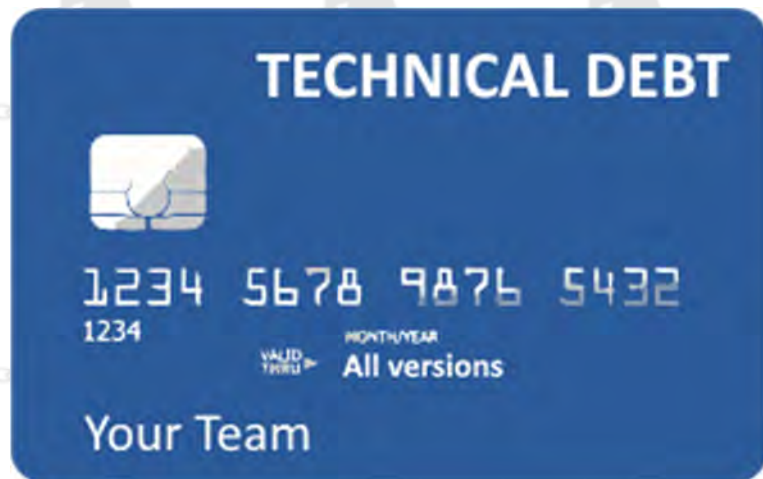


Stop the Waste! Get Out of (Technical) Debt!



Richard Hundhausen
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About Me

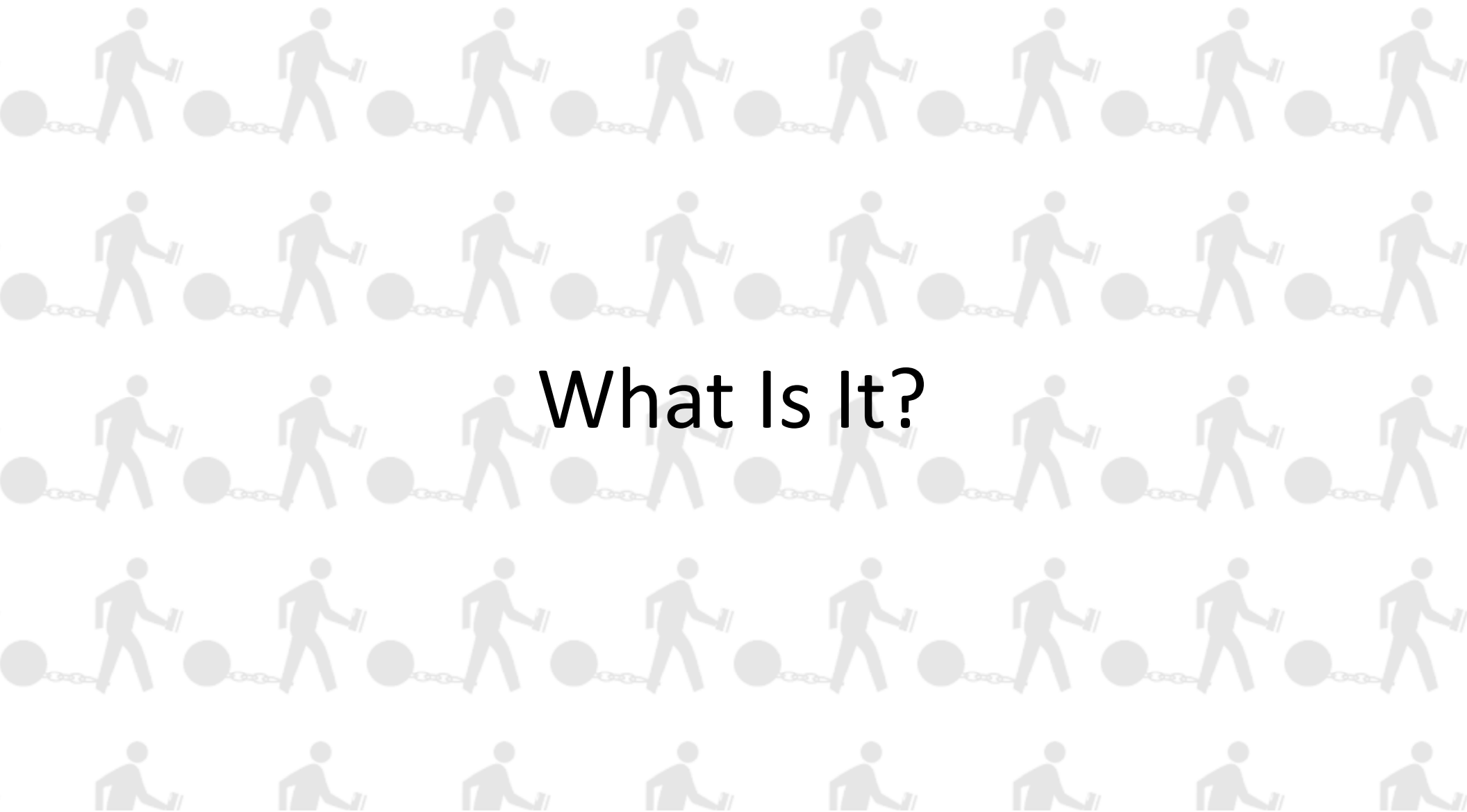
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- President of Accentient
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- Professional Scrum Developer
- Professional Scrum Trainer
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Session Backlog

