Redesign and unification of the web view of AMCS

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Auditorium Mobile Classroom Service (AMCS) is an Audience Response system that is actively developed by several individuals at the TU Dresden since 2012. In the educational context, speakers and docents use it to enhance and manage their lectures during the semester. One of the main goals of AMCS is to improve the way knowledge is presented and transferred to the audience by offering interactive polls that students can participate in before, during and after a lecture. Several standalone front end applications for platforms like iOS, Android and web are provided that enable usage of the system. However because of its ease of access, a majority of students use the system via their web browsers on different mobile devices such as laptops, tablets and smartphones. Regarding usability, design and consistency, the challenge lays in providing a unified and responsive user interface across all supported platforms that is intuitive to use.

1 Introduction

1.1 Motivation

AMCS (Auditorium Mobile Classroom Service) is an Audience Response System (ARS) currently under development at the TU Dresden. Several members of the Faculty of Computer Science initialized the project in 2012 and since then, the system and its community have grown continuously and countless features were added over the years.

In general, the system's main objective is to improve the way knowledge is transferred from a speaker to their audience. By providing interactive polls and evaluation mechanisms, AMCS hopes to increase the audience's engagement before, during and after a lecture takes place, overall strengthening the interaction between speaker and audience.

On the one hand, several features of AMCS are designed to support speakers in their role. Regarding the educational context, docents at university use it not only during their lecture to get immediate feedback from participating students. Furthermore, it is used during the whole semester to prepare and manage lectures, to analyze learning progress and to evaluate feedback given by students. More specifically, a speaker can gain insight on the understanding of their audience by evaluating answers to their polls. For example, poor results to a poll covering a certain topic might suggest that the topic was misunderstood or badly explained. AMCS enables the speaker to use precisely this information, helping to identify parts of their lectures that students might struggle with. Speakers can focus more easily on repeating and emphasizing these topics in the future.

On the other hand, AMCS provides a set of features to the audience that aim at increasing their engagement. The system aims at supporting a student's learning process by providing interactive polls, question pools and self-evaluation mechanisms that work on saved answers. While the polls are often used during lectures, the latter two tools can be used afterwards to identify and repeat difficult questions, to prepare for the next lesson or to study for the examination.

Several standalone front end applications for different platforms such as iOS, Android and web are provided to the audience. However AMCS is used by the majority of students via its web page across different mobile devices such as laptops, tablets and smartphones, likely because it is very easy to access.

Regarding the web page being the most common way AMCS is used, the challenge lays in

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providing a unified and responsive web-based user interface across all aforementioned device types. The motivation of this work is to analyze the application's state in terms of usability, design and consistency, identify weaknesses in each category and provide a set of proposals that hope to improve the design currently in place.

1.2 Objective

The main objective of this work is to provide a redesign strategy that - when implemented - improves the mostly used web view of AMCS that is currently in place. Each proposal for itself is focused at improving usability of the application while all proposals as a whole aim at keeping a consistent and recognizable interface across all supported platforms.

In order to reach this objective, an analysis of the current state of the application is conducted in section , identifying weaknesses and inconsistencies that the design can be improved on. add sec-tion here

Additionally, section covers relevant existing applications and work are analyzed to identify strategies that can be transferred and applied to AMCS. add sec-tion here

Finally, in section the strategy it is implemented as a prototype that uses the existing back end system. In section An evaluation of the prototype concludes this work. add sec-tion here

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2 State of the art

2.1 Current state of the application

At the time of writing, AMCS offers front end applications for iOS, Android and web that students can use. As already mentioned in NSERT HERE this work will focus on the web view / web page of AMCS. This section elaborates the current state of the system by identifying and analyzing all views that allow for access to the different functionalities of AMCS.

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2.1.1 Landing Page

In order to use the system, users have to create an account by providing credentials. Additionally, users have to subscribe to lectures by typing in an optional PIN code. From thereon, students gain access to the system.

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2.1.2 Main View

After successfully logging in, the user is presented with the main view of the system. It can be scrolled in the vertical direction and is divided into header and body. On top, the header comes along with corporate branding on the left side and a burger menu on the right side. Below it, the view's body organizes information in different sections as follows:

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2.1.3 Lectures

The lectures section lists all lectures relevant to the student. It is organized in subsections that indicate the temporal context of the lecture.

Upcoming lectures - Lectures that will take place in the future are shown here.

Active lectures - Lectures that take place right now are shown here.

Past lectures - Lectures that have already taken place are shown here.

Rendering of lectures in the main view   Each of these subsections is organized as a vertical list that contains all corresponding lectures (see Fig.1). A lecture is rendered in a box that uses all horizontal space available to it. The box consists of a blue header with the lecture's name, a white info/detail area and a light blue footer that contains the course this lecture belongs to. A color-coded badge on the top right of the boxes additionally serves as an indicator for the temporal context of the lecture.

2.1.4 Enrolled Courses

This section serves two purposes: Primarily, it provides a way to enroll into a course. An enrollment form is shown that consists of a text field to enter the course PIN and a blue button to trigger the enrollment (see Fig.1). When provided with a valid PIN, pressing the button redirects the user to a course overview on successful enrollment. Secondly, the view shows all courses the student is currently enrolled in. They are rendered as light blue buttons in a vertical list. A trash can icon on each button provides a way to leave the given course.

2.1.5 Menu and Navigation

Additional functionality can be reached by navigating the burger menu that is shown on the top right of the screen. Pressing the button reveals a sub menu that expands vertically on the view, offering three additional sub menus. In the following, these sub menus and their functionality are explained. This list is ordered by the relevance of the sub menus to the proposals of this paper from least to most relevant:

How it works   Pressing this button will redirect to a page that shows tutorial instructions on how to use AMCS. This help page is rendered identical on all mobile devices and therefore falls out of the scope of this paper.

Logout   As the name already states, pressing this button will logout the user and end the session. If the logout was successful, the landing page of AMCS is shown.

Student   This is one of the most important buttons that offers access to a subset of main functionalities of AMCS. Upon pressing this button, the menu expands again vertically, showing a list of further sub menus. Most of the functionalities shown in this list will be touched by the proposals for improvement that are presented section . The functionalities in questions are:

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1. Answering polls and receiving feedback

2. Evaluation of answers

3. Question Pool

Answering Polls

Answering polls is the main functionality of the system that users will engage with. Each poll consists of a set of questions the user can give an answer to. They are rendered in a view that is reused by the system depending on the situation and context. This means that the view might only be accessible under certain circumstances, for example when the lecture reaches a specific point in time, making it a slide poll (SP). SPs are shown when a specific slide is on display and can only be answered in this very moment. Other types of polls include "global" course polls (CP) that are always accessible during the semester and lecture polls (LP) that can

Poll Type	Explanation
Slide Poll (SP)	Active when a specific slide is shown. Commonly used for pop quizzes after a difficult section in a lecture to make sure that students understood everything correctly.
Preparation Poll (PP)	Active before the lecture takes place. Is commonly used to instruct students to prepare for a certain topic
Lecture Poll (LP)	Active during the life time of a lecture.
Post Processing Poll (PPP)	Active after a lecture has taken place. Commonly used to check gained knowledge.
Course Poll (CP)	Active during the whole lifetime of the course (commonly during the whole semester)

Tabelle 2.1: Different poll types that the user might encounter when using AMCS.

only be answered during the life time of a lecture. The different types of polls that occur in AMCS are further summarized in Table 2.1.

.1 Appendix Title

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Literaturverzeichnis

[Smith et al.(2009)Smith, Jones] P. Q. Smith, and X. Y. Jones. ...reference text...