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Building security processes for developers and DevOps teams.

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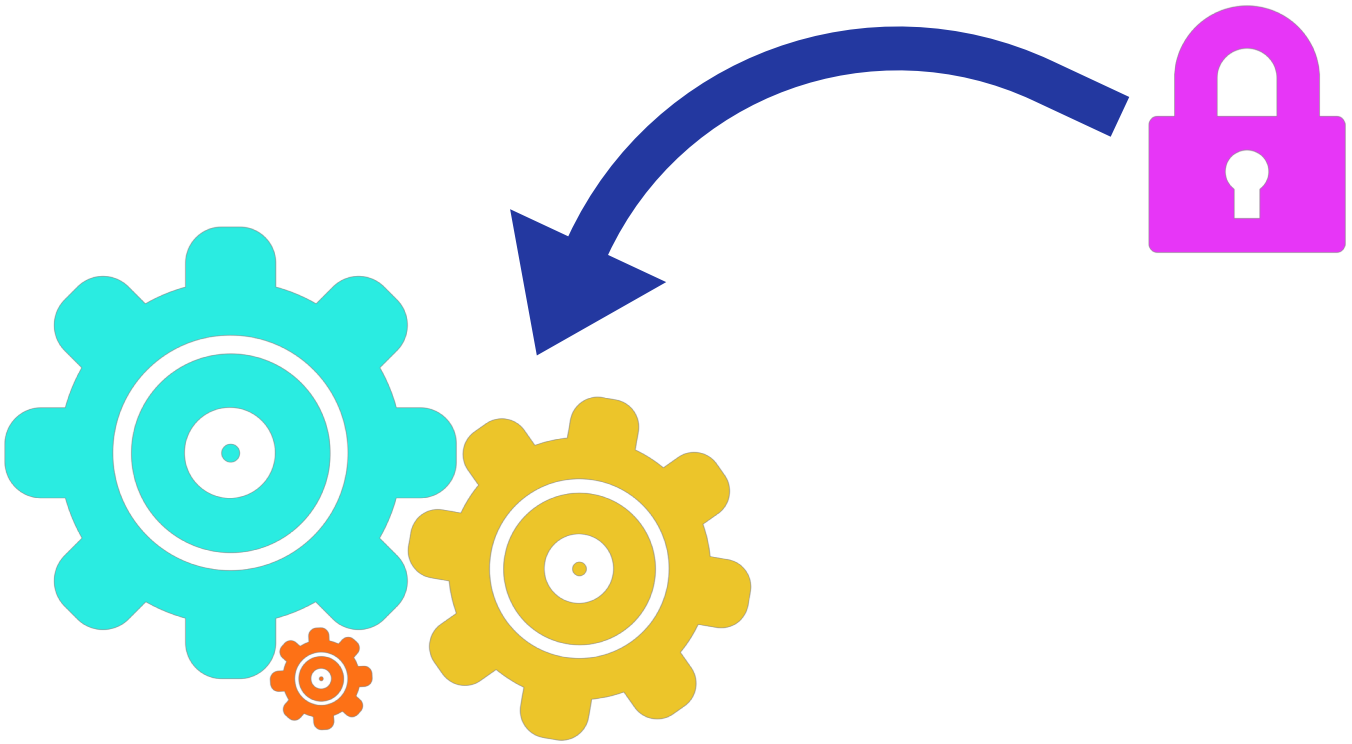
Take away: Automate the easy stuff, focus on the hard stuff

What is Security for DevOps?

- Security for DevOps (DevSec, SecDevOps, and others) is simply adding security into the software creation process



Why Does it Matter?

- Security teams are overwhelmed and can't keep up

Why Does it Matter?

- Development teams are held up, wanting to produce faster

Development

Why Does it Matter?

- Ops teams are working in a silo, security is left to last-minute

Why Does it Matter?

- Teams aren't communicating, and sometimes even feel blocked by one another

Why Does it Matter?

CISO

Losing good talent

Timeline slowed

CIO / CTO

Security

Unable to work on big picture

Frustrated by security team

Engineering & Ops

Why Does it Matter?

CISO

Losing good talent

Timeline slowed

CIO / CTO

Complete development

Reports vulnerabilities

Huh?

