Practical retrofitting for obsolete devices

Bridging the gap with old tech to create alternative interaction paradigms and workflows

Computing Within Limits — Martin Lafréchoux — June 2025

What is “retrofit“?

“Retrofit“

“To outfit (a device, vehicle, building, or system) with newly developed or previously unavailable parts or equipment.“

“Retrofit“

“To outfit (a device, vehicle, building, or system) with newly developed or previously unavailable parts or equipment.“

What is “obsolete“?

Obsolete?

Connectivity as modernity

Modern devices:

- The“universal device“ thanks to apps
- Can always be patched later
- Smart clients supported by huge infrastructures
- Actually *lose* functionality over time

Older devices:

- Designed for a specific use case
- Autonomous, stable, reliable

Obsolete?

What we lost to the smartphone

Vintage hardware has genuinely desirable features that all but disappeared:

- **Physical buttons and media**
- **User-serviceable design**
- **Offline and autonomous**
- **Single purpose**
- **Cool style**

Obsolete?

What makes a device *feel* obsolete?

Lack of connectivity:

- Unpatchable
- Unable to use cloud services

Too much friction:

- Physical media based workflows are slow
- Single-task devices are inherently limiting

Obsolete?

What makes a device *actually* unusable?

- **Software issues:**
  undocumented, proprietary file formats

- **Hardware issues:**
  repair and reliability issues, impractical physical media, proprietary connectors

- **Connectivity issues:**
  outdated communication protocols and hardware

Obsolete?

Making an older device useful again

- **Keeping it in working condition:**
  replacing batteries, finding spare parts

- **Finding a way to exchange data:**
  storage media, syncing with a host computer, gaining network connectivity

- **Embracing friction:**
  what if limits were actually liberating?
  what if slowing down made us more focused?
  what if friction gave us purpose?

Common obstacles & solutions

Deprecated media

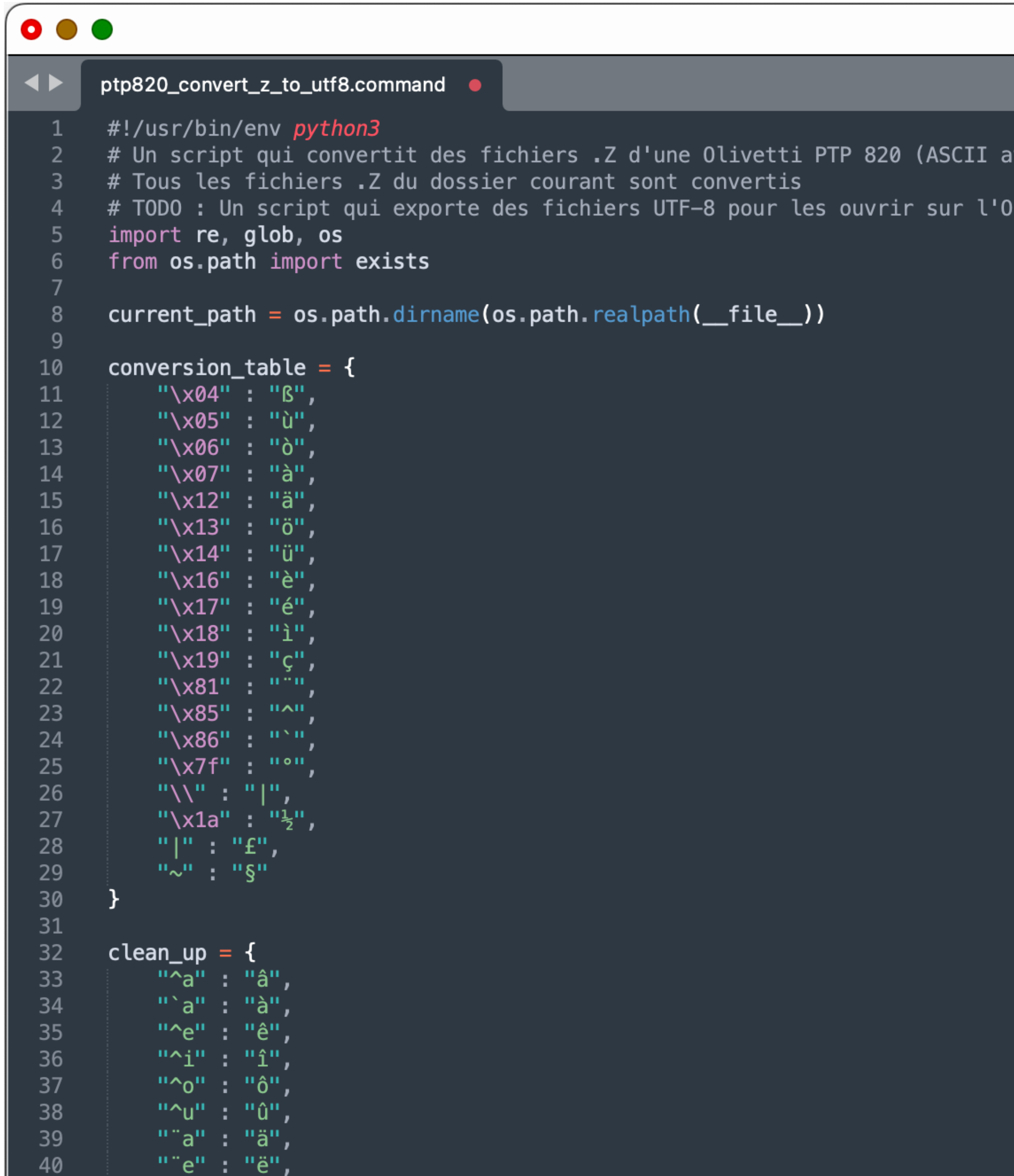
Possible solutions:

