

TECH DEBT

FLEEING FROM DESIGN PROBLEMS



HELLO

WE INTRODUCE OURSELF



Giorgio Basile
FE developer



Michele Scarpa
Full stack developer



WE INTRODUCE YOU **BACAROTECH**



BacaroTech it's an initiative aimed at recreating the joyful, community-driven atmosphere typical of the Venetian bacaro within the world of IT, through social-media outreach, events, and workshops.

We've been carrying this project forward since 2023 and, over this time, we've managed to build a community of enthusiasts that now counts almost 3,000 developers.



MEANWHILE THERE ARE MORE OF US



Antonio



Danilo



Vittorio



Moreno



Davide



Lorenzo



CHE COS'È BACAROTECH



BacaroTech



BacaroTech

Code and Fun

La tua **community di sviluppatori** dove si parla di programmazione a 360°: strutture dati, algoritmi, carriera tech e molto altro!



Canale
Whatsapp



GitHub



Instagram



Youtube



TikTok



LinkedIn



Discord

Condividi questa pagina!



Link della repo di questo LinkTree

Buon codice devs!



TECH DEBT



LET'S SEE AN EXAMPLE

MY HOME NETWORK

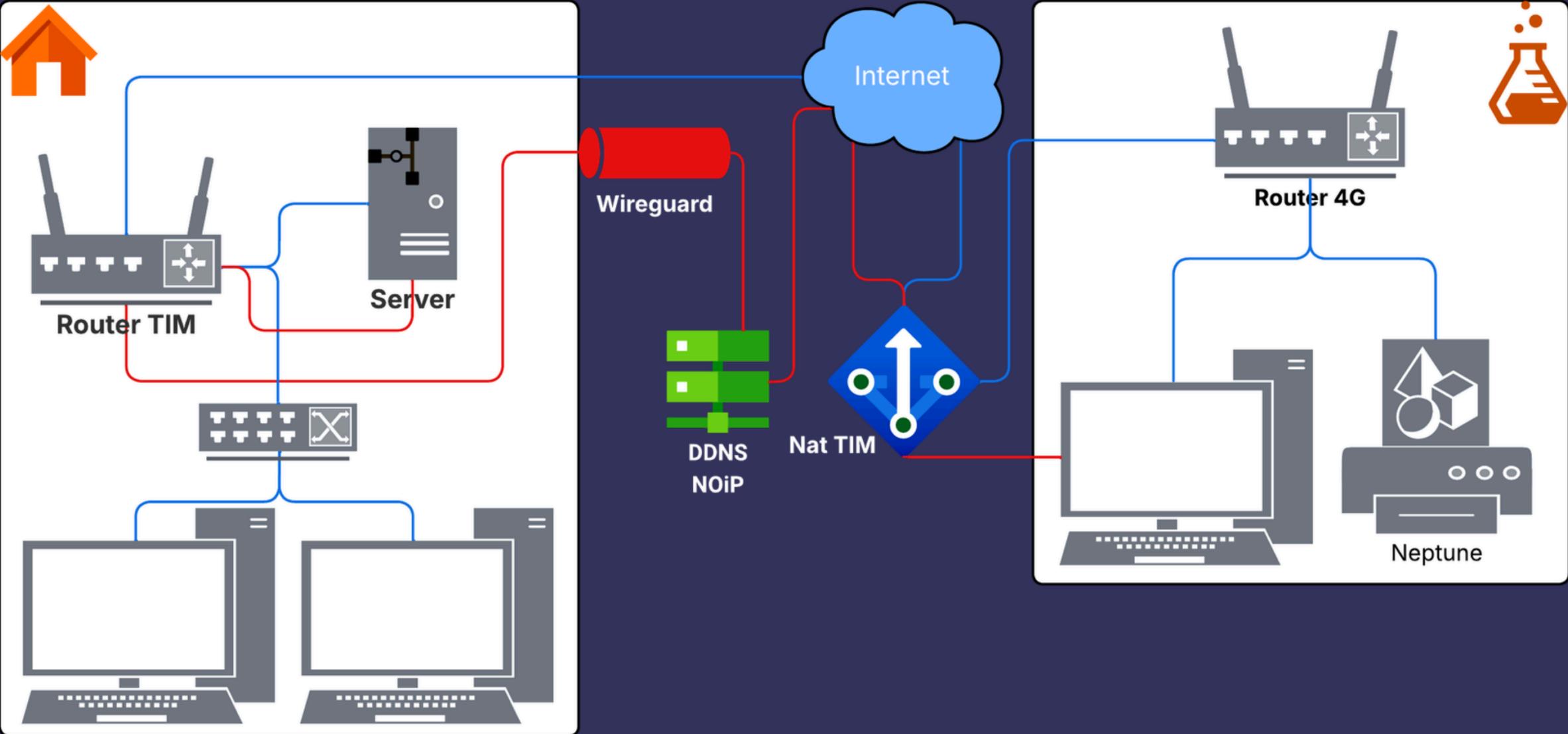


**THERE'S NOTHING BETTER TO
UNDERSTAND THAN AN EXAMPLE**



HOME LAB

LET'S SEE THE STRUCTURE



WHAT ABOUT THE PRINTER?

THIS ONE HURTS...



WHY ALL THIS?

IT SHOULD BE TRIVIAL RIGHT...? RIGHT?



Why not a *static* route?

As if...



THE CULPRIT

A CRIME AGAINST THE CUSTOMER



