
The *Electronic Briefcase*

Interactive Sales System

Architecture Overview

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M O B I L E P O I N T TM

The *Electronic Briefcase*

Market Overview

Enterprise in Motion

A purchase is an emotional decision. Great sales professionals create emotion by relating the products to the personal needs of the customer, a talent and skill essential, yet difficult to master. Most often creating a new experience the customer relates to can only be done while in the customer's world, wherever they are, disconnected from the enterprise, and often while in motion...

You are a sales person in an elevator with a prospect, going from the ninth floor to the second, you've got 30 seconds of dead-air time to create an experience that can somehow be related to a need they have. Where do you start? You intuitively make a pitch, a question is asked, you dig into your briefcase for the answer, too late. You're at the second floor. Opportunity lost, if there was one at all.

The successful mobile sales professional of the future will excel in knowing the needs of their customers, knowing their products, and pitching a full experience that can be related to quickly. Despite being disconnected from the enterprise (the company and all of its central resources), they will have at their fingertips all the vital knowledge of the enterprise. They will be legitimate extensions of the enterprise. They will be the enterprise in motion.

The Information Technology Revolution and the Challenges Ahead

Information technology today is automating and streamlining areas of customer service more than ever before, changing the very face of businesses. We have seen how ATM machines changed simple banking in the last few decades; the Internet will likely change it even more in the next few years.

Of course, improving customer servicing is not new. The Sears catalog which allowed people from remote distances to order a variety of products a century ago was not much different from home shopping on the Web today. But the Web gives you more information and allows you to find and order a desired product faster and more efficiently.

Challenge for the Sales Professional

So, with all this new technology, what will a successful sales force look like in the future?

"More efficient, more focused on selling rather than on paperwork and logistics, more focused on customer relationships and explaining the benefits of what they're selling" - Esther Dyson, EDV Ventures

"Peopleless." - Nicholas Negroponte, MIT Media Lab Director

Which is it? Will technology help or replace the future sales force?

There certainly will be challenge, yet much opportunity because as technology advances, so does the desire to provide more service, better assistance and greater accommodation.

The New Customer

To understand the new sales force, we have to understand the new customer. It didn't take much of a sales interaction in 1920 to sell the Model T when Ford declared the customer could have whatever color they wanted as long as it was black. Or even in more modern times...

Customer: I'll have a plain omelet (with tomatoes instead of potatoes), a cup of coffee and a side order of wheat toast.

Waitress: No substitutions.

Customer: What do you mean? You don't have any tomatoes?

Waitress: Only what's on the menu. You can have a number two - a plain omelet. It comes with cottage fries and rolls.

Customer: Yeah, I know what it comes with. But it's not what I want. I'll have a plain omelet (with tomatoes instead of fries), a cup of coffee and a side order of wheat toast.

Waitress: We don't make side orders of toast.

Customer: What do you mean ...? You make sandwiches, don't you?

Waitress: Would you like to talk to the manager?

Customer: ...You've got bread and a toaster of some kind? ...I'd like an omelet, plain, and a chicken salad sandwich on wheat toast, no mayonnaise, no butter, no lettuce. And a cup of coffee...Now all you have to do is hold the chicken, bring me the toast, give me a check for the chicken salad sandwich, and you haven't broken any rules.

- scene from *Five Easy Pieces* (1970)

Times are changing. Either the enterprise gives the customer more choice and less complexity in getting it or someone else will. And it is technology that is making this more and more possible, shifting us to the era of "mass-customization".

"The mass market has split into ever-multiplying, ever-changing sets of mini-markets that demand a continually expanding range of options, models, types, sizes, colors and customizations." — Alvin Toffler
The Third Wave

As technology continually expands so will the desire to "customize", and thus the complexity of the purchase increases. So what about the need for people?

Meeting the Challenge with Interactive Selling

Technology doesn't sell. People sell. Technology helps selling, from televisions to telephones, technology always has been used as a selling tool. Yet, as with any interpersonal relationship the act of selling is best done face-to-face.

Mobile sales professionals, having the right expertise and knowledge combined with refined interpersonal skills will always be needed in this era of complexity.

"The only sustainable competitive advantages companies will have going forward is their people and their processes" – Insight Technology Group

As information becomes more readily available and remedial sales services become more automated, the value-added skills of sales professionals will be that of knowledge, bringing information to the customer and matching needs to products.

"By 1998, organizations that do not implement technology enabled selling to move "knowledge" to the buying decision point will place themselves at a competitive disadvantage" – Gartner Group

Interactive selling systems (ISS) extend and enhance the salesperson's own knowledge *while in front of the customer*. It closes the information loop of today's powerful Sales Force Automation (SFA) solutions, user-centric solutions as oppose to enterprise-centric.

Today, companies are spending fortunes on sales reengineering efforts implementing technology such as contact and opportunity managers, marketing encyclopedias, sales configurators, proposal generators, team selling, and more. These solutions are becoming more powerful and integrated.

"...the ultimate goal is to develop an 'intra-enterprise' team, in which representatives from sales, finance, marketing, distribution, and other functions pool their resources and expertise to solve customer issues." - Gartner Group

To solve the whole problem the successful Enterprise in Motion extends the benefits of SFA to interactive selling, using information tools as specific to individual sales processes as the products to be customized and sold (mass-customization does not halt with the tools required to sell them).

Challenge for the System Developer

"You can design the best process in world, and back it with the latest and greatest technology; but if your people don't buy into the project, it won't work." – Insight Technology Group

The New Computer User

The system developer must understand that with information technology reaching out from the enterprise comes new types of users. These are knowledge workers such as doctors, stock traders, mobile professionals such as executives and, of course, the mobile sales professional.

These new business users have some unique characteristics. First, most of them have not used computers much in the past. Second, they tend to be well paid and very often under severe time pressures. These two characteristics mean that they still do not do computing as computer experts know it. They look at the computer as a source of information and knowledge, and as a means for communication with other professionals. Such users have one final characteristic that must be considered. They are in a position simply to reject a system if it does not meet their needs. The best

health care system in the world, for example, utterly breaks down if the doctors decide they do not like it. – Andersen Consulting, *Practical Guide to Client/Server Computing*

Dartnell's 1996-1997 Sales Force Survey highlights that 42% of a salesperson's time is spent in front of the customer (31% selling and 11% conducting service calls). These face-to-face meetings have often been the most critical time in a sales cycle.

Yet, the prevalent technology used for interactive selling are notebooks, forms, brochures and catalogs (not much has changed here since the era of the Sears catalog). Personal computing technology is used for preparing and following up on a call, but rarely has been able to add value to the process of face-to-face interactive selling.

“Of the Gartner Group clients who have implemented sales force automation (SFA), at least 60 percent report that their best reps don't use it....The top sales performers who reject SFA do so because it failed to help them with the most important transaction in sales: the face-to-face meeting.” – Gartner Group

Until tools that are designed for the office are replaced by those designed to be used interactively with a customer, perhaps they never will be used.

Meeting the Challenge with the interPersonal Computer

With the new computer user comes more demands on information technology to move closer to natural forms of human interaction and to become transparent during human interaction.

To the extent that a computer is noticeable it will be objectionable...A transparent computer is one that interacts with the human being in an entirely natural fashion. And the most natural way for individuals to interact is as they would with another person. So the model for successful computing is human...the human metaphor. . – Andersen Consulting, *Practical Guide to Client/Server Computing*

A new kind of information tool is defined here which implements the human metaphor for interpersonal applications, without sacrificing the legacy of personal computer applications. A tool that is:

- Mobile – for those who are constantly on the go, meeting with customers, visiting job sites, walking around a clinic or warehouse as they work.
- Sociable – for those who need to focus on their clients and surroundings, and require an unobtrusive tool (without a screen and keyboard between them) that enhances interpersonal communication and allows uninhibited interaction.
- Rich – for those who need to capture and display information at a greater level than paper-based tools, yet automate the paper-based tasks they are burdened with today.
- Reliable – for those who cannot have a computer fail them or they will fail to use it. Durable and always ready when needed.

Excelling without compromise in these qualities leads to the *interPersonal Computer (iPC)*, which extends the Personal Computer to an environment beyond the desktop metaphor and the man-machine user interface, to that of human interactivity.

The MobilePoint technology that enables the iPC is called **electronic briefcase**(e-case).

Face-To-Face with *e-case*

Nothing greater than face-to-face interactive selling epitomizes the need for an interPersonal Computer. A successful Enterprise in Motion requires it.

MobilePoint builds upon the power of **e-case** and its experience in deploying ISS through its **Face-To-Face Solutions Program** ensuring successful deployment of **e-case** ISS solutions delivering full enterprise systems integration, production rollout, technical support, and training services:

- Assist customers with planning and designing their e-case ISS implementation.
- Help customers with the design and configuration phases of implementing or upgrading their e-case ISS solutions.
- Provide premium support demanded for this kind of usage, ensuring fast resolution of service requests. Close attention to ongoing customer satisfaction levels is achieved with members of MobilePoint's executive staff assigned to customers as sponsors, a customer satisfaction-based compensation policy, and regular interactions between MobilePoint and the customer.

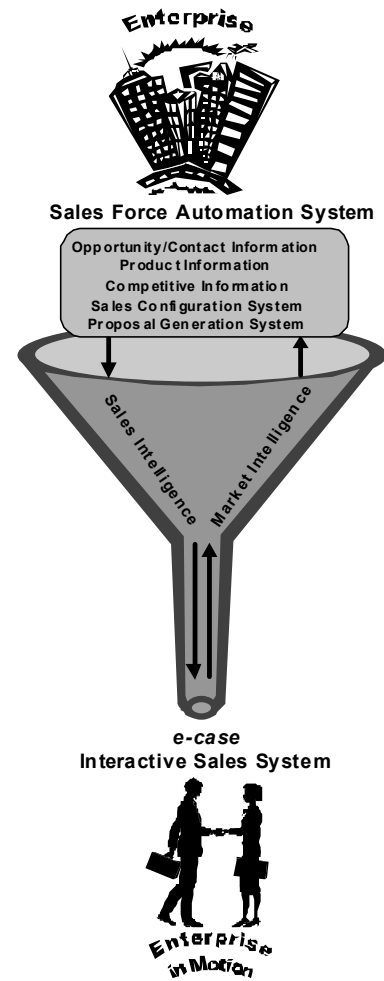
Using the **e-case** iPC environment, a set of highly customizable business objects, and an advanced *visual construction* tool, the MobilePoint *Maestro* (experts in the business sales process) can quickly construct highly interactive solutions that optimize the selling process. Solutions first and foremost designed to be used by the sales person for **selling**.

