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Investigating the Development of a Mobile Application for the ONLYLYON Ambassadors’ Network

Julia Gavelek  
*Worcester Polytechnic Institute*

Kevin Alexander Boenisch  
*Worcester Polytechnic Institute*

Kyle F. Coleman  
*Worcester Polytechnic Institute*

Megan Theresa Heinle  
*Worcester Polytechnic Institute*

Peter Bernard Prygocki  
*Worcester Polytechnic Institute*

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Investigating the Development of a Mobile Application for the ONLYLYON Ambassadors’ Network

An Interactive Qualifying Project submitted to the Faculty of Worcester Polytechnic Institute in partial fulfillment of the requirements for the degree of Bachelor of Science

By:
Kevin Boenisch, Kyle Coleman, Julia Gavelek, Megan Heinle, and Peter Prygocki

Fabienne Miller and Peter Hansen, Advisors
Emmanuelle Sysoyev, ONLYLYON, Project Sponsor

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Abstract

This project provided ONLYLYON, Lyon’s branding and promotion group, with the foundation to develop a mobile application meant to improve communication and engagement with their Ambassadors’ Network. We interviewed ONLYLYON staff and stakeholders, surveyed the Ambassadors’ Network, and benchmarked similar applications. We determined that a mobile application can provide a unified platform for communication that would address the needs of the network. We evaluated potential app content, features, and design and produced a basic mock-up. We analyzed the potential cost and time for development of the app and made recommendations to ONLYLYON.
Executive Summary

Lyon, France, competes on a global scale with other cities to attract investment, talent, and visitors. ONLYLYON, the city’s branding and promotion agency, was founded in 2007. The group aims to get more people to know Lyon, love Lyon, and come to Lyon through the use of a variety of marketing initiatives. Additionally, ONLYLYON has an Ambassadors’ Network of more than 26,000 passionate members. Each Ambassador has a close connection to Lyon and is tasked with raising awareness about the city, attracting talent and projects, and recruiting more Ambassadors.

ONLYLYON would like to make more effective use of their Ambassadors’ Network by improving communication and engagement of the network’s members. Currently, ONLYLYON uses a mass email system, the @ONLYLYON_Amb Twitter page, and their extranet on the ONLYLYON website to communicate with the Ambassadors. These channels have significant drawbacks that hinder the network’s effectiveness. In the past, ONLYLYON has updated the extranet and investigated other solutions with varying levels of success, but these initiatives did not succeed in significantly improving the effectiveness of the network. ONLYLYON was interested in learning whether or not a mobile application would be well suited to address the needs of the Ambassadors’ Network.

The goal of this project was to provide ONLYLYON with a foundation for the development of a mobile application which could promote communication and engagement within their Ambassadors’ Network and increase the global promotion of Lyon through the network’s members. Background research revealed that there did not appear to be any current applications that would suit the needs of the Ambassadors’ Network. Additionally, the needs of the entire network were not fully known. Therefore, we implemented a four-step methodology to achieve the overall goal of the project.

First, we determined the needs of the Ambassadors’ Network through interviews with ONLYLYON’s staff, partners, and city correspondents, as well as a survey of the entire Ambassadors’ Network. Second, we analyzed this data and conducted application benchmarking to determine the potential features of the application. By considering perspectives from all concerned parties, we determined three key features: a news wall, a directory to search for other Ambassadors, and a messaging platform. Third, we implemented these features in a simple application mock-up that we created in Adobe Illustrator and Android Studio. Fourth, we obtained cost and development time estimates from two local software development firms, Novius and Le Singe, and one online cost-estimator, OOZOU. We analyzed these estimates to provide ONLYLYON with a series of recommendations for how to proceed with the development of a potential mobile application.
NEEDS OF THE AMBASSADORS’ NETWORK

Virtually all interviews and a large portion of the surveys suggested a need to improve communication and increase engagement. Furthermore, the interviewees specifically expressed the need for a unified platform for communication within the network, while the Ambassadors conveyed the need for more information on how to help ONLYLYON. Another need of the network identified through interviews as well as the survey was a way to network with other Ambassadors. Interviewees felt that the network could provide Ambassadors with a strong platform to make new connections and grow their personal networks but that this opportunity is significantly underutilized currently. Furthermore, the surveyed Ambassadors felt that it was too difficult to find and connect with other Ambassadors and rarely used the extranet system on ONLYLYON’s website. Finally, interviewees suggested the need for a direct route of communication between correspondents and their Ambassadors, correspondents and ONLYLYON, and correspondents with other correspondents.

Next, we wanted to learn if and how a mobile application could address the needs of the Ambassadors’ Network. During our Ambassador survey, we asked respondents whether or not they would use an application, as well as whether or not they would use each of the nine proposed features. We found that, of the 913 respondents to our survey, 92.9% would be willing to use an ONLYLYON app for Ambassadors. We also learned that features relating to news and events were the most popular, while those relating to viewing or sharing social media were among the least popular.

In order to take the needs of everyone involved with the Ambassadors’ Network into account, we compared the survey responses with the responses of the people we interviewed. We created a graph that placed survey responses side by side with those from staff and partners, as well as key staff and correspondents. Key staff and correspondents are people who interact with the network frequently and are very knowledgeable about it. Sections of this graph are displayed in Figure 1 for the three key features we initially identified: a news wall, a directory, and messaging among Ambassadors.

![Figure 1: Interest in three key features from interviews and surveys](image-url)
As illustrated, the news wall was popular among Ambassadors but was met with some concern among interviewees who were worried about how much time and work it might require to maintain. The directory and messaging both had a significant number of strongly positive responses. A strongly positive response means that a respondent suggested the feature to us instead of just responding to our question, indicating that this aspect is very important to them.

APPLICATION BENCHMARKING, EVALUATION, AND MOCKUP

Benchmarking of existing applications played an important role in determining the potential content, features, and design of ONLYLYON’s application. In total, we analyzed 17 apps, including messaging apps, university apps, and miscellaneous apps relating to networking or ambassadors. This process helped us identify potential features to suggest to the interviewees and survey respondents. Furthermore, it provided inspiration later in the process when implementing these elements in our mock-up.

After deciding that a news wall, directory, and messaging were the three most important features to include in an application for the Ambassadors’ Network, we implemented them in a simple mock-up using Adobe Illustrator and Android Studio. This mock-up served to illustrate what the application could look like and how these features could be used. Figure 18 through Figure 21 show screenshots of each of the four pages we created.
APPLICATION DEVELOPMENT COSTS

We received cost and development time estimates from local and international app development firms to analyze the feasibility of our proposed application. First, we used OOZOU, a tool from a developer in Thailand, to estimate the cost of developing native applications for iOS and Android. The cost varied between €70,000 and €90,000 with a development time of eight to nine months, depending on functionality.

Next, we spoke to two Lyon-based developers to obtain an estimate of local development. The cost and time estimates provided by these companies are summarized in Figure 22, and the full breakdowns of these quotes are listed in Appendix H – Development Cost Analysis.

RECOMMENDATIONS

Our team drafted a set of recommendations for ONLYLYON to consider in the development of a mobile application. First, we suggest that the mobile application includes a news wall, directory, messaging, and event management functionalities. Based on our research, we identified these functionalities as the most important to address the Ambassadors’ Network’s needs for improved engagement and communication.

Second, we recommend that the app also include additional features, such as Ambassador tasks, notifications, geolocation, and account management. These features would help address more needs of the Ambassadors’ Network by guiding Ambassadors on how to help promote Lyon and customizing the app to each individual. These features would also be integrated as a part of the previously listed key features; for example, the Ambassador tasks could be featured on the news wall and geolocalisation abilities would adjust event and directory features to the Ambassador’s current location. The inclusion of a full set of features useful to Ambassadors will make it more likely for them to download, retain, and actively use the application.

We also recommend that ONLYLYON consider the development of an application for both Android and iOS devices. Although developing an app for only one of these platforms would significantly reduce costs, it would not support the goal of better connecting the entire network. Additionally, we recommend that ONLYLYON further research local, Lyon-based development companies. From our initial research, the cost of development locally does not appear to be significantly higher than overseas but would simplify the development process and result in smoother collaboration between ONLYLYON and the developers.

Overall, we feel that a mobile application has the potential to help address the needs of the Ambassadors’ Network by facilitating improved communication and engagement among Ambassadors. However, the app would not be able to address these needs by itself and requires the continuous support of ONLYLYON’s team. ONLYLYON must provide unique content, Ambassador tasks, and opportunities for personal connections in order to fully take advantage of the Ambassadors’ Network’s potential to promote Lyon globally.
# Table of Contents

Abstract .............................................................................................................................................. ii  
Executive Summary .......................................................................................................................... iii  
Table of Contents ............................................................................................................................ vii  
Figures ............................................................................................................................................... x  
Tables ............................................................................................................................................... x  
Authorship ......................................................................................................................................... xi  
Glossary of Terms ............................................................................................................................ xiii  
Acknowledgements .......................................................................................................................... xiv  
1. Introduction ..................................................................................................................................... 1  
2. Background ....................................................................................................................................... 2  
   2.1. ONLYLYON: Lyon’s Brand ........................................................................................................ 2  
      2.1.1. Current Branding Initiatives ............................................................................................. 2  
      2.1.2. The ONLYLYON Ambassadors’ Network .......................................................................... 3  
   2.2. Mobile Applications .................................................................................................................. 4  
      2.2.1. User Engagement and Retention ...................................................................................... 5  
      2.2.2. Designing the Application ............................................................................................... 6  
      2.2.2.1. Balancing the Needs of the User and the Organization ................................................. 6  
      2.2.2.2. Benchmarking Content and Features .......................................................................... 6  
      2.2.2.3. Mobile Application Layout and Flow .......................................................................... 6  
   2.2.3. Mobile Application Prototyping Process ............................................................................. 7  
3. Methodology .................................................................................................................................. 9  
   3.1. Collecting Data to Determine the Needs of the Ambassadors’ Network ................................. 9  
      3.1.1. Interviewing ONLYLYON’s Staff and Partners ............................................................ 9  
      3.1.2. Interviewing and Surveying City Correspondents ......................................................... 10  
      3.1.3. Surveying the Ambassadors’ Network ........................................................................... 10  
   3.2. Analyzing Data to Identify Potential Functionality ................................................................. 10  
      3.2.1. Analyzing Existing Applications .................................................................................. 11  
      3.2.2. Analyzing the Interviews and Survey ............................................................................ 11  
   3.3. Prototyping a Mock-up of the Proposed Mobile Application ................................................. 12
3.4. Evaluating the Mock-up and Suggesting Plans for Future Development ........................................ 12
4. Needs of the Ambassadors’ Network ........................................................................................................ 13
  4.1. ONLYLYON’s Staff and Partners ......................................................................................................... 13
  4.2. Results of the Ambassador Survey ....................................................................................................... 14
    4.2.1. Survey Design, Revision, and Distribution ................................................................................. 14
    4.2.2. Demographics of Survey Respondents ......................................................................................... 15
  4.3. Viewpoints of the Correspondents and Strategic Ambassadors ........................................................... 15
    4.3.1. Interviews with the Correspondents .............................................................................................. 16
    4.3.2. Surveys with the Correspondents and Strategic Ambassadors ..................................................... 16
  4.4. Analyzing the Overall Needs of the Network ....................................................................................... 16
5. Analysis of Potential App Content, Features, and Design .................................................................. 18
  5.1. Benchmarking Existing Mobile Applications ....................................................................................... 18
  5.2. Evaluating the Staff and Partner Interviews ......................................................................................... 20
  5.3. Analysis of the Ambassador Survey .................................................................................................... 21
    5.3.1. Analysis of Statistical Survey Results ........................................................................................... 21
    5.3.2. Analysis of the Qualitative Open-Response Results .................................................................... 25
6. Application Features, Mock-up, and Recommendations .................................................................... 27
  6.1. Determining Application Features ...................................................................................................... 27
  6.2. Mock-up and Recommendations for Application Features .............................................................. 29
    Recommendation 1: Primary Application Functionality ......................................................................... 29
    Recommendation 2: Secondary App Functionality ................................................................................. 31
7. Application Development and Recommendations .............................................................................. 33
  7.1. Costs of App Development ............................................................................................................... 33
  7.2. Benefits of App Development ........................................................................................................... 34
  7.3. Alternative Solutions .......................................................................................................................... 34
  7.4. Recommendations for App Development .......................................................................................... 35
    Recommendation 3: Research Cost-Benefit of Android and iOS App Development ............................... 36
    Recommendation 4: Research Lyon-based App Development Costs ...................................................... 36
8. Conclusions .............................................................................................................................................. 37
Appendices .................................................................................................................................................. 38
  Appendix A - IRB Approval and Verbal Consent Form ............................................................................ 38
Appendix B – Interview Questions ........................................................................................................ 41
  Appendix B1 – International Networks Manager – Kristin Mangold .................................................. 41
  Appendix B2 – Former Ambassadors’ Network Manager – Gerard Auboeuf ....................................... 43
  Appendix B3 – Community Managers – Colin Pezzani and Paul Malinic ........................................... 45
  Appendix B4 – ONLYLYON Partners .................................................................................................. 46
  Appendix B5 – Interview Questions for Correspondents ...................................................................... 47
  Appendix B6 – Interview Questions for Ambassadors .......................................................................... 49
Appendix C – Compiled Document of Interview Summaries ................................................................. 51
  Appendix C1 – ONLYLYON Staff: Paul Malinic .................................................................................. 51
  Appendix C2 – ONLYLYON Staff: Colin Pezzani .............................................................................. 52
  Appendix C3 – ONLYLYON Staff: Kristin Mangold .......................................................................... 53
  Appendix C4 – ONLYLYON Partner: Frederic Miribel, ADERLY ....................................................... 54
  Appendix C5 – ONLYLYON Partner: Camille Lenoble, Tourisme et Congrès ..................................... 55
  Appendix C6 – ONLYLYON Partner: Remy Chevrier, ADERLY .......................................................... 56
  Appendix C7 – ONLYLYON Partner: Quentin Bardinet, La Métropole ............................................. 57
Appendix D – Interview Coding .............................................................................................................. 58
  Appendix D1 – Explanation of Interview Coding ................................................................................ 58
  Appendix D2 – Code Book ................................................................................................................... 60
  Appendix D3 – Coding Charts ............................................................................................................ 62
    Appendix D3.1 – Network Communication ....................................................................................... 62
    Appendix D3.2 – Interviewee Suggestions ....................................................................................... 64
    Appendix D3.3 – Proposed Features ............................................................................................... 69
    Appendix D3.4 – Needs of the Network ........................................................................................... 74
Appendix E – Ambassadors’ Network Survey .......................................................................................... 76
Appendix F – Survey Open-Response Question Analysis ........................................................................ 78
  Appendix F1 – Activities of highly active Ambassadors ...................................................................... 78
  Appendix F2 – Ambassadors’ suggestions for application features .................................................... 79
Appendix G – Application Benchmarking ............................................................................................... 80
Appendix H – Development Cost Analysis ............................................................................................. 83
References ............................................................................................................................................... 87
Figures

Figure 1: Interest in three key features from interviews and surveys ........................................ iv
Figure 2: ONLYLYON’s 10-year anniversary campaign .......................................................... 3
Figure 3: Map of ONLYLYON’s Ambassadors’ Network ......................................................... 4
Figure 4: Transitions between app screens (So, 2017) .............................................................. 7
Figure 5: Breakdown of ONLYLYON’s staff and partners that we interviewed .......................... 10
Figure 6: Breakdown of benchmarked applications .................................................................. 11
Figure 7: Age distribution of survey respondents .................................................................... 15
Figure 8: WPI’s app’s news wall ............................................................................................... 18
Figure 9: Whova’s event map .................................................................................................. 19
Figure 10: Exhibitor details page ............................................................................................ 19
Figure 11: Neighbors by Ring’s map feature ............................................................................ 19
Figure 12: Ambassador engagement depending on length of membership in the network ....... 22
Figure 13: Issues that hinder Ambassadors’ involvement in the network ............................... 23
Figure 14: Ambassadors’ interest in potential features of the ONLYLYON app ....................... 24
Figure 15: Interest in messaging by age .................................................................................. 24
Figure 16: Interest in a directory by age .................................................................................. 24
Figure 17: Overall interest in features from surveys and interviews ......................................... 28
Figure 18: Mock-up news wall ................................................................................................. 30
Figure 19: Mock-up directory search ...................................................................................... 30
Figure 20: Mock-up messaging ............................................................................................... 31
Figure 21: Mock-up login screen ............................................................................................. 31
Figure 22: Cost estimates from Lyon-based developers ........................................................... 33

Tables

Table 1: Top six areas in which Ambassadors indicated a strong involvement in the network .. 25
Table 2: Top seven free-response suggestions for app features .............................................. 26
# Authorship

<table>
<thead>
<tr>
<th>Section</th>
<th>Primary Author(s)</th>
<th>Primary Editor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>Julia</td>
<td>Julia, Megan</td>
</tr>
<tr>
<td>Executive Summary</td>
<td>Megan</td>
<td>Julia</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>Julia</td>
<td>Kevin</td>
</tr>
<tr>
<td>Figures and Tables</td>
<td>Julia</td>
<td>Kevin</td>
</tr>
<tr>
<td>Authorship</td>
<td>Julia, Megan</td>
<td>Julia, Megan</td>
</tr>
<tr>
<td>Glossary of Terms</td>
<td>Megan</td>
<td>Megan</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>Julia</td>
<td>Kyle</td>
</tr>
<tr>
<td>1. Introduction</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>2. Background</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>2.1. ONLYLYON: Lyon’s Brand</td>
<td>Kyle, Megan</td>
<td>All</td>
</tr>
<tr>
<td>2.2. Mobile Applications</td>
<td>Kevin</td>
<td>Kyle, Julia</td>
</tr>
<tr>
<td>3. Methodology</td>
<td>Kevin, Kyle, Julia, Megan</td>
<td>All</td>
</tr>
<tr>
<td>4. Needs of the Ambassadors’ Network</td>
<td>Julia</td>
<td>All</td>
</tr>
<tr>
<td>4.1. ONLYLYON’s Staff and Partners</td>
<td>Kyle</td>
<td>All</td>
</tr>
<tr>
<td>4.2. Results of the Ambassador Survey</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>4.3. Viewpoints of Corresp. and Strat. Ambs.</td>
<td>Megan</td>
<td>Kevin, Peter</td>
</tr>
<tr>
<td>4.4. Analyzing Overall Needs of the Network</td>
<td>Peter</td>
<td>Megan</td>
</tr>
<tr>
<td>5. Analysis of Potential Application Content, Features, and Design</td>
<td>Kevin</td>
<td>Megan</td>
</tr>
<tr>
<td>5.1. Benchmarking Existing Mobile Apps</td>
<td>Kyle</td>
<td>Megan, Peter</td>
</tr>
<tr>
<td>5.2. Evaluating the Staff and Partner Interviews</td>
<td>Julia</td>
<td>Megan</td>
</tr>
<tr>
<td>5.3. Analysis of the Ambassador Survey</td>
<td>Kevin</td>
<td>Megan</td>
</tr>
<tr>
<td>Section</td>
<td>Contributors</td>
<td>All</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>--------------------</td>
<td>-------</td>
</tr>
<tr>
<td>6. Application Features, Mockup, and Recommendations</td>
<td>Peter</td>
<td>All</td>
</tr>
<tr>
<td>6.1. Determining Application Features</td>
<td>Peter</td>
<td>All</td>
</tr>
<tr>
<td>6.2. Mockup and Recommendations for Application Features</td>
<td>Peter</td>
<td>All</td>
</tr>
<tr>
<td>7. Application Development and Recommendations</td>
<td>Megan</td>
<td>All</td>
</tr>
<tr>
<td>7.1. Cost and Benefits of App Development</td>
<td>Megan</td>
<td>Julia</td>
</tr>
<tr>
<td>7.2. Recommendations for App Development</td>
<td>Julia, Kyle, Peter</td>
<td>All</td>
</tr>
<tr>
<td>7.3. Alternative Solutions</td>
<td>Kyle, Peter</td>
<td>All</td>
</tr>
<tr>
<td>8. Conclusion</td>
<td>Kyle, Peter</td>
<td>Julia</td>
</tr>
<tr>
<td>Appendix A</td>
<td>Julia, Kyle</td>
<td>Julia</td>
</tr>
<tr>
<td>Appendix B</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>Appendix C</td>
<td>Megan</td>
<td>All</td>
</tr>
<tr>
<td>Appendix D</td>
<td>Megan</td>
<td>Peter</td>
</tr>
<tr>
<td>Appendix E</td>
<td>Kevin, Kyle, Peter</td>
<td>All</td>
</tr>
<tr>
<td>Appendix F</td>
<td>Kevin</td>
<td>All</td>
</tr>
<tr>
<td>Appendix G</td>
<td>Peter</td>
<td>Kevin, Julia, Peter</td>
</tr>
<tr>
<td>Appendix H</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>References</td>
<td>Peter</td>
<td>All</td>
</tr>
</tbody>
</table>
Glossary of Terms

**Action Sheet** - A specific style of alert that appears in response to a control or action and presents a set of two or more choices related to the current context (Apple, 2018-a).

