Motivation

It is a rather complicated task to rapidly develop custom visualizations especially for people without any significant programming experience.

The idea of this software (OpenInsightExplorer) is to combine the powers of visual programming[1] and dataflow programming[2]. Modules work as independent black boxes and implement the processing stages of the visualization pipeline.

By connecting a set of compatible modules in the OpenInsightExplorer it is possible to adapt the visualization pipeline to a wide range of different applications.

All modules inside the OpenInsightExplorer are executed following the dataflow execution model (as soon as data is available on their inputs).

Features

- Open source and platform independent
- Automatic parallelization
- Custom data types
- Data streams
- Type-safety
- Hardware acceleration (GPU)
- Modules can dynamically grow (inputs & outputs)
- Modules can adapt to data types (generic modules)
- Modules can contain GUI elements

OpenInsightExplorer

Developing a visualization changes into ...

1 Dragging modules into the visual editor
2 Connecting them together
3 Running the final visualization

Evaluation

OpenInsightExplorer was evaluated by implementing example visualizations:

- Scientific visualization
  GPU accelerated volume rendering
- Information visualization

Conclusion

- A new framework for rapid development of visualizations
- It reduces the production cycle of the development
- More frequent reuse of off-the-shelf modules
- It is capable to handle scientific and information visualizations