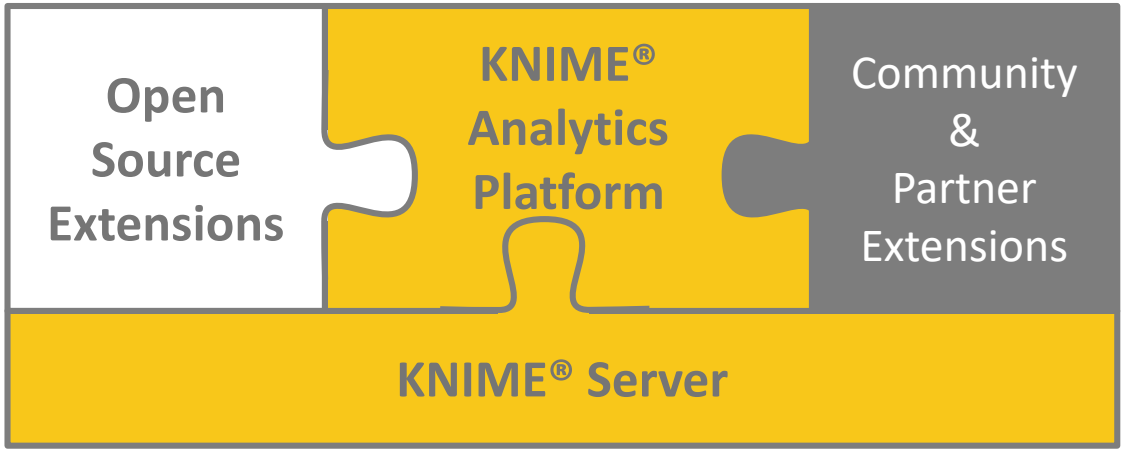
KNIME Software Pieces



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What's new - Agenda

- Too much to show it all.
- Some highlights:
  - Audio Processing
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  - KNIME Server
  - Cloud Offerings
  - Guided Analytics

Use Case 1: IMDB Reviews

Use Case 2: Census Data

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KNIME as an Open (Source) Platform

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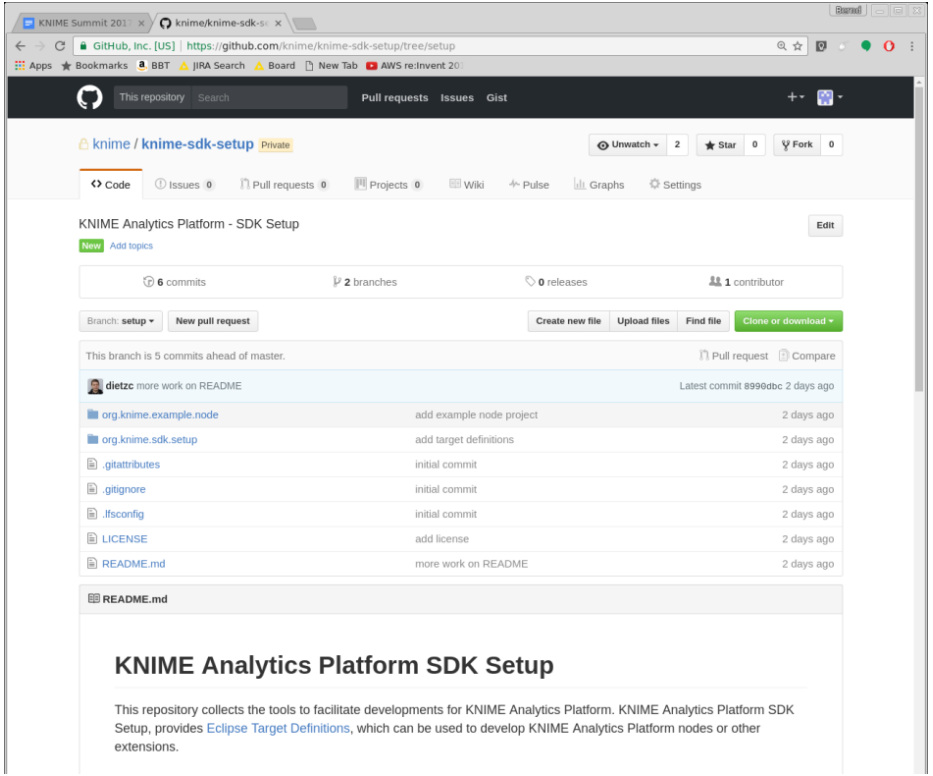
KNIME Analytics Platform – Source Code on GitHub

- Source Code available on GitHub & BitBucket
- Ongoing effort, enough to get started



https://github.com/knime/

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SVN To Git – Fun Facts

- Switched from SVN to Git earlier the year
- ~3 weeks conversion time
  (parallelized over 10 physical machines)
- Split into 70 repositories (60 open source)
- Code Base:
  - ~20GB (includes text models, R, etc)
  - ~1.7 Mio Lines of Code (open source only)
  - 1500 integration tests per version (excl. unit tests)

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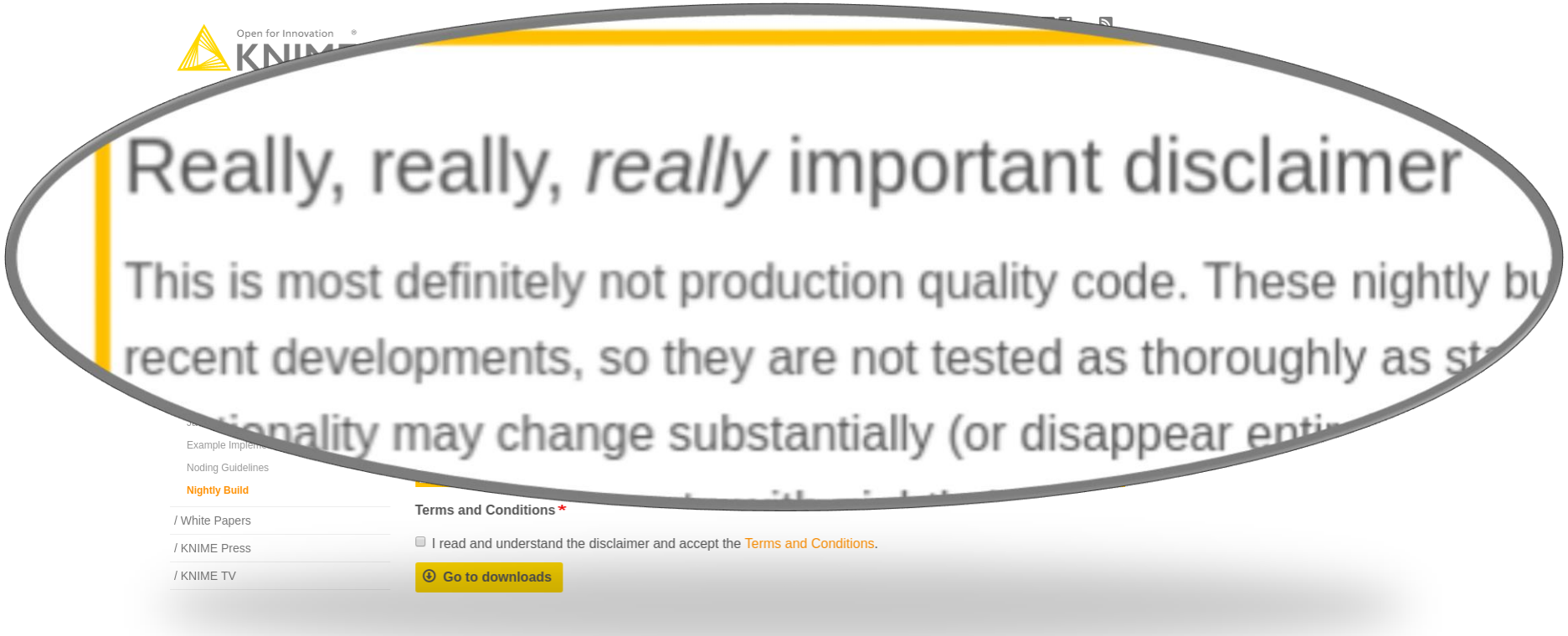
KNIME Analytics Platform – Nightly Builds

- Nightly Builds publicly available:



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KNIME Personal Productivity – free & open-source

- Part of the KNIME Analytics Platform 3.4

- What is it?
  - Workflow Diff Viewer
  - Metanode Templates
  - Workflow Linking
    ("Call Local Workflow")
  - "Local" Workflow Coach

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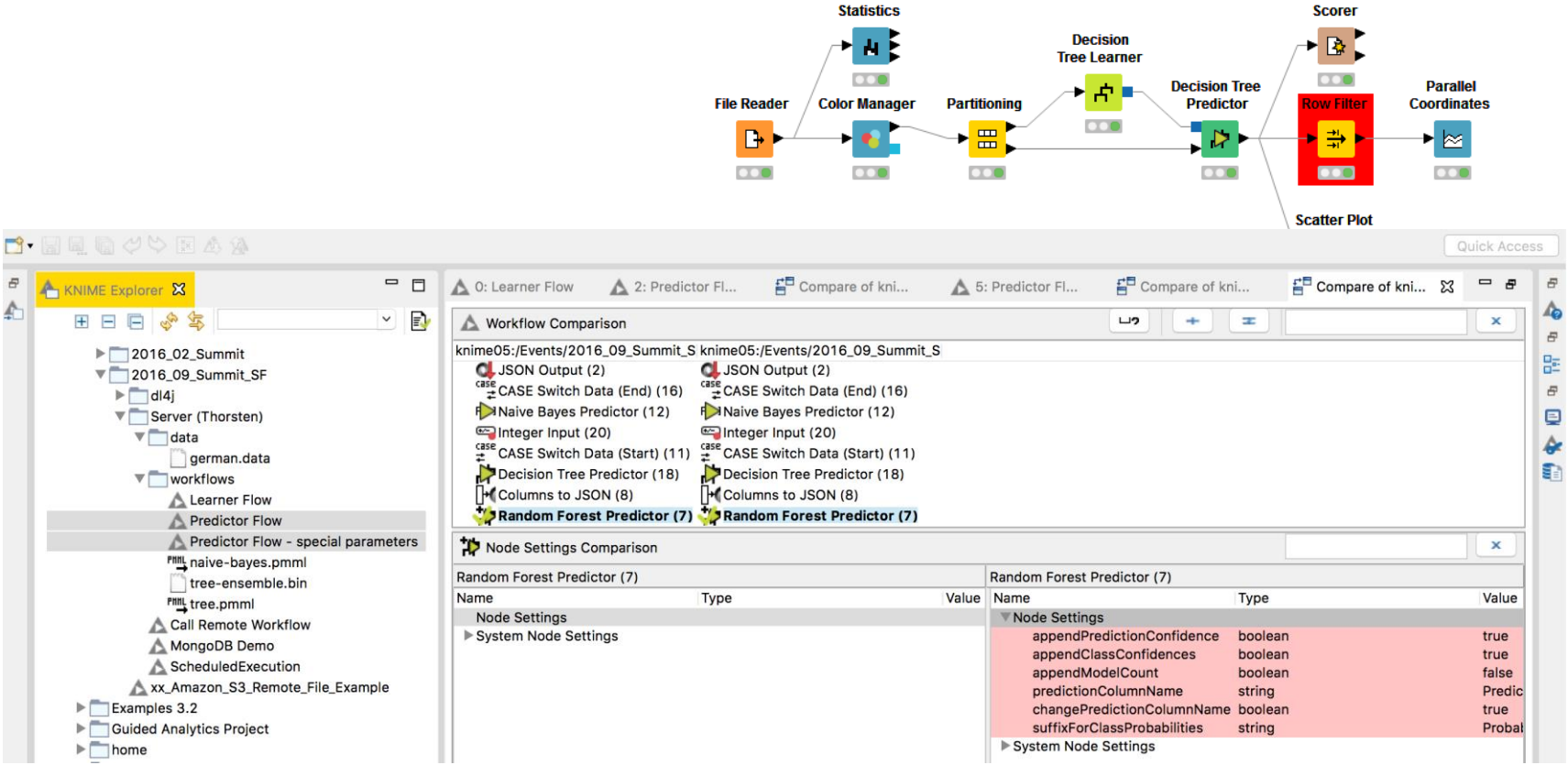
KNIME Personal Productivity – Workflow Diff



