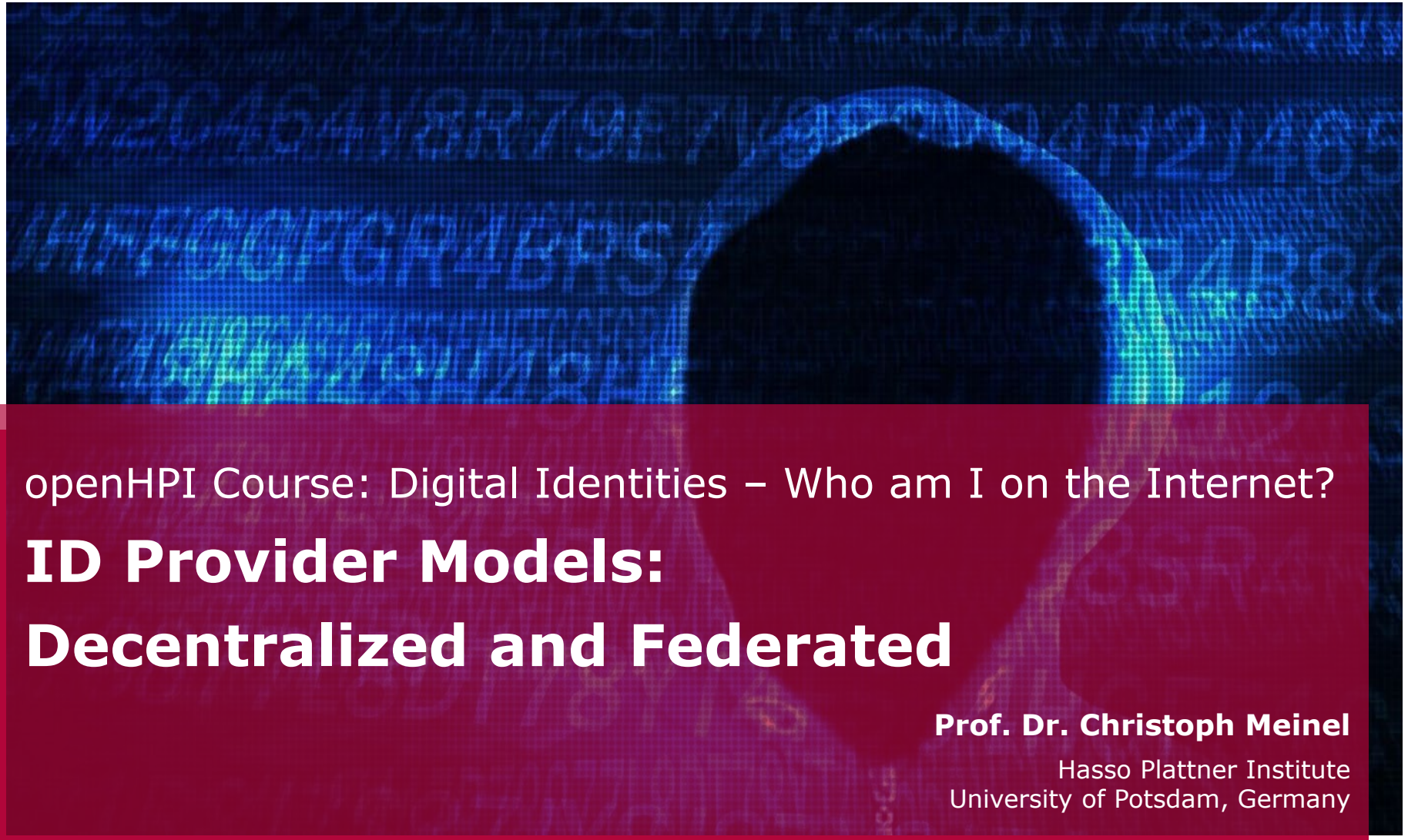


openHPI Course: Digital Identities – Who am I on the Internet?

