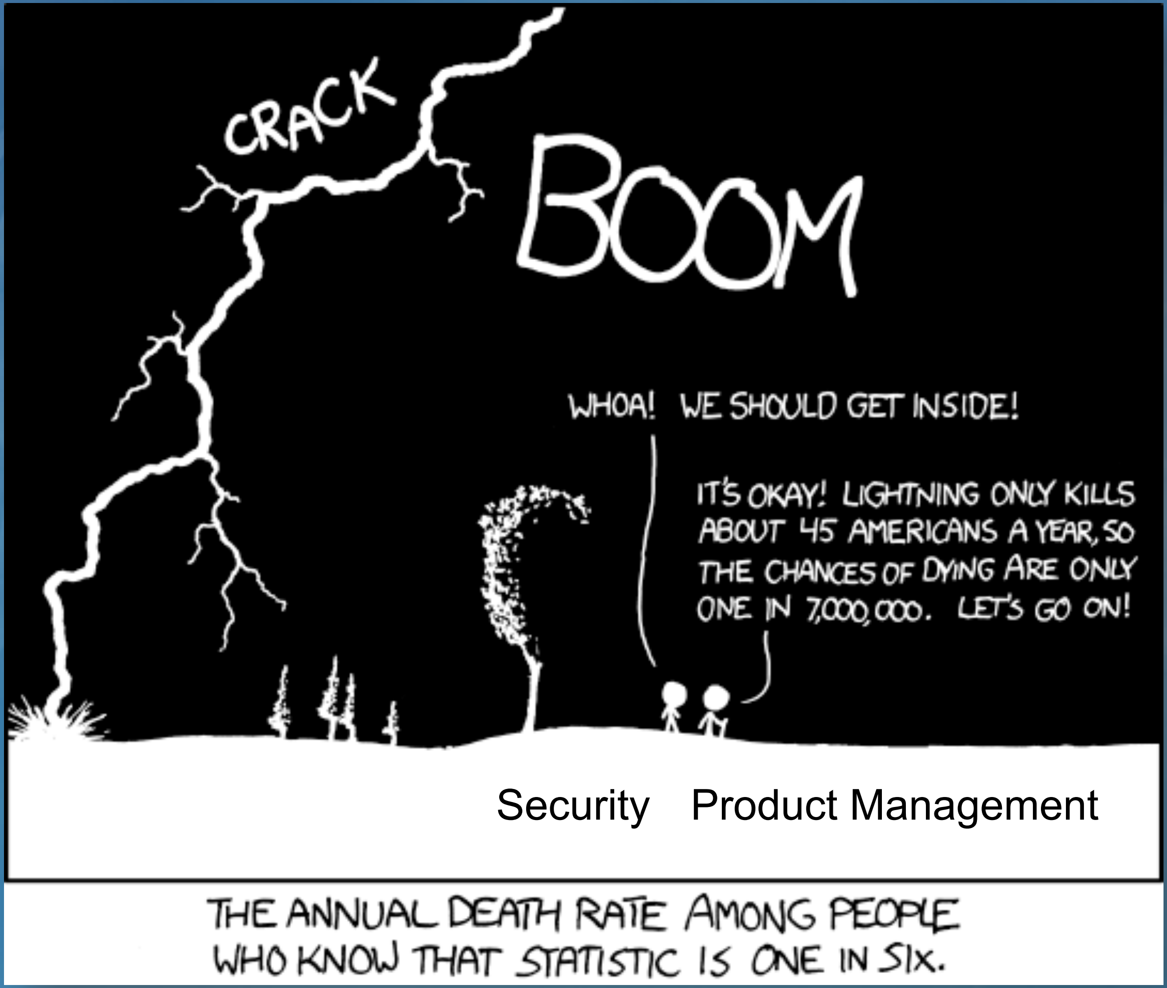
SEEING THE FOREST THROUGH THE TREES

RYAN BERG – CSO SONATYPE

THE LANGUAGE OF SECURITY IS RISK


CRACK
BOOM
WHOA! WE SHOULD GET INSIDE!
IT'S OKAY! LIGHTNING ONLY KILLS ABOUT 45 AMERICANS A YEAR, SO THE CHANCES OF DYING ARE ONLY ONE IN 7,000,000. LET'S GO ON!
Security
Product Management
THE ANNUAL DEATH RATE AMONG PEOPLE WHO KNOW THAT STATISTIC IS ONE IN SIX.

http://xkcd.com/795/

WHAT IS RISK?

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WHAT DOES THE SNAIL TELL US?

+

=

“…WE OWE A DUTY OF REASONABLE CARE TO OUR NEIGHBOR”

Lord Atkin: Donoghue v. Stevenson (1932)

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You Built It, Your Responsible

"…a manufacturer of products, which he sells in such a form as to show that he intends them to reach the ultimate consumer in the form in which they left him with no reasonable possibility of intermediate examination, and with knowledge that the absence of reasonable care in the preparation or putting up of products will result in an injury to the consumer's life or property, owes a duty to the consumer to take that reasonable care."

WHAT IS RISK?

United States v. Carroll Towing Co.
159 F.2d 169 (2d. Cir. 1947)

THE COST OF DOING NOTHING CAN'T BE IGNORED

"…IF THE PROBABILITY BE CALLED P; THE INJURY, L; AND THE BURDEN, B; LIABILITY DEPENDS UPON WHETHER B IS LESS THAN L MULTIPLIED BY P: I.E., WHETHER $B < PL$".

Translation: If the Cost of Protecting Against Harm is less than the Cost of the Damage Multiplied by the Likelihood of the Damage, then there is **negligence**.

Risk = probability x impact

Modern software development

HAS CHANGED

Application security

HASN'T CHANGED ENOUGH

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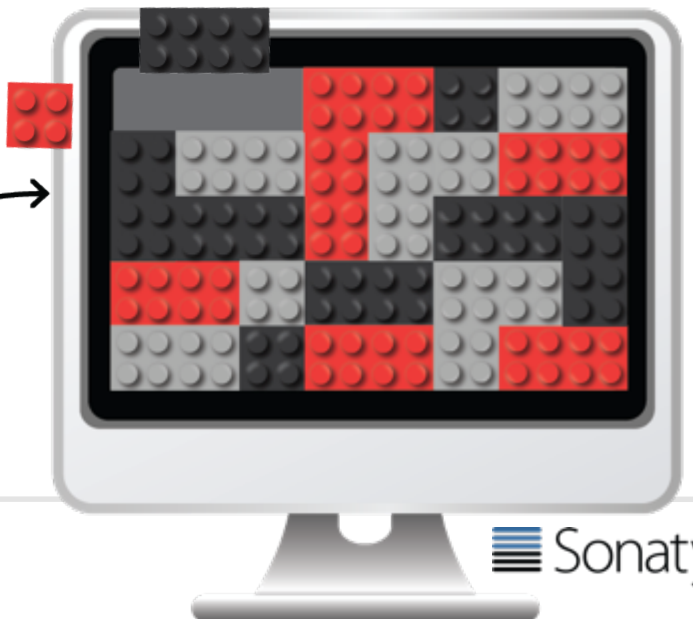
YOUR JOB DESCRIPTION HAS BEEN FUNDAMENTALLY RE-WRITTEN.

