

Beyond Instant Messaging: Matrix in the Public Sector

Applications of Matrix in (German) e-governance

Matrix: An open standard for instant messaging?

There is more!

The protocol

- › **integrates** well with the modern web ecosystem,
- › provides end-to-end security, with **no single point of control or failure** and
- › allows transport of **any (JSON) data**.

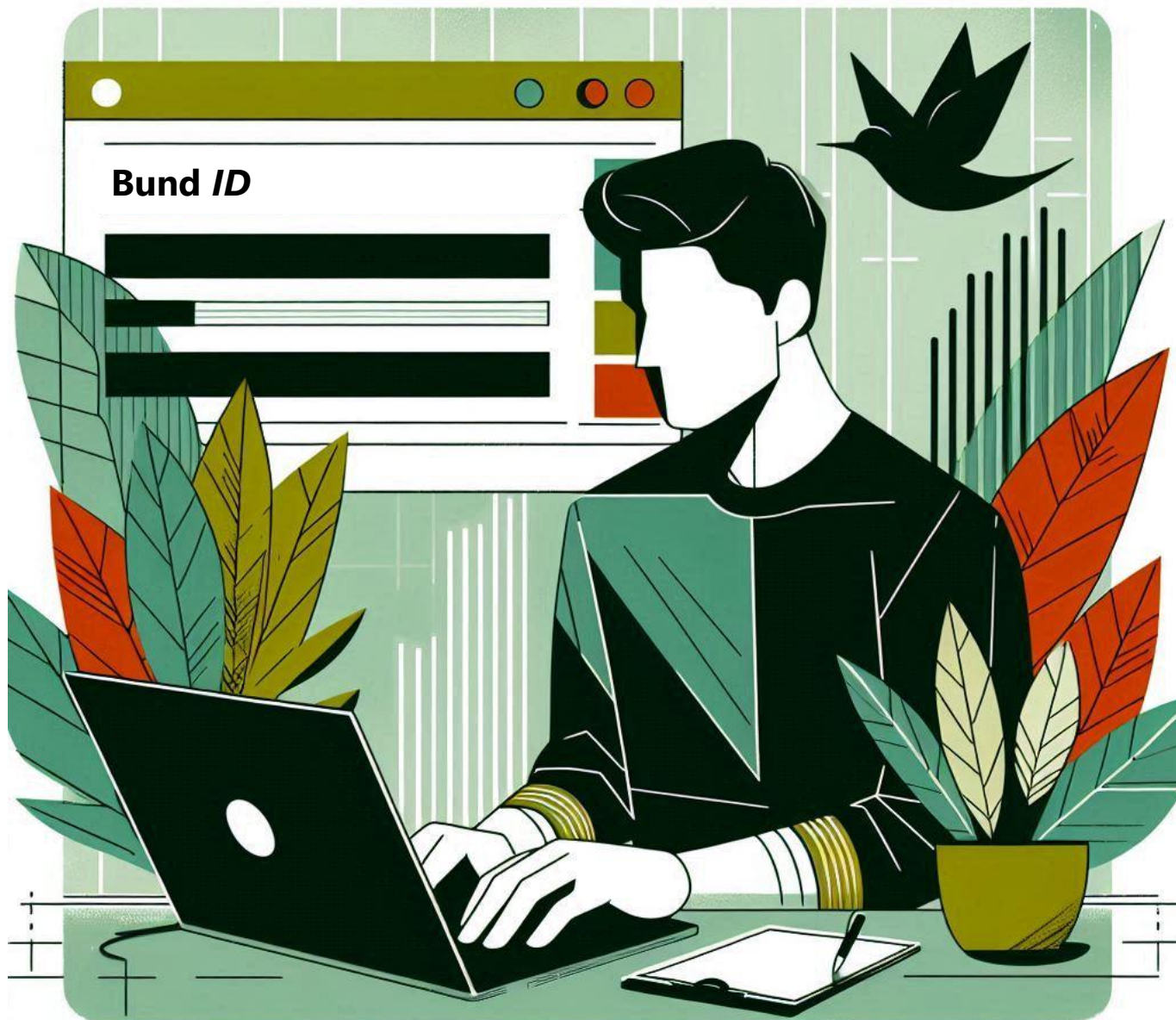
Let's have a look at some use-cases in public administration!

user
perspective



A typical contact with the public administration...





Step 1:
Request some
government service



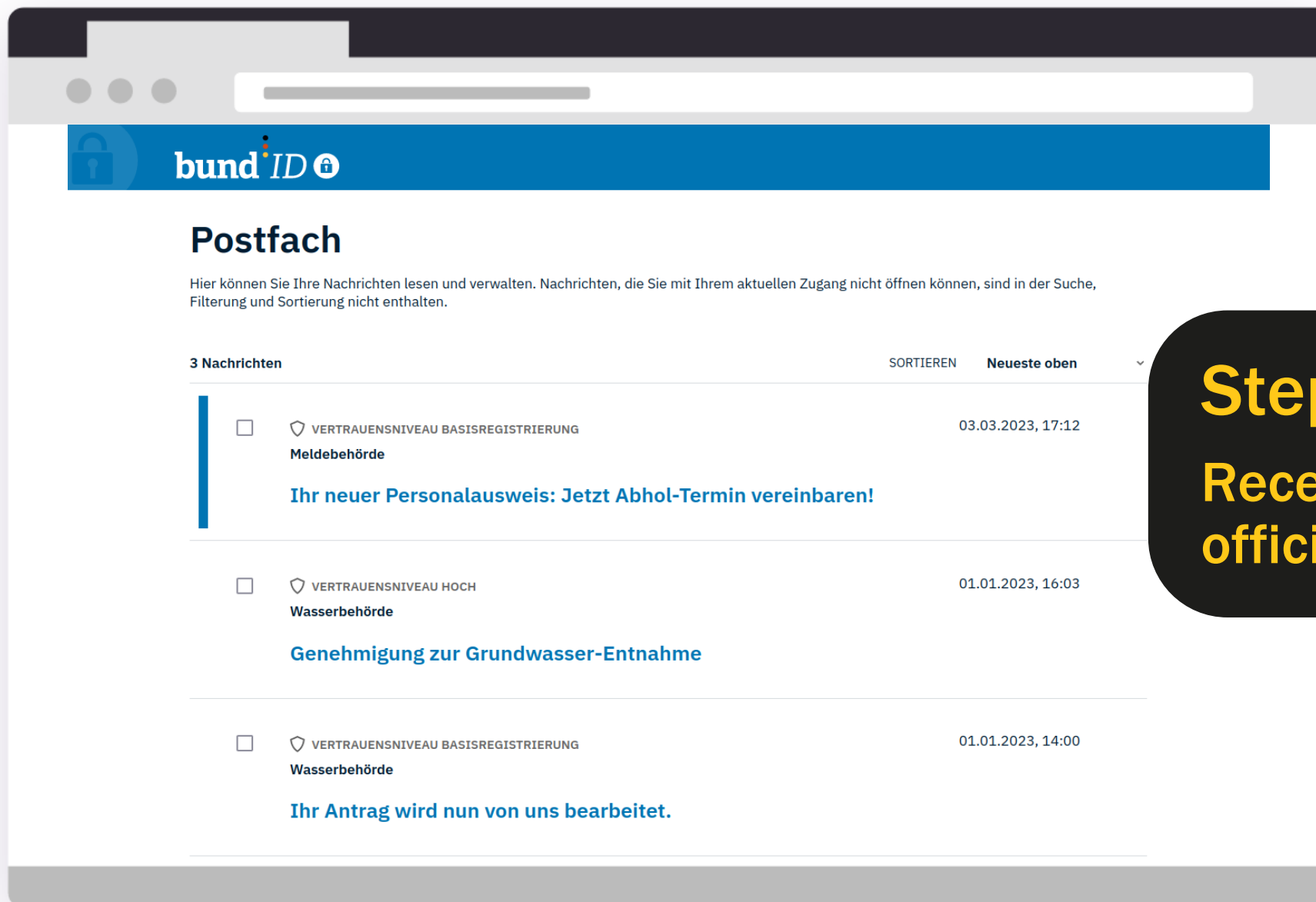
user
perspective

Step 2: Wait and relax





Step 3:
**Get notified about
updates to their request**



bund ID

Postfach

Hier können Sie Ihre Nachrichten lesen und verwalten. Nachrichten, die Sie mit Ihrem aktuellen Zugang nicht öffnen können, sind in der Suche, Filterung und Sortierung nicht enthalten.