**Ambassador Network** - A group of connected individuals who represent, speak for, or advertise a particular organization, group of people, activity, or brand (Cambridge, n.d.-a & -b).

**Calls to Action** - An exhortation or stimulus to do something in order to achieve an aim or deal with a problem (Oxford, n.d.).

**Conversion Rate** - The percentage of users who take the desired action (Nielsen, 2013).

**Dialog Boxes** - A pop up that enables communication between the computer and the user. May ask questions or give information (Digital, n.d.).

**Emulator** - Hardware or software that permits programs written for one computer to be run on another computer (Merriam-Webster, n.d.-a).

**Feedback** - A response within an application that acknowledges actions and shows results to keep people informed. For example, elements are highlighted briefly when tapped (Apple, 2018-b).

**Integrated Development Environment (IDE)** - A graphical user interface-based workbench designed to aid a developer in building software applications with an integrated environment combined with all the required tools at hand (Techopedia, n.d.).

**Low-fidelity Wireframe** - Include the most basic content of a web design project, visuals and are usually static (Justinmind, 2017).

**Mock-up** - A working sample for reviewing format, layout, or content (Merriam-Webster, n.d.-b).

**Onboarding** - A way of making someone familiar with an app (Babich, 2017).

**User Experience (UX)** - The overall experience felt by the user when using an interface, a digital device or more broadly interacting with any device or service (Usabilis, 2017).

**User Interface (UI)** - The space where a user will interact with a computer or machine to complete tasks. The purpose of a UI is to enable a user to effectively control a computer or machine they are interacting with, and for feedback to be received in order to communicate effective completion of tasks (Every, n.d.-a).

**User Testing** - A technique used in the design process to evaluate a product, feature or prototype with real users (Every, n.d.-b).
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Finally, we thank our project advisors, Fabienne Miller and Peter Hansen, for all their support throughout this project.
1. Introduction

In an increasingly globalized world, investors, businesses, and students are able to go almost anywhere. These groups provide a competitive edge to a city’s economy. Advances in high-speed fiber-optic networks and intercontinental travel have made global communication and interconnectivity easier than ever before. These people and groups, also known as talent, can travel almost anywhere, and cities, as the central socioeconomic organizing units of the modern era, must find innovative ways to attract and retain this talent (Florida & Mellander, 2015).

As a result, it has become increasingly necessary for cities to use definitive place branding to adapt, reshape, and manipulate “images of the place to be desirable to the targeted consumer” (Rehan, 2014, p. 224). Lyon, France, is one such city that competes on a global scale to attract its target audience. ONLYLYON, the city’s branding and promotion group, has a worldwide Ambassadors’ Network made up of over 26,000 individuals who have a personal connection with Lyon (ONLYLYON, 2015-c). The Ambassadors’ main roles are to promote Lyon internationally, to attract talent to Lyon, and to recruit more Ambassadors to the network (ONLYLYON, 2015-b).

Currently, ONLYLYON uses a mass email system, a public @ONLYLYON_Amb Twitter account, and a website to communicate with their Ambassadors’ Network. However, these channels have significant drawbacks (E. Sysoyev, personal communication, May 16, 2019).

To more effectively use their Ambassadors’ Network, ONLYLYON must improve communication and engagement within the network. Furthermore, the lack of a single communication platform hinders the network’s effectiveness (Bolam, Mclean, Pennington, & Gillies, 2006; K. Mangold, personal communication, May 17, 2019). Despite limited personnel, ONLYLYON has implemented other potential solutions to improve the effectiveness of their Ambassadors’ Network, such as updating their website, with varying levels of success. Some of these channels were not feasible for ONLYLYON to maintain, and a better solution must be determined. Based on research and expert interviews, we concluded that a mobile application would accomplish the needs of the Ambassadors’ Network and add significant value to ONLYLYON’s existing initiatives (J. deWinter, personal communication, April 10, 2019). While all of the desired features already exist in various capacities, we did not identify an existing application that fulfilled all of ONLYLYON’s needs.

The goal of this project was to provide ONLYLYON with a foundation for the development of a mobile application. We accomplished a series of steps to achieve our overall goal. First, we collected data to determine the needs of the Ambassadors’ Network through interviews with stakeholders and surveys of the network. Next, we analyzed the interviews and surveys and reviewed benchmarked applications to identify potential content, functionality, features, and design of the application. Once we decided on these aspects of the app, we created a low-fidelity mock-up. We contacted software development firms to obtain cost and time estimates for the application’s development. This report contains the information that we have collected and includes our recommendations to ONLYLYON for how to move forward with development of a mobile application.
2. Background

Economic growth benefits cities in many ways, such as increasing income and lowering unemployment (Pettinger, 2017). To drive economic growth, cities must vie for talent, business, and investment (Sassen, 2005). This fierce, global competition has led to cities using city branding to distinguish themselves from their competitors and to attract target audiences (Hospers, 2004). Cities establish organizations to manage their brand to achieve economic growth and prosperity (Salzman, 2016). Some of these groups utilize ambassador networks to further the success of their city. The use of ambassador networks for place branding is a more recent phenomenon, stemming from the success of networks in the private sector and for leisure (Andersson & Ekman, 2009). For these networks to be more effective, ambassadors must communicate efficiently and feel a sense of purpose. Participation within networks provides ambassadors with a way to make “rewarding, supportive social connections” (Bolam et al., 2006, p. 303). Through effective internal communication, members of an organization will feel more favorably towards the group, which results in them promoting it among others and feeling a sense of commitment (Omlion-Hodges & Baker, 2014). Therefore, organizations with ambassador networks are motivated to find ways to improve communication within the network. This chapter covers ONLYLYON, their Ambassadors’ Network, and the design and prototyping of modern mobile applications.

2.1. ONLYLYON: Lyon’s Brand

Lyon, France, has a strong city brand known as ONLYLYON, which promotes Lyon to a global audience. Founded in 2007, the initiative was the first territorial marketing project in France. ONLYLYON’s mission is three-tiered: to get investors, businesses, students, and tourists to know Lyon, to love Lyon, and to come to Lyon. To strengthen the reputation of the city, the ONLYLYON brand and logo are used throughout the city by 13 founding partners, including ADERLY (Invest in Lyon), ONLYLYON Tourism, and La Métropole de Lyon (ONLYLYON, 2015-d). Along with their founding partners, ONLYLYON works closely with 15 private partners (E. Sysoyev, personal communication, March 28, 2019). With the assistance of their partners, ONLYLYON uses both commercial branding initiatives and professional relationships through their Ambassadors’ Network to achieve their goal of promoting Lyon to a global audience. This section explains what ONLYLYON currently does to promote their brand, the roles of Ambassadors, and the current communication channels of the Ambassadors’ Network.

2.1.1. Current Branding Initiatives

Extensive and diverse marketing techniques help ONLYLYON reach their target demographics (K. Mangold, personal communication, May 13, 2019; E. Sysoyev, personal communication, May 13, 2019). To attract businesses and investors, ONLYLYON implements several techniques, including global poster campaigns and actively using professional social networks (F. Miribel, personal communication, May 15, 2019; ONLYLYON, 2015-a).
ONLYLYON has built connections with news outlets, such as The Guardian and CNN. These press relations produce over 300 news reports about Lyon yearly and generate positive publicity for Lyon, ultimately making Lyon better known worldwide (ONLYLYON, 2018). ONLYLYON has also led major advertising campaigns online and offline to increase its visibility, like its 10-year anniversary campaign which stated, “You only live once… Choose not to compromise” (ONLYLYON, 2018). Examples of this campaign are shown in Figure 2. Additionally, ONLYLYON attends conferences and events around the world to build relationships with talent in major cities like Tokyo, Montreal, Boston, Dubai, and Shanghai (E. Sysoyev, personal communication, May 13, 2019).

One of ONLYLYON’s most important tools in reaching a global audience is its use of social media. As of 2019, ONLYLYON has over 1.6 million followers on Facebook, and hundreds of thousands more on Instagram, Twitter, and LinkedIn (ONLYLYON, n.d.; C. Pezzani, personal communication, May 15, 2019). By using social media, city branding organizations like ONLYLYON can reach millions of people more directly at a much lower cost than traditional advertising campaigns (Zhang, 2014).

2.1.2. The ONLYLYON Ambassadors’ Network

Another crucial piece of ONLYLYON’s strategy is its Ambassadors’ Network of 26,332 members and counting. The network is invaluable to ONLYLYON because the Ambassadors share personal connections with both Lyon and important individuals in their local community. The Ambassadors’ global reach makes it possible for ONLYLYON to forge professional relationships that attract businesses, investors, and talents worldwide (K. Mangold, personal communication, May 17, 2019). Figure 3 illustrates the global distribution of ONLYLYON’s Ambassadors as of 2015. (ONLYLYON, 2015-d)
The members of ONLYLYON’s Ambassadors’ Network have three roles. The first is to raise awareness for Lyon among individuals, companies, political leaders, and influencers. The Ambassadors are encouraged to promote the city’s strong economy, bold scientific advancements, rich history, and regional culture. The second role of the Ambassadors is to attract projects and talents. The ONLYLYON team asks their Ambassadors to look out for potential development opportunities and to help them get in touch with key decision makers for these projects. Lastly, ONLYLYON is always looking to expand their network, so they ask their Ambassadors to recruit new members (ONLYLYON, 2015-b).

Currently, three different communication channels are used between ONLYLYON and their Ambassadors’ Network. First, mass emails can be sent to the entire network or to specific subsets. These emails, although able to reach the entire network simultaneously, are often impersonal and overlooked. Secondly, ONLYLYON has a Twitter account specifically for Ambassadors under the @ONLYLYON_Amb handle. However, this profile is fully public and is often confused with the main account by non-Ambassadors, to whom the Ambassador-specific information is irrelevant or confusing. Finally, ONLYLYON has a custom-made tool on their website to manage the network. This system was cutting-edge when created 11 years ago but is now outdated, rarely used by Ambassadors, and has limited communication abilities. This brings about the need for ONLYLYON to develop an innovative platform, such as a mobile application, to facilitate and improve communication within the Ambassadors’ Network and with ONLYLYON. (E. Sysoyev, personal communication, March 28, 2019)

2.2. Mobile Applications

In June 2017, US smartphone users spent an average of 87% of their phone time in mobile applications, significantly more time than they spent on mobile websites (Saccomani, 2018). With 76.0% of the French population owning smartphones and 77.0% of Americans owning smartphones, it can be inferred that a similar percentage of French smartphone usage is in mobile

![Figure 3: Map of ONLYLYON’s Ambassadors’ Network](image-url)
applications (Newzoo, 2018). Therefore, apps are a crucial asset for modern businesses, and there is a large market for mobile applications that can engage and retain their audience (Mehul, 2015). In the following sections, we investigate how to design an application to engage and retain users, as well as the first steps of the prototyping process.

2.2.1. User Engagement and Retention

The needs of the user should be a primary focus when developing an application. Users will not use an application, no matter its quality, if it does not fit their needs; therefore, it is crucial to cater the application to the user throughout the development process. Before the development begins, research to determine the users’ needs, such as interviews and surveys, is important to understand the user and to create an application that they will download and continue to use (J. deWinter, personal communication, April 10, 2019, McKay, 2013). User testing helps to ensure that the application will engage and retain its users by obtaining feedback to guide development (Nimbalkar, 2013). A key challenge for any mobile application is to retain its users after they have downloaded the app. On average, 71% of users stop using an app in less than 3 months (Localytics, 2019). However, there are several design choices and characteristics that can increase user engagement and retention.

Once a user downloads an application, ensuring an easy onboarding experience is crucial. Logging into the app should be optional and as simple as possible. A welcome screen or tutorial showing the new user how to use the application is often helpful, but it is equally important to not overload that person with too much information right away (Armour, 2018).

Personalizing an app to each user’s needs and choices guarantees that the app is relevant to every individual. While simple measures, such as displaying the user’s name, are helpful, modern applications are moving from personalization to individualization (Armour, 2018; Perro, 2018). While personalization adjusts an app to sub-groups or segments, individualization adjusts to each and every person on a one-by-one basis (Perro, 2018). Individualization can also be applied to notifications. While notifications are effective when done in moderation, customizing these notifications for each user can improve their conversion rate from 15% to 54% (Armour, 2018).

Keeping users inside an app for anything they need to do, instead of making them change to other apps, is also important. Built-in messaging discourages users from leaving the app to contact others. Additionally, integrating existing social media and branding also ensures a seamless experience and helps increase user retention (Romain, 2019).

Finally, one of the simplest ways to retain users is continuous improvement of an application. Providing a way for users to share feedback allows the developer to respond to changing user needs and desires and fix bugs, while also updating the user interface (UI) of the app to keep it fresh (Deery, 2018).
2.2.2. Designing the Application

When having an application developed, the client must decide what content, functionality, and features to include in their application. These elements will strongly influence why a user initially downloads an application. The content and features of an application can be broken down into two categories: goal-driven and entertainment-focused (Oinas-Kukkonen & Kurkela, 2003). Goal-driven features, like document viewing or messaging, aim to be quick and reliable, whereas entertainment-focused features, such as games or social media, are more about the experience rather than the information gained (Oinas-Kukkonen & Kurkela, 2003).

2.2.2.1. Balancing the Needs of the User and the Organization

Applications can include both categories of content and features but deciding what to put into the final product can be difficult. This task becomes significantly more challenging when an organization’s needs, like data-collection, differ from their user-base’s needs, like privacy. The saying “the customer is always right” is often used, but, if followed literally, can be detrimental to businesses (Kjerulf, 2014). Eighty percent of organizations believe they are providing a product that is exactly what their customers want; however, only 8% of customers agree (Allen, Reichheld, Hamilton, & Markey, 2005). This misunderstanding can be harmful to customer retention. To fully understand what must go into a product, the organization must recognize the importance of their customers’ needs and also not undermine their own (Allen et al., 2005).

2.2.2.2. Benchmarking Content and Features

The 2009 slogan from Apple “There’s an app for that” truly sums up the immensity of the App Store and Google Play Store. It is reasonable to assume that any content or feature that a company might need has already been developed in some sense or another. Whether this content has been developed effectively or poorly, it is useful for organizations to benchmark existing content for inspiration and to avoid common mistakes. Analyzing the success or failure of existing projects can significantly improve the development of the current project (Delayne-Stroud, n.d.).

2.2.2.3. Mobile Application Layout and Flow

In addition to the content and features of an application, the layout and flow also significantly impacts the users’ experience. Successful models for application design that focus on simplicity and usability are often implemented by developers. The design and layout of most successful mobile applications typically do not stray far from an optimized, general model (So, 2017). Any user interactions with a mobile application must have a logical flow with a beginning, middle, and an apparent conclusion. The completion of the series should offer informative feedback to provide the user with a sense of accomplishment and a signal that they are ready to move on to the next series of tasks (Schneiderman & Plaisant, 2004). The methods with which a user interacts with a mobile application are just as important as its design. According to the design
philosophy of Intuit, a major tech provider for businesses and consumers, “one of the major aspects that make navigating content on native mobile platforms so delightful is the transitions between screens” (So, 2017). Swipes from the edges of the device can transition smoothly between different areas and pages of the app (So, 2017). These types of transitions are shown in Figure 4. Additionally, feedback that reacts to user actions, such as briefly highlighting a button after it is tapped or showing active progress bars, is an important way to improve user interaction with the app (Apple, 2018-b).

![Figure 4: Transitions between app screens (So, 2017)](image)

### 2.2.3. Mobile Application Prototyping Process

Once developers decide on the content, features, and design of an application, their next step is to prototype an initial mock-up for testing and demonstration. One common way to achieve this goal is a low-fidelity wireframe of the app. (J. Beck, personal communication, April 12, 2019) To create a low-fidelity wireframe of the desired application, developers use an Integrated Development Environment (IDE). When creating a mock-up, a developer would only create the basic UI of the application and insert placeholders for each functionality instead of fully implementing its code. This process can be relatively simple, as IDEs such as Android Studio provide a drag-and-drop environment to create a layout of the UI. Afterwards, this wireframe mock-up can be loaded in an emulator and navigated by developers or testers to gain a feel for the application’s layout and flow. (T. Guo, personal communication, April 16, 2019)

During the application prototyping process, it can be helpful to consider how the choice of development method can impact the application’s features and design. Currently, there are three main approaches: native, web-based, and hybrid apps (Joorabchi, Mesbah, & Kruchten, 2013). However, native and web-based apps are the most common. Native apps, typically downloaded from an app store and stored on a user’s device, have the ability to leverage all of a device’s sensors, cameras, and built-in features (IBM, 2012). The design of these apps has a look and feel
similar to the device itself; however, the increased complexity of native apps results in a higher
development cost (Masi, Cantone, Calavaro, Mastrofini, & Subiaco, 2013). On the opposite end
of the spectrum are web-based apps. Web-based apps are hosted on a server and accessed through
a user’s mobile web browser, making them much simpler and less expensive to create. Their
primary disadvantages are that only a limited number of a device’s features are usable, their look
and feel does not integrate well into a device’s design, and they require internet access to use (IBM,
2012; Masi et al., 2013).

Considering the resources necessary to develop an application is also important. Each
feature of an app has a certain cost associated with its implementation, and this must be balanced
with each feature’s potential benefits while considering its feasibility in relation to an
organization’s budget. A good way to gain insight on these topics is to speak to multiple
development companies in person and discuss the proposed application ideas (J. Beck, personal
communication, April 12, 2019; A. Moretto, personal communication, June 3, 2019).

In the next sections, we detail the process we took to determine the needs of the
ONLYLYON Ambassadors’ Network in a mobile application, identify the most useful content and
functionality, prototype a mock-up of the application, and evaluate the mock-up.
3. Methodology

The goal of this project was to provide ONLYLYON with a foundation for the development of a mobile application. In the future, this application will promote communication and engagement throughout ONLYLYON’s Ambassadors’ Network to increase the global promotion of Lyon through the network’s members. In order to reach this goal, we completed the following objectives:

1. Collect data to determine the needs of the Ambassadors’ Network
2. Analyze data to identify the required functionality and potential app content
3. Prototype a mock-up of the proposed mobile application
4. Evaluate the cost and development time of the proposed application

3.1. Collecting Data to Determine the Needs of the Ambassadors’ Network

In order to learn about the needs and desires of ONLYLYON’s Ambassadors’ Network, we interviewed key players, including ONLYLYON’s staff, partners, city correspondents. Additionally, we sent a survey out to the general Ambassadors. In this section we discuss the interview process as well as the development and dispersion of the Ambassador survey.