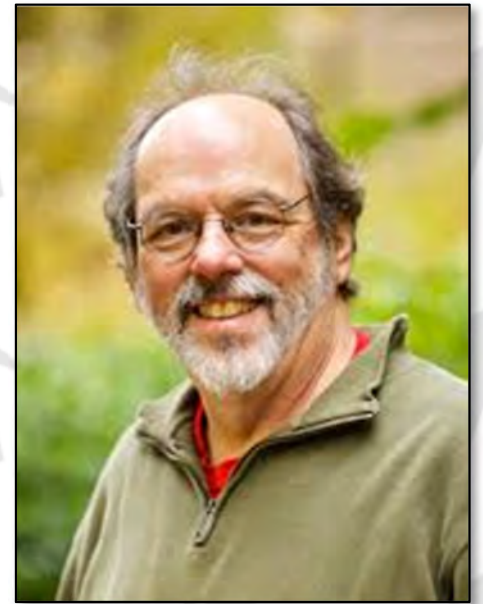
- What is Technical Debt ... and what isn't
- Why is it Bad ... and why you might want it
- What Causes It
- How to Identify It
- How to Remove It



What Is Technical Debt?

“Shipping first time code is like going into debt. A little debt speeds development so long as it is paid back promptly ...”

- Ward Cunningham, OOPSLA 1992



What's Uncle Bob Say?

“A mess is not a debt. Messy code, produced by people who are ignorant of good design practices, shouldn't be a debt.”

“Technical Debt should be reserved for cases when people have made a considered decision to adopt a design strategy that isn't sustainable in the longer term, but yields a short term benefit, such as making a release.”



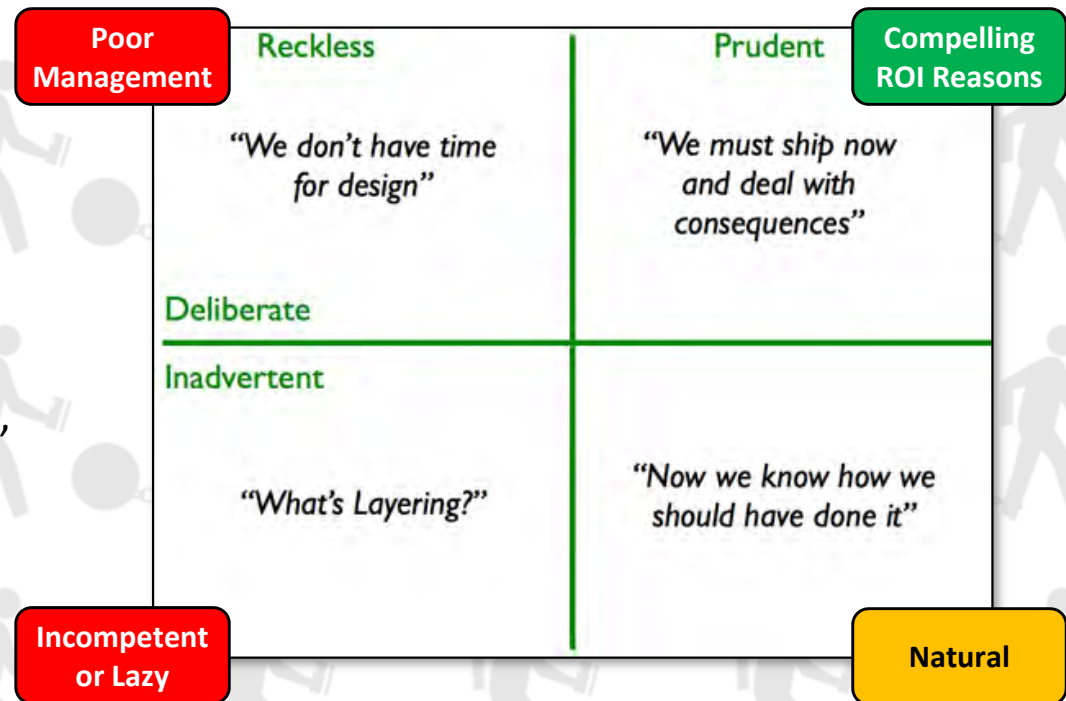
And Martin Fowler?

“There is a difference between prudent and reckless debt, as well a difference between deliberate and inadvertent debt.”



The Technical Debt Quadrant

- Reckless + Deliberate
 - “Go faster. We have more projects”
- Prudent + Deliberate
 - First to market, regulatory, etc.
- Reckless + Inadvertent
 - “Oops, we changed the wrong code”
- Prudent + Inadvertent
 - Teams should naturally improve their code after gaining experience and knowledge



What Do Others Say?



