

M E Z Z O U S E R I N T E R F A C E

PRINCIPLES OF A SIMPLIFIED DESKTOP USER INTERFACE AND USABILITY EXPERIENCE

"and thirdly, they're more like guidelines than actual rules." - Capt. Barbossa



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Preamble

I am by no means an expert, nor certified, accredited or formally studied in the field of UI design. I am however, creative, and like most creative people, I imagine innovative ways to accomplish small slices of life. I remember watching my father, mother, friends, customers at Sears all try to use a computer at different times. Some would close the wrong window, or be unable to make it bigger or smaller. Some would be unable to find the icon they needed on a cluttered desktop. Some would understand the touch and feel, but really just remembered steps to get things done because computers really didn't make sense on an everyday, human level.

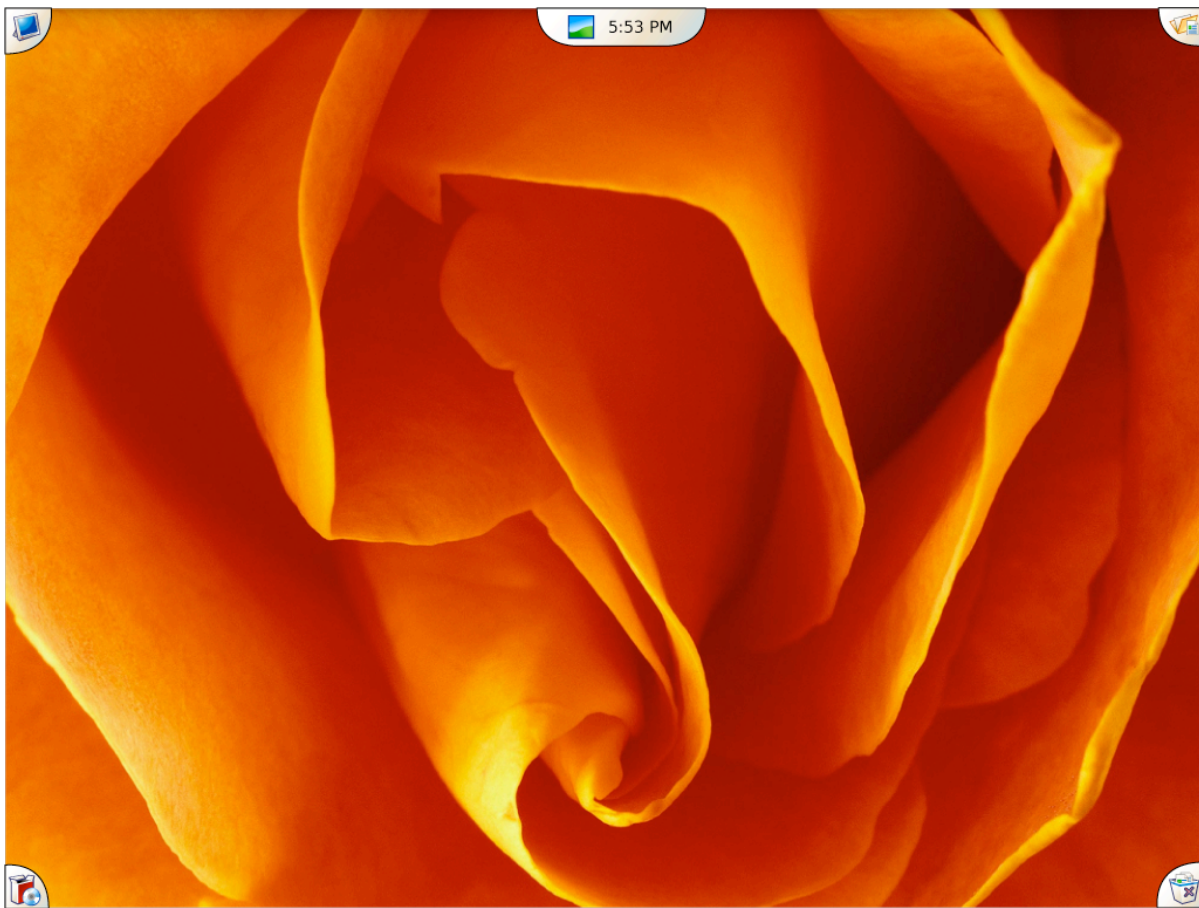
After years of being tortured, and watching others disbelieve in themselves because of uncompromising program interfaces, I decided to take my thousands of hours of experience on hundreds of programs and create my own user interface to a computer, plus write my own rules of UI design to which it would adhere. I've read a grand total of one article regarding Fitt's Laws and other UI concepts and have used, Pong, Atari, TRS-80, DOS, Windows 3.11, 95, 98, NT, 2000, XP, Mac OS 7.5 through OSX, and just about every Linux distribution containing KDE 1.1.2 through 3, Gnome 2, and other desktops and windows managers.