Applications are the new vector of attack.

Development is going faster than security can keep up.

Most source code has been replaced by open source components.



Did you know that 90% of a typical application is comprised of open source components which are assembled together like LEGO® building blocks?

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QUESTION:
IS APPLICATION SECURITY

BROKEN?

Security is bolted-on, not built-in.

Releases are monthly, weekly, or even daily. Security can't keep up.

Software is assembled with components, yet we can't really see what we're using.

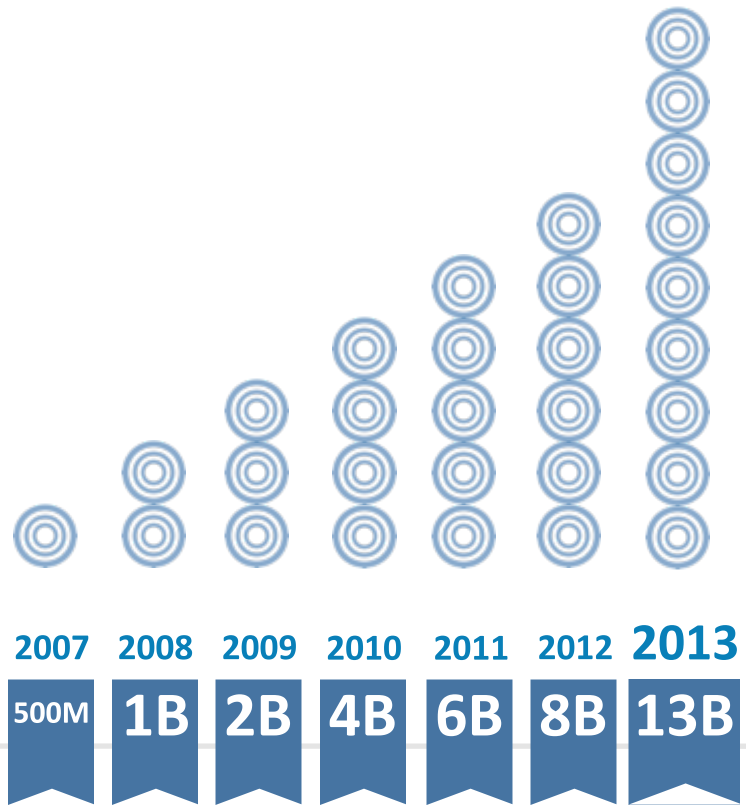
We build known vulnerabilities into our software, then spend even more time and resources to get them back out.

Open source usage is

EXPLODING

Yesterday's source code is today's

OPEN SOURCE



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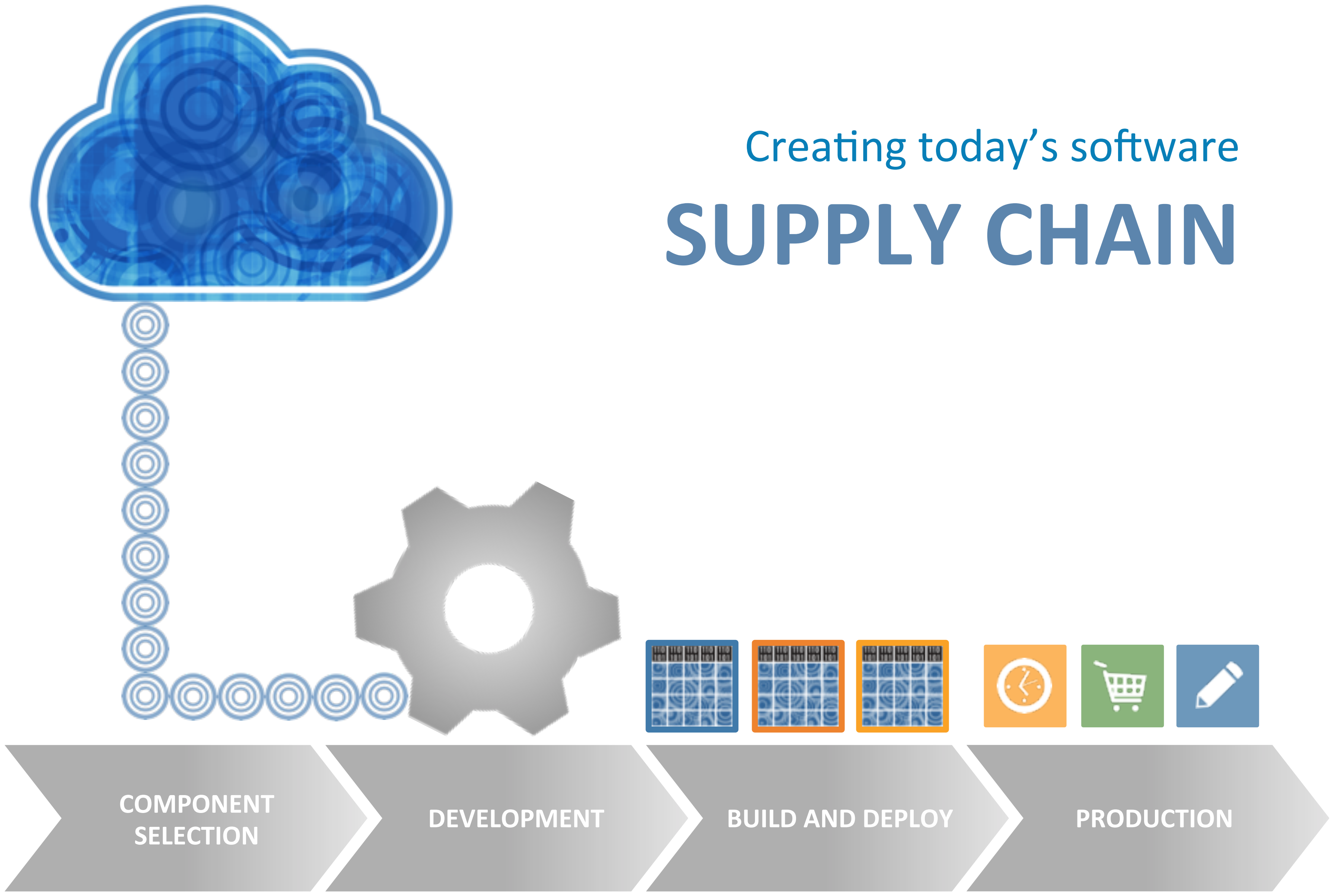
Creating today's software