3 Nachrichten SORTIEREN **Neueste oben**

<input type="checkbox"/>	VERTRAUENSNIVEAU BASISREGISTRIERUNG Meldebehörde Ihr neuer Personalausweis: Jetzt Abhol-Termin vereinbaren!	03.03.2023, 17:12
<input type="checkbox"/>	VERTRAUENSNIVEAU HOCH Wasserbehörde Genehmigung zur Grundwasser-Entnahme	01.01.2023, 16:03
<input type="checkbox"/>	VERTRAUENSNIVEAU BASISREGISTRIERUNG Wasserbehörde Ihr Antrag wird nun von uns bearbeitet.	01.01.2023, 14:00

Step 4:
**Receive some kind of
official document**

Our Vision - User Perspective



*Communication between citizens and their government needs to be **easy, user-centered and confidential.***

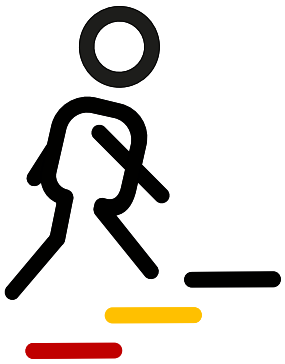
Better support for **mobile** use-cases:
multi-device-capabilities,
push notificatios, etc.

Bidirectional
communication

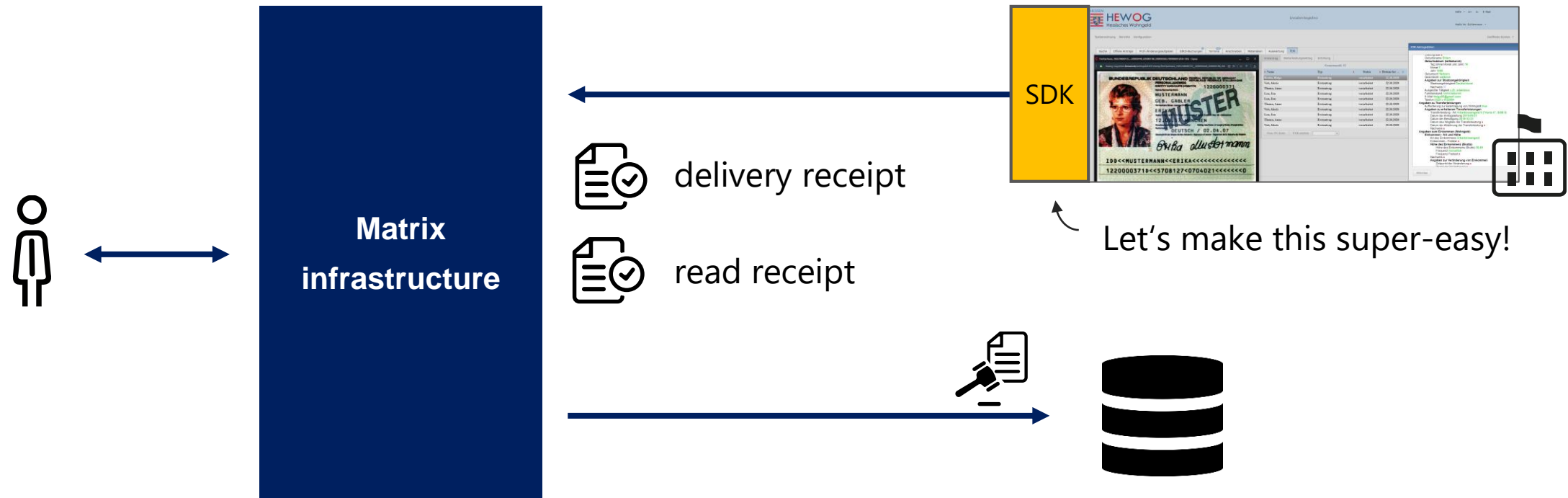
State-of-the-art
end-to-end encrypted
communication



What the public administration needs...



Integration into government agency's IT systems



user infrastructure government agency

Who initiates communication?

only governments can initiate communication?

proactive communication by citizens allowed?



every communication MUST start with a service request

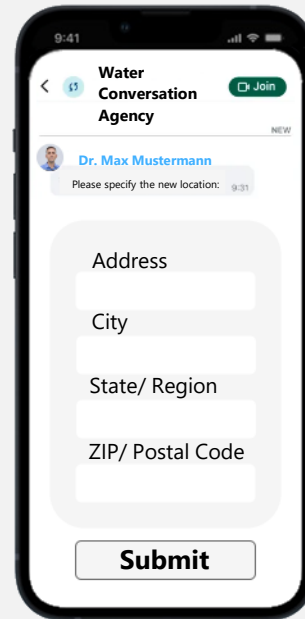
Highly customizable interaction patterns

A



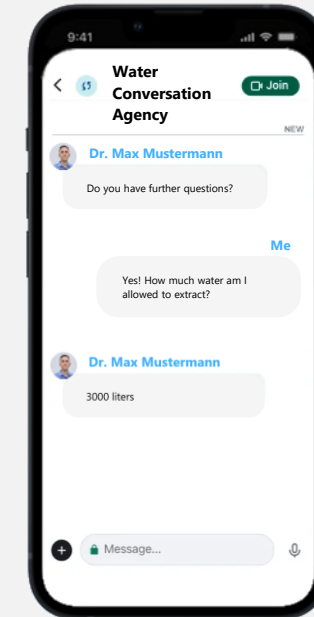
unidirectional notification
and transmission of
documents

B



structured communication
with machine readable forms

C



arbitrary, unstructured
messages

Our Vision - Government Perspective



Building a next-generation infrastructure that is **easy to integrate, open and adaptable** and enables **machine-readable communication**.

Matrix

user
perspective



government
perspective

Bringing things together



Receive Status Updates...

...via push notifications.



