

The Ami Memory System...

Creating a New Niche

The late 1970s saw the rise of various kinds of compact electronic devices to address many uses now subsumed by smartphones. Among these new classes of devices was the pocket translator.

One of the first pocket translators to see release was the Ami Memory System, developed by Friends Amis, founded by Ronald Gordon, previously president of Atari.

Building a Translator

Paul Heckel, who played a major role in the development of the device's software, wrote an article on the design process of the Ami Memory System in a 1980 issue of *Data-mation*. In the article he describes how an 8085-based black-box prototype was used to rapidly iterate on the interface and translation logic.



Paul Heckel, ca. 1980

The software was adapted to the finalized hardware, which was built around the Mostek 3870, a microcontroller using the Fairchild F8 architecture. This decision led to a re-implementation of the software using a FORTH interpreter that fit in the 2KiB of program memory available in the 3870.

Hardware

The final design itself is relatively simple, with an interface that used a 16-character VFD



Ronald Gordon with several Ami Memory Systems

driven by two Dionics DI-514 level shifters and an 11×4 keyboard. The VFD and keyboard are in turn surfaced to the 3870 through a DS8881N that shares a port with the data pins of the memory bus. A 74LS156 demultiplexer maps the three highest bits of a 16-bit address bus connected to the remaining two ports of the 3870. Three sockets for user-replaceable “memory capsules,” a 32-byte CMOS SRAM chip, a mask ROM, a voltage converter (to drive the VFD from

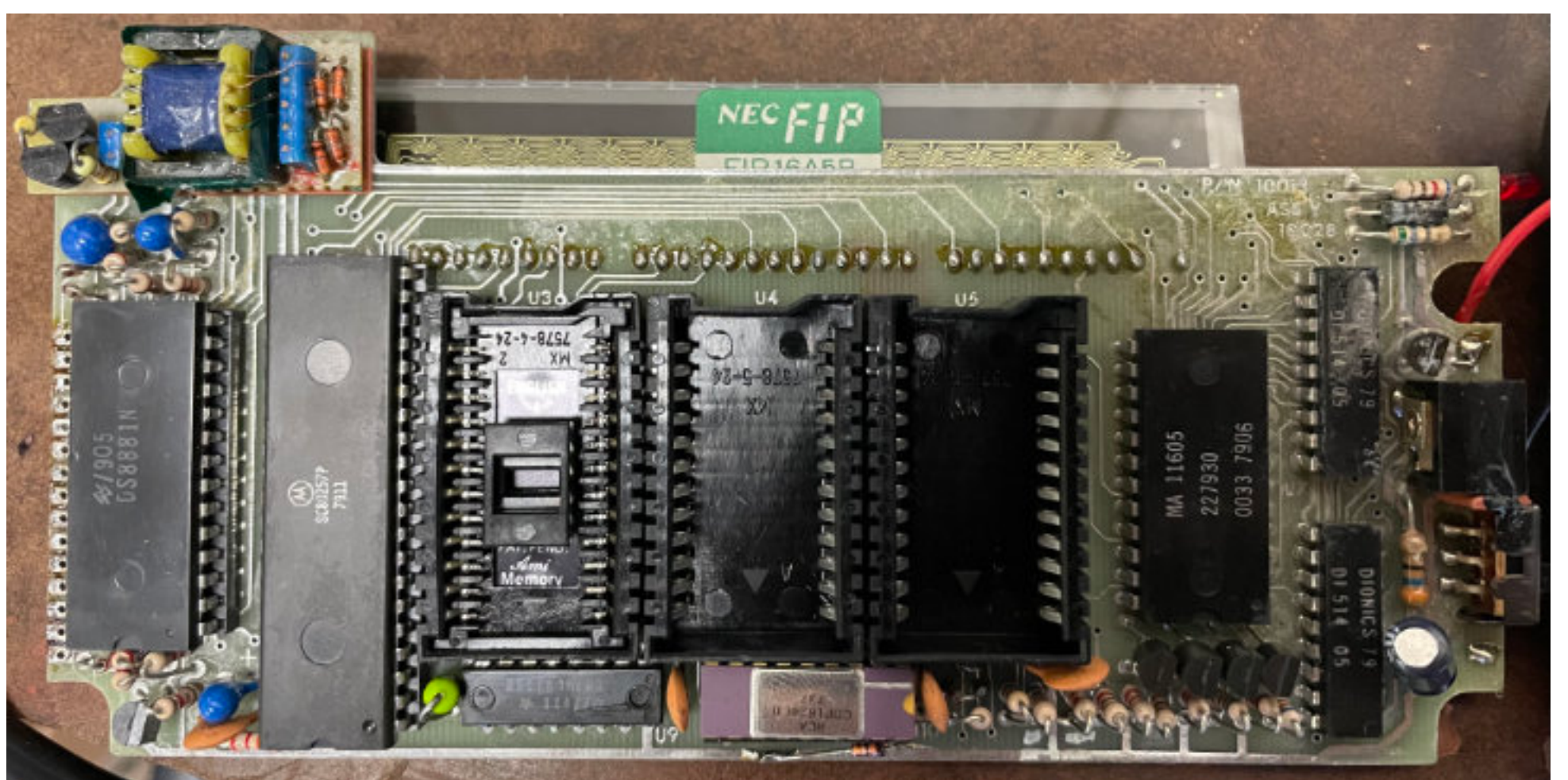
four AA batteries), and several switching transistors and passives complete the design.

