

Search for information

# Based Meetup – 04.12.2025



**Lessons Learned from  
Building an App to deal with  
bureaucracy**

Phan Van Nguyen Duc / Scalora UG



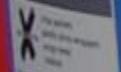
Scalora UG (haftungsbeschränkt)

Plastic Bottles Only  
Please remove the lids

NO

Plastic Bags  
Non-Lids  
Liners  
Food Trays  
Packing Wrappers  
Any Other Bits & Bobs

cans & foil



BROWN  
GLASS  
BOTTLES  
AND JARS  
ONLY

Newspapers, Magazines  
& White Mail

NO

Cardboard  
Yellow Pages  
Thickened Directories  
Plastic Bags  
Packing  
Wrappers  
—  
Other Bits & Bobs

Clear Glass  
Bottles & Jars

NO

Crockery / Plate Glass  
Pyrex / Pots  
Plastic Bags  
Cardboard  
Packaging  
Refuse

Green Glass  
Bottles & Jars

NO

Crockery / Plate Glass  
Pyrex / Pots  
Plastic Bags  
Cardboard  
Packaging  
Refuse

Any Other Bits & Bobs

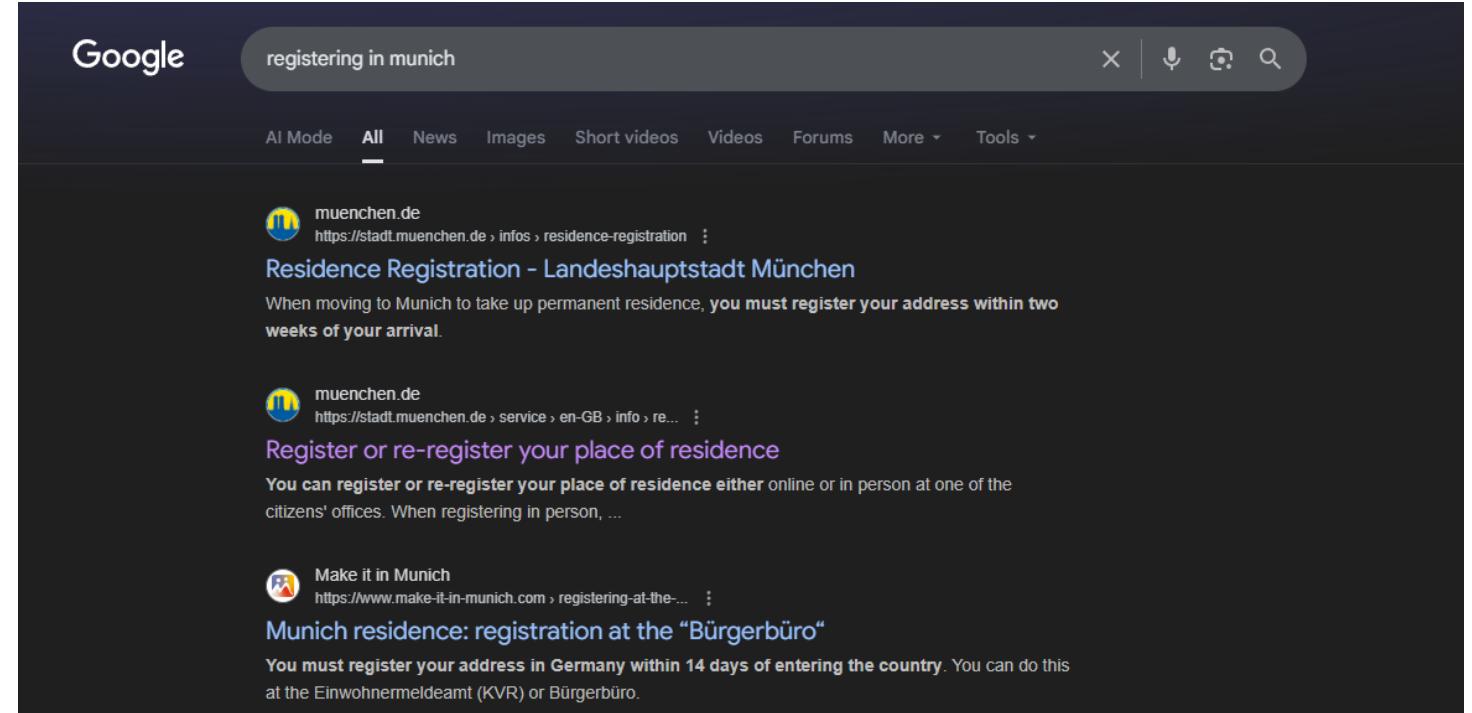
Scalora UG (haftungsbeschränkt)

# Who am I



A nephew helping his uncle

# Search information



A screenshot of a Google search results page. The search query "registering in munich" is entered in the search bar. The results are displayed on a dark-themed interface.

The results are as follows:

- muenchen.de**  
<https://stadt.muenchen.de/infos/residence-registration> ::  
**Residence Registration - Landeshauptstadt München**  
When moving to Munich to take up permanent residence, **you must register your address within two weeks of your arrival.**
- muenchen.de**  
<https://stadt.muenchen.de/service/en-GB/info/re...> ::  
**Register or re-register your place of residence**  
You can **register or re-register your place of residence either** online or in person at one of the citizens' offices. When registering in person, ...
- Make it in Munich**  
[https://www.make-it-in-munich.com/registering-at-the...](https://www.make-it-in-munich.com/registering-at-the-...) ::  
**Munich residence: registration at the “Bürgerbüro”**  
You **must register your address in Germany within 14 days of entering the country**. You can do this at the Einwohnermeldeamt (KVR) or Bürgerbüro.

# Search information

The screenshot shows a web page from the munich.de website. At the top, there's a navigation bar with links like "CityHall", "Events", "Culture, Leisure", "Sights", "Hotels", "Verkehr", "Jobs", and "Living". A search bar on the right says "Enter search term (s)". Below the navigation, a breadcrumb trail shows "Registration data and ID cards > Relocation and data change > Register or re-register your place of residence". The main content area has a title "Register or re-register your place of residence". It includes links for "Simple language", "Read aloud", and "Sign video". A note states: "If you move to Munich, you must register as soon as possible - even if you are re-registering within the city. The law stipulates 14 days." There are buttons for "Register online" and "Contact points". On the right, a sidebar titled "Content of the page" lists items such as "Course description", "Prerequisites", "Required documents", etc. A large black rectangular redaction box covers the left side of the page content.