New
Status



Matrix

SDK



public agency

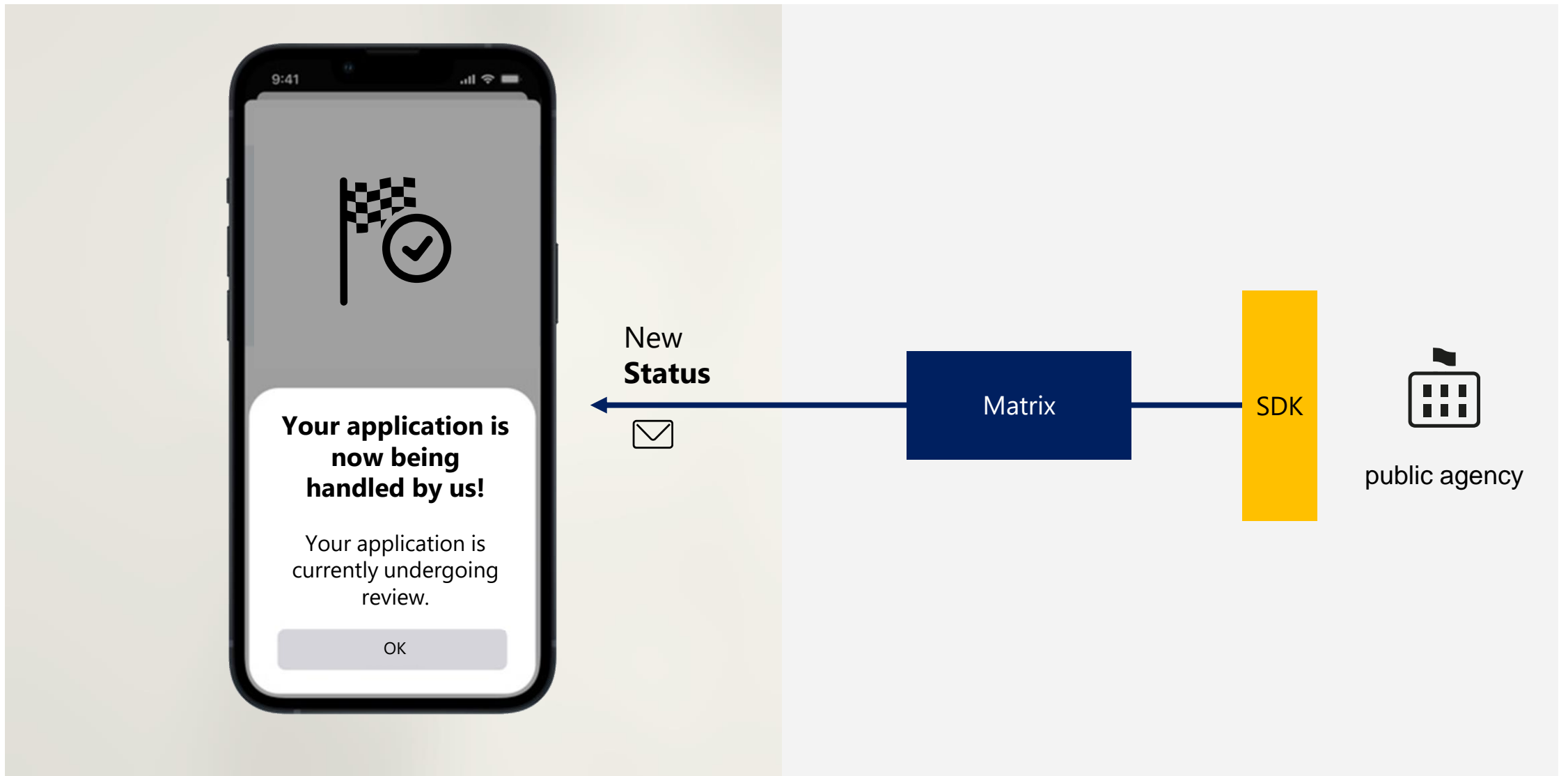
Secure Login



Secure Login



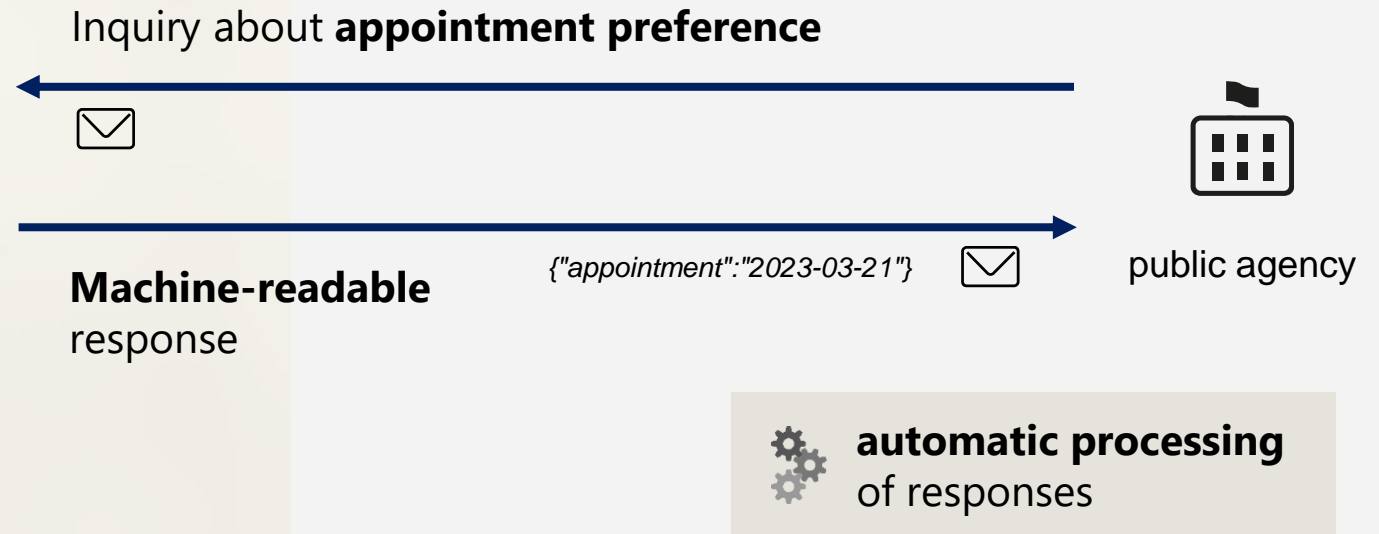
Receive Status Updates...



