

Risk-Based Testing

Or What Happens

When You Realize

You Can't Test

Everything

**Jenny
Bramble
and
Dante**



Hi, I'm Jenny!

I'm currently a QA monkey Engineer at Netsertive in Morrisville!

- History:
 - Support
 - Devops
 - Support again
 - QA/Support
 - QA
- Enjoys cats, cupcakes, computers, and coffee.
- jenny.bramble@gmail.com
- <http://twitter.com/jennydoesthings>

Enough about me. Let's talk about RISK.

**Oh, right.
This is Dante.
He trapped
himself in the
bathroom last
weekend.**



What Is Risk?

Risk is the impact of failure and the probability of that failure.

- A very important, yet very stable application may have a low risk.
- A less important application with a high degree of instability may have a high risk.
- Different features within an application can and probably do have different risks
- Risk can--and should--change in different phases of a project.

Risk can be subjective, and should always be discussed as a group.

**This
interests
Dante and
he would
like to know
more.**



Impact of Failure

Any potential negative impact contributes to the risk of an application or feature.

- Technical
 - Loss of data
 - Introduction of security flaws
- Business
 - Revenue cannot be collected
 - Critical functions cannot be performed
- Morale
 - Users have to utilize workarounds
 - Slowed workflows
 - Utilization of pitchforks and torches

Several layers of impact can be far worse than only one.

Probability of Failure

Simply, the likelihood the feature, application, or use case will fail.

- Don't worry--there's no math, just thinking
- Use historical data to consider if there has been failure before within this application, feature, or use case
- Historical data can come in many forms
 - QCA/RCA documents
 - QA defects
 - Tribal knowledge
- Talk to everyone!

Miscalculating impact or probability during testing can mean greater failures down the line.

**Dante's
pretty sure
jumping off
the roof has
a lot of risk.**



Other Types of Risks

Risk can also be introduced by factors outside of the feature you're working within.

- Modified time table
- Environment issues
- New or inexperienced team members
- Natural disasters
- Sickness
- Outside pressure

These are all things to consider when we talk about evaluating risk.

**Dante feels
that's a lot
to think
about.
Is it really
necessary?**



Why Do We Care About Risk?

We can't test everything. We'd like to think we can but...

- We have limited resources
 - Time
 - Bodies
 - Attention
- Even if we had unlimited resources
 - “Testing everything” is ridiculous
 - “Testing everything” is impossible
 - “Testing everything” is a terrible use of resources

So we assess risk and use this to determine where we focus our testing efforts.

**Dante is
stunned
you've never
considered
risk!**



What is the Impact of Failure?

Risk based testing is making a very educated guess about the impact of failure.

- Determine what features users interact with the most and how.
- Determine what happens in the event of failure.
 - Are users unable to interact with the system?
 - Is there loss of data?
 - Is there loss of revenue?
 - Would someone literally die?
- In short: What's impactful to the company?

Take these answers and use them to determine impact of failure.

What is the Probability of Failure?

Risk based testing is also making a very educated guess about the probability of failure.

- Determine what features users interact with the most.
- Figure out how the users interact with those features.
- Find out what's fragile about the code base.
- Think about how often things have seen failure in the past.
- In short: What is most likely to break?

Take these answers and use them to determine probability of failure.

Who are the Stakeholders?

Risk based testing is done by engaging all the stakeholders in a project.

- Anyone who may be impacted by the project or its failure
- Management
- Product owners
- Developers
- QA engineers
- Users
 - Internal users
 - External users
 - Admins

This gives us a full picture of the risks each group sees.



Dante thinks we should have a serious discussion about risk.

A black cat is lying on its side on a light-colored wooden floor. The cat is facing right. The text is overlaid in the center of the image.

**Haha, nah, Dante just
wants to take naps.**

How Do We Start Talking About Risk?

Look at the whole feature and specific use cases.

- How can the feature be used?
- How do users interact with the feature in particular use cases?
- How likely is that use case?
- How likely is that use case to fail?
- What happens if that use case fails?
 - Catastrophic failure
 - Degraded functionality
 - No significant impact
- Consider outside influences that may contribute to risk.

Think about risk early and often.

**Dante
sometimes
gets
overwhelmed
thinking
about risk.**



**To be fair,
Dante gets
overwhelmed
a lot.**



Talking About Risk

Can we make this easier visually?

- Yep--make a risk matrix
- Determine a rating system
 - Doesn't matter as long as it's consistent
 - You can use numbers or phrases like high/med/low
- Make your items as granular as possible
 - Start on the feature level
 - Then break it down to individual tests or use cases
- Determine the Impact of Failure and Probability of Failure
- Do math! (#sorrynotsorry)

You will be left with a number that can help you evaluate risk.

**Dante
thought
there wasn't
going to be
math.**



Example - shopping cart transactions

Item/Story/Use Case	Impact of Failure	Probability of Failure	Risk
Send user email confirming their recent purchase	7	3	24
Shopping cart redirect to PayPal	9	2	18
Adding a newly created item type to a shopping cart	9	6	54

Other Elements of a Risk Matrix

The previous example was simplified.

