Reliable Biometrics for Digital Authentication

Protecting Your Hard Earned Cash After Compromise

Netizens

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Overview

Considering authentication methods within the financial industry we look to propose how systems may be improved to better protect customers from fraudulent use. The proposed method uses **statistical data unique to the user** to increase the security of a connection.

Objectives

- Current issues
- Generalise the problem
- Tackling the issue
- Future works

Bank Fraud

"*Thieves drain our bank accounts of more than 300 million pounds every year*" - BBC Watchdog, Online [2]


[1]

Bank Data

"*Globally, 22 data records were lost or stolen every second in 2015*" - Gemalto, Online [3]


[1]

Card, Chip & Pin

- Compromised details
- Shared accounts
- Fake claims to bank compromise


[1]

[1]

Online

- Stolen details
- Unauthorised usage
- Identifying compromisers (that could stand up in court)


[1]


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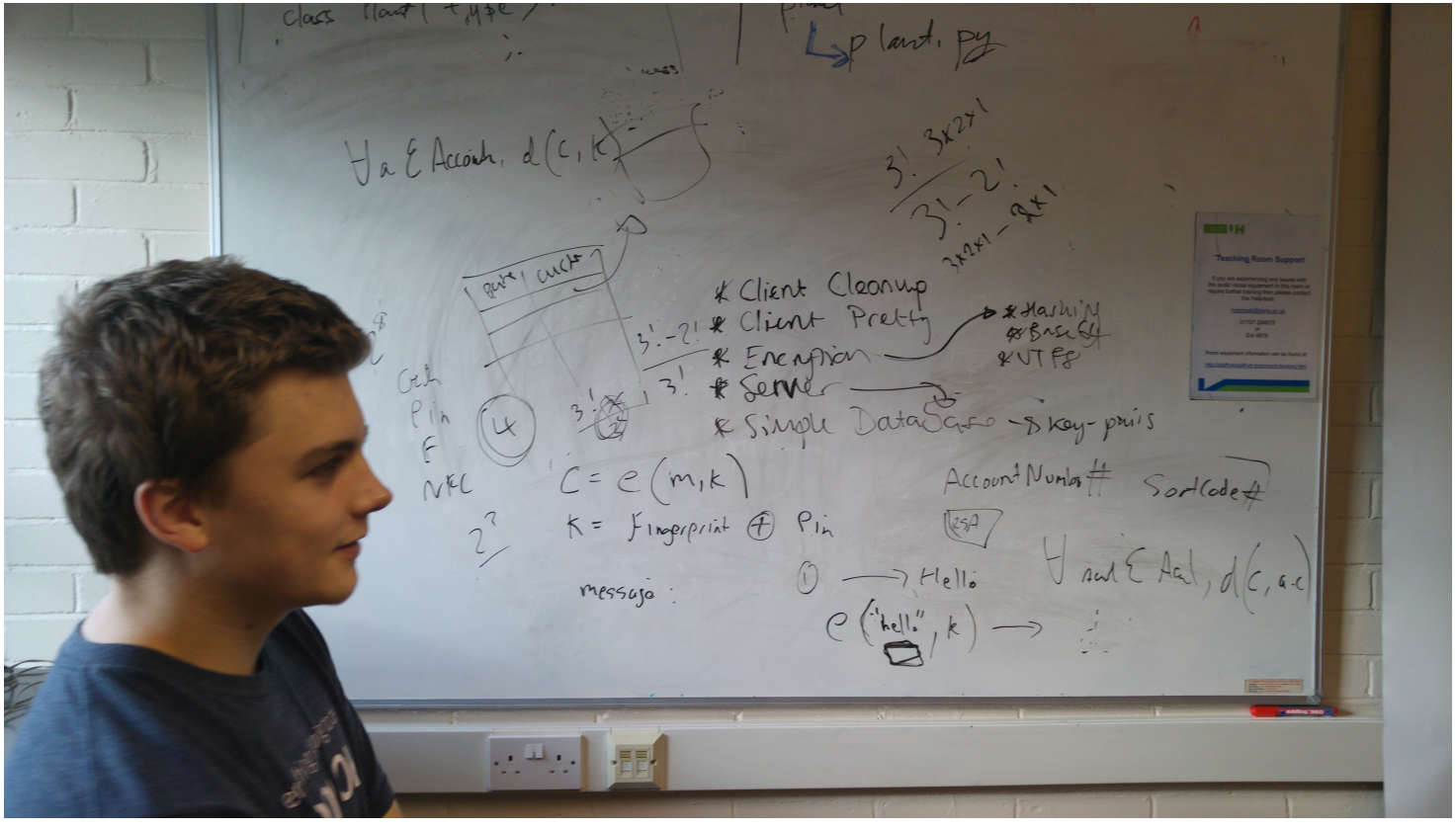
What is the issue here?

