**Release Planning**

**Yichen 19940121-6131**

**A. Product Description**

The product we plan to develop is a course management system. It is a collection of software tools which contains an online environment for course interactions. This application is for administration, documentation, reporting, tracking and delivery of electronic material. Besides, it provide a efficient way for communication between different users. The target market for this product is Swedish in short-term, European in the future, and open market in other continents is for long-term. It is because we are planning to develop this new product and it is the first version of this product. So the mainly target market for this report is Swedish market.

**B. Company Size**

The company size for this product is small which contains 3 agile development teams. There are 8 members in a agile development team. These three agile teams will work jointly on the product for 18 months to accomplish the course management system.

**C. Roadmap and Releases**

**1.viewpoint of stakeholders**

After deep discussion, we propose six stakeholders for our product: They are teacher assistant, teacher, student administrator, new student, old engineer student and developer. In the following part, I will discuss the viewpoint from these six different stakeholders. Table one show the analysis of different viewpoints.

|  |  |
| --- | --- |
| Stakeholder name | System function relate to the stakeholder |
| Teacher assistant | 1. File upload and download 2. Edit files and grade assignment 3. Communicate with students and responsible teacher online |
| Teacher | 1. File upload and download  2. Edit files and grade assignment  3. Communicate with students and teacher assistant online |
| Student administrator | 1. Manage student personal information 2. Manage student course and credit information 3. Communicate with students online |
| New student | 1. New student activation 2. Course registration 3. Email alert for new course event 4. Communication with teacher, teacher assistant and student administrator |
| Old engineer student | 1. Course registration 2. Email alert for new course event 3. Communication with teacher, teacher assistant and student administrator 4. Upload and download file |
| developer | 1. Data base management 2. Compatibility of the system 3. Authority management 4. Security management |

Table1. Stakeholders viewpoints

Some stakeholders in the product have some common requirements on product function. For example, every stakeholders expect developer all need function of communication. As for importance of stakeholders, we assume teacher and students(new student and old engineer student) as the most important stakeholders. The reasons are as follows: 1. These two group of stakeholders are a large number of users in the system. 2. There are many features that relates these two group of stakeholders.

**2. Theme define**

I use goal-oriented method for building roadmap for the course management system. The goal-oriented roadmap contains five parts: 1. Release data 2. Release name 3. Goal for this release 4. Features included into this release. 5. Metrics to determine if we have achieve the goal or not. I assign 4 releases for the whole development process of course management system. We assume that the project will be started in 2017.1.1 and it will be ended in 2018.6.30. There are four themes in our roadmap: 1. Documentation theme 2. Interaction theme 3. Edit theme 4. Improvement theme. These four themes contains all the requirements needed for the implementation of product. And we would accomplish these four theme clearly.

1. **Roadmap with releases**

I assume that we will accomplish each them in each release. So there would be four releases map to our Roadmap. For each release I indicate the goal should be accomplished, the feature should be performed and the metrics to measure the goal. Table2 presented the goal oriented roadmap with releases clearly.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date | Five months | Three months | Four months | six months |
| Name | Release1 | Release2 | Release3 | Release4 |
| Goal | Implement a product which contains basic functions | Implement a system contains interactions inside or outside the environment | Make the system editable | Add extra requirements and improvement of the whole system |
| Feature | 1. User interface 2. Upload and download file 3. View 4. Search | 1. Communication 2. Notification 3. Register 4. Log in and log out | 1. Edit and delete 2. Evaluation | 1. Other improvement in quality or functionality 2. Non-function requirement |
| Metrics | 1. The number of buttons and frame 2. The speed of accessing to system database 3. The speed of searching by keywords | 1. The speed of sending and receiving message and notification. 2. The feasibility of registration, log in and log out | 1. Editable and deletable of the file or documentation. 2. Function of evaluation | 1. Assess the final release product by all the requirements. |

Table 2 roadmap with releases

**D. Release planning strategy**

**1.1 Method for release planning**

The method I chosen for release planning is Theme-based release planning[1]. Theme-based release planning strategy provides a way for project manager to find the hidden business opportunities through putting highly interdependent features in the same release. In the early stages of release plan development, all the stakeholders will be considered in dividing clustering features, feature prioritization which can help to promote agile development method. Besides, there is a detailed evaluation process which support the theme-based release planning. There are three suggested steps to perform theme-based release planning strategy. First, graph transformation: Consider the features’ interdependence which has two kind of interdependence -- direct interdependence and indirect interdependence. And then connect the features with edges based on the dependence such as coupled, precede, exclusive. Second, Cluster: looking for themes from a cluster of feature. Third, create theme-based planning alternatives: To find optimized release plans and evaluate the theme of product.

