Bringing Data Manipulation from KNIME into TIBCO Spotfire

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Lionel Colliandre, Maxime Guitet
About Discngine

Software for Life Sciences Research Informatics

- Combine & integrate key research IT components to provide Scientific IT solutions

Customers: Sanofi, l’Oréal, Galderma, AstraZeneca, AbbVie, Merck & Co., GSK, Novartis, Roche, Pierre Fabre, Eurofins, Ipsen, Servier, Biogen, DuPont-FMC, Bayer, Syngenta, Galapagos…

Founded in 2004 - Based in Paris, France - 48 employees
More Information: www.discngine.com

KNIME Partner
Agenda

1. Introduction
2. Discngine Connector
   - KNIME Data functions
   - Client Automation SDK
   - Mashup with the KNIME webportal
   - S.W.A.K
   - Automation Tasks
3. Conclusions
INTRODUCTION

Objectives
TIBCO Spotfire

Visual analytics solution
- Optimized for visualization
  > Millions of records
- Interactive dashboards
- Real time analysis

Desktop and Web Player
For non-developers
Objective

Data Manipulation in KNIME, visualization in TIBCO Spotfire
Objective

Visual analytics + Data handling

1. Any Spotfire Client
   Analyst, Consumer, Business Author, Automation

2. Any Data origin
   Chemistry, Biology, Finance, Insurance, Informatics, ...

3. Data: Binary objects, molecules, images, sequences...
API: Events, Visualizations, Job Control...

Bidirectional
DISCMGINE CONNECTOR

Components in the Connector suite
knime automation tasks

server-side spotfire authoring

knime data functions

bi-directional data exchange

data flows integration

client automation sdk

mashup webportal / spotfire

s.w.a.k.

mashup applications, apps integration & guides

dynamic spotfire authoring

scheduled or on-demand

document “cooking”

server-side spotfire authoring
Objective

- Easy to use bi-directional data integration between a Spotfire document and KNIME workflows

What are TIBCO Spotfire Data Functions?
A way to integrate external software for data retrieval and processing
Used by TIBCO to integrate with R, SAS, Matlab, S+
Can be extended with the public API
Use standardized integration mechanisms and interfaces supported by TIBCO
Use cases

- Retrieve data from the execution of a workflow without developing an interface
- Send multiple Spotfire records to KNIME for processing
  - E.g. an entire data table, marked rows, selected columns...
- Interact with KNIME workflows based on events
  - Forms in text areas, changed document property, changed marked records
  - Write back to a database/filesystem
- Deliver custom data tables to Web Player users
A Spotfire extension based on the Data Function API

- Data only integration
  - SBDF in/out
  - Parameters in/out
  - Works with images, structures, sequences...

- Runs in all clients
  - Analyst
  - Web Player Consumer
  - Web Player Business Author
  - Automation

- No programming skills required!
Data Functions: KNIME workflows
KNIME Data Functions

Process
Objective

- Allow developers to programmatically interact with the Spotfire API through JavaScript in both Analyst and Web Player clients
- Leverage modern JavaScript Libraries (Angular, React, D3.js, Vue.js...)
- Works with KNIME and any other web capable technology (J2EE, Node.js, Python, php, Apex...)
- Used to build advanced mashup applications
  - Web application + Spotfire documents
spotfireDocument
  .addDataTable(sbdfFileURL)
  .addPage("Comparison Of Mean Ranges")
  .addScatterPlot(jsonConfig);
Client Automation SDK

```javascript
spotfireDocument
   .addDataTable(sbdfFileURL)
   .addPage("Comparison Of Mean Ranges")
   .addScatterPlot(jsonConfig);
```
Mashup KNIME WebPortal + TIBCO Spotfire: KNIME workflows
Mashup KNIME WebPortal + TIBCO Spotfire

View the demo at https://www.youtube.com/watch?v=j3i_AjW4OHY
Spotfire Web Application for KNIME

- A low-code framework to streamline KNIME workflow integration
- Based on Client Automation SDK
- Low code
  > Declare the KNIME workflows
  > Map the parameters to a web form (Wizard)
  > Define actions on the Spotfire document based on protocol output files

- Developed with React.js
S.W.A.K.: Software Architecture

Spotfire Web Application for KNIME Server

- HTML+JS
- React.js
- Discngine Client Automation SDK
- Discngine Client Automation Extension
- Spotfire Web Player
- Web (http)
- Data (http)
- KNIME Server
S.W.A.K.: KNIME workflows
View the demo at https://www.youtube.com/watch?v=_HGIUMItuEM
Objective

- Generate a Spotfire Document *server-side* from the execution of a KNIME workflow
Use case

- Spotfire Document generated server-side with dynamic content
KNIME Automation Tasks

Automation Custom Tasks

- **KNIME Login**
  > Allow execution of a KNIME Data Function
- **IronPython Executor**
  > Do anything you want...

KNIME Components

- **Spotfire Automation Tasks Writers**
  > Open & Save DXP, add pages, add charts, run script...
- **Spotfire Automation Script Runner**
  > Execute the Automation task from a KNIME workflow
  > Uses Spotfire WebService Rest API
Become an early adopter!

maxime.guitet@discngine.com

lionel.colliandre@discngine.com