Tim “Smart” Hub



THE CULPRIT

A CRIME AGAINST THE CUSTOMER



Tim “Smart” Hub

- No static routes



THE CULPRIT

A CRIME AGAINST THE CUSTOMER



Tim “Smart” Hub

- No static routes
- No local DNS



THE CULPRIT

A CRIME AGAINST THE CUSTOMER



Tim “Smart” Hub

- No static routes
- No local DNS
- No VPN Server/Client



THE CULPRIT

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Tim “Smart” Hub

- No static routes
- No local DNS
- No VPN Server/Client
- DDNS not updated



THE CULPRIT

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Tim "Smart" Hub

- No static routes
- No local DNS
- No VPN Server/Client
- DDNS not updated
- ...Firewall? As if!

THE CULPRIT

A CRIME AGAINST THE CUSTOMER



Tim "Smart" Hub

- No static routes
- No local DNS
- No VPN Server/Client
- DDNS not updated
- ...Firewall? As if!
- It catches fire on it's own



THE CULPRIT

A CRIME AGAINST THE CUSTOMER



Tim "Smart" Hub

- No static routes
- No local DNS
- No VPN Server/Client
- DDNS not updated
- ...Firewall? As if!
- It catches fire on it's own
- Pray it doesn't freeze while you're outside



THE CULPRIT

A CRIME AGAINST THE CUSTOMER



Tim "Smart" Hub

- No static routes
 - No local DNS
 - No VPN Server/Client
 - DDNS not updated
 - ...Firewall? As if!
 - It catches fire on it's own
 - Pray it doesn't freeze while you're out
- because it caught fire and so did your home**



