Manual for developing
digital waterways heritage tours

Bosman, Ayla, Maarleveld, Marleen, and Opmeer, Mark

Table of contents

Introduction

European Waterways Heritage: Re-evaluating European Minor Rivers and Canals as Cultural Landscapes (EUWATHER)

In many European countries, waterways are an important heritage asset. Canals and rivers are a significant part of urban and rural history, and essential to expanding commercial networks, flood control strategies, agriculture and industrial development. Inland waterways have bequeathed fascinating artefacts to our built environments, including towpaths, bridges, locks, shipyards, and warehouses. This architecture has sustained livelihoods for centuries and, more recently, offers opportunities for leisure and recreation. Canals have also served as sites of artistic inspiration, through literature, painting, poetry and song. However, while the cultural heritage of major rivers and canals is generally well known and publicly accessible in most countries, the heritage of minor rivers and canals is not so readily available or celebrated. The potential contribution that these important hydrological assets can make to local and regional sustainable development in Europe has therefore been quite limited.

The EUWATHER project aims to promote knowledge and rehabilitation of the cultural heritage of minor waterways and historic canals in Europe. Its objective is to develop new opportunities for eco-tourism and outdoor recreation as a driver for sustainable development. Participating project partners from Italy, Great Britain, Spain and The Netherlands have developed several (digital) tools that can help policy makers, resource managers, and entrepreneurs use the cultural heritage of minor waterways as a catalyst for developing a range of products and services associated with education, sustainable eco-tourism and outdoor recreation.

More information about the EUWATHER project, may be found on www.waterwaysexplorer.org. Here you will find more information about the project as well as a range of digital resource tools that have been developed to support the sustainable development of waterway heritage – in the partner countries and beyond.

Digital waterways heritage tours

With the spread of digital media and affordable smartphones with near-constant internet access and GPS technology, tourism and outdoor recreation has taken on new forms. Tourists no longer rely solely on human tour guides or books and maps to introduce them to places of cultural and natural heritage. Increasingly, people use web applications that provide them with maps, lists of attractions and descriptions.

During the EUWATHER project, new and existing technology and methods for creating digital waterways heritage tours have been developed tried to generate new ways of linking secondary waterways and cultural heritage. This new approach to cultural heritage tours have been co-designed with local communities, entrepreneurs and public officials in the case study areas in the participating countries. The tours

may be viewed in the 'Waterways Explorer App'. Each tour combines a map of the route with cultural heritage information of the area and of specific points of interests. The information is provided in audio and visual materials.

Purpose of the manual

There are various ways in which digital waterways heritage tours may be developed and used. This manual provides a roadmap for developing such tours based on the experience of the EUWATHER project, using ArcGIS online and IZI.Travel. The roadmap offers an overview of five steps to be undertaken to develop a waterways heritage tour:

1. Preparation
2. Orientation and presentation
3. Production and publication
4. Dissemination
5. Maintenance

Each step is explained in further detail in the following sections. The numbers in the roadmap correspond with the numbers of the section in which the step is explained. By following these steps, policy makers, resource managers, entrepreneurs, local communities and tourist organizations can create their own waterways heritage tours and further develop sustainable tourism and outdoor recreation in their region.

If you are interested to have the route included in the 'Waterways Explorer App', please mail to (one of) the contact mail addresses listed on page 1.

Roadmap to developing a water heritage tour

1 Preparation

Overview of the water heritage tour

↓ No   Yes ↓

2 Orientation and presentation

ArcGIS Online

→

3 Production and publication

IZI.Travel

4 Dissemination

Marketing and promotion

5 Maintenance

Monitoring and updating

1. Preparation of a waterways heritage tour

The first step in developing an online waterways cultural heritage tour is to establish an overview of the tour to be developed. This is a crucial step. The questions below help to determine how clear your vision of the tour is.

a) Who is your target audience? The itinerary and content of the water heritage tour depends on for whom you are creating it.

b) How may partners add value? Who are/should be partners in developing, disseminating and maintaining the tour? What is the intended role of partners? Partners might include local harbour masters, museums, NGOs, tourist organizations, historical societies, government organizations or local businesses like a boat rental.

c) What is the location of the tour (region, municipality/municipalities)? Which waterways are to be included in the tour?

d) What is the means of transport of the tour? Is it possible to boat/ sail on the waterways and/or walk/ bike along the waterways? Or even a combination of any of those means?

e) What is the desired length of the tour? In length? In time?

f) What is the exact itinerary of the tour? Are there restrictions that should be considered?

g) Which points of interest (POIs) are interesting to include in the tour? Where exactly should these be located along the itinerary to provide optimal information? How many POIs are desirable?

h) What type of information, audio and visuals are to be added to these POIs, the tour in general or to the introduction?

i) Are cross-overs desirable? For example, combinations of walking/boating/biking or a visit to a museum or a restaurant?