Forced to help

repeat

Security

Unable to work on big picture

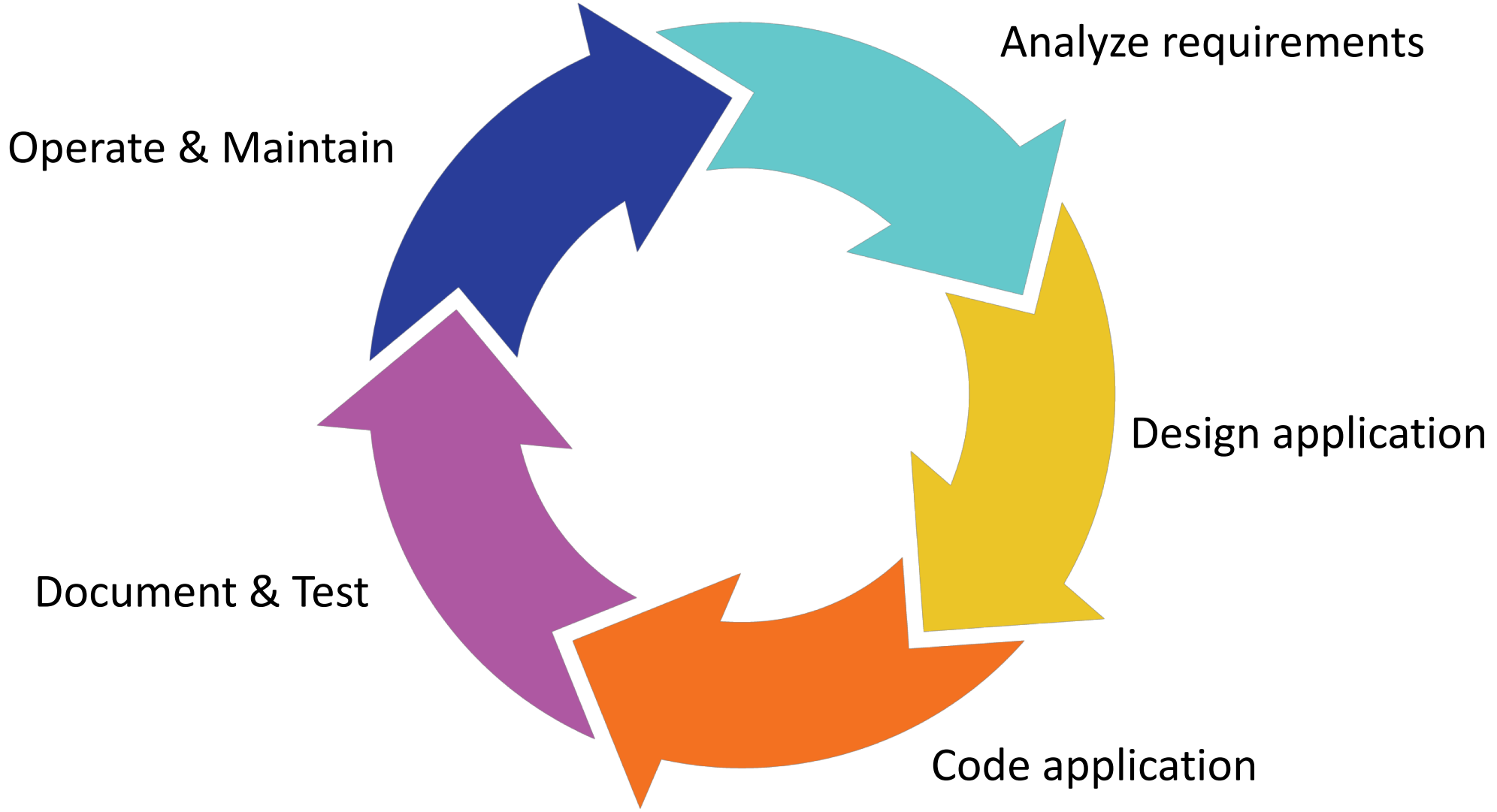
Frustrated by security team

Engineering & Ops

Formalizing Your Software Creation Process

- The SDLC
  - Software / System
  - Development
  - Life
  - Cycle

What is the SDLC?

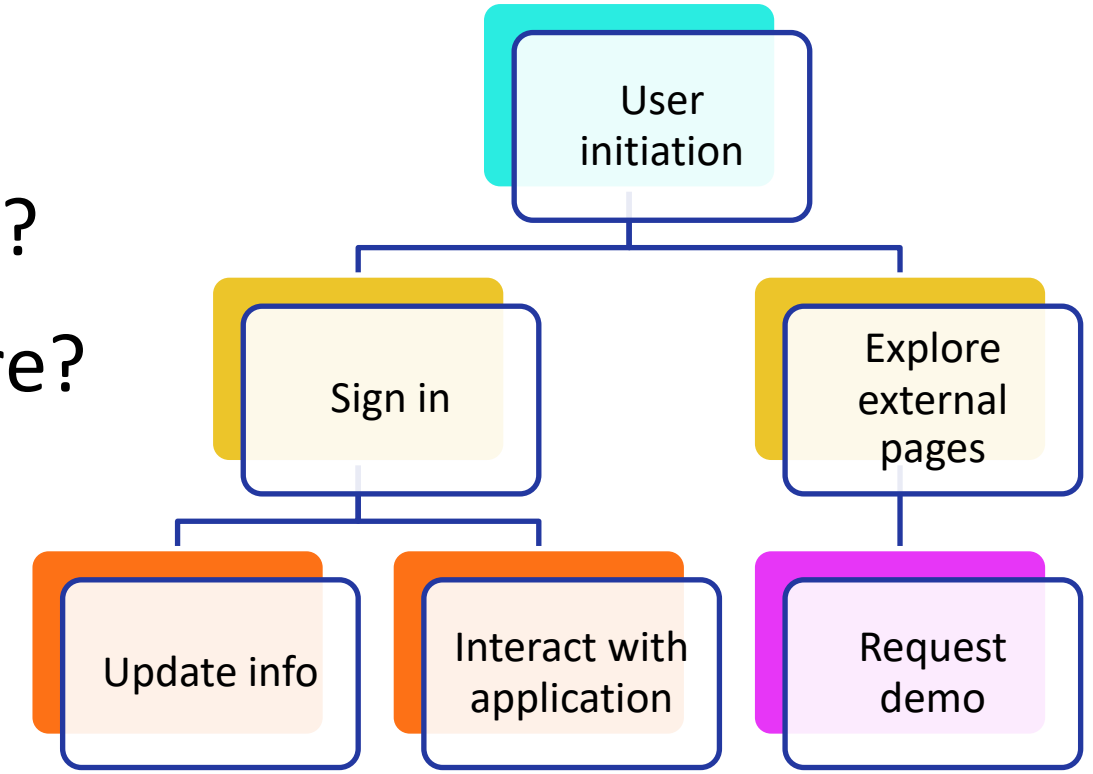


SDLC – Analyze Phase

- Who are the stakeholders and what do they want?
- What should the system be doing?
- Prototype a UI or UX Flow
- Does anything like this already exist?

