** MINISTRY OF EDUCATION AND TRAINING**

**FPT UNIVERSITY**

Capstone Project Document

The Traffic Sign Recognition and Training

|  |  |
| --- | --- |
| **Group 2** | |
| **Group member** | Mai Văn Tân – Team Leader – SE90061  Bùi Việt Phong – Team Member - SE60747  Hồ Đắc Nghĩa – Team Member - SE60628  Trần Lê Tuấn – Team Member – 60350 |
| **Supervisor** | Mr. Kiều Trọng Khánh |
| **Ext. Supervisor** | N/A |
| **Capstone Project code** | TSRT |

-Ho Chi Minh City, 01/2014-

*This page is intentionally left blank*

***ACKNOWLEDGEMENTS***

# Table of Contents

[Table of Contents 4](#_Toc378248931)

[List of Tables 5](#_Toc378248932)

[List of Figures 6](#_Toc378248933)

[Definitions, Acronyms, and Abbreviations 7](#_Toc378248934)

[Report No.3 Software Requirement Specification 8](#_Toc378248935)

[1. User Requirement Specification 8](#_Toc378248936)

[1.1 Guest Requirement 8](#_Toc378248937)

[1.2 User Requirement 8](#_Toc378248938)

[1.3 Staff Requirement 8](#_Toc378248939)

[1.4 Admin Requirement 8](#_Toc378248940)

[1.5 System Requirement 8](#_Toc378248941)

[2. System Requirement Specification 8](#_Toc378248942)

[2.1 External Interface Requirement 8](#_Toc378248943)

[2.2 System Overview Use Case 9](#_Toc378248944)

[2.3 List of Use Case 9](#_Toc378248945)

[3. Software System Attribute 53](#_Toc378248946)

[3.1 Usability 53](#_Toc378248947)

[3.2 Reliability 53](#_Toc378248948)

[3.3 Availability 53](#_Toc378248949)

[3.4 Security 53](#_Toc378248950)

[3.5 Maintainability 53](#_Toc378248951)

[3.6 Portability 53](#_Toc378248952)

[3.7 Performance 54](#_Toc378248953)

[4. ERD 55](#_Toc378248954)

[**Data Dictionary** 55](#_Toc378248955)

# List of Tables

[Table 1: <Guest> Register account 12](#_Toc378248956)

[Table 2: <Guest> Login 13](#_Toc378248957)

[Table 3: <Guest, User> Search manually using web application 15](#_Toc378248958)

[Table 4: <Guest, User> Search manually using mobile application 16](#_Toc378248959)

[Table 5: <Guest, User> Search auto using web application 18](#_Toc378248960)

[Table 6: <Guest, User> Search auto using web application 20](#_Toc378248961)

[Table 7: <User, Staff, Admin> Logout 22](#_Toc378248962)

[Table 8: <User> Report traffic sign wrong information 24](#_Toc378248963)

[Table 9: <User> Report traffic sign wrong recognize 25](#_Toc378248964)

[Table 10: <User> Delete history using web application 26](#_Toc378248965)

[Table 11: <User> Delete history using mobile application 28](#_Toc378248966)

[Table 12: <User> Add favorite using web application 30](#_Toc378248967)

[Table 13: <User> Add favorite using mobile application 31](#_Toc378248968)

[Table 14: <User> Remove favorite using web application 32](#_Toc378248969)

[Table 15: <User> Remove favorite using mobile application 34](#_Toc378248970)

[Table 16: <Staff> Add traffic sign 36](#_Toc378248971)

[Table 17: <Staff> Edit traffic sign 38](#_Toc378248972)

[Table 18: <Staff> Export to file 39](#_Toc378248973)

[Table 19: <Staff> Import from file 41](#_Toc378248974)

[Table 20: <Staff> View report 42](#_Toc378248975)

[Table 21: <Staff> Delete report 44](#_Toc378248976)

[Table 22: <Staff, Admin> Active Account 46](#_Toc378248977)

[Table 23: <Staff, Admin> Deactivate Account 48](#_Toc378248978)

[Table 24: <Staff, Admin> Make statistic 49](#_Toc378248979)

[Table 25: <Admin> Configure system 51](#_Toc378248980)

[Table 26: <Admin> Create staff account 53](#_Toc378248981)

# List of Figures

[Figure 1: System Overview Use Case 9](#_Toc378248982)

[Figure 2: <Guest> Overview Use Case 10](#_Toc378248983)

[Figure 3: <Guest> Register account 10](#_Toc378248984)

[Figure 4: <Guest> Login 12](#_Toc378248985)

[Figure 5: <Guest, User> Search manually 13](#_Toc378248986)

[Figure 6: <Guest, User> Search auto 17](#_Toc378248987)

[Figure 7: <User> User over view 21](#_Toc378248988)

[Figure 8: <User, Staff, Admin> Logout 21](#_Toc378248989)

[Figure 9: <User> Report traffic sign wrong information 23](#_Toc378248990)

[Figure 10: <User> Report traffic sign wrong recognize 24](#_Toc378248991)

[Figure 11: <User> Delete history 25](#_Toc378248992)

[Figure 12: <User> Add favorite 28](#_Toc378248993)

[Figure 13: <User> Remove favorite 32](#_Toc378248994)

[Figure 14: <Staff> Staff overview 34](#_Toc378248995)

[Figure 15: <Staff> Add traffic sign 35](#_Toc378248996)

[Figure 16: <Staff> Edit traffic sign 36](#_Toc378248997)

[Figure 17: <Staff> Export to file 38](#_Toc378248998)

[Figure 18: <Staff> Import from file 40](#_Toc378248999)

[Figure 19: <Staff>View report 42](#_Toc378249000)

[Figure 20: <Staff> Delete report 43](#_Toc378249001)

[Figure 21: <Staff, Admin> Active Account 45](#_Toc378249002)

[Figure 22: <Staff, Admin> Deactivate Account 46](#_Toc378249003)

[Figure 23: <Staff, Admin> Make statistic 48](#_Toc378249004)

[Figure 24: <Admin> Admin overview 49](#_Toc378249005)

[Figure 25: <Admin> Configure system 50](#_Toc378249006)

[Figure 26: <Admin> Create staff account 51](#_Toc378249007)

[Figure 27: ERD - Conceptual Diagram 55](#_Toc378249008)

# Definitions, Acronyms, and Abbreviations

# Report No.3 Software Requirement Specification

## User Requirement Specification

### Guest Requirement

Guest, who is not have account or not login system. Guest can use the basic function of system like search auto and search manually

### User Requirement

Use is normal user of the system. When login system, use can search auto, search manually beside that use have favorite store favorite traffic sign and history store old requests. When view traffic sign information and search auto use also can report to help system work more accurate.

