Lab 1 – Ngage Product Description

Amer Righi

Old Dominion University

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Thomas Kennedy

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1 Introduction

In the fall of 2017, a little more than 20.4 million students in the United States of America are expected to be enrolled in a college, university, or other institution of higher education (NCES). Of these 20.4 million students, roughly 41% of first-time, full-time undergraduate enrollments are expected, for one reason or another, to fail to attain a degree within 6 years of their enrollment (NCES).

While several factors affect university retention rates, one of the most commonly cited is student involvement. Studies have shown that students who are more involved in campus life, whether it is by joining student organizations or by taking leadership roles on campus, are much more likely to graduate with an undergraduate degree, and are more likely to have a higher grade point average (GPA) than individuals who are uninvolved in campus life (Student). As shown in Figure 1-1, stress from having to plan future living arrangements or being unfamiliar with the area are factors that may contribute to a student’s decision to leave a university.
Ngage is a web based social media platform conceived by the Old Dominion University (ODU) CS410 Silver Group. It is designed to assist with and facilitate the integration of new, incoming students into a variety of campus communities at any university. Ngage can be integrated into the web portal of any university to provide students and faculty with a centralized web platform that can be used to find information on student organizations, campus events, off campus housing, campus resources (such as tutoring), and any other non-academic aspect of university life. Ngage offers a service to both universities and students that would assist in raising university retention rates and increasing student engagement, both of which would benefit a university in an increasingly competitive market.
2 Product Description

While countless social media applications exist, each with its own format, a majority of social media applications have the same basic components: news feeds, customizable personal pages, and direct messaging services. Ngage is designed as a social media application that will utilize these basic components in order to provide a centralized web-based platform for all the non-academic needs of a student at a higher learning institution. As shown in Figure 2-1, Ngage will offer a solution for universities looking to increase student involvement.

![Solution flow diagram](image)

*Figure 2-1 Solution flow diagram*
2.2 Goals and Objectives

The overall goal of Ngage is to provide universities and students a platform that can be utilized to increase student engagement on campus in order to increase student retention and graduation rates. In order to achieve this goal, these objectives must be accomplished:

1. Ngage must be able to seamlessly integrate into the web portal of any university
2. Ngage must have a news feed where users (students, faculty, organizations, & administrators) can find and post status updates, event scheduling, and important university announcements
3. Ngage must provide the university with multiple administrative accounts.
4. Ngage must provide students with a marketplace where they can search for, contact, and post reviews on various local Off-campus housing providers
5. Ngage must provide users and non-users the ability to request an organization user account from a university approved administrator.
6. Ngage must provide students with a webpage listing university-specific academic resources
7. Ngage must provide students and organizations with the ability to directly message each other

2.3 Key Product Features & Capabilities

In the case of Ngage, the news feed will act as a consolidated live feed of posts created by university approved organizations, such as student organizations or an off-campus housing facility. Users will be able to filter the content of their feed by category (friends, organizations,
and events) or create their own custom filter. Users will also have a customizable personal page where they can:

- Upload a profile picture
- Edit their biography and personal information
- Post status updates for their friends at the university to see.

Organization users will be able to create and customize events to be posted on the consolidated news feed. If someone wishes to post as a university-approved organization, they will have the ability, from the home page, to request an organization user be created for them upon approval from an administrator. Organization user accounts are granted in this way to ensure only university approved organizations and events are hosted on the web application. Users will also have access to a marketplace feed, where approved off-campus organizations can post apartment listings for students to view. Students will have the ability to search through and review different listings, as well as contacting the leasing office. A “Student Resources” page listing all additional on campus resources offered to students will be maintained and accessible from the home page.

