

# AUGMENTED REALITY WITH A WEB-BROWSER INSTEAD OF A SEPARATE APP - LESSONS LEARNED FROM THE POP-UP EXHIBITION "THE PARSONAGE" (DAS PFARRHAUS).

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**SUMMARY:** Using Augmented Reality elements in exhibitions allows to show additional information and attracts additional attention and means of interaction for the visitors. They can also help visualize complex topics and adds up to date information to an exhibition created a while ago. There are many ways to use Augmented Reality to enhance a visit to the exhibition, allowing visitors to use their own device. However most smartphone or tablet owners don't like to install new Apps just because they spend 2 hours in a museum. Using web-technologies to create Augmented Reality experiences frees the museum from convincing the visitors to download an additional App. But it does more. As the user just uses his mobile Web-Browser to see the additional Augmented Reality feature, this Web-AR can easily be integrated into the accompanying website of the exhibition. This can save maintenance and update-spendings. And at the same time create additional traction with outside visitors of the museum. However Web-AR still comes with some drawbacks. Therefore each case has to be looked at separately. In this talk we go into detail about first lessons we learnt from doing Web-AR vs. App-AR applications.

## 1. INTRODUCTION

Using Augmented Reality elements in exhibitions allows to show additional information and attracts additional attention and means of interaction for the visitors. They can also help visualize complex topics, bring magically far away planets closer or adds up to date information to an exhibition created a while ago. There are many ways to use Augmented Reality to enhance a visit to the exhibition, allowing visitors to use their own device. However most smartphone or tablet owners don't like to install new Apps just because they spend 2 hours in a museum. Using web-technologies to create Augmented Reality experiences frees the museum from convincing the visitors to download an additional App. But it does more. As the user just uses his mobile Web-Browser to see the additional Augmented Reality feature, this Web-AR can easily be integrated into the accompanying website of the exhibition. This can save maintenance and update-spendings. And at the same time create additional traction with outside visitors of the museum.

However Web-AR still comes with some drawbacks. Therefore each case has to be looked at separately. As a case study we evaluated the possibilities and challenges of creating an AR experience with currently available web technologies for the the Pop-Up exhibition "The Parsonage" (Das Pfarrhaus). The exhibition is part of a Transmedia project with the documentary feature film "Pastor's children - punks politicians and philosophers", written and directed by Angela Zumpe, and the web-documentary "Flourishings from the Pastor's garden".



When talking about Augmented Reality the creative possibilities seem to be endless. Just by pointing your smartphone to an exhibit magic happens and on top of paintings, next to a dead animal or on the floor things come to life on the screen. It brings interactive possibilities into any area without actually having to build or print something physically. This additional information layer can be used in many ways.

Until now this technically involves creating a special native AR-App, which the user has to download before or at the museum. Many museums already have Apps and know about the difficulties that come with it: mostly only very few visitors are willing to install a new App on their Smartphone. Esp. as a lot of people have concerns about security or space left on their devices. Both is not an issue with a browser they are using on a daily basis anyhow. And the museum itself has to get the App created for at least two operating systems. These expenses still discourage museums to create native Apps. This is especially true if the aim is to update the service frequently with new content or new temporary exhibitions. This also can often be achieved more efficiently by using browser-based Augmented Reality, as content updates don't require to publish an update on the Appstores, but it's as instantly as updating a website via a CMS.

## 2. MAIN ASPECTS

The Pop-Up installation "The Parsonage" cites typical elements of the interior of a traditional parsonage, giving insight into the history and living of the pastors over time. The audience can walk throughout a representation of the pastors library, his garden with real living plants, salon-style hang paintings, the kitchen and the pastors room and explore the influence of the parsonage and the pastors children to society back then and now. Traditional exhibition elements, short films, animations and interviews with pastor's children give insight into the upbringing and values of a pastor's home. A miniature model village with a pastor's house and a church at its center asks the user to reflect the change of the role of the pastor in today's society and what the future brings.

By design we decided to keep these representations rather simple. The exhibition is conceptualized in collaboration with the renown architecture office Saygel&Schreiber erlin (Guggenheim Museum NY, Centre

Pompidou Paris, Kunsthau Graz, The New Museum NY and more), curator Bodo Baumunk and Prof. Angela Zumpe and is designed and produced by students of the University of Applied Sciences in Dessau.

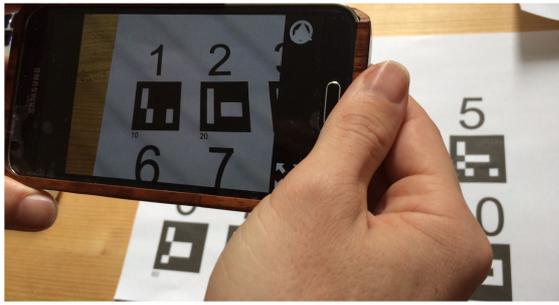
As a Pop-Up installation it will sometimes only be in one place for one day and travel all over Germany to many places, institutions and museums in 2017 for the 500 year anniversary of the Lutheran reformation. The Pop-Up installation is therefore conceived to fit in small places and naturally to be easily transportable.

