

Catalogues: A Metaphor for Computer Application Deliver

S. K. Card and D. A. Henderson, Jr.

UIR-R-1987-01

CATALOGUES: A METAPHOR FOR COMPUTER APPLICATION DELIVERY

Stuart K. Card and D. Austin Henderson, Jr.

Xerox Palo Alto Research Center
3333 Coyote Hill Rd.
Palo Alto, CA 94304

This paper presents the mail-order catalogue as a metaphor for the delivery of application software in an integrated work environment. It also describes, Catalogue, an adjunct to the Rooms multiple virtual workspace environment, which employs this metaphor. This mechanism can be used (1) to give users "instant starts" by letting the user's select a standard setup, (2) to allow users to assemble their own environment from standard components, (3) to parameterize a standard component, and (4) to load applications ready to run.

In recent years the number of application programs for personal computer workstations has increased enormously. The IBM PC, for example, is reported to have over 10,000 programs available for it. A difficult problem for most users who wish to take advantage of the possibilities of personal workstations is the high implantation cost to the end user, that is, the high cost of selecting equipment and software, ordering it, installing it, training on it, and maintaining it. This cost can easily exceed the cost of computer and software combined. Research is therefore needed on techniques for systems and application delivery with a potential for reducing these costs.

A particularly pernicious set of implantation costs, from the point of software distribution, are the costs associated with ordering, installing, and setting up software applications. These come when the user is least prepared to make choices and forces the user to invest considerable time before he can evaluate whether a system is useful enough to be worth the effort. In this paper, we wish to consider a subset of this problem where (1) users have graphics-oriented workstations running an integrated systems environment, (2) users are networked together with common access to a file server on which resident applications software is stored, and (3) the applications they wish to install or the tailoring they need to do can be expressed as a selection among enumerable items.

This description fits many industrial office systems organized around local area nets. In many

instances, a core of applications is run by most users, but a set of other applications or enhancements are also, at least potentially, available. In the non-computer world there is a simple solution to a rather similar situation: the mail-order catalogue. With a catalogue, the user is able to browse through a selection of products available and order those of interest. He is able to construct a unique environment for himself by selecting from among standard parts. The mail-order catalogue is an interesting and natural metaphor to explore for delivery of software applications.

A mail-order catalogue usually has several parts. There is some orienting information telling the customer about the supplier and how to use the catalogue. Then there are the items, each of which usually has a picture, a short name, a description, and an order number. The customer uses the catalogue by perusing the pictures, reading the descriptions of the ones that catch his eye, and ordering the ones he wants. The process is not perfect (an item when it comes may not be exactly as the customer imagined) but the process is simple, works well in the main, and it is even fun.

Our exploration of the catalogue metaphor was done in connection with a system to help users install our Rooms window manager [1,2] and explorations of the use of Rooms as a vehicle for applications. Rooms is a window management scheme in which the user is given multiple virtual

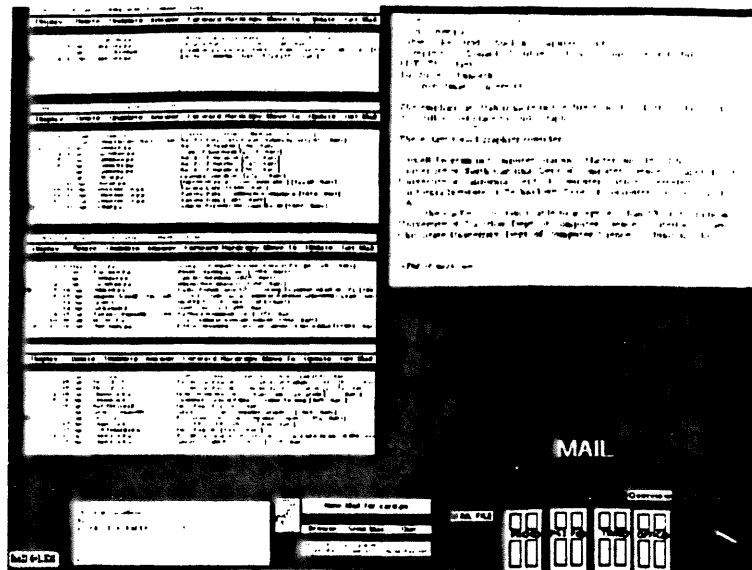


Fig. 1. A typical Room. This is the Mail Room. The user has arranged a collection of browsers for the different categories into which his mail is sorted. Instead of having to open these browsers from iconic form to access his mail, he can simply enter the room to perform the task of mail reading. Note that the availability of many screens' worth of space means that each Room can be relatively uncluttered.

