

TRIP REPORT

DATE: 28 January 1964

PLACE Boeing Aerospace Division, Seattle, Wash.

PURPOSE: Technical Conference, Digital Communications System

PERSONNEL: Jim Bloomfield, Boeing Engineer

Bob Gorman, Boeing Prgrmr.

Dick Johnson, Boeing Systems Engr.

Wayne Roth, Control Data Sales

Bill Hitchcock " " "

Bruce Meyer, Control Data Engr.

Boeing is proposing a full-duplex data link of an experimental nature between one U. S. Navy ship and one shore station. The application of the link was not disclosed.

It is required of the system that a full duplex 100 wpm (or slower) teletypewriter channel, operating continuously, interface a 4800 bit/sec radio terminal operating intermittently. The principal function of the Control Data Corporation equipment and the software is to provide the required buffer storage for speed-changing. Boeing would also like to use the reserve capacity of the equipment to perform a periodic analysis and output of data derived from automated observations of system performance.

A system hardware configuration was tentatively agreed upon that includes the following CONTROL DATA devices.

- 1 ea 8092 TeleProgrammer
- 1 ea 8064 DCT (repackaged)
- 1 ea 806X DCT (special)
- 1 ea 8098 Paper Tape Punch
- 1 ea 8097 Paper Tape Reader

It is presumed that all hardware will be installed in the TeleProgrammer cabinet if there is room: if not, a relay-rack or cabinet will also be used.

The 8064 DCT will have to be modified slightly, as follows:

1. Provide 5 data bits and 3 status bits in the T-P input word. (Drop status "Break/Idle")
2. Remove cabinet and power supply. (Actually the 8064 DCT becomes a DCU)
3. Specify Interrupt 40 rather than 30

The 806X DCT (or DCU) must be capable of accepting 5-bit output characters from the T-P and serializing these at a 4800 bit/sec rate controlled by an external Modem clock. No pulses will separate adjacent characters in the serial stream. The 806X must be capable of receiving input data in a 15-bit serial shift register, again under 4800 baud external clock control, and of staticizing these data bits in 5 bit character increments for the T-P input. Inputs and outputs are mutually unsynchronized and may occur at slightly different rates. Lastly, the 806X is a catch-all for various supervisory signals between the T-P and system components not supplied by CDC.

In terms of general complexity, the 806X resembles a double 8063 DCT, with a saving of cabinets, power supplies, one EXF decoder, etc. On this basis the quote to Boeing might be reduced, but only slightly, inasmuch as a number of status bits not used in other systems must be added. We promised Boeing that our software people would examine the system requirements and state their opinion of the ability of the 8092 T-P to do the indicated job. This opinion is required on or before Monday, 3 February, 1964.

B. L. Meyer
B. L. Meyer
1-29/64

Dec. 13, 1963

N. W. Faurus

R. F. Smith

Record Transmission Programming

Since the writing of your memo of 4 Dec., requesting a Pert Chart breakdown of each of the required programming packages, changes in programming concepts have occurred. Instead of individual packages being developed to meet the various Record Transmission requirements, the concept now is to combine (predicated upon the limits of a 2048 memory) the major requirements into one universal program. Major implying service to Mag Tape, Card Reader and Line Printer equipment. This includes local translation of data and transfer of data via communication channels. Incorporation of Paper Tape, I/O Writer and Card Punch equipment service into this universal program depends upon whether we go to a standard 4096 memory. At this point, it does not look feasible to provide a completely universal program within a 2048 memory due to the increased instruction and translation tables required for Paper Tape, I/O Writer and Card Punch equipment. It is also recognized that to increase the memory increases the cost of the TeleProgrammer. To this end, individual programs will be considered for the more uncommon peripheral devices, but at the present time, it is difficult to pinpoint the associated time frames for these special programs until we get off the ground with the Mag Tape-Card Reader-Printer routine.

Consequently, instead of the standard PERT chart you requested, find attached another approach to diagramming the areas of current and projected programming responsibilities.