ID Provider Models: Decentralized and Federated

Prof. Dr. Christoph Meinel
Hasso Plattner Institute
University of Potsdam, Germany

Dealing with Digital Identities

We have already discussed the two ID provider models "isolated" and "central":

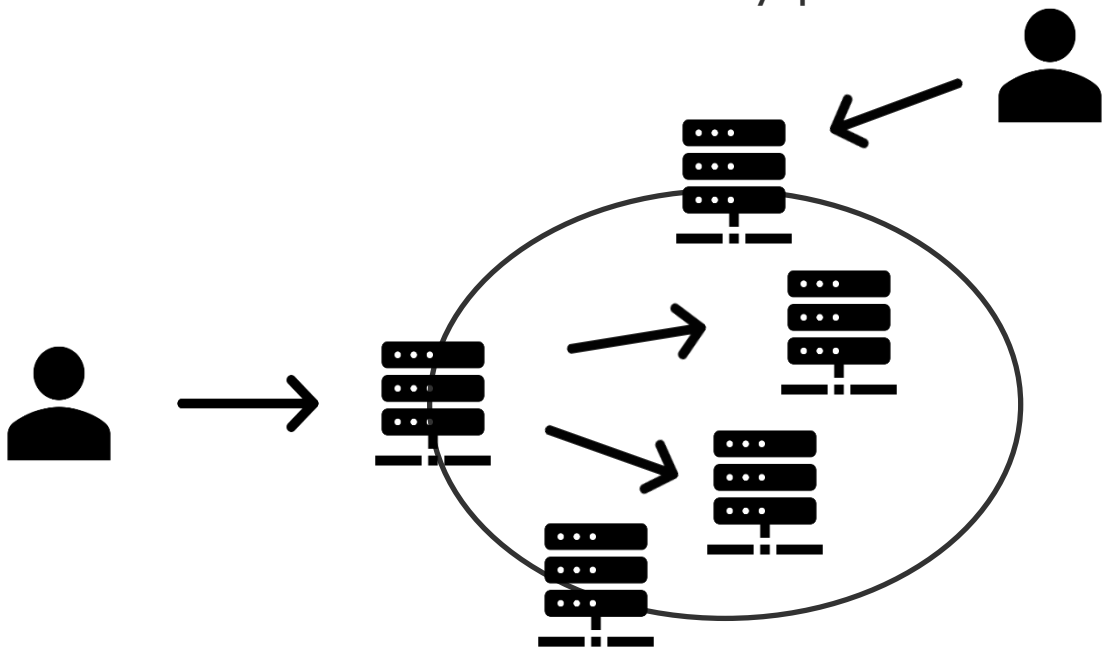
- In the central ID provider model there is only one identity provider
- If this should work globally, the question arises as to who should operate as global identity provider and where?
  - In the U.S.? China? Russia? …
  - Would American online services trust digital identities coming from a Russian identity provider?
- A single global ID provider provider is difficult to imagine, both in terms of the
  - trust issue and as a single point of failure

Therefore only a decentralized ID provider model can be considered globally

Decentralized ID Provider Model

In contrast to the central model, there are several identity providers in the **decentralized ID provider model**

- Online services can collaborate with multiple identity providers and use their identities
- Users can then choose "their" identity provider



Decentralized ID Provider Model
Advantages and Disadvantages

Advantages:

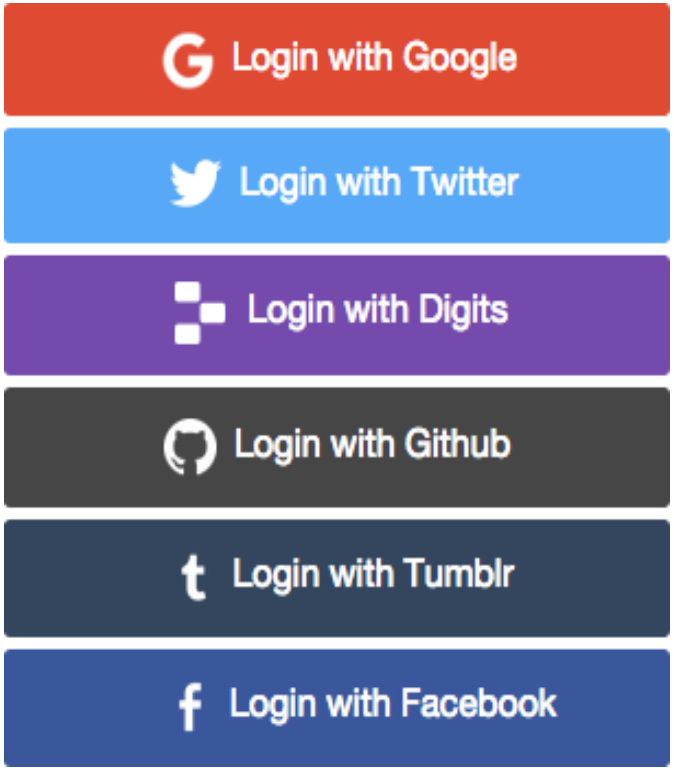
- Users can choose their ID provider
- Online services can also choose which ID provider they trust and with which they want to collaborate