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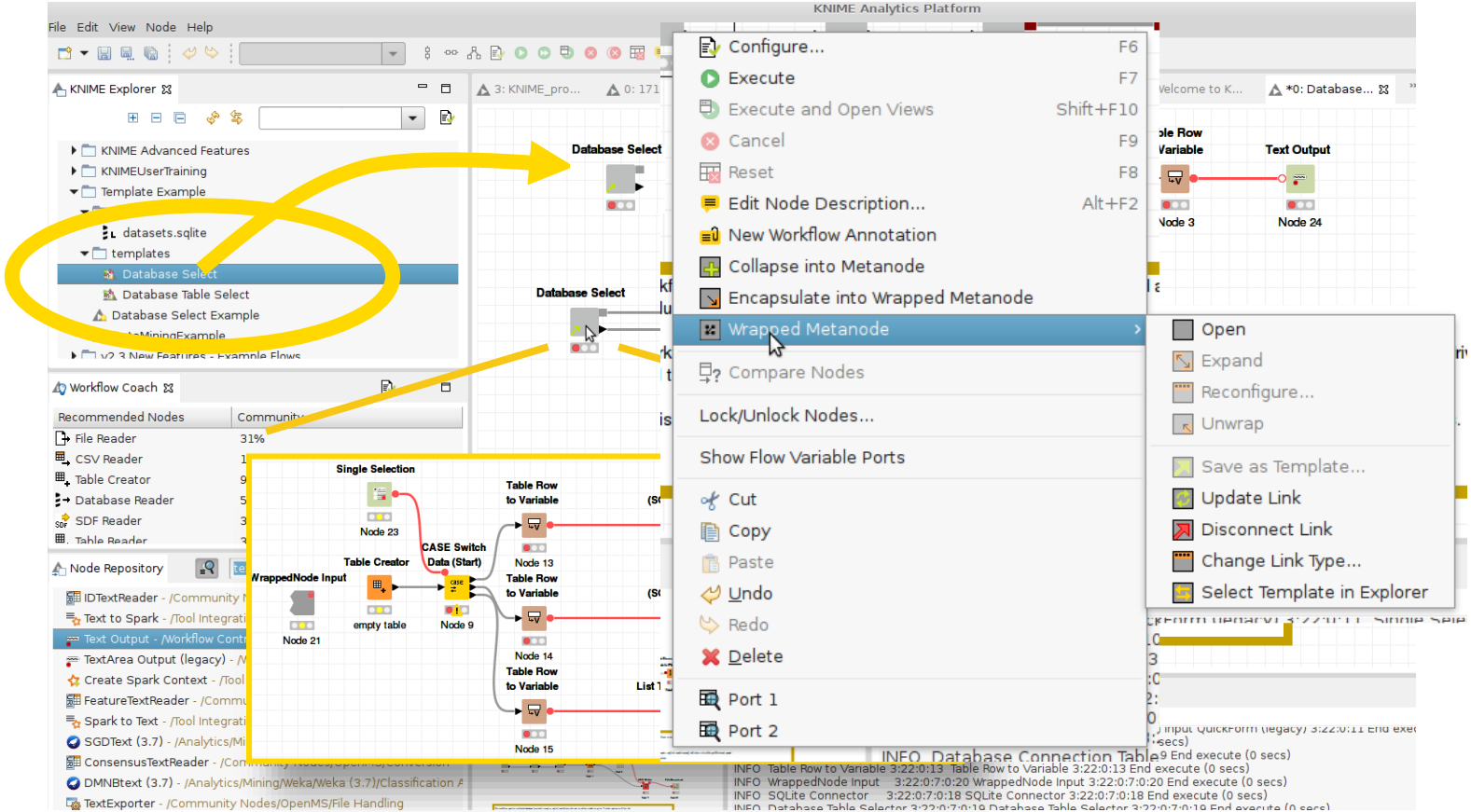
KNIME Personal Productivity – Metanode Templates



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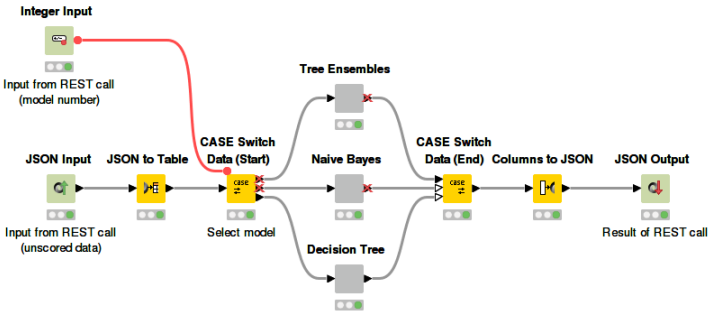
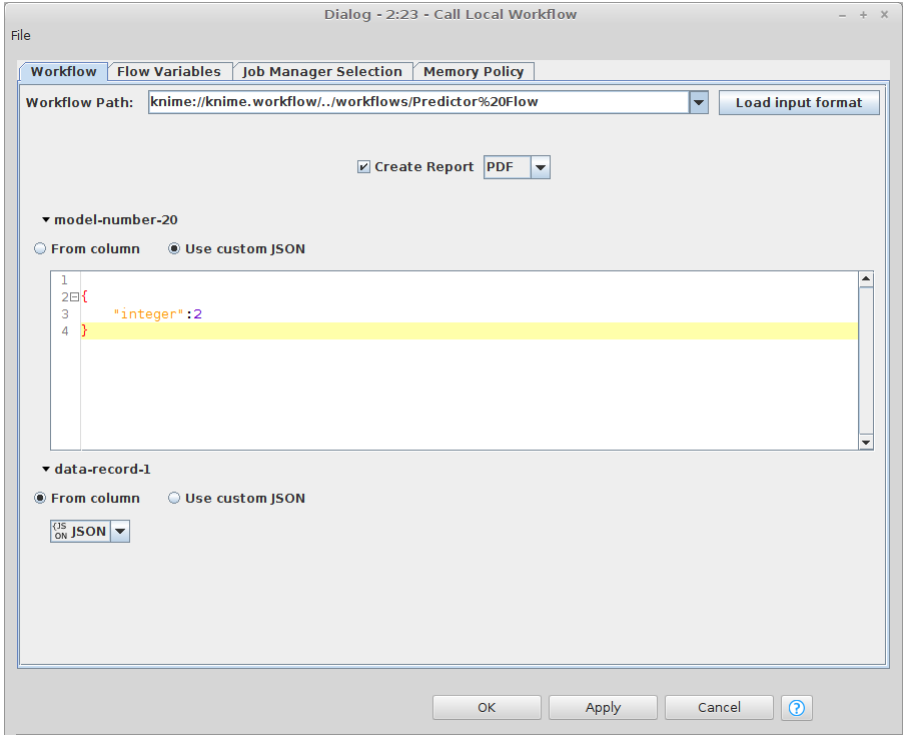
KNIME Personal Productivity – Workflow Linking

- Workflow Orchestration by calling out to other workflows





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KNIME Personal Productivity – free & open-source

- Part of the KNIME Analytics Platform 3.4

- Big Data Extensions in December (3.5)

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Speech Recognition

– Tobias Koetter –

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KNIME Audio Processing

- New audio cell type
- Listen to audio files within KNIME
- Extract acoustic features
- Speech recognition

https://pixabay.com/en/microphone-silver-metal-sound-waves-1074362/

https://www.youtube.com/watch?v=1L6zwLMvA-U

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Text Processing

– Kilian Thiel –

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Example Use Case

- Sentiment classification of movie reviews
  - PDF parsing
  - Feature vector creation
  - Predictive modeling

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Example Use Case

Goal

- Build predictive models to predict sentiment labels of reviews, “positive” or “negative”.

- “Ah, Moonwalker, I'm a huge Michael Jackson fan …”
- “This film has a very simple but somehow very bad plot. …”

Positive or negative?

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Data Set

- The Large Movie Review Dataset v1.0
  - English movie reviews
  - Associated sentiment labels “positive” and “negative”
  - http://ai.stanford.edu/~amaas/data/sentiment/
- 2000 PDFs
  - 1000 positive reviews
  - 1000 negative reviews

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Textprocessing

- Tika integration
- StanfordNLP NER Learner & Tagger nodes
- Document Vector Hashing
- Word2Vec integration

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Analytics & Scripting

– Bernd Wiswedel –

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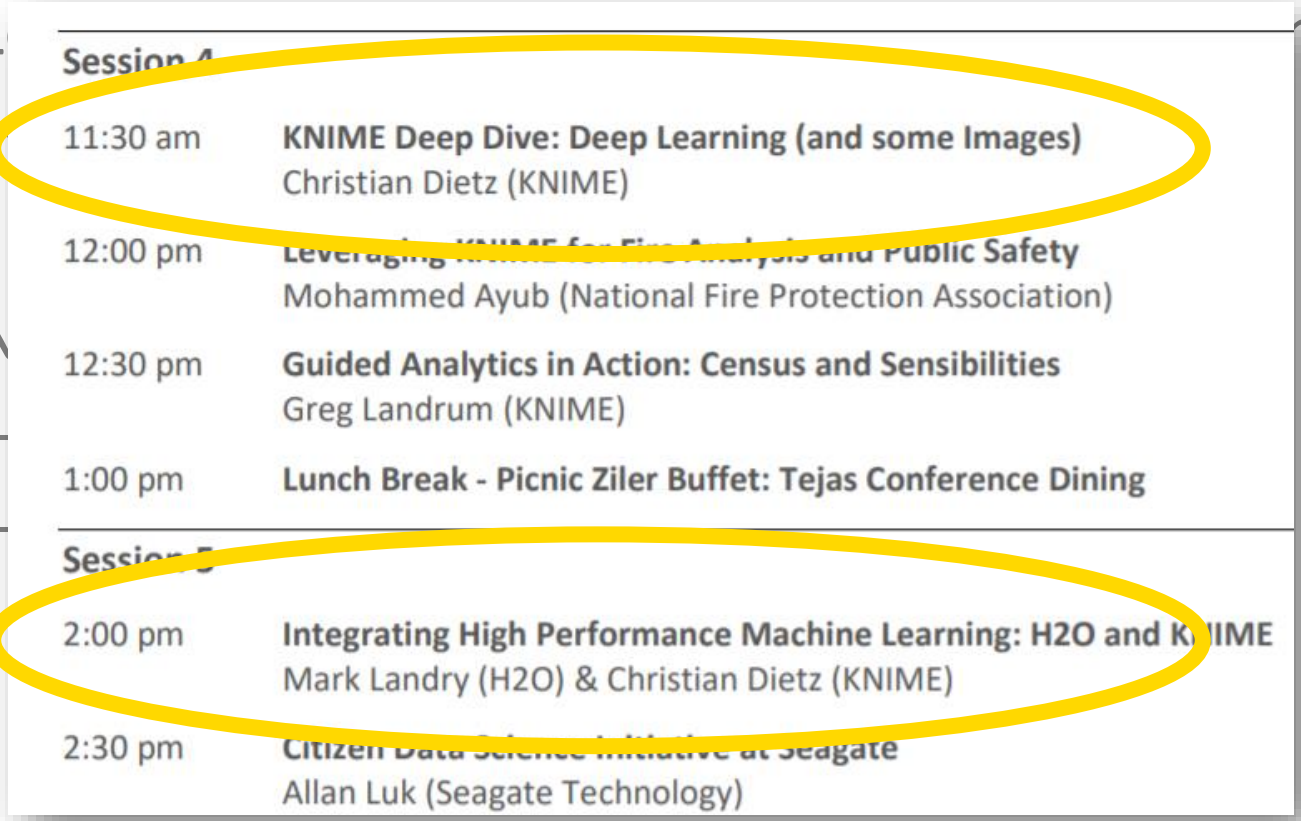
Analytics

