



An Interactive Classroom Management Tool: ClassPi



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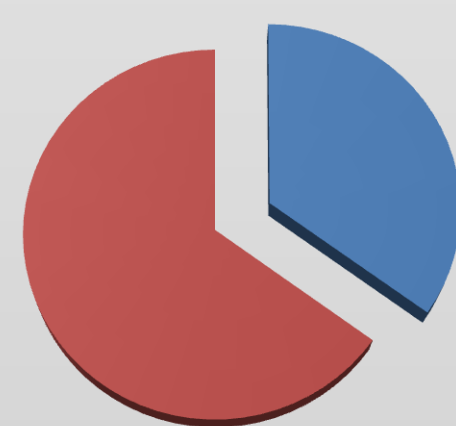
Abstract

The purpose of ClassPi is immediately obvious to all college students – creating a better system of communication between the instructor and the student. There are countless cases in which students are unable to grasp the concept of a topic, or instructors cannot gauge the level of understanding of their students. ClassPi serves as the mediator, to bridge the gap between instructor and student. ClassPi allows the instructor to post up questions about his topic for the class to see. Students are able to respond to those questions and give feedback about the instructor's topic. Students' answers are made immediately visible to the instructor by means of graphs. This provides the instructor with fresh, live information regarding students' understanding of the course material. ClassPi runs on a Raspberry Pi server, which provides an ample amount of mobility. Students are able to access ClassPi via Wi-Fi enabled devices. Features for instructors include Instructor View, where they are able to upload questions before the start of the class, to see the results of the quiz, and to see how focused the students are on the topic. Student features include a quiz-taking page, and a feedback field. These features in ClassPi help modernize the traditional classroom to new technologies, which will result in better student-instructor communication and overall positively impact education.

Motivation

Student-Teacher Interactions

- The need for students to communicate their thoughts and ideas to the instructor directly
- To create a venue for real-time student-teacher communication, without interrupting the class