R. F. Smith

RFS/fn

cc: Dr. R. E. Smith

V. Prosinski

A. Del Calzo

N. Nicholas

12/13/63

Robert E. Smith

J. Robert Tuthill

Utility Programs for the 8092 TeleProgrammer

Walt Moe, Del DelCalzo, and I had a conversation today regarding the console on the TeleProgrammer. The operating and programming switches are mounted exposed on the front of the 8092. There is a key operated lock on the console which when set to Run will effectively ignore all switches on the console except the Manual Interupt toggle switch. Del said that the program change to ignore the Manual Interupt switch when the lock is on Run would be made.

This program modification is most important since many TeleProgrammers will be in locations where there are no experienced programming or operating personnel.

J. Robert Tuthill

JRT/eb

cc: L. E. Jensen
Del Delcalzo ✓
Walt Moe

9 December 1963

To: File

From: R. F. Smith

Subject: Programming Definition for Record Transmission Terminals

On 6 December, members of Programming and Record Transmission Departments met to initiate, review and evaluate programming techniques and criteria as applied to satisfying the majority of various record transmission requirements.

The points of discussion follow:

1. Two programming philosophies were presented:
 - a) To develop programs pertinent to specific record transmission terminals, for example, mag tape to card. These programs would be retained in a program library and loaded as required. This method realizes an advantage of using only that memory required for specific job instructions and leaves the remaining memory for data storage and buffering. Conversely, as many programs as there are specific I/O terminal arrangements need be developed and loading of the controller with a new routine each time the mode changes consumes time and above average operator attention.
 - b) To develop a universal program which would service all of the various data transfer and translation requirements. This routine would continuously run in a loop and when the operation mode would change, for example, mag tape-mag tape to card-mag tape, that portion of the general program would be selected from the operator control panel. This type program, by comparison, would use extensive memory but would still provide for two 240-character buffer banks.

It was decided to proceed in the direction of the universal program.

2. Block length for all peripheral devices except mag tape was established at 80 characters. In the case of a line printer, the block length could be converted 120 characters, if required.
3. Block length for transmission was established at 240 characters. This block length is subject to change (increase) contingent upon program finalization and amount of unused memory remaining.
4. Block length for mag tape terminals will be variable up to at least 240 characters. Upon completion of program development, determination will be made as to a maximum length block. This target seems adequate considering the majority of magnetically recorded information is in blocks of 80, 97, 120 and 132 characters. Continuous data would be required to be grouped in maximum length blocks (to be determined later) or less.

5. Program will halt when mag tape mode is sensed at control panel. Operator will be responsible for identifying the block length associated with the reel of tape to be used and will either call upon a programmer or will himself enter the block length figure into the A register of the Tele-Programmer console where the figure will be automatically entered into the program upon run restoration of the program.
6. All operation modes other than mag tape will not halt, as in item 5, but will automatically be controlled by that portion of the universal program selected from the operator control panel.
7. A three digit dial switch (9 bit) was considered as an input provision to enter the block length for mag tape operation. The dial switch would have been mounted on the control panel. This suggestion was rejected in lieu of entering the block length into the A register, as specified in item 5.
8. A preamble to any data to be transferred would be formed from a combination of control panel functions, block length manually inserted (if a mag tape operation) and stored program instructions. This preamble would be sent from the send terminal to the receive terminal and would condition the receive terminal stored program to input the specified length blocks, perform the required code conversion (if called for) and output the data to the selected peripheral device.

The above reference to a universal program implies initial emphasis on mag tape, card and printer applications. Incorporation of less used peripheral devices, like paper tape, in the future will undoubtedly warrant some program modification. However, the present objectives are to facilitate first, mag tape to mag tape and second, mag tape or card to printer or card communications.

RFS

R. F. Smith

RFS/fn

Distribution: All parties concerned

TO: ALL I.D.P. PERSONNEL

FROM: J. Robert Tuthill

DATE: 11/27/63

SUBJECT: Use of the word TeleProgrammer

Control Data Corporation is applying for a trademark on the word TeleProgrammer. In order to obtain a trademark, it is important that we are consistent in the spelling. Please spell it in the above way on all internal and external documents.

J. Robert Tuthill

J. Robert Tuthill

JRT/eb

cc: R. F. Buelow
Glenn Conger
John Munson
T. D. Rowan
C. T. Casale
J. R. Eastling
J. W. Windhorst