A fully deployed e-case ISS is essentially the highly mobile front-end to the traditional SFA enterprise solutions of today incorporating the functionality of a marketing encyclopedia, sales configuration, and order management systems; funneling sales intelligence to the field, and capturing market intelligence and sending it up to the enterprise:

- Sales Intelligence
 - Qualify opportunities, detailed needs analysis, and present features/benefits directly related to each unique customer.
 - Targeted product description, tutorial, interactive promotions and surveys.
 - Interactive comprehensive ROI calculations; analyze financing options.
 - Positions products /services against competition.
 - Full product and service catalog information.
 - Libraries of reports, studies, proof sources available to customer at request.
 - Proposal generators.
 - Order management, entry and history.
 - Contact info, Calendar, ToDo's, Call history.
- Market Intelligence – all essential information of the entire sales call captured for transfer back to the enterprise.

The key to the success of the platform is it enables the very people that understand the sales process of companies the most to develop an implementation, and begin field-testing and refinement with the field sales force within weeks. This provides measurable results early in the development stages and assures a system built for selling, and built for the mobile sales professional.

Because after all, the key success criteria, that all other success criteria depend upon, is *whether the sales person will use it*.



Electronic Briefcase Architecture Description

Overview

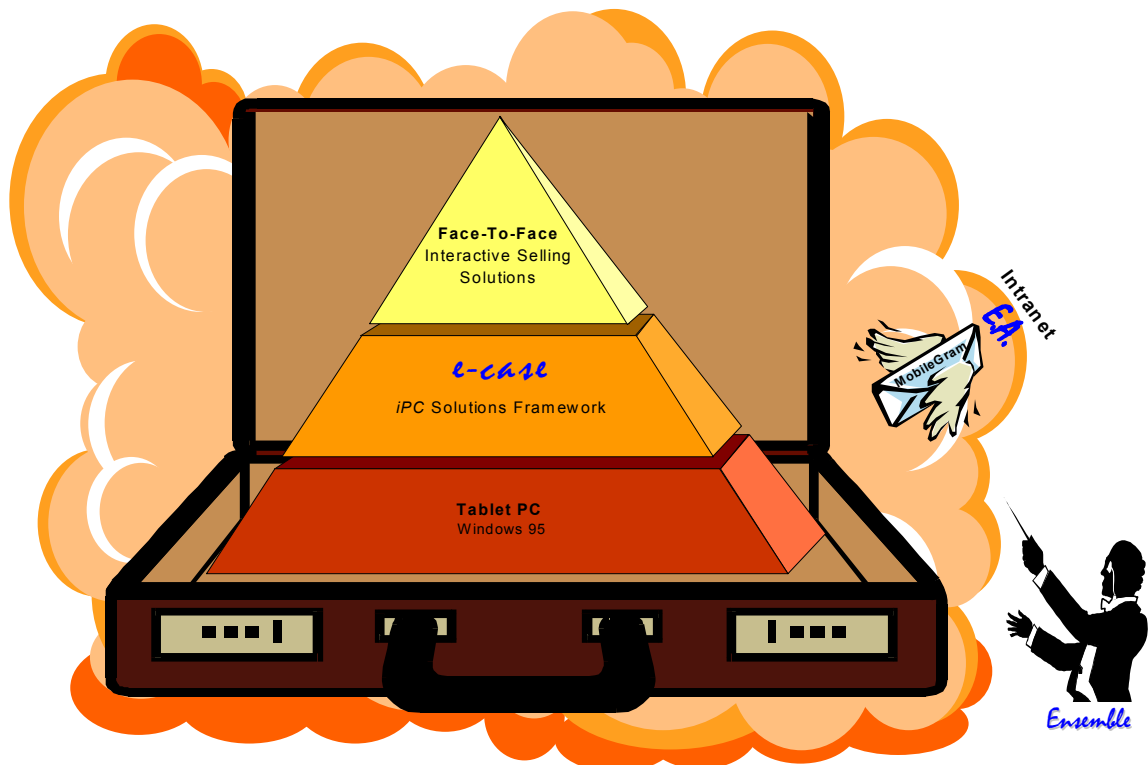
The **electronic briefcase (e-case)** provides mobile sales professionals intelligent access to the essential information needed to service their customers at the point of selling, while in motion. To meet these needs e-case distinguishes itself with the following features:

- Human Metaphor - A Paper and Gesture User Interface provides an unobtrusive environment for face-to-face selling allowing continuous interaction.
- Standard PC – The legacy of the desktop is not lost. e-case runs on standard x86 based tablet PCs . With an attached keyboard and stand, they work as any other laptop PC for office use.
- Ultra Mobile - Maximizes the PC for in-motion use. e-case software runs the tablet PC entirely in solid state memory, without sacrificing functionality. Keyboard, mouse and other desktop peripherals are neither required nor desired to run the software.
- Pack and Deliver Internet Connectivity – Store and forward messaging at its highest level for the ultra mobile yet information intensive environment.
- Visual Construction kit – A toolkit for end-user experts allowing construction of business objects using visual constructs that ties in varieties of configurable documents.

This document will describe in closer detail these benefits and provide a broad description of e-case technology.

e-case Technology

The end-user experience of an **electronic briefcase** is built upon three layers of computer technology, and two supporting products that enable a full-featured enterprise-wide solution:



- Face-To-Face ISS - Custom interactive selling solutions (e.g. Order Forms, Product Campaigns, etc...).
- e-case iPC Solutions Framework - The iPC software framework which enables interactive selling solutions using everyday models of the briefcase, notebook, pen and paper.
- Tablet PC - standard x86 technology and Windows '95 for Pen operating system.
- e-case Executive Assistant - Internet pack and deliver technology for the unique connectivity needs of the mobile professional in delivering information to and from the ultra mobile environment and the corporate enterprise.
- e-case Ensemble - Development kit for end-user experts, for rapid deployment of full featured solutions.

This remainder of this document will provide a extensive description of the e-case archecture covering these fundamental areas.

Tablet PC (Hardware/Software Platform)

The hardware that enables the e-case *iPC* is a Tablet Personal Computer, a standard x86-base PC that includes a digitizer for pen input. Also included are a ruggedized Hard Drive, Flash drive (used for most reading/writing during ultra mobile use), and a serial port. A typical user will also have a 28.8 modem and cellphone attachment (if immediate communication is required).

The tablet runs on Microsoft Windows 95 and can include a detachable keyboard and stand for portable desktop computing needs. Other items for desktop usage are a port extender (or docking station) which enables additional device attachments: floppy drive, mouse (though the pen can act as the mouse), and additional ports. Users often will have a printer and possibly an external drive (such as a Jazz 1GB drive) connected through a parallel port.

The typical e-case platform today is the Fujitsu Stylistic 1000:



- 100 MHz 486 DX4 CPU
- Microsoft Windows 95 operating system
- 640x480DSTN color LCD.
- Electromagnetic Digitizer
- 7.3" x 11" x 1.6" and 3.4 lbs.
- 340MB HDD
- 24 MB DRAM
- Two Type II (used by 20 MB Flash & 28.8 Modem) Version 2.1 PCMCIA slots
- Standard serial, parallel, keyboard & VGA ports
- Port replicator (for floppy, mouse and extra ports)
- Lithium ion battery pack provides 3-4 hours battery life
- Three-year system and optional no-fault display warranties
- Standard IrDA infrared wireless port & adapter

e-case iPC Solutions Framework

This section describes the e-case user interface and business components that create the foundation for interaction selling solutions.

The Paper and Gesture (PAGE) Metaphor

e-case is presented to the user as an application icon on the desktop, which launches the user into a fully self-contained operating environment optimized for interpersonal and “in motion” use. The most distinctive feature of e-case is its user interface, which implements the Notebook PAGE metaphor (PAper and GEsture) based on two main principles:

- The Notebook organization model
- The Gesture command model

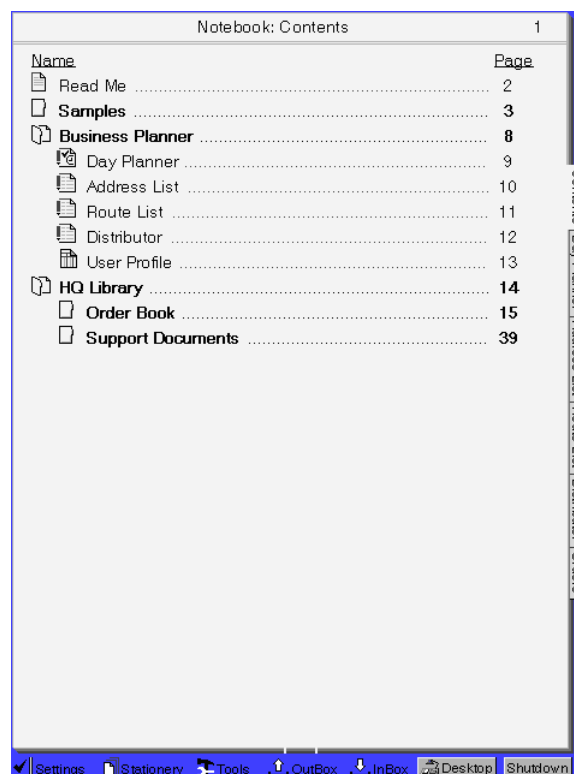
The consequences of these two design principles permeate throughout the entire system.

Notebook Organization Model

The Notebook

The notebook model presents a virtual object that everyone is familiar with: a book. The first thing the user sees in e-case is the main notebook where most day to day information is contained.

Rather than using traditional computer concepts such as directories, path names, launching applications and opening and closing files, the user in e-case works with a notebook containing pages of *documents*, tabs and a table of contents.



Documents

A document in e-case is like a document in any other computer system except that it is used more like a paper document. The details of files and application association are completely hidden from the user. Everything is pages of documents and links (similar to Web links). Much like paper, the user turns to and from pages without worrying about saving data or closing programs. When a user turns to a page, it looks the way the user last left it.

The picture above shows a typical notebook and the documents it contains. There are many kinds of documents, depending on the kind of information being worked on. Also depicted are sections, for hierarchical organization of documents, and tabs that link directly to documents for quick navigation.

All documents can contain other documents, and be embedded within other documents. The Notebook itself is a document containing documents shown in the Notebook's Contents (as in Tablet of Contents) page. The documents visible in the Contents page are referred to as page-level documents.

How the Notebook actually looks, the documents it contains, and their functions vary with the actual custom solution and the individual user. These customization issues are explored thoroughly in the Solution Framework section (ref).

Gesture Command Model

The Pen

The pen naturally combines two important forms of interaction: *Handwritten input*, translated or stored simply as ink (discussed in later sections); and *Gestures*, for operating on objects that appear on the screen. Gestures are the primary way to interact with the tablet.

Gesturing

Gestures are simple shapes the user draws on the screen to invoke a command on a particular object.

Most GUI (Graphical User Interface) applications on conventional desktop platforms use the menu command model for accepting input: the user selects an object, then clicks on a button in the application's menu to indicate the operation to perform on the object. Gesturing means both the object and the operation are identified in one stroke of the pen.