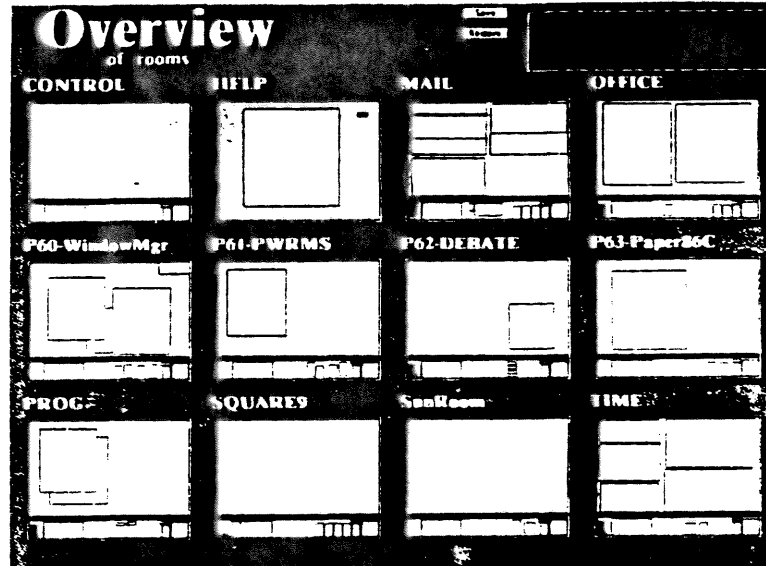


Fig. 2. The Overview. This screen provides pictograms for each Room in the user's current collection, arranged alphabetically. It also contains a message window for communicating with the user, and buttons for saving and restoring the suite of rooms. The graphics also code the fact that certain Rooms are "included" in other Rooms (grey windows are present by inclusion). Windows and Rooms may also be examined and manipulated from the Overview.

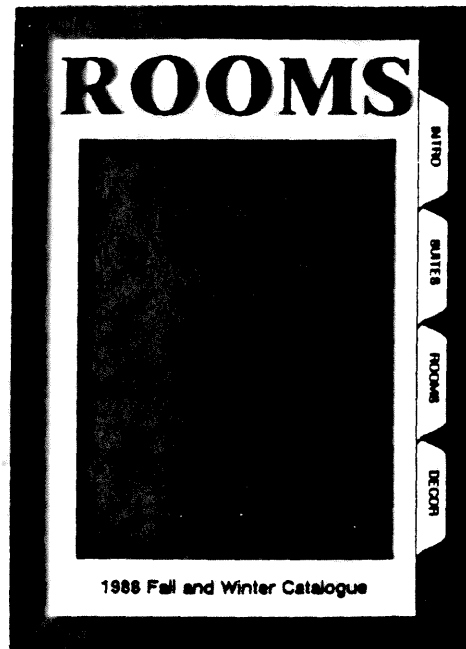


Fig. 3. The cover and controls of the Catalogue. The Catalogue initially appears as a closed book. The graphics is intended to be a playful reminder of the mail-order catalogue, an instantly recognizable marketing tool. The controls for looking through the Catalogue are presented as tabs extending from the edge. Each tab gives immediate access to one section of the Catalogue.

workspaces, each roughly screen-sized. Fig. 1 shows a typical Room. This one is a mail Room where the user keeps browsers open for sorting and reading his mail. Fig. 2 shows an Overview of the Rooms currently comprising a particular user's workspace. The user can enter any of the Rooms from the Overview or can move, copy, delete, or reshape windows within or across Rooms. Windows can be shared between Rooms either individually or in groups, and, in fact, the same window may even have different shapes and positions in different Rooms.

While there are simple commands for creating new Rooms (for example, just copy an existing Room and give it a new name), there are three problems: (1) how to simplify still more for the new user the process of setting up a suite of Rooms so that setup would not be a barrier even for naive users, (2) how to allow users to configure their own suites of Rooms to include different tools and "desk accessories". Rooms is also a potential vehicle for delivering new applications. So the last issue is (3) how to allow users to discover and load applications.

