



PodBox.

Personal Data Management Tool for a Decentralized Web



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Product Management & UX



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Engineering (Back-End)



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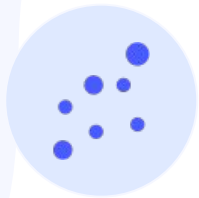


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Engineering (Front-End)



Kay Ashaolu
Advisor

We have lost control over our personal data



Scattered all over the web



Lack of control over how and what our data is used for



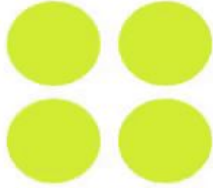
Data silos and lock-ins



“Solid has become the vital next layer of the web stack.”

Sir Tim Berners-Lee: Inventor of the World Wide Web,
Creator of the Solid platform, CTO & Co-Founder of Inrupt





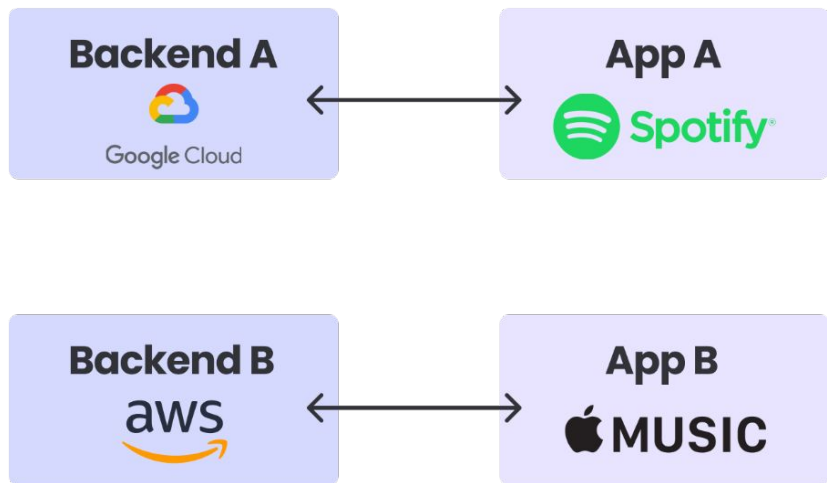
Personal Online Datastores (PODs)

Stores **all kinds of data**

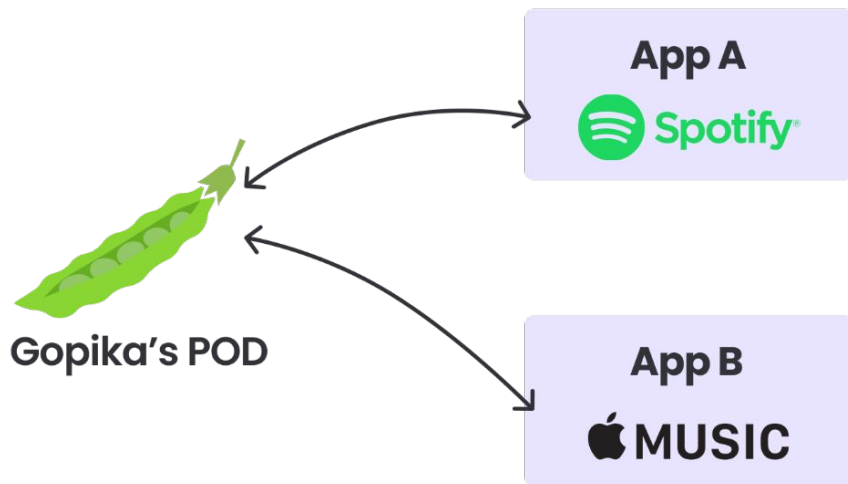
Multiple applications can
access same data
through POD



Centralized: single app and backend



Decentralized: multiple apps and backends

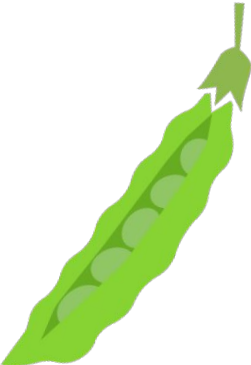


SLOW ADOPTION

POOR USABILITY

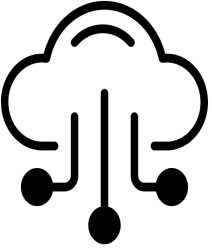
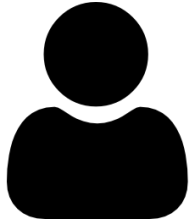
TECHNICAL AUDIENCE

Why PodBox?



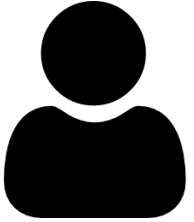
PodBox.

2024



Dropbox

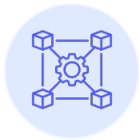
2007



PodBox Demo



POD Interfacing



Interoperability



Access Controls



3 Idiots

Three young boys, who are brilliant students, are enrolled in a prestigious engineering college. They are known as 'The Three Idiots' because they do not follow the traditional path of studying hard and getting good grades. Instead, they focus on learning for the sake of learning and enjoying the process. The book is a collection of short stories that explore their lives and the challenges they face.

Available on Amazon, Flipkart, and other online retailers.