# Search information

muenchen.de  
Das offizielle Stadtportal

CityHall Events Culture, Leisure Sights Hotels Verkehr Jobs Living

Enter search term (s)

Offizielle Website – Bundesrepublik Deutschland

Eine offizielle Website der Bundesrepublik Deutschland

Bund  
Länder  
Kommunen

Leichte Sprache Deutsche Gebärdensprache



© Senatskanzlei/Christian O. Bruch

## Elektronische Wohnsitzanmeldung

Sind Sie gerade umgezogen und möchten Ihren Wohnsitz als Haupt- oder alleinige Wohnung anmelden? Erledigen Sie das hier online, kostenlos und ohne Behördengang. Sie erhalten eine digitale Meldebestätigung und aktualisieren Ihren Personalausweis, Reisepass oder Ihre eID-Karte. Am einfachsten geht es mit Ihrem Smartphone. Die elektronische Wohnsitzanmeldung ist ein Service der Freien und Hansestadt Hamburg für ganz Deutschland.

Zum Online-Dienst

• die **AUSWEISAPP** mindestens version 2.3.0 ([weitere Informationen zur AUSWEISAPP](#)) für Ihr Smartphone oder Ihren Computer

# Search information

The screenshot shows the official website of the Federal Republic of Germany ([muenchen.de](https://www.muenchen.de)). The top navigation bar includes the logo of the Federal Government of Germany, the text "Offizielle Website – Bundesrepublik Deutschland", a search bar, and links for "Gebärdensprache" and "Leichte Sprache". Below the header, there's a logo for "Bund Länder Kommunen" and a menu with "START" and "ALLE DIENSTE" buttons. The "ALLE DIENSTE" button is highlighted with a blue background. A breadcrumb navigation shows "Start > Alle Dienste". The main content area has a title "Einen neuen Wohnsitz anmelden" (Report a new residence). It explains that users can do this online for free, without visiting a service center, using their digital certificate, ID card, or travel document. It mentions that users can register online in many municipalities across Germany. A call-to-action button "Hier starten" (Start here) is present. To the right, there's a sidebar with sections for "Übersicht" (Overview) and "Welche Voraussetzungen muss ich erfüllen?" (What prerequisites must I fulfill?). The "Übersicht" section lists questions like "Welche Voraussetzungen muss ich erfüllen?", "Worauf muss ich sonst noch achten?", etc. The "Welche Voraussetzungen muss ich erfüllen?" section lists requirements such as a valid ID card with an integrated card reader, an NFC-capable smartphone, or the AusweisApp app version 2.3.0. The background of the page features a vertical brick wall on the left and a car on the right.

## Einen neuen Wohnsitz anmelden

Erledigen Sie das hier online, kostenlos und ohne Behördengang. Sie erhalten eine digitale Meldebestätigung und aktualisieren Ihren Personalausweis, Reisepass oder Ihre eID-Karte. Am einfachsten geht es mit Ihrem Smartphone.

Sie können sich heute schon in **Berlin, Bremen, Hamburg, Rheinland-Pfalz, Schleswig-Holstein sowie in vielen Kommunen in Baden-Württemberg, Bayern, Brandenburg, Hessen, Mecklenburg-Vorpommern, Niedersachsen, Nordrhein-Westfalen, Sachsen, Sachsen-Anhalt und Thüringen** online anmelden. Weitere Informationen zum Service erhalten Sie unter [wohnsitzanmeldung.gov.de](http://wohnsitzanmeldung.gov.de).

Zur Nutzung dieses Dienstes benötigen Sie ein Nutzerkonto mit Online-Ausweis. Sie haben noch kein Nutzerkonto? [Hier registrieren.](#)

> Hier starten

---

### Übersicht

- Welche Voraussetzungen muss ich erfüllen?
- Worauf muss ich sonst noch achten?
- Wie hoch sind die Kosten?
- Wie lange dauert die Bearbeitung durch mich?
- Wie lange dauert die Bearbeitung durch uns?
- Was es sonst noch zu wissen gibt?
- Hinweis
- Information zum Service
- Wer kann mir helfen?
- Fragen zum Thema Hilfe & Datenschutz