The following rules of user interface design are user-centric and inspired by the idea that interfaces should befriend the user when possible, and simply be less. After each rule, I explain how Mezzo, (my simplified PC UI brain child who's been getting tired of rattling around in the attic), implements it. Then I talk more about Mezzo in depth and how things work using various technologies and metaphors.

The Rules

Fitt was right and no one listened.

The four corners of the screen are sadly under-utilized causing users to constantly misacquire important interface elements...and get pissed off. Items in the exact corners of the screen offer a near 100% guaranteed hit with the mouse. The most often used functions should reside there.



Mezzo Solution: *Corner Targets.* The Corner Targets in Mezzo explicitly force Fitt's Law into practice. All of the oft-clicked menus are able to be accessed by ramming the mouse into a corner. So easy, it hurts. The Desklets Target occupies a greater space and uses a "mile-high" concept to make it more acquirable. Combined with a hot key, F9, it achieves nearly the same ease of acquisition.

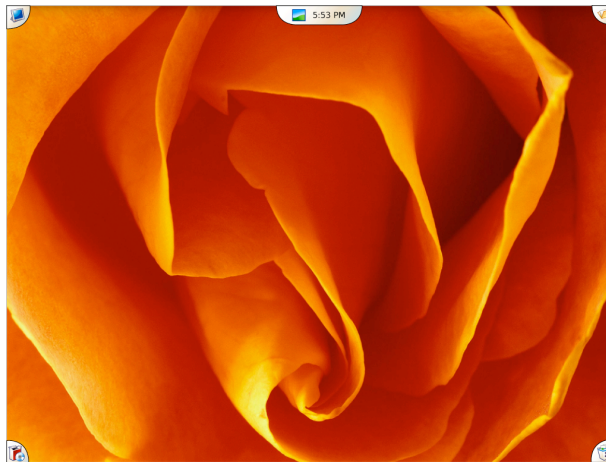
Use familiarity as a peace offering.

For those users who have experience with a computer, use what they know to get them started. If they are used to finding their programs in the lower left, and their computer in the upper right, help them by putting it there. Within reason, use familiar places when you can to breed a sense of trust and be less threatening. For those who don't have computer experience, lucky them.

Computer Target-

Similar to My Computer, contains settings and physical devices

Programs Target- Like the Start Menu, it contains Programs. Uses that naming convention.



Documents and Places Target-

Like Apple's Spotlight and My Documents it allows find and access to recent, favorite files.

Trash Target - Like XP and Mac OS, a trash metaphor. It stands for anything ready to be removed from the system.

Mezzo Solution: Mezzo places the Programs Target in the general facility of where Windows puts the Start menu for programs. Same goes for My Computer. Apple users will find access to the Finder and now Spotlight-like file searching in the upper right, and their Computer's settings in the upper left. Both will find the trash located in a familiar place, the lower right, for Windows XP and Mac users. It's all just close enough to make the initial impression of Mezzo more familiar.

Nested menus are evil.

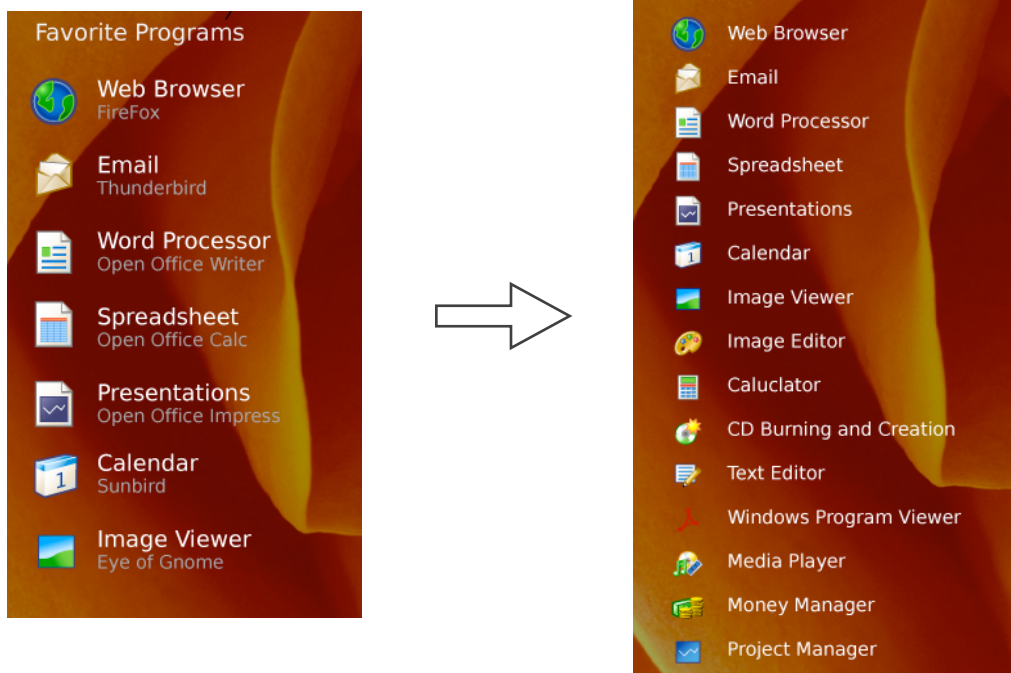
I have seen many people accidentally move off a deeply nested “File Menu” choice because they went too low or too high to the right and had to start all over. A good user interface will eliminate nested menus entirely since humans have a hard time targeting 20 pixel high menus in the first place, let alone panning down, then scrubbing to the right or left in a 20 pixel wide corridor since their hand and arm naturally moves in an arc, not a line.