Research & Design

Usability testing, expert interviews, desk research

Before PodBox, managing data access controls with a POD manager required 3 platforms



OhMyPod: POD manager

Home / Solid Applications

Solid Apps

Showcase

Application	Description
Media Kraken	Track your media and never miss a beat. - Documentation , GNU General Public License v3.0 © 2020 Noel De Martin - Source code , GNU General Public License v3.0 © 2020 Noel De Martin - Provide Feedback .
Penny	A general Pod Browser by Vincent Tunnu
Solid IDE	File manager and IDE. - Source code MIT License Copyright © 2018 Jeff Zucker
Solid File Manager	A Solid app that help you manages files in your Pod. - Source code MIT License Copyright © 2019 Otto AA
Pod Pro	An IDE for editing Solid Pods by Jasmine Leonard.
graphMetrix	Allows you to browse your Solid Pod offering multiple views of information including overview, graph, doc, gallery and grid as well as easy to use Solid collaboration control and file management. 30 day free trial followed by a \$10 per user/per month. © 2018 graphMetrix

Solid apps catalogue

User types

Here you can self-assign user types to help the data browser know which views you would like to access.

Read more

Personal information

This information is private.

Power user
Developer

Manage your trusted applications

Here you can manage the applications you trust.

Application URL	Access modes	Actions
https://api.liquid.chat	<input type="checkbox"/> Read <input type="checkbox"/> Write <input type="checkbox"/> Append <input type="checkbox"/> Control	Update Delete
https://notepod.vincentunnu.com	<input checked="" type="checkbox"/> Read <input checked="" type="checkbox"/> Write <input checked="" type="checkbox"/> Append <input type="checkbox"/> Control	Update Delete
https://ohmypod.netlify.app	<input checked="" type="checkbox"/> Read <input checked="" type="checkbox"/> Write <input checked="" type="checkbox"/> Append <input type="checkbox"/> Control	Update Delete
Write new URL here	<input checked="" type="checkbox"/> Read <input type="checkbox"/> Write <input type="checkbox"/> Append <input type="checkbox"/> Control	Add

Notes

Solidcommunity.net POD Provider

**How might we improve the POD
management experience?**

Process



Usability Testing

- 4 participants in MIMS
- Needfinding
- Complete user flow



Expert Interviews

- Interviews with Solid W3C Community Group leaders and Solid app developers



Desk Research

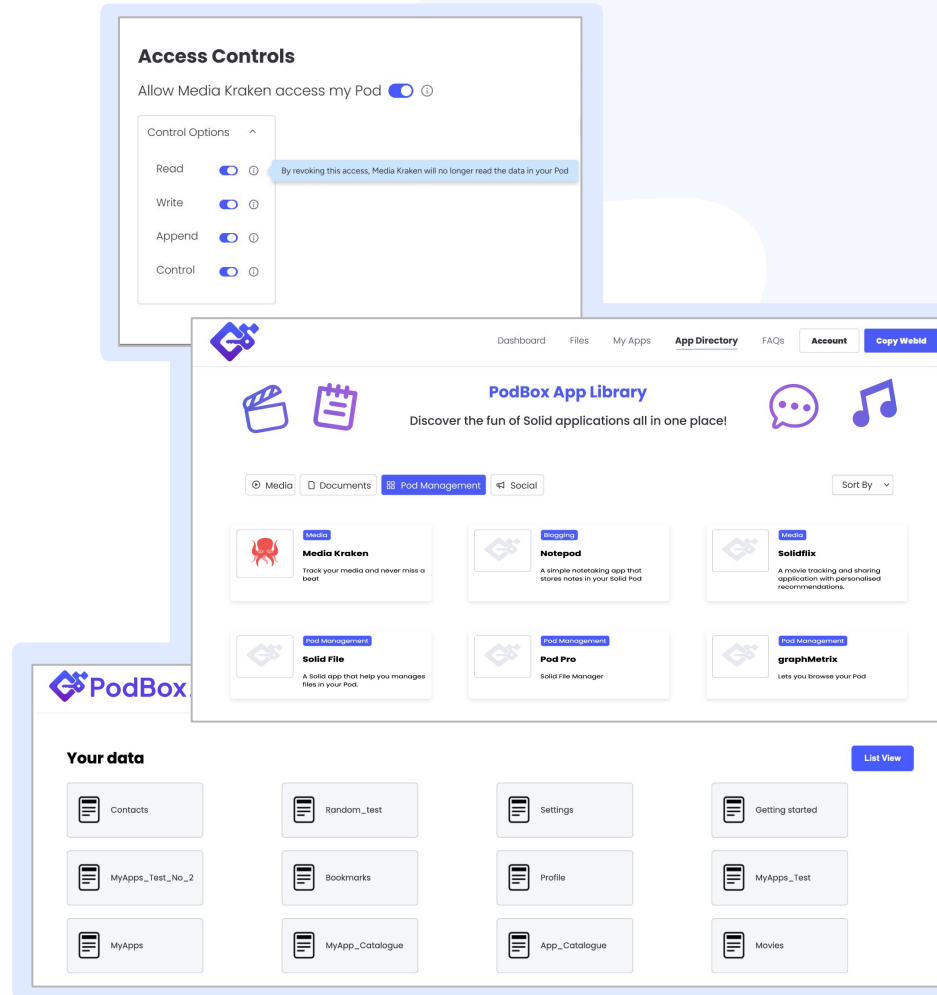
- Literature review, community forums

Design Goal 1

Unified Functional Experience

Completing key tasks requires users to switch between multiple platforms, causing confusion

"I didn't know where to look for things. I was lost and that sums up most of it."



Design Goal 2

Educational Onboarding

Users lack understanding of key terms, given that it is a novel technology

“It’s hard to understand when it uses big words, which makes me feel like a caveman.”

The image shows a screenshot of the PodBox website. The main landing page features the PodBox logo, navigation links for 'About' and 'FAQs', and a central headline: 'Take control of your data, your way.' Below this, it says 'Embrace data empowerment with PodBox. Organize, manage, and unleash the potential of your data, on your terms.' There are 'Sign up' and 'Log in with your POD' buttons. A diagram shows 'Your POD' at the center, connected to 'Notes App', 'Messaging App', 'Music App', and 'Movies App'. A text box explains: 'PodBox organizes and manages the data in your POD that you've created in your favorite apps!'. Below this is a 'Why Use PodBox?' section with three cards: 'Data Ownership' (View and manage access to all of your data across apps.), 'Inter...' (Carry from...), and a third card partially visible.

