Xerox Corporation
Palo Alto Research Center
3333 Coyote Hill Road
Palo Alto. California 94304
415 494-4000

July 25, 1980

Mr. Jack Grimes
Tektronix Inc.
XEROX P. O. Box 500
Beaverton, Oregon   97077

Dear Mr. Grimes:

The Learning Research Group at PARC has been involved in the design
and implementation of a software system for personal computing
widely known as Smalltalk. After nearly a decade of research, we
are preparing to publish a book documenting Smalltalk which will
describe the language, its implementation, its text and graphic
features, its document editors, and its program development and
debugging tools. The Smalltalk-80 programming system is the
latest version of this integrated environment for specifying,
implementing and debugging complex software applications. User
level access to the Smalltalk system is a highly graphical
approach to viewing structured information that utilizes display
screen menus and user selection of messages to obtain or change
data. Smalltalk itself is a programming language based on an
object approach to data representation and manipulation, and a
message approach to processing.

Our main goal in publishing at this time is to disseminate widely a
basic standard for Smalltalk as a language and system. We hope to
foster compatibility between the anticipated personal computer
versions of the language by providing definitive reference
documentation. A further goal is to have a number of
implementations of the system already completed at the time the
book is available. By cooperating in these implementation
projects, we hope to receive early feedback about needed revisions
of the Smalltalk book draft and to promote even greater
standardization of Smalltalk.

For purposes of review and basic implementation, we are inviting a
limited number of manufacturers to participate in a "pre-
publication review" of the Smalltalk book.   To these
manufacturers, we are proposing a two-phase review process:
 <u>Phase I</u> - Evaluation of Written Material
 <u>Phase II</u> - Trial Implementation

Phase I - Evaluation

To assist you in understanding Smalltalk and deciding whether to proceed with implementation, we will furnish:

1. Drafts of the appropriate book chapters (1-10);

2. A textual description of the byte codes that must be implemented;

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3. Example source code for the Smalltalk interpreter;

4. Text of the object descriptions which support the Smalltalk user interface.

The combination specifies a standard for the Smalltalk virtual machine that we hope will be propagated to the users of the available Smalltalk systems. In return, we are asking for cooperation in providing the book review by commenting in writing on the communicative quality of the book chapters. We expect all review comments back within a maximum of two months.

Phase II - Implementation

When the review comments of Phase I are returned, we will mutually agree to the extension into implementation. For this phase we are additionally offering:

1. System files of the object descriptions which support the Smalltalk user interface;

2. A limited amount of our consulting help in carrying out the implementation; and

3. A small set of demonstration applications to assist in understanding the system.

In return for this assistance in Phase II, we are asking for

1. Additional comments as they occur about the Smalltalk book and documentation.

2. Cooperation in a study of implementing this software transfer by writing down questions and problems for us. We in turn will write out the responses and we plan to share all questions and answers with all participants in the review. We also expect your permission to tape record verbal exchanges when written exchanges are not possible or suitable.
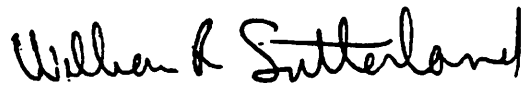
To complete the dissemination process, we hope you will share the resulting Smalltalk software with your customers on some commercial ongoing basis.

We estimate about one work year for a very expert systems
programmer to implement the microcode for the virtual machine, and
implement the i/o primitives. This code took us about 5KB of Intel
8086 code, plus about .5KB to implement our display control
primitive. It will also be necessary to write a procedure to
transform the image of the Smalltalk system objects into the
particular format of your virtual memory. These system objects
consist of about 100K (16-bit) words to support the meta-classes
(class Class, Object, Method, and Context), numbers, basic data
structures, graphics, and user interface.

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We are soliciting your cooperation on an open non-confidential
basis. Xerox is not willing to receive any proprietary
information as part of this project. Publication of Smalltalk has
been approved by Xerox and this cooperative gesture of pre-
publication review is intended to improve Smalltalk
standardization through better documentation and by starting the
inevitable implementations from a common base. All participants
will be identified to one another once the participating groups
are arranged. We would like to begin after Labor Day of this year
(1980).

Sincerely,

W. R. Sutherland, Manager
Systems Science Laboratory

A. J. Goldberg, Area Manager
Learning Research Group

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