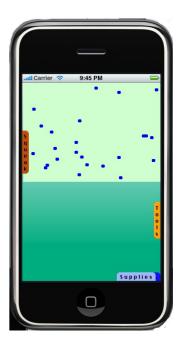# Squeak on (i)Touch devices

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Abstract

13 years back Dr John Maloney at Apple Computer worked on the macintosh support api for this novel concept of bootstrapping a Smalltalk in itself, which we know today as Squeak. It has been ported to many devices over the years, optimized and revised, but in many parts the Squeak VM still lives in the mid 90's of the last millenium under layers of backwards compatibility. We will present a clean re-implementation of the Mac OS VM for both Mac computers and iPhone/iTouch devices including a revised event handling.

Technical Details

Although the original code base was hosted entirely within the Squeak image for many years, after the Windows port and the Linux port became available it was apparent this model would not work any more and after much effort over the years the source files have moved into an SVN source tree. The support API started on the macintosh based on about 12 files supporting macintosh OS 7.x. John McIntosh took over support for the API and building the VM in the august of 2000 and has supported the growth and complexity of the macintosh VM as Apple migrated us thru os-7.x to os-9.x and then onwards to OS-X 10.0 and beyond. Let alone processor changes as Apple moved from 68K based machines, through powerpc, until the current Intel based ones, along with ARM support for the iPhone.

In the fall of 2007 it became apparent that Apple was archiving their support for legacy APIs dating from 1984 that were still used in the macintosh 3.8.x series of VMs. Once the iPhone SDK arrived it was apparent a new idea was required. Thus "burn the diskpacks" and go back and document the support platform APIs, then from that information start building a new VM that uses the os-x 10.5 Objective-C feature set, but also can be subclassed to support other Apple products like the iPhone, and enable the ability to cleanly interface to Object-C objects.

This work then dovetails with Eliot Miranda rewrite of the Squeak bytecode set for his Cog Jitter, and Igor Stasenko work on multi-threaded VMs (Hydra) within a process space. Plus it ensures one can have a code base that you can build 32/64 bit powerpc/intel VMs from and also support the 32bit ARM architecture for the iPhone.

In a combination of VM and Image side work, the event handling system also needed to be updated. In the current Morphic system the image side polls the VM for input events at a certain rate. Earlier work to use a Semaphore to signal the arrival of new events never was fully supported across platforms or the image side handling code. This leads to major problems with Squeak servers, as Squeak never goes to sleep long enough to be swapped out of the working set. On portable devices this is also a major drain on battery life.

The event system (partly based on the Hydra work) is redesigned to avoid polling and, at the same time, to support handling of touch events.

Based on the revised event system we introduce an extension to the morphic and tweak event handling that enables us to recognize gestures. On the iTouch/Phone devices the touch extensions are used to control the regular morphic environment.

In a specialized , desktop machine based setup the touch extensions are used to control a modified version of Sophie, the multi-media authoring environment built in Squeak.

This is currently work in progress. Due to license restrictions and the specialized hardware setup we can not (yet) make a working system available online.

A video will be available before ESUG and a live demo will be available at ESUG.