SUPPLY CHAIN



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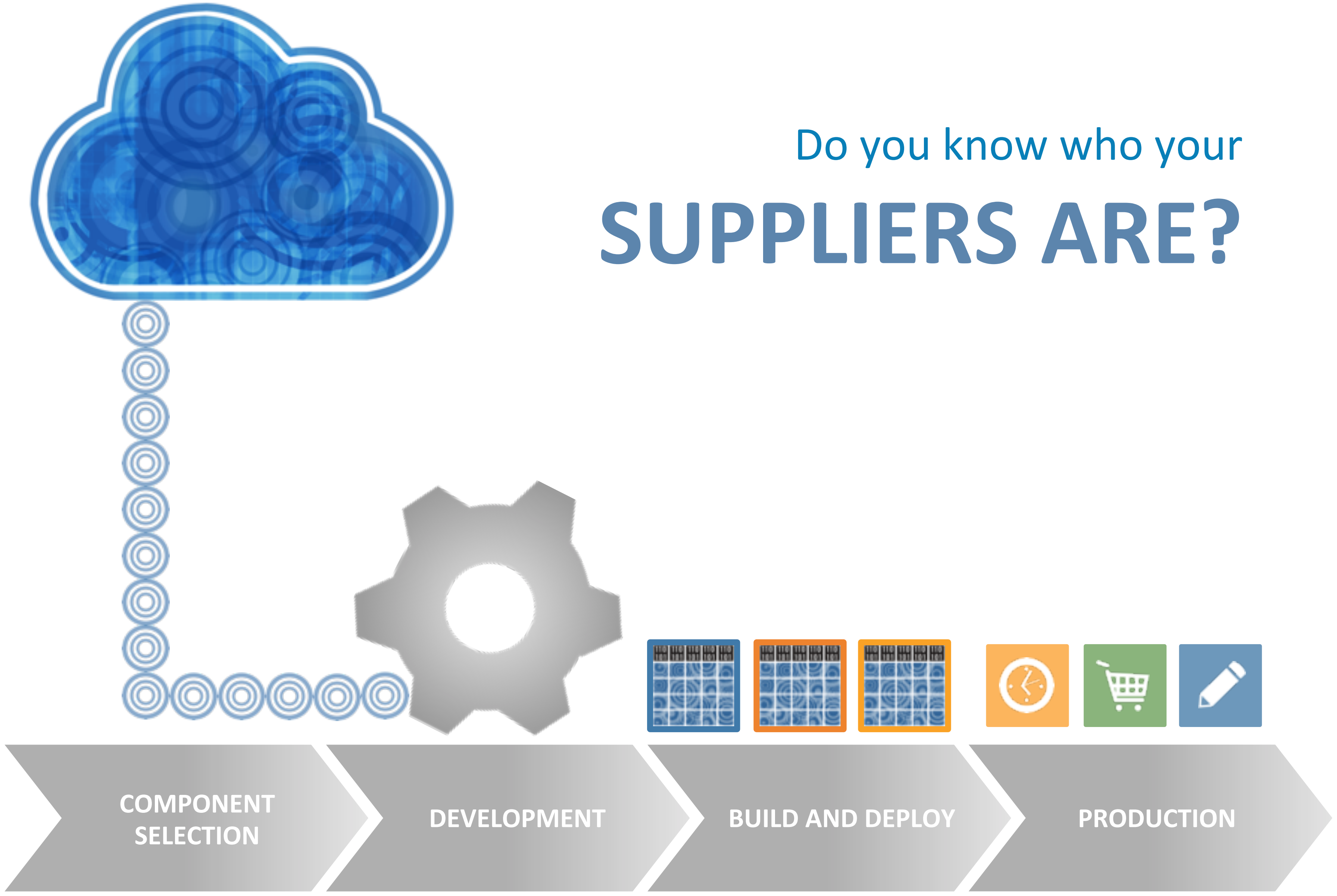
Do you know who your

SUPPLIERS ARE?



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CAN WE ALL AGREE?
THIS IS JUST NOT WORKING!

We scan source code.
We manually enforce whitelists and blacklists.
We (think we) have golden repositories.

All tickets on the things-we-think-we-should-do-to-be-competent train.

But your developers find work-arounds…
Cyber attacks are on the rise…
And software is still not secure…

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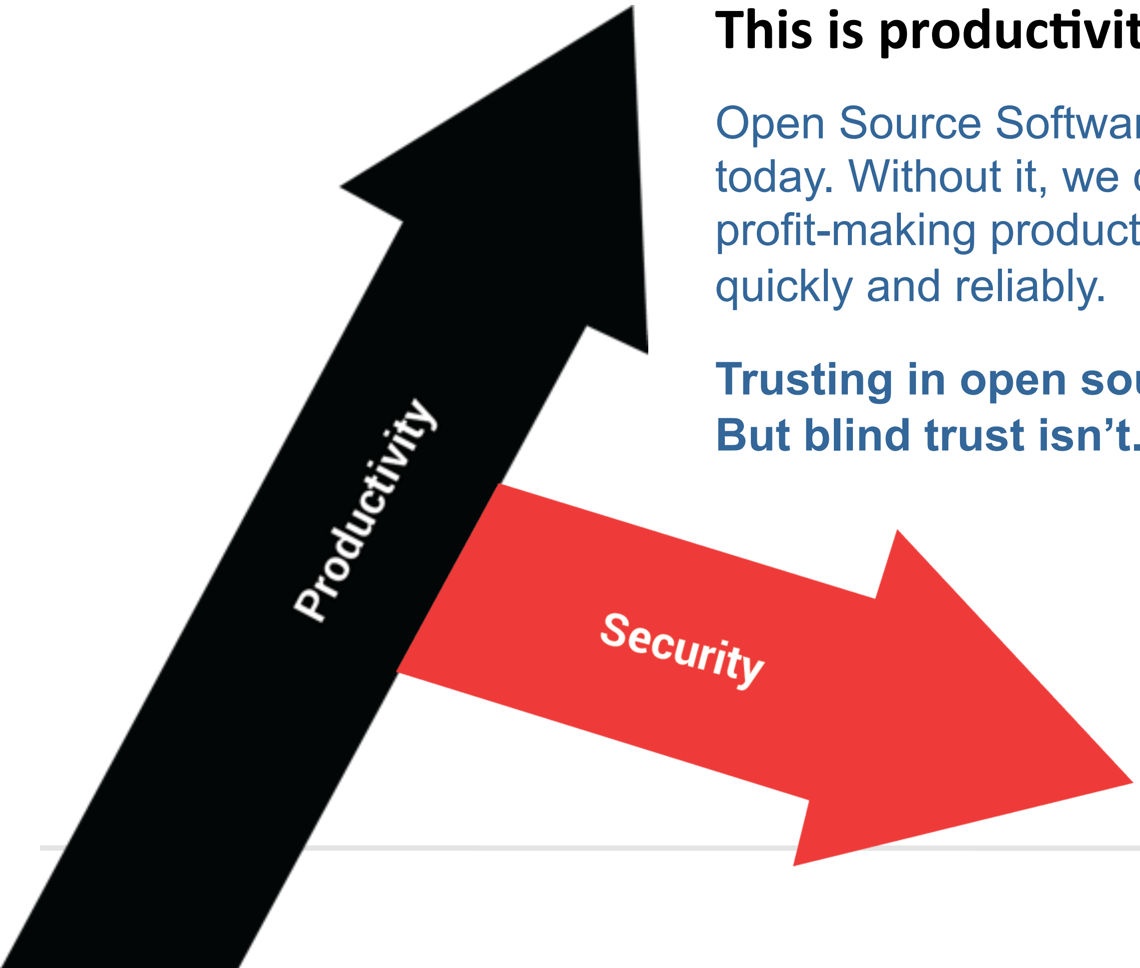
THE FACTS: THIS IS NOT AN OPEN SOURCE PROBLEM.