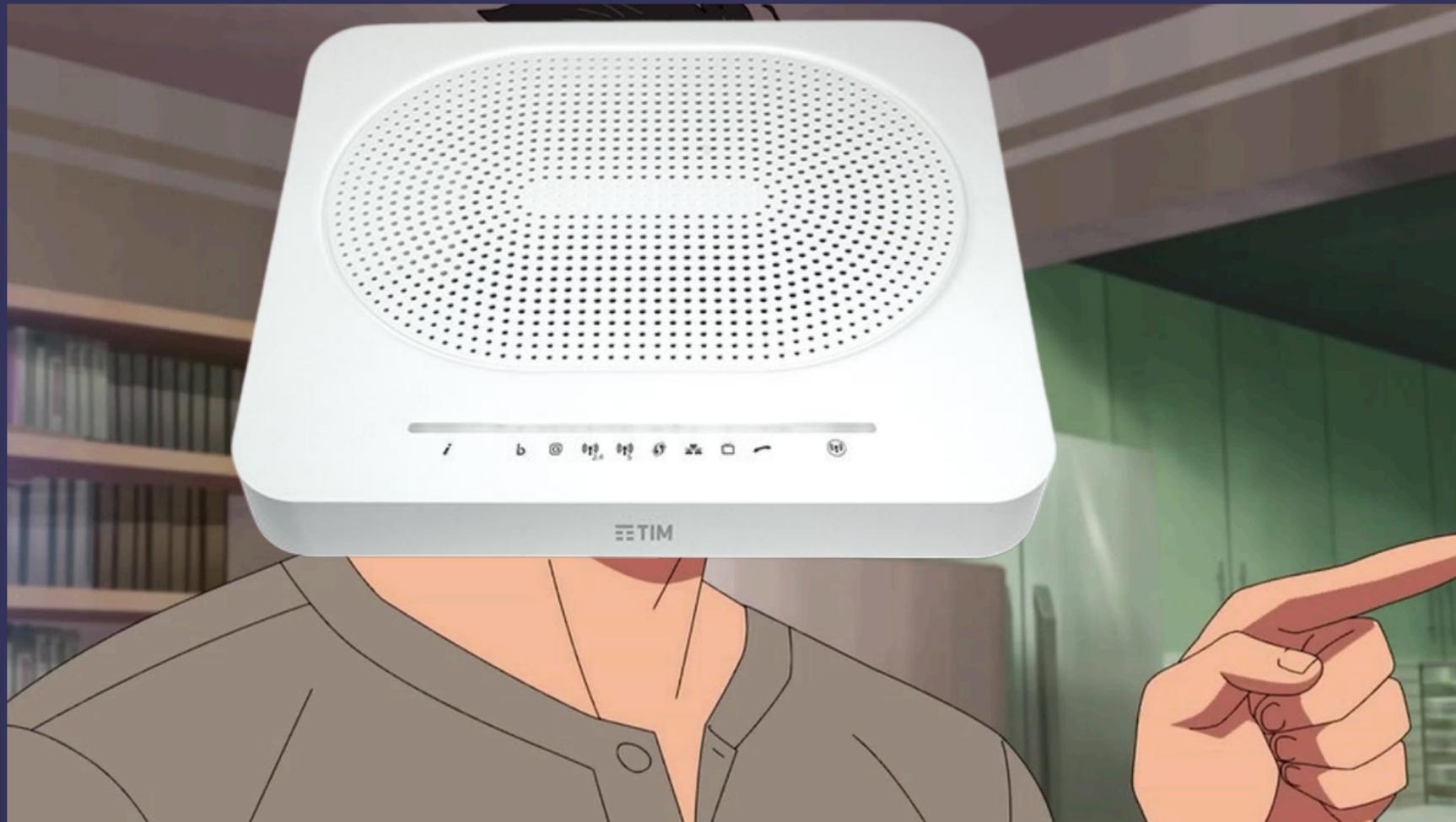
WHAT ABOUT THE LOCAL DNS?
GUESS...



**What if i want to use a
local DNS?**



CAN I SET IT EASLY? IF YOU WANT TO WASTE TIME...



THAT'S THE NEAT PART. YOU DON'T!

Get ready to manually set the local DNS on every machine in the network

Buona Good luck if for some reason you need to change the DNS's ip...



LET'S RECAP

WHAT CAN WE DO?



Technically everything, with some caveat:

- The need to do some absurd workarounds
- Loose some of your time... la lot.
- If something goes wrong... go to church
- If the net starts to grow good luck with maintenance



HOW CAN WE SOLVE THIS? THERE MUST BE A SIMPLE SOLUTION DOES IT?



Yes, there is.

But costs money you don't have

Suck it...



WHAT CAN WE OBSERVE?

WE'RE UP TO OUR NECK IN DEBT



Let's sort things out:

- Complex configurations
- Non-immediate disaster recovery
- Scalability issues
- A slow, tedious workflow full of failure points

And thank goodness it's not a commercial project...



HERE'S TECHNICAL DEBT

ONE CHOICE CASCADES INTO EVERYTHING



Deliberate and strategic

Intentional, to ship quickly

I implement a temporary solution, then refactor

Unintentional

Ignorance or inexperience

I use a deprecated library without knowing it

Evolving

Change in context

The architecture was scalable, then the product grew in unexpected ways

Process-related

Organizational shortcomings

No one has time to document or test



HOW IT SHOWS UP

TYPICAL SIGNS:



- Every new features requires changes in unexpected places
- Bugs multiply and become hard to track
- The learning curve for new developers grows exessively
- Delivery times get longer even for small changes



FAMOUS (OR INFAMOUS) COMPANIES THAT PAID A HIGH PRICE



Knight Capital Group

On August 1st, 2012, a new trading algorithm, deployed without testing, started buying stocks uncontrollably.