**1.2 Motivation for selecting this method**

The theme-based method provides an effective way to assign features in the release which deeply considers the dependency between different features. The system we plan to build is a course management system that consists of many features. The features in this system are highly dependent on each other, for example the feature of register precede the feature of modify personal information. So the value of release is highly influenced by the theme which is consist by a set bundled features. It is recommended that release certain features along with a specific set of features would have higher value which can lead to formulate a better release plan.[1][2] Because it helps the product manager to focus on the particular theme in per release when deliver the product. So I recommend to use the theme-based method for release planning.

**2.1 Method for requirement prioritization**

The method I use for requirements prioritization is MosCow[2]. The MoSCow technique is used to prioritizing requirements in a collaboration way. There are four hierarchical priority groups in the method of MosCow and each of the requirements in the same group share the same priority. The first group is “Must have” which means that the requirements are not negotiable. The whole project will result in failure if the requirements is not in the project. The second group is “Should have ” which means that it would be nice if the system have these requirements. The third group is “Could have ” which has the similar means with “Should have” group but it is sightly less advantageous than the “Should have” group. The last group is “Won’t have ” which means the requirements are not important and these requirements will not be implemented in the products.

**2.2 Motivation for selecting this method**

Firstly, I plan to use the method which consider the value of stakeholders and their urgency for each requirements and then to prioritize the requirements. However we have 7 stakeholders in the system and totally 208 elicited requirements. It is rather difficult to calculate a numbers which indicate the importance of requirements by using the value of stakeholders and their urgency for each requirements. Besides, it is also difficult to get each stakeholders opinion towards each requirements. So I would like to use the MosCow method which divided the requirements list into four groups. It is a more directly prioritized method because it use the scale of ordinal. The requirements in different group represent different level of importance for the system. So we can decide the requirements should be scheduled in which group based on which group they are.

**E. Execution of release planning**

**1. Steps to prepare the requirements and motivation**

There are six steps I take to prepare the requirements before I conduct my release planning. The first step is to elicited the requirements from different stakeholders viewpoints. There are totally 208 requirements based on 6 different stakeholders opinions. The second step is to add detail description on the 208 requirements. It can help product manager to understand the requirements deeply. The third step is to break down large requirements into small requirements. Because, it will be easy for developing if we just focus on some small requirements rather than a whole big large requirements contains a large number of small requirements. The forth step is to find the duplicated requirements and link them. Because duplicated requirement can add extra work for the product manager and make it difficult to requirement documentation as well as product development. The fifth step is to link the requirements based on the dependencies. Because dependency is a rather important character for requirements, we should consider the dependencies between requirements in the next step. The final step is to set type for all requirements. We divided these requirements into 12 types based on the dependencies and their functionality: A. Upload and download file B. Non functional requirement C. Communicate D. log in and log out E. Notify F. Edit or delete G. View H. Search I. Other J. User interface K. Evaluate L. Register. The reasons why we divided these requirements into 12 types is as follows: 1. It is difficult to formulate themes-based method on all the requirements directly, so it is easier to form theme based on types. 2. It is more convenient to think about dependencies between high-level requirements in the theme-based method compared with consider all single requirements.

**2. The steps to conduct the release planning**  
 There are two steps to conduct the release planning. First, I will consider the dependencies of 12 types of high-level requirements and then allocate them into 4 themes. Second, I will use prioritization method to prioritize the requirements in each theme and decide which requirements should be scheduled in which release.

**2.1 The first steps: identify the dependencies among 12 types.**

In the following part, I will identify the dependencies based on the 12 types we identified in previous section. There are 9 dependencies among the 12 types in our product. I will list these 9 dependencies one by one.