### Staff Requirement

Staff is the main manager of the system. Staff’s account is created by admin. Staff can use system with these functions:

* Manage user account: Active/Inactive account
* Manage traffic sign: add/edit/import/export traffic sign
* Manage report that use submit: view/remove report

### Admin Requirement

Admin is highest manage in system. Admin can do functions:

* Manage account: add staff account/active/inactive
* Manage system: configure system

### System Requirement

System is also an important part. System can do functions:

* Detect traffic sign
* Recognize traffic sign
* Store user history
* Store user favorite

## System Requirement Specification

### External Interface Requirement

#### User Interface

* + - The interface of website is clear.
    - The interface of mobile app must be clear, compatible with touch screen. The size of controls must be big enough to touch on smartphone.
    - The error, warning messages must be make clear, easy to understand. Hardware Interface
* The system will use the standard hardware and data communications resources of a standard computer.

#### Software Interface

* Chromes with Resolution (1280\*800) or bigger and support JavaScript and HTML5
* Smartphone with Android 4.0 or above. Screen size (60 x 120 mm) or bigger.

#### Communication Protocol

* Website using HTTP protocol for communication between the web browser and the web server.
* Mobile app using HTTP protocol for communicating between app and web service.

### System Overview Use Case



Figure 1: System Overview Use Case

### List of Use Case

#### <Guest>Overview Use Case



Figure 2: <Guest> Overview Use Case

##### <Guest>Register account

Use Case Diagram



Figure 3: <Guest> Register account

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – GU001** | | | |
| **Use Case No.** | GU001 | **Use Case Version** | 2.0 |
| **Use Case Name** | Register | | |
| **Author** | Tran Le Tuan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Guest  **Summary:**  Guest uses this case to register account into system.  **Goal:**  Allow guest register account into system.  **Triggers:**   * Guest wants to register account. * To register: Guest go to the register page, guest enter username, password, email, address then click on “Đăng ký” button to register.   **Preconditions:** N/A  **Post Conditions:**   * **Success:** System will show success message on current page * **Fail:** System will show error message on current page   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Guest click on “Đăng ký” button | System redirect to register page, contain a register form:   * “Tên đăng nhập”: Textbox * “Mật khẩu”: Textbox * “Nhập lại mật khẩu”: Textbox * “Email”: Textbox   - In format: ^([a-zA-Z0-9\_\-\.]+)@((\[[0-9]{1,3}\.[0-9]{1,3}\.[0-9]{1,3}\.)|(([a-zA-Z0-9\-]+\.)+))([a-zA-Z]{2,4}|[0-9]{1,3})(\]?)$   * “Đăng ký”: Button | | 2 | Guest enters register information.  Press “Đăng ký” button. | System send verify email and show the success message: “Bạn đã đăng ký thành công, vui lòng xác nhận email để kích hoạt tài khoản”.  [Exception 1, 2, 3, 4, 5] | | 3 | Guest verify account | System show message “Chúc mừng bạn kích hoạt thành công” and redirect to homepage  [Exception 6] |   **Alternative Scenario:** N/A  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Missing information | Show error message: “Vui lòng nhập đầy đủ thông tin”. | | 2 | Username/Password not in range [5,30] | Show error message: “Tên đăng nhập và mật khẩu phải từ 5-30 ký tự”. | | 3 | Input invalid retype password. | Show error message: “Thông tin nhập vào không đúng”. | | 4 | Input invalid email. | Show error message: “Email không hợp lệ” | | 5 | Existed username/email | Show error message: “Tên đăng nhập hoặc email đã được sử dụng” | | 6 | Verify link is expired | Show error message: “Đã hết hạn kích hoạt. Liên lạc với admin để có thêm thông tin” |   **Relationships:** N/A  **Business Rules:**   * Each user can register one account. * Password use MD5 code type when save in database. | | | |

Table 1: <Guest> Register account

##### <Guest> Login

Use Case Diagram



Figure 4: <Guest> Login

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – GU002** | | | |
| **Use Case No.** | GU002 | **Use Case Version** | 2.0 |
| **Use Case Name** | Login | | |
| **Author** | Tran Le Tuan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Guest  **Summary:**  Guest uses this case to login into system.  **Goal:**  Allow authentication and authorization of the system.  **Triggers:**   * Guest want to login into system * To login: Guest go to the login page, guest enters username and password, then click on “Đăng Nhập” button to login.   **Preconditions:** N/A  **Post Conditions:**   * **Success:** Guest login successful, redirect to corresponding page * **Fail:** System will show error on current page   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Guest click on “Đăng nhập” button | System show a login form, includes:   * Tên đăng nhập: Textbox * Mật khẩu: Textbox * Đăng nhập: Button | | 1 | Guess enter username and password into textboxes.  Press “Đăng nhập” button. | Guest log into system, authorized with corresponding role. Redirect to home page.  [Exception 1,2] |   **Alternative Scenario:** N/A  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | No input in “Tên đăng nhập” or “Mật khẩu” textboxs | Show error message: “Vui lòng nhập thông tin đăng nhập”. | | 2 | Input invalid username or password | Show error message: “Tên đăng nhập hoặc mật khẩu không đúng”. |   **Relationships:** N/A  **Business Rules:**   * Each user, staff, admin has an account. * Only active account can log in. | | | |

Table 2: <Guest> Login

##### <Guest, User>Search manually

Use Case Diagram



Figure 5: <Guest, User> Search manually

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – GU003** | | | |
| **Use Case No.** | GU003 | **Use Case Version** | 2.0 |
| **Use Case Name** | Search manually using web application | | |
| **Author** | Mai Van Tan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Guest, User  **Summary:**   * User use this case to search manually   **Goal:**   * Allow user to search a traffic sign   **Triggers:**   * User want to search traffic sign in manually * User can search manually by input a key work or view a list and choice the traffic sign. * User select “Tìm kiếm biển báo” in menu bar, input keyword in “Từ khóa” textbox then press “Tìm kiếm”. The system will return a list of traffic sign, guest select the traffic sign to view information.   **Preconditions:** N/A  **Post Conditions:**   * **Success**: System will show the information of the traffic sign * **Fail:** Show the error to user   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User select “Tìm kiếm biển báo” in menu bar | System redirect to search traffic sign page, contain:   * Tìm kiếm tự động: * Tìm kiếm bằng tay:   + “Từ khóa”: Textbox   + “Tìm kiếm”: Button   + List of main type traffic sign | | 2 | User input keyword in “Từ khóa” and press “Tìm kiếm”  [Alternative 1] | System receives the input, process. After done, system return a list of traffic sign match with the input keyword  [Exception 1] | | 3 | User select a traffic sign in list | System redirect to traffic sign information contain:   * Tên biển báo: Label * Hình ảnh: Image * Nội dung biển báo: Label * Mức phạt: Label |   **Alternative Scenario:**  **1.**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User select a type in list main traffic sign type | Show the list of traffic sign of type that user selected. | | 2 | User select a traffic sign in list | System redirect to traffic sign information contain:   * Tên biển báo: Label * Hình ảnh: Image * Nội dung biển báo: Label * Mức phạt: Label |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | No result match with keyword | Show message: “Không tìm thấy” |   **Relationships: N/A**  **Business Rules:**   * Search result is listed in alphabet order * Search accept Vietnamese without accent marks | | | |

