10-2005

Can Infopipes Facilitate Reuse in a Traffic Application?

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Can Infopipes Facilitate Reuse in a Traffic Application?
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Calculating truck volume on roadways is important in planning, design, and policy decisions. While modern highway instruments can very accurately measure truck volume, many US highways are equipped with antiquated equipment that is designed to detect only total volume.

Infopipes are presented as reusable building blocks for streaming applications. To evaluate this claim, we have built a significant traffic application in Smalltalk using Infopipes. This poster presents a traffic problem and solution, a short introduction to Infopipes, and the types of reuse Infopipes facilitate in our implementation.

Infopipes can be subclassed to specialize behavior. In this application, eight Infopipes reused behavior from their superclass. For instance, a VehicleCounter has the same control, data flow, and connection semantics as a Buffer, so a VehicleCounter is a natural subclass of Buffer.

Some Infopipes can be specialized by giving them parameters. For instance, the FunctionPipe was specialized in our application to apply a lane-to-lane velocity function.

Infopipes can be reused by instantiating the same Infopipe class in different contexts. For instance, one VehicleClassifier was used for each lane in the HighwayVehicleClassifier.

The Infopipe abstraction is useful for facilitating reuse in a real-world streaming application.

More information about Infopipes can be found at http://www.cs.pdx.edu/~walpole/infopipes.html