Explore Magic Cap, a smartphone OS from a decade before the iPhone

Created by Matthew Goodrich

https://learn.adafruit.com/magic-cap-the-smartphone-os-from-the-90s
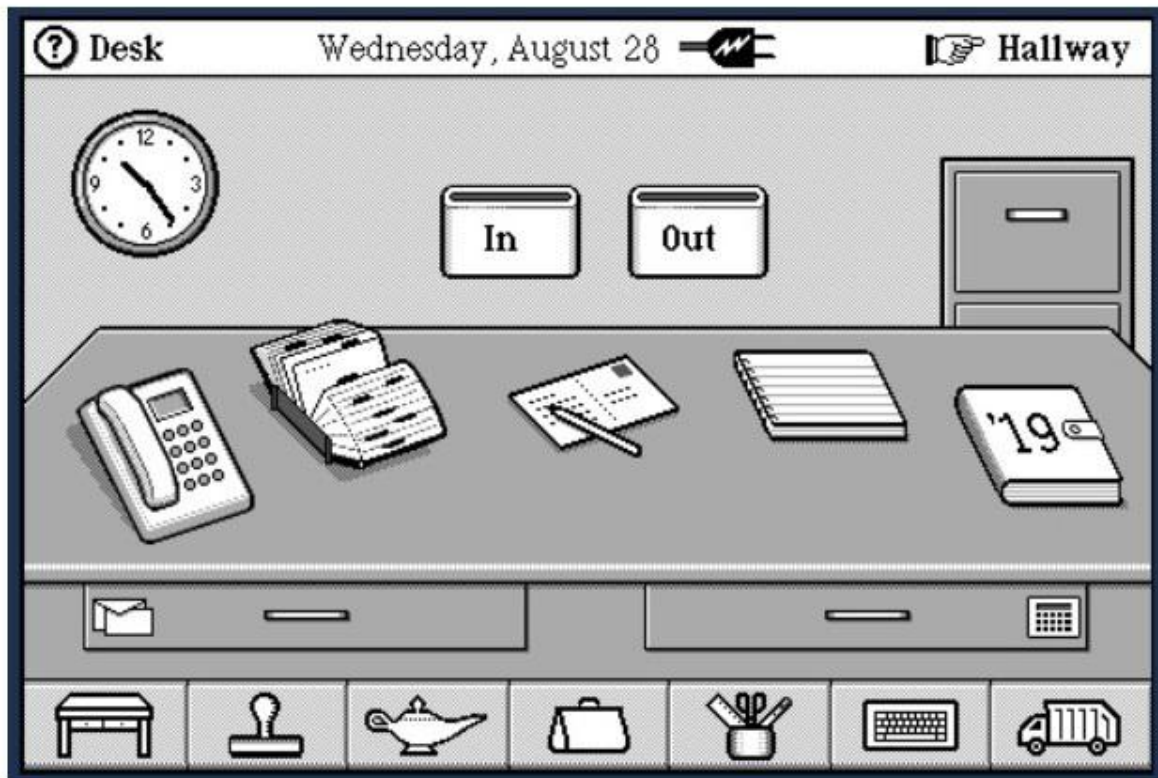
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Overview

Next in our series of "people who left Apple and founded a revolutionary company that was ahead of its time and created amazing products but ultimately failed," let's check out General Magic and their operating system called Magic Cap.

General Magic was formed by Marc Porat, Andy Hertzfeld, and Bill Atkinson in 1990. They had been working on an internal Apple project called Paradigm, but convinced Apple CEO John Sculley to spin it off as a separate company. Their idea was called a personal digital assistant in the 90s, but looking at it now it looks a lot like a modern smartphone. Porat described it as "a tiny computer, a phone, a very personal object... It must be beautiful. It must offer the kind of personal satisfaction that a fine piece of jewelry brings. It will have a perceived value even when it's not being used... Once you use it you won't be able to live without it."

Check out Josh Carter's page, Before General Magic There Was Paradigm (https://adafru.it/FHG). That looks a lot like an iPhone (except for the stylus, Jobs would get rid of that), and this was in 1990!

