Staying Ahead of the Security Poverty Line

(or just getting ahead in the first place)

Andy Ellis
Chief Security Officer

@csoandy
#HITB2012AMS

Security Poverty Line

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Organizations that don’t have enough resources to implement perceived basic security needs.

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Security Subsistence Syndrome

"I can't even do the barest minimum to cover my ass, so I'd better not do anything *but* cover my ass."

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Accruing Technical Debt

With every step forward, the undone work increases risk and makes future steps harder.

Adding value: “measuring” a security program

*Value = resources * capabilities*

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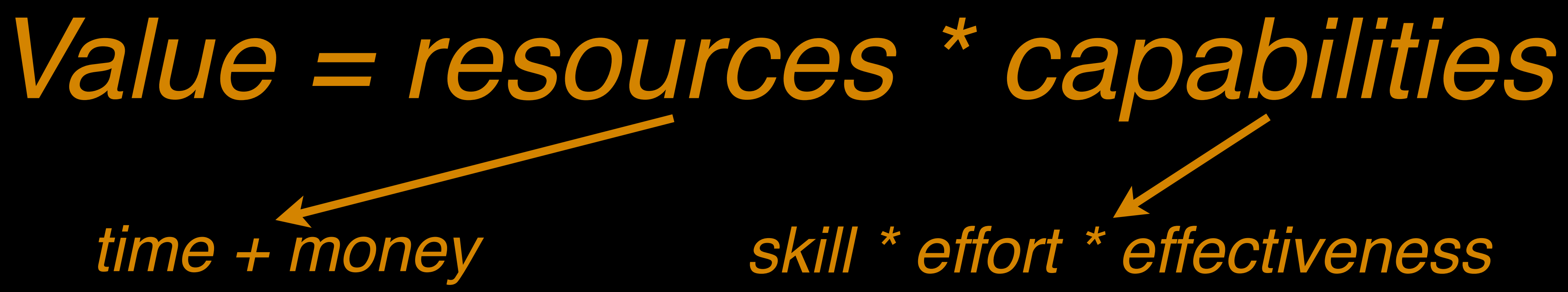
time + money

Adding value: “measuring” a security program

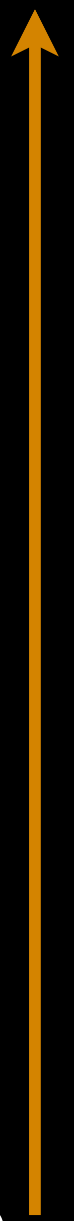


*Value = resources * capabilities*

time + money

*skill * effort * effectiveness*

How much security is “good enough”?



Security
value

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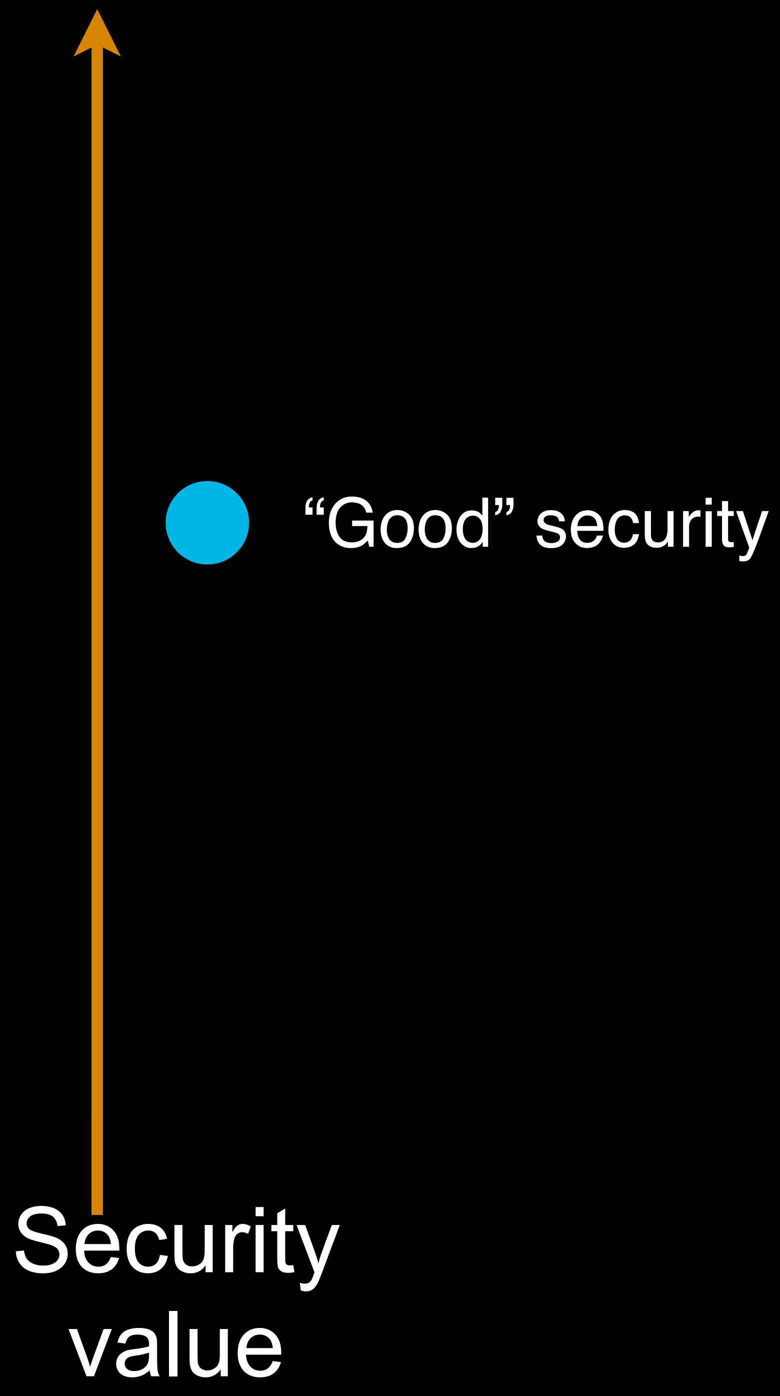

“Good” security

Security value

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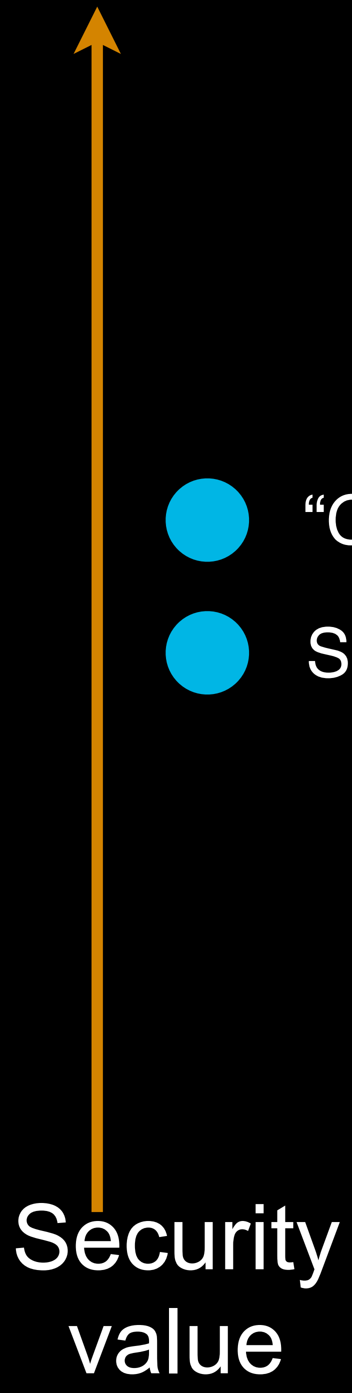
Security value

- “Good” security
- Sufficient against the casual chaotic actor

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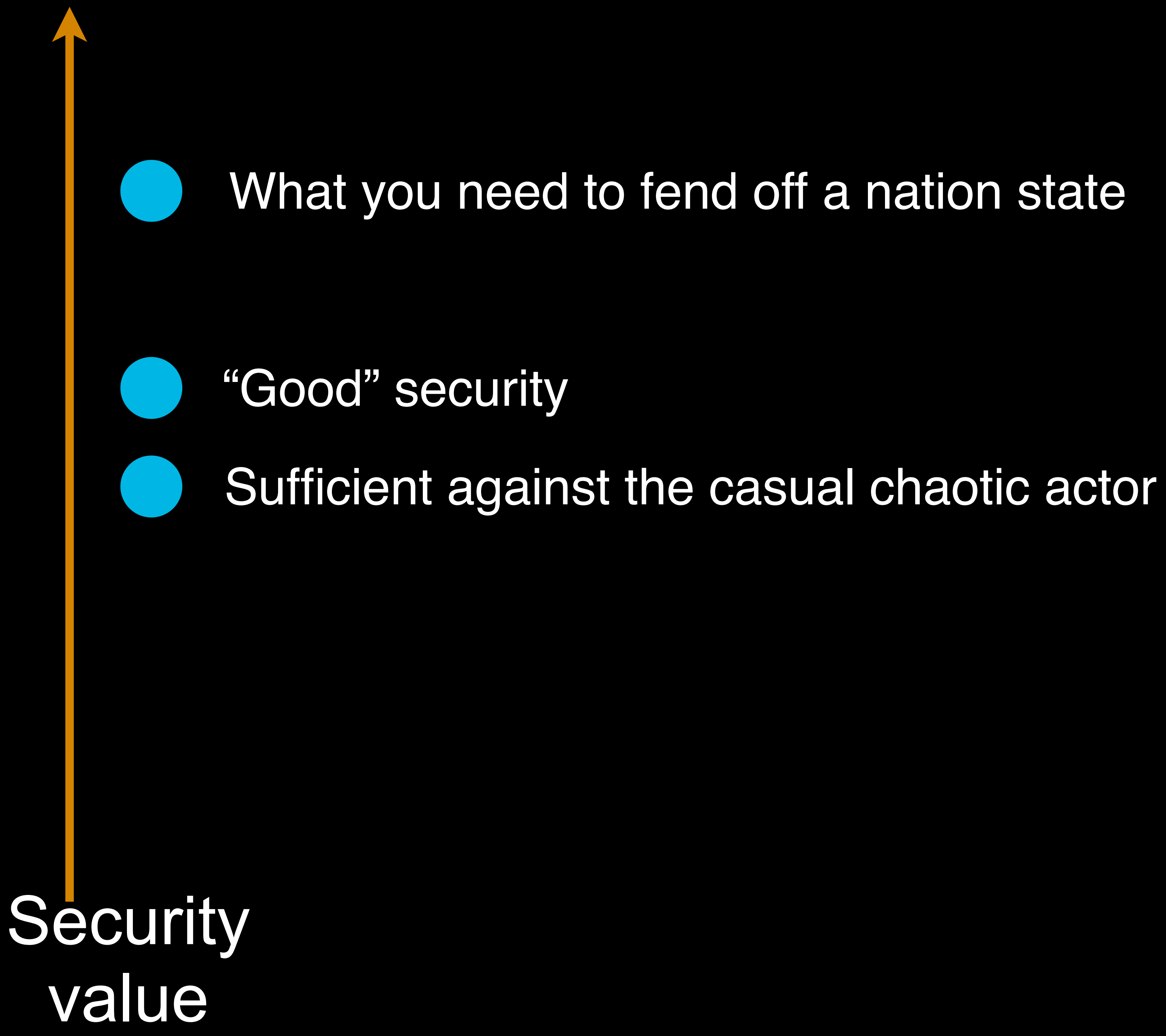

- What you need to fend off a nation state
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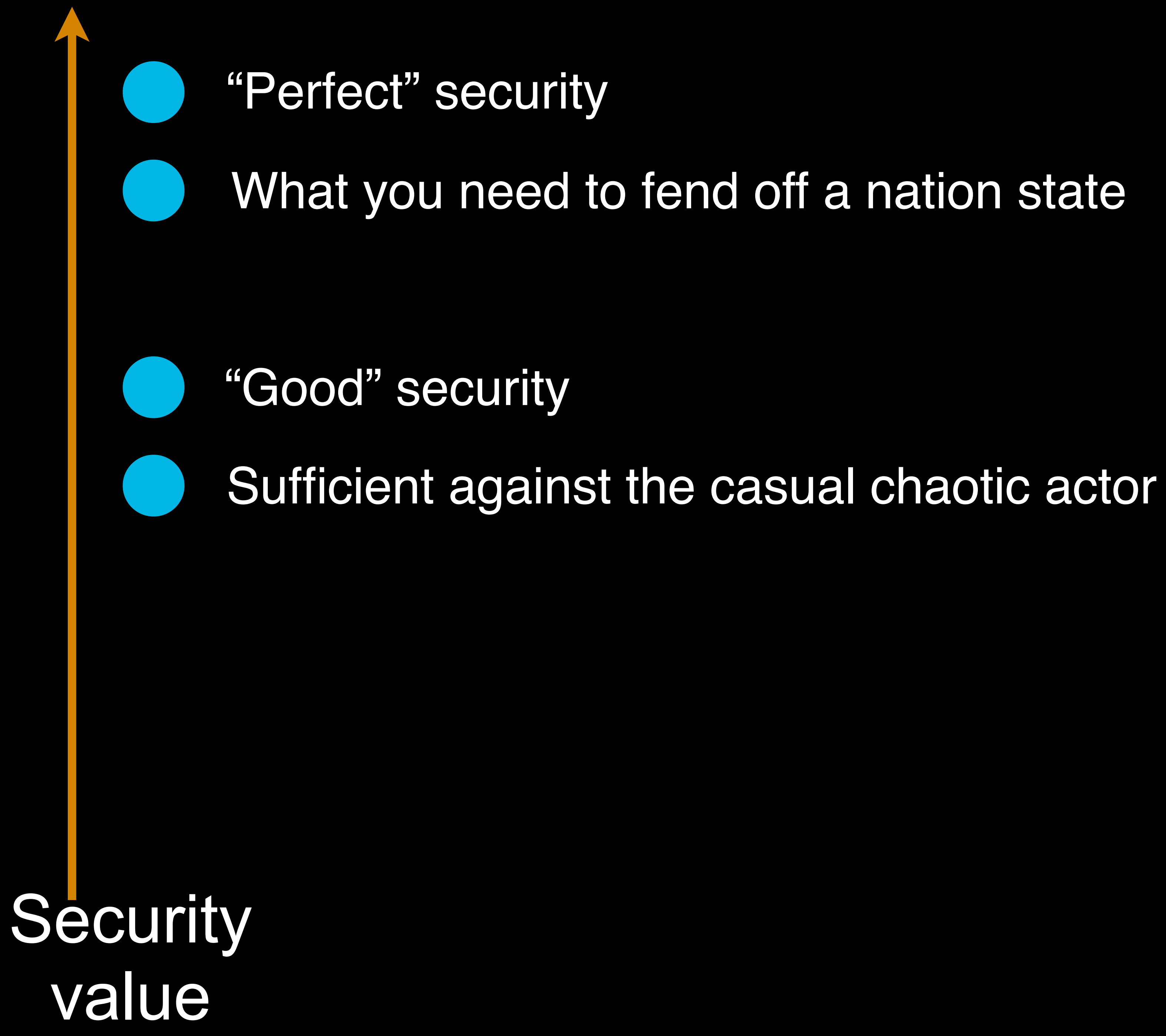

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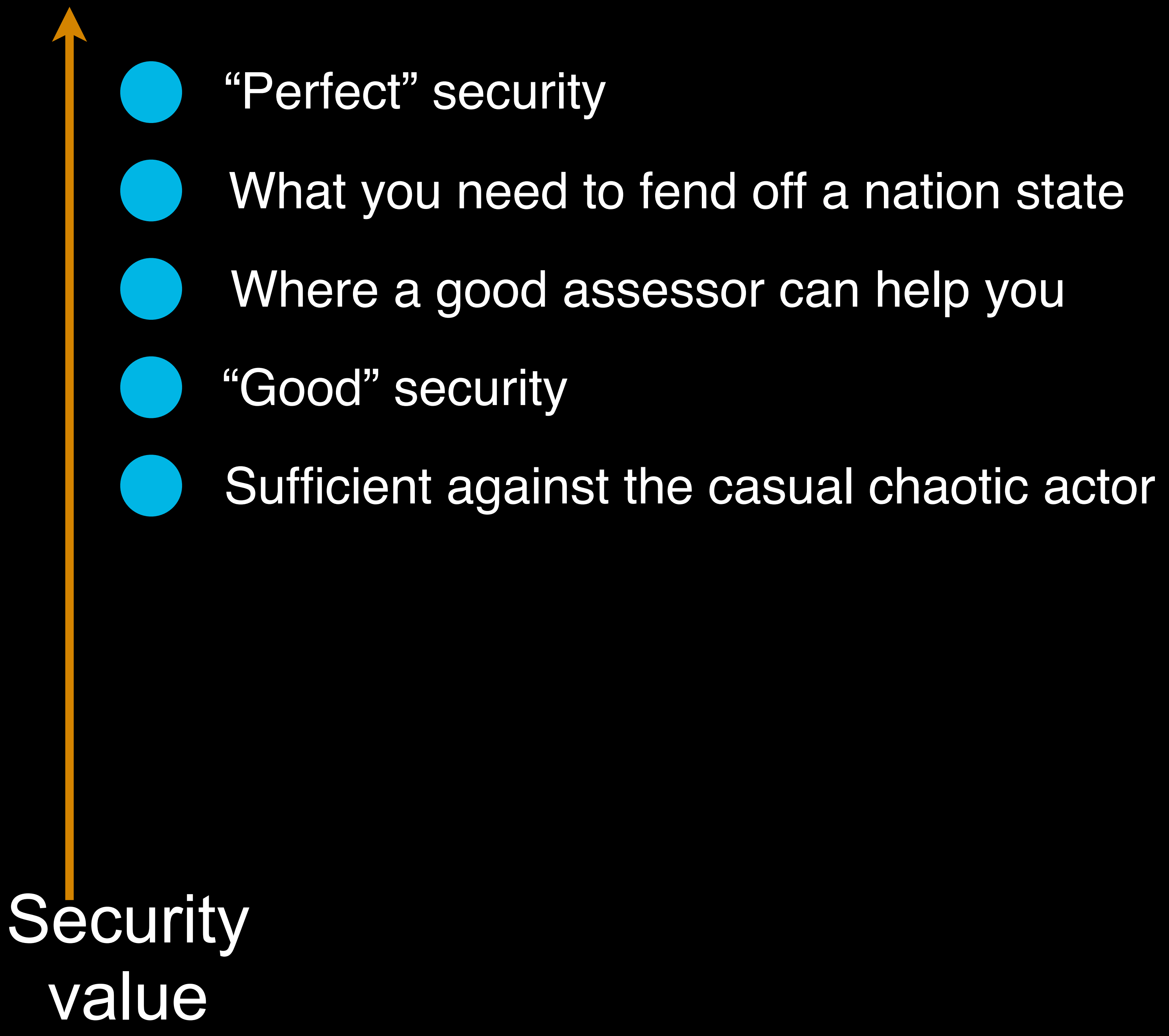

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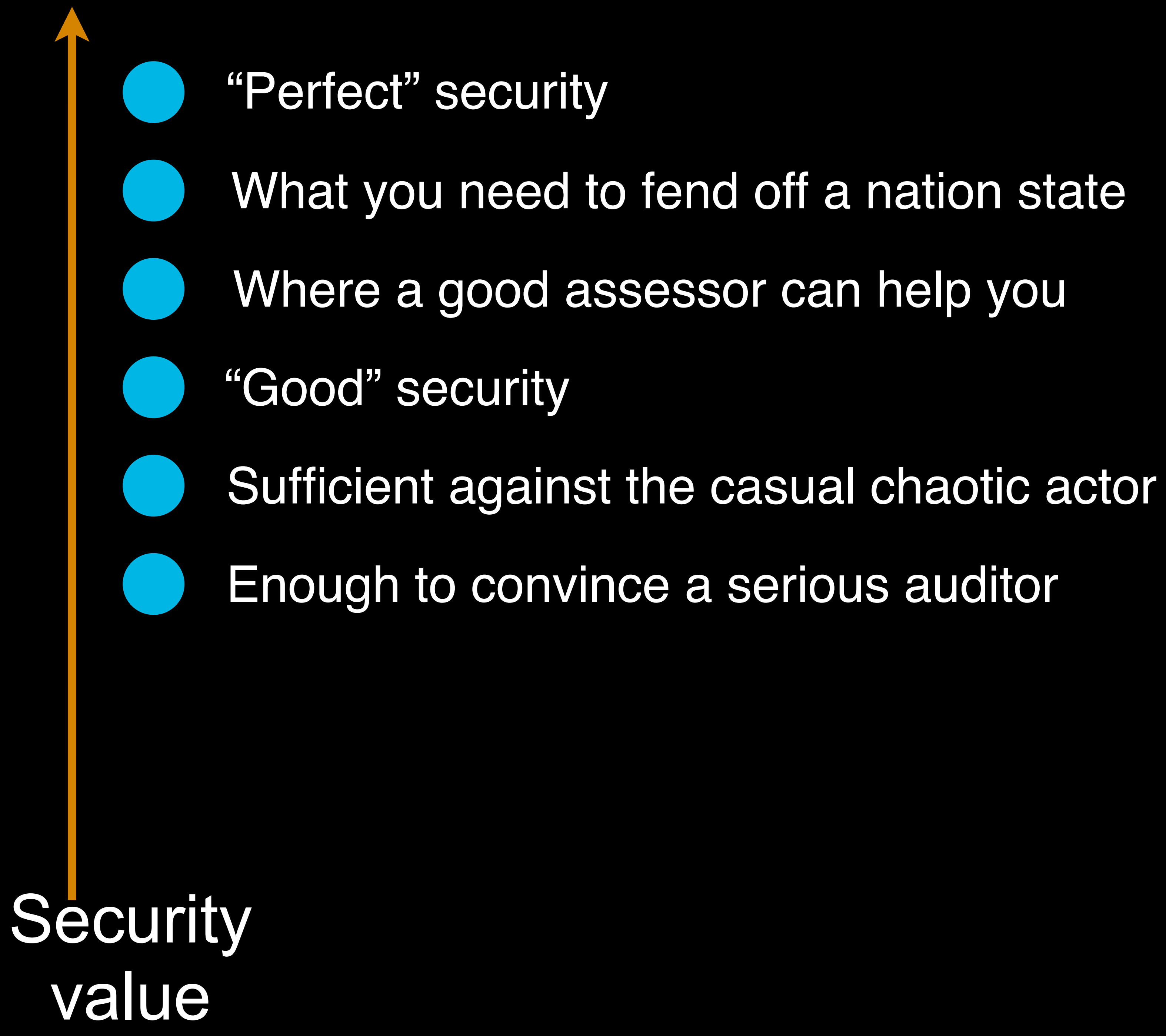

