StrangerDanger!

Finding Security Vulnerabilities Before They Find You!

Liran Tal

snyk

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DevDays Europe, May 15th 2019

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Node.js Security WG

OWASP NodeGoat Team

Author of Essential Node.js Security

THE SECURE DEVELOPER

JSHeroes

Open Source Is Awesome

Total packages indexed per ecosystem

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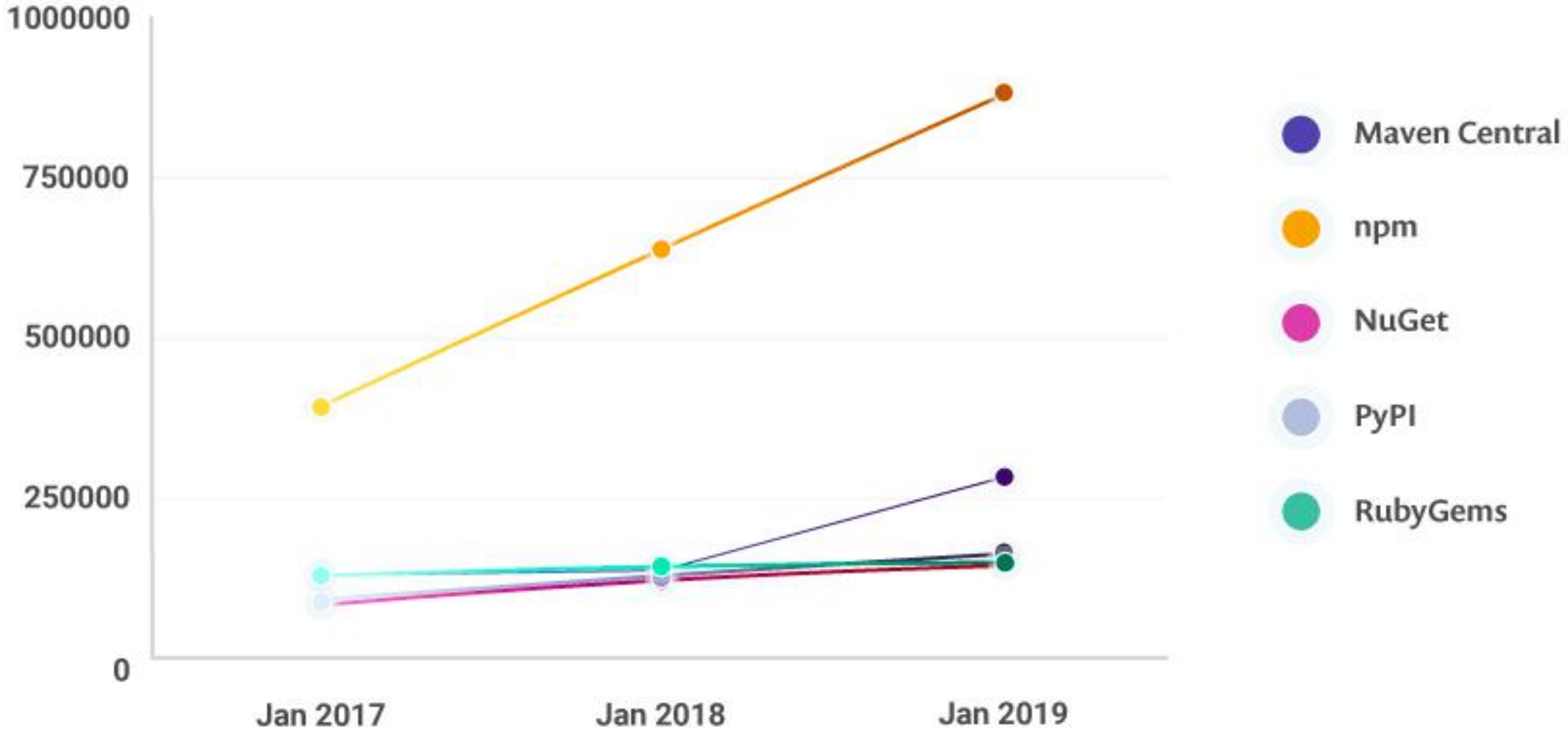
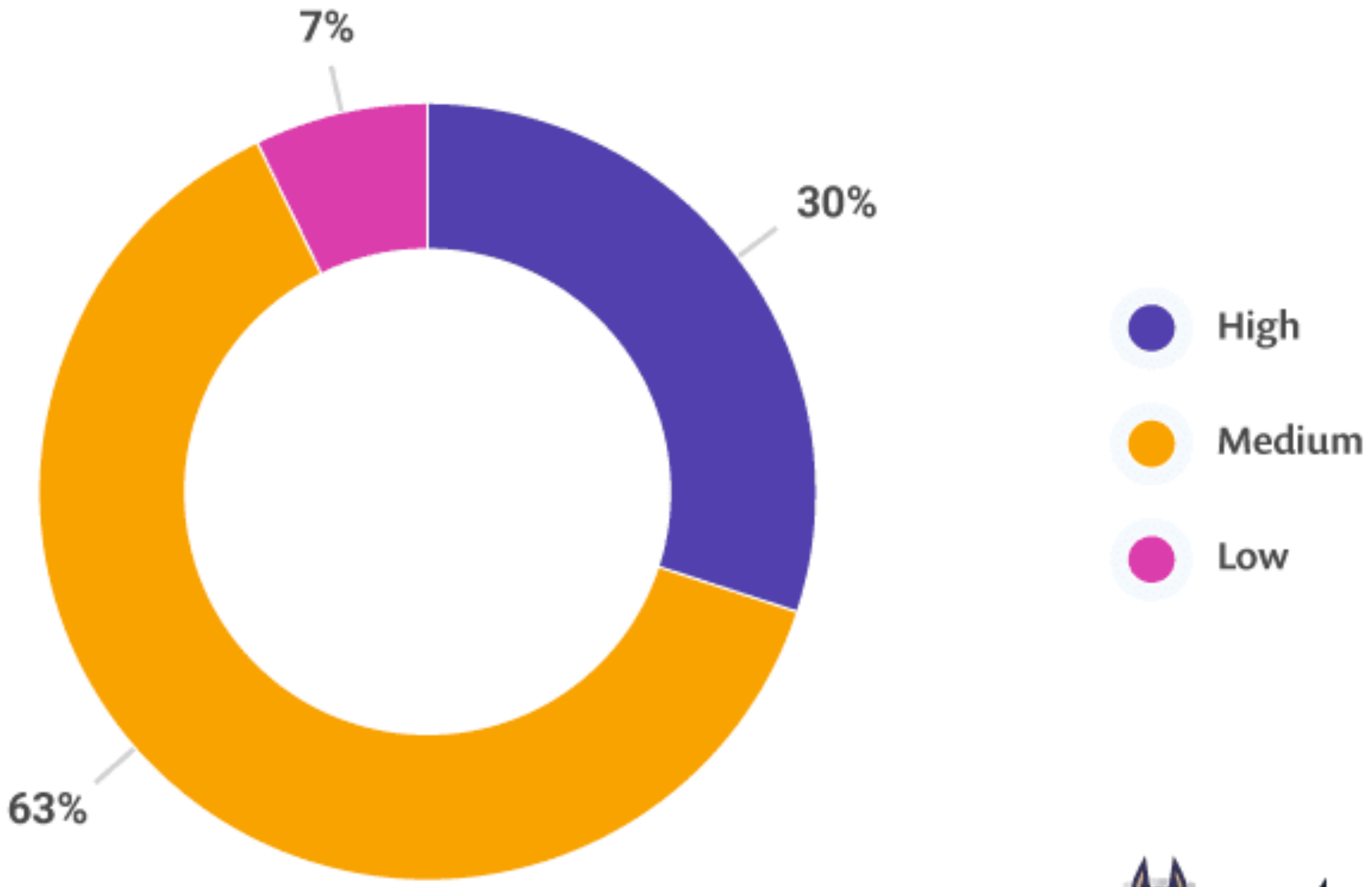