Follow-up:

➢ If you were not able to answer all the questions to your satisfaction, there are several follow-up options. You might want to take some more time for this step. A suggestion is to speak with other stakeholders in (the area of) your potential tour. Step 2 of the roadmap, Orientation and presentation, will help you to fine-tune the overview of the waterways heritage tour to be developed. The EUWATHER website and tools may also be accessed for inspiration and information.

➢ If you have a clear overview of the tour that you wish to develop, continue to step 3: Production and Publication. However, even in this case it may be worth to consider taking step 2, by checking the information available through ArcGIS Online. You may find information that you have overlooked or did know about.

2. Orientation and presentation

In this step, more detailed orientation and presentation of the tour is discussed. The online web application ArcGIS Online provides a useful means for sharing and searching for geographic information. The EUWATHER platform on ArcGIS Online provides access to existing cultural heritage data. In ArcGIS Online, cultural heritage data may be combined with additional geographic data. The platform may be used for orientation and presentation, such as:

- analysing the data available to enrich the overview of the tour to be developed;
- making a draft of the tour and;
- presenting the (draft) tour to (potential) partners and stakeholders to receive feedback and support.

ArcGIS Online is especially useful if you are not entirely sure what the tour itinerary and points of interests should be, as it is a great database. Using ArcGIS Online for the first time may require some perseverance. ArcGIS Online has its own tutorials, which may be followed. The information below provide a summary of the steps to access the database and presenting your (draft) tour, and are illustrated by screenshots.

2.1. Creating a map
a. Create a (free, for non-commercial use public) account on the ArcGIS Online website.
b. After logging in, choose "Content" from the upper toolbar.
c. Choose "Develop" and then "Map"
d. After naming your map, you can choose to add tags or a summary, but this is not required.

New Map

Specify a title, tags, and summary for the new map.

Title: | Enter a title |

Tags: | Add tag(s) |

Summary: | Enter a summary (Optional) |

Save in folder: | ▼ |

OK   CANCEL

Image 1 Creating a map in ArcGIS Online

2.2. Design a draft tour

a. Select "Add" and "Add map notes" in the top toolbar.
b. Choose the same name as you did for the map. You will be asked to name your draft tour a couple more times in later steps, give it the same name every time to avoid confusion.
c. Adding map notes will automatically launch you into the edit mode. If this is not the case, you can turn the edit mode on by choosing "Edit" in the top toolbar.
d. Choose "Freehand Line" under Add Features to draw an itinerary on the map. This itinerary is the path the user follows to visit the different points of interests.
e. Draw the line and name it.
f. Add the points of interests (POIs) to the map. These are locations with interesting cultural heritage along the itinerary. You can add specific information about these locations.
   - Click "Add" again, but now choose "Pin".
   - Name the POIs
   - Enrich the POIs with additional information, such as a description or images. The next step will describe in more detail how to add this additional information.
   - Symbols can be edited by choosing "Change symbol"
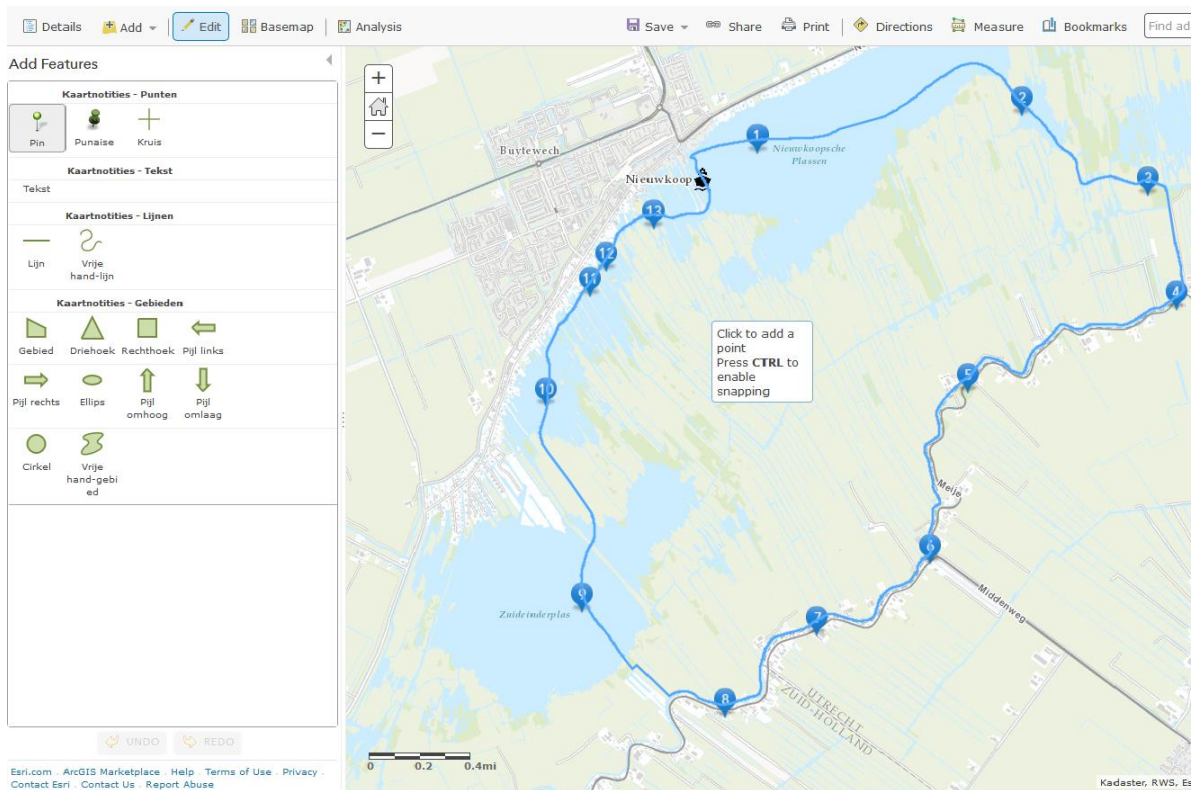   - Add as many POIs as are relevant.

