

# SEBA Lab WS2022/23

Felix Hoops, Munich, 18th of October 2022

Chair of Software Engineering for Business Information Systems (sebis)  
Faculty of Informatics  
Technische Universität München  
[www.matthes.in.tum.de](http://www.matthes.in.tum.de)



# Language Interface for Semantic Search Assistance (LISSA)

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Advisor / Product Owner: Phillip Schneider



**LISSA Frontend**

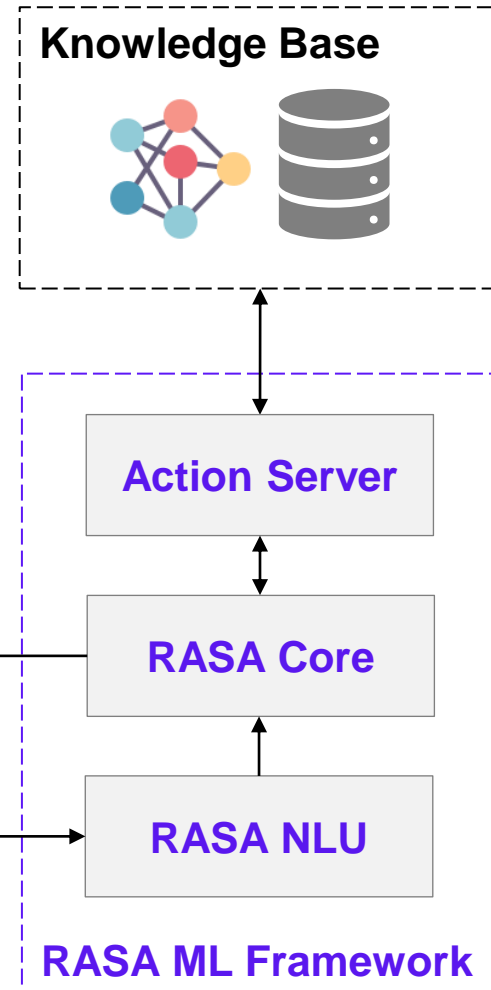
Hi, how can I help you?

Are there any papers on knowledge graphs in the latest ACL proceedings?

Yes, I found 8 papers from ACL '22 that could be relevant. Here are the two most-cited ones:

1. KG-FiD: Infusing Knowledge Graph in Fusion-in-Decoder for Open-Domain Question Answering (Yu et al.)
2. Sequence-to-Sequence Knowledge Graph Completion and Question Answering (Saxena et al.) [Show more information](#)

Type a message ...



**Outcome:** Conversational interface that provides:

- ✓ Assistance for semantic search
- ✓ Intelligent dialog management
- ✓ Retrieval of structured and unstructured data

## Technologies



Flask



Hugging Face



haystack  
by deepset



**Pitch:** The goal of the project is to develop a conversational interface that supports semantic search for unstructured as well as structured data in scientific knowledge bases.

## Basic functional requirements

- Interactive navigation through data source by means of a simple, text-based dialog interface
- Information retrieval of structured as well as unstructured data records
- Intelligent NLU and dialog management for enabling information-providing conversations

## Basic non-functional requirements

- Self-explanatory UI and engaging UX & dialog design
- Modular and reusable components
- Efficient query processing in realtime
- Scalable system architecture

## Expected prior knowledge

- Good knowledge of Python programming language
- Ability to manage and query different data structures
- Strong interest in NLP and at least basic NLP knowledge

## Bonus

- Gain knowledge about state-of-the-art NLP techniques
- Learn how to engineer conversational interfaces with widely-used open-source tool stacks
- Get guidance and feedback from experienced industry professionals

## Contact

[phillip.schneider@tum.de](mailto:phillip.schneider@tum.de)

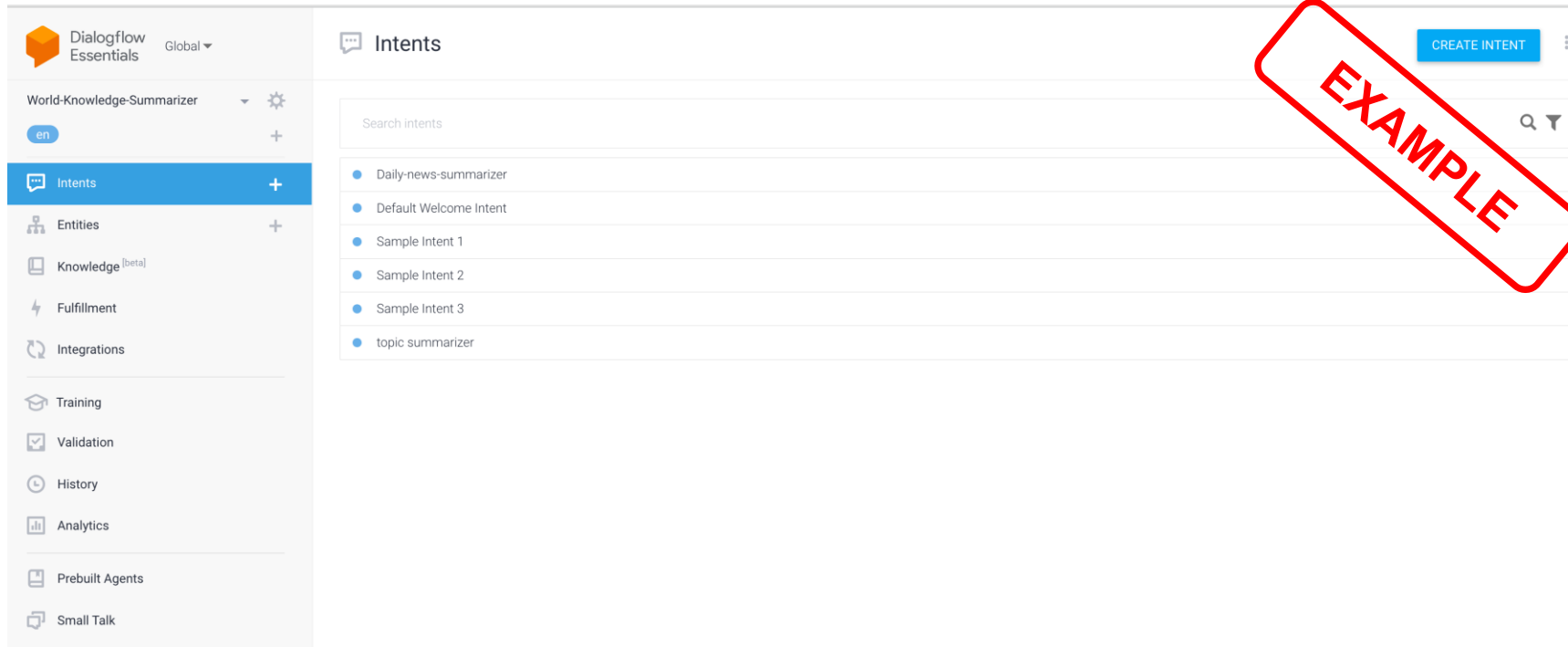
# WorkSumm – World Knowledge Summarization Skill for chatbot