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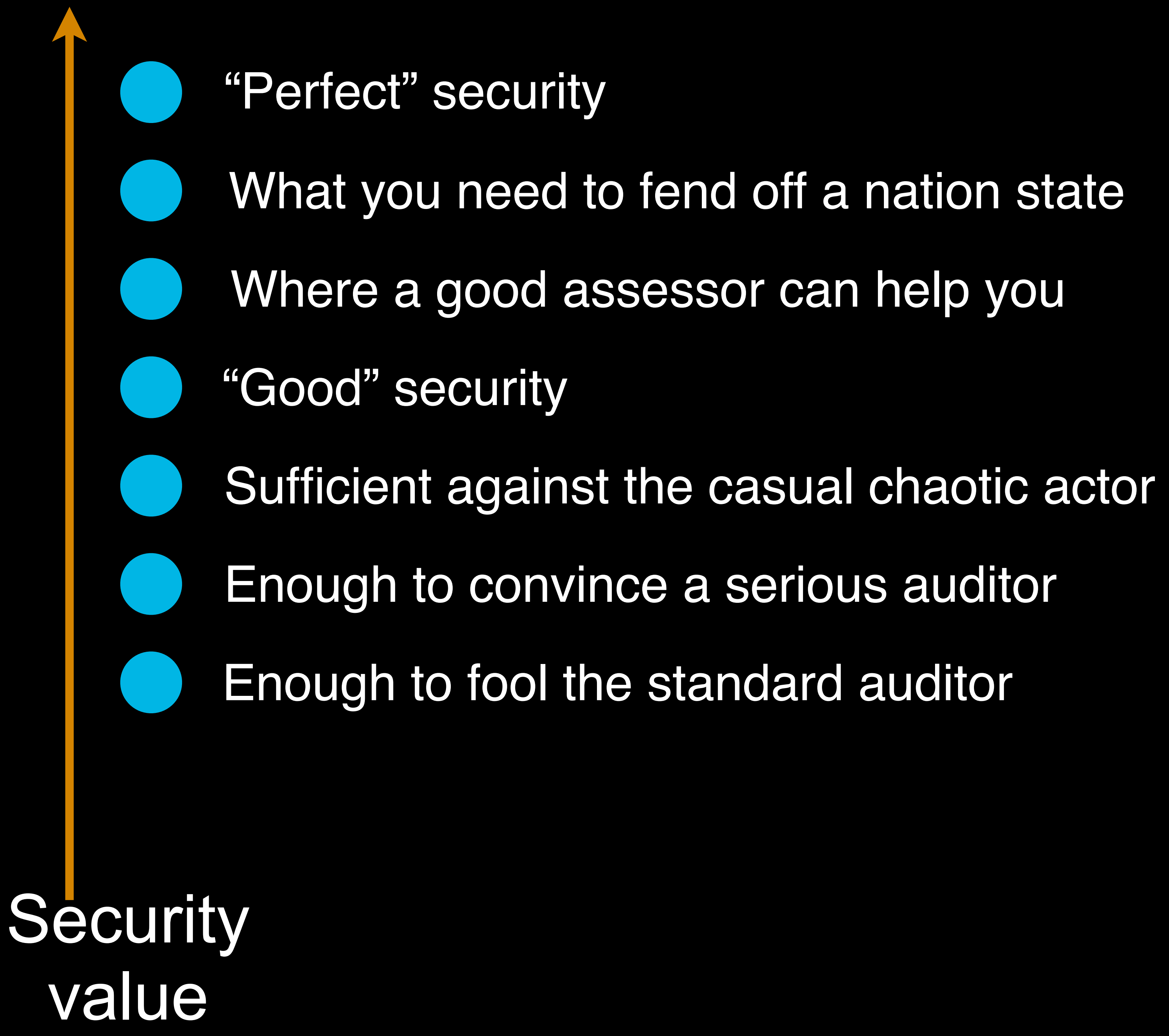

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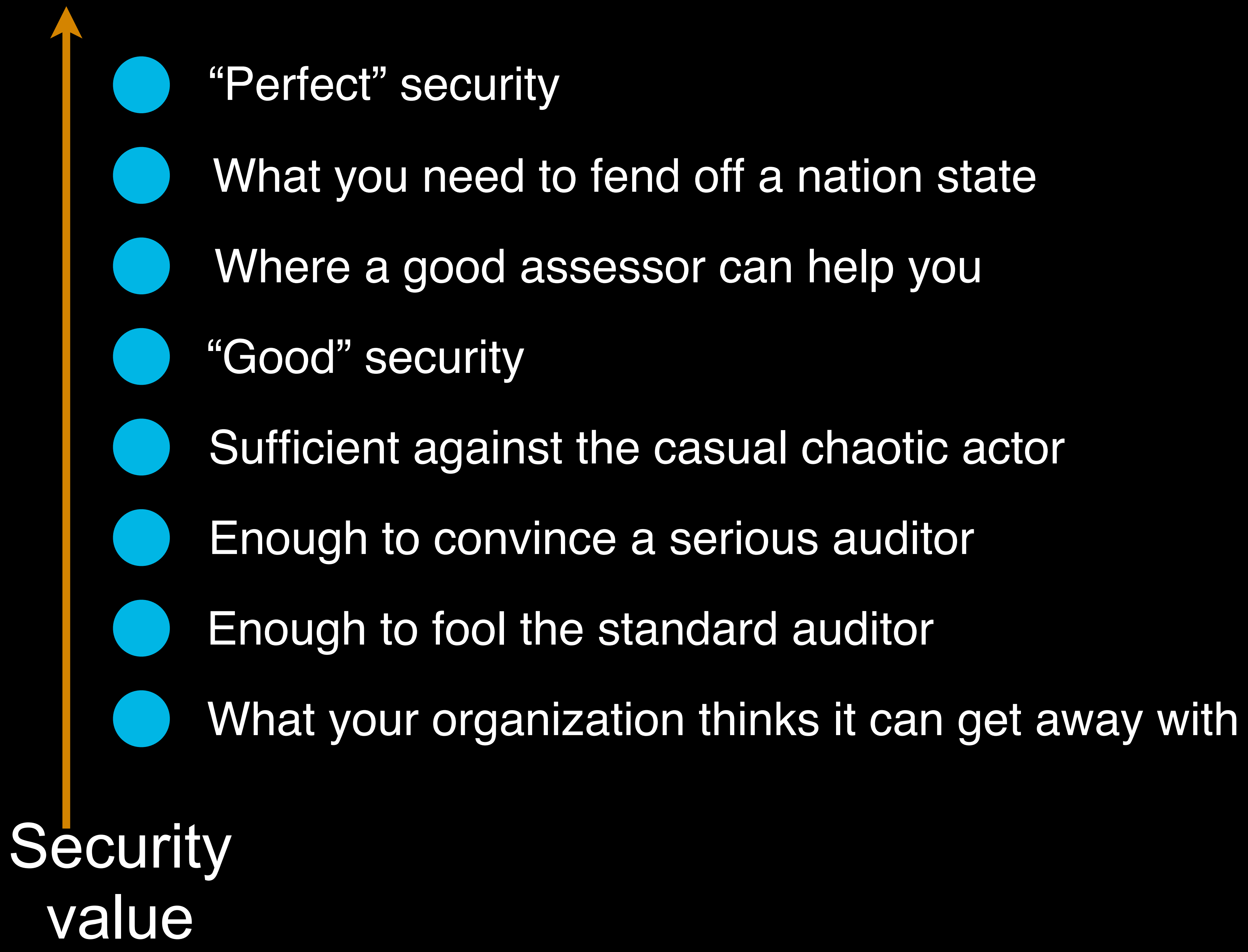

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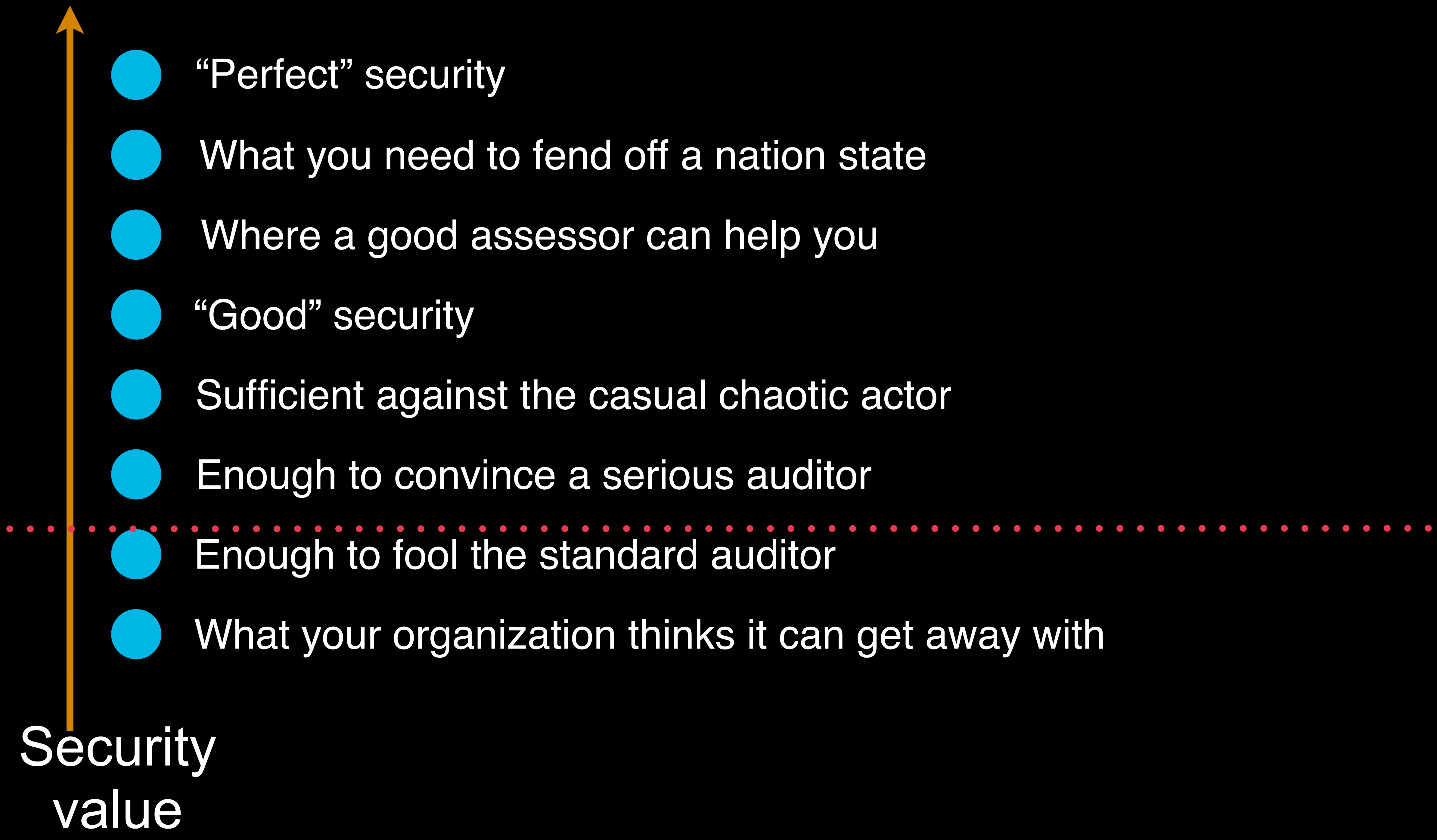

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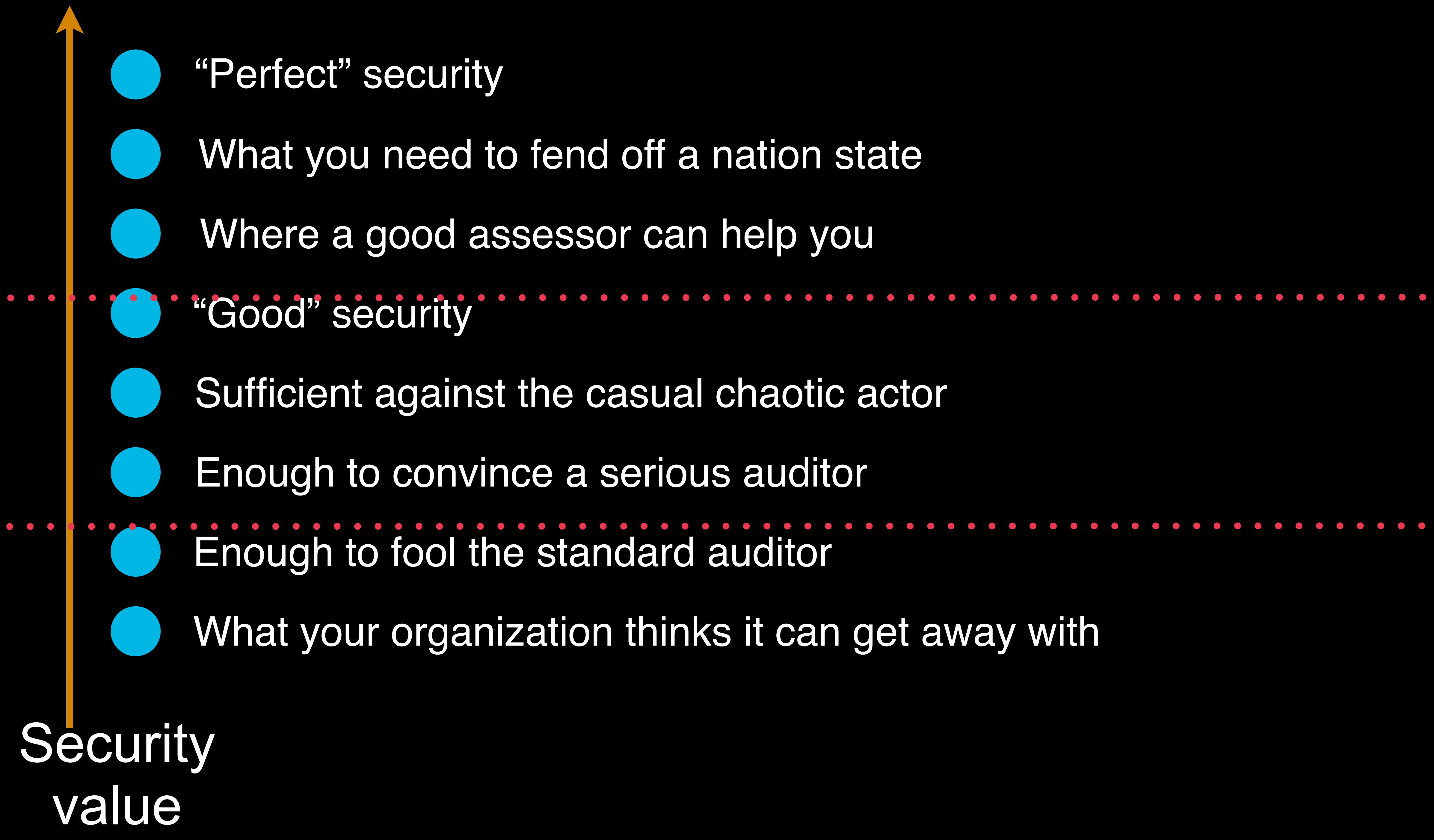

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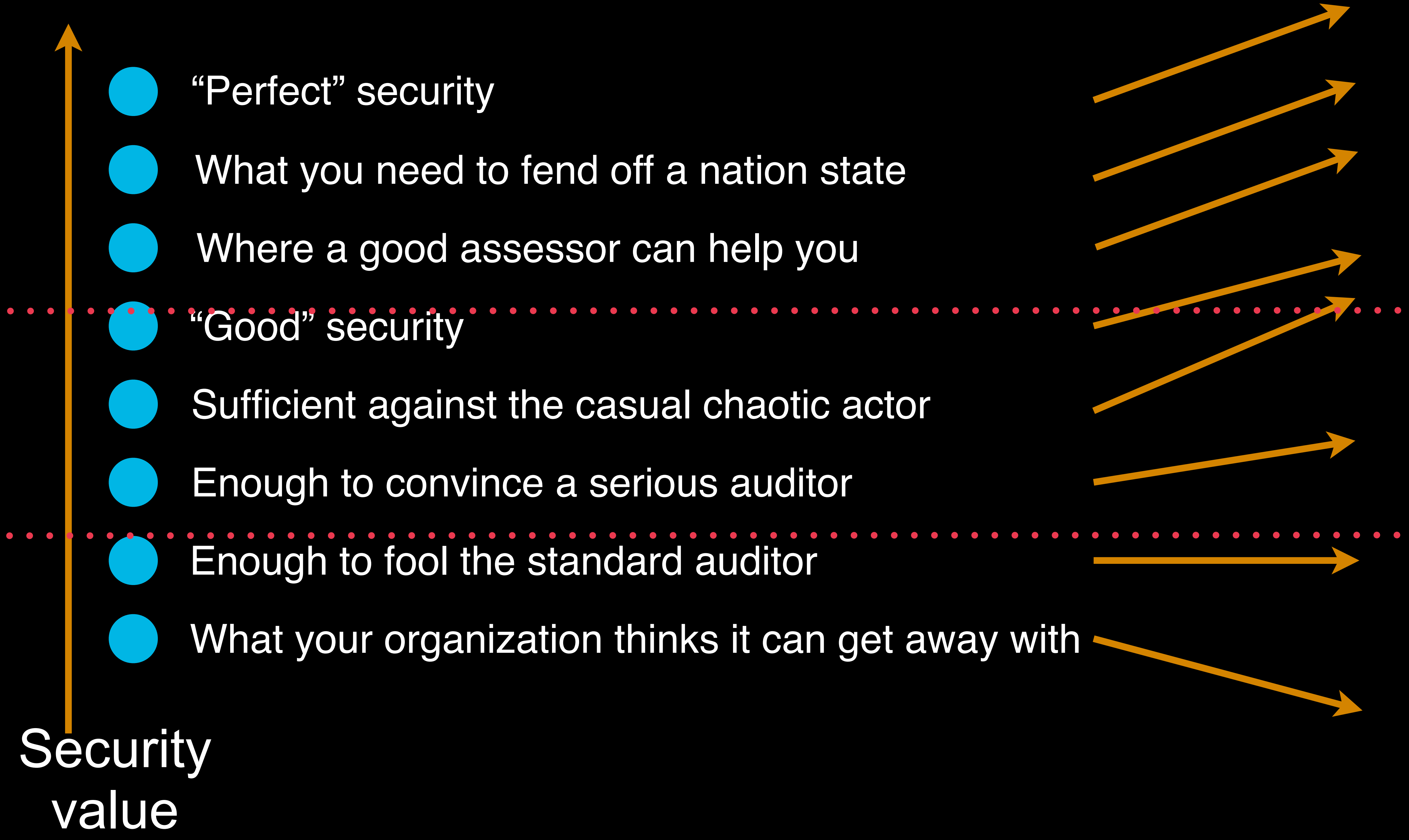

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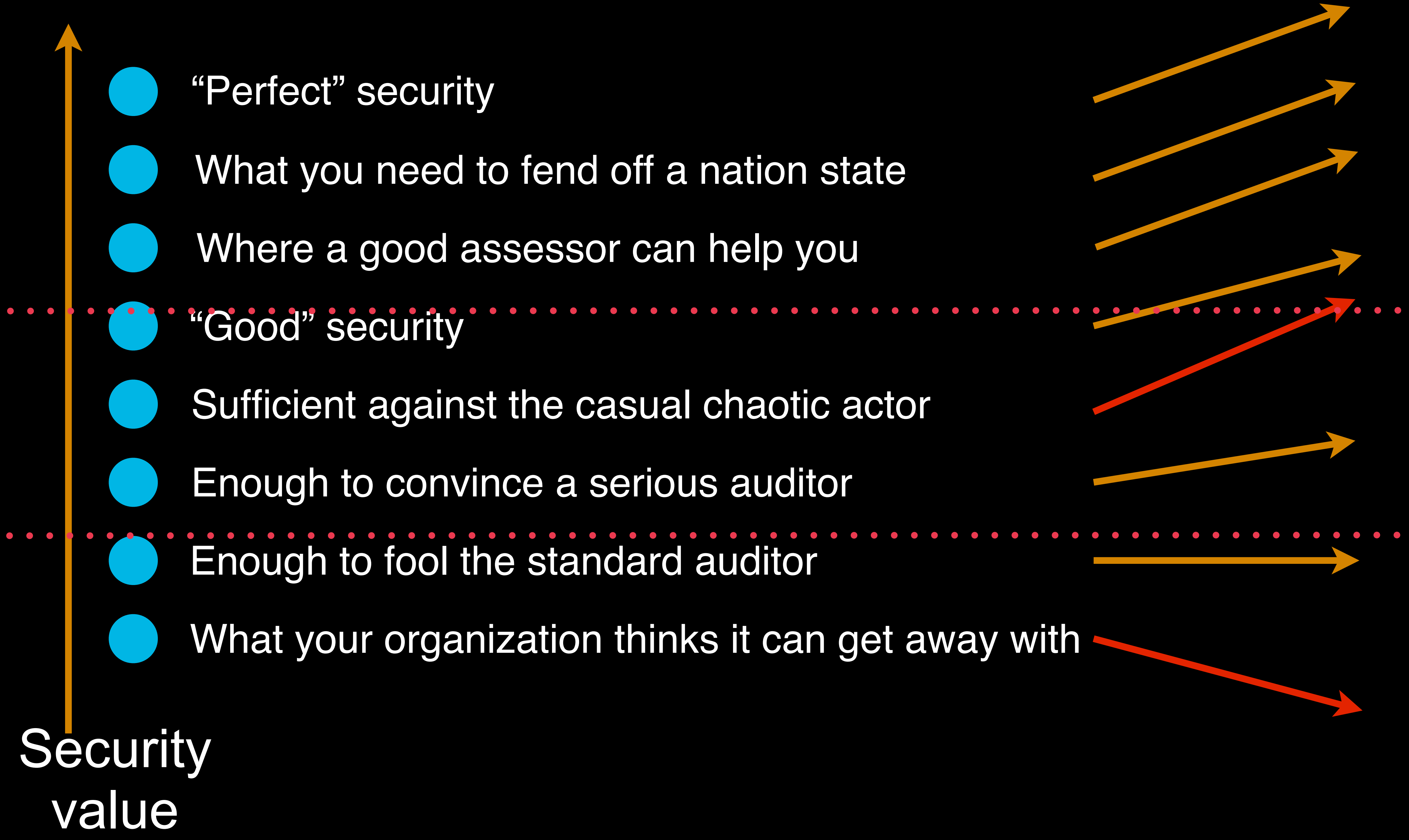

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HD Moore's Law

Sufficient against the casual chaotic actor

A rising tide lifts all boats...