The onboarding modal is titled 'Get started with your POD for free in just one step.' It includes a 'Select POD Provider' dropdown menu with 'inrupt' selected and a 'Register' button. Below this, it explains 'What is a POD?' and provides instructions on how to obtain a WebID. It also lists 'Your POD Provider' options and 'Your WebID' details.

What is a POD?
PODs serve as your data storage space, accommodating any type of data, and are established through a POD provider.
Each POD is assigned a unique WebID upon creation, a crucial identifier for future access. To obtain a WebID, register on the provider's site, note your WebID, and come back to PodBox and log in with your new POD!

→ Learn more about POD Providers

Your POD Provider
Your POD is hosted by a third party, provided in the cloud (Amazon, Google Drive or Apple iCloud), there are different options to choose from.

Your WebID
The unique identifier and location of your POD. Just like your email address, you use your WebID to log into apps in the linked ecosystem.

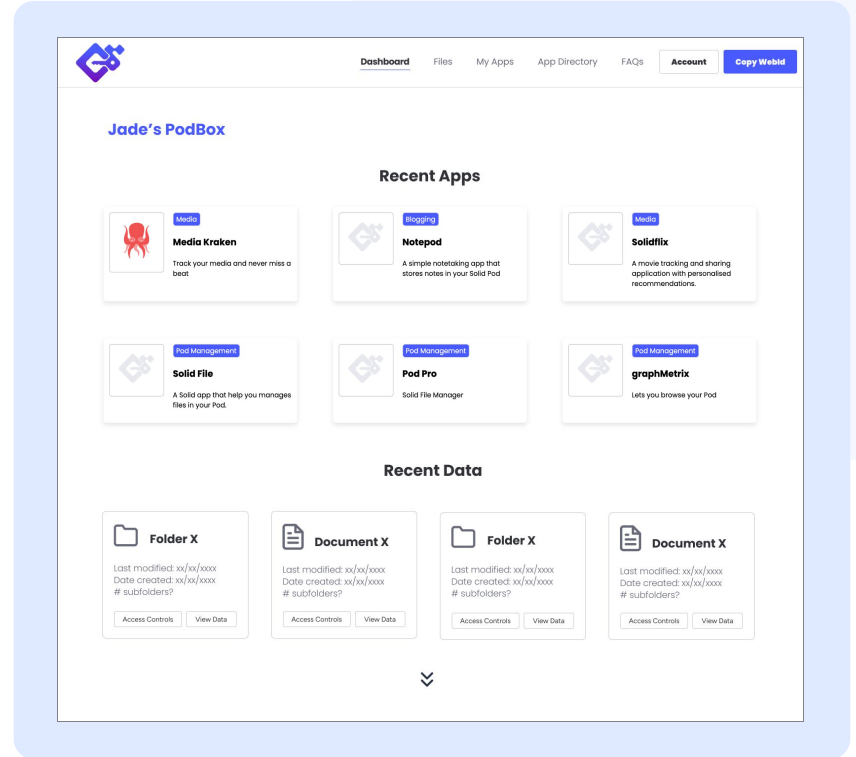
PodBox
Organize and manages access to the data in your POD that you've created in your favorite apps!

Design Goal 3

App-First Design

User mental framework of data is tied to apps

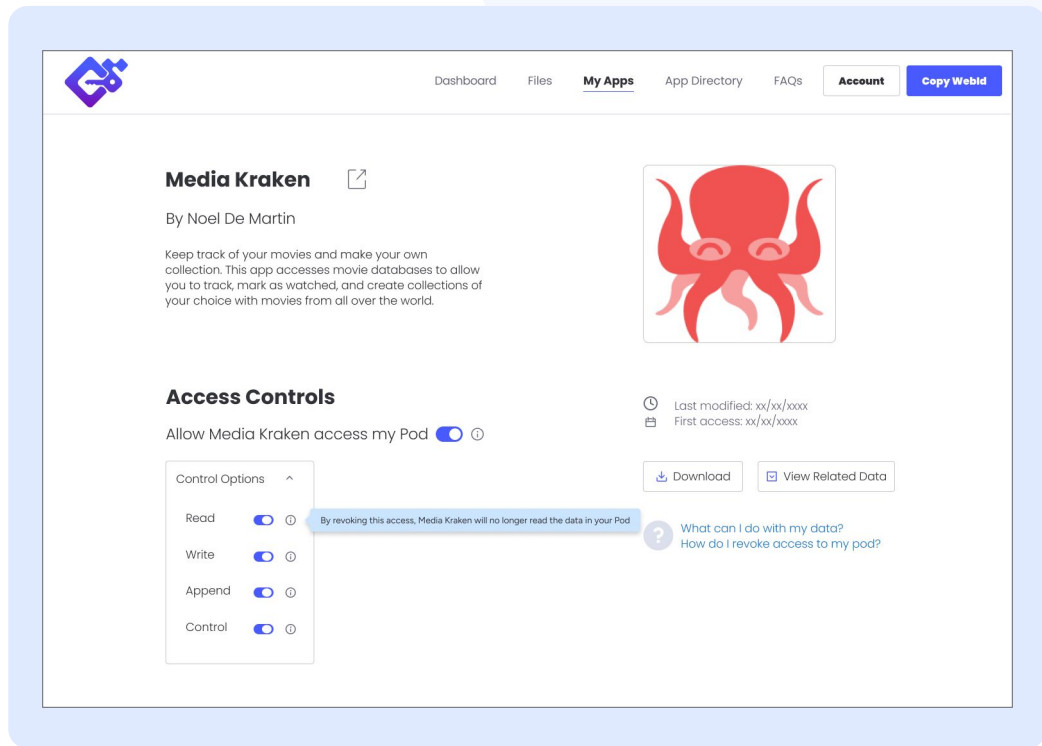
"I know that the data from this app lives in this place. I would prefer that it's just presented to me upfront rather than just being so deep in there."



