FlowViz: a Visualization Toolkit to Support Visual Programming Language Development

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Introduction

Many end user programming systems consist of visual editors which allow users to create data flow graphs representing the logical flow of the program structure. Unfortunately, there are no unified tools for creating new visual programming languages (VPL) and their IDE's. Therefore, we introduce ***FlowViz***: an interactive visualization toolkit that facilitates the creation of new VPLs.

Figure 1. High-Level **FlowViz** Overview

Related Work

Existing Tools: only allow creation of programs in a specific VPL

Figure 2. Examples Popular Existing Visual Programming Languages

Viz Libraries: used to draw graphs, but tedious when creating VPL's as this approach requires writing lots of boilerplate code for each VPL.

Figure 3. Visualization Libraries That Could Be Used to Implement a VPL

Library Design & Implementation

FlowViz was implemented in Node.Js via Browserify and makes heavy use of D3.js, Snap.svg.js, and a series of core Node modules.

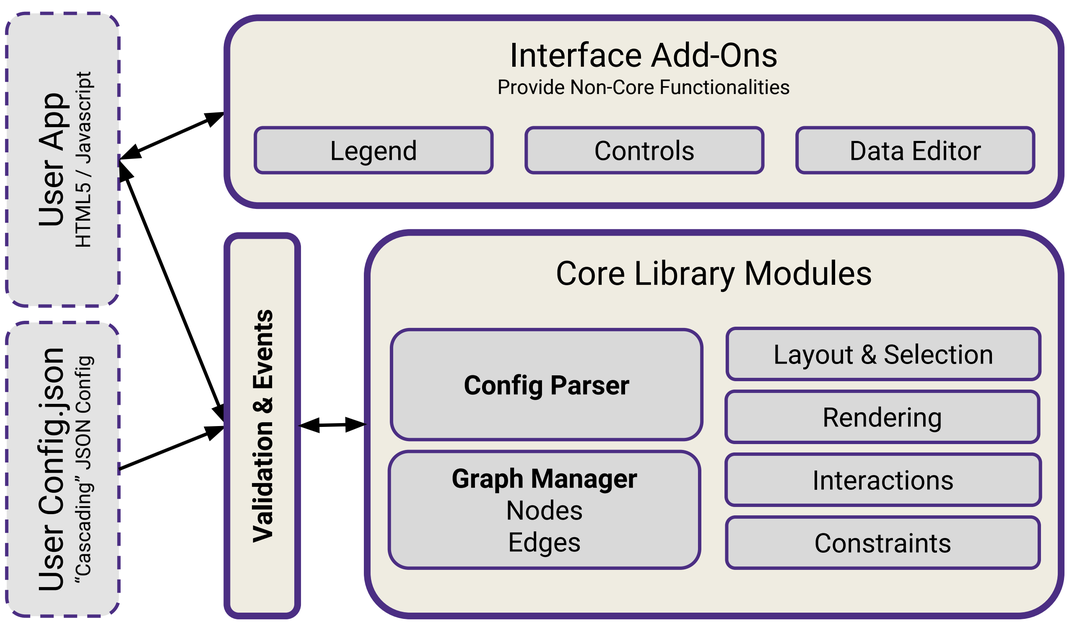
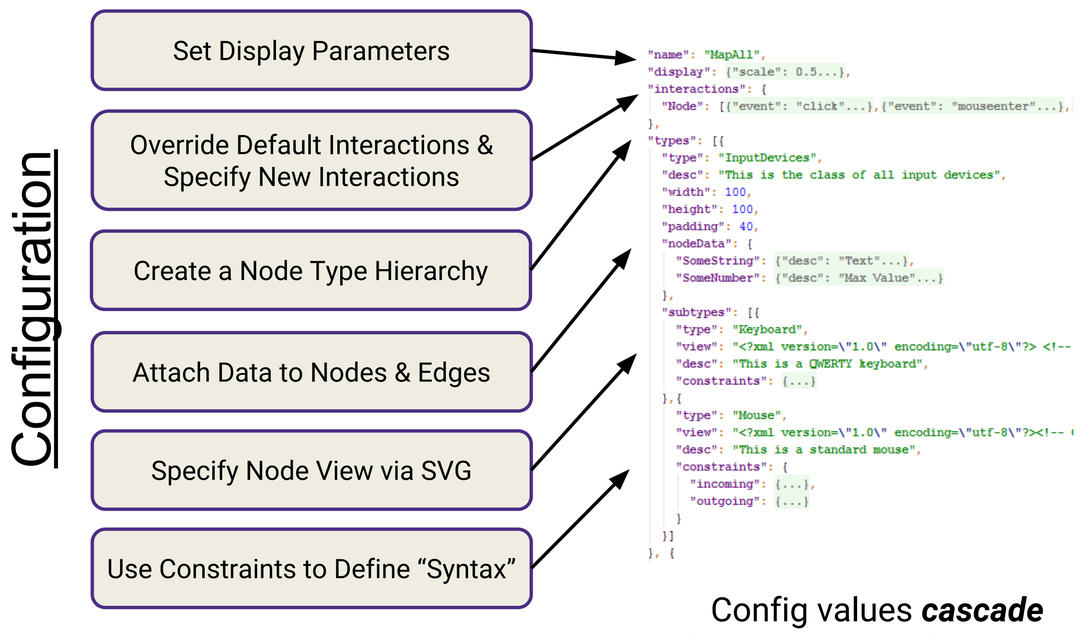
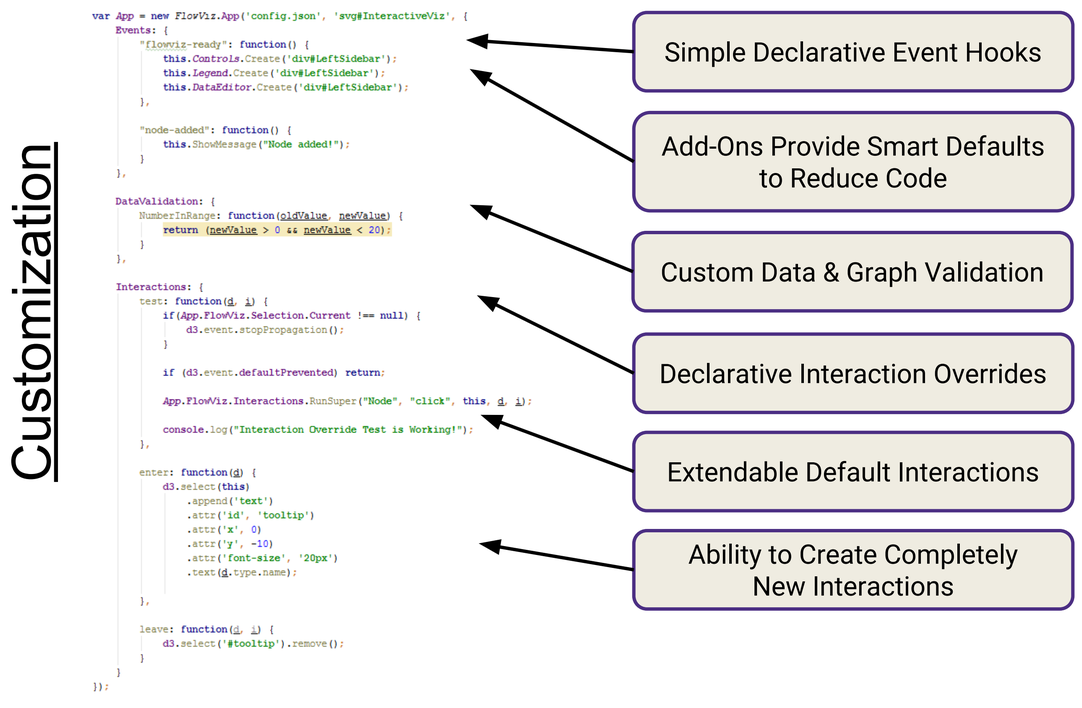