3.1.1. Interviewing ONLYLYON’s Staff and Partners

To begin our research, we interviewed ONLYLYON’s staff to investigate how ONLYLYON currently uses their communication systems, how their branding campaigns relate to the Ambassadors’ Network, and what features and potential content they want to see in an application. To better understand ONLYLYON, the Ambassadors’ Network, and the role of a potential mobile app, we also interviewed three partners of ONLYLYON. In addition to asking for general information and ideas, we proposed some of the potential features that we identified from our research, asking for their input. The staff and partners that we interviewed can be found in Figure 5.
Within the ONLYLYON Ambassadors’ Network, important “super” Ambassadors, known as correspondents, serve to lead and organize local Ambassadors in eight focus cities around the world. Through interviews and a survey, we learned about the needs of the correspondents and the international Ambassadors and how they differ from those of local Ambassadors. We interviewed correspondents from Boston, Hong Kong, London, and Sydney over the phone. We also asked correspondents from Montreal, Moscow, and Paris to fill out an online survey, however we did not receive sufficient data to draw any conclusions. The interview questions are found in Appendix B – Interview Questions.

3.1.3. Surveying the Ambassadors’ Network

To gain insight from the wide audience of the ONLYLYON Ambassadors’ Network, we created an online survey for the network’s 26,000 general members. After trialing the survey with 11 Ambassadors at a networking event and making improvements based on feedback, Kristin Mangold distributed it to the Ambassadors’ Network through an email. We closed the survey after two weeks, allowing enough time for us to analyze the results. The full set of survey questions is found in Appendix E – Ambassadors’ Network Survey.

3.2. Analyzing Data to Identify Potential Functionality

This section discusses the two-stage process we used to evaluate the data that we collected and relate it to the development of an app. First, we investigated existing messaging apps, university apps, and miscellaneous apps. These platforms have similar features, functionalities, and designs of an effective ambassador network app that we were able to extract as inspiration for ONLYLYON’s app. Second, we analyzed the interviews and survey data in order to determine what needs must be fulfilled and the desired features and content of the app.
3.2.1. Analyzing Existing Applications

We conducted application benchmarking prior to the distribution of the Ambassador surveys and the completion of all interviews to enable us to identify relevant features and design concepts to include in our survey and mock-up. We examined messaging apps, university apps, and miscellaneous apps. These applications play an important role in the connectivity and communication of their respective networks and provided us with ideas about the structure and content of ONLYLYON’s app.

We focused on each app’s UI, user experience, functionality, and included content. We also noted features which could be included in ONLYLYON’s app and how they could be adapted to fit the Ambassadors’ Network. The apps that we benchmarked are outlined by category in Figure 6, and the full list of applications and their benchmarking results are in Appendix G – Application Benchmarking.

3.2.2. Analyzing the Interviews and Survey

Following each interview, we created a document that summarized the interviewee’s perspective on key topics and what was learned. Only the most important information was extracted and broken into broad categories. These summary reports are included in Appendix C – Compiled Document of Interview Summaries. To ensure consistency when evaluating interviews, multiple group members used a qualitative coding method to analyze the data. A thorough description of this method can be found in Appendix D – Interview Coding.

To analyze the survey responses, we imported the data into IBM SPSS Statistics to analyze the survey’s demographics and trends in responses, and to create appropriate graphs and plots. Each answer to the two optional free-response questions was translated into English and a tally of common themes written in reply to these questions was kept. Refer to section Analysis of the Ambassador Survey for more information about the survey and free-response analyses using SPSS.
3.3. Prototyping a Mock-up of the Proposed Mobile Application

To determine which features to include in our application mock-up, we considered the opinions of all the people we interviewed and surveyed. To help in this process, we created a chart that displayed all of our data points next to each other. Additionally, we used our application benchmarking to guide design and layout decision in the mock-up.

After comparing both prototyping options described in section Mobile Application Prototyping Process, we concluded that creating a low-fidelity wireframe of the application was the best option. Due to the scope of our project, the fine details concerning graphic design and aesthetics that would be determined in a paper prototype were not necessary. Therefore, we decided to create a mock-up with limited functionality in Android Studio. The mock-up displayed all the features that we selected, but they were not functionally implemented.

3.4. Evaluating the Mock-up and Suggesting Plans for Future Development

Following the creation of the mock-up, we conducted an approximate cost assessment to provide ONLYLYON with valuable information for the future development of the application. We interviewed two local software development companies recommended to us by Aurélie Moretto, the communication director of ONLYLYON, as well as used an online calculator from a developer in Asia.

When speaking to software development companies in Lyon, we presented our ideas for potential content and features. Although it was not possible to determine an exact price from our initial work, we received insight into approximate development costs and how the inclusion of each feature would affect the complexity and price of making the app. The final development suggestions include a breakdown of the total cost and timeline by content, function, and features to give ONLYLYON an idea of what direction they might want to take for their final product.
4. Needs of the Ambassadors’ Network

We conducted interviews and surveys to understand the needs of the ONLYLYON Ambassadors’ Network and determine the need for a mobile application. This chapter covers the network’s needs from the perspective of ONLYLYON’s staff, partners, and Ambassadors. Furthermore, it touches upon the process of revising survey, the distribution of the survey, and its general results. Additionally, it discusses the correspondents’ needs and perspectives and the combined needs of the network.

4.1. ONLYLYON’s Staff and Partners

To determine how the Ambassadors’ Network functions, who is involved in it, and what the needs of the network are, we interviewed key staff members and partners. The full list of interviews is found in Figure 5 in section Interviewing ONLYLYON’s Staff and Partners. Summaries from the staff and partner interviews can be found in Appendix C – Compiled Document of Interview Summaries. The process we used for interview coding, our codebook, and the coded interviews can be found in Appendix D – Interview Coding. Our coding methods were heavily influenced by the work of E’19 SINGA project team: Ellen Clarrissimeaux, Sawnaz Shaidani, Emily Staknis, and Jeremiah Valero Araujo. More information about their coding methods can be found in Creating Methods for SINGA Lyon to Determine and Demonstrate Their Impact on Lyon.

At the beginning of the interview process, we asked select staff and partners what they thought about the communication and engagement levels in the network. ONLYLYON’s Program Director, Emmanuelle Sysoyev, mentioned that improving communication and engagement were two of the primary needs of the Ambassadors’ Network. With the current forms of communication, many of the personal interactions that originally helped build the network are lost, and this disengages the members. To keep engagement high and to keep Ambassadors informed about what is happening in Lyon, the International Networks Manager, Kristin Mangold, sends monthly newsletters via email to the network. Emails may be sent to the entire network or specific segments, but there is no effective way for members to respond, comment, or communicate after the news has been sent. Moreover, the staff receive a large number of inquiries from Ambassadors, making it hard for one or two people to respond to all of them.

Some Ambassadors communicate through alternative platforms and social media networks including LinkedIn, Facebook, or Twitter. From the perspective of the ONLYLYON staff, these options are effective for Ambassadors to share the ONLYLYON message within their personal network, but these social media platforms are not conducive to back-and-forth communication with other Ambassadors and ONLYLYON staff.

These perspectives guided the questions we asked in other staff and partner interviews about the needs of the Ambassadors’ Network and how the interviewees felt they could be addressed. Although the needs for improvement within the network that the staff and partners
identified supported what we learned from Emmanuelle, not everyone was sure that an application would be the best way to address them. Some had concerns about whether Ambassadors would use the app and if the development costs would be worth it. A common response was that the app would have to provide something unique that would make users want to use it over the website or alternate applications.

4.2. Results of the Ambassador Survey

After interviewing ONLYLYON’s staff and partners, we used the preliminary information that we learned to guide the creation of the Ambassadors’ Network survey. Afterwards, we tested the survey with 11 Ambassadors at an ONLYLYON event to make improvements before distributing it to the entire network. After two weeks, we closed the survey and analyzed the results. This section explains the processes of survey design, revision, and distribution as well as the gender, location, and age of the Ambassadors.

4.2.1. Survey Design, Revision, and Distribution

Interviews with ONLYLYON’s staff and partners identified common concerns about the Ambassadors’ Network relating to low participation and engagement. We wanted to know which, if any, of these issues hindered the Ambassadors’ involvement in the network. At the beginning of the Ambassador survey, we asked respondents to identify their level of involvement. If the Ambassador indicated a high level of involvement, we also asked them what they do support Lyon. Additionally, we presented a list of potential hindrances to participation, identified from interviews, and asked which ones applied to each Ambassador.

We also wanted to learn which of the potential application features we identified from interviews would be appealing to Ambassadors. Therefore, we asked each respondent whether they would use each of proposed functions. The results of this survey question are further discussed in section Determining Application Features.

In order to test our survey before distributing it to the Ambassadors’ Network, our group attended an Ambassador event on May 21, 2019. At the event, we spoke to 11 Ambassadors and asked them to complete our survey. Based on this feedback, we improved the survey questions and design. These improvements, as well as the final question set, are described in Appendix E – Ambassadors’ Network Survey.

After our revisions, ONLYLYON staff reviewed the survey before sending it to the entire Ambassadors’ Network through an email. The survey was closed after two weeks, at which point we had received 913 responses. This sample represents 3.5% of the general Ambassadors, which is sufficient to understand the whole population, as a non-response rate is not indicative of non-response bias. (Davern, 2013)
4.2.2. Demographics of Survey Respondents

All 913 Ambassadors that completed our survey answered questions about gender, age, and location. This allowed us to determine that 55% of respondents were men, 44% were women, and 1% preferred not to answer the question. This closely matches the gender distribution of the Ambassadors’ Network as a whole. Among the 76% of Ambassadors for which ONLYLYON has gender information, 52% are men and 48% are women.

The geographical distributions of survey respondents also closely followed that of the Ambassadors’ Network within a 3% margin of error, based on the 2015 global distribution, illustrated in Figure 3 in section The ONLYLYON Ambassadors’ Network. Seventy eight percent of responses were from greater Lyon, 9% from the rest of France, and the rest from Europe, North America, South America, Africa, and Asia. There were no responses from Australia. When the responses to key questions were compared between different genders and locations, we found that the difference in opinion was not statistically significant, however age did slightly impact interest in features relating to social media, as described in section Analysis of the Ambassador Survey.

The ages of respondents followed a normal distribution as shown in Figure 7, with the average being 45.4 years old. The analysis of the survey data relevant to the development of an application is discussed in section Analysis of the Ambassador Survey. Our full set of survey questions are found in Appendix E – Ambassadors’ Network Survey.

![Figure 7: Age distribution of survey respondents](image)

4.3. Viewpoints of the Correspondents and Strategic Ambassadors

ONLYLYON’s correspondents represent a significant part of the Ambassadors’ Network and have a key role as the point of contact for eight major international cities. Additionally, strategic Ambassadors are high profile players in the ONLYLYON Ambassadors’ Network. Due
to the importance of these groups’ perspectives, we interviewed four correspondents by phone. We also asked two of the other correspondents and 20 strategic Ambassadors to complete a comprehensive survey. In this section, we discuss the interviews with four correspondents and the surveys with four other correspondents and 20 strategic Ambassadors.

4.3.1. Interviews with the Correspondents

We interviewed the ONLYLYON correspondents from Hong Kong, Sydney, London, and Boston. These interviews provided us with information on current network communication shortcomings and the areas in need of improvement.

A common concern among correspondents was their limited ability to contact the Ambassadors in their area. This significantly restricted their ability to be productive leaders within the network. In order to reach out to their regional network, correspondents usually have to go through ONLYLYON to send out a mass email, which is inefficient and time consuming.

Typically, correspondents also use other platforms, such as Facebook and text messaging, to communicate with the Ambassadors in their area. However, this method makes it difficult to reach the entire local network and connect with people outside the correspondents’ professional circle. Additionally, this method can overwhelm Ambassadors with large amounts of information from many different platforms, resulting in messages getting lost or unintentionally ignored.

All the correspondents we interviewed believe that one unified platform for communication between ONLYLYON and the network should connect the correspondents directly with ONLYLYON, with other correspondents, and with other Ambassadors in their area.

4.3.2. Surveys with the Correspondents and Strategic Ambassadors

After our correspondent interviews, we sent a survey to the Moscow and Montreal correspondents. However, we only received one partially completed response. Additionally, we distributed a survey to a group of 20 strategic Ambassadors but only received one complete response. As a result, we were not able to form any conclusions about these groups’ needs based on the limited survey data collected.

4.4. Analyzing the Overall Needs of the Network

The needs of the Ambassadors’ Network are important to understand so that the relevance of an application and potential content and functionality can be determined. This section discusses the overall needs of the network based on responses to our interviews and surveys; see section Analysis of the Ambassador Survey for in-depth analysis of the survey results.

Firstly, the survey and interviews seemed to agree that Ambassadors needed more instruction on how they can support ONLYLYON’s goal of promoting and growing Lyon. Multiple interviews with staff found that Ambassadors wanted to help but were unsure of how.
This was reiterated by correspondents who said that they did not know how to respond when Ambassadors asked about what they could do to help ONLYLYON. This corresponds to the fact that 33% of surveyed Ambassadors were unsure of how to help Lyon, the second-highest obstruction preventing Ambassadors from participating more, behind a lack of time. This results in a situation where people that want to help cannot because they are unsure of how to do so. As suggested by interviews, this need could be addressed within the application by providing Ambassadors with regular tasks for them to complete, but this would require ONLYLYON to devote time to regularly providing suggestions that are beneficial to promoting Lyon and feasible for Ambassadors to do.

Secondly, we learned that Ambassadors needed an easier way to communicate within the network. The people we interviewed felt that as the network expanded, it became harder to communicate outside of personal circles, and that communication is hindered by not having a single platform to contact others. Currently, correspondents and partners must go through ONLYLYON to contact the network in their area, and all three interviewed parties agreed that this is inefficient and time consuming. Additionally, in the survey, the third most frequently indicated hindrance of Ambassador involvement—as seen in Figure 13 from section Analysis of the Ambassador Survey—was limited communication. Demonstrating that Ambassadors do feel there is a need for more communication in the network.

Thirdly, we found that Ambassadors needed a way to be able to network with each other outside of Ambassador events. This is closely related to the previous need, as communication is integral to creating and maintaining relationships within the network. Interviewees felt that it was too difficult to make personal connections outside of events, which occur infrequently. Interviewees believed that the application could be used to find other Ambassadors and used by Ambassadors to expand their professional network. For example, Ambassadors could look for others within a certain field of work through a directory or share job offers to relevant people. A directory was rated the fourth most-useful feature by surveyed Ambassadors, as seen in Figure 14. Furthermore, 11% of Ambassadors felt that the difficulty of finding other Ambassadors hindered their participation. Additionally, multiple international Ambassadors responded in the free-response section of the survey that they would like a way to find Ambassadors in their local area or when travelling to other areas.

The final major need that we identified was that Ambassadors needed to feel more engaged, involved, and appreciated within the network. A lack of incentive was the fourth highest reason that surveyed Ambassadors felt they were not more involved in the network; reference Figure 13. Our interviews also seemed to express that there was a motivational problem among the population of general Ambassadors. Some felt that Ambassadors tended to join the network and then forget about it and stop attending events. They suggested an incentive program to encourage participation. Other interviewees believed that Ambassadors currently do not see the network as a way to connect and network with others but believed that this was a great potential for the Ambassadors’ Network to be a positive asset for its members.
5. Analysis of Potential App Content, Features, and Design

To determine the potential content, features, and design of the mobile application, we benchmarked existing applications and analyzed data gathered from interviews and surveys. Benchmarking mobile applications inspired us with other potential features. We suggested these features, along with others that we had come up with on our own, in interviews so that we could understand the interviewees’ opinions on the features and receive additional suggestions. Following the benchmarking and the interviews, we generated a shortlist of the most relevant features and presented these to the Ambassadors’ Network in the survey. The following sections explain our analysis of benchmarking, interviews, and surveys.

5.1. Benchmarking Existing Mobile Applications

The process of benchmarking existing applications provided an inspiration for potential content, features, and design for the mock-up of ONLYLYON’s application. We proposed these elements, along with others identified outside of the benchmarking process, to ONLYLYON’s staff, partners, correspondents, and Ambassadors. The following section describes the results from benchmarking university, messaging, and miscellaneous applications.

University apps are designed and developed with the main goal of assisting and engaging their large network of students; however, faculty, staff, and alumni also use these apps. Emmanuelle Sysoyev, ONLYLYON’s Program Coordinator, and our main point of contact, suggested that we benchmark university applications (E. Sysoyev, personal communication, May 13, 2019). ONLYLYON has multiple different groups of individuals who would all be using this application in varying capacities. Similarly, different groups use different features in university applications. In the benchmarking process, we found that the different users of university applications—students, faculty, and alumni—have access to distinct features accessed from their respective logins. Additionally, they had features very similar to those that we were looking to include in our application design, namely the news wall. University apps demonstrated effective and appealing designs for news walls as the main page of an application. While many news walls had similar designs, Worcester Polytechnic Institute’s own app uses a unique, irregular grid pattern to show all news stories, updates, and social media posts on one page. This is shown in Figure 8. By presenting all news and social media on one page, there is no longer a need to have a separate section of the app to present social media posts. Each card with a social media post also had a link to reshare, like, or
comment directly from the application. This feature was quite common in our benchmarking, also appearing in university apps from UMass, Michigan, Harvard, and LSU.

As explained in section User Engagement and Retention, built-in messaging discourages users from leaving the app to contact others. The current messaging system on the ONLYLYON extranet is confusing and rarely used, so implementing this feature in a simple and intelligible way on an application could help the Ambassadors communicate with each other (J. Lutfi, personal communication, June 6, 2019). To get a better understanding of messaging systems, we benchmarked three apps dedicated to network communication and messaging: Slack, GINsystem, and Discord. These apps, though professionally designed and easy to use, offer overly complicated messaging systems, with a complex structure of channels, threads, groups, and chats. This is unnecessary for the majority of the Ambassadors’ Network, where the focus would be on individual Ambassadors talking amongst themselves. However, these features are great for communication in large groups or for projects and can serve as an example of how group chats could work for correspondents and strategic Ambassadors. Other apps with simpler messaging interfaces, such as Facebook Messenger, are better suited to provide potential inspiration for individual Ambassador messaging in ONLYLYON’s proposed application.

A number of miscellaneous applications were also benchmarked, ranging from networking systems to other city apps. These apps often introduced creative, new features and designs, some of which could be implemented in ONLYLYON’s app. Whova, an event organization and networking platform, features an innovative tool to create virtual exhibition guides, as shown in Figure 10 and Figure 11. This system could help ONLYLYON simplify the planning and organization of their events, while also providing helpful, easily accessible information to attendees.

![Figure 10: Whova’s event map](image1)
![Figure 11: Exhibitor details page](image2)
![Figure 9: Neighbors by Ring’s map feature](image3)
Neighbors by Ring features a neighborhood community board which lets users share posts, photos, and videos about things that have been happening in their neighborhood with others. Users can post to events happening in their area and the app uses the phone’s location to tag the post on a map. As shown in Figure 9, the posts are shown as pins on the map and are color-coded by the severity of the incident. By tapping on a pin, users can view all the details and like or comment about it. ONLYLYON could use a feature similar to this to showcase events or places of interest around the city, either through posts made by staff or by users of the application.

5.2. Evaluating the Staff and Partner Interviews

During interviews, ONLYLYON’s staff and partners suggested content, functionality, and features of the mobile application and provided feedback on our ideas. The following paragraphs contain the potential content suggested by the interviewees.

Many members of ONLYLYON’s staff and partners wanted quick information concerning topics such as real estate, Lyon, and ONLYLYON to be accessible to the Ambassadors. They recommended that this information should be modified depending on the Ambassador’s location and occupation. This app could include, for example, an explanation of ONLYLYON’s mission and values, as well as appropriate information about the ONLYLYON staff and how to contact them.

Additionally, staff and partners suggested that the app could provide ways to incentivize Ambassadors to participate, e.g., weekly questions to answer and ways to connect with the network. According to the interviews, Ambassadors often want to help or connect with Lyon but do not know how. The app could provide a tracking method of the tasks that the Ambassadors do for the network. Incentives, such as business opportunities or discounted museum tickets, could also be implemented to reward active Ambassadors.

The app could allow for professional networking opportunities as well, like job searches within certain fields, or regions around the world. It could also allow users to find connections when in unfamiliar parts of the world.

