Technical Debt

When to Pay It Down vs. When to Just Live With It

Tomas Peluritis

Data Day @ PyCon Lithuania 2026

We all have code in production that makes us cringe.

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that makes us cringe.

And that's... actually okay?

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What Even Is Technical Debt?

Three quick definitions

The textbook answer

Shortcuts taken for speed that cost you later

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The textbook answer

Shortcuts taken for speed that cost you later

What it actually is

Any gap between your current system and what you wish it was

Three quick definitions

The textbook answer

Shortcuts taken for speed that cost you later

What it actually is

Any gap between your current system and what you wish it was

What matters

Debt that's actively slowing you down or costing you money

I'm no saint...

Code I Wrote That I'm Not Proud Of

(But It's Still Running)

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ETL Pipeline from 2018

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Temporary table that has been dubbed "One Source of Truth"

Code I Wrote That I'm Not Proud Of

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ETL Pipeline from 2018

Temporary table that has been dubbed
"One Source of Truth"

Group of SQL Queries that's over 1k lines long
(and everybody's afraid to touch it)

The Debt Quadrant

Martin Fowler's Technical Debt Framework

The Debt Quadrant

	Reckless	Prudent
Deliberate		
Inadvertent		

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	Reckless	Prudent
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Inadvertent	**Reckless + Inadvertent** *"What's layered architecture?"*	

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Inadvertent	**Reckless + Inadvertent** *"What's layered architecture?"*	**Prudent + Inadvertent** *"Now we know how we should have done it"*