“Any code which a developer fears to change. That fear is legitimate, and one of the best estimates of where the risk lies.”

– Arlo Belshee, XP Guru & Coach, Tableau

“It is the cumulative total of less-than-perfect design and implementation in your project.”

– James Shore, Agile/XP Consultant and Coach



“Technical debt is everything that makes your code harder to change.”

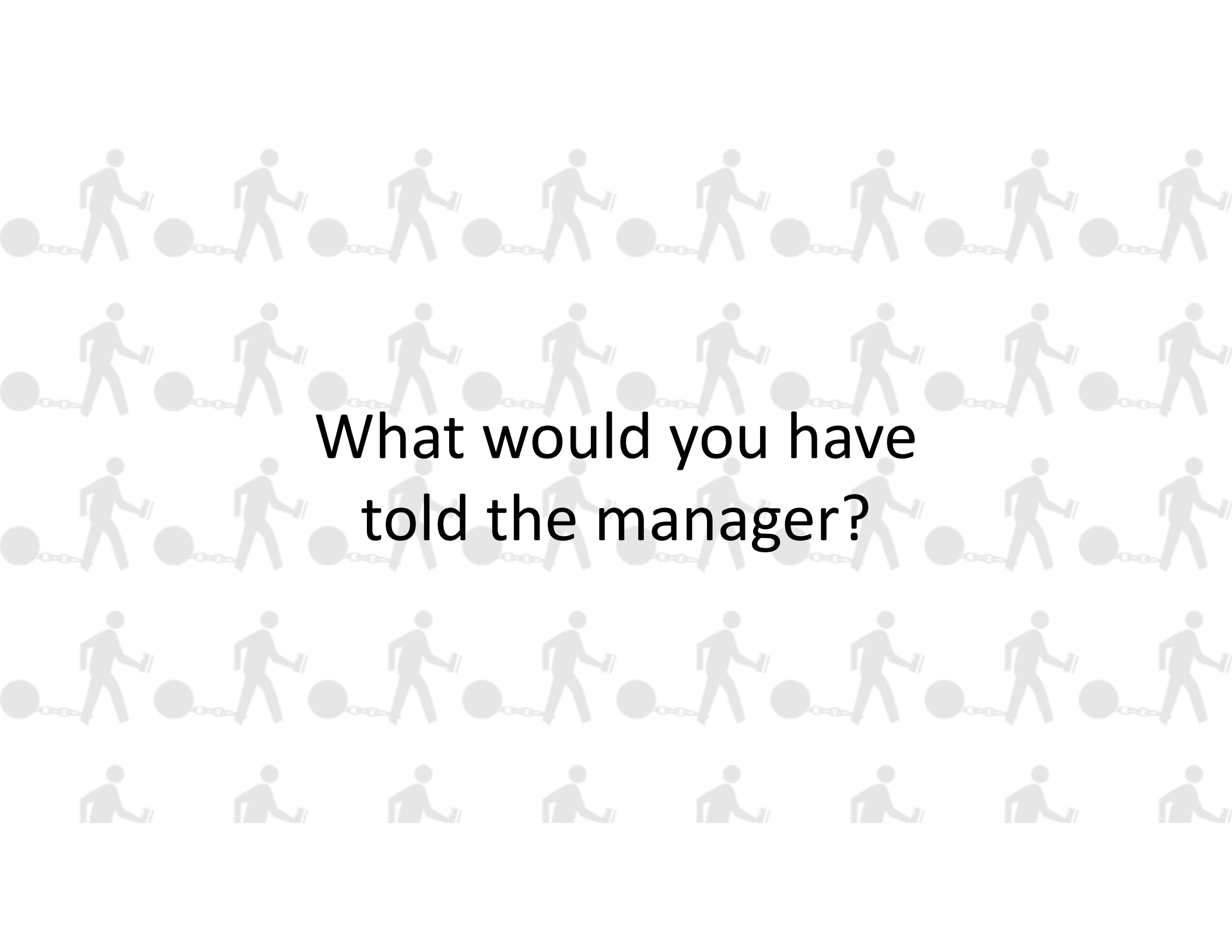
– Tom Poppendieck, co-creator Lean Software Development

The background of the slide features a repeating pattern of stylized, grey human figures. Each figure is depicted in a walking or running pose, carrying a large, dark grey sphere in its right hand and a smaller, lighter grey sphere in its left hand. The figures are arranged in a grid-like fashion, with some rows showing the full figure and others showing just the head and shoulders, creating a sense of movement and rhythm.