ONLYLYON’s staff members want the application to enable or disable different functionalities depending on the users Ambassador level, occupation, or location. Certain features, like a chat directly with ONLYLYON staff, the ability to send bulk messages, or post news to the news wall, could be limited to correspondents and strategic Ambassadors. This segmentation would also enable staff to address groups differently and provide special attention and information to the strategic Ambassadors. Moreover, news and information could be presented differently towards international Ambassadors than to local Ambassadors.

A mobile application for ONLYLYON should likely allow all Ambassadors to effectively communicate, without the aid of the International Networks Manager, Kristin Mangold. For example, correspondents should have quick access to contact their local Ambassadors, each other, and ONLYLYON’s staff.
An app function that simplifies the event-hosting process would benefit correspondents as well by making the process more time efficient and user friendly. The application could tailor notifications about events by location and profession and remind users that have sent an RSVP. Other information, like a floor plan and itinerary, could also be provided.

The application could have a directory feature that enables Ambassadors to find one another based on location or occupation. Multiple people suggested this feature, especially for the use of overseas contact and portability. This feature would likely be similar to the ONLYLYON extranet tool and would allow users to filter searches based on job field and location. Users should have profiles and contact information displayed for easy contact. However, the directory database must be well-maintained, and people must be able to easily or automatically or automatically update their locations.

Some auxiliary suggestions were also provided. A staff member at ONLYLYON suggested a feature to add filters to photos, such as ONLYLYON’s logo. Another interviewee proposed integrating ONLYLYON’s current social media to the application and providing a news wall.

In addition to the content, functionality, and feature suggestions, we received suggestions about the app’s layout and aesthetic. One interviewee recommended that the app should be quick to use, aesthetically pleasing, professional, and functional overall. A staff member suggested following a familiar app layout like LinkedIn or Facebook. Moreover, the app's colors, formatting, and other design choices should be reminiscent of Lyon.

5.3. Analysis of the Ambassador Survey

The responses to our survey were analyzed in two stages to determine the Ambassadors’ desires for content and features of the app. In the following section we cover how we performed both statistical analysis on the responses to quantitative questions and qualitative analysis on the answers to open-response questions.

5.3.1. Analysis of Statistical Survey Results

The analysis of the survey was conducted in SPSS Statistics by performing statistical computations and creating visual graphs. This provided a number of important insights. First, we learned that few Ambassadors are very involved in the network; only 8.7% said they participated at every opportunity and only 22.4% participated often or at every opportunity. Figure 12 shows this information separated by how many years an Ambassador has been a part of the network. Although it appears that there may be a small correlation between years of membership and participation at every opportunity within years 1 to 5, overall there is no statistically significant relationship between these two variables. A chi-square test calculated a significance value of 0.001, where a value of 0 would indicate no correlation, which shows that there is very little relationship between length of membership in the network and participation.
Although less than a quarter of the Ambassadors currently participate often or at every opportunity, 82.3% of respondents indicated they wanted to be more involved. This trend was consistent across all demographics and had little relation to age, gender, or location.

We found that, overall, Ambassadors’ use of social media is limited. Most platforms were not used at all by more than half of the Ambassadors, and on the most popular platforms—Facebook and Instagram—only 13% and 12.9% of Ambassadors commented, posted, and shared, respectively. Usage of Facebook was highest among younger Ambassadors, decreasing as age increases with a reasonably high statistical significance (chi-square significance value=0.304), while Instagram use had a much less significant relationship to age (chi-square significance value=0.048). Due to the low levels of interaction, it is unlikely that social media integration should be an important part of the application. If it is present, it should focus on Facebook and Instagram by encouraging Ambassadors to actively interact through those channels.

Next, we analyzed what obstacles currently hinder the Ambassadors’ Network. The most common obstacle, chosen by 53.2% of respondents, was a personal lack of time. The second most common issue, chosen by 33.4% of respondents, was Ambassadors not knowing what they can do to help Lyon. Other common obstacles were related to limited communication (21.4%), lack of incentive (20.2%), and a limited number of events (18.7%). These hindrances, illustrated in Figure 13, are important considerations that we must keep in mind when developing a potential application for ONLYLYON.

Figure 12: Ambassador engagement depending on length of membership in the network (n=913 total)
Finally, we conducted an analysis of what the 913 Ambassadors that responded to our survey would want to see in an application. Overall, 92.9% of respondents stated that they would be willing to use an application for Ambassadors. We also asked the Ambassadors whether they would use each of nine proposed features.

As illustrated in Figure 14, the features that would be used the most by Ambassadors are a wall with news (86.1% Yes) and personalized information about events (77.9% Yes). Other popular aspects included notifications about news (75% Yes), an Ambassador directory (68.7% Yes), and concise facts about Lyon (58.7% Yes). The features with the greatest percentage of respondents not stating that they would use them are sharing social media posts (21% No, 31% Maybe) and viewing ONLYLYON’s social media in the app (16% No, 38.3% Maybe). The Ambassadors’ opinions about social media closely match those of the staff and partners we interviewed, as multiple interviewees stressed that an ONLYLYON app should not propose features that already exist in other apps.
By dividing the dataset into different demographics, we found that the Ambassadors’ interest in potential features does not have any significant dependence upon gender, location, or years of membership in the network.

However, two of the proposed features show a statistically significant variance based on the Ambassador’s age. As illustrated in Figure 15 and Figure 16, messaging had a strong interest among Ambassadors less than 25 years old (82.6% Yes). This decreased significantly among 26-34 year olds (53.8% Yes) and then continued to decrease gradually up to Ambassadors greater than 65 years old (34% Yes).

A similar trend appears in relation to the directory feature, as shown in Figure 16. Overall, 87% of Ambassadors less than 25 years old indicated they would use it, but only 46.8% of those older than 65 years said the same.
5.3.2. Analysis of the Qualitative Open-Response Results

To begin analyzing the open-response questions, we wrote summaries of each response. Responses that were irrelevant to the scope of the project were ignored, while those applicable to the question were then analyzed using a simple response-coding method. Each response was read, and main themes were tallied in a separate list. If an answer presented an idea or response for the first time, this was added to the list.

The first open-response questions in the survey asked Ambassadors who indicated they were very involved in the network to describe this involvement. In total, 15 different topics were mentioned throughout 134 responses from 205 Ambassadors that indicated a strong involvement in the network. The topics that were mentioned more than 10 times are summarized in Table 1 and the full results are available in Appendix F – Survey Open-Response Question Analysis.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Number of Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attending Events</td>
<td>24</td>
</tr>
<tr>
<td>Photography of Lyon, shared on Social Media</td>
<td>18</td>
</tr>
<tr>
<td>Showing and/or Inviting others to Lyon from abroad</td>
<td>15</td>
</tr>
<tr>
<td>Promoting Lyon through Networking &amp; Professional Contacts</td>
<td>12</td>
</tr>
<tr>
<td>Social Media Sharing of ONLYLYON's Posts</td>
<td>11</td>
</tr>
<tr>
<td>General Interest in Lyon, Talk about Lyon</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 1: Top six areas in which Ambassadors indicated a strong involvement in the network

Evidently, highly involved Ambassadors most commonly attended events, showing that a feature relating to events could be important. Furthermore, a large number of Ambassadors introduced and invited others to Lyon, either personally among friends or acquaintances or within their professional circles and at networking events. Therefore, providing these people with information and figures about Lyon within the app could help them better promote the city.

The second open-response question of our survey asked Ambassadors for any other suggestions for what the application could do. Due to the open-ended nature of this question, the 124 responses spanned 31 different topics, however many responses also provided great depth in their explanations. The topics that were mentioned more than five times are summarized in Table 2 and the full results are available in Appendix F – Survey Open-Response Question Analysis.
Closely correlated to the activities that Ambassadors indicated they were highly involved in, the most commonly requested feature was related to ONLYLYON’s events. Within this suggestion, ideas such as a map, calendar for the upcoming months, and reminder notifications were brought up. Similarly, Ambassadors expressed interest in organizing their own events, both in Lyon and abroad, in order to connect with others inside and outside of their professional networks. A feature in the app that gives tips and suggestions to help plan and organize these events could therefore also be helpful.

Another idea suggested by 11 Ambassadors was to have information for restaurants and places to go around the Lyon area, with some respondents also proposing a review or rating system. However, this idea may not be well suited for the ONLYLYON application, as it is important to keep the app focused and not overlap with existing tourism apps.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Number of Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calendar and/or map of Ambassador events</td>
<td>17</td>
</tr>
<tr>
<td>Suggestions about things for Ambassadors to do to help ONLYLYON</td>
<td>13</td>
</tr>
<tr>
<td>Information about areas, restaurants, things to do in Lyon</td>
<td>11</td>
</tr>
<tr>
<td>Way to find Ambassadors in local area (geolocalisation)</td>
<td>10</td>
</tr>
<tr>
<td>Features for event organization and planning</td>
<td>9</td>
</tr>
<tr>
<td>Access to photos and videos to use for promoting Lyon</td>
<td>9</td>
</tr>
<tr>
<td>Directory to search for Ambassadors</td>
<td>6</td>
</tr>
</tbody>
</table>

*Table 2: Top seven free-response suggestions for app features*
6. Application Features, Mock-up, and Recommendations

This section covers the process that we used to decide the content, features, and layout of the proposed app, which features we proposed in the application, our mock-up, and our recommendations for app functionality.

6.1. Determining Application Features

To determine the features of our proposed application, we considered information learned from ONLYLYON’s staff, partners, correspondents, and Ambassadors. We first considered the Ambassadors’ survey responses, and then took the opinions of staff, partners, and correspondents into account to determine the importance of individual features. In order to make the process of weighing all important perspectives easier, we created the graph in Figure 17 that displays the survey (n=913), staff and partner interviews (n=8), and key staff and correspondent interviews (n=5) side by side for each feature. Key staff and correspondents (Kristin Mangold and the four correspondents we interviewed) are people who frequently interact with the network and are very knowledgeable about it. The graph uses a percentage scale, where the percent of responses that were either strongly positive, positive, neutral, or negative are displayed. A strongly positive response is one where the interviewee suggested the idea from themselves, as opposed to reacting to our questions about that feature. Refer to Figure 17 throughout this section that discusses these app features.
Upon analyzing and discussing the information presented in Figure 17, we concluded that the three most important features to include in the mock-up were a news wall, a directory, and a messaging system.

The news wall feature was the most popular among Ambassadors; however, there was a large negative response among key staff and correspondents. This was likely due to concern that maintaining and providing content to the news wall would be a significant time commitment for ONLYLYON’s staff. This burden could be reduced by integrating the news wall with existing content from ONLYLYON’s website, emails, and social media in addition to posting app-specific information. Furthermore, the news wall can be used to display information, such as a weekly task for Ambassadors to do, to inform Ambassadors how to help Lyon, thus addressing the need for Ambassadors to know how to help the network.

Figure 17: Overall interest in features from surveys and interviews
Events information was the second-most popular feature among Ambassadors and received unanimously positive responses from the interviews. Interviewees felt that more information about Ambassador events in their area and reminders for events would be helpful. A few suggested that the app could be used to collect attendance fees or allow entry to the event. A small portion of Ambassadors that were surveyed had a strongly positive reaction and expressed that reminders would be helpful in addition to other features, like a map or calendar. Furthermore, this feature could provide event attendees with useful information, thereby encouraging non-Ambassadors to download and use the app.

The directory feature was popular among Ambassadors, but even more popular among all of the groups that we interviewed. A number of interviewees also had a strongly positive response, meaning they suggested this feature to us and felt it would improve the network’s connectivity and allow Ambassadors to get more out of the network.

The Ambassador messaging feature was only popular with about half of Ambassadors that responded to the survey, with a large amount of “maybe” responses. However, this feature was well received by every interviewee and had the largest strongly positive response among all the potential features. This is because the staff and correspondents felt that this feature could be used to help facilitate communication between them and the Ambassadors for organizing events and staying in touch.

6.2. Mock-up and Recommendations for Application Features

The following section displays one of our deliverables, a mock-up of the application, and explains our recommendations on how ONLYLYON should proceed with developing a dedicated application based on prior analysis. Using Adobe Illustrator and Android Studio, we create a low-fidelity mock-up that serves as a simple example of what the appearance of ONLYLYON’s application could be. Designed with influence from Instagram, LinkedIn, and WhatsApp, the mock-up includes our three highly recommended features—a news wall, a directory, and a messaging system—along with other various functionalities.

**Recommendation 1: Primary Application Functionality**

We recommend, first and foremost, that the dedicated mobile application include a news wall, directory, messaging, and event management functionalities. Ambassadors, ONLYLYON staff, and partners identified these features as being the most helpful in a potential application. These features would greatly improve communication and engagement within the network.

The news wall would provide Ambassadors with a single, interactive place to receive updates and important information. Content could include news about Lyon, updates about ONLYLYON and its projects, or posts from ONLYLYON’s social media accounts. Posts would be made by ONLYLYON and other verified administrators, such as correspondents. Users should
be able to filter out types of information they deem irrelevant, like news outside of their field of work, news from other geographical regions, and social media posts by platform. Additionally, users would have the ability to share these posts through the application by email or social media. Figure 18 portrays an example of a news wall.

With a directory, Ambassadors would be able to conveniently find other Ambassadors through their smartphone. We recommend including a profile in the directory for each Ambassador, with fields such as name, contact info, field of work, company of employment, and languages spoken. Users would be able to hide these fields from view and searches to protect their privacy and prevent unwanted contact. In the directory, users would be able to search for Ambassadors and filter by the fields in the profile. Our mock-up of the directory search page, as shown in Figure 19, serves as an example of this feature.

A messaging feature would allow Ambassadors to easily contact other Ambassadors. We recommend that the messaging feature has the ability for users to message each other individually or in groups that can only be made by correspondents, ONLYLYON staff, and other administrators. We also recommend that users have the ability to block other users to prevent spam or abuse. To further prevent spam and abuse, the application should provide users with the ability to report offensive or irrelevant content, which administrators can remove if necessary. The design of a potential messaging feature is displayed in Figure 20.

An event manager would provide information about upcoming Ambassador events, such as a calendar, agendas, and interactive maps of the events. Though all of the other recommended features were included in the mock-up, the event manager was not. Our original recommendation for the event manager was for ONLYLYON to use a third-party application. However, from further research, we determined it would be more beneficial for the application to include an event manager to draw in more users and to dissuade members from using exterior applications for viewing and managing events. Whova, which would have also been the recommended third-party application, was an application found during the benchmarking process, and
outlined in section Benchmarking Existing Mobile Applications. The application could provide inspiration to ONLYLYON about the format and design of the event manager feature. Whova provides organizations with the ability to create events, share them directly with their members, and actively organize the event all within an application. Members can see a calendar and an interactive floor plan of the event, and individual booths within the plan can have information about the name of the booth, the hours, and the contact information of the owners. We suggest incorporating this feature into the application rather than using a third-party alternative. If users can obtain information and are required to use the app to enter the event, it would attract Ambassadors to download the app and potentially use the other features as well. It would also allow ONLYLYON to collect and store data privately, without third-party intervention.

Recommendation 2: Secondary App Functionality

We recommend that the dedicated mobile application also include secondary features, such as Ambassador tasks, notifications, geolocation, and account management. These features support our proposed primary features or provide additional functionality that will make the application more useful to the network, increasing the likelihood of the Ambassadors downloading and retaining the app.

From our research on application development through software development firms, it would cost more to add these features later. Furthermore, their inclusion would increase the value added to the application and would improve the usability and effectiveness of the application. Though they do not directly add any content, they will increase the active engagement of the user by prompting them to use the application more.

We found that a primary need of the Ambassadors’ Network was that Ambassadors need instructions on how to help ONLYLYON. While a specific feature to solve this issue was not identified, we believe that fulfilling this need is important and that it can be helped through the application. If, for example, Ambassadors were given weekly tasks, as shown in Figure 18, by ONLYLYON on the news wall, Ambassadors...
would know of ways to help ONLYLYON and further engage with the network. ONLYLYON could incentivize Ambassadors to complete tasks of varying importance, potentially with rewards upon completion.

Users should be able to receive push notifications on their phones when not using the application. These notifications could be about messages, events, and important news. However, to prevent Ambassadors from becoming overwhelmed with notifications, the user should be able to customize the types of notifications that they want to receive. Notifications, if implemented correctly, would provide Ambassadors with an incentive to return to the application and respond to recent and relevant information.

Geolocation, if allowed on the user’s device, would allow the application to automatically obtain the user’s location when the application is open. If desired, the app could then automatically tailor news, notifications, and directory results to the user’s current area. The “proche de moi” or “near me” button is shown in Figure 19. Additionally, if the user moves to another region, the application could automatically update the database of the Ambassadors’ Network with the new region so that correspondents and local strategic Ambassadors can remain informed on the Ambassadors within their area.

Finally, the application’s functionality should be segmented by a user’s affiliation with ONLYLYON. As shown in Figure 21, users have the ability to login as Correspondents, Ambassadors, or guests. Correspondents, staff, and other administrative figures would have access to a greater number of managerial features, including the ability to make group chats, chat with ONLYLYON staff, view proprietary information or news, and post on the news wall. General Ambassadors should only have access to the non-administrative functions of the application. If ONLYLYON wishes to include a way for non-Ambassadors to use the application, we recommend that guest users only have access to the news wall and can view basic information about ONLYLYON and Lyon. Guests should not be able to view the directory, view invitation-only events, use the messaging functionality, or view the Ambassador tasks within the news wall. Guest users could be prompted to join the network within the app in order to gain access to the additional features.
7. Application Development and Recommendations

In this chapter, we discuss the costs and benefits of moving forward with the application development. Additionally, we elaborate on the recommendations that we have for the future of this project and the potential development of the application. Finally, we discuss the alternatives to an application that could also help address some of the needs and challenges faced by the Ambassadors’ Network if ONLYLYON decides not to proceed with the development of a mobile application.

7.1. Costs of App Development

In order to provide useful insight into the feasibility of ONLYLYON developing a mobile application, we contacted app development companies to obtain cost estimates. ONLYLYON expressed a preference to develop the app in France or within Europe, as this would simplify the process of coordinating with developers and explaining the project to them. However, they were also interested in investigating whether agencies outside of Lyon could offer a significant cost reduction. (E. Sysoyev, personal communication, June 13, 2019) Since ONLYLYON has a limited amount of budget left for the remainder of this fiscal year and wants to proceed with development this year, ONLYLYON would likely develop the mobile application over the course of two fiscal years. (E. Sysoyev, personal communication, June 21, 2019). This would also allow the application to be developed in one continuous process.

To establish a baseline cost for the application, we used an online cost-estimator that is affiliated with an app development firm located in Thailand. Professor Jennifer deWinter, the director of WPI’s Interactive Media and Game Design (IMGD) department, recommended this resource as a starting point to approximate the cost of our proposed mobile application (J. deWinter, personal communication, June 13, 2019). The estimator calculated that the price of a web-based application would fall between €18K–36K and would take between three and four months of development until completion. Depending on the level of complexity, native Android and iOS applications would cost approximately €70K–90K together. The calculator estimated between six and seven months for the basic applications, and between eight and nine months to complete the native applications with full functionality. In Appendix H – Development Cost Analysis, the cost breakdown for the two prices is further explained.

ONLYLYON connected us with five different development firms in the Lyon region. We were able to obtain information on cost, development time, and maintenance cost of the application from two of these companies: Novius and Le

<table>
<thead>
<tr>
<th>Developer</th>
<th>Novius</th>
<th>Le Singe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Cost</td>
<td>€85K–115K</td>
<td>€176K–190K</td>
</tr>
<tr>
<td>Development Time</td>
<td>9–12 months</td>
<td>2–4 months</td>
</tr>
<tr>
<td>Maintenance Cost</td>
<td>€10K/yr.</td>
<td>€35K–38K/yr.</td>
</tr>
</tbody>
</table>

Figure 22: Cost estimates from Lyon-based developers
Singe. These estimates include the development of native Android and iOS applications and are summarized in Figure 22. Additionally, Le Singe sent information on the cost breakdown of specific features and elements of the application. This breakdown can be seen in Appendix H – Development Cost Analysis. The estimate from Novius is slightly more expensive and longer than the estimate given by OOZOU. However, the estimate received from Le Singe was significantly higher than the other estimates, nearly twice as much, while the development time was significantly shorter at 2 to 4 months.

