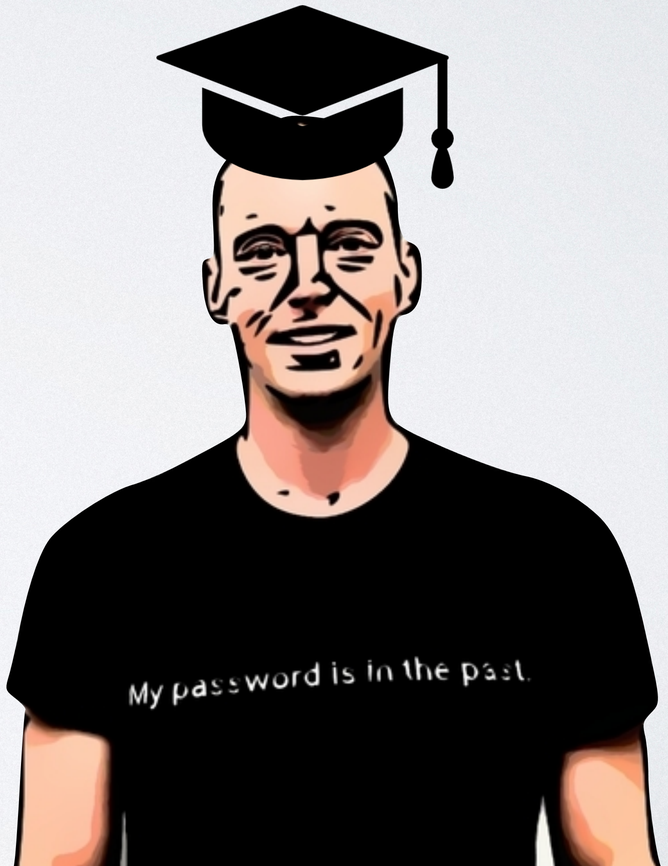
IDENTITY AND AUTHENTICATION

Chad Spensky
Allthenticate

WHO AM I?

WHO AM I?

- Chad Spensky (Professional)
  - Ph.D. Student
  - Computer Security Researcher
  - Founder of Allthenticate



WHO AM I?

- Chad Spensky (Social)
  - Beach Volleyball Player
  - Country Music Enthusiast
  - Fried Chicken Connoisseur

WHO AM I?

- Shortman (Online)
  - Hacker
  - CTF Player
  - You?

THE PROBLEM

I should have access to some things, and not others

THE PROBLEM

My Bank Account

Your Bank Account

THE PROBLEM

My E-mail

Your E-mail

THE PROBLEM

Your House

AUTHENTICATION

Convincing a digital entity that I am me

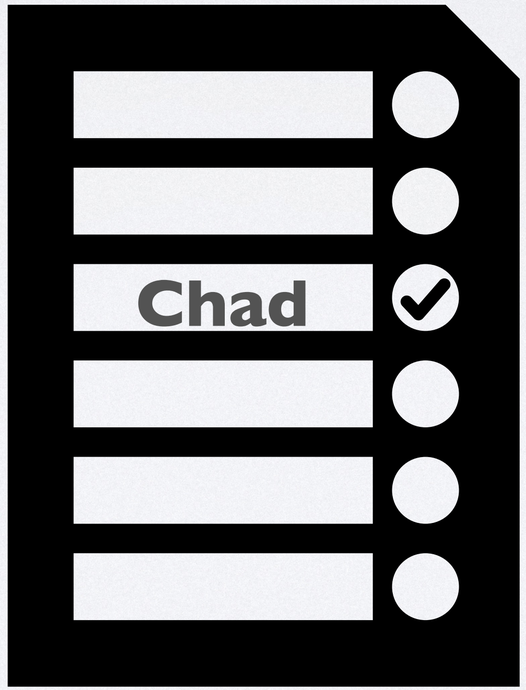
AUTHENTICATION

Convincing a digital entity that I am ~~me~~

authorized

AUTHENTICATION

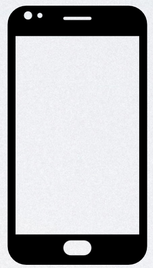
Only permitting authorized users to access a resource

