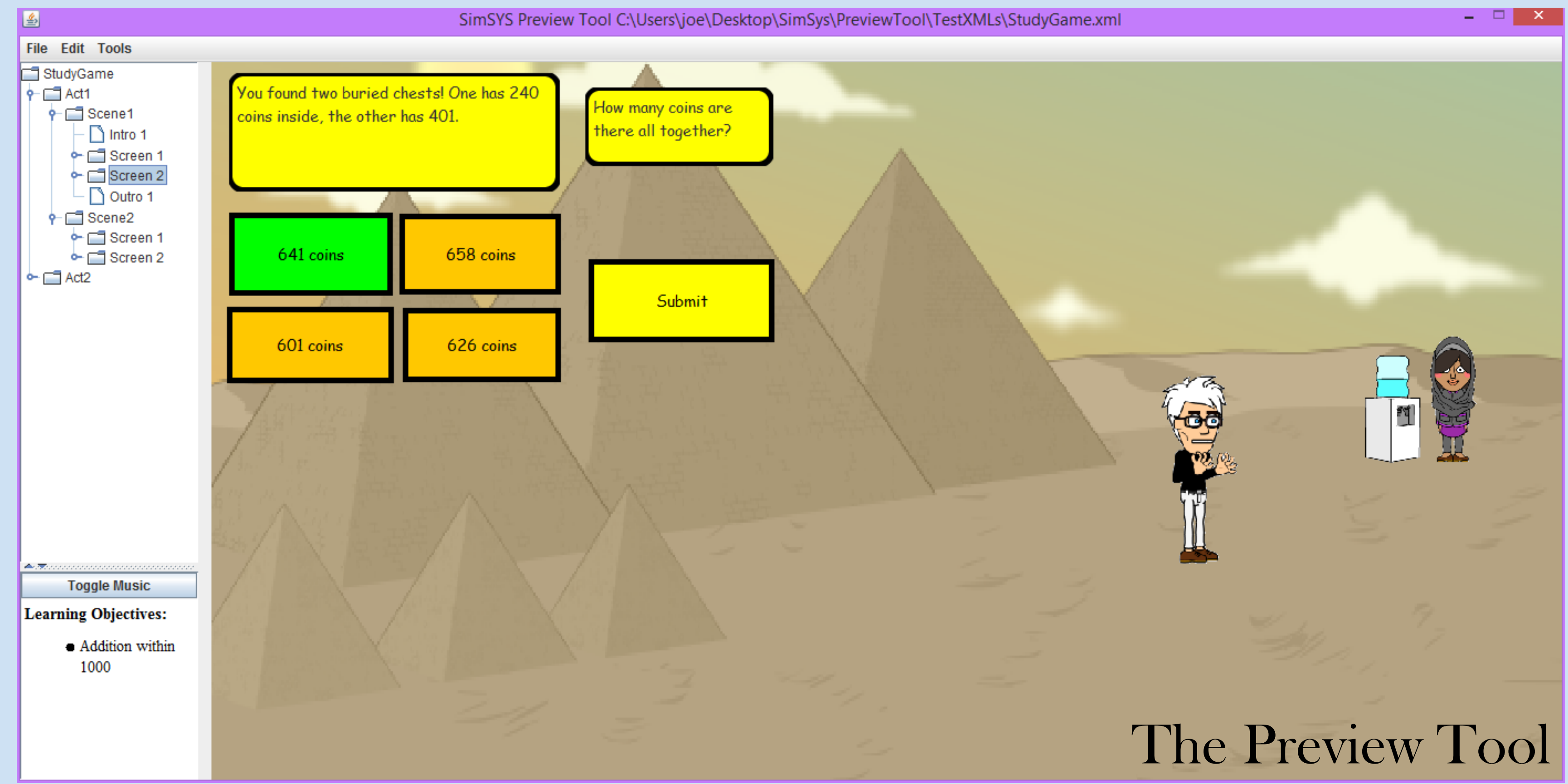# SimSys: Stability Within Chaos

Creating a Stable Tool in a Changing Environment

What is SimSys?

SimSys is an educational game—it teaches students. However, the educator may use the Preview Tool to carefully tune the game itself. The Preview Tool was the focus of this year's research.

The Need for Stability

The Preview Tool functions according to the Schema (the rules defining the different elements of the game). The Schema will be changed. The Preview Tool needs to remain useful, with minimum maintenance, regardless of changes made to the Schema.

Solution

To achieve all the objectives, multiple solutions were needed. In the end, three combined architectures solved our problem. These are Naked Objects Architecture, a Mediator Pattern, and a Translator Pattern.