Disadvantages:

- Users must deposit their identities with multiple ID providers because online services collaborate with different ID providers
- Partial Single Points of Failure
  - If a user's ID provider cannot be reached, the user can no longer use the online services
  - Users of other ID providers, on the other hand, still have access

Decentralized ID Provider Model

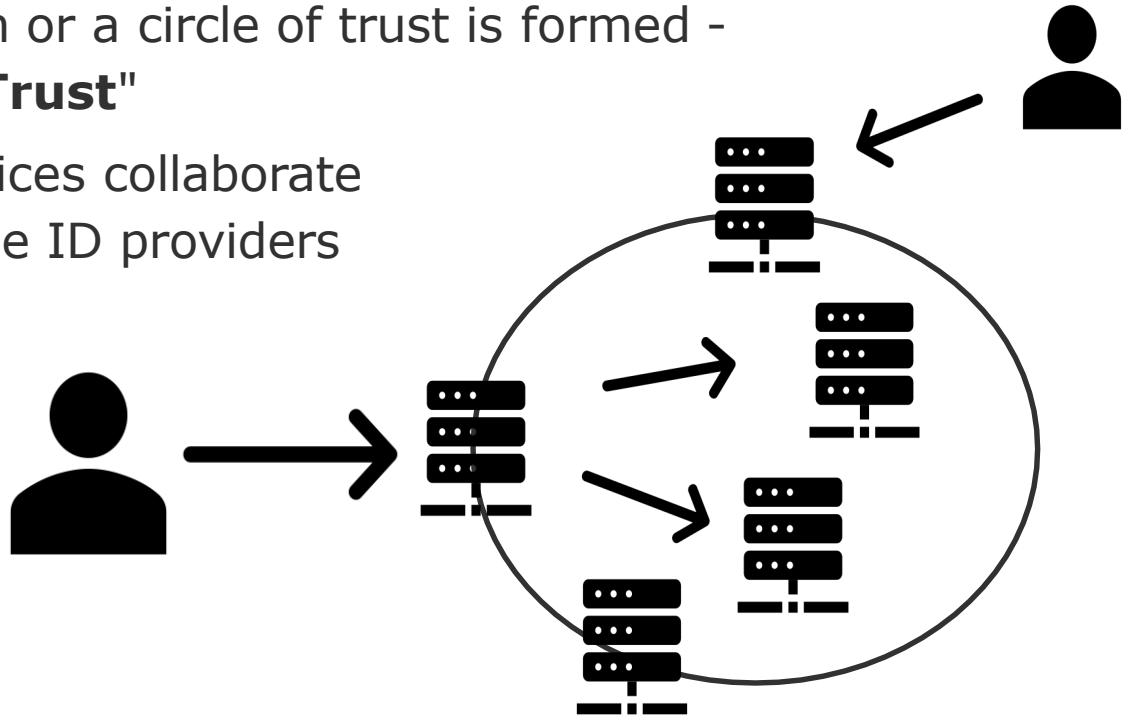
- Examples for the decentralized model are all websites/services that support at least two identity providers, e.g. via Facebook or Google
- Users can then choose which of their digital identities they use to log into an online service
- OpenID (Connect) and OAuth are well-known protocols for implementing the decentralized ID provider approach



Federated ID Provider Model

The **federated ID provider model** is actually just another name for the decentralized model

- It allows the use of digital identities across company/organizational boundaries
- A federation or a circle of trust is formed - "**Circle of Trust**"
- Online services collaborate with multiple ID providers



Example of a Federation

Eduroam network of universities around the world

- With an account (digital identity) at a university, e.g. the University of Potsdam, you can log in to any university in Berlin or Paris and use their network/internet resources without having to (re-)register with the university there

Decentralized / Federated ID Provider Model
Summary

Decentralized ID provider model:

- There is not just one ID provider, but several
- Users can (mostly) choose their ID provider themselves
- Online services can dynamically decide which ID providers they trust

Federated ID provider model:

- Is a decentralized model, mostly related to companies or organizations
- Online services trust all identities provided by an ID provider of a federated partner