Abstract

Solid, for **So**cial **Li**nked **D**ata, is a new web standard that gives users control over their online data. Developed by the inventor of the World Wide Web, Sir Tim Berners-Lee, it aims to decouple web applications from data. In a Solid environment, users own a Personal Online Datastore (Pod) and consume solid apps. A solid app is a zero-data web application connected to the user's Pod that reads or writes data on the user's Pod instead of its database. \[2 cm]

CERN, the birthplace of the Web, is interested in Solid and has defined a project to investigate how Solid could be used inside CERN's infrastructure. Previously CERN has been using a third-party Solid server provider (`solidcommunity.net`) but is now interested in deploying its own server. A Solid server's goal is mainly to serve Pods and handle authentification through an Identity Provider (IDP). Community Solid Server (CSS), released in August 2021, is one of the first open-source Solid servers that implement the Solid specification [@cssReadme]. However, by focusing on the server part, CSS is hardly usable on its own. In particular, it provides almost no user interface.

The main contribution of this thesis has been the deployment of a CSS instance into the CERN infrastructure. CSS is built primarily for researchers, developers that want to experiment with Solid servers. Therefore, it comes with minimalistic UI and a default configuration that is not designed in priority for end-users. However, it is highly configurable and extendable.

Therefore, we build a custom CSS instance suited for CERN's needs, we investigate at the different options, particularly in terms of storage, security, and integration with CERN's Single Sign-On. Furthermore, we extended CSS by building two components: a more user-friendly alternative registration page and a user profile viewer Proof of Concept. Also, we build a DevOps pipeline to deploy CSS instances to CERN infrastructure quickly. Finally, we will evaluate our CSS instance through a review of CSS software quality followed by a review of CSS' open source community dynamics.

We wrote the thesis with the mindset that further work will be done on Solid-CERN project, and that the CSS instance will be furthermore developed. Thus, we cover a wide variety of subjects and argue as much as possible on the given choices, with the intention to give a solid basis and as much freedom as possible for the following work.