



Project INFIN_IT: A Framework 12 Based Modular Workstation with Repurposed Components



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Summary

Framework 12 retro workstation reusing salvaged iPad & webcam parts and a new modular component system on the back

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[mainboard](#) [cassette](#) [framework](#) [cyberdeck](#) [framework12](#)

What if your obsolete hardware didn't have to become e-waste?
What if you could give your discarded tech an infinite afterlife?

Project INFIN_IT is a fully modular, all-in-one luggable workstation engineered around the **Framework Laptop 12 Mainboard and official battery**. Drawing aesthetic inspiration from 1980s boomboxes and classic portable computers, it reimagines repairability and component reuse as an open, modular ecosystem.

Instead of letting functional electronics turn into e-waste, INFIN_IT turns abandonware into **abADD-ONware**. In this working build, that philosophy is put straight into practice by salvaging a Retina display from a broken iPad and a discarded Logitech webcam, giving them a completely new lease on life.



Key Features

- **Boombox Meets Cyberdeck:** A dual-purpose carry handle rotates on friction torque hinges to double as an infinitely adjustable kickstand.
- **The "Speaker" Split Keyboard:** Disguised as retro boombox speaker grilles on the back, two ultra-thin, wireless split keyboard halves slide out horizontally when it's time to set up and work.
- **Cassette Drive SSD Housing:** That nostalgic cassette tape on the rear isn't just aesthetic—it's a custom sleeve enclosure designed so a Samsung T7 Shield portable SSD simply slides right inside.
- **Integrated AV & Status Column:** Positioned directly above the macropad to the right of the display:
 - **Salvaged Logitech Webcam & Mic:** Embedded neatly for video calls and voice command input via the integrated microphone.
 - **LED Matrix Display:** Flanking the right side of the webcam module to deliver glanceable system telemetry, status icons, or visual feedback.
- **Tactical 12-Key Side Macropad:** Stacked beneath the webcam and status array, 12 quick-access keys running KMK firmware provide instant controls for media playback, app switching, or push-to-talk.

- **The "XLpansion" Modular Rail System:** A direct evolution of the standard Framework Expansion Card ecosystem, breaking open slot boundaries to mount larger hardware.



Evolving the Framework Ecosystem: From Expansion to XLpansion

Framework revolutionized consumer hardware repairability with their interchangeable Expansion Card standard. INFIN_IT builds directly on top of that philosophy. Rather than keeping every single port locked into an isolated, single-width perimeter, the modular rear backplane keeps Framework's familiar card pitch and spacing while removing the rigid physical dividers between slots.

- **Customizable Grid:** Moveable rail dividers let you configure bay widths anywhere from single-card size up to **5 slots wide**.
- **Central Spine & Electrical Vision:** The chassis is engineered with a central internal routing channel designed to house a dedicated interconnect spine. In the current prototype, the rear bays act as mechanical docking and transport slots. Conceptually, something like the Satechi 4-in-1 USB-C Hub comes close with ports positioned on both sides, but an ideal implementation would expand that concept to provide up to 10 symmetrically spaced USB-C ports to make every single bay plug-and-play straight to the Framework Mainboard.
- **Future Possibilities for abADD-ONware:** This build demonstrates the concept with the slide-in cassette-housed T7 Shield, but the open rail design means you or the community can design modules for virtually anything:
 - Full-size 2.5" SATA/SSD drive caddies
 - High-capacity USB-C PD power banks
 - Optical disc drives
 - Custom breadboard development fixtures or sensor arrays



Internal Architecture & Power

- **Framework 12 Mainboard Integration:** Internal chassis mounting points and port alignment are modeled directly around the official Framework Laptop 12 CAD files.
- **Internal Battery Bay:** Dedicated mounting points are designed directly into the chassis to house the official **Framework Laptop 12 battery**, making the rig a true self-contained portable workstation. (Note: The working prototype currently runs externally while awaiting final mainboard hardware).

Bill of Materials & Sourced Components

Component	Sourced From / Hardware Used
Mainboard	Framework Laptop 12 Mainboard (integrated mounts)
Battery	Framework Laptop 12 Battery (integrated mounts)

Display	Salvaged 9.7" Retina Display (from an iPad 4) + EDP driver board [link]
Webcam & Mic	Salvaged USB webcam module with built-in mic (Logitech)
Status Display	ESP32-driven LED matrix display (Seeed XIAO ESP-S3)
Storage	Samsung T7 Shield SSD (slides into 3D-printed cassette sleeve)
Hinges	Miniature constant-torque / friction positioning hinges CL1127-0.3N.m (go for the 0.1N.m ones if you want less friction) [link]
Fasteners	M3 heat-set threaded brass inserts + flathead screws

Keyboard & Macropad Build Notes

The split keyboard shown in the build leverages an ultra-low-profile form factor designed to slip flush into the rear "speaker" channels:

- **Wireless Connectivity & Firmware:** The keyboard halves are completely wireless, powered by **Seeed Studio XIAO nRF52840** microcontrollers running **ZMK Firmware** over Bluetooth Low Energy.
 - The 12-key front macropad runs **KMK Firmware** and is powered by the same ESP32 that controls the LED matrix
- **Switch Compatibility:** The prototype pictured utilises Framework One Key modules, but these unfortunately never made it to production, however a similar keyboard could also be build using switches like the **Kailh PG1316**. For example a modified version of the awesome [mikefives split](#) is slim enough to slide directly into the rear docking slots.

Print, Slicing & File Availability

- **Print Bed Requirements:** Minimum 256 × 256 mm build volume.
- **Recommended Filament:** Matte PLA in black, light grey and dark grey. Orange PLA is used for the accents (power lever, screws etc.)
- **Layer Height:** 0.20 mm

- **Infill:** 25–30% Gyroid/Grid for the primary frame; 15% for aesthetic front covers.
- **Supports:** Supports are not needed, but may be used for extra stability when printed the backplates
- **STEP Files & Community Modules:** Complete print-ready STLs are provided. Once I can validate tolerances against physical Framework Laptop 12 mainboard hardware, parametric STEP files for the blank rail sleds and cassette sleeves will be released to let everyone design custom abADD-ONware modules.

Assembly

Parts are made to tightly connect to each other and assembly should be relatively straightforward. In some places a piece of filament can be used to lock things in place (e.g. connecting the two halves of the handle). For the power lever, a piece of filament is used to serve as a hinge (see close-up picture with bright green filament). Additional step-by-step images are added in the 'other files'-section below the print files.

Chassis geometry was designed around Framework's official 3D CAD references. Visual documentation demonstrates mechanical action, slide-out keyboard mechanics, and display clearance using auxiliary input hardware while final Framework 12 mainboard integration is completed.

Model files

	All parts	16 files
	main-body.stl	
	main-body-side.stl	
	frontplate-bracket.stl	



cammount.stl



spine.stl



backplate-left.stl



backplate-right.stl



power-lever.stl



spineplate-connector.stl

☐ Print twice



screw.stl

☐ Print twice



handle-left.stl



handle-right.stl

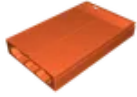


keypad-back.stl



rail_notched.stl

☐ Print as many as required



t7-shield-housing.stl



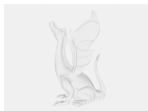
macropad-dummy.stl

☐ For demo purposes only



infin_it_v1.3mf

Other files



build_instructions.zip

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