Basic Actions in e-case

There are seven common commands that apply to all documents and objects. These (and the gestures that invoke them) are:

Action & Meaning	Gesture
Insert - Create a new object.	Caret
Edit - Change the name of an object.	Circle
Turn to - Go to an object.	Tap
Delete - Delete an object.	Scratch-out
Options - show the attributes of an object.	Check
Scroll - Navigate within an object.	Flick
Help - Display Help on an object.	Question

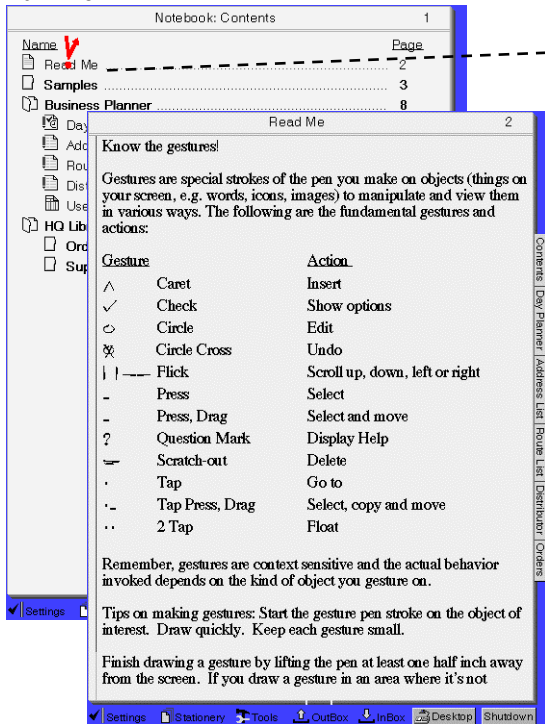
With these seven gestures a user is immediately proficient in e-case, because these gestures work in the same consistent manner on all the objects contained in pages (e.g. ink, text, and drawings) .

There are some additional gestures that allow the user to implement more complicated actions. The Help gesture can be used to explain all the commands and equivalent gestures that can be applied to any object on the page.

Notebook – Common Operations

Now let's look at how the basic actions work on the Notebook Contents page .

Turn To



1. Tap on the document
2. You are turned to the document page

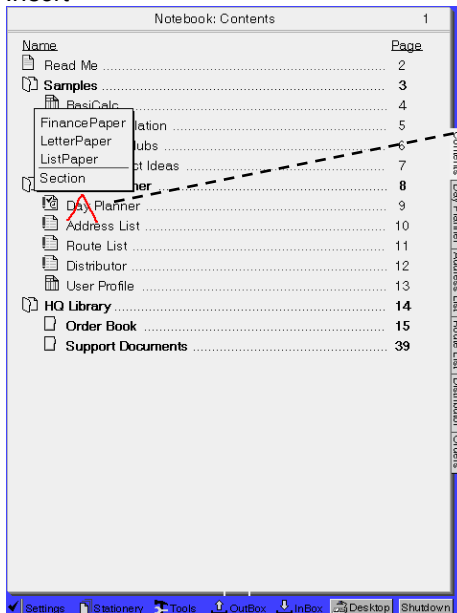
A tap on the tab will also turn to the appropriate linked document.

Tap implies “go to”, and can mean go to a document (as shown here), or link (like on the Web), or position the selection point (for data input), or press to activate a button for some function.

Another way to turn to a document from the TOC is with *Swoops* – letter gestures for quick search and find. Write the first letter or two of the name of the document. For example, write “AD” on the Notebook Contents page and Address List will be turned to.

The above document that was turned to is a TextPaper document, one of the many kinds of documents in e-case.

Insert

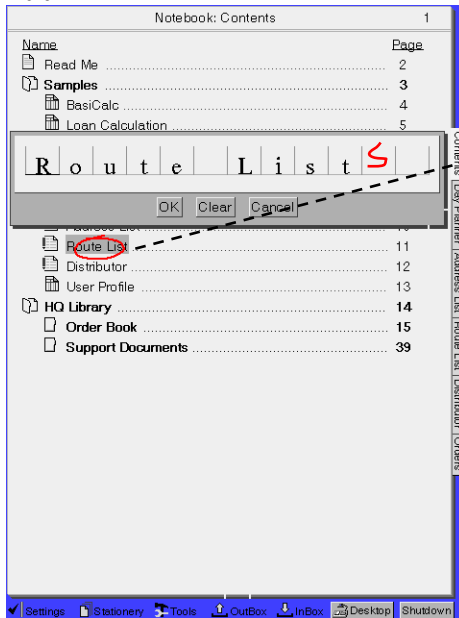


1. Draw a caret at the place to insert a new document
2. The stationery menu appears.
3. Tap the kind of document desired, and it will be created

A user can choose to insert a new document anywhere within the Notebook Contents

The stationery menu lists a subset of all the document “kinds” in the system (a full list is in the Stationery Notebook).

Edit

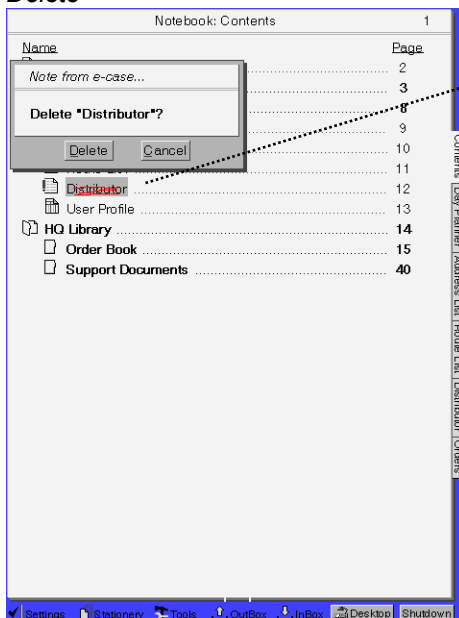


1. Draw a circle over the name of the document
2. An edit pad appears
3. Write in the changes

The Notebook Tab buttons, which link directly to areas within the notebook, can also be renamed.

The Edit Pad shown here contains a “comb” field for recognition accuracy. The user can overwrite the fields, add spaces, delete characters and resize the entire pad for longer names if desired.

Delete



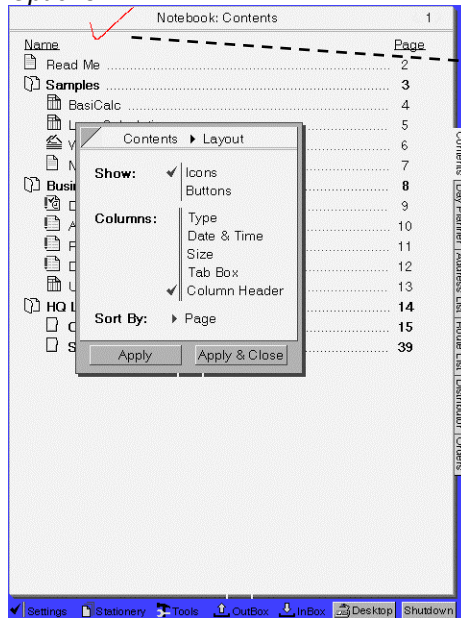
1. Draw a scratch-out over the name of the document
2. Dialog box appears
3. Tap the Delete button and the Document is deleted

Documents are actually moved to the Recycle bin and can be recovered.

Tabs can be deleted as well. However because the user can easily recreate a Tab, a confirm dialog box would not display in this case.

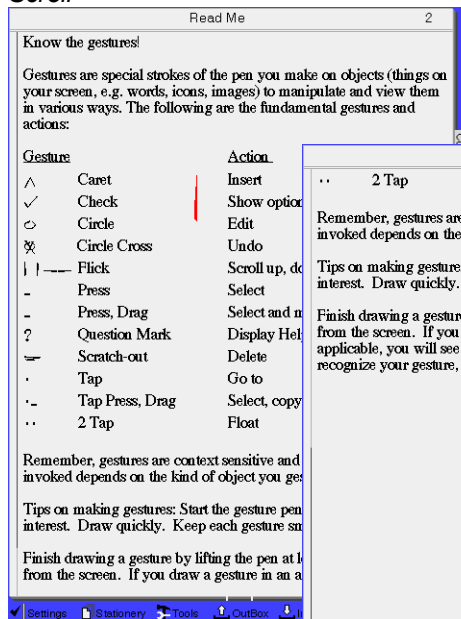
If the user is in a document other than the TOC, a scratch-out in the title bar would also delete the document.

Options

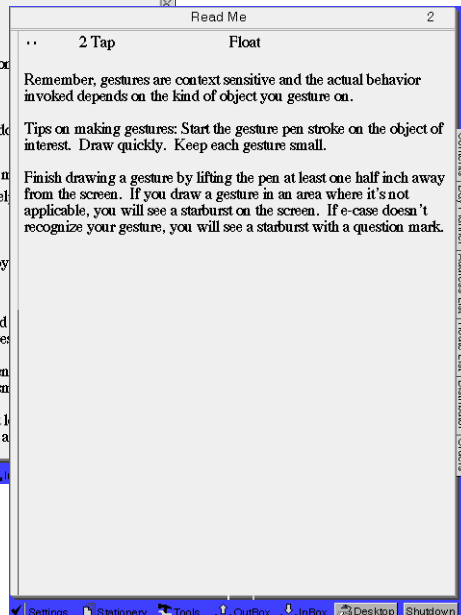


1. Checkmark on title bar of document, and the options sheet appears
2. Tap Apply, Apply & Close, or Tap on the Close Corner (in the left top) to Dismiss

