Investigating Agile Principles for Small Scale Remote Computing

Overview
For software, there is an effective development process called Agile which emphasizes communication as well as rapid, incremental development and frequent product delivery to the client. However, due to its slow nature, no such process is as widely used for hardware development. The goal of this project, therefore, was to research the principles of the Agile process and how they might be applied to a project requiring both software and hardware development in the hope of applying the findings to multi-disciplinary development teams in a real-world, industry setting. In addition to the software and hardware design aspects of the project, the team was also faced with the challenges of wireless network communication as well as the application of this initially unfamiliar design process.

Objectives
The team’s first objective was to design and develop a device that could be connected to various TV’s or computer monitors and could be accessed wirelessly for use as a remote video display for files such as MS PowerPoint. The second, more important objective was to develop the unit, both hardware and software, according to principles of the Agile development process.

Approach
- Researched the Agile process including the Scrum and Kanban models
- Met each week to participate in conference calls with the sponsor and discuss progress
- Researched devices, materials, and software available for use in project implementation
- Compiled Statement of Work and later Design Specification Report documents to outline a development plan
- Set up account with project management software called JIRA to organize Agile development
- Incrementally developed and tested software in time frames lasting two weeks each
- Developed hardware in a similar fashion, expanding time frames as necessary to accommodate lengthier design or fabrication requirements
- Assembled and tested final prototype

Outcomes
- The sponsor has further insight into the application of the Agile process to multi-disciplinary development teams
- The sponsor has a new, unique, inexpensive, and versatile device that can be used throughout various design labs to easily display announcements to employees
- The development team gained experience working with a new design process

Agile Development Process

- Scrum
  - Software Development
  - Remote Video Display Device
- Kanban
  - Hardware Development

[Diagram of Agile Development Process]