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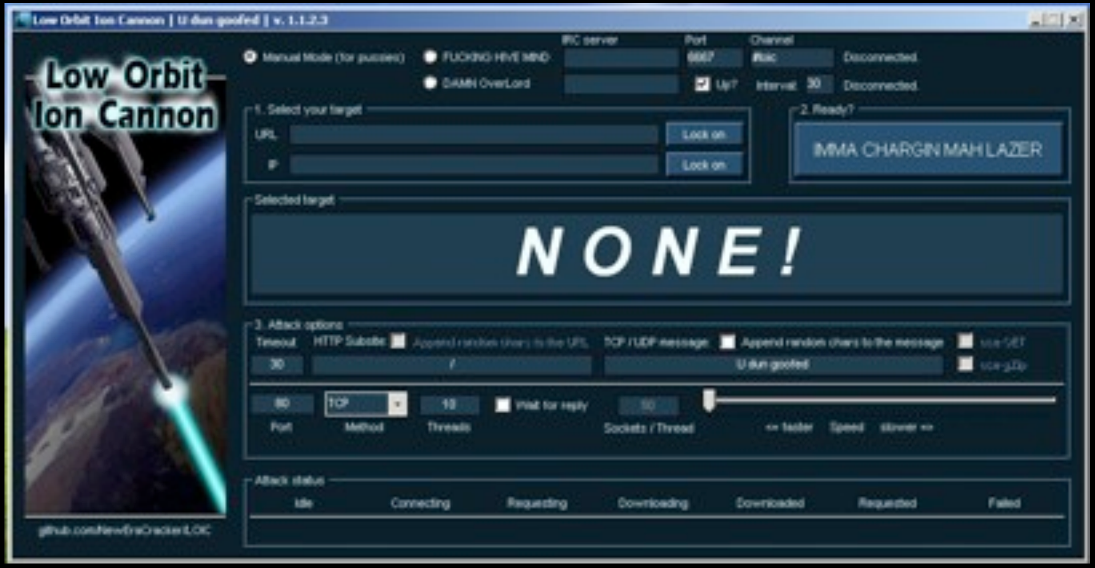

Low Orbit Ion Cannon | U dun goofed | v. 1.1.2.3

● Manual Mode (for pussies) ○ FUCKING HIVE MIND ○ DAMN OverLord

IRC server: Port: 6667 Channel: #loic Disconnected.

☑ Up? Interval: 30 Disconnected.

1. Select your target

URL: [Lock on]

IP: [Lock on]

2. Ready? [IMMA CHARGIN MAH LAZER]

Selected target

NONE!

3. Attack options

Timeout: 30 HTTP Subsite: / □ Append random chars to the URL

TCP / UDP message: U dun goofed □ Append random chars to the message

□ use GET □ use gZip

Port: 80 Method: TCP Threads: 10 □ Wait for reply Sockets / Thread: 50

<= faster Speed slower =>

Attack status

Idle Connecting Requesting Downloading Downloaded Requested Failed

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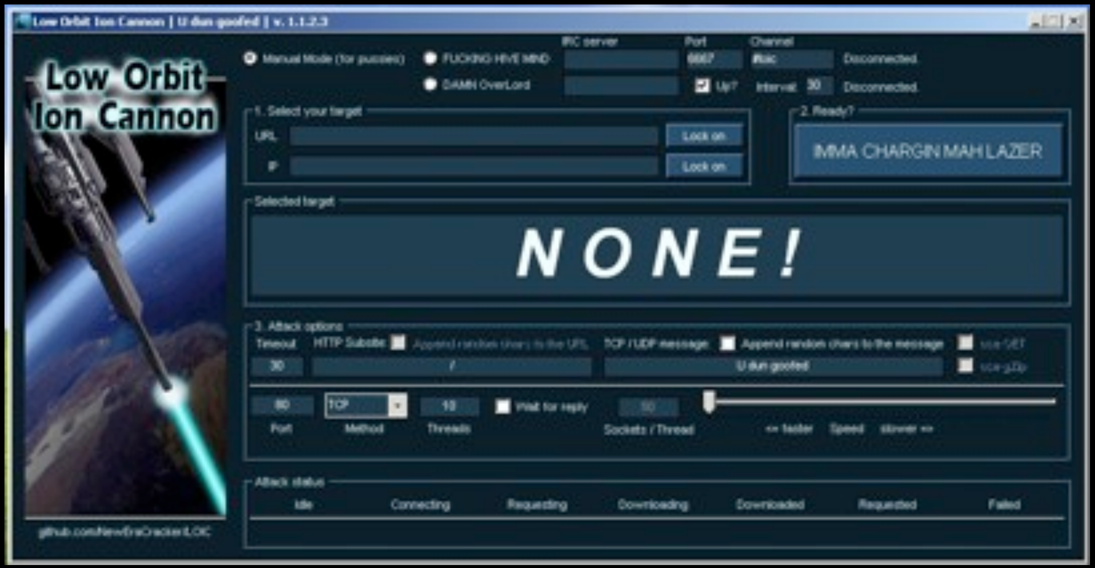
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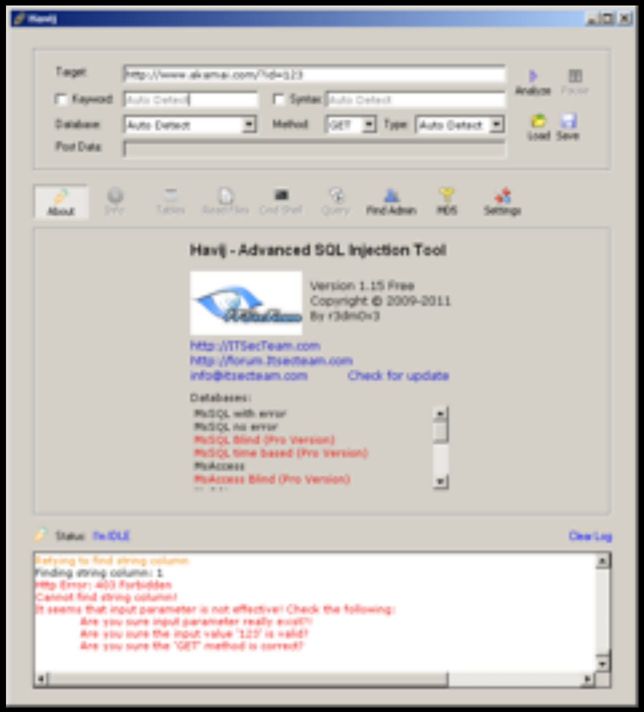
Sockets / Thread: 10


Havij

Target: http://www.akamai.com/?id=123
□ Keyword: Auto Detect
□ Syntax: Auto Detect
Database: Auto Detect
Method: GET
Type: Auto Detect
Post Data:

Havij - Advanced SQL Injection Tool

Version 1.15 Free
Copyright © 2009-2011
By r3dm0v3

http://ITSecTeam.com
http://forum.itsecteam.com
info@itsecteam.com Check for update

Databases:
MsSQL with error
MsSQL no error
MsSQL Blind (Pro Version)
MsSQL time based (Pro Version)
MsAccess
MsAccess Blind (Pro Version)

Status: I'm IDLE

```
Retrying to find string column.
Finding string column: 1
Http Error: 403 Forbidden
Cannot find string column!
It seems that input parameter is not effective! Check the following:
        Are you sure input parameter really exist?!
        Are you sure the input value '123' is valid?
        Are you sure the 'GET' method is correct?
```

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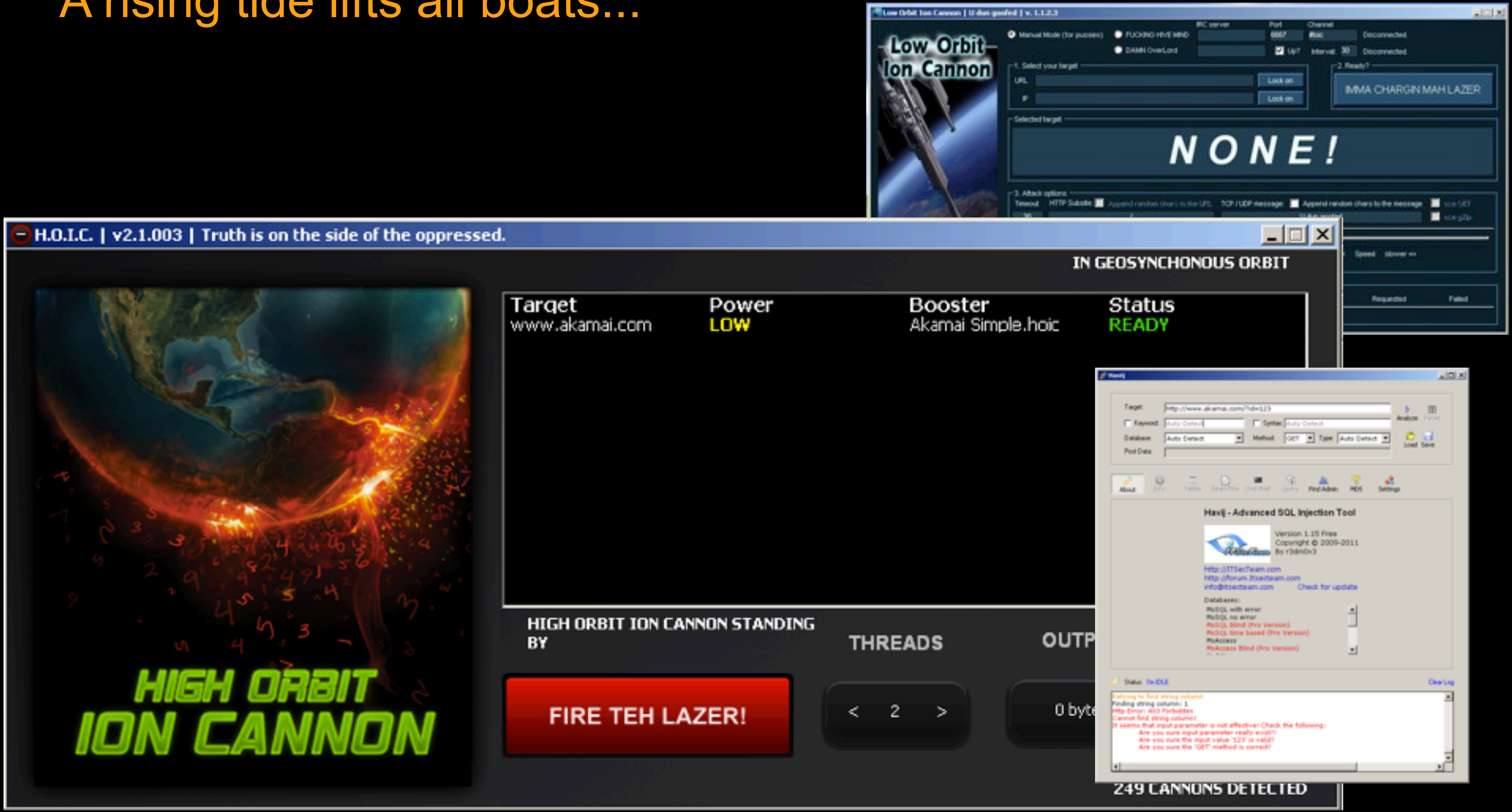

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☑ Up? Interval 30 Disconnected.

1. Select your target — URL [Lock on] IP [Lock on]

2. Ready? [IMMA CHARGIN MAH LAZER]

Selected target: NONE!

3. Attack options — Timeout 30, HTTP Subsite, TCP / UDP message: U dun goofed

Speed slower =>

Requested Failed

H.O.I.C. | v2.1.003 | Truth is on the side of the oppressed.

IN GEOSYNCHONOUS ORBIT

Target www.akamai.com | Power LOW | Booster Akamai Simple.hoic | Status READY

HIGH ORBIT ION CANNON STANDING BY

THREADS < 2 >

OUTP… 0 byte…

249 CANNONS DETECTED

Havij

Target: http://www.akamai.com/?id=123

☐ Keyword: Auto Detect ☐ Syntax: Auto Detect

Database: Auto Detect Method: GET Type: Auto Detect

Post Data:

Havij - Advanced SQL Injection Tool

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Faster Forward ™

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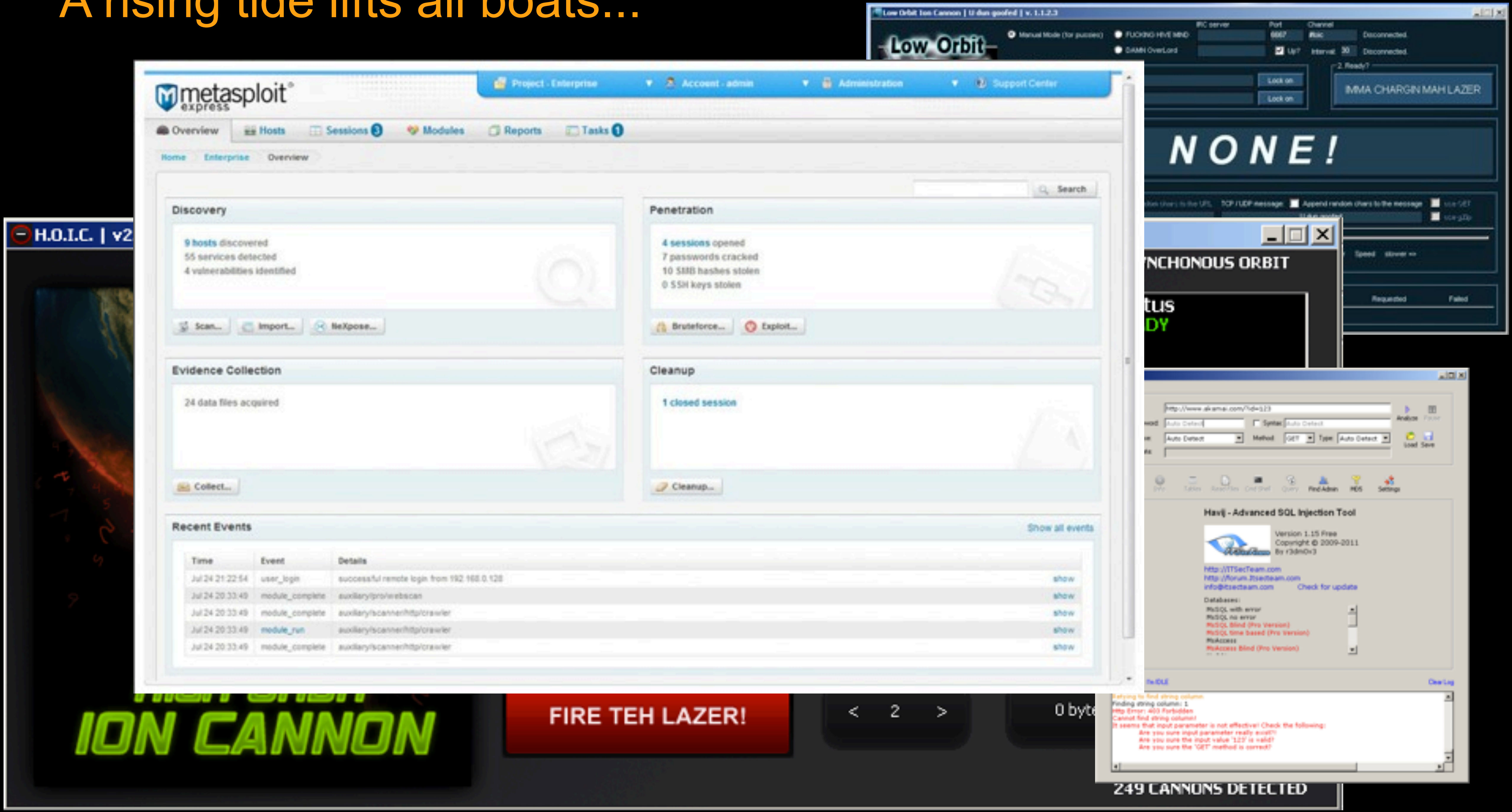

Discovery

9 hosts discovered
55 services detected
4 vulnerabilities identified

Penetration

4 sessions opened
7 passwords cracked
10 SMB hashes stolen
0 SSH keys stolen

Evidence Collection

24 data files acquired

Cleanup

1 closed session

Recent Events

Time	Event	Details	
Jul 24 21:22:54	user_login	successful remote login from 192.168.0.128	show
Jul 24 20:33:49	module_complete	auxiliary/pro/webscan	show
Jul 24 20:33:49	module_complete	auxiliary/scanner/http/crawler	show
Jul 24 20:33:49	module_run	auxiliary/scanner/http/crawler	show
Jul 24 20:33:49	module_complete	auxiliary/scanner/http/crawler	show

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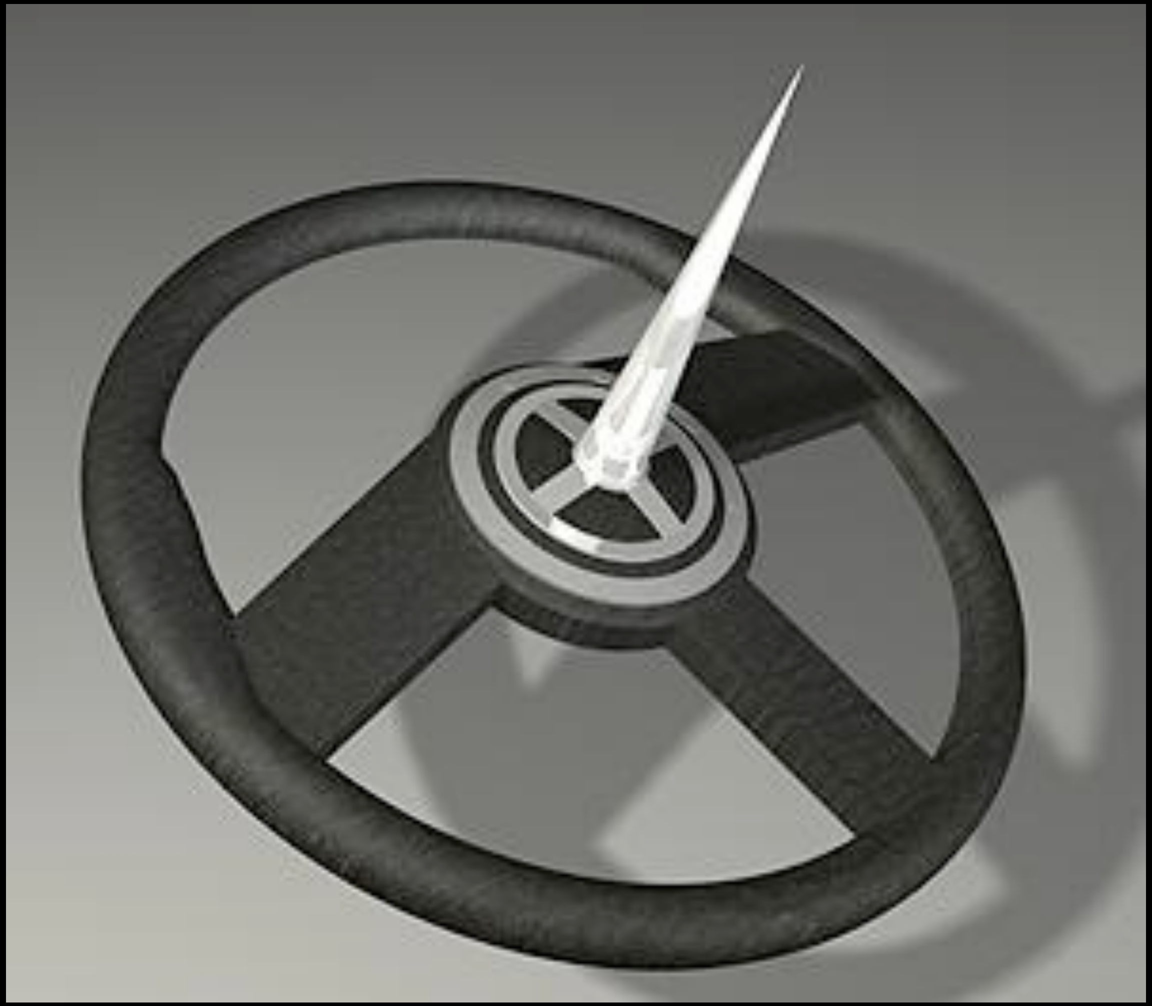
Peltzman Effect