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Advisor / Product Owner: Anum Afzal



# WorkSumm – World Knowledge Summarization Skill for chatbot



**Outcome:** A chatbot that supports:

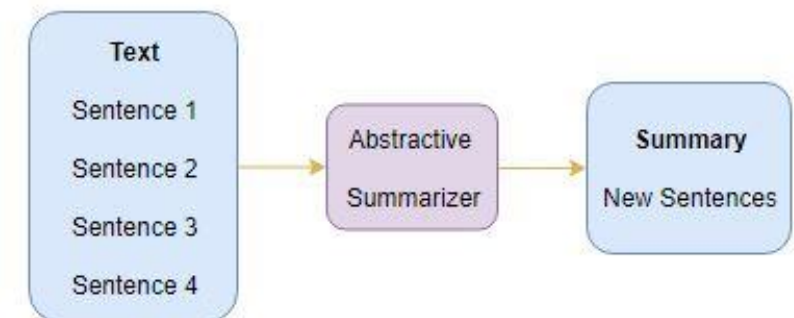
- ✓ Understanding of user utterance.
- ✓ Retrieval of relevant data for the user prompt.
- ✓ Summarization of the world knowledge into concise text for the chatbot

**Technologies:**



```
summarize(  
    "US-based private equity firm General Atlantic is in talks to invest about \\  
    $850 million to $950 million in Reliance Industries' digital unit Jio \\  
    Platforms, the Bloomberg reported. Saudi Arabia's $320 billion sovereign \\  
    wealth fund is reportedly also exploring a potential investment in the \\  
    Mukesh Ambani-led company. The 'Public Investment Fund' is looking to \\  
    acquire a minority stake in Jio Platforms."  
)
```

'reliance group buys stake in net profit for 250 bn'



**Pitch:** The goal of the project is to create a world knowledge skill for a chatbot. It involves using Natural Language Processing algorithms to summarize a topic-related world knowledge into a concise response to be used by the chatbot.

## Basic functional requirements:

- Creation of a world knowledge skill for a chatbot.
- Analysis and Pre-processing of the dataset.
- Evaluation of state-of-the-art Abstractive Text Summarization models for large documents.
- Implementation of the best-performing Text Summarization model inside the world knowledge skill.

## Basic non-functional requirements:

- The summarization skill is able to generate concise summaries of a topic.
- Implementation of NLG evaluation metrics to assess the quality of the summaries.
- Implementation of fallback mechanism for Intents

## Expected prior knowledge

- Experience in Python Programming Language.
- Knowledge in Natural Language Processing (NLP) and Deep Learning (DL) Methodologies.
- Basic Knowledge in Hugging Face, PyTorch or TensorFlow
- Experience in Conversational AI and Rasa [optional]

## Contact:

[anum.afzal@tum.de](mailto:anum.afzal@tum.de)



# Fact-Checking Tool

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Advisor / Product Owner: Juraj Vladika





EXAMPLE

Input a claim

Past Claims

Analytics

How It Works

Outcome: App that supports:

- ✓ Document search
- ✓ Evidence retrieval
- ✓ Realtime claim verification

Technologies:



retrieve evidence

Claim: Coffee helps increase lifespan

People who drink up to eight **cups of coffee** per day may slightly **lower their risk of early death** compared with non-drinkers, according to a large new study. And it doesn't appear to matter if the coffee is caffeinated or decaf, brewed or instant. The study analyzed data from about half a million Britons and found that the **more coffee** people drank, the **lower their risk of dying** during the 10-year study period. "People think of caffeine, but it's likely that some of the most beneficial compounds are not the caffeine." (...)



supported

source: [harvard.edu](http://harvard.edu)

Claim: Koalas have gone extinct in 2019 after bushfires hit Australia.

Over the weekend, **erroneous declarations** that the animals have lost most of their habitat and are "functionally **extinct**" made the rounds in headlines and on social media. **Koalas** are considered vulnerable to extinction—just a step above endangered—and reports indicate that many of them have been found dead so far in fire-devastated zones. But, experts say, we are **not looking at the death of a species**—yet. "We're not going to see **koalas** go extinct this fast," says Chris Johnson, professor of wildlife conservation at the University of Tasmania. (...)



refuted

source: [nationalgeographic.com](http://nationalgeographic.com)

Claim: Coconut oil can cure Alzheimer's disease.

The damage caused by **Alzheimer's** disrupts the brain's ability to use its primary energy source, known as glucose. Ketones may provide an alternative energy source to the brain cells to moderate the damage caused by Alzheimer's disease. The body produces ketones when it metabolizes **coconut oil** and similar substances. Unfortunately, **there just isn't any credible science to support this idea**. It is **impossible for us to know** how well **coconut oil** does or does not work in **Alzheimer's disease** because there have not been rigorous, large-scale research studies done. (...)



uncertain

source: [alz.org](http://alz.org)

verdict



**Pitch:** The goal of the project is to develop an automated fact-checking tool that for an input claim finds evidence in the corpus of documents or websites and produces a verdict on its veracity, using integrated machine learning models.

## Basic functional requirements:

- Creation of a graphical UI for input and navigation
- Visualization of found evidence and verdicts
- Preparation and processing of data
- Construction and configuration of machine learning models

## Basic non-functional requirements:

- Realtime processing of predefined and new queries
- Efficient retrieval of documents from the database
- Modularity and reusability of components

## Expected prior knowledge

- Knowledge of HTML, JavaScript, CSS
- Skills in Python, Flask / Django, Angular / React
- Integration with SQLite, Google Cloud / AWS

### Desirable:

- Knowledge of ML models, PyTorch, Hugging Face
- Understanding of NLP methods & applications

## Contact:

[juraj.vladika@tum.de](mailto:juraj.vladika@tum.de)

# Research Institution Knowledge Graph

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Advisor / Product Owner: Tim Schopf



# Research Institution Knowledge Graph

EXAMPLE

The screenshot shows a web browser at the URL `https://www.research-topic-explorer.com/computer-science/artificial-intelligence`. The page features a search bar with the placeholder text "Search whatever comes to your mind!". Below the search bar, the breadcrumb navigation is "Computer Science >> Artificial Intelligence".

Related references: [Mathematics](#) >> [Algorithms](#) >> [Artificial Intelligence](#) >> [Engineering](#) >> [Informatics](#) >> [Artificial Intelligence](#)

Similar concepts: [AI](#), [Deep Learning](#), [Machine Learning](#)

Sort by [dropdown]

Three topic cards are displayed:

- Computer Vision** (256 publications)
- Natural Language Processing** (208 publications)
- Robotics** (185 publications)

A "Show more..." link is visible next to the Robotics card.