Take a look at a video of Andy Hertzfeld demoing a General Magic phone prototype in 1995:

And check out this trailer for a documentary about General Magic:

Let's install a Magic Cap emulator and see what it was like! Unfortunately, the emulator is from the 90s and it runs on 90s Mac OS, so we need to install another emulator first. Yo dawg, I heard you like emulators...

Getting Started

We'll need a Mac OS emulator, the Magic Cap emulator, plus a bunch of support files. For this guide I'll be using Windows but you can do the same in MacOS and Linux.

Get BasiliskII, the Mac OS emulator from here: https://www.emaculation.com/forum/viewtopic.php?f=6&t=5282 (https://adafru.it/FHH) (get the one under "Always start with this download", this includes all of the support files)

(For MacOS, go here: https://www.emaculation.com/forum/viewtopic.php?f=6&t=7361 (https://adafru.it/FHH))

(For Linux, go here: https://www.emaculation.com/forum/viewtopic.php?f=6&t=6580 (https://adafru.it/FHH))

Then get the most recent build at the top of the page, this one is just the executable.

To run the GUI we also need GTK: http://www.emaculation.com/sheepshaver/gtk+-2.10.13-setup.exe (https://adafru.it/FHI)

Now we need an operating system. Get Apple Mac OS 7.5.3 (CD) from: https://winworldpc.com/product/mac-os-7/75 (https://adafru.it/FHJ)

We also need Stuffit expander to extract the Magic Cap emulator: https://www.macintoshrepository.org/2475-stuffit-expander-and-dropstuff-5-5 (https://adafru.it/FHK). Get the .dsk file, that'll be easier to work with.

Finally, get the Magic Cap emulator: https://www.macintoshrepository.org/1316-magic-cap-simulator-1-0 (https://adafru.it/FHL)

Extract the first Basilisk zip, then extract the second one and replace BasiliskII.exe with the latest version. Now install GTK.

Extract the System 7.5.3 zip to get System753.iso. Now run BasiliskIIGUI.exe.

Check Disable CD-ROM Driver, then Create a new volume. It should default to the BasiliskII folder. Increase the size, I used 256MB, then save it with the extension .dsk.

The first time we also need System 7.5.3, so click Add and find the ISO file.
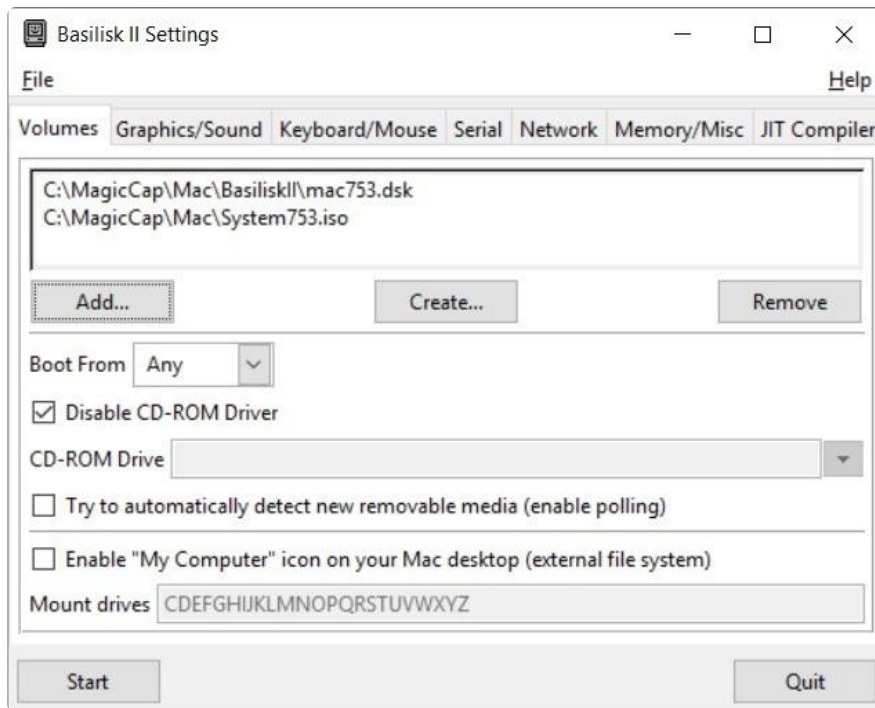
Now go to the Graphics/Sound tab and adjust it to your preference. I suggest increasing the window refresh rate and resolution.
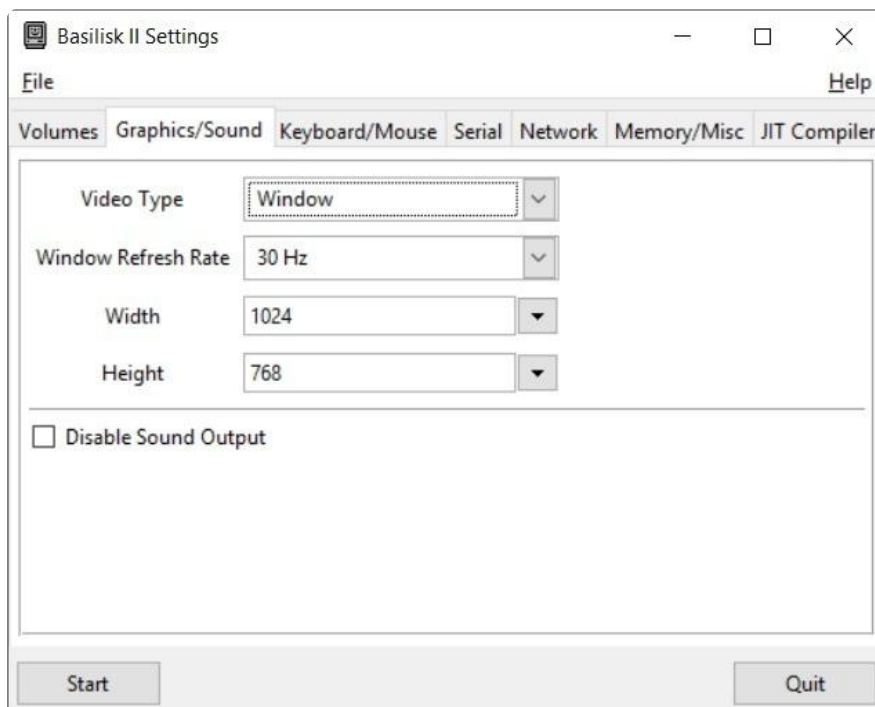