Mezzo Solution: Desktop-wide menus. Mezzo banishes the nested “Start Menu” and “Apple Menu” concepts in favor of the expansive Desktop-Wide menus launched by single-clicking the Corner Targets. These menus eliminate the pan-and-scan method of finding the proper information in a menu, and cut down on the user accidentally missing the nested menu, and having to go back and re-drop the menu to try again. The entire desktop space is used as a menu with plenty of room for large icons, and no nesting.

Scrolling sucks.

A good user interface will minimize scrolling, and encourage the user to create volumes of information that do not promote scrolling. Apple does this wonderfully with the sidebar of the Finder window in recent versions of OSX, and the Dock to some degree. Content should help the user manage large amounts of itself by presenting it in a single pane view, and possible prevent the user from storing 150 individual files one spot. We do this in life by making file cabinets only so big. There's a reason.



Mezzo Solution: *Auto resize icons and information. The default desktop menu interfaces auto resize the icons and information to eliminate scrolling. Users see all the immediately available information possible. When more items are visible, they shrink in size, and/or offer less information. I coupled this with the desktop Target Menus themselves replacing much of the need to launch a file manager or other 'scoll-happy' interface driven program. The goal is to display information that is of high importance, like Favorite Programs, in big, open space, but still allow for increased numbers for folks who can handle lots of choices. But the UI is “weighted” toward the simple.*

Drill down interfaces hide too much.

Don't hide things from the user, unless you have a really good reason, and if you do, make it really obvious what's underneath. The Windows, Gnome and KDE control panels are guilty of this from time to time, as are any desktop icons like My Computer. By forcing the user to drill-down through UI elements to find the one they want, you kill any chance of them finding it instinctively or quickly unless they are great guessers. "How am I supposed to know that my printers are in my Start Menu under Control Panel? Isn't my Start Menu for Programs?"



Mezzo Solution: *Desktop-Wide Menus.* The entire screen is used to present the Desktop Menus under each type of target. This gives plenty of space to provide non-hidden and plain language access to almost every useful function in the OS. The Settings are not below anything, they are in plain view. The only hiding which occurs is the targets themselves, but they borrow on established "norms" for content placement, such as Programs in the lower left and the Computer in the upper left. Desklets can offer non-hidden access to key functions if needed as well. For example, the WiFi Info Desklet, lets you see the status of your wireless connection and then click on it to change the settings.

Configuration gluttony must be stopped.

There comes a point at when the UI is hidden, drilled, stacked and nested so much, just because there is a knob or button for everything. This has to stop. Device design is about making decisions to help the user, not about weaving a rope to hang themselves with...or smoke when they get frustrated.



Mezzo Solution: *Small amount of configuration options and many decisions made for the user. There are things you can't configure in the Mezzo interface. Like the position of the close window button, or the window décor. You can't change the height or the position of the Menagerie, and the number of computer Settings modules are limited on purpose in the mock-ups because they should be. Users should not be burdened with over-configurability. Instead their computer should be like their TV and just work, with a few small adjustments if necessary.*

Consistency plus relationship wins over “put it in thee places, and they’ll find it when they need it”

People are trained monkeys, but they also make associations that help them learn faster...just like monkey’s, I think. If you group like-oriented activities in a single place, the user can trust the interface to find similar stuff in that place. However, if, like Windows®, you put access to a function in several disparate locations in an effort to hopefully “be there” when the user is looking, the UI defeats itself. You confuse the user more by giving them no logical location+association for a given type of action. The cost of “3 ways to access something” out weighs the benefit. Really, multiple access to a function is a cheat for having hidden it.

The best anti-example in Windows is removing a program under Windows XP. The user has to go to My Computer then chose small “Change my settings” or “Control Panel” icon, then make some guesses about which category “Program Removal” is hiding in, then choose “Add or Remove Programs” to remove a program. Having “Programs” initially associated with “My Computer”, which, at first look, instead contains My Documents, Shared Documents, then Hard Drives, Other drives, Printers, and other stuff makes a human start trial and error guessing, get frustrated, begin to swell like a balloon. Then if they ever do accomplish the task, they have no idea how they did it, and simply remember the steps..like a monkey. That old type of design creates a relationship, when, in fact, a separation would have better served the user. Programs should have been no where near the My Computer.