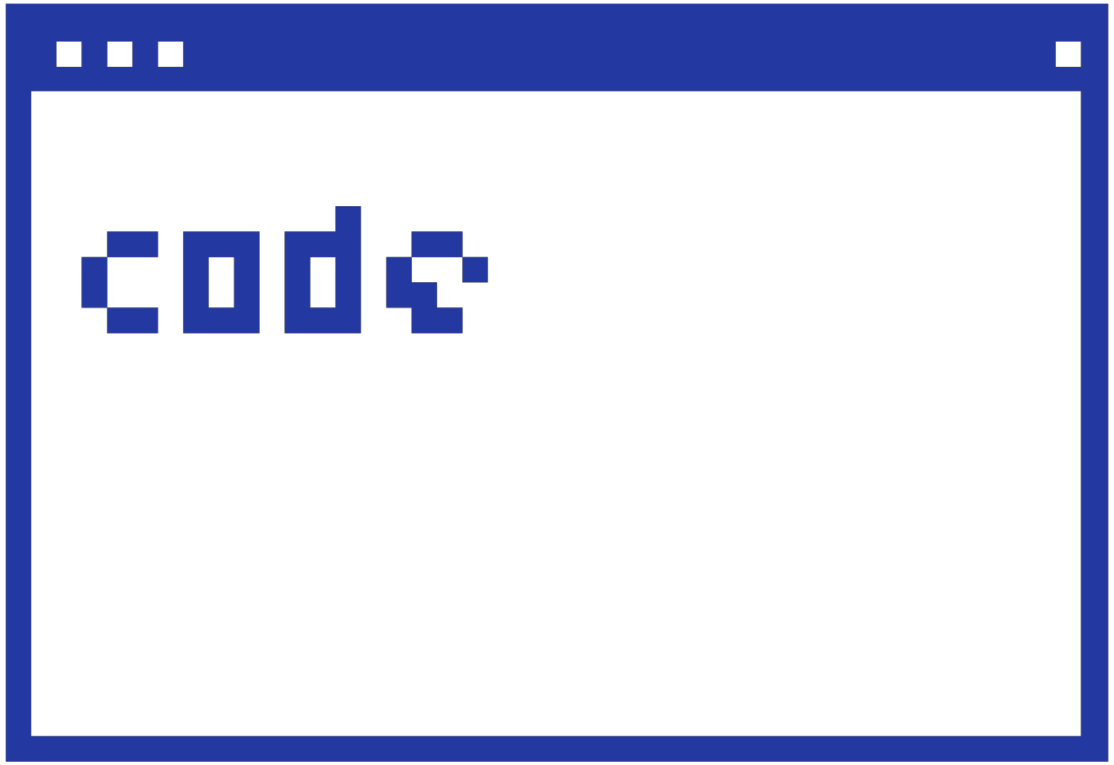
SDLC – Design Phase

- Are there any risks with the system?
- What is the UX / UI Design?
- What is the flow for the application?
- How can it be extended in the future?
- How should it perform?



SDLC – Code Phase

- Writing code for functionality and writing tests



SDLC – Document & Test Phase

- Document how it works
- Training others
- Run your tests

Testing Your Applications

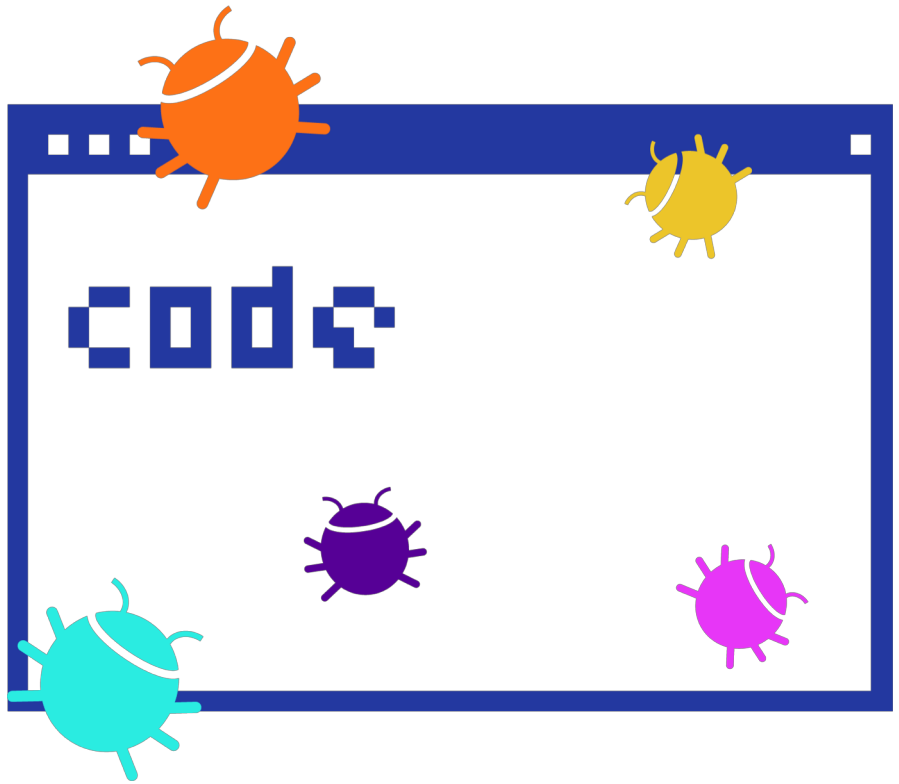
- Integration tests
- Unit tests
- Regression tests