SimSYS Preview Tool C:\Users\Joe\Desktop\SimSYS\PreviewTool\TestXMLs\StudyGame.xml

StudyGame
Act1
 Scene1
  Intro 1
  Screen 1
  Screen 2
  Outro 1
 Scene2
  Screen 1
  Screen 2
Act2

Toggle Music

Learning Objectives:
- Addition within 1000

You found two buried chests! One has 240 coins inside, the other has 401.

How many coins are there all together?

641 coins   658 coins

601 coins   626 coins

Submit

The Preview Tool

Naked Objects

An architecture where each object is responsible for its own data. The buttons, text boxes, and characters all keep track of their own data.

Mediators

The mediators keep the XML that is saved and the current representation of the Preview Tool up-to-date and in sync. They will need to be updated.

Translator

The translator loads the XML into the Preview Tool. It insulates the majority of the Preview Tool, and will need the most editing with future changes.

References

Jacob Dahleen, Alex Hunsberger, Ryan Weber, Dennis Brylow, C. Shaun Longstreet, Kendra M. L. Cooper VLC 2014: International Workshop on Visual Languages and Computing, in Proceedings of the Twentieth International Conference of Distributed Multimedia Systems, pages 329-334, Pittsburgh, Pennsylvania, August 2014.

Preview Tool → Schema

Step 1: The Preview Tool asks for a change

Step 2: The Mediator updates everyone

Mediators
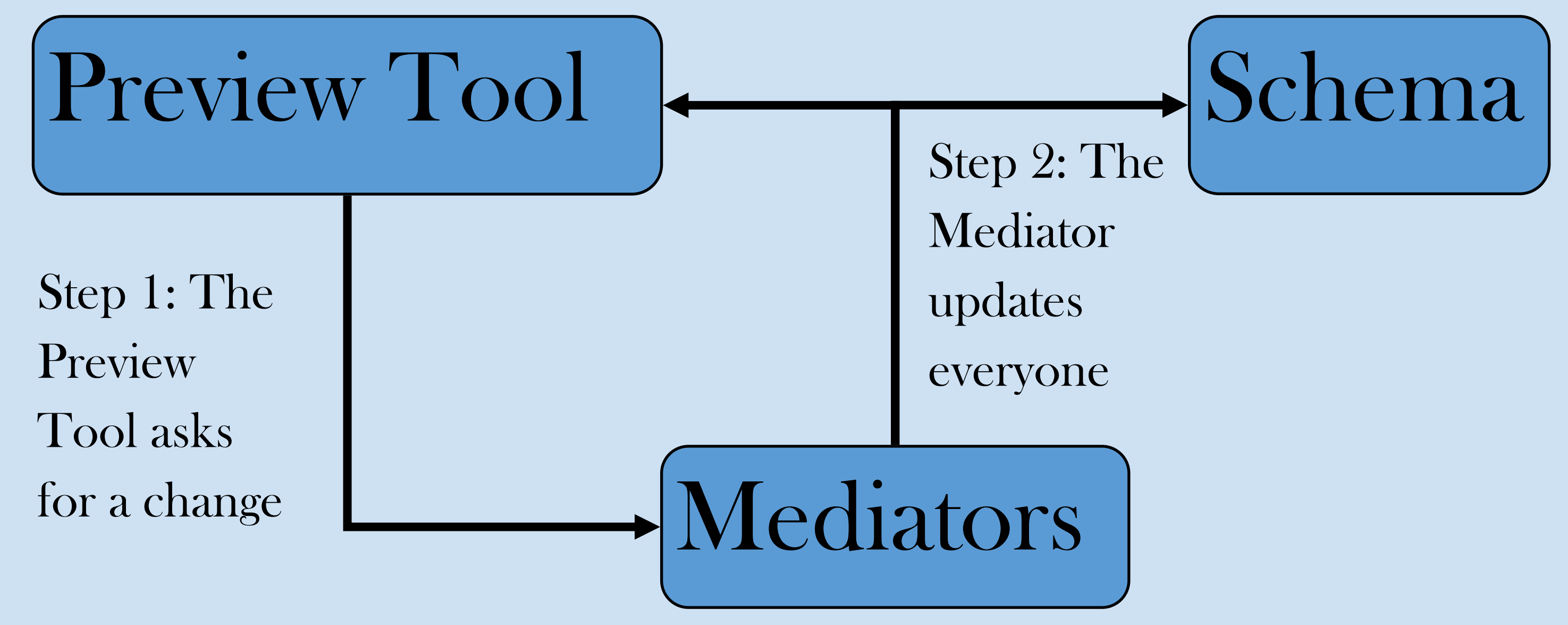
Moving Forward

The Preview Tool will have to change a lot in the future. However, since the Schema is decoupled from the Preview Tool, these changes should be minimal, and quick to implement. The Preview Tool has become a beacon of stability in a volatile environment.

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Under the Mentorship of Dr. Brylow, Dr. Longstreet, and Dr. Cooper