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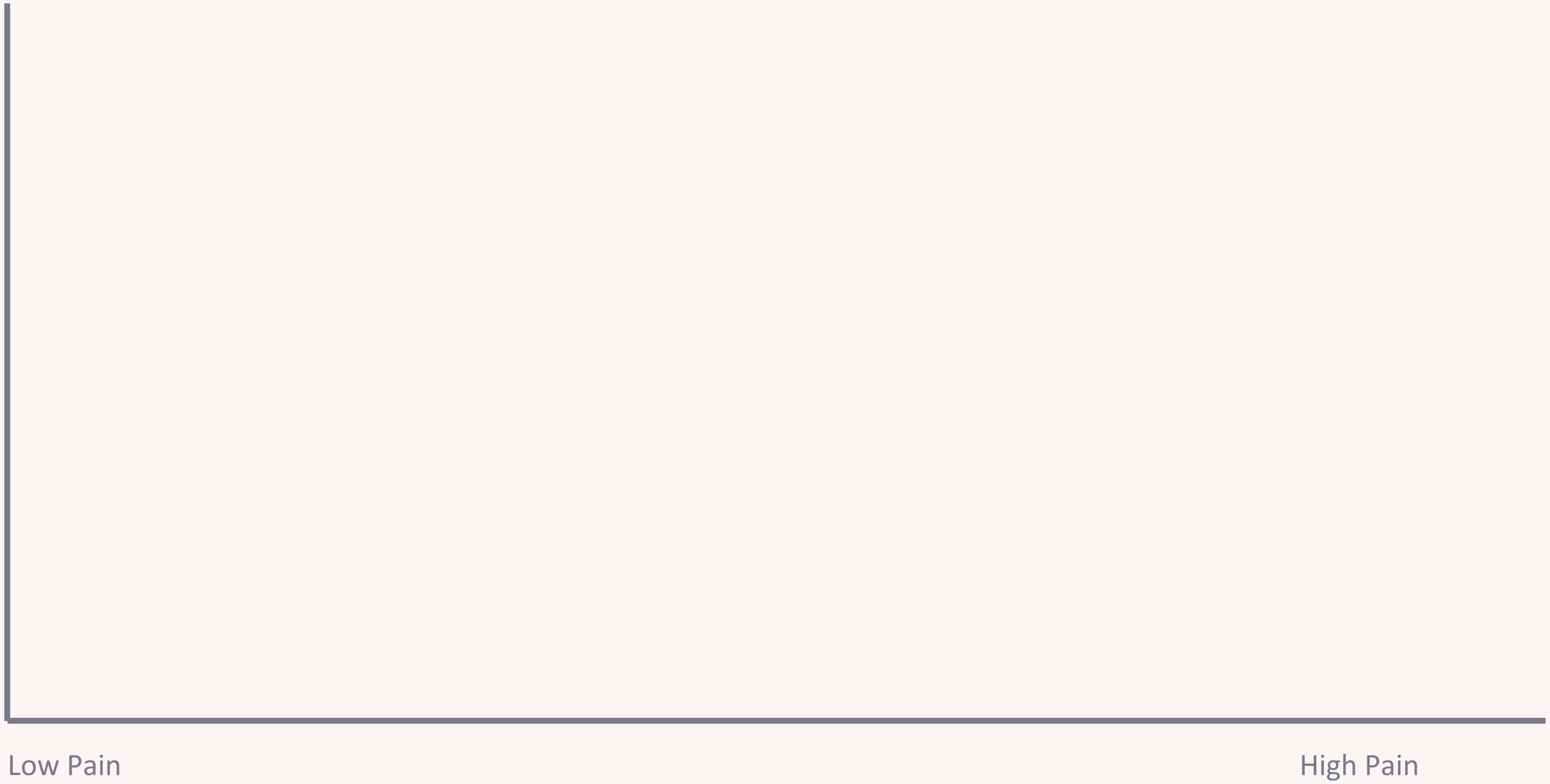
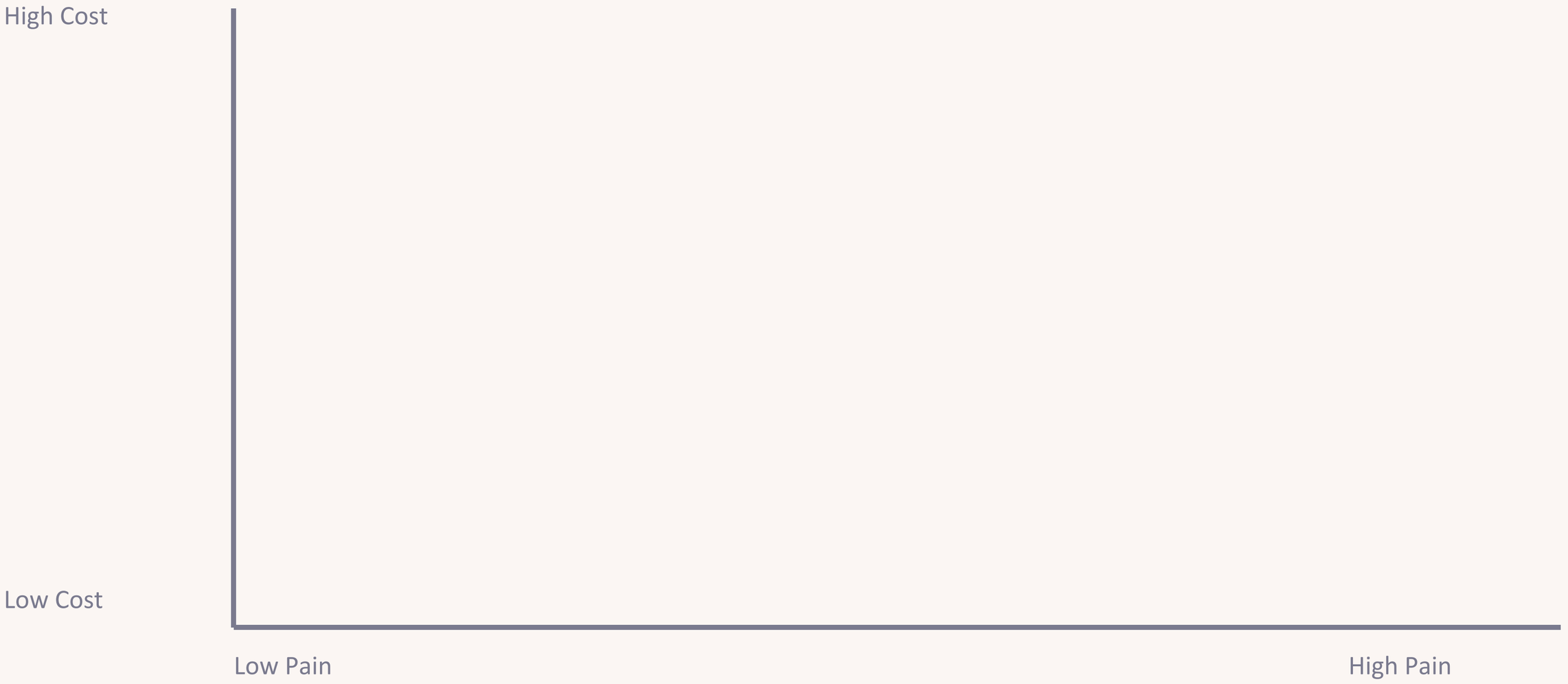
Inadvertent	**Reckless + Inadvertent** *"What's layered architecture?"*	**Prudent + Inadvertent** *"Now we know how we should have done it"*

