



Experience the city's history in a new way with the innovative city app "BremerhavenGuide"

Author(s)

ECTN

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Type of best practice

VR/AR & Technologies, inc. Gamification & Immersive performances

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City history, cultural heritage, city identity, city tours, innovative, new experiences, digital

The "BremerhavenGuide" is a free app that brings the maritime cultural heritage of the city of Bremerhaven to life in an innovative and emotional way. The Bremerhaven APP developed by Erlebnis Bremerhaven Ltd. and the Department of Economics, Tourism and Science presents points of interest (sights, historical sites and attractions), a digital city map and interactive city tours. Users can call up individually selected points of interest (POIs) with the app and start themed guided tours of the city. The POIs are presented using informative and entertaining videos, audio stories, images and texts. The city can be experienced interactively at selected POIs through the implementation of augmented reality (AR) technology.

Organisation in charge of best practice

Erlebnis Bremerhaven GmbH - Experience Bremerhaven Tourism, Marketing and Events Company Ltd.

Location

Bremerhaven, Germany

Dates

Start June 2021 - Completion August 2022

Description

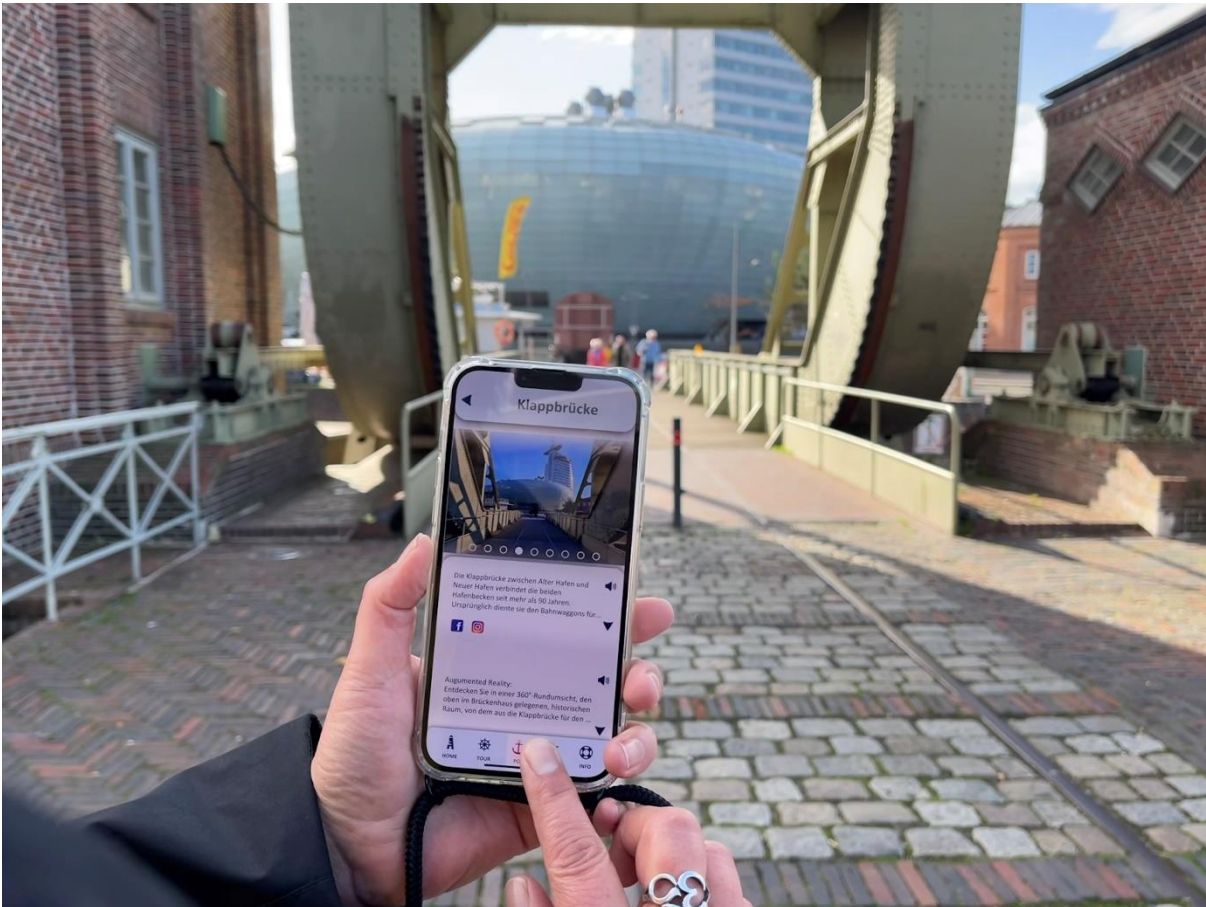
With the BremerhavenGuide app, users can go on a historical and cultural journey of discovery and experience places of culture and history, sights, insider places and scientific and tourist facilities. The BremerhavenGuide offers an interactive, digital city map in which various themed tours can be started, such as the historical tour "Experience a journey through time in Bremerhaven". The digital tour of the city's history takes you to interesting sights and historical locations. From the oldest active lighthouse on the German North Sea coast to the Historical Museum, the Emigration Monument and the historic bascule bridge.





