



Frascati, Dec. 16, 1991

Note: **C-4**

DAΦNE DEVILS

The Control Group

Project: Integrate a Macintosh CPU into VME.

Motivation: The development system for Hell CPUs is a problem: tools are scarce and very costly for VME CPUs. The Mac environment offers many more possibilities: among them are:

- LabView. It is certainly adequate for the simple Hell program. It is multitasking, it has a very good debugger and it is very easy to use. In alternative we could use

- MPW, very good development system with debugger (SADE), all the possible languages and good human interface.

Timbuktu allows complete access to lower level CPUs from the consoles using the standard AppleTalk network.

Implementation: It is possible (National has done it for VXI).

It is simple: We will use the Macintosh LC Processor Direct Slot (PDS) to connect to a VIC 068 VME interface chip. This interface chip takes care of all the VME interface for a Master, Slave and Arbiter with a minimum of added components (4 buffers and a decoder for Local RAM). This is not like building a CPU from scratch. We have two building blocks to connect together. An example of implementation is a Tecnint CPU, which we have already bought (complete with schematics).

The DEVILS will consist of a two board double VME unit. One board is the Mac logic board, and the second is the VIC068 interface board. All Mac capabilities are kept.

A SCSI interface with 16-32 MBytes of dynamic RAM mounted on the interface board will replace the hard disk drive for startup.

Alternatively, a remote (Ethernet) boot of a diskless Mac is being investigated.

Cost:

- A Mac LC board: price 1.5 ML
- A VIC chip: a few 100 KL (checking)
- A Timbuktu copy: 100 - 200 KL
- A LabView engine : a few 100 KL (checking)
- Miscellanea: a few 100 KL.

TOTAL: Less than a commercial VME CPU, including software:

E. g. Tecnint TVM3038 cost: 4 6ML.

A prototype could be built through a collaboration with Universita' di Roma - Ingegneria (Prof. Moreno Coli and 1 laureando), but considering the deadlines, we are contacting external VME firms (Tecnint, CAEN, etc.) to have the board prototyped and built industrially.

We will need about 80.

Time: The first firm contacted (TECNINT) said they are capable of delivering several boards within two months. Therefore, including tests, we should be able to get a few tested boards by April 92.