7.2. Benefits of App Development

The lower cost-estimates cover only the most basic features and limited, web-based design. The more expensive prices include more features and design, which would create a more polished and refined app. Despite the higher initial cost of an app with more features, we believe that the long-term benefits outweigh this initial high cost. For example, it is less expensive to include a feature from the beginning instead of adding the features post-development. Additionally, an app with more functionality at the beginning would give users the impression of a fully developed application rather than an incomplete one; this would lead to more Ambassadors downloading and actively using it. As a result, we believe that **ONLYLYON should develop their application with all potential features and content necessary from the beginning.**

Furthermore, developing a dedicated application for the Ambassadors’ Network would provide three key benefits to ONLYLYON. First, they will retain control over their data collection and will not be limited by a third-party company. Second, they will be able to communicate with the entire network on a single unified platform without having to worry about information being lost in transition between emails, the website, and social media. And finally, a dedicated application would provide Ambassadors with convenient access to tools that they feel would help them. Also, although this is not a direct benefit of the application, it would provide ONLYLYON prestige as the first city-branding organization to have an application of this kind.

7.3. Alternative Solutions

We explored alternative solutions if ONLYLYON does not see the benefit of developing a dedicated application. The alternative to the application would be that ONLYLYON invests in improving the extranet and use third-party solutions. The extranet already includes some of the features that would be part of the application, such as messaging and a directory. However, these features are out of date and not user-friendly. The extranet would require significant updates to its UI and UX in order for Ambassadors to seriously consider using it more. The features would have to become more easily accessible to users instead of being hidden within the website’s tabs. Other features, like news and notifications, could be implemented for a cost estimates to be equivalent to developing the application. The extranet could provide users with a similar experience to the application but would not have the same accessibility and usability as a mobile application. To
supplement this, ONLYLYON could look into third-party software like Whova to provide features that the extranet does not or cannot. A less-expensive, web-based application could be also be developed to integrate with the extranet and provide its features on mobile devices for a fraction of the cost. However, this alternative is not ideal because of the previously outlined negatives of web-based applications and using third-party alternatives. Additionally, using multiple different platforms fractions users and the need for a unified place for Ambassadors to communicate was stressed by ONLYLYON.

Other alternatives to a native application would be to develop a web-based or hybrid application. Web-based applications are lower-priced and work on multiple operating systems. However, they require an internet connection, must be accessed through a web browser, and cannot use device features that utilize built-in hardware and software, e.g., notifications, compass, camera, and vibration. Hybrid apps offer the flexibility of a web-based application and the functionality and aesthetics of a dedicated application. This typically keeps development simple and costs lower than a native app, with fewer sacrifices than the web-based application (IBM, 2012). Further research into the cost for a hybrid application is necessary to determine if a hybrid application is a viable alternative for ONLYLYON.

A cheaper option to developing applications for both Android and iOS operating systems is to develop the application for one operating system—the primary system used by Ambassadors—and postpone the development of the other version; however, further research into the specific phones used by Ambassadors is necessary to ensure that a significant amount of Ambassadors are not excluded. While developing for both Android and iOS will likely double the effective development cost and may double the development time depending on the developer, it is important to consider that the purpose of this application is to provide a unified communication platform. In March 2019, Apple users made up 20% of mobile phone users in France, following Android’s majority of 80% (Kantar, 2019). Ergo, if a significant portion of iOS users are unable to use the application, the purpose of unifying the network is lost. Furthermore, most of the ONLYLYON staff use iOS devices so it would be difficult to manage an app that is not compatible with their phone's operating system (E. Sysoyev, personal communication, June 24, 2019).

7.4. Recommendations for App Development

The next sections discuss our recommendations that specifically relate to the application’s development. From our research and communication with local app developers, we created a series of development recommendations that ONLYLYON should consider when proceeding with a mobile application for the ONLYLYON Ambassadors’ Network.
Recommendation 3: Research Cost-Benefit of Android and iOS App Development

We recommend that ONLYLYON conduct further research into the cost-effectiveness of developing applications for both Android and iOS operating systems. Based on the cost estimates we conducted, we recommend dedicated native applications because they do not require an internet connection, can be saved to the device’s memory, and can utilize a device’s hardware, allows for features such as notifications. These apps can also be designed with the device and operating system’s design in mind, which makes the application more robust and professional-looking. However, dedicated applications for both operating systems are a significantly larger investment in cost and development time. Further research into the costs and benefits of a hybrid application compared to dedicated applications is necessary. Additionally, research into the market share of Android vs. Apple within the Ambassadors’ Network could provide insight on the necessity of developing for both Android and iOS to not divide the network.

Recommendation 4: Research Lyon-based App Development Costs

We recommend that ONLYLYON conduct further research into the app’s cost and development time with local software development firms. The costs of app development within Lyon varied widely from €100K to €200K, and this greatly affects whether local development is worthwhile. However, higher than foreign development, the benefits of local development are worthwhile. Local firms are likely to be familiar with the culture of Lyon and the French language, which makes communication and development quicker and smoother. Since ONLYLYON already has relationships with local companies, such as Novius and Le Singe, less time must be spent establishing ONLYLYON’s mission and the purpose of the application because they are already aware. If the cost difference between outsourcing and local development is negligible, ONLYLYON can have the benefits of local development without an increase of cost. Our team does not have enough information to provide an exact cost for local application development or recommend a specific developer, therefore ONLYLYON should continue investigating their options.
8. Conclusions

The ONLYLYON Ambassadors’ Network provides significant assistance in promoting Lyon, France, to a global audience. However, ONLYLYON could more effectively utilize their network by improving the engagement and communication of its members. Most Ambassadors want to become more involved and help to promote Lyon more, indicating that the network has the potential and the willingness to further improve the promotion of Lyon.

We concluded that the development of a mobile application could be beneficial for the ONLYLYON Ambassadors’ Network, provided that ONLYLYON continuously supports and maintains the app. Many of the needs of the Ambassadors’ Network, including personal connections, easier communication, and guidance on how to support Lyon, can be facilitated through the application; however, it cannot address these topics by itself. In addition to the development of an app, ONLYLYON should continue to implement changes and resources to fully address the needs of the network through this application. This can be achieved through additional networking opportunities, conveying ways for Ambassadors to help Lyon, and further developing relationships with strategic Ambassadors. These changes may require an additional team member to support.

ONLYLYON could work with a professional development company to create and maintain a polished, high-caliber mobile application. This app should be well-designed, easy to use, and have most, if not all, of the features that we identified as important for the Ambassadors’ Network. This would not only ensure that the application is well positioned to support the network but would also make Ambassadors more likely to download, retain, and actively use the app. Additionally, ONLYLYON should maintain a close relationship with this development company to actively update the app’s features and compatibility with new devices.

Considering the different avenues for ONLYLYON to improve the Ambassadors’ Network by increasing engagement and communication, we believe that a dedicated mobile application is an effective choice. The app’s messaging feature would promote communication between members while notifications and weekly tasks would help increase engagement. A directory would allow Ambassadors to take full advantage of the platform’s networking opportunities and geolocalisation would personalize the app to each person’s current location. Furthermore, over 82% of Ambassadors want to be more involved in the network while over 92% are willing to use an application. Additionally, this new platform would reinforce ONLYLYON’s image of innovation in city branding and promotion, as this would make Lyon the first city to have an application dedicated to its Ambassadors’ Network. By improving the effectiveness of the ONLYLYON Ambassadors’ Network, a mobile application has the potential to get more people to know Lyon, to love Lyon, and to come to Lyon.
Appendices

Appendix A - IRB Approval and Verbal Consent Form

WORCESTER POLYTECHNIC INSTITUTE
100 Institute Road, Worcester MA 01609 USA

Institutional Review Board
FWA #00015024 - HHS #00007374

Notification of IRB Approval

Date: 30-Apr-2019

PI: Coleman, Kyle

Protocol Number: IRB-19-0586

Protocol Title: Promoting Lyon with Innovative Technology

Approved Study Personnel: Coleman, Kyle~Boenisch, Kevin~Gavelek, Julia~Heinle, Megan~Hansen, Peter H~Miller, Fabienne~Sphar, Jefferson A~

Effective Date:

Exemption Category: 2, 3

Sponsor*:

The WPI Institutional Review Board (IRB) has reviewed the materials submitted with regard to the above-mentioned protocol. We have determined that this research is exempt from further IRB review under 45 CFR § 46.104 (d). For a detailed description of the categories of exempt research, please refer to the IRB website.

The study is approved indefinitely unless terminated sooner (in writing) by yourself or the WPI IRB. Amendments or changes to the research that might alter this specific approval must be submitted to the WPI IRB for review and may require a full IRB application in order for the research to continue. You are also required to report any adverse events with regard to your study subjects or their data.

Changes to the research which might affect its exempt status must be submitted to the WPI IRB for review and approval before such changes are put into practice. A full IRB application may be required in order for the research to continue.

Please contact the IRB at irb@wpi.edu if you have any questions.

*if blank, the IRB has not reviewed any funding proposal for this protocol
VERBAL CONSENT FOR INTERVIEWS

With your permission, we would like to take an audio recording of this interview, beginning now while we read you some information about this interview and request your consent to participate.

(Start the Audio Recording now)

Description of the study and study procedures

We are conducting research to determine the functionality, and potential content of an innovative technology used for ONLYLYON’s Ambassadors’ Network.

The IRB Project is #19-0586. Our advisors of this project are Peter Hansen, Fabienne Miller, and Emmanuelle Sysoyev.

If you agree to participate, you will be asked to answer questions with an expected duration of [30 minutes to 1 hour]. We would like your permission to audiotape/videotape this interview.

Risks

Your participation does not involve any risks other than what you would encounter in daily life.

Benefits

You are not likely to have any direct benefit from being in this research study. However, the possibility of improving communications across the ONLYLYON Ambassadors’ Network as a result of this project could be seen as personally beneficial.

Alternatives

You may choose to not participate in this interview.

Financial Information

Participation in this study will involve no cost to you. You will not be paid for participating in this study.

Confidentiality

Study records that can identify you will be kept confidential by allowing only research staff to review data and keeping data in a password protected computer. Audio recordings as well as transcripts of the interviews will be treated with the same level of confidentiality and results of the research study may be published. If desired, your name will not be used.

Subjects Rights

Your participation in this research study is completely voluntary. You can withdraw at any time. Choosing not to be in this study or to stop being in this study will not result in any penalty to you or loss of benefits to which you are entitled. Your choice to not be in this study will not
negatively affect any rights to which you are otherwise entitled including your present or future employment or affiliation with ONLYLYON.

**Whom to contact with questions**
If you have any questions or problems during your time on this study, you should call Kevin Boenisch (07-80-81-23-77), Kyle Coleman (09-70-44-86-84), Julia Gavelek (06-24-78-53-46), Megan Heinle (06-21-95-23-50), Peter Prygocki (06-75-57-07-49) as the people in charge of this research study. Questions about your rights as a research subject may be emailed to the Institutional Review Board (IRB) Office of Worcester Polytechnic Institute at irb@wpi.edu.

**Consent Section**
Do you wish to participate?
Record Subject’s response: Yes  No

Do you agree to be audio-taped/video-taped for the remainder of this interview?
Record Subject’s response: Yes  No
Appendix B – Interview Questions

Appendix B1 – International Networks Manager – Kristin Mangold

1. How long have you been working for ONLYLYON? What made you want to work here?
2. What is your job title and what responsibilities fall under your position?
3. Can you tell us about your time working at ONLYLYON?
4. What do you believe are the needs of the Ambassadors’ Network as a whole? The strategic Ambassadors? General Ambassadors? Correspondents? International Ambassadors?
   a. In your opinion, how should we balance the needs of ONLYLYON with the Ambassadors’ needs?
   b. How active do you think the network is?
   c. How has this trend changed over time?
   d. Do you believe that the qualifications to become an Ambassador in Lyon are too restrictive or not restrictive enough?
   e. Are there specific areas where you think the involvement of the Ambassadors is particularly strong? Particularly weak?
   f. Do you have data that we can look at about the Ambassadors’ Network in general or data pertaining to the demographics of involvement within the network?
5. In what ways do you currently use the Ambassadors’ Network?
   a. Do you think there are ways that the network could be used more effectively?
   b. How do you manage, communicate, and engage the Ambassadors’ Network?
   c. How much do you communicate with the network as a whole? How often do you communicate with individual Ambassadors?
      i. In your opinion, is this a good amount of communication? If not, do you think you should communicate more frequently? Less?
6. How do you manage the network through the website?
   a. How much do you use the Ambassador website?
   b. What do you like and dislike about the website? Are there some specific areas where you see a need for improvements?
   c. What is the data that you currently get from the website tools? How do you get it?
   d. Is there a way to determine the last time an account was accessed? How many accounts would be considered no longer in use? (At the end, ask for some reports)
7. In your opinion, how effectively do you communicate with the Ambassadors through email believe the ONLYLYON emails to Ambassadors are in communicating?
   i. Why do you think people don’t read them?
   ii. What types of would communication more effective that cannot be done through an email?
8. What are your roles and responsibilities when it comes to the ONLYLYON_Amb Twitter account?
a. What do you like and dislike about using Twitter as a platform for communication? Are there specific features that you particularly enjoy? Dislike?

9. Provide a general overview of the events held for Ambassadors.
   a. How often are Ambassador events held and how is the attendance?
   b. How are they used? How could they be used more effectively?

10. What are the benefits for joining ONLYLYON’s Ambassadors’ Network?
   a. How many people become Ambassadors through referrals?
   b. How do you motivate people to join the network? Read emails?
      i. How could this be improved? What incentives could be implemented?
      ii. Do you have any ideas on how to motivate people to download the app?

Potential Solution:

1. What are some alternate forms of communication that would help you as an ONLYLYON staff member? Do you think the same forms of communication would also help communicate and engage Ambassadors in the network?

2. What features would you use to communicate and engage the network?

3. What do you think of our current features - messaging (Who specifically would you communicate with?), news, pop-up map, etc.?
   a. Would you use them? What do you like or dislike?

4. How would you want this application to fulfill ONLYLYON’s needs?

5. How do you see this mobile application affecting your existing methods for managing, communicating with, and engaging the network?
   a. Will it replace some existing methods? Which ones?

6. How do you think the application should address the different types of Ambassadors? (International, Strategic, Correspondents, and General).
   a. Should the app primarily focus on one group?

7. How will this application work in tandem with your goal of increasing the strategic Ambassadors and their involvement in ONLYLYON’s mission?

Closing Comments/Questions:

1. Do you have any other ideas for what would encourage Ambassadors to become more engaged with the network (other than the app)?

2. Any questions for us? Anything that we should know going forward? Suggestions?

3. Can you run some reports to give us some data and statistics about website use, account activity, email reads/clicks, etc.?

4. Review the survey questions, talk about how to send them.
Appendix B2 – Former Ambassadors’ Network Manager – Gerard Auboeuf

**Joining and Using the Ambassadors’ Network:**

1. Why did you decide to come work for ONLYLYON?
2. How long have you worked for ONLYLYON?
3. What is your role at ONLYLYON currently?
4. What were your responsibilities when you managed the ONLYLYON Ambassadors’ Network?
5. What do you see as the main role of the Ambassadors’ Network?
6. How has this role changed since you were managing the network?
7. How did the network change after expanding beyond just strategic Ambassadors?
8. How did you manage, communicate, and engage with the network?
   a. How much did you communicate with the network?
      i. Was this communication sufficient? If not, how would you have communicated differently?
9. In what ways do you currently use the Ambassadors’ Network?
   a. How do you think you could more effectively use the network?
10. Do you think that the emails sent to the Ambassadors are effective? How could they be more effective?
11. How much do you use the Ambassador website?
    a. How often do you log into your account?
    b. What do you do on your account?
    c. What do you like and dislike about it?
12. What would encourage current Ambassadors to get more involved in the network?
13. How active is the network currently? How has this trend changed over time?
14. In your opinion, what are the current strengths, weaknesses, and benefits of the network?
    a. For how long have these strengths/weaknesses been around?
    b. What are the main areas of improvement for the network?

**Potential Solution:**

1. What ideas or technologies would help improve communication and engagement among the Ambassadors in the network and ONLYLYON as a whole?
2. (Without providing any background information) If ONLYLYON were to develop an app to help support the Ambassadors’ Network, what are the features you think it should include?
3. What do you think of our current potential features? I.e.
   a. Messaging: two-way communication between Ambassadors directly through the application.
   b. News and updates: current information about ONLYLYON’s status and important occurrences in Lyon.
   c. Resources: easy access to the resources provided through ONLYLYON’s website.
d. Information about nearby events: Customizable notifications and information about events in nearby cities

e. Recruitment opportunities: Resources for and communication with potential Ambassadors to expand upon the network

f. Direct communication with ONLYLYON: Integrated two-way chat functionality directly with ONLYLYON staff.

g. Social media integration: Find Ambassadors’ social network accounts, post directly to different social media platforms, view recent posts by ONLYLYON and followed Ambassadors.

h. Pop-up map: A virtual guide to Lyon including regular updates on a map of trending events and recent business developments.

i. Virtual exhibition guide: Map of Ambassador exhibition with helpful information and a schedule of the event.

j. Would you use them? What do you like or do not like?

4. How could you see this mobile app functioning differently for ONLYLYON and different categories of Ambassadors?

5. In your opinion, how should we balance the needs of ONLYLYON with the Ambassadors’ needs?

Closing Comments/Questions:

1. Any questions for us? Anything that we should know going forward?
Appendix B3 – Community Managers – Colin Pezzani and Paul Malinic

**Joining and Using the Ambassadors’ Network:**

1. Why did you decide to come work for ONLYLYON?
2. How long have you worked for ONLYLYON?
3. What is your job title and what responsibilities fall under your position?
4. What do you see as the main role of the Ambassadors’ Network?
5. Describe your past experience with the Ambassadors’ Network in detail. How do you use the network?
   a. How would you describe your involvement in the network? How and why has this changed over time?
   b. How do you think you could more effectively use the network?
   c. How often do you communicate (back and forth) with individual Ambassadors in the network? The entire network? Which methods do you use?
6. What do you believe the need of the Ambassadors’ Network is?
7. During your time at ONLYLYON, how have you seen the network grow and change? How has it changed for better? How has it changed for the worse?
8. What do you see as the network’s strengths and weaknesses both generally and specific to yourself?

**Potential Solution:**

1. What are some alternate forms of communication that would help you as an ONLYLYON staff member? Do you think the same forms of communication would also help communicate and engage Ambassadors in the network?
   
   **Note:** After the response, very broadly/simply introduce the idea of a mobile app for Ambassadors with communications and news without going into details.

2. If there were a mobile application for Ambassadors, what need would it fulfill for you and how would it help you?
3. How do you see this app helping the Ambassadors’ Network as a whole?
4. What features would you want to have as an ONLYLYON staff member to communicate with and engage the network?
5. What do you think of our current features - messaging (Who specifically would you communicate with?), news, pop-up map, etc.?
   a. Would you use them? What do you like or don’t like?

**Closing Comments/Questions:**

1. Do you have any other ideas for what would encourage Ambassadors to become more engaged with the network (other than the app)?
2. Any questions for us? Anything that we should know going forward? Suggestions?
Appendix B4 – ONLYLYON Partners

Joining and Using the Ambassadors’ Network:
1. What does your group do and how does it fit into the work of ONLYLYON and their other partners?
2. Describe your past experience as a partner in relation to ONLYLYON.
   1. How would you describe your involvement? How and why has this changed over time?
3. How does your group interact with the ONLYLYON Ambassadors’ Network?
   1. What do you see as the main role of the Ambassadors’ Network in relation to your work?
   2. What is the most important asset of the network to your group?
4. How have you seen the network grow and change over time? How has it changed for better? How has it changed for the worse?
5. What do you see as the network’s strengths and weaknesses both generally and specific to your group?

