

Science Hack 2021

TUM Chair of Cyber Trust - „Smart City“



Team: Smart City - Smart People

Barbarella Petz, Christine Kurz, Khanh Huynh, Philipp Junge

Project: Mobile App MyMuc

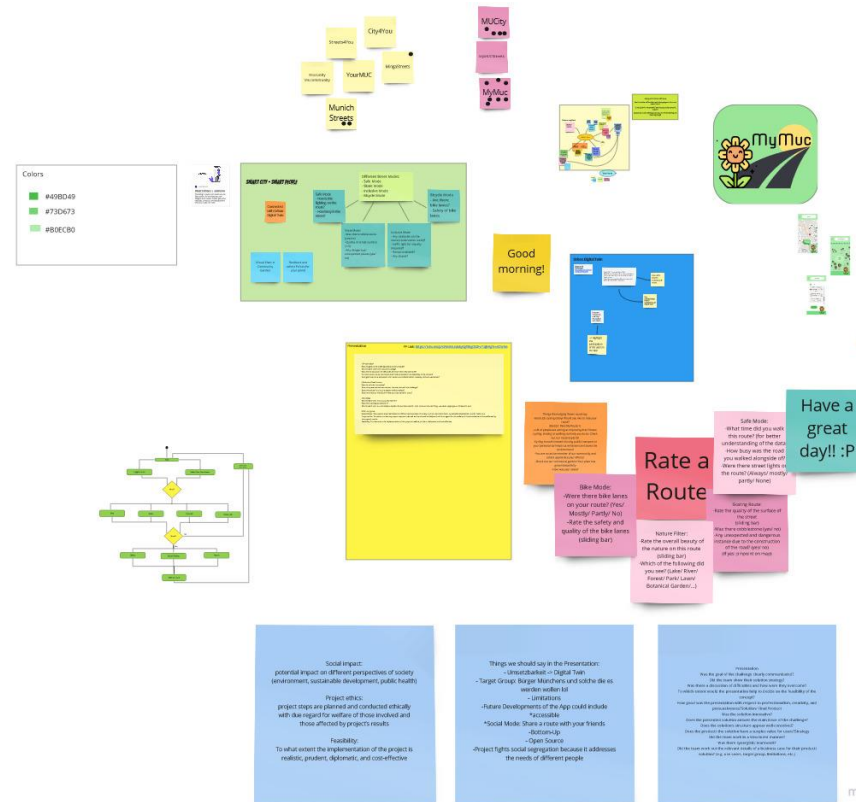
Gathering street information in a Bottom-Up Approach to facilitate a more diverse and inclusive use of the streets of Munich

Solution Development

Challenge Goal

- ▶ Nudge people towards more social and sustainable behavior in a Smart City context, exemplary in Munich

Solution Strategy

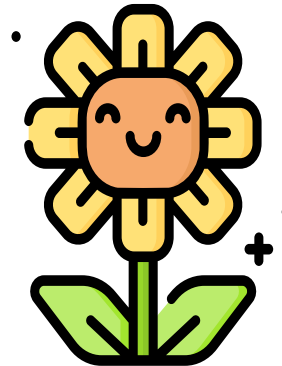


MyMuc



Social Nudging

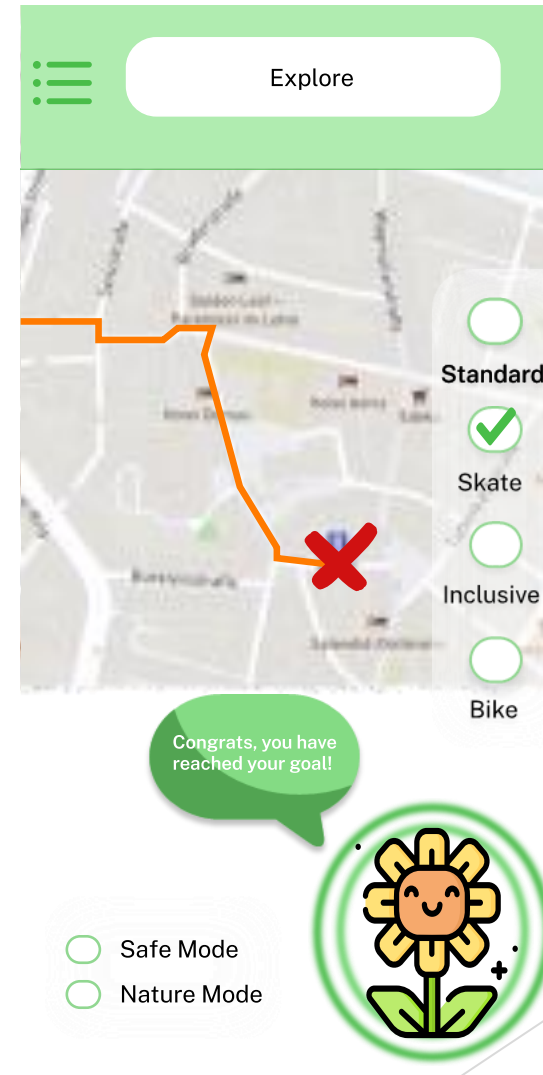
- ▶ Nudges steer people to take specific actions that benefit themselves and their society
 - ▶ Without using penalties or monetary rewards
 - ▶ Preserve Freedom of Choice
 - ▶ Low cost
- ▶ Different types of Nudges, such as
 - ▶ **Reward System** (e.g., Community Garden & Nudging Flower in MyMuc)
 - ▶ A reward system can help steer people to take the desired action
 - ▶ **Smart Disclosure** by Nudging Flower