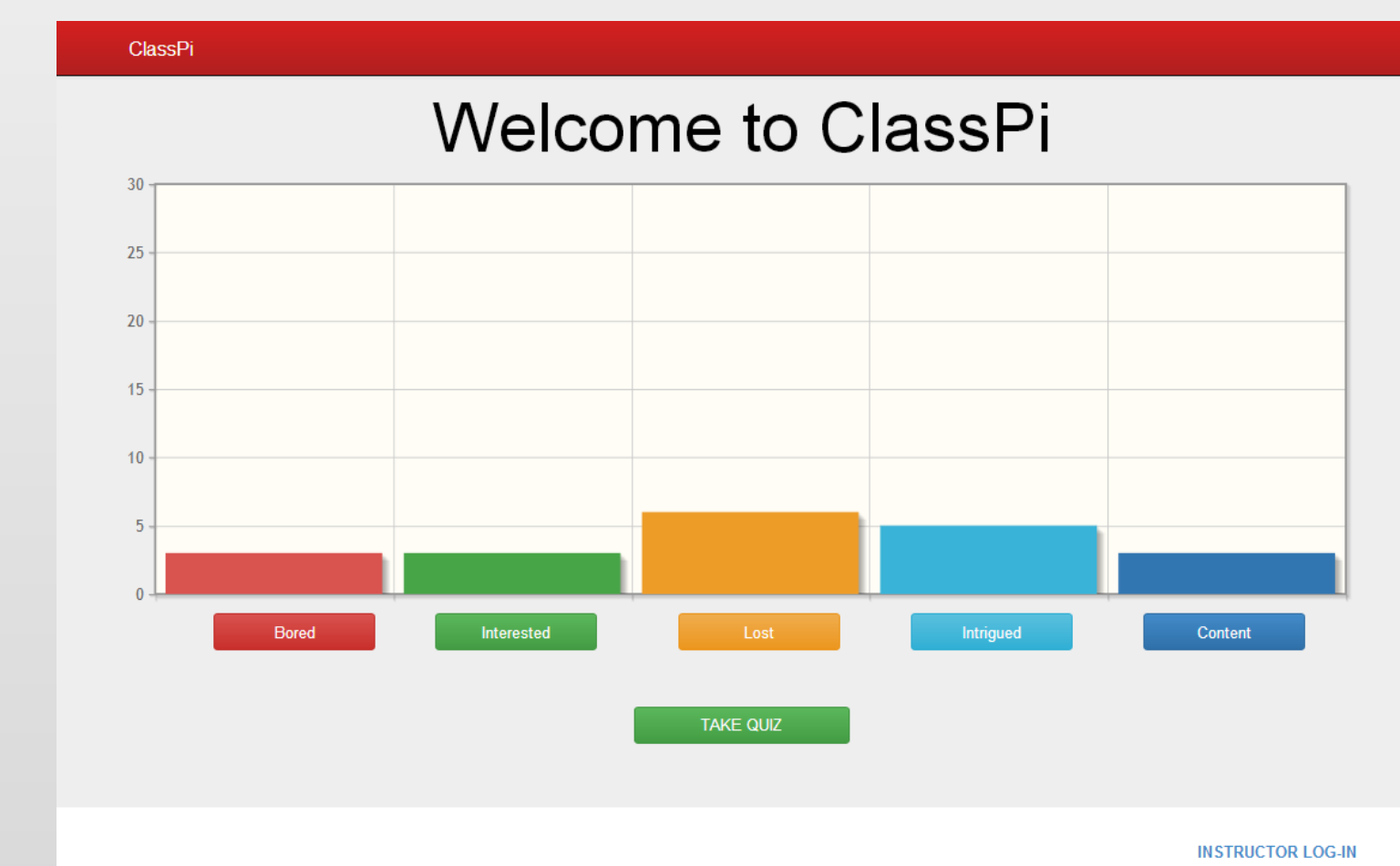
College students are bored in class about 28% of the time.

Group Motivation

- Our desire to engage in a project where several different skill levels are necessary to succeed

The Current State of Technology in the Classroom [Infographic]