Image 2 Designing your tour in ArcGIS Online

2.3. Enrich the POIs

a. One way to enrich the POIs is through adding additional information. The Waterways Explorer website features a lot of information, but the information may be added form other sources such as your own digital archive, and the internet. Be sure to check if additional information from other sources is free of copyright.

- To add a clickable link to this information, click the chain symbol above the description box ("Develop link"). This allows you to develop a hyperlink. Copy the URL of the relevant page and name your hyperlink. If a user clicks your link now, a window opens to the selected web page.

b. The Waterways Explorer website also features an image bank which may be used to enrich your POI. Images from other sources may also be added. Be sure to check if additional information from other sources is free of copyright.

- To add an image, copy its URL from the source webpage, and paste it into the box "Image URL" (note: not "Image Link URL"). The image will now be displayed whenever the POI is selected.
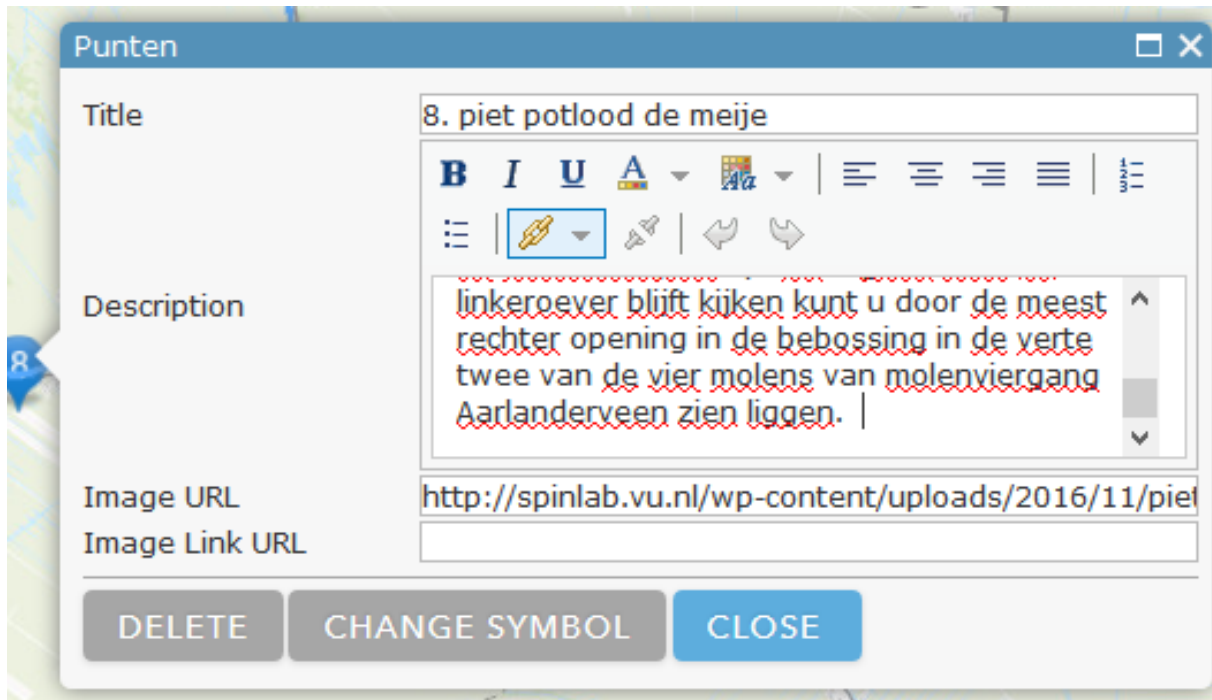
Image 3 Enriching a POI