1. Type C. Communication, L. Register and G. View precede J. User interface
2. Type C. Communication and E. Notify are coupled
3. Type G. View and H. Search are coupled
4. Type D.log in and log out precede L. Register
5. Type D.log in and log out precede C. Communication
6. Type A. Upload and download is precede G. View
7. Type D.log in and log out E. Notify H. Search precede F. Edit or delete
8. Type D.log in and log out precede K. Evaluate
9. Type F. Edit or delete and K. Evaluate precede B.Non functional requirement and I. Other

Figure1 shows the dependencies among these 12 types clearly.

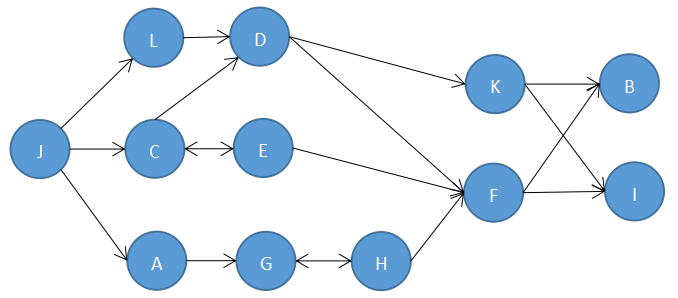


Figure1. dependencies among 12 types

The next step is to allocate these 12 types into four different themes based on the dependencies:

First theme is a documentation theme which contains type J, A, G and H. It firstly build the user interface of the system and then present the function related to the files.

Second theme is interaction theme which contains type L, D, C and E. It add some interaction activity such as communication and notify. And the communication and notify are between different users so the register and log in and out function are required in this theme.

Third theme is edit theme which contains type K and F. It makes the system editable about files, personal information, set and so on. Besides, it add evaluate function which contains grade assignment and other similar activities.

The forth theme is improvement theme which contains type B and I. In this theme, we will develop some requirements that can not be classed in 12 types. Besides, non-function requirement will be considered in this theme carefully.

**2.2 The second steps: requirements prioritization**

I assume that the main part of one theme will be accomplished in each release. In the following part, I will analyze and prioritize the requirements in each theme by the method of MosCow and determine which requirement should leave in the release or postpone even delete.

**For theme one(requirements in type J, A, G and H):**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | REQUIREMENTS | MUST (M) | SHOULD (S) | COULD (C) | WON'T (W) |
|  | **User interface type:** |  |  |  |  |
| 11 | Personal Start Page | x |  |  |  |
| 12 | Course Start Page | x |  |  |  |
| 19 | User Interface Language |  |  | x |  |
| 21 | Course Info | x |  |  |  |
| 23 | Discussion Forum |  | x |  |  |
| 39 | Course Start Page Contents | x |  |  |  |
| 40 | Personal Start Page Contents | x |  |  |  |
| 64 | Link to Course |  | x |  |  |
| 66 | Calendar Item Contents |  | x |  |  |
| 68 | Contents of Message |  | x |  |  |
| 144 | Editing layout of the course page |  | x |  |  |
| 145 | User Interface | x |  |  |  |
| 164 | Layout customization support | x |  |  |  |
| 207 | Compatibility different resolutions |  | x |  |  |
|  | **Search type:** |  |  |  |  |
| 77 | Search option | x |  |  |  |
| 98 | Search engine | x |  |  |  |
| 189 | Course Schedule | x |  |  |  |
|  | **View type:** |  |  |  |  |
| 4 | Limited Views |  | x |  |  |
| 8 | Course Information | x |  |  |  |
| 28 | List Courses for User | x |  |  |  |
| 32 | Basic Contents of Personal Profile | x |  |  |  |
| 34 | Access to View Social Security Number | x |  |  |  |
| 35 | Extra Contents of Personal Profile |  | x |  |  |
| 47 | Access to View Course Info | x |  |  |  |
| 49 | View Course Links | x |  |  |  |
| 51 | Discussion Forum message overview |  | x |  |  |
| 56 | Access to View Course News | x |  |  |  |
| 58 | Access to use Course File Archive | x |  |  |  |
| 90 | New/Extra curricular activities | x |  |  |  |
| 97 | Teacher timetable and meeting |  |  | x |  |
| 102 | Activity Log | x |  |  |  |
| 122 | Teacher's contact information on the course page |  | x |  |  |
| 123 | Comment section for lecture streams |  |  | x |  |
| 132 | Hand in overview | x |  |  |  |
| 143 | Reading PDF files support |  | x |  |  |
| 155 | User profile Information | x |  |  |  |
| 159 | Student information view | x |  |  |  |
| 160 | Students management | x |  |  |  |
| 177 | Participants list | x |  |  |  |
| 182 | Course Options |  | x |  |  |
| 191 | Grade checking | x |  |  |  |
| 195 | Login information representation |  |  | x |  |
| 202 | Grade and Credit Management |  | x |  |  |
|  | **Upload and download:** |  |  |  |  |
| 15 | Course File Archive | x |  |  |  |
| 31 | Download files from Course File Archive | x |  |  |  |
| 57 | Access to change in Course File Archive |  | x |  |  |
| 72 | RTF files | x |  |  |  |
| 73 | Streaming Video |  |  | x |  |
| 76 | Supportable formats |  | x |  |  |
| 81 | Export grade with csv, xls, xlsx, pdf |  |  | x |  |
| 82 | Access to upload and download assisgnment | x |  |  |  |
| 83 | Download examination forms | x |  |  |  |
| 84 | Download files to desired location | x |  |  |  |
| 86 | Upload personal files | x |  |  |  |
| 118 | Resource Sharing |  | x |  |  |
| 129 | Hand in | x |  |  |  |
| 130 | Upload files | x |  |  |  |
| 148 | Hand in file size |  | x |  |  |
| 149 | Links to websites |  | x |  |  |
| 151 | Hand in options |  | x |  |  |
| 152 | Hand in deadline |  | x |  |  |
| 163 | Course literature management | x |  |  |  |
| 166 | Uploading file | x |  |  |  |
| 169 | Publish Assignment | x |  |  |  |
| 174 | Cannot submit after deadline |  | x |  |  |
| 180 | Bulletins | x |  |  |  |
| 184 | Download File | x |  |  |  |
| 185 | Course related information | x |  |  |  |