On the right, a "Description" box contains the text: "Artificial intelligence (AI) is intelligence demonstrated by machines, as opposed to natural intelligence displayed by animals including humans. Leading AI textbooks define the field as the study of 'intelligent agents': any system that perceives its..."

Below the topic cards, there are two columns of "Top researchers" and "Top publications":

Top researchers	Top publications
<b>Prof. X</b> h-index: 346 #publications: 1698 #citations: 222435	<b>AI in medicine</b> #citations: 12645
<b>Prof. Yakin</b> h-index: 261 #publications: 2987 #citations: 198652	<b>Explainable AI</b> #citations: 9645
<b>Dr. Ngew</b> h-index: 157 #publications: 398 #citations: 79356	<b>What is AI?</b> #citations: 8639

At the bottom, there are two charts:

- Development over time:** A bar chart showing data for years 14 through 21.
- Size of research:** A pie chart with a slice highlighted.

**Outcome:** App that supports:

- ✓ Linking of related scientific domains
- ✓ Visual knowledge exploration

**Technologies:**

The technologies listed are Flask, django, React, and neo4j.

**Pitch:** The goal of the project is to develop a web application which provides an explicit overview of the research fields within a research institution based on graph data.

## Basic functional requirements:

- Support navigation of research concepts based on a provided ontology
- Support search of researchers and their topics

## Expected prior knowledge

- Knowledge in React, Python and Flask
- Basic Knowledge in Neo4j beneficial

## Basic non-functional requirements:

- Realtime processing of predefined queries
- Adaption of the result set in realtime
- Realtime client – server communication
- Design of modular components

## Contact:

[tim.schopf@tum.de](mailto:tim.schopf@tum.de)

# DP/PCE

# Data Privacy – Privacy Compliance Ecosystem

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Advisor / Product Owner: Alexandra Klymenko  
Stephen Meisenbacher



**LACE** Max Mustermann

- Dashboard
- Users
- Learning Nuggets
- Learning Paths
- Bookmarks
- Glossary
- Decision Support System**
- Privacy Compliance Structure
- Lab Hub

### How it works

In this Decision Tree, you receive recommendations based on the answers you provide. As a result, accuracy of recommendations is dependant on the their correctness. You can answer with:

- YES** You receive further questions regarding technologies that possess the inquired characteristic.
- NO** You receive further questions regarding technologies that do **not** possess the inquired characteristic.
- SKIP** You receive further questions regarding technologies that do and do not possess the characteristic. You should skip questions if you are not certain about the implication or description provided.

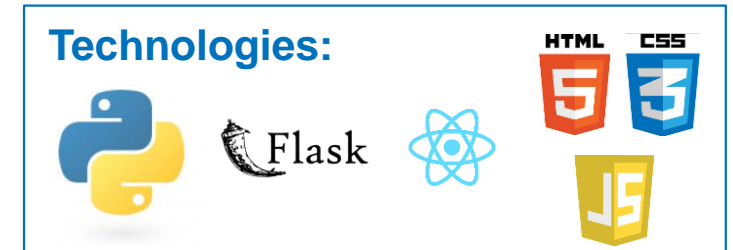
### ?

Do your Computations rely on real values you have collected previously?

Most value generation or computations processes directly run on the actual data. Using actual data sets increases accuracy and can produce more closely related to concrete values.

**YES** **SKIP** **NO**

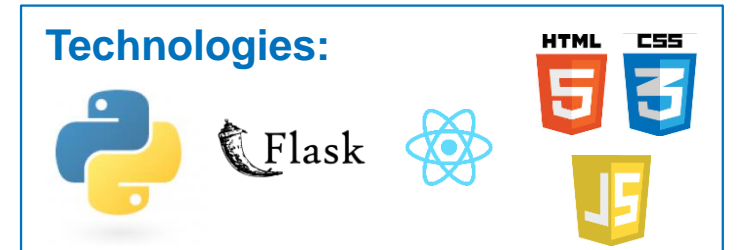
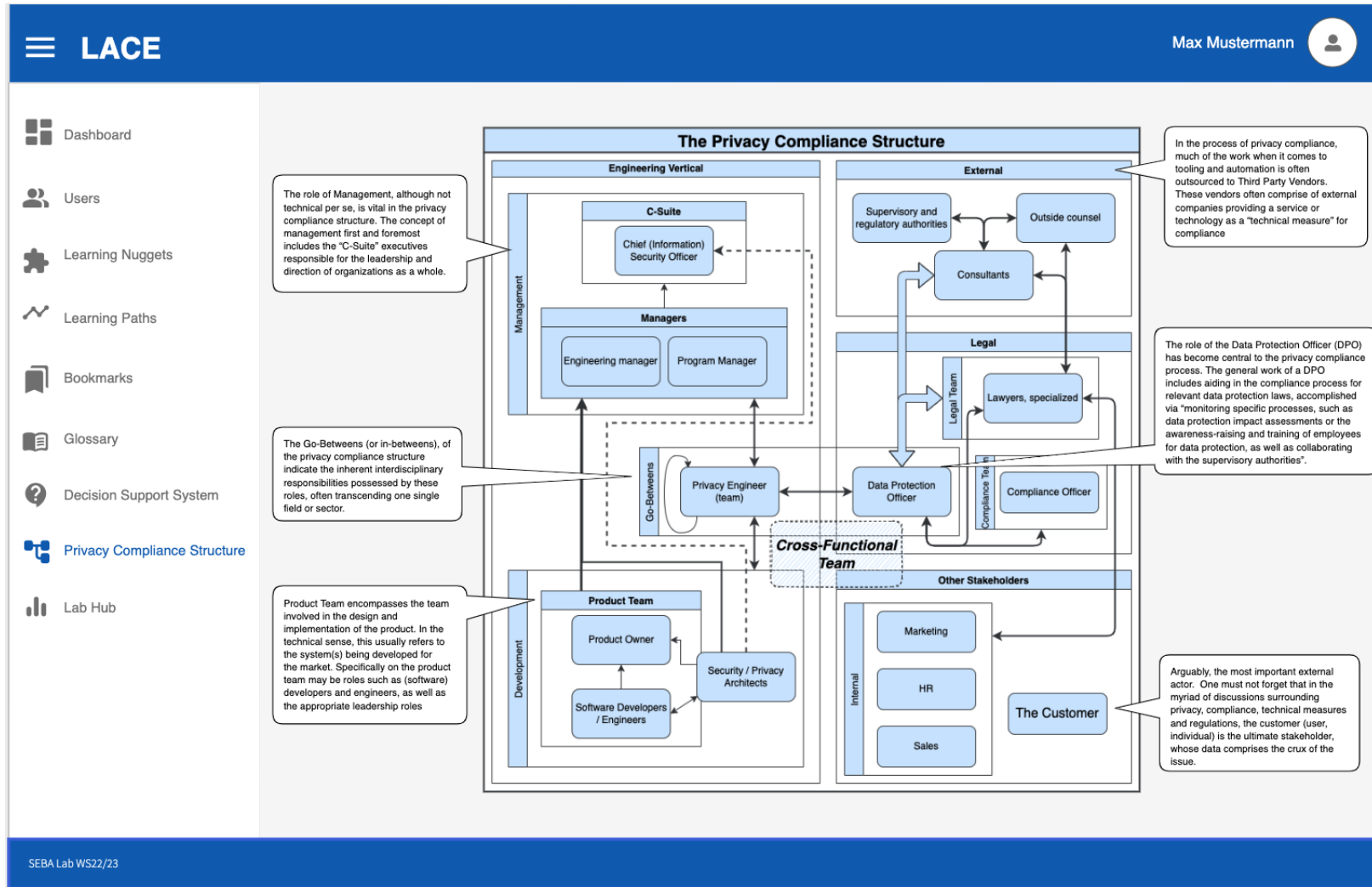
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- Outcome: App that supports:**
- ✓ Educational UI
  - ✓ Interaction with learning content
  - ✓ Visual exploration
  - ✓ Decision support system
  - ✓ Discussion forum