- Adapters
- External readers
- Hardware emulators

Proprietary files

Possible solutions:

- File converters
- Reverse-engineering



```python
#!/usr/bin/env python3
# Un script qui convertit des fichiers .Z d'une Olivetti PTP 820 (ASCII a
# Tous les fichiers .Z du dossier courant sont convertis
# TODO : Un script qui exporte des fichiers UTF-8 pour les ouvrir sur l'O
import re, glob, os
from os.path import exists

current_path = os.path.dirname(os.path.realpath(__file__))

conversion_table = {
    "\x04" : "ß",
    "\x05" : "ù",
    "\x06" : "ò",
    "\x07" : "à",
    "\x12" : "ä",
    "\x13" : "ö",
    "\x14" : "ü",
    "\x16" : "è",
    "\x17" : "é",
    "\x18" : "ì",
    "\x19" : "ç",
    "\x81" : "¨",
    "\x85" : "^",
    "\x86" : "`",
    "\x7f" : "°",
    "\\" : "|",
    "\x1a" : "½",
    "|" : "£",
    "~" : "§"
}

clean_up = {
    "^a" : "â",
    "`a" : "à",
    "^e" : "ê",
    "^i" : "î",
    "^o" : "ô",
    "^u" : "û",
    "¨a" : "ä",
    "¨e" : "ë",
```

