Towards a more Secure Online Banking Experience

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WIKID

Wireless Key ID system

Where are we going? And why are we in this hand-basket?

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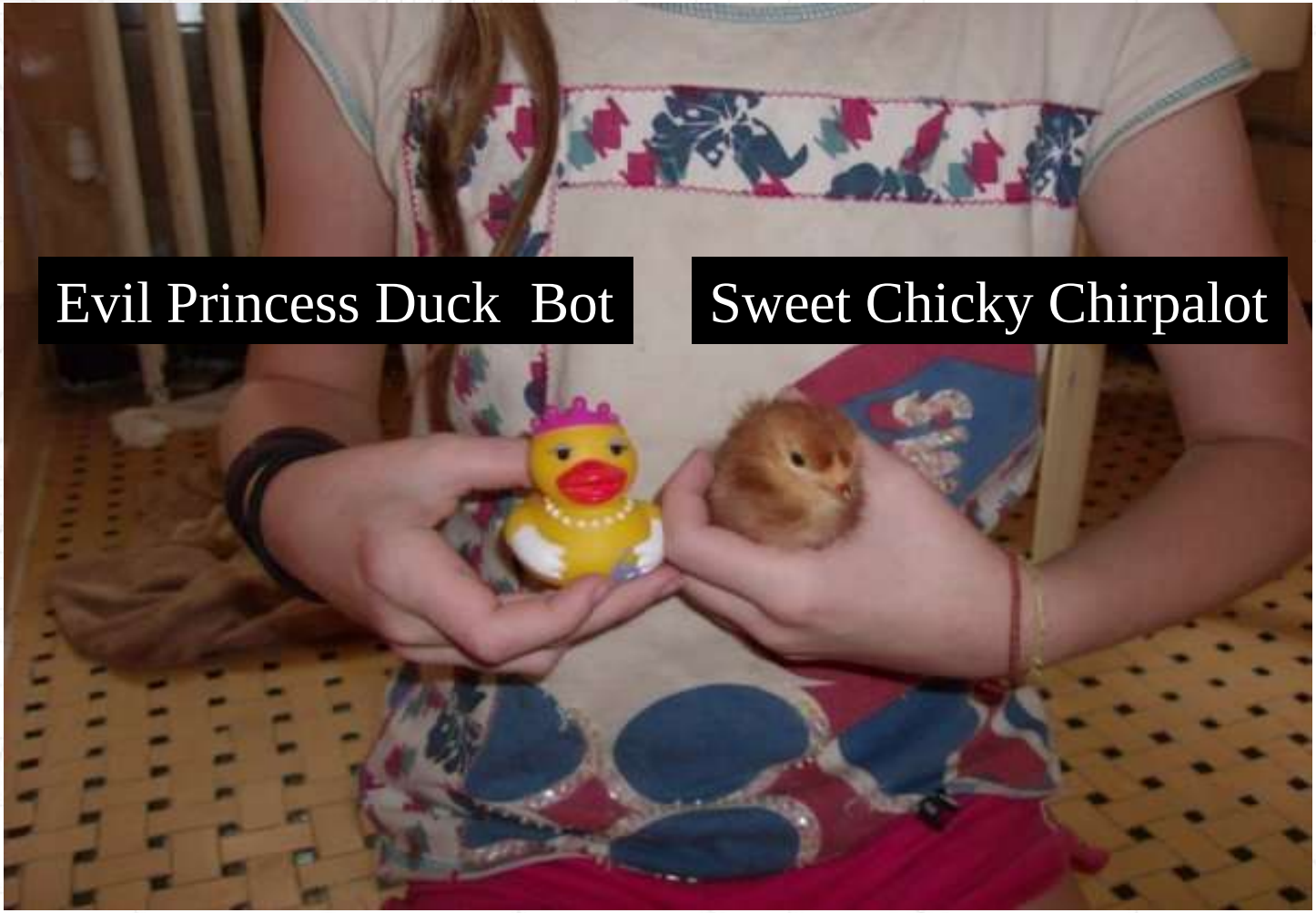
Authentication



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Session Authentication

- Static Passwords
- Machine authentication
  - Spoof-able
- Two-factor authentication
  - Tokens
  - SMS

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Mutual/Host Authentication

- Image-based
  - Subject to MITM attacks
  - Highly annoying
  - Fall back to 20 questions
- Programmatic SSL cert validation
  - Similar to SSH

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Transaction Authentication

- One-time passwords
- Call-back system
- SMS
- Digital Signing

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What's the current situation?

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Zeus!

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Defeating Zeus

- Anti-fraud measures
- Transaction authentication via call-back, SMS or other cryptographically distinct method

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Are we done yet?

- Call-back
  - Scaleability, calls per second?
  - Costs
  - Metasploit VoiP war-dialer
- Attacks on SMS
  - Paris Hilton's secret question
  - Nokia 1100 phones

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Open Source A5/1 Rainbow Tables!