Table 3: <Guest, User> Search manually using web application

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – GU004** | | | |
| **Use Case No.** | GU004 | **Use Case Version** | 2.0 |
| **Use Case Name** | Search manually using mobile application | | |
| **Author** | Mai Van Tan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Guest, User  **Summary:**   * User use this case to search manually   **Goal:**   * Allow user to search a traffic sign   **Triggers:**   * User want to search traffic sign in manually * User can search manually by input a key work or view a list and choice the traffic sign. * User select search traffic sign in manually item [image], input keyword in “Từ khóa” textbox then press “Tìm kiếm”. The system will return a list of traffic sign, guest select the traffic sign to view information.   **Preconditions:** N/A  **Post Conditions:**   * **Success**: System will show the information of the traffic sign * **Fail:** Show the error to user   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User select search traffic sign in manually item [image] | System redirect to search traffic in manually screen, contain:   * “Từ khóa”: Textbox * “Tìm kiếm”: Button * List of main type traffic sign | | 2 | User input keyword in “Từ khóa” and press “Tìm kiếm”  [Alternative 1] | System receives the input, process. After done, system return a list of traffic sign match with the input keyword  [Exception 1] | | 3 | User select a traffic sign in list | System redirect to traffic sign information contain:   * Tên biển báo: Label * Hình ảnh: Image * Nội dung biển báo: Label * Mức phạt: Label |   **Alternative Scenario:**  **1.**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User select a type in list main traffic sign type | Show the list of traffic sign of type that user selected. | | 2 | User select a traffic sign in list | System redirect to traffic sign information contain:   * Tên biển báo: Label * Hình ảnh: Image * Nội dung biển báo: Label * Mức phạt: Label |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | No result match with keyword | Show message: “Không tìm thấy” |   **Relationships: N/A**  **Business Rules:**   * Search result is listed in alphabet order * Search accept Vietnamese without accent marks | | | |

Table 4: <Guest, User> Search manually using mobile application

##### <Guest, User> Search auto

Use Case Diagram



Figure 6: <Guest, User> Search auto

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – GU005** | | | |
| **Use Case No.** | GU005 | **Use Case Version** | 2.0 |
| **Use Case Name** | Search auto using web application | | |
| **Author** | Mai Van Tan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Guest, User  **Summary:**   * User use this case to auto search traffic sign   **Goal:**   * Allow user to search traffic sign automatically   **Triggers:**   * User want to search traffic sign automatically * User select “Tìm kiếm biển báo” in menu bar, select an image and press “Tải lên và tìm kiếm”. System will return a list of result. Guest selects a traffic sign to view information of it.   **Preconditions:** N/A  **Post Conditions:**   * **Success**: System will show the information of the traffic sign * **Fail:** Show the error to user.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User click on “Tìm kiếm biển báo” in menu bar | System redirect to search traffic sign page, contain:   * “Tìm kiếm tự động”   + File picker   + “Tải lên và tìm kiếm”: Button * “Tìm kiếm bằng tay”   + “Từ khóa”: Textbox   + “Tìm kiếm”: Button   + List of main type traffic sign | | 2 | User select an image and press “Tải lên và tìm kiếm” | System receives the image, process. After done, redirect to result page contain:   * Image uploaded * List of traffic sign recognized   [Exception 1][Exception 2] | | 3 | User select an traffic sign to view detail | System redirect to view traffic sign information page, contain:   * Tên biển báo: Label * Hình ảnh: Image * Nội dung biển báo: Label * Mức phạt: Label |   **Alternative Scenario:** N/A  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | No result match with keyword | Show message: “Không tìm thấy” | | 2 | Image is not matches format or size | Show message: “Chỉ chấp nhận ảnh jpg, pgn, bmp có kích thước nhỏ hơn 1MB” |   **Relationships: N/A**  **Business Rules:**   * The image is only in jpg, png, bmp format with the size less than 1MB | | | |

Table 5: <Guest, User> Search auto using web application

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – GU006** | | | |
| **Use Case No.** | GU006 | **Use Case Version** | 2.0 |
| **Use Case Name** | Search auto using mobile application | | |
| **Author** | Mai Van Tan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Guest, User  **Summary:**   * User use this case to auto search traffic sign in mobile   **Goal:**   * Allow user to search traffic sign automatically   **Triggers:**   * User want to search traffic sign automatically * User select search auto item [image], system opens a camera screen. User takes a photo and submits to server. System will return a list of result. User selects a traffic sign to view information of it.   **Preconditions:** N/A  **Post Conditions:**   * **Success**: System will show the information of the traffic sign * **Fail:** Show the error to user.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User select search auto item [image] | System show the screen contain:   * Chụp ảnh biển báo: Link * Chọn ảnh có sẵn: Link | | 2 | User select “Chụp ảnh biển báo” | System will open camera screen,   * Preview image screen * Button [image]: take and submit the image | | 3 | User take a photo and submit to the server  [Alternative 1][Alternative 2] | System receive the photo, after process system redirect to result page contain a list of traffic sign  [Exception 1] | | 4 | User select a traffic sign to view information | System redirect to traffic sign information page contain:   * Tên biển báo: Label * Hình ảnh: Image * Nội dung biển báo: Label * Mức phạt: Label |   **Alternative Scenario:**  **1.**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User select “Chọn ảnh có sẳn” and select an image  [Alternative 2] | System receive the photo, after process system redirect to result page contain a list of traffic sign  [Exception 1] | | 2 | User select a traffic sign to view information | System redirect to traffic sign information page contain:   * Tên biển báo: Label * Hình ảnh: Image * Nội dung biển báo: Label * Mức phạt: Label |   **2.**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | No internet connection | Show message: “Không có kết nối internet, chương trình sẽ tự động tìm kiếm khi có internet” | | 2 | When internet available | System receive the photo, after process system notify user | | 3 | User view the notification | System show the list result  [Exception 1][Exception 2] | | 4 | User select a traffic sign to view information | System redirect to traffic sign information screen contain:   * Tên biển báo: Label * Hình ảnh: Image * Nội dung biển báo: Label * Mức phạt: Label |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | No result match with keyword | Show message: “Không tìm thấy” | | 2 | Image is not matches format or size | Show message: “Chỉ chấp nhận ảnh jpg, pgn, bmp có kích thước nhỏ hơn 1MB” |   **Relationships: N/A**  **Business Rules:**   * The image is only in jpg, png, bmp format with the size less than 1MB | | | |

