IBM/CSC 7095 PROGRAM

DESIGN EFFORT

Key Dates	IBM	CSC
3/1 - 4/1	Review Fortran Language Extension	2 Channel Simulation - Compatibility Mode
	Review CSC's comment sheet on Functional Objectives	3 Fortran Language Extension
		2 IBSYS Modifications (Level 0)
		2 Assembler External Specs
		2 Bulk Storage Evaluation
		1 Evaluation of Functional Objectives
4/1	CPU Defined	IBSYS Modifications (Level 1)
	I/O Defined (except bulk core or drum alternative)	Assembler (Level 1)
4/15	Define Fortran Language (Extensions to IV)	Fortran (Level 1)
		Assembler (Level 2)
		Monitor (Level 1)
		IBSYS Modifications (Level 2)
5/1	Selection of bulk core or drum	Complete design levels 1, 2, and 3 of Fortran IV, Assembler, IBSYS Modifications, and Monitor
	Establish direction for Multiprocessing	

February 20, 1964

STATEMENT OF WORK

PROGRAMMING SYSTEM DESIGN FOR THE I.B.M. 7095 COMPUTER

A. SCOPE

Computer Sciences Corporation will perform the complete design of a programming system for the IBM 7095 computer system. The programming system will include the subsystems characterized, in general, by the following sections of Exhibit A, "Objectives and Definitions of a Programming System for the IBM 7095F Computer and a Proposal for its Implementation", submitted to IBM by CSC on October 22, 1963.

1.	II.C.1.	Executive System
2.	II.C.2.	Assembler
3.	II.C.3.	FORTRAN IV
4.	II.C.5.	Support Programs (excluding Sort)
5.	II.D.	7090/7094 IBSYS Modifications
6.	VII.C.	FORTRAN Library Routines

In addition, a study will be made concerning the problems entailed in the transition of 7094 operations to 7095; a user guide describing this transition will be provided.

The design will result in documentation of a quality which will pass the IBM Alpha Test, and which would make it possible for coding to begin immediately. Attachment 1 is representative of the level of detail which will be maintained in the documentation of the internal design.

The following specific documents will be supplied.

1. FORTRAN

   a. Reference Manual. This manual will contain: language specifications; explanation of all compiler output, such as diagnostics and program maps; and instructions in the use of the FORTRAN I/O Buffering Package.

   b. FORTRAN Internal Design Manual.

2. ASSEMBLER

   a. Reference Manual. This manual will contain: external language specifications; explanation of assembler output, such as diagnostics and listings; and instructions in the use of the input/output system.

b. Assembler Internal Design Manual.

3. EXECUTIVE SYSTEM

a. Programmer's Guide. This manual will contain: explanation of required system control cards and deck set-up for jobs, multi-language programming and other loader information. This document will be at the application programmer level.

b. Systems Programmer's Guide. This manual will contain: detailed reference material for creative use and maintenance of the system. Directed to experienced systems personnel, it will include a discussion of system options, computer requirements, and other information of concern to the people who have overall programming system responsibility.

c. Executive Internal Design Manual.

4. UTILITY PROGRAMS

a. Programs and Routines. This manual will contain: support programs and FORTRAN Library routines, disc organization routines, and 7094 MAP-to-7095 Translator.

b. Utility Program Internal Design Manual.

5. IBSYS MODIFICATIONS

a. User Notes. This manual will contain: explanation of procedures to be used in converting an application program written for the 7094-II IBSYS system to the 7094-III compatible mode system. This document will be directed to the application programmers.

b. IBSYS Modification Internal Design Manual. This manual will contain: detailed documentation of each modification, including flowcharts and supporting text.

6. TRANSITION

a. 7094-7095 Transition Manual. This manual will contain: explanation of procedures to be used in converting an application program written for the 7094 IBSYS system to the 7095 system. This document will be directed to the application programmers.

B. INTERNAL DOCUMENTATION

Internal documentation will be written at three levels:

Level 1: General flowcharts and prose description of the logic of the entire system;

Level 2: Description of the logic of each phase or component, with complete interface description; and

Level 3: Detailed prose description and flowcharts of each routine within the phase or component, including detailed interface and internal table description.

C. FORMAT

External documentation will be produced in a form commensurate with recent IBM publications; e.g., 7040 or 7010.

D. IBM-SUPPLIED ITEMS

IBM will supply complete documentation of the latest IB system, including all program listings, by March 8, 1964.

In order to meet the objectives of Item A on the schedule presented in Item E, IBM will supply the following items:

1. 60 hours of 7094 time at the rate of five hours per week, commencing March 15, 1964. Machine time to be supplied in the Los Angeles area.

2. 100 hours of 1401 time at the rate of eight hours per week, commencing March 15, 1964. Machine time to be supplied in the Los Angeles area.