Not All Debt Is Created Equal

The Pain



The Pain vs. Cost Matrix



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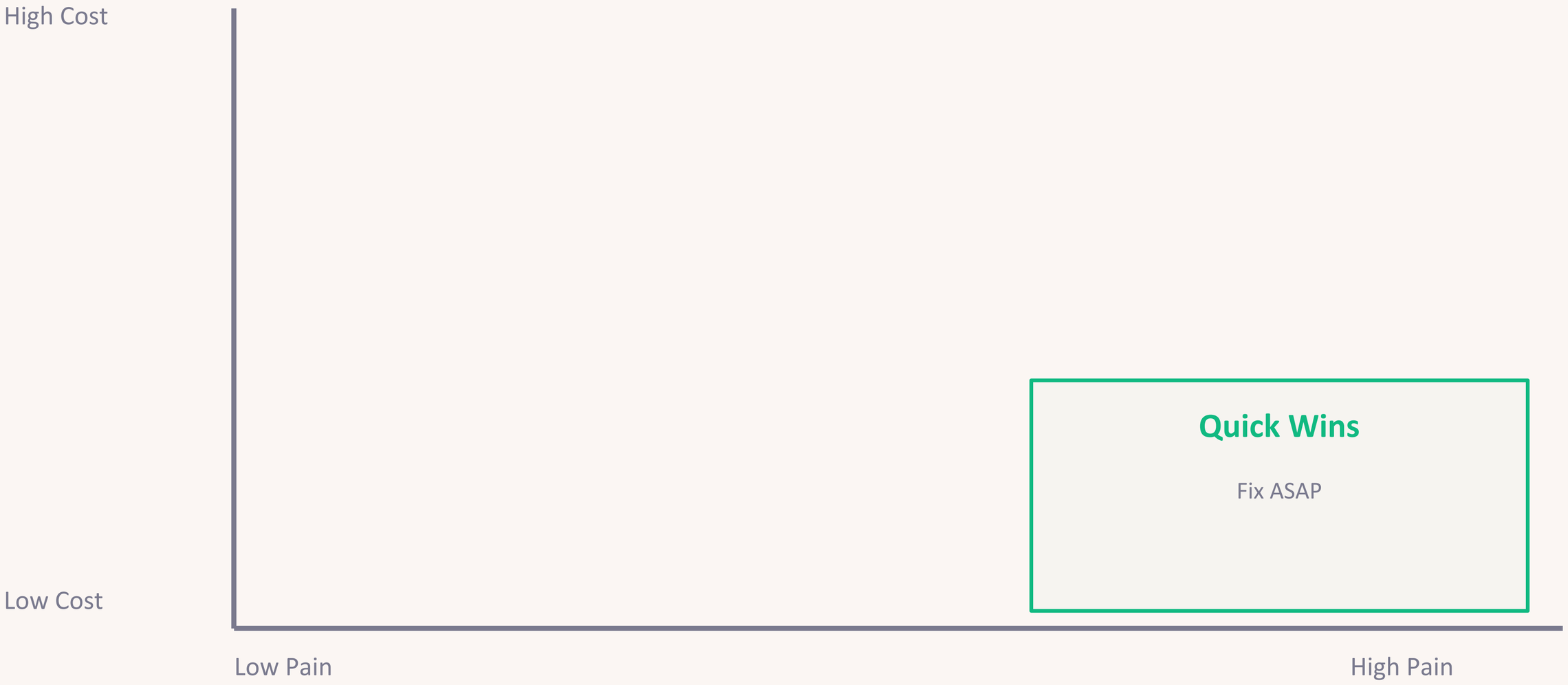
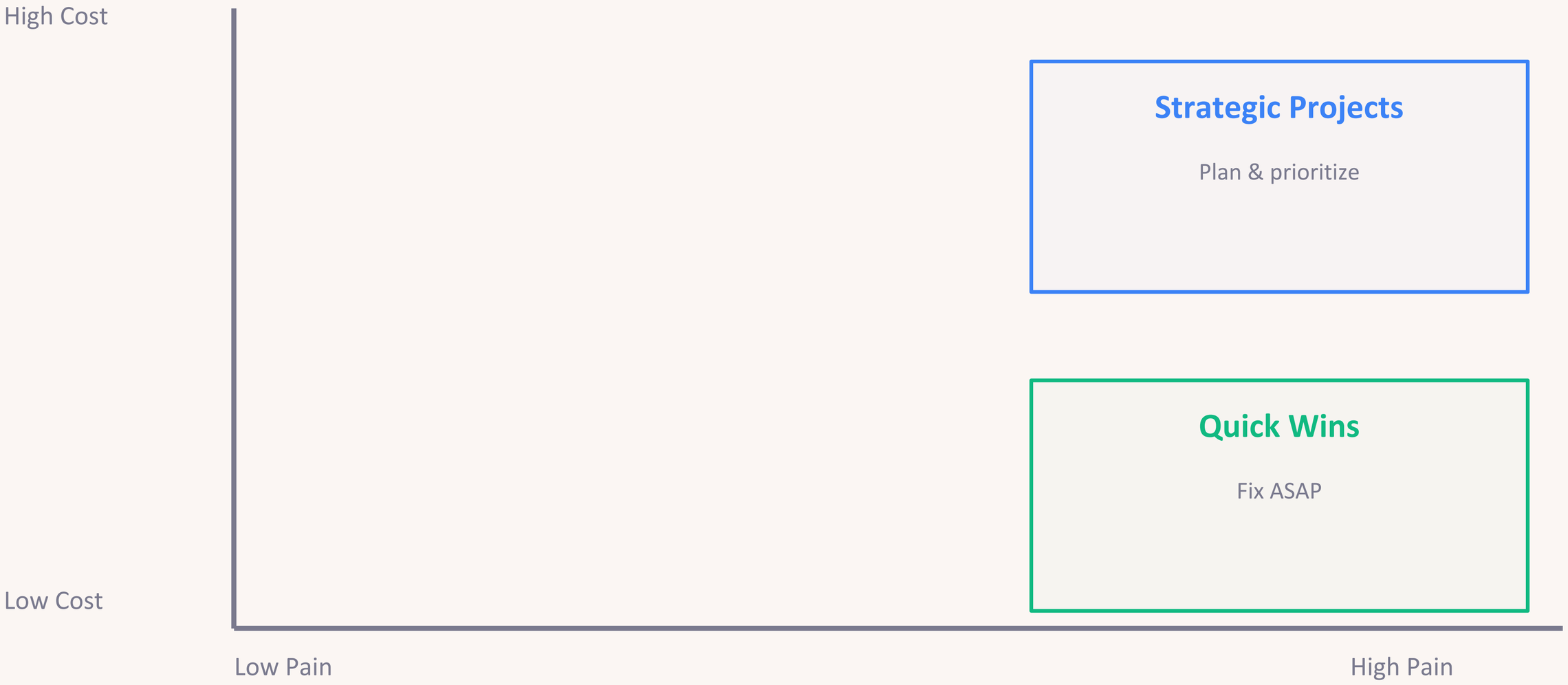
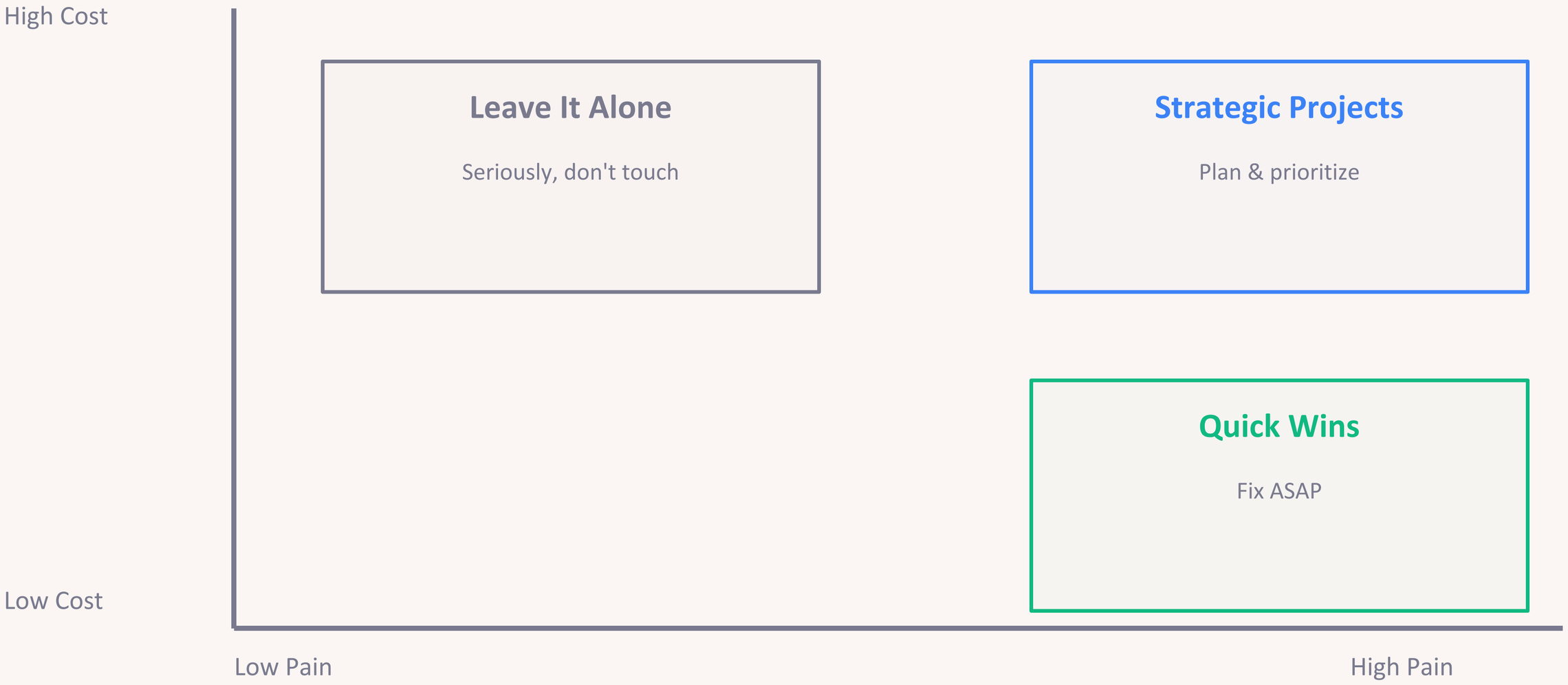