# DP/PCE: Privacy Compliance Structure



- Outcome: App that supports:**
- ✓ Educational UI
  - ✓ Interaction with learning content
  - ✓ Visual exploration
  - ✓ Decision support system
  - ✓ Discussion forum

**Pitch:** The goal of the project is to extend a learning platform for Privacy-Enhancing Technologies with a focus on interactively showcasing the data privacy compliance process.

## Basic functional requirements:

- Integration of an existing decision support system
- Linking of the decision support system to existing learning material on PETs
- Creation of interactive privacy compliance structure exploration tool
- Addition of a discussion forum for registered users
- Further e-learning features (e.g., gamification)
- UI design improvements

## Basic non-functional requirements:

- Intuitive user interface
- Code quality
- Modular and extendable design

## Expected prior knowledge:

Required:

- Knowledge in HTML, CSS, JavaScript, Material UI, React, Python, Flask, MongoDB

Desirable:

- First experience or high interest in data privacy (compliance) and Privacy-Enhancing Technologies

## Contact:

[alexandra.klymenko@tum.de](mailto:alexandra.klymenko@tum.de)

[stephen.meisenbacher@tum.de](mailto:stephen.meisenbacher@tum.de)

# DP<sup>2</sup>NLP

## Data Privacy – Differential Privacy in Natural Language Processing

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Advisor / Product Owner: Stephen Meisenbacher  
Alexandra Klymenko



# DP<sup>2</sup>NLP – Explore Word-Level Text Privatization

Welcome, User! 

## Private NLP Playground

- Framework
- Hyperparameters
- EMBEDDING SPACE VISUALIZATION

Epsilon

Delta

100%

**Run!**

TOTAL PERTURBED WORDS  
**1**

TEXTUAL SIMILARITY  
**0.95**

EMBEDDING SPACE VISUALIZATION

### MECHANISM CALCULATIONS

$D'$	$\exp\left(\frac{\varepsilon q(D, r)}{2\Delta q}\right)$	$\Pr[D']$	$q(\text{heart}, D')$
<i>liver</i>	16.602	0.367	0.590
<i>lung</i>	9.647	0.213	0.476
<i>tissue</i>	6.560	0.145	0.395
<i>diabetes</i>	6.315	0.140	0.387
<i>cancer</i>	6.108	0.135	0.380

ORIGINAL TEXT

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. **heart** Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

PRIVATE TEXT

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. **liver** Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

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**Goal:** to develop an educational user interface that allows users to explore the application of word-level Differential Privacy to textual data, in an interactive and real-time manner.

**Outcome:** App that supports:

- ✓ Interactive NLP Dashboard
- ✓ Real-time calculations
- ✓ Complex Data Visualization
- ✓ Educational UI

**Technologies:**

**Pitch:** The goal of the project is to develop an educational user interface that allows users to explore the application of word-level Differential Privacy to textual data, in an interactive and real-time manner.

## Basic functional requirements:

- Creation of an interactive text privatization playground
- Displaying of perturbation results, both graphically and mathematically
- Exhibition of non-privatized vs. privatized text
- Providing relevant stats and user notifications

## Basic non-functional requirements:

- Real-time execution of Differential Privacy
- Intuitive visualization of the perturbation process
- Adaptation of calculations to user-given parameters
- Design of custom components to facilitate the UI
- Code readability and quality

## Expected prior knowledge:

- Knowledge in Flask, React, Javascript, HTML, CSS
- Strong programming skills in Python
- Basic knowledge in Natural Language Processing
- Solid knowledge in Probability & Statistics
- Genuine interest in (data) privacy and Privacy-Enhancing Technologies!
- Experience in JavaScript / Python visualization libraries like D3, Chart, Plotly, etc.

## Contact:

[stephen.meisenbacher@tum.de](mailto:stephen.meisenbacher@tum.de)

[alexandra.klymenko@tum.de](mailto:alexandra.klymenko@tum.de)

# Governance Evaluation for Algorand

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Advisor / Product Owner: Burak Öz  
Christian Ziegler



# SUPPRA-Governance – Governance evaluation for Algorand



## Governance Period Timeline

Governance works in cycles. Each cycle lasts three months and contains a sign up phase, a voting phase and a rewards phase.

Completed

Period-Starts

📅 Jun 30, 2022

Completed

Become a Governor

📅 Ends in Jul 14, 2022

Voting

📅 Not Announced

- Outcome:** App that supports:
- ✓ Governance Visualization
  - ✓ Quick Pagespeeds
  - ✓ Real-time updates
  - ✓ Data aggregation

Job Card Dashboard

2019 Enduraplas 800 Gallon Fire Ranger (Ser)

Timeline: Created (06/01/2020 7:14 AM) → Assigned (06/07/2020 8:30 AM) → First Updated (06/07/2020 8:30 AM) → Closed → Reopened

Time Elapsed: 23 Days 06 Hours

Time Open: 23 Days 06 Hours

Time on Hold: - Days - Hours

Turnaround Time: - Days - Hours

Actuals					Estimated						
Amount		Cost	Gross Margin		Amount		Cost	Gross Margin			
\$90k		\$40k	\$50k		\$90k		\$40k	\$50k			
Parts: \$50k	Labour: \$40k		Parts: \$50k	Labour: \$10k		Parts: \$50k	Labour: \$10k				
55.56%					55.56%						
#	ITEM	CHARGE TYPE	QTY	AMOUNT	COST	#	ITEM	CHARGE TYPE	QTY	AMOUNT	COST
1	Canon CN-E 16mm	Parts	90	\$10,000.00	\$10,000.00	1	Canon CN-E 16mm	Parts	90	\$10,000.00	\$10,000.00
2	2016 Marooka MSTB...	Parts	80	\$9,000.00	\$9,000.00	2	2016 Marooka MSTB...	Parts	80	\$9,000.00	\$9,000.00

Card analytics 01.12 - 31.12

Transactions: 18,417 (734% more than last month)

Authorizations: 24,320 (3.18% going down)

Approvals: 9,564 (0.32% looks pretty good)

Revenue: This month \$815,390 (Last month \$743,950)

Goal overview: 83%

Sales: 83.2% (Monthly goal 19.3% 17,840 total sales)

Client retention: [Bar chart]

tailwindcss

DATA-DRIVEN DOCUMENTS

Algorand™

node

JS

Next.js

**Pitch:** The goal of the project is to develop a governance evaluation platform and dashboard for the cryptocurrency Algorand with ongoing data-collection.