Non-repudiation

The act of associating actions with an individual.

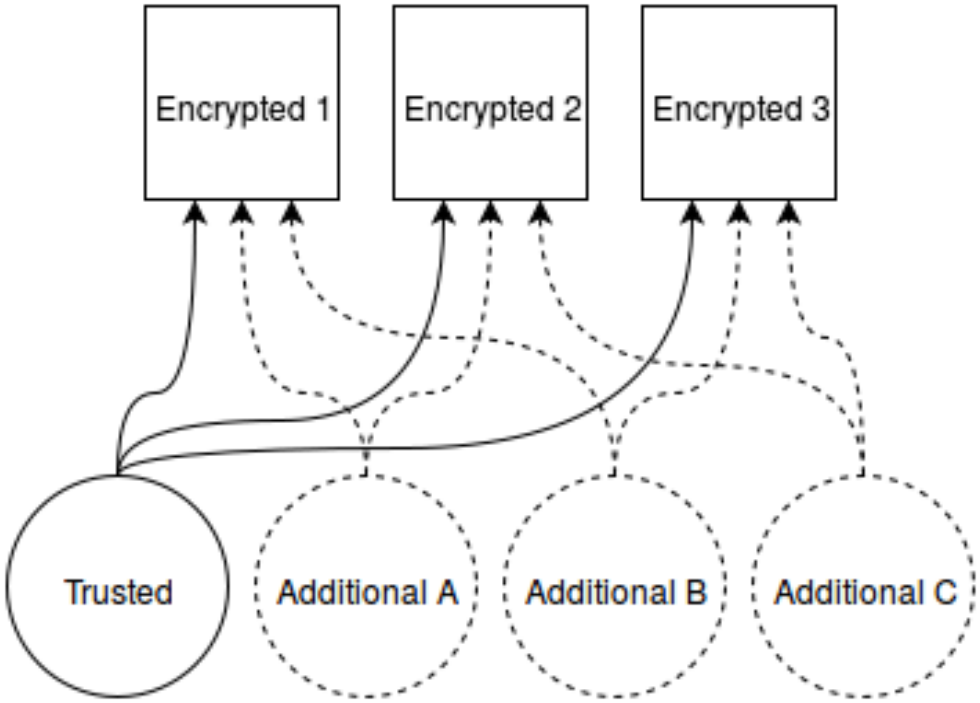


What does this mean?

- Asking “questions” only the user will be able to reply with
- Uniqueness of reply - we’re not robots!