- You can include a breakdown of the types of risk if it's hard to pull out one number
 - Usage
 - Fragility
 - Merges
 - Environmental issues
 - User frustration
 - User familiarity
- Risks may also vary depending on the phase of the project and environment

A risk matrix can be complex or simple, as long as it conveys the correct information.

**Dante
discusses
risks with
everyone
involved.**



The Bigger, Riskier Picture

Once we start talking about risk on the story level, we realize we should talk about risk in the application at large.

- Which parts of the app or ecosystem are inherently fragile?
- Which places have failed before?
- Where are we most vulnerable to code changes?
- What causes the most pain when it fails?

Thinking about these things can give us a better idea of how much testing we will need to do as new features are added.

**Dante wants
to make sure
you're
thinking
about risk
holistically.**

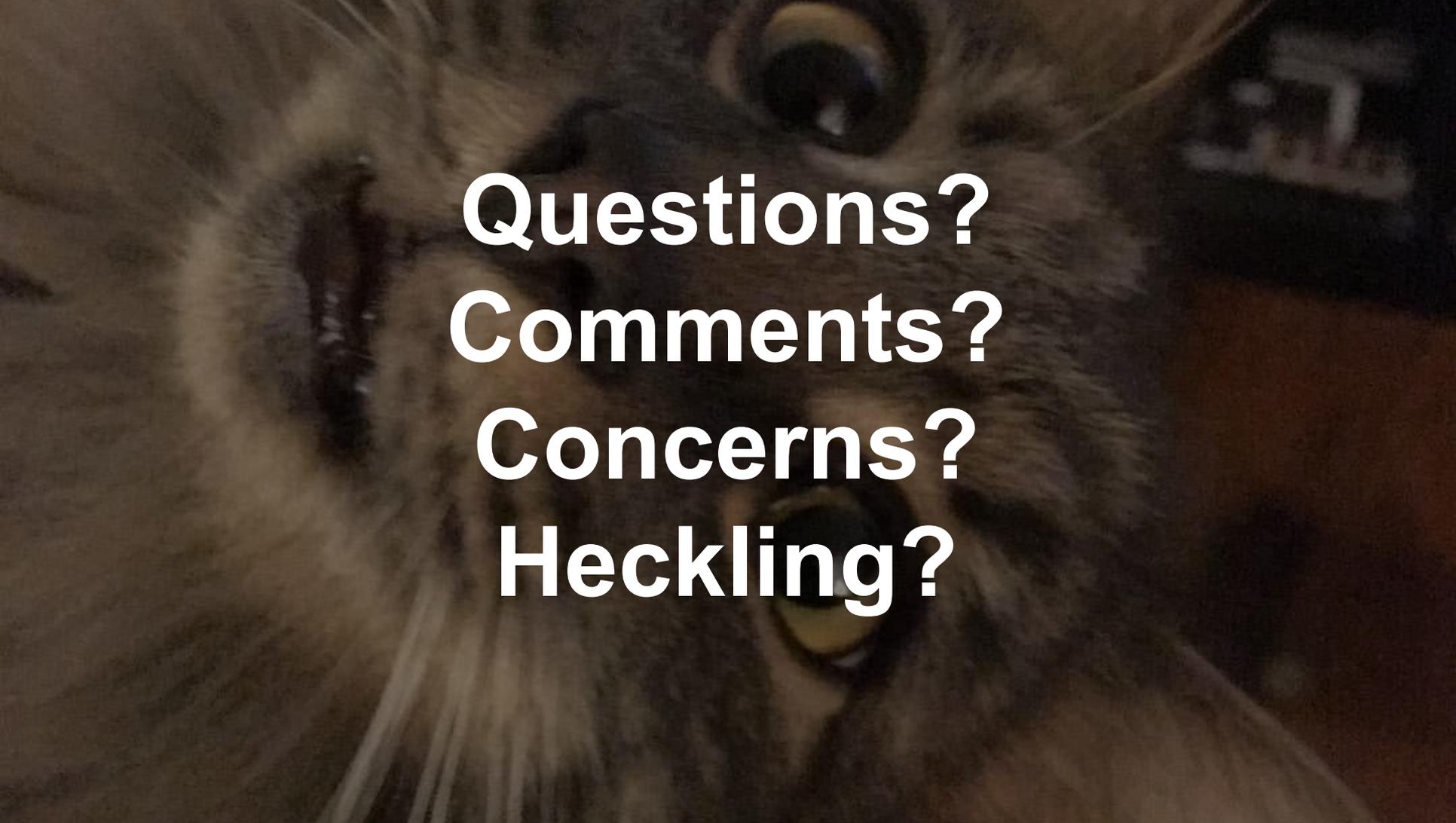


How Does This Help Us?

This gives us a framework to talk about what we're going to test in a sprint and what needs priority.

- Where do we get the most bang for our buck?
- What needs the most attention?
- What needs the least?
- What's a good candidate for automation?
- What should we test on production? Staging? Dev?

We gain more focus and more thoughtful testing which leads us to a better application.