Open Source is written by People

Do You Know
Which Dependencies
You Have?

Open Source is written by ~~People~~ Strangers

OS maintainers are confident in their own security knowledge



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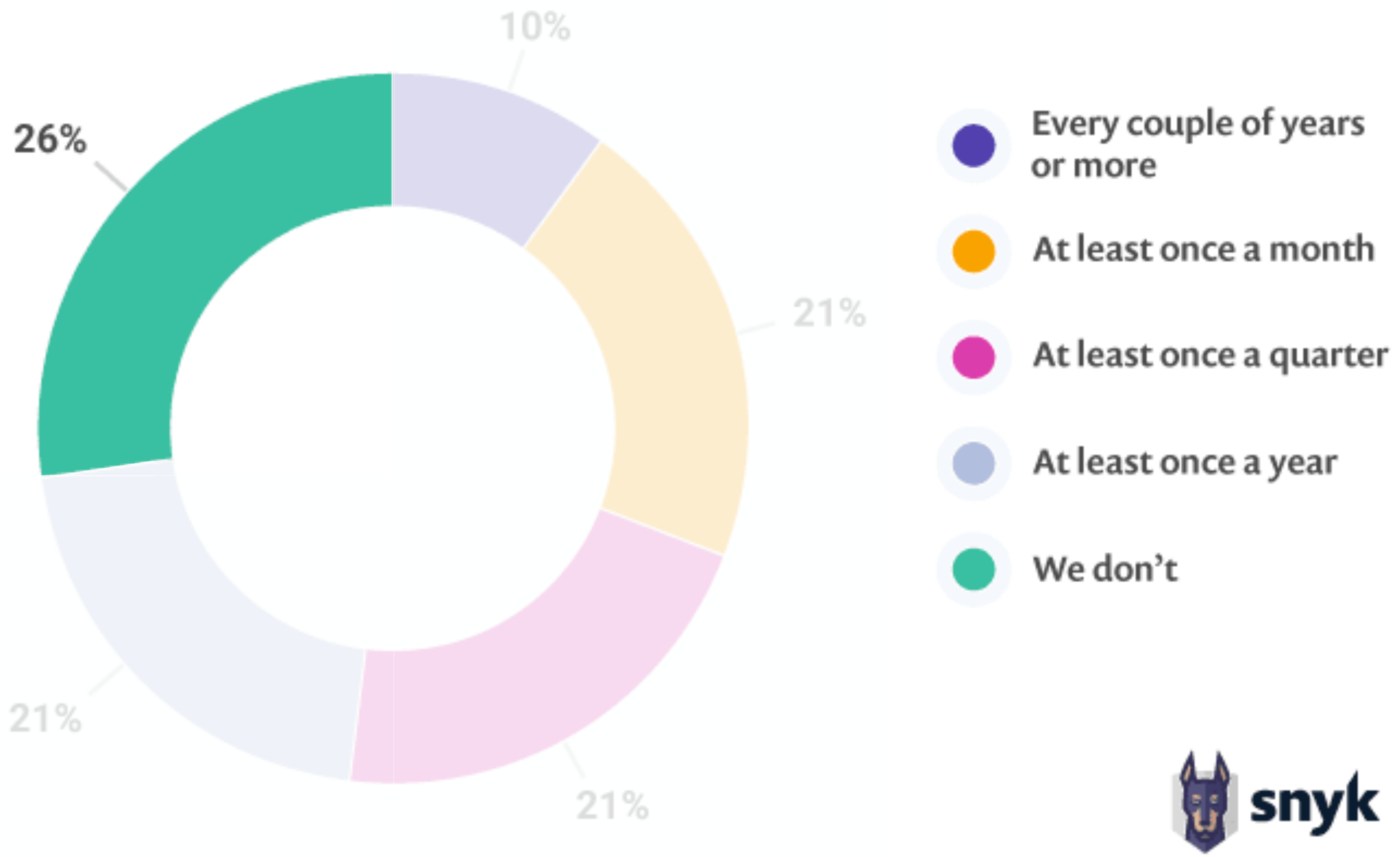
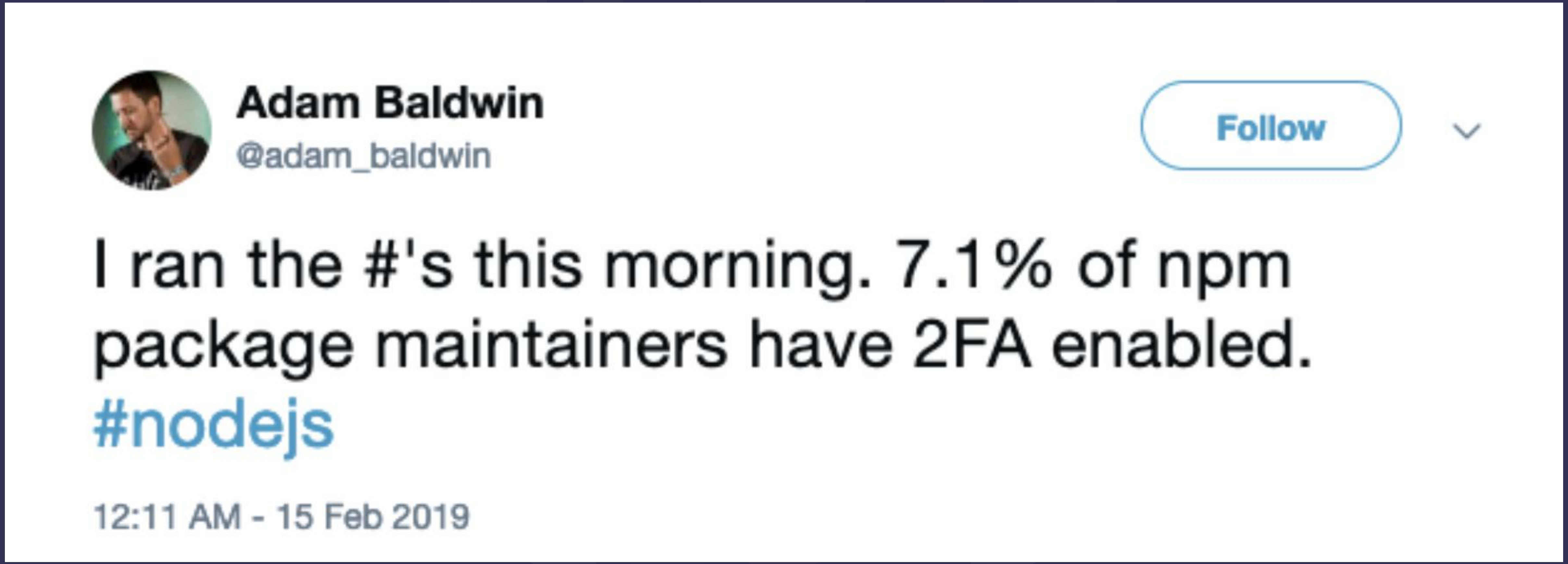
OS maintainers differ in their code auditing cadence





