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**
** VEOS, the Project and Beyond
**
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The Progression

July, 1990...

The challenge was to design the software infrastructure for rapid prototyping of distributed dynamic virtual environments for any Unix platform and any set of behavior transducers.

We designed the first pass on the porch of the R & D Cowboys' favorite espresso shop. We scrapped that model within two months, before a single line of code was written.

The software needed to provide data-management, inter-process communication, and reliable multitasking. We were aiming for a virtual environment operating system - VEOS.

I rethought every modern applied computing issue that we encountered. I reinvented process management, expert system design, network protocols, deadlock prevention, process synchronization, object-orient programming, parallel programming, ...

The replacement ideal was much closer to the mark. I was sure as I could be about the design without actually getting our hands dirty in the C code.

August, 1990

Early on, it became clear to me that if I didn't write each individual component by hand, we could not realize the snug fit that custom components achieve.

First came 'nancy', the generalized data-space manager. nancy is based on the notion of a fully generalized data element - the grouple. All entity data *could* be stored, with a slight decrease in efficiency, as grouples in the grouplespace.

Consequently, nancy grew to support more and more forms of data manipulation as the only data management system. In no time, nancy had the fundamental match-substitute-execute capability of a rudimentary inference engine.

Shortly thereafter, nancy was fully developed as a generalized data package.

September, 1990

Next, I prototyped the first running VEOS shell and jump table. The first VEOS entity was composed of that shell, linked-in nancy, and a 'hello-world' primitive.

Dav Lion completed the first VEOS hardware driver for the polhemus 6-D sensing device. Though with only one entity (and exactly one process) in a world, the entity could only perform a few simple tasks with simulated inter-entity communication across the local grouplespace. The need for true inter-entity communication was paramount.

October, 1990

Again, to assure smooth integration, I wrote the solution by hand. Thus, the 'talk' inter-entity communication module was the third and final component to the VEOS kernel.

Only a month after I successfully passed the first grouple between two VEOS entity shell's, we showcased the VEOS functionality with Dav's - FlockWorld.

January, 1991

After much experimenting and testing, I rewrote 'talk' and achieved a magnitude of improvement in efficiency and robustness.

February, 1991

With the VEOS kernel solidly founded, we showcased the 'Cubes In a Room' world beside the conventional VPL Research RB2 system.

The completion of 'Cubes..' marked the beginning of public VEOS. The kernel has become relatively firm and seamless. Myself and Dav have become highly automated world programmers and are prepared for VEOS world programmer apprentices.

March, 1991

This document in conjunction with the VEOS kernel documentation shall serve to seal the VEOS package for VEOS neophytes.

Prospectus

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c. April, 1991

I complete a preliminary port of VEOS to the Macintosh. 3-D sound can be trivially integrated.

c. May, 1991

The VEOS port to Silicon Graphics is completed and trials are begun with full-scale GL renderer. Polhemus and spaceboard drivers are completed for SG.

c. Summer, 1991

Interns tackle many hardware drivers for VEOS - e.g. headmount, dataglove, etc. I begin to experiment with nebulous standardization and protocol issues in context of natural virtual programming.