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"Twisting the Triad"

The evolution of the Dolphin Smalltalk MVP framework

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Some History…

- 1984 - Intuitive Solution
- 1988 - Intuitive Solution/2
- 1995 - Intuitive Solution/3

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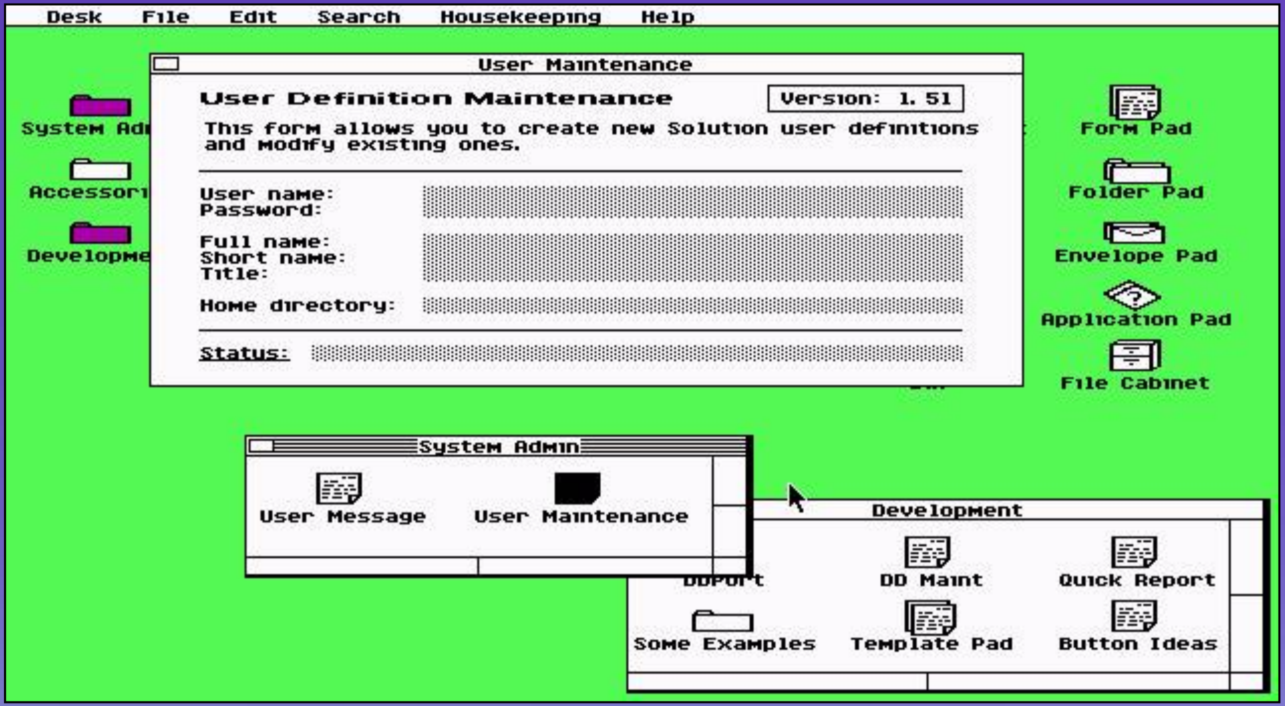
Intuitive Solution



User Maintenance

User Definition Maintenance

Version: 1.51

This form allows you to create new Solution user definitions and modify existing ones.

User name:
Password:

Full name:
Short name:
Title:

Home directory:

Status:

Intuitive Solution/3

- Windows client
- Pure Object Oriented
- Memory footprint suitable for laptops
- Relational Database connectivity
- Component-based GUI

