Requirements Specification

School of Science
Network Device Display System

Requested by:
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System Definition

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1.1 Product Overview and Summary

A web based network device mapping system would allow Mr. Eric Crossman and Mr. Ken Swarner to easily locate network devices and detailed information pertaining to network devices in the School of Science. Our clients are burdened with the difficult task of keeping track of every network device located within the School of Science. Orion Technologies can offer our clients a solution to this problem. This solution will allow them to locate any device in the school of science and quickly review detailed network device information pertaining to all network devices. Our software will allow our clients to view floor plans containing the layout of network devices within the school of science. Our software will be able to zoom in on specific rooms to see a more detailed network device layout. In addition, our software will allow our clients to update our floor plans with ease as new network devices are added to our clients’ Oracle database.

1.2 Development, Operating and Maintenance Environments

Our team will develop our software from our clients’ requirements. Our Software will be developed on a Dell desktop PC running Windows XP as well as an Apple iMac running OS X. An Oracle 10G Release 2 database will be created to store information about all network devices and each device’s geographic location in the School of Science. This database will also store all user accounts, passwords, user permissions, network device information, and network device geographic location. Those users with an account will be allowed to access the School of Science Network Device Display System (SOSNDDS) via a website on Internet Explorer 6.0+, Safari, and Mozilla Firefox 1.5+.

1.3 Data Flow Diagrams

Please refer to the attached Data Flow Diagram Document, also located on the Orion Technologies website:
1.4 Prototypes

Login Page

The login page is the first page shown to the user. After entering a valid username and the corresponding password, the user will be taken to the room search page.
The “Room Search” page is the first page shown to the user after logging in. The user can search for a room either by the floor of a specific building, or they can navigate to a room if it’s already known. In addition, users can search for devices by clicking the designated button. In the upper-left hand corner, the user who is currently logged in is displayed, and at the bottom of the page the user can access the control panel (Only accessible to Administrators) or Logout. The above named options are available on every screen throughout. Finally, the user can search for specific devices by clicking on the appropriate button.
The Device Search page allows users to search the database for any devices, based on their search criteria. Search parameters may include Device Type, the floor the device is on, the room the device is located in, as well as any Device Attributes. This page is accessible to all users.
Floor Plan Page

The floor plan page is displayed whenever the user wants to find a room through the floor. From this page, the user can select a room or make a generic search of devices in the system.
Whenever a user’s mouse hovers over a room with devices in it, a small box will pop up, displaying the number of devices in that room.
This is the Room “View Mode”. From this screen, the user can view details of any device within the room (in the above instance, Roger Bacon 348), as well as switch to “Edit Mode”. Edit Mode is only accessible to Administrators; the “Edit Mode” button will be disabled for all other users.
Edit mode is accessible to only Administrators. In terms of the room display, the only difference from “View Mode” is that the room note displays where the device details were previously listed. While in Edit mode, an Administrator can move devices within the room, move devices to other rooms, ping a device to ascertain that the device is connected to the network, search for new devices, and edit the room note.
From Edit mode, Administrators may access the “Search for New Devices” page, which will list any devices recently added to our clients’ database which haven’t been given a geographical location. From here, the Administrator can place any of the devices in any room of the database.
After clicking the place device link, Administrators will be directed to the above page. The Administrator may place the object in any room in either Roger Bacon or the Morell Science Center.
The Control Panel main page and all functions that are done from within the control panel are accessible to Administrators only. From here, you can search for a specific user, browse a list of users, and add users.
This is where the Administrators can add users. Information needed for users include Username, Password, Room, User Type, Room Permissions (if user is Custom or Faculty), and Detail Permissions (if user is Custom).
Control Panel – Browse User Page

The “Browse Users” page will display a list of all users in the system. The list can be sorted by Username, User Type, or Room. From this list, you can click on a user name to perform tasks on their account, such as changing their password.
The user main page in the control panel allows the Administrator to perform one of three basic maintenance operations on a given user, once that user is selected. These options include “Change Password”, “Change Permissions”, and “Change User Type”.

