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Host of the How To Code Well channel

youtube.com/howtocodewell

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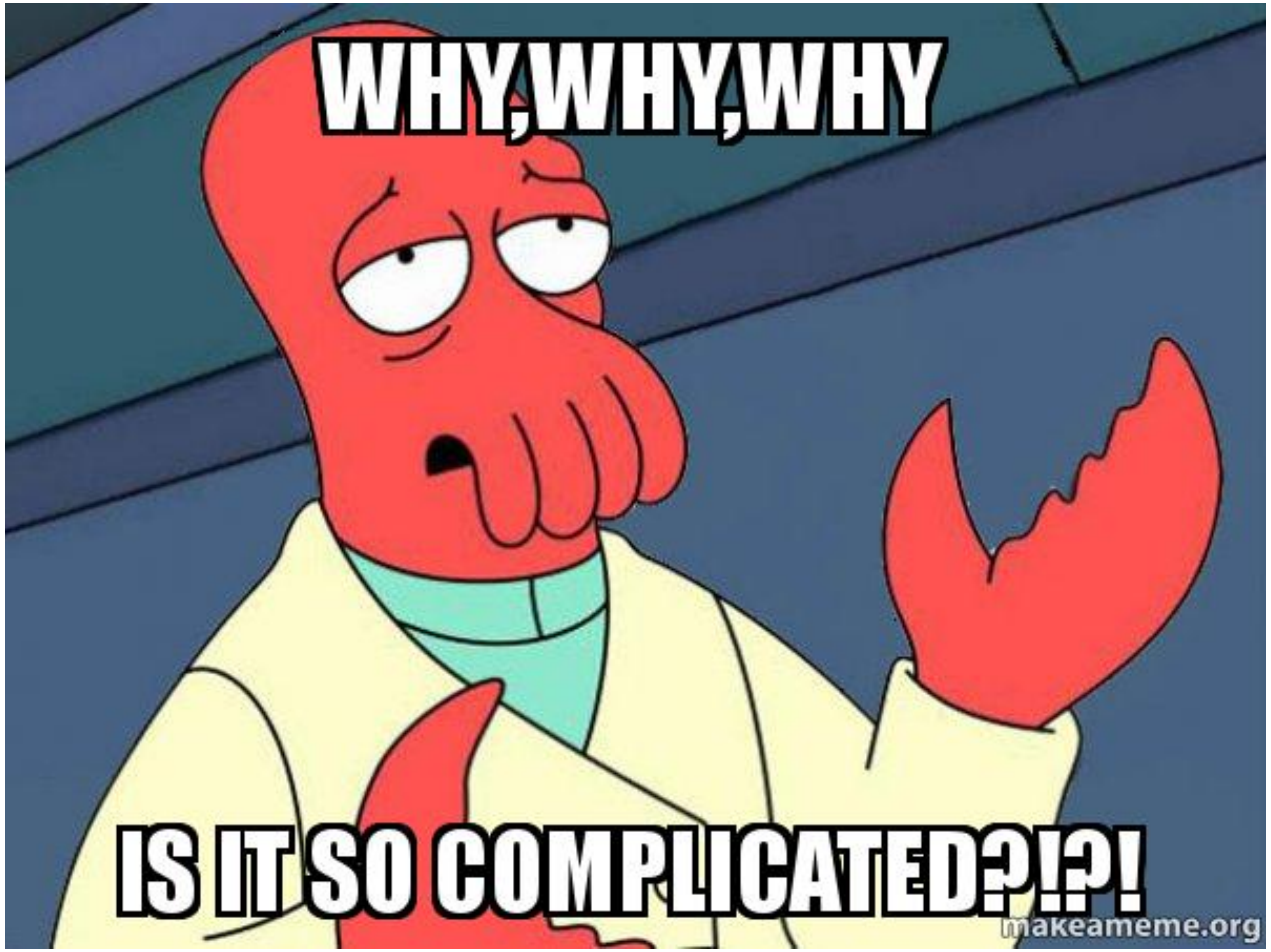
From Manning Publications

40% off code dockphpsc

HOW TO CODE WELL

@pfwd

Software Complexities



Ask who/what is to blame

Try and answer why

The key to simplicity

Who/what is to blame

The Developer

The Technology

The Client

The End User

Who/what is to blame

The Developer

The Technology

The Client

The End User

BLAME ALL THE THINGS

Why is software development complex?

