

Real-World Solid Deployments

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Who is Inrupt?



Inrupt



Who We Are

Inrupt here to drive adoption of Solid.



What We Do

Enterprise-grade software and services for [developers](#), [organizations](#), and [end users](#).
Founded on open [W3C specs](#).

Use Cases



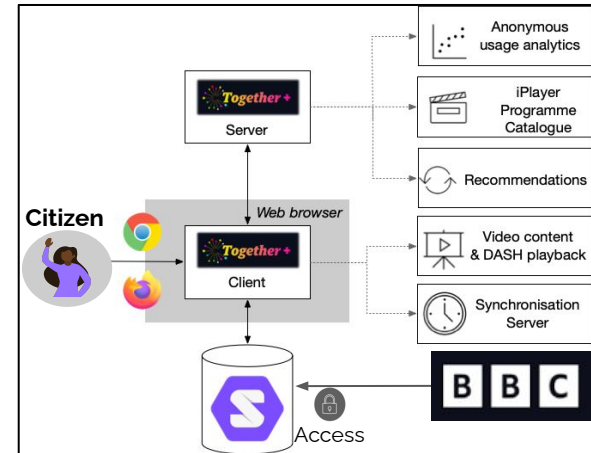
Use Cases

- BBC
- Flanders Government
- VITO/DNB* (Flanders)

BBC Together+ Data Pod



- A **Watch Party** app (40k users).
- Users control their 'watch' data.
- Privacy the key message.



BBC famous for using Linked Data for their World Cup website (2012), and Olympics website (2016)
One month left, but [BBC iPlayer](https://www.bbc.co.uk/iplayer) content mostly geo-locked to the UK.
Demo - <https://www.bbc.co.uk/togetherpod>



Data Utility Company



Flanders
State of
the Art

“Letting data flow is the key to giving our society and our economy a huge boost. That requires trust.”

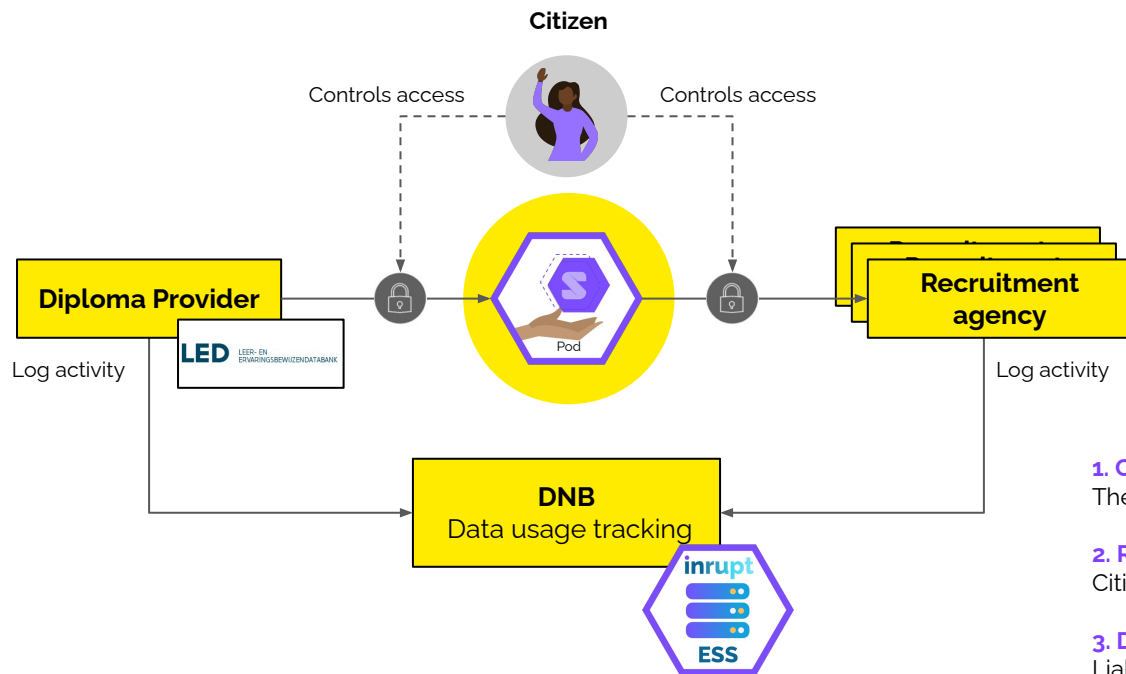
Jambon, Flemish Prime Minister



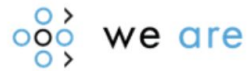
Medegefinancierd door
de Europese Unie
NextGenerationEU

Data Utility Company (DNB)

Diploma Use Case



- 1. Citizens want to apply for jobs**
They put their qualifications in their Pod.
- 2. Recruiters want to find qualified applicants**
Citizens grant permission to view their Pod.
- 3. Data Utility Company (DNB) facilitates all interactions**
Liable for data storage, but increases economic data flow.



