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Leggett & Platt

QUEST ANALYTICS

MOONSHOT INNOVATIONS

# Your Assumptions are Wrong and Your Software is Bad

Better Requirements Come from Better Questions

Bill Parrott
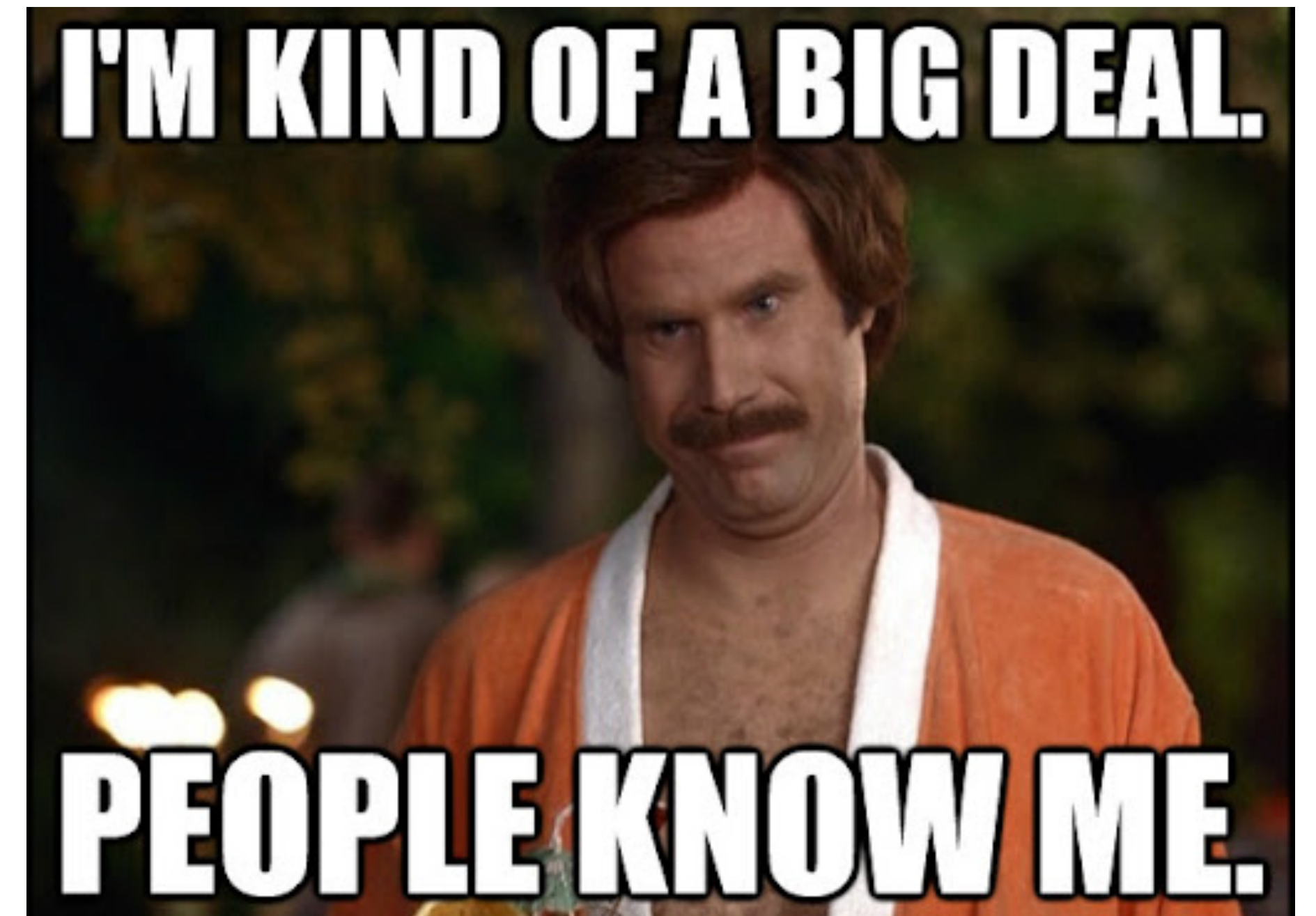
Who am I?

i.e. "What makes me an expert?"

- Senior Frontend Engineer at Mythical Games

- 20+ years building web stuff

- Husband and father of two

- Multiple LinkedIn endorsements for Meme Fu

Who am I?

i.e. "What makes me an expert?"

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- But…

I'M KIND OF A BIG DEAL. PEOPLE KNOW ME.
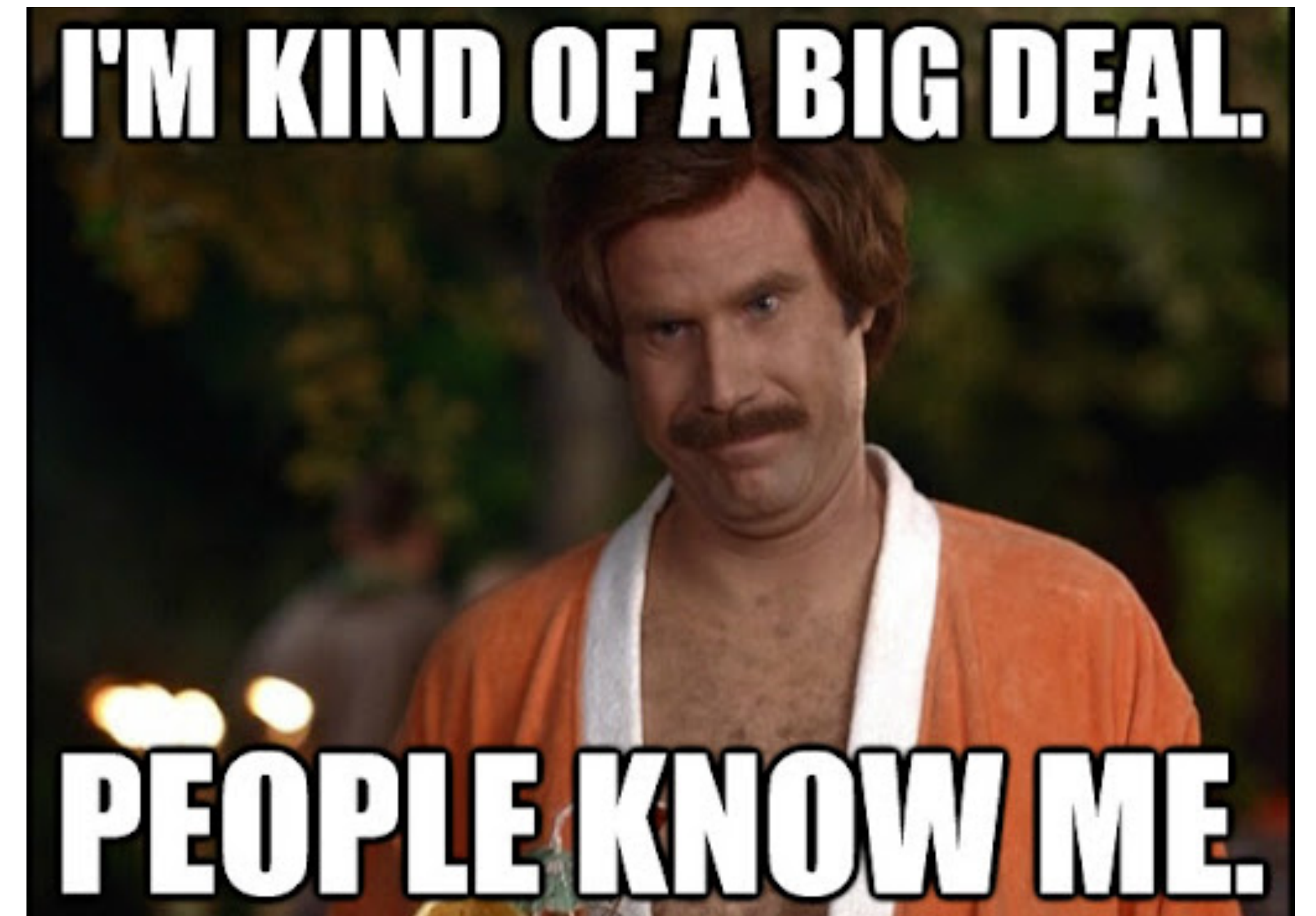
Who am I?
i.e. "What makes me an expert?"

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- But…

- I'm not actually an expert
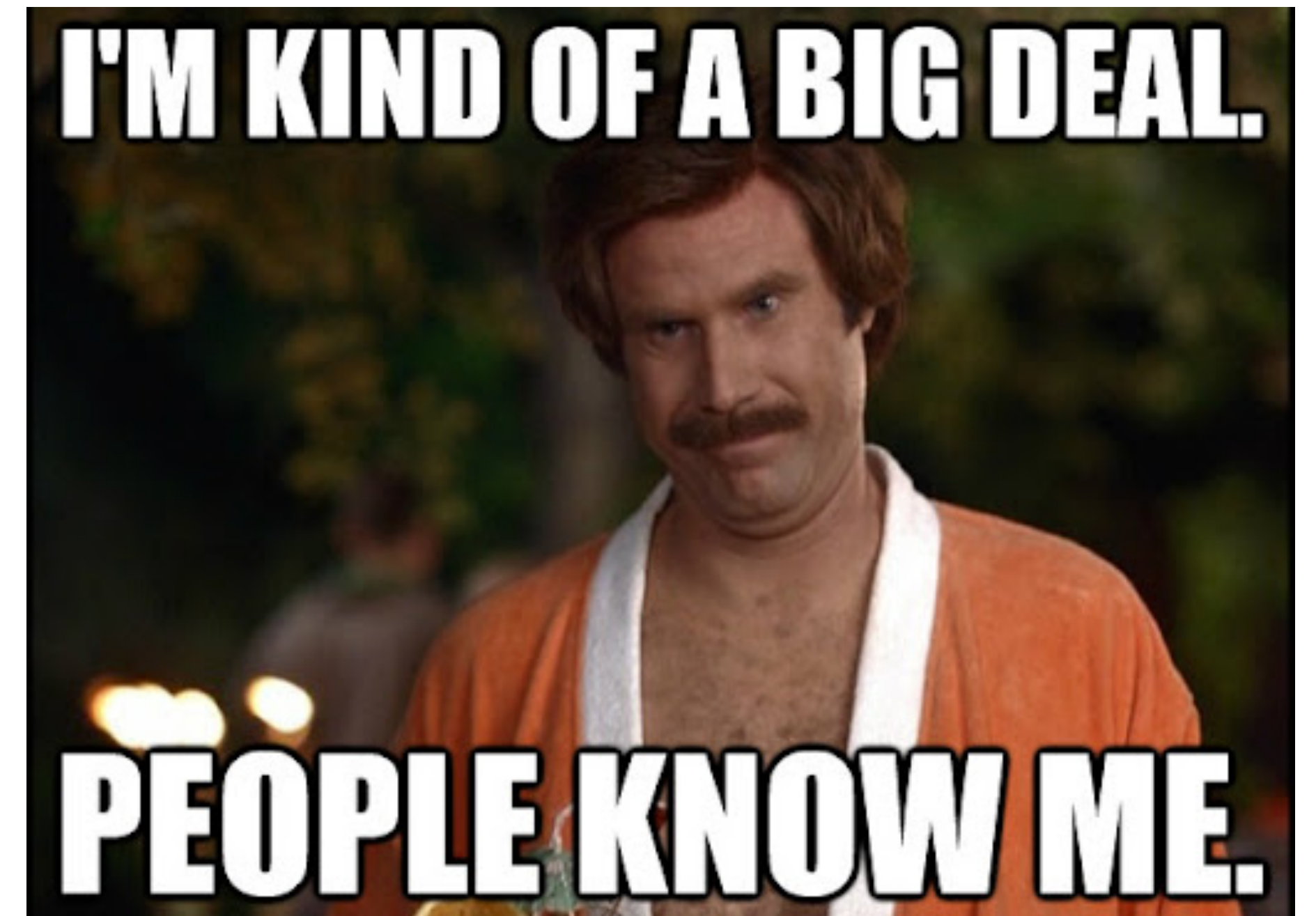
Why we fail