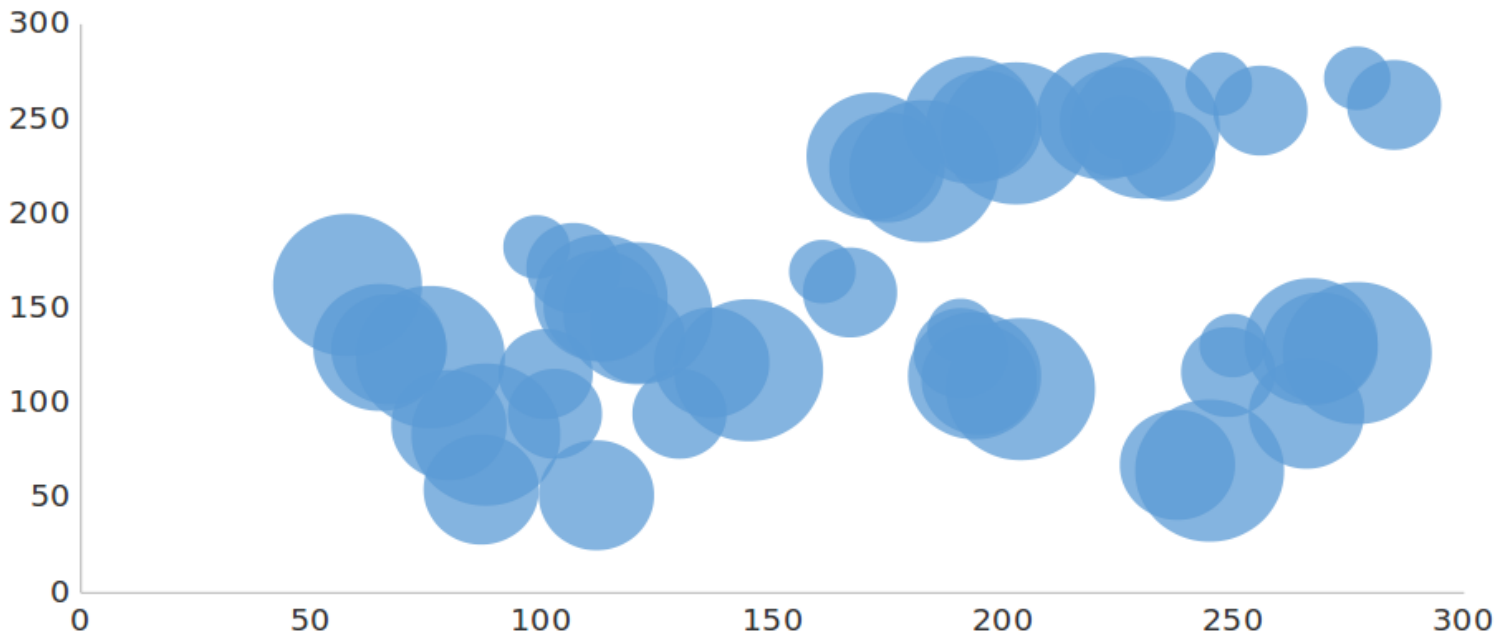
Main Algorithm

Multi-pillar trust, relying on current proven methods and building up security for reduced risk.



Fingerprints

Researching methods of reliable storage and recall of fingerprints stored in a hash.



Others

- **Voice Recognition** - Recognising patterns in different words
- **Facial Expression** - Looking at the uniqueness in expressions
- **Gestures** - A challenge-response check

Most biometrics will work!

Passwords

- Less to remember as information is part of you
- Potential for faster authentication
- Solves the problem of longer and more complicated passwords
- Failures in methods are supported by other pillars
- Robustness increases with number of methods used
- Not predictable for a hacker
- Hashes mean that personal information isn't stored on the server

Santander - Rán-Lock

We were short-listed to present at Santander Big Ideas.

- 500 teams registered
- 80 teams submitted
- 13 selected for finals

What we have

- Demonstration of how the overall algorithm works
- Example of how users will integrate with the system

6. Future Work

What Next?

We need reliable hashes!

- **Fingerprints** - Good starting point given the amount of data available.
- **More biometrics** - The more options the better, a lot aren't ready yet for reliable hashing.
- **Testing** - We want to field test the idea with a larger audience.

Thank You!

Any questions?

References I

Wiki Commons.
Emoji.
[Accessed 04-2016] Google - https://code.google.com/p/noto/, *Apache License 2.0: http://tinyurl.com/h8kzup7*

BBC Watchdog.
Bank Fraud: Easy to be a victim - hard to get your money back?.
[Accessed 04-2016] http://tinyurl.com/glrbl9k.

Gemalto.
2016 The Year Data Breaches Got Personal.
[Accessed 04-2016] http://tinyurl.com/h7vduvk.