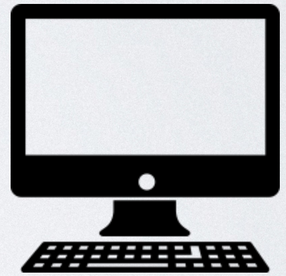


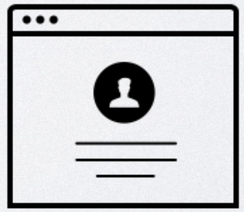
AUTHENTICATION

Real World

Digital World



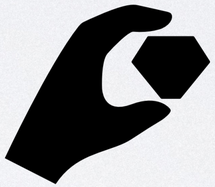




AUTHENTICATION

- What you know

- What you have



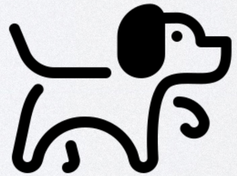
- What you are

WHAT YOU KNOW

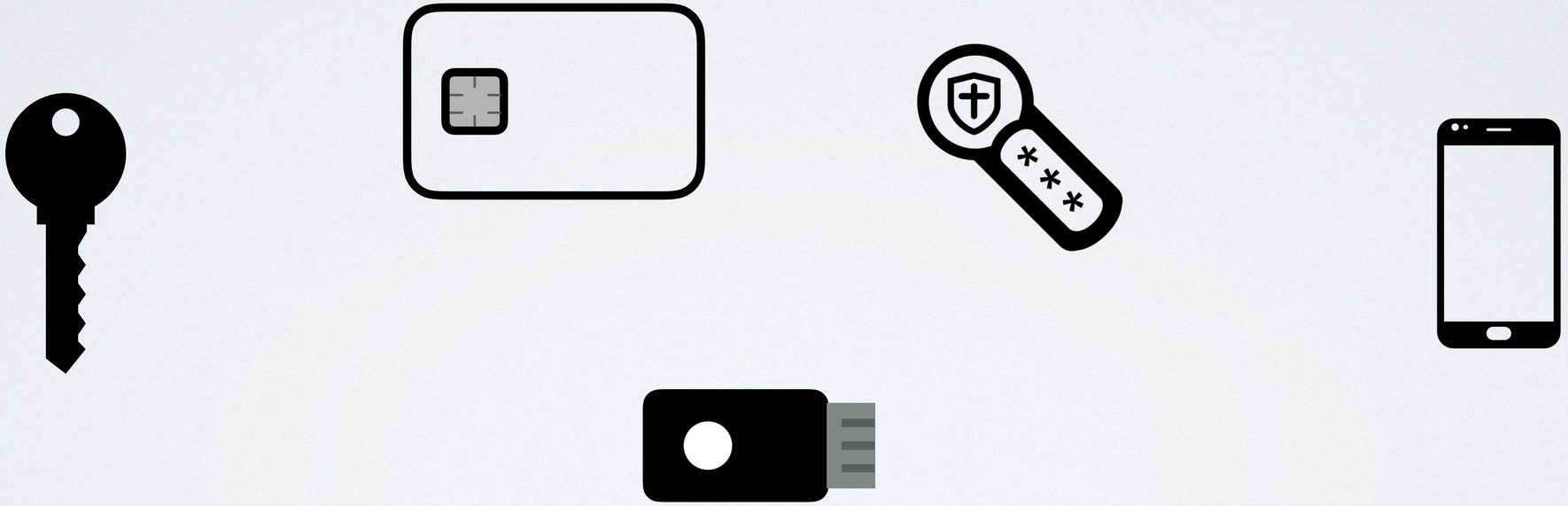
A Secret

****

Personal Details



WHAT YOU HAVE

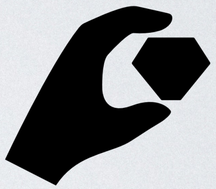


WHAT YOU ARE

THE GOOD

- **Know**: Always with you

- **Have**: No mental burden

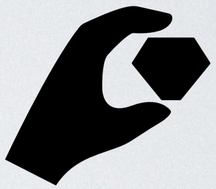


- **Are**: Just be yourself

THE BAD

- **Know**: You must remember it. always.

- **Have**: You must always have it.

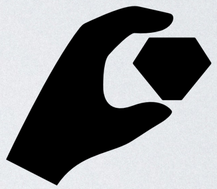


- **Are**: What if you temporarily change? (e.g., cold or injury)

THE UGLY

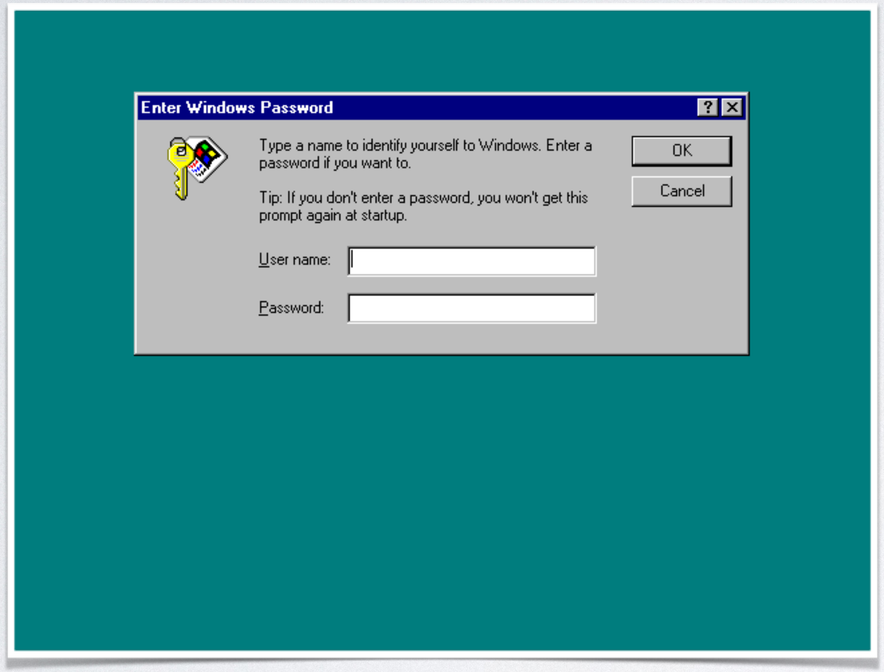
- **Know**: You must be better than a computer.