Potential Solution:
1. What technologies or alternate forms of communication would help you more effectively utilize the Ambassadors’ Network?
2. In addition to helping your group, how do you see these technologies helping improve communication and engagement among the Ambassadors in the network and ONLYLYON as a whole?

Note: After the response, very broadly/simply introduce the idea of a mobile app for Ambassadors with communications and news without going into details.

1. If there were a mobile application for Ambassadors, how would you use this app?
2. What features would you use as an ONLYLYON partner to communicate and engage the network?
3. What do you think of our current features (features will be provided)?
   1. Would you use them? What do you like or don’t like?
2. How would you want this application to fulfill your company’s needs?
   1. If desired, how would you want your company to be highlighted in the application?

Closing Comments/Questions:
1. Do you have any other ideas for what would encourage Ambassadors to become more engaged with the network (other than the app)?
2. Any questions for us? Anything that we should know going forward? Suggestions?
Appendix B5 – Interview Questions for Correspondents

**Overall Introduction and Role in Network**

1. Describe your experience with the network in detail.
   a. Why did you join the ONLYLYON Network? How did you become a correspondent?
   b. What are some things that you have accomplished as a Correspondent?

2. How do you use the Ambassadors’ Network?
   a. Do you attend events? What is the most recent Ambassador event that you attended/heard about?

3. What sort of relationship do you share with your local Ambassadors?

**Overall Network Development/History**

4. How active do you think the network is and the Ambassadors in your area? How has this trend changed over time?

5. In your opinion, what are the current strengths, weaknesses, and current role of the Network?

6. How do you recruit/encourage people to join the network? How often do you do this?

**Communication**

7. How do you currently engage and communicate with the Ambassadors in your area? How much? Do you have ways to send information to your Ambassadors?

8. Do your local Ambassadors reach out to you directly? How often? Through which channels?

9. How much do you communicate with others in the network, aside from your local Ambassadors? How do you communicate with ONLYLYON?

10. Are there ways for you and your Ambassadors to communicate development opportunities with ONLYLYON? How often do they get used?

11. Do you feel that Ambassadors use the social media networks that ONLYLYON runs? Do they read emails?

12. Overall, how do you feel about the current communication within the network, and how do you think it can be improved? How would this help you, your Ambassadors, and ONLYLYON? Do you have some ideas or suggestions for improvement?

**Mobile Application**

13. If there was a mobile application for Ambassadors, how would you want to use it? What would you want it to do? What need is there for it to fulfill? Do you have some ideas for potential features and content in the app?

14. What do you think of our current potential features - messaging, pop-up map, etc.?
   a. Would you use them? What do you like or not like?
15. How could you see this mobile app functioning differently for you than for the Ambassadors in your area?

Closing

16. Do you have any local Ambassadors that you recommend us connecting with who may be interested in sharing their thoughts with us?

17. Any suggestions or ideas for us? Closing comments and thoughts?
Appendix B6 – Interview Questions for Ambassadors

Joining and Using the Ambassadors’ Network:

1. How long have you been an Ambassador? Why did you join the ONLYLYON Network?
2. What do you see as the main role of the Ambassadors’ Network?
3. Describe your past experience with the Ambassadors’ Network in detail.
   a. How would you describe your involvement in the network? How and why has this
      changed over time?
4. How do you use the Ambassadors’ Network?
   a. Do you attend events? What is the most recent Ambassador event that you
      attended/heard about?
   b. Have you referred development opportunities to ONLYLYON?
   c. Have you referred others to join the network? Why? How?
5. During your time as an Ambassador, how have you seen the network grow and change?
   How has it changed for better? How has it changed for the worse?
6. What do you see as the network’s strengths and weaknesses both generally and specific
   to yourself?

One-Way Communication:

1. How often do you read the emails from ONLYLYON?
   a. Do you read them in-depth or just skim them?
   b. If you do not read them, why not?
   c. What motivates you to check an email? What content interests you?
   d. What do you like and dislike about it?
2. How much do you use the ONLYLYON website?
   a. How often do you log into your account?
   b. What do you do on your account?
   c. What do you like and dislike about it?
3. How would you describe your involvement with the ONLYLYON_Amb Twitter account?
   a. What do you like and dislike about it?

Back-and-Forth Communication:

1. How much do you communicate (back and forth) with other Ambassadors in the
   network? Which methods do you use?
2. How much do you communicate (back and forth) with ONLYLYON staff and how do
   you reach them?
3. Are you satisfied with this amount of communication? If not, do you think you should
   communicate more or less frequently?

Potential Solution:
1. What are some alternate forms of communication that would be helpful for you and/or increase your engagement with the network?

*Note: After the response, very broadly/simply introduce the idea of a mobile app for Ambassadors with communications and news without going into details.*

2. If there were a mobile application for Ambassadors, what sort of features do you think it should have?

3. What do you think of our current features - messaging, news, pop-up map, etc.?
   a. Would you use them? What do you like or not like?

4. Would you use this app?
   a. What would motivate you to download the app?
   b. How often would you voluntarily open the app? Or, would you only open it when prompted?
      i. What notifications would you like to receive from the app?
   c. Would you message with ONLYLYON and/or other Ambassadors?
   d. Would you read news and updates on the app?

5. What would incentivize you to become more engaged on the application?

**Closing Comments/Questions:**

1. Do you have any other ideas for what would encourage you to become more engaged with the network (other than the app)?
2. Any questions for us? Anything that we should know going forward? Suggestions?
# Appendix C – Compiled Document of Interview Summaries

## Appendix C1 – ONLYLYON Staff: Paul Malinic

<table>
<thead>
<tr>
<th></th>
<th>Paul Malinic</th>
<th>05.16.2019</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Job Title</strong></td>
<td>Community Manager</td>
<td></td>
</tr>
<tr>
<td><strong>Role at ONLYLYON</strong></td>
<td>Runs the social media accounts in partnership with Colin</td>
<td></td>
</tr>
<tr>
<td><strong>Current Use of Ambassador Network</strong></td>
<td>Works with local influencers, specific type of Ambassador, to create user-generated content</td>
<td></td>
</tr>
</tbody>
</table>
| **Challenges and Needs of Network** | • Need to focus within, focus within Lyon, balance  
• Need to communicate ONLYLYON’s mission, not just tourism  
• Better communication, networking opportunities  
• Facebook, Twitter does not work that well  
• Email/correspondents are good to reach out, but does not help them communicate with each other  
• Need to focus on strategic Ambassadors. |            |
| **Interviewee Suggested Features and Content** | • The app should help Ambassadors reach information quickly and communicate with each other.  
• Help them talk to each other  
• Help them get information about Lyon quickly |            |
| **Thoughts on Proposed Features** | Likes the idea of an app because other social medias do not work and ONLYLYON has too little manpower to manage them. |            |
| **Other**            | • Ambassadors need to be able to communicate and feel like a part of the network  
• Ambassadors need to feel like they can use the network to find a job, create opportunities.  
• App, if used to communicate often, people are more likely to use the other features |            |
### Appendix C2 – ONLYLYON Staff: Colin Pezzani

<table>
<thead>
<tr>
<th></th>
<th>Colin Pezzani</th>
<th>05.15.2019</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Job Title</strong></td>
<td>Community Manager</td>
<td></td>
</tr>
<tr>
<td><strong>Role at ONLYLYON</strong></td>
<td>Colin manages ONLYLYON’s social media. Colin is working on developing a web series about Lyon on the ONLYLYON YouTube page.</td>
<td></td>
</tr>
<tr>
<td><strong>Current Use of Ambassador Network</strong></td>
<td>Sometimes Ambassadors connect with ONLYLYON through FB and other social media, but they don’t talk to them on social media.</td>
<td></td>
</tr>
<tr>
<td><strong>Challenges and Needs of Network</strong></td>
<td>Believes that ONLYLYON must focus more efforts on targeting the international market to promote Lyon’s brand.</td>
<td></td>
</tr>
</tbody>
</table>
| **Interviewee Suggested Features and Content** | • Connect with Ambassadors with Skype, making events over social media or on the website (alternative solution)  
• Creating weekly prompts to ask groups of Ambassadors to answer.  
• Making a page where users could download pdfs, such as brochures.  
• Thinks it would be helpful for Ambassadors to communicate with Ambassadors → Should allow them to chat all together  
• We must make a scale of which Ambassadors are important |
| **Thoughts on Proposed Features** | Likes them a lot |
| **Other**                    | • App must be quick to use, aesthetically pleasing, and functional.  
• What can we do to touch more people? What should we talk more about? Gastronomy? Science?  
• Cannot talk about politics or boring things, can talk about sports and cool things to do in Lyon |
### Appendix C3 – ONLYLYON Staff: Kristin Mangold

<table>
<thead>
<tr>
<th>Job Title</th>
<th>International Networks Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role at ONLYLYON</td>
<td>Manages the Ambassador Network</td>
</tr>
<tr>
<td>Current Use of Ambassador Network</td>
<td>Strategic Ambassadors need to have info before a project starts, such as confidential info about developments</td>
</tr>
</tbody>
</table>
| Challenges and Needs of Network | • Different Ambassadors need different things. Currently send lots of big news, but not enough customized/first-hand info  
• Currently, a lot of people do not know what to do but want to help.  
• There is no way to capture everything an Ambassador does |
| Interviewee Suggested Features and Content | • Different features for ambassadors of different ranks.  
• 2 Parallel Streams: focus on BOTH general Ambassadors AND strategic Ambassadors.  
• App should focus on every Ambassador, but features could be limited to certain ranks of Ambassadors.  
• Strategic Ambassadors need a better way to contact ONLYLYON more, general Ambassadors need to contact them less.  
• Tasks to help general Ambassadors know what to do. ONLYLYON snapchat filters on their app? - logo of ONLYLYON?  
• An easy way for Ambassadors to report their involvement (the things they do). |
| Thoughts on Proposed Features | • Quick contact with ONLYLYON for strategic Ambassadors  
• Application should not be split apart into multiple different apps, but multiple faces/cover to the same app can be presented to different types of users. Switch between profiles with different functionality.  
• Geolocate Ambassadors  
  • Reminders for local events  
  • The user could check into a location and get local info.  
• Ambassadors should be able to communicate with each other  
• Customized info based on location, job, etc. |
| Other                   | • Make a longer survey for correspondents.  
• Kristin does not need to be the central point when forming connections, people can connect to each other directly without going through Kristin each time. |
Appendix C4 – ONLYLYON Partner: Frederic Miribel, ADERLY

<table>
<thead>
<tr>
<th>Group</th>
<th>Frederic Miribel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partnership with ONLYLYON</td>
<td>Frederic Miribel</td>
</tr>
<tr>
<td>Invest in Lyon (ADERLY)</td>
<td>05.15.2019</td>
</tr>
</tbody>
</table>

ADERLY works closely with ONLYLYON. Three step process:
- Promote (ONLYLYON)
- Prospecting Leads (ADERLY)
- Setting up Businesses (ADERLY)

Current Use of Ambassador Network
Create leads and connections for ADERLY to get in touch with Development Opportunities Globally. When reaching out to new businesses the use the target cities of ONLYLYON. Says that an Ambassador was able to put a company in contact with ADERLY and ultimately got them to Lyon

Challenges of Network
Large groups are useless without personal connections (for ADERLY). Hard to keep network engaged. Don't have an answer when Ambassadors ask what they can do to help. Cannot sort the network into groups based on region or profession. Too many Ambassadors within Lyon. Either need to be more restrictive or less.

Interviewee Suggested Features and Content
- Social Media Integration
- News
- Info about Lyon
- Job Search
- Real Estate information
- PowerPoints Accessible in one location
- Directory

Thoughts on Proposed Features
Ambassador to ONLYLYON Communication: Does not entirely like the idea. News and Updates: Liked the idea of customized information by user preferences, who will be writing these? Incentive Programs: Provide members with incentives to share business opportunities. Had this idea a while ago, revisit?

Other
Reach out to other networks (Like Lyon’s universities and ask to partner with them)
<table>
<thead>
<tr>
<th><strong>Group</strong></th>
<th>ONLYLYON: Tourisme et Congrès</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Partnership with ONLYLYON</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Gives info to Kristin, and then she emails it out to network</td>
</tr>
<tr>
<td></td>
<td>• Shares news and updates with the Network</td>
</tr>
<tr>
<td></td>
<td>• Tourist Office falls into brand of ONLYLYON, they are not a separate entity and need to maintain consistent branding across all they do</td>
</tr>
<tr>
<td><strong>Current Use of Ambassador Network</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Send info to international Ambassadors just as info, send info to local Ambassadors as a call to action.</td>
</tr>
<tr>
<td></td>
<td>• They recognize how important the network is, crucial part of Lyon’s promotion</td>
</tr>
<tr>
<td></td>
<td>• Want to share info both TO and THROUGH the network</td>
</tr>
<tr>
<td><strong>Challenges of Network</strong></td>
<td>Today, almost anyone can become an Ambassador. It has become more like a social network that anyone can join, and no one feels “special” anymore. Many Ambassadors don’t really participate or don’t even know they are Ambassadors.</td>
</tr>
<tr>
<td><strong>Interviewee Suggested Features and Content</strong></td>
<td>Directory, create a way for individuals to find and connect with professionals within their field, from certain regions, or globally</td>
</tr>
<tr>
<td><strong>Thoughts on Proposed Features</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Likes the news idea.</td>
</tr>
<tr>
<td></td>
<td>• Create a wall that will be checked daily, like Facebook. Should contain personalized notifications based on location, profession, etc.</td>
</tr>
<tr>
<td></td>
<td>• Communication between Ambassadors and the network at large would be very overwhelming, show them the appropriate way to connect with ONLYLYON.</td>
</tr>
<tr>
<td></td>
<td>• Might be a good idea to do Ambassador - Ambassador Communication (may need to be managed or curated).</td>
</tr>
<tr>
<td></td>
<td>• Downloads would likely be useless.</td>
</tr>
<tr>
<td></td>
<td>• Really likes quick facts idea SHOULD BE EASY TO SHARE</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Needs to be simple and easy to use. Not just another application, must have something that causes people to open it</td>
</tr>
<tr>
<td><strong>Appendix C6 – ONLYLYON Partner: Remy Chevrier, ADERLY</strong></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Group</strong></td>
<td>Remy Chevrier</td>
</tr>
<tr>
<td><strong>Partnership with ONLYLYON</strong></td>
<td>Invest in ONLYLYON (ADERLY)</td>
</tr>
<tr>
<td><strong>Current Use of Ambassador Network</strong></td>
<td>He and his team recruit people and businesses to come to Lyon. People have heard about Lyon through ONLYLYON. Name recognition is helpful when recruiting.</td>
</tr>
<tr>
<td><strong>Challenges of Network</strong></td>
<td>Brings new firms to Ambassador networking events to get them more comfortable with the city. They will often stop showing up after around 2 events. Never had an Ambassador successfully bring a Business, Firm, Investor, etc., to Lyon</td>
</tr>
<tr>
<td><strong>Interviewee Suggested Features and Content</strong></td>
<td>Also, the network is too easy to join. People join years ago and forget about it. Don't have to restrict it but there needs to be smaller groups or communities within the Ambassador Network.</td>
</tr>
<tr>
<td><strong>Interviewee Suggested Features and Content</strong></td>
<td>He has not thought much about content It should be helpful to connect people with others within the network</td>
</tr>
<tr>
<td><strong>Thoughts on Proposed Features</strong></td>
<td>Gather data in one library. Integrate all the data. Info on restaurant, life sciences, etc.</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>No opinion on the proposed features, he hasn't thought much about it. Does not really think that the app could be helpful to him or his team</td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td>Look into giving incentives, e.g., a couple euros off a museum pass</td>
</tr>
</tbody>
</table>
### Appendix C7 – ONLYLYON Partner: Quentin Bardinet, La Métropole

<table>
<thead>
<tr>
<th>Group</th>
<th>Quentin Bardinet</th>
<th>05.16.2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partnership with ONLYLYON</td>
<td>ONLYLYON: La Métropole</td>
<td></td>
</tr>
<tr>
<td>Current Use of Ambassador Network</td>
<td>At the start wanted to have 100-200 ambassadors that would create leads for companies, talents, and events. Quickly became much bigger than expected.</td>
<td></td>
</tr>
<tr>
<td>Challenges of Network</td>
<td>Network is very responsive and active in general. Many ambassadors come to events when the network is asked. He doesn’t want restrictions on the network.</td>
<td></td>
</tr>
<tr>
<td>Interviewee Suggested Features and Content</td>
<td>• App should be simple, not too many notifications</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Should be restricted to the Ambassadors' Network</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Different apps for different groups (think google)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Need a filter to contact specific groups</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Way to find who is in charge and how to contact them What is happening in Lyon every day, filtered to groups/professions</td>
<td></td>
</tr>
<tr>
<td>Thoughts on Proposed Features</td>
<td>• Info about events in the local area is good.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Does not like the idea of having news presented through the app, because no one actually cares about that.</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>Should be oriented towards the desired new ambassadors who are very active</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Understand how to make international people more active</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rank reasons why people are they in the network</td>
<td></td>
</tr>
</tbody>
</table>
Appendix D – Interview Coding

Appendix D1 – Explanation of Interview Coding

As interview responses are highly subjective, ensuring consistency throughout the process was vital to achieving accurate results. The summaries of each interview were written by all three group members that conducted the interview. These members that attend the interviews were varied to mitigate potential biases between different sub-groups. Once most of the interviews were conducted, we established a single unified format of coding the collected data from each interview. The code was developed with the purpose of drawing focus to topics of import to our project. These major themes include network communication, needs of the network, features suggested by the interviewee, and their opinions on our proposed features. Through coding we were able to compare major themes and opinions between different interviews.

Two individuals were responsible for the coding of interview data. The individuals separately read through the interview summary and index all the important or relevant information using the codebook found in Appendix D2. An example of interview coding is visible below.

Next, the coders compared their coding and explained why they assigned the specific code to each individual section. They held a discussion until an agreement was drawn for the code of each excerpt. After the coding had been compared and combined, the excerpts along with their code and their tag were organized into a chart. A summary of the code was then written to call attention to any similarities between related interview excerpts. An example of this is visible below.
These charts, which can be found in Appendix D3, were then used to create write-ups on the results of the interviews and to analyze themes and concepts between them. These write-ups are seen in section D4.

<table>
<thead>
<tr>
<th>CODE</th>
<th>SUMMARY</th>
<th>TAG</th>
<th>EXCERPT FROM INTERVIEWEE</th>
</tr>
</thead>
</table>
| P_F_News | A constant news stream, especially if customized creates a lot of work for the OL team. Some Ambassadors feel that the news feed would be a waste and not be used. | Challenge | Who will be writing these? Lots of extra work (Fredric)  
Does not like the idea of having news presented through the app, because no one actually cares about that (Quentin)  
Would be very cumbersome (Julie) |
|          | The app should include a news feed with info from both Ambassadors and ONLYLYON. Ambassadors should be able to filter the info and notifications they received based on field of location. | Suggestion | The news feed should be able to include info from both Ambassadors and ONLYLYON itself (Gerard).  
Create a wall that will be checked daily, similar to facebook. Should contain personalized notifications based on location, profession, etc. (Camille).  
Should be able to subscribe/unsubscribe to info you want/don’t want, Global/region/country (not city) (Francois) |
Appendix D2 – Code Book

Network Communication

Network_Communications = General communication between OL and the network (not relating to any of the platforms specifically).

N_C_Website = Comments that relate to communication over the website.
N_C_Email = Comments that relate to communication over the email.
N_C_SocialMedia = Comments that relate to communication over social media.

Proposed Features

P_F_App = Overall thoughts on the app
P_F_Directory = Opinions relating to a feature that would allow the users to look up other Ambassadors based on field or location.
P_F_News = Opinions related to a feature that would display a news feed or posts about Lyon and ONLYLYON.
P_F_QuickFacts = Opinions relating to a feature that would allow the users to find quick and easy information about Lyon.
P_F_PersonalizedInfo = Opinions related to a feature that would allow the individual to personalize the information they see in the app based on personal preferences.
P_F_SocialMedia = Interviewee recommendations related to a feature that links social media to OL social media accounts.
P_F_Messaging = Interviewee recommendations related to a feature that would allow users to communicate with each other or OL.