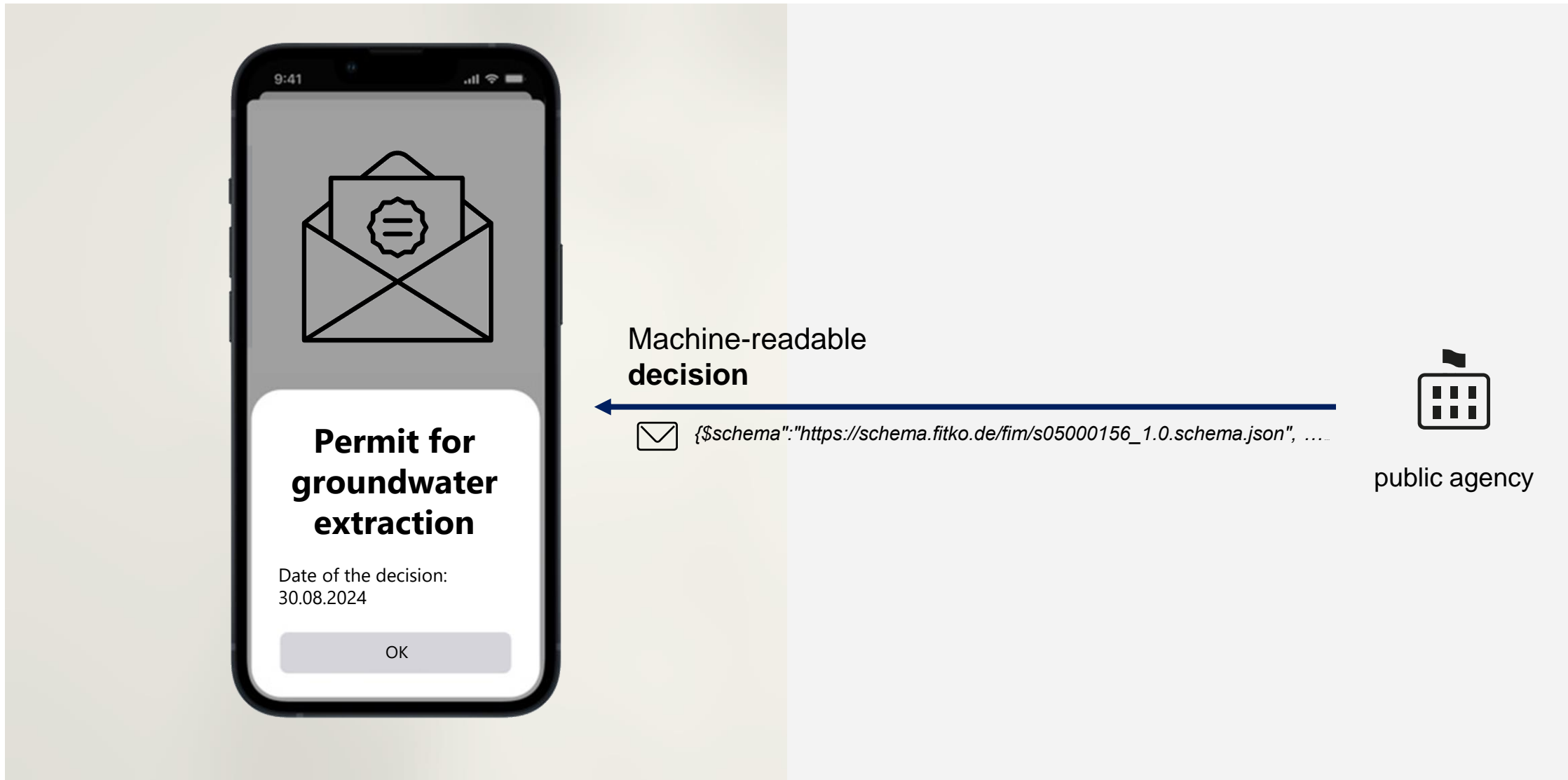
Take Further Actions...



...by answering multiple-choice follow-up questions.