- L… …new
  S…
- N…



Session 4	
11:30 am	**KNIME Deep Dive: Deep Learning (and some Images)** Christian Dietz (KNIME)
12:00 pm	**Leveraging KNIME for Fire Analysis and Public Safety** Mohammed Ayub (National Fire Protection Association)
12:30 pm	**Guided Analytics in Action: Census and Sensibilities** Greg Landrum (KNIME)
1:00 pm	**Lunch Break - Picnic Ziler Buffet: Tejas Conference Dining**
Session 5	
2:00 pm	**Integrating High Performance Machine Learning: H2O and KNIME** Mark Landry (H2O) & Christian Dietz (KNIME)
2:30 pm	**Citizen Data Science Initiative at Seagate** Allan Luk (Seagate Technology)

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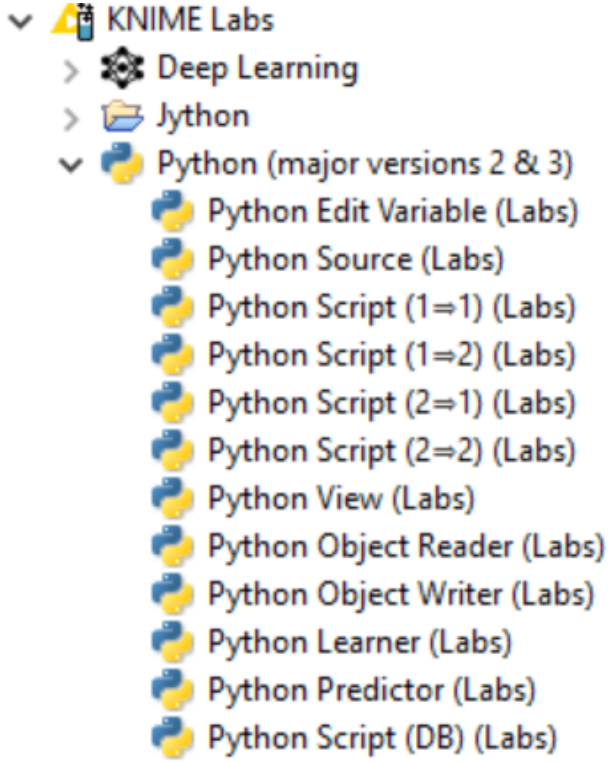
Scripting – Python (Labs)

- Supports Python 3
- Major Speedup
- Used for new DeepLearning Integration



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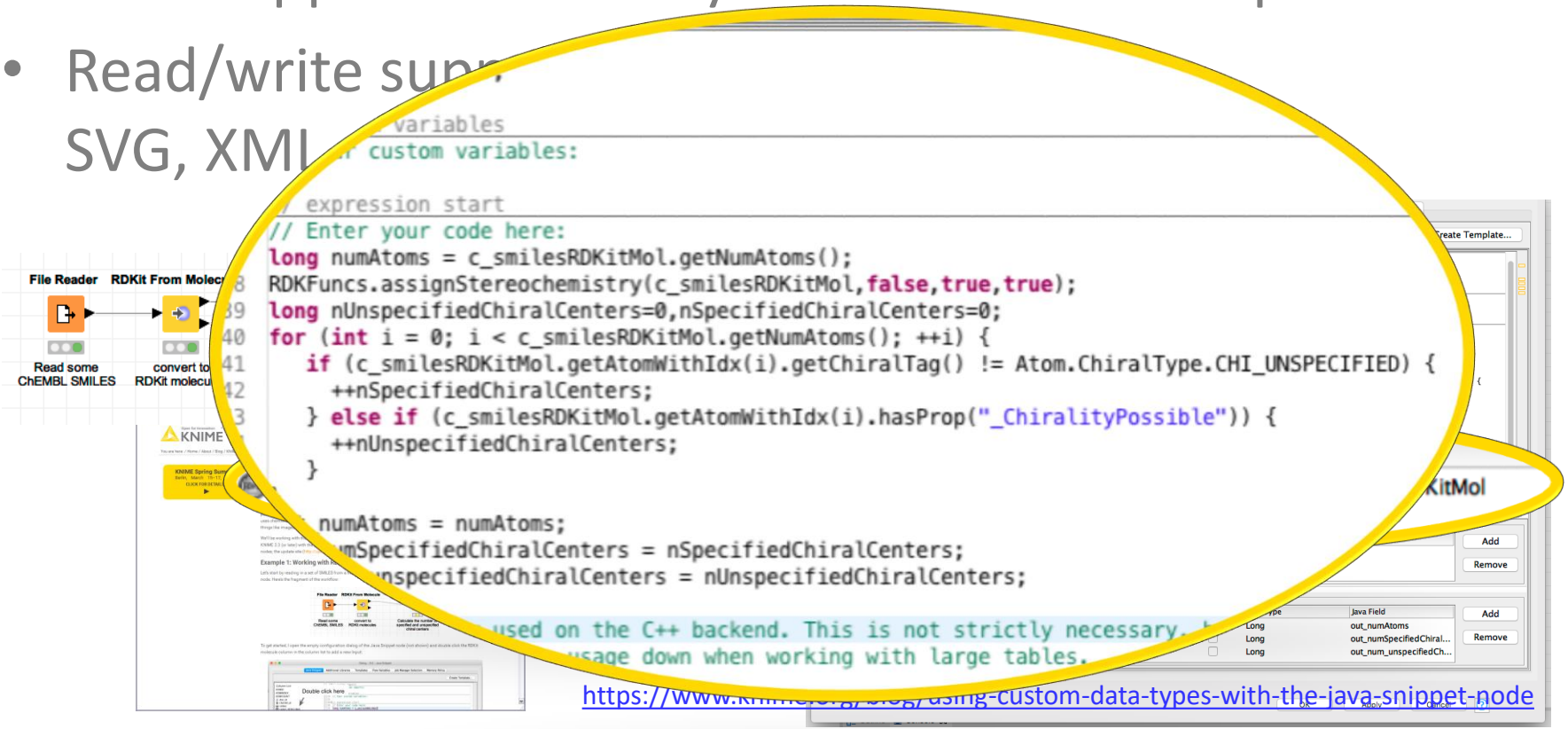
Type Extensions in Java Snippet

- Java Snippet: Swiss Army knife for data manipulation
- Read/write sup
  SVG, XMI



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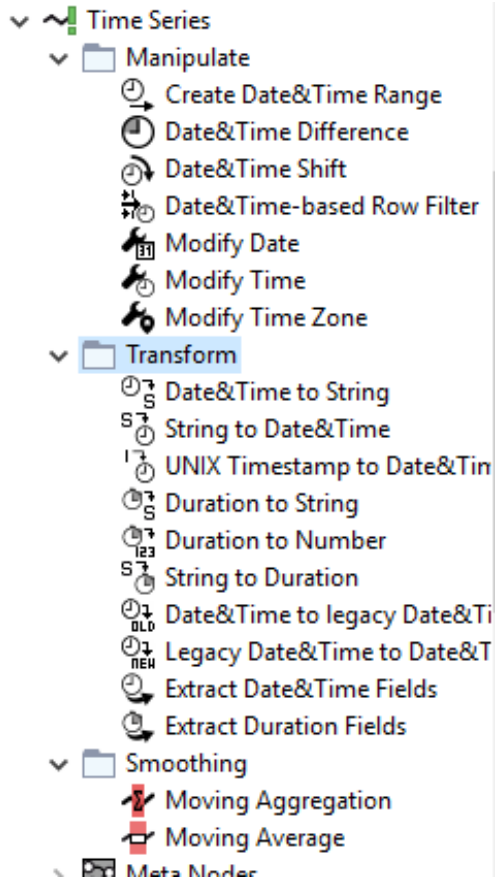
Date & Time Handling Nodes revised

- Richer data types
- Timezone support
- Duration “math”



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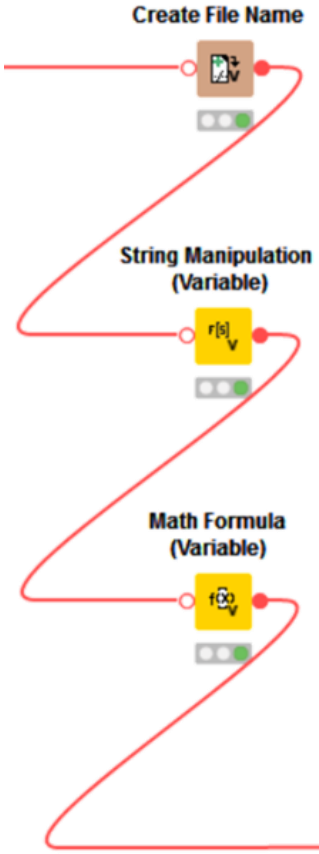
Three new helpers!!



- Generate a file path based on folder, file name and extension type
- Simple changes to string based variables
- ... and for number variables as well.

