TECHNICAL PROGRESS REPORT
LISP 2
Period Ending July 6, 1966

CONTRACT ARPA SD-97
SUBCONTRACT SDC 65-107

I.   This is a periodic report of progress on the LISP 2 Program, as
     required by the contract.   Copies are distributed to the following
     persons as specified:

          Mr. Jules Schwartz   SDC
          Professor Marvin Minsky   MIT
          Professor John McCarthy   Stanford U.
          Dr. Ivan Sutherland   ARPA

     The report is intended to outline the activities of Information
     International, Inc., during the period, however, most efforts
     are done in conjunction with SDC.

II   GENERAL HIGHLIGHTS

     A.   An operating version of LISP 2 was demonstrated to ARPA
          in mid-May.

     B.   The Project staff has been increased to the desired and
          approved level.

     C.   A paper on LISP 2 has been accepted for presentation to the
          Fall Joint Computer Conference.

     D.   The LEND-LEASE program to familiarize representatives
          from other Companies and Agencies has been successfully
          initiated.

     E.   Phase II of the contract has been completed.

III PHASE II TASKS

     Task 1 - Design of LISP 2 Supervisor

          A preliminary version of the LISP 2 supervisor was designed
     and available for demonstration by 16 May.   Since that date, various

improvements have been proposed and documented in the Intermediate language document (see Task 4).

Task 2 - Inclusion of Compiler and Supervisor in Core Image

Completed 6 May 1966.

Task 3 - Produce LISP 2 Version of META

This work has continued under the direction of Erwin Book of SDC.

Task 4 - Draft of LISP 2 Reference Manual for Q32

The first draft of this document was delivered to SDC on 5 May and passed into the hands of their technical editors. Though substantially correct and complete, it did not reflect the many small changes and additions to LISP 2 that have been made during Phase II. Because of the difficulties inherent in revising so large a document, it was decided to revive and re-issue the Intermediate Language document as a concise language definition reference for the author of the Reference Manual, P. Abrahams of III. The re-issue is expected by 18 July.

Task 5 - Improvements to the Compiler

The first debugged version of the Q-32 compiler was available by May 16. Since that date, much of the compiler has been rewritten, primarily to incorporate new features into the language, but also to improve its operation and machine transferability. The next, and possibly last, core image generation for the Q-32 will reflect these improvements.

Task 6 - Checkout - and Demonstration of LISP 2 on Q-32

All parts of LISP 2, except for the syntax translator, were demonstrated to ARPA via teletype from Boston approximately May 17.

Task 7 - Minor Changes and Additions to the Language

Most of these changes were made by 29 April. However, since then several other modifications have proven desirable. Among the features affected are: the FOR statement, variable declarations, token syntax, and functional arguments. Much recent work has been done to

complete these modifications so that they could be described in
the Intermediate Language and Token Syntax documents, and so
that the 360 and PDP-6 implementations could proceed with few
such changes expected over the next few months.   These then were
completed by 1 July.

Task 8 - Draft of LISP 2 Primer

A draft of the LISP 2 Primer was completed by M. Levin of
III and delivered to SDC by 27 May.   Editing of the primer is con-
tinuing under the direction of C. Weissman of SDC.   Additional
material is being prepared at the present time by M. Levin; this
is expected to be ready by September 1.

Task 9 - Design and Documentation of Tables and Arrays

This document is being prepared by S. Kameny of SDC.

Task 10 - Specification of Machine Dependent Parts of LISP 2

This specification has been appended to the Internal Storage
Conventions document (see Tasks 11 and 12).

Task 11 & 12 - Storage Conventions for IBM 360/65 and PDP-6 Computers

A draft of the document covering storage conventions for
both the IBM 360/65 and PDP-6 was delivered to SDC on 5 July.
It is now undergoing editing.

IV   EVIDENCE OF COMPLETION

Part 1 - An operating version of the LISP 2 system was demon-
strated on May 17.

Part 2 - Drafts of the primer, reference manual, and internal
storage conventions documents have been submitted to SDC.

V   TECHNICAL PROBLEMS

A continuing problem has been the limited core storage available
on the Q-32 and projected for SDC's IBM 360/65.   The lack of space
on the Q-32 has caused a slowdown in the rate of updating the system

to include the syntax translator and language modifications.   The
50K maximum task size specified for the 360/65 time sharing
system required much extra work in specifying the internal storage
conventions for that machine.

Prepared and Submitted by:

INFORMATION INTERNATIONAL, INC.

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