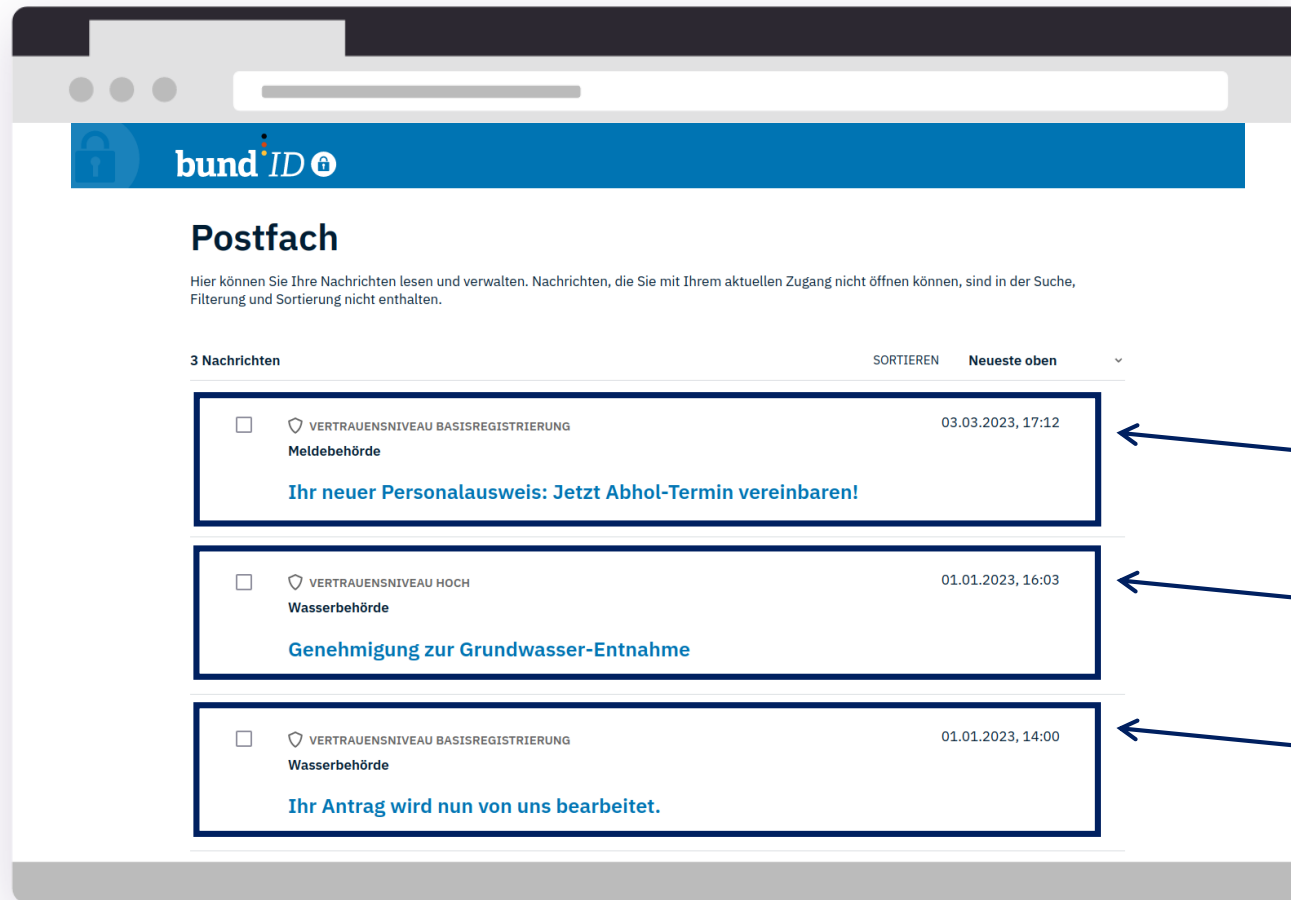


Receive Official Documents



○ A Multi-Channel Approach – powered by Matrix

„Mobile First, but not Mobile Only!“



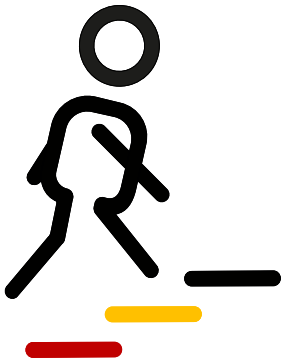
Matrix Room #1

Matrix Room #2

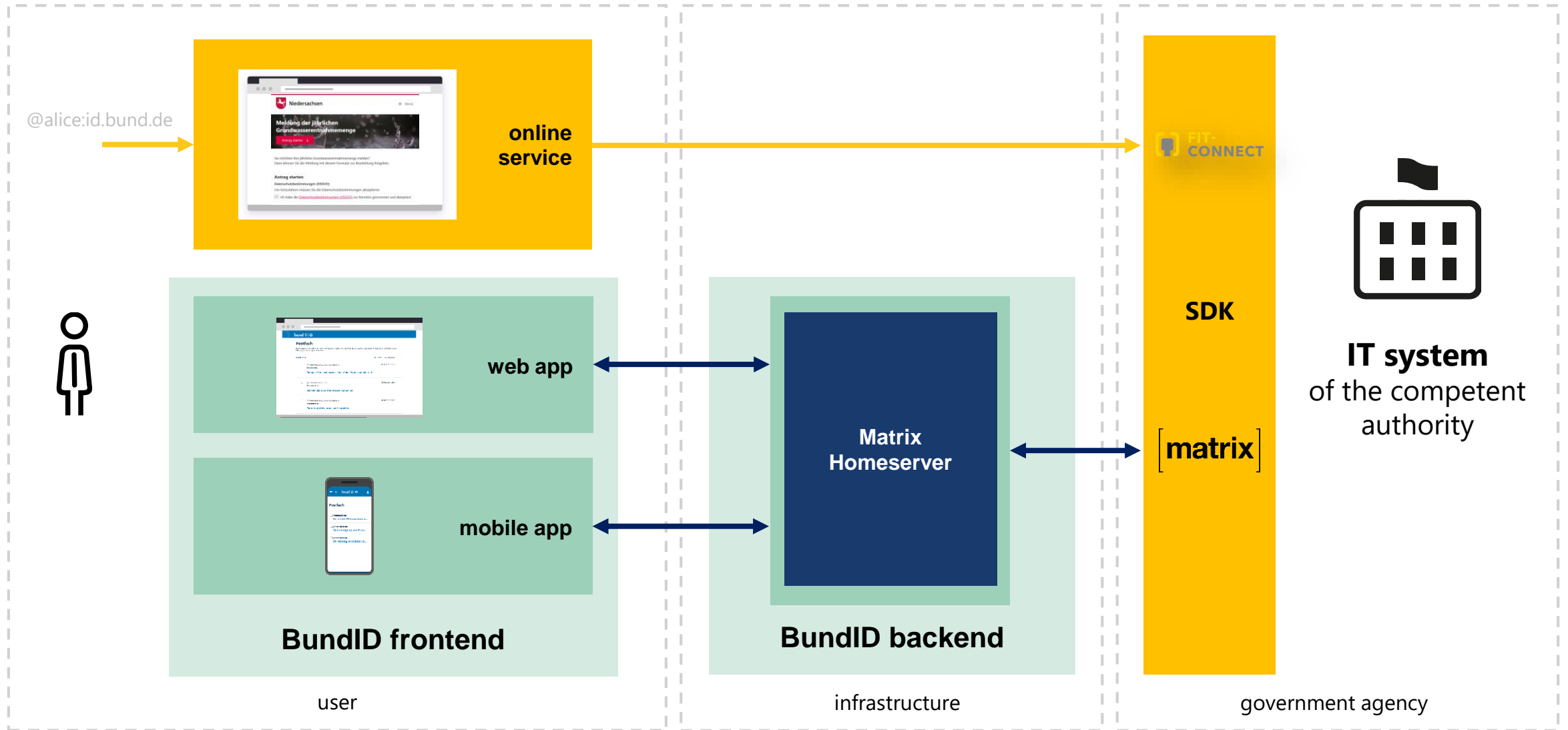
Matrix Room #3



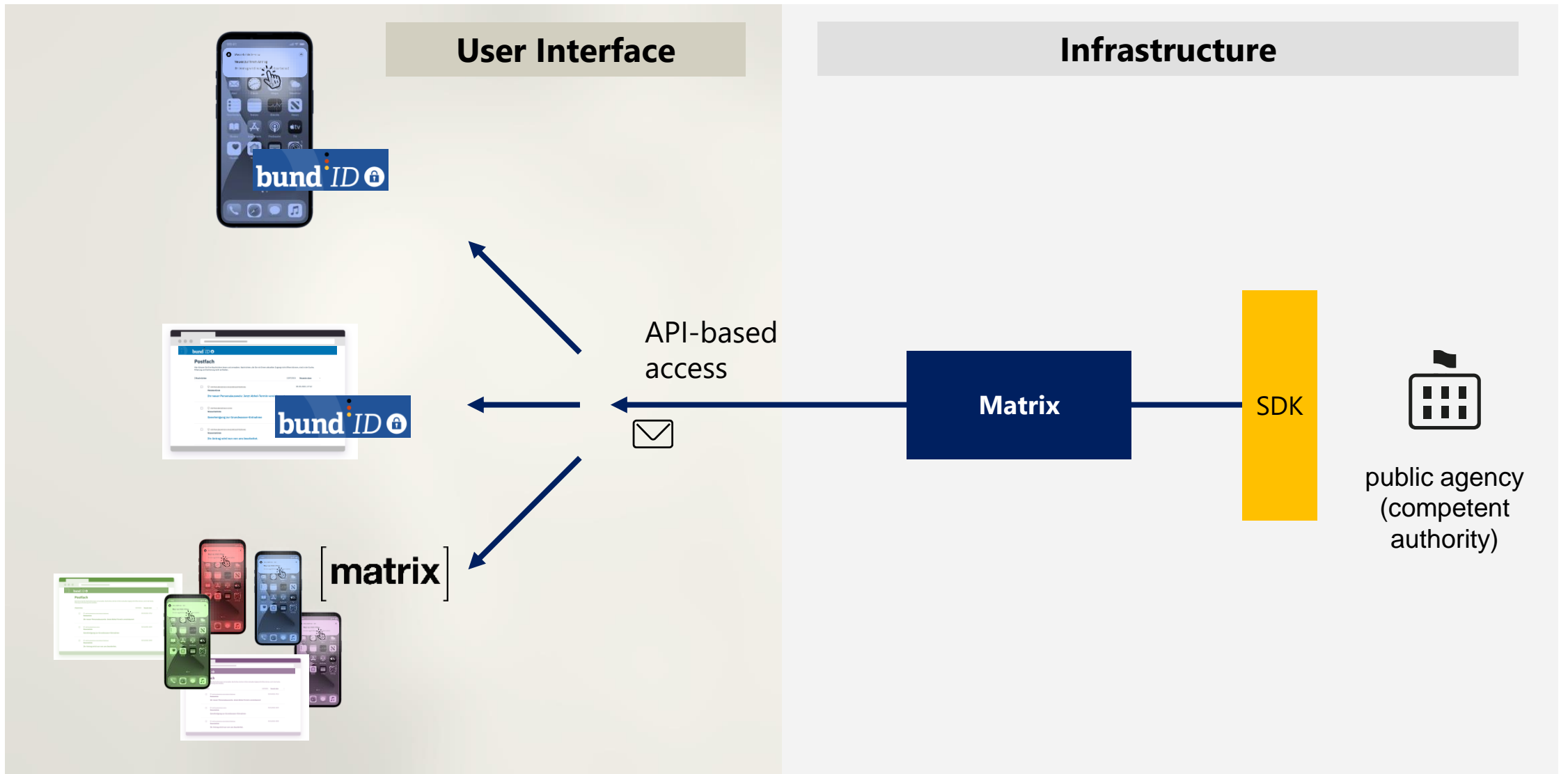
Let's have a look at some high-level software architecture!