This is productivity exceeding security.

Open Source Software (OSS) is essential in our world today. Without it, we couldn’t build our innovative, profit-making products or awesome new services quickly and reliably.

Trusting in open source is fine.
But blind trust isn’t.

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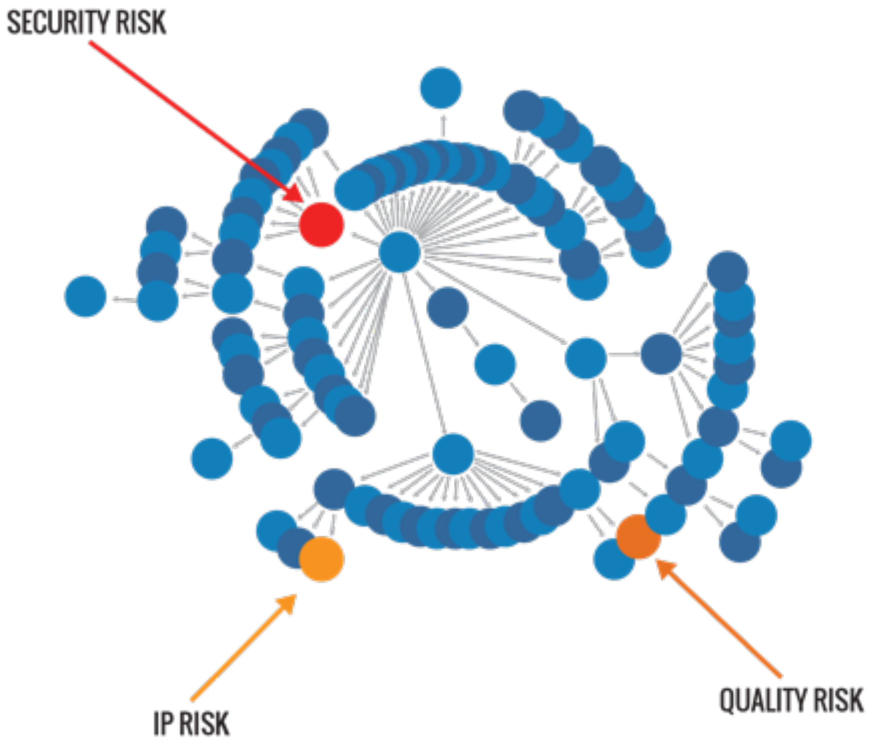
Components are like **MOLECULES** not atoms.

There are massive dependencies.



Complexity

One component may rely on 100s of others

Volume

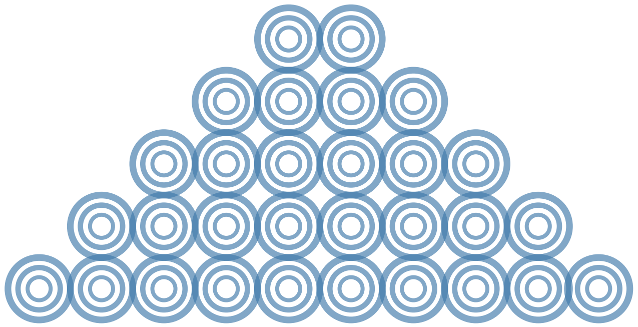
Typical enterprise consumes 1,000s of components monthly

Diversity

- 40,000 Projects
- 200M Classes
- 400K Components

Change

Typical component is updated 4X per year



674,863 OSS COMPONENTS

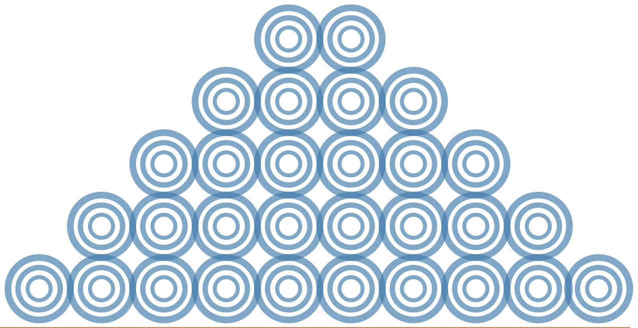
CHANGE

Typical component is updated 4X per year.

11 MILLION OSS USERS

Change

Typical component is updated 4X per year



674,863 OSS COMPONENTS

CHANGE

Typical component is updated 4X per year.

Unlike COTS, there is no clear, effective

COMMUNICATION

channel

11 MILLION OSS USERS

- *Has a risk been identified?*
- *What type of risk?*
- *Is a better version available?*

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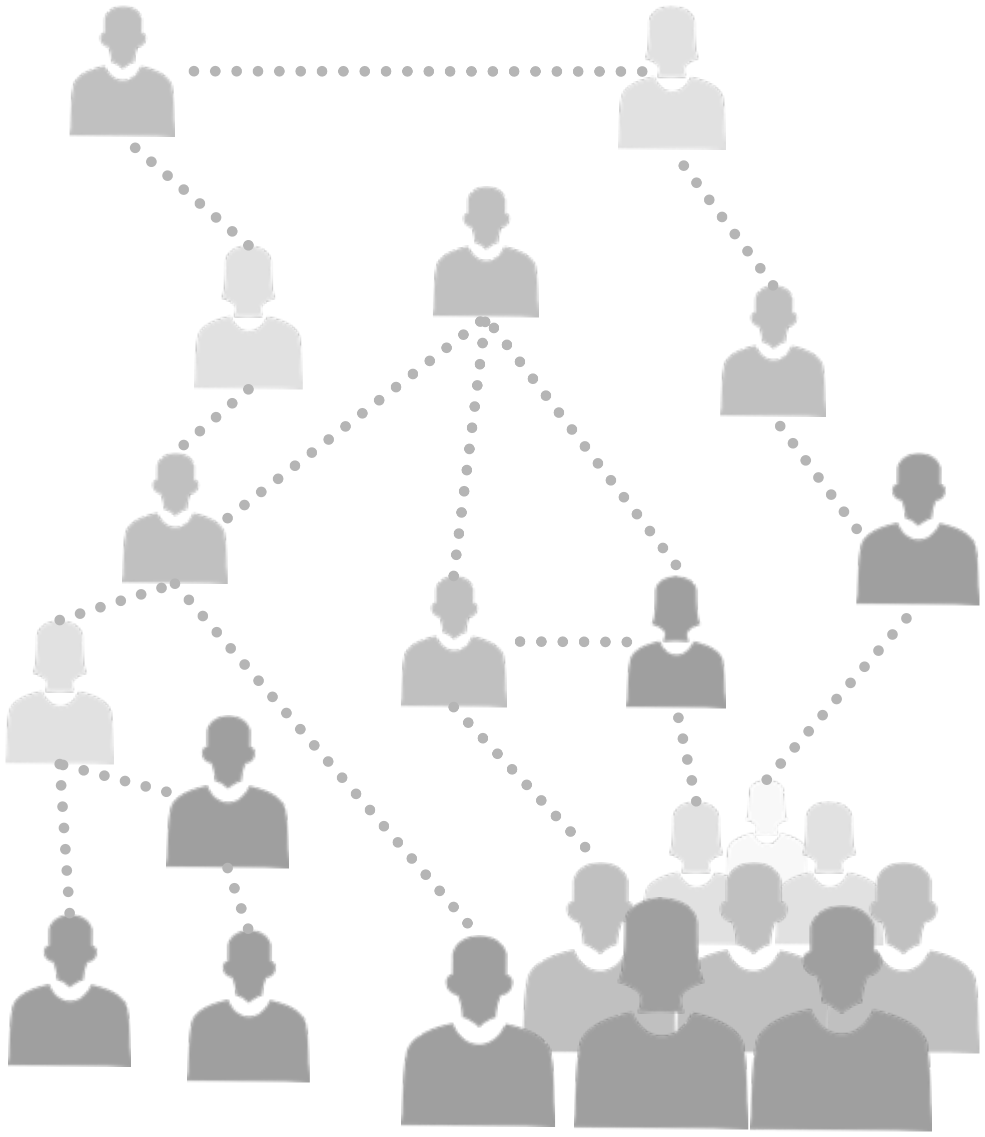