What your organization thinks it can get away with

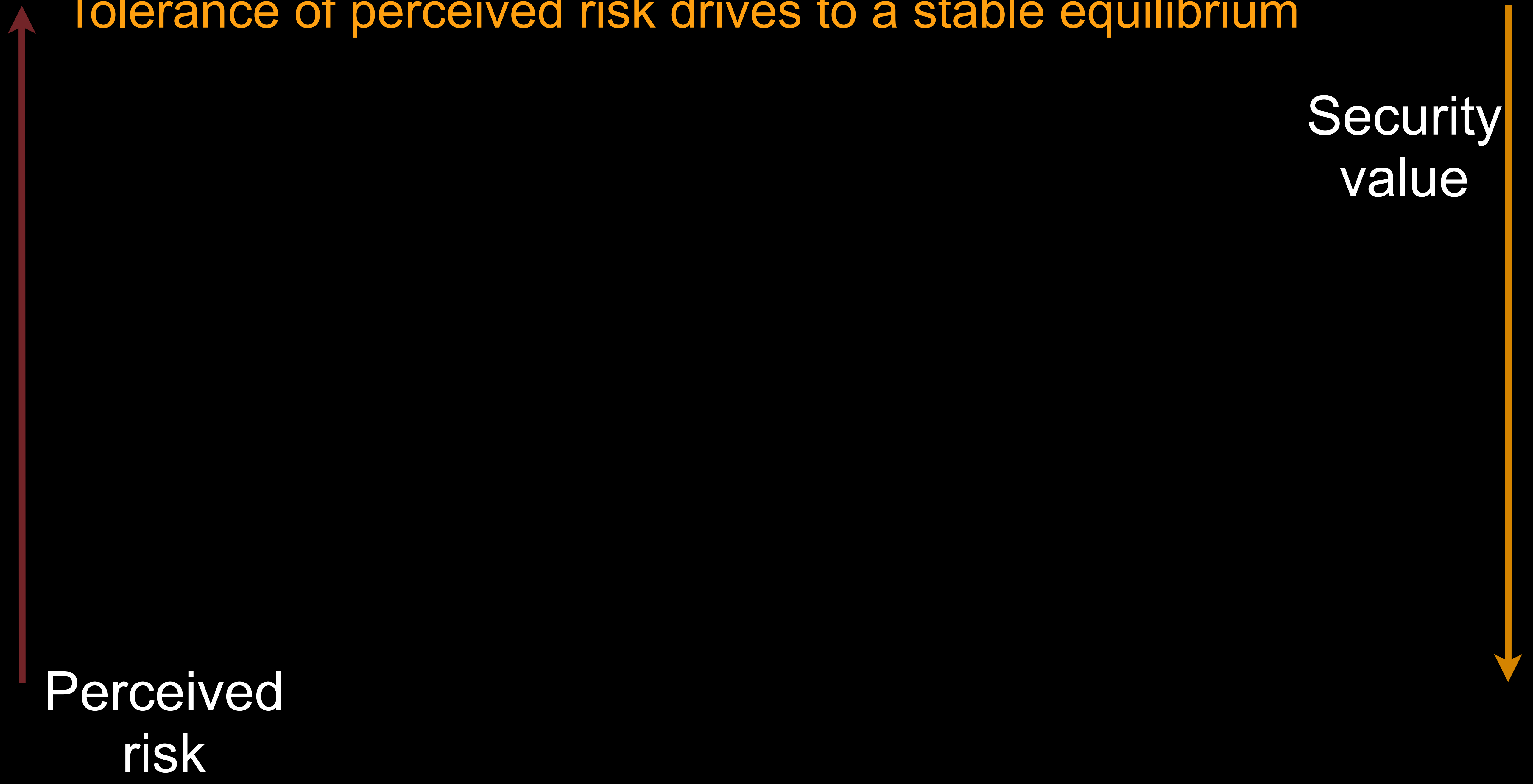
Peltzman Effect

What your organization thinks it can get away with →



Set-point theory of risk tolerance

Tolerance of perceived risk drives to a stable equilibrium



Security value

Perceived risk

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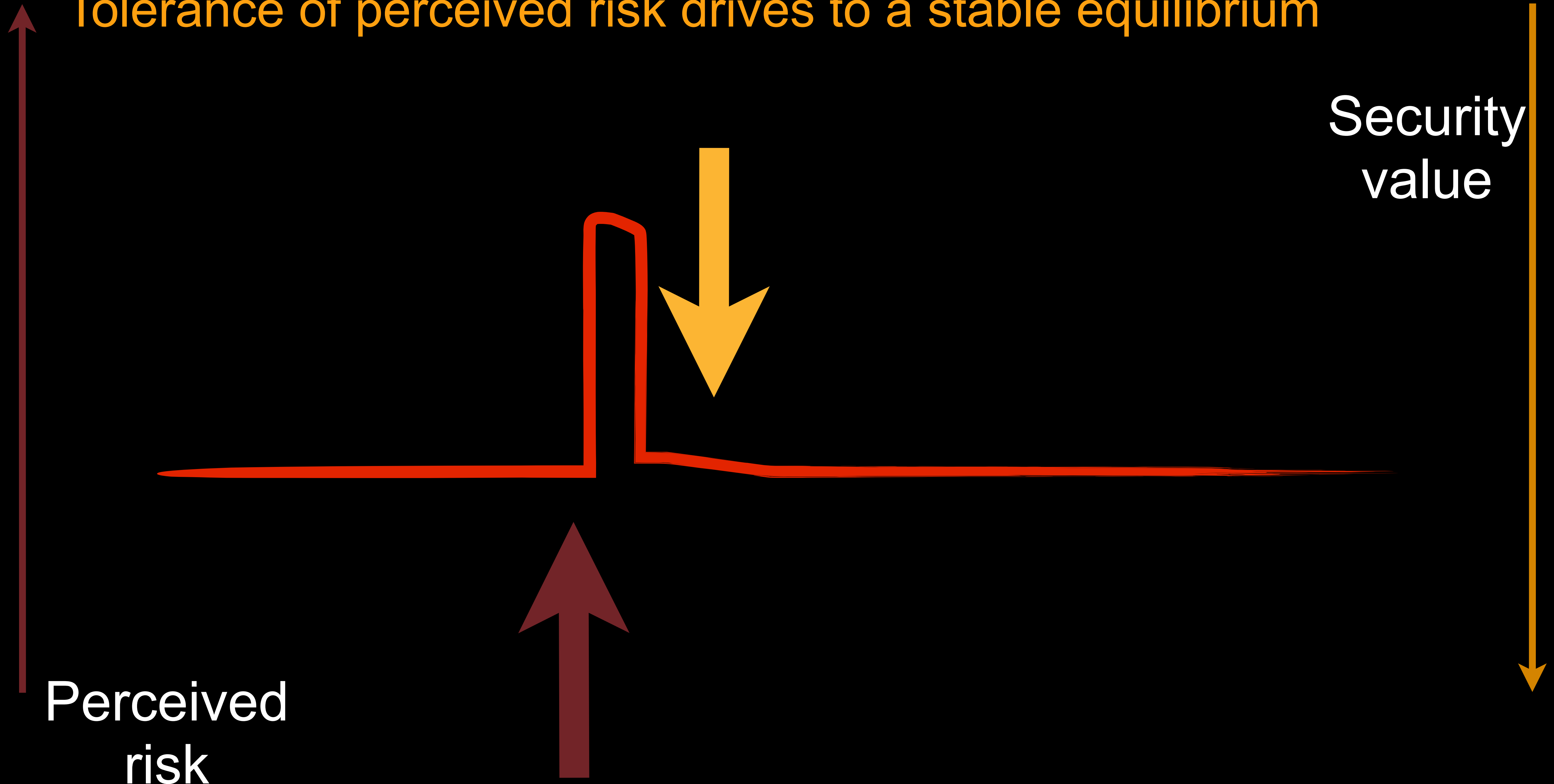

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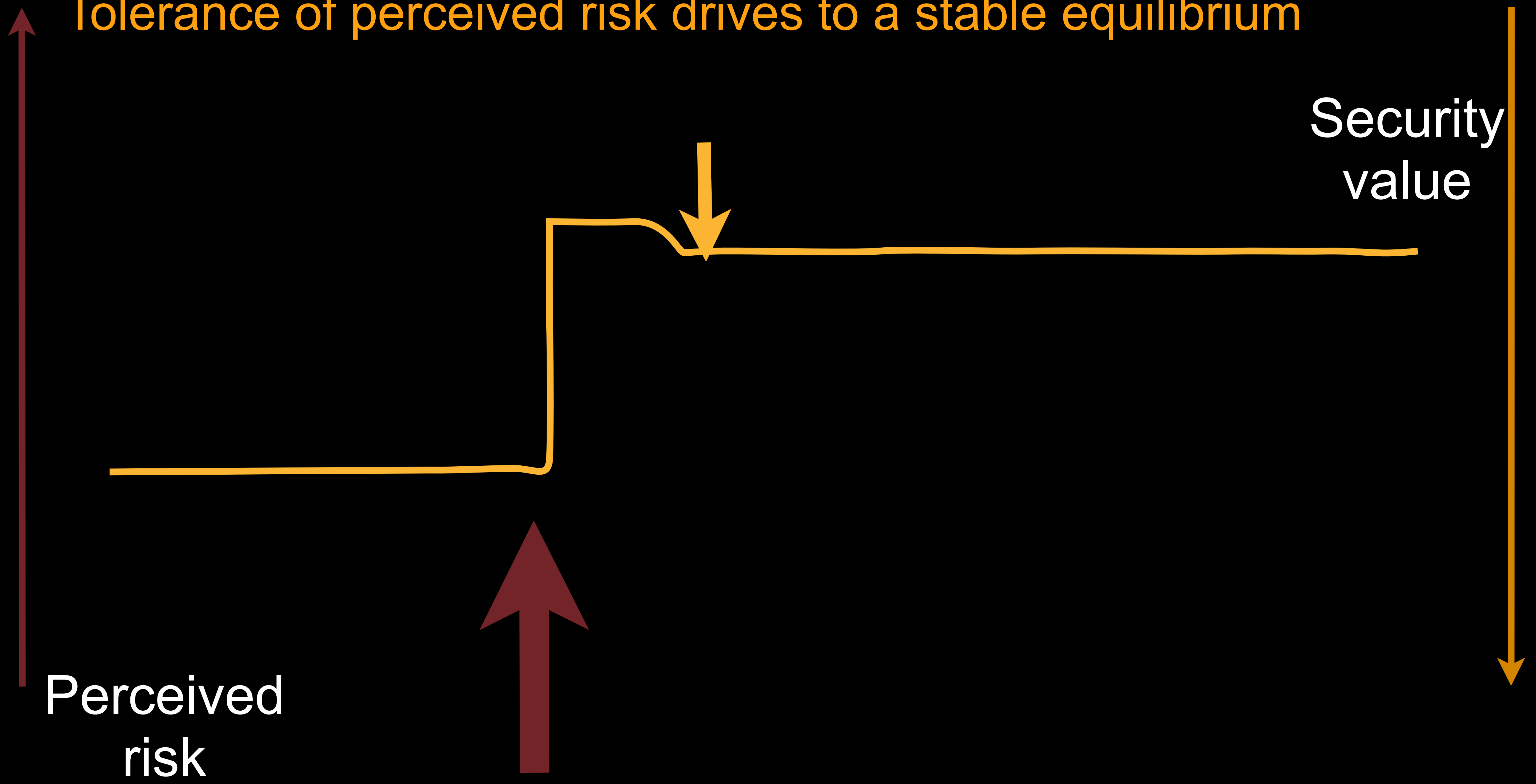

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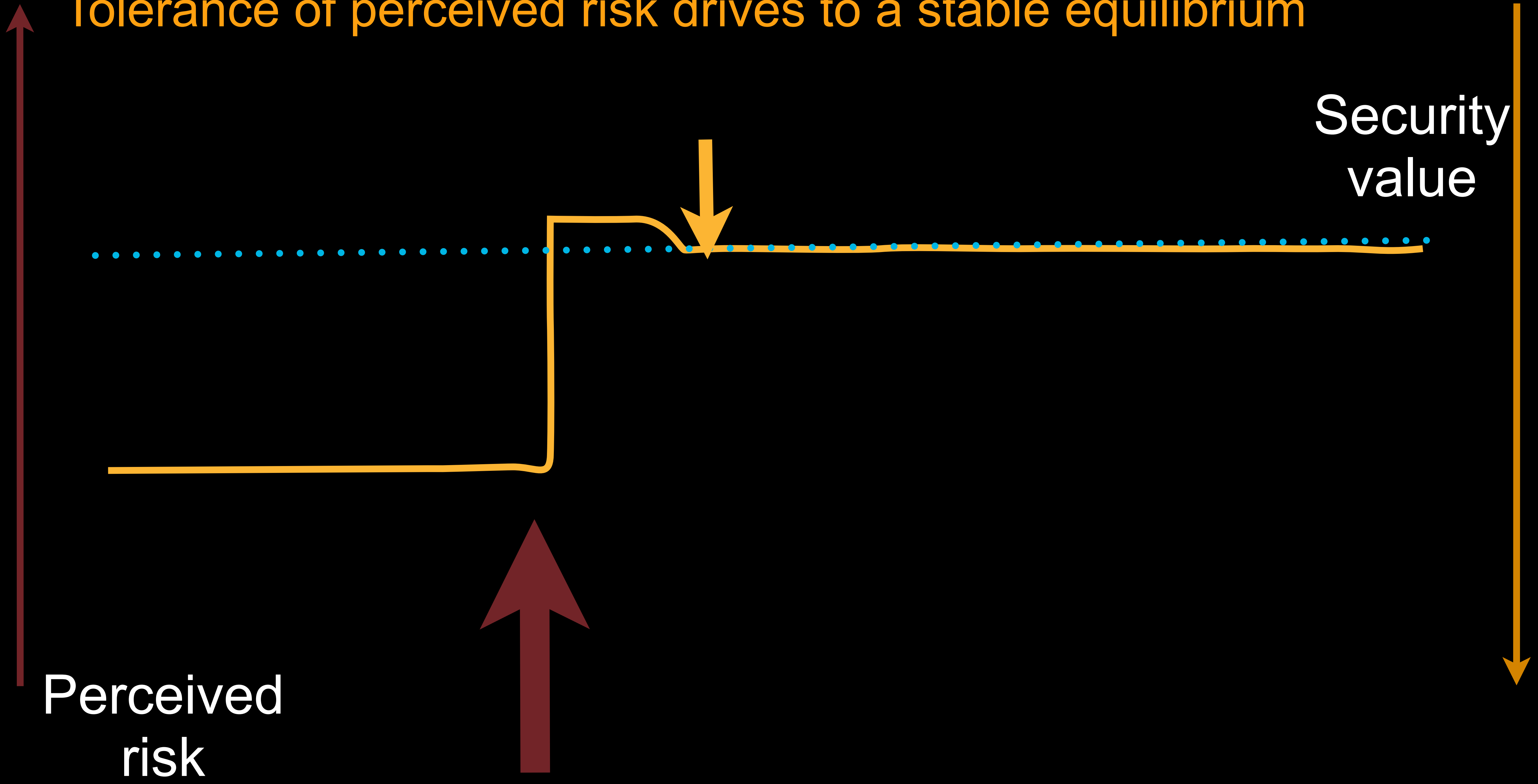

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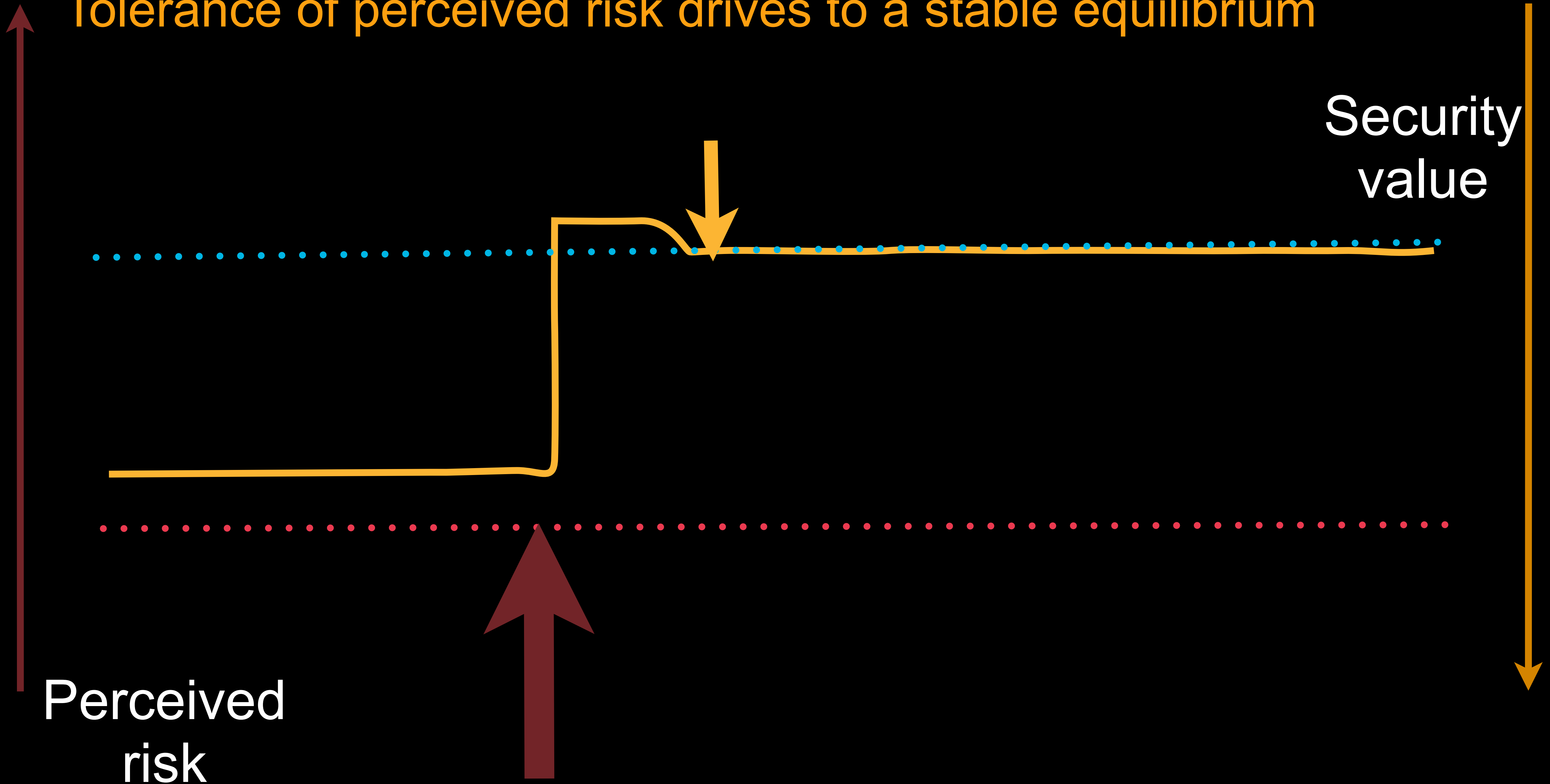

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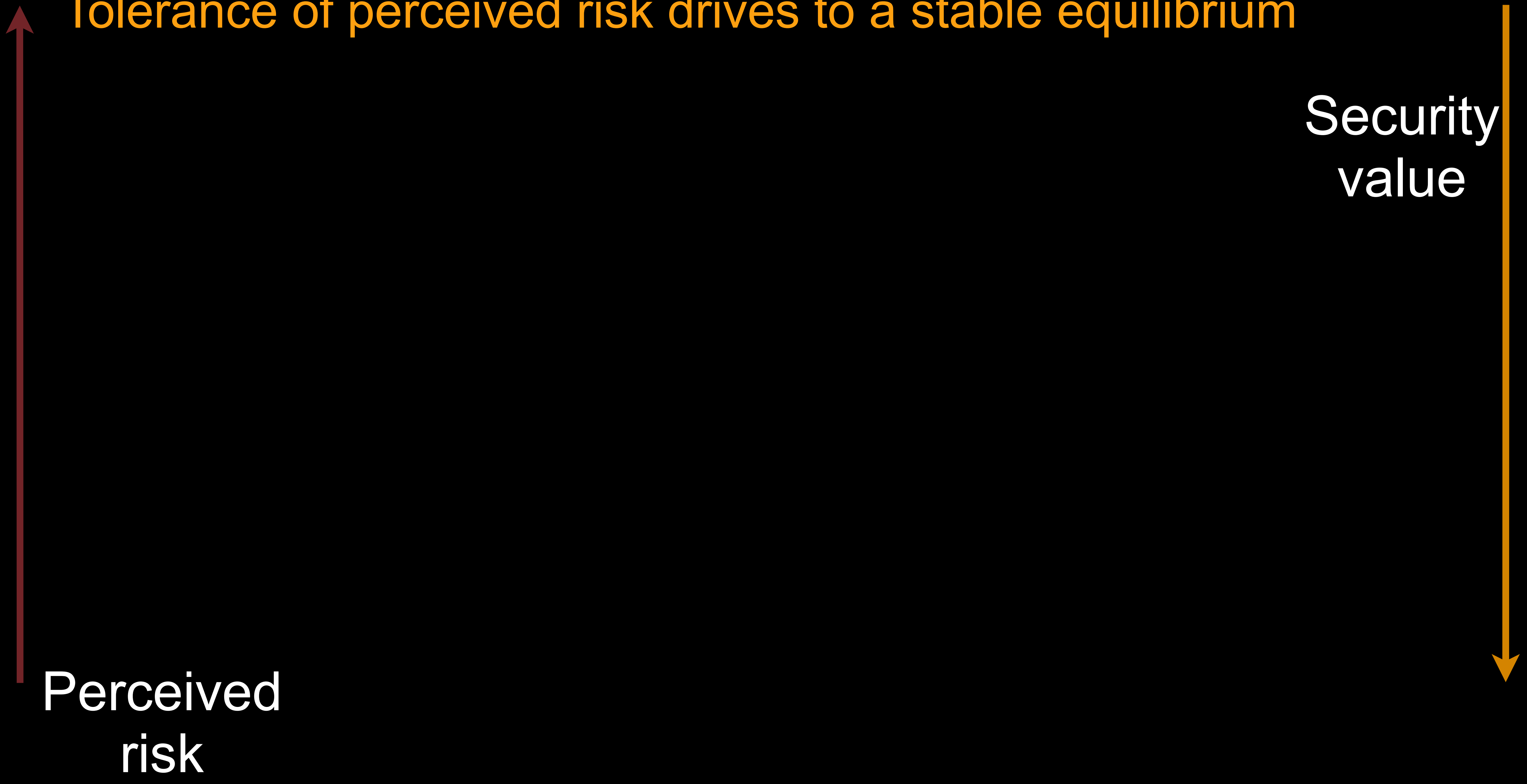