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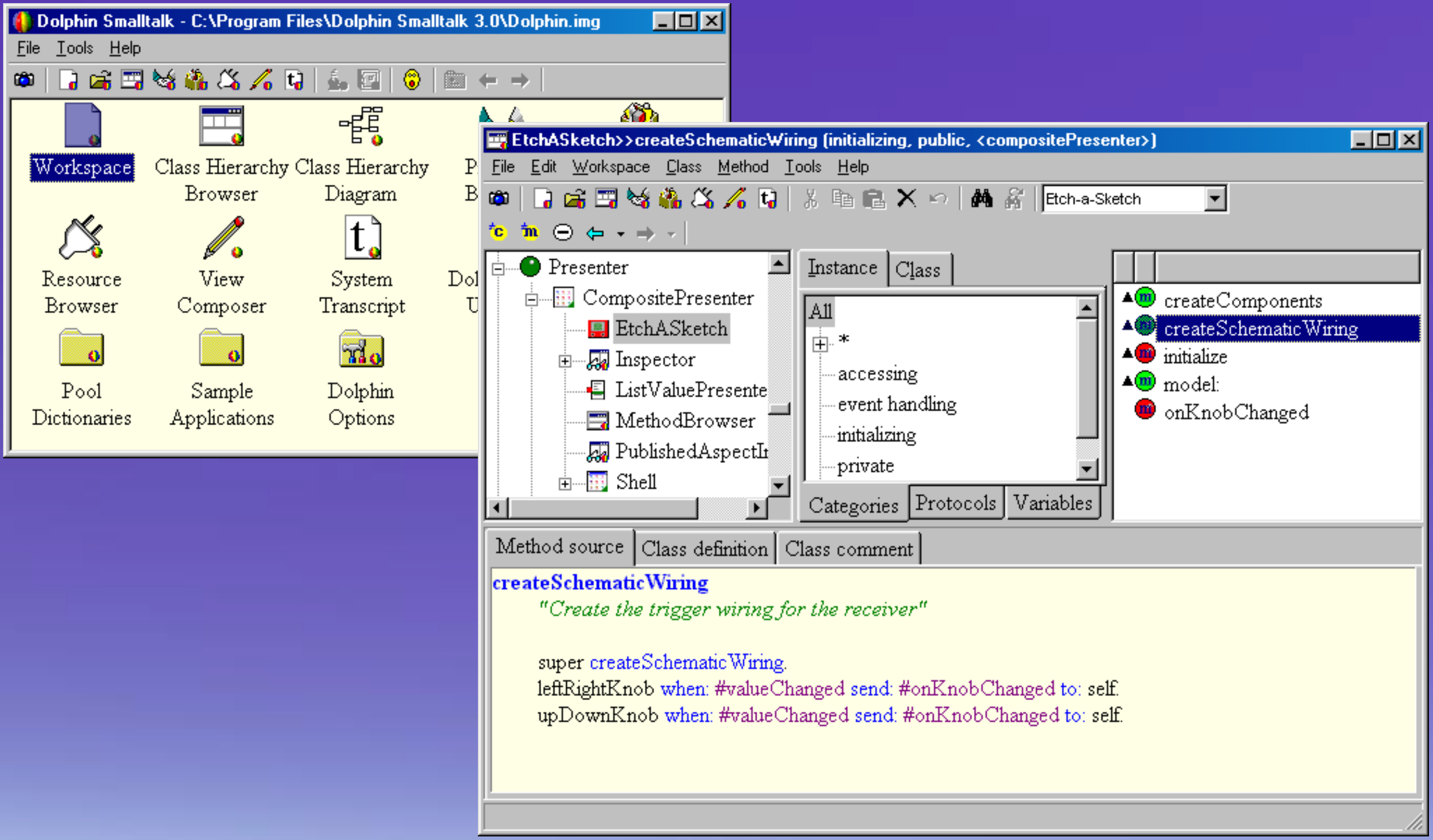
Dolphin Smalltalk



```
createSchematicWiring
	"Create the trigger wiring for the receiver"

	super createSchematicWiring.
	leftRightKnob when: #valueChanged send: #onKnobChanged to: self.
	upDownKnob when: #valueChanged send: #onKnobChanged to: self.
```