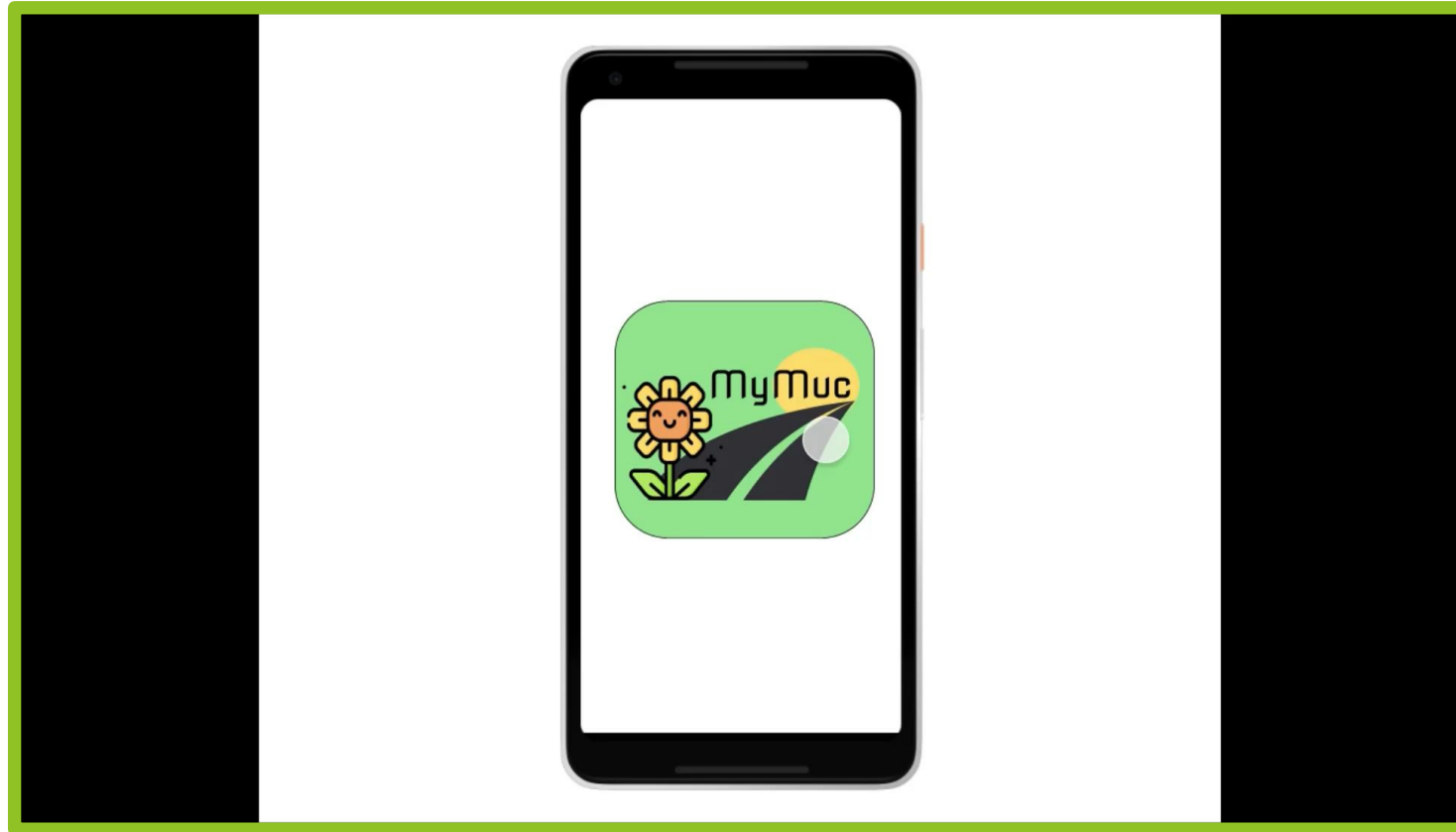
Nudging Flower

The Nudging Flower praises the user and suggests they might rate their route or offers information on the social, environmental and health-related benefits of MyMuc