Manual processes

DON'T WORK

Automation should

ENFORCE POLICIES

Humans should manage exceptions

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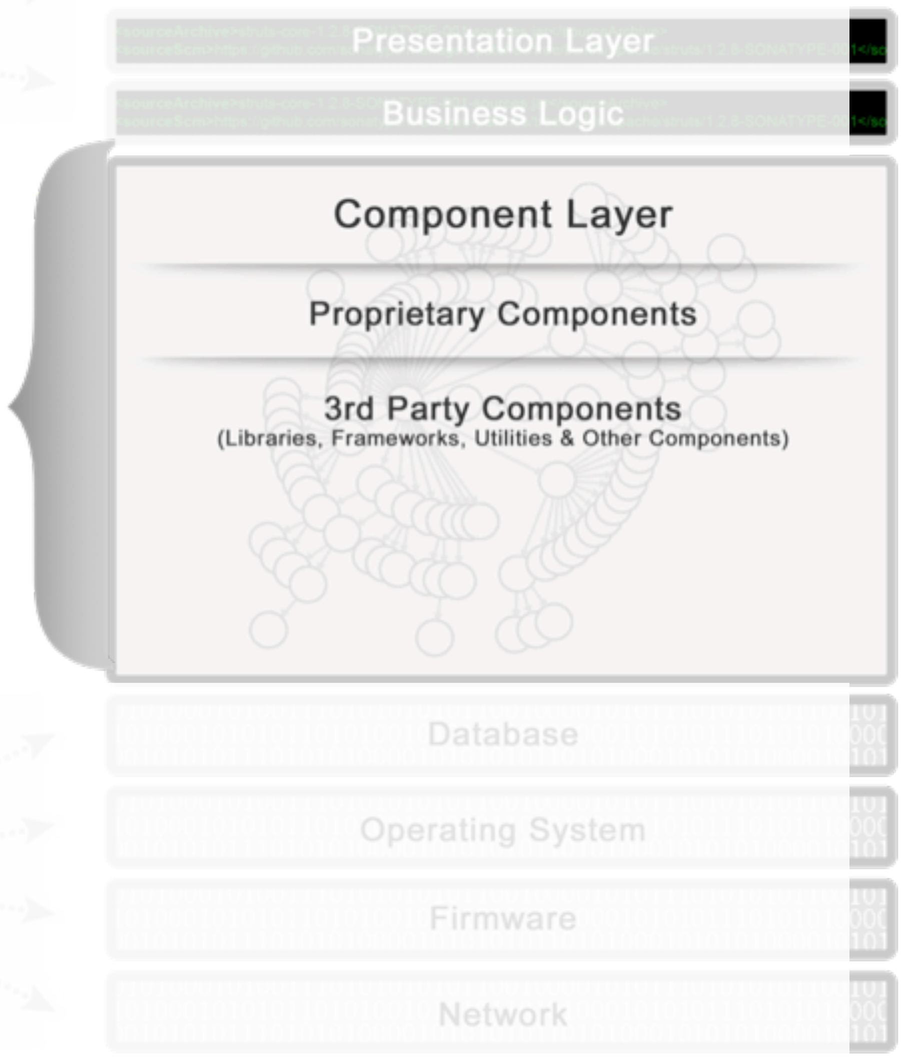
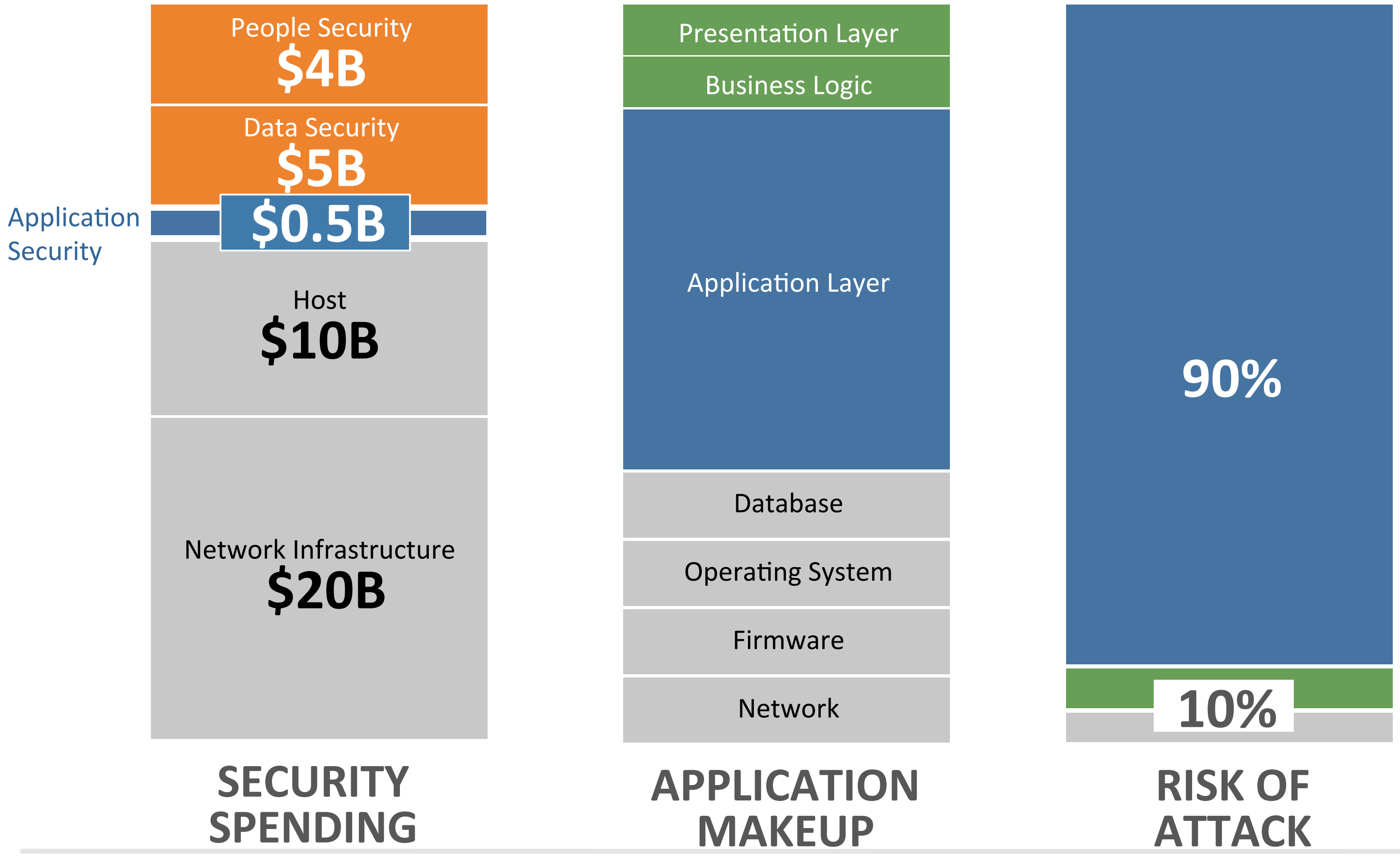
WHAT ME WORRY, TIS' JUST A BIT OF FLOATING ICE

