


# CS486C – Senior Capstone Design in Computer Science

## Project Description

<b>Project Title: The Virtual Office Door</b>	
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### Project Overview:

Many large organizations, including universities, are based on physical offices or cubicles, where members of those organizations sit, work, and can be found by others for meetings or other business. In almost all such organizations, a person's office door (or hallway wall of cubicle) has evolved into a rich information resource; at NAU for example, nearly every office door is filled with useful information for both students and casual visitors: office hours, cartoons, printouts of interesting newspaper articles...and, when appropriate, status information for the faculty member, e.g., the little sticky note that says "I'll be back in five minutes" or "I'm down in my lab". In essence, this small information specialized information space serves as a universal "bulletin board" for the person in the office/cubicle that contains not only practical info (office hours), but a snapshot of the inhabitant's personality and interests.

Although the office door is useful, the fact that it is and always has been a *physical space* is limiting in many ways, including:



- The inhabitant must be physically there to "update" the information. This is particularly troublesome for status information (e.g., "I'm in another room", "I'm out sick today", "I've been delayed and will arrive at 3:35") because the whole point is that the inhabitant is explaining why they are not there. If no other colleague can be called to post this information (a hassle for all!), then an information void happens. Where is person x?
- There is limited space. The very fact that space is limited makes it impossible to post much, perhaps leading to difficult information availability choices. In the picture here, the office door is full, but not terribly so. But now imagine that all of this information had to fit onto the space office "info boards" available in the NAU Engineering Building.
- Clutter and disorganization. As information gets posted into limited space, pages overlap, items get buried under others, and the whole information resource begins to become unmanageable and inaccessible.
- The reader must be physically present to access information. Although "browsing office doors" is pleasant for casual visitors, others with more direct business have to physically walk by the office to access information: students and colleagues have to arrive at the office door to read that sticky note...or to leave a sticky note of their own.

The goal of this project is to create a *Virtual Office Door*, that exists simultaneously in the physical and electronic worlds. In particular, we envision Web2.0 platform similar to (but much simpler than) Facebook, where individuals can create and manage their "office" door. Some specific features of the product include:

- Users can register for an account, and can construct their virtual office door in an easy, graphical fashion, by dragging a number of "widgets" selected from a predefined set onto their door.

- A pre-defined set of widgets provides key functionalities (e.g. office schedule, sticky note, posted article/comic), but are designed as modular elements with a common structure; future developers could easily add new widgets.
- A unique URL is generated for each member. Visiting this URL in any browser presents a view of the faculty members door, automatically tailored for readability from either standard or mobile browsers (i.e., the web page is mobile-friendly). The idea is that anyone can bookmark this URL...and then easily check some person's door in just seconds, from either their mobile device or a standard browser.
- There might be ways to add elements to an office door, e.g., comment (if permissions allow) on postings, or to leave your own "sticky note" for the inhabitant.
- The web-based interface(s) represent the minimal required functionality. As advanced achievement for the project, the physical display on the office door will be replaced by a wall-mounted tablet device. This provides the traditional "physical" information space at the office door; people can come by, read the display, and potentially leave a sticky note. This device must connect via WiFi (or maybe Bluetooth, TBD) to allow online interaction. The inhabitant should be able to configure what this device does when "sleeping": show the office schedule, show a chosen slide show, flick through postings on the office door...or some combination of the above.
- The hardware cost should be minimal. This means designing around, for example, older versions of Android running on an older used device purchased in Ebay.
- Office inhabitants can rapidly update their office doors for critical status information, either directly from the door-mounted device as they walk out, or remotely via their smartphones or a browser.

There are, of course, many other possible interesting features that one might explore and possible ways to implement this project. The team will gather up and flesh out requirements in collaboration with the sponsor, and will explore technological options during the fall requirements and design phase.

Note that no mobile app is required to complete the minimal requirements of the project: the virtual door can be viewed in a mobile-adapted view on a mobile device's browser. An app will, however, presumably be required if the team is able to tackle the door-mounted tablet part of the challenge.

### **Knowledge, skills, and expertise required for this project:**

- Strong creative instinct required to drive forward and explore an open-ended product concept.
- Web2.0 technologies required to build the core portal for the project
- Knowledge of programming languages and frameworks associated with building reactive Web2.0 interfaces.
- Knowledge of mobile devices/tablets, as well as capability to create a simple display interface on one.

### **Equipment Requirements:**

No special equipment is required to create the minimal product, based only on a web app and (existing) browsers on desktops and mobile devices.

If the team is ambitious enough to pursue the door-mounted display, an appropriate tablet device will be purchased by the Capstone program for the team's use in development. A 7" or 8" tablet is envisioned but other possibilities may be considered.

### **Software and other Deliverables:**

- A fully functioning WebApp that implements the minimum (virtual side only) functionalities outlined above.
- If tackled, a functional mobile application running on the provided tablet, that presents the physical interface at the office, as outlined above.
- Complete user manual for non-technical users;
- A strong as-built report detailing the design and implementation of the product in a complete, clear and professional manner. This document should provide a strong basis for future development of the product.

- If not included in the As-built report, documentation (via a wiki perhaps?) of design rationale detailing the exploratory design that happened, e.g. why was technique X selected over technique Y and what are the pros/cons?;
- Professionally documented (and tested) source code, in an online repository (Github, Bitbucket), as well as archived and delivered on a thumb drive.