- ▶ "Cycling, skating or walking helps improving peoples' fitness"
- ▶ "Cycling to work instead of using public transport or your personal car helps cut emissions and saves the environment!"
- ▶ "You are an active member of our community and others appreciate your efforts!"
- ▶ "Check out our communal garden! Your plant has grown beautifully"



Video Presentation



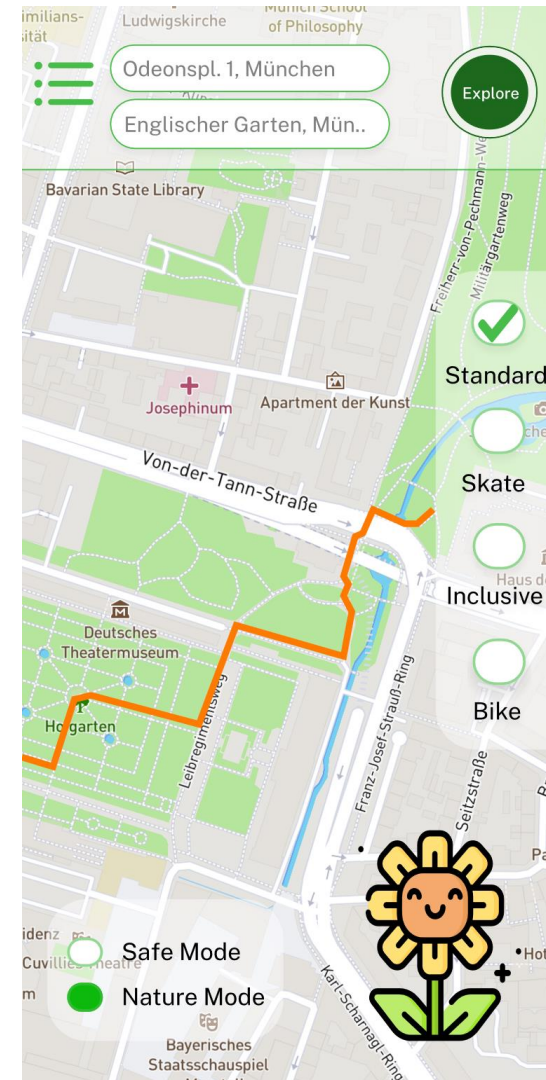
MyMuc Mobile App

Main Page - Map View

- ▶ Route search (Start - Destination)
- ▶ Explore
- ▶ Category (Standard, Skate, Inclusive, Bike)
- ▶ Filters (Safe, Nature)

Example

- ▶ Route from Odeonsplatz to Englischer Garten
- ▶ Standard: Like Google Maps
- ▶ Nature: Preferably leads through green areas



Rate a Route

- ▶ Users can rate routes or streets with respect to different categories and filters
- ▶ Users are encouraged to give feedback after reaching their route destination
- ▶ Rating a route waters your virtual plant which makes it grow

☰ Rate a Route

▲ Safe

At what time did you go?

12:00

How busy was the street?

Were there street lights?