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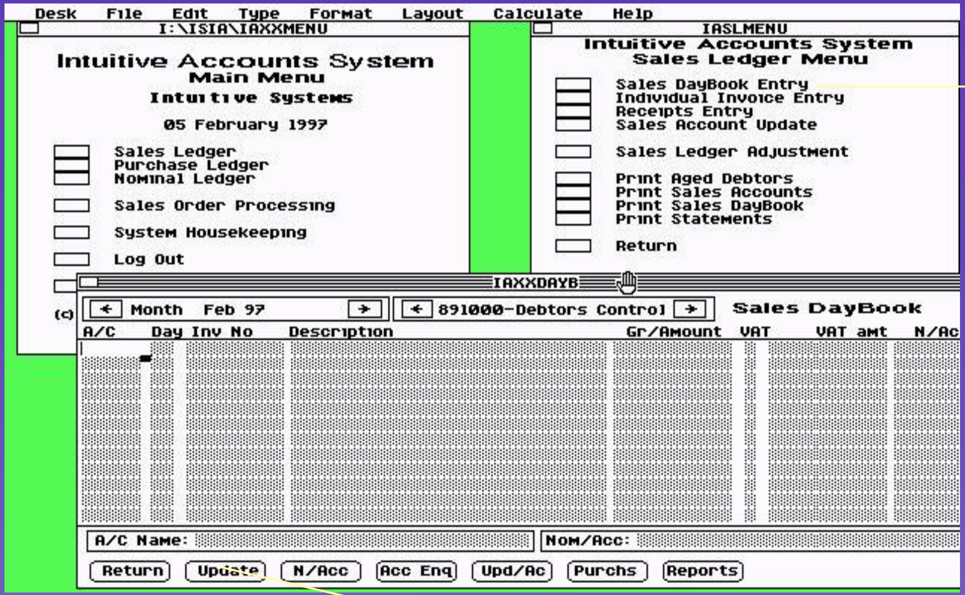
Learning from our mistakes?



```
Desk   File   Edit   Type   Format   Layout   Calculate   Help
I:\ISIA\IAXXMENU                         IASLMENU
Intuitive Accounts System                Intuitive Accounts System
Main Menu                                Sales Ledger Menu
Intuitive Systems                        Sales DayBook Entry
05 February 1997                         Individual Invoice Entry
Sales Ledger                             Receipts Entry
Purchase Ledger                          Sales Account Update
Nominal Ledger                           Sales Ledger Adjustment
Sales Order Processing                   Print Aged Debtors
System Housekeeping                      Print Sales Accounts
Log Out                                  Print Sales DayBook
                                         Print Statements
                                         Return
IAXXDAYB
Month  Feb 97   891000-Debtors Control   Sales DayBook
A/C   Day Inv No   Description   Gr/Amount  VAT   VAT amt  N/Ac
A/C Name:                               Nom/Acc:
Return  Update  N/Acc  Acc Enq  Upd/Ac  Purchs  Reports
```

PROCESS FOR dayBookEntry
…
…
ENDPROCESS

PROCESS FOR Update
…
…
ENDPROCESS

Intuitive Solution employed a widget based framework

“Widgets” - 1

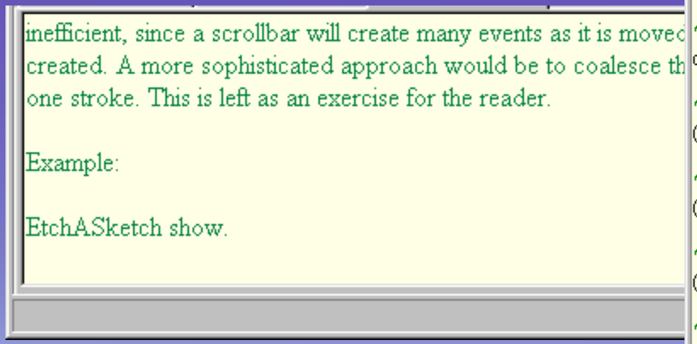
- Dolphin UI should be widget based
  - Precedents were...
    - Visual Basic/Windows Dialogs/MFC
  - Typically *not* hierarchical