Fig. 3 shows the catalogue concept as applied to the Rooms system. User's can traverse the catalogue by means of three operators:

(PREV-PAGE)
(NEXT-PAGE)
(TURN-TO <tabname>)

The operator **PREV-PAGE** moves the catalogue back a page, **NEXT-PAGE** moves the catalogue forward a page, and **TURN-TO** turns to the page signified by a catalogue tab. The user invokes these operations by selecting with the mouse various parts of the catalogue: the catalogue tabs invoke **TURN-TO**; the curled corners on the catalogue pages invoke either **PREV-PAGE** or **NEXT-PAGE**.

Fig. 4 shows the catalogue pages associated with ordering entire suites of Rooms. A new user need only select one of the boxes on this page to bring in a complete, pre-designed set of Rooms. Fig. 5 shows how the user can order individual Rooms. These Rooms are added to the user's current suite. A variant on this idea allows the user to select new applications (Fig. 6). Fig. 7 shows the appearance of a typical application Room. This Room contains a number of clocks, useful as desk accessories. By checking the ClockStore application, the user adds the Room in Fig. 7 to his workspace. He can then go to this Room, shop for a clock, and follow the instructions in the Room for moving the clock to other Rooms (In the

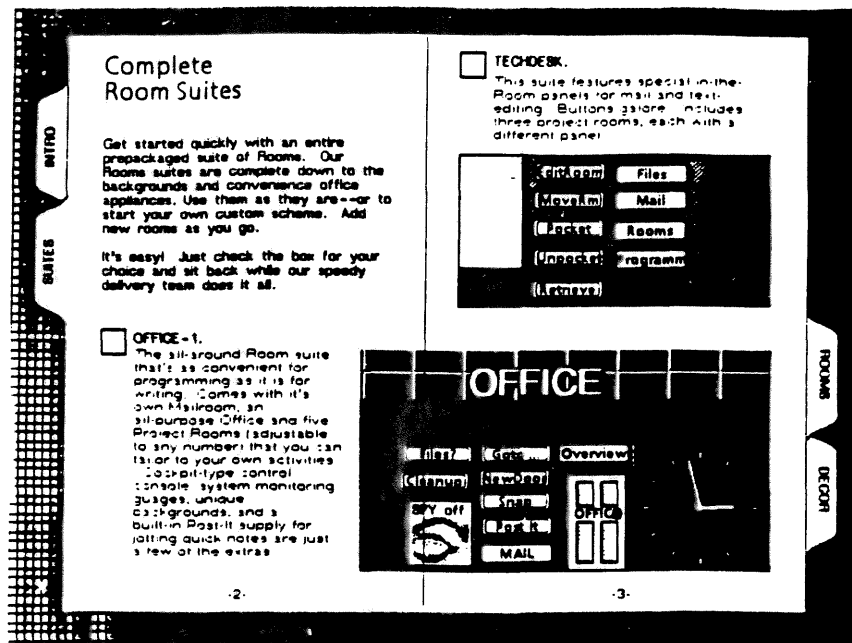


Fig. 4. Pages for ordering Suites of Rooms. This section permits the user to order many Rooms at once. Suites of Rooms are crafted to support standard classes of user, with Rooms provided for supporting the tasks common to users of that class. The controls for selecting suites are shown as boxes which the user can "check" through mouse selection. On confirmation, the Rooms in the selected suite will be added to the users' collection of Rooms.