My first big project
And my first big failure

- Scheduling and attendance tracking for tutor groups run by the Tutoring Services department at KU

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- Weeks of research and gathering requirements

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- Weeks of research and gathering requirements

- Months of development

- Everything was implemented as discussed and as requested

- Didn't actually solve their problem (traded one set of problems for another)

- Completely unusable

The tire swing

How the customer explained it

How the project leader understood it

How the analyst designed it

How the programmer wrote it
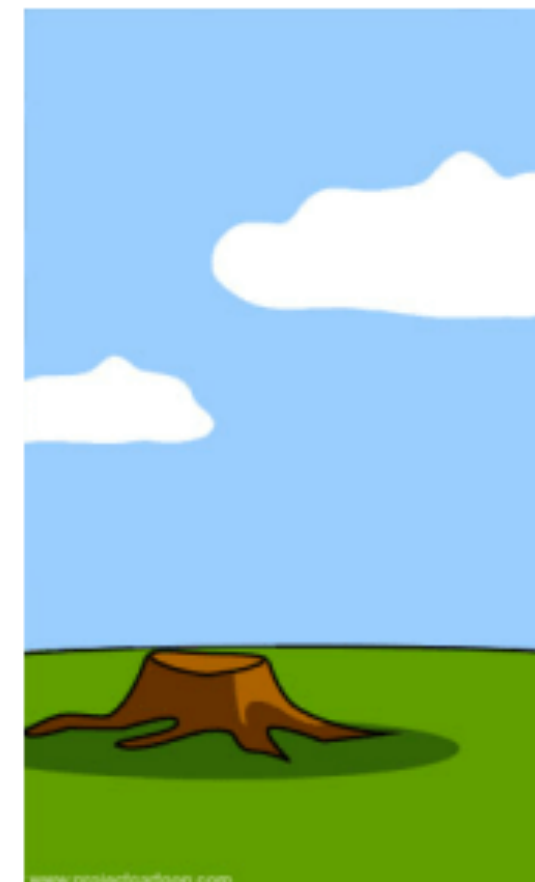
How the business consultant described it
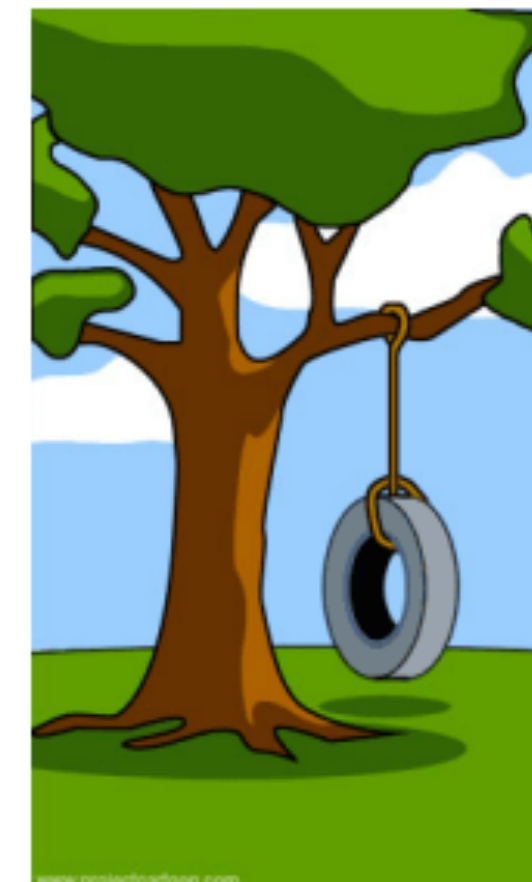
How the project was documented

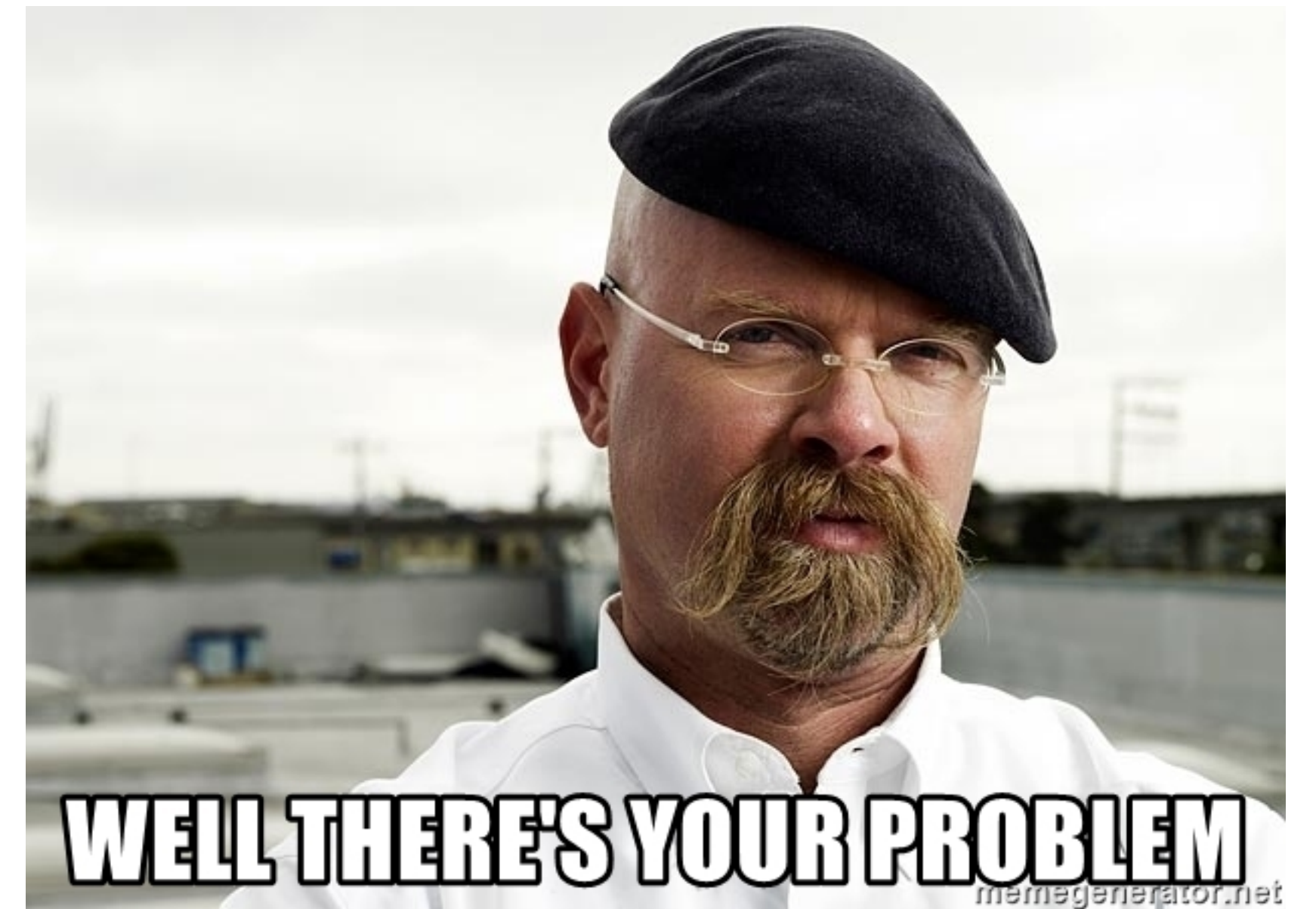What operations installed

How the customer was billed

How it was supported

What the customer really needed

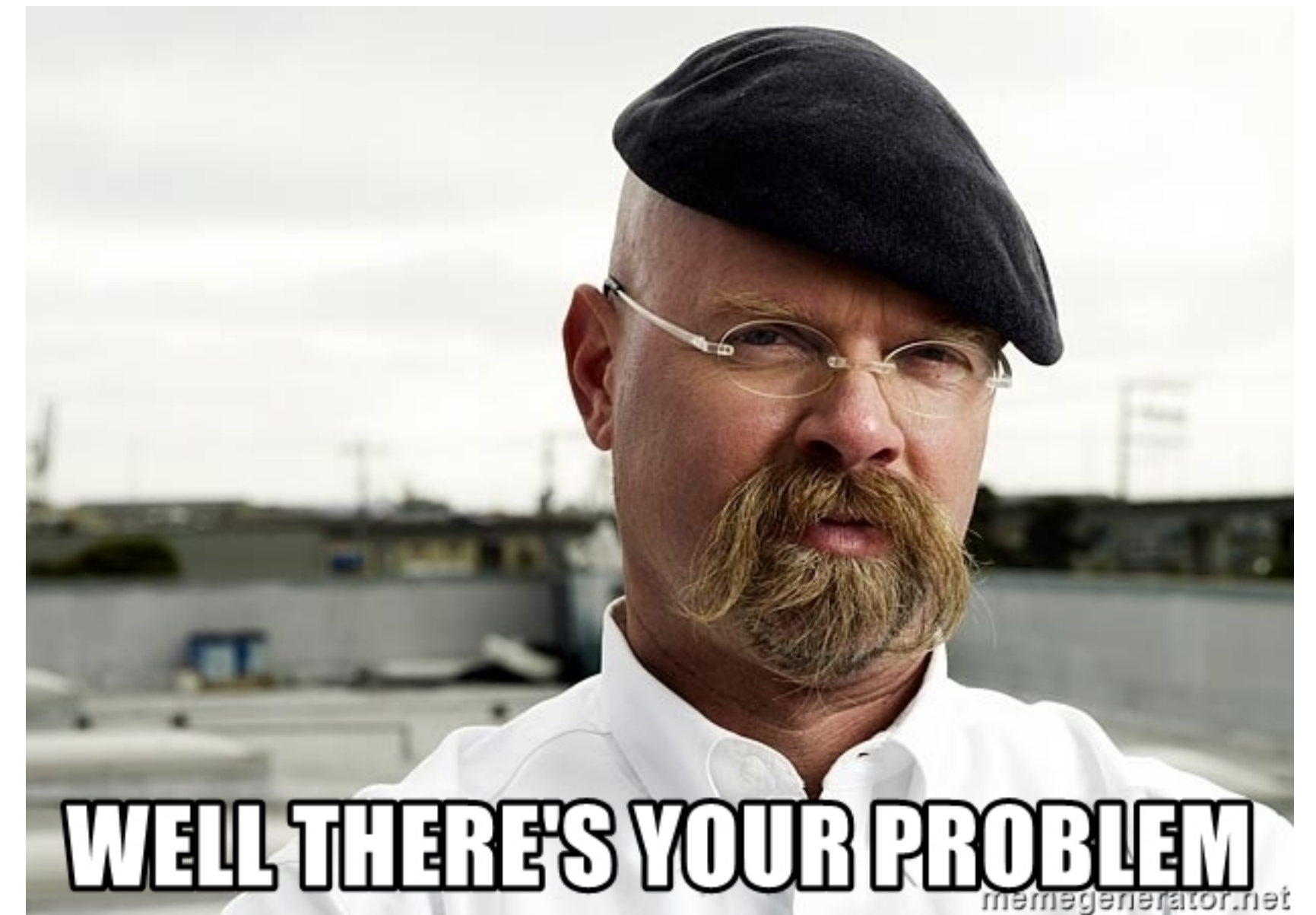# Reasons we fail

WELL THERE'S YOUR PROBLEM
memegenerator.net

Reasons we fail

- "The telephone game"