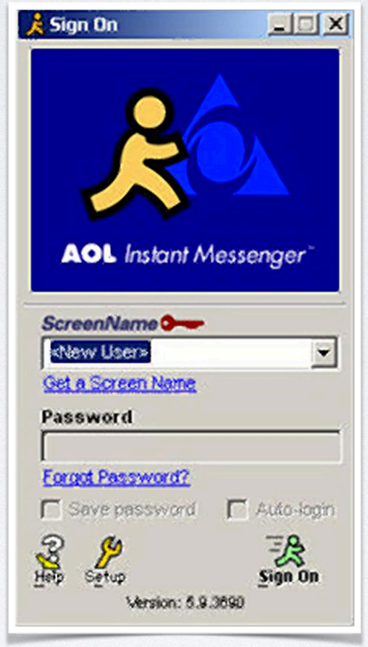
- **Have**: What if it gets stolen?



- **Are**: You can never share or revoke who you are.

PASSWORDS





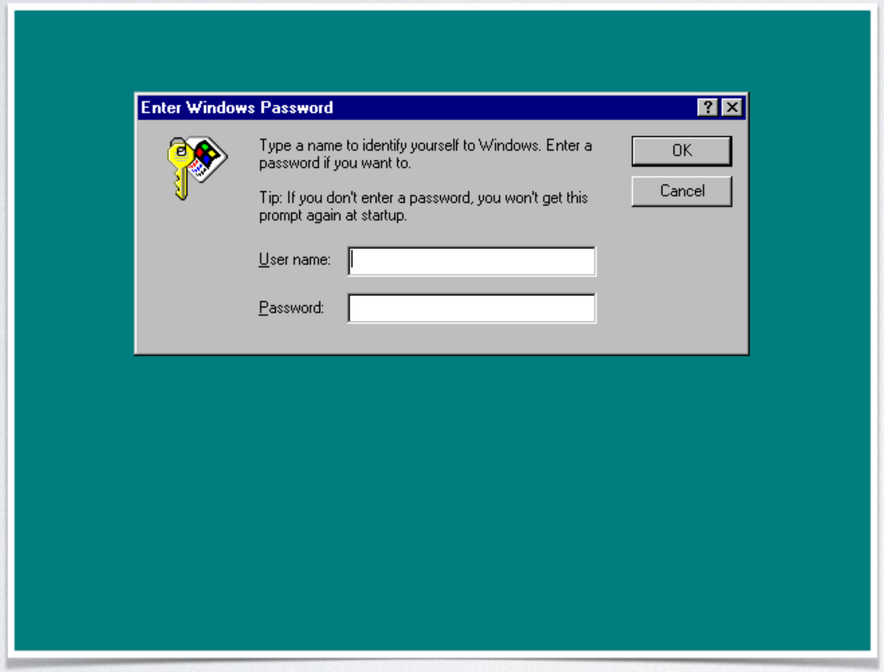
****

****

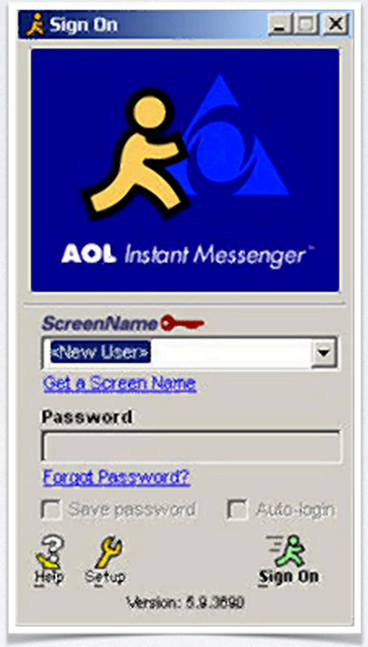
****

1990s

PASSWORDS



