



openHPI Course: Digital Identities – Who am I on the Internet?

# What is a „Digital Identity“?

**Prof. Dr. Christoph Meinel**

Hasso Plattner Institute  
University of Potsdam, Germany

# Why do we need Digital Identities?

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There are an rapidly increasing number of online services

- Before one can use an online service, a **registration** is needed
- The service needs to „**know**“ its users:
  - Who is shopping?
  - Where to deliver the goods?
  - Whose exam results are this?
- **Registration leads to the establishment of a digital identity**, which is deposited with the online service

Register for openHPI

# Digital Identities: Authentication (1/2)

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A digital identity uniquely **represents a person/object** in the digital world

- Contains attributes that help and are necessary to distinguish persons/objects from each other
- **Example:** Attributes for distinguishing two people:
  - name
  - address
  - birthday
  - ...
- Which attributes are necessary depend on the domain
  - sometimes only a single attribute is enough, e.g. name
  - for people with the same primary attribute a distinctive secondary attributes is necessary, e.g. address

# Digital Identities: Authentication (2/2)

- One person can have many different identities
  - other username
  - other email address
- Different types of digital identities can serve different purposes
  - **anonymous**: Online forums with pseudonym
  - **private**: Facebook account with hobbies
  - **business**: LinkedIn account with skills
- Depending on the purpose, the identity contains different attributes



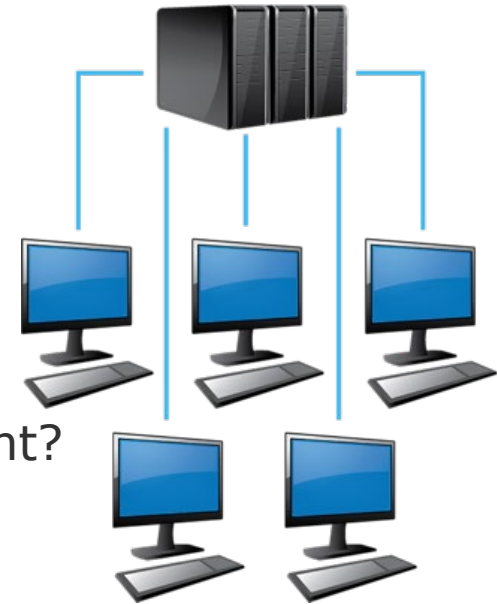
# Not Only People Have a Digital Identity

Digital identities do not only refer to people

- Objects also need a digital identity
  - computers, smart devices, IoT devices, ...

## Examples:

- Home network:
  - To which of the five devices should the file be sent?
- Website:
  - [open.hpi.de](https://open.hpi.de) clearly describes which computer or server(s) delivers the openHPI website
- Without a digital identity, objects cannot be distinguished



# Who Owns a Digital Identity?

A person / object (physically) has to prove that a certain digital identity belongs to him / it in a process called

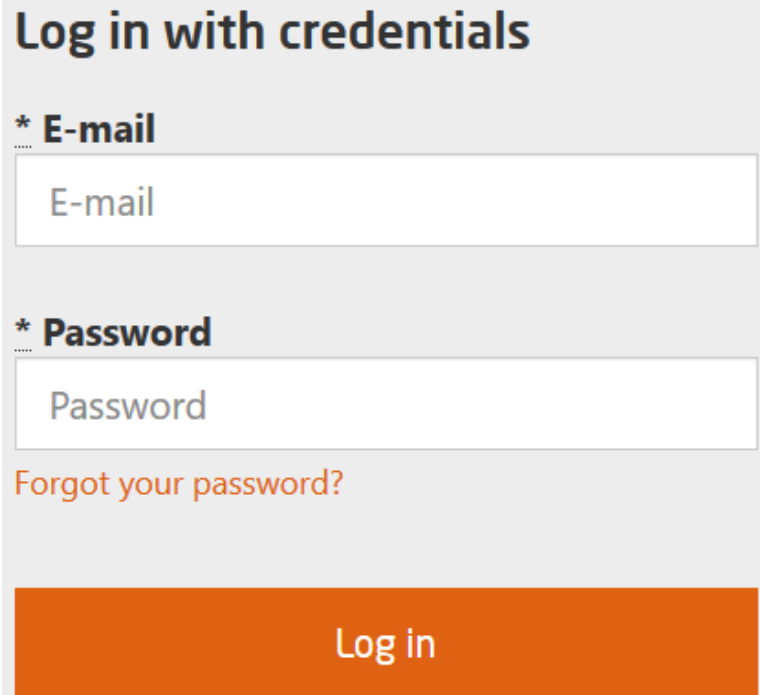
→ **authentication**

## Authentication:

- A person gives proof that he / she owns a certain identity, e.g. entering a password

## Authentication:

- The other party (the online service) checks the evidence, e.g. compares the password entered with the password stored during registration
- Anyone who successfully authenticates can then use the digital identity



The image shows a login form titled "Log in with credentials". It contains two input fields: one for "E-mail" and one for "Password". Both fields are preceded by an asterisk and a small "....." indicating they are required. Below the password field is a link that says "Forgot your password?". At the bottom of the form is a large orange button labeled "Log in".

# Summary

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A **digital identity** uniquely **represents** a person or an object in the digital world

- Digital identities are characterized by attributes
- A person / object can have multiple identities, e.g.
  - for different purposes
- Connection between the physical and digital identity is established by verification of e.g:
  - knowledge of a secret (password, PIN, TAN, ...)
  - physical („biometric“) characteristics (fingerprint, iris, ...)
  - ownership of a certain object (credit card, smartcard, ...)