Scroll

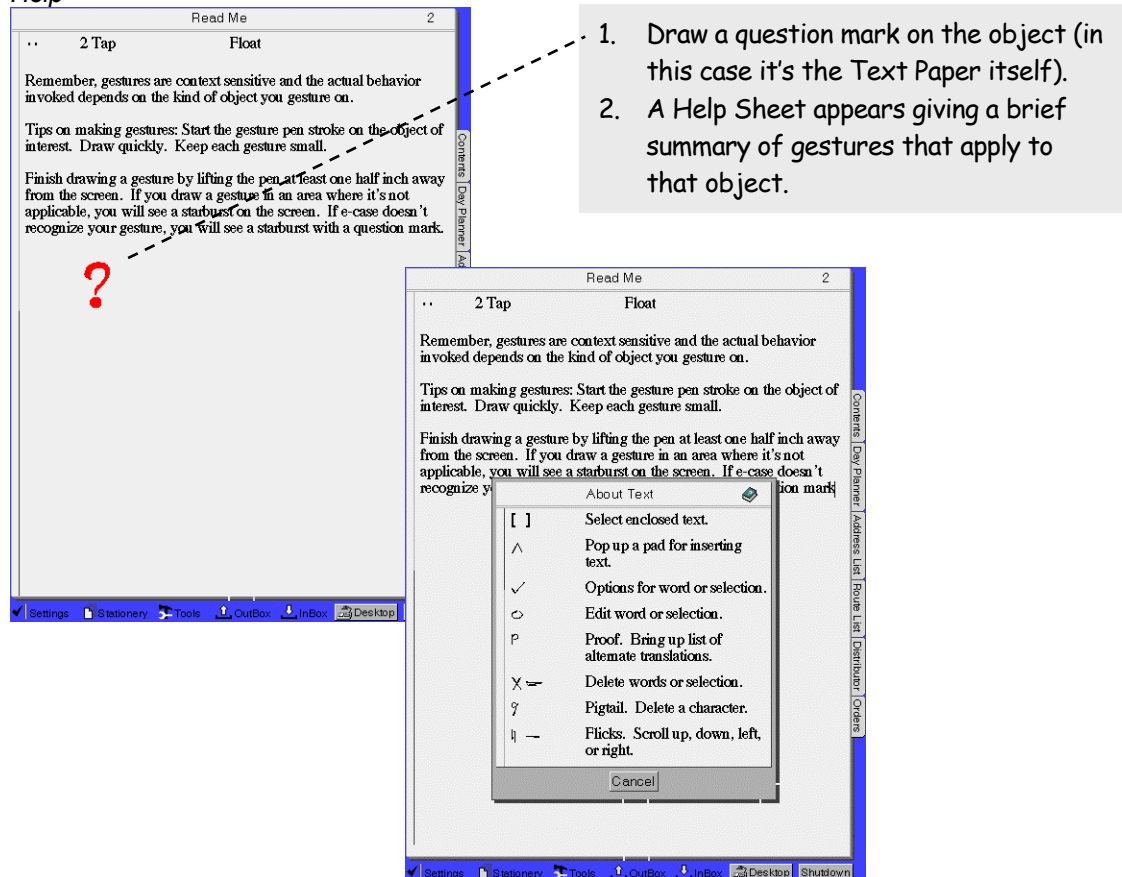


1. Flick up on the page
2. The document scrolls down



The scroll gesture is a strong example of how gestures allow the user to focus as little as possible on the screen while performing a command. In general, all gestures provide a fast uninhibited means of commanding with as little focus as possible.

Help



1. Draw a question mark on the object (in this case it's the Text Paper itself).

2. A Help Sheet appears giving a brief summary of gestures that apply to that object.

Remember, gestures are context sensitive and the actual behavior invoked depends on the kind of object you gesture on.

Tips on making gestures: Start the gesture pen stroke on the object of interest. Draw quickly. Keep each gesture small.

Finish drawing a gesture by lifting the pen, at least one half inch away from the screen. If you draw a gesture in an area where it's not applicable, you will see a starburst on the screen. If e-case doesn't recognize your gesture, you will see a starburst with a question mark.

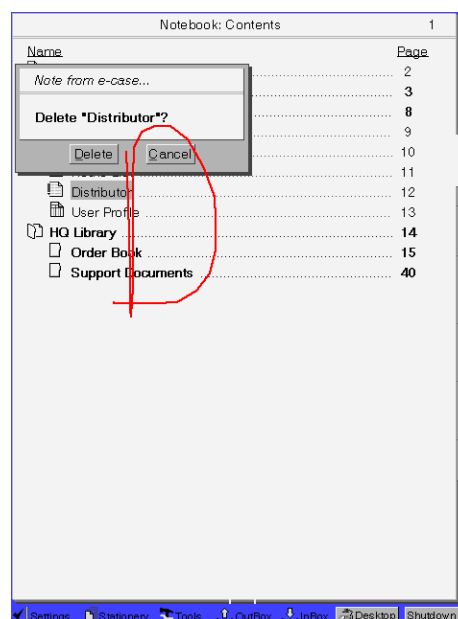
About Text

- [] Select enclosed text.
- ^ Pop up a pad for inserting text.
- ✓ Options for word or selection.
- ↶ Edit word or selection.
- P Proof. Bring up list of alternate translations.
- X Delete words or selection.
- ? Pigtail. Delete a character.
- ⏏ Flicks. Scroll up, down, left, or right.

Cancel

Accelerators

Let's go back to the delete operation where a dialog box appeared to confirm the operation. The buttons Delete and Cancel can be tapped by the user. However, tapping buttons in a dialog box requires some user focus and targeting. The underlined letter in the button label indicates an accelerator gesture can be used. These allow for less human-focused command invocation. For example drawing a "D" anywhere on the Notebook would equate to the same as tapping on the Delete button.



Name	Page
Note from e-case...	2
	3
Delete *Distributor*?	8
	9
	10
	11
Distributor	12
User Profile	13
HQ Library	14
Order Book	15
Support Documents	40

Delete *Distributor*?

Delete Cancel

More Advanced Operations

Like accelerator gestures there are many other commands and gestures that have extraordinary benefits in allowing the user to interact with the computer without requiring total focus and attention. Some of these will be introduced as we discussed the individual documents and their functionality more in the subsequent sections.

The Briefcase

The notebook is contained within the *Briefcase*. On the bottom of the Briefcase (which is visible just below the notebook in the picture) are the system-level objects:



The *Settings* notebook is for changing system-wide options. *Stationery* contains the various kinds of documents the user can create. The *Tools* document contains general purpose tools (such as a clock or calculator). The *InBox* and *OutBox* are for remote deferred enterprise communication, implementing the e-case Intraprise Message service. In the lower right-hand corner of the briefcase are the *Desktop* (to return to the Windows desktop) and *Shutdown* (to turn off the machine) buttons.

On the bottom edge of the notebook is a resize handle that the user can lift up like a window shade to view the rest of the contents of the briefcase. Other notebooks and connected volumes will be visible here. Usually the user has the shade down for maximum screen real estate visibility of notebook pages.

Documents – A Closer Look

Stationery

As stated before, documents are analogous to the combination of data and programs in other systems. The kind of document depends on the kind of information being displayed.

The user thinks of document “kinds”, as one would of the real paper-based model of stationery. These stationery documents reside in the *Stationery Notebook* but the novice user does not need to be concerned with this yet. The documents required already preexist in the main Notebook.

Advance users will create new documents via the Insert action and pick from the stationery menu. The stationery menu lists the documents in the stationery notebook designated to be on the menu. Some documents do not need to be on the menu, because there is rarely a need for more than one of them.

What documents reside in the stationery notebook, whether they appear on the stationery menu, and how they can be created and further customized are issues of configuration, and discussed in more detail in the customization section later in this document.

The Main Notebook

Another way to think of documents in **e-case** is as different “views” of information (as in database terminology). A document provides a particular kind of view of data. This data is local within the document but can also include views of data that are global (shared among other documents) within the Notebook.

The most important set of data that is globally shared among documents is the *Notebook Database*. The organization and accessibility of this database is one of the most powerful features of an **e-case**

notebook. The organization and customization of the database is discussed in more detail later. User's only know about information in the documents.

This section describes in closer detail from a user's perspective, the main kinds of documents that reside in a typical Notebook:

- TextPaper
- ListPaper
- DayPlanningPaper
- FinancePaper
- Publications
- NotePaper

The Solution Framework section will provide a more in-depth description of these documents, customizing them, the concept of stationery, and the Notebook Database.

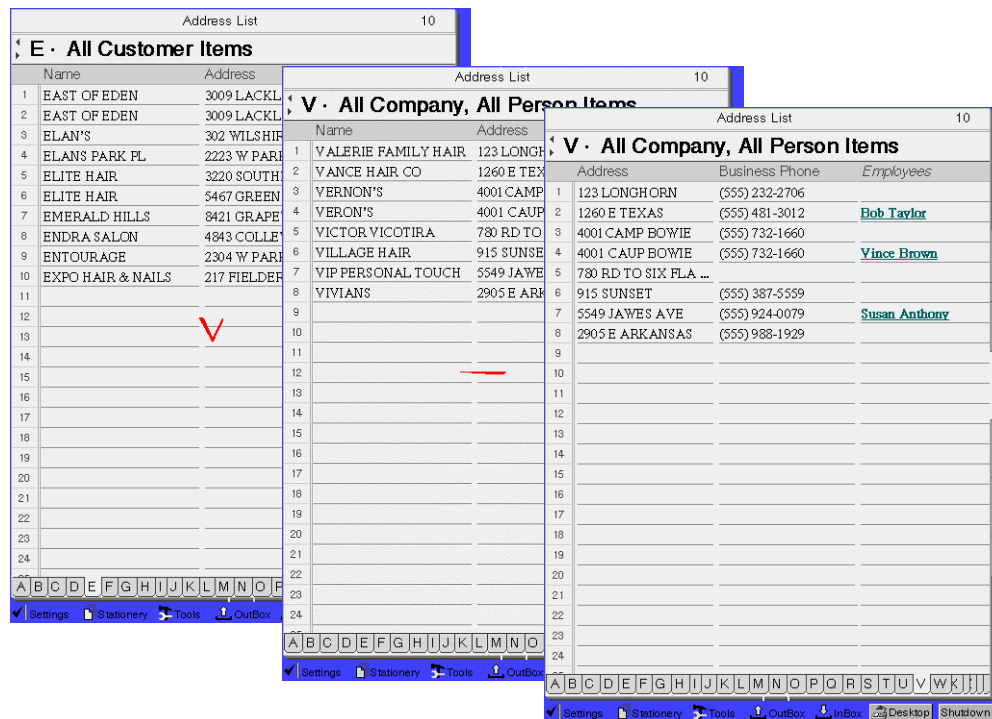
ListPaper

ListPaper shows a view of all *items* in the Notebook Database that meets certain criteria (defined by the document's designer). For example, the Address List in the example Notebook is a kind of ListPaper that displays all "Persons" and "Companies" items:

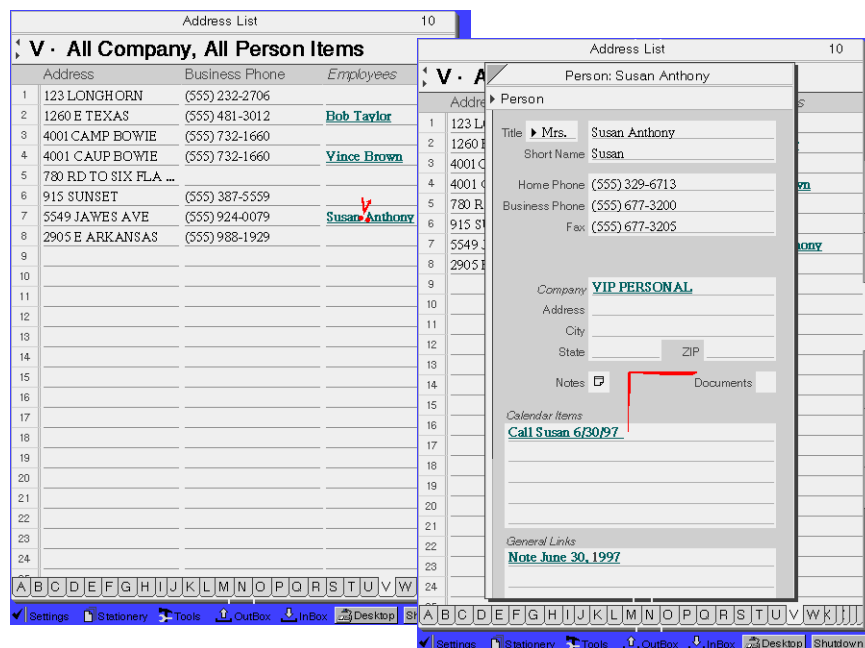
Address List			10
E - All Company, All Person Items			
	Name	Address	Business Phone
1	EAST OF EDEN	3009 LACKLAND RD	(555) 738-9530
2	EAST OF EDEN	3009 LACKLAND	(555) 731-8850
3	ELAN'S	302 WILSHIRE	(555) 477-0808
4	ELANS PARK PL	2223 W PARK ROW	(555) 277-3355
5	ELITE HAIR	3220 SOUTHLAKE ...	
6	ELITE HAIR	5467 GREEN OAKS	(555) 478-8281
7	EMERALD HILLS	8421 GRAPEVINE H ...	
8	ENDRA SALON	4843 COLLEVILLE ...	
9	ENTOURAGE	2304 W PARK ROW	(555) 275-7358
10	EXPO HAIR & NAILS	217 FIELDER PLZ	(555) 226-3976
11			
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22			
23			
24			
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z			
Settings Stationery Tools OutBox InBox Desktop Shutdown			

ListPaper can contain one or multiple columns of item *details* (attributes such as "Name", "Address", and "Phone Number" ...).