Components are a hidden risk



Spending and risk are

OUT OF SYNC



Risk of Attack Source: Ponemon Institute; Security spending numbers are approximate

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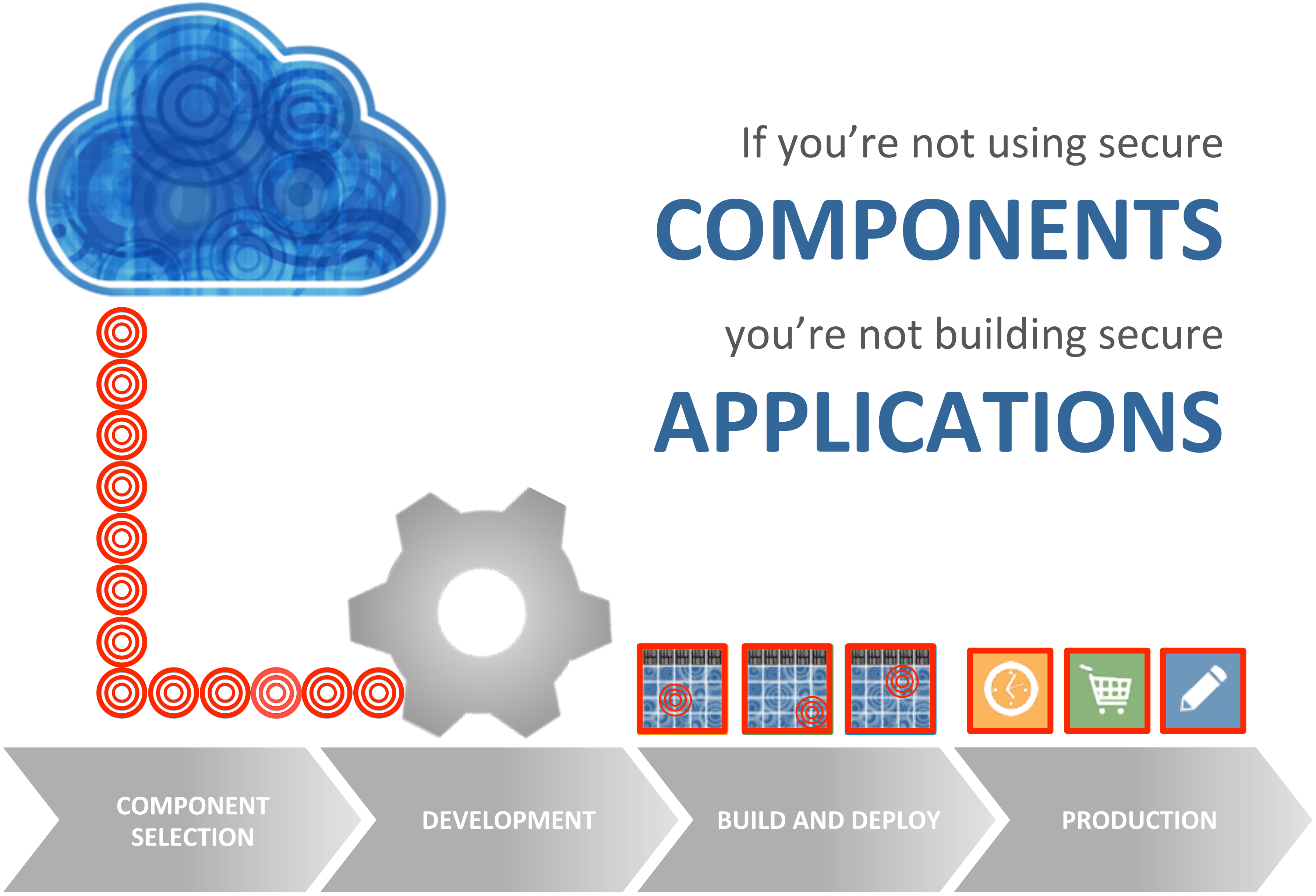
If you're not using secure