2.4. Presenting the draft tour: export to StoryMaps

a. The draft tour is almost ready to be presented. Save it by clicking "Save" in the toolbar.
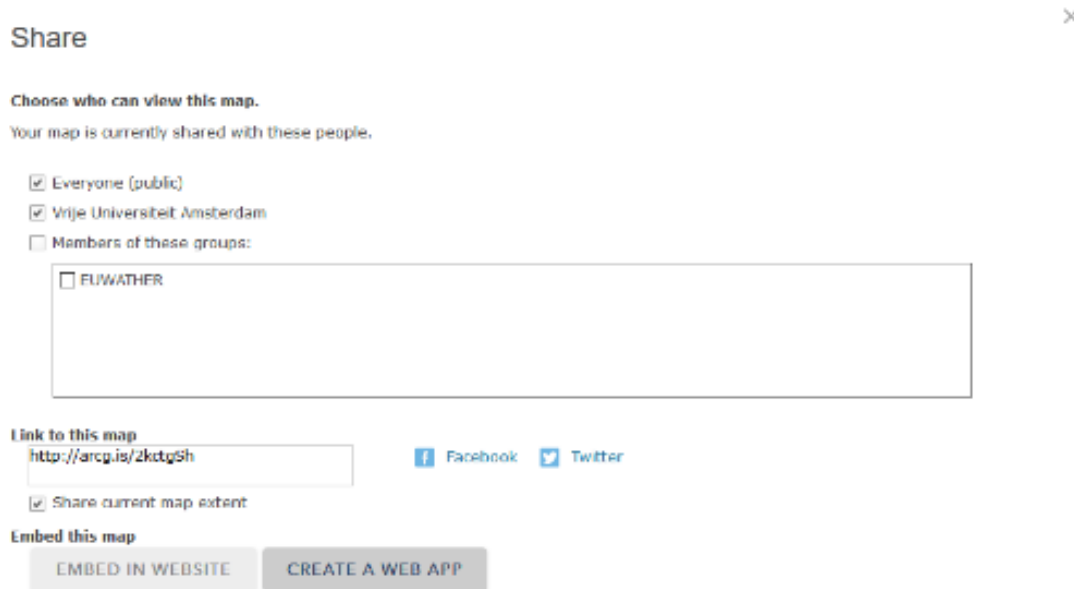
b. Choose "Share" and the button "Create a web app".

Image 4 Sharing the map (choose "Develop a Web App")

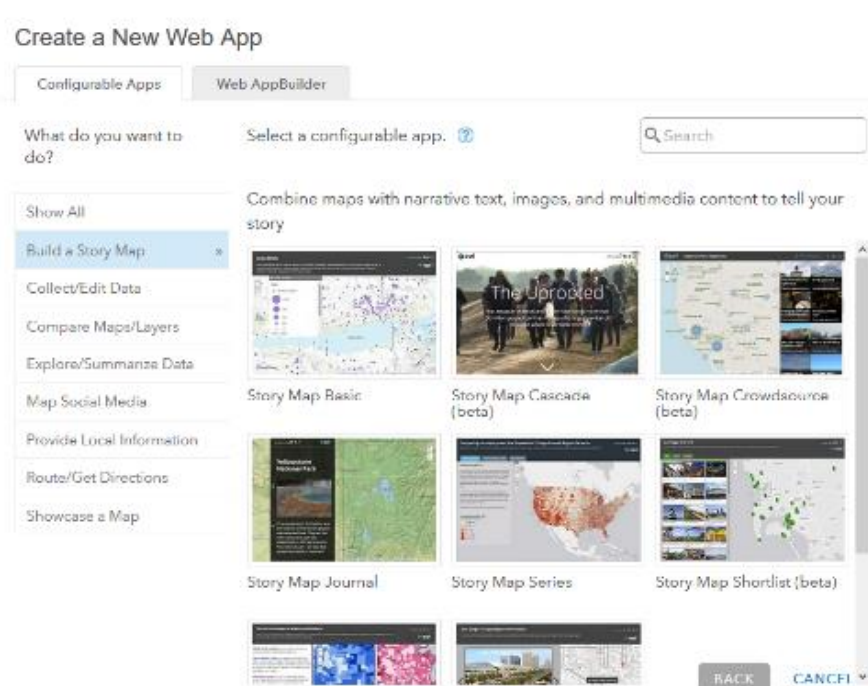c. Choose "Build A Story Map", "Story Map Series" and "Develop Web App".