The primary feature that sets Ngage apart from other social media platforms and marketplaces is its focus on university life and student engagement. Ngage revolves completely around the university it is being used in. Ngage does this by pulling information that has already been established by the university, such as student organizations and academic resources, and combining them to provide a centralized platform for users to view, update, and interact with this information in a streamlined way. Once Ngage is configured for a university, it will replace many of that universities current pages and resources, such as:
• Off-Campus Housing References
• Student Resources
• Student/University Organization pages
• University Announcements

2.4 Major Components (Hardware/Software)

Figure 2-2 shows four major functional components identified for Ngage. The first major functional component is the Ngage Web site, written in Angular2. For the second major functional component, we will utilize a MySQL database to store user account information, status updates, events, and apartment-listings. The site will be hosted on a private server and designed with an API with interfaces for viewing/posting on the news feed, creating/customizing events, rsvp’ing events, creating apartment listings, searching/viewing/reviewing apartment listings, account maintenance, requesting an organization account, and updating user information. Finally, the fourth major functional component is the web enabled client device that the end user access the web application on.
3 Identification of Case Study

Ngage will have use cases in two particular markets: university students/faculty and leasing offices near universities. Students will be able to use Ngage to get engaged on campus, while student organizations will use Ngage to increase awareness of campus events. Leasing offices will be able to use Ngage to reach out to university students in need of housing.

3.1 User

University students, primarily first time enrollments, will use the Ngage platform to get engaged on campus. Students will be able to view a live feed of posts made by other students and student organizations. Students will be able to search through a list of registered student organizations, and will be able to navigate to the organizations’ personal page, where they can join the organization and view posts and events made by that organization. Students will also be able to navigate to the marketplace, where registered off-campus organizations will post house/apartment listings. Here, students will be able to view listings, contact leasing offices, and review listings, facilitating the stressful process of finding housing.

University approved student organization leaders will have access to organization accounts. An organization account will be able to post status updates to the live feed, as well as create and customize events in order to increase awareness of the organizations’ activities. They will also be able to customize membership for the organization.

The Ngage platform will offer off campus housing organizations the ability to post and customize listings on a marketplace, as well as update their contact information. This will help
the Housing organization find a renter for available properties, as well as receive feedback from students.

3.2 Reason for Visiting

Users will visit Ngage for all aspects of university life outside of academia. Users will be able to stay up to date on Campus events using the live feed, search through student organizations, and find student resources, housing options and roommate assistance on one, streamlined platform.

3.3 Future

The Ngage platform provides a service that would be very beneficial to universities and students. As the platform grows, more universities will integrate Ngage into campus life, facilitating campus integration for new and transfer students. Guest accounts can be used by visitors and potential students to explore the university’s resources, housing, organizations, and events, encouraging enrollment in the university.

4 Ngage Product Prototype Description

The Ngage prototype is designed to communicate the feasibility of implementing the Ngage social media platform in a Higher Education environment to increase student engagement.

4.1 Prototype Architecture

The Ngage Web application prototype will be hosted on an Ubuntu 16.04 Web server, written in Angular2, and will utilize a MySQL database to store user account information, status updates, events, and apartment-listings. The MySQL database will be populated with 1 Administrative account, 10 student and faculty accounts, 5 organization accounts, and 20
example apartment listings. The Ngage prototype site will have limited functionality, only including interfaces for viewing/posting on the news feed, creating/customizing events, and searching/viewing apartment listings. An ODU desktop or laptop personal computer (PC) running any version of Windows. This PC will be used as a client machine, and must have Internet access and a web browser, which will be used to access the Ngage prototype Web site.

Unlike the real world project, the Ngage prototype will be limited in a few scopes, as shown in Table 4-1. The Ngage prototype will not have the feature to request an organization account, post apartment listings, or customize account details and photo. In the real world project, any machine that connects to the Ngage website is a client computer, while the prototype is limited to one machine. The Ngage prototype will not have any direct messaging between students and organizations.

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### Table 4-1 Prototype vs Real World Product Comparison