Informational Nudges

Users don't understand access control implications or what information was important for a given task

"I don't know what this means to me right now. I don't know what this part is gonna do, so I feel very lost right now."



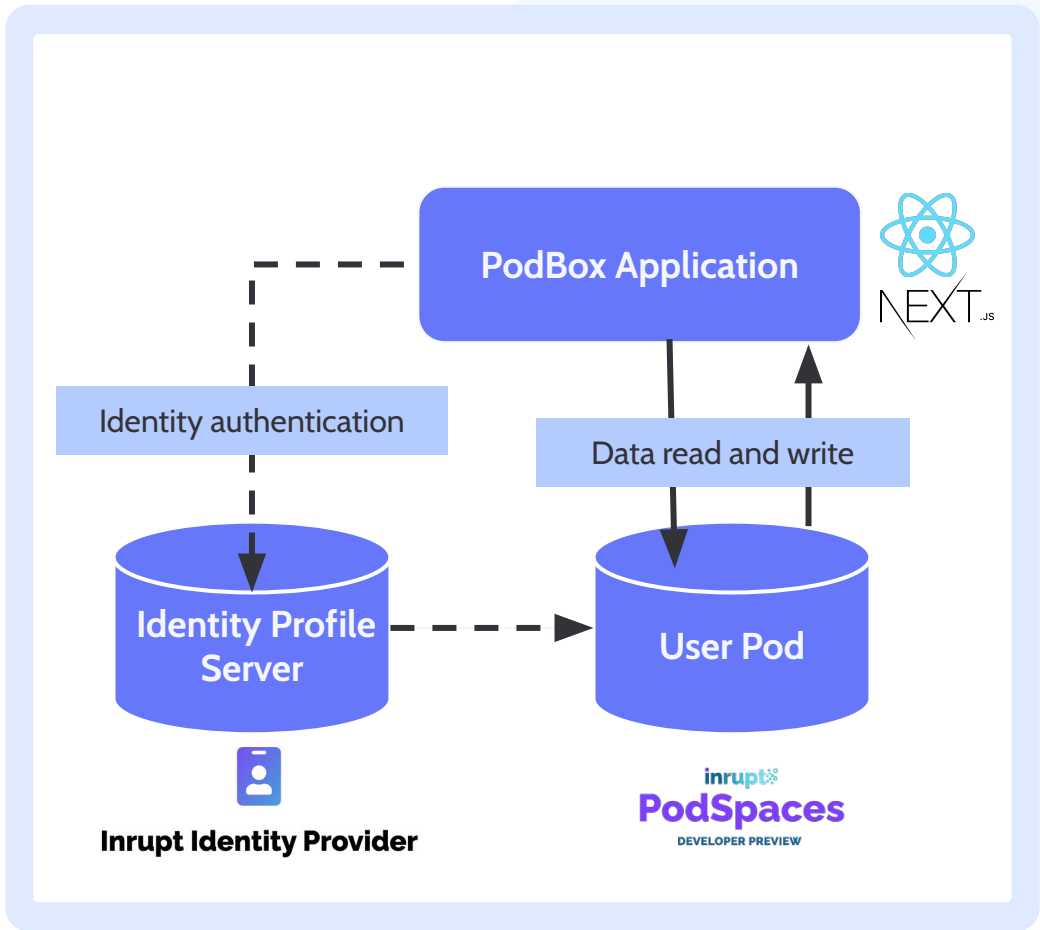
The screenshot displays a web application interface for managing access to an app named "Media Kraken". The interface includes a navigation bar with "Dashboard", "Files", "My Apps", "App Directory", "FAQs", "Account", and "Copy Webid". The main content area shows the app's name, author "Noel De Martin", and a description: "Keep track of your movies and make your own collection. This app accesses movie databases to allow you to track, mark as watched, and create collections of your choice with movies from all over the world." A red octopus icon represents the app. Below this, the "Access Controls" section shows a toggle for "Allow Media Kraken access my Pod" which is currently turned on. A "Control Options" dropdown menu is open, showing "Read", "Write", "Append", and "Control" options, each with a toggle and an information icon. A tooltip points to the "Read" option, stating: "By revoking this access, Media Kraken will no longer read the data in your Pod". To the right, there are "Download" and "View Related Data" buttons, and a help section with a question mark icon and the text: "What can I do with my data? How do I revoke access to my pod?". The help section also includes a clock icon for "Last modified: xx/xx/xxxx" and a calendar icon for "First access: xx/xx/xxxx".