chad1

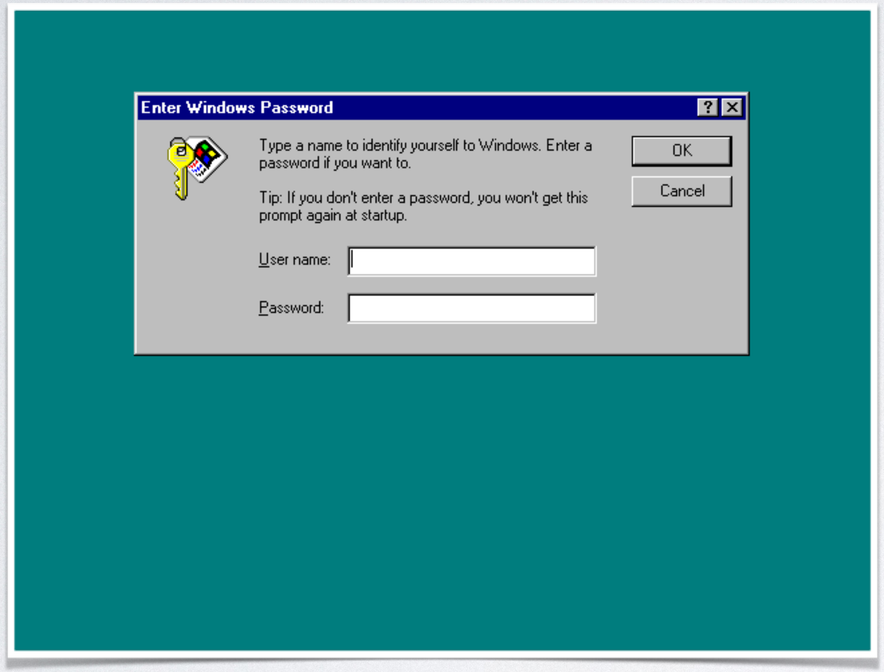


****

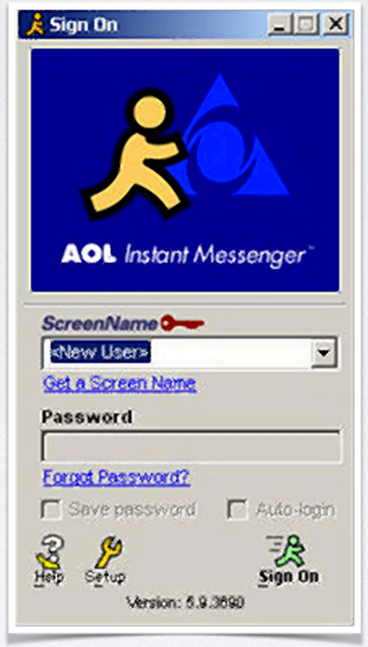
****

1990s

PASSWORDS



chad1

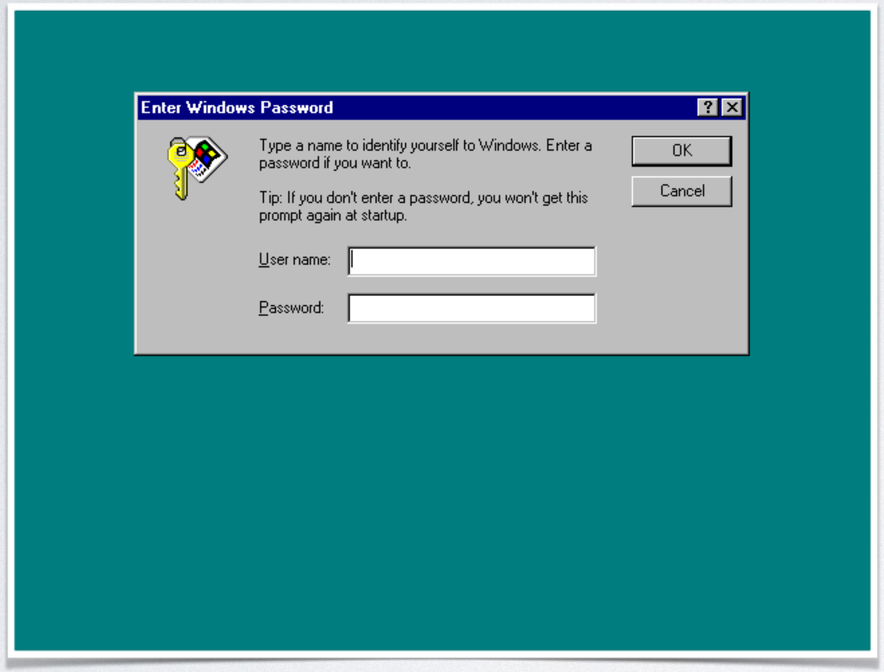


chad86

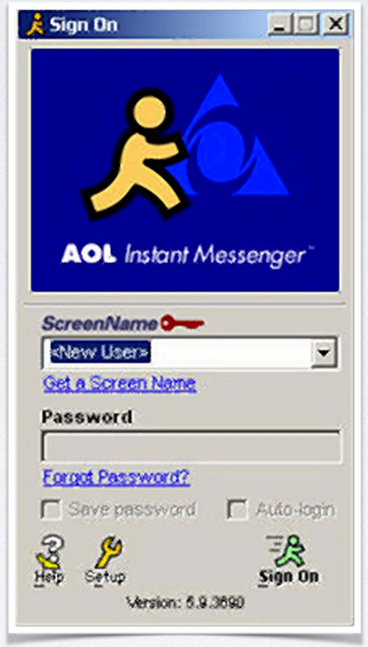
****

1990s

PASSWORDS



chad1



chad86

NotChad!