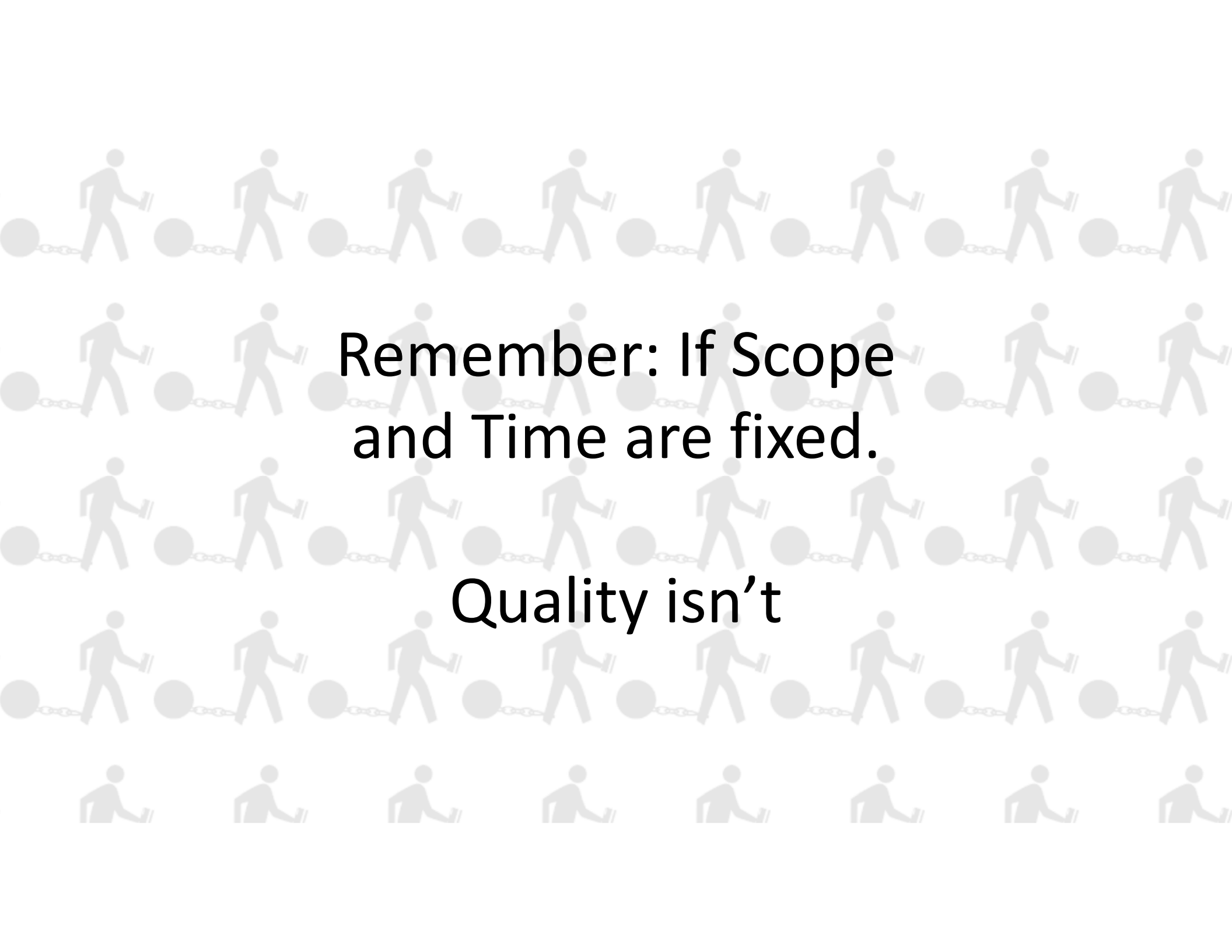
Got It.
So What Causes It?

Does This Sound Familiar?

- **Manager:** When will the new workflow be available?
- **Team:** Uh, we *hope* tomorrow, probably by the end of the day.
- **Manager:** No, we need it today. Can't you find a creative way to do it?
- **Team :** We'll have to talk about it ...
- **Manager:** We have five clients that really need this today and if they don't get it, then they will probably not sign the contract with us.
- **Team :** But the ...
- **Manager:** Please understand the business value of this. Can't you just copy/paste a similar workflow, tweak it, and we'll "fix it" later?
- **Team :** Sure boss.
- **Manager:** Great. So we should be able to deploy it this afternoon?
- **Team :** Ack!

The background of the slide features a repeating pattern of stylized, grey human figures. Each figure is depicted in a walking or carrying posture, holding a rectangular weight in its right hand. A chain is attached to the figure's left ankle, which is connected to a large, solid grey sphere. This sequence of figures and spheres creates a continuous, rhythmic pattern across the entire slide.

What would you have
told the manager?

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Remember: If Scope
and Time are fixed.

Quality isn't

Quiz: Which Is Technical Debt?

- A. A bug reported by a customer a few months after the product was released.
- B. A bug discovered by the team during regression but was determined to not be “release blocking”.
- C. A bug that occurs on a new version of a browser that was released after the product was released

Quiz: Which Is Technical Debt?

- A. Crappy (but working) code written by a single developer on the team.
- B. Crappy (but working) code inherited by the team.
- C. Crappy (but working) code generated by a tool that the team agreed to use.