Adam Baldwin
@adam_baldwin

I ran the #'s this morning. 7.1% of npm package maintainers have 2FA enabled. #nodejs

12:11 AM - 15 Feb 2019

flatmap-stream

eslint-scope

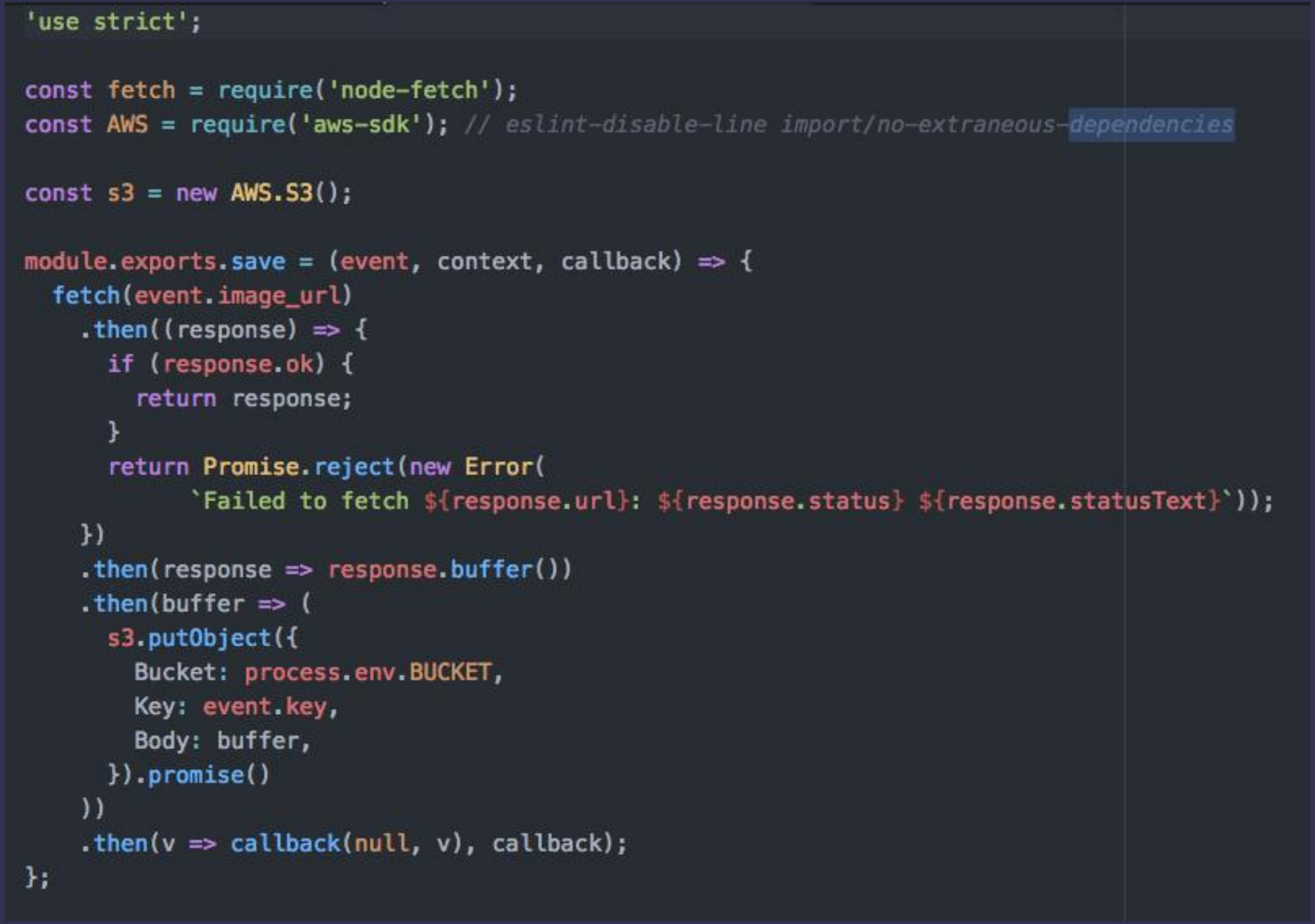
crossenv

A typical JavaScript app has 100s or 1,000s of dependencies

Some direct, most indirect

Serverless Example: Fetch file & store in s3

(Serverless Framework Example)