**For theme two(requirements in type L, D, C and E):**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | REQUIREMENTS | MUST (M) | SHOULD (S) | COULD (C) | WON'T (W) |
|  | **Register:** |  |  |  |  |
| 65 | Add New Users as Course Participators | x |  |  |  |
| 74 | Register option for courses |  |  | x |  |
| 75 | Sign Up for participants | x |  |  |  |
| 111 | Register for exams | x |  |  |  |
| 135 | Automatic enrollment |  | x |  |  |
| 179 | Course Registration | x |  |  |  |
| 183 | Publish the registrations | x |  |  |  |
| 192 | Outdated courses cancelling |  | x |  |  |
|  | **Log in and log out:** |  |  |  |  |
| 1 | Restricted Interface | x |  |  |  |
| 2 | Personalised Views | x |  |  |  |
| 27 | Login/Logout | x |  |  |  |
| 61 | Incorrect login | x |  |  |  |
| 62 | Successful Login | x |  |  |  |
| 63 | First login |  | x |  |  |
| 88 | Login Credentials | x |  |  |  |
| 89 | information provided to the user on restriction |  | x |  |  |
| 103 | Automatic logout |  | x |  |  |
| 104 | Enable and disable option for automatic logout |  |  | x |  |
| 109 | Session Manager |  | x |  |  |
| 137 | Log in time reset |  | x |  |  |
| 187 | Automatically Log Out |  | x |  |  |
| 197 | Account automatically sign out |  | x |  |  |
|  | **Communication:** |  |  |  |  |
| 59 | Access to Discussion Forum |  | x |  |  |
| 67 | Reply to Message | x |  |  |  |
| 69 | Course Chatroom | x |  |  |  |
| 108 | Discussion about the assignment |  | x |  |  |
| 114 | Contact information |  | x |  |  |
| 117 | Send Messages | x |  |  |  |
| 119 | Campus Forum |  | x |  |  |
| 121 | Course Platform | x |  |  |  |
| 131 | Chart room(same with 69) |  | x |  |  |
| 146 | Hand in feed back privacy | x |  |  |  |
| 176 | Communication | x |  |  |  |
| 186 | Send Message | x |  |  |  |
| 193 | Comments Replying | x |  |  |  |
| 199 | Relationship of developers |  | x |  |  |
| 205 | Communication(same with 176) | x |  |  |  |
|  | **Notification:** |  |  |  |  |
| 85 | User-friendly information |  |  | x |  |
| 87 | Notification Alerts | x |  |  |  |
| 112 | Auto-generated mail | x |  |  |  |
| 113 | Unread notifications for messages |  | x |  |  |
| 120 | Notification | x |  |  |  |
| 124 | Push Notifications | x |  |  |  |
| 181 | Latest Changes |  | x |  |  |
| 188 | Email Notification | x |  |  |  |
| 190 | Email Alert | x |  |  |  |
| 196 | Receiving information | x |  |  |  |
| 203 | Grade Notification | x |  |  |  |
| 204 | Exam Notification | x |  |  |  |