Technical Architecture

Application architecture, Linked-Data

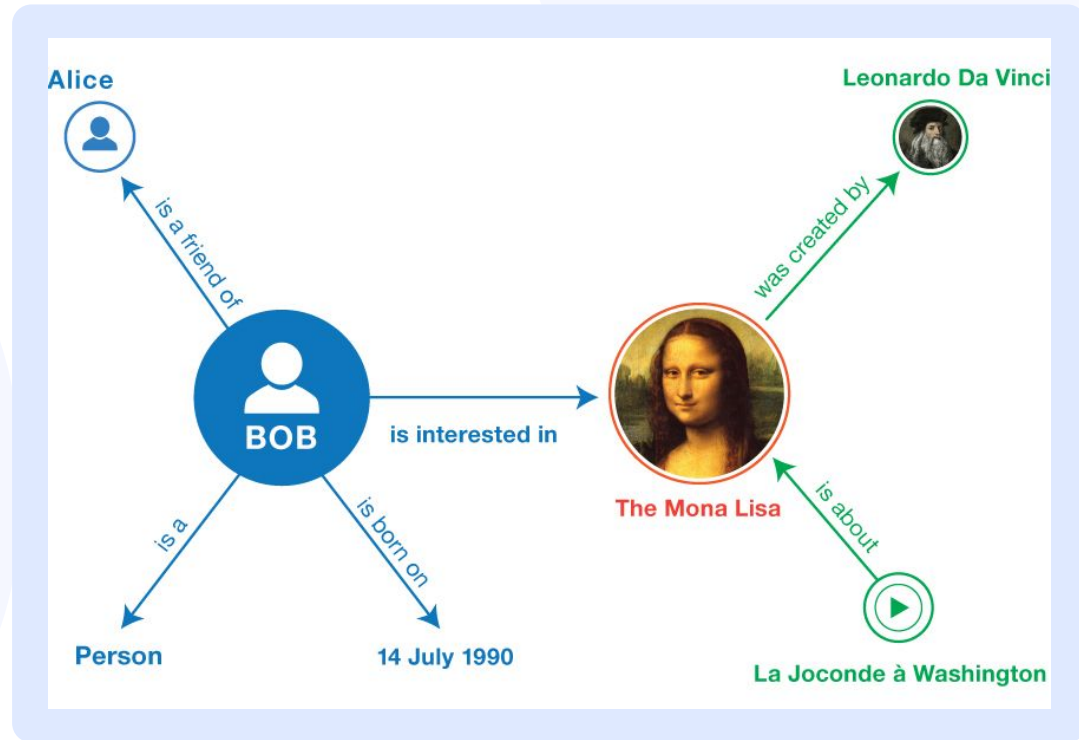
Solid decouples identity, data, and the application

Roles typically all played by a single platform, which limit data portability and lock-in users to ecosystems that have access to data



Interoperability and portability via data structure

PODs store data in 'structured' formats such as RDF, contrasting against the use of more typical table (relational database) structures



Source: [RDF 1.1 Primer](#)

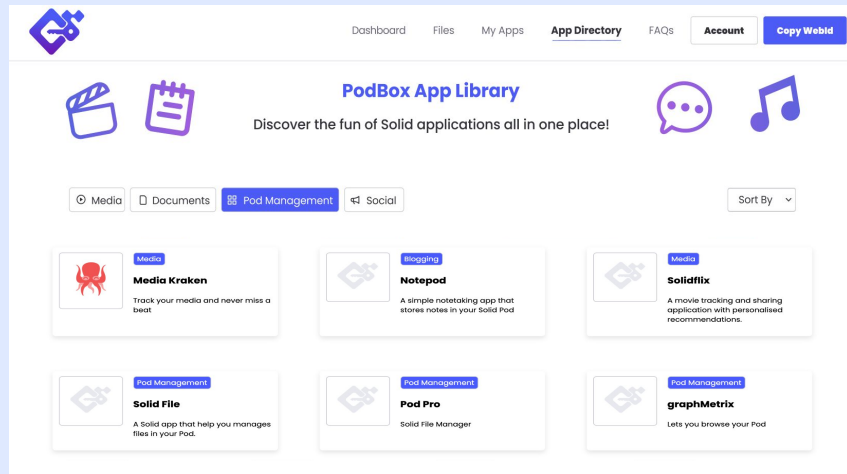
Interoperability and portability via data structure

PODs store data in 'structured' formats such as RDF, contrasting against the use of more typical table (relational database) structures



Public RDF resource for Solid Apps in Podbox

Our App Library fetches it's app library information from a public RDF document hosted on my POD, with public read access.



Publicly available App Catalogue in RDF (hosted on my pod)

The background features several light blue, organic shapes. A prominent white star is located in the upper left quadrant. The text 'So, what's next?' is centered in a bold, black, sans-serif font.

So, what's next?



PodBox.

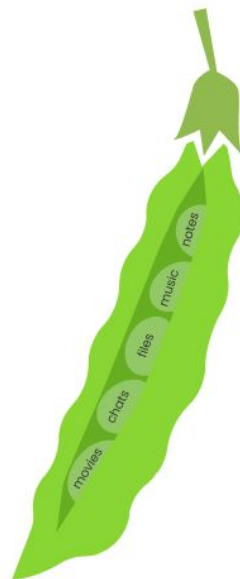
Thank you!

Appendix



Your POD Provider

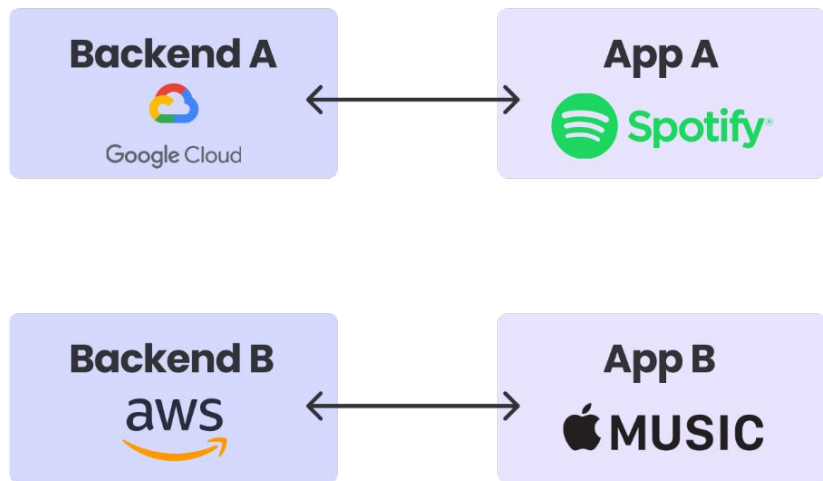
Your POD is hosted by a third party provider in their cloud. Much like Google Cloud Platform or Apple iCloud, there are different options to choose from.



