

XEROX

BUSINESS SYSTEMS

System Development Department

To	John Weaver	Date	July 18, 1978
From	John Wick	Location	Palo Alto
Subject	Mesa Status Report	Organization	SD/SS/DE/Mesa

Filed on: [IRIS] < WICK > STATUS > JULY78.BRAVO

This memo reports the status of the Mesa project as of mid July, 1978.

Issues

The need for a D0 to test Pilot related software is now critical.

Mesa 4.0

A final report on Mesa 4.0 statistics has been completed. It indicates a productivity figure of 6990 loc/py; the corresponding figure for Mesa 3.0 was 5590. The microcode and Nova code were omitted from these figures; this will be corrected later.

The *Mesa User's Handbook* was released in mid June; comments have been quite favorable (especially from summer students and new hires).

Mesa 4.1

All known problems with long pointers have been identified and fixed, although further testing on the D0 is required. Substantially better code is now generated for most long operations, although it still suffers from the restrictions imposed by the Alto/Mesa microcode.

Performance tuning of the scanner and peephole modules is complete. Analysis of symbol table swapping behavior indicates that performance is too dependent on programming style (DEFINITIONS FROM) to benefit from any short term fix. Symbol table formats were extended to improve DeSoto performance.

The 4.1 compiler will be available for pre-alpha testing by the Pilot group this week.

A long pointer debugger (which does not support paging) was first tested on the D0 on July 7; a number of bugs have also been fixed. The debugger will be prereleased with the 4.1 compiler this week (it may be delayed slightly by the requirement for map swapping by early next week).

Debugger progress has suffered from lack of D0 test time.

Bugs in the microcode (signed compare) and the system (code swapping) were identified and fixed. These will also be released with Mesa 4.1.

Pilot 2.0 / Oak

The D0 Mesa 4.0 microcode is complete; it compiled the compiler on June 24. Work is continuing with System Architecture (Garner) on extensions to the microcode for Pilot (long pointer instructions, long code base, VM map instructions, page faults, and long BitBlit); the first three items are complete.

Phases three and four of the D0 acceptance tests have been documented and delivered to System Architecture (Metcalf). D0 processor and disk performance have been measured and reported.

The Pilot/Mesa runtime modules have completed testing and were integrated with the VFS on June 30. This constituted the first standalone version of Pilot, which did not rely on any code in the Alto/Mesa system. The Pilot/Mesa runtime has also been tested on the D0, as has a special version of the Alto/Mesa system which runs with code in hyperspace; it is being used to debug the debugger and the long code base microcode as well as the runtime.

Design of the VM MapLog interface to Pilot is complete; coding will begin as soon as the long pointer debugger is prereleased to the Pilot Group. Due to lack of critical resources, debugger design has been rather hasty, and we anticipate problems with the implementation. The schedule for the Pilot debugger is awfully tight.

Work on the Pilot Startup program (BootMesa) is about half done; it should be ready for initial testing by early next week. It will be used to build Pilot 2.0b.

The Pilot Group (Lauer) has agreed to provide the section of the *Pilot Functional Specification* on the Pilot/Mesa Runtime, with appropriate input from us.

Development Common Software

A plan for Development Common Software was completed with the Pilot Group (Lynch). Short term requirements for test programs running on Pilot were identified and assigned (see below). Long term needs for compatibility packages are still unclear.

Scott McGregor (on loan from ADUPG) has completed initial conversion of the keyboard/display software using Alto/Pilot 1.0c (typescripts are not yet supported, nor are Alto directories). This package will allow simple test programs to run unchanged using Pilot.

Jim Sandman will convert the Mesa string, time, and free storage packages. The Pilot Group (Redell) will provide access to Alto directories. The status of file streams (needed to support typescript files) is currently unclear; this module tends to drag in large pieces of the Alto/Mesa interfaces.

Mesa Planning

The long range planning meetings held with Pilot, System Software, Oak, and Star were completed. Based on further analysis of Pilot and Star dependencies, releases through Mesa 7.0 were redefined and rescheduled. Briefly, Mesa 5.0 will implement priority one language features for Star and

provide ongoing Pilot support, Mesa 6.0 will implement priority two language features, debugging aids, and Pilot performance tuning, and Mesa 7.0 will include another round of instruction set analysis and a revised PrincOps instruction set. A release plan has been prepared and circulated for comment.

Mesa 5.0

Minimal activity on the design and implementation of new language features (default parameters and inline procedures) is in progress. Preparation for the hearings (task lists, internal meetings) will begin as soon as 4.1 is stable.

Miscellaneous

A large amount of consulting time was spent with the Pilot Group (Jalics) on the debugger's performance monitor. We are also providing minimal design assistance to CSL (Geschke, Lampson, Levin, Mitchell) on a version of Mesa for wide bodied Altos.

Our participation (Satterthwaite, Wick) in the Consistent Compilation Working Group continues at a slow but steady pace.

The Programming Environment Group (Satterthwaite) has completed its initial analysis; an internal draft of their report is expected this week.

Distribution:

Kierr	Johnsson	Koalkin	Lynch	Sandman	Satterthwaite
Sweet	Wallace				