

Microwave Engineering Project

Overview

This is an independent collaborative project open to anyone interested in high-speed digital microwave engineering. All engineering documents will be published. Review and participation at all levels is actively sought.

The design process starts with an exploratory phase that produces the project vision and a mission statement. Requirements are derived from this work and are explored, weighed, and considered through analysis and experimentation. Design follows from and feeds back into the requirements. Implementation follows from design. The implementation is verified against the requirements. If the implementation does not fulfill the requirements, then that implementation is redesigned. Testing occurs throughout the process.

○ *Design*

REQUIREMENTS

Exploratory Results

- The system should transmit and receive high-speed digital data over a full-duplex microwave link.
- The frequencies of operation are 5.6GHz and 3.4GHz.
- The bandwidth should be at least 10MHz.
- The system should cost less than \$1000 to purchase.
- The system should transmit high-definition video signals.

Exploratory Results

- The system should be capable of point-to-point communication between any two stations in range of each other.
- The system should be capable of multiple access communications between stations.
- The system should allow stations to discover each other and advertise their current and potential configurations and services.

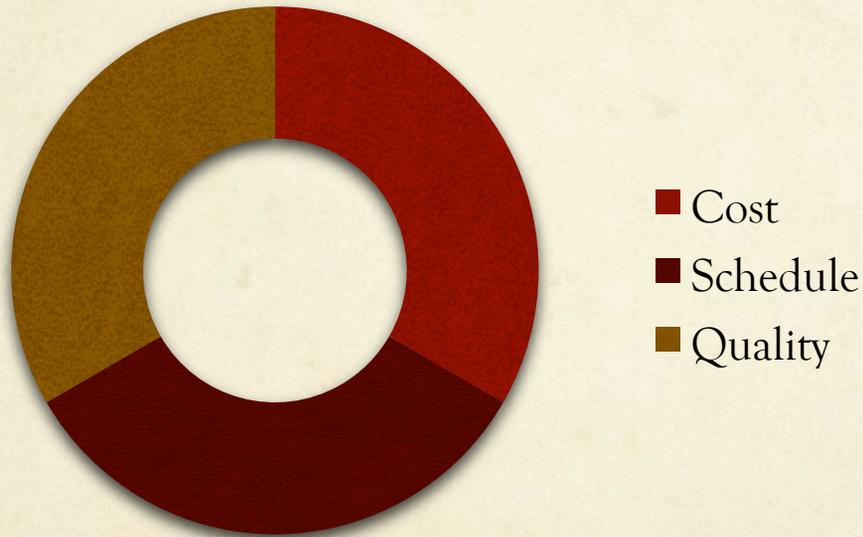
Exploratory Results

- The system is intended to be useful, with modifications, in the amateur satellite service as a ground station.
- The system should be partitioned in a way that reduces requirements for custom hardware.
- The system should be able to handle an Ethernet 10/100 link as either a control link and/or as a data link.
- The system should be able to handle a wide variety of types of data without modification.
- The system should be able to simulate a satellite environment.

Mission

- To produce a high-speed digital microwave communications system for amateur radio.

Design Balance



Requirements

Requirements are necessary attributes that are defined for an item or system prior to the design effort.

Requirements are derived from the mission and are the foundation of the implementation.

Requirements Analysis

Requirements Analysis is an organized method for identifying the appropriate set of resources and requirements that satisfies the mission statement of the project.

High Definition Video

- Transmission of high-definition video is a project requirement because it's compelling and hasn't been widely pursued in amateur radio.
- H.264 has been proposed as the supported video standard because The Steve says it's the best video compression standard.
- High-definition webcams were designated as the best signal source for high-definition video because they provide digital data out in a useful format.

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contributors, supporters, and participants

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Thank you - your involvement makes it happen.