

## How to integrate folding bikes into train journeys?

### GXC challenge with Deutsche Bahn Connect (DB Connect)

#### Overview

The challenge for this project was proposed by Deutsche Bahn Connect (DB Connect). It is a subsidiary of Deutsche Bahn (DB) which is the German railway company and has about 320,000 employees, carries about 232 million tons of good and transports about 4.8 billion people annually. The main task of DB Connect is providing shared mobility options for its customers on their first and last mile of traveling. DB Connect has over 1 million customers every year, operates in more than 70 cities and owns over 16,000 rental bikes. For the GXC challenge DB Connect wants to explore opportunities to integrate folding-bike systems into its portfolio.

#### Problem

The space in cities, around train stations and especially on trains is getting scarcer and even if it is just parking lots for bikes there is none available. Yet customers demand to bring their rental bikes with them and have an interlinked travel chain. As a result DB Connect needs to think of a new business model, that enables them to provide these opportunities to their customers, adds value to DB's current portfolio of trains, buses and the app of DB, but is also self-sustaining and can be realized.

The challenge statement for the student teams was therefore the following one:

**How might we effectively integrate folding-bikes-systems and rail usage in urban and rural areas?**

#### Approach

Video lectures and weekly live sessions for content input as well as individual team coaching sessions with experts accompanied the students during their project work for ten weeks. The six student teams followed an innovation process applied in the action-learning course format "Real Projects" of HM's entrepreneurship center SCE, starting by understanding the problem through general research about the Deutsche Bahn Connect, customers, business partners and distribution methods. During a first meeting with the DB Connect team, the students were able to discuss the challenge in person, ask questions and write a problem statement. Interviewing stakeholders also helped to better understand the problem, get inspired and find out about the challenge giver's attitude.

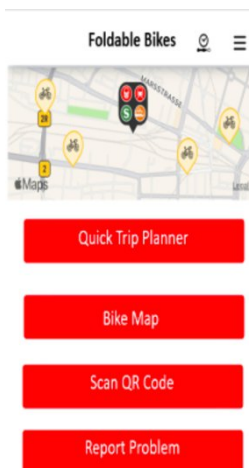
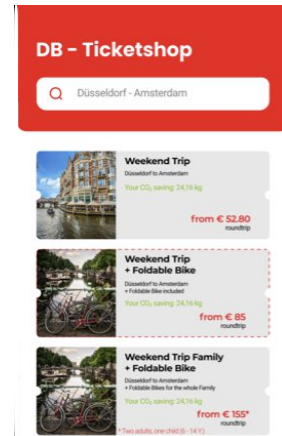
During the fourth week a brainstorming exercise, called the "Crazy Eight Ideation" method, was introduced to the students. It helped them to come up with different kinds of initial ideas within a very short amount of time to ideate, structure these ideas and later on evaluate on how feasible they are. In order to see how realizable and presentable the new business ideas were, each of the teams also created a storyboard and created empathy maps that described needs, activities, thoughts, feelings, etc. of potential customers. Using these techniques, the teams were able to decide on one final solution idea each. During the following six weeks, these ideas were then elaborated with the help of business model canvases, GitHub issues and digital prototypes. The tool to build a digital prototype was either Figma, Glideapp or Bubble.io.

In a second online meeting with the challenge giver, the ideas and drafts of the prototypes were presented to DB Connect for the first time. Valuable feedback helped the teams to further develop and improve or change their prototypes and finalize them for the final presentation in the last week of the challenge.

Besides the innovation Challenge the students of this course also participated in 5 international meetings of the Start For Future program, which provided them access to EIT Urban Mobility experts, the opportunity to exchange on a tandem with a student team from another European university and extra coaching to develop their business models and prototypes.

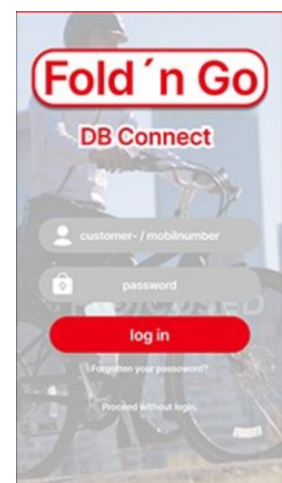
## Prototypes

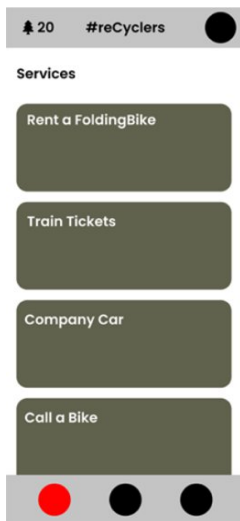
The team *DiSols* created an app with Figma that is easily implemented in the already existing DB Navigator app and allows its users to navigate to their closest pickup box of bikes and works as a ticket shop for the bikes they want to rent. On the final prototype the team also added a feature that recommends a bike that suits the customer's needs very well based upon some questions like the rider's weight, height, the distance they want to ride and whether they need electric support on their rental. Another added feature was that the train ticket and a rental bike could be booked with a weekend bundle option. Since especially nowadays many customers of DB Connect are very cautious about their emissions of carbon dioxide, the app is also capable of calculating the CO<sub>2</sub>, that has been put out by using public transport, but it also compares it to other means of transportation.



*Team2Bike* developed a prototype using Figma. Their app enables people to navigate to the closest rental box for bikes, introduces the user about his rental bike and looks for connections on all products of DB's portfolio. If the bike is the fastest way to get from A to B, it will be suggested to the customer. For the second iteration of the prototype the team added the option of traveling with foldable bikes on trains and made their application more intuitive, usable and easier to be implemented among the already existing DB Navigator App. Among other features, *Team2Bike* worked on the booking process, updated their overview upon already purchased tickets and also made it also possible for the customers to report different problems that might occur during the process of paying, booking a bike and also report any issues with the bikes.