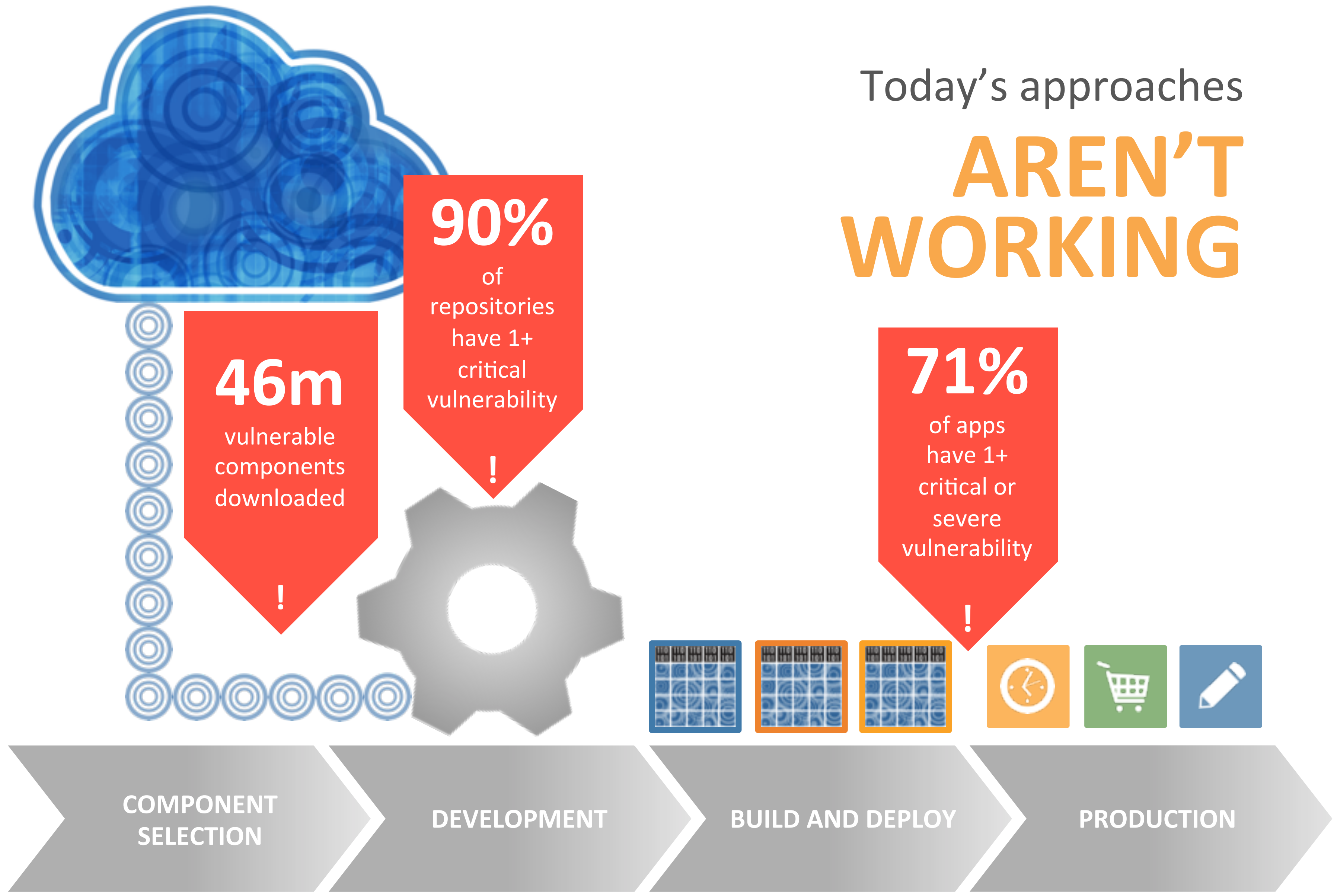
COMPONENTS

you're not building secure

APPLICATIONS



Today's approaches AREN'T WORKING


46m
vulnerable components downloaded
!
90%
of repositories have 1+ critical vulnerability
!
71%
of apps have 1+ critical or severe vulnerability
!
COMPONENT SELECTION
DEVELOPMENT
BUILD AND DEPLOY
PRODUCTION

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LET'S GET MORE SPECIFIC.

EVEN AFTER SECURITY ALERTS WERE ISSUED AND FIXES PROVIDED…

there were
150,508
downloads of
BOUNCY CASTLE
with an exploitability score of 10.

there were
70,665
downloads of
APACHE STRUTS 2
with an exploitability score of 10.

there were
2,167,625
downloads of
HTTP CLIENT
with an exploitability score of 8.6.

Hmmm…that's a lot of sour components flowing into your applications. And fresher versions have been available *for years!*

Source: Sonatype analysis of downloads from (Maven) Central Repository and NIST CVE database

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THE ANTI-PATTERNS

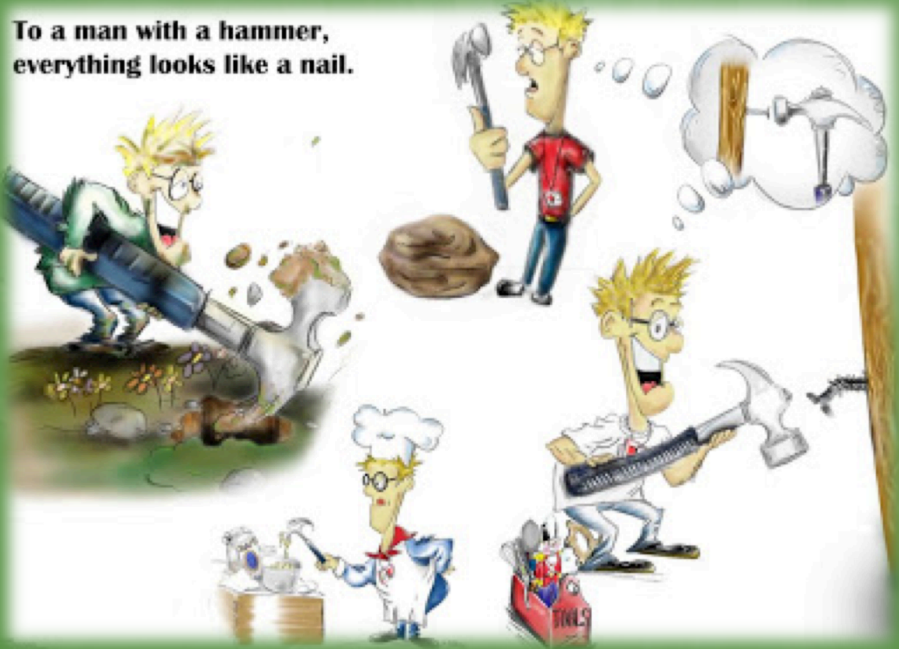
TURN OFF THE LIGHTS

LOCK THE DOORS

POINT FINGERS

THESE ARE NOT MY DROIDS

EVERYTHING IS A NAIL



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Applications don't age,

THEY ROT LIKE MILK

Time for a

FRESH APPROACH?

CURRENT METHODS

Problem discovery

“Scan and scold”