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Throw this in the mix

Friday, January 9th, 2009

The BlackBerry® Mobile Banking application from Bank of America has our ATM and banking center Locator, which will find the nearest locations with a simple touch of a button, no address input required[1]. Added convenience whether you're traveling or just driving around town and need to get your money quickly.

The App will also give one-touch access to:

- Check available balances
- Pay bills[2]
- Transfer funds[2]

Read the rest of this entry »

Mobile Banking!

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How can this be a good thing?

- Chance to deploy a client
- Defeat of A5/1 means public key encryption
- Most mobile users will also be PC users
- Confirm transactions made in one on the other
- Extremely difficult to break real two-channel banking

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If the problem is...

- Stolen passwords
  - The answer is strong session authentication

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If the problem is...

- MITM attacks
  - The answer is strong mutual https authentication

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If the problem is

- Malware
  - The answer is transaction authentication via a second channel

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But those are not the problems

- The problem is a determined, persistent, motivated attacker
- So, what's needed is a forward-thinking, security-focused, responsive, banking software industry

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Why aren't we here already?

- Banks don't want to develop software
- Marketing over security
- Banks fear support costs of online banking
- Duopoly in Personal Financial Software
- Monopoly in Aggregation

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How about: Bankforge.net?

- Open source site for OFX applications
- Supported by the banks. Bounties? Prizes?
- Plenty of FI organizations that could promote/manage such a site
- Minimal support costs
- Increase competition for Aggregation & Personal Finance software

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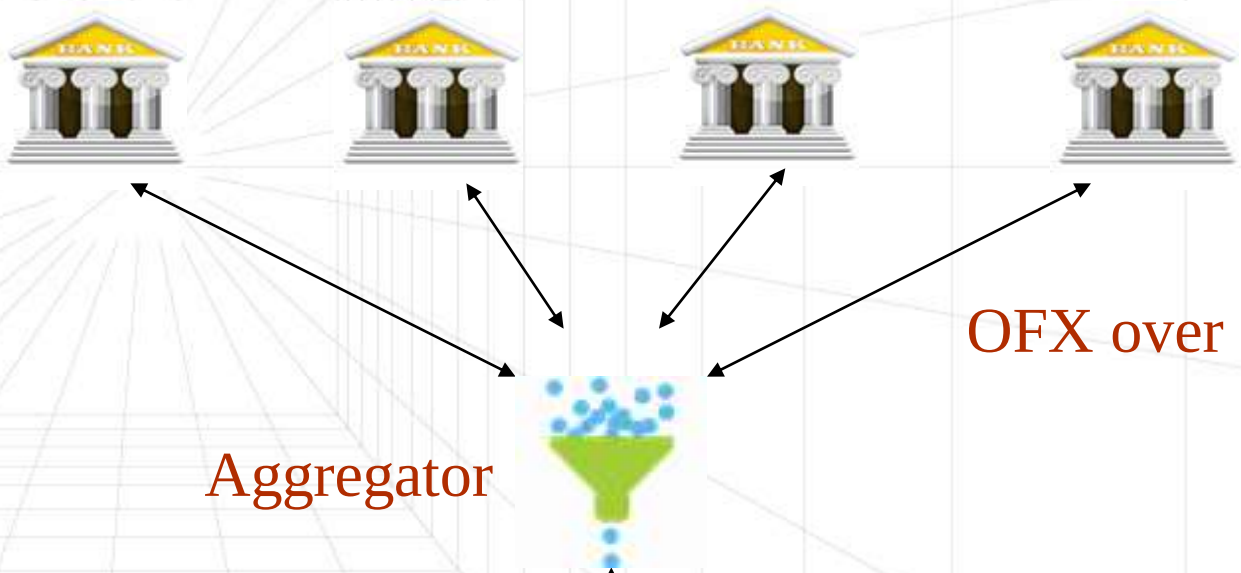
Financial Aggregation



OFX over SSL

Aggregator

Public Key Encryption
Two-factor Authentication
Transaction Authentication

Personal Finance Software

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Principles

- Rely on well-tested security principles
- Don't rely on the security of 3rd parties
- Maximize the user's understanding of what's going on
- Use public key encryption!

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Browser Improvements

- Site-specific browser
- Content Security Policies

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UI Tweeks

- Transaction Mode!

- You could do this with client side asymmetric encryption

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OFX

File Edit View History Delicious Bookmarks Tools Help

http://www.ofx.net/

OFX: Home Page

Open Financial Exchange

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Developer Information

Information for the Press and the Media

Press Room

Open Financial Exchange (OFX) is a unified specification for the electronic exchange of financial data between financial institutions, businesses and consumers via the Internet. OFX is not a financial institution.

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OFX on Sourceforge

“Hello Li.

I'm sorry nobody has responded; that probably means nobody is able to help you. As you might have figured out already, the community for the OFX protocol is kind of narrow. It probably has to do with the lack of interest from the banks in fostering such a community.”

Can we have ATM-esque Security?

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Summary

- Banks need to implement transaction authentication via a 2nd channel ASAP
- Be careful relying on 3rd parties
- Use cryptography! Wisely...
- Involve the user
- Banks need to support the OFX community

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Thanks!

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