WELL THERE'S YOUR PROBLEM
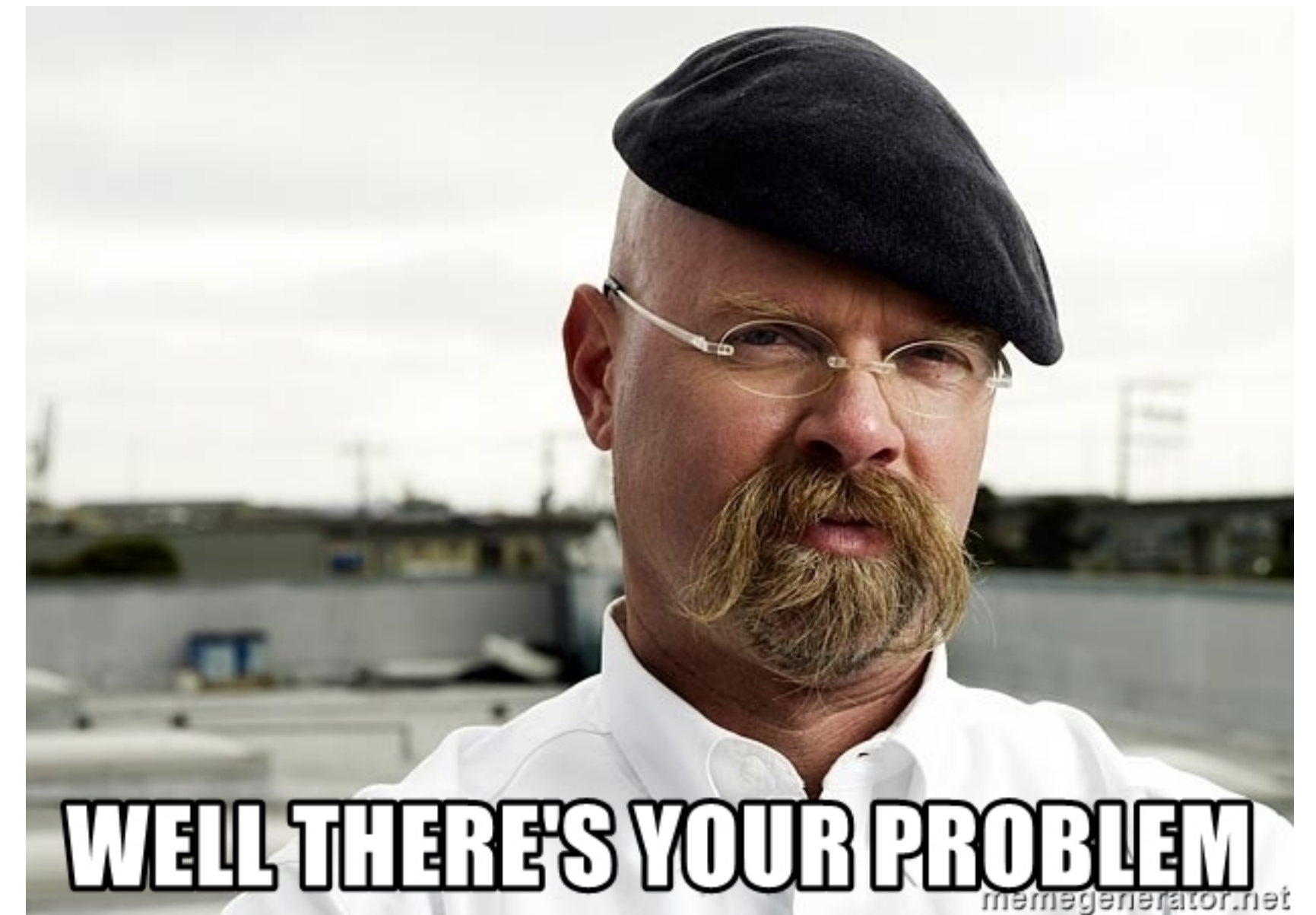memegenerator.net
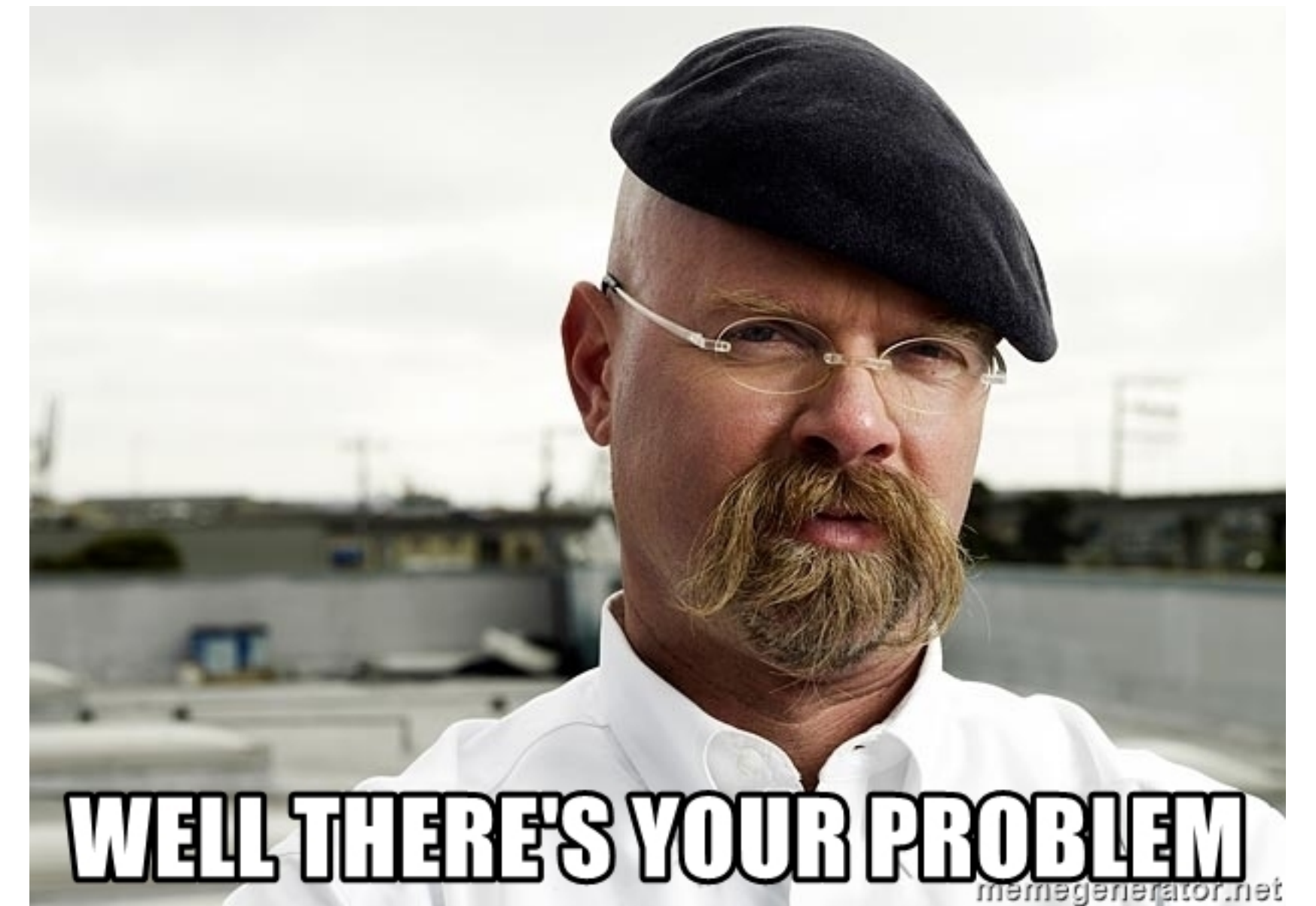
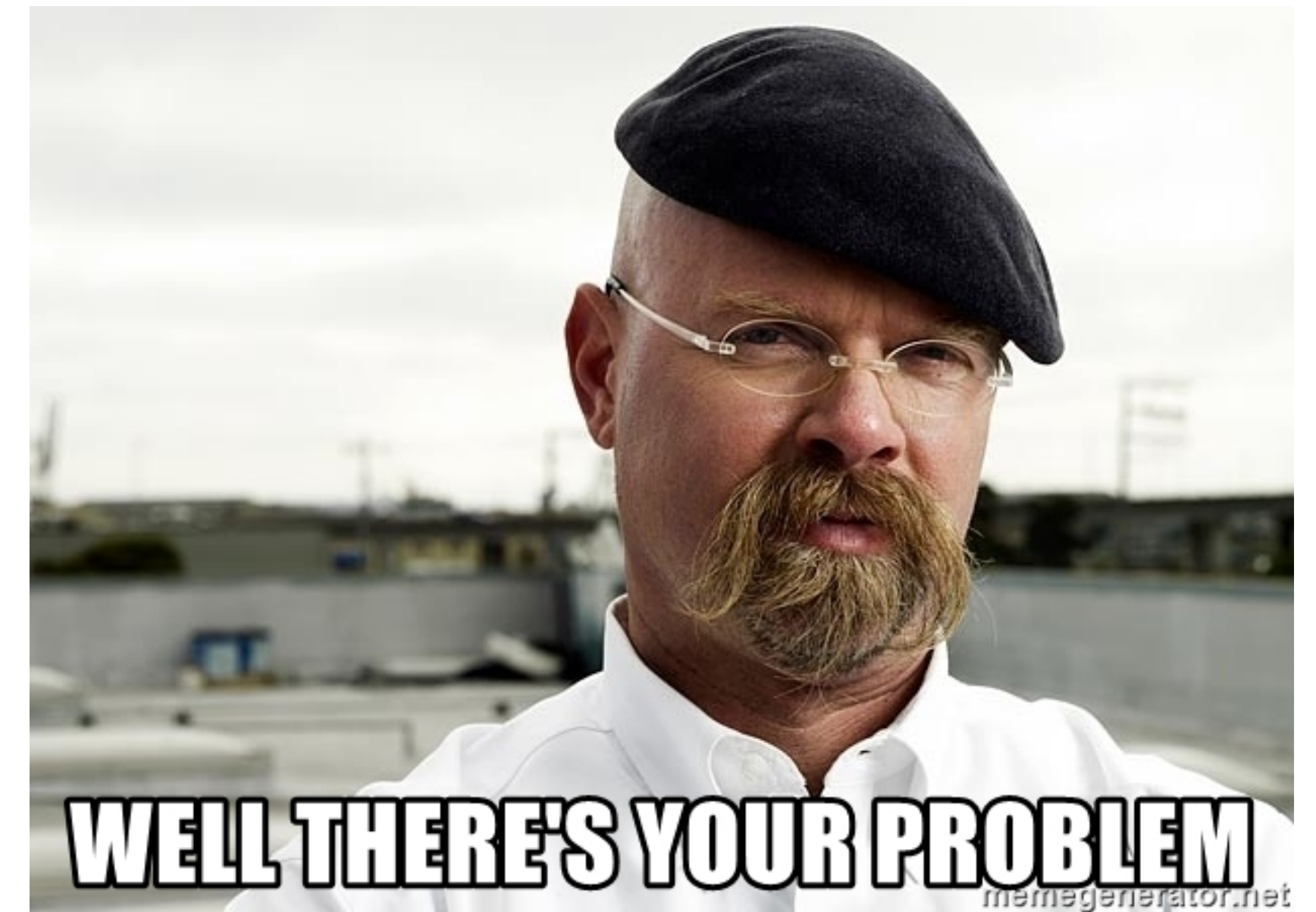# Reasons we fail