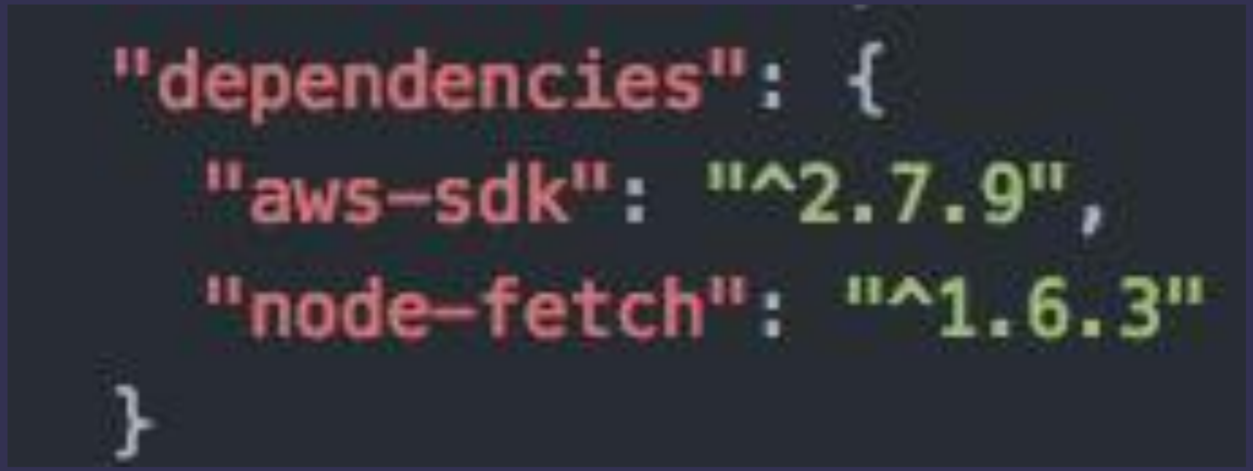
```
'use strict';

const fetch = require('node-fetch');
const AWS = require('aws-sdk'); // eslint-disable-line import/no-extraneous-dependencies

const s3 = new AWS.S3();

module.exports.save = (event, context, callback) => {
  fetch(event.image_url)
    .then((response) => {
      if (response.ok) {
        return response;
      }
      return Promise.reject(new Error(
            `Failed to fetch ${response.url}: ${response.status} ${response.statusText}`));
    })
    .then(response => response.buffer())
    .then(buffer => (
      s3.putObject({
        Bucket: process.env.BUCKET,
        Key: event.key,
        Body: buffer,
      }).promise()
    ))
    .then(v => callback(null, v), callback);
};
```

19 Lines of Code

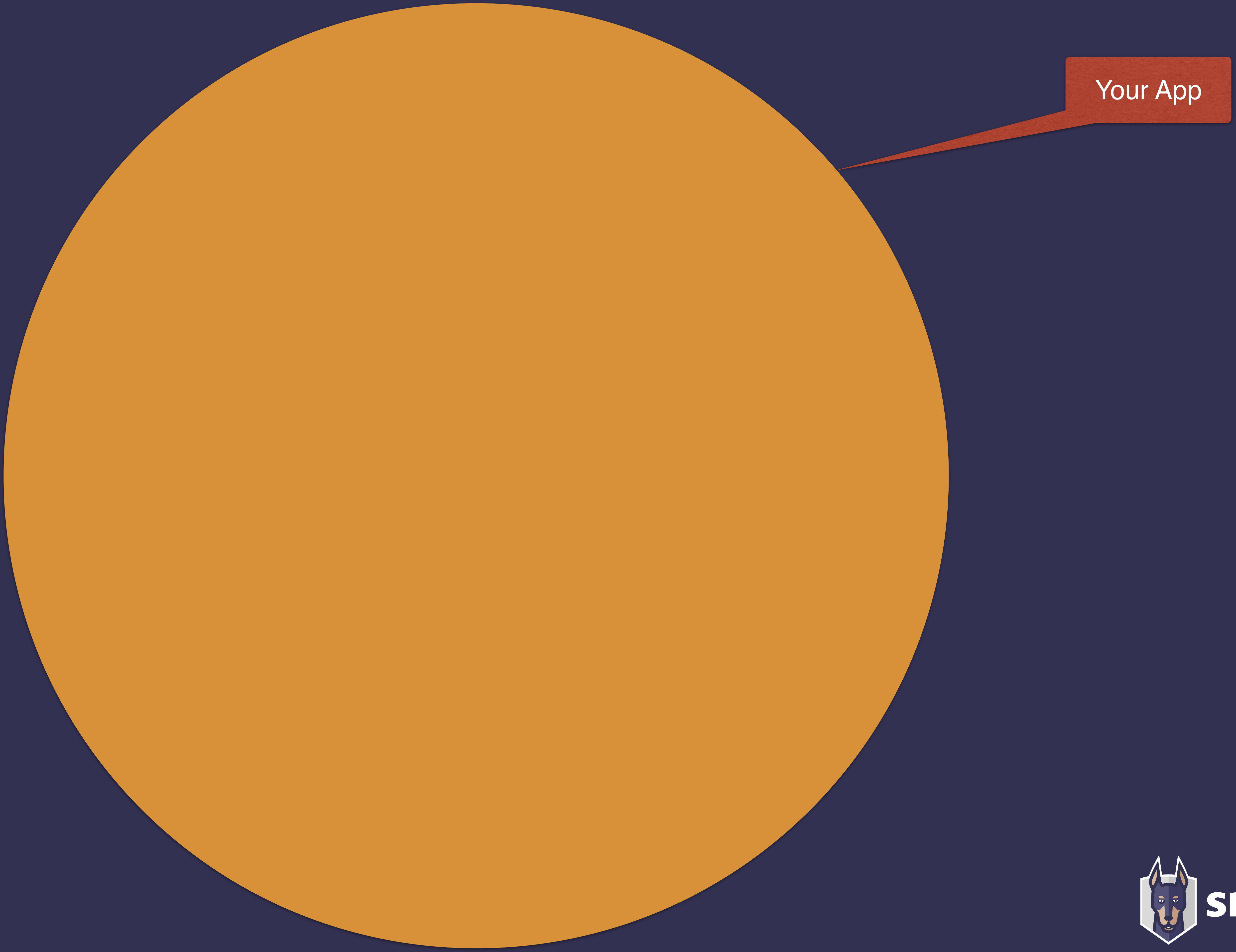


```
"dependencies": {
  "aws-sdk": "^2.7.9",
  "node-fetch": "^1.6.3"
}
```