## Basic functional requirements:

- Fetch Governance data from the Algorand Blockchain
- Aggregate Governance Data and do basic analysis
- Visualize the aggregated Governance Data
- Design an ongoing data-collection

## Basic non-functional requirements:

- Quick loading times and very good Pagespeed scores
- Realtime client – server communication
- Design of modular components
- Caching of results in the server

## Expected prior knowledge

- Knowledge in tailwindcss, Next.js, NodeJS
- Basic Knowledge working with REST APIs, GraphQL, RPCs.
- Experience in JavaScript visualization libraries d3
- Basic Knowledge of Socket.io or similar realtime client – server communication frameworks

## Contact:

[burak.oez@tum.de](mailto:burak.oez@tum.de)

[christian.ziegler@tum.de](mailto:christian.ziegler@tum.de)



# Group Ordering

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Advisor: Felix Hoops

Product Owner: Isa Usmanov

The logo for 'droov' is displayed in a lowercase, sans-serif font. The letters 'd', 'r', and 'o' are blue, while the second 'o' and 'v' are green.

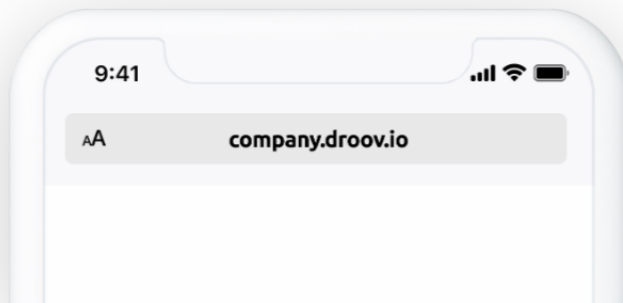
# droov

E-commerce and delivery solution for SMEs

## Step 1

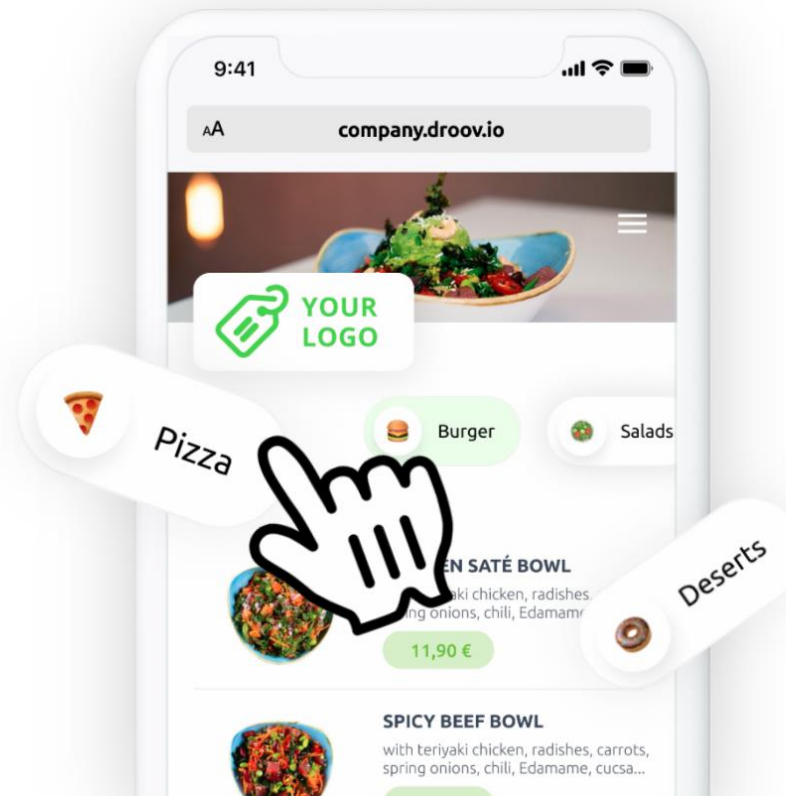
Choose a unique link for your shop

[https:// company.droov.io](https://company.droov.io)



## Step 2

Drag-and-drop assemble and design your store (no code)



## Step 3

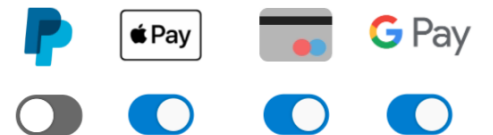
Configure logistics to meet your business needs