- "The telephone game"

- Good vs poor communicators

Reasons we fail

- "The telephone game"

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- Not following up

WELL THERE'S YOUR PROBLEM

Reasons we fail

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Reasons we fail

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- Asking the wrong questions

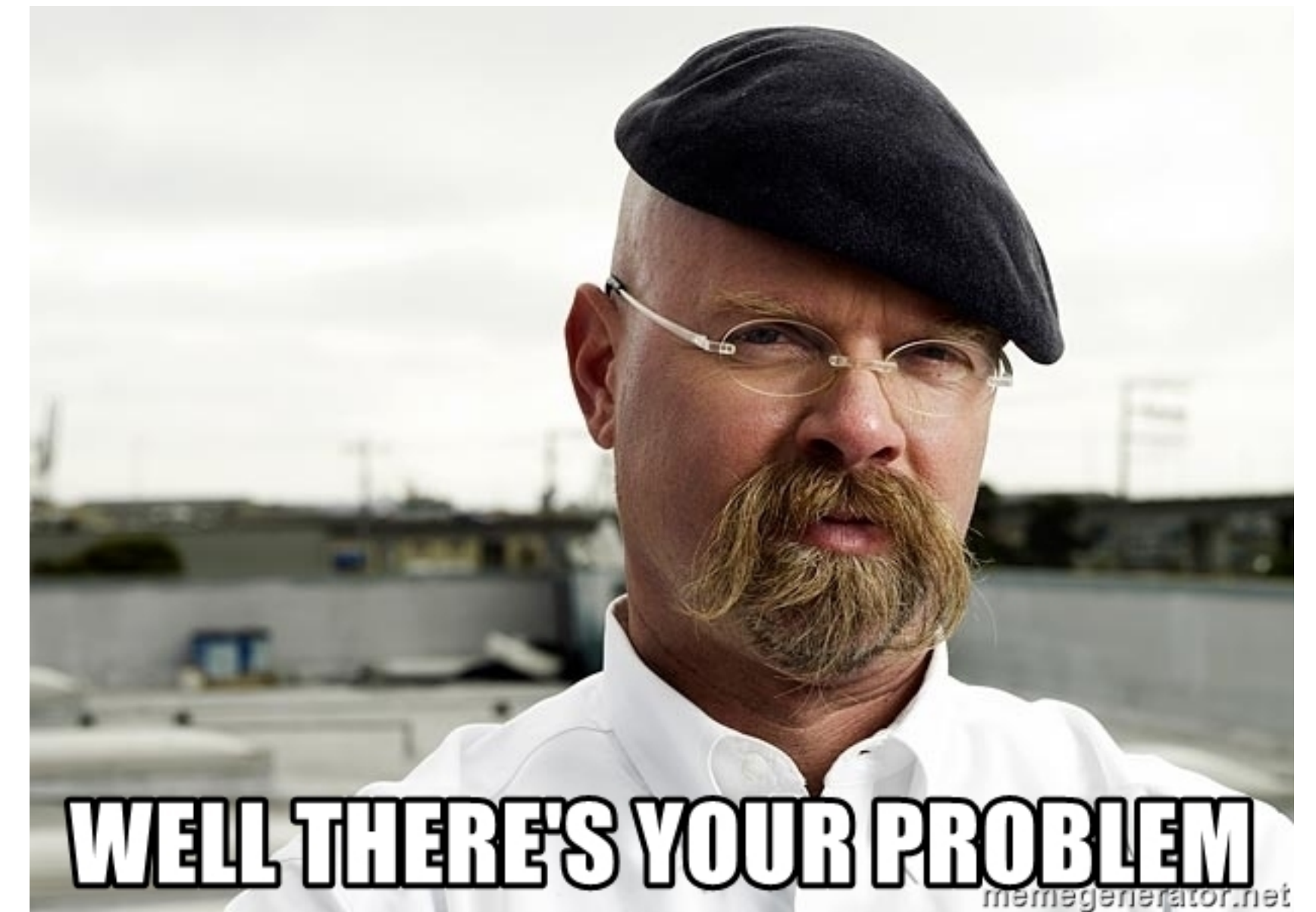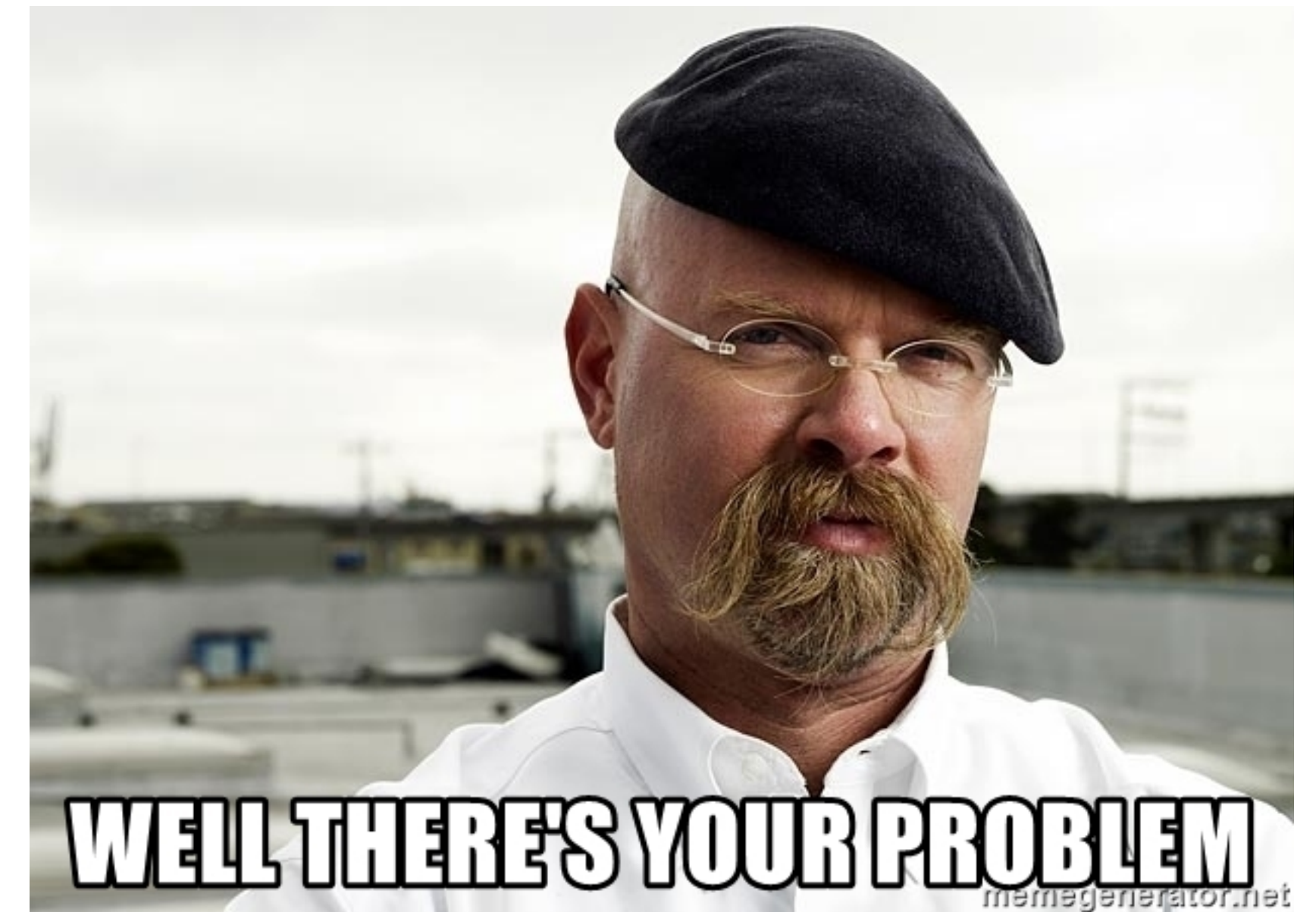WELL THERE'S YOUR PROBLEM

memegenerator.net

Reasons we fail

- "The telephone game"

- Good vs poor communicators

- Not following up

- Companies and processes continually evolve; nothing is static

- Asking the wrong questions

- Making bad assumptions, including unconscious ones

When the good idea is a bad idea

" **"What's a good idea?" is a good question, but only when you're about 80 percent of the way through your thinking!** "

Getting Things Done: The Art of Stress-Free Productivity, David Allen

The stages of planning

Taking a page from David Allen's book

The "natural planning model"

GTD Version   My Version

1. Defining purpose and principles

2. Outcome visioning

3. Brainstorming

4. Organizing

5. Identifying next actions

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5. Implementation

Improving your communication

Asking the right questions of the right people

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- Not every question is a good one.

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  - …

Asking the right questions

Early in the planning process

Bad

Asking the right questions
Early in the planning process

Bad

- What features do we want in our app?
  - See also: What is our acceptance criteria?

Asking the right questions

Early in the planning process

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- What features do we want in our app?

    - See also: What is our acceptance criteria?

- What technology should we use?