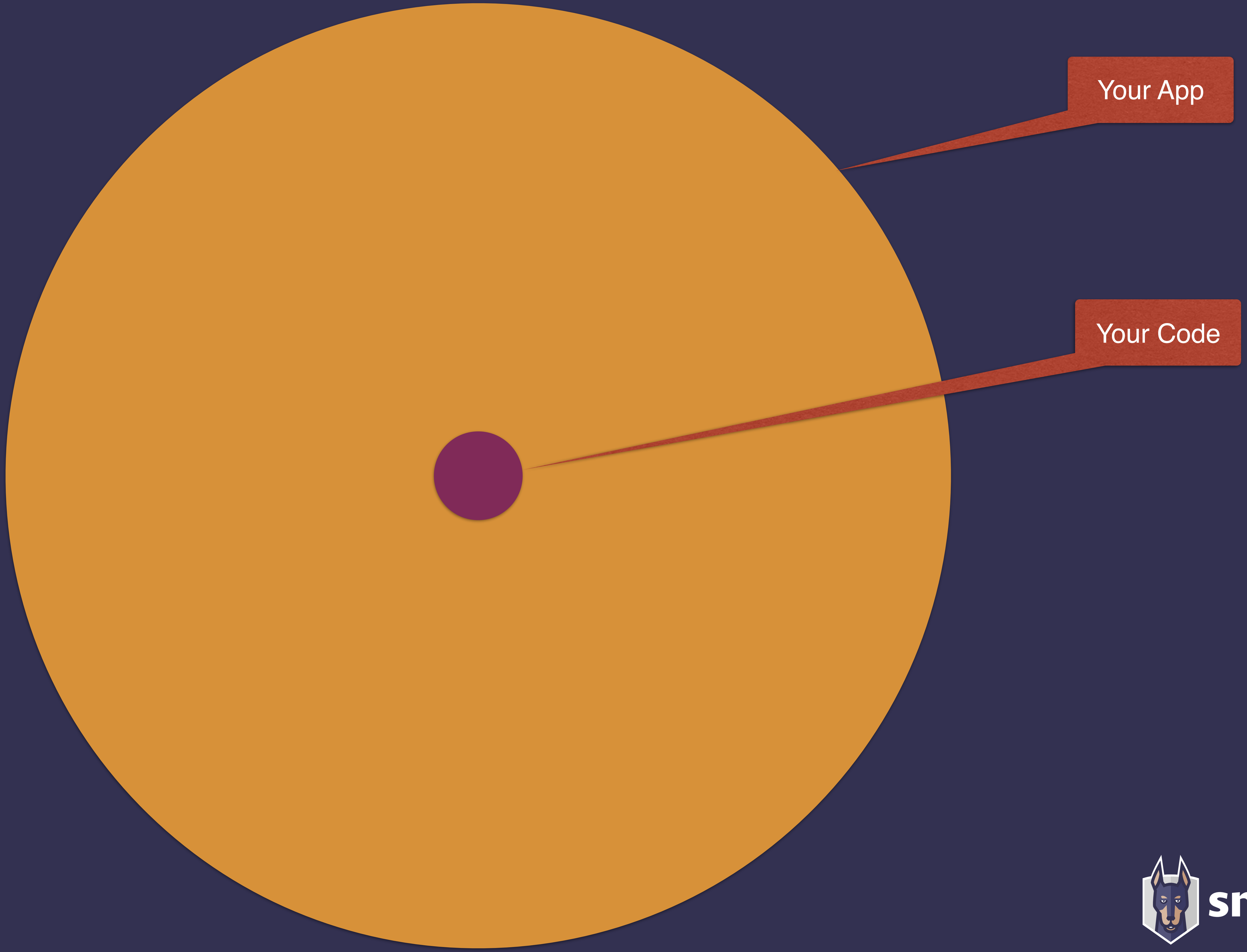
2 Direct dependencies

19 dependencies (incl. indirect)

