

# SCOPE Nortel

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## INTRODUCTION

Project Roots is a senior Franklin W. Olin College Of Engineering consulting project partnered with Nortel to explore and discover new interfaces for network managers. Our team studied network managers and network management, defined design specifications, and created product concepts to aid Nortel in developing new and innovative network management tools.

This project was organized around User-Oriented and Iterative Design processes, which are emphasized within the Olin education. Our first semester focused on user interviews, idea generation, and background research. In the second semester, after we finished analyzing interviews and selecting metaphors, we moved on to an iterative cycle of refining prototypes and testing them with users in co-design sessions.

Our understanding of the needs of the end users of network management products stems from interviews with several network managers about their jobs, needs, and goals. We spoke with a broad range of different network managers at various colleges, businesses, and government offices. The recordings and transcripts of these interviews are being delivered to Nortel, as are the results of our analysis of this research.

## VALUES AND METAPHORS

In order to judge our products throughout the process, we defined our users' "values" for ourselves by analyzing the transcripts and involving Olin community members in design activities. Network managers need tools that exhibit the following nine values, which relate either to the identity development or to the reputation of the product, its users, and its makers:

*Identity Development:* Appropriately Paced, Contextualized Data, Role-Based Visualization & Interaction, Scales to Environment, Intelligent Adaptation

*Reputation:* Trust, Ownership & Responsibility, Knowledge Retention, Enabling Correct Action

Concurrently, we generated a list of over 150 potential metaphors, which we rated according to their compatibility with the values we found. The highest-ranking metaphors, including Weather Forecasting, Orchestra, Lassie, and Air Traffic Control, inspired us with several seed concepts around which we designed new interfaces.

## INTERFACES

Our initial interface designs were based on concepts that came out of our top metaphors. For instance, both the Orchestra and Air Traffic Control metaphors brought to mind the concept of focusing in on part of something while still being aware of the whole. Thus, we created a Contextual Map interface that allows users to "focus in" on different layers of the network and then perform troubleshooting or deployment tasks relevant to the current context. We also returned to our users to conduct co-design sessions in which the users played creatively with our interface ideas and gave us useful feedback on each iteration of our prototypes. For example, when we asked network managers to explore the behavior of a physical interface on a proposed small monitoring device, their questions and assumptions about its functionality made us recognize the opportunity for a new tool. The result is The Scout, an unobtrusive and inexpensive device which can be left in a remote location to collect data that is normally inconvenient for network managers to collect themselves.

*Scout Scenario:* Alice has noticed that one of the network switches goes down every night from 3 AM to about 5:30 AM. She can't figure out why, and isn't able to be on location to watch what happens. Since the switch goes down, she also can't have the computer in her office monitor what's going on. She decides to leave the box connected to the switch and sets it to monitor the traffic that comes in and out

of the switch. She leaves the box connected overnight. The next day she collects the box and looks over its collected data. She is able to figure out which packets are causing the switch to enter an infinite loop until it reboots itself.

*Contextual Map Scenario:* Hector is configuring a set of wireless nodes through a map view that shows information about the wireless network. An alert pops up in his alert list, stating that one of the file servers has filled above 90% of its capacity. He quickly finishes configuring the wireless nodes that are remaining. After he finishes, he clicks on the alert, which brings up the file storage map view. He can see that one of the file servers is highlighted in red. He notices that the log on this machine reports that the routine deletion of backups after a week is failing due to a permissions problem. He fixes the problem and the machine works again.