Yes No

Next

Personal Plant in Community Garden

Personal Plant

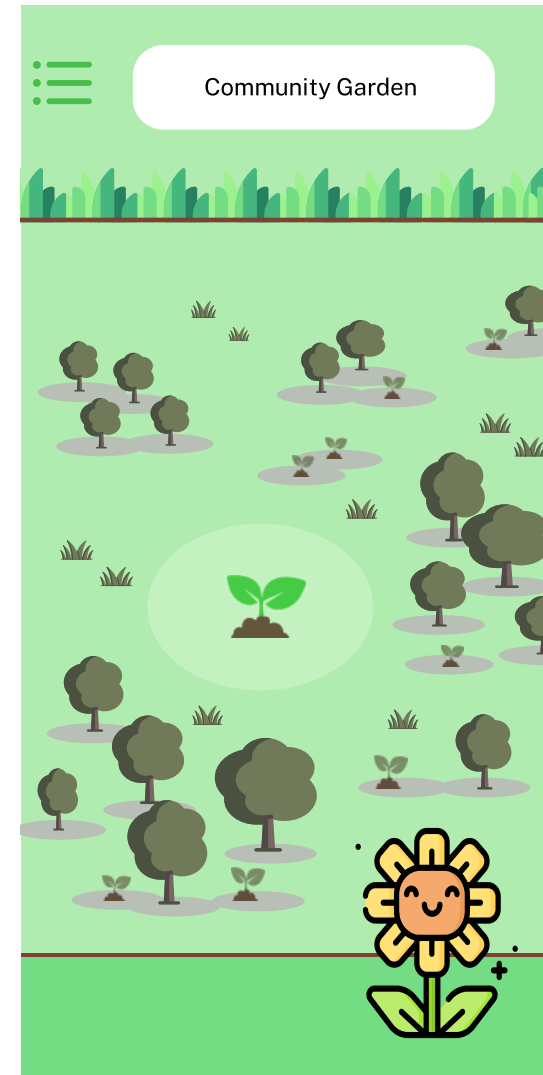
- ▶ Giving feedback → Your PP grows

Community Garden

- ▶ Shows your plant next to all others
- ▶ Nudge: Motivation to get the biggest PP

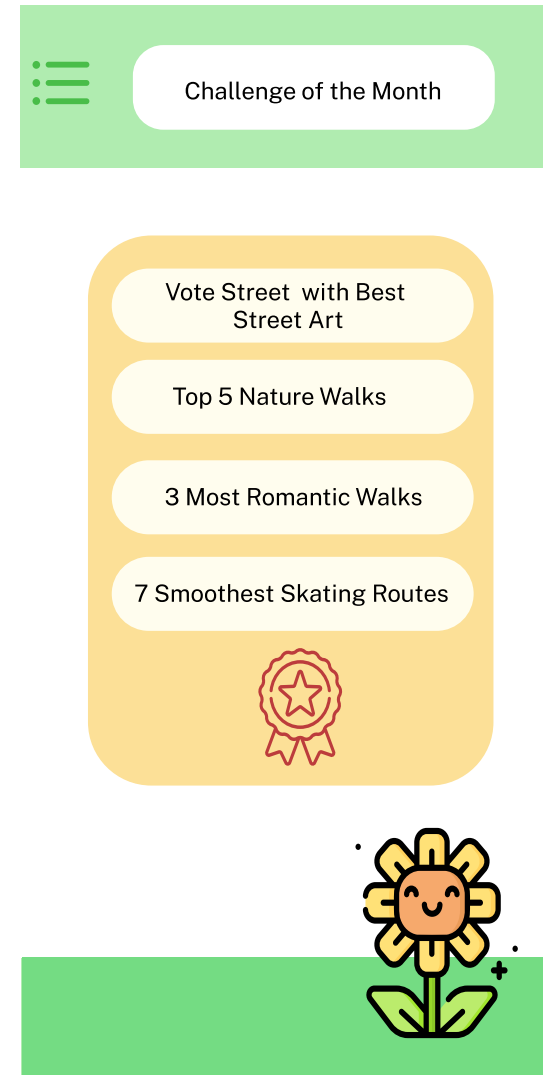
Plant a Real Tree

- ▶ If your plant has a certain height, you can decide if you want a real tree planted in cooperation with the city of Munich



Challenge of the Month

- ▶ Additional nudges by providing challenges in which users can participate
- ▶ Social Aspect: Get to know other users who participate in challenges
- ▶ Get to know Munich: explore new spots in Munich you did not know before



Smart City Aspects

Project "CUT - Connected Urban Twins" (Digital Twin of Munich)

- ▶ 2D/3D model of city can be imported (Data Exchange)
- ▶ Traffic data is recorded by sensors and could be used for finding low frequented routes



CONNECTED
URBAN
TWINS

(Big) Data Aspect

- ▶ Most users will rate a route, not individual street sections
- ▶ MyMuc gets better and stays up-to-date the more citizens participate



Personalized Nudging

- ▶ ML methods
- ▶ Similar to Netflix Algorithm
- ▶ E.g. "Other users also liked this route"

Sustainability & Social Impact

- ▶ Accessibility tailored to different needs of different groups of people
- ▶ Health benefits
- ▶ Take the strain off public transport by promoting alternative means of transport (cycling, skating, etc.)
- ▶ Making it easier for people with special needs to participate in social life
- ▶ Creating a safer city environment for all
 - ▶ Safe Mode tells you which route to walk home safely at night

Future Developments of MyMuc

- ▶ Accessibility of the App: Connect voice assistants with MyMuc
- ▶ Social Mode:
 - ▶ Share route with friends
 - ▶ Meet new people on common routes
- ▶ Integrating the App into municipal Apps and Strategies



Business Strategy

- ▶ Model project “Smart Cities Smart Regions - Kommunale für Städtebau und Mobilität der Zukunft” of Bavaria
- ▶ Funding Programs (e.g. Strategie BAYERN DIGITAL, Hightech Agenda Bayern, EU’s Horizon 2020 program)

Thank you for your Attention!