Proprietary ports

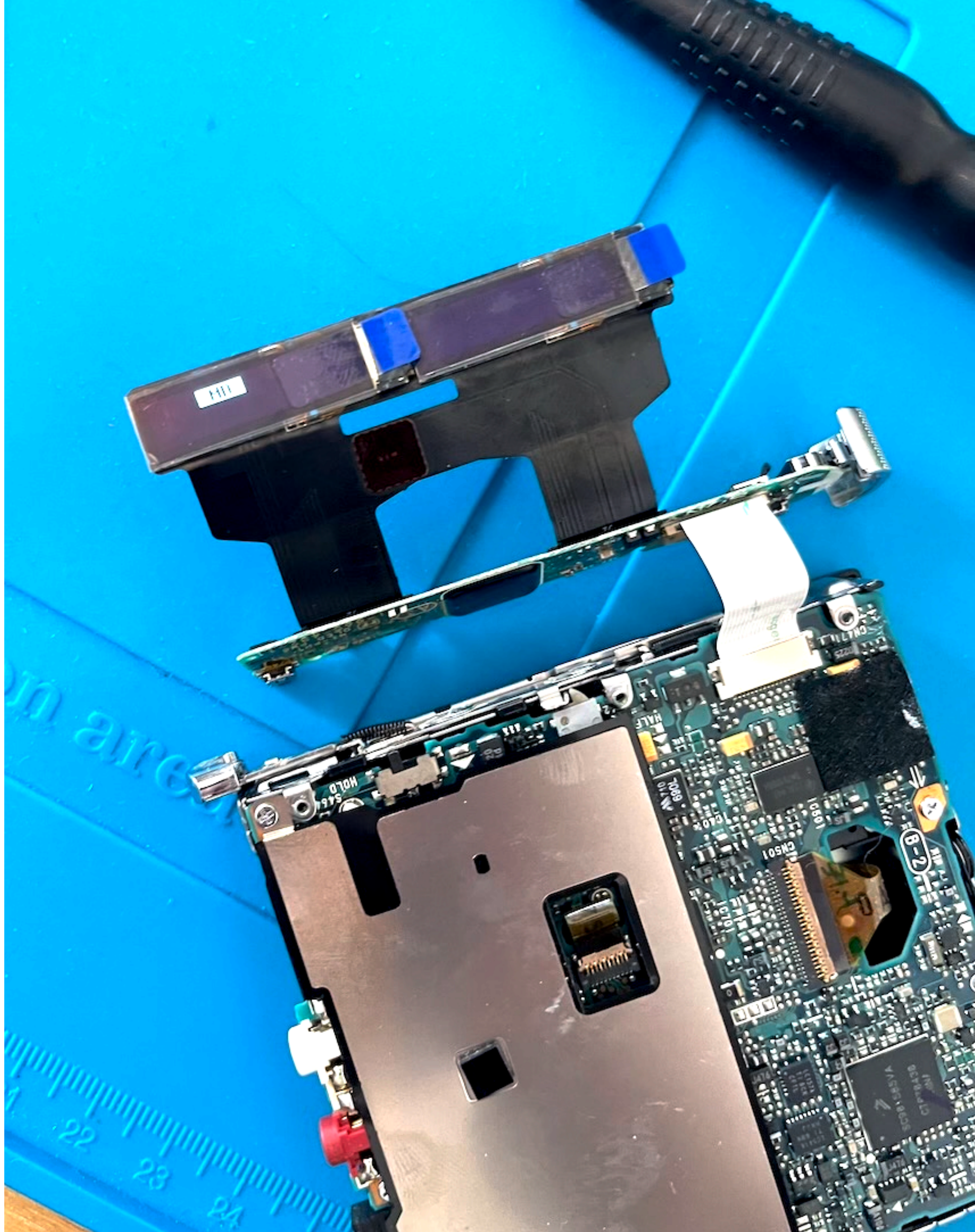
Possible solutions:

- Old stock
- Salvaged parts
- Adapters

Lack of spare parts

Possible solutions:

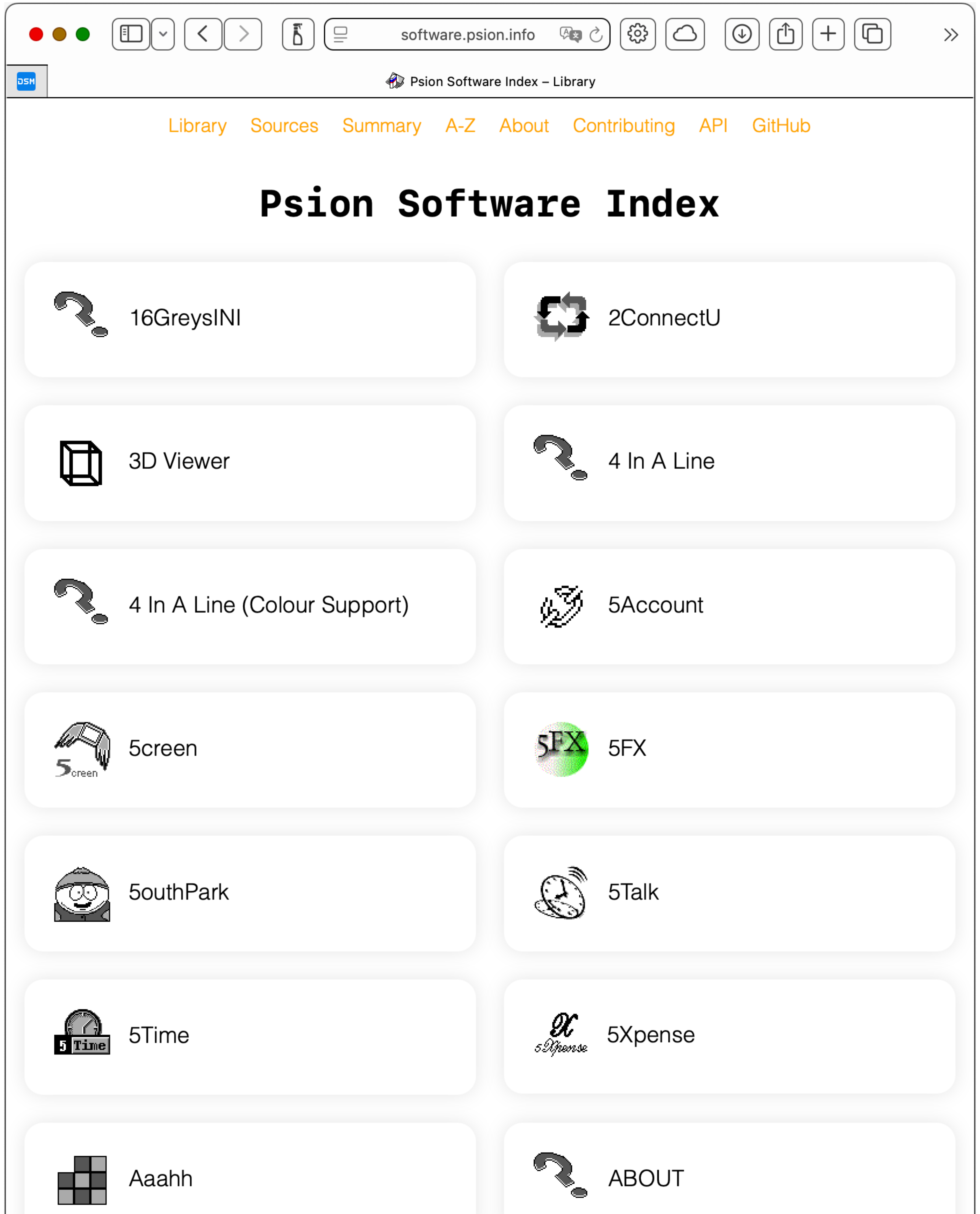
- Old stock
- Salvaged parts
- 3D-printed parts or adapters
- 3rd party provided parts



Lack of support

Possible solutions:

- User-provided documentation (tutorials, videos, forums)
- User-archived official documentation
- User-provided software archives