Next go to Memory/Misc and make our Mac more powerful. Increase the RAM to 64 MB, keep the model as a Mac IIci, and change the CPU type to 68040. It should default to the ROM file in your BasiliskII folder.
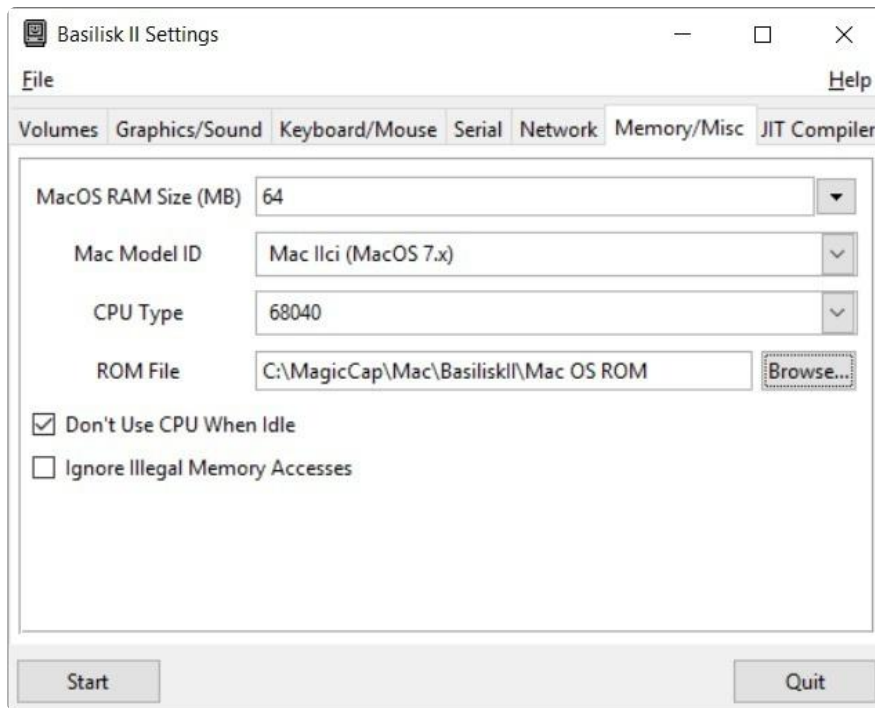
Now click Start and be transported back to Mac OS 7! It'll want you to initialize the disk we created, give it a name and click Initialize.