Asking the right questions
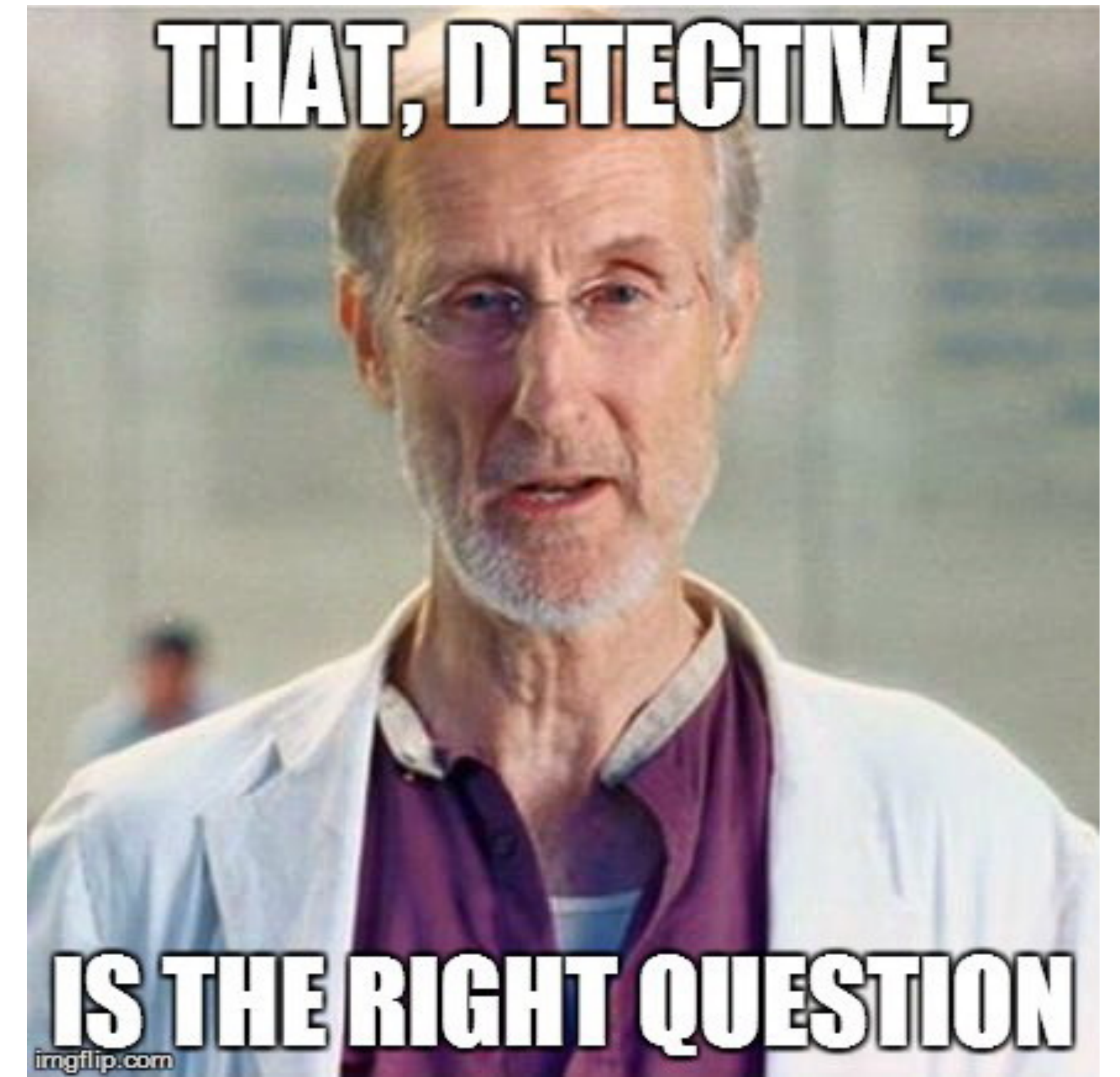
Early in the planning process

Bad

- What features do we want in our app?
  - See also: What is our acceptance criteria?

- What technology should we use?

- If we could have the "Rolls-Royce" of apps, what would it do?
(Yes, I actually asked this question)

Asking the right questions

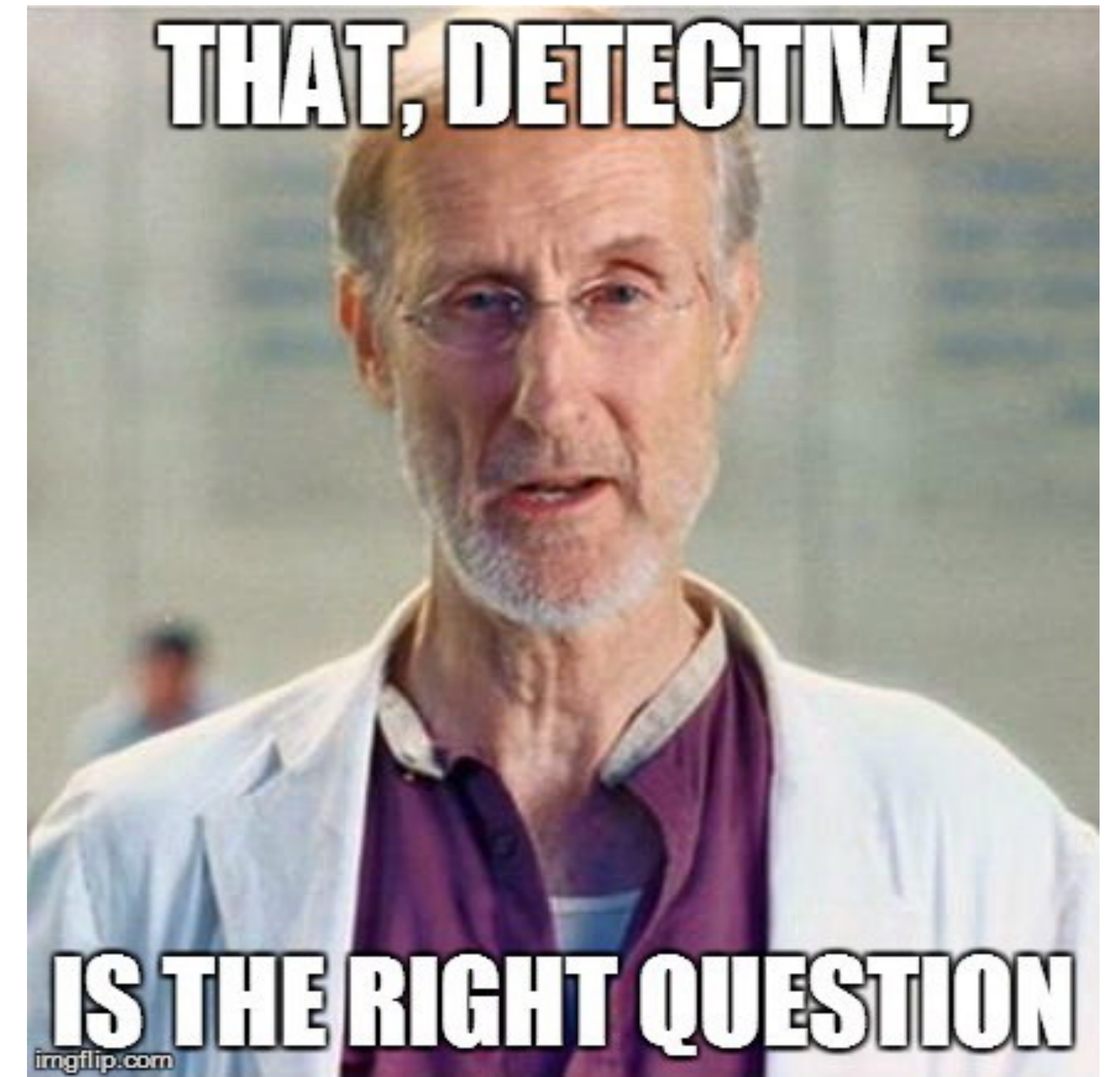## Early in the planning process

Good

Asking the right questions
Early in the planning process

Good

- What problem are we trying to solve?

Asking the right questions

Early in the planning process

Good

- What problem are we trying to solve?

- What business process(es) does this relate to?