- Creating a new health platform - **We Are**.
 - To be a hub for many new health apps...
 - ...all storing patient information in Pods.
-
- First app is a Questionnaire App (PREM*).

* VITO (Flemish Institute for Technological Research) / DNB (Data Utility Company)

* PREM - [Patient Recorded Experience Measurement](#) , "...gather information on patients' views of their experience while they are receiving care."

PREM Questionnaires



Vlaams Patiëntenplatform

VLAAMSE PATIËNTEN PEILING 2.2

IN TE VULLEN DOOR EEN MEDEWERKER VAN HET ZIEKENHUIS

Naam ziekenhuis:	KEI Oostduinkerke	Code vragenlijst:	
Naam afname:		Papieren versie	
Klinische afdeling:		<input type="checkbox"/> Reva 1 <input type="checkbox"/> Reva 2 <input type="checkbox"/> Reva 3 <input type="checkbox"/> Reva 4	

hulp vragen aan familie of vrienden. Om ziekenhuismedewerkers u niet helpen.

mogelijkheden aan)

iet vooraf bepaald.
atieverstreking over de aandoening'.

praf bepaald.
breiding op opname'.

llen indien uw opname gepland was)

	Nee	Ja
r hoe ik mij moest		
nformatie over hoe ik mij		
me in het ziekenhuis.		

hier in te vullen door alle patiënten)

medewerkers". Hiermee worden *alle* het medisch en verpleegkundig personeel, rkers, poetsdienst, secretariaat, etc.

	Nooit	Soms	Meestal	Altijd
mijn				

AMBULANCE / PARAMEDICS

1. If an **ambulance was called for you/your child**, did the ambulance staff/paramedics **explain what was happening** in a way you could understand?

1 ☐ Yes, definitely → **GO TO Q2**
 2 ☐ Yes, sort of → **GO TO Q2**
 3 ☐ No → **GO TO Q2**
 4 ☐ An ambulance was not called → **GO TO Q3**
 5 ☐ I can't remember → **GO TO Q2**

2. Overall, how well do you think the ambulance staff/paramedics looked after you/your child?

1 ☐ Very well → **GO TO Q2**
 2 ☐ Fairly well → **GO TO Q2**
 3 ☐ Not very well → **GO TO Q2**
 4 ☐ Not at all well → **GO TO Q2**
 5 ☐ Don't know / can't remember → **GO TO Q2**

WAITING

3. How did you feel about **how long** you/your child had to wait to be seen?

1 ☐ I did not have to wait at all → **GO TO Q9**
 2 ☐ The wait was shorter than I expected → **GO TO Q4**
 3 ☐ The wait was about as long as I expected → **GO TO Q4**
 4 ☐ The wait was longer than I expected → **GO TO Q4**

4. While you were waiting, did someone tell you/your child how long they would have to wait?

1 ☐ Yes, definitely
 2 ☐ Yes, sort of
 3 ☐ No, I was not
 4 ☐ No, but I didn't need anything
 5 ☐ Don't know / Can't remember

5. Was there **enough for you to do** when you/your child were waiting to be seen (such as toys, games and books)?

1 ☐ Yes, lots to do
 2 ☐ Yes, some things, but not enough
 3 ☐ There were things, but not for my age group
 4 ☐ No
 5 ☐ Can't remember / Did not notice
 6 ☐ I had my own things to do

6. Was there **everything you/your child needed** while you waited (such as food, drink and toilets)?

1 ☐ Yes, definitely
 2 ☐ Yes, sort of
 3 ☐ No
 4 ☐ I did not need anything
 5 ☐ Don't Know / Can't remember

7. Were you/your child looked after while you/your child waited (for example, were you given pain medicine, blankets or sick bowls if you needed them)?