Image 5 Creating a Web App (choose "Build a Story Map")

d. Pick "Side Accordion" as your lay-out style and name the story map.
e. In the "Add Entry"-menu, click on "Map" and choose the map that you just developed. Do not forget to name it (again).
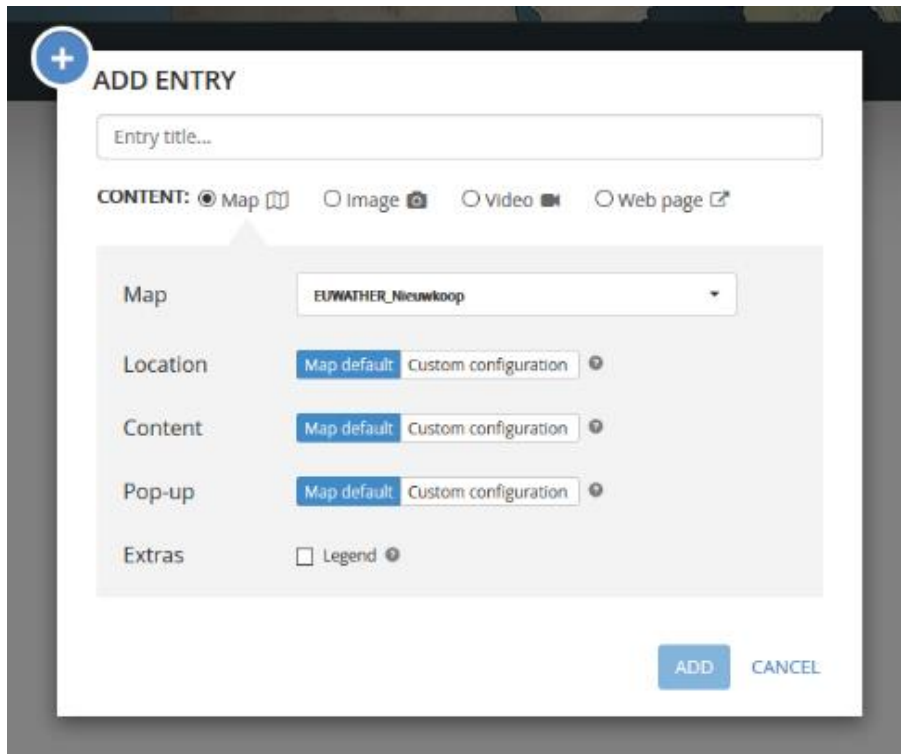

Image 6 Adding an entry (choose the map you just developed)

f. After adding the map, you will see the Story Map dashboard, which consists of the accordion menu on the left and the multimedia viewer on the right.
g. Click "Add" to add your storytelling. Every entry allows you to add text (The narrative) and to enrich it with multimedia.
    - To add images from the EUWATHER image bank, click "Link" and paste the image URL in the "Image link" field.
    - Note: the information you provide here will only be saved in this story map, not in the map you developed before.
    - Note: entries cannot be removed from the story map, so be careful in adding.
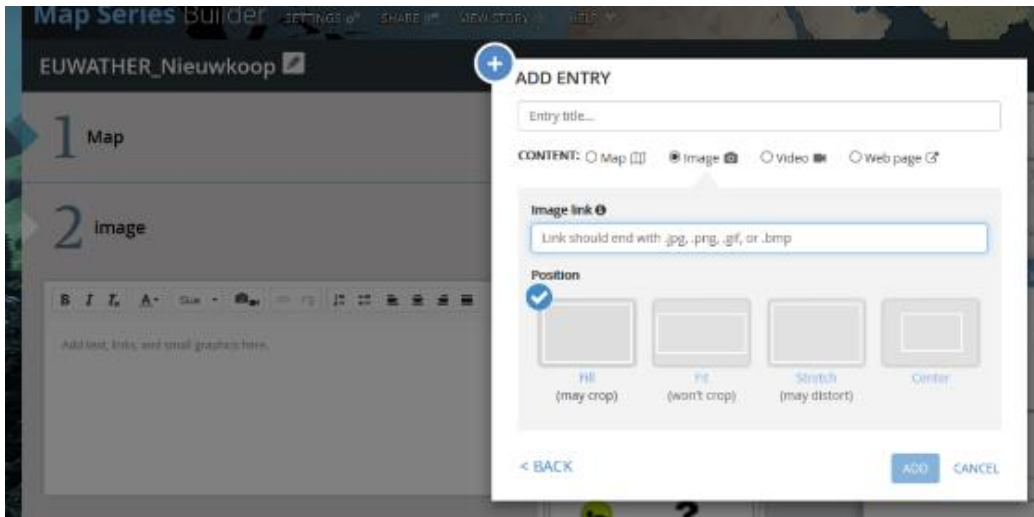
Image 7 Adding an entry to the storytelling

h. When you have finished the storytelling, save it using the button on the top right of the screen.

i. Choose "Share" to publish it. You can now present the draft to gather feedback. Use the link provided under "Socialize" to open the mobile version of your story map on your phone or tablet.

Image 8 Sharing the Story Map

Follow-up:
  ➢ Continue to fine-tune the draft tour and presentation in this step if this is necessary.
  ➢ If you are satisfied with the draft and now have a clear overview of the tour (including POIs, information you want to add, etc.), continue to step 3: Production and publication of the water heritage tour.