Within ListPaper, there are subpages and tabs for navigation shown on the bottom edge. Navigation through the list can be done via scrolling gestures, tapping on tabs, or *Swoops* (quick finds with letter gestures). Let's swoop to the **V** items and then scroll to the right to view more details of the items:

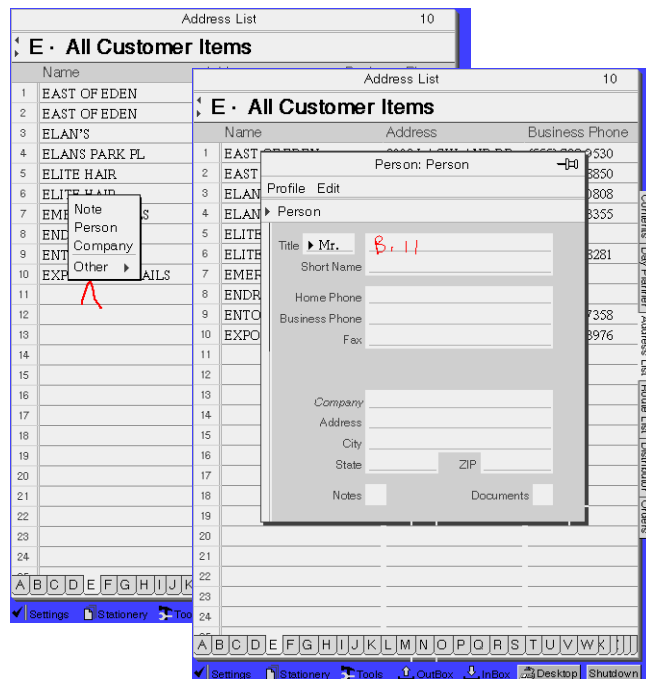


The column "Employees" contains *link items* (meaning a relationship between an item and another one). Linked items are visually indicated in a dark-green underline font. Double-tap means "bring to" (float at a minimized size), so let's double-tap on the link item. A Profile Sheet listing the entire item (all the details it contains) is displayed.



Dismiss the Profile Sheet by tapping the Close Corner (gray triangle in upper left corner), or as shown above, an advance user will use the Close gesture (a flick left-down).

Let's create an item from scratch. Since this is a ListPaper document showing "Companies" and "People", the context of a Create gesture here presents a menu of item kinds that can be created (People, Companies, and Others).



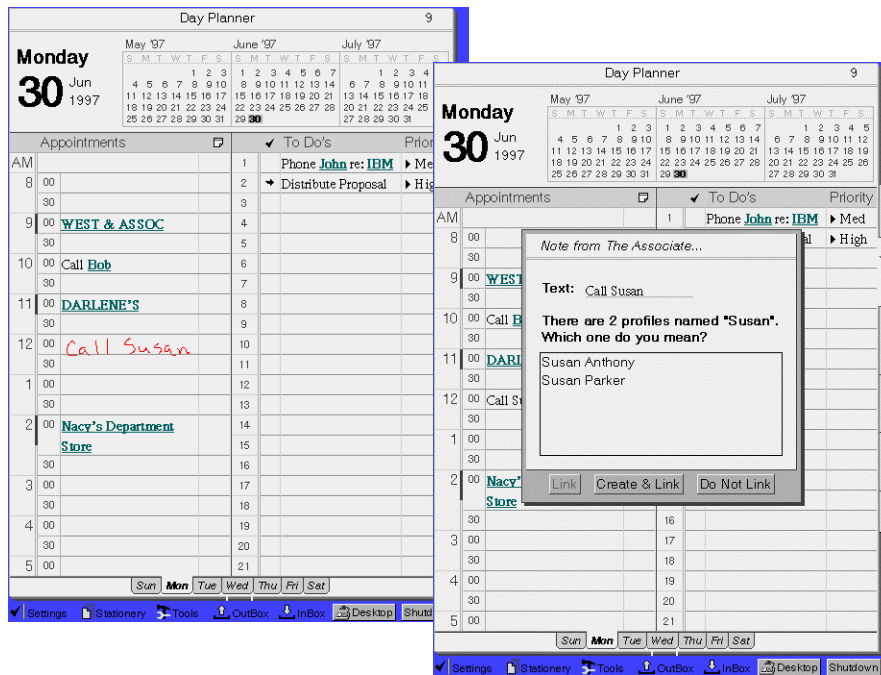
1. Create gesture on the list.
2. The create menu displays.
3. Choose "Person"
4. A new profile for "Person" appears.
5. Write in the information.

DayPlanningPaper

DayPlanningPaper provides a daily view upon the Notebook Database. An example here is the Day Planner in the Notebook showing a list of appointments and To Do items. "Call Bob" is an appointment at 10am. "Bob" (shown in green underline) is a link item.



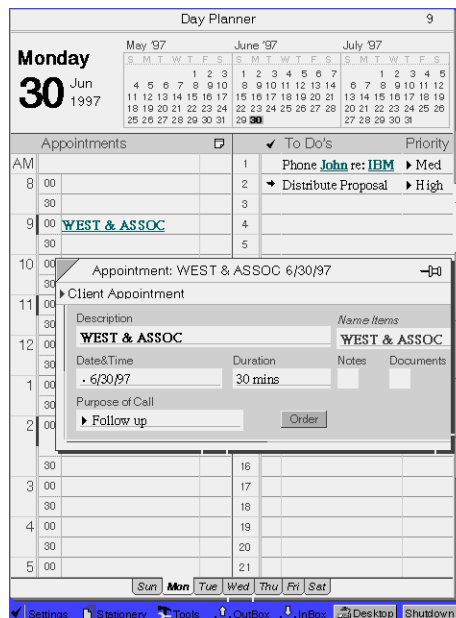
Appointments are created with the Create gesture, or the user can just write in an entry such as "Call Susan" shown here:



The entry is recognized and the *Associate* checks to see if there is a relationship between the entry and an item in the Notebook Database. In this case, two Susan's are identified and the user is asked which Susan to link to. The user chooses, and an appointment item is created in the database.

It is the *Associate* in e-case that provides the user a friendly way to establish links between database items in documents.

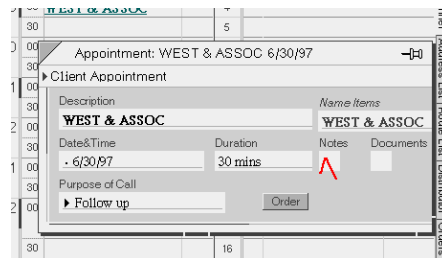
Ok, now let's say it's the beginning of the day, a double-tap on the time column brings the appointment profile for 9am:



NotePaper

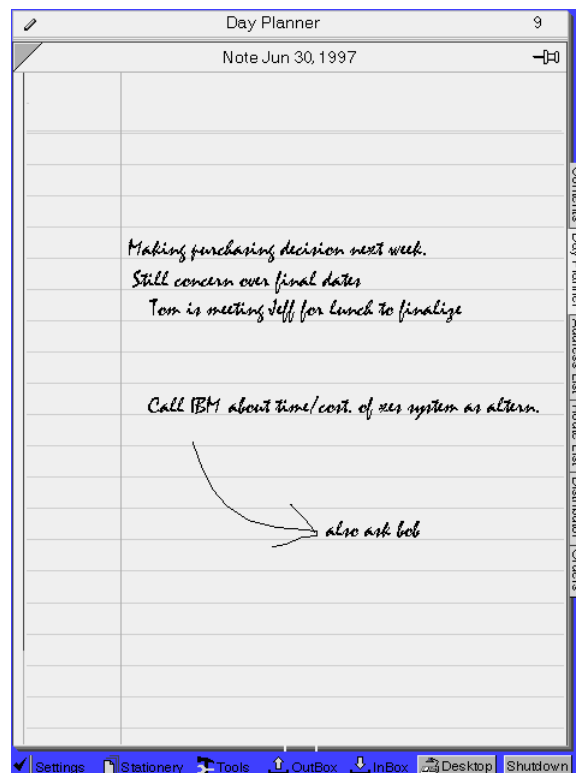
Perhaps the salesperson needs to take some notes while with the client. NotePaper is for free-form handwritten input. It's literally like a real piece of notepaper, except more flexible and accessible. NotePaper can be created almost anywhere Profile items are, and are automatically linked with these items. The Associate also automatically links them to translated items within the NotePaper.

For example, let's create a note in the appointment profile:



The screenshot shows a software window titled "Appointment: WEST & ASSOC 6/30/97". Inside, there's a "Client Appointment" section. The "Description" field contains "WEST & ASSOC". The "Date&Time" field shows "6/30/97" and the "Duration" field shows "30 mins". There are fields for "Notes" and "Documents", both currently empty. A "Purpose of Call" dropdown menu is set to "Follow up". An "Order" button is visible at the bottom right of the form. The background shows a calendar grid with the date 16 highlighted.