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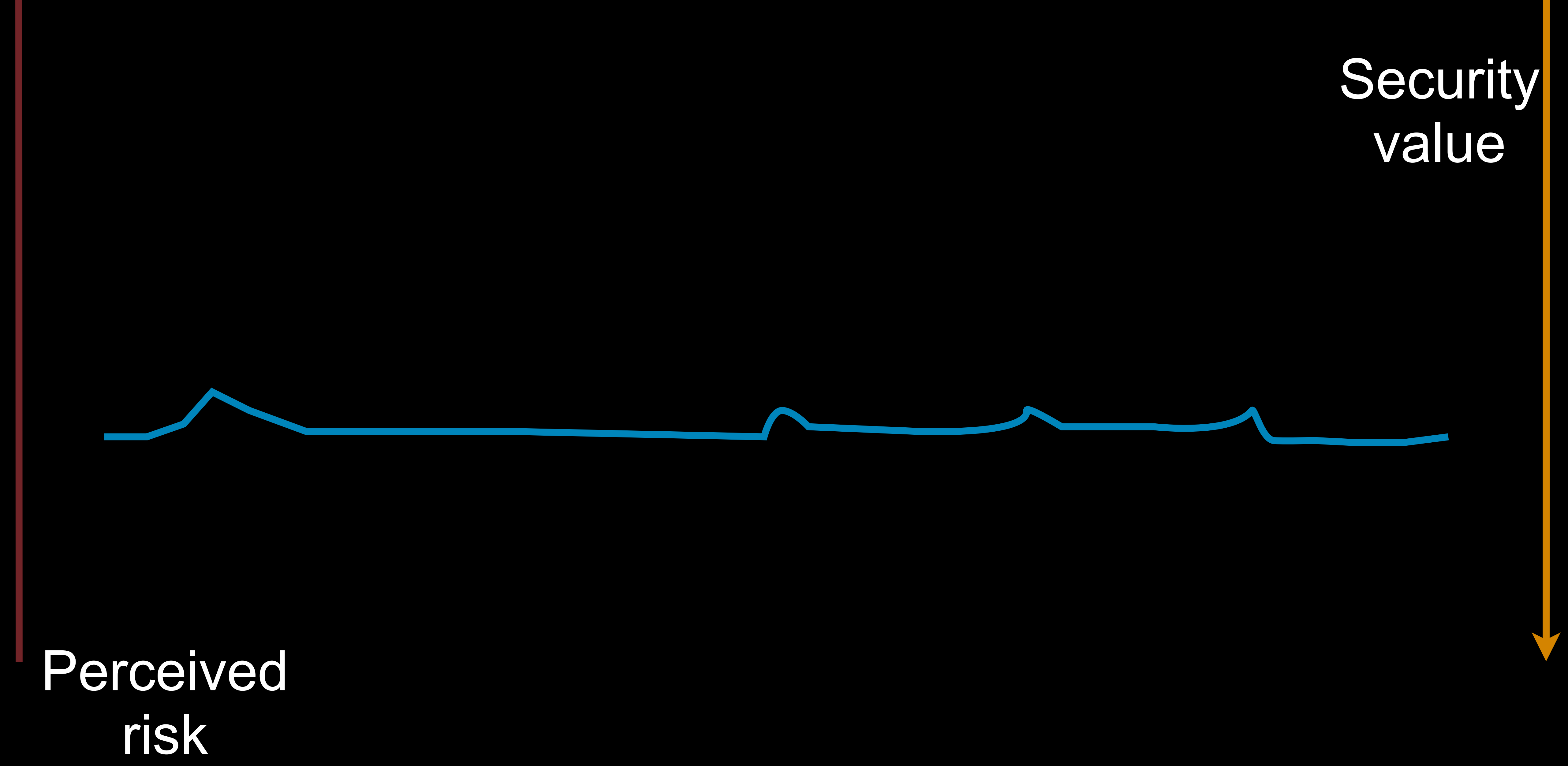

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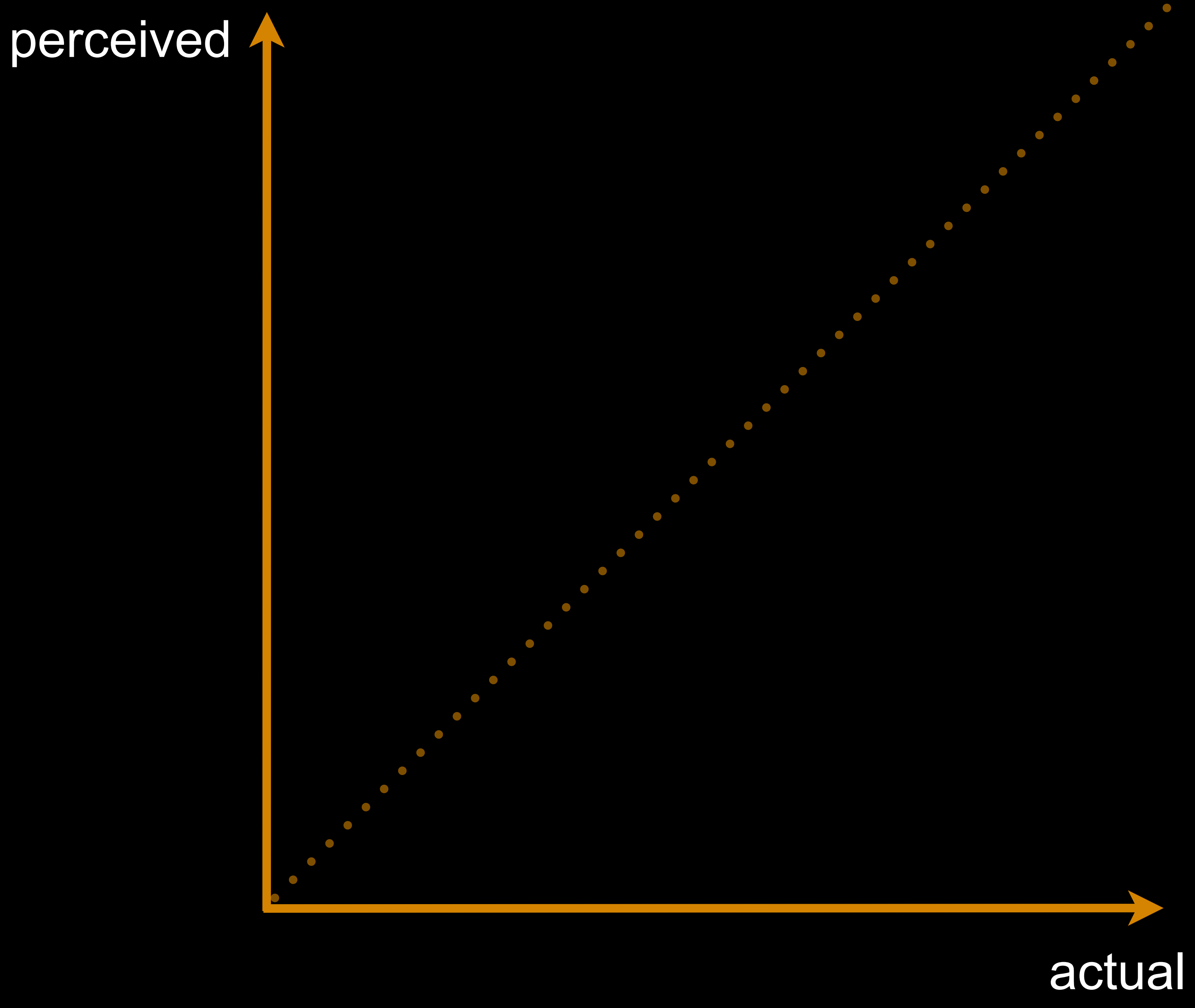

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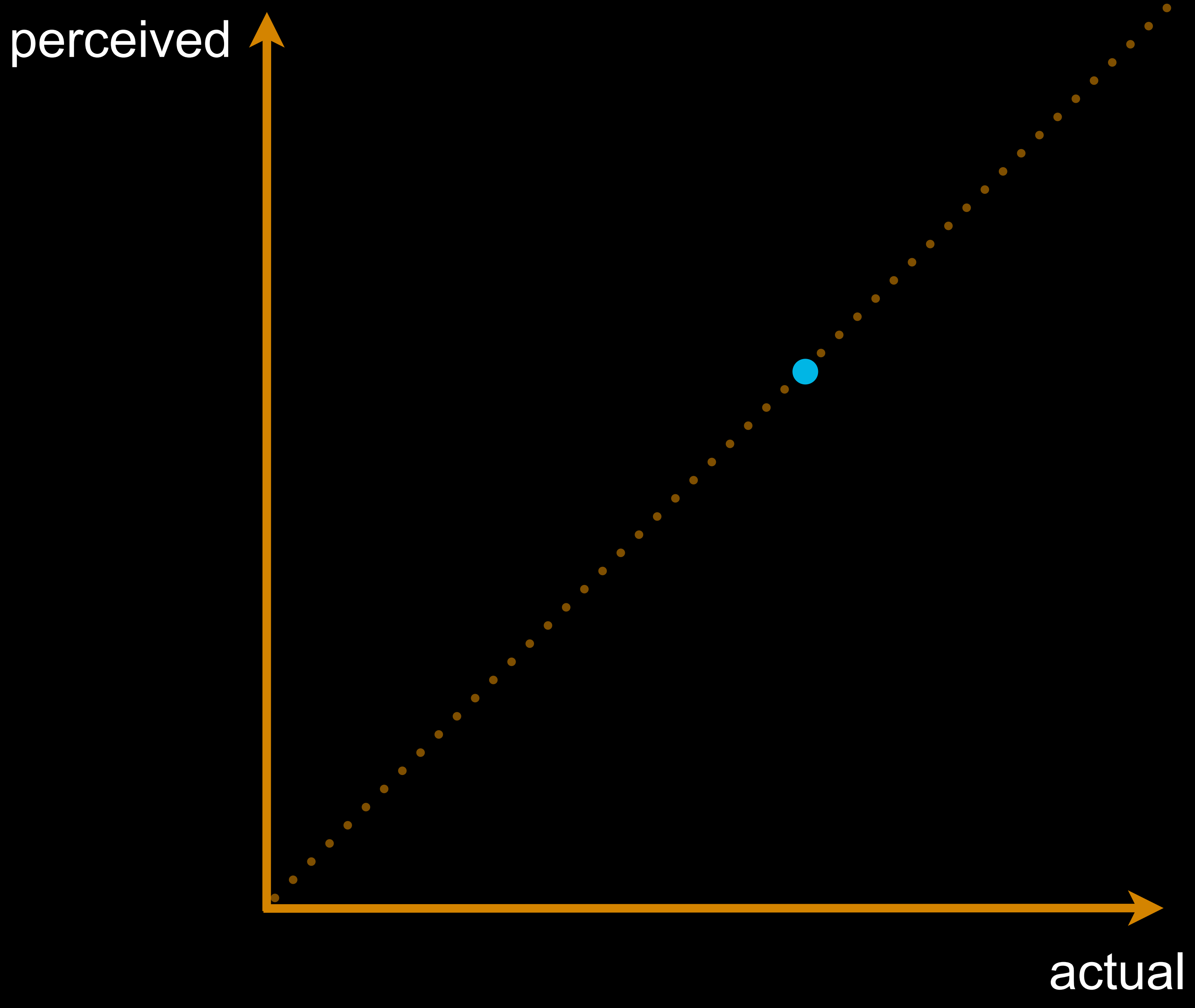

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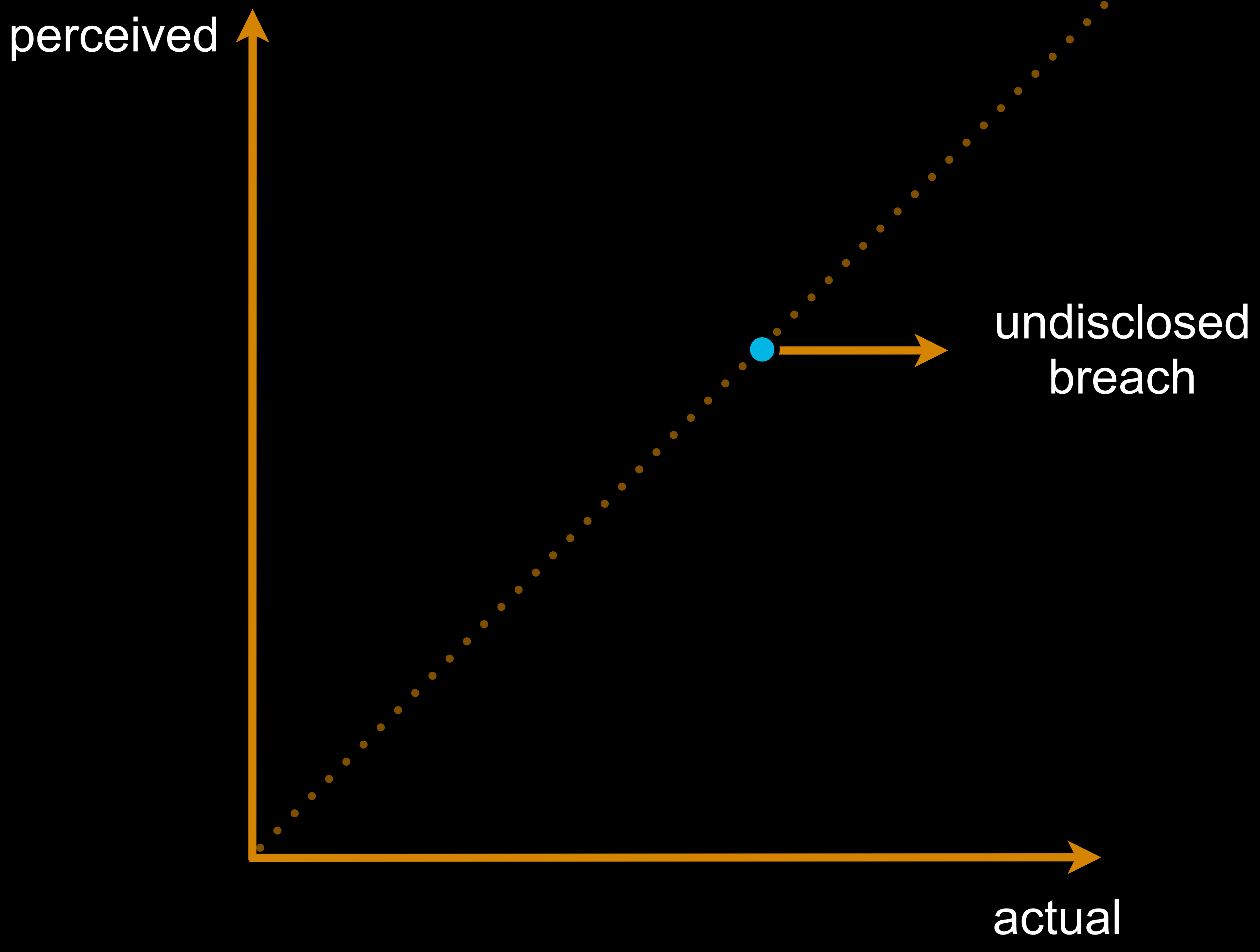

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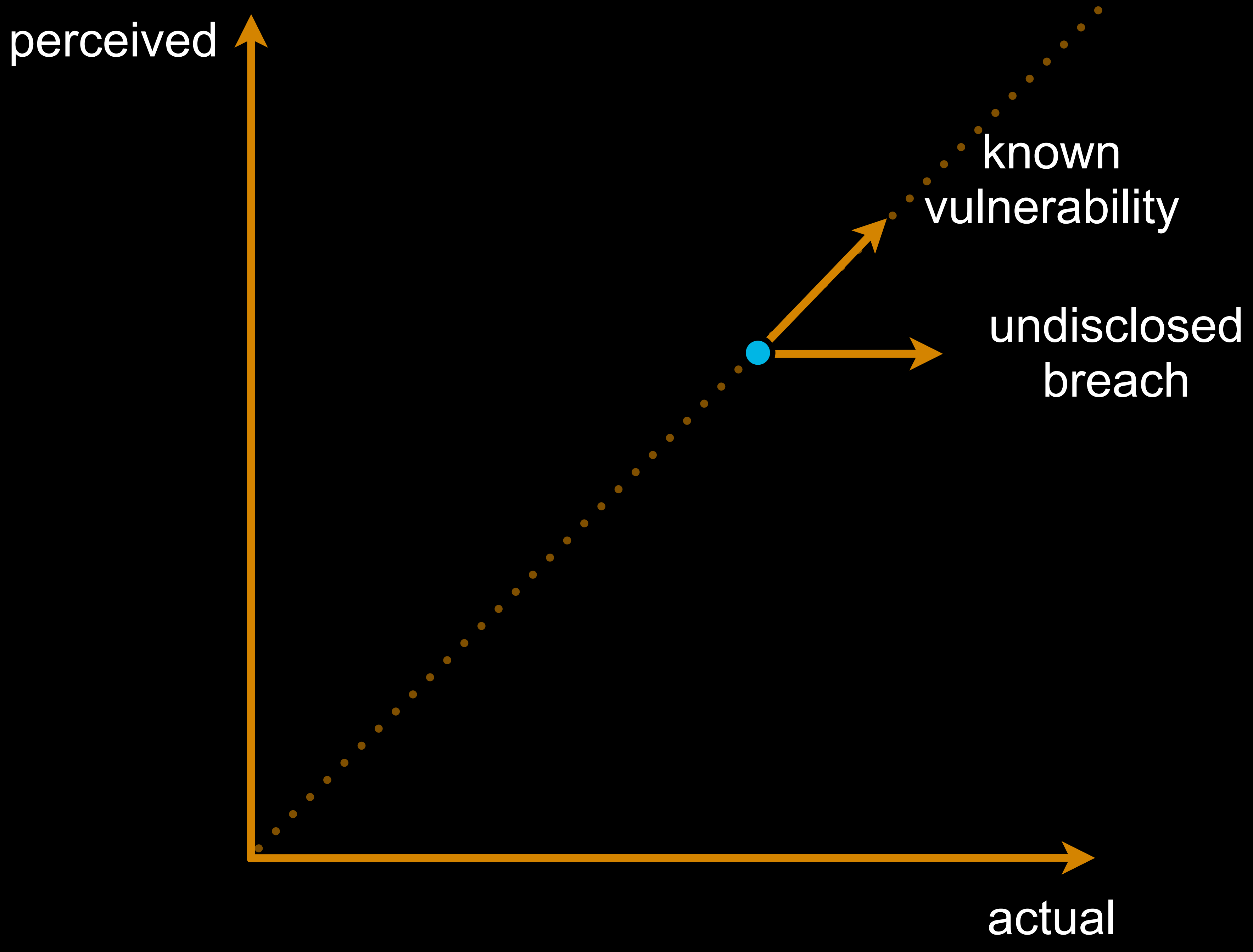