Define delivery area 

Set operating days and time

Monday 08:00 - 16:00

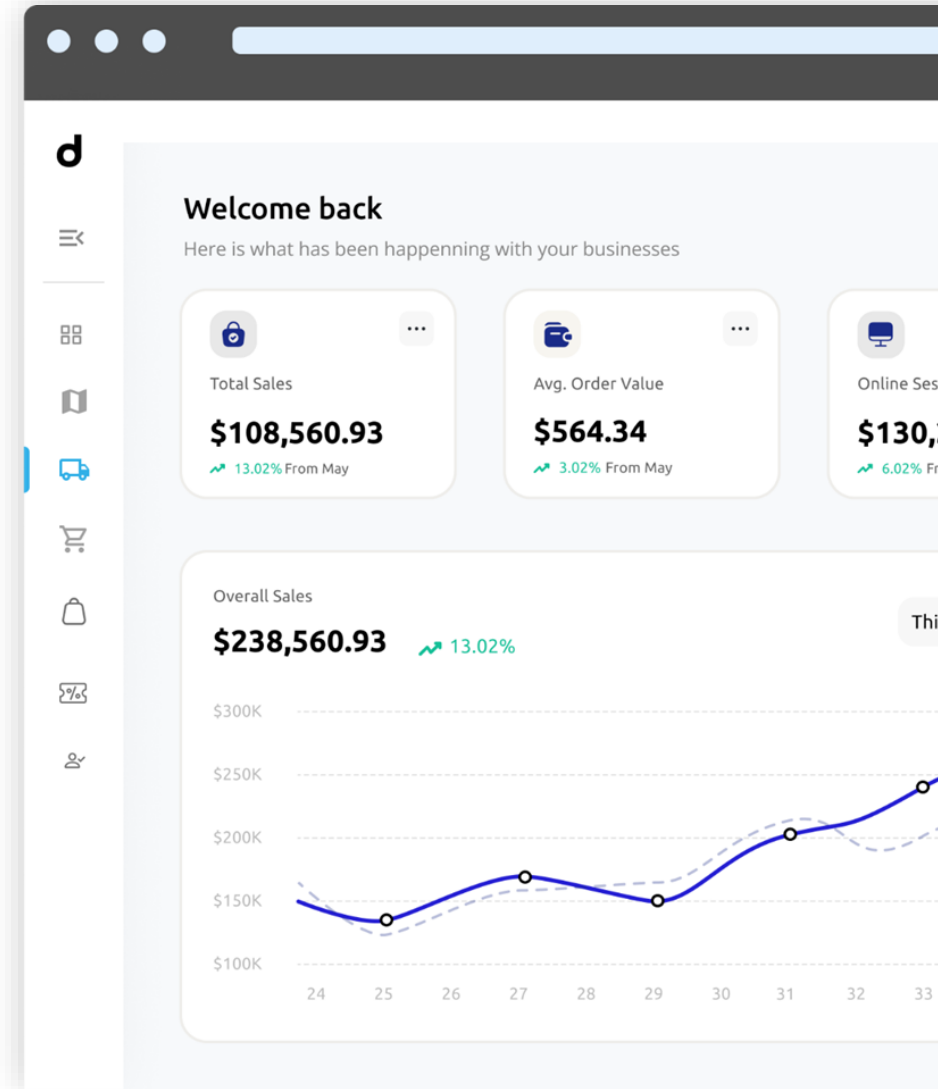
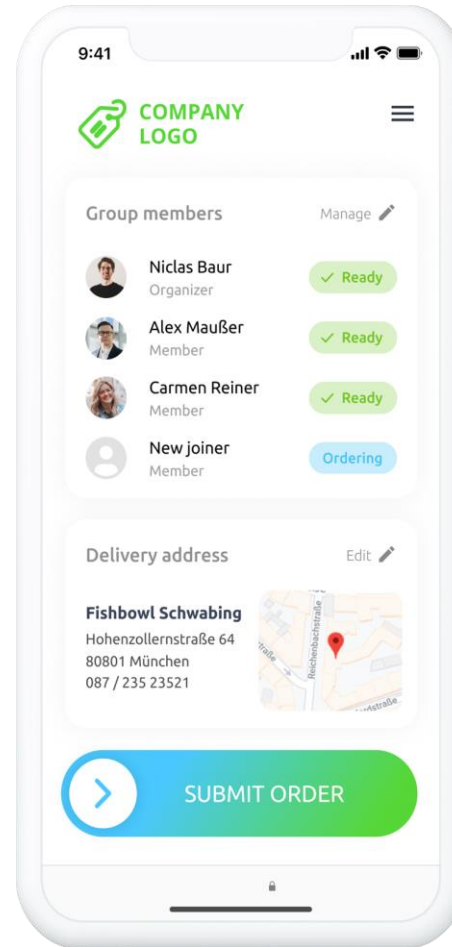
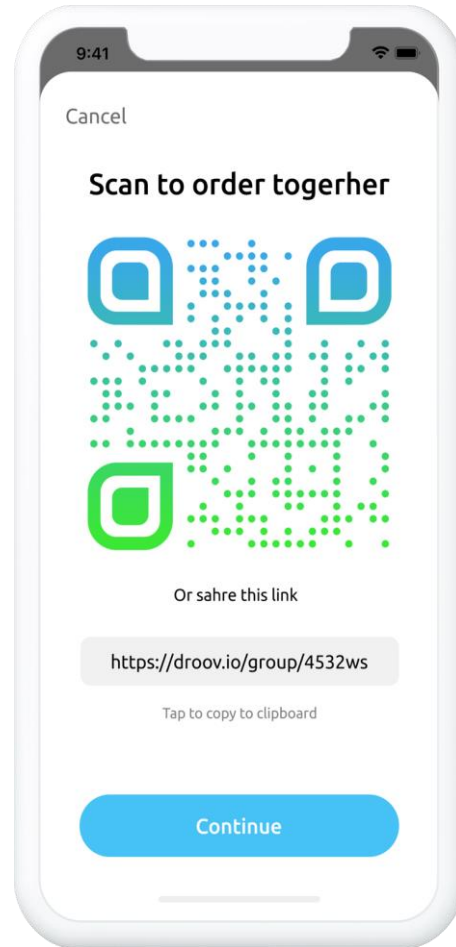
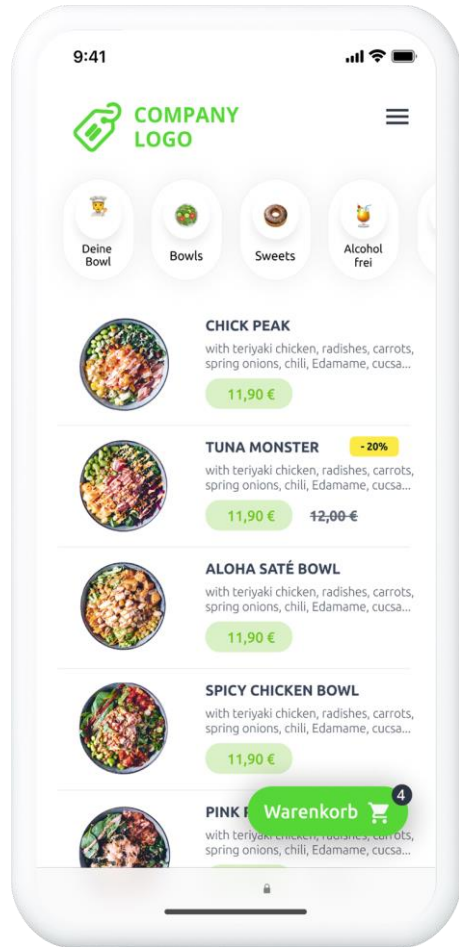
Connect payment methods



Organise & manage couriers



# Goals – Group ordering & business analytics dashboard



**Pitch:** droov allows small businesses to effortlessly create their online store and operate a delivery business. The two main goals of this project are **1)** Extending current solution with a possibility to offer a group ordering functionality. For example, if co-workers in the office or a group of friends in Englischer Garten want to order together from a single restaurant. Group orders are economically and ecologically beneficial for all of the parties involved. **2)** Developing a business analytics dashboard to display business performance metrics, among others, number of daily/weekly orders, revenues etc.