### Welche Voraussetzungen muss ich erfüllen?

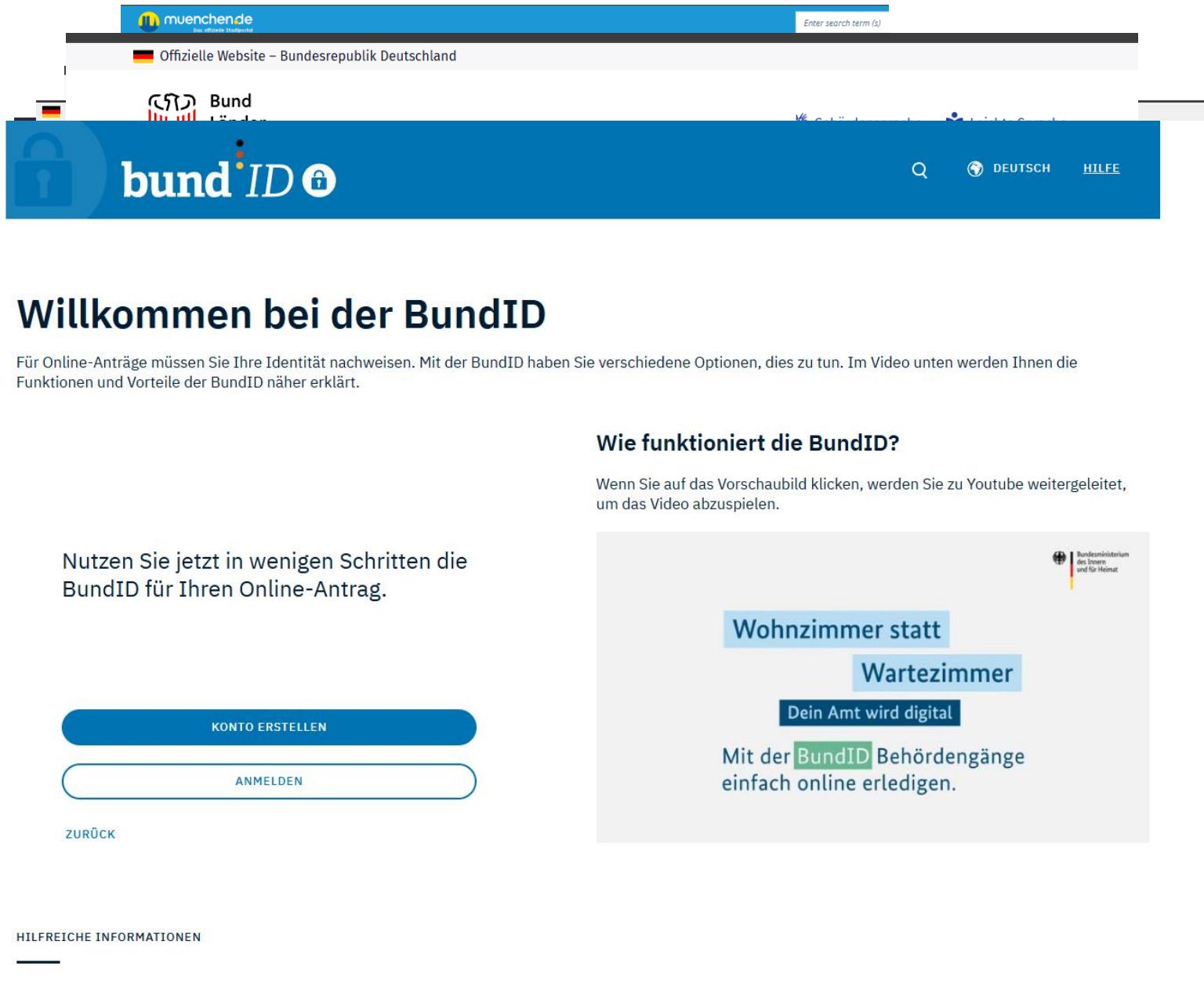
Zur Nutzung dieses Dienstes benötigen Sie ein Nutzerkonto mit Online-Ausweis. Wir verwenden die E-Mail-Adresse aus Ihrem Nutzerkonto für Benachrichtigungen an Sie. [Hier anmelden oder registrieren.](#)

Sie sind innerhalb Deutschlands umgezogen.

Außerdem benötigen Sie:

- einen **gültigen Personalausweis mit freigeschalteter Online-Ausweisfunktion** inklusive PIN ([weitere Informationen zur Online-Ausweisfunktion](#)) oder eine eID-Karte für Bürgerinnen und Bürger der Europäischen Union sowie Angehörige des Europäischen Wirtschaftsraums inklusive PIN ([weitere Informationen zur eID-Karte](#))
- ein **NFC-fähiges Smartphone** (empfohlen) oder ein **USB-Kartenlesegerät** ([weitere Informationen zu kompatiblen Kartenlesern für die Nutzung der Online-Ausweisfunktion](#))
- die **AusweisApp** mindestens Version 2.3.0 ([weitere Informationen zur AusweisApp](#)) für Ihr Smartphone oder Ihren Computer

# Search information



The screenshot shows the official website of the Federal Republic of Germany ([www.bundid.de](https://www.bundid.de)). At the top, there's a navigation bar with the German flag, the text "Bund", "Bundesrepublik Deutschland", and a search bar. Below the header is a large blue banner with the "bund ID" logo, which includes a lock icon and three colored dots (blue, orange, red). To the right of the banner are links for "DEUTSCH" and "HILFE". The main content area has a dark blue background. A large heading "Willkommen bei der BundID" is centered. Below it, a text block explains that users must prove their identity and lists various options and benefits. Two prominent buttons are visible: a blue rounded rectangle labeled "KONTO ERSTELLEN" and a white rounded rectangle with a blue border labeled "ANMELDEN". At the bottom left, a "ZURÜCK" button is shown. On the right side, there's a section titled "Wie funktioniert die BundID?" with a video thumbnail. Below the video, there's a callout box with the text "Wohnzimmer statt Wartezimmer Dein Amt wird digital" and "Mit der **BundID** Behördengänge einfach online erledigen." The box also features the logo of the Federal Ministry of the Interior and for the Homeland.

## Willkommen bei der BundID

Für Online-Anträge müssen Sie Ihre Identität nachweisen. Mit der BundID haben Sie verschiedene Optionen, dies zu tun. Im Video unten werden Ihnen die Funktionen und Vorteile der BundID näher erklärt.

Nutzen Sie jetzt in wenigen Schritten die BundID für Ihren Online-Antrag.

KONTO ERSTELLEN

ANMELDEN

ZURÜCK

HILFREICHE INFORMATIONEN

- [Weiter zum Neuen](#)  
- [Fragen zum Thema Hilfe & Datenschutz](#)

Ausweisfunktion)

- die **AusweisApp** mindestens Version 2.3.0 ([weitere Informationen zur AusweisApp](#)) für Ihr Smartphone oder Ihren Computer

# Who am I



A nephew helping his uncle  
& Data Scientist

# Experience

- **Data Owner User Data**
  - IPPEN DIGITAL GMBH & CO. KG, MUNICH
- **Data Scientist**
  - ACCENTURE TECHNOLOGY SOLUTIONS GMBH, MUNICH
- **NLU Engineer/Chatbot Engineer**
  - HARMAN CONNECTED SERVICES, GARCHING
- **B.Sc. & M. Eng. Microsystems Technology**

Provide the  
Information  
People need  
when they  
need it



So easily usable that I can just put it in his hand be  
done

# Solution 1 - Chatbot

**AI Agent + Web API**

**Techstack:**

- Langchain + OpenAI
- Discord API
- SERP API

 heute um 23:21 Uhr  
! I have a blue card and I lost my job. How long can I stay in Germany without a job

 ImmiBot BOT heute um 23:21 Uhr  
Received your message. Processing...  
As a blue card holder in Germany, if you lose your job, you have three months to find another job and continue to live in Germany. You have not yet reached the eligibility for settlement. The German Blue Card is issued for the duration of your work contract, with a maximum duration of four years. If your contract ends before you are eligible for settlement, you have three months to stay in Germany. If you are unable to find a new job within this time frame, you may need to explore other visa options or consult authorities for further guidance.

 heute um 23:24 Uhr  
! If I lose my job on the blue card, can I receive unemployment benefits while I look for a new job?