perceived

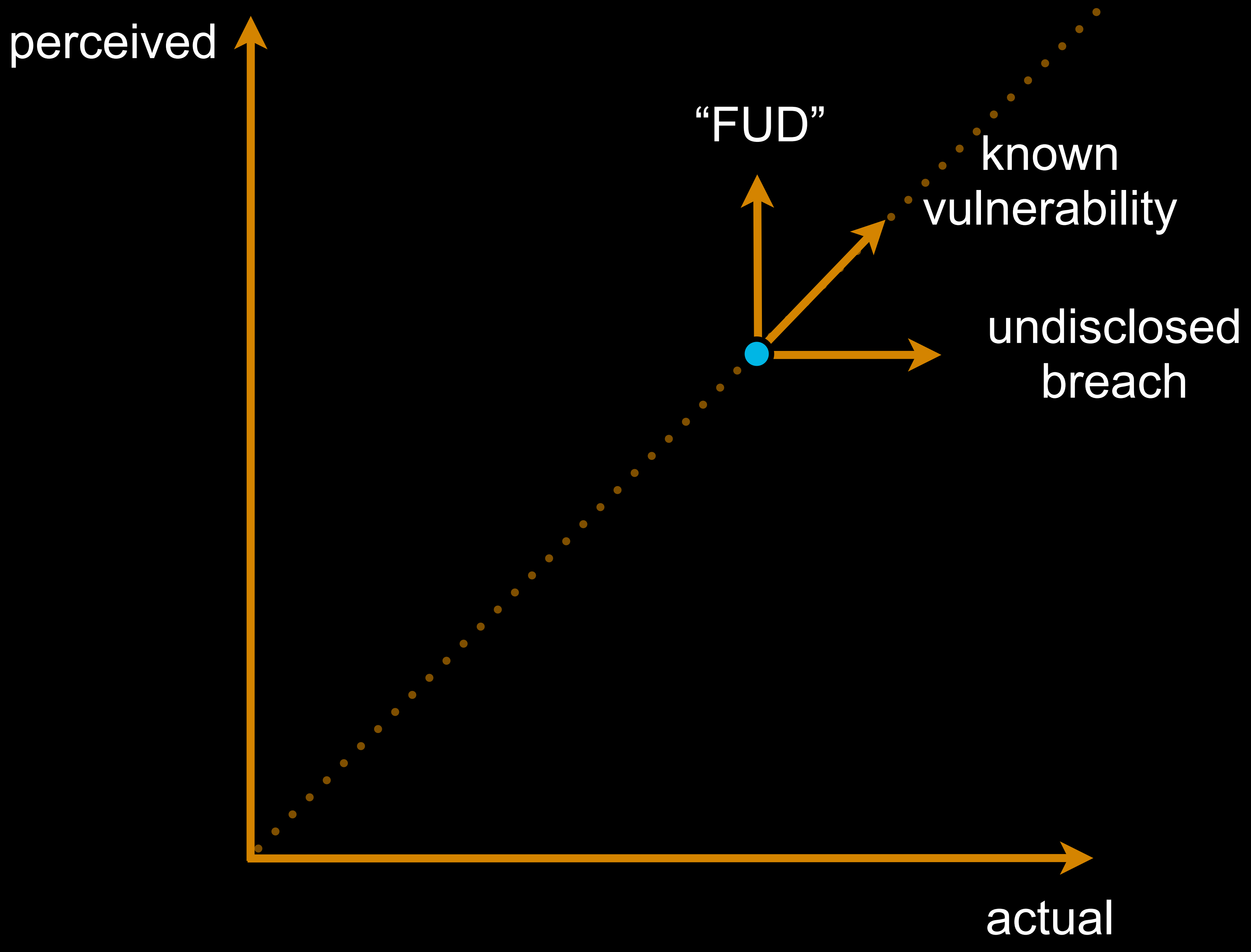
known vulnerability

undisclosed breach

actual

Faster Forward ™

Perceived Risk vs. Actual Risk



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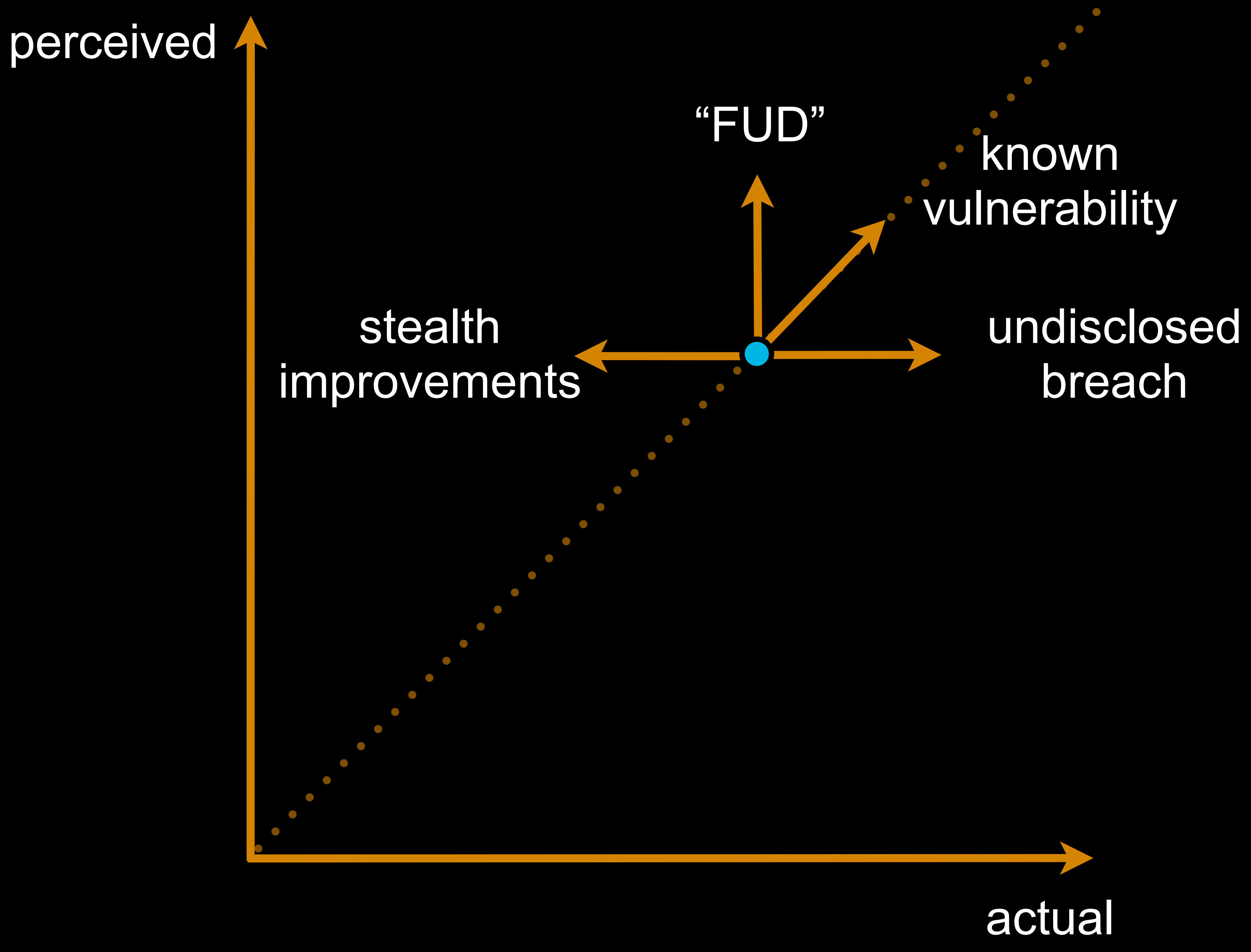

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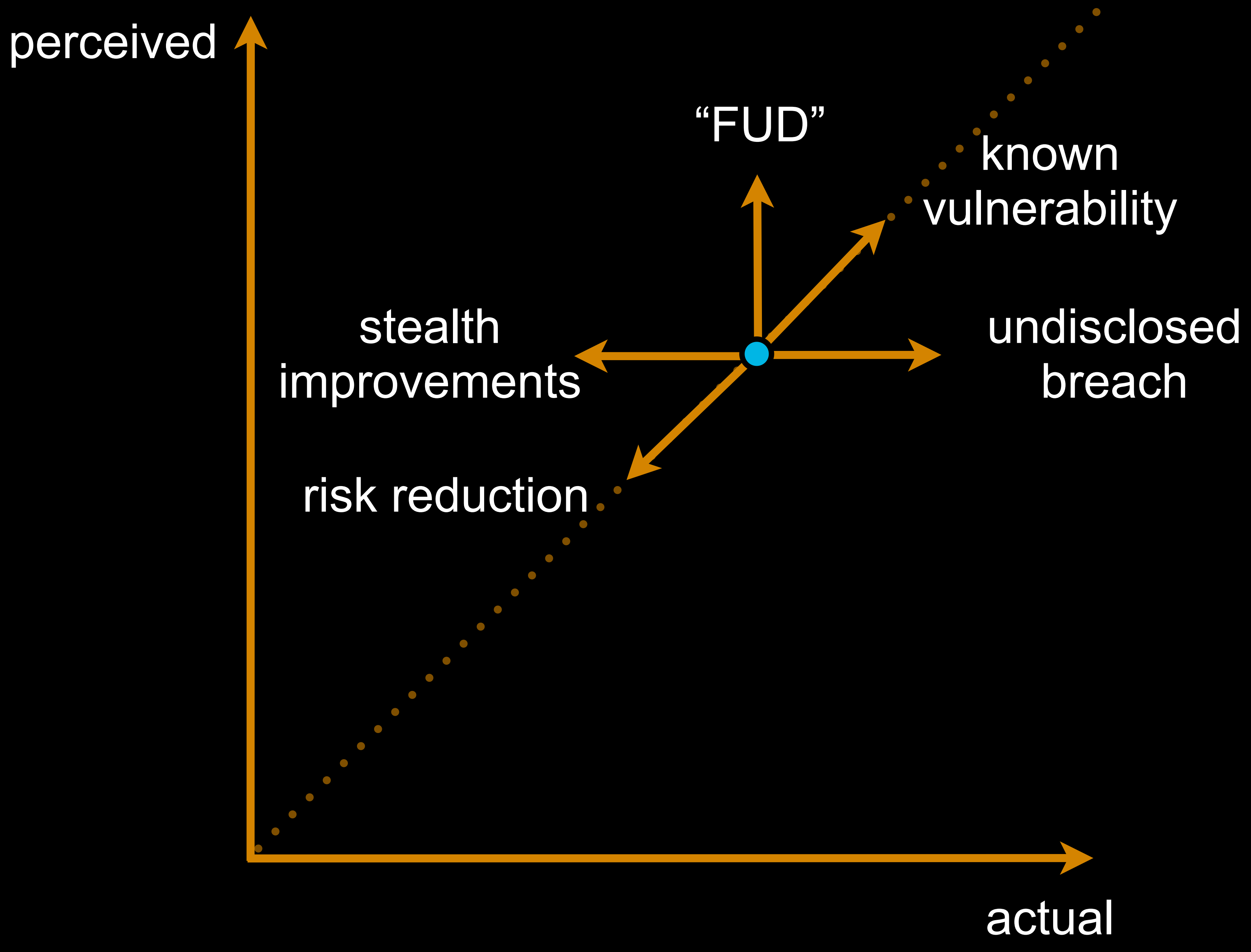

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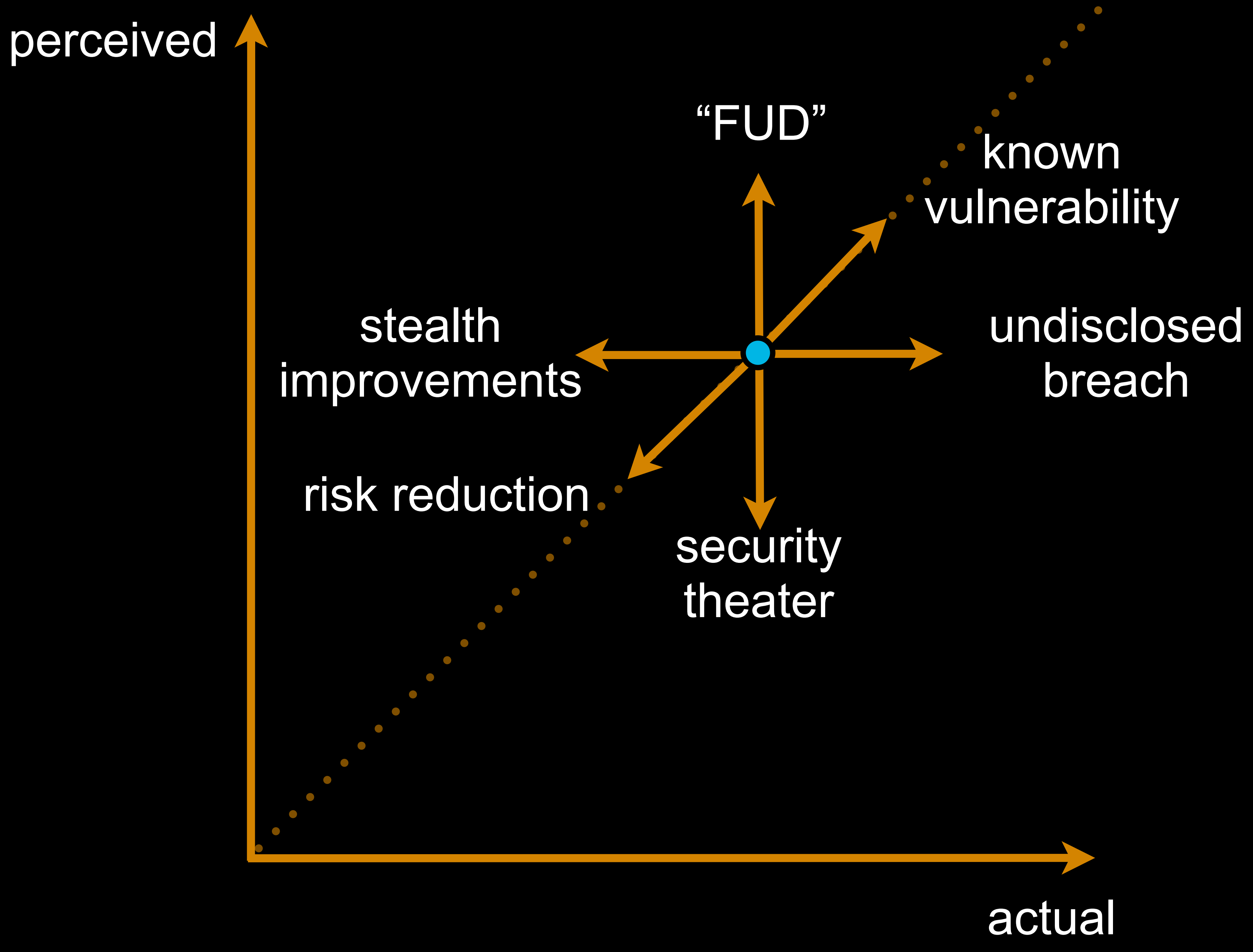

Thursday, May 24, 2012

Don’t beg for money ...

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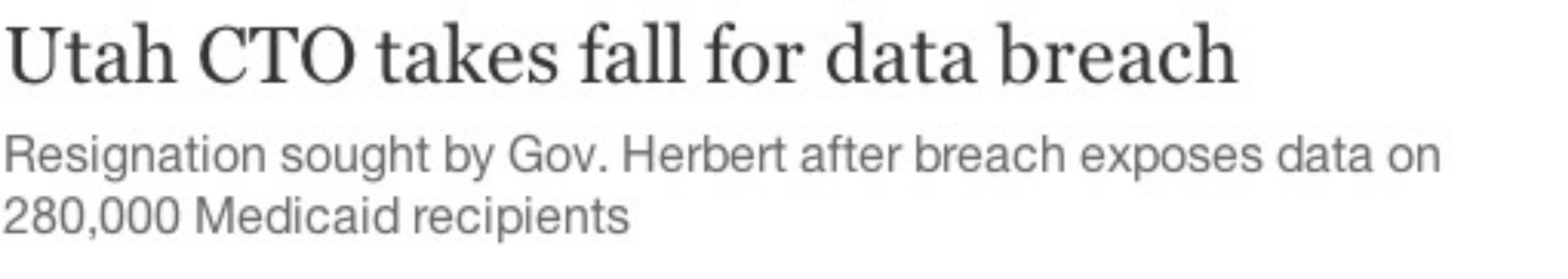

Utah CTO takes fall for data breach

Resignation sought by Gov. Herbert after breach exposes data on 280,000 Medicaid recipients

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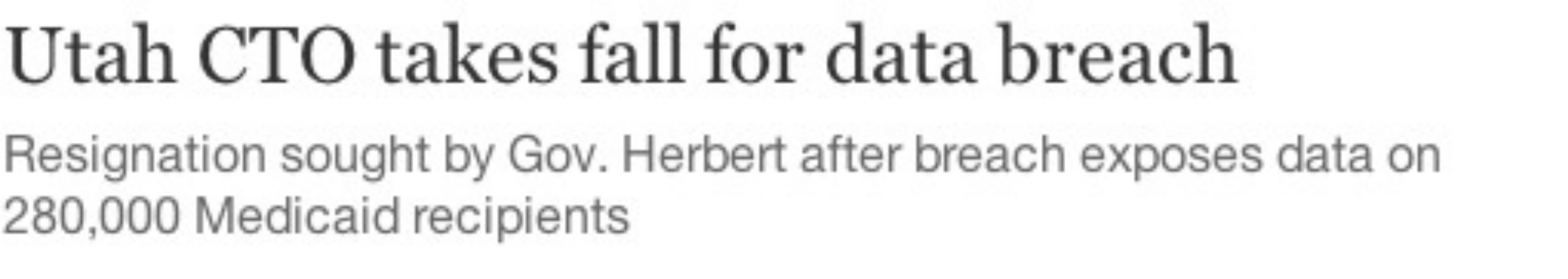

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“We need to roll out FDE immediately! And DLP!”

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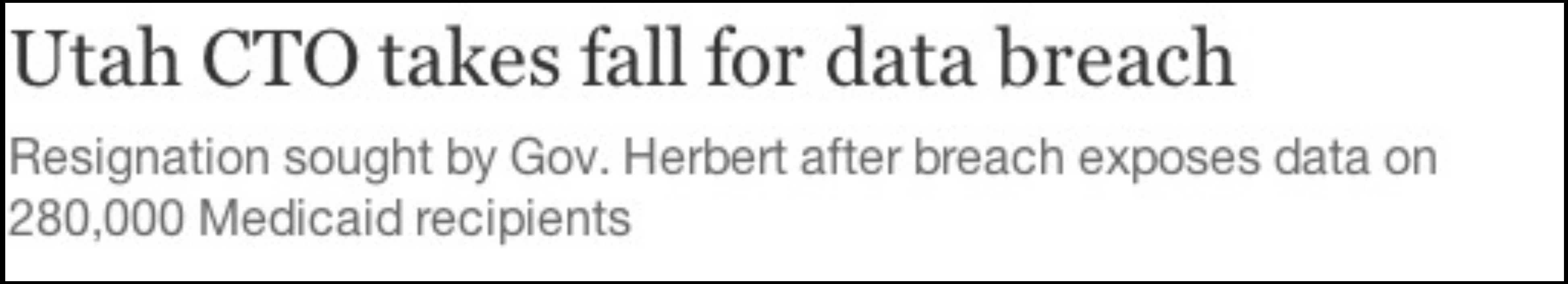

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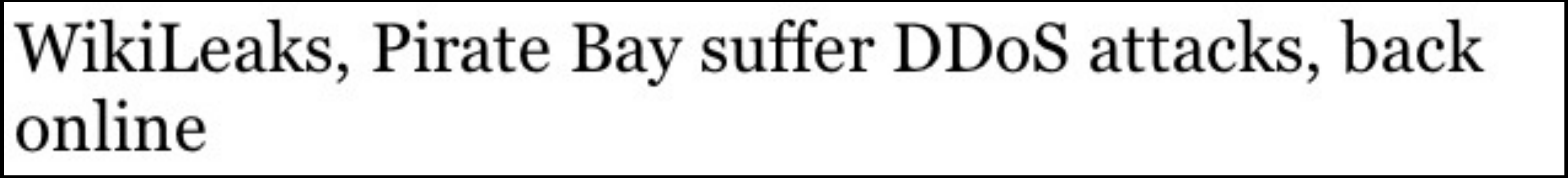

WikiLeaks, Pirate Bay suffer DDoS attacks, back online

“We need DDoS protection, right away!”

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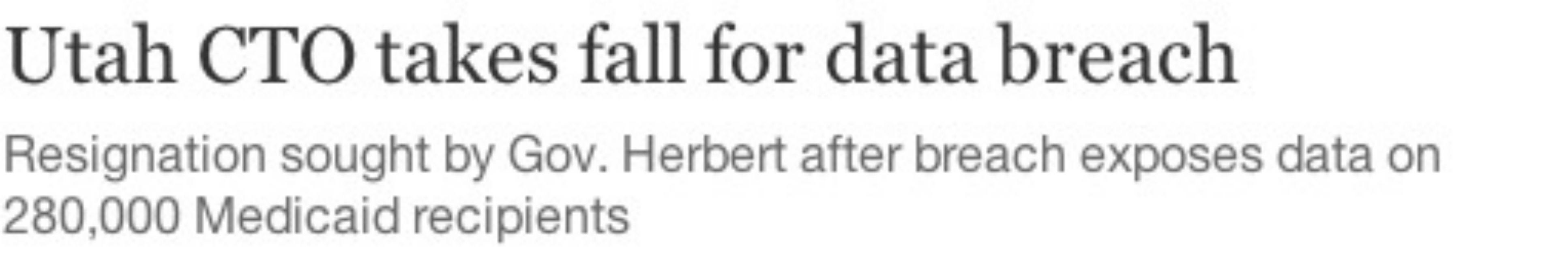

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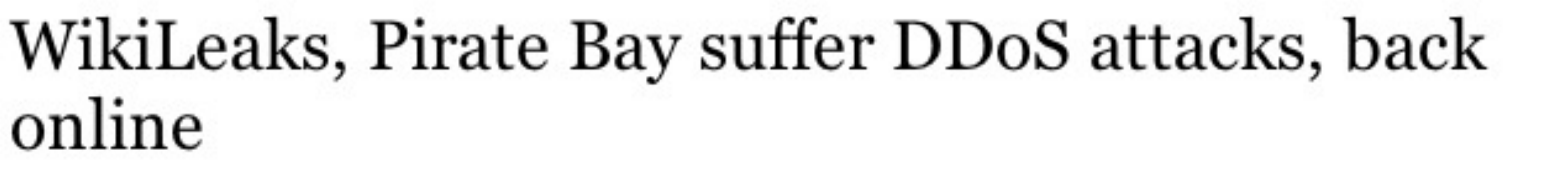

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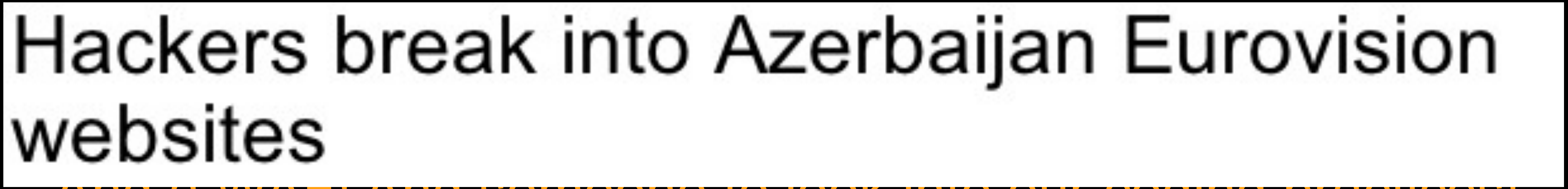
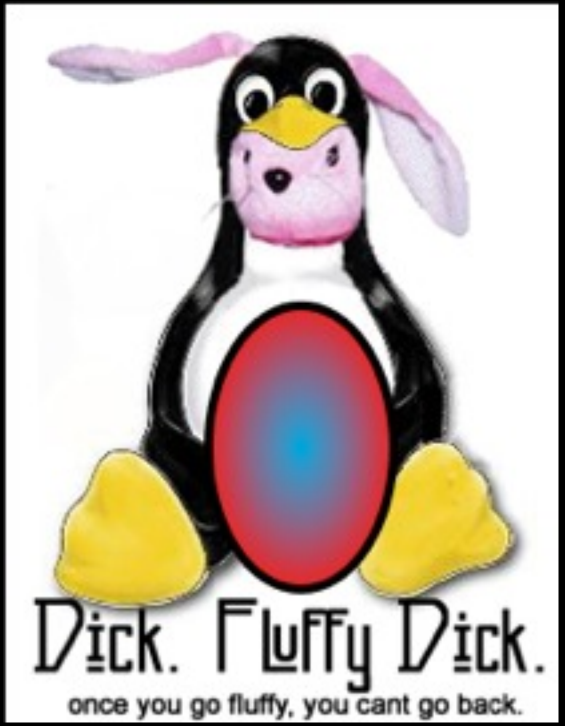


Hackers break into Azerbaijan Eurovision websites

And a WAF! And someone to look into our coding practices!