Table 6: <Guest, User> Search auto using web application

#### <User> User over view

Use Case Diagram



Figure 7: <User> User over view

##### <User, Staff, Admin> Logout

Use Case Diagram



Figure 8: <User, Staff, Admin> Logout

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – UU001** | | | |
| **Use Case No.** | UU001 | **Use Case Version** | 2.0 |
| **Use Case Name** | Logout | | |
| **Author** | Mai Van Tan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** User, Staff, Admin  **Summary:**  User use this case to logout  **Goal:**  Allow user to logout  **Triggers:**  User want to logout  User click on “Thoát” button  **Preconditions:**   * Guest must logged in the system with the role is user, staff, or admin   **Post Conditions:**  **Success:** User logout and redirect to home  **Fail:** System show the error  **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User click on “Thoát” button | System delete user session and redirect to home page  [Exception 1] |   **Alternative Scenario:** N/A  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Session timeout | System show message “Bạn chưa đăng nhập”, redirect to login page |   **Relationships:** N/A  **Business Rules:**   * Session timeout: 30mins | | | |

Table 7: <User, Staff, Admin> Logout

##### <User> Report traffic sign wrong information

Use Case Diagram



Figure 9: <User> Report traffic sign wrong information

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – UU002** | | | |
| **Use Case No.** | UU002 | **Use Case Version** | 2.0 |
| **Use Case Name** | Report wrong information using mobile application. | | |
| **Author** | Bui Viet Phong, Ho Dac Nghia | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** User  **Summary:**  User uses this case to report traffic sign  **Goal:**  Allow user to report traffic sign  **Triggers:**   * User want to report wrong traffic sign(wrong information) * When user view traffic sign detail and think that result is wrong then user can click on report item on traffic sign detail information screen.   **Preconditions:**   * User must log in the system with role user.   **Post Conditions:**  **Success:** The report of a traffic sign will be save on server  **Fail:** Show error message  **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | While view traffic sign detail, user click on the report button | System transfer to report screen:   * “Nội dung phản hồi”: Textbox – Min length: 50, Max length: 200. * “Gửi ý kiến”: Button | | 2 | User input report content and select “Gửi ý kiến” button [Alternative 1] | System send report to server and transfer to traffic sign detail screen. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User press “back” button | System back to traffic sign detail screen. |   **Exceptions:** N/A  **Relationships:** N/A  **Business Rules:**   * The text box must not be empty. * The report sent to server have pending status. | | | |

Table 8: <User> Report traffic sign wrong information using mobile application

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – UU003** | | | |
| **Use Case No.** | UU003 | **Use Case Version** | 2.0 |
| **Use Case Name** | Report wrong information using web application. | | |
| **Author** | Bui Viet Phong, Ho Dac Nghia | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** User  **Summary:**  User uses this case to report traffic sign  **Goal:**  Allow user to report traffic sign  **Triggers:**   * User want to report wrong traffic sign(wrong information) * When user view traffic sign detail and think that result is wrong then user can click on report item on traffic sign detail information screen.   **Preconditions:**   * User must log in the system with role user.   **Post Conditions:**  **Success:** The report of a traffic sign will be save on server  **Fail:** Show error message.  **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | While view traffic sign detail, user click on the “Gửi ý kiến” button | System show the report popup:   * “Nội dung phản hồi”: Textbox – Min length: 50, Max length: 200. * “Gửi ý kiến”: Button * “Đóng” : Button | | 2 | User input report content and click on “Gửi ý kiến” button [Alternative 1] | System send report to server and close the popup. |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User press “Đóng” button | System close the popup. |   **Exceptions:** N/A  **Relationships:** N/A  **Business Rules:**   * The text box must not be empty. * The report sent to server have pending status. | | | |

Table 9: <User> Report traffic sign wrong information using web application

##### <User> Report traffic sign wrong recognize

Use Case Diagram



Figure 10: <User> Report traffic sign wrong recognize

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – UU004** | | | |
| **Use Case No.** | UU004 | **Use Case Version** | 2.0 |
| **Use Case Name** | Report Wrong Recognize using mobile application | | |
| **Author** | Bui Viet Phong, Ho Dac Nghia | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** User  **Summary:**  User uses this case to report traffic sign recognize  **Goal:**  Allow user to report wrong traffic sign recognize.  **Triggers:**   * User want to report wrong traffic sign(wrong recognize traffic sign) * When user wants to recognize a traffic sign but the system cannot show the result of that traffic sign. * User can click report item on auto search result page   **Preconditions:**  User must logged in the system with the role is user  **Post Conditions:**  **Success:** The report of a traffic sign will be save on server  **Fail:** Show error message  **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | In the search auto result screen, press menu button then select “Báo nhận diện sai” | System transfer to report screen:   * “Nội dung phản hồi”: Textbox – Min length: 50, Max length: 200. * “Gửi ý kiến”: Button | | 2 | User input report content and select “Gửi ý kiến” button [Alternative 1] | System send report to server and go back to result screen |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User press “back” button | System back to result screen. | | | | |
| **Exception:** N/A  **Relationships:** N/A  **Business Rules:**   * The text box must not be empty. * The report sent to server have pending status. | | | |

Table 10: <User> Report traffic sign wrong recognize using mobile application

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case No.** | UU004 | **Use Case Version** | 2.0 |
| **Use Case Name** | Report Wrong Recognize using web application | | |
| **Author** | Bui Viet Phong, Ho Dac Nghia | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** User  **Summary:**  User uses this case to report traffic sign recognize  **Goal:**  Allow user to report wrong traffic sign recognize.  **Triggers:**   * User want to report wrong traffic sign(wrong recognize traffic sign) * When user wants to recognize a traffic sign but the system cannot show the result of that traffic sign. * User can click report item on auto search result page   **Preconditions:**   * User must logged in the system with the role is user   **Post Conditions:**   * **Success**: The report of a traffic sign will be save on server * **Fail**: Show error message   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | In the search auto result page, press menu button then select “Sai kết quả” | System show the report popup:   * “Nội dung phản hồi”: Textbox – Min length: 50, Max length: 200. * “Gửi ý kiến”: Button * “Đóng” : Button | | 2 | User input report content and click on “Gửi ý kiến” button [Alternative 1] | System send report to server and close the popup |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User press “Đóng” button | System close the popup. | | | | |
| **Exception:** N/A  **Relationships:** N/A  **Business Rules:**   * The text box must not be empty. * The report sent to server have pending status. | | | |