 ImmiBot BOT heute um 23:24 Uhr  
Received your message. Processing...  
Yes, blue card holders in Germany can receive unemployment benefits if they lose their job. They need to register as unemployed with the local Agentur within the required period. The blue card is still valid for three months in the event of unemployment and six months for the blue card holder for two years. Contact your local Agentur for more information.

 heute um 23:21 Uhr  
! I have a blue card and I lost my job. How long can I stay in Germany without a job

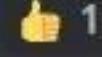
 ImmiBot BOT heute um 23:21 Uhr  
Received your message. Processing...  
As a blue card holder in Germany, if you lose your job, you have three months to find another job and continue to live in Germany. You have not yet reached the eligibility for settlement. The German Blue Card is issued for the duration of your work contract, with a maximum duration of four years. If your contract ends before you are eligible for settlement, you have three months to stay in Germany. If you are unable to find a new job within this time frame, you may need to explore other visa options or consult authorities for further guidance.

 heute um 23:24 Uhr  
! If I lose my job on the blue card, can I receive unemployment benefits while I look for a new job?

 ImmiBot BOT heute um 23:24 Uhr  
Received your message. Processing...  
Yes, blue card holders in Germany can receive unemployment benefits if they lose their job. They need to register as unemployed with the local Agentur within the required period. The blue card is still valid for three months in the event of unemployment and six months for the blue card holder for two years. Contact your local Agentur for more information.

13. November 2023  
 13.11.2023 21:10  
!How long do I need to wait to apply for EU Permanent Residence?

 ImmiBot BOT 13.11.2023 21:10  
Received your message. Processing...  
In order to apply for EU Permanent Residence, you need to have lived in the EU country legally for a continuous period of 5 years. There is no specific waiting period mentioned for applying for EU Permanent Residence. However, it is important to note that the processing time for the application may vary depending on the country. It is recommended to contact the immigration office or embassy of the specific EU country you are interested in for more information on the requirements and processing time.

 1

# Issues - Chatbot

---

- Problems:
  - You only ask about things you know about but that's not enough
    - GEZ, Taxes, health care/health insurance, free education etc...



# Issues - Chatbot

- Problems:
  - You only ask about things you know about but that's not enough
    - GEZ, Taxes, health care/health insurance, free education etc...
  - Relevance measured by the ranking of the search engine, returns the most SEO optimised content not the most useful content
  - Most of the time it's the same questions

→ Solution:

- ➔ App with reliable sources and some other things like to do lists and translation feature

The image displays two side-by-side screenshots of the Scalora UG website. Both screenshots show a header featuring a passport and a German residence card.

**Naturalization Services:**

- Years of experience in Immigration law**
- Complete handling by a licensed lawyer**
- Specialized in Naturalization in Germany**

**One-time** **2.490,00€** One-off payment

**2 months** **1.249,00€ /month** Installment payment for 2 months

**12 months** **249,00€ /month** Installment payment for 12 months

**Add to shopping cart**

**Further information**

**Payment Options:** PayPal, Mastercard, Visa, SEPA

All prices incl. 19% VAT.

**Google** ★★★★★ 4,9/5 - 401 reviews

**Settlement permit Services:**

- Years of experience in Immigration law**
- Complete handling by a licensed lawyer**
- Specialized in permanent residence rights**

**One-time** **2.490,00€** One-off payment

**2 months** **1.249,00€ /month** Installment payment for 2 months

**12 months** **249,00€ /month** Installment payment for 12 months

**Add to shopping cart**

**Further information**

**Payment Options:** PayPal, Mastercard, Visa, SEPA

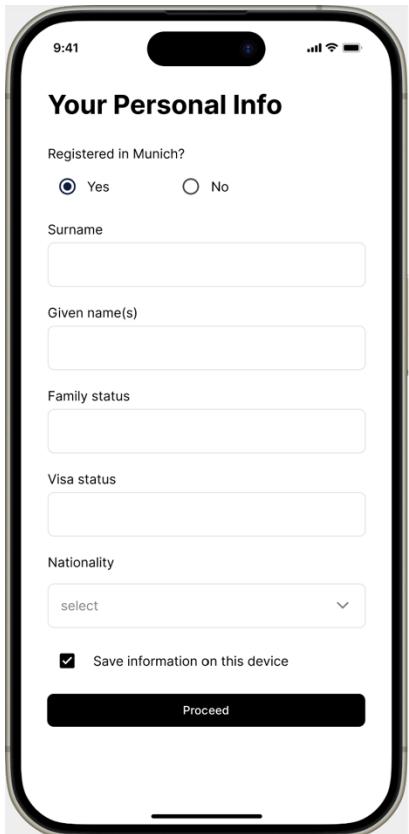
All prices incl. 19% VAT.

**Google** ★★★★★ 4,9/5 - 401 reviews

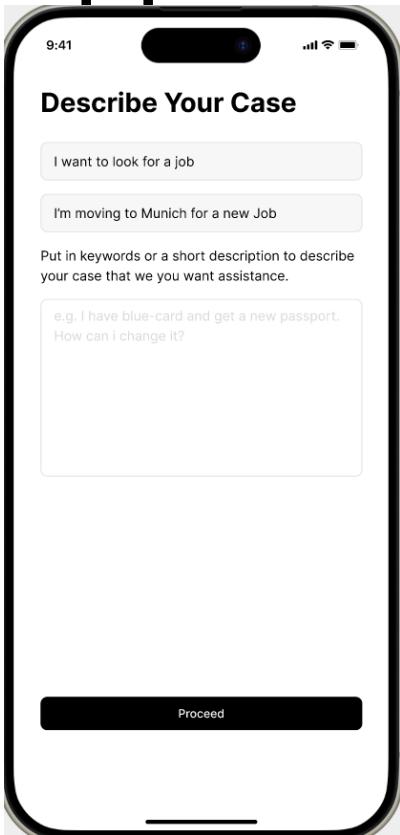
# New solution

- 
- Lets make an app
    - With selected sources
    - Improved information retrieval system, RAG + Knowledge graph