- Widgets
  - UI components where data/display/behaviour are combined in a single entity.
  - #createLayout method to construct composite UI
  - Events routed via individual methods

“Widgets” - 2

- Easy to draw UI first and code later
- But poor re-use…

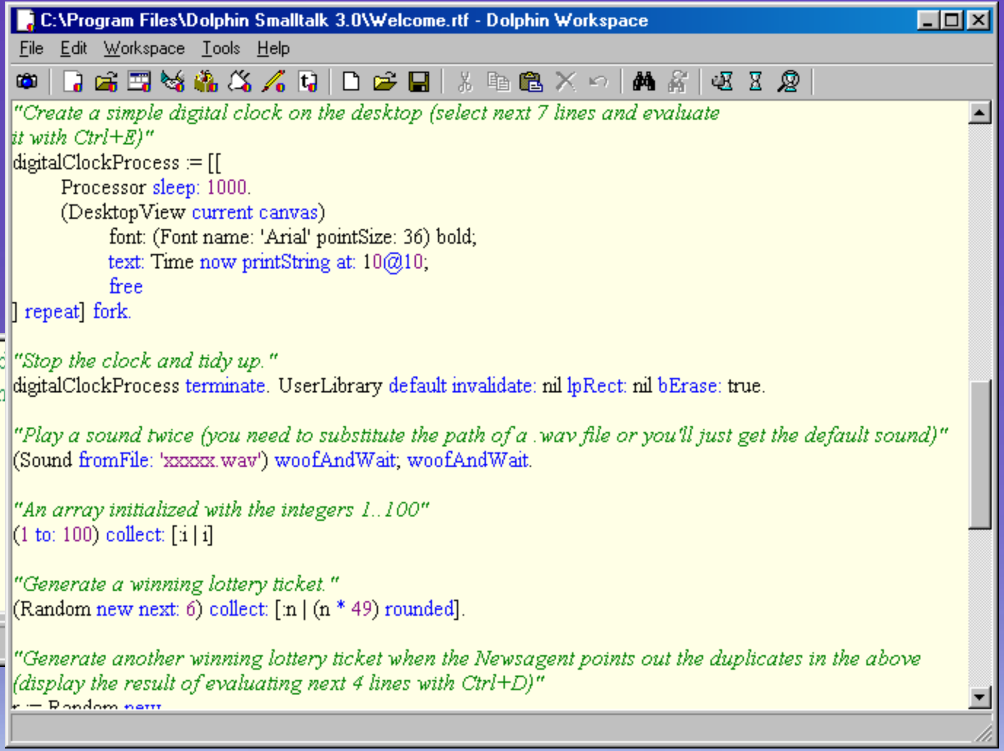
e.g. *SmalltalkWorkspace*



inefficient, since a scrollbar will create many events as it is moved
created. A more sophisticated approach would be to coalesce th
one stroke. This is left as an exercise for the reader.

Example:

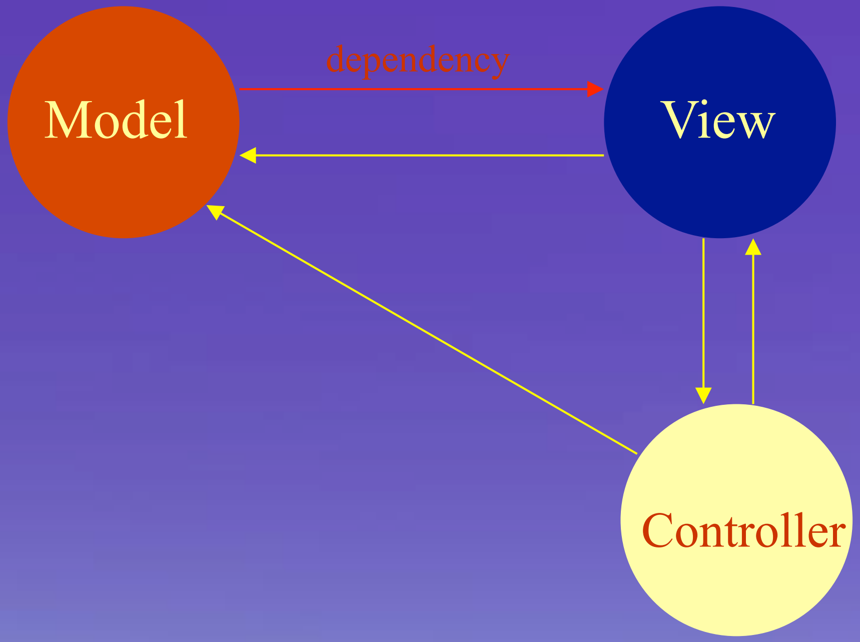
EtchASketch show.