Table 10: <User> Report traffic sign wrong recognize using mobile application

##### <User> Delete history

Use Case Diagram



Figure 11: <User> Delete history

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – UU004** | | | |
| **Use Case No.** | UU004 | **Use Case Version** | 2.0 |
| **Use Case Name** | Delete history using web application | | |
| **Author** | Mai Van Tan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** User  **Summary:**   * User use this case to delete search history in web application   **Goal:**   * Allow user delete their search history   **Triggers:**   * User want to delete history of search result * User view list of history or view history detail then select “Xóa” button. Confirm to delete by press “Đồng ý”   **Preconditions:**   * Guest must log in the system with role user   **Post Conditions:**   * **Success**: The history will be deleted from system * **Fail:** Show the error to user   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User select “Xem lịch sử tìm kiếm” | System redirect to history page contain a list of search history   * List of search history * “Xóa”: Button - on each row | | 2 | User select “Xóa” button  [Alternative 1] | System shows message: “Bạn có chắc chắn muốn xóa?” | | 3 | User select “Đồng ý” | System delete the history and refresh the list  [Exception 1] |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | User select to view history detail | System redirect to view history detail page, like result page when make search auto [reference to Use case GU005]   * “Xóa”: Button | | 2 | User select “Xóa” button | System shows message: “Bạn có chắc chắn muốn xóa?” | | 3 | User select “Đồng ý” | System delete the history and refresh the list  [Exception 1] |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Cannot delete history | Show message: “Xóa không thành công”. |   **Relationships: Search auto in web application use case**  **Business Rules:**   * When delete history, only change history’s active into false | | | |

Table 10: <User> Delete history using web application

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – UU005** | | | |
| **Use Case No.** | UU005 | **Use Case Version** | 2.0 |
| **Use Case Name** | Delete history using mobile application | | |
| **Author** | Mai Van Tan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** User  **Summary:**   * User use this case to delete search history in mobile application   **Goal:**   * Allow user deletes their search history.   **Triggers:**   * User want to delete history of search result * User view list of history or view history detail then select “Xóa” button. Confirm to delete by press “Đồng ý”.   **Preconditions:**   * Guest must log in the system with role user   **Post Conditions:**   * **Success**: The history will be deleted from system * **Fail:** Show the error to user.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User select “Xem lịch sử tìm kiếm” | System redirect to history screen contain a list of search history   * List of search history | | 2 | User press and hold for 1s in a history item, then select “Xóa”  [Alternative 1] | System shows message: “Bạn có chắc chắn muốn xóa?” | | 3 | User select “Đồng ý” | System delete the history and refresh the list  [Exception 1] |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User select to view history detail | System redirect to view history detail screen, like result screen when make search auto [reference to Use case GU006]   * “Xóa”: Button | | 2 | User select “Xóa” button | System shows message: “Bạn có chắc chắn muốn xóa?” | | 3 | User select “Đồng ý” | System delete the history and refresh the list  [Exception 1] |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Cannot delete history | Show message: “Xóa không thành công”. |   **Relationships: Search auto in mobile application use case**  **Business Rules:**   * When delete history, only change history’s active into false | | | |

Table 11: <User> Delete history using mobile application

##### <User> Add favorite

Use Case Diagram



Figure 12: <User> Add favorite

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – UU006** | | | |
| **Use Case No.** | UU006 | **Use Case Version** | 2.0 |
| **Use Case Name** | Add favorite (Using web application) | | |
| **Author** | Bui Viet Phong | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** User  **Summary:**  This use case allows user to add a traffic sign into favorite list  **Goal:**  Add a traffic sign into favorite list  **Triggers:**   * In our system, each user has a favorite list to bookmark traffic signs for viewing later again * To add a traffic sign into favorite list, user must: * View traffic sign details by auto search or manually search * On the traffic sign details popup, click button “Lưu biển báo”   **Preconditions:**   * Guest must log in the system with role user   **Post Conditions:**   * **Success:** The popup inform that the traffic sign has been added to favorite list * **Fail:** No traffic sign is added to favorite list   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | View the traffic sign detail by search manual on web in usecase  [Alternative 1] | Show the Traffic details popup, contains detail of traffic sign, include:   * Traffic sign Image * Traffic sign content * Penalty fee. * “Lưu biển báo”: Button   [reference to Use case **GU005** for details] | | 2 | Click “Lưu biển báo” button | Add the traffic sign to favorite list and change button to “Xóa biển báo”. |   **Alternative Scenario 1:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | View a traffic sign details by search auto on web in Use case **GU005** | Show the Traffic details popup, contains detail of traffic sign, include:   * Traffic sign Image * Traffic sign content * Penalty fee. * “Lưu biển báo”: Button   [reference to Use case **GU005** for details] | | 2 | Click “Lưu biển báo” button | Add the traffic sign to favorite list and change button to “Xóa biển báo”. |   **Exceptions:** N/A  **Relationships:** Search auto, search manual.  **Business Rules:** - The favorite list cannot contain more than one traffic signs have same ID. | | | |

Table 12: <User> Add favorite using web application

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – UU007** | | | |
| **Use Case No.** | UU007 | **Use Case Version** | 2.0 |
| **Use Case Name** | Add to favorite (Using mobile application) | | |
| **Author** | Bui Viet Phong | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** User  **Summary:**  This user case allow user to add a traffic sign into favorite list  **Goal:**  Add a traffic sign into favorite list  **Triggers:**   * In our system, each user has a favorite list to bookmark traffic signs for viewing later again * To add a traffic sign into favorite list, user must: * View traffic sign details by auto search or manually search * On the traffic sign details screen, select favorite button   **Preconditions:**   * Guest must log in the system with role user.   **Post Conditions:**   * **Success:** The button change color from “gray” to “yellow” * **Fail:** No traffic sign is added to favorite list   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | View a traffic sign details by search manual on mobile in Use case **GU005**  [Alternative 1] | Transfer to traffic sign detail screen, include:   * Report : Image button * Add favorite : Image button * Traffic sign Image * Traffic sign content * Penalize fee.   [reference to Use case **GU006** for details] | | 2 | Select add favorite button | Add the traffic sign to favorite list and change button’s color to yellow |   **Alternative Scenario 1:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | View a traffic sign details by search auto on mobile in Use case **GU006** | Transfer to traffic sign detail screen, include:   * Report : Image button * Add favorite : Image button * Traffic sign Image * Traffic sign content * Penalize fee.   [reference to Use case **GU006** for details] | | 2 | Select add favorite button | Add the traffic sign to favorite list and change button’s color to yellow |   **Exceptions:** N/A  **Relationships:** Search auto, Search manual  **Business Rules:** - The favorite list cannot contain more than one traffic signs have same ID.  - User can add favorite even if there is no connection to server. | | | |