Control Panel – User Main Page
The “Change User Password” page allows Administrators to change the password on any account for any user.
The “Change User Permissions” page allows the Administrator to change the permissions for any Custom or Faculty user.
In case a user needs to be upgraded or downgraded, the Administrator can access the “Change User Type” page. As you can see, the “Custom” option is currently selected, as that is user “TLederman”’s current user type.
1.5 Functional Requirements

Requirements grouped according to Use Case:

Administrator:

- View all four floors in Roger Bacon Hall and all three floors in Morrell Science Center
  - Click a room to zoom in and view all network devices in any specific room
  - Mouse over a room to view how many computers, printers, wireless access points, and wall boxes are in that room
- Access all device details pertaining to any specific network device
  - MAC Address
  - IP Address
  - Asset Tag
  - Priority
  - VP Code
  - Building
  - Room #
  - Manufacturer
  - Model
  - Equipment Type
  - Monitor Type
  - Purchase Year
  - Installed Date
  - Purchase Order #
  - CPU
  - Speed
  - Disk
  - Memory
  - Serial #
  - User Name
  - User Type
  - Department

- Create and manage other user accounts with the control panel
  - Create and delete accounts
  - Edit passwords for all users
  - Upgrade or downgrade a user between Administrator, Custom, and Faculty
  - Set user permissions
    - Set the rooms a faculty or custom user may view
    - Set the device details a Custom user may view
- Access to an Administrator Edit Mode:
  - Read and edit private notes associated with any room
  - Move a device to another part of any room
  - Move a previously placed device to a different room
  - Ping a device to find out if the device is working properly
  - Search for new devices that have not been placed in any room
- place a newly found devices into any room
- Navigate to a specific room, thorough a navigate function found on any page.
- Search for preexisting devices in the SOSNDDS based on any device detail

**Faculty:**
- View all four floors in Roger Bacon Hall and all three floors in Morrell Science Center
  - Navigate to any room that an Administrator has given the Faculty user access to and view Limited device details
    - MAC address
    - IP address
    - Asset tag
    - User Name
    - User Type
    - Department
  - mouse over a room the faculty user is allowed access to and view how many computers, printers, wireless access points, and wall boxes are in that room
- Search for preexisting devices in the SOSNDDS based on any limited device detail
  - Search results are limited to devices in rooms the faculty user has been granted access.

**Custom:**
- View all four floors in Roger Bacon Hall and all three floors in Morrell Science Center
  - Navigate to any room that an Administrator has given the Custom user access to and view any device details an Administrator has allowed access to
  - mouse over a room the custom user is allowed access to view how many computers, printers, wireless access points, and wall boxes are in that room
- Search for preexisting devices in the SOSNDDS based on any device detail an Administrator has allowed the faculty user to view
  - Search results are limited to devices in rooms the faculty user has been granted access.

**1.6 Performance Requirements**

The School of Science Network Device Display System will be a web based system, able to run on the following browsers: Internet Explorer 6.0+, Firefox 1.5+ and Safari 2.0+. The design will be optimized for viewing at 1024 x 768 resolution.
1.7 Early Subsets and Implementation Priorities:

The most important components of this System are:
- The ability for users to view only the devices which they have permission to view.
- For users to navigate to specific rooms.
- For administrators to have access to edit mode functions including: moving network devices, placing new devices
- For administrators to create user accounts and edit user permissions

1.8 Foreseeable Modifications and Enhancements:

Possible modifications to this software, while in development or once completed may include: the addition or reconstruction of rooms as is necessary, or the ability for Administrators to add new devices from within the program as opposed to entering a new device into our Administrators’ database first.

1.9 Acceptance Criteria:

The functional requirements are broken down by use case, with each use case having specific requirements associated with it that need to be fulfilled (for more details please see our use case narrative document.