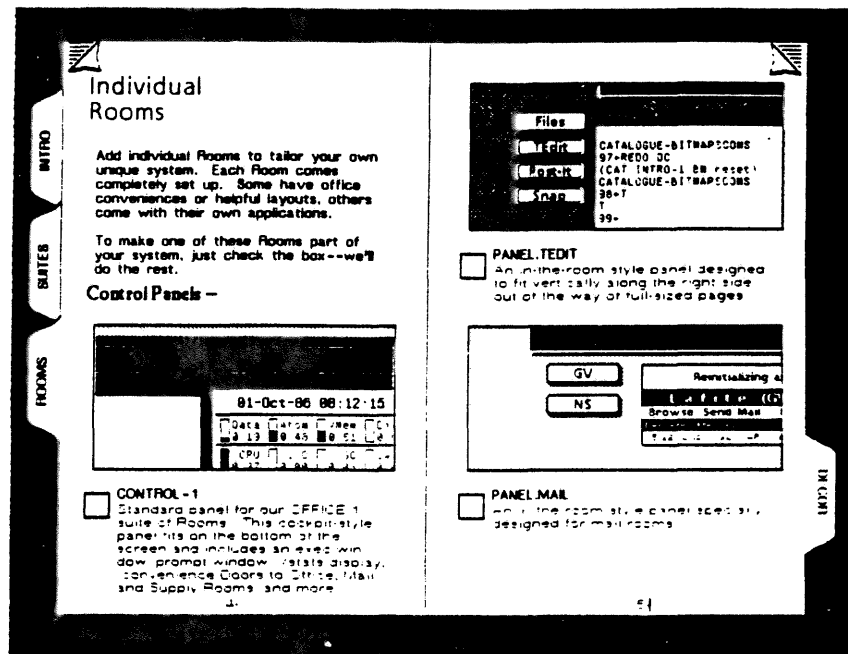


Fig. 5. Pages for ordering Individual Rooms. Rooms can also be ordered one at a time. The pages shown here offer control panels, those Rooms designed to be included in other Rooms to provide particularly useful constellations of accessories. The graphics and text combine to suggest the characteristics and use of the product. The description need not be definitive, as the user can simply request one and experience it for himself to determine if it fits his needs. Selecting the curled corners of pages permits turning the pages within a section.

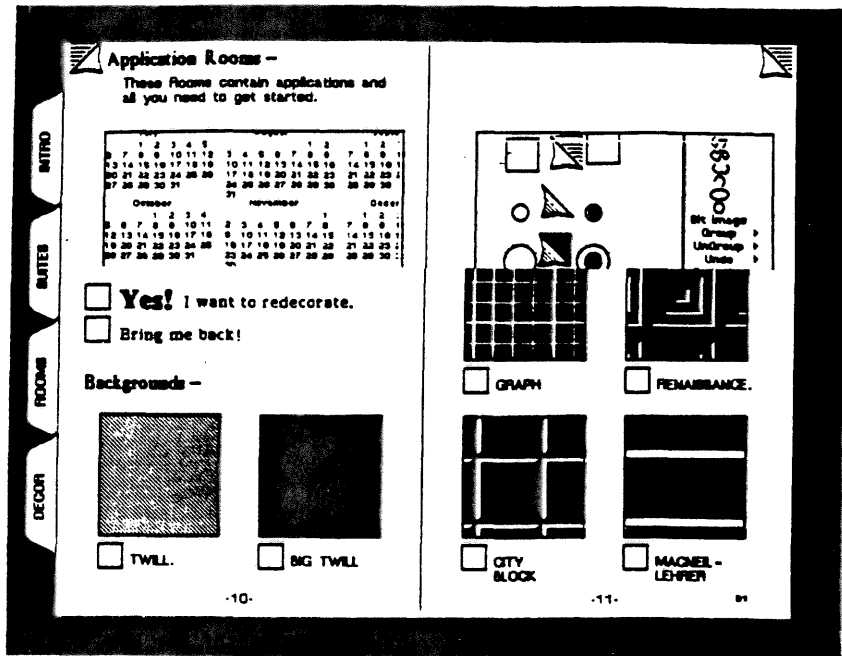


Fig. 6. Pages for ordering new applications. Setting up an application is a particularly trying task for a user who has never used that application. Catalogue offers an alternative: A suite of Rooms can be prepared which offers the application already set up and surrounded by exhibits and exercises. Once ordered and delivered, the user can walk/work through such a "museum" suite and learn the application at the "hands" of expert users as presented by expert trainers.