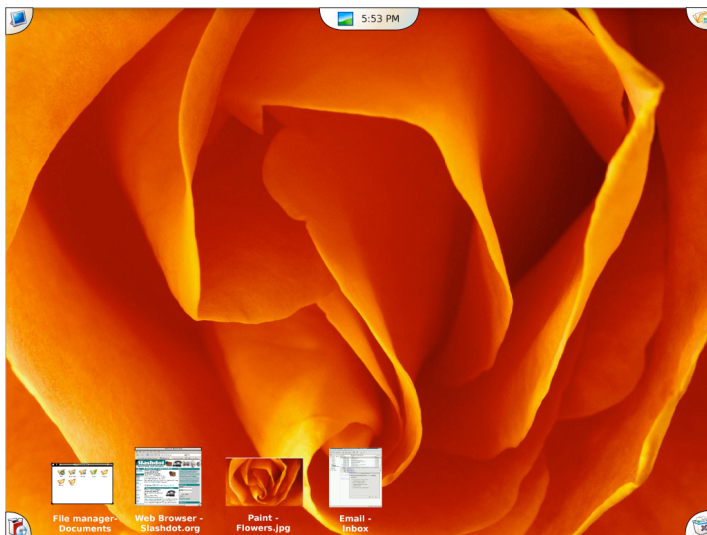
Mezzo Solution: *Action driven and action centric Corner Targets. You won't find access to shared files on your network in the applications menu on Mezzo. Nor will you find the Settings menu next to your favorite programs. Mezzo breaks up the desktop into four distinct topic-driven areas via the Corner Targets. The upper left is for hardware devices and settings, the lower left is for programs, the upper right is for documents and document locations, and the lower right is for trash. Ah, simple, consistent, and easy to remember and acquire. Things related to these actions are found near them as well. Adding, editing or removing programs takes place in the Programs Target for example, not under My Computer > Control Panel > Add or Remove Programs.*

- **Lower Left - Programs - Run, remove, add and organize programs**
- **Upper Left - Computer - Hardware, settings for it, tasks involving it**
- **Upper Right - Documents and Places - Find, organize and see content**
- **Lower Right - Trash - Anything slated for removal**

The drag-and-drop desktop and its icons are the junk-drawer of the modern computer and should be eliminated.

In addition to hiding things deep below drill down icons, clutter is a user's nightmare. Their office and home are already cluttered, so computer's should give them a break. The average desktop quickly becomes cluttered without user intervention. Downloads, files, shortcuts. Every file-dialog encourages saving to the desktop by offering the confusing choice of "Desktop" along with "Documents", or "Pictures". What if I'm saving a picture to put into a document? Then where does it go? If we had a nickel for every time a user saved something to their desktop and wondered where it went, we'd be rich people. If users need to save a picture of the web or grab a URL, then the browser has wonderful facilities for doing that; Bookmarks and Save Image As. If a user needs to save something, they have plenty of choices, they don't need another one just for temporary things that never end up going away. Plus, popping things up onto the desktop like CDs or Hard

Drives or copying program shortcuts there leaves the door open to the user a) missing what happened, or b) losing the UI elements they've come to depend on in a sea of surprise clutter. "Where's My Documents?" It happens every day.



Mezzo Solution: *No traditional desktop. There is no DnD desktop, no magically appearing devices, and no copying to it by rabid installers. Instead the desktop has use-*

ful information taking the form of Desklets that appear when the Desklets Target is pressed. Mezzo uses familiarity to its advantage because most of the world instinctively mouses to the lower-left corner for their programs menu. The absence of desktop icons should take half a second to overcome for most people. Being able to customize their favorite programs locations, and have those NEVER CHANGE unless they do it themselves, will be a welcome empowerment.

Pop up dialogs and balloons are a horrible interface tool.

Popup dialogs demand attention, often at the most inconvenient time, no one reads them, which is dangerous, spyware employs them very well, and having to read them for important information or to take a desired action interrupts the users flow of work, and should be minimized if not discarded all together. Thank heaven for Firefox and the thoughtful integration of the Find Dialog, tabs and “above-content” messages embedded in the UI. And taskbar “balloons” are simply popup devils that are smaller and more area specific. They are evil too, just in a different way, since balloons disappear entirely if not touched and vanish, leaving the user to wonder where went the important information that needed their attention so badly that it had to be popped up in their peripheral vision.