Testing Your Applications

- Integration tests
- Unit tests
- Regression tests
- Security tests ← Starting your security for DevOps

SDLC – Operate & Maintain Phase

- Application is now running in production
- Fix any new bugs
- Discuss retrospectives
  - How did it go?
  - What could be changed for next time?

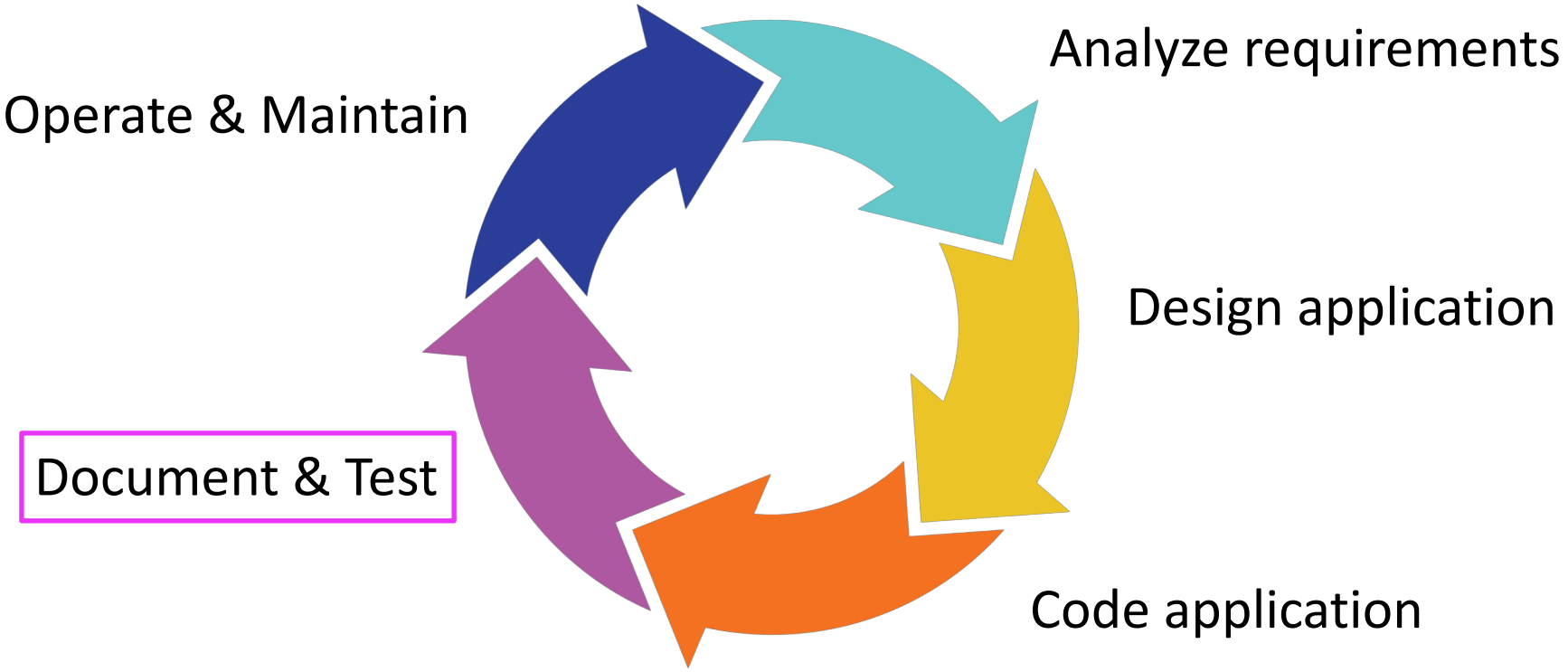


SDLC Methodologies

- Waterfall
- Prototype
- Agile
- Iterative
- V Model
- Incremental
- Rapid Application Development RAD
- Spiral

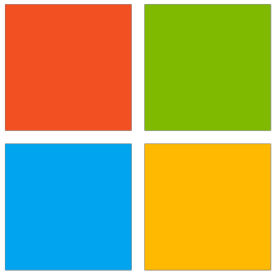
Comparing Methodologies

- Methodologies are common in one way: the testing phase
  - This is where security ideally enters the development process



Where did Security for DevOps Begin?