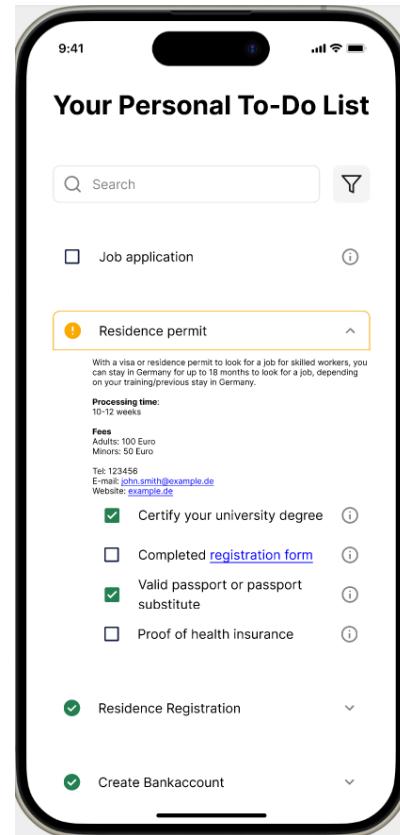
# Solution 2 - App



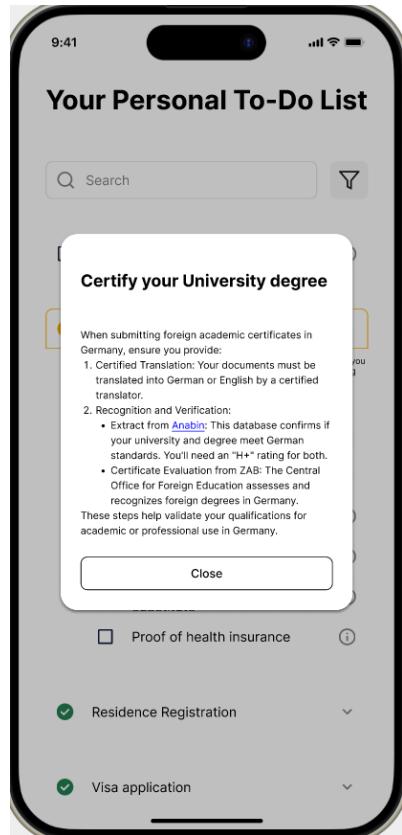
Sensible Daten sicher lokal  
gespeichert



Einfache Bedienung



Personalisierte To-Do Liste

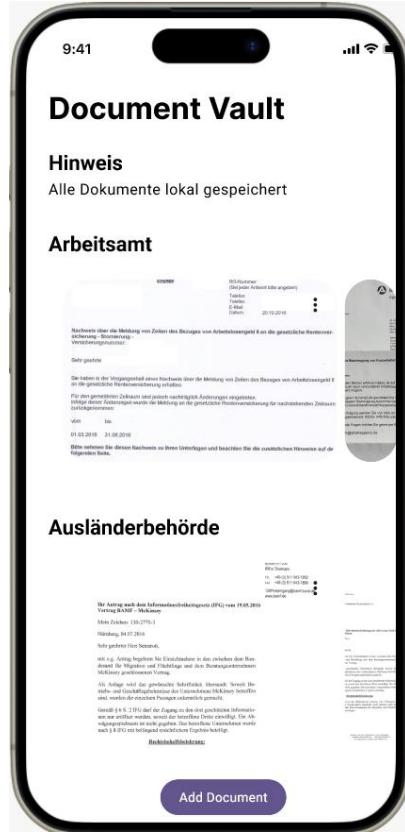


Informationen zur richtigen  
Zeit am richtigen Ort

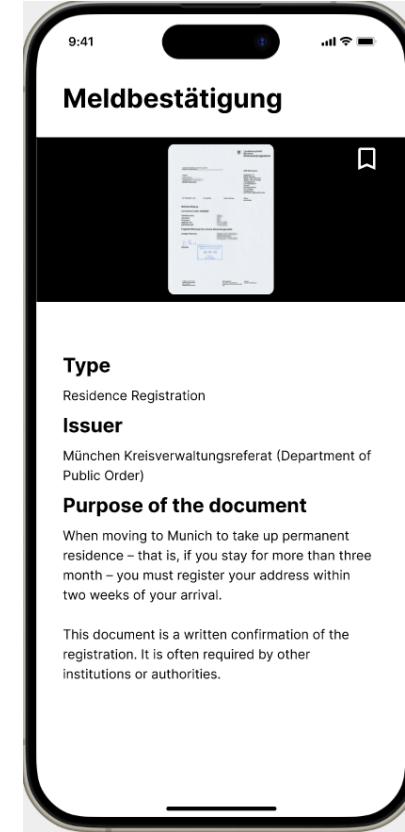
# Solution 2 - App



Hilfe beim alltäglichen  
behördlichen Briefwechsel



Einfache Organisation aller  
Dokumente in einer App



Integrierte Übersetzungs-  
funktion und Erklärung

# Problems

RAG:

- Retrieving the right information chunks

# Vector similarities

---

- Model: text-embedding-ada-002
- Cosine-similarity

---

---

## SEMANTIC SIMILARITY RESULTS

---

---

### Reference Text:

You do not need an entry visa in order to study in Germany if you are a citizen of an EU country, Iceland, Liechtenstein, Norway or Switzerland. You do not need an entry visa if you come from Australia, Andorra, Brazil, El Salvador, Honduras, Israel, Japan, Canada, Monaco, the Republic of Korea, New Zealand, San Marino, the United Kingdom of Great Britain and Northern Ireland or the United States of America either.