Software is invisible

Software cannot be visualised

Software is constantly changing

Why is complexity so bad?

Complexity leads to

Communication issues

Product flaws, cost and delays

Complexity leads to

Difficulty enumerating

Less understanding of the possible states

Complexity leads to

Ugly code

Hard to integrate, maintain and extend

Complexity leads to

The unknown

Security breaches, re writes and over abstraction

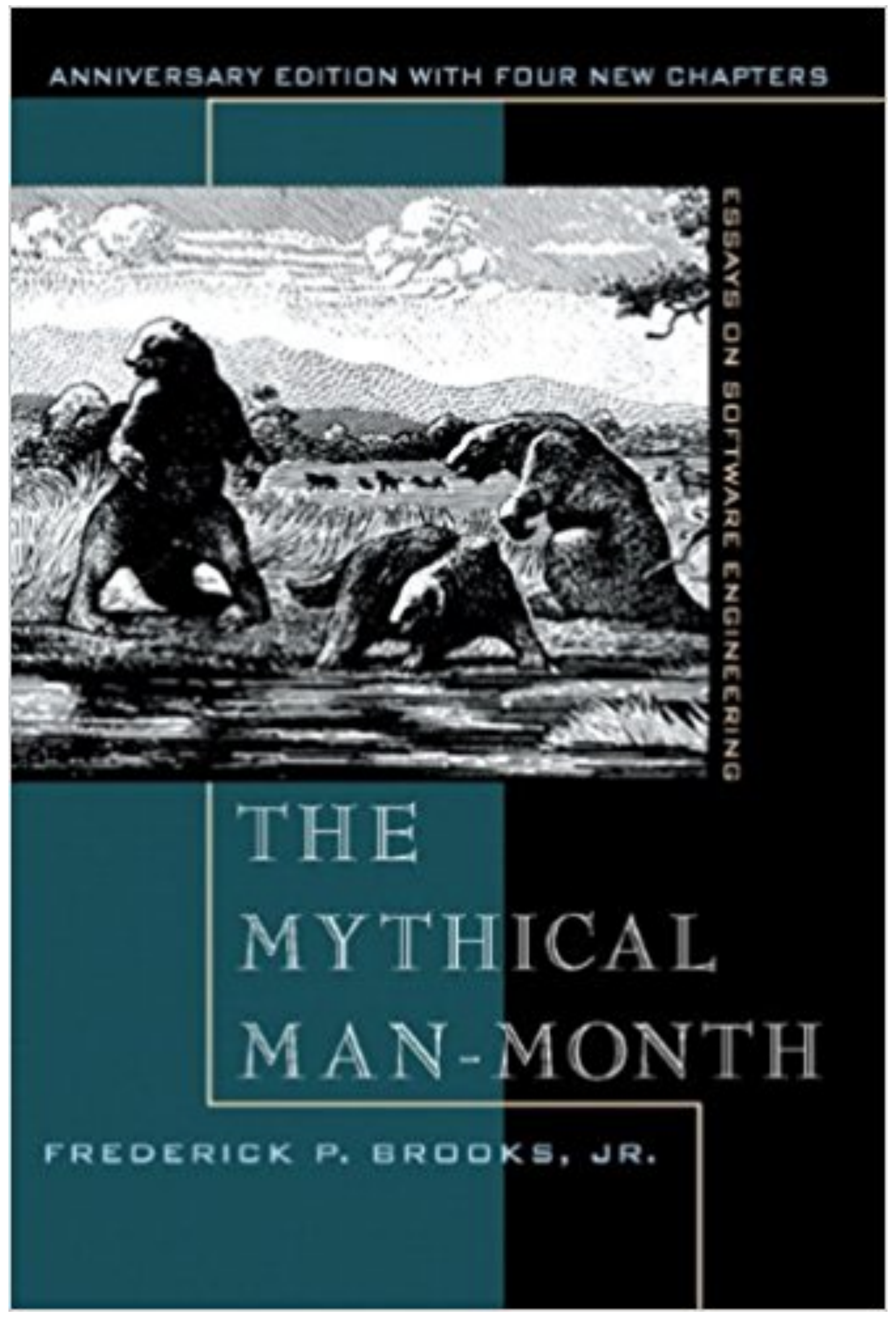
Complexity leads to

Fickle business decisions

Loss of data integrity, high barrier of entry and increased personnel turnover

Complexity is the **most common difficulty** but **not all** complexity **is inevitable**