1990s

PASSWORDS

- Attackers were blinding guessing or cracking offline credentials
  - Stronger passwords are harder to guess/crack

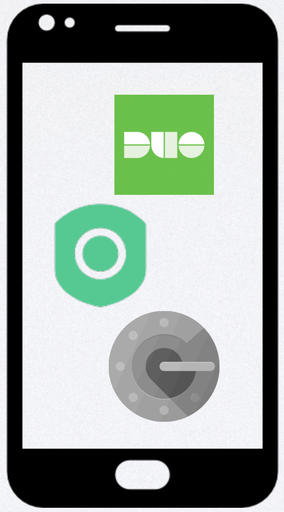
1990s

PASSWORDS

More than 15 usernames

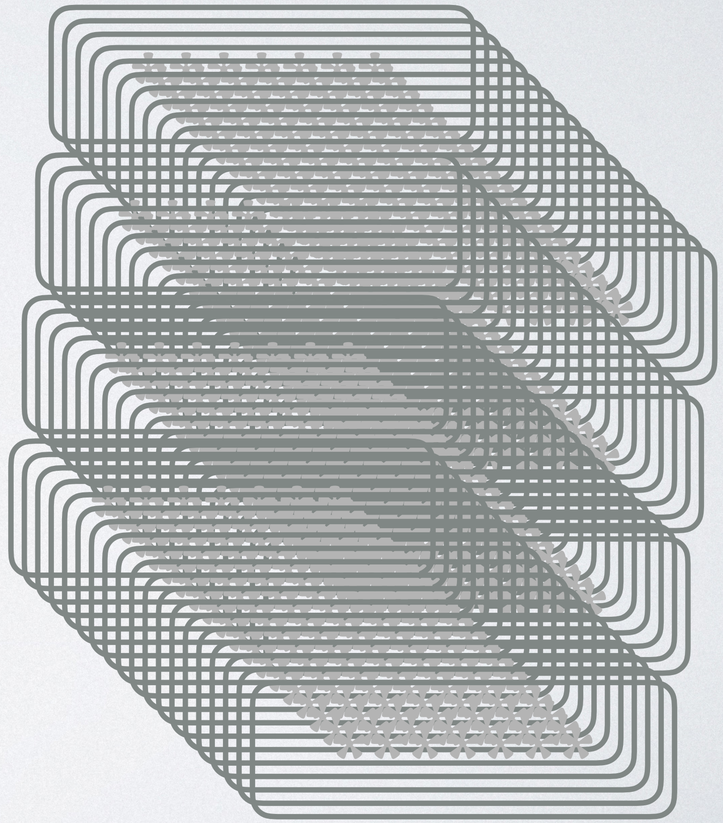
cspensky@ucsb.edu
cspensky@gmail.com
cspensky@mit.edu
chad@allthenticate.net
cspensky@cs.ucsb.edu
chad@cspensky.info
cspensky@unc.edu
cspensky@alumni.pitt.edu
chad.spensky@ll.mit.edu
cspensky@comcast.net
cspensky@alumni.unc.edu

3 dedicate apps



Today

More than 150 *saved* passwords



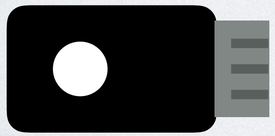
PASSWORDS

- Attackers are phishing users to steal the credential outright
- Password strength is completely irrelevant

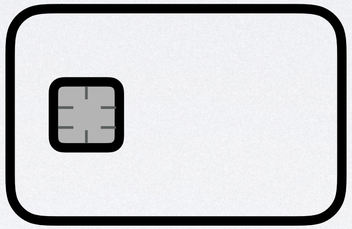
Today

HARDWARE TOKENS

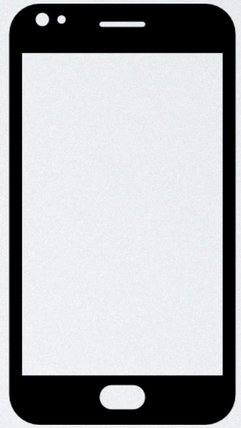
Second Factor



Hardware Credential



Portable Computer



HARDWARE TOKENS

- Attackers can still phish second factors
- Most hardware credentials can be outright stolen