**For theme three(requirements in type K and F):**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | REQUIREMENTS | MUST (M) | SHOULD (S) | COULD (C) | WON'T (W) |
|  | **Evaluation:** |  |  |  |  |
| 71 | Grade export not working | x |  |  |  |
| 96 | Course feedback | x |  |  |  |
| 107 | Course Assessment Record | x |  |  |  |
| 125 | Grading | x |  |  |  |
| 161 | Student evaluating(same with 125) | x |  |  |  |
| 172 | Collect the files |  | x |  |  |
| 175 | Evaluate the answer for assignement | x |  |  |  |
| 198 | Get feedback from customer |  | x |  |  |
|  | **Edit or delete:** |  |  |  |  |
| 5 | Manage and Conduct a Course | x |  |  |  |
| 14 | Course News | x |  |  |  |
| 16 | Personal Profile | x |  |  |  |
| 17 | Manage Course Participators | x |  |  |  |
| 20 | Course Calendar |  | x |  |  |
| 24 | Product Access | x |  |  |  |
| 25 | User Calendar |  | x |  |  |
| 29 | CRUD course news | x |  |  |  |
| 30 | Add / Remove files to file archive | x |  |  |  |
| 33 | Edit Basic Contents of Personal Profile | x |  |  |  |
| 36 | Add/Remove Participators to Course | x |  |  |  |
| 42 | Course Administration Contents |  | x |  |  |
| 43 | CRUD Calendar Items |  | x |  |  |
| 44 | Synchronise Calendars |  | x |  |  |
| 45 | Access to Change Course Calendar |  | x |  |  |
| 46 | Access to Personal Calendar |  | x |  |  |
| 48 | Access to Edit Course Info (syllabus) |  | x |  |  |
| 50 | CRUD Course links | x |  |  |  |
| 52 | View/add messages | x |  |  |  |
| 53 | Access to edit user database | x |  |  |  |
| 54 | Edit Course News | x |  |  |  |
| 55 | Access to Add, Edit and Remove Course News Items | x |  |  |  |
| 70 | Cannot import calendar | x |  |  |  |
| 78 | Profile progress tracker | x |  |  |  |
| 80 | Access to delete the message in course discussion form |  | x |  |  |
| 91 | Data Backup |  | x |  |  |
| 99 | Language and Country |  | x |  |  |
| 101 | Trash Box |  | x |  |  |
| 126 | Post messages |  | x |  |  |
| 133 | Save main users' information |  | x |  |  |
| 134 | Enroll students | x |  |  |  |
| 136 | Add, delete, update function | x |  |  |  |
| 138 | Course edit options |  | x |  |  |
| 140 | Publish information function | x |  |  |  |
| 141 | Course management | x |  |  |  |
| 147 | Privacy of personal information |  | x |  |  |
| 154 | User profile picture |  |  | x |  |
| 156 | Course related events |  | x |  |  |
| 165 | Course dashboard management | x |  |  |  |
| 167 | Edit comment for the files uploaded | x |  |  |  |
| 170 | Edit comment for the assignment published | x |  |  |  |
| 171 | Set the deadline for the assignment published | x |  |  |  |
| 173 | Account Settings | x |  |  |  |
| 178 | Profile Management | x |  |  |  |
| 194 | Account and Profile Modifying | x |  |  |  |
| 201 | Modify Student Information | x |  |  |  |