software.psion.info

Psion Software Index – Library

Library Sources Summary A-Z About Contributing API GitHub

Psion Software Index

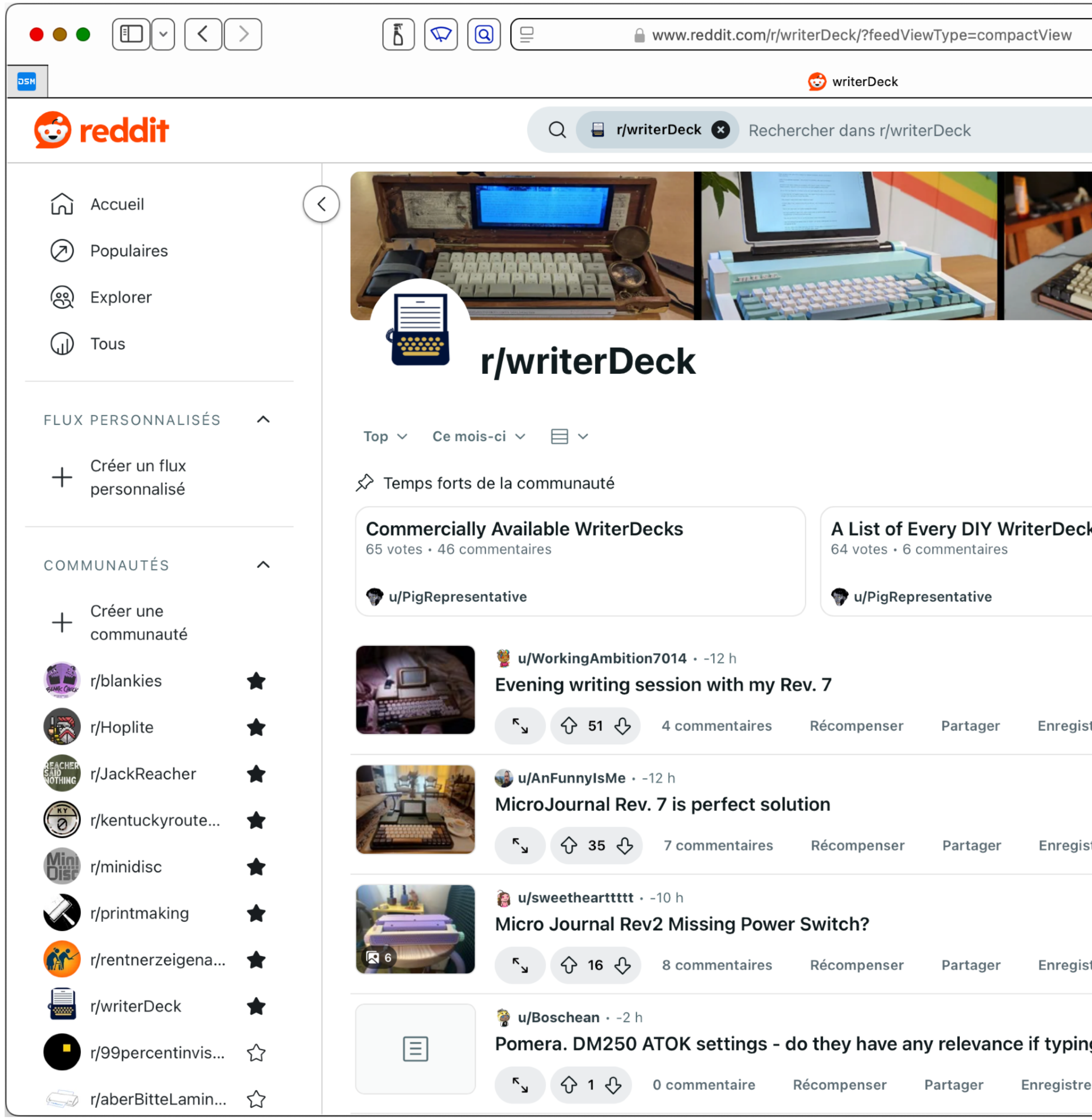
16GreysINI	2ConnectU
3D Viewer	4 In A Line
4 In A Line (Colour Support)	5Account
5creen	5FX
5outhPark	5Talk
5Time	5Xpense
Aaahh	ABOUT

Success factors

Finding fellow nerds

The importance of niche communities

- Community-maintained software and documentation archives are crucial
- Reddit is the first stop for most retrofitting efforts
  - Huge user base
  - Clearly organised & searchable
  - Available on the open web



www.reddit.com/r/writerDeck/?feedViewType=compactView

writerDeck

reddit

r/writerDeck Rechercher dans r/writerDeck

Accueil
Populaires
Explorer
Tous

FLUX PERSONNALISÉS

Créer un flux personnalisé

COMMUNAUTÉS

Créer une communauté

r/blankies
r/Hoplite
r/JackReacher
r/kentuckyroute...
r/minidisc
r/printmaking
r/rentnerzeigena...
r/writerDeck
r/99percentinvis...
r/aberBitteLamin...

r/writerDeck

Top Ce mois-ci

Temps forts de la communauté

Commercially Available WriterDecks
65 votes • 46 commentaires
u/PigRepresentative

A List of Every DIY WriterDeck
64 votes • 6 commentaires
u/PigRepresentative

u/WorkingAmbition7014 • -12 h
Evening writing session with my Rev. 7
51 · 4 commentaires · Récompenser · Partager · Enregis

u/AnFunnyIsMe • -12 h
MicroJournal Rev. 7 is perfect solution
35 · 7 commentaires · Récompenser · Partager · Enregis