3. Production and publication
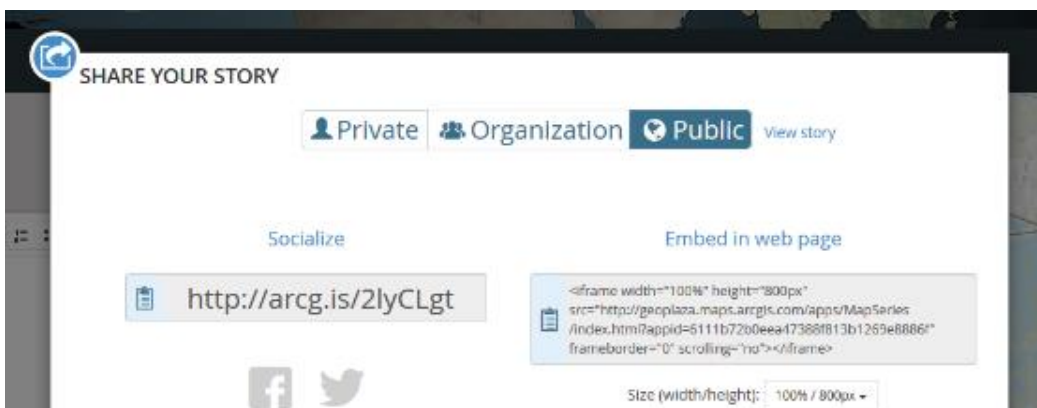
The next step is the actual online production and publication of the tour. There are various ways in which digital waterways heritage tours may be developed. During the EUWATHER project, IZI.Travel proved a useful and user-friendly free platform to do so. IZI.Travel is an online (audio) guide platform, specifically designed to develop tours. Adding audio is not required. However, it is recommended, as it adds and both depth and a more comfortable way of experiencing the tour, especially if it is a boating or biking tour. The online production and publication of the tour is via the IZI.Travel website. Users may view the published tour via the website or the IZI.Travel app on a tablet or smartphone. An IZI.Travel account is necessary to produce and publish an online tour and to view tours via the app.

Publishing the tour is only advised if you have a clear overview of the waterways heritage tour to be developed. The options provided for creating tours are limited. It is for example not possible to see who edited what in the tour, or even duplicate POIs.

To publish your IZI.Travel tour, follow the steps below.

3.1. Creating your tour

a.   Create an account on the IZI.Travel website.
b.   After logging in, your dashboard will be shown. To develop a tour, click on the red button "+ Develop" at the top of the screen.
c.   Choose the option "Tour".
   ➢ Name your tour. Note that IZI.Travel provides users with public tours when searching in a specific area or on a specific term. When chosen effectively, the name of your tour contributes to the promotion for your tour. If you are interested to have the route included in the 'Waterways Explorer App', please mail to (one of) the contact mail addresses listed on page 1.
   ➢ We recommend keeping the setting for "Playback type" on "Random", though of course you are free to explore all the options.
   ➢ Choose the means of transport through which your tour should be done.
   ➢ And finally, choose the language in which the tour will be told. It is possible to add multiple languages in the same tour later.
d.   IZI.Travel will now automatically show you its own tutorial. Follow the steps in the tutorial to develop your tour.
e.   Do not forget to enrich your POIs with additional information. See step 2.3 of this manual for ways to do this.
f.   When finished, choose "Only users who have passcode", for publication of the tour. After checking the tour in the next step (3.2 - Checking the tour), you will choose "Everyone".

Image 9 Example of an IZI.Travel tour

3.2. Checking the tour

Checking your tour is essential. The checking should be done in multiple ways. Do not forget to provide those who check the tour with the necessary passcode to view the tour in IZI.Travel (for your passcode, check step 3.1f).

a. Text check: ask others to proof-read.
b. Check audio and visual material: check if the quality of audio and visual material is sufficient.
c. Field check: test the tour in the field using the mode of transport chosen for the tour. Do the field check preferably with someone in your target audience and partners in the region. It is useful to not only take notes, but also photographs during the field check.
d. Process the feedback and improve your tour. It may be necessary to check the adapted tour.

Follow-up:
➢ Check tour and process your feedback as much as you believe necessary. It is an iterative process.
➢ If you are satisfied with the tour, publish the tour in IZI.Travel by choosing "Everyone" for "Who can see it in the mobile application?" (top left, next to the title of the tour). Continue to step 4: Dissemination.

4. Dissemination

The target audience will not automatically find your waterways heritage tour. For this reason, it is important to make a plan for disseminating the tour, including marketing and promotion. This may be through your own organisation. Most often it is more effective to involve partners and stakeholders in the region of the tour.

Possible ways for dissemination are public events, meetings and seminars involving (regional) stakeholders, leaflets to be distributed in tourist offices, banners and temporary (pop-up) exhibitions, and of course social media (Facebook, Twitter).