Other Examples

- Deciding to forgo writing automated tests, as they normally would, for a tricky section of code
- Deciding to build on a soon-to-be-deprecated framework rather than investing in purchasing, upgrading, and learning a newer version
- Deciding to hard-code connection strings and IP addresses, rather than use a config file
- Having hundreds of customer-specific branches on the same code base

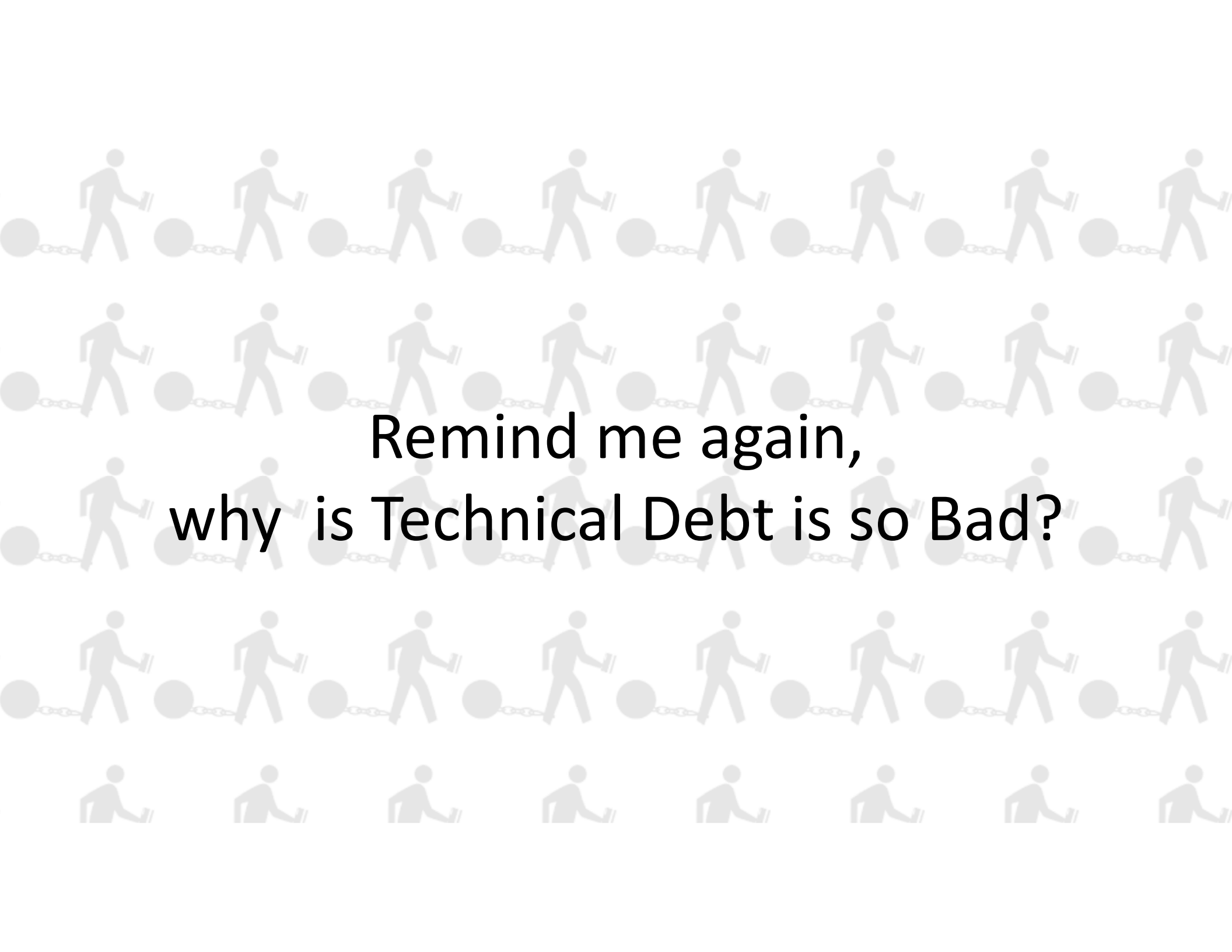
Bad Practices Yield Technical Debt

- Big Design Up Front (BDUF)
- Little/no refactoring
- Lack of automated tests
- Infrequent integration
- Lack of code review / pair programming
- Unsustainable pace

Broken Windows Theory



Hacks, shortcuts, and workarounds can infect the team, and the codebase

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Remind me again,
why is Technical Debt is so Bad?

As Technical Debit Increases ...

- The number of defects increases
- Development and support costs increase
- Product atrophy increases
- Fear and loathing increase

And These Things Drop ...

