

WHAT WE ARE LOOKING FOR FROM MPS

1

IMPROVED DESIGN -- MODULARITY

1A

CONTROL STRUCTURES THAT ENCOURAGE MODULAR DESIGN

1A1

RUNTIME ENTITIES, CALLED PROCESSES, CORRESPOND TO
MODULES

1A1A

CONTROL IS PASSED AMONG THE PROCESSES

1A1B

CONTROL STRUCTURES THAT ENCOURAGE SIMPLE INTERFACES

1A2

PROCESSES COMMUNICATE BY MESSAGES SENT OVER "PORTS"

1A2A

IMPROVED DEBUGGING

1B

SOURCE LANGUAGE DEBUGGING

1B1

INTEGRATED WITH NLS

1B2

EASE OF MODIFICATIONS

1C

INCREMENTAL COMPILATION

1C1

DYNAMIC LINKING AND SYMBOLIC REFERENCES

1C2

CHANGE SINGLE MODULE RATHER THAN RELOADING ENTIRE SYSTEM

1C3

EASE OF DEVELOPMENT

1D

MAKE NEW CONFIGURATION OF EXISTING MODULES RATHER THAN
REPROGRAM

1D1

LIBRARY OF MODULES -- LIKE HARDWARE COMPONENTS

1D2

SOFTWARE COMPONENTS -- MODULES OF HIGH GENERALITY

1D3

ADDRESS SPACE CONSIDERATIONS

1E

MODULES RELOCATABLE IN ADDRESS SPACE

1E1

MAPPED IN ONLY AS NEEDED; NOT LOADED OTHERWISE

1E2

DYNAMICALLY ESTABLISH AND MODIFY CONFIGURATION

1E3

FLEXIBILITY -- FROM "VIRTUALITY" OF EXTERNAL REFERENCES

1F

MODULES COMMUNICATE VIA PORTS

1F1

MAY CONNECT ANY OTHER MODULE TO THE PORT

1F2

MAY REPLACE ANY MODULE BY ANOTHER THAT SATISFIES THE INTERFACE REQUIREMENTS	1F3
CONNECTION OF PORTS BINDS THE "VIRTUAL FACILITIES" OF THE MODULE TO REAL FACILITIES	1F4
THE FORMATION OF THESE CONNECTIONS (AND THUS THE BINDING OF FACILITIES FOR THE MODULE) IS NOT ONLY DELAYED UNTIL RUN TIME BUT MAY EVEN BE CHANGED AS THE MODULE RUNS	1F5
RELIABILITY	1G
SIMPLER RELATIONSHIPS AND DEPENDENCIES	1G1
BETTER DEFINITIONS OF INTERFACES	1G2
ABILITY TO PUT A MODULE INTO A TEST ENVIRONMENT FOR VERIFICATION	1G3
ABILITY TO INTERFACE SPECIAL PURPOSE "SUBSYSTEMS" TO NLS	1H
MAY INTERFACE MODULES RESPONSIBLE FOR NLS FILE HANDLING, DISPLAY GENERATION, ETC. TO NEW MODULES TO MAKE SPECIAL SUBSYSTEMS OF NLS	1H1
TRANSPORTABILITY	1I
LANGUAGE FOR MPS AND THE SYSTEM PRIMITIVES SHOULD BE RELATIVELY EASY TO MOVE TO OTHER MACHINES	1I1
VERY FEW PRIMITIVES WRITTEN FOR THE BASE MACHINE	1I2
MOST OF MPS WRITTEN AS MODULES BY BOOTSTRAPPING	1I3
A RESTRICTED MPS FOR THE NOVA MINICOMPUTER HAS ALREADY BEEN PARTIALLY DESIGNED	1I4
ABILITY TO ACCESS REMOTE SYSTEMS	1J
CAN BUILD MODULE WHICH WILL RUN WITH NLS AND DRIVE ANOTHER SYSTEM OVER THE NET	1J1
MAY INTERACT WITH NLS USER; FORMAT REQUEST; SEND OVER NET; GET RESPONSE; FORMAT FOR INSERTION INTO NLS FILE OR FOR NLS DISPLAY	1J2
ABILITY TO MOVE MODULES TO OTHER COMPUTERS	1K
SUCH AS INTERACTIVE PARTS OF NLS	1K1
COMMUNICATE THRU NET	1K2
COLLABORATION WITH OTHER GROUPS ON SOFTWARE DEVELOPMENT	1L

WELL DEFINED INTERFACES; DYNAMIC LOADING; MODULARITY MAKE
IT POSSIBLE FOR OTHER GROUPS TO BUILD MODULES TO RUN WITH
NLS

1L1

THIS OBVIOUSLY WILL BE COMBINED WITH ABILITY TO HAVE
MODULES COMMUNICATING OVER THE NET

1L2

WHY WE THINK IT WILL WORK

2

THE MODULARITY/PROCESS/PORT/VIRTUALITY IDEAS HAVE BEEN
SUCCESSFULLY USED BY RUDY KRAUTER IN SEVERAL SYSTEMS INCLUDING
A PARSER FOR AN INTERACTIVE EXTENDIBLE PROGRAMMING SYSTEM.

2A

SOMEWHAT MORE GRANDIOSE SCHEMES HAVE BEEN CONSIDERED BY BOB
BALZER AND OTHERS AT RAND.

2B

THE SEGMENTATION/COMPILATION/DEBUGGING IDEAS HAVE BEEN WORKED
OUT BY PETER DEUTSCH AND COMPANY AND AT LEAST PARTIALLY TRIED
OUT IN SPL FOR THE BCC MACHINE OR VARIOUS LISP
IMPLEMENTATIONS.

2C

PETER DEUTSCH AND JIM MITCHELL WILL BE INVOLVED WITH THE
DESIGN AND IMPLEMENTATION OF THE SYSTEM. IN ADDITION, BUTLER
LAMPSON AND ALAN KAY WILL BE CONTRIBUTING TO THE DESIGN.

2D