

CERN-Solid Code Investigation Final Presentation

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Overview

1. **Introduction**
2. **Solid**
3. **Indico**
4. **Proof of Concept**
 - *Comments* in Indico events
 - Indico Conference *Registration* from pod data.
5. **Challenges, Advantages, Gaps for CERN and Solid**
6. **Continuation in CERN-Solid Collaboration**
7. **Conclusion**

Introduction

- **Context:** Loss of control over data, loss of innovation
- **Goal:** Investigation of decentralized storage in a centralized system

Solid

- **Social Linked Data**, is a project, a standard, an ecosystem, a movement and a community initiated by Sir Tim Berners-Lee.
- Allows people to control *where* their own data are stored and *who* has access to them.
- It combines existing W3C standards and is built on top of the existing Web.

The Data Pod

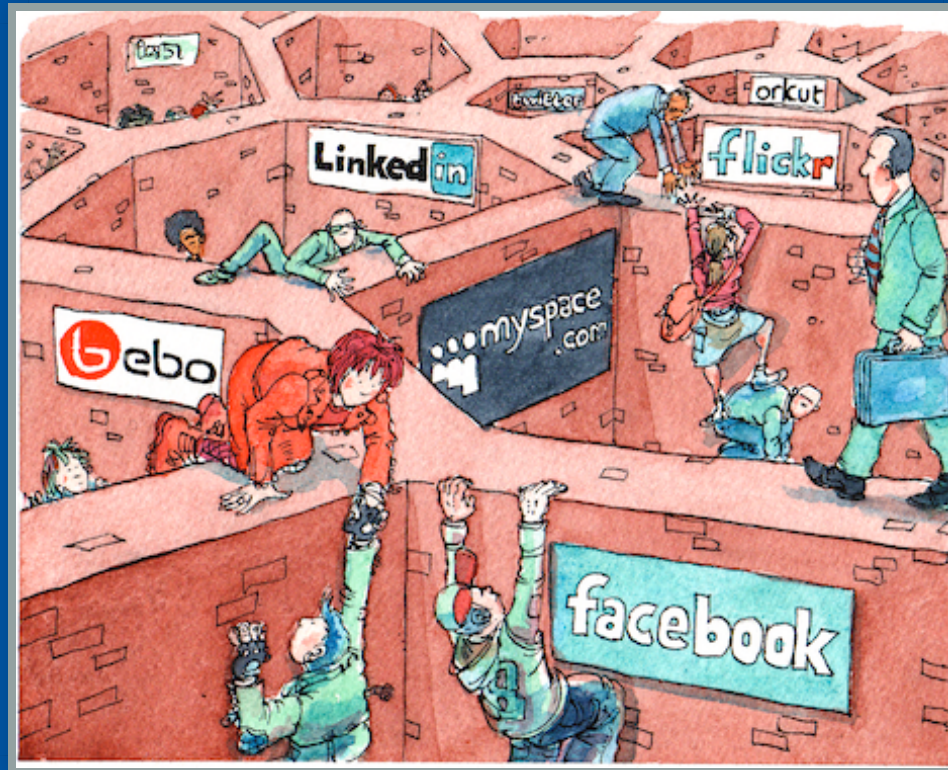
A decentralised data store for one's personal data. A pod is like a secure personal Web server for all kinds of data.

- Data is stored as *Linked Data*, i.e. the resource gets its own HTTP URI on the Web.
- The pod is described by a unique WebID. WebID examples:
 - <https://timbl.inrupt.net/profile/card#me>
 - <https://dimou.solidcommunity.net/profile/card#me>
 - <https://janschill.net/profile/card#me>

The Solid Server

A Web server that stores users' pods, with support for access control and optionally identity service.

Ideally Solid Is About Escaping From This Situation



Taken from: <https://www.w3.org/DesignIssues/CloudStorage.html>

Indico

- Open-source tool for event organisation, archival and collaboration
- Resilient and reliable for over 20 years
- No incentive for user data in modules of
 - Conference registration
 - Meeting comments

“Indico is used every day at CERN to manage more than 600,000 events of different complexities and 200 meeting and conference rooms.”

CERN-Solid

CERN-Solid presentation at the December 2020 Solid World

by Jan Schill (itu.dk), Maria Dimou (CERN)

Thursday 3 Dec 2020, 16:00 → 17:00 Europe/Zurich

Description The talk is prepared for the December 2020 Solid World webinar.

This is a monthly event where Solid implementors share their experience.

All material and recording will be linked from [the Solid events' index](#).



The talk is about the reasons and status of [the CERN-Solid code investigation project](#).