---

---

	Nationality	Query	Similarity Score
0	Australian	I'm Australian and I want to study in Germany	0.836554
1	American	I'm American and I want to study in Germany	0.823242
2	Vietnamese	I'm Vietnamese and I want to study in Germany	0.815944
3	Japanese	I'm Japanese and I want to study in Germany	0.815351
4	Korean	I'm Korean and I want to study in Germany	0.813484

# Problems

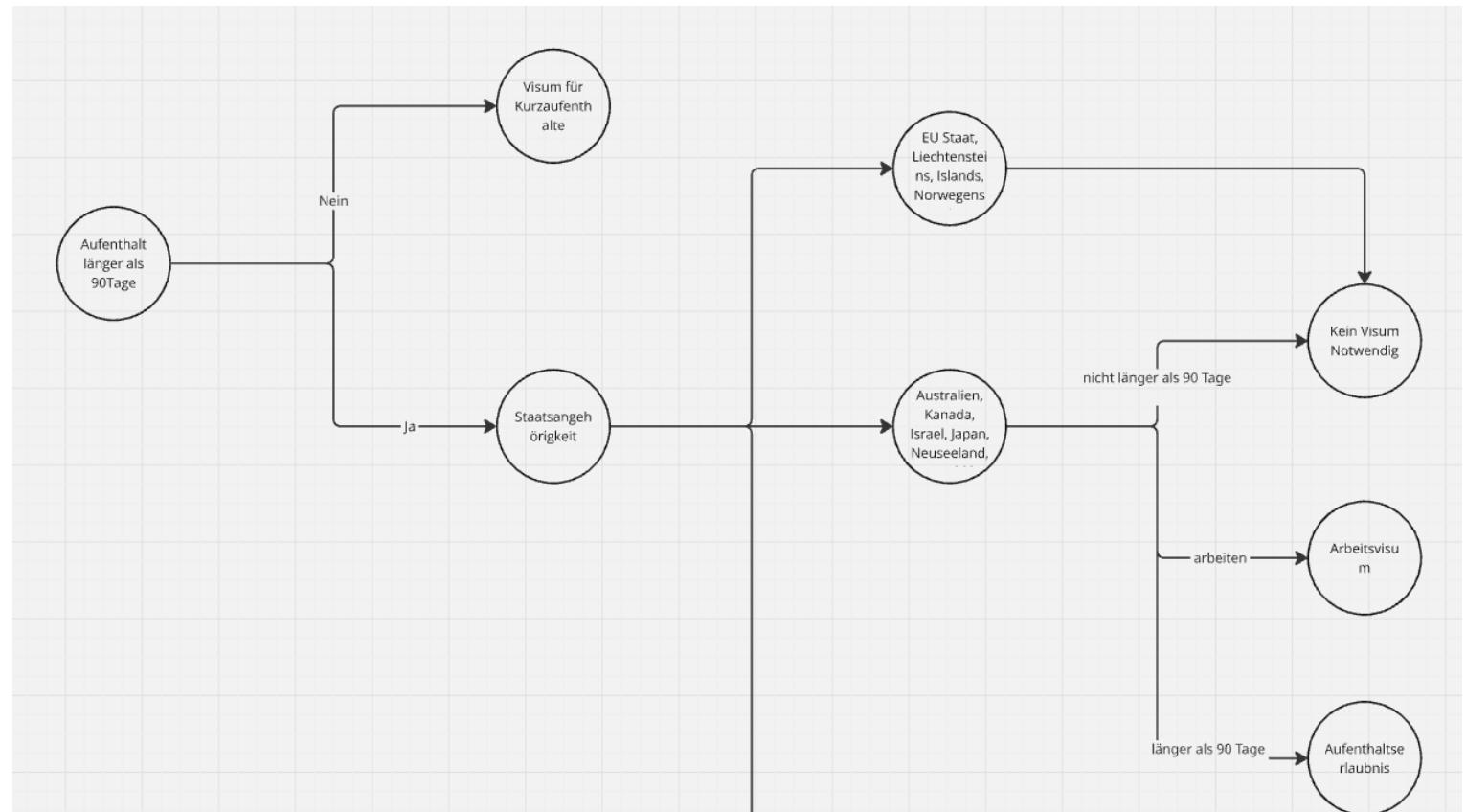
RAG:

- Semantic vectors are too similar
- Chunking of the documents if there are lot of cross references, e.g. <https://www.make-it-in-germany.com/en/visa-residence/skilled-immigration-act>

-> Knowledge Graph to the rescue, it should provide related information

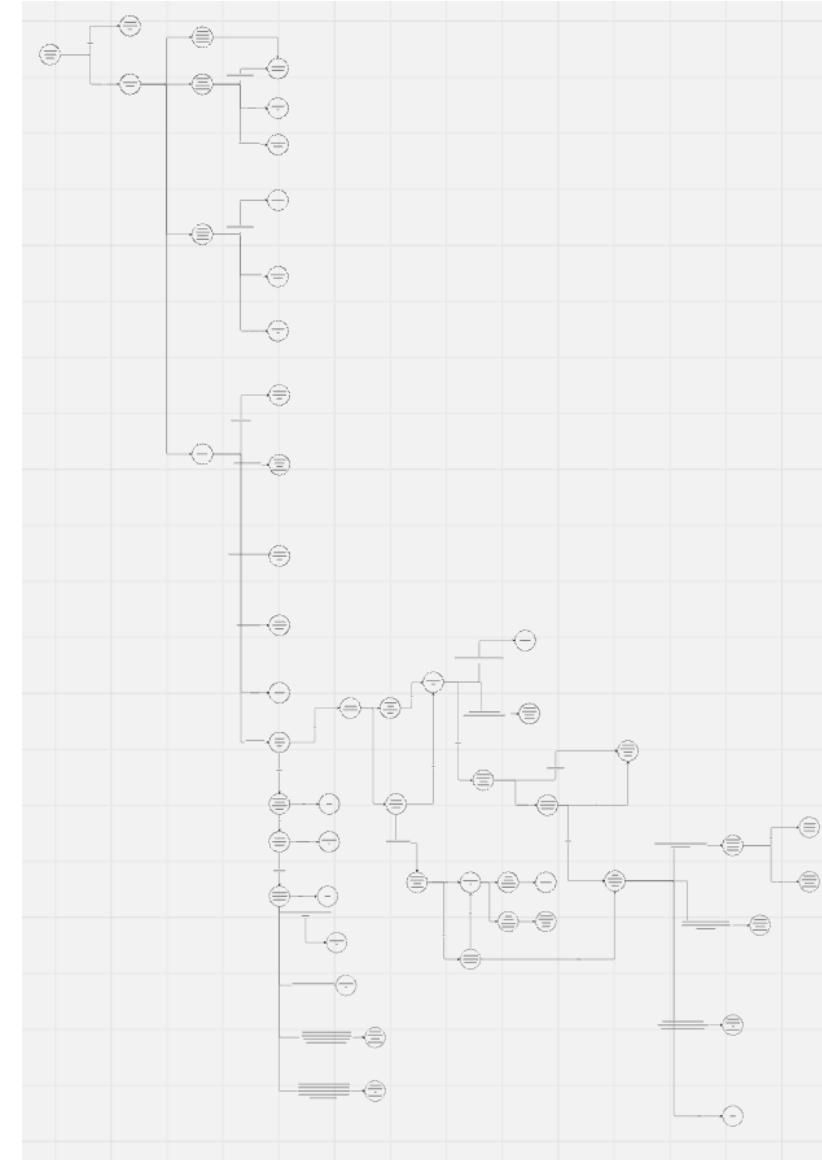
# Knowledge Graph – Modeling the Process