When you get to the desktop open up System 7.5 Version 7.5.3, open System Software Installers, and run Install System Software.
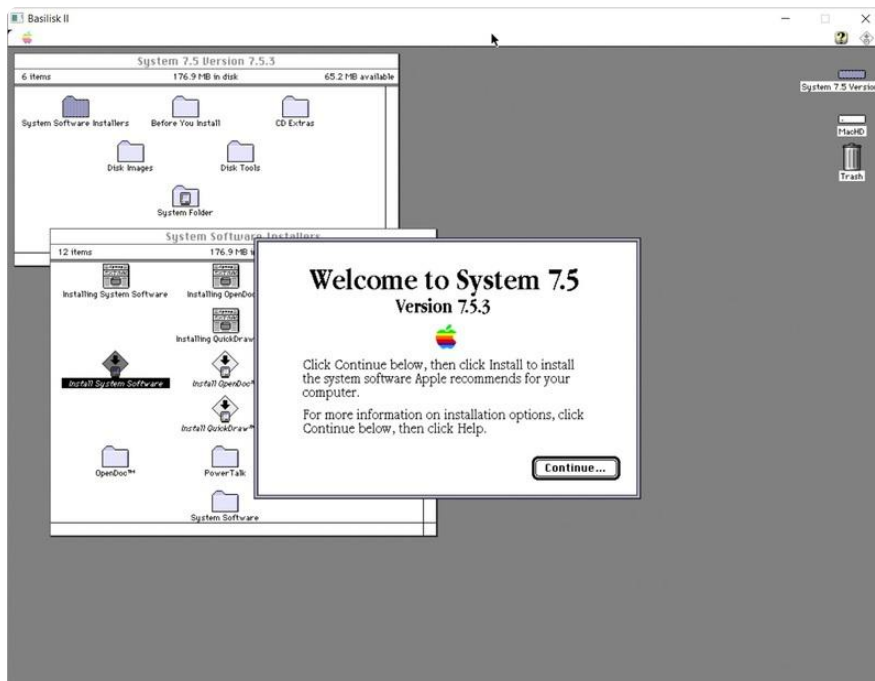
Click Continue, make sure it selected your disk (I called mine MacHD) as the destination, then click Install. It should go a lot faster than it would have been on a real Mac, and when it's done click Quit.

Go to the Special menu and Shut down your new Mac.

Run BasiliskIIGUI again. Now remove the System753 disk and add the Stuffit Expander disk. Start up and you'll have a Stuffit Expander disk. Open that and run the installer.
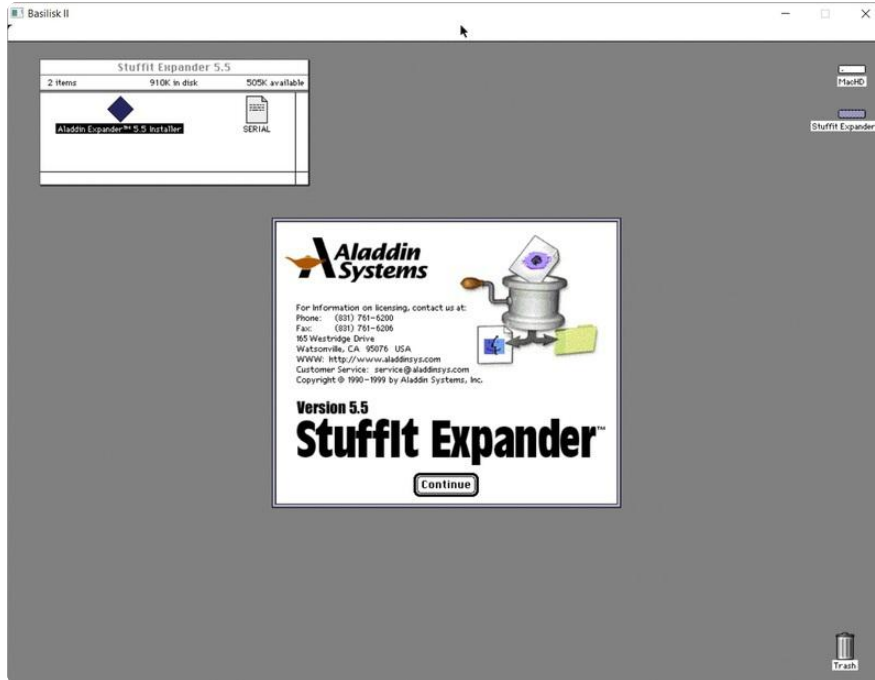