In two days, the company's stock lost 75% of its value, and the company had to obtain an emergency \$400 million investment to avoid bankruptcy.

Within a year, Knight was forced to merge with a competitor.



FAMOUS (OR INFAMOUS) COMPANIES THAT PAID A HIGH PRICE



Friendster (anni 2000)

The first major successful social network, Friendster had the advantage of being the first mover in the emerging social media market.

However, its platform was burdened by the technical debt accumulated during its rapid early growth.

When the user base increased, the site became extremely slow. It eventually lost to MySpace.



BUT WHAT IF I DON'T FAIL?

HOW MUCH DOES IT COST ME?



Millennium Bug:

The well-known Y2K issue (year 2000), caused by decades of software using two-digit dates, is a historic example of technical debt on a global scale.

Fixing the Millennium Bug is estimated to have cost more than \$100 billion worldwide.

And that expense essentially wiped out any savings originally gained by taking that technical shortcut.



BUT WHAT IF I DON'T FAIL?

HOW MUCH DOES IT COST ME?



Lost productivity:

A study by Stripe and McKinsey found that developers spend, on average, 42% of their weekly time dealing with technical debt or “bad code.”

At a global scale, this productivity drain amounts to around \$85 billion a year in lost output.

Nearly half of teams’ innovative capacity is eroded by avoidable issues caused by sub-optimal systems.



HOW DO YOU DEAL WITH IT?

RECOGNIZING TECH DEBT



Make it visible and measurable:

- Keep a tech-debt board in your backlog
- Estimate its cost in time or risk
- Communicate that debt isn't a flaw it's a choice that comes with interest



HOW TO DEAL WITH IT?

CONTINUOUS REFACTORING



Not a project, but a habit.

Like cleaning the kitchen while you cook.

Boy Scout Rule: leave the code a little cleaner than you found it.



HOW DO YOU DEAL WITH IT?

AUTOMATE THE DISCIPLINE



Tests, CI/CD, linting, living documentation.

The more reproducible your environment is, the less debt you accumulate.



HOW DO YOU DEAL WITH IT?

BALANCING STRATEGY AND TACTICS



Contracting debt is acceptable for an MVP — just make sure you note where you cut corners and plan when you'll fix it.



HOW DO YOU HANDLE IT?

WHEN THERE ARE NO ALTERNATIVES



- Isolate the debt: wrap the fragile part inside a dedicated module or service.
- Document the trade-offs: explain why the decision was necessary.
- Plan the payback: define a trigger (e.g., hardware upgrade, version update) for when you'll fix it.



HOW DO YOU DEAL WITH IT?

HOW TO AVOID IT (YOU CAN'T COMPLETELY)



Technical debt can't be eliminated — it has to be managed like an investment.

Key ways to reduce it:

- Write for the future reader, not just for the current urgency.
- Use continuous feedback loops (reviews, pair programming, post-mortems).
- Educate both the team and leadership about total cost of ownership, not just time-to-market.



LET'S TALK SOLUTIONS FOR COMPANIES



If the growth of corporate services leads to an unsustainable increase in technical debt, the only wise move may be to postpone that growth itself.



LET'S TALK SOLUTIONS FOR COMPANIES



Accept that technical debt exists and make it part of your daily workflows.

