DATE: FEBRUARY 24, 1971

TO: ADMINISTRATIVE DISTRIBUTION

FROM: J. W. GINTELL

SUBJECT: 1971 MULTICS DEVELOPMENT GOALS

The attached documents are draft descriptions of Multics
Development Goals for 1971.   The first document describes
major milestones for the year and is organized by calendar
quarter.   The remaining eight documents name the tasks to
be performed by each group.

I would appreciate comments and discussion about the
information within.   In particular, please suggest new
projects which should be included and/or items which could
be excluded.

I would like to call attention to the fact that these
documents are draft documents only; they have not yet received
careful review by all those who should review them.   As a
result, projects and/or dates should not be used for any external
commitments.

                                    JOHN W. GINTELL

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(enclosure)

DATE: FEBRUARY 11, 1971

TO: DISTRIBUTION

FROM: J. W. GINTELL

SUBJECT: 1971 MULTICS TARGETED MILESTONES

The following describes the major Multics Development
targeted milestones for 1971.   The projects/dates should
not be used for any external commitments; however, we will
make every attempt to meet these goals.

This list of milestones will be revised as new requirements
are encountered.

This document does not include specific tasks which occupy
much of our manpower - analyzing problems, fixing problems,
making minor functional or performance improvements,
consulting with new users/installations, up-dating documentation,
etc.

For the sake of convenience the milestones are listed by quarter
and sorted by area within each quarter.

                        J. W. GINTELL

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First Quarter

Hardcore

Variable size AST entry/page table

This change will take advantage of the CPU retrofit and free a large amount of wired down storage.

Model 33/35 Teletypes
Non-Standard Terminals

These changes allow the use of a wider variety of terminals by Multics.

User settable Search Rules

This feature will allow users to set their own search rules. An independent portion of this project will change the meaning of a reference name thus making subsystem usage more sensible.

Rebind system with new binder

This should introduce a performance improvement by reduction of system size.

Non-hardcore

Ring 1/message segments

This feature will create a protected means for inter-user communication.

Initial Absentee Facility

This feature will permit users to request "jobs" to be performed at a later time. Operations will be able to control the amount of resources given to running absentee "jobs".

Dartmouth System

Users will be able to use Multics as if it were the Dartmouth system.

First Quarter

Non-hardcore (Continued)

New Binder

The new binder will permit
users and the system to bind
packages of programs more
efficiently than with the
old binder.

Documentation

Complete SPS except for
reference data PL/I and

Fortran

Second Quarter

Hardcore

Page multilevel

Dynamic allocation of most frequently used pages onto drum; this will allow maximum use of drum channel capacity.

Tape management

Keep track of tape drive use, add accounting, allow users to use tape.

New interrupt mechanism

Allow unwiring of some software, better peripheral error handling.

Improved on-line error reporting

All systematic processing of hardware errors.

Crash recovery speedup

Enable rapid recovery from crashes by eliminating operator interaction, speeding up dump and shortening of salvage time.

Non-Hardcore

Applications of ring 1

Protected mail command, user changeable passwords.

User rings

Allow users to take advantage of the ring mechanism.

New text editor

A very cheap, easy-to-use editor to replace edm.

Extended Absentee

Allow more flexibility in use of absentee facility.

Improved graphics facility

GECOS environment

Allow the execution of GECOS jobs.

Command usage monitoring

Produce more information about use of system.

Initial on-line T&D's

Allow for testing peripherals while system is running.

"Off-line" file storage

Ability for users to specify segments which may be stored off-line at a low cost rate; simple-to-use mechanism to retrieve.

Second Quarter

Languages

Fortran Version II   A new improved maintainable
                                            Fortran
.

APL   Initial release of APL

Documentation

PL/I manual   Make available in preparation
                                            for Version II.

Complete SPS

Third Quarter

Hardcore

File Multilevel/Backup

Better use of DS-270,
170 cheaper Backup,
automatic retrieval

New IPC, locking facility

Needed for user who wishes
to share information
rationally.

Non-hardcore

File manager

Large data base manager
(used by PL/I I/0).

New runoff

In PL/I not BCPL,
faster, improved features

New I/0 daemon

1 or 2 printers,
simultaneous punching,
better operator control

System control improvements

Make system operation
cleaner - require less consoles

I/0 management

Improved handling of
peripherals, accounting

Limit stops for CPU usage

Languages

Version II PL/I

New language features,
enhanced compiler performance

Documentation

PL/I users manual
MPM rev. ch. I, II, ref data

Fourth Quarter

Hardcore

355/IOM on Development machine

Allow removal of development GIOC

Preparation for follow-on processor

Dynamic device reconfiguration

Ability to remove suspected bad device.

