

DRAFT

1 MEMORANDUM

December 7, 1984

To: List
From: Mitch
Re: Notes

With the formal commencement of the "Notes" project upon us, it seemed appropriate to set down a few brief notions about the project, its scope, and its strategic importance to Lotus. This material should be regarded as more than highly confidential.

First, the news and some formalities. Ray Ozzie will be wearing a new hat, not as a Lotus employee, but as a principal in Iris Associates Inc., which is under contract to Lotus to develop a software product, "Notes". Both Ray and I foresee a close, cooperative relationship in the spirit of a partnership which is going to open up new ground in the personal computer software industry, and contribute materially to the prosperity of all parties. Structurally, the nature of the Lotus-Iris arrangement bears a slight resemblance to Ashton-Tate's deal with Forefront, the developers of Framework. Ray and team will be located in their own facility, somewhere west of Lotus. I will be working extremely closely with Ray, as part of the design team. Some sort of public announcement will be made shortly, details of which have to be worked out.

Personally, I am extremely excited about Notes as a product itself and as the foundation for a product line with billion dollar potential. The aim here is ambitious in the extreme - to shoot for a spreadsheet for thinkers.

The attachment gives some idea of the nature of the project.

Mitch

LIST

David Gilmour
Ezra Gottheil
Norm Saunders

2 What is this document?

This document is an attempt to describe in a capsule form what Notes is all about. I have tried to indicate what are open issues and guesses within the text. Future revisions will be increasingly specific and contain more examples.

3 What is Notes?

Notes is a document creation, editing, and storage system.

4 What is a Note?

A note may be any size from a single line of text to a novel. Provisions will be made to allow notes to be graphic elements or even digitized voice.

Notes may be individually stored and retrieved.

5 Data Structures

5.1 Attribute/Value pairs

A note may be thought of a series of attribute-value pairs. For instance, consider a single message in an electronic mail system as a note. The note will have attributes like "To", "From", "Date Sent", "Body", etc. In a sense, each attribute is like a data base field, and the particular value is the content of that field. The Notes storage system will be vastly more flexible than any conventional data base.

5.2 Application-supplied attributes

Certain attributes will automatically be supplied when the user invokes a particular Notes "application", e.g. E-mail. This will save mental wear and tear.

5.3 User definable attributes

In all cases, however, the user will be able to define his or her own sets of attributes and values to personalize their filing system. For instance, the user may set up subject categories to file E-mail, as in, Computers: IBM, DEC, Apple; Software: System, Application etc., where a piece of mail may or may not have the attribute "Computers". There is no presumption that any given note need to have assigned values for every attribute the system knows about.

5.4 Virtuality and hierarchy

From the user perspective, Notes will be a full virtuality, not a simple hierarchy. A standard outline editor is a simple hierarchy. Each headline appears in exactly one place. In Notes, a single note may

appear an unlimited number of times in the user space. This will make it possible to "file" the same piece of E-mail by sender, date, and subject and freely browse in each of those dimensions. The trick here is to store the note once in a note storage file, but allow multiple pointers into the file.

5.5 Inter-document linkages

5.5.1 Manual

Users will be allowed and encouraged to create arbitrary, manual links between groups of notes. This is intended to provide a facility by which a user can create relationships which follow his or her own idiosyncratic paths of association.

5.5.2 Automatic

Some strong type of automatic inter-document linkage will be an integral feature of Notes. It will be analogous to a query facility in a traditional data base, but extended. If the user wishes to browse through all mail on a particular topic, the request should be easy to make. Further, however, if the user wishes to be kept informed of any such new mail, it should be possible to specify a request to this effect, such that the arrival of that new piece of mail should trigger notification to the user, as opposed to the user's having to manually assert the query.

5.6 Extension into expert systems

It is intended to make the attribute-value storage system and methods of inter-document linkage rich enough to support certain types of symbolic processing typically associated with expert systems. There is no commitment to actually provide any such expert system with the initial release, however. This is one reason why a unary keyword system is not being used. Extremely robust support of complex cross-references is intended.

6 Views

A "View" is simply a standard way of displaying a note. The view is to a note in Notes as the cell format is to a cell in a spreadsheet. Just as there are certain standard formats, there will be certain standard views, e.g., List, Table, Outline, Rolodex. The View is independent of the data. The components of a view will include the positions and relations of various note attributes. Users will be able to create their own custom views using a simple, interactive graphic editor. The creation of a custom view will be similar to laying out a custom form for a database.

Since Notes will run under a graphic operating environment such as the Macintosh or MS-Windows, users will have at their disposal the

ability to include in their custom views elements of special pull-down menus, dialog boxes, mini-scrolling regions, etc.

7 The PC hardware and system software environment

Notes is intended to run on existing IBM PC's. Minimum memory required will most likely be 512K, although it could be less. Macintosh is also an early release target. Relative priority is not yet set.

LAN-support, via MS-DOS 3.1 (or higher) and Apple-Talk, is targeted for first release. Support for multi-tasking under DOS 4.0 is highly likely.

Notes will run under a graphical user interface only. MS-Windows is probable target, pending resolution of uncertainties. We are conscious of the need for performance optimization.

8 Relation to existing types of products

Notes is meant to integrally incorporate a WYSIWYG word processor, outline editor, electronic mail system, and personal scheduler (and potentially other "desk accessory" functions. Notes should stand in relation to word- and idea-oriented tasks as 1-2-3 stands in relation to number-oriented tasks. Notes is therefore meant to be a "big enchilada"-type product. While it may functionally subsume various stand-alone products, it is not intended to eliminate our market for such smaller, cheaper, more highly targeted (and highly functional) applications. In this respect Notes is not intended to be like 1-2-3, which effectively killed off the market for stand-alone spreadsheets on the IBM PC. Notes should represent the leading edge.

9 Relation to new categories of products

Notes should take the first major crack at the area of idea processors, textual databases, and hypertext systems. If we have scoped our ambition properly, and we can achieve the goals we've set, all previous efforts (now known to us) will be seen as products of a lesser category.

If Notes works, it too will be surpassed in time. One hopes we will do the surpassing.

10 Styles and Methods of Use

Notes is meant to be useful to a single individual for the organization and storage of his or her own documents. In addition, for users whose machines are connected via a LAN, Notes will fully support shared document structures, opening up intriguing possibilities for group conferencing and group scheduling applications.

There is a strong general intent to extend Notes in the future to support users who aren't hard-wired together. This project, code-named ECHO, will be described further at another time.

11 Extensibility

Notes will have three classes of extensibility, roughly paralleling Symphony, with the benefit of Symphony hindsight.

11.1 Application creation by templates

Just as users created standard cash flow and budget models, it is expected that individual will create standard templates for handling their own notes, E-mail, and schedules. These may be re-distributed (mostly informally, we suspect).

11.2 Procedure creation by programming language

This stands in place of macros. Keystroke oriented approaches lack cleanliness. Here, the "language" will have screen-oriented forms, dialog, and menu editors. Unless we come up with a better idea, the control structures will be represented in some form of (hopefully accessible) block structured language.

The programming language will enable sophisticated users to create bullet-proof custom applications which are sufficiently robust to be commercially re-sold, e.g., a custom textual database on a specific topic, say, recent developments in microcomputing.

11.3 System extensions by add-ins

The fundamental technical architecture of Notes will allow system extensions by add-ins in a fashion similar to Symphony. These could include developers' tool kits and valuable, but unanticipated features.