The defaults are fine, so click through the installer and you should end up with Stuffit Expander on your Mac hard drive.

Shut down again and we'll figure out how to get the Magic Cap emulator onto the disk.

Install Magic Cap

We have a working Mac, now we need Magic Cap. To get the .sit file onto our Mac hard drive we'll use HFVExplorer, a utility included with BasiliskII.

In the BasiliskII folder you should have an HFVExplorer folder - open that and run HFVExplorer. It looks a bit dated but it works well. Go to File, Open Volume, and find the .dsk file that you created for your Mac.
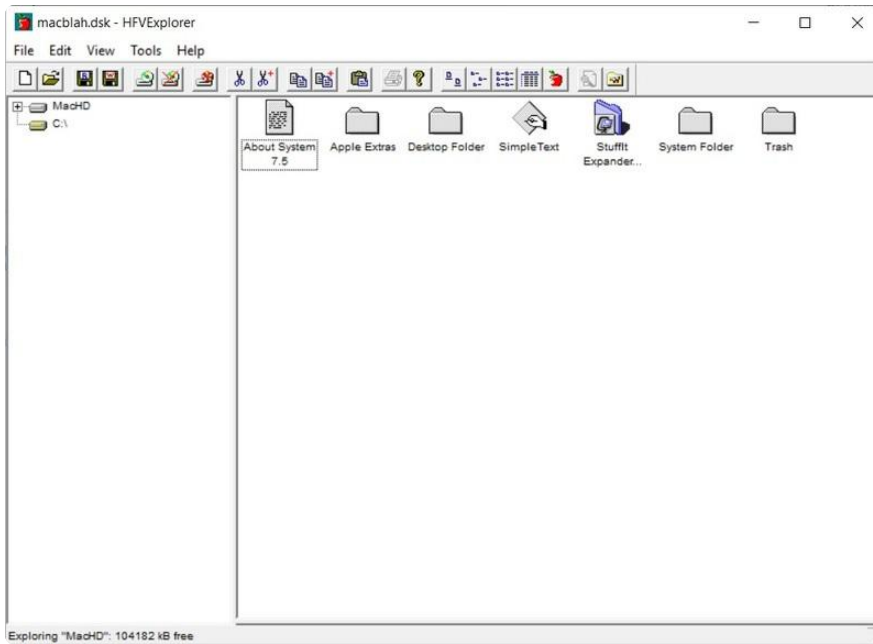
On the left, navigate to the folder where you have the magic_cap_simulator.sit file. Select it and go to Edit, Copy.

Now click on your Mac drive on the left and paste. Click okay and you'll have the file on your Mac.
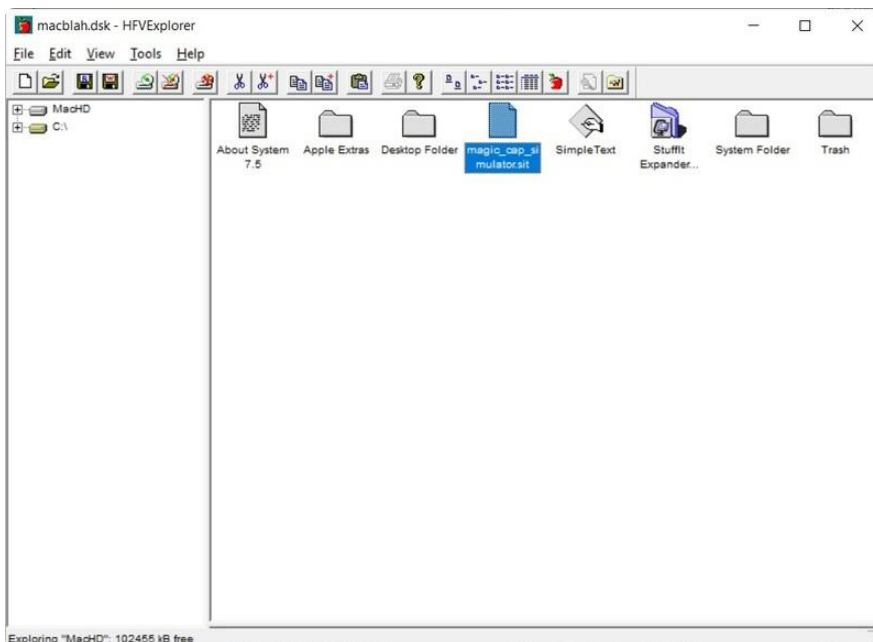
Now you can close HFVExplorer and go back to BasiliskGUI. Remove the Stuffit volume if you still have it and then start Basilisk.