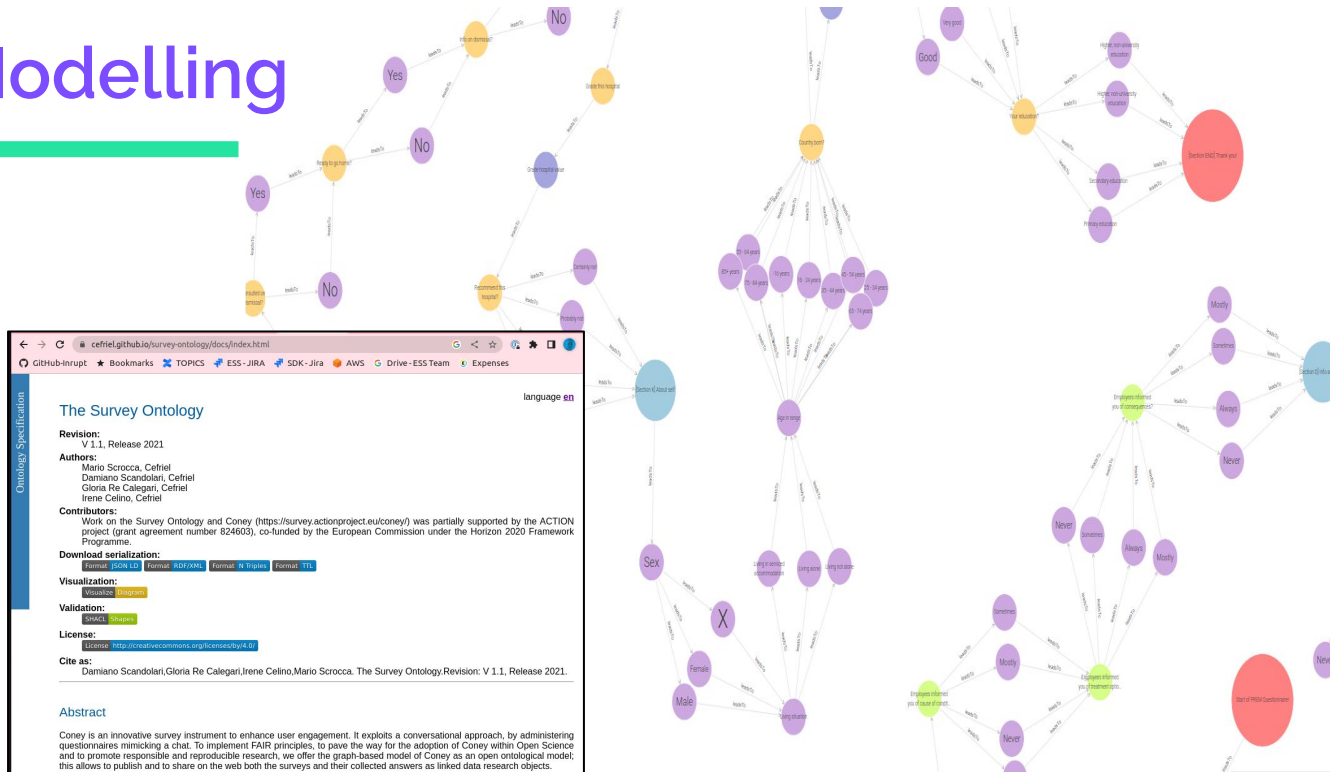
1 ☐ Yes, definitely
 2 ☐ Yes, sort of
 3 ☐ No, I was not
 4 ☐ No, but I didn't need anything
 5 ☐ Don't know / Can't remember

8. **How clean** do you think the waiting area was?

* English example - https://www.rcpch.ac.uk/sites/default/files/Emergency_Dept_Setting_-_Combined.pdf

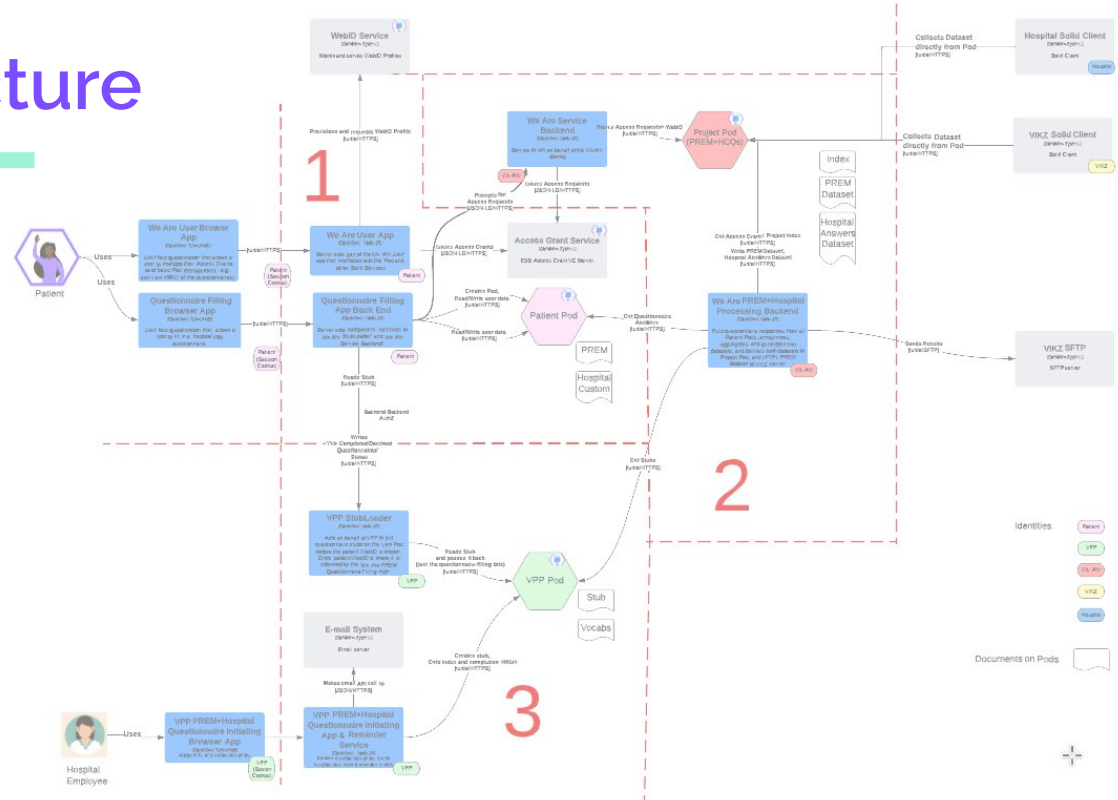
* Our PREM - https://www.kei.be/Portals/0/dtxArt/blok-document/bestand/Vlaamse-Pati%C3%ABnten-Peiling-2.2-FINAAL_ca7a7167-333a-4253-9b31-0e1eb759b895.pdf