C:\Program Files\Dolphin Smalltalk 3.0\Welcome.rtf - Dolphin Workspace
File Edit Workspace Tools Help

```
"Create a simple digital clock on the desktop (select next 7 lines and evaluate
it with Ctrl+E)"
digitalClockProcess := [[
	Processor sleep: 1000.
	(DesktopView current canvas)
		font: (Font name: 'Arial' pointSize: 36) bold;
		text: Time now printString at: 10@10;
		free
] repeat] fork.

"Stop the clock and tidy up."
digitalClockProcess terminate. UserLibrary default invalidate: nil lpRect: nil bErase: true.

"Play a sound twice (you need to substitute the path of a .wav file or you'll just get the default sound)"
(Sound fromFile: 'xxxxx.wav') woofAndWait; woofAndWait.

"An array initialized with the integers 1..100"
(1 to: 100) collect: [:i | i]

"Generate a winning lottery ticket."
(Random new next: 6) collect: [:n | (n * 49) rounded].

"Generate another winning lottery ticket when the Newsagent points out the duplicates in the above
(display the result of evaluating next 4 lines with Ctrl+D)"
r := Random new
```

Model-View-Controller

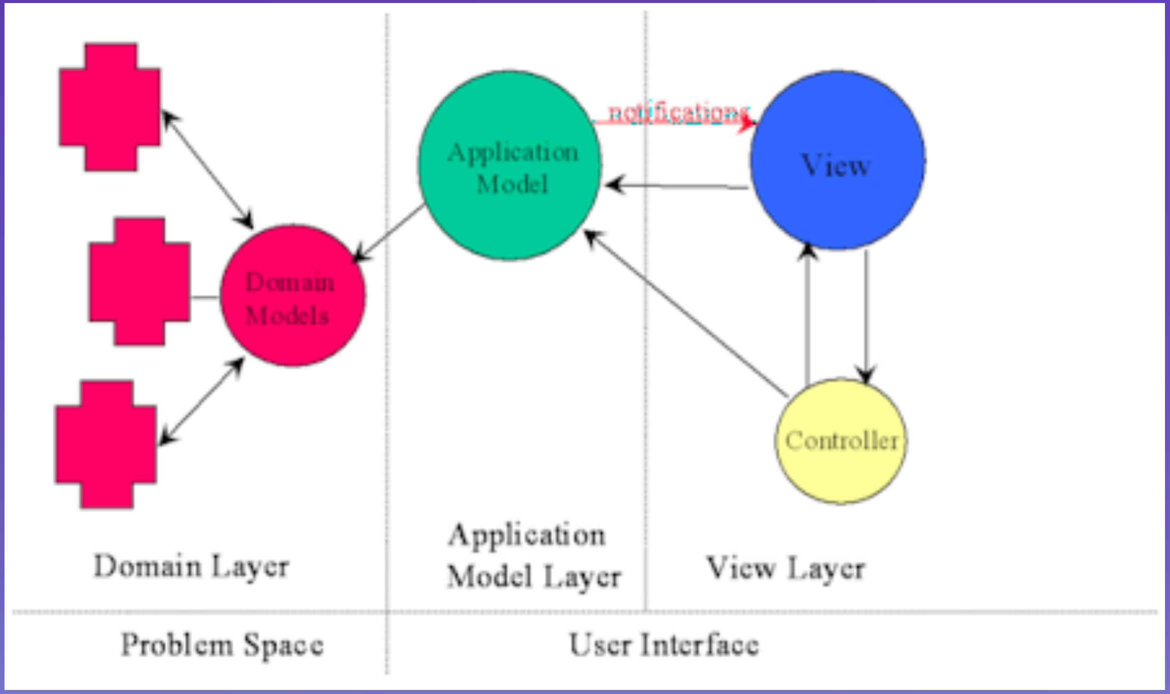


Basic MVC

- Model is a domain object
  - Refined into ValueModel
- View is an output device
  - Linked by Observer to display model contents
- Controller is an input device
  - Maps UI gestures into changes to model

- MVC gives a pluggable widget
  - Usually a generic value component
  - Not suitable for composite “application” components

Enhanced MVC



MVC - 2

- Application Model
  - Mediator between domain classes and UI
- M,V,C are all pluggable
  - Much improved reuse cf Widgets

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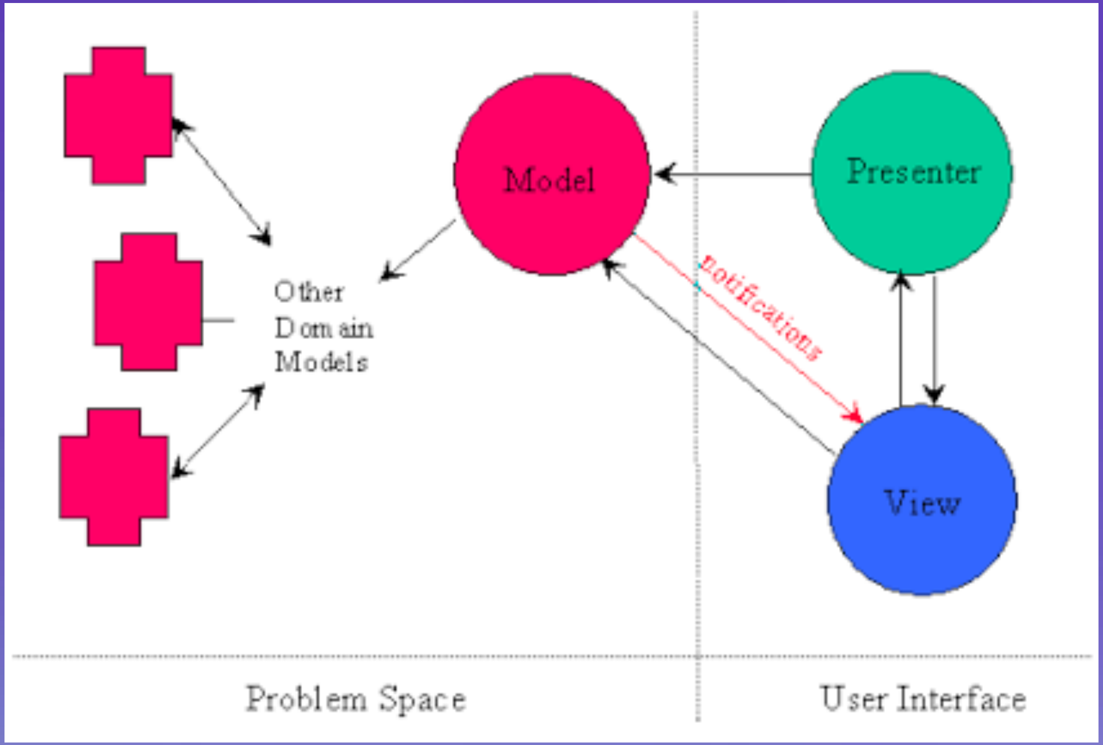
MVC Anomalies

- Observcr pattern applied in wrong place
  - AM and View are loosely coupled
  - Leads to #componentAt: problem
  - in turn breaks Observer
- Controllers
  - inappropriate for modern event driven OS