The note displays, automatically titled by the date (it can be changed of course). The salesperson writes away:

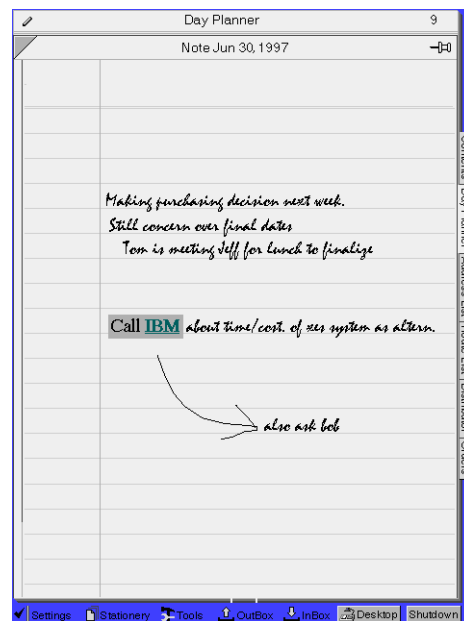
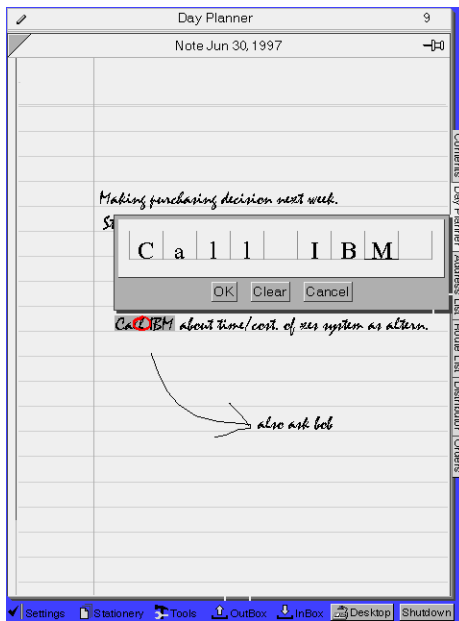


The screenshot shows a "Day Planner" window for "Note Jun 30, 1997". The main area is a large grid where handwritten notes are entered. The notes are:
Making purchasing decision next week.
Still concern over final dates
Tom is meeting Jeff for lunch to finalize

Call BTI about time/cost. of xer system as altern.

An arrow points from the text "Call BTI..." to the text "also ask bob".
The right side of the window has a vertical menu with options: Contents, Day Planner, Address List, Route List, Distribution, Orders. The bottom of the window has a taskbar with icons for Settings, Stationery, Tools, OutBox, InBox, Desktop, and Shutdown.

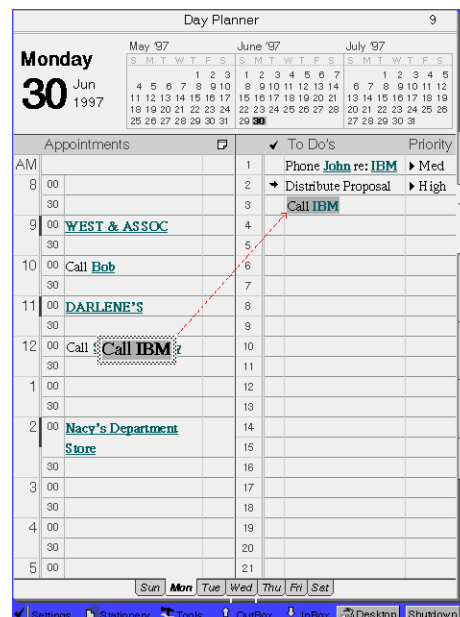
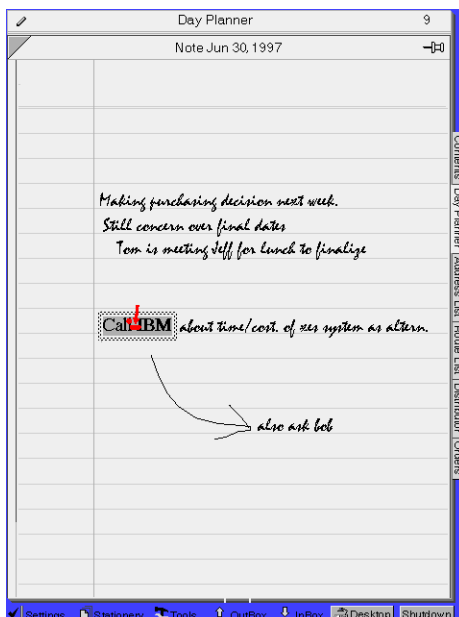
Links within notes are created by *selecting* (double-tap) the ink, and then edit to translate:



The associate automatically links the translated text to a known item in the database.

Selection is also important for moving and copying objects. Gestures based on pressing and dragging are used for these actions. Let's look at an example: What if the salesperson wanted to make "Call IBM" a To Do item in the Day Planner: The gesture to mark an object for copying is double-tap press (to move its tap press).

So a tap press on "Call IBM", and a double marquee border visually shows the object is ready for drag and dropping. After doing this, close the note (the selection will remain visible), and drag and drop the selection onto the To Do list:



And the To Do item is automatically created. Moving and copying of objects is standard throughout the system. For example in the Notebook Contents page, this would be how documents would be duplicated and rearranged.

FinancePaper

Another important kind of e-case document is FinancePaper, which is used for forms and worksheet calculations. Not only do these kinds of documents work like standard paper forms and worksheets, they include the power of typical spreadsheet applications in standard computing.

For example here is a simple loan calculation sheet which the user can easily do some experimental recalculations with:

Interest Rate (per Annum)	Term (Months)	Your monthly payment is:	Each \$1,000 increase in principle will increase payment by:	A .5% increase in interest rate will increase payment by:
7.25	360	682.18	6.82	34.24
6.25	360	615.72	6.16	32.88

Simply overwrite the interest rate and instantly the form reflects the change.

Order Guidance

FinancePaper is used in many ways. Let's go back to the appointment profile of the previous example. Sales consultation begins here by tapping on the "Order" button:

That turns to an order form (automatically pre-filled with the client data):

The FinancePaper document above shows an order form that in many ways looks like a standard paper form, however there is often much more to it (depends on the custom solution).

From within this form the salesperson may have access to many other related functions for both pre and post order taking. Functions such as: summaries of previously ordered products (Order History); promotional material that may be of interest to this client (Campaigns); worksheets to help determine current costs versus alternatives (Needs Analysis); and many other possibilities. The solution designers build these capabilities around the individual needs of each sales process.

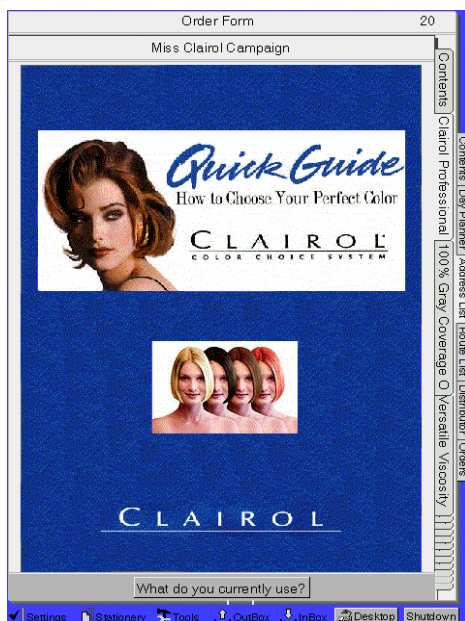
In this example, let's add some product items. Create on the line items brings up a list of product categories. The category is chosen and the product list appears:

The user writes in the quantities desired and when done taps “Ok”. The items are posted to the order.

Publications

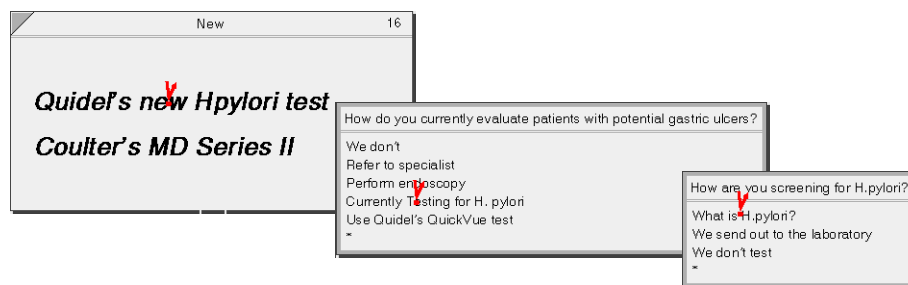
Publications are documents that display formatted text and graphics. They have many advance navigating facilities, and provide in **e-case** the key components for a campaign promo. brochures and catalogs. Let's look at a few examples.

The example order form has a button called "promo". Here is where promotional material directed at this or all clients are launched. So, the user taps on the button and the following Publication displays, in this case it's a Q & A series.



This example is the beginning of a Campaign promo. Let's look at other examples of how Publications and other documents come into play in presenting sale intelligence.

For example, the sales person could represent a medical distributor trying to promote a very important ulcer test kit to physicians. Based on the order history and type of physician, the following promotional material is launched from a choice of two:



Here the salesperson asks a series of questions. The answers from the client can lead to either a identifying no need at all, or help the client cost compare what they currently use with the new product, or provide the client with completely new information and identified a new benefit for the client not understood before:

H.pylori (Helicobacter pylori) is a type of bacteria that attaches to the stomach lining causing most types of chronic gastritis.

ProofSource

See Product

Loan Calculation 5

WSJART

THE WALL STREET JOURNAL
WEDNESDAY, FEBRUARY 28, 1996

Specialists Back Antibiotic Use To Cure

The American College of Gastroenterology endorsed the use of antibiotics to cure peptic ulcers.

to repeated courses of drugs, and special diets to control stomach acid and relieve ulcer pains. Gastroenterologists are the doctors most Americans turn to for the treatment of their duodenal and gastric peptic ulcers.

The college published a statement agreeing with the consensus reached two years ago by a federal panel of experts that the majority of peptic ulcers is associated with a common bacterium called *Helicobacter pylori*.

"Since the cure of *H. pylori* decreases ulcer recurrence and facilitates healing, antibiotic therapy is definitely indicated for all *H. pylori*-infected ulcer patients," according to new "practice guidelines" published by the college in this week's issue of the Journal.

A weeklong course of drug treatment should cure 85% to 90% of ulcer patients infected with the bacterium, the college declared. Various antibiotic and drug combinations have proved effective, the statement said. One of the most effective consists of two antibiotics such as metronidazole and amoxicillin, combined with either


Settings Stationery Tools OutBox InBox Desktop

Loan Calculation 5

NEWHPY

QuickVue® One-Step H. Pylori Test
for Whole Blood, Serum, or Plasma

Identify the Leading Cause of Ulcers in Just 10 Minutes



FAQ

Settings Stationery Tools OutBox InBox Desktop Shutdown

Contents Day Planner Address List Route List Distribution Orders

All the answers, whether they lead to a sell or not, are captured into a *market intelligence* database that is later uploaded to the enterprise. Sending information back and forth between the enterprise is the subject of the next section.

e-case *Executive Assistant* (Communications Framework)

The **e-case Executive Assistant (EA)** is the middleware between the Enterprise information systems and the mobile sales force. It is the smart distributor of information for the Enterprise in Motion.