... instead waste your crises ...



- And of course last but not LEAST a special From AKAMAI technologies yes sireee
- (you guys cant keep this kind of stuff under wrapps)
- (yes what if someone mass executed ping -f 6500 yahoo.com from your noc)
- (i dont think anyone could block 5000+ machines world wide)
- --
- ---------@athena.dialup.mit.edu's password: luxlacpconcaprevsiebsmdakanetwork24sdyoyo
- Got RSA key from '-----@crabcake.kendall.akamai.com' to macau.nocc.akamai.com with pass h4rdc0r3

... and effect long term change

What if you found an organization where every developer had a copy of the key used to gain root access to every production system?

On their desktop?

At home?

How would you fix this?

Security Awareness

The Problem:

- Auditors believe that if we just train everyone with a basic security education, then *of course* we'll have no problems!

The Solution:

- Basic, standard security awareness, web-based, automated, simple.
- Targeted training, not exposed to auditors.

Security Awareness

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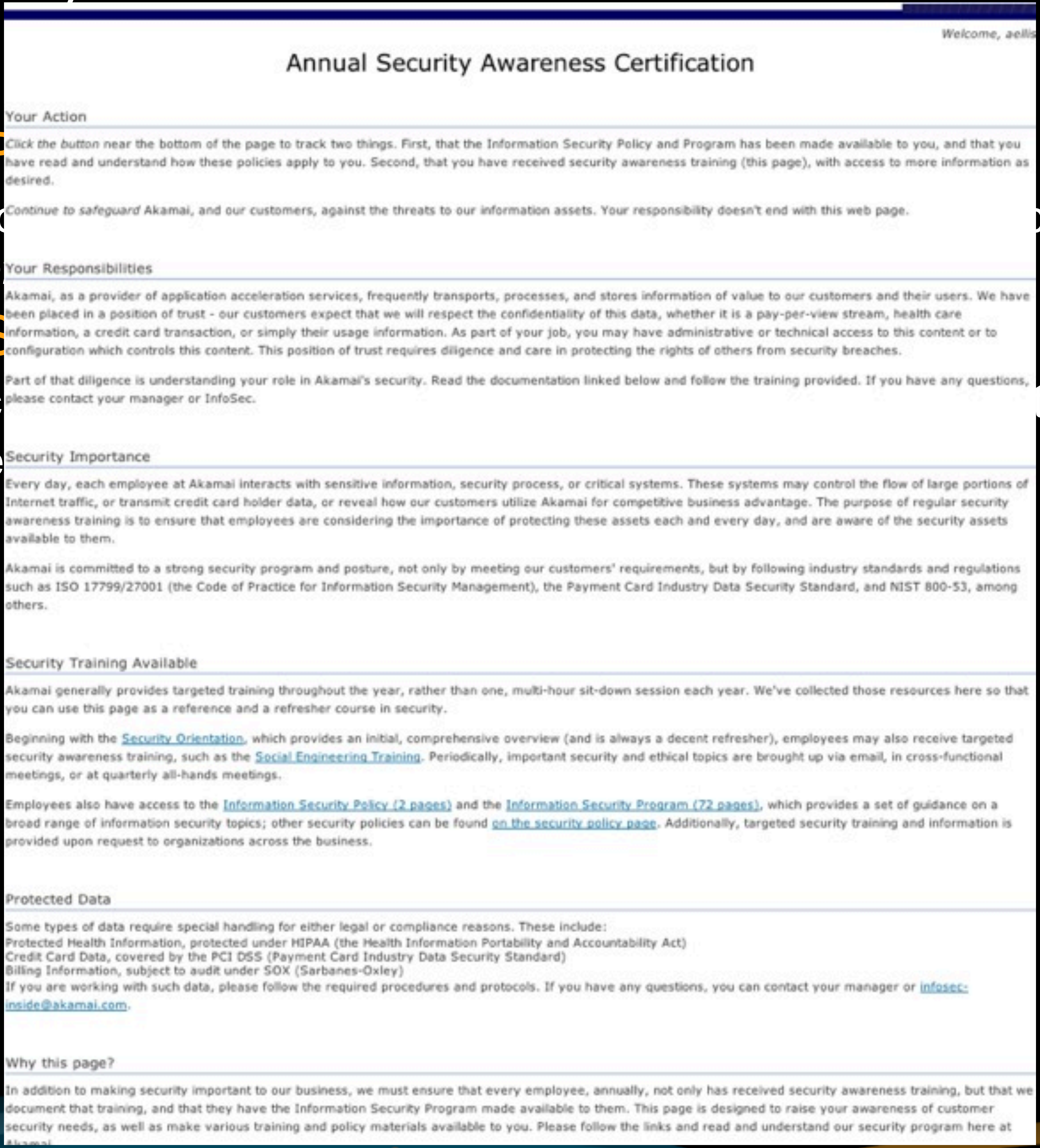


Welcome, aellis

Annual Security Awareness Certification

Your Action

Click the button near the bottom of the page to track two things. First, that the Information Security Policy and Program has been made available to you, and that you have read and understand how these policies apply to you. Second, that you have received security awareness training (this page), with access to more information as desired.

Continue to safeguard Akamai, and our customers, against the threats to our information assets. Your responsibility doesn't end with this web page.

Your Responsibilities

Akamai, as a provider of application acceleration services, frequently transports, processes, and stores information of value to our customers and their users. We have been placed in a position of trust - our customers expect that we will respect the confidentiality of this data, whether it is a pay-per-view stream, health care information, a credit card transaction, or simply their usage information. As part of your job, you may have administrative or technical access to this content or to configuration which controls this content. This position of trust requires diligence and care in protecting the rights of others from security breaches.

Part of that diligence is understanding your role in Akamai's security. Read the documentation linked below and follow the training provided. If you have any questions, please contact your manager or InfoSec.

Security Importance

Every day, each employee at Akamai interacts with sensitive information, security process, or critical systems. These systems may control the flow of large portions of Internet traffic, or transmit credit card holder data, or reveal how our customers utilize Akamai for competitive business advantage. The purpose of regular security awareness training is to ensure that employees are considering the importance of protecting these assets each and every day, and are aware of the security assets available to them.

Akamai is committed to a strong security program and posture, not only by meeting our customers' requirements, but by following industry standards and regulations such as ISO 17799/27001 (the Code of Practice for Information Security Management), the Payment Card Industry Data Security Standard, and NIST 800-53, among others.

Security Training Available

Akamai generally provides targeted training throughout the year, rather than one, multi-hour sit-down session each year. We've collected those resources here so that you can use this page as a reference and a refresher course in security.

Beginning with the Security Orientation, which provides an initial, comprehensive overview (and is always a decent refresher), employees may also receive targeted security awareness training, such as the Social Engineering Training. Periodically, important security and ethical topics are brought up via email, in cross-functional meetings, or at quarterly all-hands meetings.

Employees also have access to the Information Security Policy (2 pages) and the Information Security Program (72 pages), which provides a set of guidance on a broad range of information security topics; other security policies can be found on the security policy page. Additionally, targeted security training and information is provided upon request to organizations across the business.

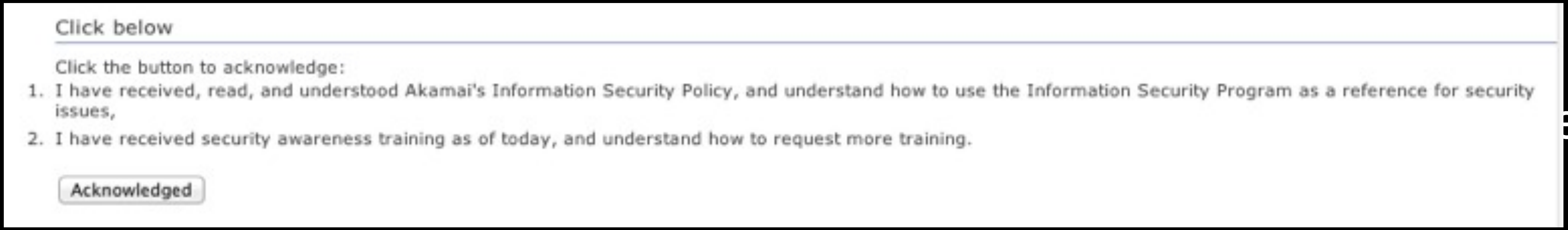
Protected Data

Some types of data require special handling for either legal or compliance reasons. These include:
Protected Health Information, protected under HIPAA (the Health Information Portability and Accountability Act)
Credit Card Data, covered by the PCI DSS (Payment Card Industry Data Security Standard)
Billing Information, subject to audit under SOX (Sarbanes-Oxley)
If you are working with such data, please follow the required procedures and protocols. If you have any questions, you can contact your manager or infosec-inside@akamai.com.

Why this page?

In addition to making security important to our business, we must ensure that every employee, annually, not only has received security awareness training, but that we document that training, and that they have the Information Security Program made available to them. This page is designed to raise your awareness of customer security needs, as well as make various training and policy materials available to you. Please follow the links and read and understand our security program here at

Security Awareness



Click below

Click the button to acknowledge:

1. I have received, read, and understood Akamai's Information Security Policy, and understand how to use the Information Security Program as a reference for security issues,
2. I have received security awareness training as of today, and understand how to request more training.

education,

The Solution:

- Basic, standard security awareness, web-based, automated, simple.
- Targeted training, not exposed to auditors.

Security Awareness

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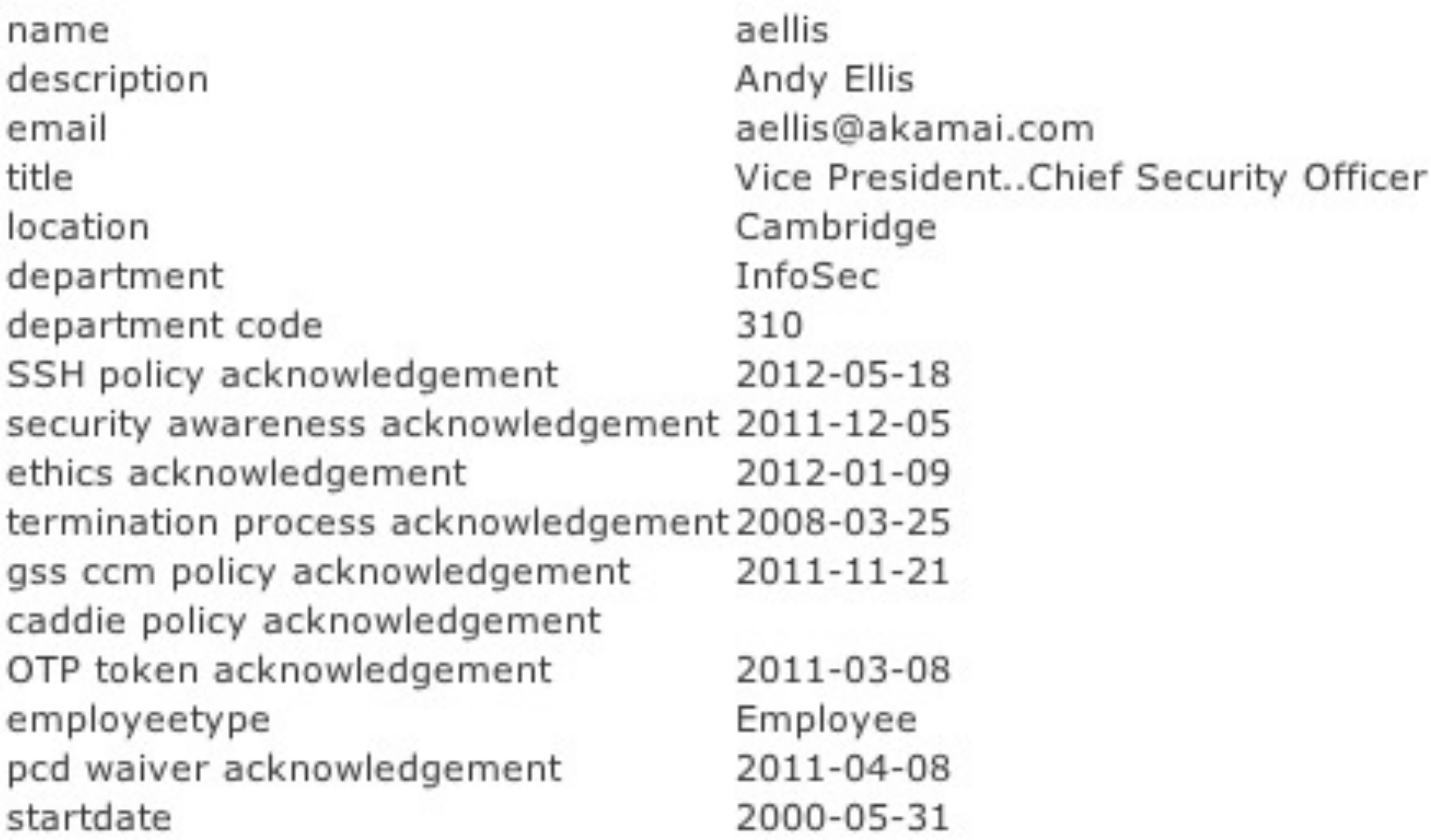


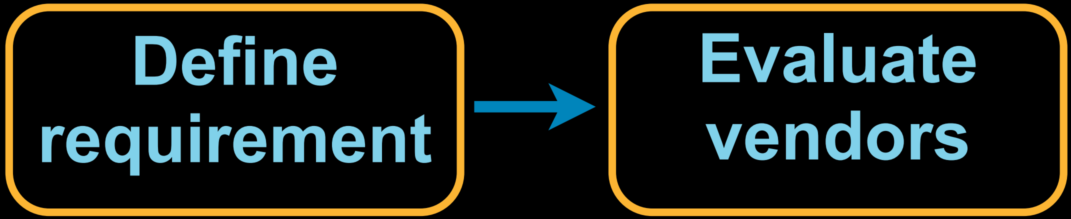
name	aellis
description	Andy Ellis
email	aellis@akamai.com
title	Vice President..Chief Security Officer
location	Cambridge
department	InfoSec
department code	310
SSH policy acknowledgement	2012-05-18
security awareness acknowledgement	2011-12-05
ethics acknowledgement	2012-01-09
termination process acknowledgement	2008-03-25
gss ccm policy acknowledgement	2011-11-21
caddie policy acknowledgement	
OTP token acknowledgement	2011-03-08
employeetype	Employee
pcd waiver acknowledgement	2011-04-08
startdate	2000-05-31