PREM Data Modelling



- * Survey Ontology: <https://cefriel.github.io/survey-ontology/docs/index.html>
- * <http://localhost:7200/graphs-visualizations?saved=2e6fa700017b46c29bbbaf5200c80a75>

PREM App Architecture



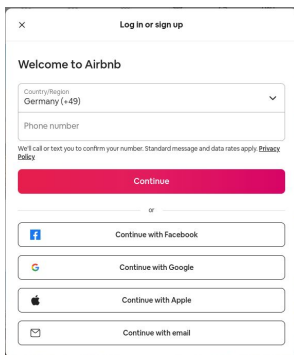
PodPro: <https://podpro.dev/>
 Demo - <http://localhost:4202/> (still under **active** development!)

Technologies



Solid-OIDC

<https://docs.inrupt.com/developer-tools/javascript/client-libraries>



- Based on OIDC* - access based on ***Who You Are***.
- WebID (and Profile Documents)
- Broker to IdPs* (e.g., Cognito, Auth0, Okta, [itsme](#),...)
- Inrupt SDK* [solid-client-authn](#)

* OIDC - Open ID Connect (e.g., 'Login with Facebook', 'Login with Google', etc.)

* IdP - Identity Provider (also BBC's IdP, DNB's IdP, Google, GitHub, Gluu, Keycloak, MitreID Connect, Signicat...)

* SDK - Software Development Kit

Access Grants

<https://docs.inrupt.com/developer-tools/javascript/client-libraries>

- Based on VCs* - access based on ***What You Have***
- Uses rapidly evolving W3C [VC API](#) 'standard'.
- Inrupt SDK* [solid-client-access-grants](#)

* VC - [W3C Verifiable Credentials](#)

ETL Tutorial

<https://github.com/inrupt/etl-tutorial>

- ***Extract, Transform, and Load*** (ETL)
 - **Extract** data from multiple sources.
 - **Transform** into Linked Data.
 - **Load** into Pods.

PodPro: <https://podpro.dev/>

Demo - Extract, Transform, and Load data from:

- Hobby data (local file)
- Passport (JSON object)
- Companies House UK (API): <https://find-and-update.company-information.service.gov.uk/search> (00041424)

Artifact Generator

<https://github.com/inrupt/artifact-generator>

- Generates source-code for ***vocabs***...
...in any programming language.
- Access to term metadata.
- Reports on Best Practices.

Query / Comunica

<https://comunica.dev/>

- Standard query (i.e., SPARQL)...
- ...across Pods **and** any Linked Data.
- Uses [Quad Pattern Fragments](#) (QPF).

PREFIX sur: <<https://w3id.org/survey-ontology#>>

PREFIX schema: <<http://schema.org/>>

SELECT * WHERE { ?s ?p ?o. }

SELECT * WHERE { ?s sur:hasAnswer ?o. }

SELECT * WHERE { ?s schema:streetAddress ?o. }

SELECT * WHERE { ?s a schema:ImageObject. }

Link traversal version: <https://comunica.github.io/comunica-feature-link-traversal-web-clients/builds/solid-default/>

PodPro: <https://podpro.dev/>

Demo - query data in test user Pod.

Thank you!

