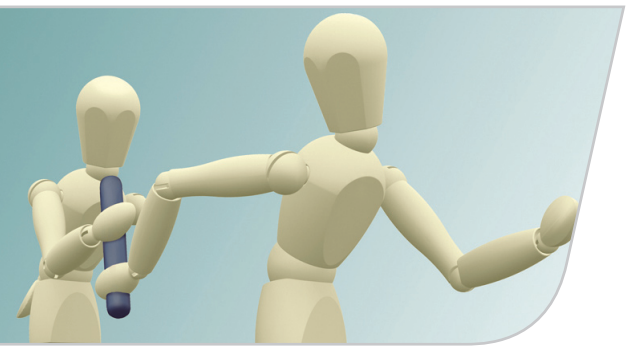
Medicel *Integrator*

Workflow Application Data Sheet



Medicel Integrator provides a series of data management applications to handle diverse processes in turning data into information and knowledge. The Workflow application supports the design and execution of computational analysis tasks.

Overview

The Workflow application is a graphical user interface for automated data analysis. It provides a wide range of powerful tools for the field of bioinformatics. It offers capabilities applicable in transcriptomics, proteomics, metabolomics, as well as for modelling and simulation of biological systems and pathway analysis.

Key Features and Benefits

- *Versatile, extensible tool package*
- *Visualization capabilities for different data types*
- *High-throughput batch data analysis*
- *Data analysis capacity independent of resources of the local computer*
- *Handles heterogeneous data*
- *Encapsulates hierarchical modules*
- *Highly-automated*
- *Shareable*
- *Reusable*

Versatile and extensible tool execution framework

The tool selection encompasses currently over 200 items developed for diverse data transformation operations, such as calculation, classification, combining, conversion, export, import, matching, modelling and simulation. In addition to the provided tools, user-developed or 3rd party tools can be incorporated to the system.

The tools can be used both alone and in series. In the latter case, data processing workflows can be graphically constructed by chaining tools and executing them in a defined order. Once workflows are assembled and specified, they can be reused with new data and shared among colleagues.

Visualization by data type

The Workflow application provides various viewers and editors for visualizing and modifying intermediate and final results of analysis processes. Visualizable data include text, number, image, mass spectra, protein 2d and 3d structure. The visualizations are associated with data types, and so Workflow always offers suitable viewers. External applications can easily be harnessed as additional viewers.

Automated high-throughput batch data analysis

In systems biology, researchers are continuously confronted with a prodigious amount of component level data, which has to be refined into system level understanding of the role of the discovered biological components in a relevant context. The Workflow application provides capabilities for managing data produced by high-throughput measurement techniques. Data can be imported to the system and automatically analyzed by connected tools. No manual intervention is needed, but the control of the process can be regained whenever required. The progress of the analysis is shown throughout its execution.

The size of data or the complexity of analysis tasks are not limited by the resources of local computers as all analyses are executed on dedicated tool servers. Once the execution is completed, the results are instantly available in the application.

Dealing with heterogeneous data

Analytical instruments from different vendors generate disparate data formats. Researchers have to transform and combine data from discrete sources before being able to do the analysis work.

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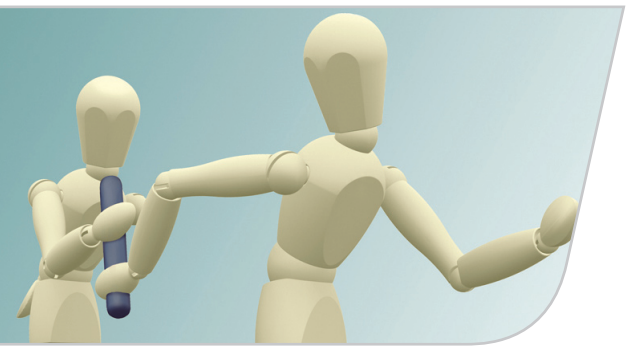
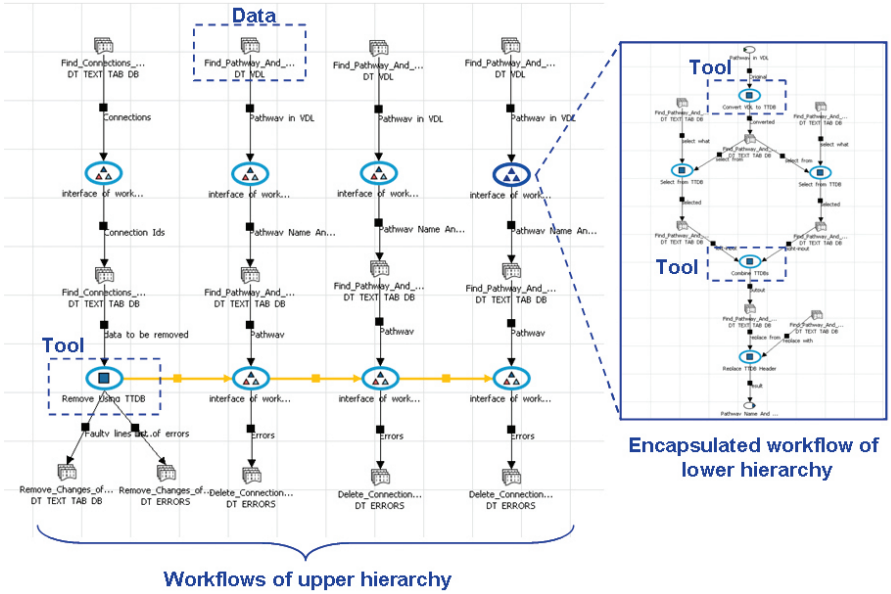


Required Computer Configuration

Medicel Integration Framework
Java Runtime Environment (JRE)
2 GB RAM
web browser

In Workflow, data converting and combining operations can be succesively connected to form an unbroken data processing chain. No time-consuming, laborious manual modifications are needed. The Workflow application offers data conversion tools for adapting measurement data to the other integrated data formats.



Example workflows. The upper hierarchy level consists of four distinct workflows. Each workflow contains two workflows of the lower hierarchy, except for the first workflow which contains one encapsulated workflow and one tool. One workflow (dark blue) is opened and is shown on the right.

Hierarchical encapsulation

In Workflow, large, complex analysis processes can be divided into discrete modules that can be organized hierarchically. The application allows the user to build tasks starting from an upper level and moving gradually to more detailed levels. This unique feature helps to gain a comprehensive conception of tasks and to manage dimensionality of data, such as interconnectedness, time and spatial dimensions.

Integration with other applications

The Workflow application can be used either as a stand-alone software or as part of the Medicel Integrator application product group. It is, in fact, an indispensable member in this entity as it is the operational unit, which performs all computational tasks. When working with Medicel Integrator, a logical work order would, for example, be that the research project is first planned and managed with the Experiment application*. The Workflow application is then connected to Experiment for subsequent data analysis. All the results are automatically stored to Medicel Integrator Data Warehouse, from which they are retrieved to be visualized, further analyzed and interpreted in other applications.

* Please consult the data sheet of the Experiment application for more information.

Medicel
Keilaranta 12
FIN-02150 Espoo
Finland
phone +358 9 386 7092
fax +358 9 386 7093
info@medicel.com
www.medicel.com