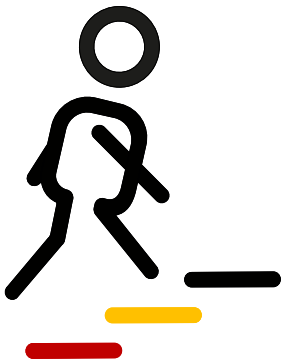
Target Architecture: Matrix-based G2C communication



API-first Approach

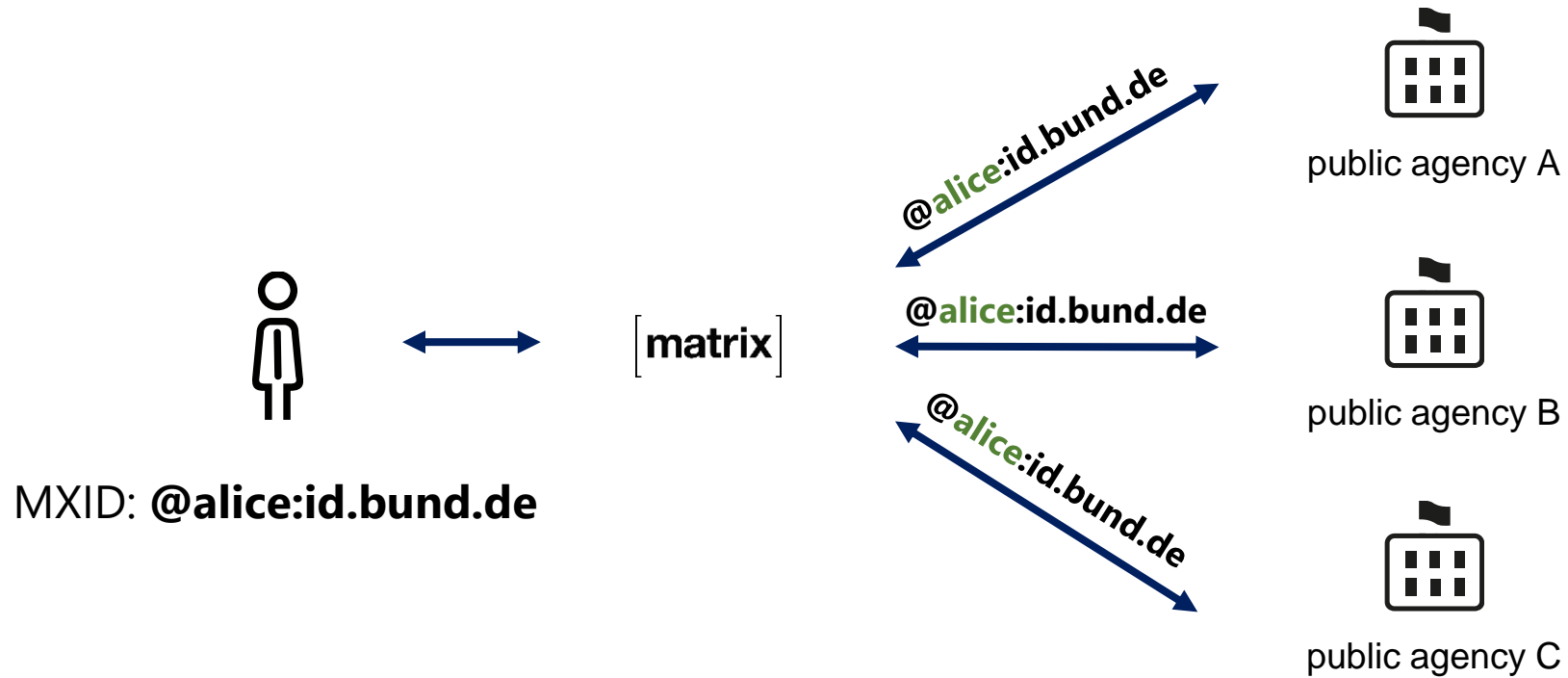


**We want to contribute upstream
to the Matrix standard!**



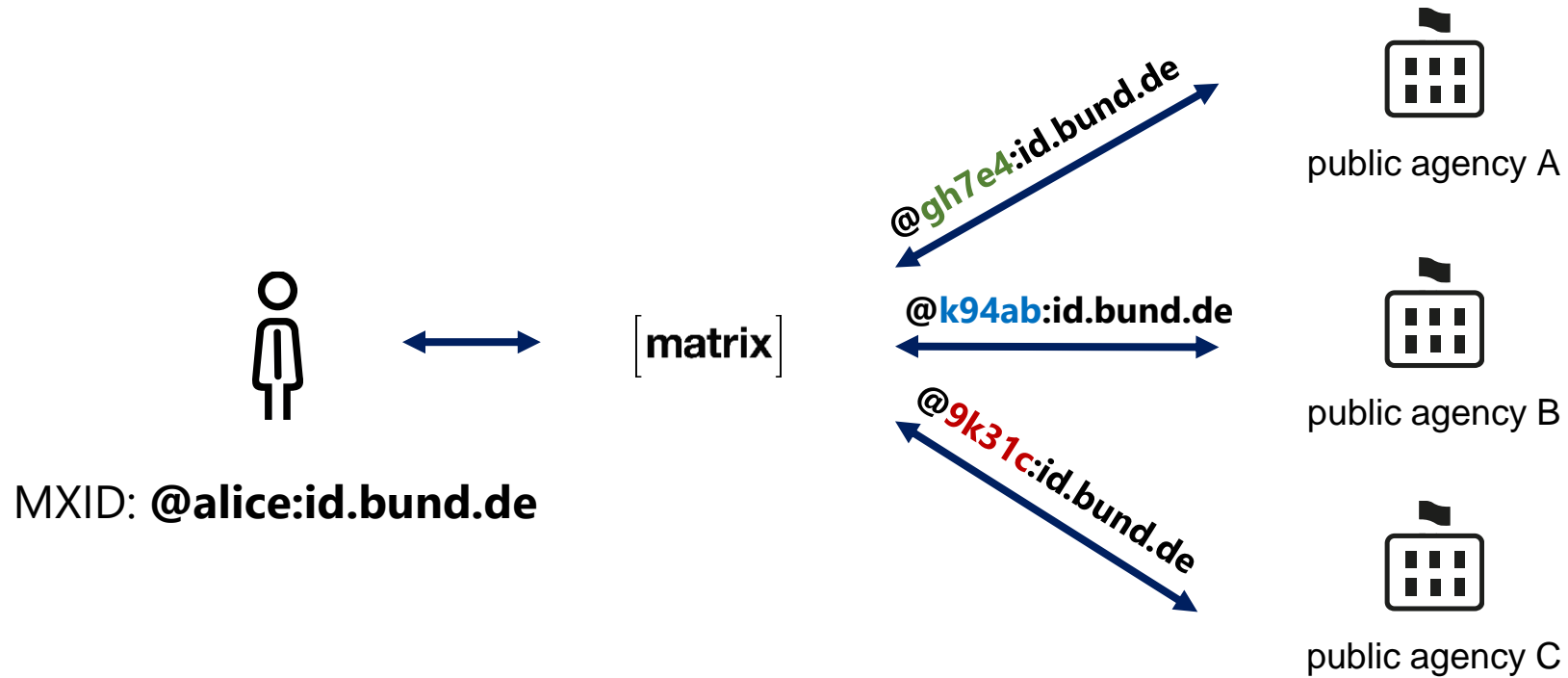
○ Pseudonyms

Pseudonymous identifiers to achieve unlinkability (privacy-by-design)



