

Saltzer

MULTICS Design and Implementation Organization

JANUARY 11, 1966

TO: Distribution

The MULTICS design is in its late stages in many areas. Implementation planning has begun. The total MULTICS effort now has two (2) parts:

1. Completing design and implementation of software;
2. Developing a time-sharing operating system to such a point that it can be turned over to General Electric and further developed into a commercial product with all attendant implications on sales information and documentation.

The design of MULTICS requires extreme attention to detail. The attention that can be given by the Triumvirate is not enough. A formal organization is required to extend to more individuals responsibilities and authority for completing the design and implementation of large portions of the software.

Approval and control of overall design and implementation is retained with the Triumvirate.

MULTICS reporting will take place as follows:

1. Reports are generated weekly by subproject leaders. These reports will discuss progress against planned goals.
2. Subproject reports are collected by project managers and distilled to give a project viewpoint. Subproject reports will be attached to the project reports and distributed to Triumvirate and all other project managers.
3. A weekly MULTICS report will be generated by E. Vance (G.E.) and distributed outside the project and to project managers.

The Triumvirate will meet on a bi-weekly basis to review schedules, planning, and resource allocation.

Design reviews will be held separately from Triumvirate meetings as required or called for by the Triumvirate.

To make the organization successful, administrative control must be given to project managers over those individuals assigned to them. Control must be independent of the organization by which the individual is employed. It is up to the Trinity and Triumvirate to acknowledge and support this control by not reassigning personnel which have previously been assigned to a MULTICS project without first discussing the reassignment with the project manager.

Note that the organization attached represents a snapshot of the project as it exists today. There will be changes as we uncover areas not currently staffed and as certain subprojects complete. Effort is continuing to document MULTICS design goals.

The first task for the new organization is to produce full MULTICS schedules by January 15, 1966.

E. R. Vance

E. R. VANCE

Cop^{er}ator of Triumvirate

(enclosure)

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AUTHORITY AND RESPONSIBILITY

1. Trinity -
 - Periodic review of overall progress
 - Resource approval
 - Approval of overall schedule
2. Triumvirate -
 - Approval of proposals for design approaches
 - Assignment/reassignment of manpower and resources
 - Schedule review/approval
 - Establishment of goals
 - Monitoring of schedules and progress
 - Approval of project plans
 - Weekly overall report
3. Project Manager(s)-
 - Development of overall project plan for design and implementation
 - Assignment of manpower within assigned resource
 - Development of project and subproject schedules and documentation
 - Programming and debug of modules
 - Coordination w/other project managers
 - Weekly reporting on each subproject and its progress against approved project plan.
4. Subproject Leader(s)-
 - Implementation of project modules
 - Documentation of project modules
 - Weekly progress reporting

PROJECT DESCRIPTIONS

MULTICS - Operating System portion of total program. Includes all input/output, named file manipulation, basic commands and command language, and hard core supervisor.

Techniques and Standards - Technical and programming standards leading to use of "best" use of GE-645 hardware and MULTICS.

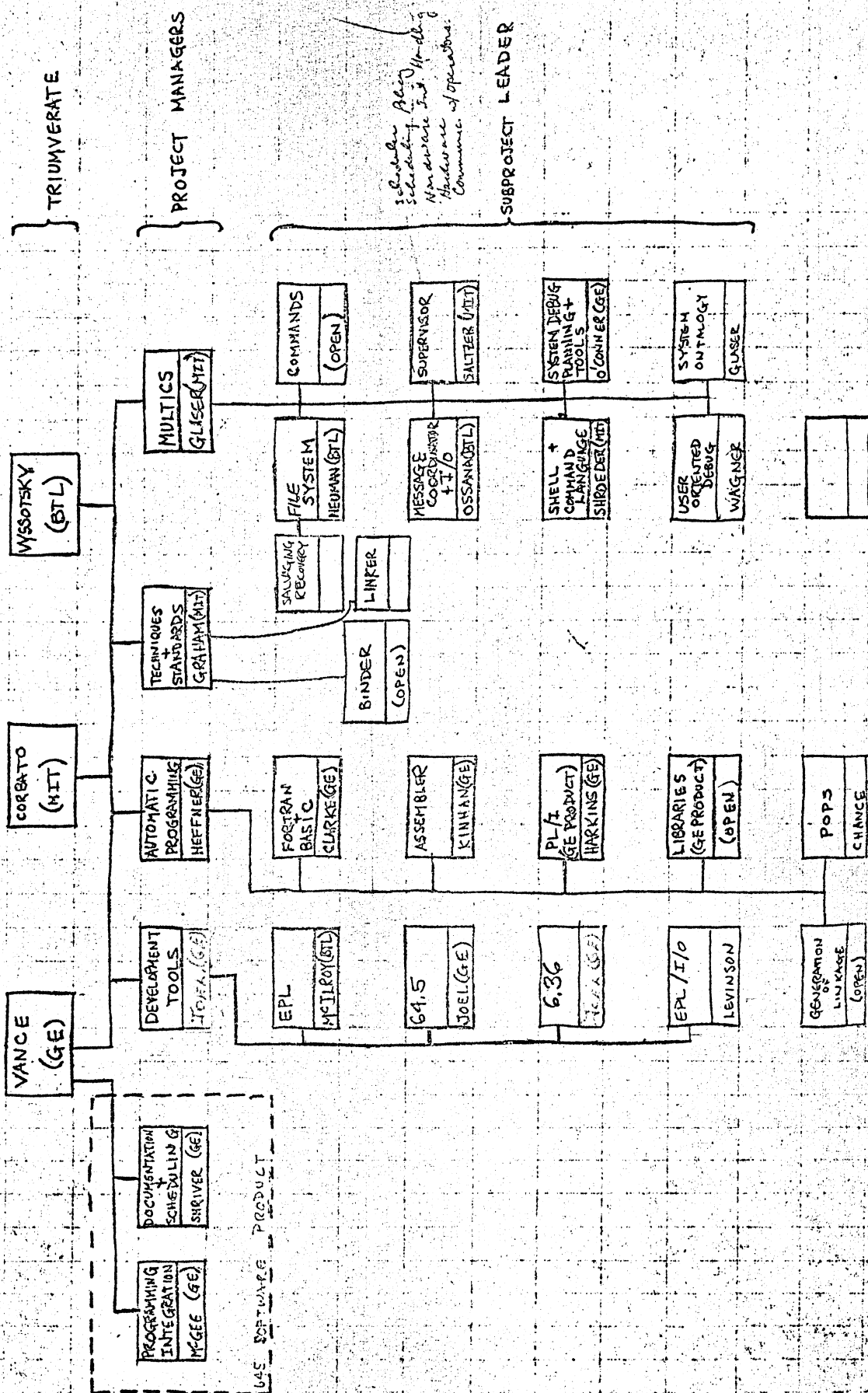
Automatic Programming - The following compilers under MULTICS: FORTRAN, PL/I (G.E. product), Assembler, and BASIC (Dartmouth compiler. Also, libraries and compiler implementation language (POPS) is a responsibility of the group.