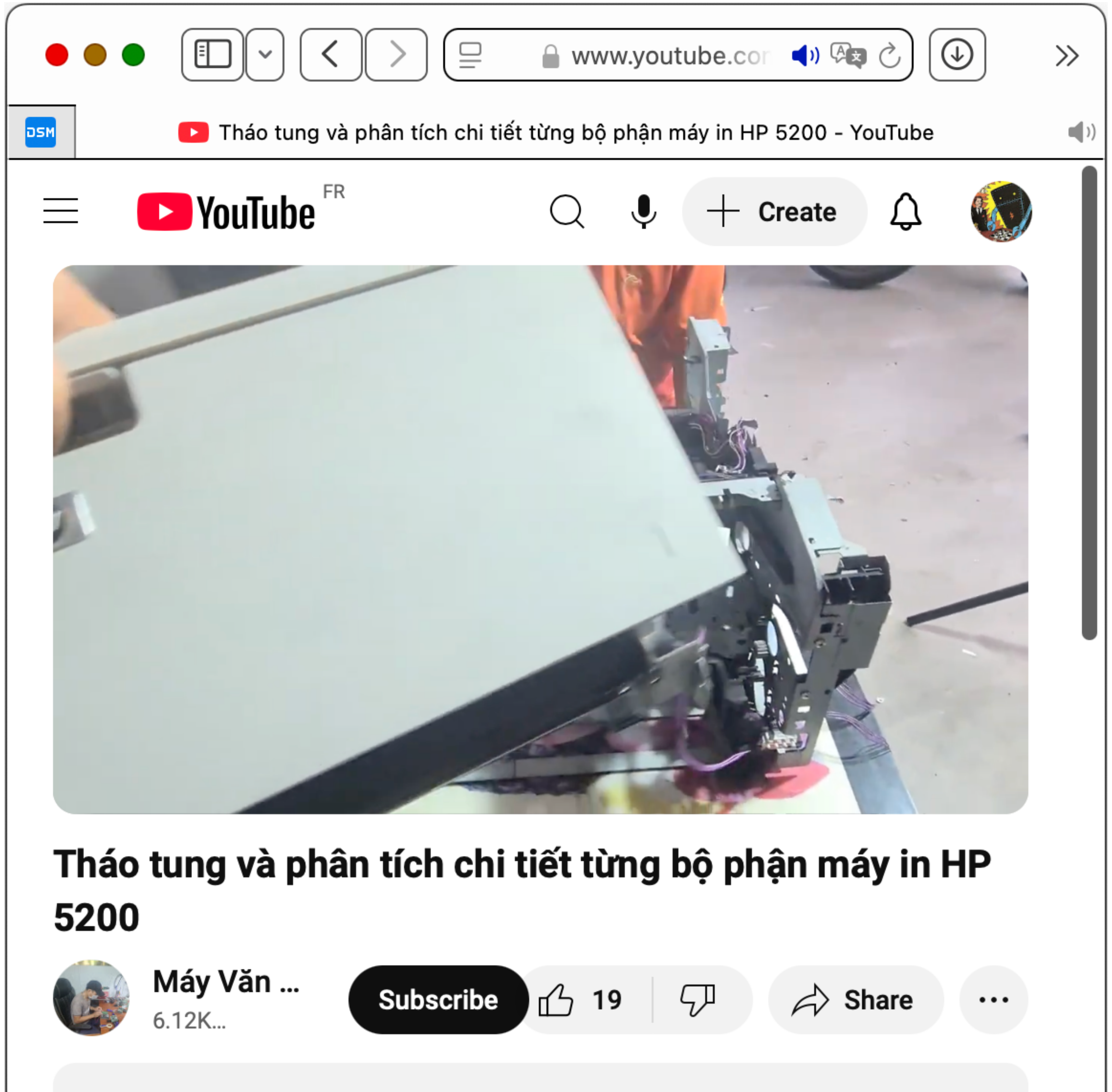
u/sweetheartttttt • -10 h
Micro Journal Rev2 Missing Power Switch?
16 · 8 commentaires · Récompenser · Partager · Enregis

u/Boschean • -2 h
Pomera. DM250 ATOK settings - do they have any relevance if typin
1 · 0 commentaire · Récompenser · Partager · Enregistre

Following the lead of the Global South

The retrofitting ethos is very similar to the way tech is used, maintained and repaired in developing countries.

- Maximizing the useful life of devices
- Repairing beyond what the service manual advises
- Producing video tutorials enabling users to repair their own devices
- Creating “Frankenstein laptops“ from discarded devices and e-waste