191,155 Lines of Code



Your App



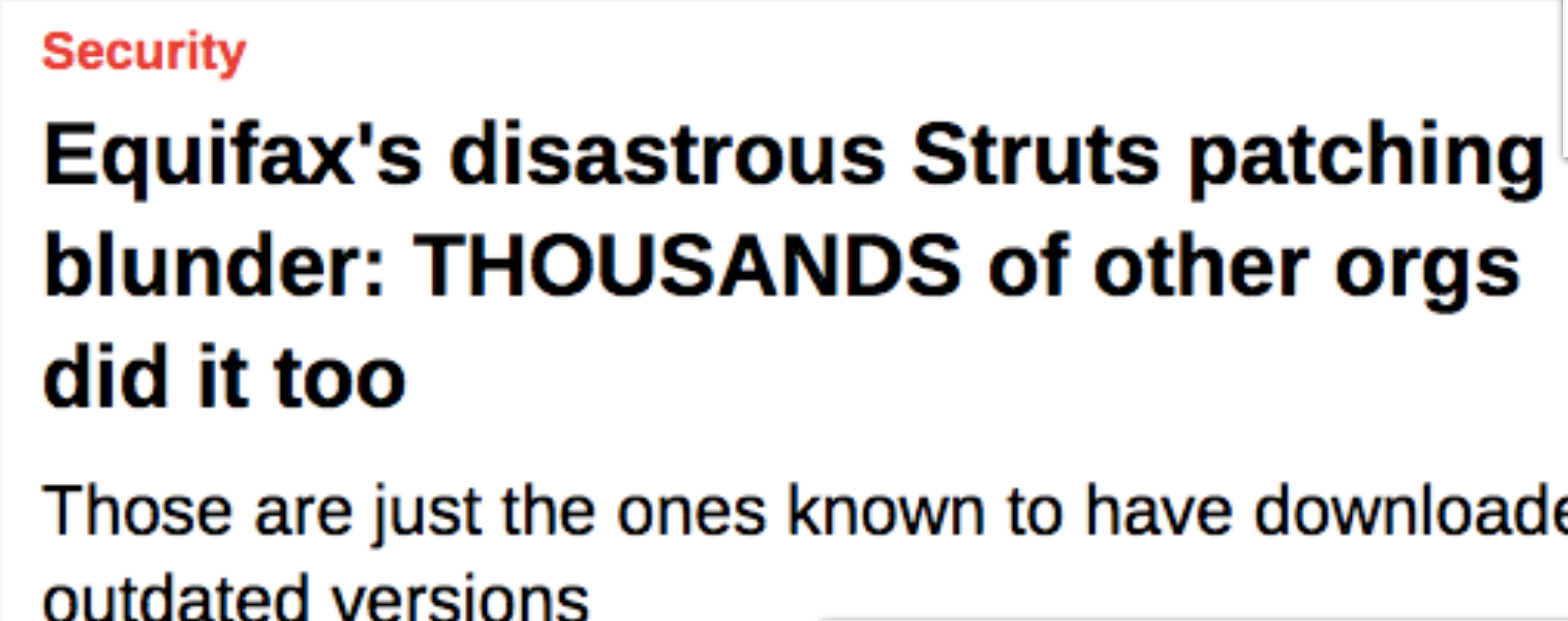
Your App

Your Code

AppSec Challenges

1. Software delivery **sped up** with little thought to **security**
2. **Lack of security focus** throughout the app lifecycle
3. **Silo**-ed security expertise

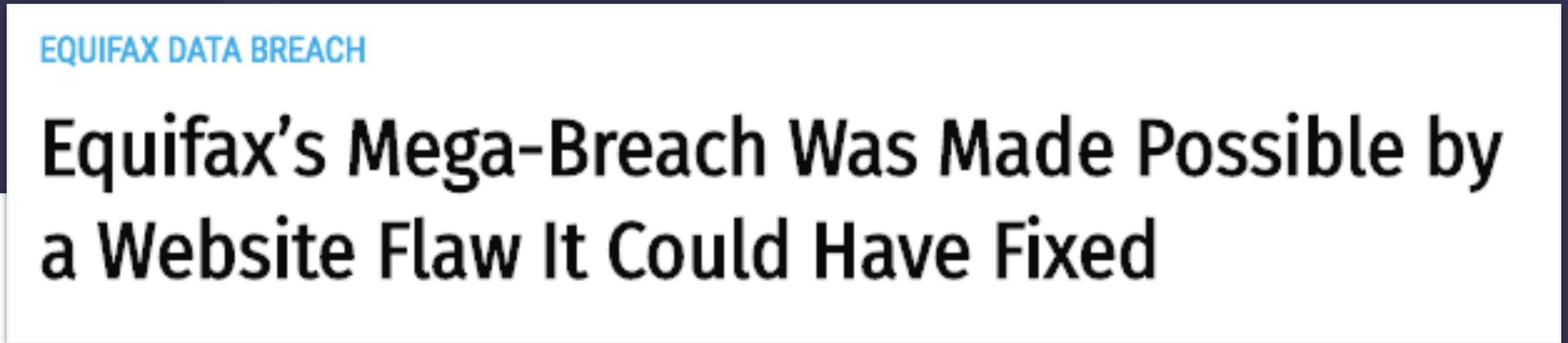
What happens when we neglect open source security?



Security

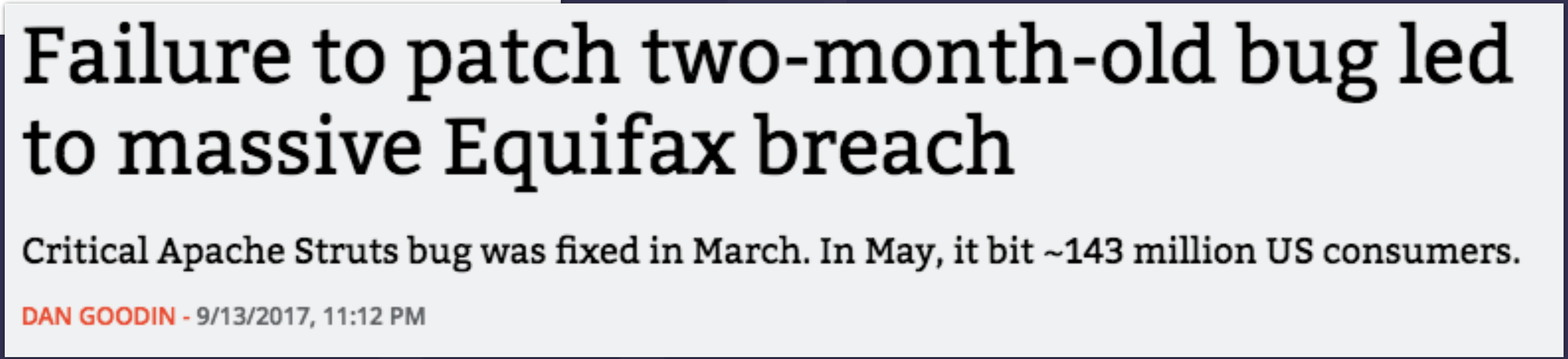
Equifax's disastrous Struts patching blunder: THOUSANDS of other orgs did it too