This technology of smart distribution embraces these two very unique considerations:

- The ultra mobile environment is by its very nature extremely discontinuous, error-prone, and relatively slow for data communication.
- ISS demands ultra fast and reliable response. Moments of waiting on a desktop equate to an eternity when in front of a customer.

Mobile Communication Today

Despite years of technological promises, visions, and some localized success stories, ubiquitous wireless communication for a national solution is often only as good as the POTS (Plain Old Telephone System) provides.

Even with the most state-of-the-art system available however, the Face-To-Face ISS solution must present information seamlessly without interruption to the user. All the information needed to service the customer at the point of contact must be within the e-case environment. Thus communication is deferred. That is, the user sends data or requests to retrieve data, and then goes on to the next order of business. The actual transmission requests are queued in the user's Inbox or Outbox, and processed in the background without interrupting the user.

This is the difference in the user model of man-machine interfaces and the human metaphor of computers being invisible during human interaction. The user of a standard PC will log onto the Internet, bring up a Web page, download email, all with 100% attention upon the machine. The seconds or minutes of waiting in between each task is sometimes taken for granted by the user, they will sip a cup of coffee, read a part of a magazine on their desk, or even use the multitasking features of the PC and work on a report in a word processor, in between each communication task.

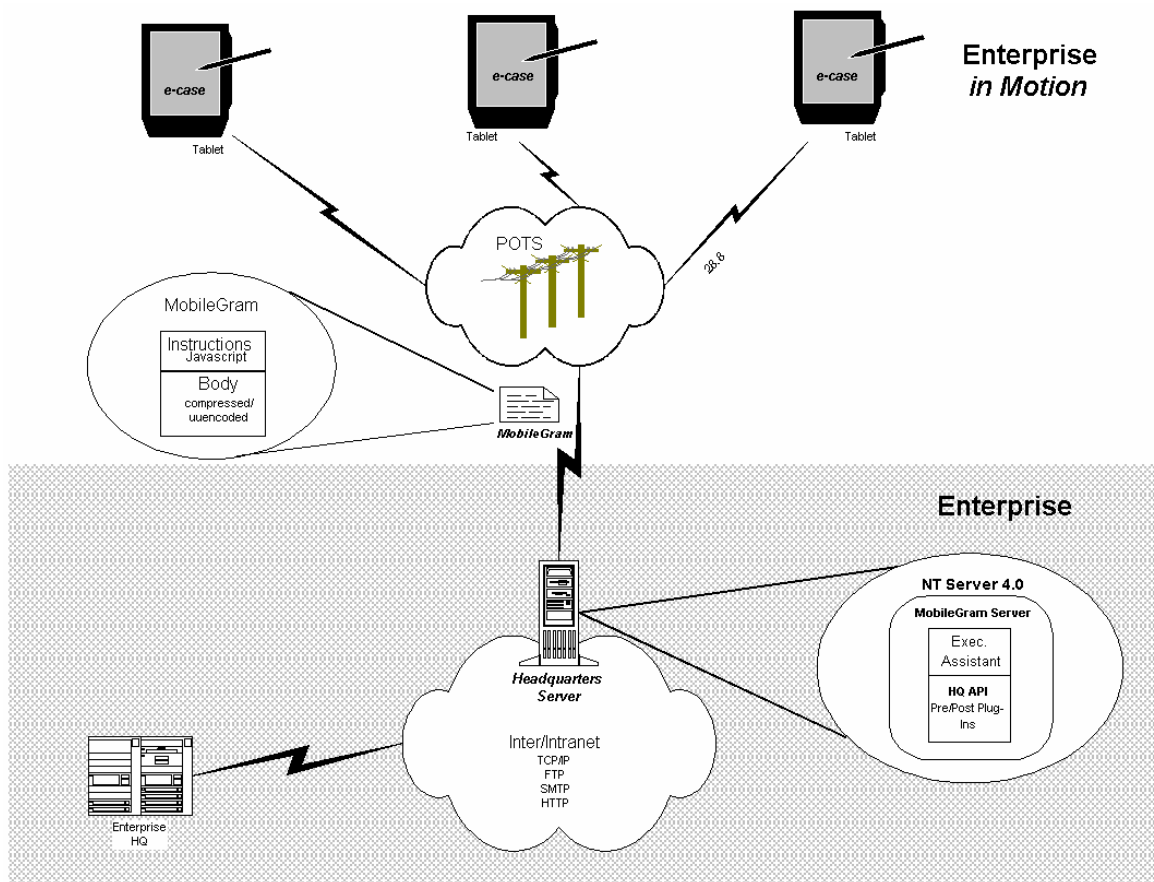
The user model is much different in the human interactive world, where seconds of waiting is an eternity when an interpersonal conversation is occurring.

The Client/Distributor/Server

Two categories of information are distributed between the enterprise and the mobile sales force: Sales Intelligence and Market Intelligence. The centralization of this information is performed by single or multiple backend database solutions. From an Oracle database, to a mainframe solution, to a Web server, the information stored electronically by the enterprise is as diverse as the various needs and history of the company itself.

The MobilePoint philosophy centers on simplicity, reliability and security. Instead of distributed real-time transactional processing common in traditional client/server environments, the model is deferred transaction distribution: multiple servers of information communicate through a single distribution pipeline dedicated to the field.

This diagram below illustrates the E.A. architecture, and the primary components for discussion in this section : MobileGrams, HQ Server, Executive Assistant , and the Enterprise (corporate network).



MobileGrams - Pack & Deliver

On the tablet, sending and receiving uses a deferred distribution model known as *Pack and Deliver*. These packages are sent and received via the Inbox and Outbox. For example, a customer order will be “packaged” and sent by the sales person while in a customer’s warehouse basement, but it is really only queued into the Outbox. If the tablet is currently capable of sending it then it will, or it will do it later when it can (the sales person leaves the basement and is within cellular range).

The “packages” that are sent and received are called *MobileGrams*. MobileGrams bundle both data (compressed) and “instructions” (JavaScript) . For example, a customer order MobileGram would contain both the transaction data that represents the order and forwarding instructions detailing how to get to the enterprise database at the other end. The forwarding instructions are interpreted on a distribution server machine called the *HQ Server* by a service called the *Executive Assistant*. The communication service is called *HQ Link*.

HQ Server

The distributor between the n number of field users and the n number of servers of the enterprise is designed for ultra reliability communication needs between the tablet and itself, and wide flexibility between it and the servers of the enterprise. To meet these goals the distributor uses an internet-based client/server model (to any n-tiered backend).

Communication from the tablet to the enterprise is strictly point to point, to and from the *Headquarters Server* (Windows NT Server) which is managed and maintained by the corporate network administrators. It is assumed the server has Internet connectivity, and firewall protection into the corporate network.

HQ Link

Availability, reliability and security are the primary concerns of MobilePoint's customers for communication. To this end the preferred connectivity architecture is where tablets connect directly point to point to the HQ Server (chain of modems via a digiport on the server). Circuit-Switched Cellular (CSC) is still the preferred option today (because of availability). Other options for the physical layer can be supported such as CDPD or RAM Mobile. For CSC the communication protocol used between the tablet and server is an adaptive packet sizing technique that insures data can be transferred over relatively poor cellular channels. Unless the entire MobileGram is received the transmission is not acknowledged at the application layer, until subsequent retries ensure the full package has been transferred.

Security

The only systems that have the HQ Link CSC protocol are e-case Tablets. Before a session is confirmed an encrypted handshake protocol occurs, and upon failure the client dialing in will see nothing and be disconnected. After validation, normal user authorization occurs. During authorized communication fully encrypted communication is supported.

Executive Assistant

The middleware software technology residing on the HQ Server is the e-case Executive Assistant (EA) which processes the MobileGrams. For example, an Order sent from a sales person will be forwarded by the EA on to a computer connected to the network.

It follows the metaphor of the company Executive Assistant who filters and prioritizes all the information pertinent to the mobile professional while on the road, while leaving non-essential information to be communicated later (via traditional means such as email, client/server software, groupware, web browsing...) once back at the office or home.

The left screenshot shows an 'Order Form' for 'CLAIROL PROFESSIONAL'. It includes a table with columns 'QTY' and 'PRODUCT DESCRIPTION'. The table contains the following data:

QTY	PRODUCT DESCRIPTION
2	4764 Clairoxide 10 vol qt. Developers
3	1727 Clairoxide 20 vol qt. Developers
6	4765 Clairoxide 30 vol pt. Developers
3	1724 Pure White 20 vol pt. Developers
2	1725 Pure White 20 vol qt. Developers

The right screenshot shows a 'Notebook: Contents' screen. It includes a table with columns 'Name', 'Page', 'Enabled', and 'Status'. The table contains the following data:

Name	Page	Enabled	Status
Read Me	2		
Samples	3		
Business Planner	8		
Day Planner	9		

The 'Outbox: Contents' section shows a table with columns 'Name', 'Page', 'Enabled', and 'Status'. The table contains the following data:

Name	Page	Enabled	Status
PCL	2	<input type="checkbox"/>	Disconnected
WEST & ASSOC 01/11/98	3		
SALLY JAMES 01/10/98	4		
K-GROC BERNEY 01/10/98	5		

In the above example the user taps on the Send button (actually an MobileScript button, see next section) which will send this document's contents (in the form of a MobileGram) to the Outbox. If the communications link is enable, or later when convenient, the system will connect automatically with the HQ Server and send all queued MobileGrams to the server. Also, all waiting MobileGrams for this user retrieved.

e-case Ensemble (Customization)

Introduction

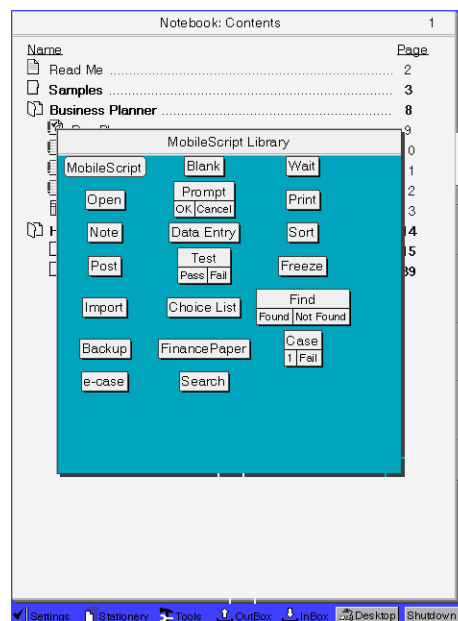
Customization is a two fold consideration. There is customization of the static architecture of the system, and then there is customization of the dynamic architecture. Static architecture is the structure of the documents, dynamic is the actual running behavior.

Stationery

Documents are analogous to the combination of data and programs in other systems. The kind of document depends on the kind of information being displayed. Stationery can be built from basic TextPaper, such as a "Dear Customer " letter already filled in with the basic customer letterhead and formalities.

