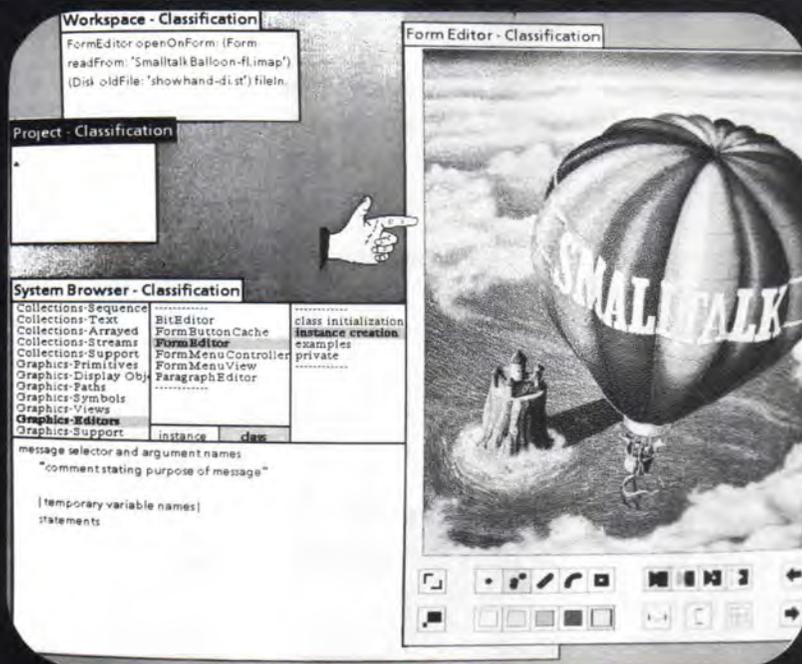


The Xerox 1100 Smalltalk-80™ System

An Integrated Programming Environment



The Smalltalk-80 is a personal, integrated, interactive environment ideally suited to exploratory programming and prototype development. It is the result of 10 years of research and development by the Software Concepts Group of the Xerox Palo Alto Research Center (PARC).

The Xerox 1100 Smalltalk-80 completely implements the Smalltalk-80 environment,* and takes full advantage of the Xerox 1100 advanced hardware capabilities.

Environment. The Xerox 1100 Smalltalk-80 environment provides integrated, interactive text and graphics editors, compiler, source level debugger, and management of multiple views and dynamic memory.

Interactive. Smalltalk-80 environment is interactive. The Xerox 1100 implementation takes full advantage of the large bit-mapped display, keyboard, and unique pointing device, called a *mouse*. The system provides for the scheduling and manipulation of *multiple, overlapping views* of display data.

Using the mouse, a programmer can point to text and select actions from *pop-up menus*. An extensive set of graphical facilities is available to support the construction of interactive applications.

Object-oriented. Smalltalk-80 is a powerful interactive language based on the idea of *objects* that communicate by sending and receiving *messages*. Every Smalltalk object is an instance of some *class*. Classes are organized hierarchically, so that a new class is normally defined as a subclass of an existing class. The subclass inherits the instance storage requirements and message protocol of its superclass. It may add new information of its own, and may override inherited responses to messages.

The notion of class provides a uniform framework for defining and protecting system objects and encourages a logical, hierarchical program structure.

*As described in the August 1981 issue of Byte magazine and *Smalltalk-80: The Language and Its Implementation*, by Adele Goldberg and Dave Robson, Addison Wesley, 1982.

accessible for viewing and modification by means of a view called a *Browser*. A Browser displays the system class structure and allows the user to move through the structure by pointing with the mouse. The Browser provides facilities for managing incremental changes to the system in a formalized way.

Text Editing. Text editing throughout the system is carried out by a simple *cut and paste* metaphor. The same text editor is used for document creation and class development.

Graphics Editing. An extensive graphics package is included that provides for the creation and manipulation of bit images, lines, and curves.

Technical Information

- Integrated environment
- All system facilities available to user
- Text editor
- Graphics editor
- Class/instance model with inheritance
- Incremental compilation/dynamic binding
- Source language debugger
- Browser/incremental change management
- Graphical presentation through overlapping windows
- Input from a keyboard, a pointing device, and menus
- Dynamic memory management/reference counted garbage collection
- Performance measurement tools
- Library of over 4,000 functions
- Over 1 million bytes of commented source text on-line
- IEEE floating point
- Extended precision integers, up to 65,000 digits

the display and modification of code and data. The current point of execution is highlighted in the original source text, and variable values can be inspected simply by pointing with the mouse.

Processes. The Smalltalk-80 system includes a high-level process scheduler capable of managing many independent processes controlled by external or system-derived signals.

Performance Measurement Tools. Performance can be analyzed to provide a percentage breakdown of execution time in a given application. The presentation in terms of calling sequence makes it easy to locate performance bottlenecks.

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