Those are just the ones known to have downloaded outdated versions



EQUIFAX DATA BREACH

Equifax's Mega-Breach Was Made Possible by a Website Flaw It Could Have Fixed



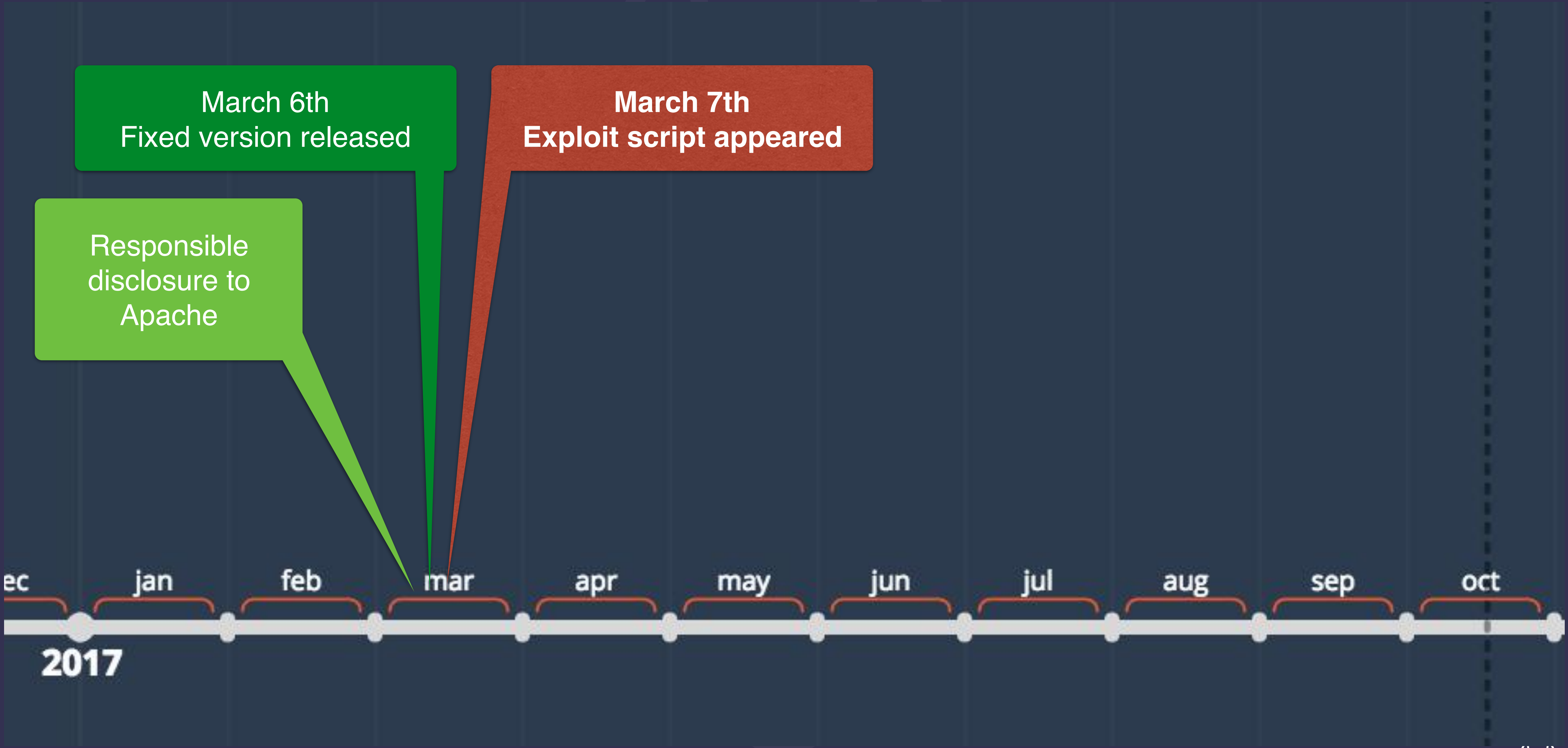
Failure to patch two-month-old bug led to massive Equifax breach

Critical Apache Struts bug was fixed in March. In May, it bit ~143 million US consumers.

DAN GOODIN - 9/13/2017, 11:12 PM

Java Struts 2 RCE Vulnerability

CVE 2017-5638



March 6th
Fixed version released

March 7th
Exploit script appeared

Responsible disclosure to Apache

@liran_tal

Source: Josh Corman & Dan Geer

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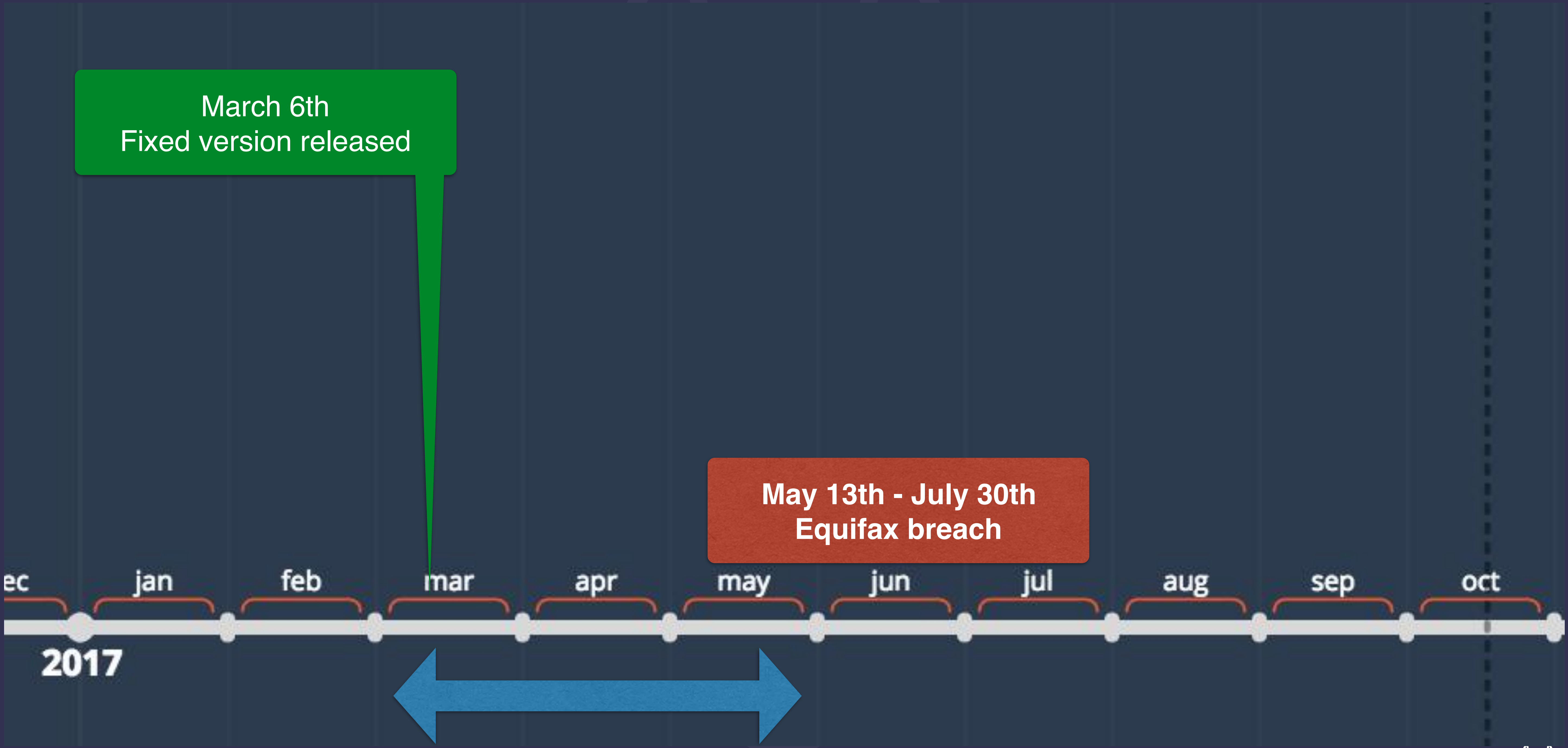
Java Struts 2 RCE Vulnerability