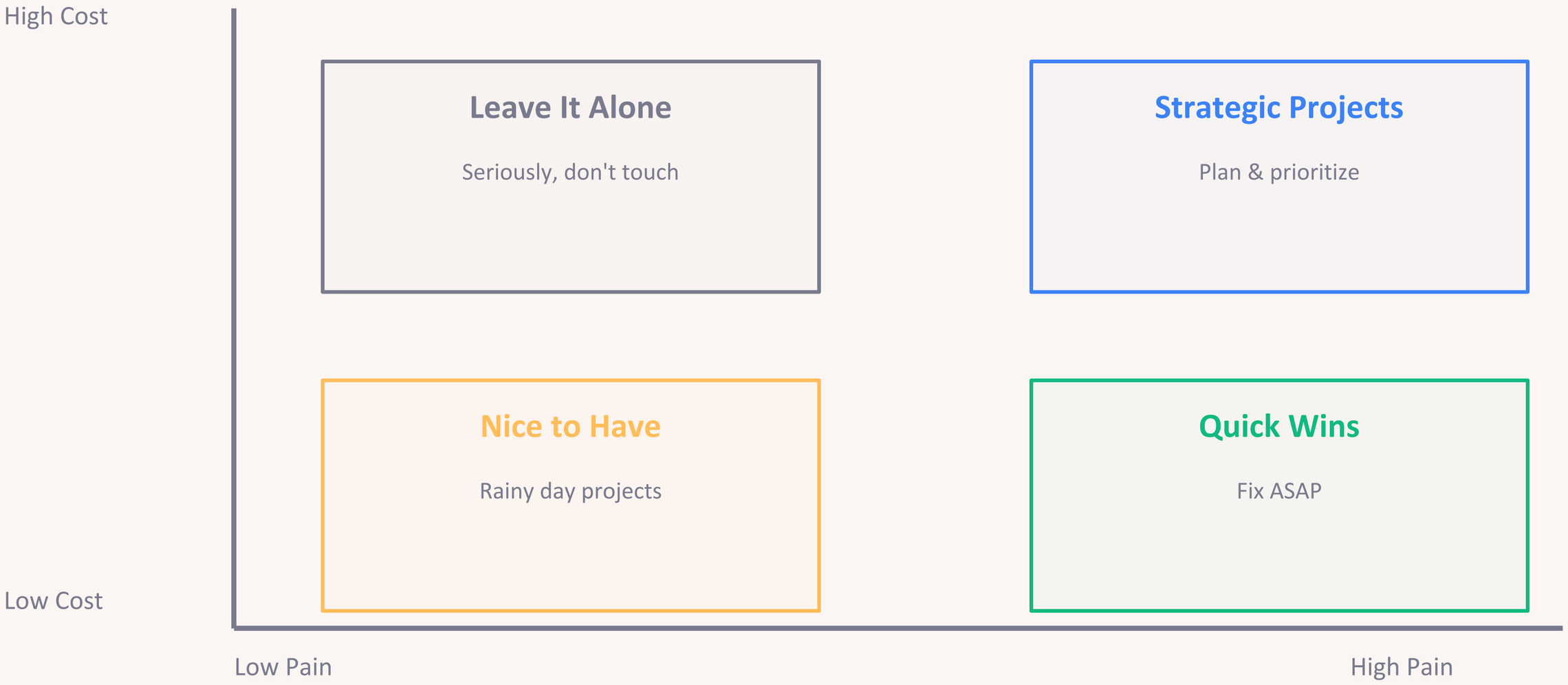
The Pain vs. Cost Matrix



The Pain vs. Cost Matrix



The Pain vs. Cost Matrix



Story Time

Redshift to Snowflake

Redshift → Snowflake

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Before

- 3 Separate Airflow environments

Redshift → Snowflake

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- No Dev Env

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10–12 months to complete

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- Single Prod Airflow Env

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- Dev Env
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- ±20% Cost reduction + easy scaling

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- Dev Env
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- Happier engineers

10–12 months to complete

Story Time v2

Legacy Data Pipeline Refactor

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1-1.5 months to complete

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After

- Learned PIG

1-1.5 months to complete

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- Learned PIG
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Legacy Data Pipeline Refactor

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- Learned PIG
- Rewrote in Apache Spark
- Cleaner code, zero business impact

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Source got deprecated (as well as my pipeline) in the next 5 months

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Source got deprecated (as well as my pipeline) in the next 5 months

Working code that's ugly is often better than "perfect" code that took forever to build.

Story Time v3

Airflow Environment Consolidation

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- Single managed environment

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- Worker autoscaling bottlenecks during peak hours

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But we traded old debt for new debt

- Worker autoscaling bottlenecks during peak hours
- OOM kills on workers

Migrating away from debt doesn't mean debt-free.

You're trading one set of problems
for (hopefully) better ones.

How to Decide?

A practical decision framework

Five Questions Before You Refactor

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1

Is it actually causing pain?

Not just offending your sensibilities

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   What else could you build instead?

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4. **Will it get worse over time?**

   Some debt compounds, some stays stable

Some Debt Gets Worse, Some Stays The Same

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Stable Debt

Stays the same over time.

You can live with it.

- One ugly function
- Isolated legacy system
- "Bad" architecture that works

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Compounding Debt

Gets exponentially worse.

Fix it or suffer.

- Lack of tests
- Missing documentation
- Inconsistent patterns spreading

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   Not just offending your sensibilities

2. **Can you measure the cost?**
   Performance issues, developer time, $$$

3. **What's the opportunity cost?**
   What else could you build instead?