Interviewee Suggestions

Interviewee_Suggestions = General Suggestions, not relating to specific features.
I_S_Directory = Interviewee recommendations related to a feature that would allow the user to filter through contacts based on career field, location, etc.
I_S_EasyInfo = Interviewee recommendations related to a feature that would display quick and easy information about Lyon.
I_S_Communication = Interviewee recommendations related to messaging, posts, etc.
I_S_Segment = Interviewee recommendations related to a feature that would break up the application based on the level of the user, e.g. staff, correspondents, or general Ambassadors.
I_S_AmbTask = Interviewee recommendations related to providing the Ambassadors with specific tasks to complete, in order to engage the network.
I_S_Networking = Interviewee recommendations related suggesting some form of networking or job opportunities.
I_S_Layout = Interviewee recommendations related dealing with the formatting of the application.
I_S_Other = Interviewee recommendations that are not repeated often.
Ambassadors’ Needs

Needs_of_Network = Comments that relate to the needs or shortcomings of the network

Tags
  Positive
  Challenge
  Neutral
  Suggestion
### Appendix D3 – Coding Charts

#### Appendix D3.1 – Network Communication

<table>
<thead>
<tr>
<th>CODE</th>
<th>SUMMARY</th>
<th>TAG</th>
<th>EXCERPT FROM INTERVIEWEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network_Communication</td>
<td>Network is responsive and active, especially when prompted. Ambassadors tend to come to events.</td>
<td>Positive</td>
<td>Network is very responsive and active in general. Many Ambassadors come to events when the network is asked. (Quentin)</td>
</tr>
<tr>
<td></td>
<td>There isn't a single method of communication for Ambassadors, which is confusing. Current forms of communication prevent personal connections, which leads to disengagement. As such, correspondents feel that activity is low except when an event is not occurring. Correspondents have difficulty when trying to communicate with the Ambassadors in their area because they don't have access to an official communication platform.</td>
<td>Challenge</td>
<td>Large groups are useless without personal connections (for ADERLY). (Frederic)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Most of the year communication is pretty low (Lucie)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>It is hard to communicate with the people in the network – they will text friends, and send email to HK ambassadors, share info on Facebook, people don’t message back. (Lucie)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>There is not one single touch point for communication. Between Facebook, emails, and the website it can be confusing to the Ambassadors where to go. (Lucie)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Neutral</td>
<td>Shares news and updates with the Network. (Camille)</td>
</tr>
<tr>
<td>N_C_Website</td>
<td>The website is confusing and at times difficult to understand.</td>
<td>Challenge</td>
<td>The website is confusing and the application process asks questions that are hard to understand (Francois).</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
<td>Rating</td>
<td>Notes</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>---------</td>
<td>-----------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>N_C_Emails</td>
<td>Emails reach large audiences.</td>
<td>Positive</td>
<td>Email/correspondents are good to reach out (Paul)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Emails can send lots of big news (Kristin)</td>
</tr>
<tr>
<td></td>
<td>Email doesn't allow for communication within the network and are ineffective. Additionally, they cannot be customized for different groups</td>
<td>Challenge</td>
<td>Email does not help them communicate with each other (Paul)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Different Ambassadors need different things. Not enough customized/first-hand info (Kristin)</td>
</tr>
<tr>
<td></td>
<td>Partners can share info with the network through Kristin (Not direct communication with the Network)</td>
<td>Neutral</td>
<td>Gives info to Kristin, and then she emails it out to network</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N_C_SocialMedia</td>
<td>Social media is ineffective at communication and ONLYLYON lacks the manpower to maintain them.</td>
<td>Challenge</td>
<td>Facebook, Twitter does not work that well. Social media do not work and ONLYLYON has too little manpower to manage them. (Paul)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sometimes Ambassadors attempt to reach out through social media, but ONLYLYON doesn't respond.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sometimes Ambassadors connect with ONLYLYON through FB and other social media but they do not talk to them on social media (Colin)</td>
</tr>
</tbody>
</table>
## Appendix D3.2 – Interviewee Suggestions

<table>
<thead>
<tr>
<th>CODE</th>
<th>SUMMARY</th>
<th>EXCERPT FROM INTERVIEWEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I_S_Directory</td>
<td>There should be a way for Ambassadors to find others based on location or field. This feature could also allow for personalized info based on field and location. Users should have profiles and contact info displayed for easy contact.</td>
<td>Geolocate Ambassadors: Reminders for local events. The user could check into a location and get local info. Customized info based on location, job, etc. (Kristin)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cannot sort the Network into groups based on region or profession. Suggested directory (Frederic).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Directory, create a way for individuals to find and connect with professionals within their field, from certain regions, or globally (Camille).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Need a filter to contact specific groups (Quentin).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Everyone should have a profile - contact people in a very easy way (Lucie)</td>
</tr>
<tr>
<td></td>
<td>The directory feature should be easy to update based on location changes</td>
<td>Should be able to see your location and update your notifications based on your location. People should not be able to see your exact location (Francios).</td>
</tr>
<tr>
<td>I_S_EasyInfo</td>
<td>Quick information; like real estate info, brochures, and PowerPoints; should be accessible by Ambassadors. Maybe an extensive library on info from Lyon. Could include information about ONLYLYON, like who is in charge and how to contact them.</td>
<td>The app should help Ambassadors reach information quickly (Paul)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Making a page where users could download pdf, such as brochures (Colin).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Info about Lyon, like real estate info and PowerPoints (Frederic)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gather data in one library. Integrate all the data. Info on restaurants, life sciences, etc (Remy)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Way to find who is in charge and how to contact them (Quentin)</td>
</tr>
<tr>
<td>I_S_Communication</td>
<td>The app should allow all Ambassadors to communicate, which would encourage users to use other features. The communication method should not</td>
<td>The app should help Ambassadors communicate with each other. If the app is used to communicate often, people are more likely to use the other features (Paul)</td>
</tr>
<tr>
<td>have to go through Kristin. Correspondents should have quick access to contact the Ambassadors in their area, each other, or ONLYLYON.</td>
<td>Thinks it would be helpful for Ambassadors to communicate with each other → Should allow them to chat all together (Colin)</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Ambassadors should be able to communicate with each other (Kristin)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kristin does not need to be the central point when forming connections, people can connect to each other directly without going through Kristin each time. (Kristin)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It should be helpful to connect people with others within the network (Remy)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Would be useful if the correspondents could have access to all the Ambassadors in their area, i.e. Hong Kong group chat. Correspondent should have direct access to ONLYLYON. Group chats between correspondents would be helpful (Lucie).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to communicate with the Ambassadors in the area. (Francois)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Would like to see something like a facebook group with everyone in it and a quick way to contact everyone without having to go through Kristin (Julie)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I_S_Segment</td>
<td>The application should allow for different levels of focus on different groups and provide special attention and information to the strategic Ambassadors</td>
<td></td>
</tr>
<tr>
<td>Need to focus on strategic Ambassadors. (Paul)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>We have to make a scale of which Ambassadors are important (Colin)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Strategic Ambassadors</td>
<td>Need to have info before a project starts, such as confidential info about developments. Different features for Ambassadors of different ranks. 2 Parallel Streams: focus on BOTH general Ambassadors AND strategic Ambassadors. The app should focus on every Ambassador, but features could be limited to certain ranks of Ambassadors. The application should not be split apart into multiple different apps, but multiple faces/covers to the same app can be presented to different types of users. Switch between profiles with different functionality. (Kristin).</td>
<td></td>
</tr>
<tr>
<td>Info should be presented differently between international and local Ambassadors.</td>
<td>Send info to international Ambassadors just as info, send info to local Ambassadors as a call to action. (Camille)</td>
<td></td>
</tr>
<tr>
<td>There could possibly be multiple different apps for different groups.</td>
<td>Different apps for different groups (think Google) (Quentin)</td>
<td></td>
</tr>
<tr>
<td>I_S_AmbTask</td>
<td>The app should give Ambassadors weekly questions to answer. Creating weekly prompts to ask groups of Ambassadors to answer. (Colin)</td>
<td></td>
</tr>
<tr>
<td>Ambassadors want to help, but don't know what to do. There should be tasks for general Ambassadors to know what to do and a way to track what an Ambassador does for the network. Contributing Ambassadors could be provided incentives like</td>
<td>Currently, a lot of people do not know what to do but want to help. Tasks to help general Ambassadors know what to do. There is no way to capture everything an Ambassador does. An easy way for Ambassadors to report their involvement (the things they do). (Kristin)</td>
<td></td>
</tr>
<tr>
<td>I_S_Networking</td>
<td>The app should allow for professional networking opportunities, like looking for jobs within certain fields, regions, or around the world. It could also allow users to find friends if moving nearby.</td>
<td>Networking opportunities. Ambassadors need to feel like they can use the network to find a job, create opportunities (Paul)</td>
</tr>
<tr>
<td>----------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Job Search (Frederic)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Create a way for individuals to find and connect with professionals within their field, from certain regions, or globally. (Camille)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use the platform to find work/friends if a person moves to a new area (Leo).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use the network to post job offers, etc. (commercial, entertainment, exclusive events). Way to share opportunities with and help other Ambassadors. (Francois).</td>
</tr>
<tr>
<td>I_S_Layout</td>
<td>The app should be quick to use, aesthetically pleasing, and functional.</td>
<td>The app must be quick to use, aesthetically pleasing, and functional (Colin)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>From a technology standpoint, he thinks there needs to be a focus on simplicity and ease of use. He wants it to feel familiar so have a similar layout to Facebook or LinkedIn so</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>people know that it is a social platform. (Gerard)</strong></td>
<td>Needs to be simple and easy to use. (Camille)</td>
<td></td>
</tr>
<tr>
<td>---------------------------------</td>
<td>------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>App should be simple (Quentin)</strong></td>
<td><strong>The app's colors, formatting, etc. should be reminiscent of Lyon</strong> Wants something that reminds him of Lyon and makes him feel at home (Leo).</td>
<td></td>
</tr>
<tr>
<td><strong>App should be formal.</strong></td>
<td><strong>Want to keep app exciting but formal (Francois).</strong></td>
<td></td>
</tr>
<tr>
<td><strong>I_S_Other</strong></td>
<td><strong>The app should include a section to explain ONLYLYON's mission.</strong> Need to communicate ONLYLYON’s mission (Paul)</td>
<td></td>
</tr>
<tr>
<td><strong>Other potential solutions to the problem. Ways to connect with the Ambassadors’ Network</strong></td>
<td><strong>Connect with Ambassadors with Skype, making events over social media or on the website (alternative solution) (Collin)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>The app could include a way to post photos with filters on the app, like the ONLYLYON logo.</strong></td>
<td><strong>ONLYLYON snapchat filters on their app? - logo of ONLYLYON? (Kristin)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>The app should include social media integration and a news feed.</strong></td>
<td><strong>Social Media Integration, News (Frederic)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>The app should have info about Lyon for specific groups</strong></td>
<td><strong>What is happening in Lyon every day, filtered to groups/professions (Quentin).</strong></td>
<td></td>
</tr>
<tr>
<td><strong>The app should have a function that simplifies the event holding process for Correspondents</strong></td>
<td><strong>Would like to see an event function. Currently, use Facebook for events. Also able to invite people outside the network through emails? Pay for events in the app. Tricky to get people to pay (Lucie).</strong></td>
<td></td>
</tr>
<tr>
<td><strong>The app should define ONLYLYON's value to its members and partners.</strong></td>
<td><strong>Define the value proposition from ONLYLYON to its members and other stakeholders ie the city, tourism, the metropole, etc. (Leo).</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Function in the app that allows correspondents to push through new Ambassadors</strong></td>
<td><strong>Easier way to approve new Ambassadors (Julie)</strong></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix D3.3 – Proposed Features

<table>
<thead>
<tr>
<th>CODE</th>
<th>SUMMARY</th>
<th>TAG</th>
<th>EXCERPT FROM INTERVIEWEE</th>
</tr>
</thead>
<tbody>
<tr>
<td>P_F_App</td>
<td>The idea of an application is considered generally positive.</td>
<td>Positive</td>
<td>Likes the idea of an app (Paul)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Likes the idea of an app (Colin)</td>
</tr>
<tr>
<td></td>
<td>There is much debate over if an app is the best solution. It is seen as too costly, time-consuming and will likely not be used.</td>
<td>Challenge</td>
<td>Not just another application, must have something that causes people to open it. (Camille).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Remy)</td>
</tr>
<tr>
<td></td>
<td>The app should be helpful for the ambassadors</td>
<td>Neutral</td>
<td>The app should be a tool for the Ambassadors (Aurelie).</td>
</tr>
<tr>
<td></td>
<td>The app should feel more like a social network to encourage users to communicate. The network itself should not be made more restrictive, but the app should be restricted to the Ambassadors' Network. The app should have a clear use case and be useful. If it is the new form of communication, it should make it clear that the other forms are discouraged. Other popular communication platforms should be seen as an inspiration.</td>
<td>Suggestion</td>
<td>The app should feel more like a social network (Gerard).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The network should not be restricted, but the app should be restricted to the Ambassadors' Network (Quentin).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If moving forward with the app, need to be super clear what it is to be used for, and if it becoming the primary form of communication, need to be clear that the other channels are subsidiary. Have to make sure that it is useful, or they won't keep it. (Lucie)</td>
</tr>
<tr>
<td><strong>P_F_Directory</strong></td>
<td>The idea of a directory is considered positively, especially for the use of overseas contact and portability.</td>
<td>Positive</td>
<td>Likes the idea of a directory to use when abroad and a means of communication with other Ambassadors (Gerard). Directory: Great idea, can do it right from your pocket (Francois)</td>
</tr>
<tr>
<td><strong>P_F_QuickFacts</strong></td>
<td>The quick facts is a good idea overall</td>
<td>Positive</td>
<td>Really likes quick facts idea (Camille).</td>
</tr>
<tr>
<td></td>
<td>Be careful how this ends up being presented. People are not going to want a download on their phone, to hard to get it to other places. Additionally, if people are looking for information they will first go online or to the website.</td>
<td>Challenge</td>
<td>Downloads would likely be useless (Camille).</td>
</tr>
<tr>
<td></td>
<td>Quick facts need to be easily email-able or share-able through social media. Quick facts should give info about Lyon but also the OL team. The quick facts should have multiple different versions tailored to different groups of people</td>
<td>Suggestion</td>
<td>SHOULD BE EASY TO SHARE (Camille)</td>
</tr>
<tr>
<td></td>
<td>Short Info about Lyon – Hard to find info about Lyon What are they doing at the moment? What is the team up to? What is happening in Lyon (Luice)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P_F_PersonalizedInfo</strong></td>
<td>The idea that a user can tailor their notification/information preferences based on location and profession was considered important.</td>
<td><strong>Positive</strong></td>
<td>Liked the idea of customized information by user preferences (Frederic)</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>The user could get notifications based on their location, like Ambassador events or local ONLYLYON news.</td>
<td><strong>Suggestion</strong></td>
<td>Reminders for local events. The user could check into a location and get local info. Customized info based on location, job, etc. (Kristin)</td>
</tr>
<tr>
<td></td>
<td>The news wall should be customizable</td>
<td></td>
<td>Should contain personalized notifications based on location, profession, etc. (Camille).</td>
</tr>
<tr>
<td></td>
<td>By default, users should only receive important notifications.</td>
<td></td>
<td>The app should not have too many notifications (Quentin)</td>
</tr>
<tr>
<td></td>
<td>Notifications should not be redundant and should be customizable.</td>
<td></td>
<td>They would be happy to receive notifications of Lyon's news, as long as they are relevant or important to them. Should not hear the same thing from emails and facebook. (Lucie).</td>
</tr>
<tr>
<td></td>
<td>Notifications should not be redundant and be important, non-preachy</td>
<td></td>
<td>If they get more than just preaching regular reminders that would help him (Leo)</td>
</tr>
<tr>
<td><strong>P_F_Messageing</strong></td>
<td>The idea that ambassadors should be able to</td>
<td><strong>Positive</strong></td>
<td>Ambassadors should be able to communicate with each other (Kristine).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>communicate is seen positively.</strong></td>
<td><strong>Might be a good idea to do Ambassador - Ambassador Communication (Camille).</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Messaging with other ambassadors: Good idea (Francois)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **Ambassadors messaging OL directly could cause too much clutter and work for OL. Ambassadors being able to communicate with the entire network could be overwhelming and might need moderation.** | **Challenge**
| **Communication should be limited and well monitored** | **Challenge**
| **Communication should maybe be limited to area, strategic/correspondent vs general. Communication to other ambassadors should be moderated, “very strong” (Francois)** |
| **The more useful the app is, the more people will come back to it** | **Suggestion**
| **App, if used to communicate often, people are more likely to use the other features (Paul).** |
| **Certain groups, like the strategic ambassadors, should have access to the OL staff** | **Suggestion**
| **Quick contact with ONLYLYON for strategic Ambassadors (Kristin).** |
| **Ambassadors could be told how to contact OL appropriately** | **Suggestion**
| **Show the Ambassadors the appropriate way to connect with ONLYLYON. (Camille)** |
| **Messaging could be handled similarly to LinkedIn** | **“like LinkedIn” (Francois)** |
| **P_F_News** | **Positive**
| **Likes the news idea. (Camille)** |
| **The idea of a news feed/wall to display news about Lyon/ONLYLYON was viewed positively.** | **Challenge**
<p>| <strong>A constant news stream, especially if customized</strong> | <strong>Who will be writing these? Lots of extra work (Fredric)</strong> |</p>
<table>
<thead>
<tr>
<th>Author</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creates a lot of work for the OL team. Some Ambassadors feel that the news feed would be a waste and not be used.</td>
<td>Does not like the idea of having news presented through the app, because no one actually cares about that (Quentin)</td>
</tr>
<tr>
<td>Would be very cumbersome (Julie)</td>
<td></td>
</tr>
<tr>
<td>The app should include a news feed with info from both Ambassadors and ONLYLYON. Ambassadors should be able to filter the information and notifications they receive based on field or location.</td>
<td>Suggestion The news feed should be able to include info from both Ambassadors and ONLYLYON itself (Gerard).</td>
</tr>
<tr>
<td></td>
<td>Create a wall that will be checked daily, similar to Facebook. Should contain personalized notifications based on location, profession, etc. (Camille).</td>
</tr>
<tr>
<td></td>
<td>Should be able to subscribe/unsubscribe to info you want/don’t want, Global/region/country (not city) (Francois)</td>
</tr>
</tbody>
</table>
### Appendix D3.4 – Needs of the Network

<table>
<thead>
<tr>
<th>TAG</th>
<th>EXCERPT FROM INTERVIEWEE</th>
</tr>
</thead>
</table>
| Challenges  | Ambassadors have lost their sense of connectivity (Gerard).  
Large groups are useless without personal connections (for ADERLY). Hard to keep network engaged. Don't have an answer when Ambassadors ask what they can do to help. Cannot sort the Network into groups based on region or profession. Too many ambassadors within Lyon. Either need to be more restrictive or less (Fredric).  
Today, almost anyone can become an ambassador. It’s become more like a social network that anyone can join, and no one feels “special” anymore. A large number of ambassadors don’t really participate or don’t even know they’re ambassadors (Camille).  
Ambassadors quickly forget about the network after signing up (Francois).  
Need to understand how to make international people more active (Quentin).  
The will often stop showing up after around 2 events. Never had an Ambassador successfully bring a Business, Firm, Investor, etc, to Lyon (Remy)  
Many people who move don’t see OL as the glue to connect them to other parts of the world. (Leo) |
| Neutral     | The focus is no longer on strong personal ties but instead on broad less personal contact. (Gerard)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Suggestion  | Need to focus within, focus within Lyon, balance. Need to communicate ONLYLYON’s mission, not just tourism. Better communication, networking opportunities. Need to focus on strategic ambassadors. Ambassadors need to be able to communicate and feel like a part of the network. Ambassadors need to feel like they can use the network to find a job, create opportunities. (Paul)  
Strategic ambassadors need to have info before a project starts, such as confidential info about developments. Different ambassadors need different things. Currently, a lot of people don’t know what to do but want to help. There is no way to capture everything an ambassador does. Kristin does not need to be the central point when forming connections, people can connect to each other directly without going through Kristin each time. (Kristin).  
Gerard thinks that they need to commune more to have a greater sense of unity and to focus on their goal as a group. (Gerard) |

<table>
<thead>
<tr>
<th>Want to share info both TO and THROUGH the network (Camille)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Don't have to restrict it but there needs to be smaller groups or communities within the Ambassador Network. (Remy).</td>
</tr>
<tr>
<td>He wants to be able to divide the network better by role, geography, experience. (Quentin).</td>
</tr>
<tr>
<td>Database needs to be updated with people's constantly changing location and information (Francois)</td>
</tr>
</tbody>
</table>
Appendix E – Ambassadors’ Network Survey

In order to test our survey before distributing it to the Ambassadors’ Network, our group attended an Ambassador event on May 21, 2019. At the event, we spoke to 11 Ambassadors and asked them to complete our survey on a smartphone or on paper. We found that, on average, each survey took about two minutes and forty-five seconds to complete the required questions. Respondents that filled out the optional free response questions took closer to four minutes. This meant that the survey was short enough to not discourage participants.