Open your hard drive and there's the magic cap file! It helps to put it in its own folder, so make a new one and drag that file into the new folder. Now drag the sit file onto the Stuffit Expander program on the desktop.
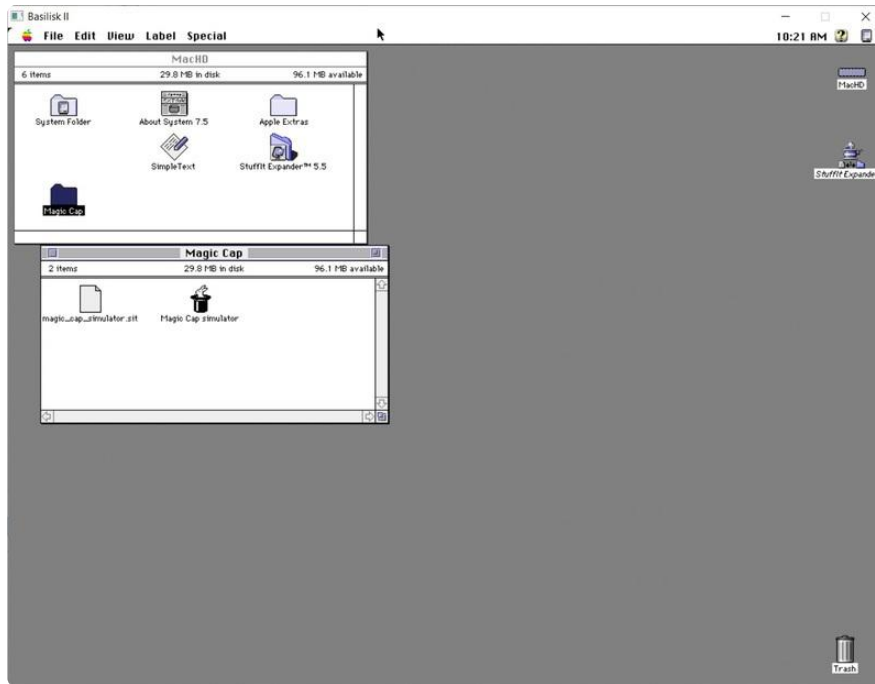
Voila! Finally, there's the emulator inside our emulator.

At this point you may want to make a backup of the dsk file in case things get corrupted later (which can happen with the Magic Cap emulator). To do that just shut down and make a copy of the dsk file.

Now let's check out Magic Cap! Double-click the rabbit in the hat to get started.