## Basic functional requirements:

- As group organizer, initiate a group order, generate invite link & QR-code. Joining group via link; checkout
- Paying and submitting batched order and creating a group order status tracking view.
- Configuring group ordering details in the admin view
- Analytics dashboard with business performance metrics

## Basic non-functional requirements:

- Intuitive and responsive user interface (Always eliminate extra clicks where possible - be creative)
- Follow droov's styling pattern
- Collaborate and engage with founder team

## Expected prior knowledge

- Prior knowledge in web application & front-end development **React.js / JavaScript**
- Basic experience with styling **CSS libraries**
- Prior knowledge in backend development (**Node.js or Firebase + MongoDB or Firestore DB**)
- Basic knowledge in version controlling tools: **Git / Gitlab**
- Extra points for experience with **Payment processing** solutions (not mandatory)

## Contact:

Isa Usmanov - [isa@droov.io](mailto:isa@droov.io)

# SHAREVAX – Get and share the vaccines people need

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Advisor: Peter Kuhn

Product Owner: Monja Puggel  
Martin Gail



# SHAREVAX – Get and share the vaccines people need

Sharevax

Donate or sell vaccines

Ask for demand

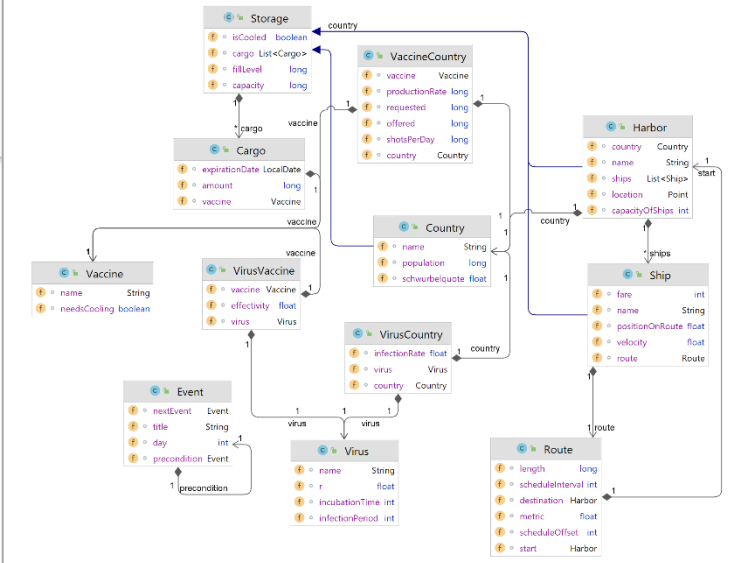
### Overview about vaccines in stock

- Covid-19
- Figures
- Vaccines available
- Vaccines demanded
- Monkeypox
- Flu

Doses available

0 1 Mio

Vaccines currently shipping					
Vaccine	doses	from	to	Urgency	In time
Comirnaty	500 000	USA	Nigeria	●	●
Comirnaty	300 000	Germany	Argentina	●	●
Spikevax	200 000	UK	Iran	●	●
Spikevax	100 000	Sweden	South Africa	●	●



**Outcome: App that supports:**

- ✓ Calculation Algorithms
- ✓ Real-time Result Change
- ✓ Complex Event Processing
- ✓ Multi-level Data visualization

**Technologies:**

**Pitch:** The goal of the project is to develop a web application for simulating the distribution of vaccines based on an algorithm that calculates optimal shipping routes and delivery.

## Basic functional requirements:

- Simulating the usage of shipment routes
- Find optimal distribution of vaccines
- Visualization of vaccine amount and shipment routes
- Visualization of dashboards

## Expected prior knowledge

- Knowledge in frontend technologies like Angular or React, HTML, CSS
- Knowledge in backend technologies like mongoDB, Spring Boot, NodeJS
- Basic knowledge in developing calculation algorithms

## Basic non-functional requirements:

- Processing of user input and adaption of the result in real-time
- Real-time client – server communication
- Design of modular components

## Contact:

[martin.gail@capgemini.com](mailto:martin.gail@capgemini.com)

[monja.puggel@capgemini.com](mailto:monja.puggel@capgemini.com)

[p.kuhn@tum.de](mailto:p.kuhn@tum.de)

# CLIQ – A Web3 protocol to tokenize reciprocity in a social network

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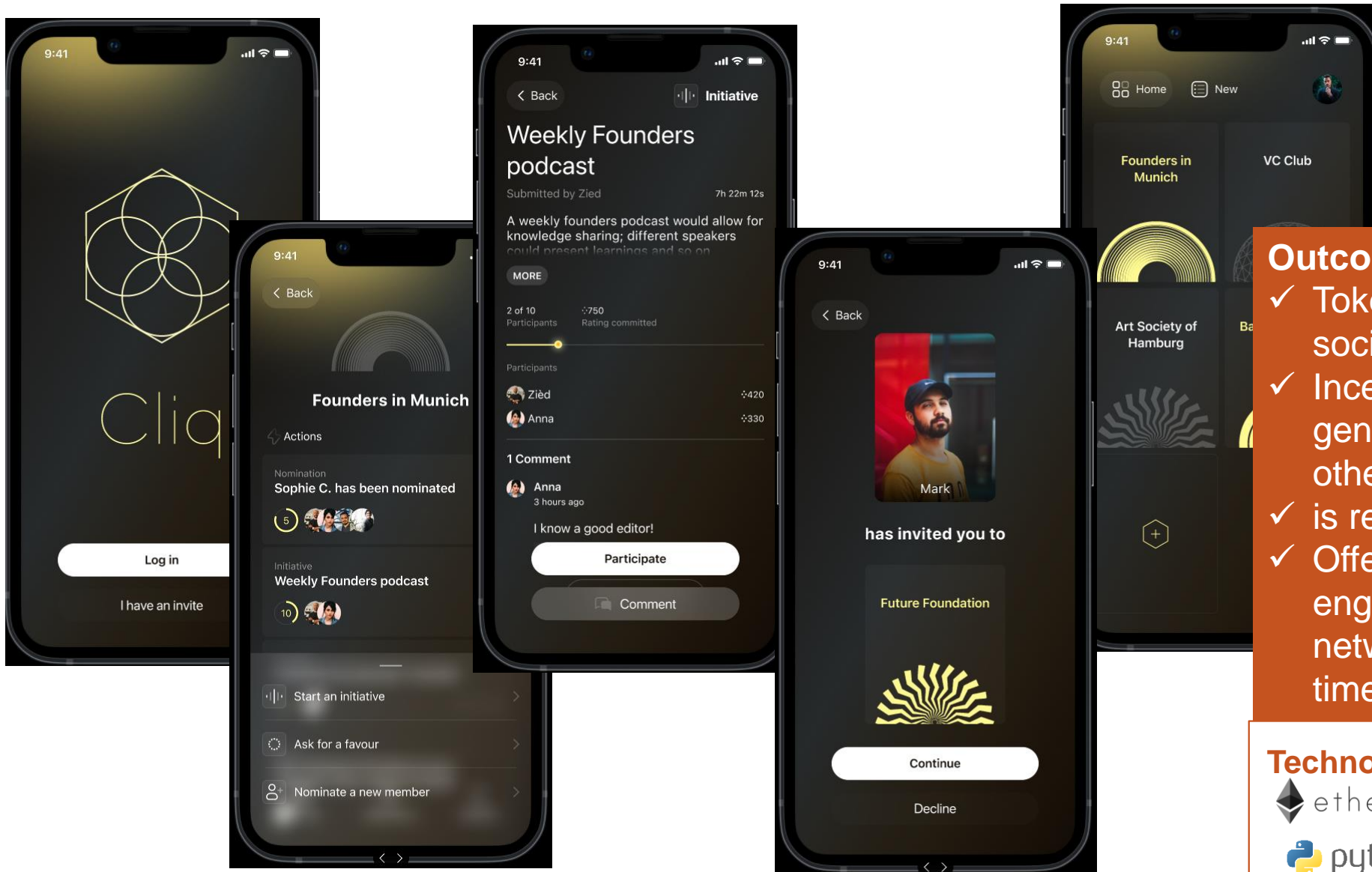
Advisor: Sascha Nägele