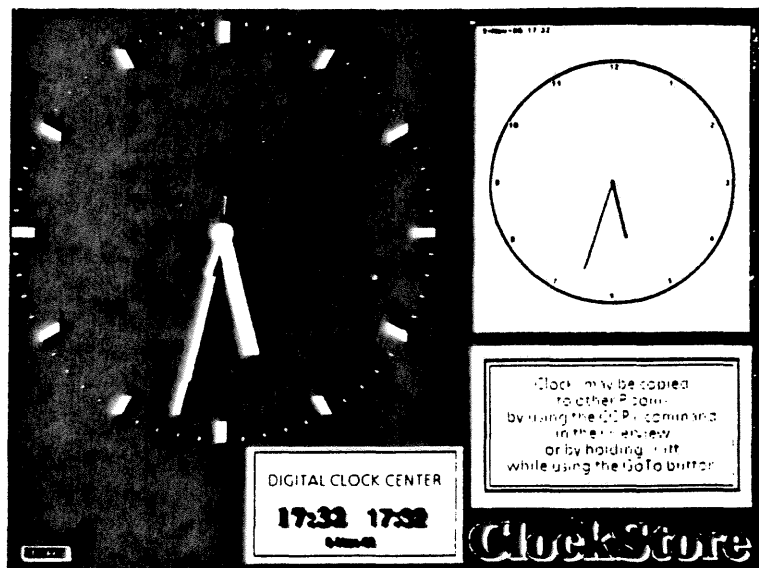


Fig. 7. The ClockStore application Room. This Room can be ordered to provide access to yet another style of marketing - the store in which the user can browse. Here the ClockStore Room in filled with clocks of various sorts. The user can move interesting ones to his other Rooms, and then he can delete the ClockStore from his space. This provides the ability to see, feel, and compare the clocks and yet not clutter up his space with those he does not want

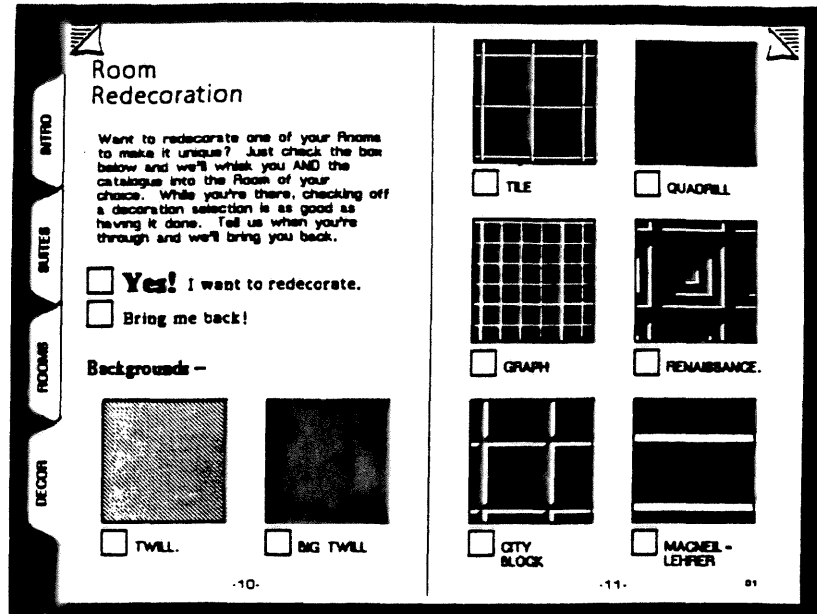


Fig. 8. Pages for ordering backgrounds. With many Rooms, it is helpful to a user to provide graphical recognition cues for Rooms. Backgrounds are provided for this purpose, and the Catalogue provides an easy way to acquire ones that designers have crafted to achieve special effects. These pages indicate just how varied and appealing these backgrounds can be.

Rooms system, he could also put the clock on a control panel available in all or many Rooms). Optionally, he could then delete the Room. Finally, Fig. 8 shows the catalogue used to tailor the appearance of a given Room. When the appropriate box is checked, a pop-up menu asks the user to select a Room and both the user and (a copy of) the catalogue are placed in the desired Room. At that point, whichever background the user selects is immediately painted in the Room. When the user checks the Return box, he is returned to the original catalogue Room (and the catalogue copy deleted).

These examples indicate how the simple catalogue metaphor can be used to assist in the setup and delivery of applications. It can be used (1) to give users "instant starts" by letting the user's select a standard setup, (2) to allow users to assemble their own environment from standard

components, (3) to parameterize a standard component, and (4) to load applications ready to run.

REFERENCES

1. Card, S. K. and Henderson, D. A., Jr. A multiple virtual-workspace interface to support user task switching, in Conference Proceedings, CHI+GI, 1987, Human Factors in Computing Systems and Graphics Interface, ACM, 1987, pp. 53-59.
2. Henderson, D. A., Jr. and Card, S. K. ROOMS: The user of multiple virtual workspaces to reduce space contention in a window-based graphical user interface. Xerox Palo Alto Research Center, Palo Alto, California, (accepted for publication in ACM Transactions on Graphics, in print).