CVE 2017-5638



March 6th
Fixed version released

May 13th - July 30th
Equifax breach

@liran_tal

Source: Josh Corman & Dan Geer

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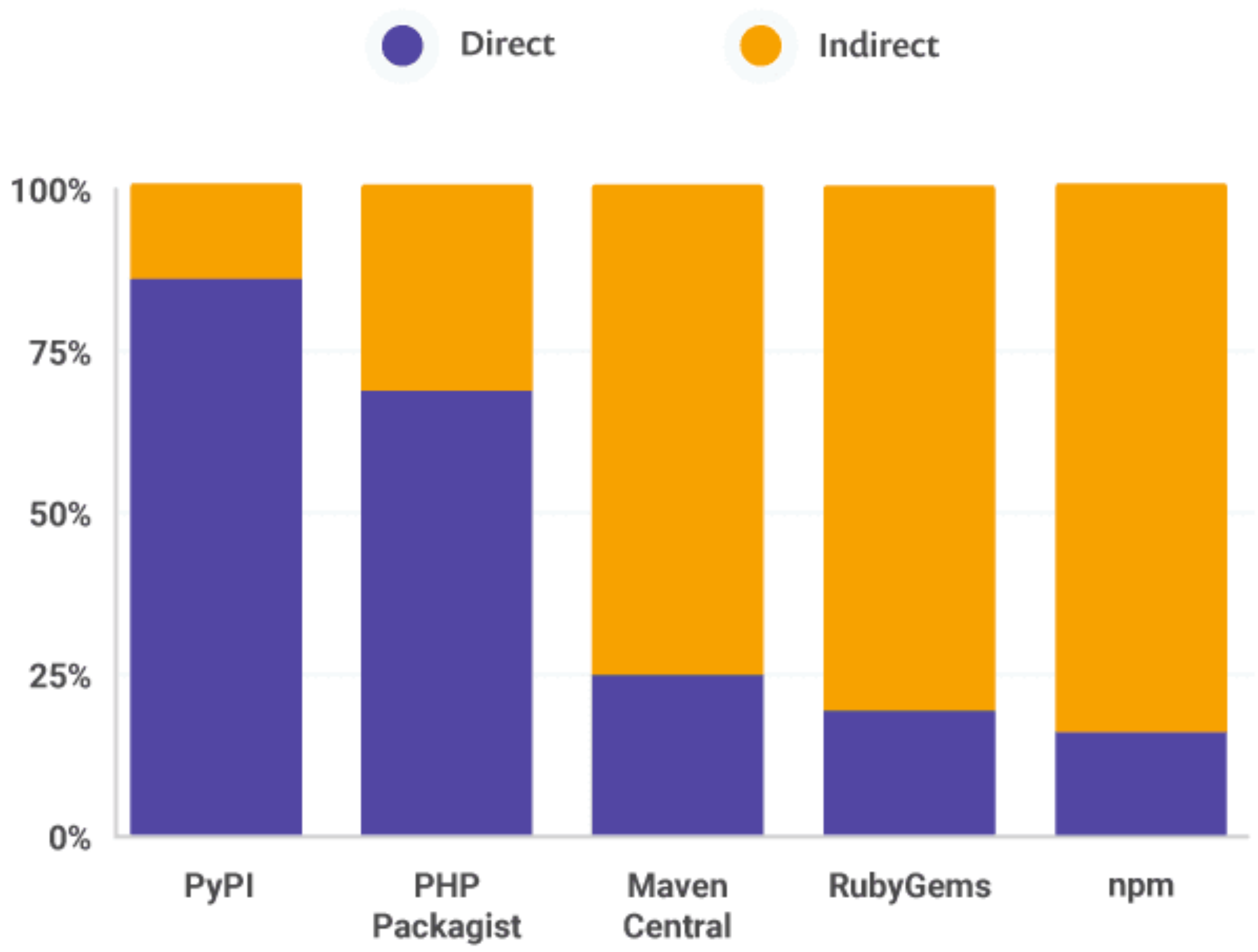
Attackers Are Targeting Open Source

One vulnerability, many victims

The direct and indirect dependency split across ecosystems



Live Hacking

Let’s learn about vulnerabilities in open source libraries

What’s the **Solution**?

What’s the **Solution?**

Team Culture + Process + Tooling

Open Source Security Takeaway

- Find vulnerabilities
- Fix vulnerabilities
  - Upgrade when possible, patch when needed
- Prevent adding vulnerable modules
  - Break the build, test in pull requests

Liran Tal
Developer Advocate

Open Source Is Awesome

Please Enjoy Responsibly

@liran_tal