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... and now for something completely different

– Rosaria Silipo –

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E-Learning

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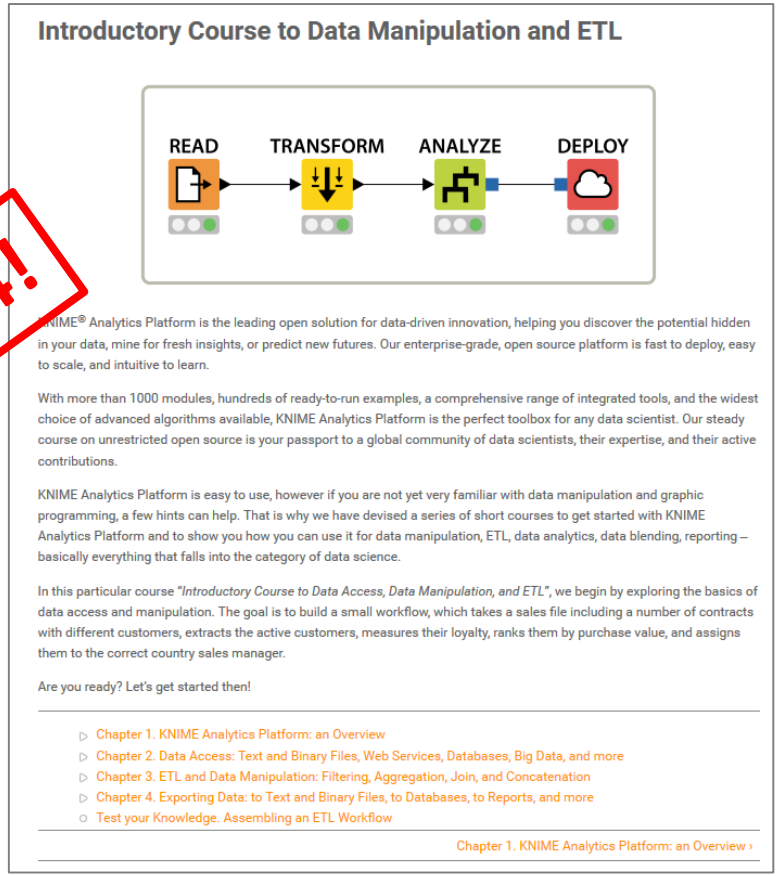
Free E-Learning Course: Web Page

- Hands-on e-learning course
- Data Access, ETL, **Analytics**, **Control Structures**, **Visualization**
- Around 50 small units
- … with exercises
- … and with solutions on the EXAMPLES server
- Final exercises to test your knowledge!

Check Section 1.4!

https://www.knime.org/knime-introductory-course



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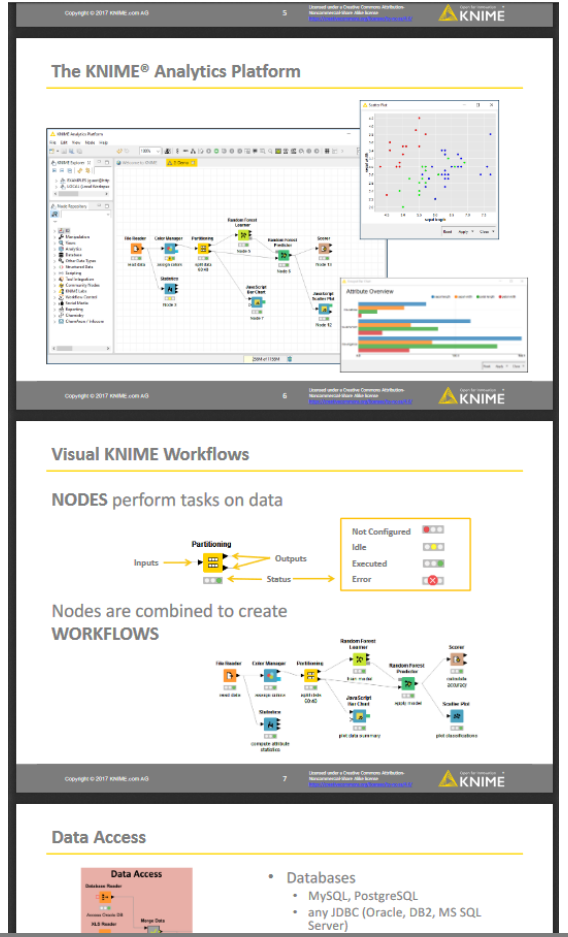
KNIME Course Slides – now available as pdf

KNIME Text Mining Training

This one day course is an intensive training focused on the processing and mining of textual data with KNIME using the Textprocessing extension. Learn how to read textual data in KNIME, enrich it semantically, preprocess, and transform it into numerical data, and finally cluster it, visualize it, or build predictive models. Text mining experience is not necessarily required for this training.

	KNIME Text Mining Training
Duration	1 day
Costs	€ 750 per user
Topics	1. Introduction to KNIME 2. Reading and Importing Textual Data 3. Text Preprocessing, Semantic Enrichment, and Transformation 4. Text Classification 5. Visualization 6. Text Clustering

PDF files for KNIME Text Mining Training material can be downloaded here.



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E-Books

At the **KNIME Press**:

https://www.knime.com/knimepress

Will They Blend? The Blog Post Collection edited by Rosaria Silipo

Beginner's Luck written by Rosaria Silipo

The KNIME Cookbook written by Rosaria Silipo and Michael P. Mazanetz

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On-line Learning

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On-line Courses

- On-Line Courses vs. On-Site Courses with Teacher
- First Experiment with Joe Porter's group in November/December
- Basic Course on KNIME Analytics Platform
- With Homework and Homework Correction

Send us an email: education@knime.com

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Webinars

In 2018 Series of Webinars:

- Data Science Cycle
- Introduction to KNIME Analytics Platform
- Data Access
- Database
- Logistic Regression
- Ensemble Models
- Text Processing
- …

Keep an eye on our web site www.knime.com

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Learning @Meetups

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Learnathons

Data Science Cycle: ETL, Model Training, Deployment

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KNIME Server
– Jon Fuller–

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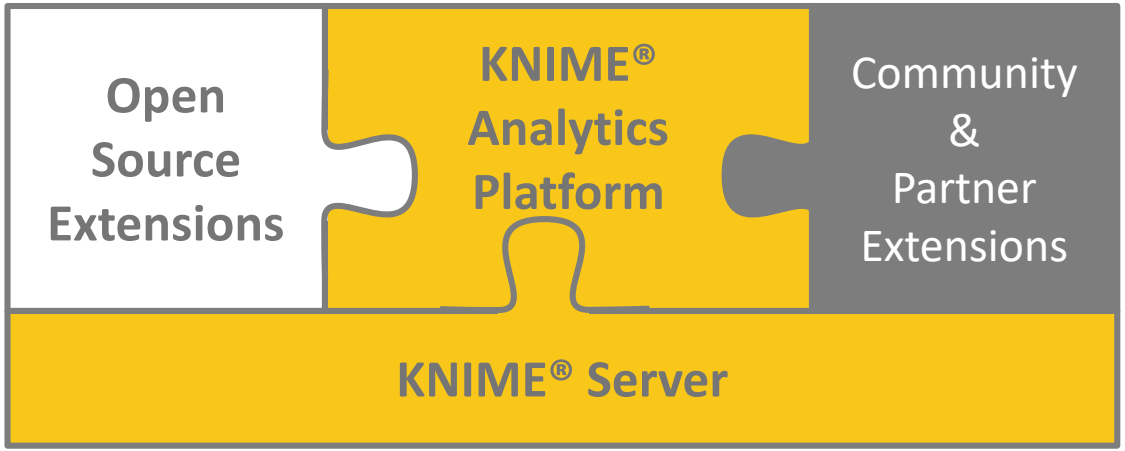
KNIME Software Pieces



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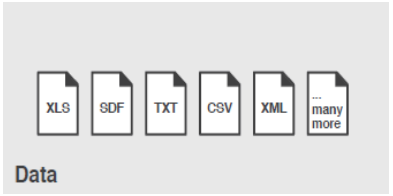
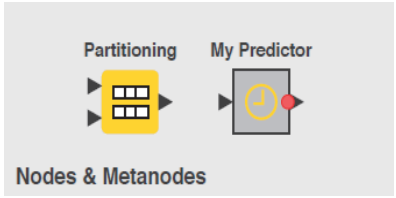
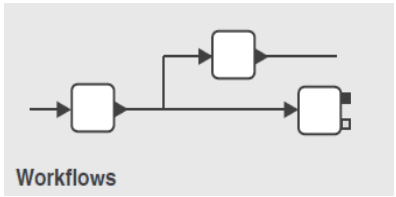
KNIME Server

Shared Repositories

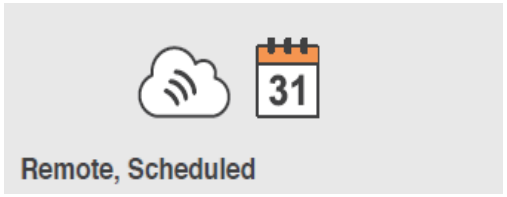






Access Management

Flexible Execution



Web Enablement

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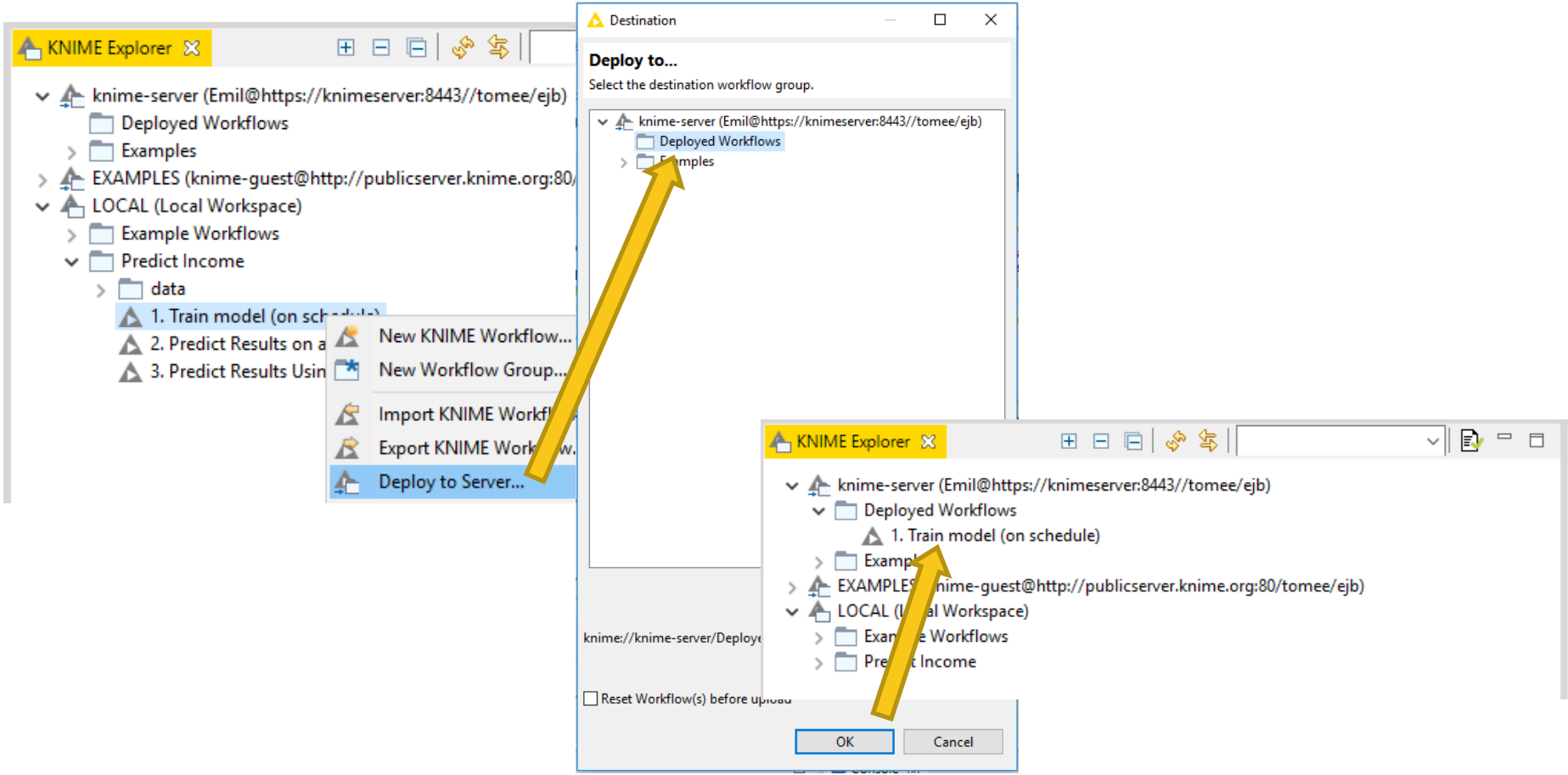
Deploy to Server