<table>
<thead>
<tr>
<th>Fully Functional Components</th>
<th>Real World Product</th>
<th>Prototype</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Students can search information on Organizations and grocery stores.</td>
<td>Guests can use the site</td>
</tr>
<tr>
<td></td>
<td>Students can create user accounts to save their preferences and searches</td>
<td>Search information and get updates about housing on campus and near to campus</td>
</tr>
<tr>
<td></td>
<td>Organizer can manage their own page on the site if they choose</td>
<td>Tutoring hours will be posted for each department</td>
</tr>
<tr>
<td></td>
<td>Users can post comments about their personal experience with an apartment, house, or dorm</td>
<td>A list of all clubs and organizations will be displayed with current contact information</td>
</tr>
<tr>
<td></td>
<td>Registered user can join Organizations and R.S.V.P for events</td>
<td>Students can use the “contact us” feature to request information or sign up for email</td>
</tr>
<tr>
<td></td>
<td>Food, attractions and housing can be looked up on a map, students can copy and paste address into another service to get directions.</td>
<td>Organizer can use “contact us” feature to update</td>
</tr>
<tr>
<td>Partially Functional Components</td>
<td>Students can view a list of current clubs and organizations.</td>
<td>Campus events will be posted in the live feed</td>
</tr>
<tr>
<td></td>
<td>Organizers can use the “contact us” form to send information they would like to see added pertaining to a club or organization</td>
<td>Live feed can be filtered by category</td>
</tr>
<tr>
<td></td>
<td>Comments may be posted for housing only through the “contact us” feature</td>
<td></td>
</tr>
<tr>
<td>Eliminated Components</td>
<td>Students Direct Messaging</td>
<td>Organizers can manage their own page</td>
</tr>
<tr>
<td></td>
<td>Realtors may post listings</td>
<td>Students comments and direct messaging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Registered user can join Organizations and R.S.V.P for events</td>
</tr>
</tbody>
</table>

### 4.2 Prototype Features and Capabilities

The primary feature that sets Ngage apart from other social media platforms and marketplaces is its focus on university life and student engagement. Once implemented, Ngage eliminates the need for universities to host university information on several different web pages, replacing them with the centralized Ngage platform. In certain cases, it will also replace any
existing 3rd party university social media platform being used by the university to update students on statuses and events.

4.3 Prototype Development Challenges

During the development of the Ngage prototype, many challenges and risks will have to be overcome. As with any project, the timeline is a prominent concern, as there is a chance that the development team will be unable to develop a functional prototype within the required timeframe. To mitigate the risk of delays, team members will maintain communication with each other via text and email, follow a predetermined development and testing schedule, and divide coding work efficiently.

Another issue that may arise during development of the prototype is code inconsistencies between different developers. Because this is a particularly large project, and the code will be divided evenly, there is a risk that a developer might make a change to the code without informing the team. To lower the risk of this happening, team members will push their code changes to a common git repository, and inform the group via email or message.

4.4 Risk Mitigation

There are three main technical risks to consider during the development of this project. As with any application on the internet, there is always a risk of hacking and breach of data. To mitigate this risk, the prototype will not collect sensitive user information. The team will follow standardized security protocols and will maintain a firewall on the web server. Secondly, there will is a risk of data loss due to hard drive corruption. This will be addressed by planning regular back-ups of the system. There is a risk of traffic overloads. This issue can be addressed by building a scalable system and monitoring web traffic.
Glossary

**Alert (email/text):** Alert messaging (or alert notification) is machine-to-person communication that is important or time sensitive. An alert may be a calendar reminder or a notification of a new message.

**Angular2:** a JavaScript-based open-source front-end web application framework maintained by Google.

**Cookie:** (also called HTTP cookie, web cookie, Internet cookie, or browser cookie) a small piece of data sent from a website and stored on the user's computer by the user's web browser while the user is browsing.

**Git:** version control system for tracking changes in computer files and coordinating work on those files among multiple people.

**GitLab:** web-based git repository manager the includes wiki and issue tracking features.

**Gradle:** an open-source build automation system that was designed for multi-project builds.

**JavaScript:** a programming language commonly used in web development where the code is processed by the client’s browser.

**MySQL:** an open source multi-user database management system.

**ODU:** Abbreviation for Old Dominion University

**Platform:** an integrated set of packaged and custom applications tied together with middleware.

**RSVP:** a process for a response from the invited person or people
Student involvement: the amount of physical energy students exert and the amount of psychological energy they put into their college experience.

Ubuntu: open-source Linux operating system.

Virtual machines: an emulation of a computer system that provide functionality of a physical computer.

Web Application: a client server computer program in which the client (including the user interface and client-side logic) runs in a web browser.

Wiki: a website on which users collaboratively modify content and structure directly from the web browser.
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