BIOMETRICS

Fingerprint

Voice Recognition

FaceID

BIOMETRICS

Fingerprint

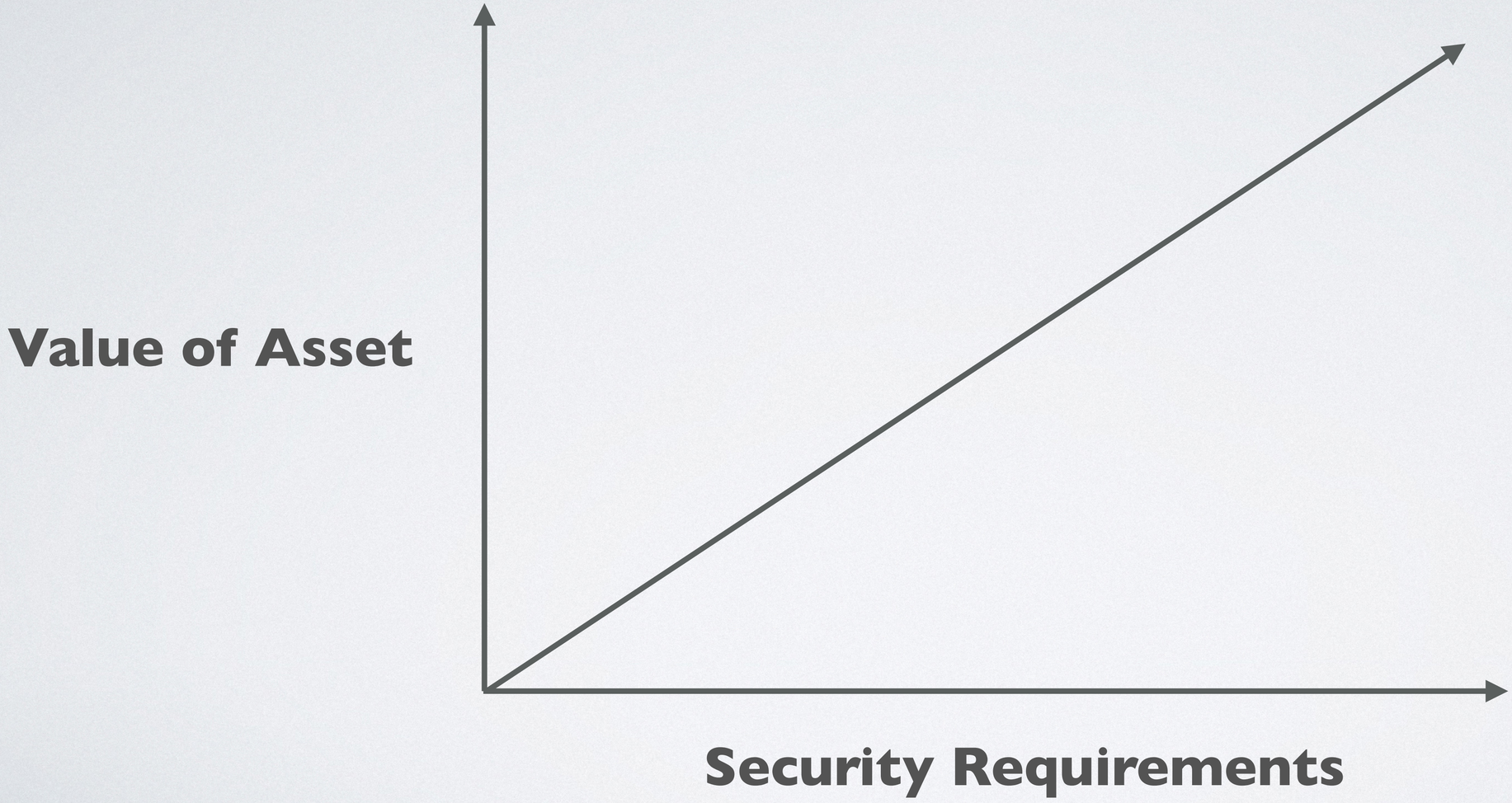
Voice Recognition

FaceID