Model-View-Presenter



Presenters as components

- MVP components based around presenter
  - Hierarchical
- Views are the presenters' "skins"
  - Hierarchical, but independent of presenter hierarchy
  - Multiple views available for each presenter
- Models are the presenters' data
  - Initially owned by presenter
  - Can be reattached

Resources

- Models (domain logic) are class based
- Presenters (UI logic) are class based
- Views are often instance based
  - Composite views built with View Composer
  - Saved down as resources

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Dependency vs Events

- Dependency
  - legacy Observer mechanism from ST-80
  - register interest in *all* updates
  - explicit disconnect via #release
- Events (SASE)
  - introduced in Digitalk ST
  - #when:send:to:
  - target specific events
  - finalization can automatically disconnect

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Does Dolphin have “Balls”?

- Visual Basic had VBX
- COM has ActiveX
- Java has Beans
- Dolphin has..
  - Published Aspects
  - Instance streaming

MVP in a Nutshell

- Models first / UI second
- Model is mutable or immutable?
  - Immutable models require value components
- Basic Component
  - implement view class
  - implement presenter class
  - install view instance as a named resource on presenter
- Composite component
  - implement presenter class
  - draw composite view with View Composer
  - install view as a named resource on presenter

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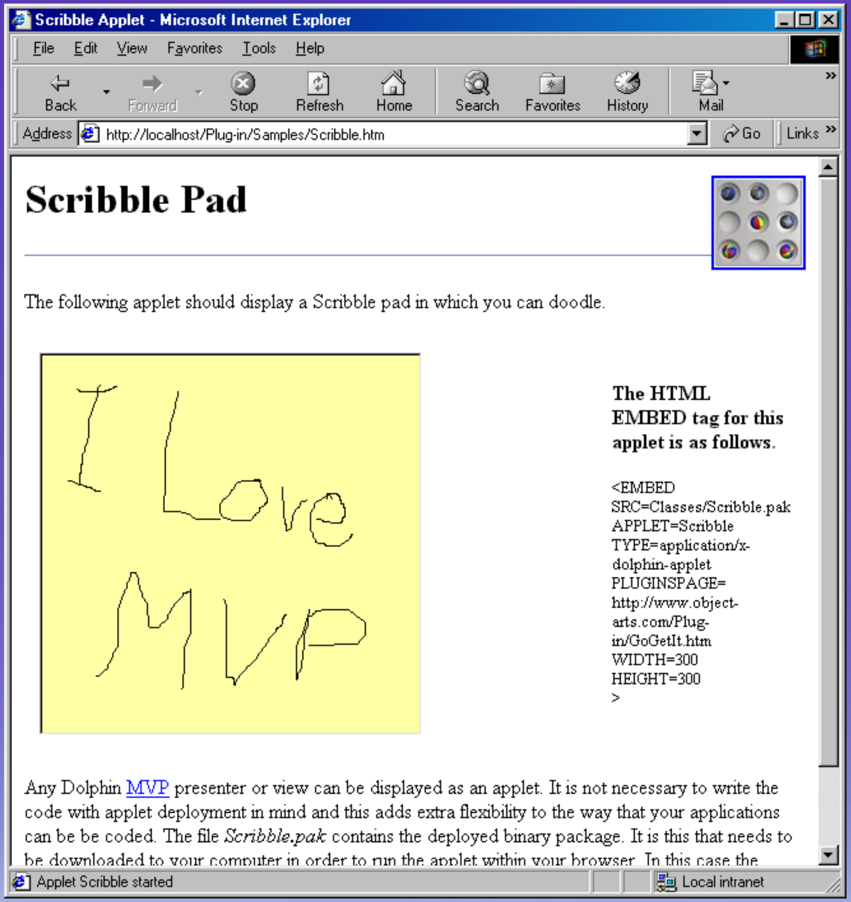
Web components


Scribble Applet - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Refresh Home Search Favorites History Mail
Address http://localhost/Plug-in/Samples/Scribble.htm Go Links
I Love MVP
Applet Scribble started
Local intranet

Scribble Pad

The following applet should display a Scribble pad in which you can doodle.