Using Magic Cap

Remember old iOS when apps looked like the thing they were trying to replace? The notes app looked like a notebook, the calendar looked like a desk calendar, etc. It's called skeumorphic design and Magic Cap uses it for everything. Click the X in the upper right corner of the simulator dialog and check out your (literal) desktop.
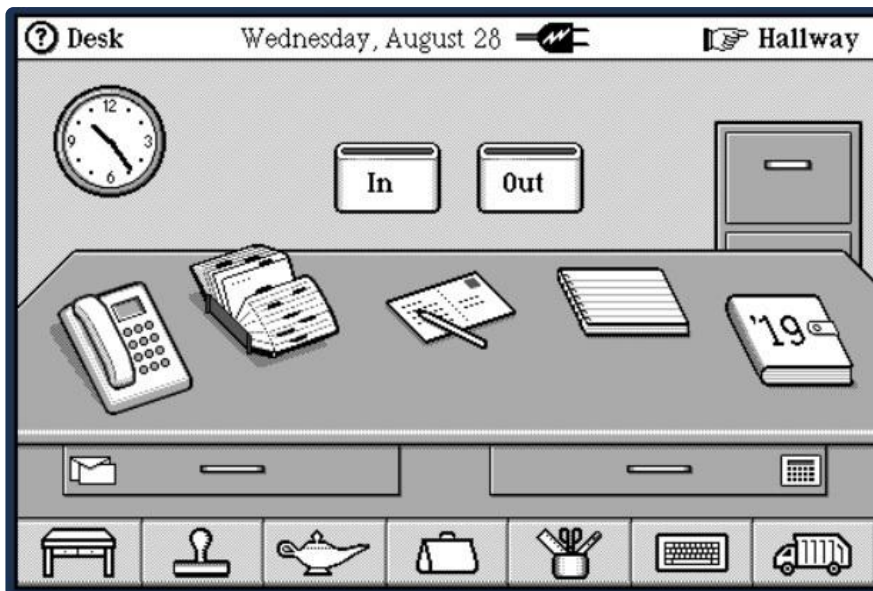
You can use the mouse to tap on things (remember that we're emulating a touchscreen/stylus device). Try tapping on various things on the desk. You can return to the desk by clicking the desk icon in the lower left.

It's not entirely stable, so doing some things (like dialing the phone) may crash the emulator or even the Mac emulator. If that happens just start it up again and it should be fine. In some cases it may corrupt the installation and even re-extracting it won't help. If you made a backup of the dsk file you can just shut down and replace the current dsk with that to get back to a useful state. Otherwise you may need to build the system again.

Tap the postcard in the middle of the desk to try writing a message. It'll tell you that you need to fill out a name card. Click fill out to go through a short tutorial.

When you reach the part where you need to type in your name, watch what it does after typing a few characters of your first name (if you have a common first name).
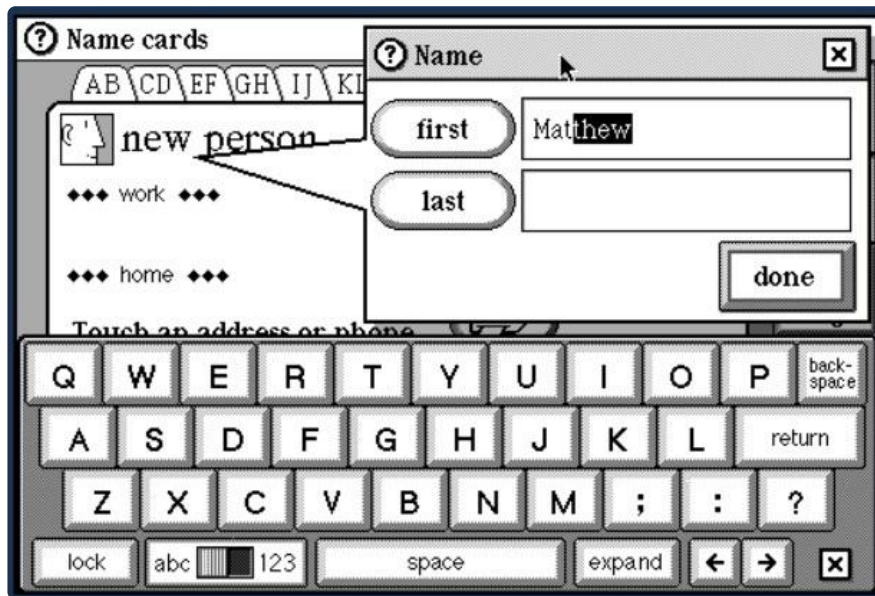
Yes, that's predictive text! Also check out the familiar keyboard that popped up to type in a name. That kind of thing wouldn't show up again for another decade.

When you're finished creating a card, go back to the desk and then tap Hallway in the top right. Here you can "walk" down the hall to visit other pieces of the system, like the control panel and library. There's a game room but sadly it didn't come with any games. The board next to it with the General Magic logo lists the credits and includes some very notable names.

Click Downtown in the top right to exit our building and see what else is on the block. The only thing available is the AT&T store - AT&T partnered with General Magic to provide service through the PersonaLink network.