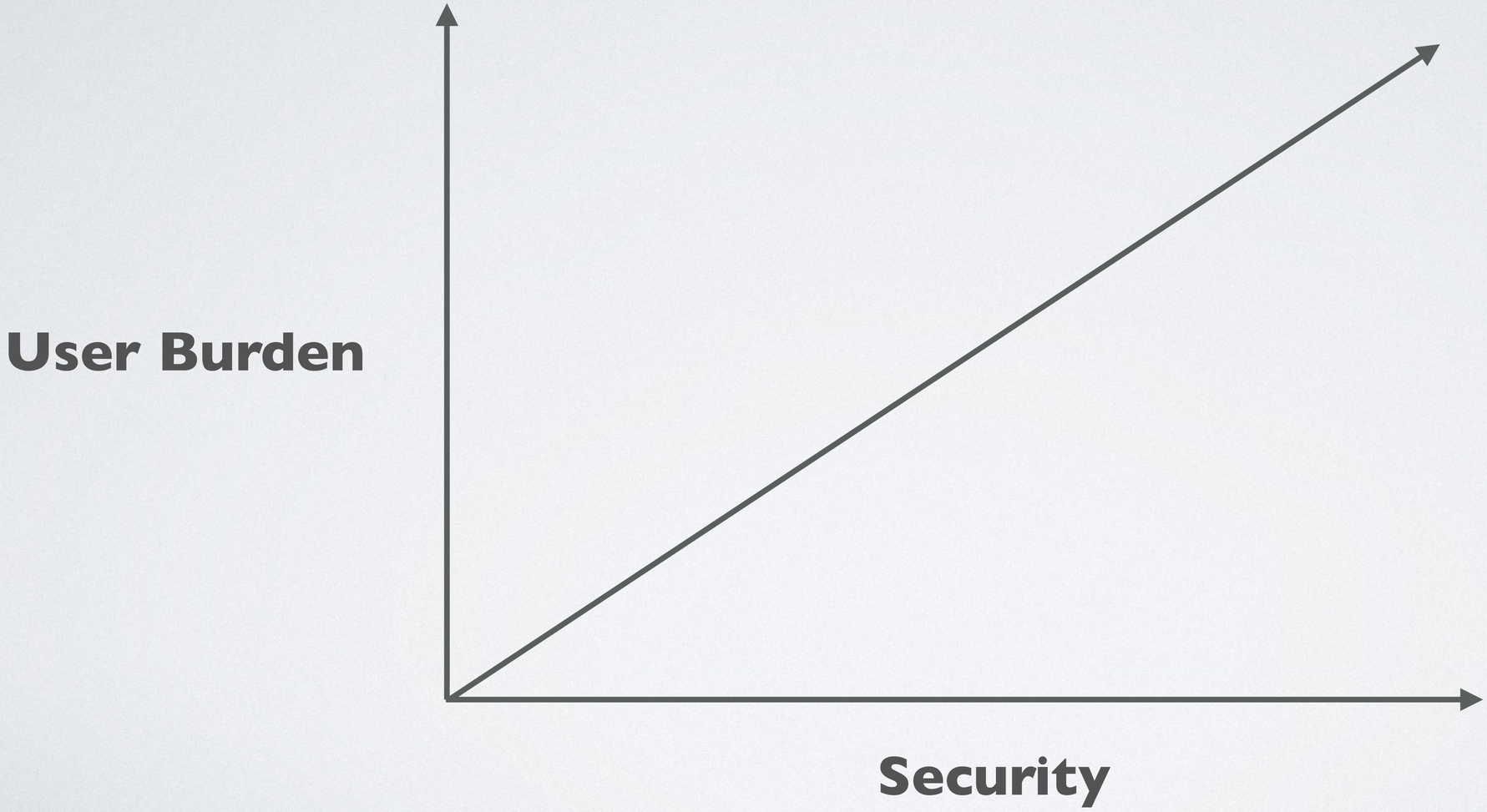
BIOMETRICS

- Easily accessible (e.g., pictures, recordings, or fingerprints)
- Once replicated, are gone forever