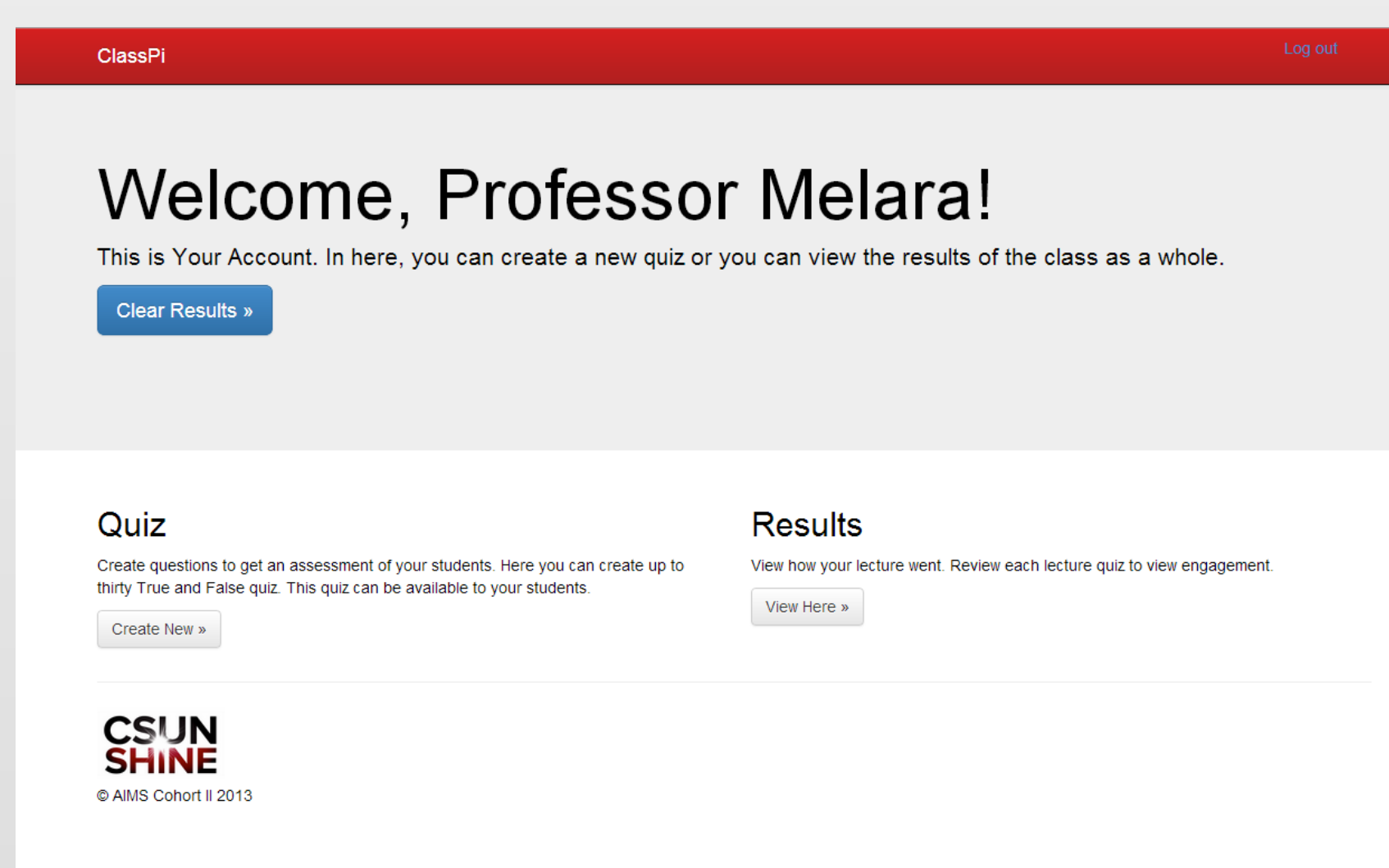
Results



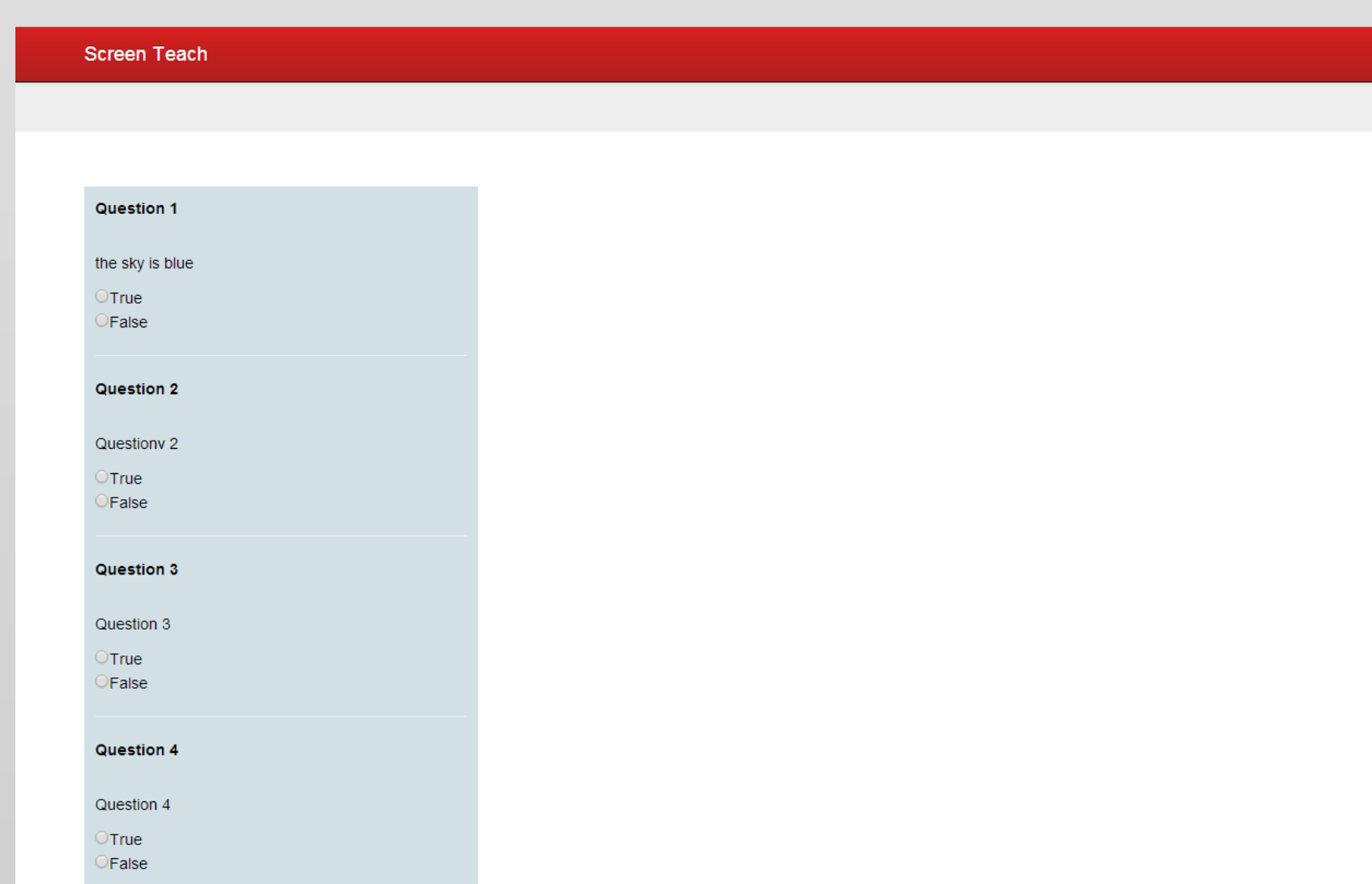
Real-time feedback homepage

ClassPi provides real-time communication between the student and professor. To the student it provides a venue for communication with the professor via Wi-Fi enabled devices without interrupting class. Students are able to gauge the reactions of their peers in the classroom anonymously, creating a more comfortable learning environment. The professor can adjust his or her lecture based on ClassPi feedback: real-time graph and assessment. The ClassPi has the potential to provide objective research on education.