PersonaLink used General Magic's Telescript - something they called agent-oriented programming. The idea was that your device wouldn't just send data, but would send an entire program up to a server that could then run it and perform different tasks. Companies would run groups of servers that could do this, and they referred to it (in the 90s!) as the cloud.

Yet another idea ahead of its time, PersonaLink didn't last and was eventually shut down. Agent-oriented programming didn't last but twenty years later everything is done in the cloud.
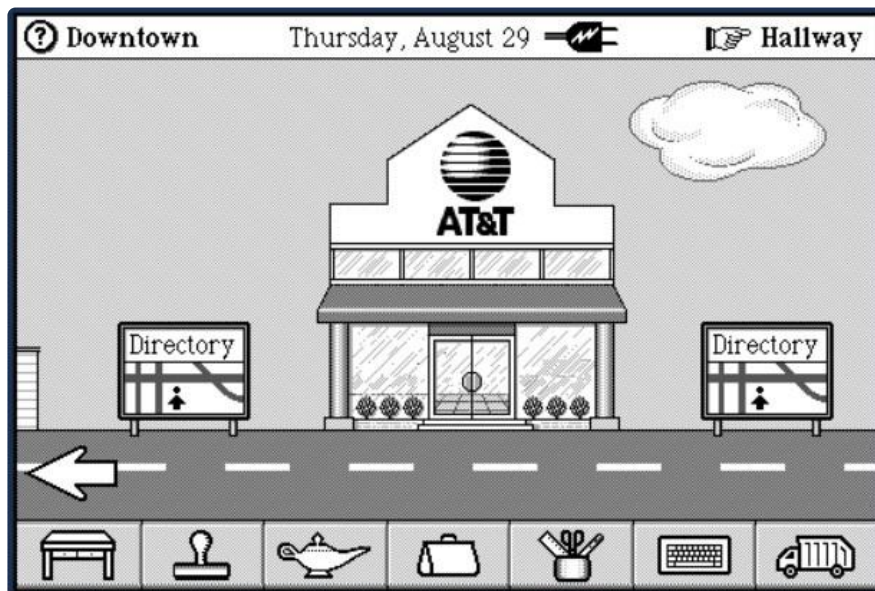
It was possible to install additional packages (apps) and add more to Magic Cap, but our emulator can't install the ones that are available as they're designed for a later version on real hardware.

Speaking of hardware, let's see what this originally ran on.

Hardware and Legacy

Companies partnered with General Magic and several made devices that ran Magic Cap. Sony and Motorola were the first, with the Sony Magic Link and the Motorola Envoy. General Magic later built its own device, the DataRover. Other prototypes were made but most didn't make it to market.

The Sony device had a phone jack and could connect via dial-up. The Envoy, on the other hand, had a very conspicuous antenna and could connect to the ARDIS network at speeds up to 19.2 kbps!

All of these show up on auction sites from time to time but are getting pricey due to their historical significance and collectability.

Unfortunately the tech just wasn't there in the 90s to realize the full vision of General Magic. The devices were very slow and mobile networks barely existed, even if you could get some sort of data service the cost was astronomical.

General Magic itself ended in 2002, but their tech lives on in many other places. Employees of General Magic went on to develop (or have a large part in developing) the iPod, iPhone, Apple Watch, Android, eBay, and more. One employee, Megan Smith, became the Chief Technology Officer of the United States.

The company and its products didn't survive but it set the stage for a lot of the tech we know and love today.

Resources

Reference

General Magic (the movie) (https://adafru.it/FHM) - a documentary about General Magic featuring the people who were there.

Josh Carter's Magic Cap pages (https://adafru.it/FHN) - tons of info about General Magic and Magic Cap.

Hardware

- DataRover 840 (https://adafru.it/FHO) (another page (https://adafru.it/FHP))
- Motorola Envoy (https://adafru.it/FHQ)
- Sony Magic Link (https://adafru.it/FHR) - (User Guide (https://adafru.it/FHS))
- Many others (https://adafru.it/FHT)

Related

Folklore (https://adafru.it/FHU) - Stories from the early Apple days, mostly about developing the Macintosh. Many of the authors and characters would go on to work at (or even co-found) General Magic.