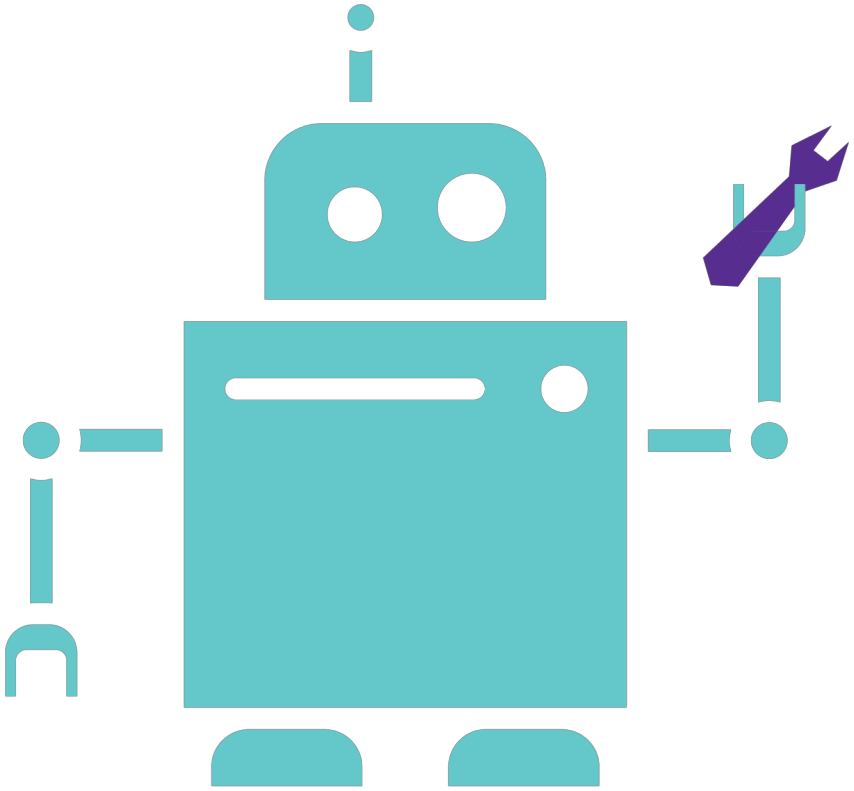
- Microsoft Secure Development Lifecycle
  - A more formal approach to the SDLC with Security in mind
  - Microsoft learned the value of thinking about security early
  - Threat Modeling: can begin earlier than the testing phase



Microsoft

Where to Begin

- There are minimal automation requirements for your DevOps to build security in
  - You can't just have a QA team



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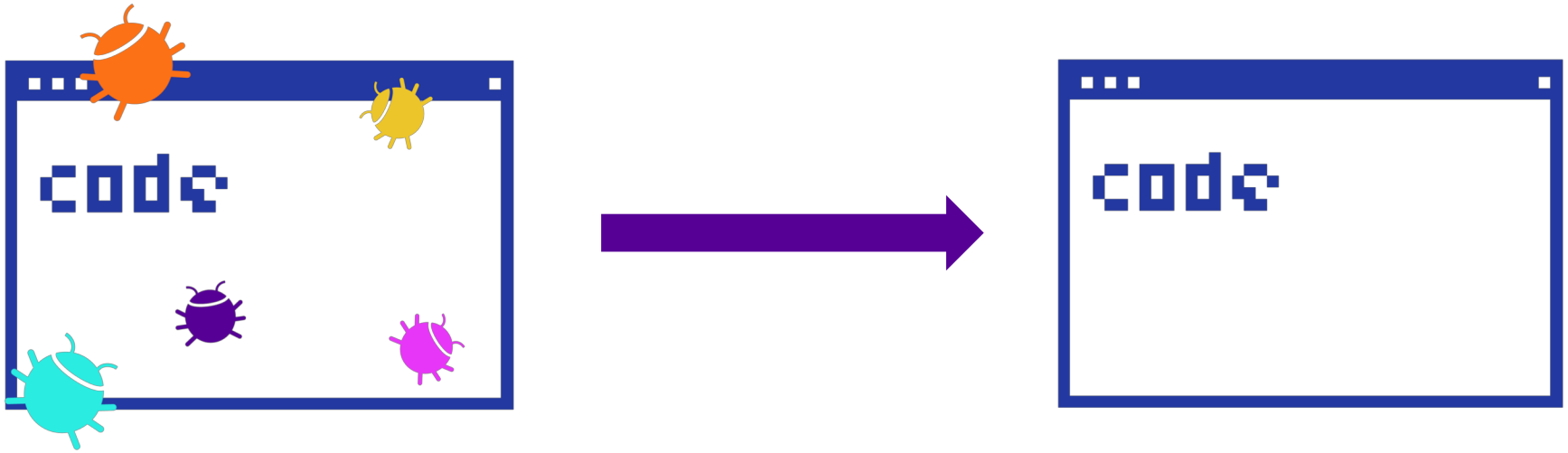
Automate the easy stuff, focus on the hard stuff

Where to Begin

- CI (Continuous Integration)
  - Get features merged into your mainline or master branch frequently
  - Typically also paired with CD (Continuous Deployment)
  - Allows mainline to be built and deployed at any time
    - You MUST have great, automated testing for this to work!