Based on our observations of participant behavior while completing the survey, we made improvements to its design. The slider to select the number of years of membership in the network was replaced by a dropdown box due to issues on mobile devices. Additionally, some Ambassadors were confused as to why Instagram was not an option for the social media question. Though Instagram is not directly relevant to our study, it was added to make the social media question more logical for respondents. Finally, we included a back button on the survey to allow users to go back and forth as desired.

The final set of survey questions is listed below.

Joining and Using the Ambassadors’ Network

1. Where do you live?
   a. Lyon and Surrounding Area - Rest of France - Europe - North America - Asia - South America - Australia - Africa
2. What is your age?
   a. <24, 25-34, 35-44, 45-54, 55-64, 65+, Prefer not to answer
3. How many years have you been a member of the network?
   a. Slider from 0 to 11
4. How active and engaged are you in the Ambassadors’ Network?
   a. I rarely participate - I occasionally participate - I participate often - I participate at every opportunity
   b. Would you like to be more actively involved in the network?
      - Y/N
5. Which of the following hinder your participation in the network and ability to promote Lyon to others? (Select all that apply)
   a. Lack of concise, useful, and easy to find facts and info about Lyon
   b. Difficulty to search for and find other Ambassadors (i.e. networking or finding leads)
   c. Limited communication abilities among Ambassadors
   d. Unsure about what I can do to help Lyon
   e. Too few local events and networking opportunities
   f. Not enough incentive to participate
   g. Personal/Not enough time
Communication

6. How do you use each of the following media?
   a. Matrix for each platform choice being:
      - Interact, comment, and share
      - Read frequently
      - Occasionally look at
      - I do not use it
   b. ONLYLYON Website
   c. LinkedIn
   d. Facebook
   e. Twitter
   f. Ambassador-specific Twitter (ONLYLYON_Amb ← Mention this username in Qualtrics)
   g. WeChat/Weibo

7. Do you read ONLYLYON’s email newsletters?
   a. Never - Occasionally look at them - Often skim through them - Always read the whole email

Potential Solution

8. ONLYLYON is looking to develop a mobile application to assist the Ambassadors’ Network.
   a. Would you be willing to use an app for ONLYLYON Ambassadors?
      - Yes - Maybe - No

9. Below are some potential features that this app may have. Would you use these features and find them helpful?
   a. Each option has Yes - Maybe - No
   b. Directory to search for other Ambassadors and contact them
   c. News & Updates about Lyon
   d. Quick facts and info about Lyon
   e. Personalized info about events in your area
   f. Integration with social media (LinkedIn, Twitter, etc.)
   g. Messaging with other Ambassadors
   h. Answers to frequently asked questions

10. What other app features or ideas would help you as an Ambassador?
    a. Open response (optional)
Appendix F – Survey Open-Response Question Analysis

Appendix F1 – Activities of highly active Ambassadors

The following table summarizes the activities mentioned by Ambassadors that indicated they were highly involved in the network and how often each of these topics was mentioned. In total, there were 134 response to this question.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Number of Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attending Events</td>
<td>24</td>
</tr>
<tr>
<td>Photography of Lyon, shared on Social Media</td>
<td>18</td>
</tr>
<tr>
<td>Showing and/or Inviting others to Lyon from abroad</td>
<td>15</td>
</tr>
<tr>
<td>Promoting Lyon through Networking &amp; Professional Contacts</td>
<td>12</td>
</tr>
<tr>
<td>Social Media Sharing of ONLYLYON’s Posts</td>
<td>11</td>
</tr>
<tr>
<td>General Interest in Lyon, Talk about Lyon often</td>
<td>11</td>
</tr>
<tr>
<td>Using Social Media (Personally posting about Lyon)</td>
<td>8</td>
</tr>
<tr>
<td>Creating Connections with Business Partners for ONLYLYON</td>
<td>6</td>
</tr>
<tr>
<td>Talking to Others about the Network, Recruiting</td>
<td>6</td>
</tr>
<tr>
<td>Organizing Events</td>
<td>5</td>
</tr>
<tr>
<td>Exchange Student Host or Reception of Visitors</td>
<td>3</td>
</tr>
<tr>
<td>Writer of online publications, blog, or books</td>
<td>3</td>
</tr>
<tr>
<td>Trade group/trade event participation</td>
<td>2</td>
</tr>
<tr>
<td>Sharing Social Media tips to ONLYLYON Staff</td>
<td>1</td>
</tr>
<tr>
<td>Political Lobbying</td>
<td>1</td>
</tr>
</tbody>
</table>
Appendix F2 – Ambassadors’ suggestions for application features

The following table summarizes each of the features and similar comments mentioned by Ambassadors in the final open-response question of the survey.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Number of Mentions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calendar and/or map of events/upcoming events</td>
<td>17</td>
</tr>
<tr>
<td>Suggestions for things for Ambs to do</td>
<td>13</td>
</tr>
<tr>
<td>Information about areas, interests, things to do in Lyon</td>
<td>11</td>
</tr>
<tr>
<td>Way to find Ambassadors in local area, Geolocalisation</td>
<td>10</td>
</tr>
<tr>
<td>Suggestions for Events to Organize, event planning</td>
<td>9</td>
</tr>
<tr>
<td>Access to photos and videos for promotion</td>
<td>9</td>
</tr>
<tr>
<td>Directory</td>
<td>6</td>
</tr>
<tr>
<td>The app should be developed in Lyon</td>
<td>5</td>
</tr>
<tr>
<td>Way for members to help each other</td>
<td>4</td>
</tr>
<tr>
<td>Messaging among Ambassadors</td>
<td>4</td>
</tr>
<tr>
<td>Submit ideas for ONLYLYON and/or vote on them</td>
<td>4</td>
</tr>
<tr>
<td>Talk about the history of Lyon</td>
<td>3</td>
</tr>
<tr>
<td>Games and contests to win prizes</td>
<td>3</td>
</tr>
<tr>
<td>Job board relating to Lyon</td>
<td>3</td>
</tr>
<tr>
<td>Filter for only relevant content for each person (AI?)</td>
<td>3</td>
</tr>
<tr>
<td>Not necessary to have an app</td>
<td>3</td>
</tr>
<tr>
<td>Interactive Map</td>
<td>2</td>
</tr>
<tr>
<td>Ambassador challenges/incentives</td>
<td>2</td>
</tr>
<tr>
<td>Virtual Reality</td>
<td>1</td>
</tr>
<tr>
<td>Gamification to share content about Lyon</td>
<td>1</td>
</tr>
<tr>
<td>RSVP button to events</td>
<td>1</td>
</tr>
<tr>
<td>Easy way to find info/facts about Lyon</td>
<td>1</td>
</tr>
<tr>
<td>Content/publications from Ambasassadors</td>
<td>1</td>
</tr>
<tr>
<td>Links to useful websites</td>
<td>1</td>
</tr>
<tr>
<td>Photo filters (like Snapchat)</td>
<td>1</td>
</tr>
<tr>
<td>Sharing of Photos in the app</td>
<td>1</td>
</tr>
<tr>
<td>A bit of humor</td>
<td>1</td>
</tr>
<tr>
<td>Ambassador photo card (like an ID)</td>
<td>1</td>
</tr>
<tr>
<td>Ambassadors Sharing Experiences among themselves</td>
<td>1</td>
</tr>
<tr>
<td>Correspondents need to be Admins for their areas</td>
<td>1</td>
</tr>
<tr>
<td>Privacy concerns</td>
<td>1</td>
</tr>
</tbody>
</table>
Appendix G – Application Benchmarking

This section compiles a complete list of benchmarked applications referenced in Section 5.1. Benchmarking Existing Applications. There are three categories of applications benchmarked: Messaging Applications, University Applications, and Miscellaneous Applications. Applications were benchmarked by taking a quick look through the app to understand the design and flow of the pages, then a more thorough search was done within the application to find the key features that were identified in the interview and survey process. If the feature was found in the application, the corresponding cell was filled in green. If only certain aspects of the feature were found the cell was filled in with yellow and a note was taken on what was present from the original feature. Finally, if the application did not include the feature the cell was filled in with red. There were also seven other applications we attempted to benchmark, but they required a login, payment, or verification that prevented us from looking at the application completely. These applications and a brief description of the features we could access are found in the last screenshot of this section.

<table>
<thead>
<tr>
<th>Type of Application</th>
<th>Name of App: Features</th>
<th>Messaging Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key:</td>
<td></td>
<td>Slack</td>
</tr>
<tr>
<td>Includes Feature</td>
<td>Messaging</td>
<td></td>
</tr>
<tr>
<td>Includes Part of Feature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doesn’t include Feature</td>
<td>Linkable accounts</td>
<td></td>
</tr>
<tr>
<td>Social Media</td>
<td>Link to users FB</td>
<td></td>
</tr>
<tr>
<td>Event Org.</td>
<td>Links to calendar</td>
<td></td>
</tr>
<tr>
<td>News Feed</td>
<td>Specific threads</td>
<td></td>
</tr>
<tr>
<td>Interactive Map</td>
<td>User posts</td>
<td></td>
</tr>
<tr>
<td>Quick Info</td>
<td>Thread overviews</td>
<td></td>
</tr>
<tr>
<td>Custom Notif.</td>
<td>Subscribe to threads</td>
<td></td>
</tr>
<tr>
<td>Directory</td>
<td>Contacts and groups</td>
<td></td>
</tr>
<tr>
<td>Things to Note</td>
<td>Complex but very useful once learned</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Similar to slack</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Only Fraternities and Sororities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Simple easy, useful</td>
<td></td>
</tr>
</tbody>
</table>
### University Applications

<table>
<thead>
<tr>
<th>Name of App</th>
<th>WPI</th>
<th>LSU</th>
<th>Rutgers</th>
<th>U Michigan</th>
<th>UMass</th>
<th>Al-Qods</th>
<th>Harvard</th>
<th>U Minnesota</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Features</strong></td>
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<td>Messaging</td>
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<td>Social Media</td>
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<td>Event Org.</td>
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<td>News Feed</td>
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<tr>
<td>Interactive Map</td>
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<td>Quick Info</td>
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<td>Custom Notif</td>
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<td>Directory</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Things to Note</td>
<td>Changed since benchmarked prefer the old design</td>
<td>Similar to UMass</td>
<td>Many unique features nothing for our project</td>
<td>Similar to LSU</td>
<td>Similar layout to WPI but doesn’t have compatibility with iPhone X</td>
<td>Poorly Designed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Miscellaneous Applications

<table>
<thead>
<tr>
<th>Name of App</th>
<th>Whova</th>
<th>Nagoya</th>
<th>Ring</th>
<th>LinkedIn</th>
<th>ONLYLYON AMB (web)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Features</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Messaging</td>
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<tr>
<td>Social Media</td>
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<tr>
<td>Event Org.</td>
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<td>News Feed</td>
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<tr>
<td>Interactive Map</td>
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<tr>
<td>Quick Info</td>
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<tr>
<td>Custom Notif</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Directory</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Things to Note</td>
<td>Extremely useful app made solely for event planning</td>
<td>Poorly Designed interesting features</td>
<td>Interactive map should be looked into more</td>
<td>LinkedIn used by ONLYLYON currently</td>
<td>Website has aspects of what they want in the application but executed poorly</td>
</tr>
<tr>
<td>Not Benchmarkable</td>
<td>These Applications included, payments, a delayed login, or a unique code to join the network</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brand Ambassador</td>
<td>5 icons on bottom bar - photos, gifts, share, check box, email</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Easy way to share photos</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wallet, coins (from social media), and engagement to create Ambassador level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brandbassador</td>
<td>My brands, other brands</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Missions and point values</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Task they ask you to complete</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Earn commission with discount codes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Profile - see your recent notifications and overall standings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field Day</td>
<td>4 words and icon at bottom - new gigs, scheduled, earnings, profile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BAP</td>
<td>3 words at top of page - kinda like facebook - feed, explore, highlights</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts Ambassador</td>
<td>Exactly the same as Brand Ambassador, just with art</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BAI</td>
<td>Partners, refer a friend</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Side bar like harvard's</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This is cool because it’s transparent so you can still see the main page</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kat Agency</td>
<td>2 words at bottom - bookings, profile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bookings → future, active, past, group</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix H – Development Cost Analysis

Our analysis of application development cost and development time involved looking through OOZOU, an online calculator affiliated with a development firm in Thailand and recommended to us by Professor deWinter, the director of WPI’s IMGD department. Below are two tables that break down the development cost and time by feature. These features are recommended to be included in the application.

OOZOU calculates the cost by factoring in the daily cost of designers, developers, and/or a project manager. On design days, only designers and the project manager work. On development days, only developers and the project manager work. Designers and developers have a daily rate of €398,17, and project managers have a daily rate of €88,48. Therefore, both design and development days have a daily cost of €486,65.

This first table breaks down the development cost and time of the application for a web-based application. More detailed descriptions of the features can be found on OOZOU’s website. The features with asterisks are design days, while the other days are development days. A work week is 5 days, and a work month is about 20 days.

<table>
<thead>
<tr>
<th>Feature:</th>
<th>Days Required:</th>
<th>Cost:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size: Small</td>
<td>10</td>
<td>€4,866,50</td>
</tr>
<tr>
<td>UI: Basic*</td>
<td>5*</td>
<td>€2,433,25*</td>
</tr>
<tr>
<td>Email/Password Sign Up/In</td>
<td>1</td>
<td>€486,65</td>
</tr>
<tr>
<td>Multi-Tenant Accounts</td>
<td>3</td>
<td>€1,459,95</td>
</tr>
<tr>
<td>Activity Feed</td>
<td>4</td>
<td>€1,946,60</td>
</tr>
<tr>
<td>User Profiles</td>
<td>2</td>
<td>€973,30</td>
</tr>
<tr>
<td>Tags</td>
<td>2</td>
<td>€973,30</td>
</tr>
<tr>
<td>Geolocation</td>
<td>3</td>
<td>€1,459,95</td>
</tr>
<tr>
<td>Messaging</td>
<td>6</td>
<td>€2,919,90</td>
</tr>
<tr>
<td>Forums/Commenting</td>
<td>0</td>
<td>€0</td>
</tr>
<tr>
<td>Social Sharing</td>
<td>2</td>
<td>€973,30</td>
</tr>
<tr>
<td>CMS Integration</td>
<td>7</td>
<td>€3,406,55</td>
</tr>
</tbody>
</table>
This second table breaks down the development cost and time by feature for an iOS/Android native application. Work on an iOS application cannot be reused for an Android application and vice versa. Therefore, the fourth and fifth column represents the combined times and costs of developing both versions simultaneously.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Days Required</th>
<th>Cost</th>
<th>Combined Days Required</th>
<th>Combined Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size: Medium</td>
<td>30</td>
<td>€14,599,50</td>
<td>60</td>
<td>€29,199,00</td>
</tr>
<tr>
<td>UI: Basic*</td>
<td>15*</td>
<td>€7,299,75*</td>
<td>30*</td>
<td>€14,599,50*</td>
</tr>
<tr>
<td>Email/Password Sign Up/In</td>
<td>1</td>
<td>€486,65</td>
<td>2</td>
<td>€973,30</td>
</tr>
<tr>
<td>Activity Feed</td>
<td>4</td>
<td>€1,946,60</td>
<td>8</td>
<td>€3,893,20</td>
</tr>
<tr>
<td>User Profiles</td>
<td>2</td>
<td>€973,30</td>
<td>4</td>
<td>€1,946,60</td>
</tr>
<tr>
<td>Tags</td>
<td>2</td>
<td>€973,30</td>
<td>4</td>
<td>€1,946,60</td>
</tr>
<tr>
<td>Searching</td>
<td>3</td>
<td>€1,459,95</td>
<td>6</td>
<td>€2,919,90</td>
</tr>
<tr>
<td>App Icon Design</td>
<td>7</td>
<td>€3,406,55</td>
<td>14</td>
<td>€6,813,10</td>
</tr>
</tbody>
</table>
Our team also received estimates from two software development firms local to Lyon. The first estimate we received was from Novius. Novius provided us with a lump sum estimated range for Android and iOS native applications. These applications would have sign in, administration access, customizable notifications, messaging, a news wall, a directory. This does not include every recommended feature but includes the most important ones. It also includes the cost of automatically adding news to the news wall from ONLYLYON’s website and testing and optimization. Novius estimates that the development of this application could range from €85.000 to €115.000 and take between 9 and 12 months to complete. Novius believes that the cost of maintenance would be about €10.000 per year, including security updates, hosting, bug fixes, and other small improvements.

Le Singe is the second company we received cost estimates from. Below is a graph of the features and their cost. The costs and total development time initially provided were clarified to be for iOS, so developing both Android and iOS applications would require doubling the development time and cost. The features with an asterisk are features we recommend for ONLYLYON to include.
<table>
<thead>
<tr>
<th>Feature</th>
<th>Cost for iOS:</th>
<th>Cost for iOS &amp; Android:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Account system*</td>
<td>€8.000*</td>
<td>€16.000*</td>
</tr>
<tr>
<td>User management*</td>
<td>€8.000–€10.000*</td>
<td>€8.000–€10.000*</td>
</tr>
<tr>
<td>Notifications*</td>
<td>€10.000–€15.000*</td>
<td>€20.000–€30.000*</td>
</tr>
<tr>
<td>Chat functionality*</td>
<td>€12.000*</td>
<td>€24.000*</td>
</tr>
<tr>
<td>Activity feed*</td>
<td>€15.000*</td>
<td>€30.000*</td>
</tr>
<tr>
<td>Directory*</td>
<td>€10.000*</td>
<td>€20.000*</td>
</tr>
<tr>
<td>Geolocation*</td>
<td>€10.000*</td>
<td>€20.000*</td>
</tr>
<tr>
<td>Events*</td>
<td>€15.000*</td>
<td>€30.000*</td>
</tr>
<tr>
<td>Community platform</td>
<td>€10.000–€12.000</td>
<td>€20.000–€24.000</td>
</tr>
<tr>
<td>Resources library</td>
<td>€20.000</td>
<td>€40.000</td>
</tr>
<tr>
<td>F.A.Q.</td>
<td>€5.000–€15.000</td>
<td>€10.000–€30.000</td>
</tr>
<tr>
<td><strong>Total Recommended:</strong></td>
<td><strong>€88.000–€95.000</strong></td>
<td><strong>€176.000–€190.000</strong></td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>€123.000–€142.000</strong></td>
<td><strong>€246.000–€284.000</strong></td>
</tr>
</tbody>
</table>

Le Singe believed that a reasonable development time for both applications would be between 2 and 4 months. Maintenance costs would be about 20% of the cost of the application. Therefore, for the recommended features, the maintenance costs would be about €35.200–€38.000 per year. For every feature, the maintenance costs would be about €49.200–€56.800.
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