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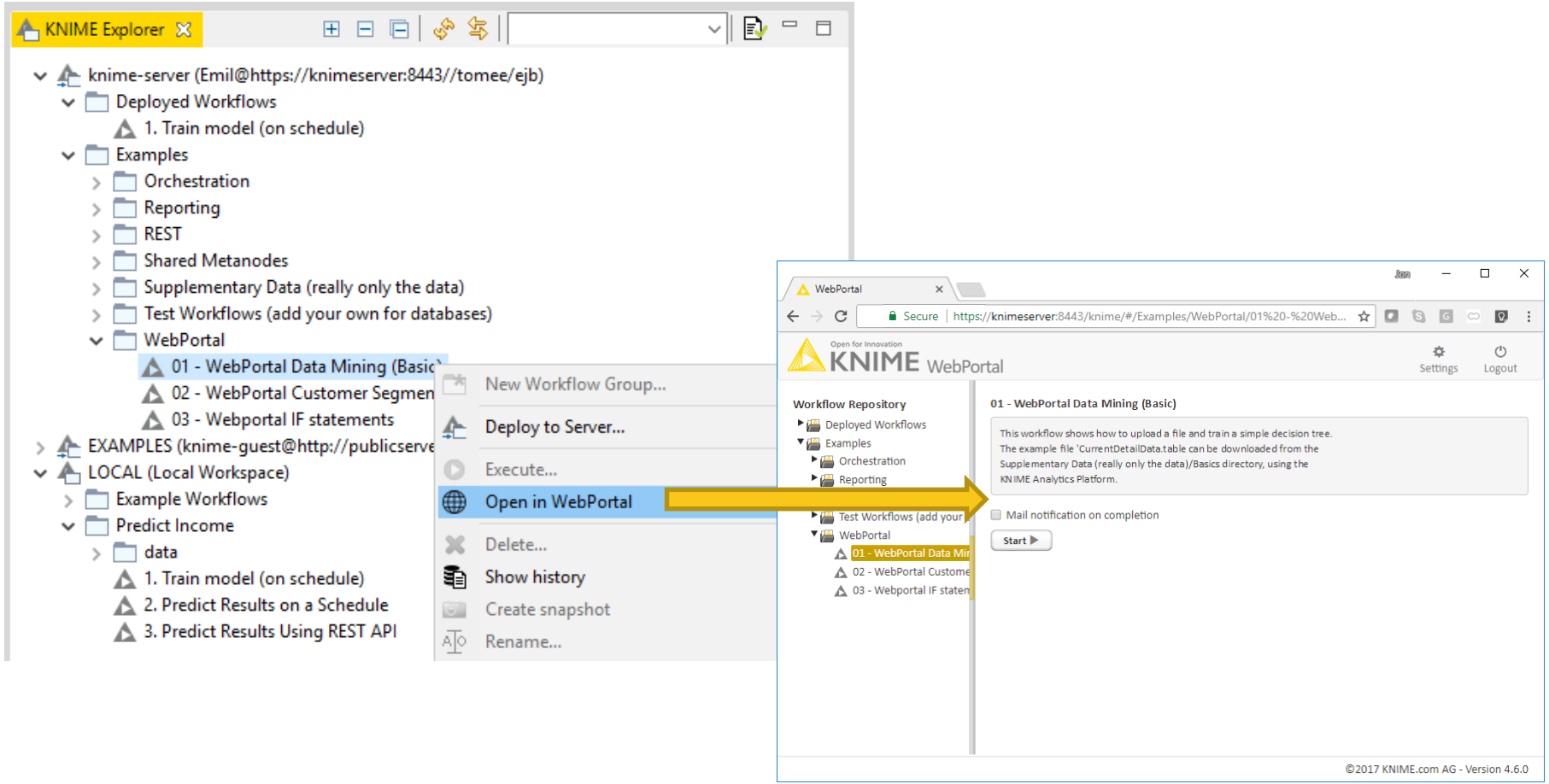
Open in WebPortal



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Authentication

- Authentication with LDAP/Active Directory.

- **Single Sign On (SSO) with Kerberos**

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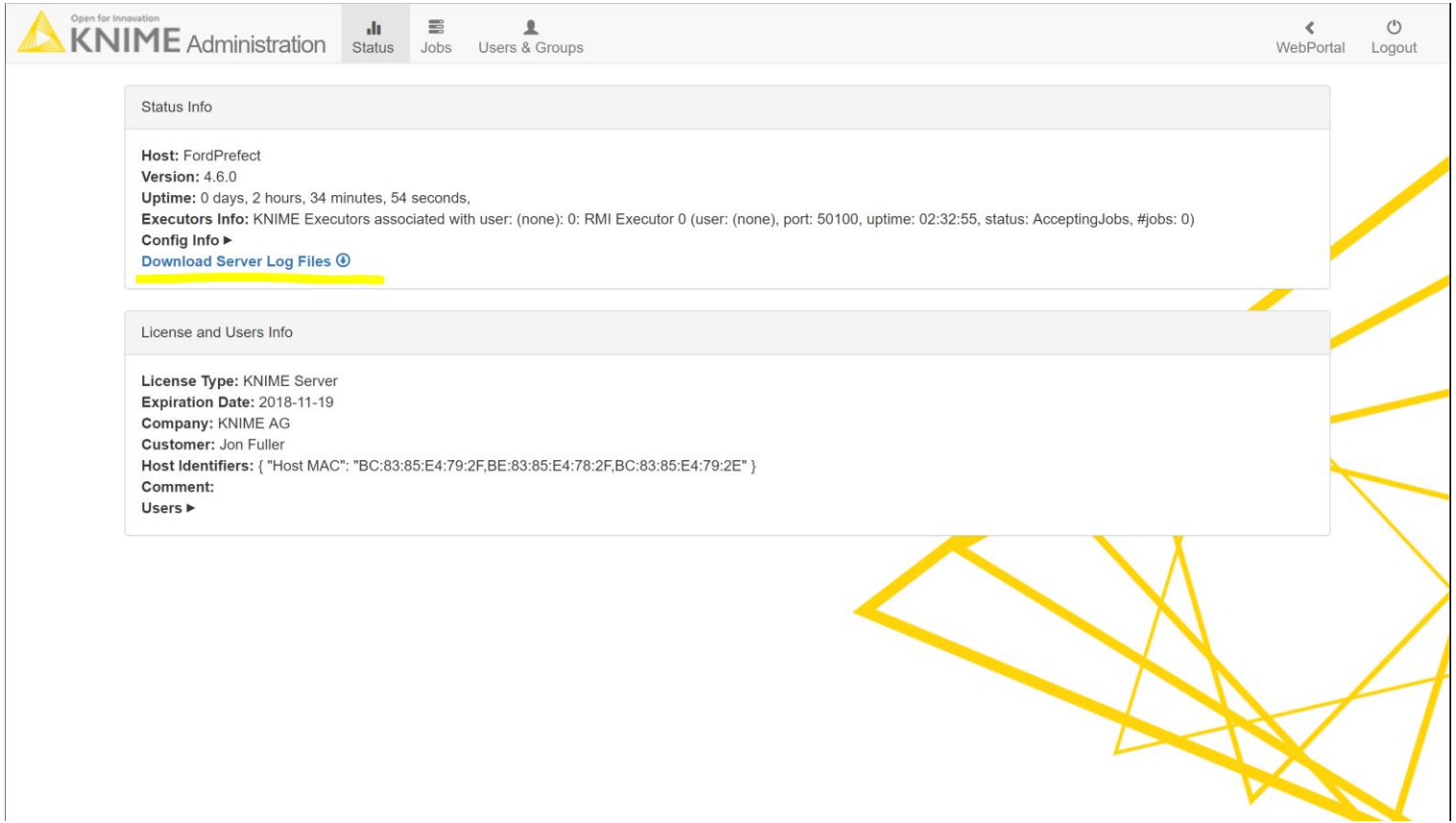
KNIME Server – Admin made easy



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KNIME in the Cloud

– Jon Fuller –

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Why cloud?

- Bring analytics to the data
- Work fast, work agile
- Pay for what you need
- New ways to work

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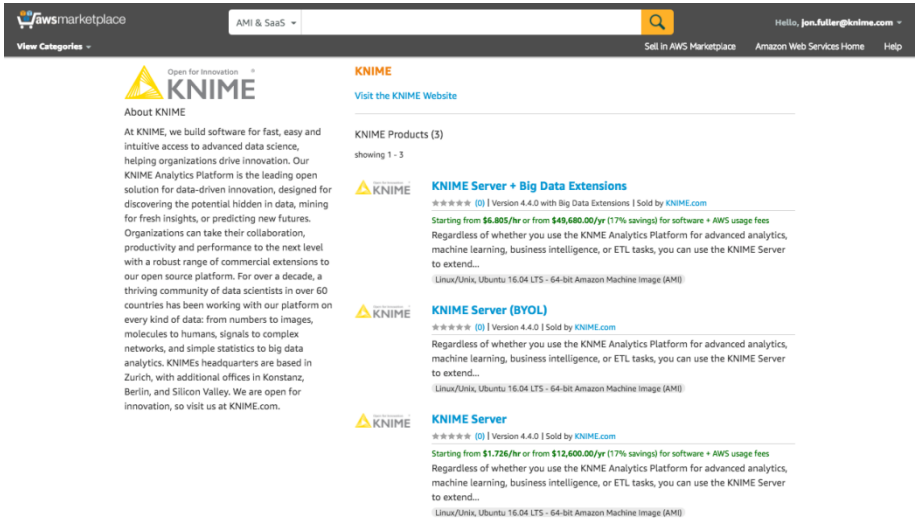
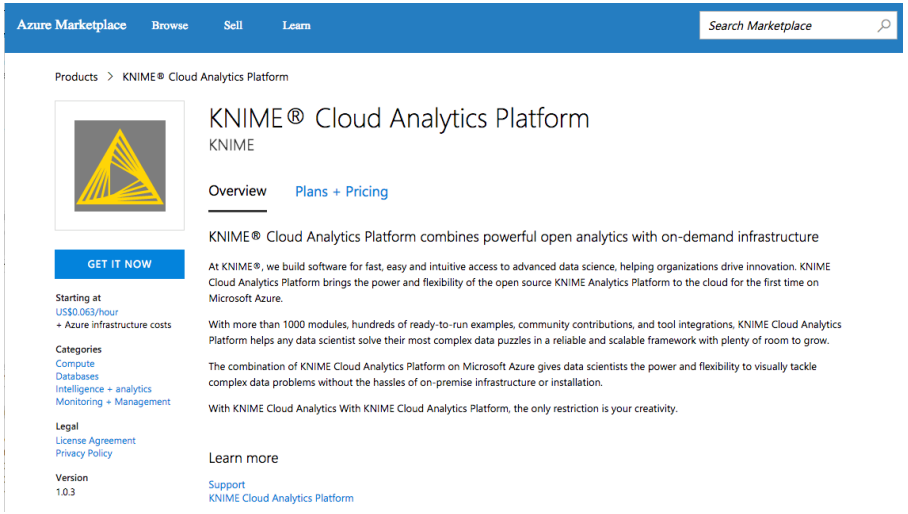
Cloud Platforms