The app uses videos, audio stories, images and texts to provide entertaining information at a total of 20 stations. At some "Points of Interest" (PoI), a very special information experience awaits the user. Whenever the word "Augmented Reality" (AR) is displayed on a PoI page, you can use your smartphone to explore unexpected insights, entertaining visualisations or exciting all-round views. AR technology offers users an enhanced city experience by merging the real environment with virtual elements. Virtual reality glasses are not required for the interactive city experience. The user only needs an AR-capable smartphone or tablet to play the AR scenes. The interactive experiences, which conventional sources of information cannot reproduce, evoke positive emotional reactions in the viewer (wow effect), which also contribute to an improved perception of the historical sites and cultural assets. The innovative storytelling, such as fascinating 360-degree views and the integration of numerous playful elements and activities, motivates users even more to engage with the city's historical sites and sights and also creates positive experiences.

The BremerhavenGuide is innovative from a technical and conceptual point of view and was designed as a virtual interface to the city society and local tourists and all interested parties as a tourism and city marketing tool. The user does not have to be on site to access the app content. The location-independent use of the information at any time enables greater and flexible dissemination of cultural and historical content. In addition, new digital contact points are created to address locals, future guests and interested parties.



Conceptually, the APP was conceived and designed from the user application. The clear and well-organised architecture of the app ensures a high level of user quality. In order to fulfil the different requirements of the users, the APP can be set to either English or German. The text size can also be customised. Frequently asked questions are answered under the "Info" tab and allow feedback to be sent.

The BremerhavenGuide was developed under the premise of sustainability. The dimension of social sustainability was taken into account in several respects. On the one hand, the cultural assets relevant to Bremerhaven, such as the historic bascule bridge at the New Harbour, the Simon-Loschen lighthouses and the rear light in the Fishery Harbour showcase and the converted historic fish station in the Fishery Harbour showcase, are presented in detail in the app. The city's cultural heritage is brought to life for visitors through innovative storytelling and promotes regional identity. The fascinating 360-degree views and AR elements make it possible to experience places such as historic ships that are difficult to make accessible to people with physical disabilities. AR technology also makes it possible to experience historical sites and sights that are not open to the public, offering users unique experiences. Among other things, the BremerhavenGuide enables a spectacular view from the Oberfeuer lighthouse, which is otherwise only accessible to the relevant personnel. The implementation of wind noises makes the scene even more authentic for the viewer.



With the BremerhavenGuide, the city of Bremerhaven wants to generate a wide reach and visibility for the historical and touristically relevant PoI in Bremerhaven. The BremerhavenGuide is also intended to attract new target groups such as young people with an affinity for mobile phones. The APP is intended to draw the attention of the city's society, tourists and interested parties to the tourism-related institutions of knowledge transfer, such as the German Maritime Museum - Leibnitz Institute of Maritime History and the German Emigration Centre, so that the exciting and informative offers of these institutions are used even more. To this end, the APP was designed in such a way that the respective digital tour can be interrupted at any time and the user can decide on the city experience themselves. The personalised use of the APP meets the user's need for individuality and enables the use of further information services on site at any time. To help users find their way around the city, their own location and the routes to the PoI locations are displayed on the city map. The app thus helps to make the historical and cultural sites that can be found throughout the city more visible to the user.

The content of the APP is created and managed via a content management system, which is located at Erlebnis Bremerhaven. As the tourism company (Erlebnis Bremerhaven) has direct access to the content of the APP, the BremerhavenGuide can be maintained and expanded by its own employees. The content does not become outdated and there is a sufficient degree of flexibility in the management of the BremerhavenGuide. An IT service provider only needs to be utilised for the development of AR scenes. The technical feasibility of the app is regularly monitored and adapted to the technical development of smartphone technology.

The presentation of the historical and cultural sites by the BremerhavenGuide provides digital rather than physical information. By dispensing with printed advertising media, natural resources are conserved and an active contribution is made to greater climate protection.