Progress is monitored in https://github.com/janschill/uni-research_project



Indico - what is - <https://getindico.io/>

Indico - the repo - <https://github.com/indico/>

Please contact Maria Dimou for further information on [the CERN-Solid collaboration](#).

 [CERN-Solid present...](#)  The same presenta...

Contact  maria.dimou@cern.ch

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The CERN-Solid Code Investigation Project


1. Review Solid specifications
2. Evaluate Solid implementations
3. **Enrich Indico with Solid principles**
 - *Comments* in Indico events via Solid pod authentication.
 - *Registration* in Indico conferences with personal data taken from the Solid pod.
4. **Make recommendations on Solid adoption in CERN applications**
5. **Document challenges, advantages, gaps**
6. **Continuation of CERN-Solid Collaboration**

Details on the Proof of Concept (PoC)


Comments to Indico Events via Solid Pod Authentication

Comments


<https://solidcommunity.net> [Log in](#)

 [Thomas Baron](#) · [Apr 26](#) · ...


Also I noticed that when I entered comments while I was not logged in Indico, these comments disappeared after a refresh

 [Thomas Baron](#) · [Apr 26](#) · ...


I have delete option on all comments event those not made by me, I guess that is wrong is it?

 [Thomas Baron](#) · [Apr 26](#) · ...


test again

 [Tim Smith](#) · [Apr 20](#) · ...


Thanks for identifying the cause of my disappearing comment :)

 [Pedro Ferreira](#) · [Apr 19](#) · ...


Yay! It works! Well done! 🎉

 [Tim Smith](#) · [Apr 15](#) · ...


Excellent, many thanks for giving me the opportunity to comment that I have no comment :)

 [CERN e-learning](#) · [Apr 14](#) · ...

This is another project, which now has a pod and is delighted to contribute to this wonderful app! Bravo Jan!

 [CERN Slides app](#) · [Apr 14](#) · ...


I have several pods. I wonder via which Solid login I am entering this comment now.

 [Maria Dimou](#) · [Apr 6](#) · ...

This is a new comment that I wish to edit on my Solid pod and see it changed there and here. This is the content after edit

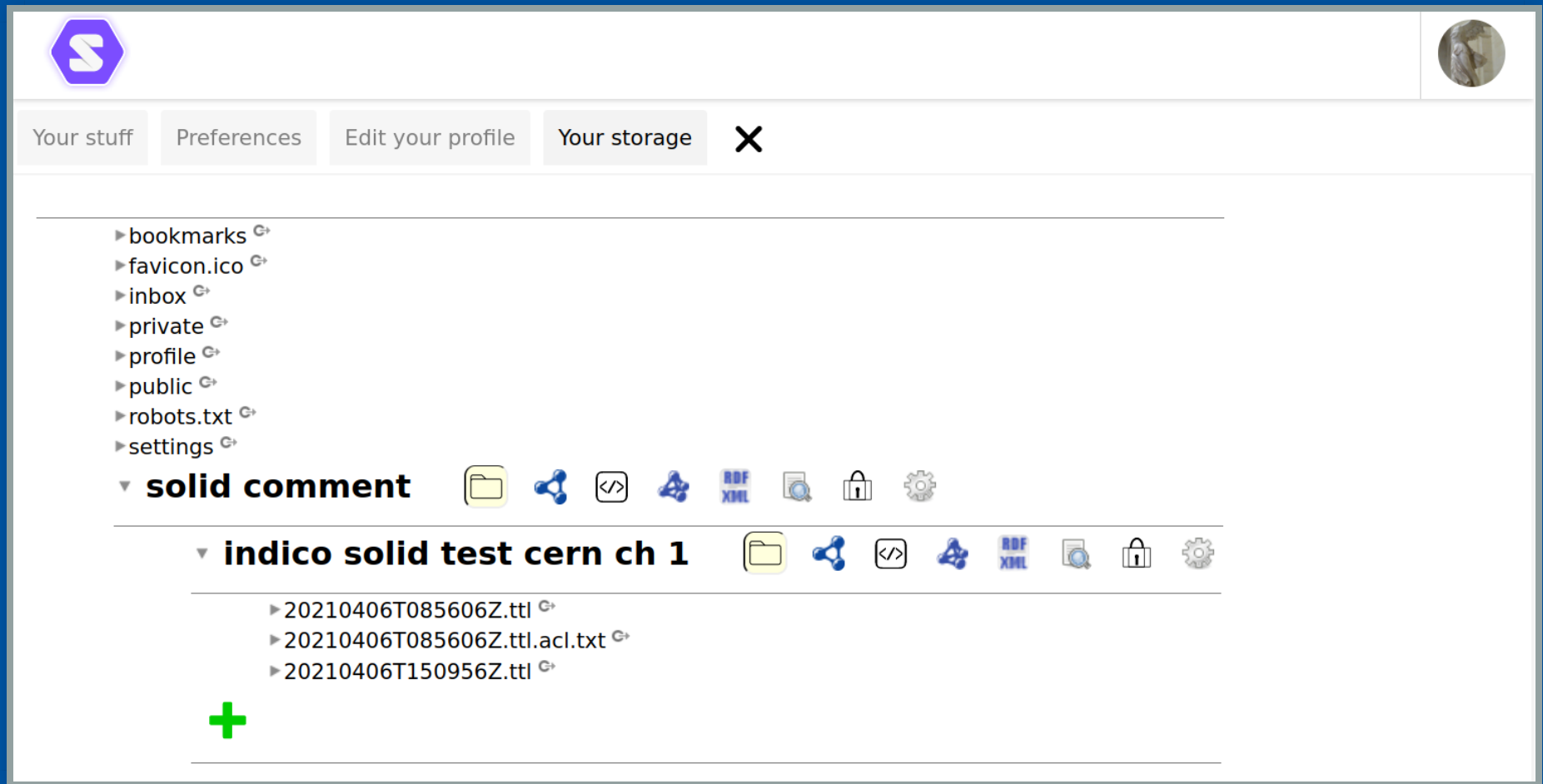
Comment is unavailable.