Making CI and CD Successful

- CI / CD need infrastructure
  - If you're going to deploy multiple times a day, even to staging, you need infrastructure to automatically run tests and be assured of correctness

CI / CD Platforms

- A place to run your code and verify tests pass


Travis CI

TeamCity

PHABRICATOR


CODESHIP

go 15.2

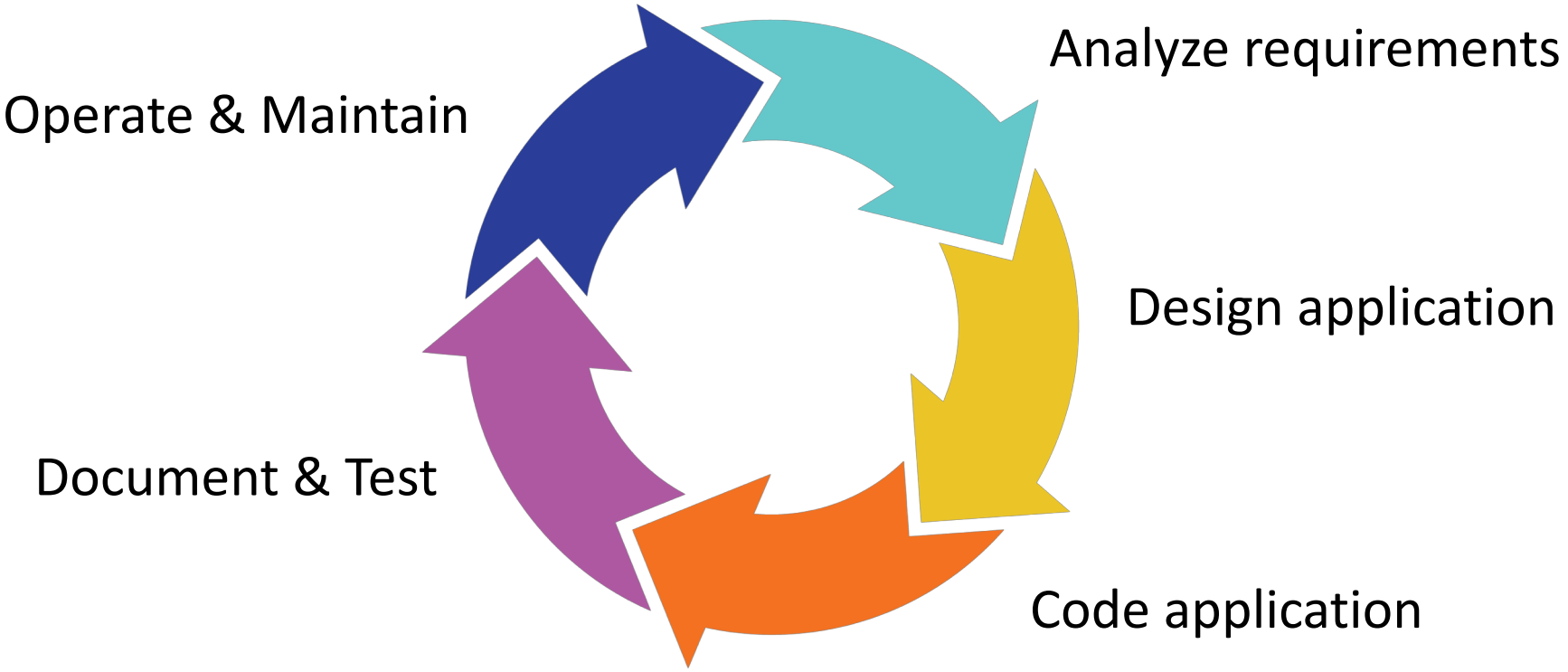
circleci


Jenkins

Visual Studio Team Services

Build an Organization That Supports SecDevOps

- Define a pipeline for your process so you can track code as it moves through the system



Current Organization Pitfalls

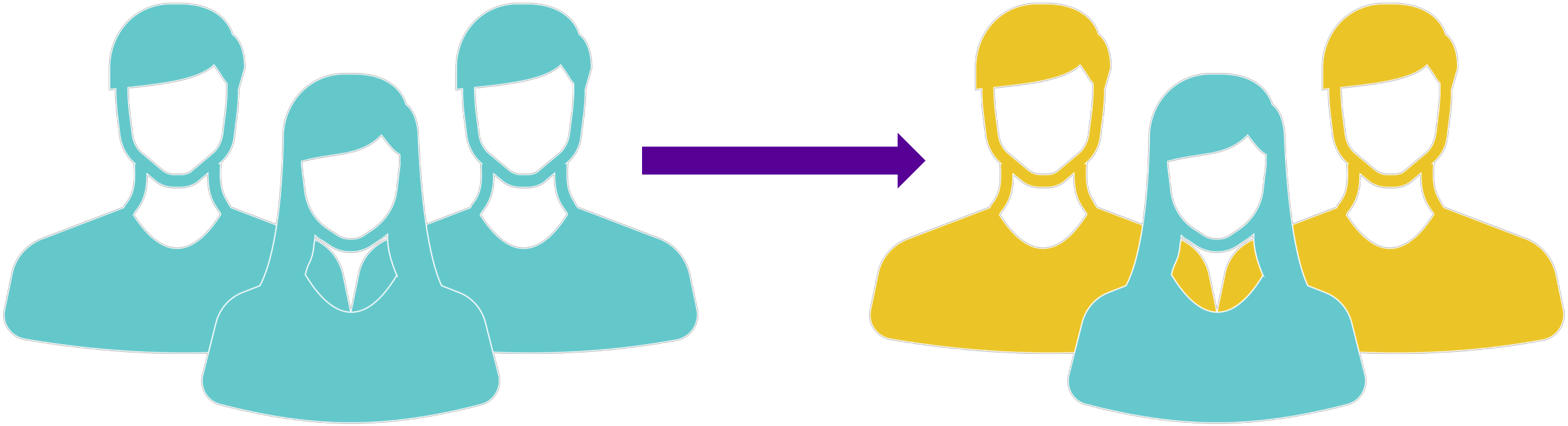
- Most organizations have kept security as the final check, but that has drawbacks
  - Security mitigations can make it hard to find the root of a vulnerability
  - Without automation, manual processes are slow and never create optimal results