Development Tools - Use of Project MAC IBM-7090 and GE-635 to develop tools to aid in the initial debugging of the MULTICS software and GE-645 hardware.

Documentation and Scheduling - Creation and publication of program documentation and monitoring of prepared schedules are the responsibility of this group.

Programming Integration - This group is responsible for G.E. Marketing liaison providing the GECOS interface to MULTICS, and providing free-standing GECOS on GE-645.

ORGANIZATION AND PROJECT LEADERSHIP



! Excludes files including hardware & software of operators.

PERSONNEL ROSTER

TRINITY

E David (BTL)
R Fano (MIT)
JW Weil (GE)

TRIUMVIRATE

FJ Corbato (MIT)
ER Vance (GE) - Coordinator
VA Vyssotsky (BTL)

PROJECTS

MULTICS - EL Glaser (MIT) - Manager

File System - P Neuman (BTL) - Leader

Daley (MIT)
Alpert (MIT)
Clancy (MIT)
Crisman (MIT)
Cushing (MIT)
Krekeler (G.E.)
Quisenberry (MIT)
Thompson (MIT)

Message Coordination and I/O - J Ossana (BTL) - Leader

Dunton (MIT)
Bartlett (BTL) - ½ time
Berlet (BTL)
Braun (BTL) - ½ time
Gimple (BTL)
Hansen (BTL)
Noll (BTL)
Rathun (BTL) - ½ time
Stambler (MIT)
Stone (BTL) - ½ time
VanHeusen (BTL)
Wagner (BTL)
Weiss, (BTL)

PROJECTS (Continued)

Shell/Command Language - Schroeder (MIT) - Leader

Sobecki (GE)
Eastwood (BTL)

Commands - (open) - Leader

Smith (MIT)
Martin (MIT)
Child (MIT) - ½ time

User Oriented Debug - Wagner (MIT) - ½ time

System Debug - O'Connor (GE) - Leader

Edwards (MIT)

Supervisor - Saltzer (MIT) - Leader

Jones	(BTL)	} T&D Liaison
Wolman	(BTL)	
Peticolas	(MIT)	
Manning	(MIT)	
Farber	(BTL)	

Techniques and Standards - RM Graham (MIT) - Manager

Linker/Binder - Johnson (MIT) - ½ time

Automatic Programming - WJ Heffner (GE) - Manager

FORTTRAN - Clarke (GE) - Leader

Campbell (GE)
Heyn (GE)
Crawford (GE)

Assembler - Kinhan (GE) - Leader

Steiner (GE)

PL/I (GE Product) - Harkins (GE) - Leader

Horta (GE)

Libraries - (open) - Leader

Goldberg (GE)
Gray (BTL)
Hamming (BTL)
Mammel (BTL)
Shaw (BTL)

Development Tools - DE Joel (GE) - Manager

6.36/64.5 - Joel (GE) - Leader

Bartlett	(BTL)
Bensoussan	(GE)
Hyde	(BTL)
Johnson	(MIT) - 1/2 time
Ratcliff	(GE)
Slosberg	(GE)
VanBinh	(GE)
Wagner	(MIT)
Ziegler	(GE)

EPL - McIlroy (BTL) - Leader

Boyd	(BTL)
Evans	(MIT)
Kaiman	(BTL)
Leagus	(BTL)
Morse	(BTL)
Pease	(BTL)
Pfenning	(BTL)
Weiss	(BTL)
Wexelblatt	(BTL) - BTL PL/I Contract following

Podiska?

Documentation and Scheduling - AR Shriver (GE) - Manager

Grems	(GE)
Haig	(MIT)
Tague	(BTL)

Programming Integration - RC McGee (GE) - Manager

Cantrell	(GE)
Schecter	(GE)
Hubbard	(GE)
Bordi	(ITT)
Hobbs	(ITT)
Quinn	(ITT)
Foster	(ITT)

} Subcontract

*Widrig? Van Vleck?
Rappaport?*