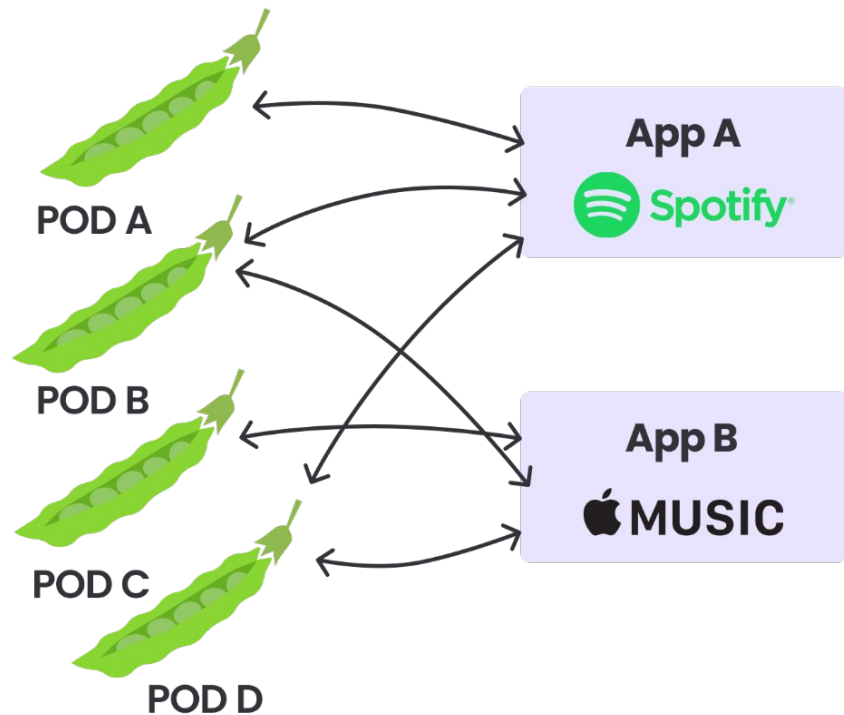
Your POD

Your data is stored securely in your Personal Online Data store (POD).

Centralized: single app and backend



Decentralized: multiple apps and backends



Educational Onboarding vs OhMyPod

The screenshot shows the OhMyPod! user interface. At the top, there is a navigation bar with links for WELCOME, PROFILE, FRIENDS, MY FILES, and SEARCH. A user profile icon is visible in the top right corner. The main content area features a large heading: "Welcome, https://miagsm.solidweb.org/profile/card#me". Below this, a text block states: "This application is being developed to improve the user experience so it is easier and clearer for each user to interact with its POD." This is followed by a paragraph explaining the development context and a list of three bullet points: "Improve user experience", "Improve security and privacy", and "Build the starting point". At the bottom of the page, there is a footer with copyright information for empathy.co, version 1.0.1, and a link to the GitHub repository.

OHMYPD! WELCOME PROFILE FRIENDS MY FILES SEARCH EN

Welcome, <https://miagsm.solidweb.org/profile/card#me>

This application is being developed to improve the user experience so it is easier and clearer for each user to interact with its POD.

The application is being developed by Astrid Gamoneda Arruñada, from the WESO research group, in collaboration with [empathy.co](#), the eCommerce Search behind top world brands as Kroger, Carrefour or the Inditex Group. The main objectives of this application are the following:

- **Improve user experience** for the moment, interacting with a POD is complex and difficult; if you're not used to the computer science world. We're trying to make it easier for the users to manage the data they want to store in their POD, because the first step to gain users, is to make their life easier.
- **Improve security and privacy**: With the actual way to manage the POD, there are some critical security flaws, for example, granting access to a user so he can deny you access to your own POD, this should not be allowed.
- **Build the starting point**: a prototype of a search engine based on the SOLID platform/principles.

The application is continuously evolving. Different aspects are changing, such as the user interface, and application functionalities are being added and edited.

© empathy.co | Version 1.0.1 | [FAQ](#) [Our repository on github](#)

The screenshot shows the PodBox website. The header includes the PodBox logo and navigation links for "About" and "FAQs". The main heading is "Take control of your data, your way." Below this, a paragraph encourages users to embrace data empowerment. A central diagram shows a central cube labeled "Your POD" with arrows pointing to it from icons representing various apps: Notes App, Messaging App, Music App, and Movies App. A text box next to the diagram explains that PodBox organizes and manages data from these apps. Below the diagram are two buttons: "Sign up" and "Log in with your POD". The "Why Use PodBox?" section features three cards: "Data Ownership" (with a key icon), "Interoperability" (with a gear and cube icon), and "Secure Sharing" (with a padlock icon). Each card contains a brief description of the benefit.

PodBox. About FAQs

Take control of your data, your way.

Embrace data empowerment with PodBox. Organize, manage, and unleash the potential of your data, on your terms.

PodBox organizes and manages the data in your POD that you've created in your favorite apps!

Notes App Messaging App Music App Movies App

Your POD

Sign up Log in with your POD

Why Use PodBox?

- Data Ownership**
View and manage access to all of your data across apps.
- Interoperability**
Carry your data as you switch from one app to another.
- Secure Sharing**
You decide who has access to your data at all times.