Solution 1: Embedded Security

- Security engineers embedded across each team in the organization

Solution 2: Training the Breaking Mindset

- Recurring training and proper tooling



Our goal: Collaboration and Automation.

CISO

Retains talent

Projects completed faster

CIO / CTO

Builds securely

Security

Can focus on big picture

Unblocked by security team

Engineering & Ops

Why (Some) Security Has to Be Automated

- Computer's aren't as ingenious as humans – humans are needed for the hard stuff.
- Humans have limited time and energy, so automate the easy stuff to allow them to focus on the hard stuff.

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PAUSE: What's easy? What's hard?

Easy: not needing domain knowledge

- Things that are similar across products, teams, technologies.
- Example: SQL injection on all of the search forms on a product

Hard: needing to understand the product

- Domain knowledge and business logic is needed from the people who build and use the product.
- Example: Second order SQL injection on an order form that requires knowledge about the shopping cart system

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Automate the easy stuff, focus on the hard stuff

How to Have Vulnerabilities Fixed Faster and Earlier

- Good automated testing as a culture

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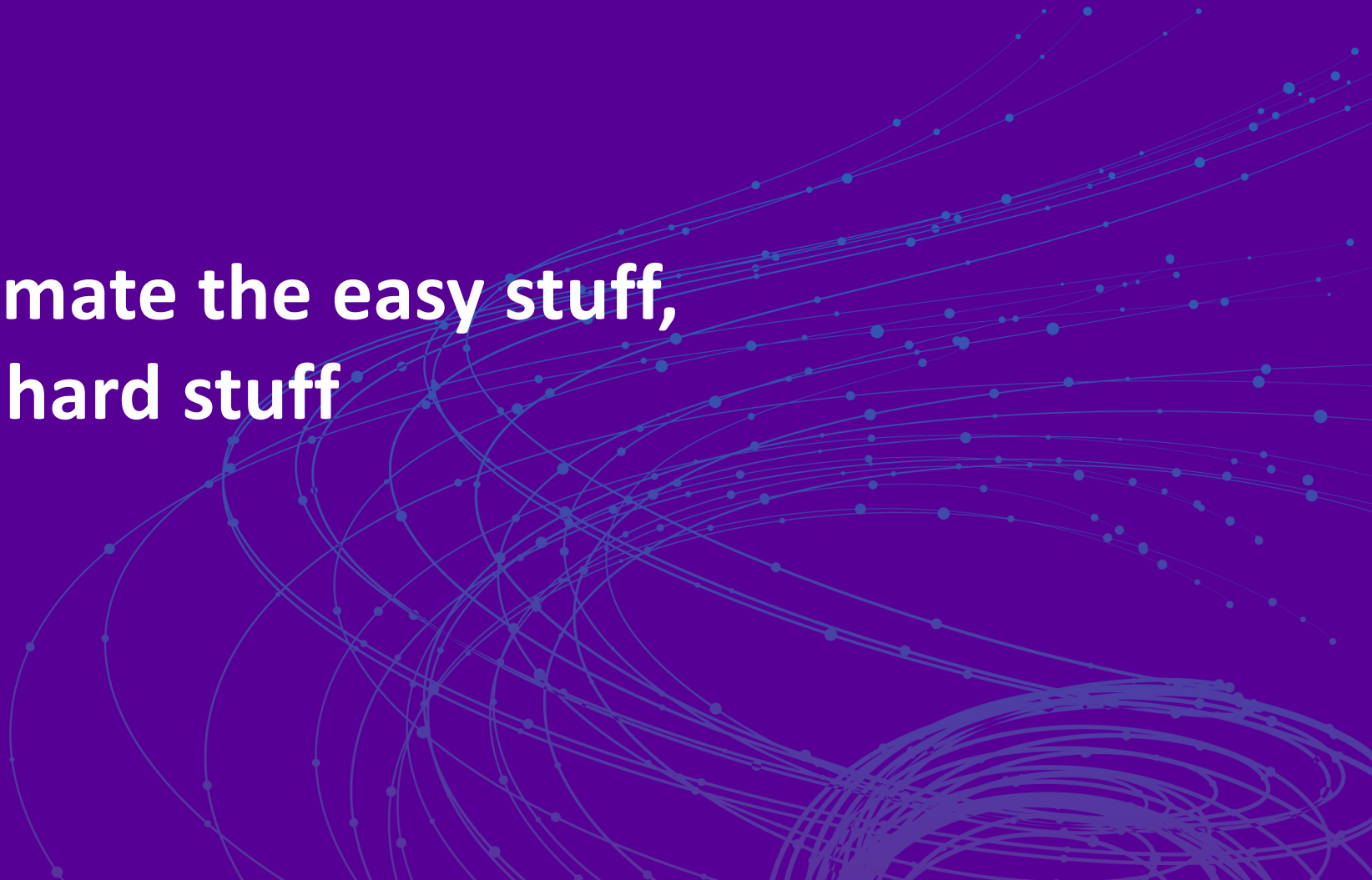
Again… Automate the easy stuff, focus on the hard stuff