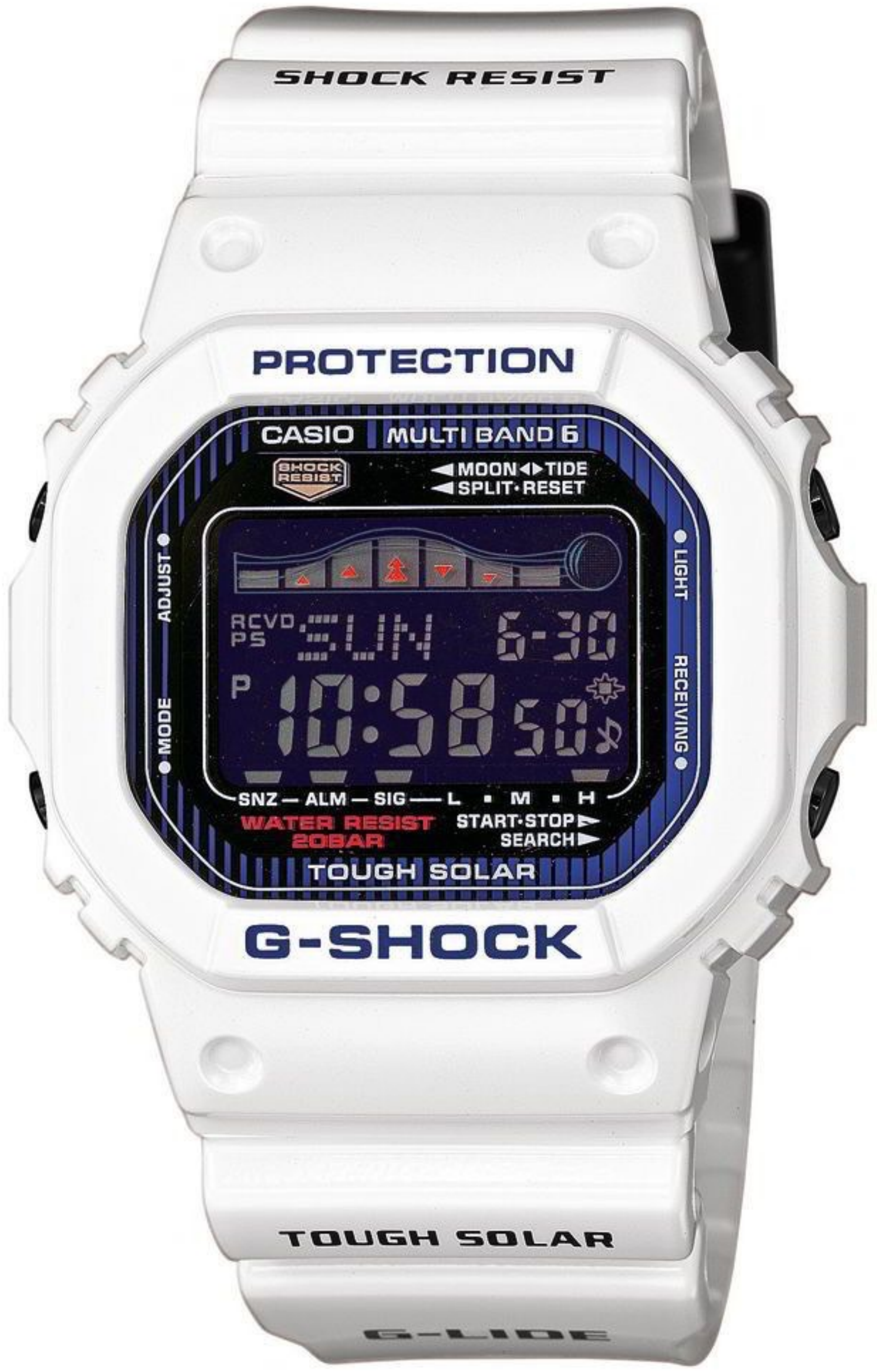
Tháo tung và phân tích chi tiết từng bộ phận máy in HP 5200 - YouTube

Tháo tung và phân tích chi tiết từng bộ phận máy in HP 5200

Designing durable devices

Successful retrofit factors

- Open file formats
- Standard ports
- Standard comm. protocols
- Modular, user-serviceable design
- Devoted fan base



Resilient design goals

- Clarity of purpose
- Device autonomy
- Intermittent connectivity
- Durable materials
- Long-term manufacturer support

The result

Hybrid devices

Tools for another future

- Retrofitted devices go beyond what was originally possible, sometimes even overcoming initial design flaws

- They become hybrids that maintain earlier affordances but can be used again in a connected world

- Like tools out of a alternate timeline — looking back at the past to find a way towards a different future

Thank you!

mail: m.lafrechoux@gmail.com
mastodon: martin@boitam.eu
homepage: nologos.net

Reverse panel

Three questions I want to ask you

- Is there a device you have fond memories of?
- Where is it now? Do you still have it?
- What keeps you from using it?