---



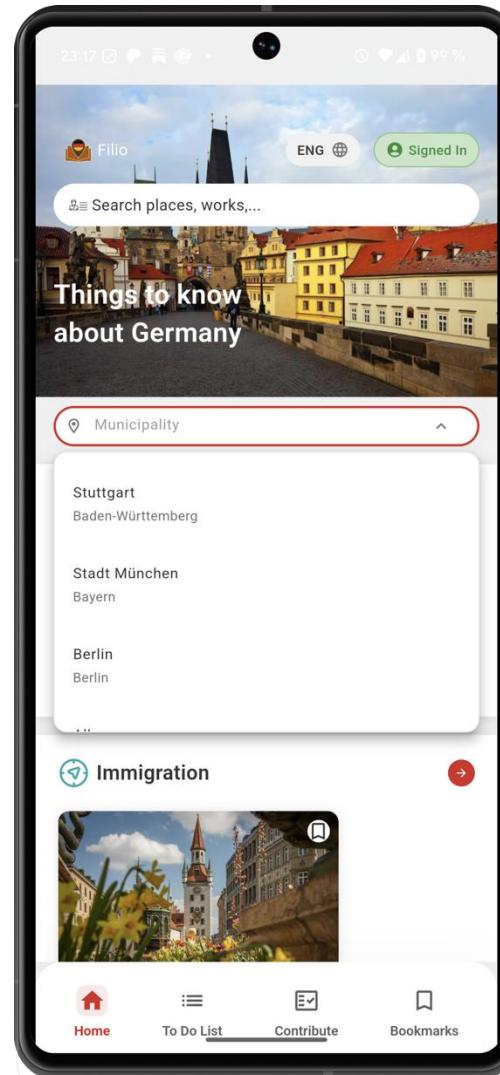
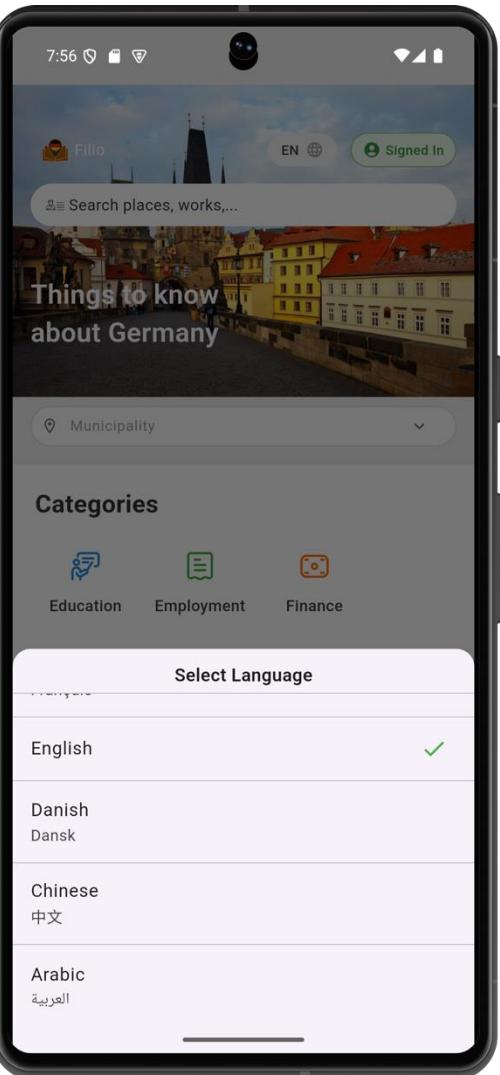
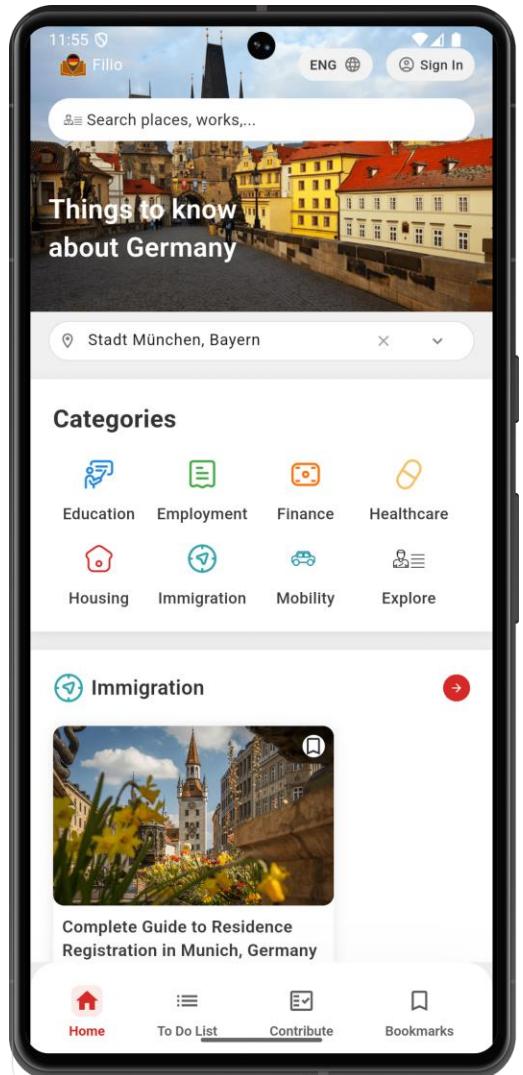
# Knowledge Graph – Modeling the Process