These conditions limited the amount of content we were able to place in the exhibitions physically. We expected to hold the attention of visitors from 15 up to 90 minutes, if they'd watch all content. And for short visits the willingness to install a new App on your personal phone would be even smaller than compared to visiting a large many hour exhibition place. Also all technical equipment that may break more easily than wood or steel should be kept to a minimum. Still we wanted to use more than just the couple of screens and the big LCD monitor to show moving image, as we had hours of interviews from the creation of the film. And we wanted to update the installation as we go along in 2017 to different places. As we already had a web-documentary that serves as the main goto place for everyone interested in the project we were looking to enhance this goto place and not create distraction by having a separate native App. As the installation being an art piece itself we felt we should provide added value to the visitor in an innovative way.

Before we finally decided to go for the road of Web-AR, we were looking into the drawbacks of this technology.

AR is magic, out of nothing something can appear in the view of the user. But it only happens in certain places. The user has to know where to point his device to. This has to be obvious and simple. QR codes are generally known and accepted and have already been used to bring users to a web destination.

Therefore the drawback, that "pure" Web-AR currently only can use QR-like markers, and does not work hidden with any image to trigger the AR feature, was not a disadvantage for us, but a needed prerequisite.

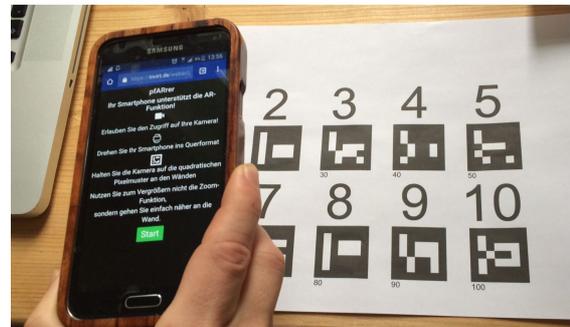


AR in a browser is something people would not expect from their browser. And this is indeed a technology that is in development. That means not all browsers support this feature already. But the Chrome and Firefox Browser do support it and that's most of the Android market share. Updating your browser to the latest version is something that people are more willing to do and should do, as this AR feature should not be the main reason to update. Because the Safari browser until now (October 2016) does not support the browser access to the camera Apple smartphones and tablets can't handle the Web-AR. To not exclude Apple users from our Web-AR-App we created an extension for the Web-AR-App that lets them access the same content like Android users. We hope that Apple will soon update their ecosystem with that feature.

As the AR happens on demand in the browser, just the content that the user selects for watching is downloaded from the internet. This is esp. an advantage if the user uses his mobile internet connection with a limited data quota. In case the museum provides a free WIFI with internet, this is not a concern any more, as well as for the many users that have big or unlimited data plans. All in all the data download volume of the Web-AR will never be more than that of the App-AR which usually already includes all content.

In AR usually you place an object, film or text on top or in relation of a given surface, that is being defined by the marker. That's the same in Web-AR. For native app development there are AR-Toolkits by various companies that are trying to perfect the way how the placements of the AR content in the real world is made. In Web-AR this is made only by script code that also enables dynamic websites. Because this code is interpreted before execution it runs slower, this can result in a slightly “wobbly” and not as precise positioning of the content as in an App. One reason the AR-Engines only support native apps so far may be the fact that it is not possible to fully protect the source code as

intellectual property in the Web in the same way as you can do in an App. Since Web-AR is open about its source code, it's possible to copy it, but also to improve it. As this makes it difficult to commercialize the technology easily, the big players in AR-Engines don't see this as a field of their business so far. This however also means it might be potentially less costs involved to create, maintain and update a Web-AR App as no traditional AR-Engine license fee applies. In our case we used existing open source material and worked quite a lot on it to improve it and build new functions into it. So there is additional development work needed to realize Web-AR - at least once for the underlying framework. To introduce how the Web-AR works, we created a startpage, that shows different options if you have an Apple or Android device and tells you how to handle the Web-AR best.



What is true for the Web-AR-Engines is also true for the Web-AR itself: it's on the web and therefore not easy to monetize, because although paywalls on the web are technically possible, they are hardly widely accepted by the users. But for museum and culture uses we don't see much monetisation efforts via Apps, so that's not a main disadvantage.

Also not only the code, but also the content can in theory be more easily copied from Web-AR compared to App-AR. Even if only visual details of the exhibit, texts, interviews and web-ready-images are used in the AR, it is suggested to be taken into consideration on a case by case basis when creating or selecting the content for the AR feature.

#### 4. SUMMARY

Generally speaking we found that Web-AR is very useful and with many advantages for our case of a travelling Pop-up installation, as its instantly accessible for most users, the content can also be accessed for Apple users. It needs no downloads, less explanation, and with our limited amount of AR-content it felt more reasonable to not invest into creating a full AR-App and put it on the App stores.

The system is not perfect, but we see a lot of ways to improve the features and user experience for it and update content faster.

#### 5. REFERENCES / THANKS

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