App-First Design vs OhMyPod

OHMYPOD!

WELCOME PROFILE FRIENDS MY FILES SEARCH

EN 



Your FILES

SEARCH

MY POD

8

1

2

- CREATE FILE
- CREATE FOLDER
- UPLOAD FILE

.well-known

profile

robots.txt

chats

public

inbox

settings

movies

4c50dd90-beff-11ee-a606-f79e9ae475e2.ttl



Jade's PodBox

Dashboard Files My Apps App Directory FAQs Account Copy Webid

Recent Apps

 App Name

Last modified: xx/xx/xxxx
Date created: xx/xx/xxxx
Visit App Site [🔗](#)

Access Controls [View Related Data](#)

 App Name

Last modified: xx/xx/xxxx
Date created: xx/xx/xxxx
Visit App Site [🔗](#)

Access Controls [View Related Data](#)

 App Name

Last modified: xx/xx/xxxx
Date created: xx/xx/xxxx
Visit App Site [🔗](#)

Access Controls [View Related Data](#)

 App Name

Last modified: xx/xx/xxxx
Date created: xx/xx/xxxx
Visit App Site [🔗](#)

Access Controls [View Related Data](#)



Recent Data

 Folder X

Last modified: xx/xx/xxxx
Date created: xx/xx/xxxx
subfolders?

Access Controls [View Data](#)

 Document X

Last modified: xx/xx/xxxx
Date created: xx/xx/xxxx
subfolders?

Access Controls [View Data](#)

 Folder X

Last modified: xx/xx/xxxx
Date created: xx/xx/xxxx
subfolders?

Access Controls [View Data](#)

 Document X

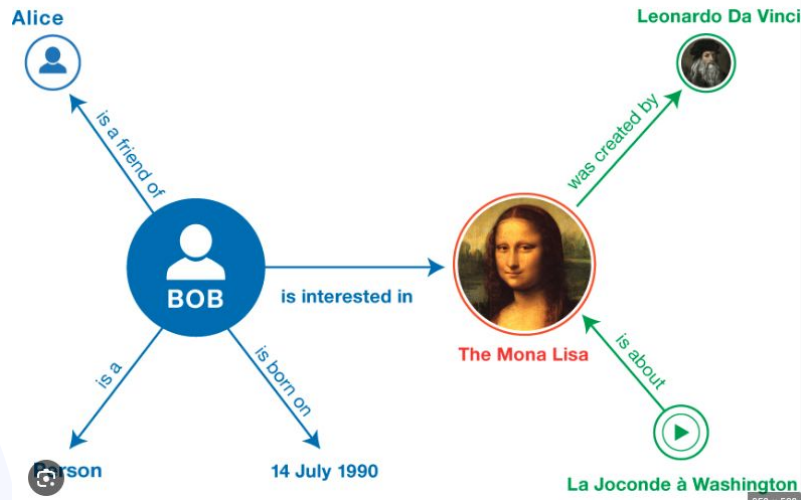
Last modified: xx/xx/xxxx
Date created: xx/xx/xxxx
subfolders?

Access Controls [View Data](#)



Interoperability and portability via data structure

PODs store data in 'structured' formats such as RDF or Linked-Data, contrasting against the use of more typical table like structures.



Date of birth
database

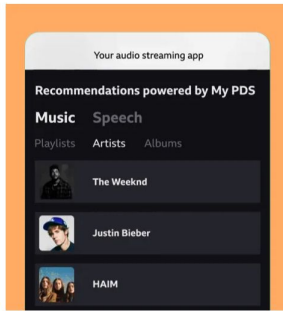
1. Bob

Friend database

1. Bob - Alice

Economic Benefits

- Cost effective development because of reusable backend
- No cloud cost, can still acquire transactional data, no data security burdens.
- All of user data at one place unlocks great benefits for insights



Industry

Media

Challenge

Improve streaming recommendations by creating a full view of a users' content preferences

Solution

Unlock greater user value through the power of interoperable Solid Pods

Benefits

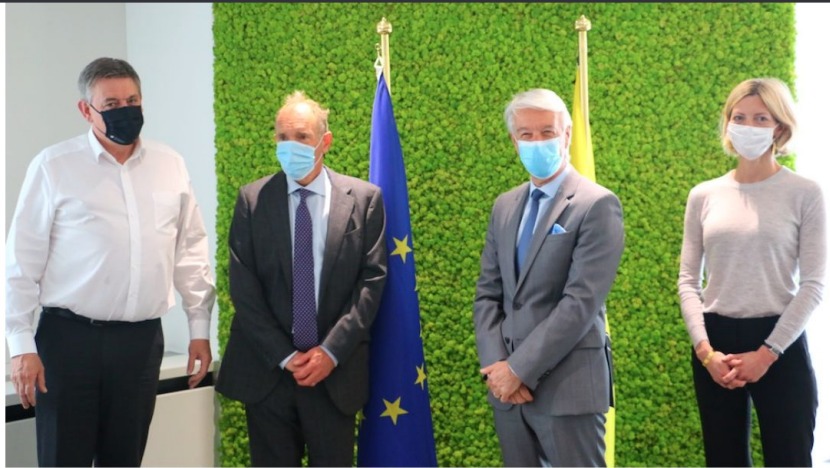
Create a foundation for unlocking deeper data insights with Solid. Improve the quality of user data and foster trust with BBC users.

BBC

The BBC uses interoperable Solid Pods to prototype improved viewing experiences

5 minute reading

Government adoption



Committing to a digital innovation economy in Flanders, built on Solid

Inrupt and the Government of Flanders lay out a vision of a Flemish digital economy built on Solid.