Table 13: <User> Add favorite using mobile application

##### <User> Remove favorite

Use Case Diagram



Figure 13: <User> Remove favorite

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – UU008** | | | |
| **Use Case No.** | UU008 | **Use Case Version** | 2.0 |
| **Use Case Name** | Remove favorite (Using web application) | | |
| **Author** | Bui Viet Phong | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** User  **Summary:**  This user case allow user to remove a traffic sign from favorite list  **Goal:**  Remove a traffic sign from favorite list  **Triggers:**   * In our system, each user has a favorite list to bookmark traffic signs for viewing later again. Items in the list can be deleted by user.   **Preconditions:**   * Guest must log in the system with role user.   **Post Conditions:**   * **Success:** The traffic sign has been remove from favorite list * **Fail:** No traffic sign has been remove from favorite list   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | - Click ‘Danh sách đã lưu’ link in the main menu | Redirect to favorite page, include:   * List of traffic signs in the favorite list * Each row in the list include:   + Traffic sign name   + Traffic sign ID number   + Traffic sign image   + “Xóa”: Button | | 2 | Click button “Xóa” in the row contain the traffic sign tend to remove  [Alternative 1] | Remove the traffic sign from favorite list |   **Alternative 1:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | View a traffic sign details by search auto on web in Use case **GU006** or by search manually on web in Use case **GU004** | Show the Traffic details popup, contains detail of traffic sign, include:   * Traffic sign Image * Traffic sign content * Penalty fee. * “Xóa biển báo”: Button   [reference to Use case **GU004** or **GU006** for details] | | 2 | Click “Xóa biển báo” button | Remove the traffic sign from favorite list and change button to “Lưu biển báo”. |   **Exceptions:** N/A  **Relationships:** Search auto, Search manual  **Business Rules: -** When the traffic sign is removed from favorite list, it is also removed from database | | | |

Table 14: <User> Remove favorite using web application

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – UU009** | | | |
| **Use Case No.** | UU009 | **Use Case Version** | 2.0 |
| **Use Case Name** | Remove favorite (Using mobile application) | | |
| **Author** | Bui Viet Phong | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** User  **Summary:**  This user case allow user to remove a traffic sign from favorite list  **Goal:**  Remove a traffic sign from favorite list  **Triggers:**   * In our system, each user has a favorite list to bookmark traffic signs for viewing later again. Items in the list can be deleted by user.   **Preconditions:**   * Guest must log in the system   **Post Conditions:**   * **Success:** The traffic sign has been remove from favorite list * **Fail:** No traffic signs has been remove from favorite list   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | - Select ‘Danh sách yêu thích’ button in the main screen  [Alternative 1] | Show the list of traffic signs in the favorite list, each row in the list include:   * Traffic sign’s name * Traffic sign image | | 2 | Select and hold on one traffic sign in the list for 1 second. | Show the menu, contains below items:   * Xóa | | 3 | Select ‘Xóa’ | Remove the traffic sign from favorite list. |   **Alternative 1:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | View a traffic sign details by search auto in Use case **GU006** or by search manually on mobile in Use case **GU004** | Transfer to traffic sign detail screen, include:   * Report : Image button * Remove favorite : Image button * Traffic sign Image * Traffic sign content * Penalize fee.   [reference to Use case **GU004** or **GU006** for details] | | 2 | Select the remove favorite button . | Remove the traffic sign from favorite list and change button’s color to gray |   **Exceptions:** N/A  **Relationships:** Search auto, Search manual  **Business Rules: -** When the traffic sign is removed from favorite list, it is deactived in the database. | | | |

Table 15: <User> Remove favorite using mobile application

#### <Staff> Staff overview

Use Case Diagram



Figure 14: <Staff> Staff overview

##### <Staff> Add Traffic sign

Use Case Diagram



Figure 15: <Staff> Add traffic sign

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE SU001** | | | |
| **Use Case No.** | SU001 | **Use Case Version** | 2.0 |
| **Use Case Name** | Add traffic sign | | |
| **Author** | Tran Le Tuan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Staff  **Summary:**  Staff use this case to add new traffic sign  **Goal:**  New traffic sign will be added into database  **Triggers:**   * We want to add a new traffic sign into database * To add new sign, staff must: * From the staff Home Page, click the menu item “Quản lí biển báo” * Select “Thêm biển báo” button   **Preconditions:**   * Guest must login as role Staff.   **Post Conditions:**   * **Success:** The sign will be added * **Fail:** No sign added. Transfer to error page   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click menu item “Quản lí biển báo”. | Redirect to Sign Manager Page, includes a panel with 2 tabs:   * Danh sách biển báo. * Thêm biển báo.   Current tab is Account List. This tab includes:   * Table with 2 column:   + Hình: Label   + Thông tin: Label * Thêm: Button * Hủy: Button | | 2 | Fill information of the sign and press “Thêm” button.  [Alternative 1] | The new sign will be added. System shows message “Đã Thêm Biển Báo Thành Công”  [Exception 1, 2] |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Click on “Hủy” button | The form is emptied |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Not enter enough require information. | Display error message: “Thông tin khai báo chưa đầy đủ.” | | 2 | Traffic sign name existed in database | Display error message:  “Biển báo đã tồn tại.” |   **Relationships:** Manage Account  **Business Rules:**   * Added traffic sign must difference with other traffic sign in database. | | | |

Table 16: <Staff> Add traffic sign

##### <Staff> Edit traffic sign

Use Case Diagram



Figure 16: <Staff> Edit traffic sign

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – SU002** | | | |
| **Use Case No.** | SU002 | **Use Case Version** | 2.0 |
| **Use Case Name** | Edit traffic sign | | |
| **Author** | Bui Viet Phong | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Staff  **Summary:**  This use case allow staff to edit traffic sign information or traffic images  **Goal:**  Edit traffic sign information or traffic images**.**  **Triggers:**   * For recognize or view traffic signs details, the system must store traffic signs information and images for recognition * To edit traffic signs, staff must: * Select ‘Quản lý biển báo’ * Click “Sửa” * Edit information or add image then click “Lưu”   **Preconditions:**   * Guest must log in the system with role staff   **Post Conditions:**   * **Success:** The new traffic sign’s information or image will be updated * **Fail: T**raffic sign’s information or image will not be updated   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | - Click ‘Quản lý biển báo’ | Redirect to Traffic management page, contains:   * “Thêm mới”: Button * “Nhập từ tập tin” : Button. * “Xuất từ tập tin” : Button * “Tạo mẫu” : Button * List traffic sign: Table. | | 2 | Click “Sửa” button match with traffic sign want to edit. | Show the popup, include:   * “Số hiệu biển báo” : Text box. * “Tên biển báo” : Text box * “Hình ảnh” : Label * “Hình ảnh” :File Upload Control: file type “.jpeg” – Maximum size: 1mB * “Loại biển báo”: Select box * “Thông tin” : Text area * “Mức phạt tham khảo” : Text area * “Ảnh nhận diện” : File Upload Control: file type “.jpeg” – Maximum size: 1mB | | 3 | Edit information in text box or select file to upload from File Upload Control to add more image then click “Lưu”.  [Alternative 1] | * Update traffic sign information or images. * Redirect to Traffic management page.   [Exception 1] |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | [Alternative 1]  - Click “Hủy” button | Close the popup. |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Select wrong file. | Display error message: “ Tập tin không đúng định dạng” | | 2 | File structure is wrong. | Display error message: “ Tập tin không đúng cấu trúc” | | 3 | File size is more than 1mB | Display error message: “ Kích thước tập tin phải nhỏ hơn 1mB” |   **Relationships:** Manage traffic signs  **Business Rules:**   * Staff can add many train images in one time. * Do not allow edit traffic ID. | | | |