Asking the right questions

Early in the planning process

Good

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- What alternatives/fallbacks are we using today, and in what ways are they insufficient for our needs?
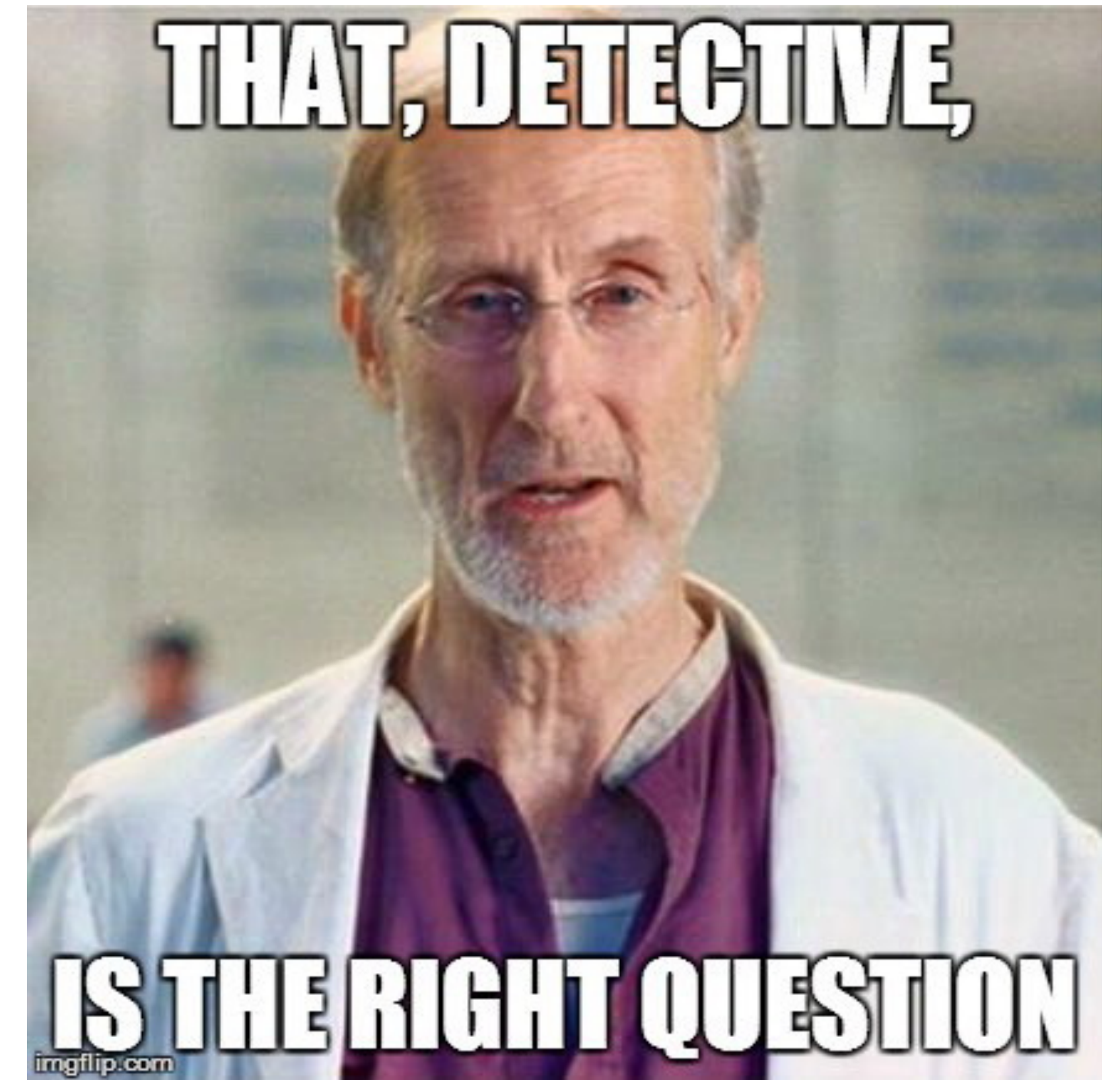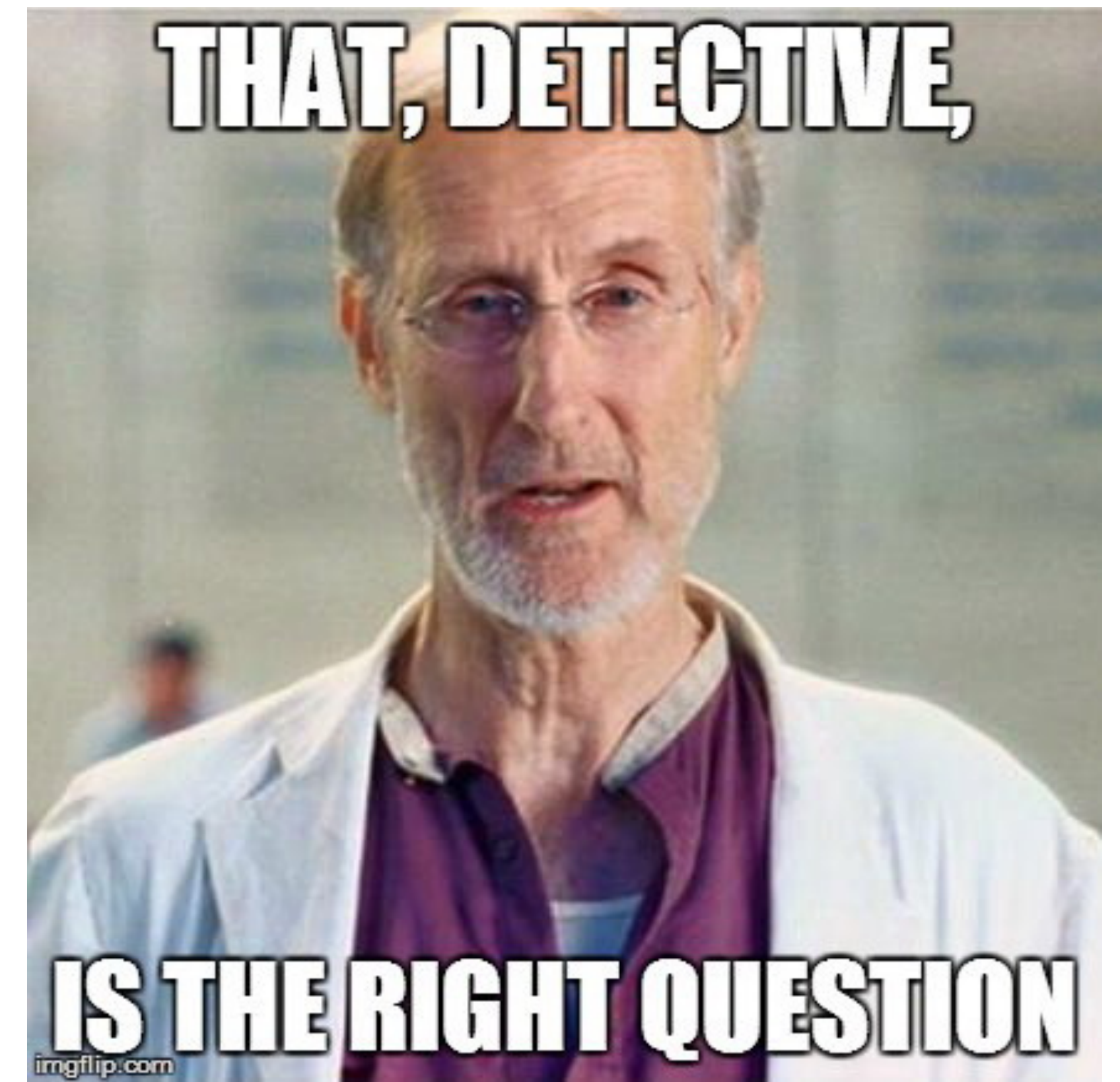
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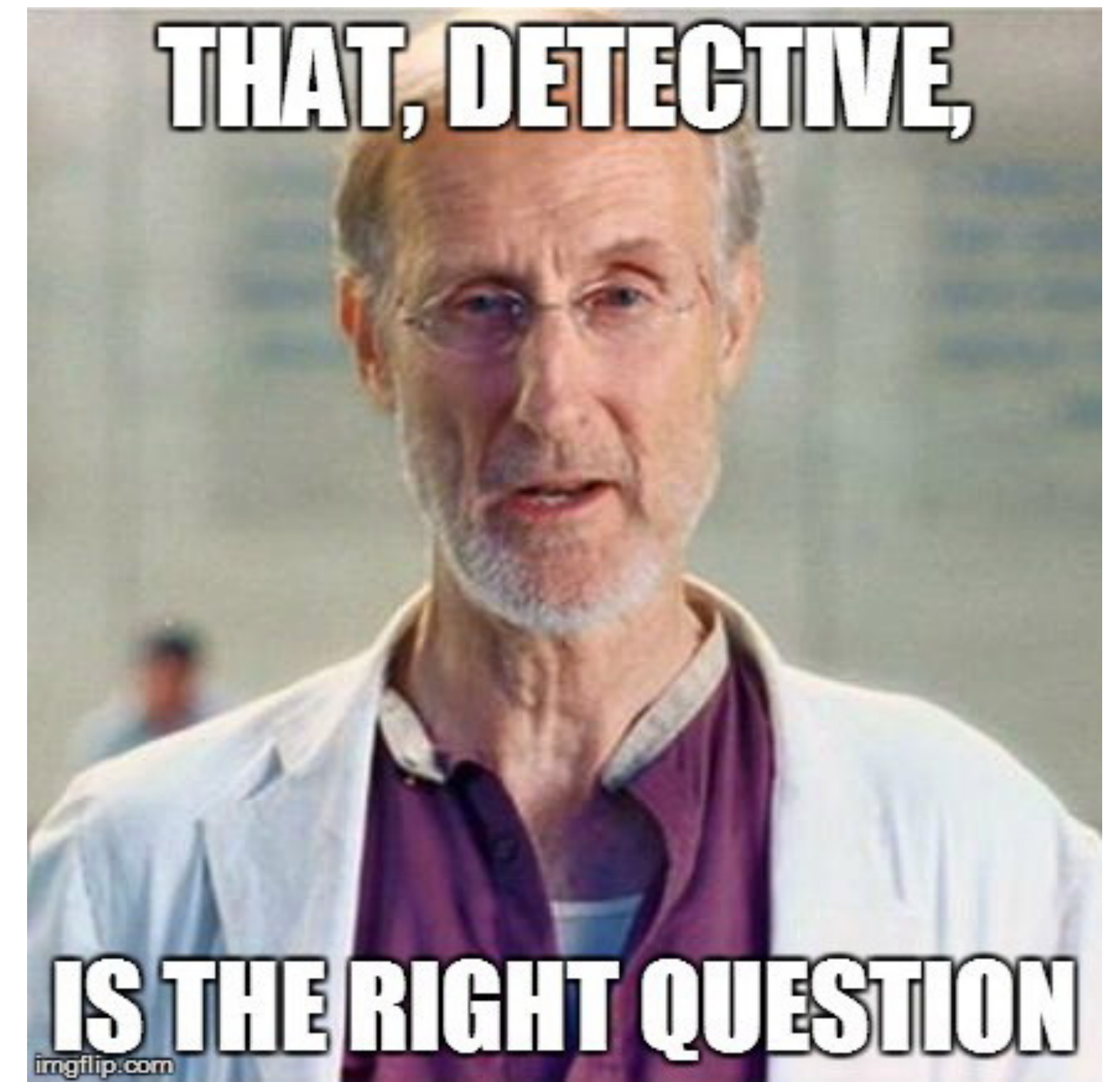
Asking the right questions

Refining the concept

Bad

Asking the right questions
Refining the concept

Bad

- What technology should we use?

Asking the right questions

Refining the concept

Bad

- What technology should we use?

- What else should this do?
  (I actually asked this, too… so young and naive)

Asking the right questions

Refining the concept

Good

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- Where are our users?
  (Geographic areas, desktop vs mobile, etc)

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- What is our timeline?

Asking the right questions

Refining the concept

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  (Geographic areas, desktop vs mobile, etc)

- What legal/regulatory requirements do we need to consider?

- How will we measure success?

- What is our timeline?

- How can we build this in stages?
  (Iterate and release faster to identify issues early.)