Unique Features



Professor's Welcome Screen



Student Quiz View



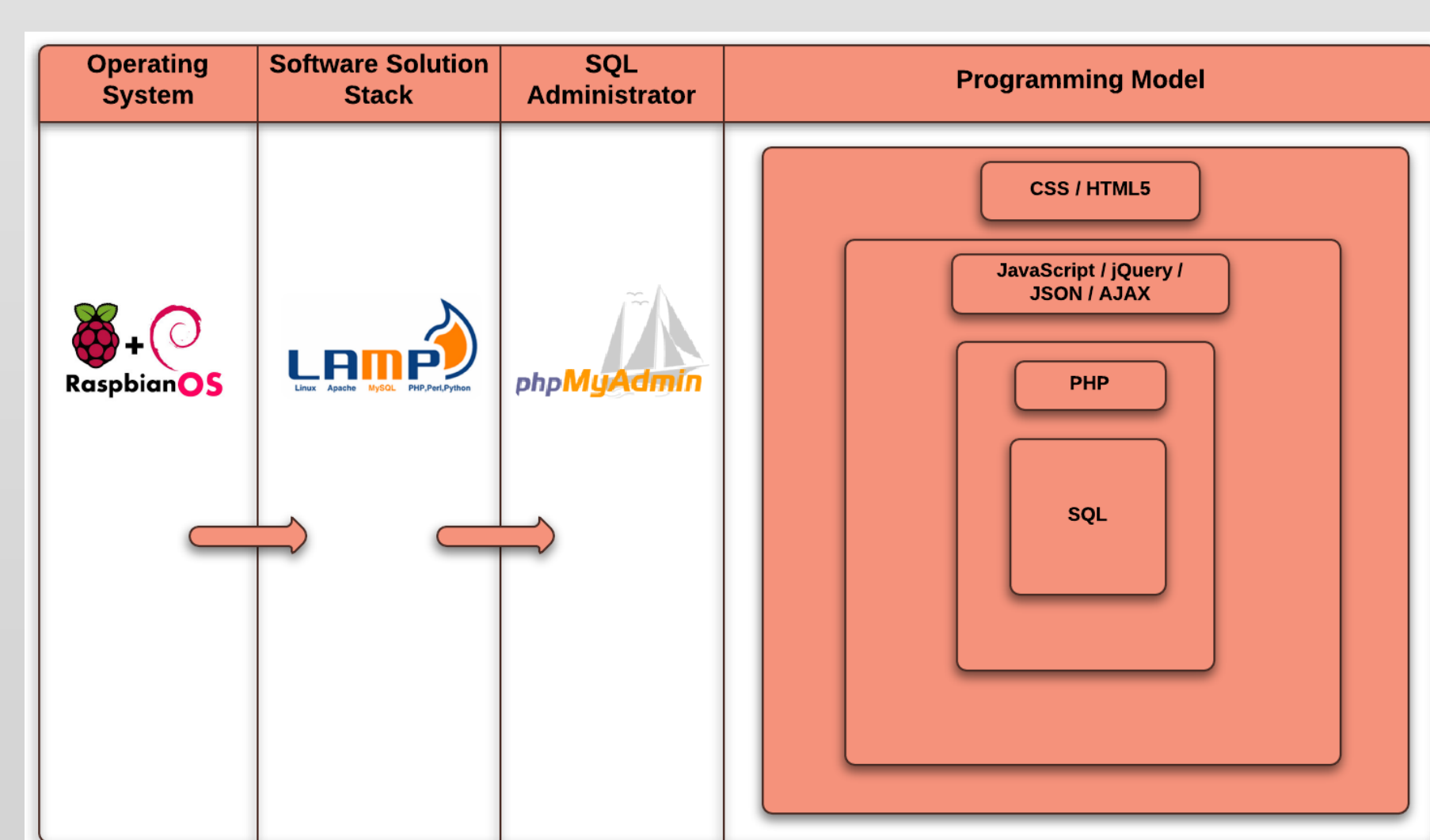
The Raspberry Pi itself is a unique feature because it is portable and inexpensive