Table 17: <Staff> Edit traffic sign

##### <Staff> Export to file

Use Case Diagram



Figure 17: <Staff> Export to file

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – SU003** | | | |
| **Use Case No.** | SU003 | **Use Case Version** | 2.0 |
| **Use Case Name** | Export To File. | | |
| **Author** | Tran Le Tuan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Staff  **Summary:**  Staff uses this case to export to file  **Goal:**  Allow staff to export to file  **Triggers:**   * Staff wants to export to file. * To export file, we must :   + Staff login system  + On manage traffic sign page, click on button “Xuất tập tin” to export  **Preconditions:**   * Guest must login with role Staff.   **Post Conditions:**   * **Success**: Staff can export to file * **Fail:** Show message error alert   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click on “Xuất tập tin” to request export on “quản lí” page | System will export report to file excel.  Show message “Xuất tập tin thành công”  [Exception 1] |   **Alternative Scenario:** N/A  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Cannot export file | Display error message: “Xuất tập tin thất bại.” |   **Relationships:** N/A  **Business Rules:**   * The export file will be a excel file with the structure like the sample file in … | | | |

Table 18: <Staff> Export to file

##### <Staff> Import from file

Use Case Diagram



Figure 18: <Staff> Import from file

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – SU004** | | | |
| **Use Case No.** | SU004 | **Use Case Version** | 2.0 |
| **Use Case Name** | Import traffic sign from file | | |
| **Author** | Bui Viet Phong | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Staff  **Summary:**  This use case allow staff to train new traffic signs from existing file  **Goal:**  Train new traffic signs from existing file  **Triggers:**   * For recognize or view traffic signs details, the system must store traffic signs information and images for recognition * To add new traffic signs from existing file, staff must: * Select ‘Quản lý biển báo’ * Click “Nhập từ tập tin” * Select file to upload then click “Tải lên”   **Preconditions:**   * Guest must log in the system with role staff * Staff has the file to upload   **Post Conditions:**   * **Success:** The new traffic sign has been added to database * **Fail:** No traffic sign has been has been added to database   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | - Click ‘Quản lý biển báo’ | Redirect to Traffic management page, contains:   * “Thêm mới”: Button * “Nhập từ tập tin” : Button. * “Xuất từ tập tin” : Button * “Tạo mẫu” : Button * List traffic sign: Table. | | 2 | Click “Thêm biển báo từ tập tin” button | Show popup, include:   * File Upload Control – File type : .zip. * “Gửi”: Button. * “Hủy” : Button | | 3 | Select file to upload from File Upload Control then click “Gửi” button.  [Alternative 1] | Upload file and add new traffic signs to database, then reload page. |   **Alternative Scenario 1:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | [Alternative 1]  - Click “Hủy” button | Close the popup. |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Not select file, click “Tải lên” button | Display error message: “Vui lòng chọn file để tải lên” | | 2 | Upload wrong file. | Display error message: “ Tập tin không đúng định dạng” |   **Relationships:** Manage traffic signs  **Business Rules:** N/A | | | |

Table 19: <Staff> Import from file

##### <Staff> View report

Use Case Diagram



Figure 19: <Staff>View report

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – SU005** | | | |
| **Use Case No.** | SU005 | **Use Case Version** | 2.0 |
| **Use Case Name** | View Report | | |
| **Author** | Bui Viet Phong, Ho Dac Nghia | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Staff  **Summary:**  Staff use this case to view report  **Goal:**   * Allow staff to view list of report or detail of report   **Triggers:**   * In our system, user can send report. Staffs can view these reports.   **Preconditions:**   * User must login system with role Staff.   **Post Conditions:**   * **Success:** The list of report will show. Staff can view details of report. * **Fail:** No report list displayed. Staff cannot view details of report.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click menu item “Quản lí phản hồi” on menu bar. | Redirect to Report List Page, contains:   * “Loại phản hồi” : Select box * Table with 4 columns, record of 20 latest report:   + STT: label   + Nội dung: label   + Người gửi: label   + Loại phản hồi: label   + Thời gian gửi: label   + Chi tiết: link   + Xóa : link | | 2 | For report’s detail view  Staff click “Chi tiết” link beside each report. | System show the popup, include:   * Sửa thông tin : link * Loai phản hồi : label * Người gửi : label * Thời gian gửi : label * Nội dung: label * Xóa phản hồi : button * Đóng : button |   **Alternative Scenario:** N/A  **Exception**: N/A  **Relationships:** N/A  **Business Rules:** N/A | | | |

Table 20: <Staff> View report

##### <Staff> Delete report

Use Case Diagram



Figure 20: <Staff> Delete report

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – SU006** | | | |
| **Use Case No.** | SU006 | **Use Case Version** | 2.0 |
| **Use Case Name** | Delete Report | | |
| **Author** | Bui Viet Phong, Ho Dac Nghia | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Staff  **Summary:**  Staff uses this case to delete report  **Goal:**  Allow staff to delete report.  **Triggers:**   * In our system, user can send report. These reports can be deleted by staff. * To delete report, staff go to manage report page, then click “Xóa” link.   **Preconditions:**   * User must log in the system with role Staff. * There must be at least one report in the report list   **Post Conditions:**   * **Success**: The report of a traffic sign will be removed. * **Fail**: Report isn’t removed   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click menu item “Quản lí phản hồi” on menu bar. | Redirect to Report List Page, contains:   * “Loại phản hồi” : Select box * Table with 4 columns, record of 20 latest report:   + “STT”: label   + “Nội dung”: label   + “Người gửi”: label   + “Loại phản hồi”: label   + “Thời gian gửi”: label   + “Chi tiết”: link * “Xóa” : linkMã số: Label * “Tên người phản hồi”: Label * “Thời gian”: Label * “Nội dung”: Label * “Xem chi tiết”: Link * “Xóa”: Link | | 2 | Click on the “Xóa” link  [Alternative 1] | System delete report and refresh page. |   **Alternative Scenario 1**:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click on “Chi tiết” link | System show the popup, include:   * “Sửa thông tin” : link * “Loai phản hồi“: label * “Người gửi” : label * “Thời gian gửi” : label * “Nội dung”: label * “Xóa phản hồi” : button * “Đóng” : button | | 2 | Click on the “Xóa phản hồi” button | System delete report and refresh page. |   **Exceptions:** N/A **Relationships:** View Report  **Business Rules:** N/A | | | |