Asking the right questions
During development

Bad
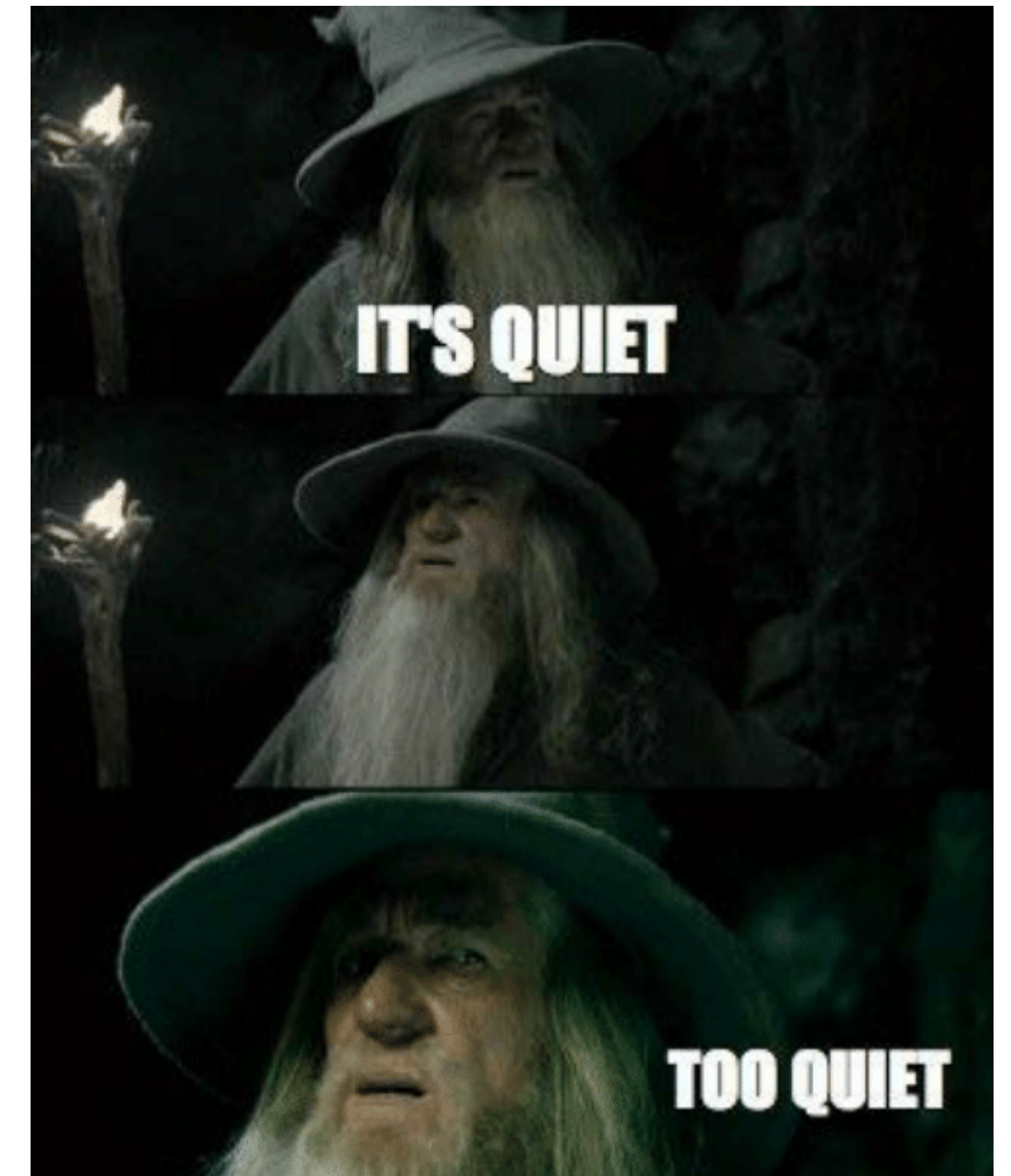
Asking the right questions
During development

Bad

- *(silence)*
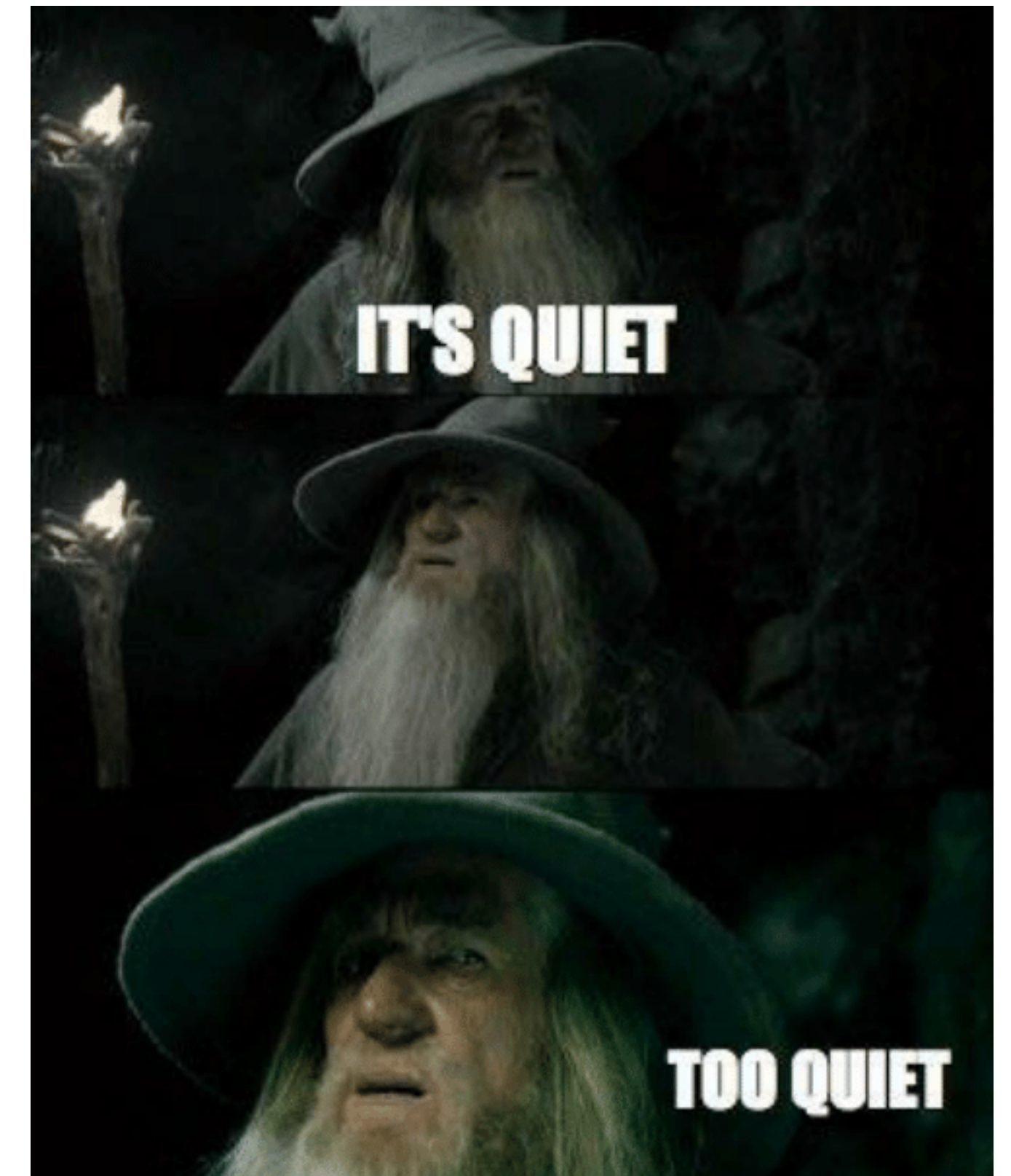
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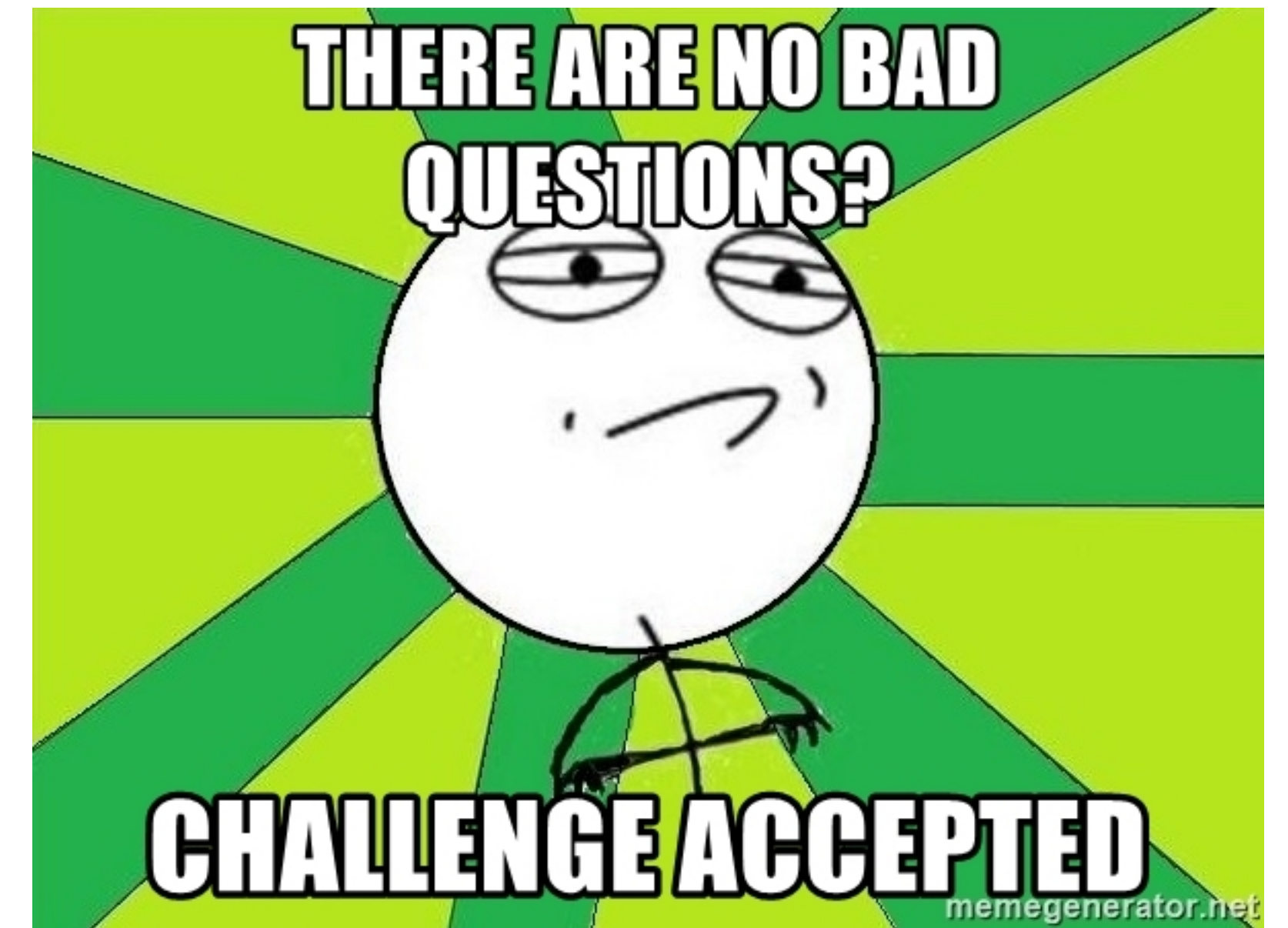
During development

Good

Asking the right questions

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Good

• What technology should we use?

Asking the right questions
During development

Good

- What technology should we use?