- AWS and Azure
- The two leaders in Cloud (see Gartner 2016)





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KNIME Cloud Products (Marketplace)

- KNIME Cloud Analytics Platform

- KNIME Server (5-User)

- KNIME Server + Big Data Extensions (5-User)

- KNIME Server (+ Big Data Extensions) BYOL

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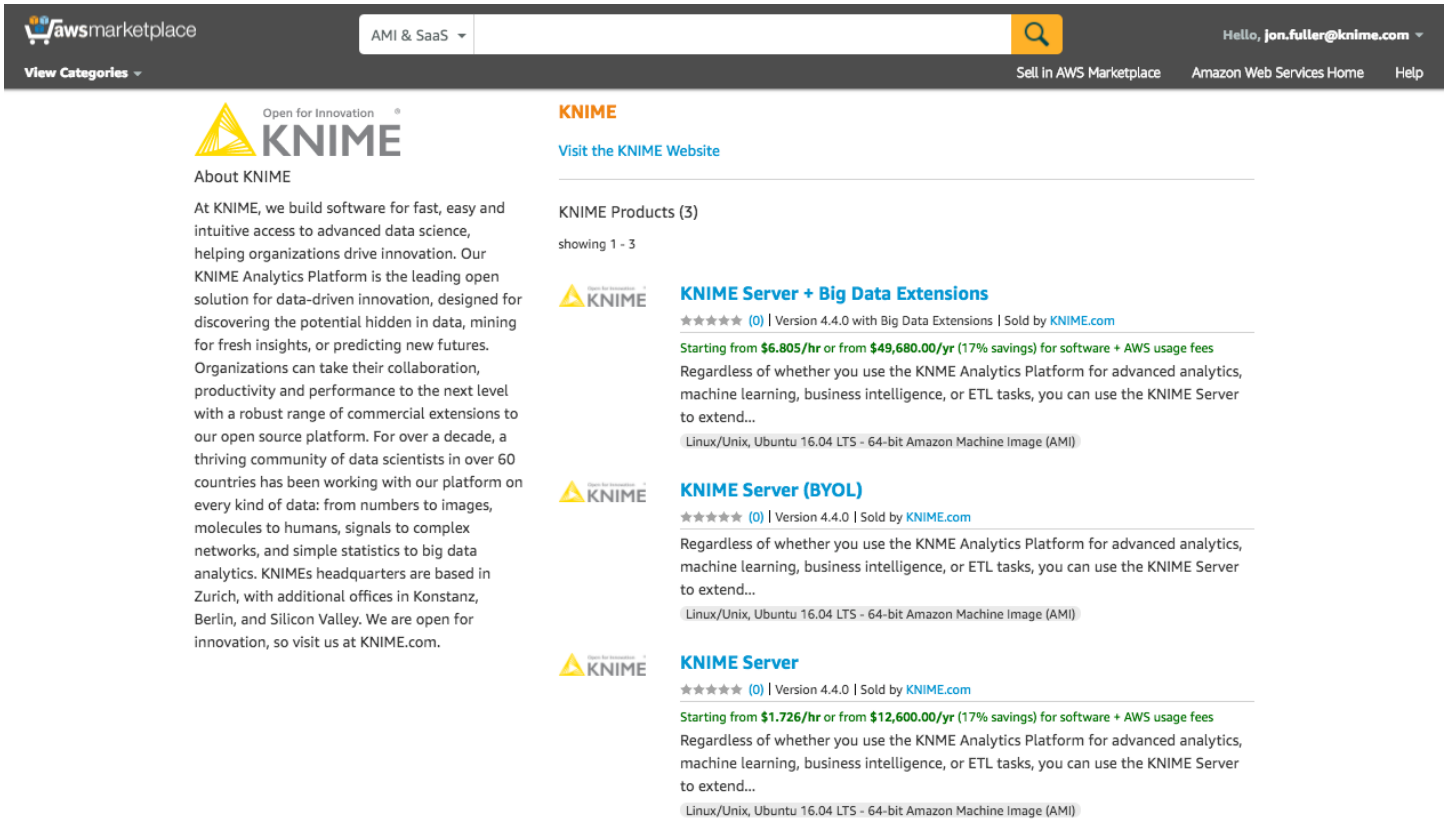
KNIME Server in the Cloud



amazon web services

Azure

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Cloud Connectors

- Enable working directly with data on the AWS or Azure clouds

- S3

Amazon S3

- Blob Storage

Microsoft Azure Blob storage

- SQL Server

Azure SQL DB

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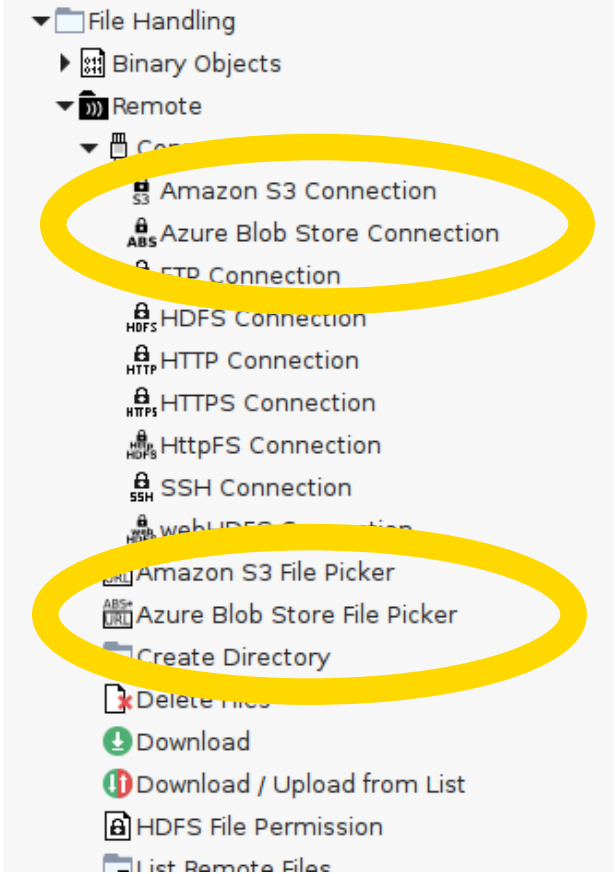
KNIME Cloud Connectors

- Amazon S3/Azure Blob Storage: Save (large) unstructured data in the cloud
- Connect through KNIME's file handling nodes
  - List
  - Upload/Download
  - Delete
  - URL access



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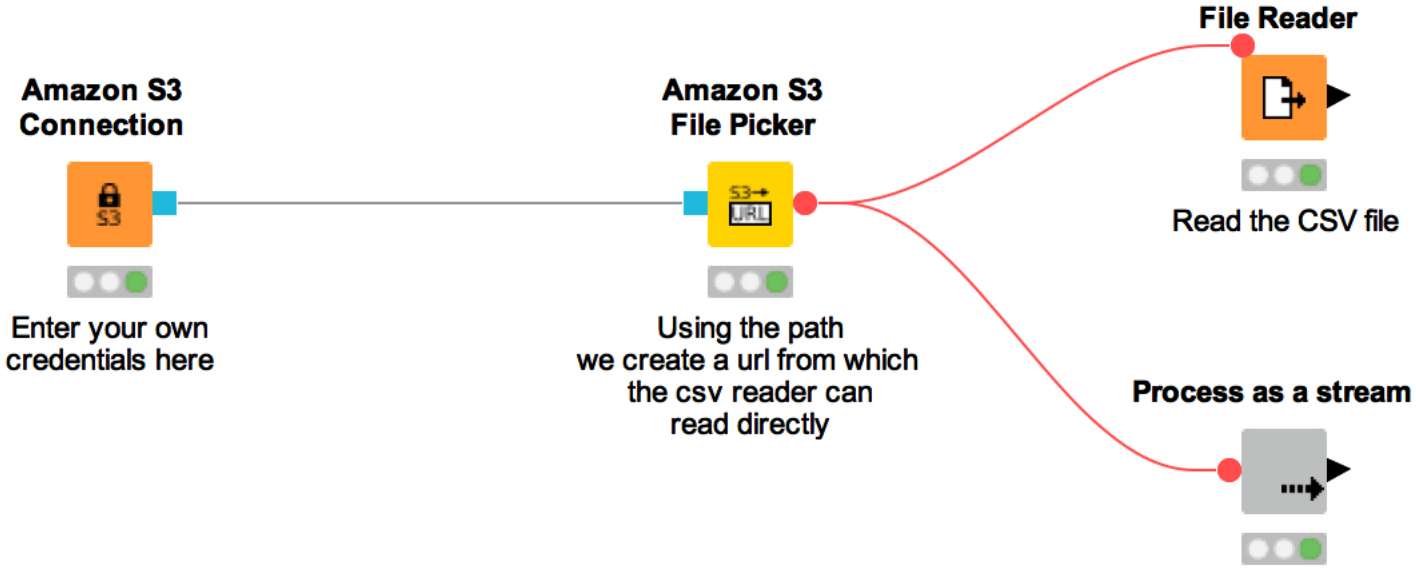
Cloud Connectors Workflow Example



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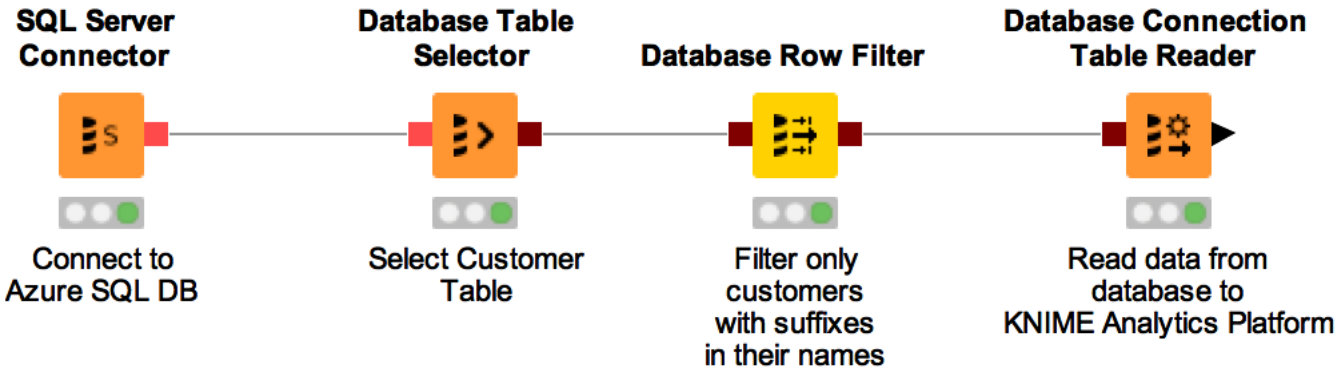
Azure SQL Server Connector



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More connectors: Amazon Redshift

- Fully managed data warehouse
- SQL interface
- Distributed and parallelized queries

- Amazon Redshift connector integrates seamlessly with existing KNIME Database connectors