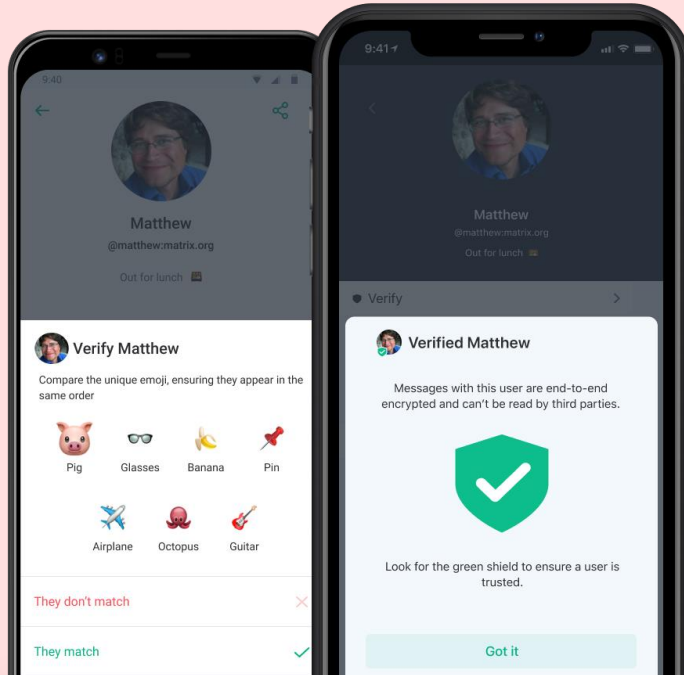
○ Pseudonyms

Pseudonymous identifiers to achieve unlinkability (privacy-by-design)



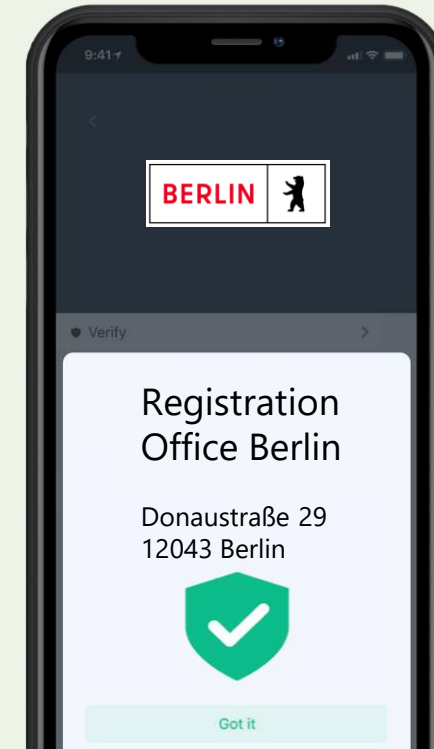
Just like Apple's private email relay service (`9je2xxxxx@privaterelay.appleid.com`), but for Matrix.

X.509-based Authentication (Device Verification)



<https://element.io/features/device-verification>

Not practical for interactions
with authorities 🙄



Automatic verification of government
accounts via X.509 certificates 😊

Machine-Readable Forms

Transmission of machine-readable responses via customizable forms

9:41

Water Conversation Agency

Join

NEW

Dr. Max Mustermann

Please specify the new location: 9:31

Address

City

State/ Province/ Region

ZIP/ Postal Code

Submit

```
{  
  "adress": "Zum Gottschalkhof 3",  
  "city": "Frankfurt am Main",  
  "state": "Hesse",  
  "zip": "60594"  
}
```

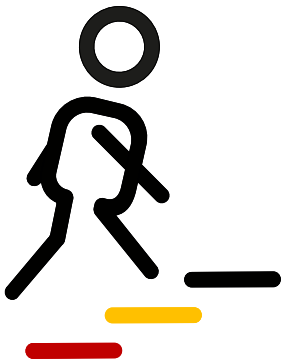
We will soon publish our tender!



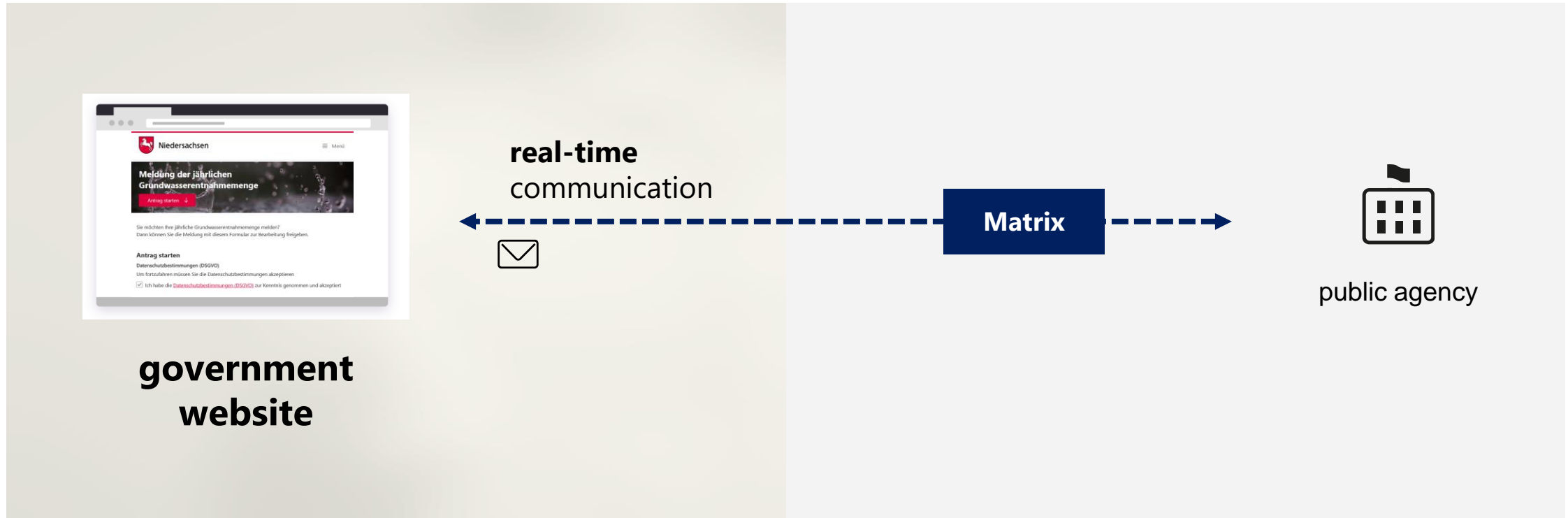


***Other* Potential Applications of Matrix in the Government Sector**

These aren't any official projects or strategies ... yet ;)