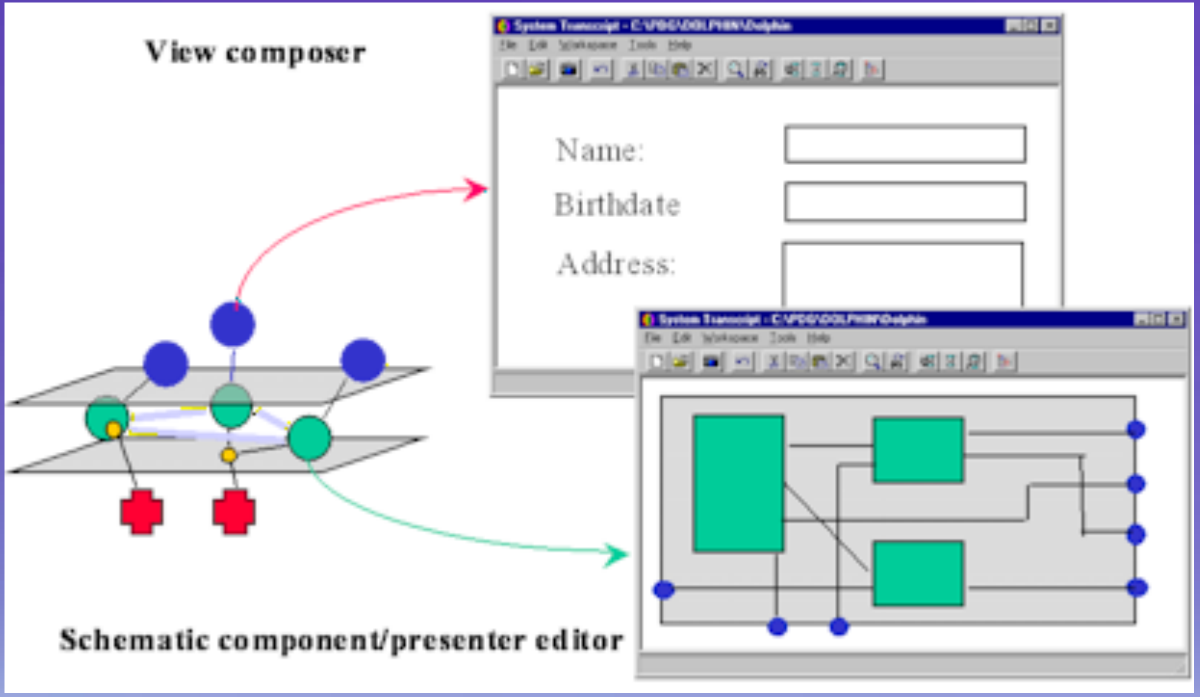
The HTML EMBED tag for this applet is as follows.

```
<EMBED
SRC=Classes/Scribble.pak
APPLET=Scribble
TYPE=application/x-dolphin-applet
PLUGINSPAGE=
http://www.object-arts.com/Plug-in/GoGetIt.htm
WIDTH=300
HEIGHT=300
>
```

Any Dolphin MVP presenter or view can be displayed as an applet. It is not necessary to write the code with applet deployment in mind and this adds extra flexibility to the way that your applications can be be coded. The file *Scribble.pak* contains the deployed binary package. It is this that needs to be downloaded to your computer in order to run the applet within your browser. In this case the

MVP Potential (1)

- Schematics


View composer
Name:
Birthdate
Address:
Schematic component/presenter editor
System Transcript - C:\VSO\DOLPHIN\Dolphin
File Edit Workspace Tools Help

MVP Potential (2)

- Portable Smalltalk UI
  - Models and Presenters are already ANSI portable
  - Require views for target platform
  - Useful for Camp Smalltalk/ Refactoring Browser

Summary

- MVP is modern Observer style framework
- Keeps advantages of MVC without disadvantages
- More suitable for event driven OS

Spread the Word!