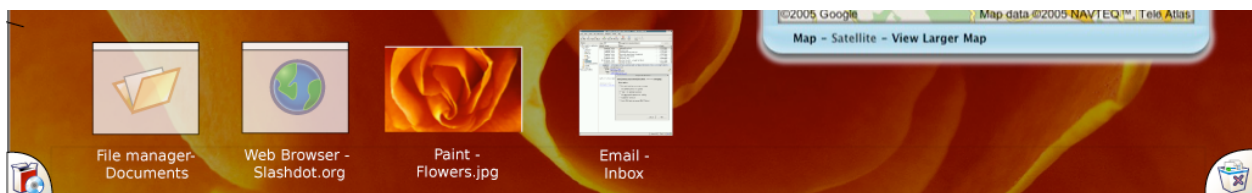


Mezzo Solution: *The Desklets Target and its desktop interfaces serve to provide the user with information that they can observe on their own time and at their convenience. For example, if a new wireless network becomes available, a Desklet can show the message and even change color, but it won't popup in your face, demanding attention or a mouse click.*

Key Technologies

The Menagerie

The Menagerie combines a taskbar with a live thumbnail set allowing the user to visually see what programs are open, minimize and restore windows or juggle between active windows. When a window is minimized a thumbnail is created that approximates the size and shows the content of the window at the bottom of the screen. If the user clicks on this minimized representation, the window returns to it's original state.

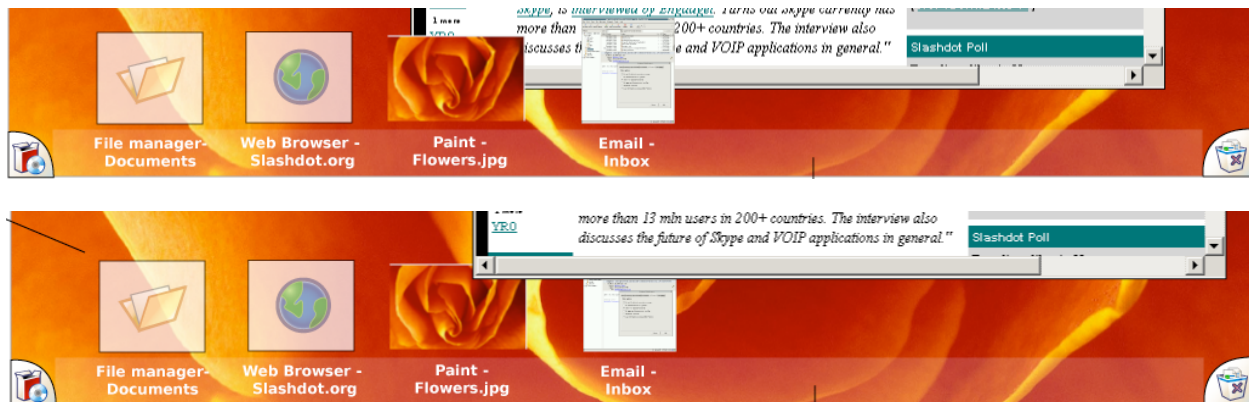


The Menagerie also functions like a taskbar or pager, in that ALL windows have a representation allowing the user to bring them to the “front”, not just minimized ones. Non-minimized windows are a “Ghost” or semi-transparent window shape with an icon in them representing the icon of the program running in that window on the desktop. All Thumbnails have the name of the program and document below them up to twenty-five characters on two lines and are alpha blended to the desktop.

Ideally, thumbnails should be able to give feedback to the user, similar to the current number of unread emails on the Mail icon in Mac OS X. However, if you have filtering rules, that no longer helps you. My original Mezzo design has this in the center of the thumbnail. But it's use should not give the user false information, especially if it's addicting to look at, like the Mail icon is. I opted to remove it in favor of Desklets.

The Menagerie Hot Zone

At the bottom of the screen is a twenty-five (25) pixel high band that windows may not cover. This is the Menagerie Hot Zone which allows the user to see and click on any Menagerie window to bring it into focus or reinstate it.



If the user holds their mouse in the Hot Zone for more than two seconds, the entire Menagerie comes into focus and shows on top of all other windows until the mouse is moved away, or the user takes action on a Menagerie window.

Bumper Borders

I as watched people new to computers, I found that within the first ten minutes, they have moved something off screen that they need to then move back on screen to access. Like a scroll bar, or a file icon. Humans love to move things out of their way, but in the computer world, the distance that windows travel invariably ends up with some important information or UI element dangling out of view, off screen. Bumper Borders fixes this by disallowing any windows to go beyond the edges of the screen. With todays larger screen sizes, and easy stack access through the Menagerie, windows can always be one click away from full view. What this amounts to is a more 9:6, or theater ration desktop that is wider than tall for the area windows are allowed to move.



Desklets

After determining that popups are evil, but that our most dear programs such as email and instant messaging need our attention from time to time, I imagined Desklets can do many things we relegate to popups and balloons, or worse. Desklets provide all information that would normally reside in a tiny box flashing up from the taskbar, or jumping out of the system tray. Desklets give the user a large space to have appropriate amounts of information, and are easily tucked away until called upon by activating the Desklets Target. Oddly enough, after I came up with a very static idea for Desklets, with rigid placement controls, Apple released Dashboard Widgets. So now, the goal is two have Desklets be compatible with those as well.

