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Smalltalk

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June 30, 1981

RECEIVED

JUL 1 1981

G.I. RHINE

Dr. Adele Goldberg
Xerox Corporation
Palo Alto Research Center
3333 Coyote Hill Road
Palo Alto, California 94304

Dear Adele:

We are pleased to accept your offer of a visit to Xerox PARC. We will arrive at San Jose airport on July 10 at 8:35 a.m., then drive to PARC. We should arrive at PARC between 9:30 and 10:00 a.m.

The following seven people will be visiting Xerox PARC:

- 1) George Rhine, Design Automation Division (DAD), Systems Engineering and Technology Group Manager. (Among other things, George has overall management responsibility for the Smalltalk-80 project.)
- 2) Paul McCullough, DAD Systems Engineering and Technology Group. (Paul is the Project Leader for the Smalltalk-80 project.)
- 3) Larry Katz, DAD Systems Engineering and Technology Group.
- 4) Allen Wirfs-Brock, DAD Systems Engineering and Technology Group.
- 5) Rick LeFaivre, Computer Research Laboratory Manager, Tektronix Laboratories.
- 6) Kit Bradley, DAD Microprocessor Development Products.
- 7) John Providenza, DAD Microprocessor Development Products.

We have a number of topics we would like to discuss with LRG. Some of these can be categorized as follows:

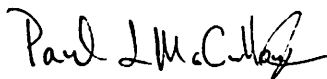
- * Administrative: Licensing arrangements
Long-term stability of the Virtual Machine Specification
Long-term stability of the Virtual Image
Tek dissemination of Smalltalk-80 information and Xerox' copyright.
- * Speculative: Smalltalk-82 (Smalltalk-80 and type checking?)
LOOM (or similar facilities)
Events & Process synchronization

- * Anticipatory: Allocation of currently unused primitives
Implementation - specific priorities (e.g., I/O)
- * Nitty-Gritty: Bugs (!) in the book's algorithms,
Observations made during our implementation activity

Our list is far longer than this, but this preview should give you an idea about some of the areas we're interested in discussing.

We are certainly looking forward to this exchange of ideas and experiences.

Sincerely,



Paul L. McCullough
DAD Systems Engineering and Technology Group
Smalltalk Project Leader

PLM:jac

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(1)

- ① Virtual Image: compressed image has objects spanning segment boundaries
- ② SEGMENT SIZE: CAN BE 65536 BUT THAT DOESN'T FIT IN A 16-BIT UNSIGNED FIELD
- ③ how often does B&Bt have same source & destination
How many of the possible effects are actually used (useful)
~~menu selection: reverse video done by bit blt to sw, or by video hw~~
- ④ The text claims (somewhere - collec. classes maybe?) that the largest possible object is 65535 words, but ... object overhead is ~~6557~~ 2 words, so largest possible is 65533, and because of ② above, it's really 65532.
- ⑤ How add primitives to do i/o etc.?
 - many primitives (read, write, seek ...)
 - start i/o prim.
- ⑥ "Events" & focus synchronization, esp. i/o
- ⑦ ~~Why are the freebits of OT-entries only~~ turned on by the compactor, and ~~not at deallocation~~
- ⑧ how often do ref counts get to 128, but object really isn't "permanent"?
- ⑨ why does interp copy multiple fields of objects rather than poking obj mem mgr. (transfer: of object: — —)
- ⑩ color smalltalk
- how?

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(2)

- (11) "permanent" objects (e.g., nil, true, false, \emptyset , ...) need not be reference-counted up or down; a CAM could be used to implement a look aside during the "count up/down" routines; ~~how big should~~ how large should the CAM be? is 8 enough? is 64 too many? is this even useful?
- (12) Ethernet support via methods/primitives
- (13) swap pointers i_1 of i_2 and: ^{-appendix 7} is wacko.
- (14) discuss S:PER articles?
- (15) How is "deepCopy" recursion really defined?
- (16) OOZE/Loom ^{to be} release? if not, enough info for us to invent?
- (17) chap 11, pg 43 last part of is inside-out-backwards according to business memo (vs. book)
- (18) Do we get another shot at book before publication?
- (19) For AllOther Objects AccessibleFrom: suchThat: do:
does not take small Integers into account - needs a guard after next ←
- (20) Mhs off-by-1

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- 21 License Agreement?
- 22 Given the ~~existence~~ existence of the browser, how does one protect proprietary sw?
- 23 Shouldn't allocates which can't obtain sufficient memory fail back to the user? (As opposed to killing the system). An allocate of a LARGE object might fail when there is still enough space available to do useful work.
- 24 Would it be worthwhile to maintain separate free lists for contexts.
- 25 if primitive 16r13 (size) is sent to an object without indexable fields should it fail or should it return ϕ .
- 26 If a message lookup cache is used by the interpreter, when must the cache be flushed (to reflect ~~changes~~ changes to compiled methods). How ^(which?) can this be signaled.

- (27) Should array access primitives check whether the receive has indexable fields?
- (28) Does "beDisplay" or "beCursor" increment reference count of object?
- (29) It is potentially significant that popping ops from the active context stack does not destroy the actual object references.
- (30) "Guided Tour" through the classes in the Virtual Image?
- (31) ~~The actual implementation for the == primitive and the smallInteger = primitive are identical. why have separate primitives for these. Using only one would make an extra single byte send available.~~
- (32) Reprints of Byte articles? for internal Tek distribution, (~50 copies)
- (33) Long term stability of the Virtual Machine Specification \neq of the Virtual Image.
- (34) Allocation of currently unused primitives?
- (35) How can Smalltalk-80 map onto multiple processor realizations, for problems which are too large for single processor solutions?

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⑤

③⑥ How does one add a primitive?

③⑦ Relationship between changing the cursor object \neq beCursor (to effect a change in the displayed cursor) is never stated.