MobileScript

MobileScript is a *visual construction tool* that implements dynamic behavior for solution architectures built upon the basic e-case documents. MobileScript consists of buttons that implement specific functions that are either general to all documents or specific to a particular kind of document. The default library of buttons is shown here:



Instead of emulating other scripting languages and creating another esoteric syntax, MobileScript uses simple graphs to depict the program flow. MobileScript buttons take the place of script library calls in traditional script languages. These buttons provide dialogs on how to incorporate them into the script, relieving the script creator from understanding and remembering script library function interfaces.

The standard MobileScript syntax within an option sheet will describe 1 to n number of action lists. The format and attributes of an action list in a button vary with each different kind of button. Let's look at the Open button. Here we have set the Open button to where it will open the document "Read Me" and float it over the notebook:

Here is one of the palettes of the full script (a MobileScript palette contains other scripts and palettes, and has a being and end button). The script asks the user a series of questions and prompts the user based on the answers. The script palette will either end the entire script (if it is the highest level script) or the upon completion the next level of scripts are ran.

More scripts can easily be created with the Insert gesture anywhere in the palette.

e-case Notebook Database

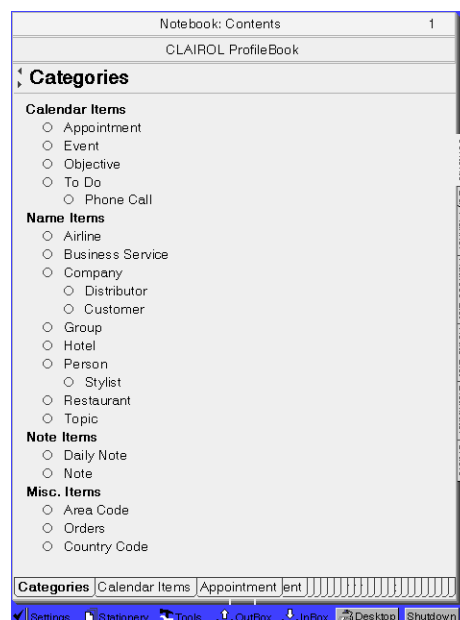
The Notebook database is a powerful Object-Oriented database implementing the information management capabilities of e-case.

The Notebook DB organizes information into **categories** (table types), **details** (record types), and **items** (field types).

Categories

A **category** corresponds to a different kind of information the sales consultant deals with everyday such as Companies and People. Categories are hierarchically grouped (supertypes/subtypes).

For example, here is a hierarchy for a typical application the hierarchy is as follows:



Details

Here is a sample of the category structures and their details (this is only a subset):

Name Category

|__Company Category

Business Phone	Fax	Address	City	State	ZIP	Stylists	Notes (link)	Documents (link)
----------------	-----	---------	------	-------	-----	----------	--------------	------------------

|__Retail Category

Customer No.	Best Days To Call	Best Days To Attend Class	Owner/ Manager (link)	Trade Category	...
--------------	-------------------	---------------------------	-----------------------	----------------	-----

Details have the following supertypes:

- *Text*
- *Phone Number*
- *Number*
- *Note*
- *Index*
- *Date/Time*
- *Choice*
- *Link*

The ProfileBook has a complete U/I for defining the categories and details. Here is a snapshot of the U/I for the Retail Category:

The screenshot shows a software interface for managing a 'Retail Layout'. It includes fields for personal and business information such as Name, Short Name, Business Phone, Address, City, State, ZIP, Fax, Notes, Documents, and General Links. A 'Calendar Items' section at the bottom features a grid for scheduling appointments. The interface is part of a 'CLAIROL ProfileBook' and includes a sidebar with navigation options like Contents, Day Planner, Address List, Route List, Distributor, and Orders. The bottom status bar contains icons for various system functions like Settings, Stationery, Tools, OutBox, InBox, Desktop, and Shutdown.

Views

The U/I for viewing and editing information in the database is done through various document “list paper” and “planners”. List Paper documents provides customized views of multiple Name and Calendar items. An example of a “List Paper” for the Clairol application is provided below.

List Paper documents such as the Route List and Address List (shown above) are preset for the user, or can be created dynamically (via Orchestrator or the user).

Each item in the list can be viewed in detail using a Profile view.

Exporting/Importing

Data is exported and imported via List Paper view documents.

List paper can display ALL items, a single category or combination. In addition, the details displayed are fully customizable. The export record structure matches the organization of the List Paper. Also, the first two columns of data are **Item Tag** & Category which are not displayed in the List Paper. Here’s a subset sample of the record table for Address List. The data is shown here in tables for readability the actual import/export format is a comma/quote delimited file.

Item Tag	Category	Name	Short Name	Business Phone	...
262	Retail	J & F Beauty Salon	J & F Beauty Salon	(415) 387-2678	
6212	Distributor	OAK TREE SHOPPING CENTER	OAK TREE	(908) 767-1277	

Item tags are used as identifiers for the records by the database.

On import, all non-blank fields will overwrite the previous values. Deletes are handled with a special character.

Intranet Connectivity via MobileGrams

Distribution of data to and from the tablet is done via MobileGrams. Customization on the tablet for creating MobileGrams is done through with the **Ensemble** toolkit via the MobileGram Orchestrator button. On the enterprise end, customization is done on the HQ server.

MobileGram Front-end

A MobileGram is another button provided in the Ensemble toolkit.

The attributes of this button from the Maestro view (as shown in a button action list) are:

Send|Get *What* [**As** *Kind*] **To|From** *Where* [**Now|Every** *When*] [**Using** *Process*]

where:

- *What*: document/script locator or reference (UUID if Send action or FinancePaper cell reference)
- *Kind*: document/script import or export type (default is text).
- *Where*: URL (string or cell reference)
- *When*: optional string or cell reference (0-168, where 0 means once, 1 means every 1 hour)
- *Process*: optional string or cell reference (this would be "program name parameters..."). I.e. this would be a plug-in call.

Examples:

`Send Market Data To ftp://webdev1.internex.net/mp/mkint`

Will send the document "Market Data" to the appropriate site into mkint.

`Get Market Data As FinancePaper From
ftp://webdev1.internex.net/mp/mdata.xls Now`

will get an Excel file and import it as a FinancePaper document called "Sales Data" immediately (wait for response).

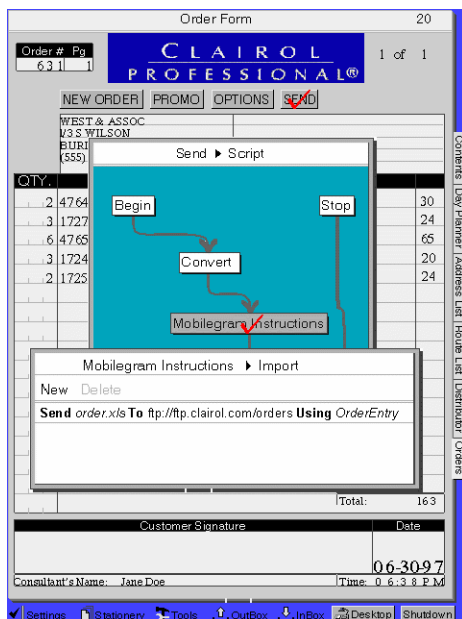
`Get Market Data As FinancePaper From
ftp://webdev1.internex.net/mp/mdata.xls Every 24`

will request HQ to retrieve an Excel file every 24 hours and import it as a FinancePaper document called "Sales Data".

`Get Market Plan As e-catalog From ftp://webdev1.internex.net/mp/mdata.htm
Every 24 Using Publisher`

will request HQ to retrieve an HTML document every 24 hours, run it through the Publisher plug-in, and import it as a e-catalog document called "Market Plan".

Let's look at the Order example we used previously. Here we open up the Send button (using the Options action, however normally these buttons are locked from the normal user), this displays the Send script palette. Also here we checkmark to look at the MobileGram Instructions script which displays the action list for the MobileGram.



This will create a exported Excel file (the Convert script button) and then send it to HQ, which will process it using OrderEntry (which will also extend the actual URL to be a CGI call).

Frequently Asked Questions

What are the internals of e-case, does it run completely independent of Windows?

e-case is a self-contained object-oriented software environment. It fully uses the 32-bit protected mode capability of the underlying hardware and provides pre-emptive multitasking for all critical tasks. The Windows desktop is used as a launch platform, and e-case runs independently from the desktop framework.

Can I develop at a layer lower than the Script level? What is the development platform like?

All customization needs should met with the Ensemble toolkit. MobilePoint develops the underlying framework components of e-case with a software development kit (using Microsoft Visual Development Studio) under a powerful class library and pure object-oriented environment which is completely ANSI C compatible.

What plans does MobilePoint have for supporting other and future Pen Computers and PDAs?

Currently e-case is distributed on Intel x86-based PC Tablets. The software foundation of e-case can be ported onto other platforms, and has been ported to RISC based technology in the past. Current market conditions have yet to justify non-PC-based hardware to be fully supported at this time.

What other wireless protocols does e-case support?

Any physical communication layer can be support by the e-case communications framework. The issues are coverage, reliability, cost and mobility. Up and coming wireless technologies such as two-way paging, CDPD and special packet-switching networks can easily be supported on customer demand.

What about upgrading both e-case and the custom solutions, how is this supported?

The Executive Assistant provides an automatic upgrade service for e-case updates. As described earlier, HQ Link provides a update mechanism for all Campaign Promotions and Applications.

What kind of support and limitations does MobilePoint have for running Windows applications on an e-case Tablet?

MobilePoint provides extensive knowledge on using the desktop aspects of the tablet to its most beneficial. Not all Window applications work well under the pen environment. In Windows, the pen simply emulates the mouse events the application normally expects, however some applications expect special mouse events or simply design their interface in a manner which is closely couple with the mouse, keyboard and desktop U/I. Other issues are identifying the appropriate desktop peripherals such as printer, extra disk space options, e-mail and internet configurations, and so forth. MobilePoint will assist in identifying and consulting with configurators in achieving the best desktop configuration.

Can I Web-browse, e-mail and Fax on the Tablet?

Yes. MobilePoint will assist in identifying and consulting with configurators in achieving the best desktop connectivity solutions for your needs as well.

What about Handwriting recognition, I'm concerned it still has a long way to go and users will find it makes using the tablet too cumbersome.

Handwriting technology has advanced in the last few years, however it will never improve enough to excel in the wrong applications. For desktop usage (e.g. writing a report, doing email, or preparing a presentation) a keyboard is essential and the e-case Tablet supports a keyboard attachment for laptop-like use. While on the road in the ultra mobile environment the application needs are different, and where the keyboard and mouse fail the pen actually is extremely convenient and powerful. This is why, obviously, the pen is used extensively today in human interactive situations and the e-case pen and paper environment fits these environments naturally.

Recognition software becomes an issue when trying to use the pen for desktop applications. You would not want to write a novel using pen recognition software for example. However, for order taking in front of a customer, it's much faster, and practical to it with the e-case software.