Product Owner: Zied Bahrouni  
Ehsan Olyaei





# CLIQ – A Web3 protocol to tokenize reciprocity in a social network



**Outcome:** A protocol that:

- ✓ Tokenizes reciprocity in the social network app Cliq
- ✓ Incentivizes users to generate value for each other
- ✓ is resilient against fraud
- ✓ Offers a different engagement metric in social networks (as opposed to time per user)

**Technologies:**

**Pitch:** Cliq (in beta) is a social network that enables users to create small closed cliques to exchange favors and organize collective action. The goal of this project is to create a Web3-based protocol that tokenizes reciprocity. The protocol would incentivize users to help others and with that create reciprocity within the group.

## Basic functional requirements:

- Tokens should be earned by fulfilling favor requests, taking part in collective actions or nominating new members.
- The sum of tokens a user has therefore corresponds to their helpfulness within a group.
- Moreover, the tokens should be linked to privileges or financial incentives to further incentivize users to create value for each other.

## Basic non-functional requirements:

- Create different concepts of the reciprocity token and test them with the Dev team and the social science team.
- Run experiments with Dev team and social science team in controlled groups of pilot users.

## Expected prior knowledge

- General knowledge about web3 protocols and blockchain (bonus: in social networks)
- Ethereum protocol
- (Optional) Python, Django, JavaScript, React
- Basic knowledge in DevOps

## Contact:

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# Know your Money! – Budget Calculator with PSD2

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Product Owner: Francisco De las Casas Young  
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Felipe Wieman



# Know your Money! – Budget and Estate Platform with PSD2

Record all expenses with one click  
Use our connection to PSD2 to transmit all your expenses in seconds.  
Try it now >

**Monthly income**

Net household income  
5,000 € / month

Is there any further income?  
 Yes  No

**Monthly expenses**

Warm rent / living costs  
1.200 € / month

Do you have to continue paying the rent or housing costs if you buy a property?  
 Yes  No

Current loans / leasing fees

1. Calculate available amount

Monthly income	5,640 € ^
Net household income	5,000 €
Monthly expenses excluding rental costs	-1,100 € v
Available amount	4,540 €

2. Determine your desired monthly rate

0 €  4,540 €

Our recommendation: 1,500 €

- ✓ Monthly safety buffer of 300€ respected at a property size of 100 sqm
- ✓ Within the recommended debt ratio of 1,500€

My desired monthly rate  
**1,500 €**



Integration of customers bank data



Integration of financing data



Integration of estate data



## Outcome – Web-App that supports:

- ✓ Integration of Estate, Financing and Bank APIs
- ✓ Calculations of the customers financial possibilities
- ✓ Categorization and optimization of income and expenses
- ✓ Multi-level data visualization of complex financial data
- ✓ Personalized mortgage calculations
- ✓ Personalized estate recommendations

## Technologies:



**Pitch:** The goal of the project is to develop a budget and estate web platform using different APIs to compute the financing possibilities of our customers to provide recommendations for estates and mortgages.

## Basic functional requirements:

- Implementation of several forms and views
- Visualization of data and calculations
- Integration of a PSD2 (Payment Service Directive 2), Interhyp and Estate APIs
- Categorization and Optimization of income/expenses
- Personalized recommendations for estates and mortgages

## Basic non-functional requirements:

- Intuitive, performant and responsive user interface (mobile first)
- Design of modular and reusable components
- Security (2FA, Captcha, Access Token)

## Expected prior knowledge

- Knowledge in Frontend Technologies
  - HTML, CSS, JavaScript, TypeScript, React
- Knowledge in Backend Technologies
  - Java, Node, Kotlin, Spring Boot
- Bonus: Knowledge of PSD2 conform Bank APIs

FYI: If you want to choose another technology that is not listed here, just let us know! :)

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# Managing cloud developer workspaces

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Advisor: Tri Huynh

Product Owner: Jonas Helming



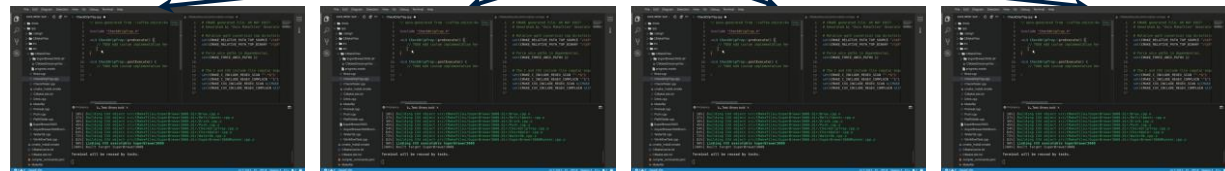
# Managing cloud developer workspaces



Application for  
managing a cluster  
of developer  
workspaces



Cluster of developer  
workspaces  
(Kubernetes)

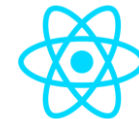


Browser-based IDE

**Outcome:** App that supports:

- ✓ Managing Dev Workspaces
- ✓ Monitoring Deployments
- ✓ Resource/Cost Analysis
- ✓ Optimizing the cluster

**Technologies:**



**Pitch:** The goal of the project is to develop a web application for managing a cluster hosting developer workspaces.

## Basic functional requirements:

- Configure parameters, such as allowed resource consumption per user
- Managing user workspaces
- Monitoring deployed service
- Statistics about usage, performance and cost
- Manage cluster optimizations, e.g. “prewarming”

## Basic non-functional requirements:

- All code will be contributed under an Open Source license (EPL)
- Reproducible build and set-up

## Expected prior knowledge

- Knowledge in HTML, CSS, TypeScript and React
- Basic Knowledge in Docker and Kubernetes
- Standard “toolbox” including Git and VS Code

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