The Mythical Man-Month
No Silver Bullet
Frederick P Brooks Jr

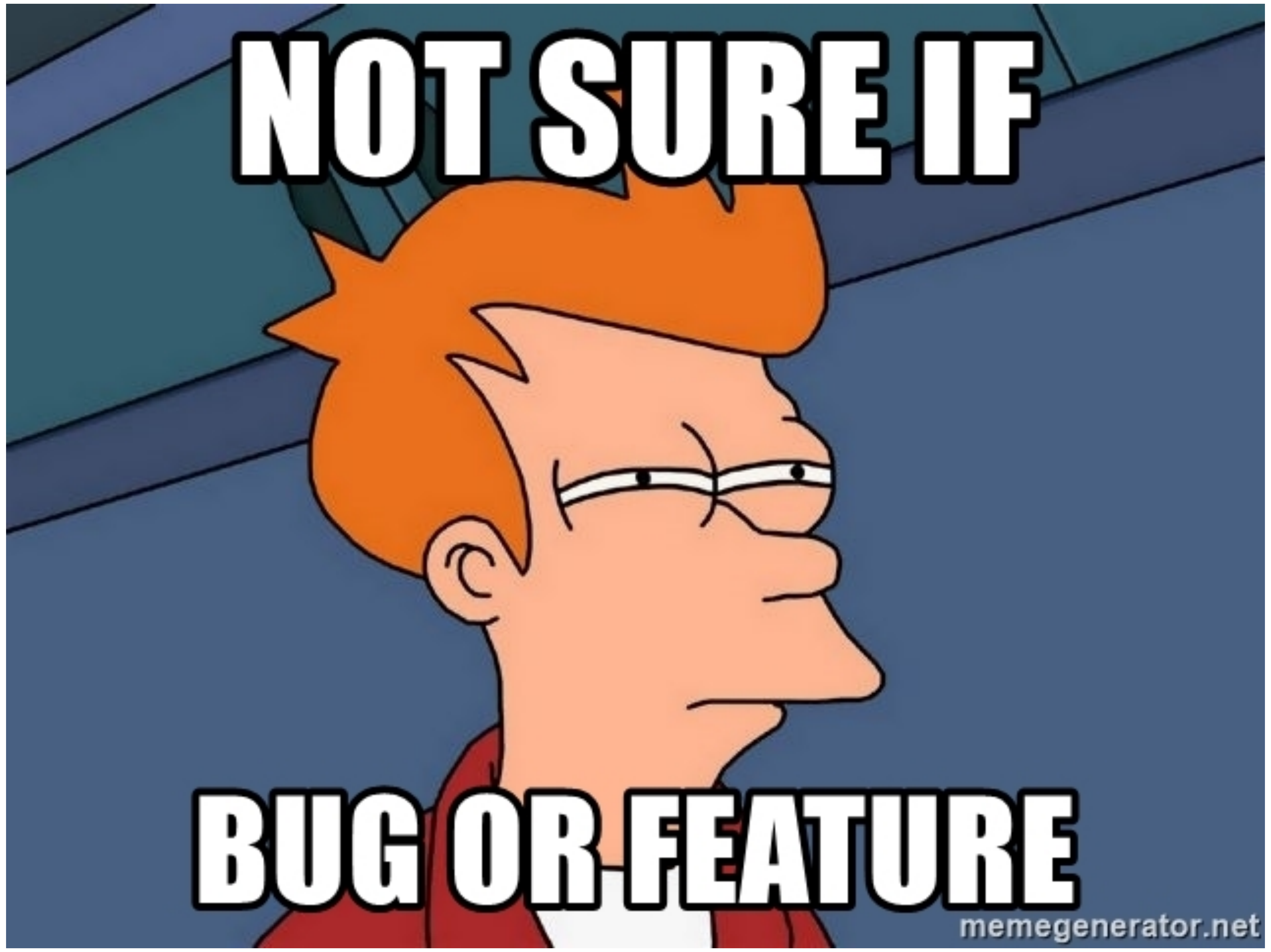

ANNIVERSARY EDITION WITH FOUR NEW CHAPTERS
ESSAYS ON SOFTWARE ENGINEERING
THE MYTHICAL MAN-MONTH
FREDERICK P. BROOKS, JR.