FINDING THE RIGHT FIT

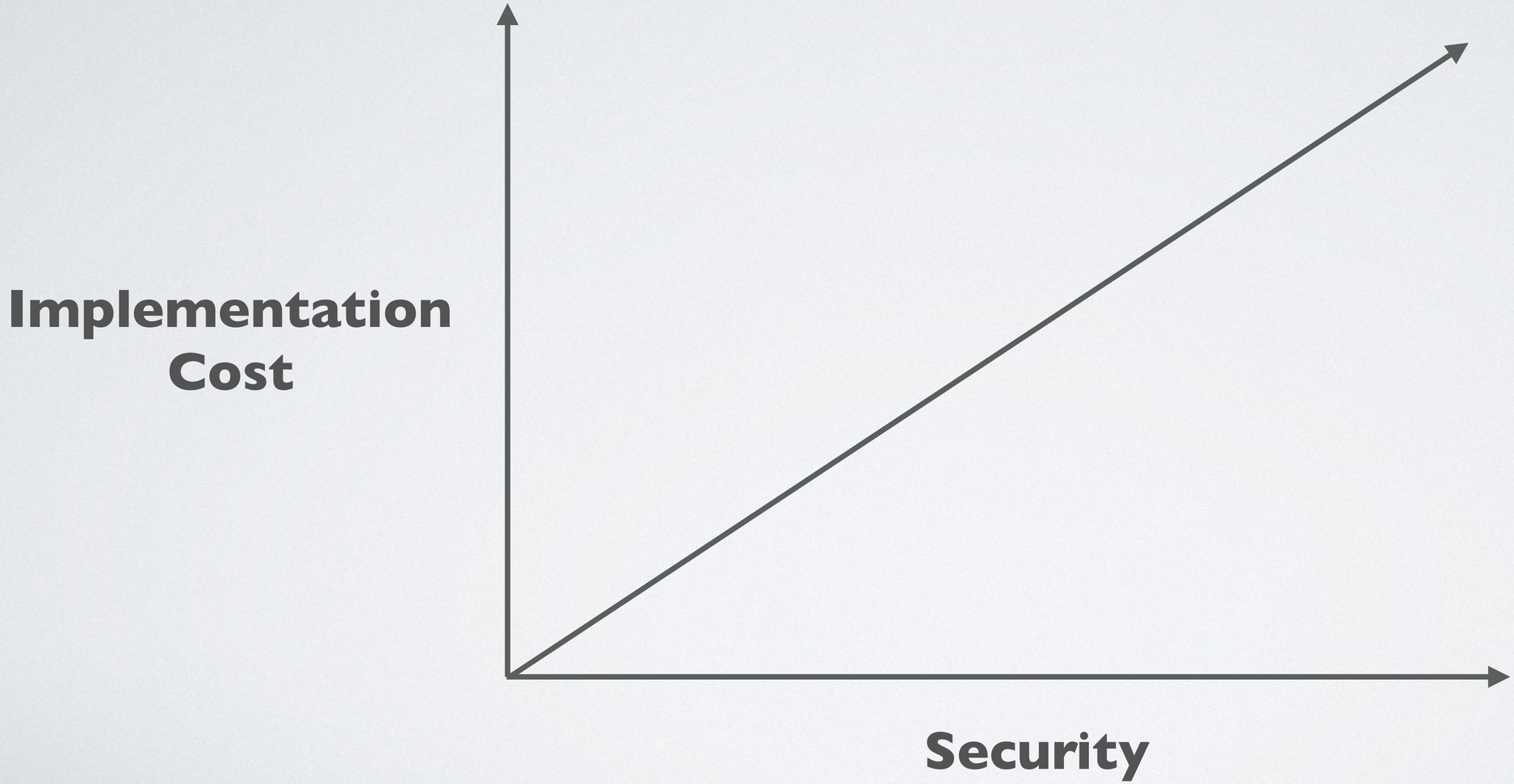


FINDING THE RIGHT FIT



FINDING THE RIGHT FIT

FINDING THE RIGHT FIT



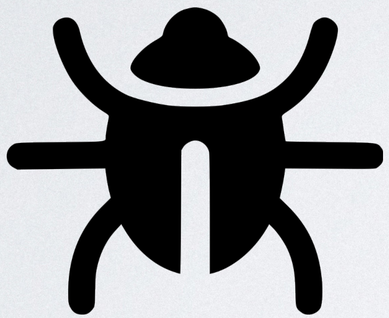
FINDING THE RIGHT FIT

THE PROBLEM

There are too many options

MORE IS NOT BETTER

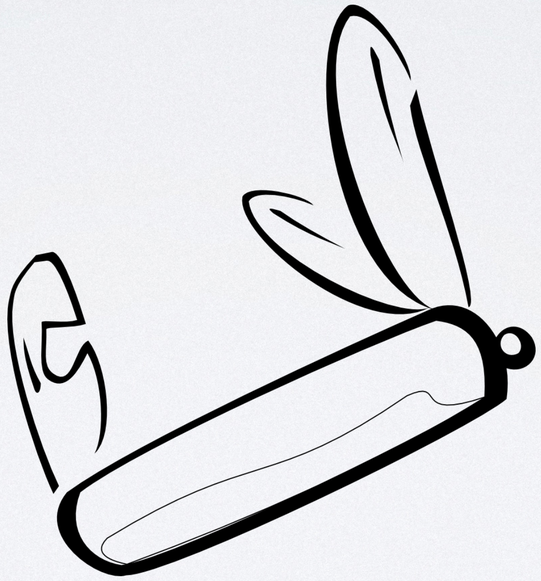
More bugs



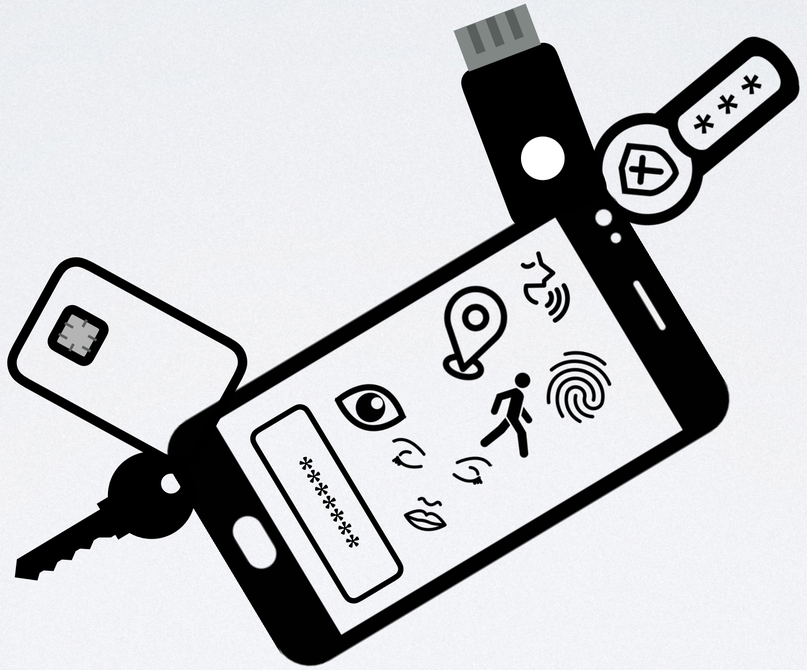
More overhead

More user burden

WE NEED FLEXIBILITY



WE NEED FLEXIBILITY



MORE SECURITY. LESS BURDEN.

chad@allthenticate.net