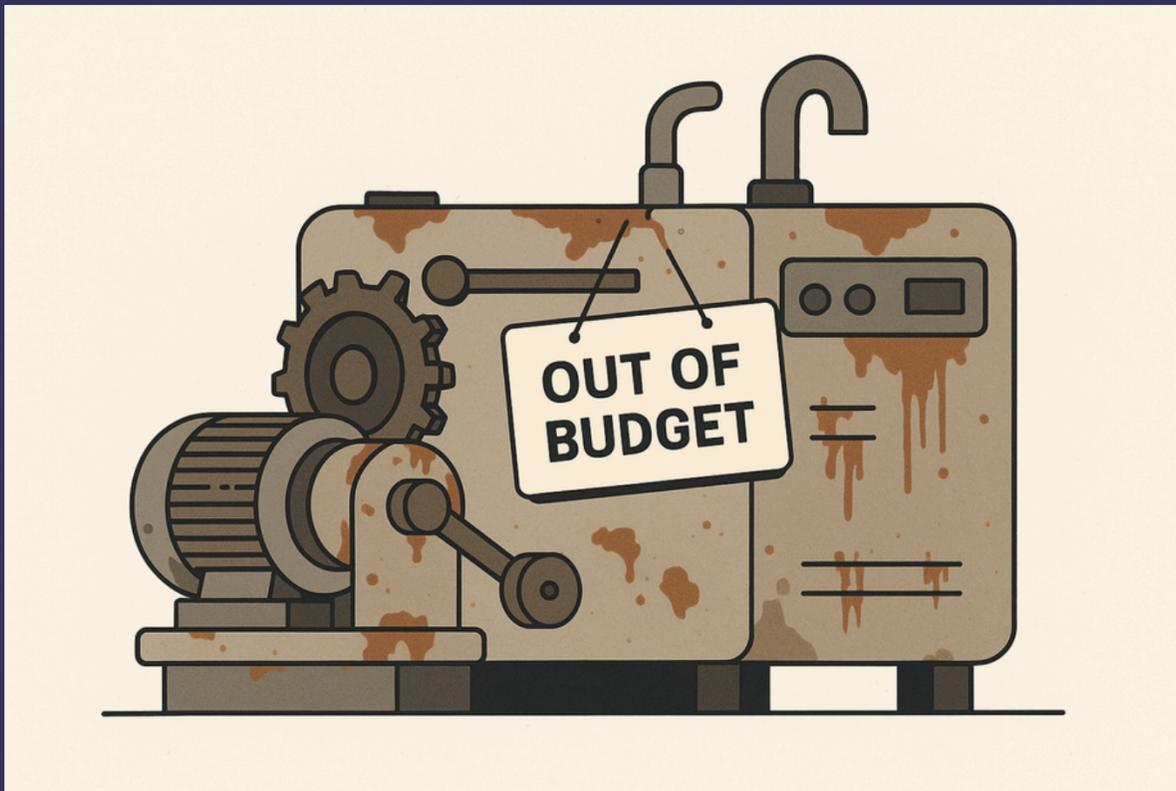
Documentation must be written, fixes must be applied, and refactoring must be planned.

Debt needs to be treated as part of the production cycle, not as a constant emergency.



KEY PRINCIPLES TO REMEMBER

BUDGET



“We don’t have budget” is not a valid excuse.

If there’s no budget for maintenance, it’s only a matter of time before the company’s core revenue stream collapses.

Killing the cow that feeds you is not a sustainable strategy.



KEY PRINCIPLES TO REMEMBER

INTEREST



Unlike financial debt, where interest rates are predictable, technical debt behaves more like borrowing from a loan shark.



PRINCIPLES TO REMEMBER

MEMORY IS UNRELIABLE



Documentation is not the code.

You will forget how it works.

What your code does shouldn't be known only to you and "the almighty above."

Sooner or later—more sooner than later—only the almighty will know.

Your future self will thank you.



PRINCIPLES TO REMEMBER

YOUR REPUTATION MATTERS



Keeping your work clean and well-documented is in your best interest.