Essential complexity

Vs

Accidental complexity

Essential complexity



Nice to haves are **only nice** if they **enhance** the **core functionality**

Write down your essential features

Include a **justification** for each essential feature

Will 80% of the system function without the essential feature?
- If so then it isn't essential!

Every time a feature is added the **level of complexity is increased across the entire development life cycle** of the project

Features require

- Testing (code level, UAT, Load, Integration etc..)
- Documentation
- Training
- Designing
- Development
- Maintenance

Have a **meeting every time** a **essential feature** is **added**

Celebrate every time a essential feature is removed

Menu A has 100 options

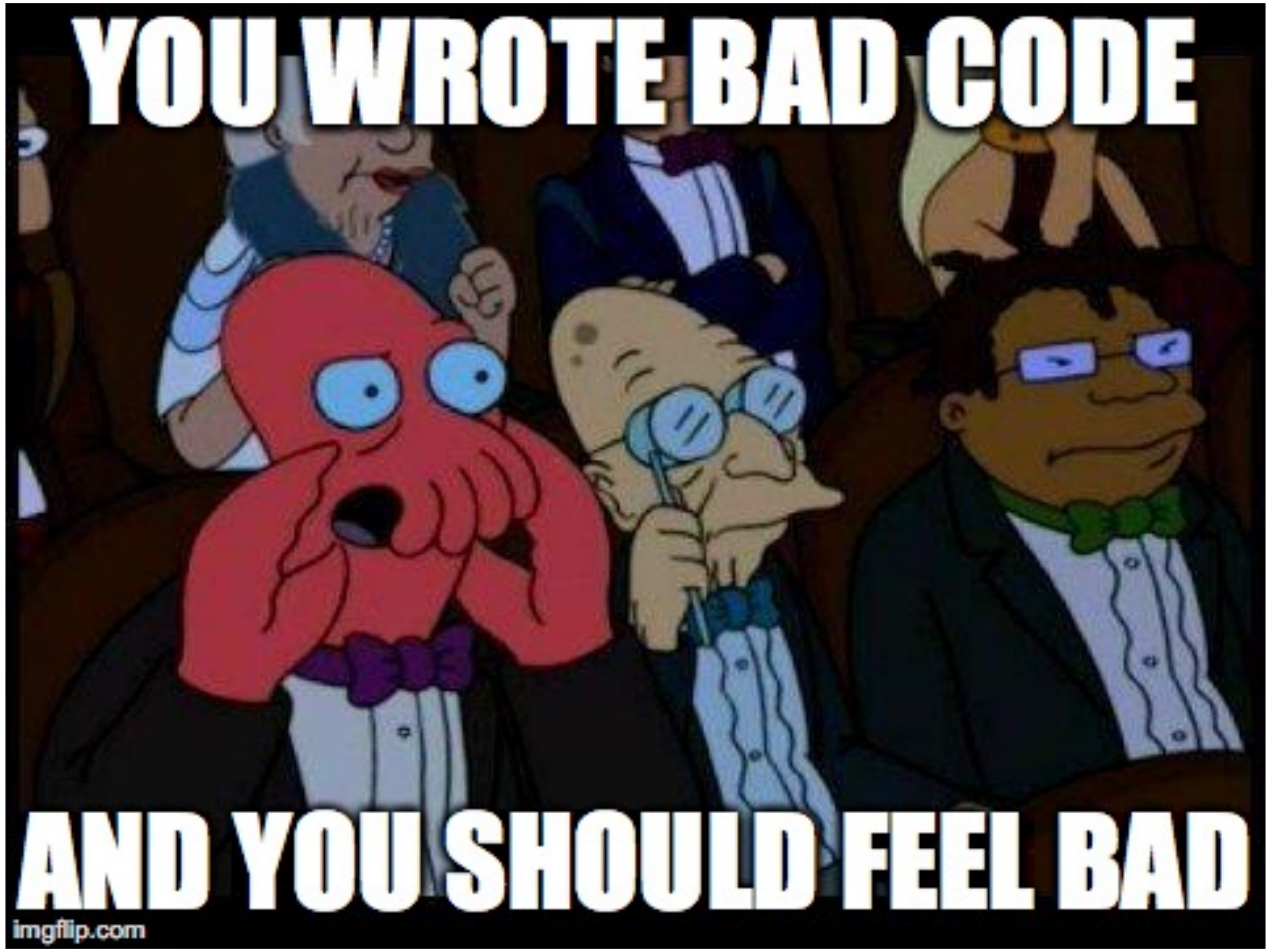
Menu B has 15 options

Which one is more complicated to the customer, waiter and chef?

How many **essential features** do you think Twitter has?

If you are starting a project from scratch then **<u>ONLY</u> the essential features should be included in the first release**