Source code scanning

Approval-centric workflow

Scans after development

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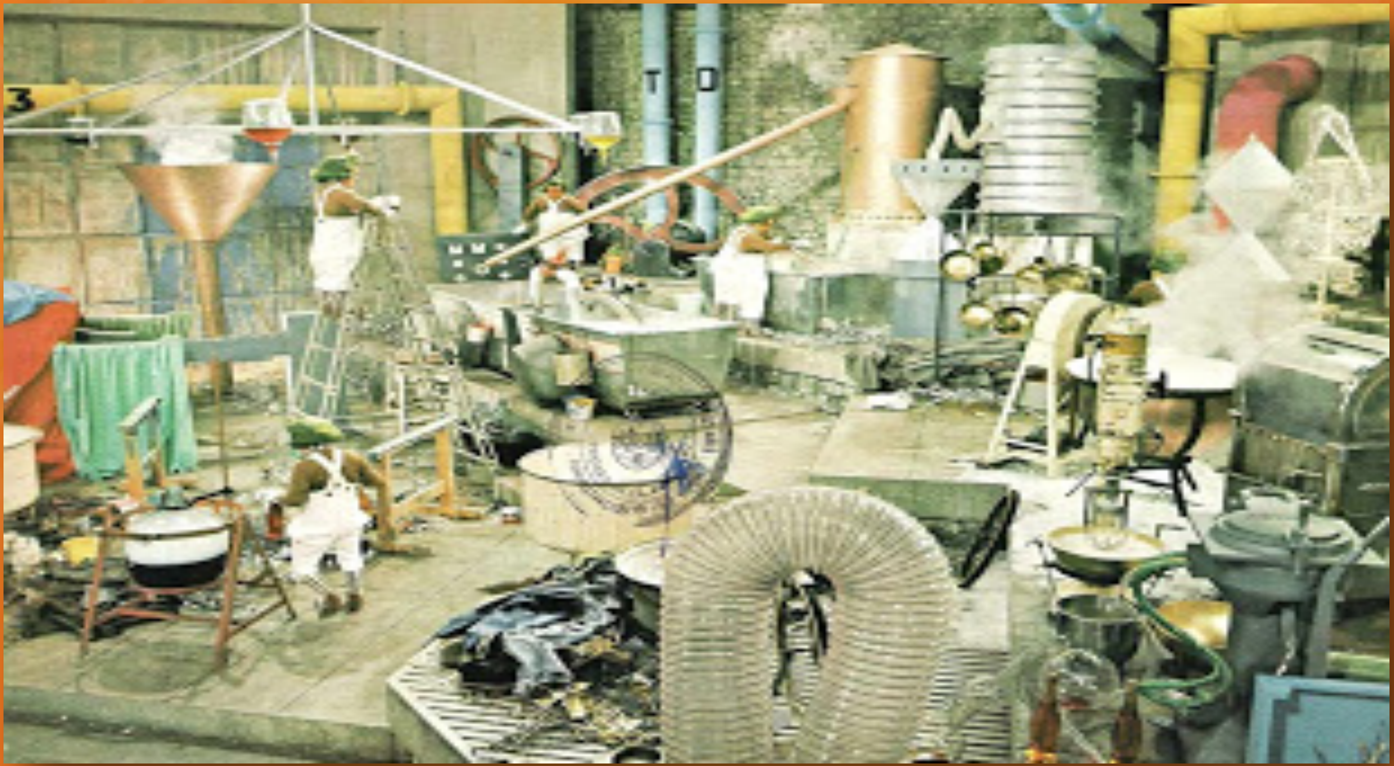
THE PROBLEM IS NOT PROBLEM DISCOVERY



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PROBLEM DISCOVERY WORKS FOR THIS

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NOT THIS

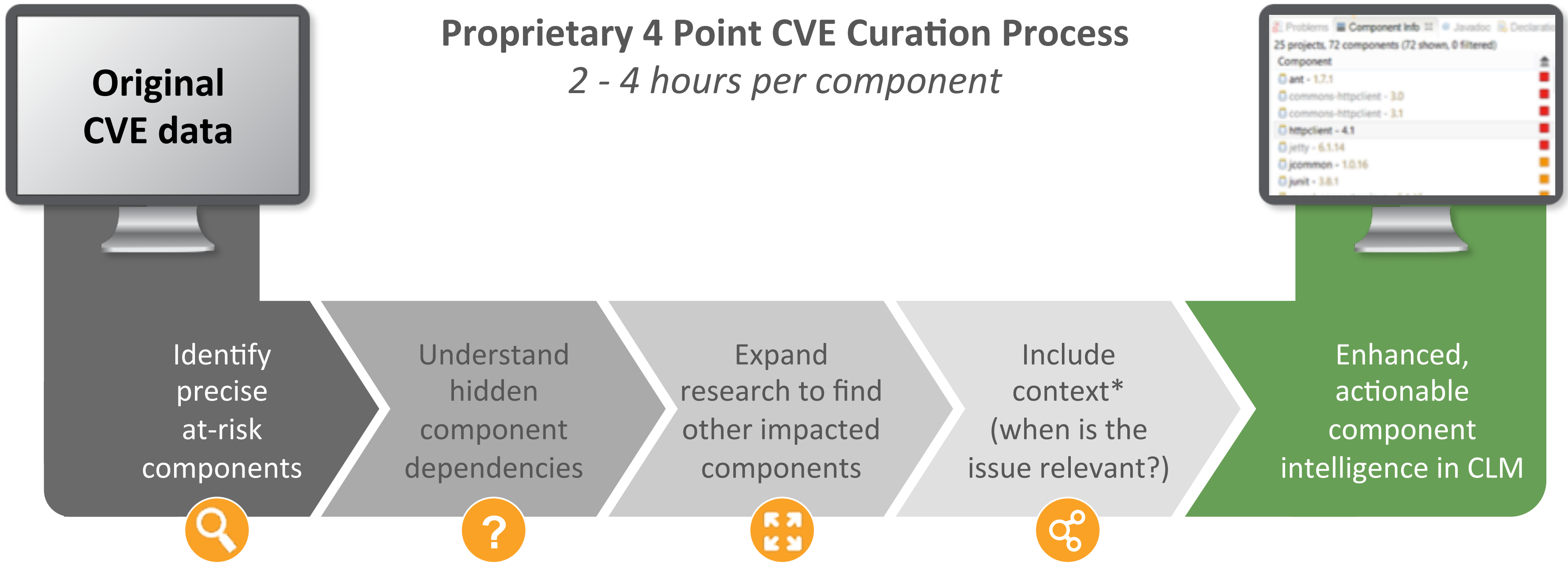
Time for a

FRESH APPROACH?

To fix it, you must first find it. Time to make CVE information actionable.

Proprietary 4 Point CVE Curation Process

2 - 4 hours per component


Original CVE data
Identify precise at-risk components
Understand hidden component dependencies
Expand research to find other impacted components
Include context* (when is the issue relevant?)
Enhanced, actionable component intelligence in CLM
Problems
Component Info
Javadoc
Declaratio

```
25 projects, 72 components (72 shown, 0 filtered)
Component
ant - 1.7.1
commons-httpclient - 3.0
commons-httpclient - 3.1
httpclient - 4.1
jetty - 6.1.14
jcommon - 1.0.16
junit - 3.8.1
```

* Coming soon

Got questions?

Get the

ANSWERS.

- ? What production applications are at risk?
- ? What problems are most critical?
- ? What components are being used? Where are they?
- ? Which components have known security vulnerabilities?
- ? What are our license obligations?
- ? Do our applications comply with our policies?
- ? How can we choose the best components **from the start**?

BUILDING A **BETTER BRIDGE** BETWEEN DEV, OPS AND SECURITY

- Need to recognize that the priorities are different
- Tooling needs to adopt the practice of the practitioner not the other way around
- A Tool is not a process and a process is not a tool learn to leverage both.

Take the Open Source Impact **CHALLENGE!**

Get answers FAST!
Contact us at
www.sonatype.com/answers

? What production applications are at risk?

? What problems should you address first?

? What components are being used? Where are they?

? Which components have known security vulnerabilities?

? What license obligations do you have?

? Do your applications comply with your policies?

? How can you choose better components **from the start**?

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