FreeSketch

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Use cases

- Suppose you are to **reflecting on a calculus** and want to change its semantics, explore the consequences... in an iterative process.

- A more practical case can be: you are **brainstorming about a new software**, and want to sketch its GUI together with its functionalities... Again you are forced to go back and forth, drawing and redrawing, and the meaning of your diagrams, at this stage, are only clear to you...

No tools (?)

- **Pen+paper**, or:
  - Knowledge management tools
  - Formal system tools
  - Presentation tools / Vectorial Editors
- **semantically aware** tools

  (ie domain specific & rigid)
- vs **syntax only** tools

  (ie general & dumb)

No tools (?) (II)

- **Problems**
  - do not support incremental definition / tinkering
  - rigid, fixed working style

- **A tool should assist you, not decide for you**
  - if the tool lets you do only *appropriate* actions, how can you explore a new idea?
  - the way a diagram was drawn, in time, reveals a lot about its meaning

Draw a sketch, freely

- **Drawing = scripting**
- Re-playable history (which is a script)
- Incremental specification of semantics, by examples
- Extreme robustness
- Open to different working styles
- Composition of scripts (procedural abstraction)
- Dynamic linking between scripts

An example

- *Let's take a look at the Mouse demo...*

- FreeSketch is almost at its version 1.0
- FS is implemented in Java 1.5
- Scripts can be exported/imported in XML

Applications

- exploration of new domains (e.g. when learning)
- (interactive) algorithm animation, simulation
- prototypical programming (e.g. Self)
- experiment with core concept of AOP and refactoring (e.g. fix semantics, rewrite code)

- OOA&D: rich pictures can be animated in FS

What is FS, then?

- *Drawing=scripting* means **focus on user behaviour**
- FS represents a **generalization** of the **command pattern**
- Structural in both space and time
- FS is a **linguistic meta-tool**
  - The user incrementally specifies semantics and visual syntax of its own domain-specific language (similar to OOA)
  - Scripts start as flat and long; end up partitioned in sub-scripts, individually shorter, and more readable

Conclusions + Work

- FreeSketch needs to be tested with problems from different fields

- Now that it works, study more high-level tools:

    – script generalization (kind of macro-contraction)

    – script optimization