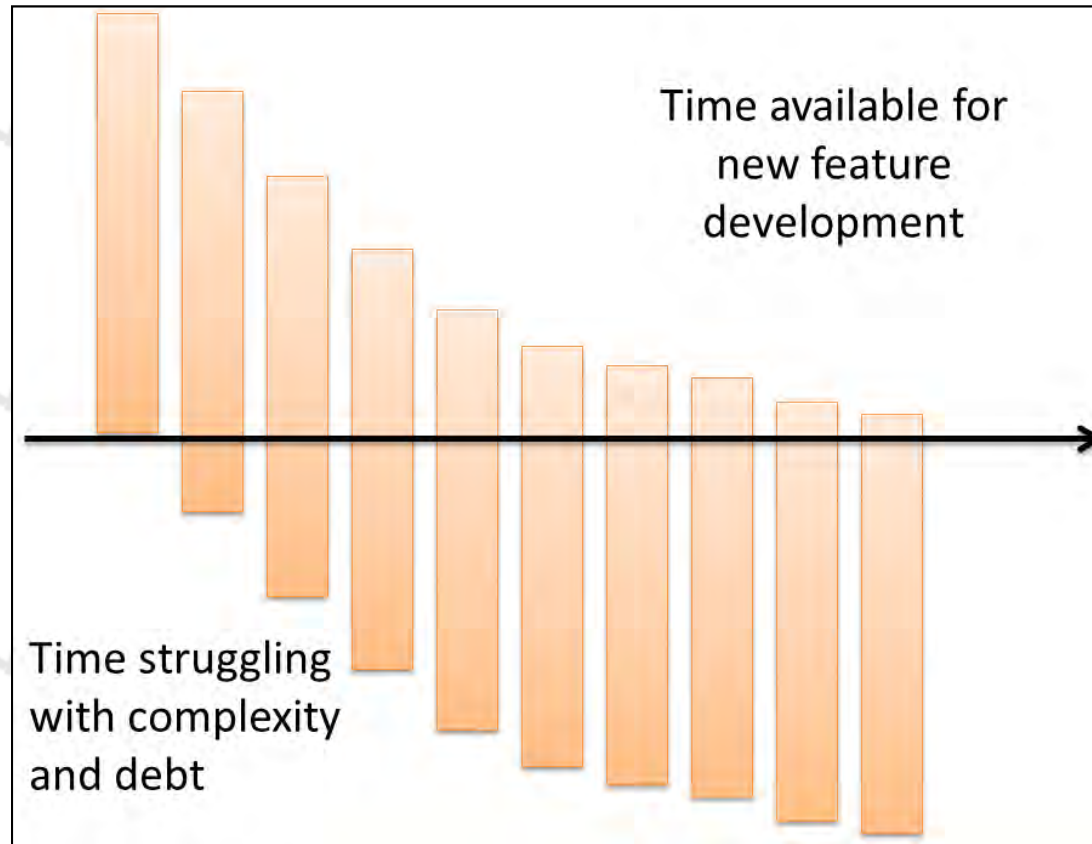
- Product performance
- Team performance
- Stakeholder satisfaction

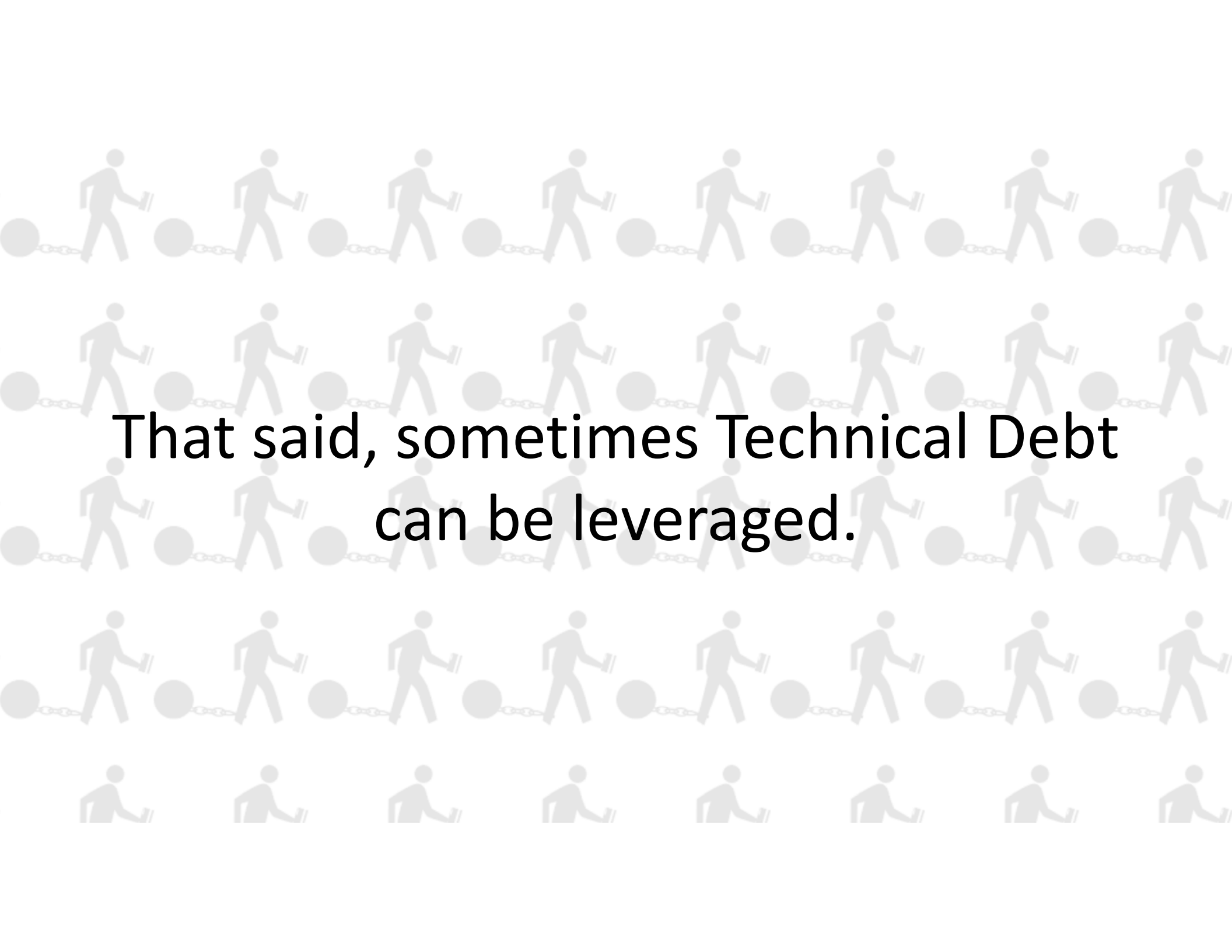
“Left unchecked, technical debt will ensure that the only work that gets done is unplanned work.”