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Amazon Athena

- Serverless, interactive query service
- SQL interface

- Amazon Athena integrates seamlessly with existing KNIME Database connectors

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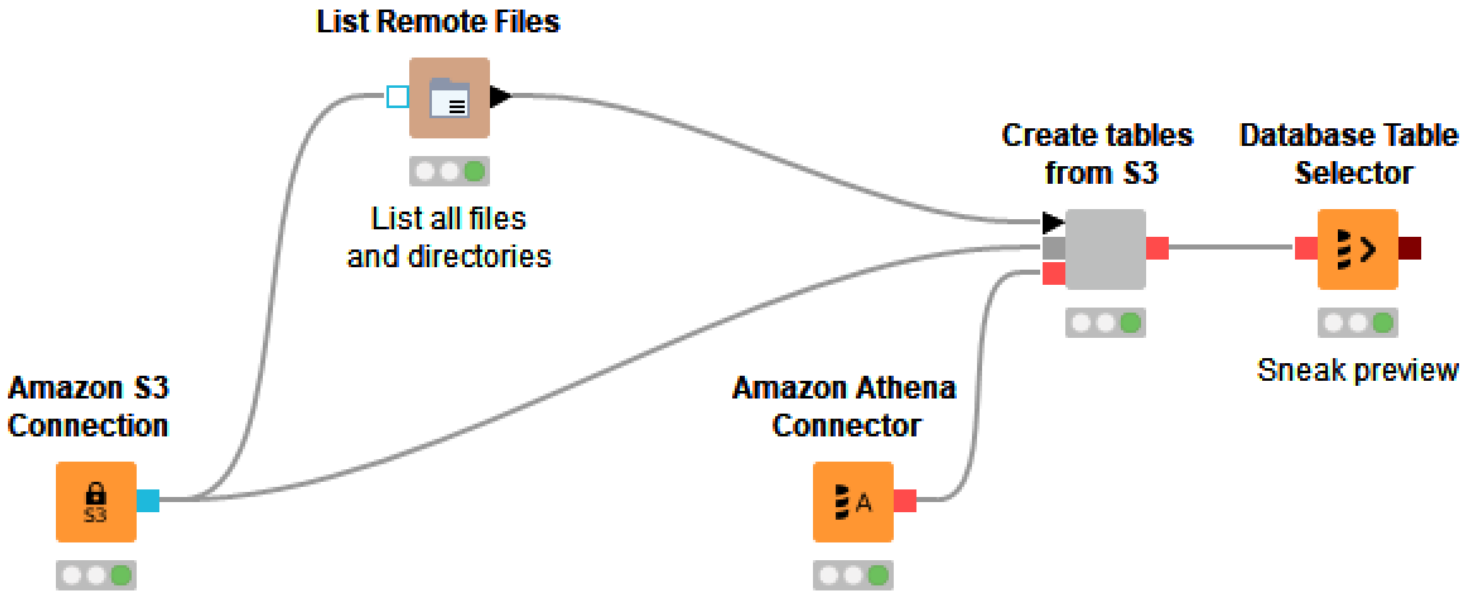
Amazon Athena



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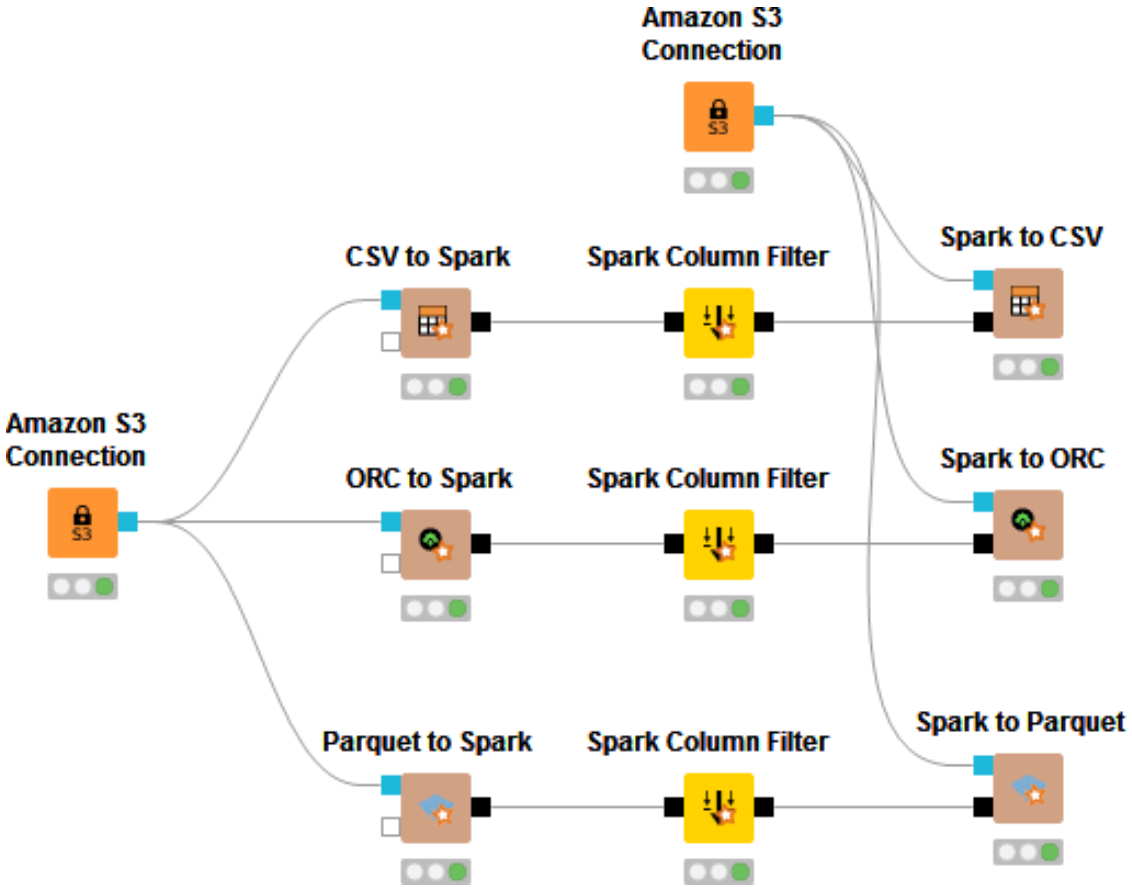
S3/Blob Storage support for Spark Data Source Nodes



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Cloud Resources

- Data storage
  - MS Azure Blob Storage, Amazon S3
- Databases
  - Azure SQL Server, Amazon RDS (MySQL, PostgreSQL etc)
- Data warehouse
  - Amazon Redshift, Amazon Athena, Azure SQL-DW
- Hadoop/Spark
  - Azure HDInsight, Amazon EMR

Azure Blob Store


Amazon S3

Azure SQL Server


Amazon Redshift


Amazon Athena


Azure HDInsight


Amazon EMR

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KNIME in the Cloud: Summary

- KNIME Analytics Platform available on Azure Marketplace
- KNIME Server available on Azure and AWS marketplaces
- Cloud connectors for S3, Blob Store, Azure SQL server

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Guided Analytics

– Greg Landrum –

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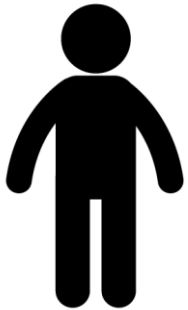
Reminder of what we're talking about here

Someone who needs data / analytics



KNIME expert

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What often happens

Someone who needs data / analytics

KNIME expert

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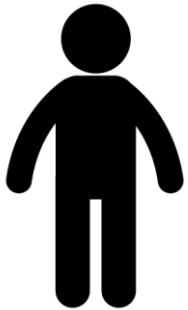
What we'd like to provide

Someone who needs data / analytics



Guided Analytics workflows

KNIME expert

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Guided Analytics workflows

- Enable people who are not KNIME experts to work with/explore/analyze/learn from data
- Typically deployed via KNIME WebPortal
- Heavy use of interactive JavaScript views for the user experience

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- Heavy use of interactive JavaScript views for the user experience

- Bonus for everyone: the JavaScript views that we're building for Guided Analytics are also really useful in "normal" KNIME workflows.

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So what's new?

- JavaScript Views:
  - Parallel coordinates plot
  - Table view
  - Decision tree view
  - Network view
  - Stacked area chart
  - Sunburst chart
- Interactivity: Selection and filtering
  - Range filter widgets
  - Linked views
  - Accessing views in wrapped metanodes, composite view
  - Layout editor

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But let’s start with a demo

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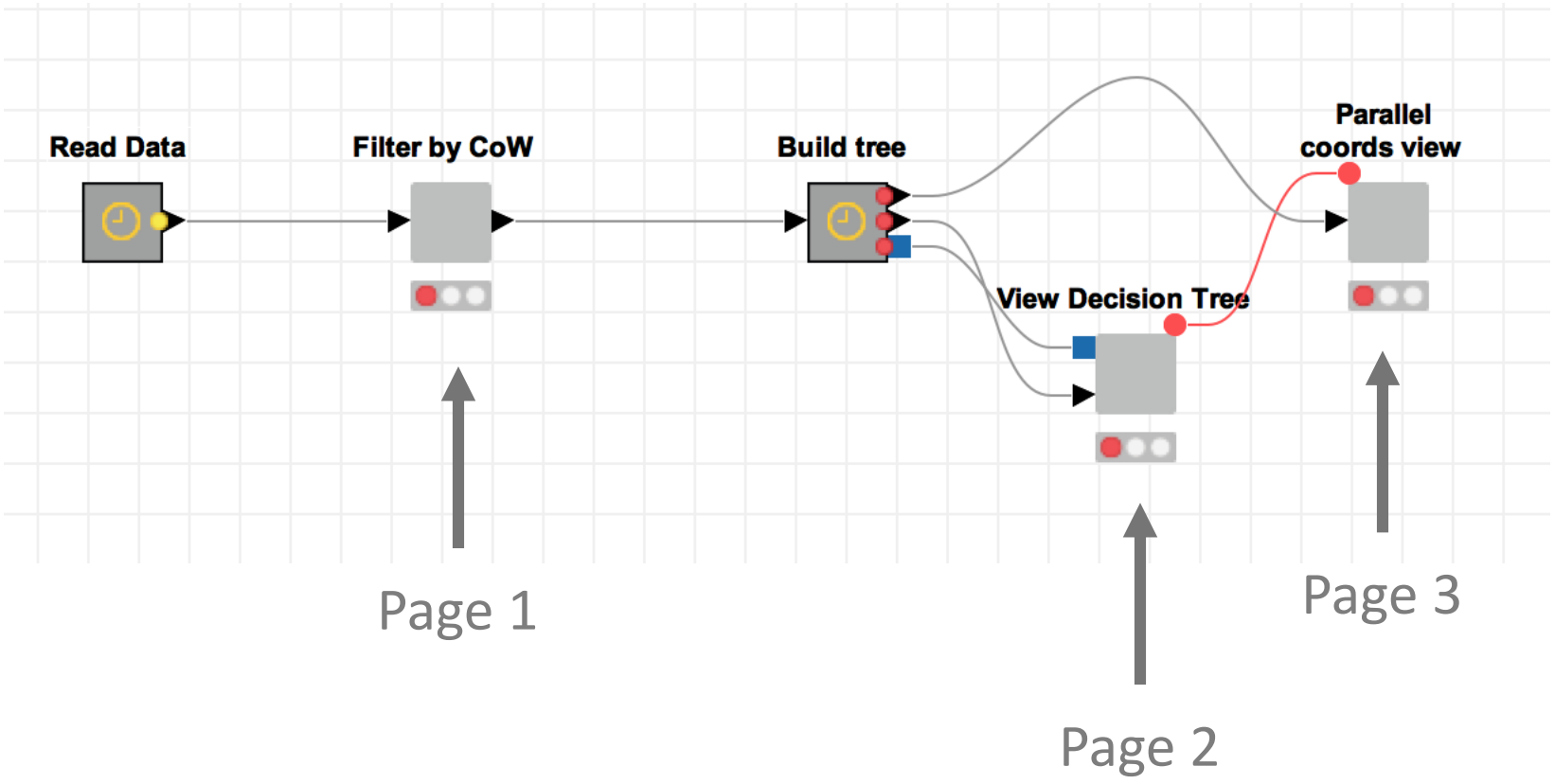
The workflow behind the demo:



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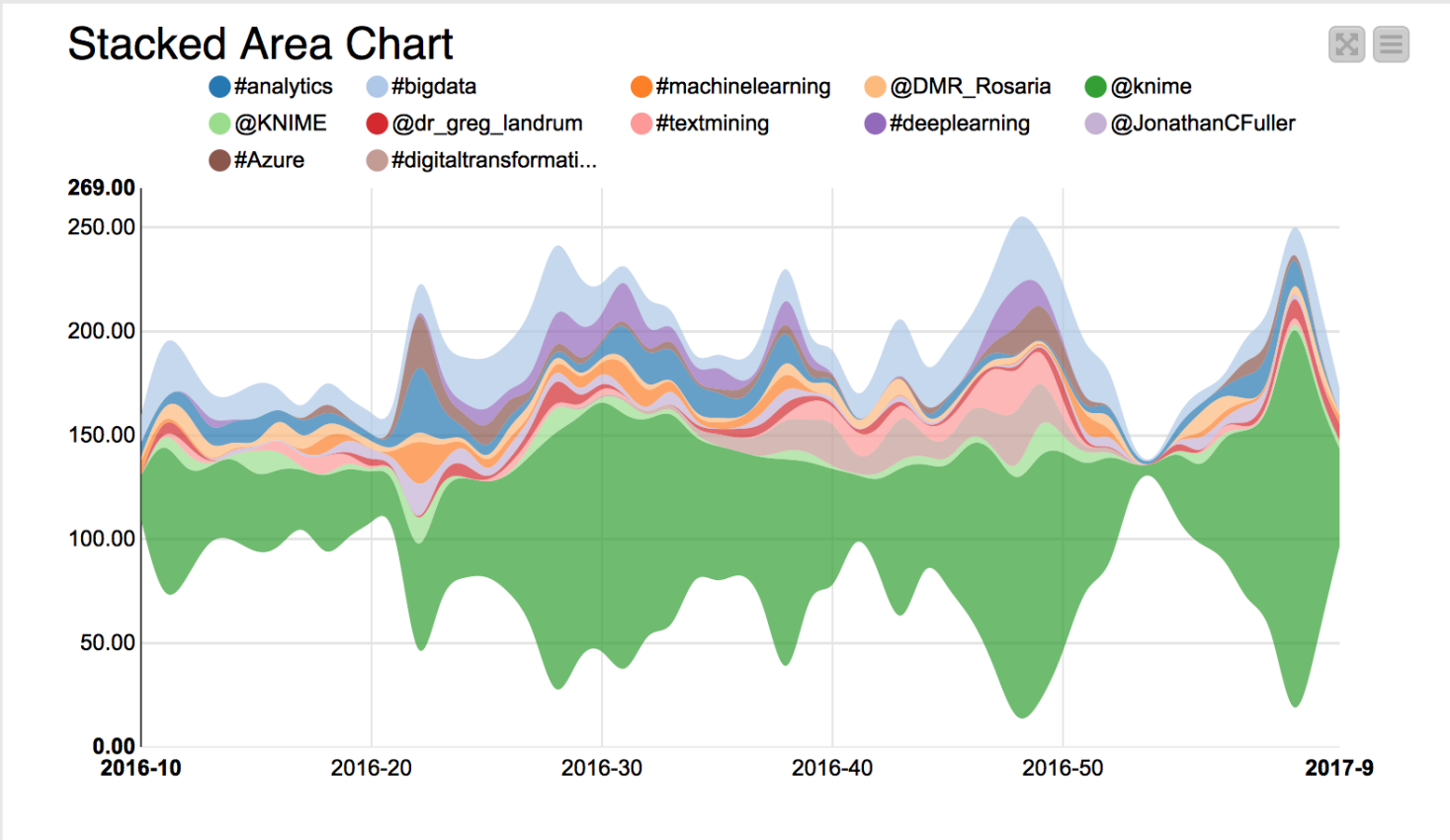
JavaScript Stacked Area Chart



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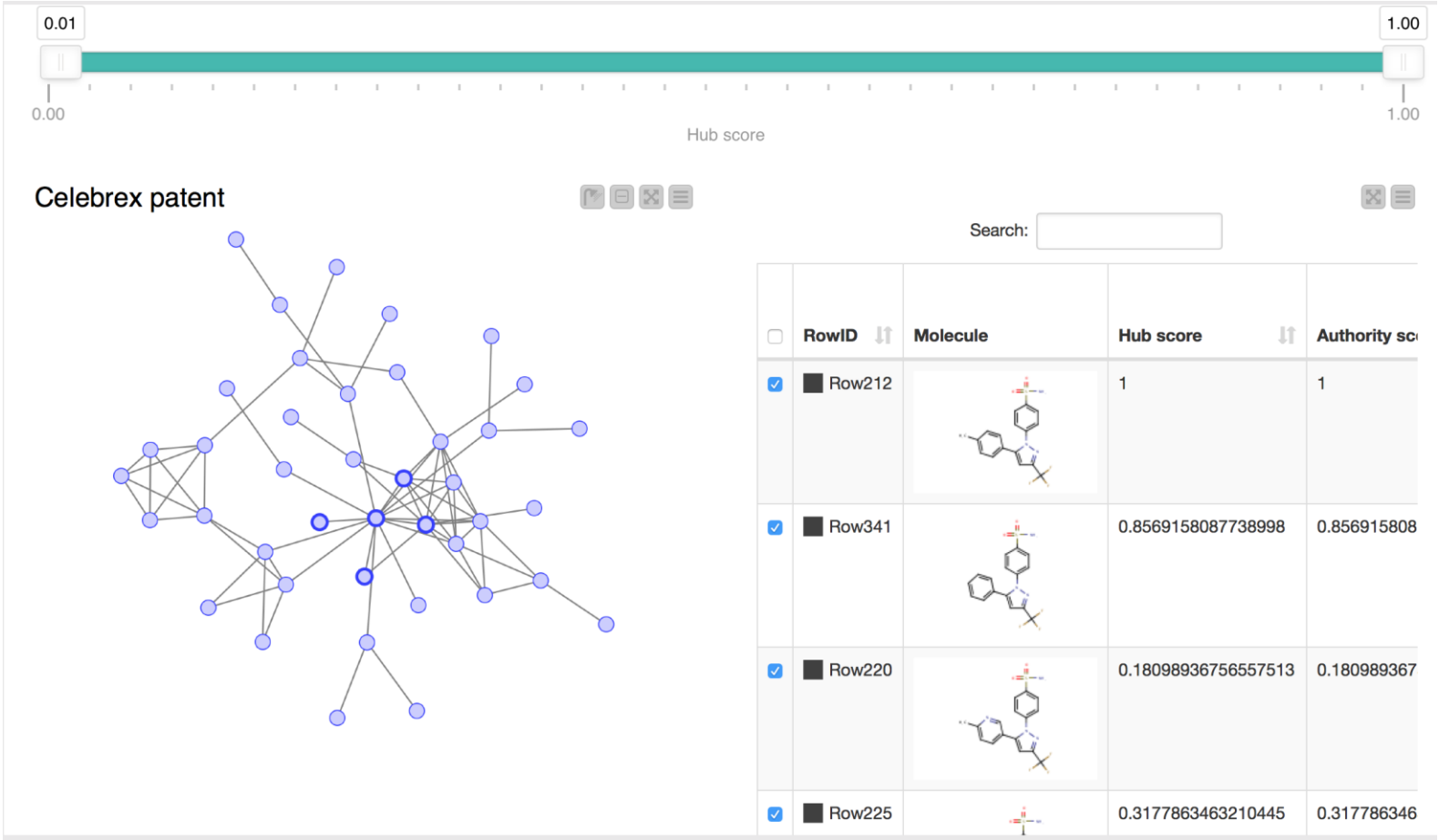
JavaScript Network Visualization



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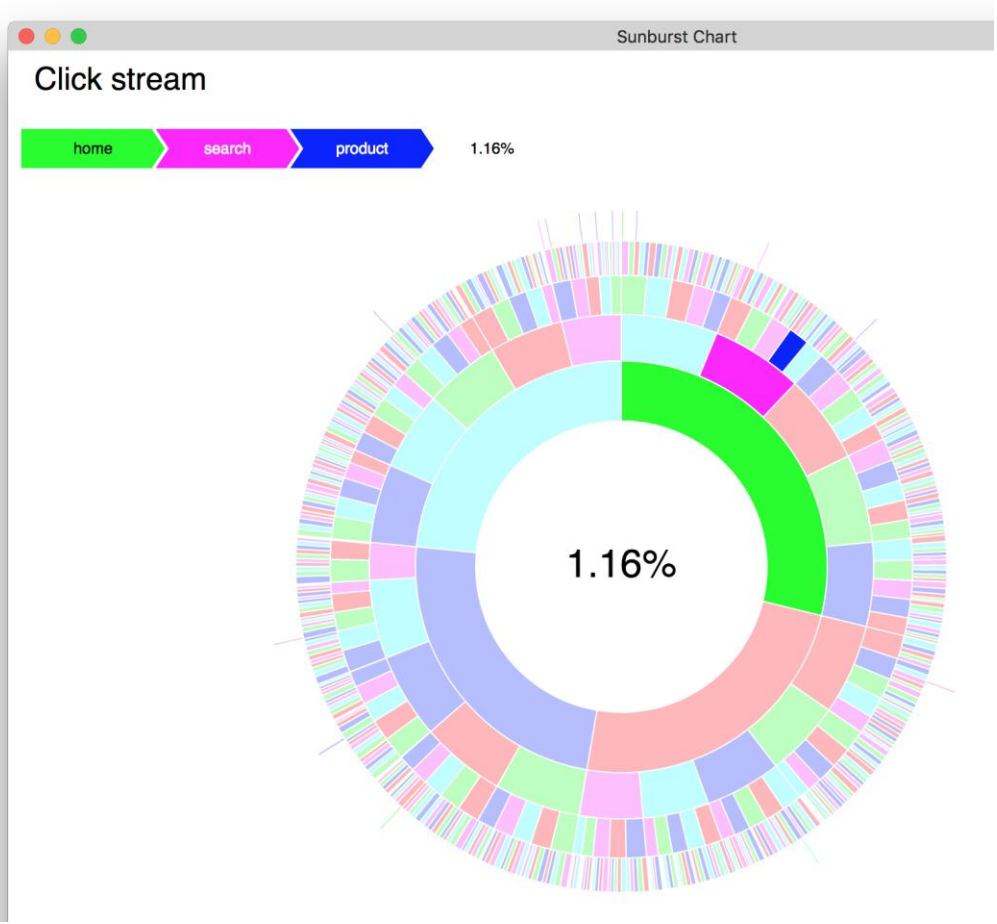
JavaScript Sunburst Chart



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(Short) Coffee Break
- all of us -

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