

Kiosk System

Cole Chittim, Jesse Ericksen, Megan Hong, Dakota Rice-Narusch
Version 1.0

| Initials | Date | Reason for Change | Version |
|----------------|--------|-------------------|---------|
| MH, CC, JE, DN | 5/3/19 | First draft | 1.0 |

Background

Currently at Western Washington University and SEA Discovery Center there is a want for new or renovation of pre-existing displays. These displays would be more interactive than the current technology. There are interactive screens to use, but currently there is no software solution to populate these displays with information. Our team aims to build a software solution to help both of these institutions in this endeavour. The software will allow both institutions to intuitively and easily populate the system with their own respective content.

Business Opportunity

Our system would enable the University and SEA Discovery Center to quickly and easily update all kiosks on their respective campuses with the latest events, news, maps, and information. In the past, campus maps were static and bulletins were often outdated. They required someone to manually and physically come and swap out old information with the new. The kiosk system would not only save time, but it will also keep visitors up to date with the latest information at all times. It would also support more interactivity to allow users to view content at their leisure.

Business Objectives and Success Criteria

BO-1: Reduce the time it takes to spread information.

BO-2: Reduce the time it takes SDC and University employees to update information.

BO-3: Reduce the time it takes visitors to find and retrieve information.

BO-4: Increase accuracy and relevance of information. Information should be current and relevant to the location of the kiosk.

SC-1: Timed events will disappear once their specified date and time expire, keeping information accurate and up to date.

SC-2: Data will be stored on the computer and accessed by the raspberry pi over WiFi

SC-3: File transfers will be simple and easy

Customer and Market Needs

MN-1: The system must be easy and intuitive to use. Displays should quickly inform users on how to navigate and information should not be overwhelming.

CN-1: The system must be consistent and easy to use. Uploading content (posts, articles, videos) and updating information should be simple.

CN-2: Customer should be able to customize their displays easily (remove pages, add pages via easy-to-use file transfer)

Business Risks

In our team's assessment of business risks we found very few issues that could plague our development. There is no current solution being utilized by SDC and the current option being used at WWU is less than optimal, so any solution would be an upgrade to the current alternatives. However, issues we do foresee occurring is misinformation due to content not loading properly which may occur occasionally. This primarily revolves around our software's dependency on network access to access files. If the network were to fail or the software fail to connect to the network, then content may not be loaded properly. We foresee this issue occurring occasionally during the lifetime of the software but not often enough to be of high concern. The only major issues facing the project is failure of the hardware that the software will operate on. We found this problem not of concern as it will likely not occur in the lifetime of the software.

Vision Statement

Our team aims to build a software system that provides means to easily create and maintain an informational kiosk. This system will provide the means to customize a user interface that is responsive and intuitive from the perspective of both the user of the kiosk and those who configure it's content. This system we are proposing to build is Discovery Kiosk. This system will provide the operator with easy file transfer to the kiosk, video capabilities, and customizable menus. Unlike the products currently used by faculty that are difficult to use, our solution provides an intuitive means to create and maintain a kiosk saving valuable time and reducing the risk of misinformation of those who use it.

Major Features

- FE-1 Easy file transfer: We will have an easy to use interface that allows for simple drag-and-drop to add slides in, no awkward naming conventions like what is currently being used. Data will be stored on a computer, and our raspberry pi device will access it over the network wi-fi.
- FE-2 Video: We intend to have video playable within the application, and the ability for an inter-mixing of video and picture slideshows.
- FE-3 Timed Events: We will have slides that stay on screen for a designated period of time, as for a specific activity. There will also be a default time for slideshows, which can be changed.
- FE-4 Easy controls: Our hardware will run using a touch screen tv, and the software will have intuitive controls for viewing. This will include options such as stop, play, scroll back, zoom in, playback speed, etc. These will be done using the touch screen, likely using the lower part of the screen as a control system.
- FE-5 Menu options: The software will have an options menu, for selecting other features such as a specific set of slides, finding where specific faculty are, and where to find rooms on a map.

Assumptions and Dependencies

In the conception of this software, our team determined we will rely on a handful of technologies. For control and user interaction, the software will heavily rely on touchscreen functionality in the display for control of the interface. Additionally to comply with the form factor of a kiosk, we assume the software will be running on raspberry pi hardware or an equivalent system. We will be depending on wi-fi in order to access slides and videos. For other information that does not get updated often, it can be stored on the device itself. We also depend on a computer for storing slide and video data. We will not be using batteries in our raspberry pi, and will be depending on an outside power source for functionality.

Scope of Initial Release

| Feature | Release 1 |
|---------|--|
| FE-1 | Fully implement |
| FE-2 | Be able to attach video |
| FE-3 | Fully implement |
| FE-4 | Fully implement basic touch navigations |
| FE-5 | add menus with limited features: faculty, and slides |

Scope of Future Release

| Feature | Release 2 |
|---------|--|
| FE-2 | Fully implement, possibly with sound |
| FE-4 | Refine layout and touch navigation |
| FE-5 | Work towards implementing building maps, finding rooms |

Limitations and Exclusions

Currently the scope of this software is limited to use in Western's Computer Science department and the SEA Discovery Center. Users of our software will be able to interact with it via touch-based controls only. We will not be supporting the use of gestures or voice control for our displays. For the touch screen display in the Computer Science department we will also be excluding audio output per request of the department.

Stakeholder Profiles

| Name | Benefit | Constraints |
|---|--|--|
| SDC faculty and WWU CS faculty | Ease of access and change of information, Faster display of data, automation of simple tasks, Improvement over previous information systems. | Software must be used with a touch screen, needs a computer to store data, and will need an internet connection. |
| SDC Visitors and prospective WWU CS faculty | Find information, locate rooms, find where an event is located and when, ease of use in operation. | The screen must be interacted with to for use, visitors will not be able to remove slides or add their own. |
| Current WWU CS students | Find information on clubs, see research posters, get location of Computer Science faculty. | The screen must be interacted with to for use, students will not be able to remove slides or add their own. |

Project Priorities

We will be striving to achieve all the features of this project with the highest quality, but there are some limits that we have to consider when completing it. One limit is the size of our group, and another is our schedule. If our group becomes smaller (in the case of someone getting sick), or we run into a bug that takes longer than estimated, our project could suffer in features or quality. Therefore our highest priority is getting the most basic features implemented, and working up. In order to keep on schedule, if we lose a team member for a bit the remaining members will work harder to insure we keep a steady schedule.

Operating Environment

Discovery Kiosk will be experienced by visitors to the WWU CS department and SDC so it is vitally important to provide a welcoming experience so that those seeking information can walk away with a positive and well informed opinion on the establishment. Because of this, long term down time of the system will not be tolerated. Similarly just slow or unresponsive service would reflect poorly on the operating location which is not our goal. Discovery Kiosk needs to be stable and responsive to keep up with its dynamic operating environment.