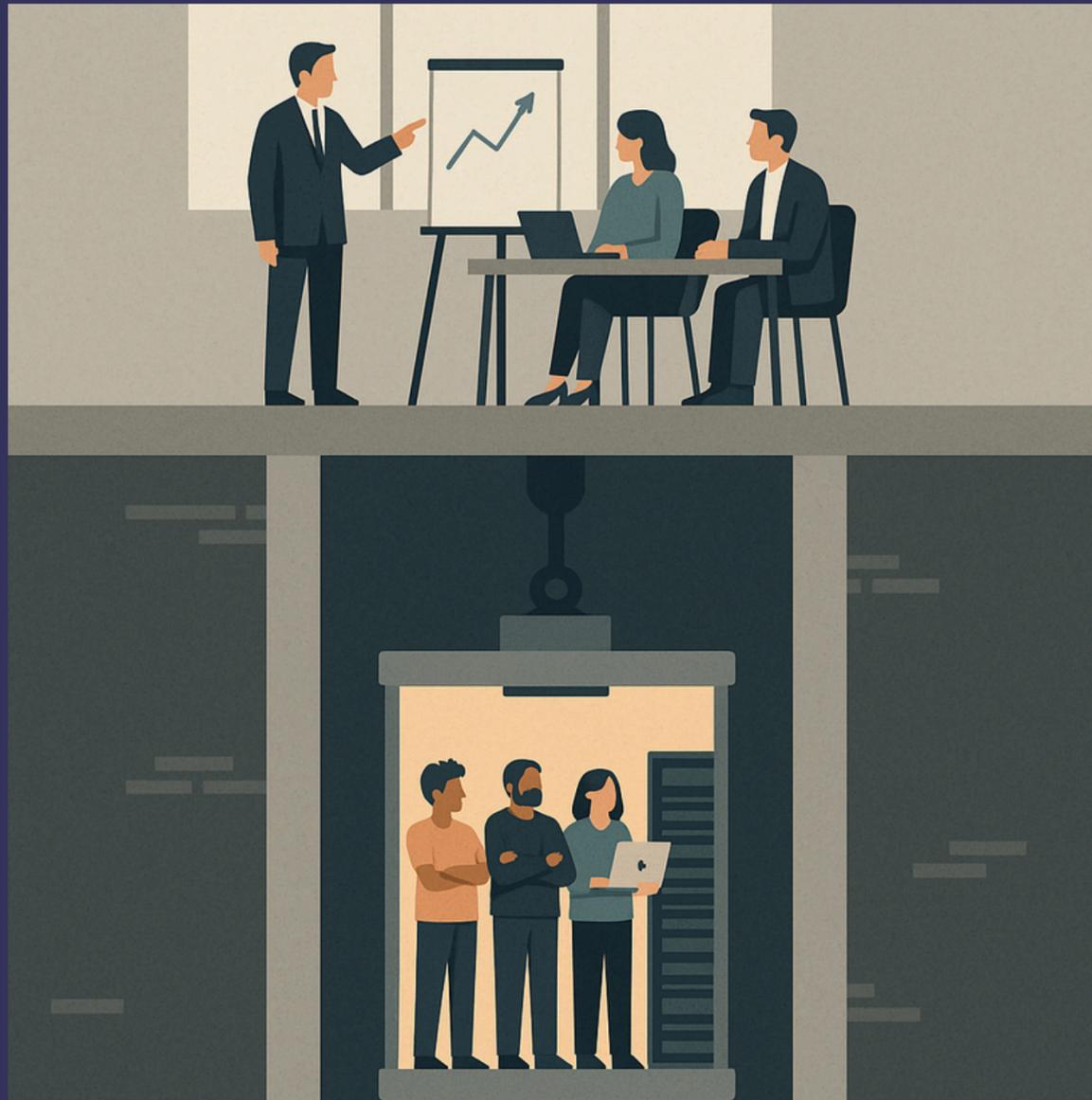
If a company fails or suffers damage, you will always be associated with that failure.

A low salary is not an excuse — if that's the case, change jobs instead.



PRINCIPLES TO REMEMBER

LISTEN TO YOUR ENGINEERS



Listen to your developers: if you don't give them the space to do their best work, it's like overloading an elevator.

At first it might seem fine, but over time the cable will start to strain — and eventually it will snap.

And unlike a real elevator... there are no emergency brakes.



IN CONCLUSION

REMEMBER THIS



Technical debt is not inherently bad.

It's the trade-off between what we want to build and what we're able to build today.

The real problem begins when we stop treating it as debt and start treating it as an asset.”

— Quote by myself



ALL NICE...

BUT IN THE END, HOW DID YOU FIX IT?



By doing what I should have done from the very beginning.



ALL NICE... BUT IN THE END, HOW DID YOU FIX IT?



By doing what I should have done from the very beginning.



FRITZ!Box 7530 Ax Edition
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**THANK YOU ALL FOR
PARTICIPATING!**

WE'RE READY FOR YOUR QUESTIONS.



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