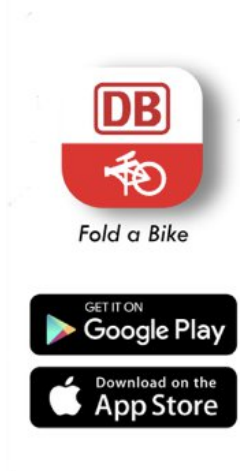
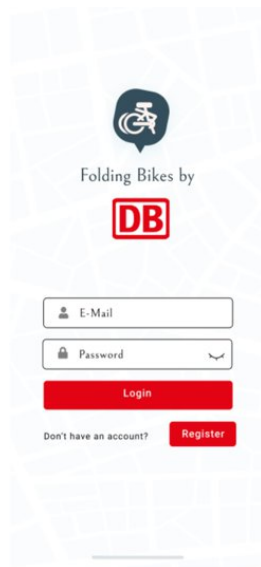
The third prototype was created by the team *Fold'n Go*. These students approached the challenge from a different angle by creating an app that is supposed to stand by itself and not just features that should be implemented into the already existing app of DB. After receiving the feedback from the challenge giver that the team should focus more on implementing new features that could be implemented into the already existing Call a Bike app, they revised their prototype and decided to think more about functions they wanted to implement. The main feature of the prototype was to find one of the bike boxes around you with a map. After finding this rental station the app would navigate you to it, help you choosing a bike by giving an overview over the different tariffs and finally the app will also help its user to reach their final destination by being a navigator once again.





Team #reCyclers developed a prototype by using Figma. This team intended to create a very clear and intuitive user experience. The first function they thought about and later on implemented is a routing functionality once again. Team #reCyclers differentiate from other teams, by conceptualizing more how they could make a route planner for a combination of bikes and other ways of transport that Deutsche Bahn provides. The result of this is also a function that gives an overview on the different mobile services that DB provides, but also the app should offer a profile screen that is supposed to give the users an opportunity to setup their profile settings, personal information, etc. Besides these two ideas the team also came up with the idea of a point system that would allow users to collect points by riding rental bicycles or taking the train. As a reward for helping so safe the environment the user will get a certain amount of points per ridden kilometer and can later on trade them for little goodies in a specific store, as DB already does in other contexts.

The team *InternationalAvengers* created an app that is called *Folding Bikes* with the platform Figma. This application offers a feature to register and later on log into the app, provides a map with all the Brompton docks and the bikes that are currently available, a checkout page that also lists all the costs and payment methods and finally they also thought about the process of returning the bikes to the Brompton docks. Furthermore it is possible to reserve a rental bike with the app and a reservation code will be created, if the customer desires it. Just like team #reCyclers also the *InternationalAvengers* played with the idea to reward their customers with points that can later on be transformed into discount coupons for potential business partners of Deutsche Bahn. Team five has approached the implementation of social media differently than the other teams as well, by making it possible to share the app through social media platforms and invite friends and family to use this app. A further potential revenue in their business model include small billboards advertisement on the side of the dock stations.



*Green Mile* Team developed the concept *Fold a Bike* targeting tourists. Using Figma they prototyped a navigator that gives an overview over the latest travel destinations and also most of the other features were very similar to the ones of the other teams. Other, really outstanding, implementations of team *Green Mile* were a category called "My Bookings", in which the users could find out about where they can have an overlook on their past and future reservations, "Community" enables the users to connect their green travel to social media platforms to share their activities with friends and "Statistics" will give an overview over everything that has been accomplished by the customer so far. A unique feature this team conceptualized is called "My Tours" - a travel guide for tourists in one city and will point out places of interest like restaurants, shops, etc.

## Next Steps

The final presentation to the Deutsche Bahn Connect team took place on December 8, 2021. Following the presentation, the six student teams shared their documentation by making their GitHub repositories public. This documentation serves as insights and foresights for discussions and idea generation for future strategic planning activities of the partner organization.

Furthermore, the student teams were all invited to take part in the SCE Pitch Festival, which will take place on January 25<sup>th</sup>, 2022 and compete with other student teams for a prize of up to €1,000.

## Documents

The final documentation and prototypes developed by the six teams are available open access:

- [DiSols](#)
- [Team 2 Bike](#)
- [Fold'n Go](#)
- [reCyclers](#)
- [International Avengers](#)
- [Green Mile](#)

## About GXC

This project was a challenge the **GXC International Virtual Innovation Challenge** and is a special edition of the [Real Projects](#) course format, which was offered for the third time in the winter semester 2021/22 as part of the "GlobalXChanges/Challenges (GXC)" project. In our virtual online course, public governmental and non-governmental organizations propose innovation challenges that can be solved through digital technologies. Next, students from HM Hochschule München University of Applied Sciences (HM) and its four strategic partner institutions dive into an international virtual action-learning course. The students are divided into international interdisciplinary teams and follow an innovation process to tackle the proposed challenges and prototype solutions. The course includes video lectures and dynamic weekly live sessions with a professor for content input and additional tutoring and team coaching sessions with industry experts to advise on prototyping and mentor students in the challenges of remote international teamwork.

The GlobalXChanges/Challenges project is funded by the German Academic Exchange Service (DAAD) from funds of the Federal Ministry of Education and Research (BMBF). For more information on the GXC measures and the International Virtual Innovation Challenge visit [hm.edu/gxc](https://hm.edu/gxc).