Non-hardcore

Improved accounting

On-line T&D

Languages

APL improvements

Documentation

MSPM

1971 HARDCORE TASKS

Ongoing

Support to System Assurance

Metering

Documentation (SPS + MSPM)

Cleanup odds and ends (Sysinfo, etc.)

Error handling improvement

Reconfiguration improvements

Tuning

Current

Statis Multilevel run by Operations

Bind entire hardcore

Replace all EPL routines and EPL run-time routines

Variable size AST/page table

User settable search rules

Parent associated reference names

BOS improvement for crash recovery

Make Salvager more failure-proof

Three rings (Std. Serv. Group)

Eliminate all EPL code and all EPL run-time routines

New Tasks

Cleanup "attributes mess", new directory format

Page Multilevel

Page faults at interrupt time

Fix process Termination to help user

New Backup/File Multilevel

I/O assignment table

Improved peripheral handling

    Tape

    Printer

    Cards

New Interprocess Communication (Std. Serv. Group)

Combine PDS/PDF

New linkage/stack segment conventions (Lang. and Std. Serv. Group)

Remove definitions from wired down code

Allow salvager to only salvage the used portion of hierarchy

New Tasks (Continued)

Speedup linkage search path
Make Segment/Directory control working set smaller

For New Hardware

355 software for Development machine
IOM software for Development machine
PRT 300 softward
No RAR except for STAC
Prepare for

       new control unit format

       new clock

       new appending hardware

       new ring protection

To be considered

2 drum gimmick
2 270 channels
Start 270 read in middle
New Wait/Notify
Multiple copies on 270 or drum gimmick
AST salvage
Machine code critical modules
Dynamic device reconfiguration

1971 STANDARD SERVICE SYSTEM TASKS

Ongoing

Support to users - bux fixing, etc.
Documentation (SPS + MSPM)
Error Handling interface improvement
Improve user interfaces

Current

Dartmouth System
Lisp
Ring 1 + message segments
New mail command
Initial Absentee
LSS
Binder improvements

New tasks

Absentee extensions
Improved I/O Daemon 2 printers, etc.
New IPC
Improved user control (with Sys. Admin. group)
New system control
Tape management
Object segment redesign
Command usage monitoring
New editor
Commands/Documentation to make multiple rings useful

<u>To be considered</u>

Data base compiler
Save/Resume

<u>For new hardware</u>

Prepare for new clock
Prepare for new control unit

1971 Language Tasks

Ongoing

PL/I maintenance

Fortran maintenance

Documentation

Current

PL/I Version II

Fortran Version II

APL

New PL/I I/O

Record I/O, file manager

New

New call/save/return

For new hardware

Prepare for extended instruction set

1971 Special Service Tasks

Ongoing

Documentation

Graphics system maintenance, improvement

Current

New graphics editor

Initial tie-in to ARPA network

To be considered

Graphics for fancy terminals

1971 System Administration Tasks

Ongoing

· Documentation
Register users, etc.
Run billing
Monitor system usage
Improvements to user control software

Current

Turnover day-to-day activities to User Services Group
Cleanup billing, add absentee accounting

New Tasks

Cross-checking accounting
User requests for Services via system
Load control improvement
Daily, weekly "bills"
Limit stops
Full disk storage accounting
User control improvements (with Std. Serv. Group)

To be considered

Replace accounting
Dynamic load control

1971 System Maintenance Tasks

Ongoing

Install systems
Failure Analysis
IPC interface

Current

Improvements to installation procedures

New

System testing software
Replace installation software
Simplify providing new systems to foreign users

1971 Hardware Tasks

Ongoing

Support all hardware

Write special tests for problems

Current

Simple Tape T&D

Simple Header Punch T&D

Simple Printer T&D

To be considered

Interpreter for Test and Diagnostic Language

On-line Processor T&D

File System device T&D

For new hardware

355 installation and support

IOM installation and support

1971 Documentation Tasks

Ongoing

Update MPM to keep up with installations.
Update SPS to keep up with installations.
Update operational documentation.

Current

Write SPS for all modules not currently documented.
Prepare Administrative Documentation.
Rewrite beginning sections of MPM.
PL/I manual for Version II.
Prepare Graphics supplement.

New

Re-develop the MSPM.
Upgrade the on-line documentation
PL/I users guide