4. **Will it get worse over time?**
   Some debt compounds, some stays stable

5. **Can you get stakeholder buy-in?**
   If you can't explain why it matters, maybe it doesn't

How to Actually Get Buy-In for Debt Paydown

Speaking Their Language

What doesn't work

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"Engineers spend 5 hrs/week on workarounds"

"It's blocking the feature you want next quarter"

"3 production incidents from this in 2 months"

Common Traps to Avoid

Where teams go wrong

Where Teams Go Wrong

The Perfection Trap

Spending months refactoring working code

"We'll fix everything before adding features"

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The Shiny Object Trap

"Let's rewrite in [Fancy New Tech]!"

Migration for migration's sake

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The Death March Trap

All debt, all at once

Team burns out, nothing ships

Tech Debt in the Age of AI

How AI changes things

AI Changes the Debt Equation

The Good

Cost to fix goes down

AI Changes the Debt Equation

The Good

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- Understanding legacy code faster

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New categories of debt

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The Net Effect

- More things move from "Strategic Projects" to "Quick Wins" on the matrix.
- But AI-generated debt compounds faster because your team didn't write it and doesn't understand it.

Living With Debt Successfully

The part nobody talks about

Managing Debt You Decided to Keep

Document it

If you chose to keep it, write down why and what the risks are

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Set alerts for when stable debt starts becoming compounding debt

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Rotate ownership

Don't let one person be the 'debt expert' who can never leave

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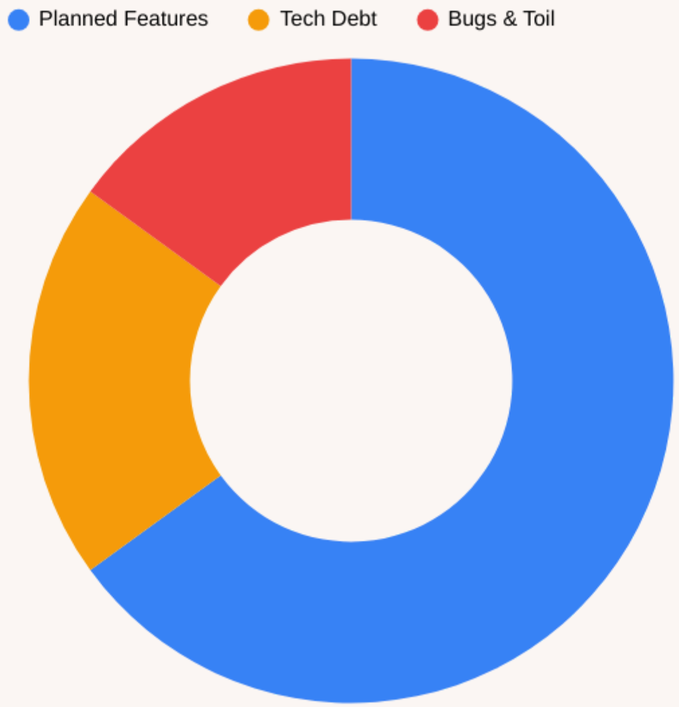
Review quarterly

Pain changes. What was fine 6 months ago might be killing you now

The Debt Budget

15–20%

of each sprint
for debt work



Not a big bang.

A continuous habit.

Small, steady payments beat heroic refactoring every time.

Track the ratio

Tag your work: Planned Feature / Tech Debt / Bug / Operational Toil / Ad-hoc

The split tells you a story about where your team's time actually goes.

The Catalog of Debt

Know what you're living with

Know What You're Living With

What	Pain Level	Cost to Fix	Type	Status
Legacy API	High	2 months	Compounding	Scheduled Q1
Python version upgrade	Low	3 weeks	Stable	Backlog
1k-line SQL query	Medium	1 month	Compounding	Monitoring
No test coverage on ETL	High	Ongoing	Compounding	15% per sprint

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You don't need fancy tools. A simple spreadsheet works.

The point is awareness — you can't make good decisions if you don't know what debt you have.

TL;DR

Key Takeaways

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1. Not all debt needs to be paid down
2. Measure pain and cost before refactoring
3. Translate debt into business language
4. Budget for debt work continuously
5. Document and monitor what you keep
6. AI lowers fixing costs but creates new risks

Technical debt isn't a failure.

It's a tool. Use it wisely.

Q&A

Thank You

Tomas Peluritis

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