Links

www.bremerhaven.de/bremerhavenguide

Resources needed

Human and financial resources were required to develop the BremerhavenGuide app. However, scientific expertise was also required for the development of the APP and the integration of the innovative AR technology. In order to design a prototype and explore the various possibilities offered by the complex AR technology in the context of the APP, the Department of Economics, Tourism and Science, together with Erlebnis Bremerhaven, initiated a student project at Bremerhaven University of Applied Sciences in the Computer Science programme. The results of the project work served as the basis for the description of the rough concept and the definition of work packages, among other things.

Challenges encountered

The first step was to define and establish the structure and features of the mobile application to be developed. A joint workshop was held with the client (Erlebnis Bremerhaven) and the commissioned IT agency to complete this task, taking into account the technical feasibility. Together, key elements of the application such as the cloud





database, CMS system, interactive elements and app-compliant operating concept as well as intuitive use were defined. During the implementation of the new design and functional concept, however, sources of error arose that could not have been foreseen during the conceptualisation phase. An error management system was integrated so that these sources of error could be identified quickly and the application could be improved and optimised accordingly. Creating complete accessibility for the app is currently an unresolved challenge, as screen reader and keyboard use is not possible in the app. Solution structures are currently being developed and will be implemented in the near future. A further challenge was compliance with the legal framework provided by the General Data Protection Regulation. The application could only be implemented under the premise of compliance with the regulation. In addition to the technical and legal challenges, the development of the app also raised the question of the acceptance of AR technology. How will the technology be accepted in the newly developed app? What reservations exist regarding the communication of information through the use of AR technology? To answer these questions, the questions were examined as part of a master's thesis at Bremerhaven University of Applied Sciences in the "Digitalisation, Innovation and Information Management" course. The findings and recommendations derived from the master's thesis were taken into account in the further development of the APP.

Evidence of success

From the City of Bremerhaven's perspective, the BremerhavenGuide application is a successful medium for innovative communication of the city's history and culture. The combination of interactive map, virtual tours, use of AR technology and special city information results in a unique selling point of the application that makes the BremerhavenGuide attractive to use. The success of the application is reflected in the number of downloads. The BremerhavenGuide is available in the Google Play Store and the App Store. In both stores, the application achieves a large number of downloads and good user ratings. The reports in the public media such as regional daily newspapers, radio reports and posts in the social media also reflect the positive evaluation by the public. The impact of the application was also examined in a master's thesis at Bremerhaven University of Applied Sciences in the "Digitalisation, Innovation and Information Management" course. The evaluation of the BremerhavenGuide was analysed under various aspects using a survey. The evaluation of the survey shows that the BremerhavenGuide is accepted by people of all ages and that the respondents rate the presentation of the city's history and culture using the application and AR technology as attractive.

Potential for transfer

"The potential for transferring the application is very high, as the commissioned agency has developed a general functional concept as the basis for the BremerhavenGuide. This concept can be configured according to the individual needs and wishes of other cities. As the use of applications is becoming increasingly popular and the trend is being taken up by more and more cities and local authorities, there is also a need for corresponding service models for the development of city applications. The potential for transferability of the functional concept developed for the BremerhavenGuide as well as the increased demand is also reflected in the economic utilisation of the developed structures. The agency





commissioned with the implementation of the application offers the generalised concept as an offer model on the website <https://cityar.de/#featureInfo>. The basic application can be configured in different ways by customers and customised to suit individual circumstances. Following the publication of the BremerhavenGuide, the City of Bremen promptly published a corresponding application under the name ""BremenGo"". The design and structure correspond to the BremerhavenGuide. The applications differ only in their city-specific content.

Further Information

"Through the CMS system anchored at the tourism company, further content can be added to the BremerhavenGuide by the user. Since the launch of the application, further tours have been added that present both the history of the city and its identity. The following tours were developed under the premise of the individual characteristics of the city of Bremerhaven - fish, harbour and science city: Fishing Harbour Tour: On this tour, you can experience many interesting facts about fish from the past and present at 23 different locations. EnergieKlimaTour: The EnergieKlima Tour shows the many facets of climate protection at 10 different locations - innovative research, concrete applications and good examples. A ""wheelchair tour"" has been developed to fulfil the city of Bremerhaven's goal of participation for all. The tour has been developed for anyone travelling on wheels, with a wheelchair, rollator or pushchair or those with limited mobility. Other identification-creating tours, such as a tour to the museum ships, are currently being realised. A tour on the topic of sustainability will be developed in spring 2024.