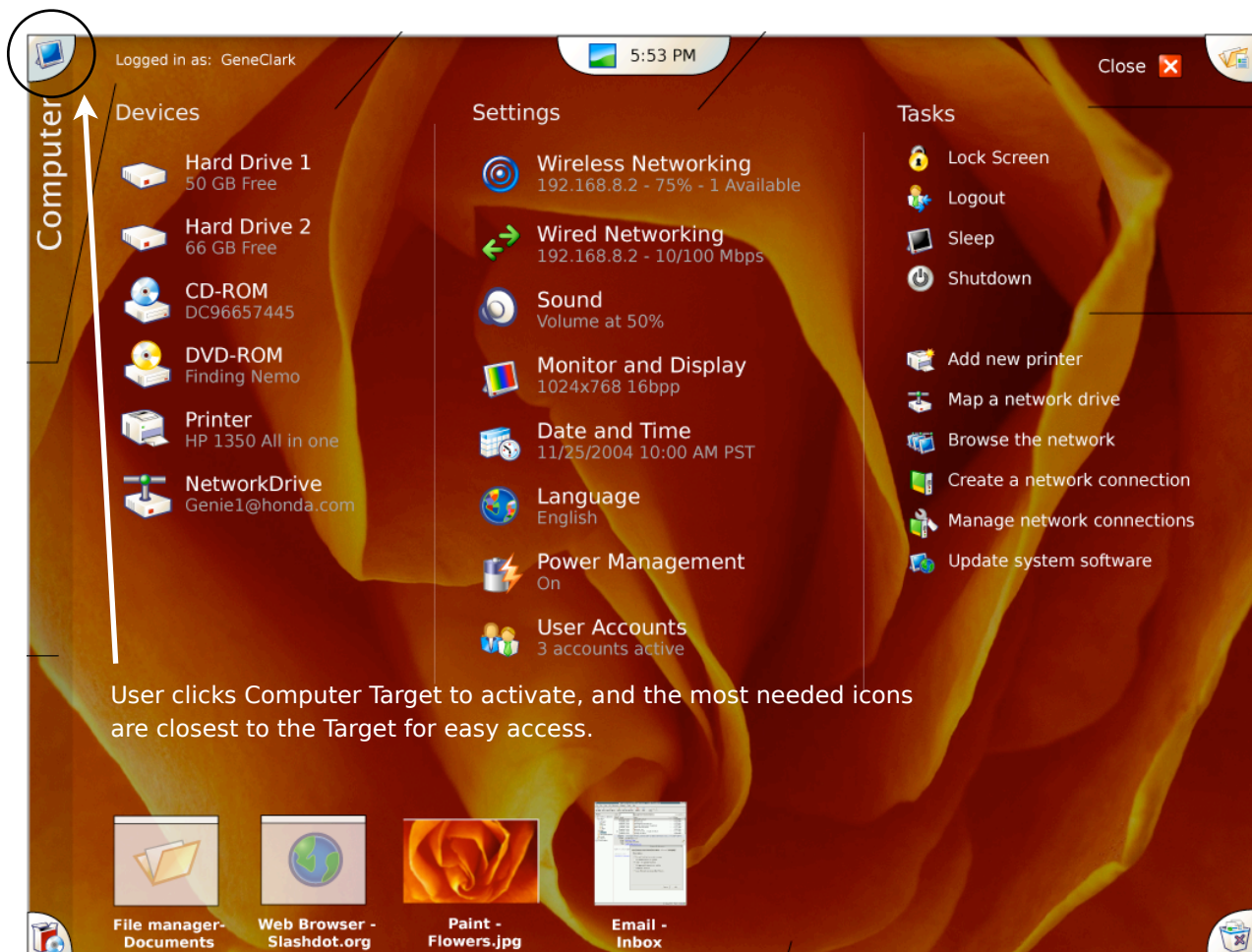


Desklets are live DHTML/Javascript programs that can give one click access to settings and display current information to the user, such as WiFi connections, battery life and other network services. They can cross over each other, but cannot leave the Bumper Borders established by the

Mezzo Desktop. They are governed by the same rules as windows in the Menagerie as well.