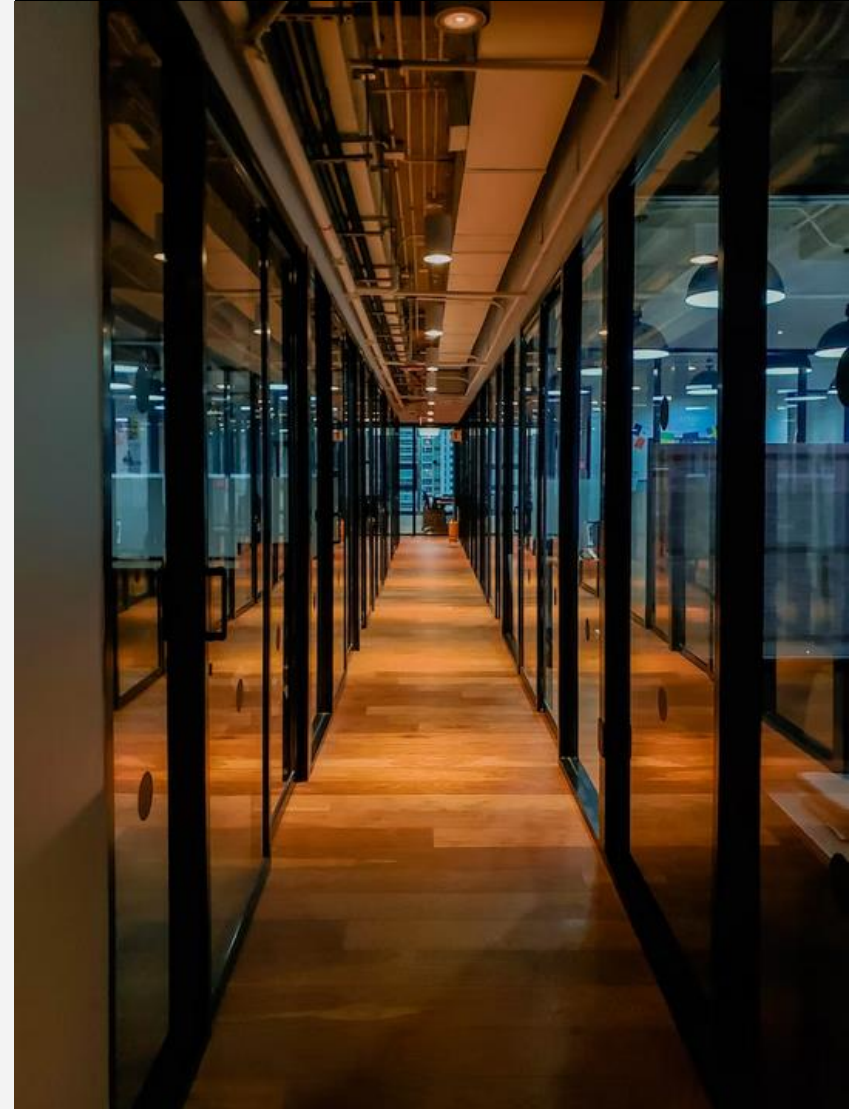


Let's Enhance Online Services with Real-Time Capabilities!



This is not an official project or strategy.

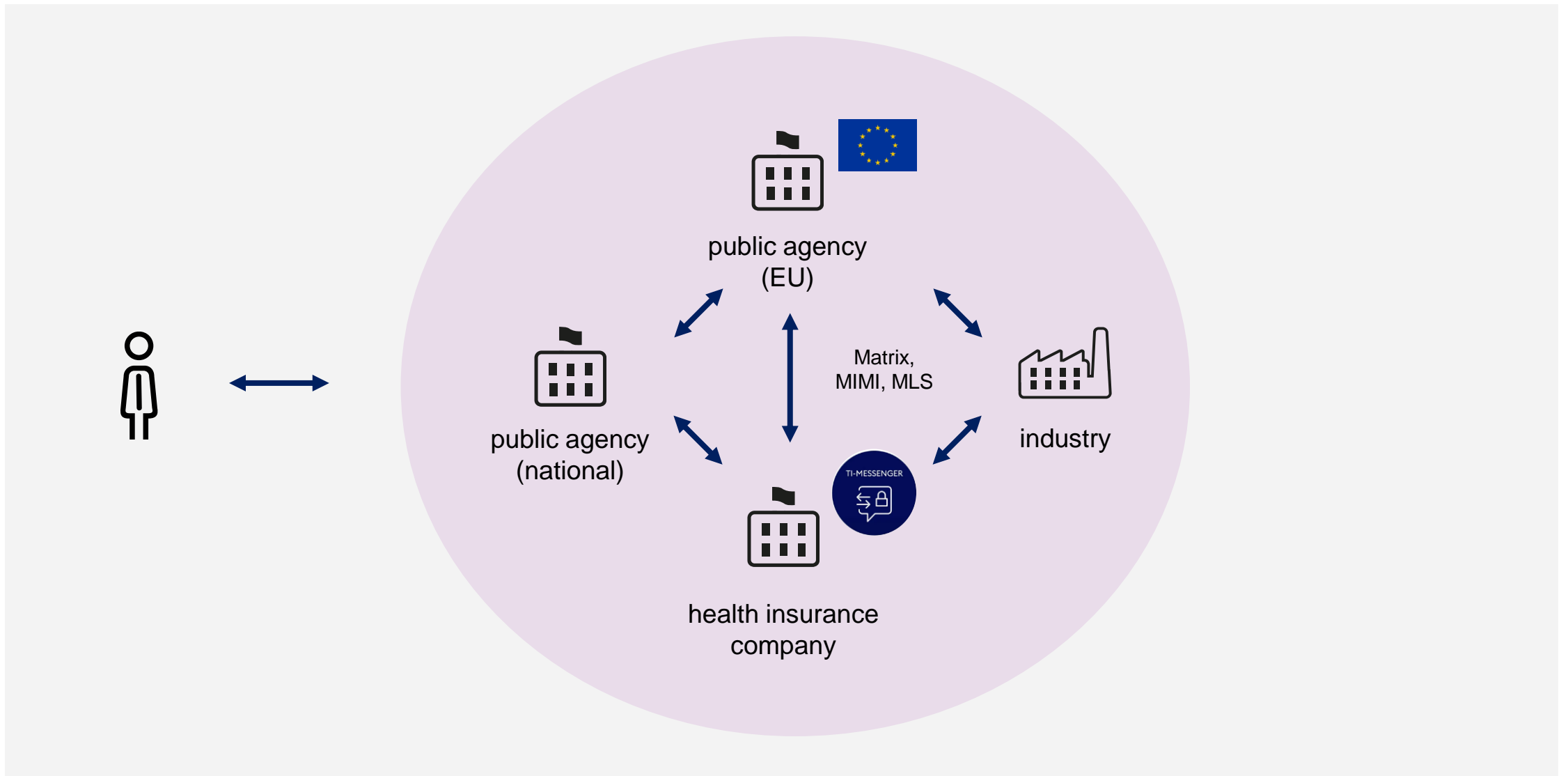
Let's Connect Industry and Government IT Systems!



Bildquelle: <https://unsplash.com/de/fotos/c3tNiAb098l>

This is not an official project or strategy.

Let's Build Open Network for Secure, Decentralised Communication



This is not an official project or strategy.

Let's discuss!

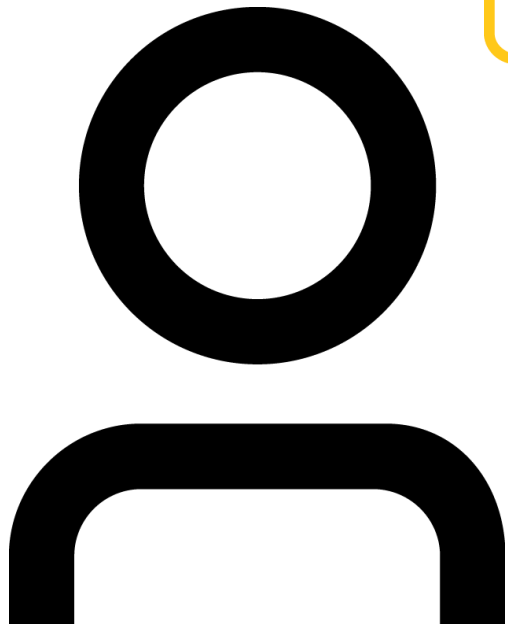
#matrix4gov:matrix.org

Project infos (in German):

<https://gitlab.opencode.de/fitko/g2x-matrix-pilot>

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FITKO

