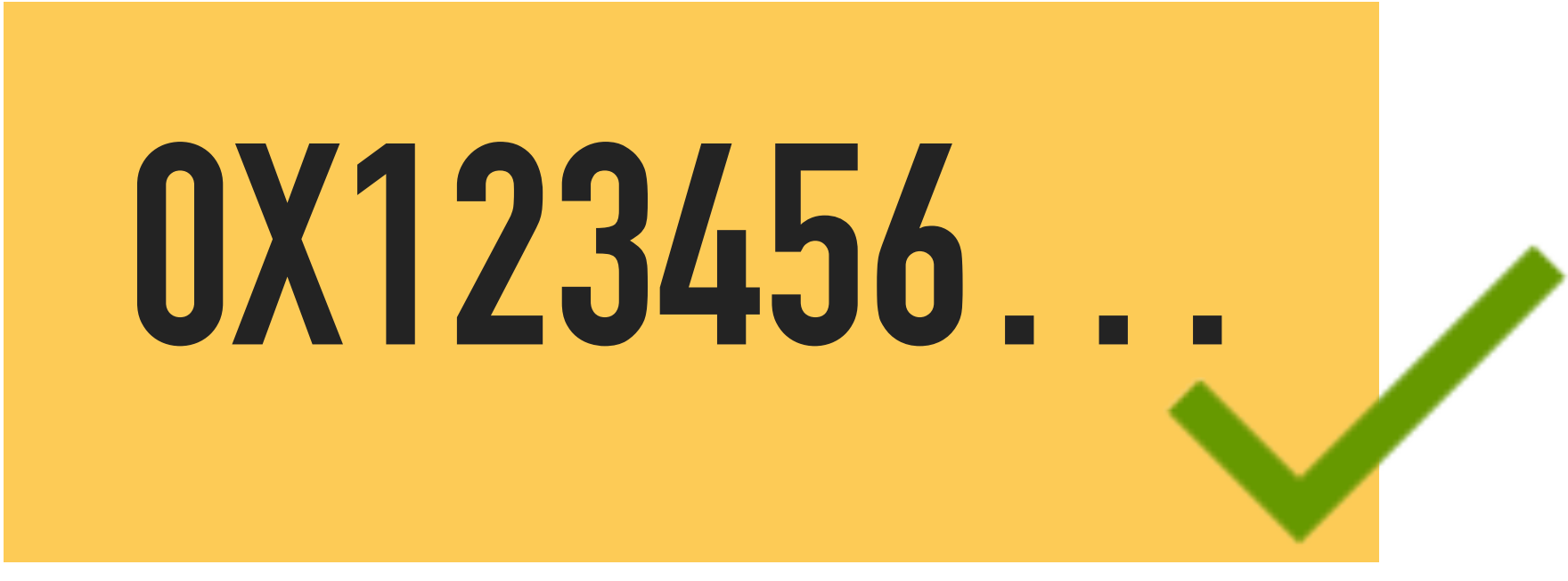
JENS NEUHALFEN


0X123456...

User	Password Hash *	...
Alice		...
Eve		...
...	...	...

GOOD CRYPTOGRAPHY

DATA INTEGRITY & ASSOCIATION

0X123456...

0XABCDEF...

* including the username in the hash/hmac

0XABCDEF...

INTEGRITY PROTECTION BINDS USER TO SECRET

Problem: Protected data can be “replayed”.

Solution: Cryptographically bind data to context.

DATA INTEGRITY & ASSOCIATION

0X123456…

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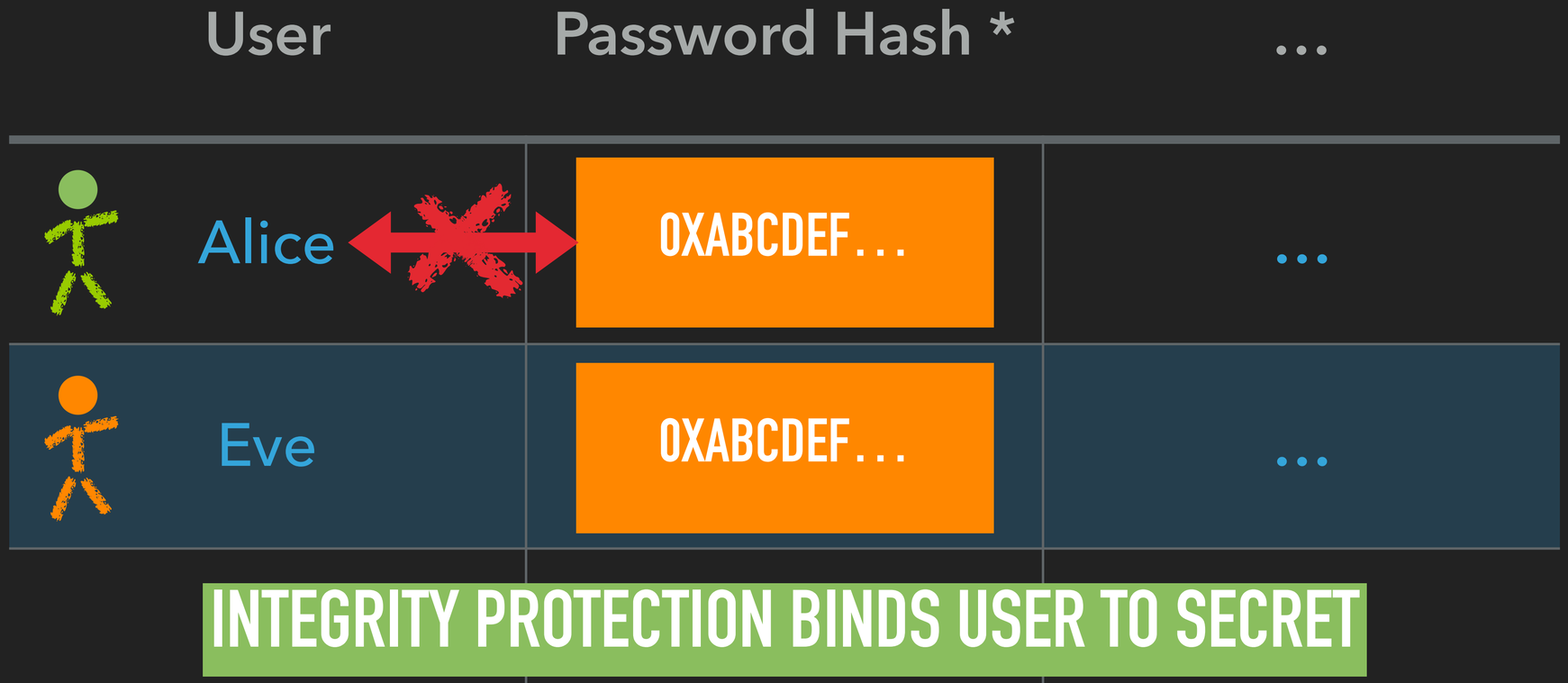