Software

While the initial software implementation for the 8085 prototype was written in PL/M, the final software was written for a FORTH interpreter adapted for the F8-based platform, with most logic stored as bytecode on the 32Kibit 2532 mask ROM included on the main board.

As noted in Heckel's writeup, FORTH bytecode could also be used in the memory capsules that otherwise contained look-up tables for each language. As a result, several non-dictionary capsules were also released, including a calorie counter, a word game, and a bar/wine guide.

Over the approximately three-year life of the device, over ten different basic language capsules were made for the device. A second series of five “double capacity” capsules was also released, along with a capsule for phonetically spelling French, Spanish, German, and Italian words when used in conjunction with those language capsules.



A fully-populated Craig M100 PCB.

...A Pocket Translator Pioneer

Making it to Market

Friends Amis spent a year developing its translator, ultimately partnering with Matsushita (now Panasonic) for assembly and Craig Electronics for distribution, resulting in the rebranded Craig M100 hitting US stores in Spring 1979.

By this point, Friends Amis no longer had the market all to itself, as the competing Lexicon LK-3000 “language computer” had been announced in November 1978, pushing Friends Amis to announce the Craig M100 early, on December 11, 1978.

But while the Lexicon may have hit the market first, the design of the Ami Memory System ultimately prevailed not only due to financial missteps made by Lexicon that required a bailout from its partner, Nixdorf Computers AG, but also a lower upfront cost (\$200 instead of \$225) and its design, which made for a lower total cost of ownership



A Panasonic HHC with Printer/Cassette Adaptor

(\$25-30 per single-language capsule instead of \$65 per language-pair).

Ultimately, the Ami Memory System would find life as a under a number of names around the world, including the Brainbank in the UK, the MBO-Pocketcomputer in Germany, the Philips HL3695 in the Netherlands, and the FA300 elsewhere in Europe.

Building a Successor

Despite its success, the Ami Memory System was seen as a mere stepping stone to a full-fledged handheld comput-

er almost as soon as it had launched, with the manufacturing agreement with Matsushita promising computer-like add-ons like a miniprinter and voice synthesizer in a future model. Friends Amis was thus free to focus on software development for a future device.

By 1981, this partnership had resulted in the creation of the Panasonic HHC (Hand-held Computer). While the HHC shed the F8 architecture in favor of the more popular and accessible 6502, the FORTH runtime of the Ami Memory System was easily maintained and improved with a port to the HHC, preserving compatibility with existing capsules while opening up the ability to run full-fledged programs. The HHC thus found a niche as an “Insurance Portable Computer” for life insurance salesmen, as well as use by white-collar workers on the go.

References

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John Quirt. “The Solid State Linguist Makes Its Debut.” *Fortune*. 8 October 1979, pp. 170–174.

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A Craig M100 with original packaging, manual, and several packaged memory capsules