Administrator:
- Login
- Welcome Screen
- View all floor plans
- View all rooms
- View all information pertaining to every network device
- Navigate to specific rooms through floor plan navigation
- Navigate to specific rooms through the navigate function
- Create user accounts
- Change account passwords
- Change account permissions
- Change a user’s type
- Move network devices within a room
- Move network devices to other rooms
- Create and edit notes in all rooms
- Search for a device in the SOSNDDS by any device information field
- Place new devices into the SOSNDDS which are available in our clients’ database

Custom:
- Login
- Welcome Screen
- View all floor plans
- View rooms with in their department, as assigned by an Administrator
- Search for a device in the SOSNDDS by any device information field an Administrator has allowed
• View limited device information about devices within their department as assigned by an Administrator

Faculty:
- Login
- Welcome Screen
- View all floor plans
- View rooms which they have been assigned by an Administrator
- View limited device details (MAC Address, IP Address, Asset Tag, user name, user type, department) about devices they have been assigned by an Administrator
- Search for a device in the SOSNDDS by Limited device details

1.10 Testing Requirements:

The system will undergo a detailed, specific and thorough testing process by the Team members of Orion Technologies. All requirements outlined in this document will be tested for, to ensure our product’s successful implementation. Specifically the system will be tested to ensure that: it is secure, users are only allowed to view rooms and devices which they have been assigned, all devices are located in the correct locations as well as their information is displayed accurately, and finally that all edit mode options work properly and can only be accessed by an Administrator.

1.11 Cross Reference Index:

This information will be provided in the next step of our system’s development, the Preliminary design. The Data flow diagrams will have been further developed at this stage as is necessary to complete this section.
2.1 Glossary of Terms:

*Database* - A collection of data arranged for ease and speed of search and retrieval.

*Linear Sequential Model / Classic Waterfall Model* – Is a systematic sequential approach to software development projects, it begins with planning and progresses to modeling, construction, deployment and finally culminates in the finished software. Our specific approach will begin with this Software Plan and will progress through Requirement Specifications, Preliminary/Detailed and finally Acceptance Tests.

*Network Device* – Any computer, printer, wireless access point or other network accessory connected to the School of Science network.

*MAC address* - Media Access Control address, given to a device in a network. It consists of a 48-bit hexadecimal number (12 characters). The address is normally assigned to a device, such as a network card, when it is manufactured.

*Virtual* – Created, simulated, or carried on by means of a computer or computer network.

*Server* – A computer that processes requests for HTML and other documents that are components of web pages.

*Data Flow Diagram* - A graphical representation of the flow of data through an information system.

*Internet* - An interconnected system of networks that connects computers around the world via the TCP/IP protocol.

*Gantt Chart* - A chart that depicts progress in relation to time, used to track the progress of a project
### 2.2 Timeline (Gantt chart):

<table>
<thead>
<tr>
<th>ID</th>
<th>Task Name</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Team Formation</td>
<td>1 hr</td>
</tr>
<tr>
<td>2</td>
<td>Initial Team Meeting</td>
<td>1 hr</td>
</tr>
<tr>
<td>3</td>
<td>Team Meetings</td>
<td>32.13 days</td>
</tr>
<tr>
<td>4</td>
<td>Initial Client Meeting</td>
<td>1 hr</td>
</tr>
<tr>
<td>5</td>
<td>Client Meetings</td>
<td>50.13 days</td>
</tr>
<tr>
<td>6</td>
<td>Software Plan</td>
<td>6 days</td>
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<tr>
<td>7</td>
<td>Software Plan Documentation</td>
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</tr>
<tr>
<td>8</td>
<td>Software Plan Presentation</td>
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<tr>
<td>9</td>
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<td>10</td>
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<tr>
<td>12</td>
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<tr>
<td>13</td>
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</tr>
<tr>
<td>14</td>
<td>Preliminary Design Presentation</td>
<td>1 day</td>
</tr>
</tbody>
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**Project: Gantt Chart**

- **Date:** Thu 09/05/07
- **Task:**
- **Summary:**
- **Progress:**
- **Deadline:**
- **Milestone:**