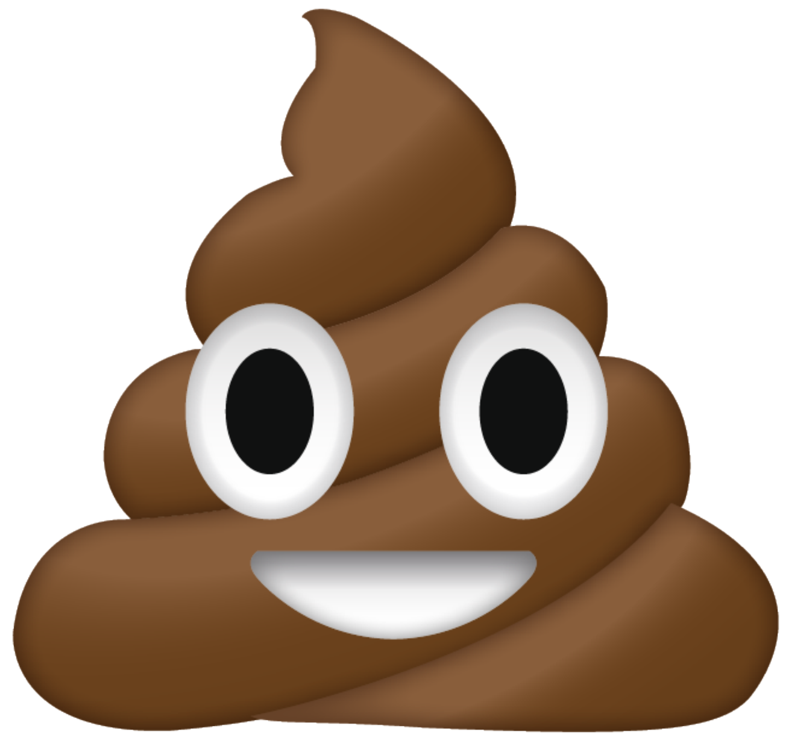
Accidental complexity



New Project

Box fresh shiny toy
- Magpie like

Legacy Project

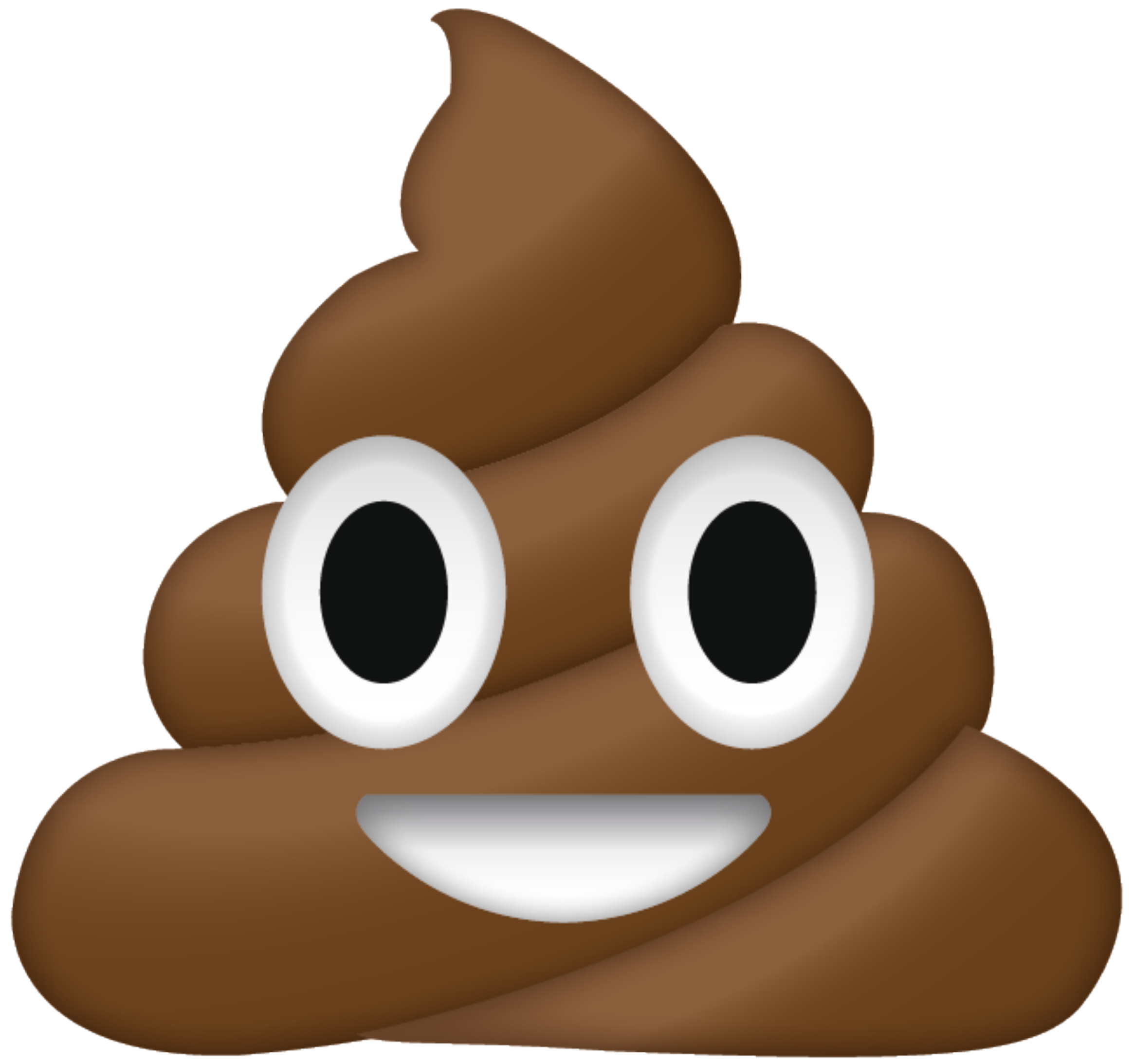


Steaming pile of
source code

New Project

- **You** make **ALL** the **accidents**
- High risk of over generalising the requirements
- **K**eep **I**t **S**imple **S**tupid

Legacy Project



- If you can, try to **Decouple**, **Downsize** and **Defuse** the complexity from the wider system

- “If it isn’t broke don’t fix it”
  This doesn’t make sense in software development

A + T = S

Accident + Time = Steaming Pile Of Source Code

+

=

The keys to simplicity

Software Complexities

“**Software entities** are more complex for their size than perhaps any other human construct, because **no two parts are alike**”

Brooks, F., 1995. *The Mythical Man-Month: Essays on Software Engineering*. 2nd ed. University of North Carolina at Chapel Hill: Addison-Wesley.

Software Complexities

Don’t **R**epeat **Y**ourself

Don’t **O**ver **A**bstract

Don’t **O**ver **G**eneralise

Code that **glues two systems** together is often **easier to write** and **maintain** compared to writing a **monolith from scratch**

Buy versus build

Software Complexities

Software should be **grown** not **built**

"We still make syntax errors, to be sure; but they are fuzz compared to the **conceptual errors** in most systems. If this is true, building software **will always be hard**. There is inherently **no silver bullet**."

Brooks, F., 1995. *The Mythical Man-Month: Essays on Software Engineering*. 2nd ed. University of North Carolina at Chapel Hill: Addison-Wesley.

Getting **simplicity** right **is complicated**

Software Complexities

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Thank you. 🙏 give feedback
https://joind.in/talk/4503f

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