- Gene Kim, co-author
The Phoenix Project



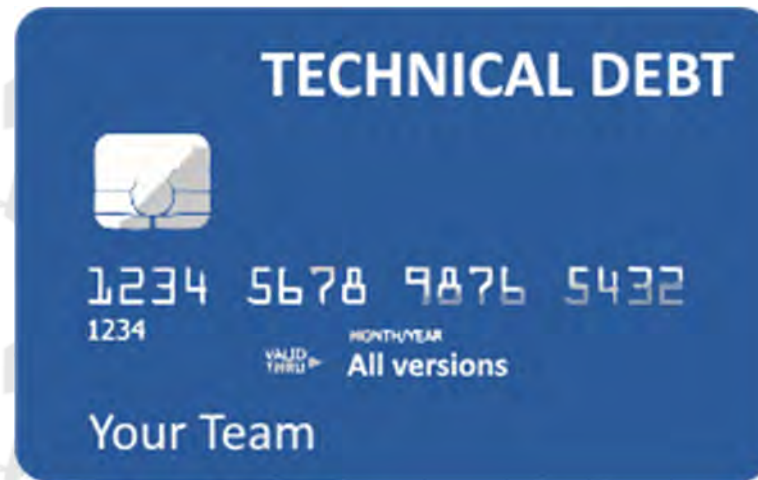
This Could Be Your Future



The background of the slide features a repeating pattern of stylized, grey human figures. Each figure is depicted in a walking posture, carrying a large, dark grey sphere on its back. The spheres are connected to the figures by thin, light grey chains. The figures are arranged in a grid-like pattern, with some appearing to be in motion, creating a sense of a heavy, shared burden.

That said, sometimes Technical Debt
can be leveraged.

Like Using a Credit Card



Sometimes a team makes decisions to ship a less-than-optimal product in order to obtain earlier feedback or a market advantage

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But Be Cautious

- Make sure you know ...
 - The interest rate
 - Your payment plan
 - The cost vs. value (Return on Debt – ROD?)

The background of the slide features a repeating pattern of stylized, grey human figures. Each figure is depicted in a walking posture, carrying a large, dark grey sphere on its back. The spheres are connected to the next figure in the sequence by a chain, suggesting a line of people struggling under a heavy burden. The figures are arranged in horizontal rows, creating a sense of a long, continuous line of labor or struggle.

What about legacy code?

How do I find its
Technical Debt?

Finding Technical Debt

Objectively	Socially
✓ Code coverage	✓ Ask the team
✓ Code analysis	
✓ Code metrics (complexity, coupling, LOC)	
✓ Code smells	
✓ Duplications	
✓ Duplications	

SonarQube

- A platform and tools to continuously analyze and measure code quality
 - Open source
 - Pay for support
 - Pay for some plugins
 - Active community: support, plugins, books

sonarqube

<https://bit.ly/SonarCloud>

As You Find it, Make it Visual

In the backlog

Title	Business Value	Effort	Tags
Customer can see upcoming appointments	8	5	
Export vendors to PDF	13	8	
Customer can opt-in/opt-out of paper billing	5	5	
Service rep can view service ticket details from the dashboard	5	5	
Update MVC framework		5	Technical Debt
Technician can report busy/late on Windows Phone	8	5	
Technician can look for closest hardware store from Windows Phone	13	2	
customer branches back into main		13	Technical Debt
connection strings in config.file		3	Technical Debt
the nearest Fabrikam Fiber location	8	5	



On the story map

The background of the slide features a repeating pattern of stylized grey icons. Each icon depicts a person walking to the right, carrying a large, heavy sphere on their back. The person is bent over slightly under the weight, and a chain is visible connecting the sphere to their waist. This pattern is repeated across the entire width and height of the slide, creating a visual metaphor for the burden of debt.