Methods

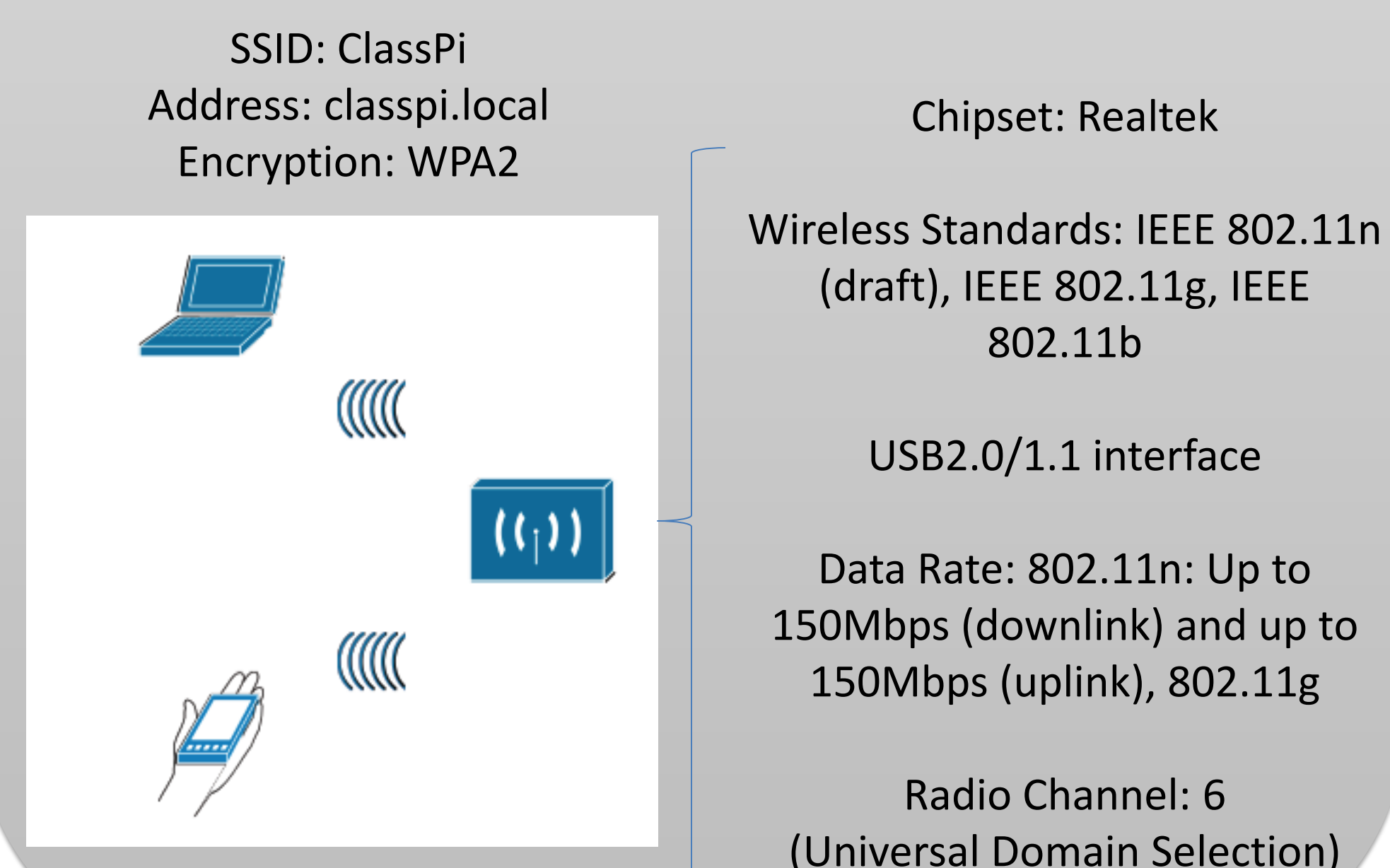
Hardware Experiences

- We were able to modify a USB Wi-Fi dongle and use it as a Hotspot to broadcast a network for clients to connect
- Extensive research was required to fine-tune many details, such as security configurations, wireless encryption and the hardware chipsets
- Configuration of LAMP stack system

Software Diagram



Network Diagram



Conclusion

- ClassPi is flexible, meaning it can support any device connected via Wi-Fi with a web browser
- Can be used for various types of classroom lectures
- Setup is simple and quick with no technical expertise required – you simply just plug it in to power
- The actual hardware is very lightweight and it is able to broadcast its own network and host an internal website that distributes the software content of the project
- Overall, the project was a success because we were able to bring together a group of students, whose knowledge and experience varies greatly, to develop a prototype that better the college experience for more students like ourselves

Future Implementations

- Distribute worldwide as an open-source project
- Localization support
- Host student lecture material
- Students' ability to provide feedback on specific lecture topics
- Browse lecture history

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