► *Why is this comment unavailable?*

 [Jan Schill](#) · [Apr 1](#) · ...

Welcome to the solid-comment POC. Please write a comment.

What You See in Your Data Pod



Details on the Code for *Comments*

- Client-side developed JavaScript application
- Self-contained, can be re-used in other applications
- Stores one comment in one file on data pod
- Communicates with data pod directly
- Needs authenticated Indico session
- Indico holds the reference to the location of comment

Details on the Code for *Comments* (continued)

- **Performance:** $n * 2 + 4$ requests with n -comments
 - Not mentioning slow running data pods
- **Availability:** Data pods not reachable
 - Cache the comment
 - or always fetch new?
- **Usability:** Control access in authentication flow suboptimal
- **Data Integrity:** Data can be changed freely on data pod
 - Digital signatures
 - *Verifiable Credentials* (recently announced to collobarate with Solid)

Indico Conference Registration via Solid Pod Data - Prompt

Thesis submission: Conference registration autocomplete

1 June 2021
Europe/Zurich timezone

Overview

Registration

Participant List

Registration

Registration form

Document to use for autofilling. <https://janschill.net/profile/card#me> Autocomplete

Personal Data

Title

First Name *

Last Name *

Email Address *

The registration will be associated with your Indico account.

Phone Number (+41) 123 45 6789

Affiliation

Position

Address
2300 Copenhagen

Country

(All the fields marked with * are mandatory)

Register

Indico Conference Registration via Solid Pod

Data - Linked Data

LD: Subject	LD: Predicate	LD: Object	Indico form
#me	ns:fn	"Jan Schill"	name="first_name"
#me	ns:fn	"Jan Schill"	name="last_name"
#me	ns:hasEmail	mailto:schill@hey.com	name="email"
#me	ns:gender	"Male"	Label="Gender"

ns = <http://www.w3.org/2006/vcard/ns#>

Details on the Code for *Conference Registrations*

- **Design of implemented module:** retrieve personal information **for** an Indico conference registration **from** data pod
- Original idea to store personal information **of** conference registration **in** data pod abandoned due to:
 - Sensitivity of payment details requiring reliable data retrieval
 - Archival of events need the data at Indico
 - Management of events/conference need performant data retrieval

Challenges with Solid Status Today

- Few applications using Solid pods so far
- No encryption at rest
 - CERN needs encryption or on-premise hosting
- User interface mostly challenging
- No formal support for the open source solutions.
 - A great enthusiasm in gitter though!
- Solid being a living standard, the specifications also evolve, especially in the Access Control area, leading to varying server implementations.
==> Impact on test-suite results.

Continuation CERN-Solid Collaboration

- Servers
 - Outstanding Solution
 - solidcommunity.net
 - Integration with CERNBox
 - Sandboxed Community Solid Server
 - Own Server Solution
- Applications
 - New applications with Solid in mind
 - Enrich existing applications with more prototypes
 - Structure existing data

Conclusion

- Solid can be easily and naively integrated
 - For more sophisticated solutions more time and efforts are needed
 - Different CERN applications could be more (Solid-)suitable
- Decentralization/Solid faces many challenges
- Active development and new initiatives give hope in Solid