---



# Knowledge Graph – Problems

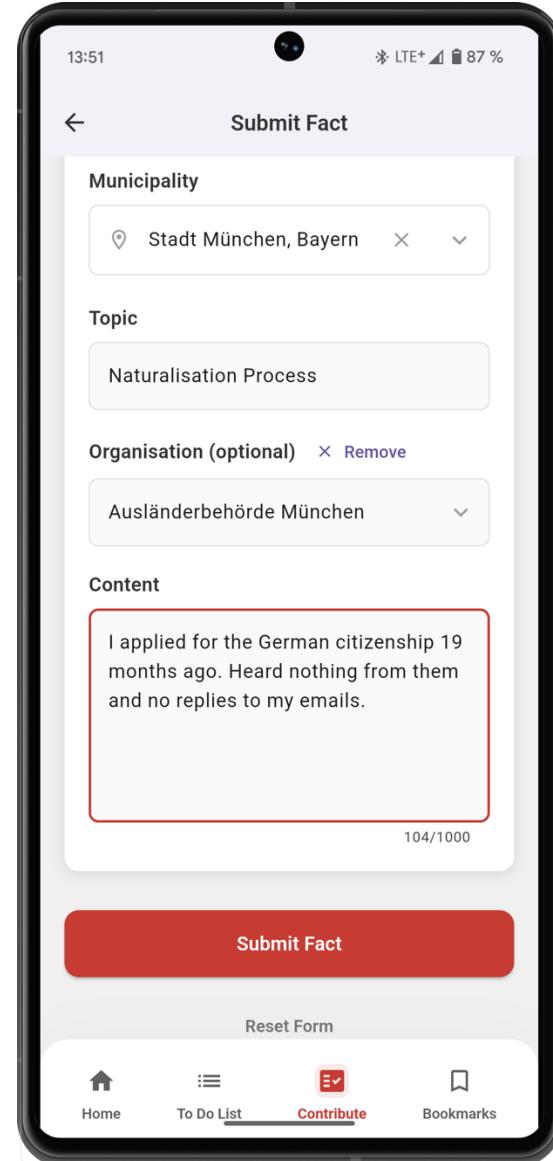
- 
- Outcome is not deterministic, different processing time, required documents and decisions
  - It depends on the state, city and the clerk processing your documents



# Crowd sourced information

---

Information from people  
who walked in your shoes



# Real submission

## Einbürgerung (2023–2025)

- **12/2023 – Eligibility & Application**
- Quick online eligibility test ([muenchen.de](https://muenchen.de))  
→ *Eligible to apply*
- Application submitted via BayernPortal,  
€255 fee paid
- **Expected:** Kundennummer + case officer  
contact
- **Reality:** Never received → *Mistake 1: I  
didn't notice this was missing*

# Real submission

- **2023–2025 – 19 Months of Silence**
- No communication at all
- Only way to reach them: Kontaktformular (requires Kundennummer → I didn't have it)
- Automated replies but **no human response**

# Real submission

- **10/2025 – First Breakthrough**
- Learned from friends: applications can stall for 19–25 months
- Tried calling the *Servicestelle* → many attempts until someone confirmed:  
**“Your application is in Bearbeitung”**
- Finally received my **Kundennummer**

# Real submission

- **11/2025 – Finally Reached My Case Officer**
- Sent another Kontaktformular (now with Kundennummer)
- Called again → told to email the generic address
- Then: personal Gmail suddenly gets a reply from my case officer
  - He had emailed me on **01.07.2025**
  - I never received anything in the BayernPortal inbox
  - He will send documents by post

# Real submission

- **12/11/2025 – Documents Arrive**  
Includes: reminder letter, copy of the missing email, declarations, update checklist, employer confirmation.
- **14/11/2025 – Resolution**
  - Sent everything back by email
  - Officer confirms **BayernPortal messages often fail**
  - Their fallback: if no reply for months  
→ **send a “reminder” by post**

- Dashboard
- Generate Article
- Sources
- Facts
- Purposes
- Articles
- Analytics

## Article Purposes

Search purposes...

residence permit in Germany  
0 facts linked

Guide on what do after arriving in Germany  
0 facts linked

Guide on finding accommodation in Germany  
0 facts linked

Guide on obtaining German citizenship  
0 facts linked

Tips and resources for job seekers in Germany  
0 facts linked

Introduction to living in Germany, covering culture, language, and daily life  
0 facts linked

Guide on health insurance and other necessary insurances in Germany  
0 facts linked

## Workspace

### Facts & Sources

Help immigrants understand the Health Insurance System in Germany. Keep the language easy to understand.

0 facts linked

Search facts...

Privately insured people must initially pay their medical bills themselves and then receive a refund from their insurance company.

Children are not covered by private health insurance free of charge and require separate premiums.

Once you have opted for private health insurance, it is difficult to switch to statutory health insurance.

Private health insurance premiums increase with age.

Health insurance is required even if you are not employed.

Children, spouses and registered partners can usually be insured together through family insurance with statutory health insurance.

## Generate Article

Article Header

Description (Optional)

Purpose selected

20 facts linked

**Generate Article**

### Linked Facts Preview

These facts will be included in your generated article.

1. Fact 49

From sources

2. Fact 50

From sources

3. Fact 51

From sources

4. Fact 52

From sources

5. Fact 53

From sources

6. Fact 54

From sources

7. Fact 55

From sources

8. Fact 56

Thanks to  
my  
supporters





**Madeline Yin**

Data Engineer



**Denis Ott**

DevOps Engineer



**Zhe Wang**

Dialog Engineer



**Vijay Ravichandran**

Ex. CTO - AI Speech



**Firas Esbai**

Machine Learning & Data Engineer



**Hussein Elwy**

Data Engineer



**Sahithi Akella**

Tech Lead - Chatbot Development



**Mihaela Coman**

Product Owner – Augmented Reality



**Natalia Sherstneva**

NLP Engineer



**Dr. Naveen Desiraju**

Projekt Manager

---

# Special Thanks



**Roman Denysenko**

QA Software Engineer

<https://www.linkedin.com/in/roman-denysenko/>



**Daniel Keddi**

Regierungspräsidium Karlsruhe  
im Bereich  
Flüchtlingsangelegenheiten/Asyl

If you have  
any content,  
write me  
please



**Info@scalora.ai**