- What existing tools (internal or external) already exist to help us?
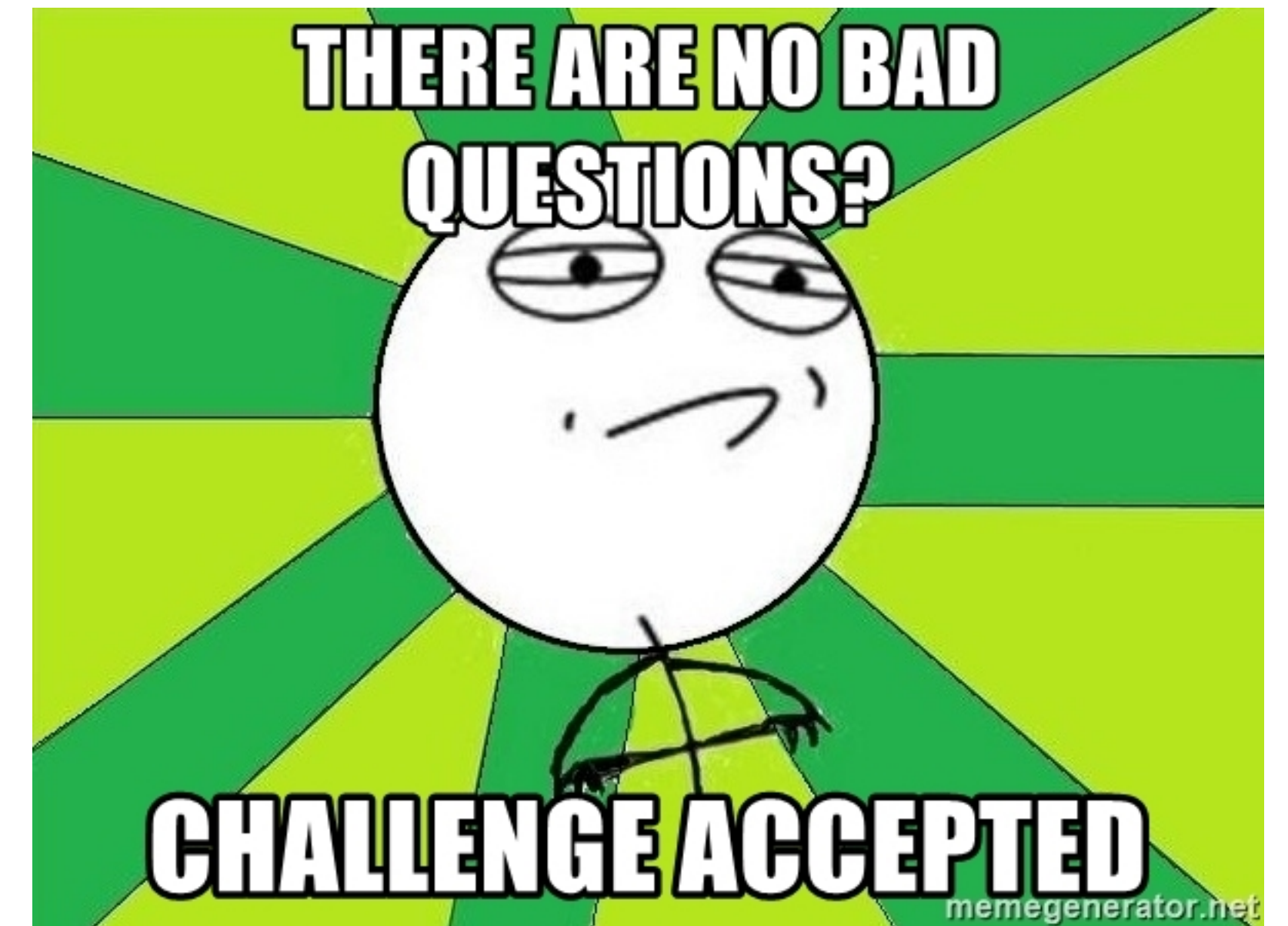
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THERE ARE NO BAD QUESTIONS?

CHALLENGE ACCEPTED

memegenerator.net

Asking the right questions

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- What edge cases do we need to account for?

- What external services / APIs do we depend on?

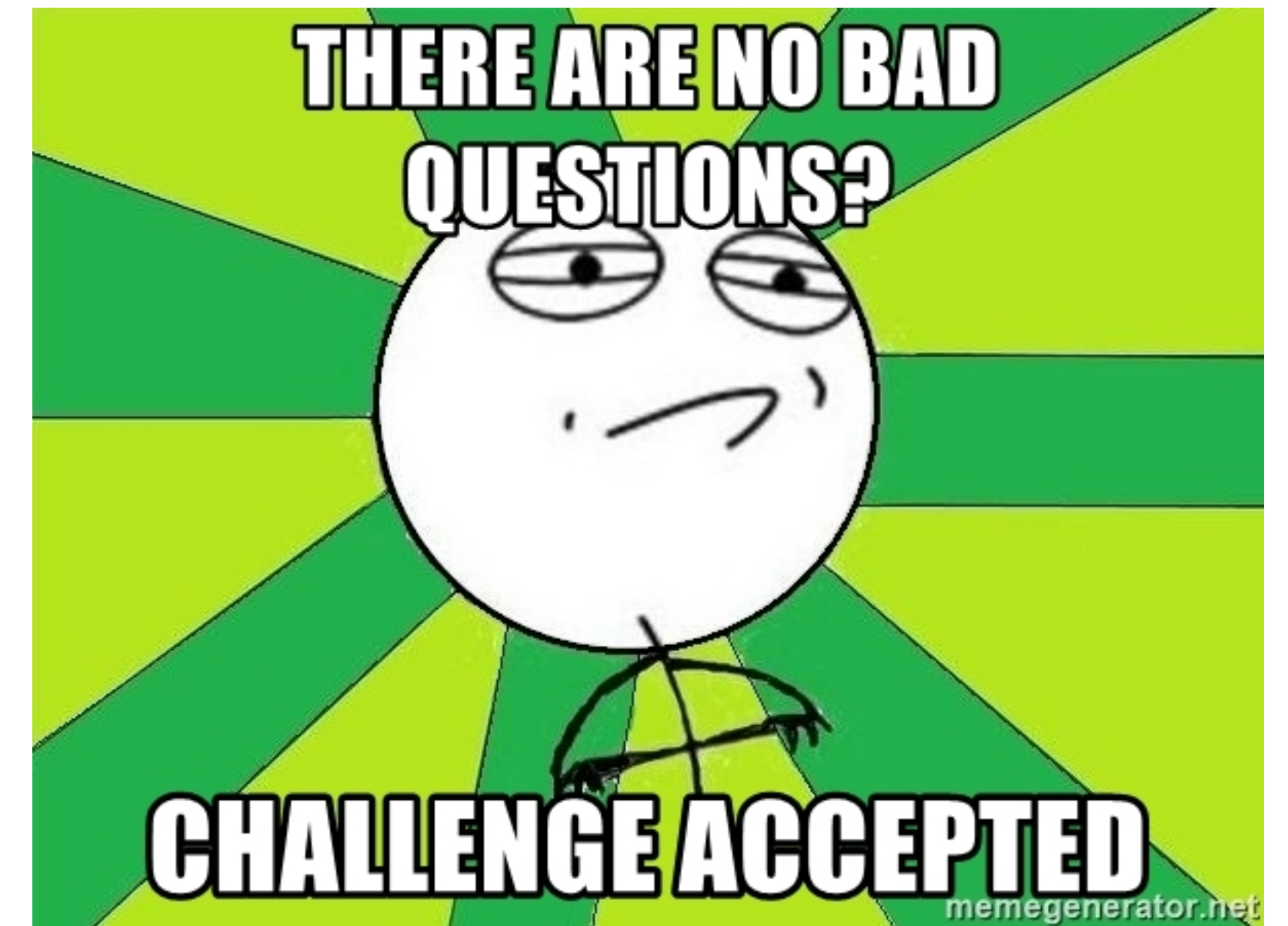THERE ARE NO BAD QUESTIONS? CHALLENGE ACCEPTED

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- How will this be misused?

- What edge cases do we need to account for?

- What external services / APIs do we depend on?

- *And any/all other questions that come up as the project takes shape.*

Asking the right questions

Nearing the end

Bad

Good

Asking the right questions

Nearing the end

Bad

- Does this match our original design?

Good

Asking the right questions

Nearing the end

Bad

- Does this match our original design?

Good

- Does this solve the original problem(s)?

Let's design an app!

Warning!

Lots of text coming at you. Here's something to keep you safe.

Tutor Groups Management System

An old project becomes new again

Tutor Groups Management System

An old project becomes new again

What problem are we trying to solve?

Tutor Groups Management System

An old project becomes new again

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Manual processes are error-prone and time-consuming.

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Students: discovering available groups; expressing interest in others

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Students: discovering available groups; expressing interest in others

Staff: onboarding new tutors; assigning new students to specific groups

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Tutors: tracking student attendance to scheduled tutor group meetings

Tutor Groups Management System

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An old project becomes new again

What are we doing today and why is it insufficient?

Tutor Groups Management System

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Tutors, groups, and student data are tracked in various spreadsheets by university staff

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Tutors fill out paper records to track student attendance; staff manually enters the data into additional spreadsheets

Tutor Groups Management System

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What are we doing today and why is it insufficient?

Tutors, groups, and student data are tracked in various spreadsheets by university staff

Tutors fill out paper records to track student attendance; staff manually enters the data into additional spreadsheets

Processes are prone to human error and loss of data

Tutor Groups Management System

An old project becomes new again

Tutor Groups Management System

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Who are our users?

Tutor Groups Management System

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Who are our users?

Students: register interest in tutoring services for one or more courses and attend sessions to which they are assigned

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Who are our users?

Students: register interest in tutoring services for one or more courses and attend sessions to which they are assigned

Tutors: employed by Tutoring Services department to provide instruction for various subject matters

Staff: onboard new students and tutors; manage the creation and scheduling of individual groups

TGMS

What do we know and what can we infer so far?

TGMS

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- We have multiple levels of user functionality, so some sort of basic permissions system will be needed.

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TGMS
Some follow-up questions

TGMS
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Is it possible for a student to be a tutor for one subject and a tutee for another?

TGMS

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TGMS

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Do we need to collect day/time availability from tutors and potential tutees, or will that part of the process be managed separately?

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Yes.

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We would prefer to manage availability and scheduling within the app.

TGMS

Some follow-up questions

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Do students enter the courses they are interested in using a free-form input, or do they select from a list?

TGMS

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Does enrollment in the tutoring groups cost money for the student? If so, will the app be responsible for collecting payment?

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What is the order of operations? In other words, what processes happen first, second, third, etc and can any of them happen in parallel?

TGMS
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There is a predefined list of courses each semester, but students should be able to add more courses.

Does enrollment in the tutoring groups cost money for the student? If so, will the app be responsible for collecting payment?

Enrollment does cost the student money, but the charges are added to the student's main campus account separately from the app. No payment collection is necessary.

What is the order of operations? In other words, what processes happen first, second, third, etc and can any of them happen in parallel?

Get out your trusty whiteboard or diagramming software of choice!

So far, so good!

It's a great start. Here's a fantastic meme.

Tutor Groups Management System

Refining the concept

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Potential collection of PII (Personal Identifiable Information)

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What is our timeline?

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What is our timeline?

Go-live in November for Spring semester groups, or April for Summer/Fall groups

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3. Tutor group creation and student/tutor assignments

4. Attendance tracking for individual tutor groups

We did it!

GREAT START!

Hang on…
But what about _____?

There's more to the story
Things we didn't talk about

- Authentication and role selection: this would involve conversations with the University's IT department to determine the best way to identify and target specific users (staff, students, and tutors).

- Error handling: what happens if student's manually enter invalid course numbers? What if they submit vulgar or irrelevant data?

Final thoughts

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  - Concepts that can be easily misinterpreted.
  - Multi-step workflows (especially ones with manual steps)
  - Data / communication paths

Before we wrap up

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- *I learned*

Questions?

Thank you!

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