UPPSALA
UNIVERSITET

Secure Drag&Drop Key Exchange

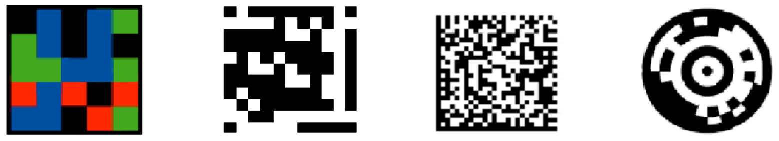
Christian Rohner, Henrik Andersson, Ioana Ungurean

The problem in key-exchange is how to do authentic transport of key material from one device to another. The transportation should also be intuitive and easily understandable for a non-expert user and it should involve as little interaction as possible from the user.

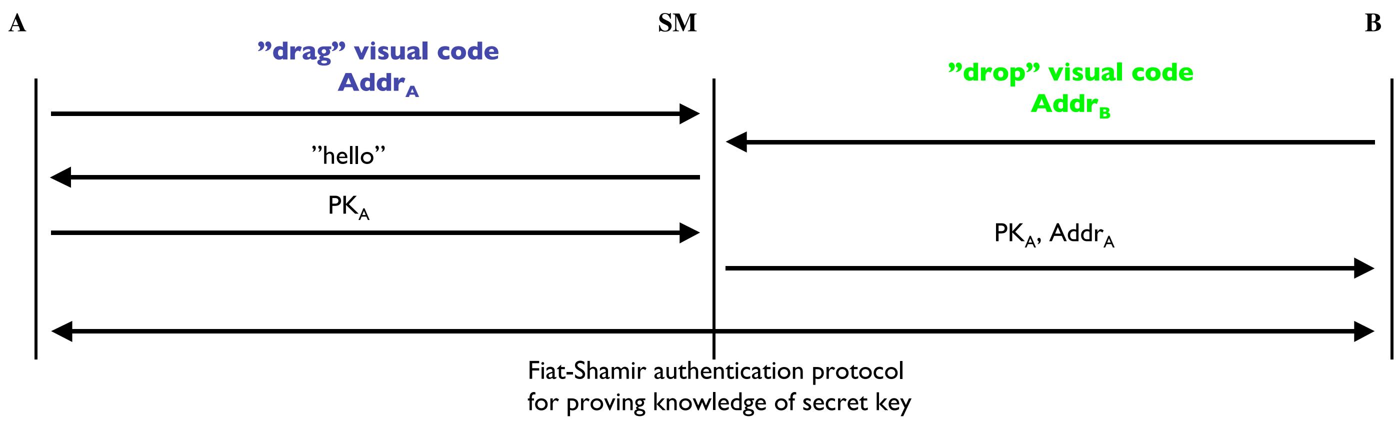
Our approach is to ”drag&drop” key material from one device to the other.

This approach is also suitable for small devices that don’t have display or keyboard.

Visual codes can be used as authentic channel:



We use the visual codes for representing the bluetooth addresses of the devices. For the future the public keys could be coded.



A

SM

B

”drag” visual code
$\mathbf{Addr}_A$

”drop” visual code
$\mathbf{Addr}_B$

”hello”

PK_A

PK_A, $Addr_A$

Fiat-Shamir authentication protocol
for proving knowledge of secret key

Legend:
PK - public key
Addr - bluetooth address
A - the device that owns the PK
B - the device that will get the PK
SM- security manager, transports the keys

We have transformed an insecure channel between the devices A and B in an authentic channel, A•→B, by using the visual channels A•→ SM and B •→SM, and the channel SM•→ B, which we make authentic by asking B to confirm that he trusts SM.

B*->SM not relevant. SM*->B: checking that message comes from SM on dialogue (?), Trust cannot generate authenticity on a channel, but it allows to combine two atuthentic channels into an authentic channel.