How Do I Get Out of Debt?

**A better question: How
do you eat an elephant?**

Have a Definition of “Done”

- Closest thing to a “silver bullet”
- Agree on it
- Write it down
- Obey it
- Review and discuss it regularly

Sample Definition of “Done”

- ✓ Code has been reviewed
- ✓ No static analysis errors
- ✓ All tests pass
- ✓ Test coverage doesn't decline
- ✓ All acceptance criteria met
- ✓ Product Owner likes the work

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There is no Done-Done

There is only “Done”.

No partial credit (points) for partially-done work. Partial credit usually means Technical Debt.

The background of the slide features a repeating pattern of stylized, grey human figures. Each figure is depicted in a walking pose, carrying a rectangular block in its right hand. The figures are arranged in horizontal rows, with some appearing to be connected by thin chains or lines, suggesting a process flow or a team working together. The overall aesthetic is clean and modern, with a focus on the concept of teamwork and workflow.

Have a Cross-Functional Team

Make sure the team has all of the skillsets
required to deliver the “Done” work
exist on the team.

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Automate Tests

Lack of high-quality automated test leads
to a breeding ground for technical debt.

Unit | Acceptance | Regression

The background of the slide features a repeating pattern of stylized, light gray figures. Each figure is depicted in a walking pose, carrying a rectangular block in its right hand. The figures are arranged in a grid-like fashion, with some appearing to be connected by thin chains or lines, suggesting a continuous flow or process. This pattern serves as a subtle visual metaphor for the concept of continuous integration.

Continuous Integration

Check-in/commit/merge your code often,
building, and running automated tests.

Prefer not to work in branches.

The background of the slide features a repeating pattern of stylized grey icons. Each icon depicts a person walking to the right, carrying a briefcase in their right hand. They are also wearing a large, dark grey spherical weight on their back, which is connected to a chain that extends behind them. This visual metaphor represents the burden of debt or pressure.

Keep the Pressure Off

Work at a comfortable, sustainable pace.

Be positive. Manage debt informally.

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Collaborate on Design

Prefer in-person whiteboard sessions on design topics to leverage the collective experience of the team.

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Design For Testability

Testability == Maintainability

Practice Test-Driven Development

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Have an Agile Architecture

Simple and emergent, delivering in vertical (thin) slices, and refactoring to patterns as needed.

Mitigate technical risks early.

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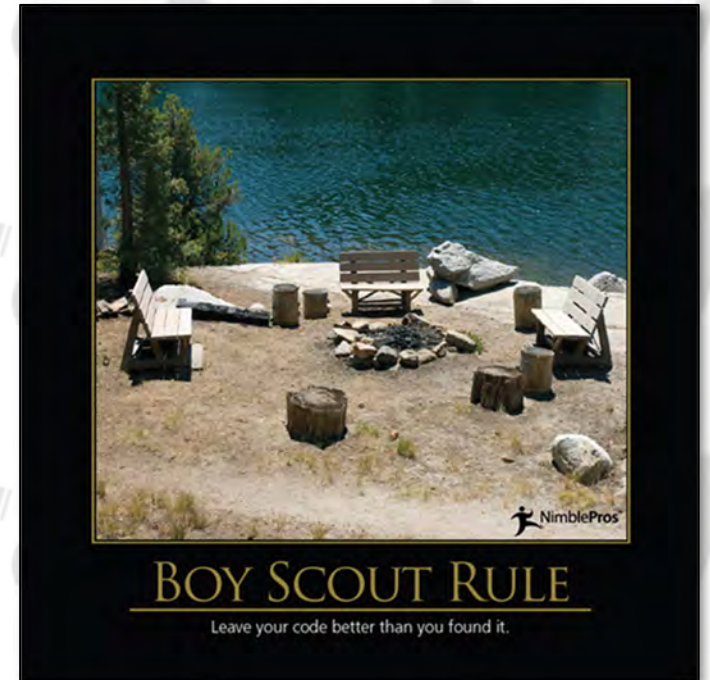
Finish One Thing First

Design the work so that multiple people can “swarm”. Complete the first thing and then move on to the next thing.

Working as a team means working as a team.

The Boy Scout Rule

- Leave your code better than you found it.
 - Prior to every commit
 - Small refactorings in legacy code
 - Write additional tests
 - Update an outdated comment
 - Improve a variable name





**DONE IS
BETTER
THAN
PERFECT**

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Done ("thank you") ;

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 @rhundhausen

 <https://github.com/rhundhausen>