Follow up:
> ➢ Dissemination is not a one-time action. Be sure to promote the tour on a regular basis.

5. Maintenance

The last step in the roadmap for developing a water heritage tour is maintenance. To ensure the water heritage tour is up to date, it is important to monitor and regularly update the tour.

a) Users can provide feedback through IZI.Travel. Be sure to check reviews regularly and update the route depending on the feedback. These reviews can be accessed on the IZI.Travel dashboard, under "Reviews".
b) IZI.Travel provides its own statistics on the tour, including stats about the users of the tour and POI-specific stats. These statistics can be accessed on the IZI.Travel dashboard, under "Visit stats".
c) Repeat the field check on at least a yearly basis.

Follow-up:
> ➢ Update the water heritage route depending on reviews, statistics, evaluations and regular field checks.
> ➢ Develop another water heritage route.

References

If you are interested in learning more about the value of developing cultural history tours and ways to do so, the references below provide additional and more detailed information.

Alderman, Derek H., David L. Butler, and Stephen P. Hanna. "Memory, Slavery, and Plantation Museums: The River Road Project." *Journal of Heritage Tourism* 11, no. 3 (July 2, 2016): 209–18. doi:10.1080/1743873X.2015.1100629.

"Article Leanza et Al Developing a Heritage-Interpretation Based Itinerary 2016.Pdf," n.d.

Boiano, Stefania, Jonathan P. Bowen, and Giuliano Gaia. "Usability, Design and Content Issues of Mobile Apps for Cultural Heritage Promotion: The Malta Culture Guide Experience." *ArXiv Preprint ArXiv:1207.3422*, 2012. http://arxiv.org/abs/1207.3422.

Chang, Yu-Lien, Huei-Tse Hou, Chao-Yang Pan, Yao-Ting Sung, and Kuo-En Chang. "Apply an Augmented Reality in a Mobile Guidance to Increase Sense of Place for Heritage Places." *Journal of Educational Technology & Society* 18, no. 2 (2015): 166–178.

Chung, Namho, Heejeong Han, and Youhee Joun. "Tourists' Intention to Visit a Destination: The Role of Augmented Reality (AR) Application for a Heritage Site." *Computers in Human Behavior* 50 (September 2015): 588–99. doi:10.1016/j.chb.2015.02.068.

Di Pietro, Laura, Roberta Guglielmetti Mugion, Giovanni Mattia, and Maria Francesca Renzi. "Cultural Heritage and Consumer Behaviour: A Survey on Italian Cultural Visitors." *Journal of Cultural Heritage Management and Sustainable Development* 5, no. 1 (May 18, 2015): 61–81. doi:10.1108/JCHMSD-03-2013-0009.

Dieck, M. Claudia tom, and Timothy Jung. "A Theoretical Model of Mobile Augmented Reality Acceptance in Urban Heritage Tourism." *Current Issues in Tourism*, July 30, 2015, 1–21. doi:10.1080/13683500.2015.1070801.

Dollani, Arta, Antonella Lerario, and Nicola Maiellaro. "Sustaining Cultural and Natural Heritage in Albania." *Sustainability* 8, no. 8 (August 11, 2016): 792. doi:10.3390/su8080792.

"Driving Engagement in Heritage Sites Using Personal Mobile Technology.Pdf." Accessed August 31, 2016. https://www.dora.dmu.ac.uk/bitstream/handle/2086/11966/Driving%20Engagem ent%20in%20Heritage%20Sites%20Using%20Personal%20Mobile%20Technolo gy.pdf?sequence=1&isAllowed=y.

Garrido, Raynel Mendoza, Danilo Vargas Jiménez, Silvia Baldiris, and Ramon Fabregat. "'Social Heritage' Augmented Reality Application to Heritage Education." In *Augmented and Virtual Reality*, edited by Lucio Tommaso De Paolis and Antonio Mongelli, 9254:17–24. Cham: Springer International Publishing, 2015. http://link.springer.com/10.1007/978-3-319-22888-4_2.

Giaccardi, Elisa, and Leysia Palen. "The Social Production of Heritage through Cross-media Interaction: Making Place for Place-making." *International Journal of Heritage Studies* 14, no. 3 (May 2008): 281–97. doi:10.1080/13527250801953827.

Han, Kyungsik, Patrick C. Shih, Mary Beth Rosson, and John M. Carroll. "Enhancing Community Awareness of and Participation in Local Heritage with a Mobile Application," 1144–55. ACM Press, 2014. doi:10.1145/2531602.2531640.

Hincapie, Mauricio, Christian Diaz, Maria Zapata, and Camilo Mesias. "Methodological Framework for the Design and Development of Applications for Reactivation of Cultural Heritage: Case Study Cisneros Marketplace at Medellin, Colombia." *Journal on Computing and Cultural Heritage* 9, no. 2 (January 28, 2016): 1–24. doi:10.1145/2827856.