How to Have Vulnerabilities Fixed Faster and Earlier

- Good automated testing as a culture
  - Educate your developers

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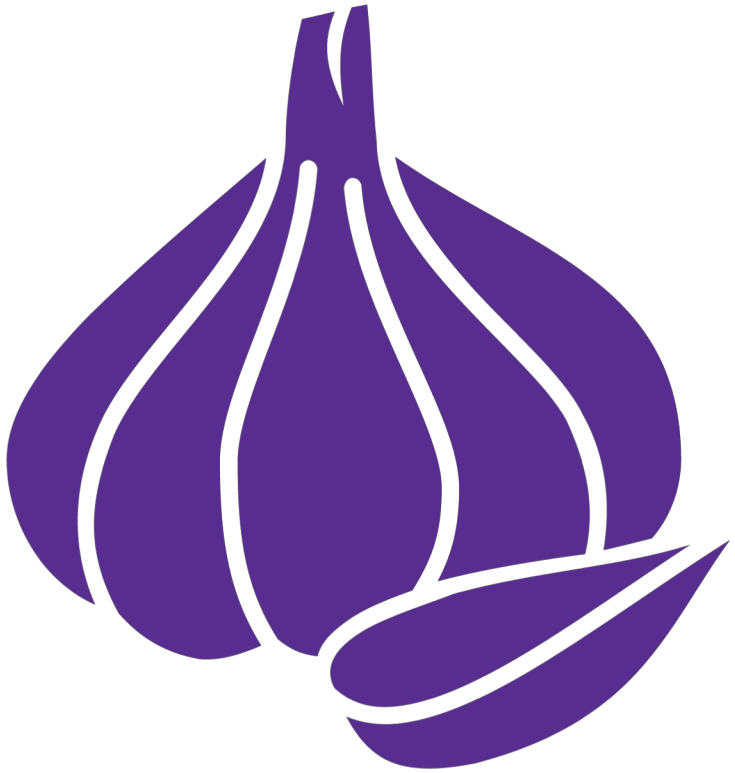
How to Have Vulnerabilities Fixed Faster and Earlier

- Good automated testing as a culture
  - Educate your developers
  - Build a culture of security awareness
- Build security into the development processes
- Simplify reporting – provide only required details, with suggested fixes

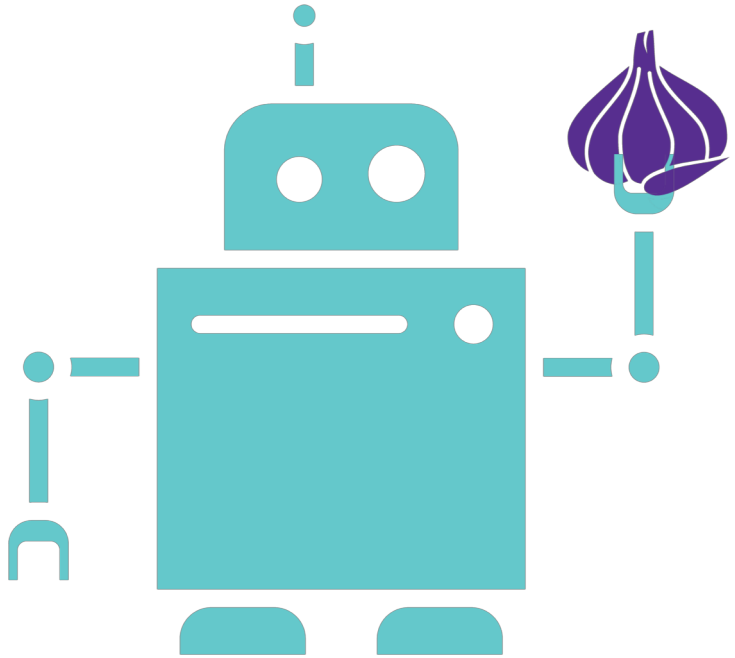
Where Do You Draw the Line?

- Let's be honest… security is like an onion. Luckily, you decide how many layers of security you want and need
  - How vulnerable of a target are you today?
  - How attractive of a target are you?
  - What's the potential loss?
    - Monetary
    - Reputation
    - Trust
    - PII / Compliance



Let's Start Building Security Into Development

- Next week you should:
  - Assess where you are _not_ automating, but could be
  - Decide on how you plan to restructure your organization with security embedded throughout
    - Integrate security into each team
    - Train the breaking mindset



Let's Start Building Security Into Development

- In 3 months you should:
  - Automate your deployments and implement a CI/CD process
  - Re-evaluate your security tools, focused on automation and integration
  - Have a security liaison spend time with each team to evaluate gaps

Let's Start Building Security Into Development

- In 6 months you should:
  - Automate and integrate your security
    - Pen tests, network tests, web tests, API tests
  - Implement your organizational changes
    - Embed security in each team
    - Train the breaking mindset

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More questions? Find me at booth # 3216 (South Expo)

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