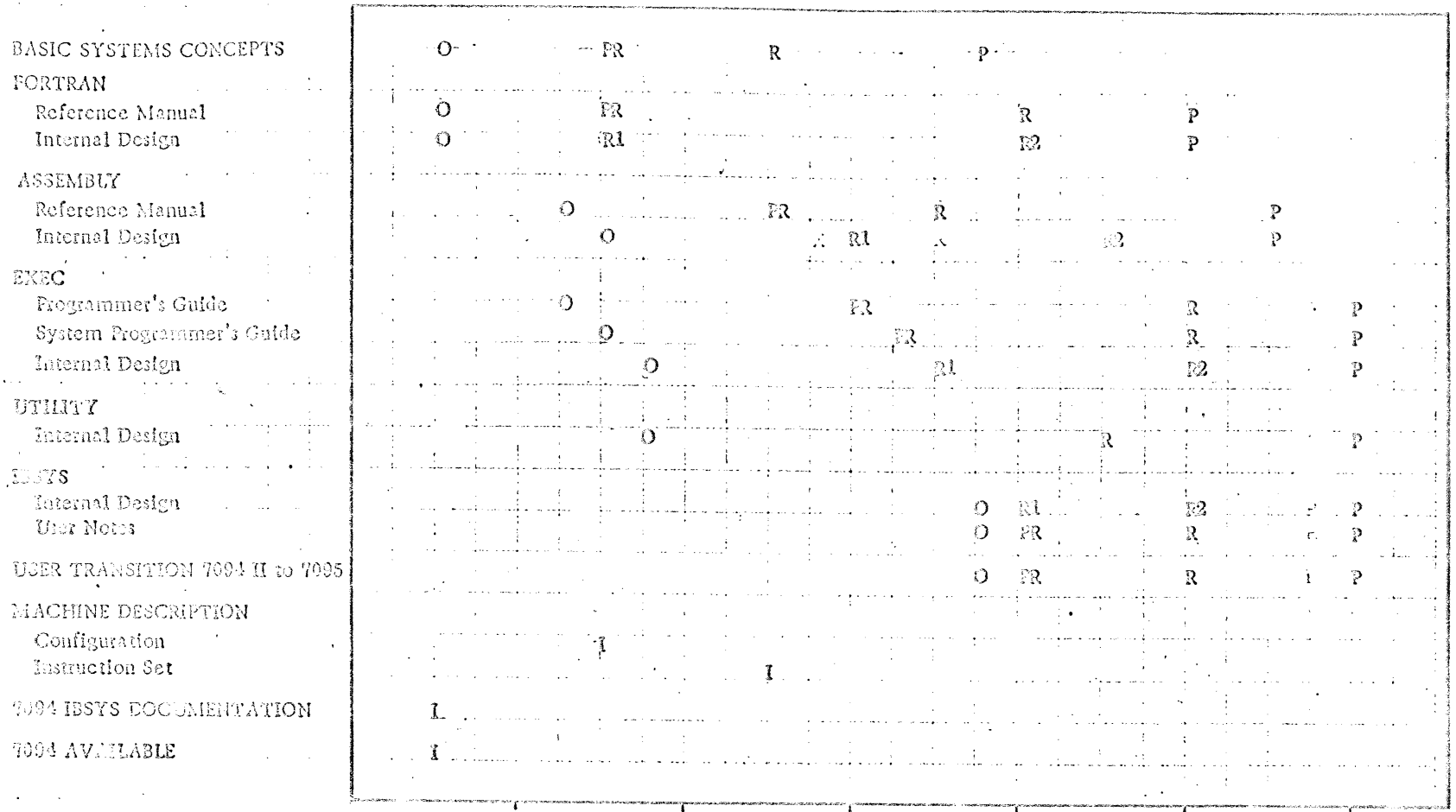
3. 7095 system configuration to be defined by April 15, 1964. Both the minimum configuration and optional configuration to be defined.

4. 7095 instruction set defined by May 15, 1964.

7095 machine configuration and instruction set is assumed preliminarily to be that cited in Section II.A, "IBM 7095 FORTRAN Configuration", except for substitution of the 7320-X large-capacity drum, in place of the 7320 drum. The instruction set is assumed preliminarily to be that cited in Exhibit B, "7095 Data Processing System, Functional Objectives", dated December 19, 1963. Any conceptual modifications at the system level must be supplied to CSC in preliminary form by March 1, 1964.

E. SCHEDULE

The schedule for the completion of the system is shown in Attachment 1. On the given dates CSC will present to IBM rough draft copies for review. If no comments are received from IBM within two weeks of delivery of this documentation, it will be assumed that it is approved.



O Outline Available
FR IBM and CSC Review of Preliminary Draft of External Specifications
R IBM and CSC Review of Final Draft of External Specifications
P Published Document Available for Delivery
I Furnished by IBM
R1 Review by IBM and CSC of Level 1 Documentation
R2 Review by IBM and CSC of Level 2 and Level 3 Documentation

7095F SYSTEM DESIGN SCHEDULE