Desktop-wide Menu

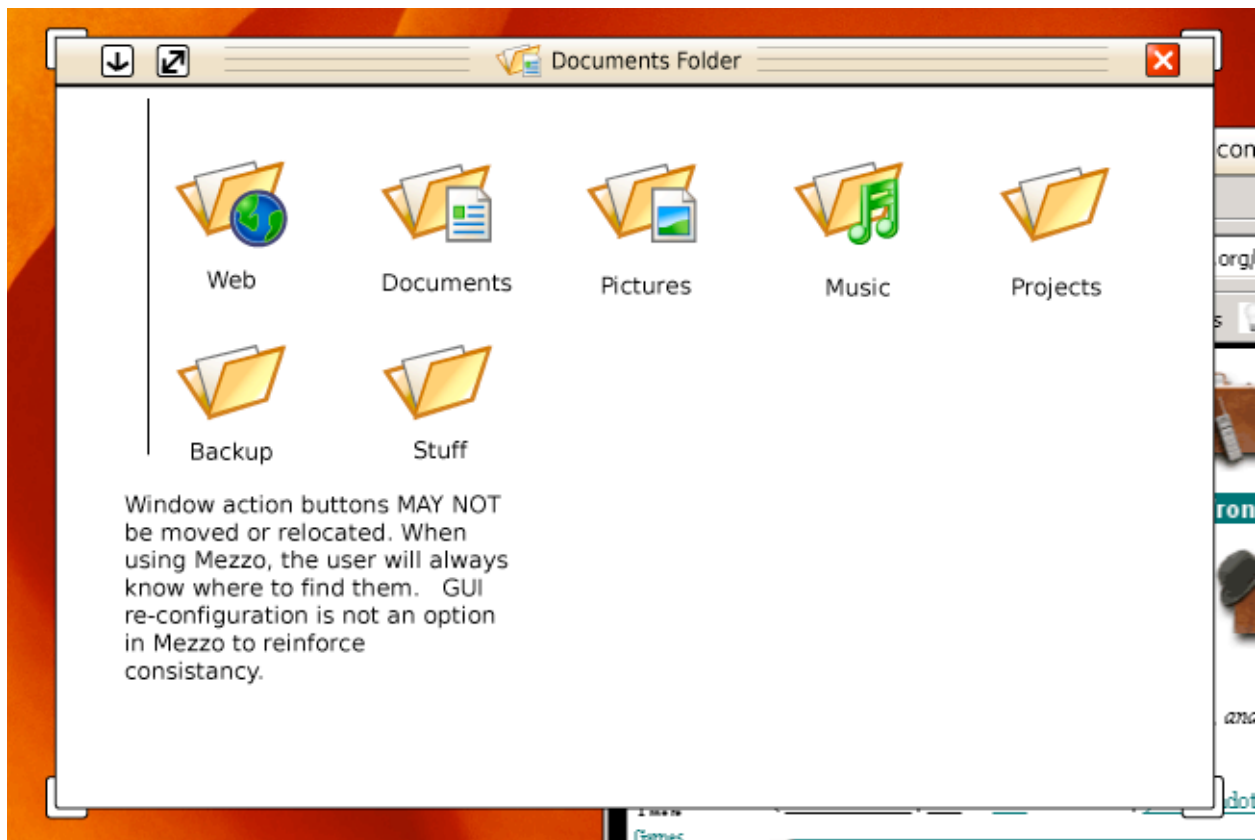
Horizontal scrubbing is one of the hardest thing for a human hand to do with a mouse. Moving the mouse linearly, left to right without going more than 20 pixels higher or lower is akin to asking a bear to run down a hill and pause on a specific pine cone, for a second, just to get to the honey. Enter the Desktop-wide menu. A semi-transparent shroud covers the entire desktop and allows the user to accomplish what would normally be hidden deep within four or five nested menus.



Large icons sizes, no nested menus. Coupled with auto-resizing of lists, the user gets one click access to the vast majority of things their computer can do for them. Because of the space luxury, they are generally split in two or three sections for logical separation of activity. In each case the most often used icons are the largest, and closest to the Target which activated the menu.

Window Decor

Windows represent a huge chunk of time the user spends fiddling with a computer interface. They should be friendly, easy to read, grab, move, and not accidentally close or change size because the buttons are too close. The Mezzo window sizing decor is non-changeable, and uses small arrows, placement and color to aide user action. There are grips on all four corners of each window allowing the active window to be resized from any direction at any time, due to the desktop's Bumper Borders. The top of the window has "grip" like lines to afford grabbing, and a clear name and icon to represent content in the center to a sense of balance. The red "X" symbolizes close throughout the UI, and stands out from the titlebar warning of the im-



mediate action when pressed. When a window is maximized, the close button and other controls disappear to prevent accidental closure, or other changes to a non-active window. Who among us has lost an incredibly important window because they clicked just right of the top window and closed an important document beneath instead? Not with Mezzo.

Universal “Find”

I love Spotlight, Apple’s technology for finding anything based on words and phrases inside any document on your computer...we’ll almost any. Beagle is a strong open source implementation of similar concepts. Mezzo uses this technology front and center in the Documents and Places Target. The New and Recent lists are replaced with the results of the Find above, allowing the user to rarely touch the file manager. Which is good, because file managers break a lot of the UI laws Mezzo espouses.