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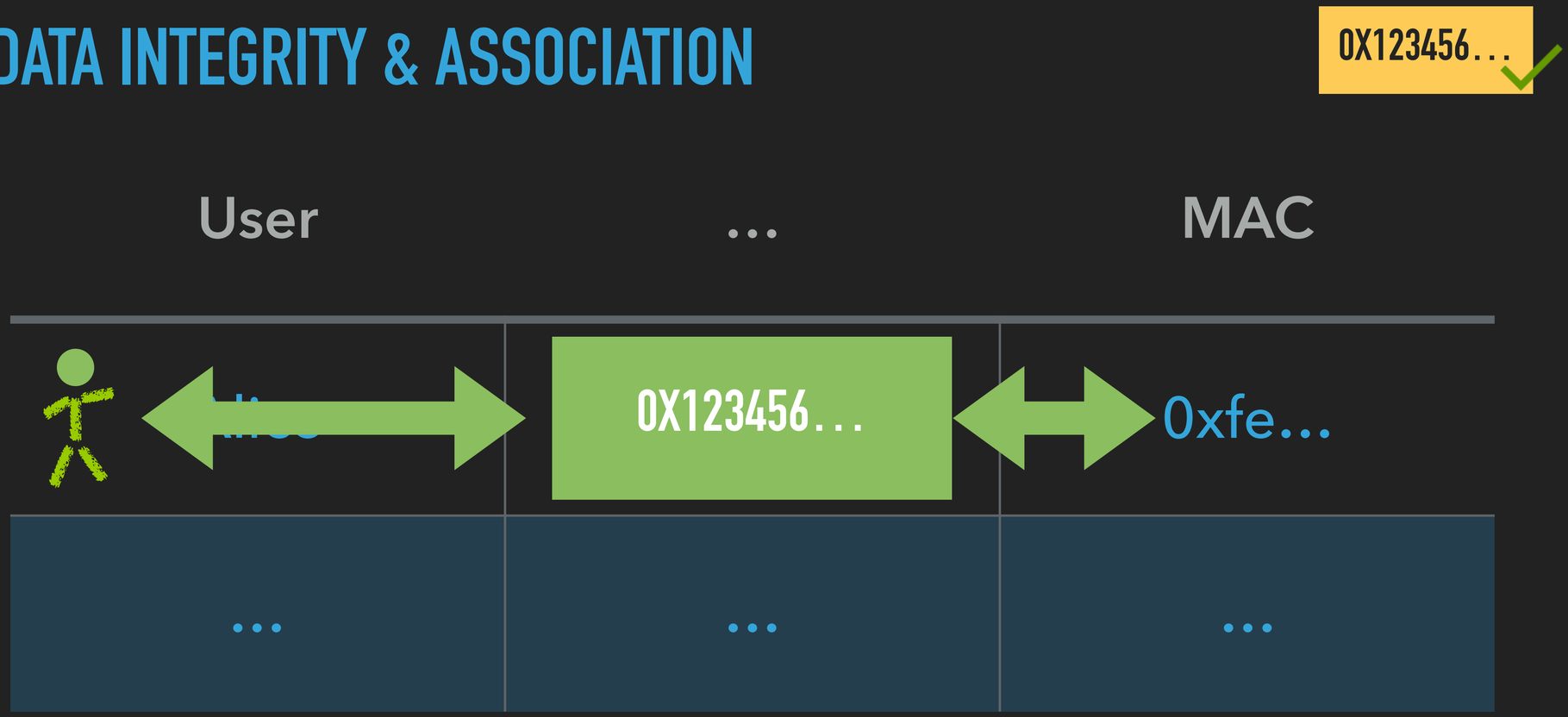
DATA INTEGRITY & ASSOCIATION



- Add integrity checks to the data (HMAC, AEAD encryption, signatures)
- Include an association (here: “User”) in the integrity check