Figure 4. ***FlowViz*** Library Design

Details of System Use

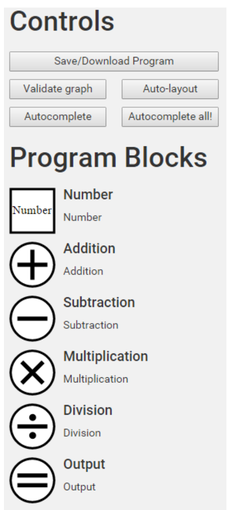


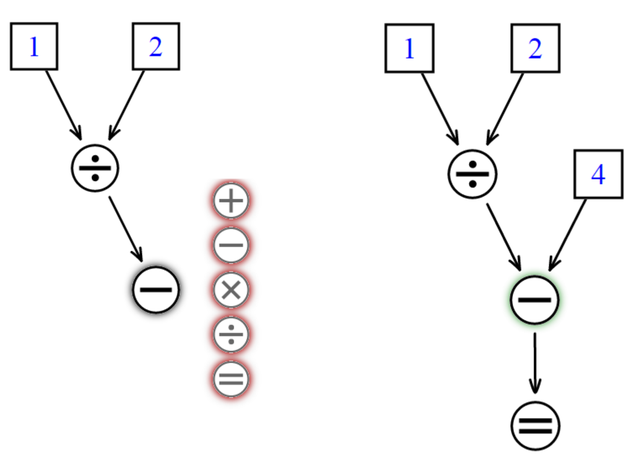
Config values ***cascade*** through the type hierarchy!



Interactive VPL IDE with **Auto-Suggest** and **Auto-Complete**!

Results





Future Work

- Edge types and custom connections based on node types
- More intelligent path planning (A*?)
- Better set of automatic layout styles (no more Sugiyama!)
- Add unit tests