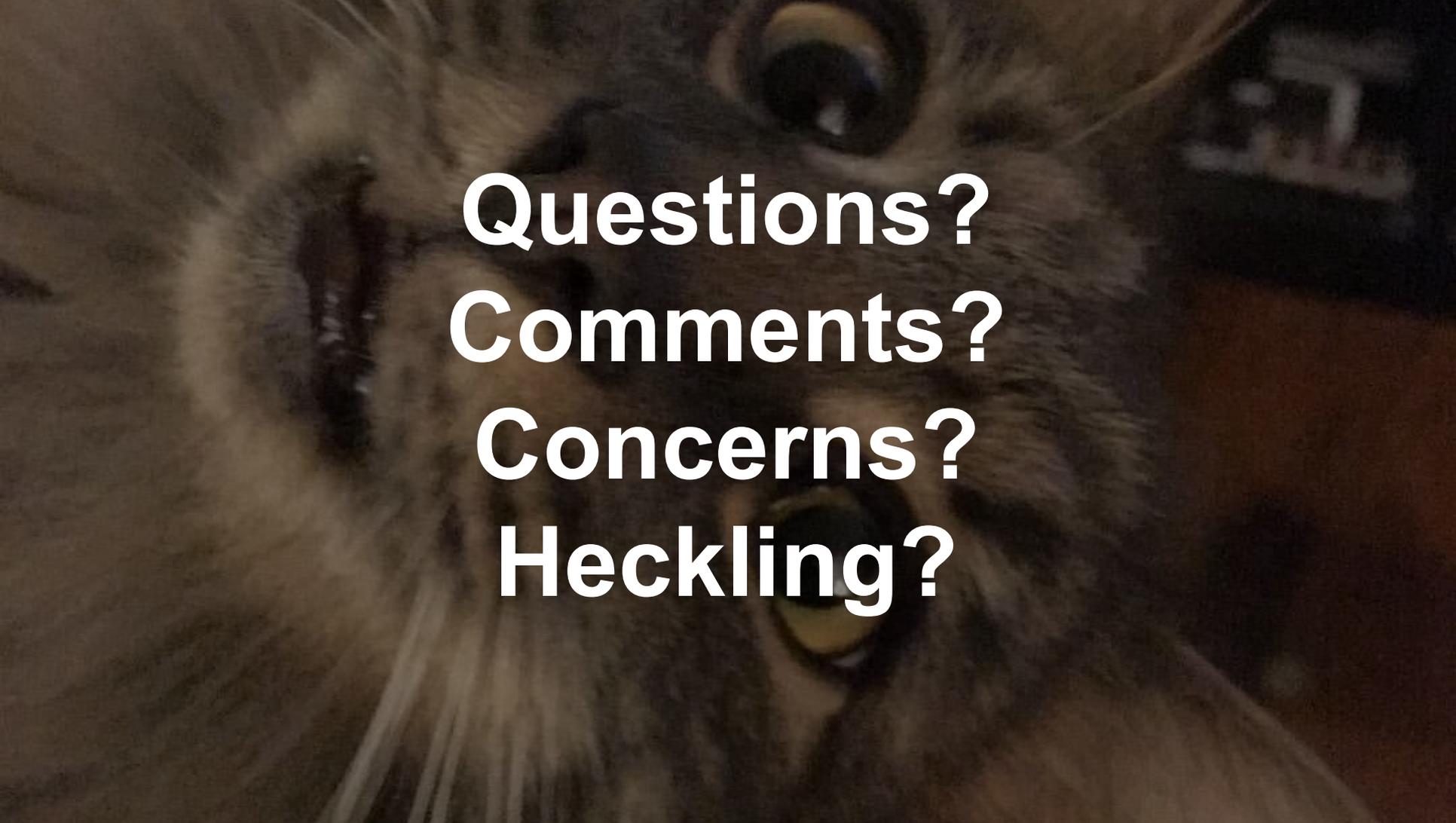
A close-up, slightly blurred photograph of a cat's face, focusing on its eyes and whiskers. The cat has light-colored fur and dark eyes. The text is overlaid in the center of the image.

Questions?
Comments?
Concerns?
Heckling?

**Haha, Dante
doesn't
care!**

**(But it's
okay--Jenny
does)**



A close-up, slightly blurred photograph of a cat's face, focusing on its eyes and whiskers. The cat has light-colored fur and dark eyes. The text is overlaid in the center of the image.

**Questions?
Comments?
Concerns?
Heckling?**

Further Reading

- *Heuristic Risk-Based Testing* by James Bach
 - <http://www.satisfice.com/articles/hrbt.pdf>
- *Risk-Based Testing: Test Only What Matters* by Rajnish Mehta
 - <https://www.stickyminds.com/article/risk-based-testing-test-only-what-matters-0>
- *Risk Based Testing, Strategies for Prioritizing Tests against Deadlines* by Hans Schaefer
 - <http://www.methodsandtools.com/archive/archive.php?id=31>
- More images of Dante by request
- You can contact Jenny at jenny.bramble@gmail.com