**For theme four(requirements in type K and F):**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| ID | REQUIREMENTS | MUST (M) | SHOULD (S) | COULD (C) | WON'T (W) |
|  | **Non function requirements:** |  |  |  |  |
| 3 | Secure Product | x |  |  |  |
| 10 | Usable Product | x |  |  |  |
| 13 | Quick and Easy Overview of Relevant Information | x |  |  |  |
| 26 | Support Unicode |  | x |  |  |
| 41 | Access to Course Administration | x |  |  |  |
| 79 | Account activity | x |  |  |  |
| 93 | Recovery Email validity |  |  | x |  |
| 127 | Phone compatibility | x |  |  |  |
| 128 | File compatibility | x |  |  |  |
| 153 | Profile privacy |  | x |  |  |
| 162 | Quality Requirement: Usability(same to 10) | x |  |  |  |
| 209 | Security(same to 3) | x |  |  |  |
|  | **Others:** |  |  |  |  |
| 6 | Market | x |  |  |  |
| 7 | Heterogeneous System Access | x |  |  |  |
| 9 | Course Participant Administration | x |  |  |  |
| 18 | System Users | x |  |  |  |
| 22 | Course Links Archive | x |  |  |  |
| 37 | Course Participator Roles | x |  |  |  |
| 38 | Participator Privileges | x |  |  |  |
| 60 | Change Privileges for Course Participators | x |  |  |  |
| 92 | Recovery Email |  |  | x |  |
| 94 | Literature databases |  | x |  |  |
| 95 | Admin Functionalities |  |  |  | x |
| 100 | Sentiment Analysis |  |  |  | x |
| 105 | Course library |  | x |  |  |
| 106 | Access to edit, delete and add the books in course library |  | x |  |  |
| 110 | Database for projects | x |  |  |  |
| 115 | Course Book Library | x |  |  |  |
| 139 | Permission setting function | x |  |  |  |
| 142 | The language can be transformed |  | x |  |  |
| 150 | Visual presentation of students progress |  |  | x |  |
| 157 | clear requirement document |  |  | x |  |
| 158 | Smart Phone application |  |  | x |  |
| 168 | New Student Activation | x |  |  |  |
| 200 | Deliverable requirements |  | x |  |  |
| 206 | Database established |  |  | x |  |
| 208 | Authority management(same with38) | x |  |  |  |

**F. Result of release**

After prioritize the requirements in the four themes, I will discuss which requirements will be scheduled in which release. For each release I will estimate the resources required to implement the planed requirements and describe how this release match to my roadmap.

**1. For the first release:** The requirements in the must group of first theme will be scheduled in this release.

The **resource** required to implement this release: 1. Time resource: five months. 2. Human resource: three agile teams and 8 people for each team. 3. Salary for eight employees 4. Eight computer for development 5. A large work room for eight developers.

This release implement the basic function of course management system which include the user interface and file documentation. It satisfied the expectation of roadmap in release one.

**2. For the second release:** The requirements in the must group of second theme will be scheduled in this release.

The **resource** required to implement this release: 1. Time resource: three months. 2. Human resource: three agile teams and 8 people for each team. 3. Salary for eight employees 4. Eight computer for development 5. A large work room for eight developers.

This release add some interaction function into the system. Which allow different users can chart with each other. Besides, it adds register and log in and log out function in the system. These two added function satisfied the expectation of roadmap in release two.

**3. For the third release:** The requirements in the must group of third theme will be scheduled in this release.

The resource required to implement this release: 1. Time resource: four months. 2. Human resource: three agile teams and 8 people for each team. 3. Salary for eight employees 4. Eight computer for development 5. A large work room for eight developers.

This release is make the system editable and add evaluation function in the system. It satisfied the expectation of roadmap in release three.

**4. For the forth release:** The requirements in the must group of forth theme will be scheduled in this release within the first three months. And all the requirements in the should and could group of four themes will be scheduled in the left three months.

The resource required to implement this release: 1. Time resource: six months. 2. Human resource: three agile teams and 8 people for each team. 3. Salary for eight employees 4. Eight computer for development 5. A large work room for eight developers. 6. A test environment to test the non-function requirements quality or ask volunteer customers to give feedback on the non-function requirements.

This release is about improvement and ensure the non-function requirements. It adds the requirements in “Should” and “Could” group in the system which makes the system have more features and functions. These requirement may not be the most essential part of the system, but the implementation of these requirements can increase the satisfaction of customers. So this release satisfied the roadmap.

**Reference**

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