**1 Introduction**

Project Chips is an Olin College Senior Consulting Program for Engineering (SCoPE) project sponsored by Nortel to design and prototype a new software solution for network managers. The team spent the first semester generating and evaluating ideas to develop an in-depth design of a network management application that would be taken to prototype. After narrowing it down from a long list of ideas, the Network Map emerged as the final design.

During the second semester, the team worked to layout the architecture for the program and begin implementation of the basic features. The final result of this development work is a web-based network mapping application that has the rich look-and-feel of a desktop application, but which allows the user to access and edit the map easily from anywhere within the network.

**2 Design Process**

During the first semester, the team reviewed last year's user study and interviewed a number of network managers. The team then generated a number of ideas and narrowed them down based on requirements and values of the sponsor and design team. Paper mock-ups were generated for a handful of ideas and then taken to users. From there, the team chose the two best ideas and created paper prototypes to further develop the ideas. When the team chose the Network Map, a low-fidelity prototype was created to get the look and feel of the program.

**3 Final Prototype**

A screenshot of the Network Map prototype is shown above. The map is created, edited, and viewed by the user in a browser window. A large focus was placed on intuitive and rich user interaction. Each method of navigation (zooming, panning) has multiple user interfaces. The navigator window is inspired by Adobe Photoshop and similar programs. The map can also be dragged and zoomed in a manner similar to Google Maps. Keyboard shortcuts and tooltips are present for many functions to help users accustomed to more keyboard-oriented software like command lines. Map creation is easy using a drag-and-drop interface familiar to users of most desktop applications. With each edit, the map updates a server-side database.

In interviews, users expressed the need for more control over their network mapping software. Most current platform-based network mapping software relies on auto-discovery algorithms and has a cumbersome interface for manual edits. Our software uses manual creation, trading setup time for greater control. The web-based application can be accessed by the network manager from any computer with an internet connection, allowing the user to view or edit the map while in the field or at home.

**4 Future Development**

In planning the project, the team designed an application that has many more features than could be implemented in one semester. The team assigned levels of importance to each feature of the map and grouped them into different versions. This semester, the core features were completed in a platform that is easily expandable. For the next stages of the product, the Chips team created a plan for developing new features based on their criticality and dependency on other features. The feature chart for suggested future development is shown above.

**5 About the Team**

The team consisted of four Olin seniors and one Babson senior. Alex is majoring in Engineering with a concentration in Computing, Lee is majoring in Engineering with a concentration in Systems, Katherine (Kat) and Nate are majoring in Electrical and Computer Engineering, and William (Bill) is majoring in Finance at Babson College. Within the team, Lee was the project manager, Bill was the budget coordinator, Nate was the technical lead, and Kat was the Safety and Ethics Coordinator. The project was advised by Adnan Onart as the Nortel Liaison, Brad Minch as the faculty advisor, and Ben Artin as the external advisor. Other than the year-long project, the team learned a lot about design specifications, software development, team organization, project planning, and team dynamics.