Entering and Transmitting Passwords Securely

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Motivation

- Users access many services through the web: forums, shopping, banking, mail , etc.
- Mostly password-based user authentication
- Users tend to reuse passwords [1]

→ Protecting passwords is crucial

Problem Statement

- Ideally web page with password field https protected and password transmitted using https
- But: On many web pages no https at all or only password transmission secured
- No browser warning in these cases

→ Passwords are often not adequately protected and users are not aware when this is the case

Our Goal

- Support users in detecting suboptimal condition for password entering
- Warn users with a mixture of passive and active warning method to avoid interruption and annoyance in case of login intention is expressed
- Provide understandable texts with recommendations on how to proceed

Our Approach

Highlighting password fields and displaying a non-blocking warning dialog only in case password field is focused

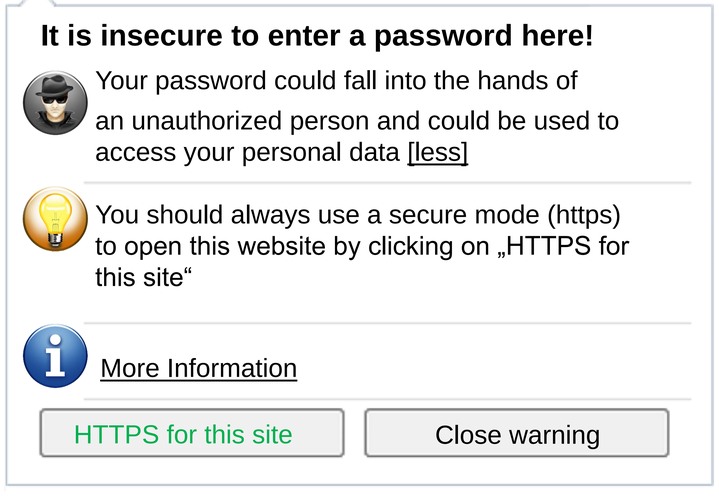
Highlight Password Field

- In [2], we showed that combination of red background and yellow warning triangle is well perceived as security warning in the considered scenario

- Password field might not be of type ``password“
- Also: positive feedback for user

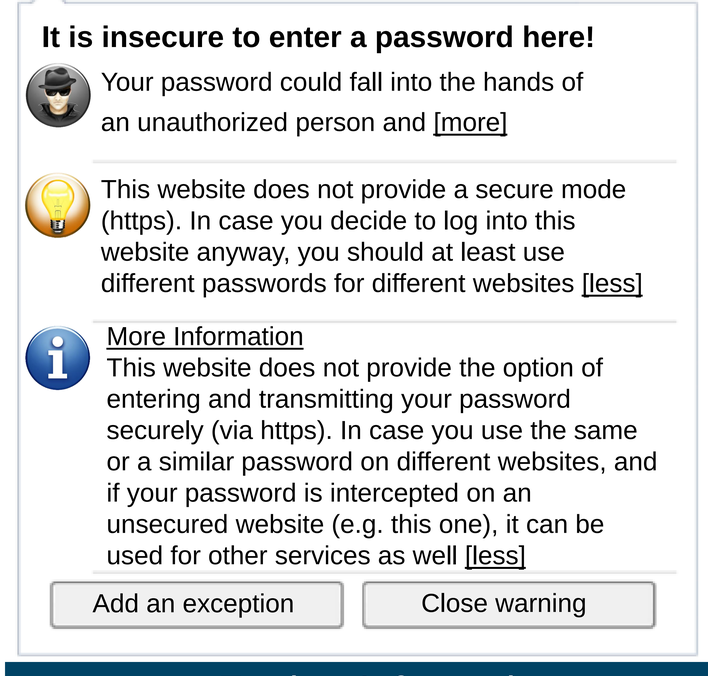
- Ideally individualized icon to prevent attacks

HTTPS Available (short version)



- Texts based on a (pre-)user study

HTTPS Not Available (long version)



Future Work

- Conduct a field study
- Enhance Add-On: e.g.
  - Consider further field types, e.g. credit card information
  - Consider website type (e.g. online banking) to be more precise about the possible risks

Literature and Related Work

[1] Sun, Hung-Minet al. "oPass: A user authentication protocol resistant to password stealing and password reuse attacks.“, *Information Forensics and Security*, 2012

[2] Kolb, Nina, et al. "Capturing Attention for Warnings about Insecure Password Fields–Systematic Development of a Passive Security Intervention.", *Human Aspects of Information Security, Privacy, and Trust*, 2014

[3] Maurer, Max-Emanuel, et al. "Data type based security alert dialogs.“ *Human Factors in Computing Systems*, 2011.

Further Information

secuso.informatik.tu-darmstadt.de/de/research/results/passsec-add-on/