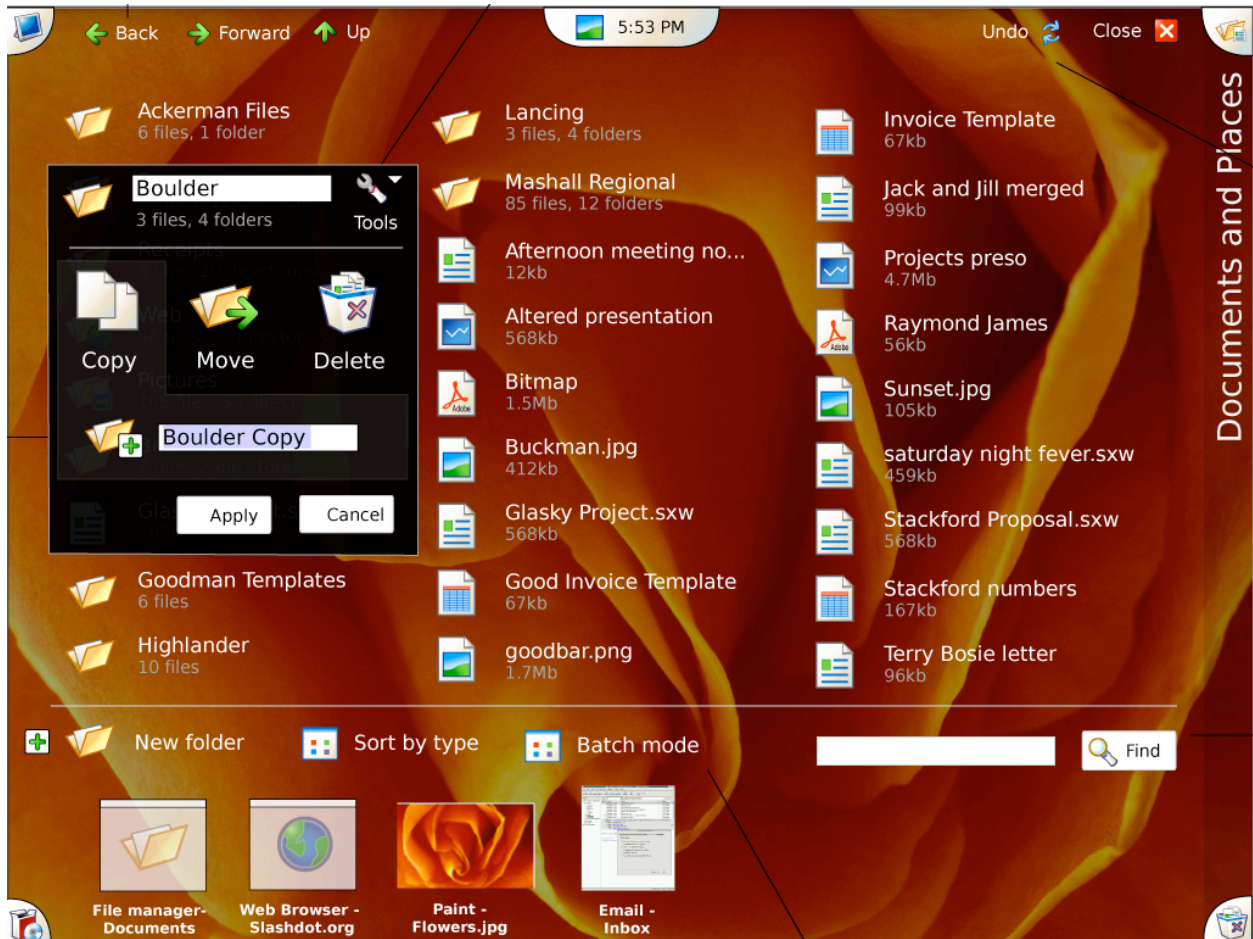
A Word About Documents and Places

There is no distinction for physical location

Because computers connected to everything now, information we look at can literally be anywhere. The Documents and Places Target simplifies this extremely complex concept. Of course, a recent document can be a folder, a picture, an address book card, a sound file. But here's the catch; they don't have to be on the local machine. In fact they increasingly will not be. They will be on websites, file servers, and impromptu networks. Since the New and Recent listings will contain only links, the computer likely contains any remote links in logs files for network connections anyway. Making that re-connection simple and secure is another story. Users currently have to treat these files very differently, by accessing shared disks first, their browser, their photo program. To the user, they really just want what they recently created or touched. Mezzo aggregates that into one simplified screen.

A Word About Document Management

After working with traditional file managers, I often feel like they complicate things for the bulk of users. I designed a Mezzo Document Manager which uses the Desktop Wide concept and makes the top three document management actions - copy, move, delete - readily available.



While this is a simplified solution, I believe that users would be better served by not having to rely on a “file manager” at all, and the applications responsible for a file type or types would manage those files, much like any eMail client, or iTunes, or iPhoto.

Epilogue

Its all relative. Ease of use, convenience, and other oft proclaimed characterizations of computer interfaces. Everyone wants a simple interface, but over simplification of the problem also can lead to broken solutions. A computer is not a toaster, and even a toaster can be hard. A better toaster would at least tell you exactly what your toast would look like after it pops out when you turn the dial. It would let you judge if that's light or dark. Computers are more like a tool rack to accomplish a set of tasks and I've never seen a more complicated tool rack than today's PCs. To this end, they need to be simplified. They need less clicks, less hidden functions, less menus, and less visual trickery. They need Mezzo.



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