John Bruce, Inrupt CEO and Co-founder

Sir Tim Berners-Lee, Inrupt CTO and Co-founder

NHS data: Can web creator Sir Tim Berners-Lee fix it?

9 November 2020

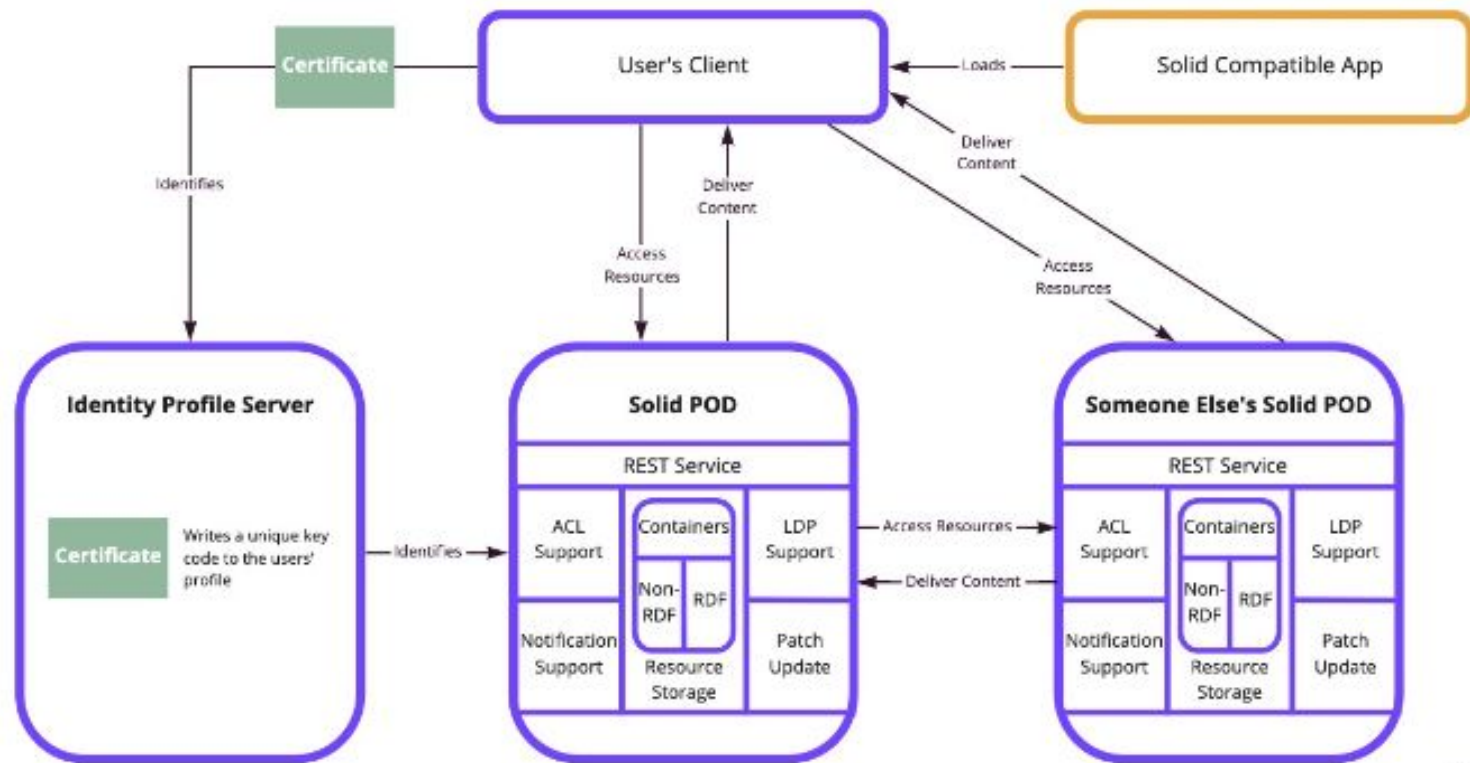
By **Rory Cellan-Jones**, Technology correspondent

Share



Deblackboxing Solid


Solid's Architecture





Jade's PodBox


Recent Apps



Media

Media Kraken


Track your media and never miss a beat



Blogging

Notepod


A simple notetaking app that stores notes in your Solid Pod



Media

Solidflix


A movie tracking and sharing application with personalised recommendations.



Pod Management

Solid File


A Solid app that help you manages files in your Pod.



Pod Management

Pod Pro

Solid File Manager




Pod Management

graphMetrix

Lets you browse your Pod


Recent Data



Folder X

Last modified: xx/xx/xxxx
Date created: xx/xx/xxxx
subfolders?


[Access Controls](#) [View Data](#)



Document X

Last modified: xx/xx/xxxx
Date created: xx/xx/xxxx
subfolders?


[Access Controls](#) [View Data](#)



Folder X

Last modified: xx/xx/xxxx
Date created: xx/xx/xxxx
subfolders?

[Access Controls](#) [View Data](#)



Document X

Last modified: xx/xx/xxxx
Date created: xx/xx/xxxx
subfolders?

[Access Controls](#) [View Data](#)



We used existing vocabularies to create a new App resource

Apps are written and read as 'CreativeWork' such that other applications will also be able to read their properties.

Thing > CreativeWork > MusicPlaylist [more]

A collection of music tracks in playlist form.

Property	Expected Type	Description
Properties from MusicPlaylist		
numTracks	Integer	The number of tracks in this album or playlist.
track	ItemList or MusicRecording	A music recording (track)—usually a single song. If an ItemList is given, the list should contain items of type MusicRecording. Supersedes tracks.
Properties from CreativeWork		
about	Thing	The subject matter of the content. Inverse property: subjectOf
abstract	Text	An abstract is a short description that summarizes a CreativeWork .