Third party security reviews

Third party security reviews

Define requirement

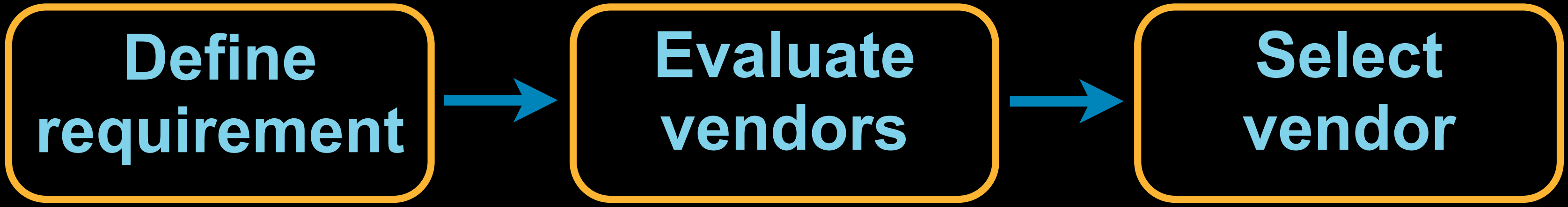
Third party security reviews



Define requirement

Evaluate vendors

Third party security reviews

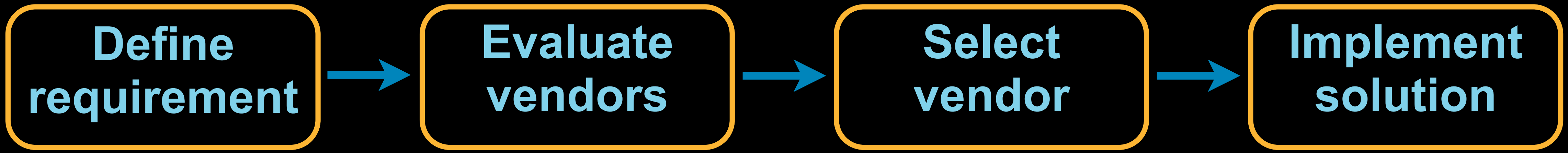


Define requirement

Evaluate vendors

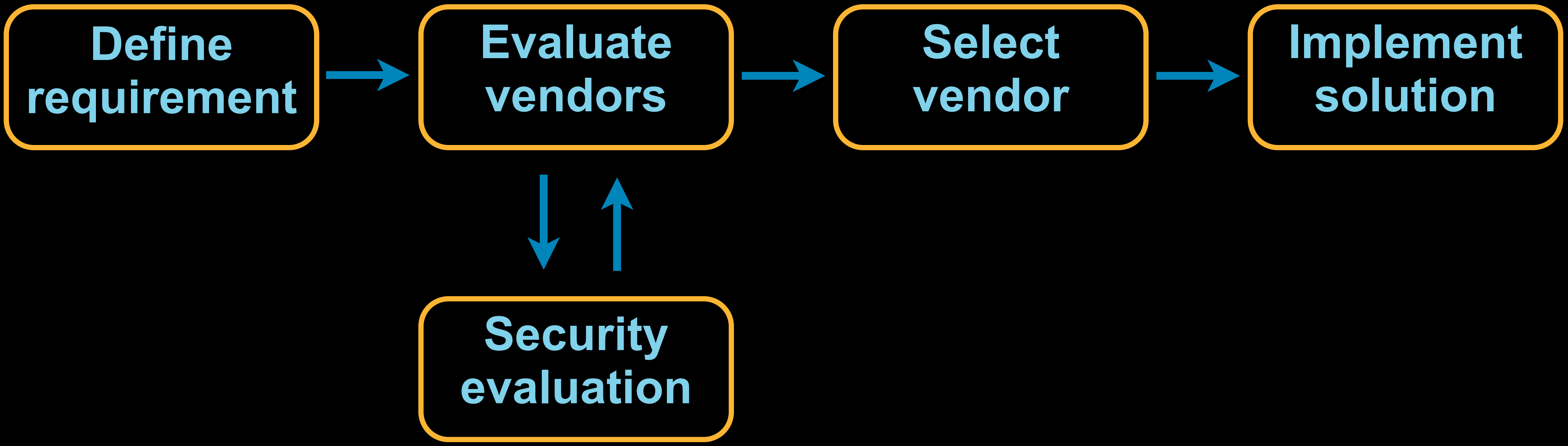
Select vendor

Third party security reviews



Define requirement → Evaluate vendors → Select vendor → Implement solution

Third party security reviews



Define requirement

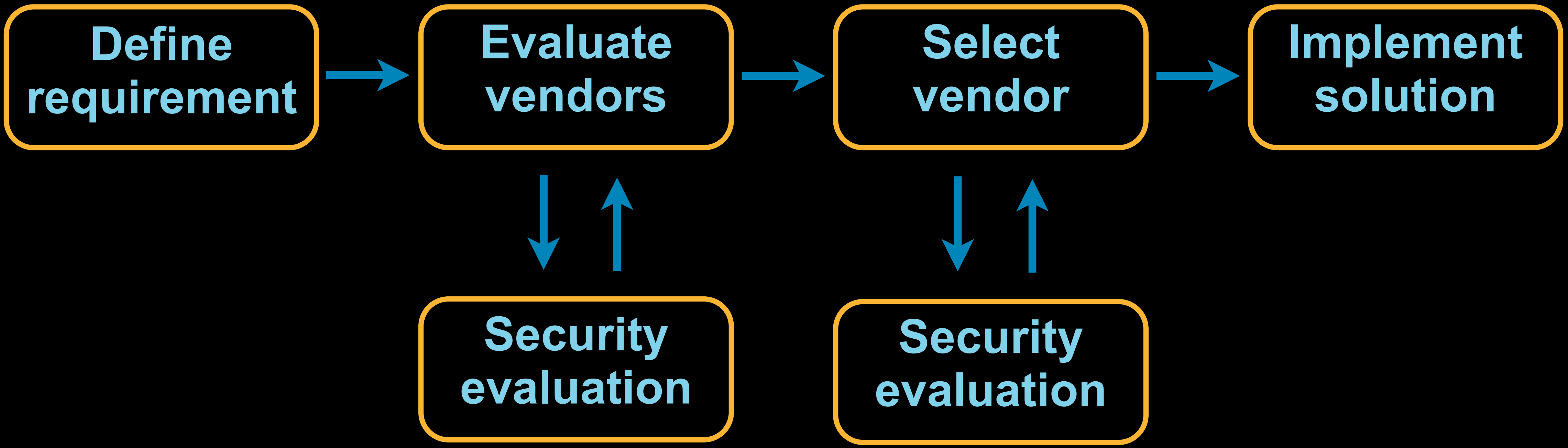
Evaluate vendors

Select vendor

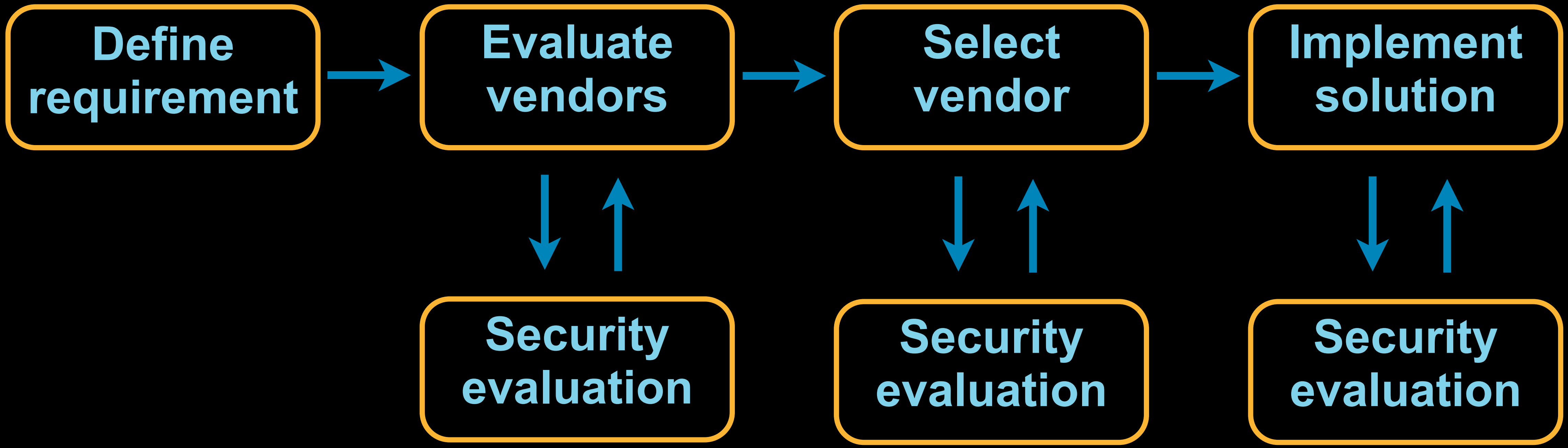
Implement solution

Security evaluation

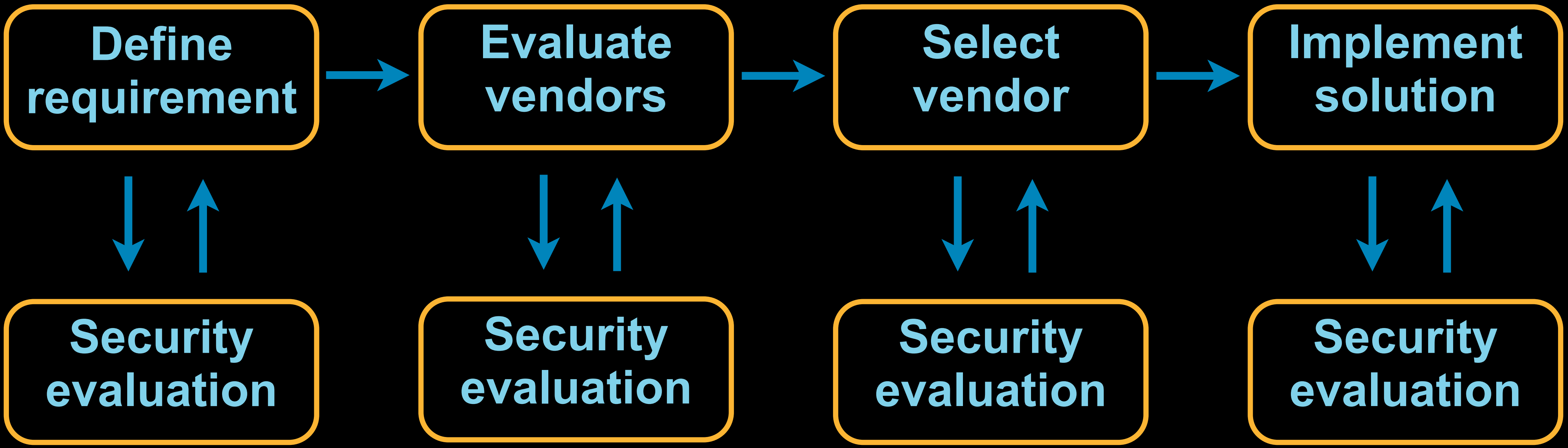
Third party security reviews



Third party security reviews



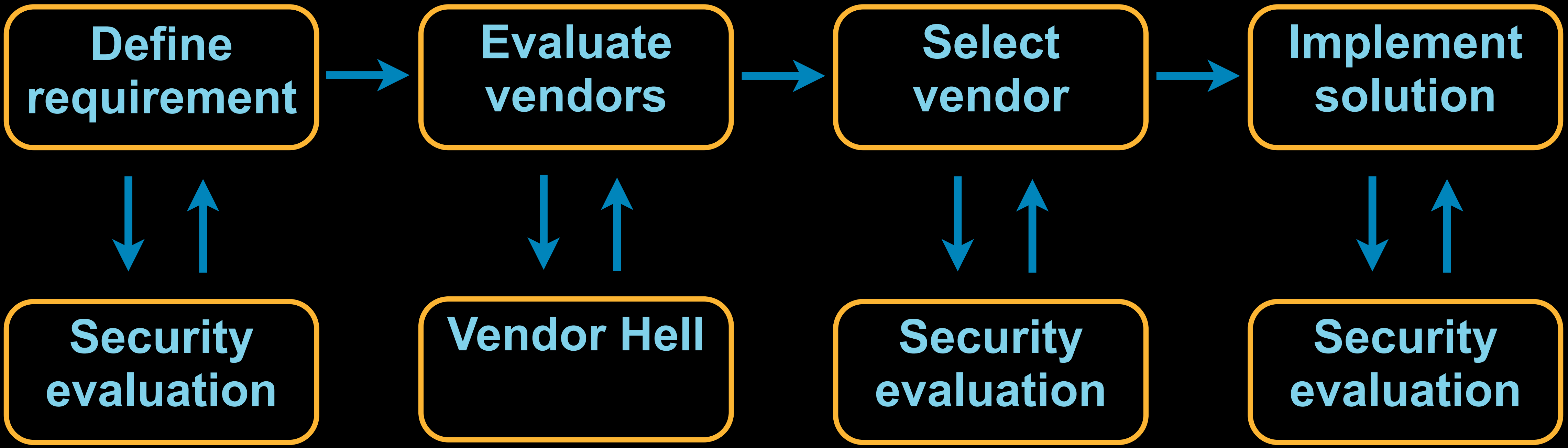
Third party security reviews



Define requirement → Evaluate vendors → Select vendor → Implement solution

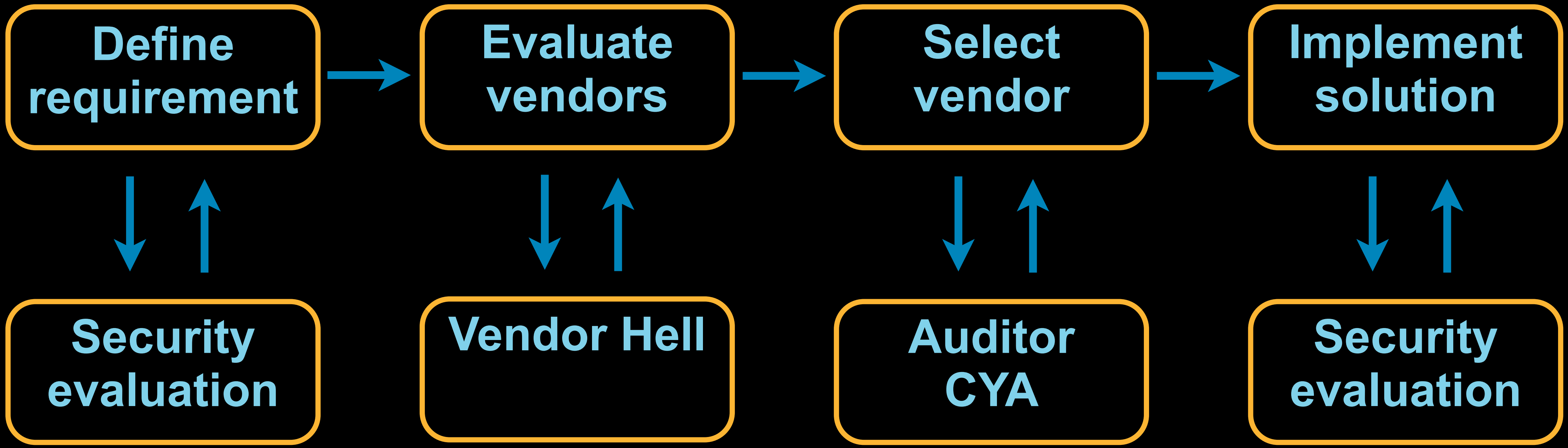
Each step ↔ Security evaluation

Third party security reviews



Define requirement → Evaluate vendors → Select vendor → Implement solution

Third party security reviews



Define requirement

Evaluate vendors

Select vendor

Implement solution

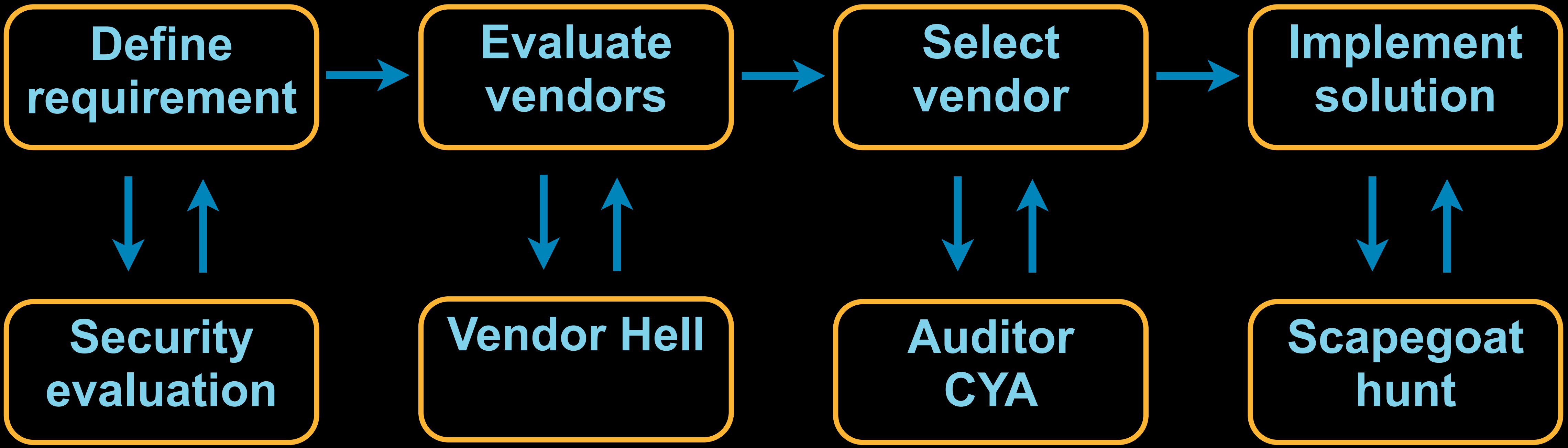
Security evaluation

Vendor Hell

Auditor CYA

Security evaluation

Third party security reviews



Define requirement

Evaluate vendors

Select vendor

Implement solution

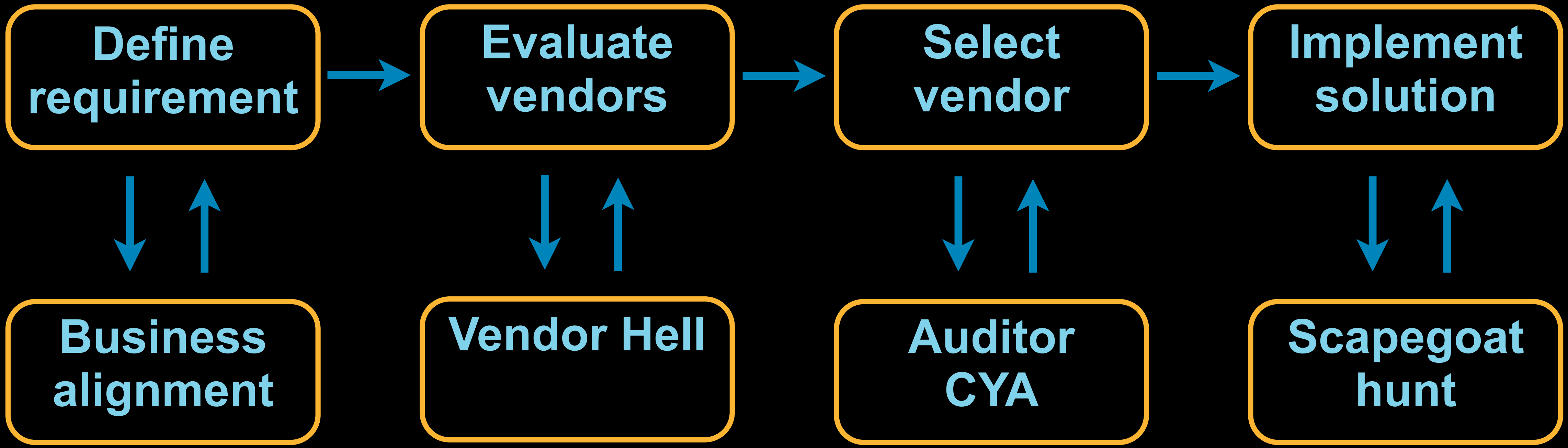
Security evaluation

Vendor Hell

Auditor CYA

Scapegoat hunt

Third party security reviews



Define requirement

Evaluate vendors

Select vendor

Implement solution

Business alignment

Vendor Hell

Auditor CYA

Scapegoat hunt

Hunting for malware in a 10PB cloud

http://bitly.com/AkaVscan

Hunting for malware in a 10PB cloud

http://www.flickr.com/photos/james_lumb/3921969141/

http://bitly.com/AkaVscan

How easy is juggling?

How easy is juggling?

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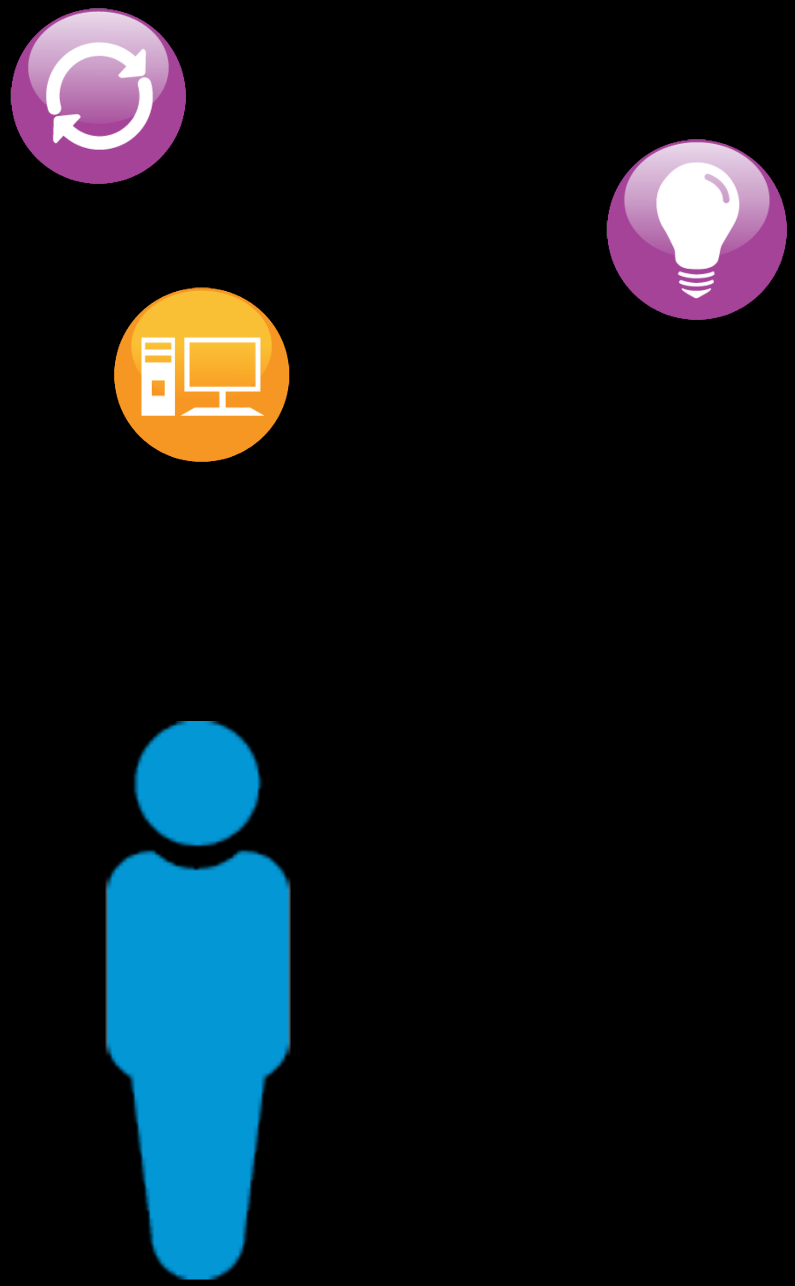
Thursday, May 24, 2012

How easy is juggling?

How easy is juggling?

How easy is juggling?



Takeaway: Measuring security value

Value = resources * capabilities

time + money

skill * effort * effectiveness

Takeaway: Measuring security value

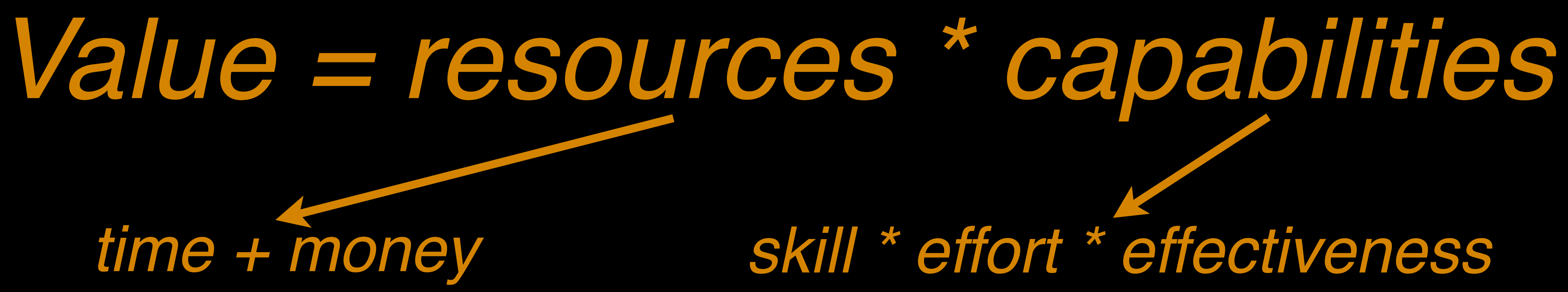
*Value = resources * capabilities*

time + money

*skill * effort * effectiveness*

Goal of any security program: dv/dt > 0

Takeaway: Measuring security value



*Value = resources * capabilities*

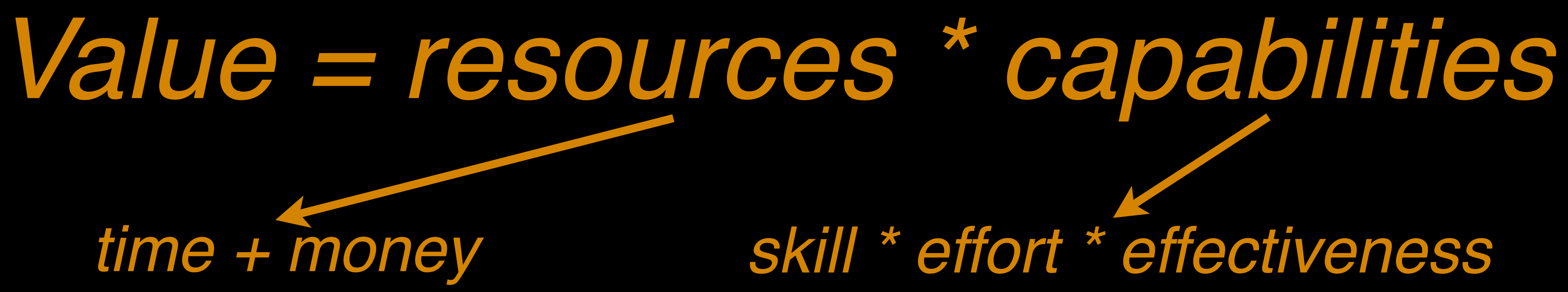
time + money

*skill * effort * effectiveness*

Goal of any security program: $dv/dt > 0$

Below the Security Poverty Line, we see Security Subsistence Syndrome: relying on *resources*, not *capabilities*.
Goal: $dr/dt > 0$

Takeaway: Measuring security value



*Value = resources * capabilities*

time + money

*skill * effort * effectiveness*

Goal of any security program: $dv/dt > 0$

Below the Security Poverty Line, we see Security Subsistence Syndrome: relying on *resources*, not *capabilities*.
Goal: $dr/dt > 0$

A *good* security program wants to create surplus.
Goal: $dc/dt > 0$

Questions, Answers, and Pontifications

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