Hooper-Greenhill, Eilean. "Measuring Learning Outcomes in Museums, Archives and Libraries: The Learning Impact Research Project (LIRP)." *International Journal of Heritage Studies* 10, no. 2 (May 2004): 151–74. doi:10.1080/13527250410001692877.

Kempiak, Joanna, Lynsey Hollywood, Peter Bolan, and Una McMahon-Beattie. "The Heritage Tourist: An Understanding of the Visitor Experience at Heritage Attractions." *International Journal of Heritage Studies*, January 27, 2017, 1–18. doi:10.1080/13527258.2016.1277776.

Khan, Muqeem, and Penny de Byl. "Technology Intervention for the Preservation of Intangible Cultural Heritage (ICH):" *International Journal of Knowledge Society Research* 4, no. 2 (32 2013): 1–8. doi:10.4018/jksr.2013040101.

Leanza, Paola, Simona Porto, Vincenzo Sapienza, and Santi Cascone. "A Heritage Interpretation-Based Itinerary to Enhance Tourist Use of Traditional Rural Buildings." *Sustainability* 8, no. 1 (January 6, 2016): 47. doi:10.3390/su8010047.

Lee, Yi-Ju. "Creating Memorable Experiences in a Reuse Heritage Site." *Annals of Tourism Research* 55 (November 2015): 155–70. doi:10.1016/j.annals.2015.09.009.

Lombardo, Vincenzo, and Rossana Damiano. "Storytelling on Mobile Devices for Cultural Heritage." *New Review of Hypermedia and Multimedia* 18, no. 1–2 (March 2012): 11–35. doi:10.1080/13614568.2012.617846.

Martina, Andrea. "Virtual Heritage: New Technologies for Edutainment." Politecnico di Torino, 2014. http://porto.polito.it/2541502/1/MARTINA.ANDREA.PHD.THESIS.pdf.

Mortara, Michela, Chiara Eva Catalano, Francesco Bellotti, Giusy Fiucci, Minica Houry-Panchetti, and Panagiotis Petridis. "Learning Cultural Heritage by Serious Games." *Journal of Cultural Heritage* 15, no. 3 (May 2014): 318–25. doi:10.1016/j.culher.2013.04.004.

O'Keefe, Brian, and David Benyon. "Using the Blended Spaces Framework to Design Heritage Stories with Schoolchildren." *International Journal of Child-Computer Interaction* 6 (December 2015): 7–16. doi:10.1016/j.ijcci.2016.02.001.

O'Keefe, Brian, David Benyon, Gaurav Chandwani, and Madhav Menon. "A Blended Space for Heritage Storytelling," 90–99, 2014. doi:10.14236/ewic/hci2014.10.

Pavlova, Lilia, Lubomil Draganov, Detelin Luchev, Desislava Paneva-Marinova, György Szántó, Zsolt László Márkus, Tibor Szkaliczki, and others. "Technology-Enhanced Learning for Cultural Heritage." *Digital Presentation and Preservation of Cultural and Scientific Heritage*, no. V (2015): 293–301.

Pendit, Ulka Chandini, Syamsul Bahrin Zaibon, and Juliana Aida Abu Bakar. "Mobile Augmented Reality for Enjoyable Informal Learning in Cultural Heritage Site." *International Journal of Computer Applications* 92, no. 14 (2014). http://search.proquest.com/openview/574f50014413fc6887f45d48a0abf246/1?pq-origsite=gscholar.

Rubino, Irene, Claudia Barberis, Jetmir Xhembulla, and Giovanni Malnati. "Integrating a Location-Based Mobile Game in the Museum Visit: Evaluating Visitors' Behaviour and Learning." *Journal on Computing and Cultural Heritage* 8, no. 3 (May 7, 2015): 1–18. doi:10.1145/2724723.

Schieder, Theresa Karolina, Asta Adukaite, and Lorenzo Cantoni. "Mobile Apps Devoted to UNESCO World Heritage Sites: A Map." In *Information and Communication Technologies in Tourism 2014*, edited by Zheng Xiang and Iis Tussyadiah, 17–29. Cham: Springer International Publishing, 2013. http://link.springer.com/10.1007/978-3-319-03973-2_2.

Simonettoa, E., C. Froment, E. Labergerie, G. Ferré, B. Séchet, H. Chédorge, J. Cali, and L. Polidori. "Valorisation of Cultural Heritage Through Virtual Visit and Augmented Reality: The Case of the Abbey of Epau (France)." *ISPRS Annals of Photogrammetry, Remote Sensing and Spatial Information Sciences* 1, no. 1 (2013): 289–294.

Telling Our Stories: An Interpretation Manual for Heritage Partners. Vol. 135, 2008.

"The Social Production of Heritage through Cross Media Interaction Making Place for Place Making.Pdf," n.d.