RF Pathloss Application

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Abstract

Aviat Networks are a multinational company based in the United States. Globally, they provide microwave network solutions and backhaul equipment such as radio units, for IP-centric, multi-Gigabit, telephone, television and computer data services. Many of their operations are based in remote and rural areas across the world.

As a complement to the radio equipment the company also supplies engineering data for each radio unit in the form of Pathloss files. These can be downloaded and used by engineers and network designers to perform detailed path loss calculations for their environment using a program called Pathloss.

Currently, all of Aviat Network's engineering data is stored in Excel spreadsheets and Pathloss files are created by manually inputting data into a text editor program. Each office throughout the world does this their own way and holds data locally. The Pathloss files are offered for download on Aviat's web site; however the customer must download a zip file containing all Pathloss files and then match file names from a data sheet to the particular one that they require.

The company would now like to have an integrated system that stores all of its engineering data for radio units in one place. It would also like that data to be accessible to anyone, anywhere in the world.

The aims of this project are to design and create a relational database to hold data for each of the radio units used and supplied by Aviat Networks. It is also to create a web application that will allow access to that data using parameter based searches, and let users download only selected files that meet their particular requirements. The system should also have the ability to display transmission curves graphs for each selected radio unit.

Originally the project was viewed as a relational database design challenge. However, after initial investigations and analysis it was decided that a flat database would be more suited to the system due to the one to one relationships between data, and also the sheer volume of data fields. It also became clear that the real challenge was not in the database design but in the search facility within the web application that would be required to restrict data to only that which is of interest to the customer.

The original methodology used was a flexible version of waterfall method, whereby all stages would be revisited after the initial stage had been designed and implanted. However it soon became apparent that a more agile approach should be taken.

The initial requirements of the company were mostly but not completely met by the end of the project. As the design progressed it became clear that there was scope for many enhancements and improvements that could possibly be added to the functionality of the system.