Table 21: <Staff> Delete report

##### <Staff, Admin> Active Account

Use Case Diagram



Figure 21: <Staff, Admin> Active Account

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – SU007** | | | |
| **Use Case No.** | SU007 | **Use Case Version** | 2.0 |
| **Use Case Name** | Active Account | | |
| **Author** | Tran Le Tuan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Admin, Staff  **Summary:**  This use case allow admin to active an account  **Goal:**  An inactive account will be activated  **Triggers:**   * In our system, when we do not want user to login, we inactive his/her account. We can active the inactivated account so they can login again. * To active an account, admin must: * From the admin Home Page, click the menu item “Quản lí tài khoản”. * Check the Select checkbox of the account record, then select “Kích hoạt” on the drop down list, and press “Đồng ý” button   **Preconditions:**   * User must log in the system with the role admin * There must be at least one inactive account in database   **Post Conditions:**   * **Success:** The selected accounts will be activated * **Fail:** No account activated.Transfer to error page   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click menu item“Quản lí tài khoản”. | Redirect to Account Manager Page, includes a panel with 2 tabs:   * Danh sách tài khoản * Tạo tài khoản   Current tab is Account List. This tab includes:   * Table with 4 column:   + Mã số: Label   + Tên tài khoản: Label   + Email: Label   + Chức vụ: Label   + Tình Trạng: Label * Action: dropdownlist: Khóa, Kích hoạt * Đồng ý: Button | | 2 | Check the checkboxs of the account(s), select “Kích hoạt” on the drop down list, and press “Đồng ý” button | The selected account(s) will be activated  [Exception 1,2] |   **Alternative Scenario:** N/A  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | The account has already been activated by another admin | Nothing happen, the account(s) status is active | | 2 | Check no checkbox, press “Đồng ý” button | Display error message:  “Chưa chọn tài khoản để kích hoạt.” |   **Relationships:** Manage Account  **Business Rules:**   * Admin cannot active/inactive account of themselves or other admin * Staff cannot active/inactive account of themselves, other Staff or Admin | | | |

Table 22: <Staff, Admin> Active Account

##### <Staff, Admin> Deactivate Account

Use Case Diagram



Figure 22: <Staff, Admin> Deactivate Account

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – SU008** | | | |
| **Use Case No.** | SU008 | **Use Case Version** | 2.0 |
| **Use Case Name** | Inactive Account | | |
| **Author** | Tran Le Tuan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Admin  **Summary:**  This use case allow admin to active an account  **Goal:**  A active account will be inactivated  **Triggers:**   * In our system, when we do not want a user to login, we inactive his/her account. The account can be activated later * To active an account, admin must: * From the admin Home Page, click the menu item “Quản lí tài khoản” * Check the Select checkbox of the account record, select “Kích hoạt” on the drop down list, and press “Process” button   **Preconditions:**   * User must logged in the system with the role is admin * There must be at least 1 active account in database   **Post Conditions:**   * **Success:** The selected account(s) will be inactivated * **Fail:** No account inactivated.Transfer to error page   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click menu item“Quản lí tài khoản”. | Redirect to Account Manager Page, includes a panel with 2 tabs:   * Danh sách tài khoản * Tạo tài khoản   Current tab is Account List. This tab includes:   * Table with 5 columns:   + Mã số: Label   + Tên tài khoản: Label   + Email: Label   + Chức vụ: Label   + Tình Trạng : Label * Action: dropdownlist: Khóa, kích hoạt. * Đồng ý: Button | | 2 | Check the checkboxs of the account, select “Khóa” on the drop down list, and press “Đồng ý” button. | The selected account(s) will be inactivated.  [Exception 1,2] |   **Alternative Scenario:** N/A  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | The account have been inactivated by another admin | Nothing happen, the account(s) status is inactive | | 2 | Check no checkbox, press “Đồng ý” button. | Display error message:  “Chưa chọn tài khoản khóa” |   **Relationships:** Manage Account  **Business Rules:**   * Admin cannot active/inactive account of themselves or other admin * Staff cannot active/inactive account of themselves, other Staff or Admin | | | |

Table 23: <Staff, Admin> Deactivate Account

##### <Staff, Admin> Make statistic

Use Case Diagram



Figure 23: <Staff, Admin> Make statistic

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – SU008** | | | |
| **Use Case No.** | SU008 | **Use Case Version** | 2.0 |
| **Use Case Name** | Make statistic | | |
| **Author** | Bui Viet Phong, Ho Dac Nghia | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Staff  **Summary:**  This use case allow staff to make Statistics about User and Report  **Goal:**   * Make Statistics information about user or search.   **Triggers:**  - To make statistic, staff go to statistic page, choose statistic type, time then click “Thống kê” button.  **Preconditions:**   * User must logged in the system with the role is staff   **Post Conditions:**   * **Success:** Statistics is displayed as a graph * **Fail:** No statistics info displayed   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click link “Thống kê” on main menu. | Redirect to statistic page, include :   * “Loại thống kê” : select box * “Từ ngày” : Text box * “Đến ngày” : Textbox | | 1 | Choose statistic type, “from” date and “to” date then click “Thống kê” button | System make statistic and show the graph below. |   **Alternative Scenario:** N/A  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | The time start more than end time. | Display error message: “Vui lòng chọn ‘Từ ngày’ sau ‘Đến ngày’” | | 2 | The time start does not pick. | Display error message:”Vui lòng nhập thêm thông tin” |   **Relationships:** N/A  **Business Rules:**   * User statistic based on the number of register. * Report statistic based on the number of report that sent to the system. day | | | |

Table 24: <Staff, Admin> Make statistic

#### <Admin> Admin overview

Use Case Diagram



Figure 24: <Admin> Admin overview

##### <Admin> Configure system

Use Case Diagram



Figure 25: <Admin> Configure system

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – AD001** | | | |
| **Use Case No.** | AD001 | **Use Case Version** | 2.0 |
| **Use Case Name** | Configure system | | |
| **Author** | Mai Van Tan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Admin  **Summary:**  Admin use this case configure system  **Goal:**  Allow to configure system  **Triggers:**   * When admin want to configure system * Admin click on “Quản lý cấu hình” in menu   **Preconditions:**   * Guest must log in the system with role admin   **Post Conditions:**   * **Success:** The new configuration is applied to system * **Fail:** System show the message   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click menu item “Quản lý cấu hình”. | System redirect to configure system page:   * Thông số 1: Textbox * Thông số 2: Textbox * …… (Will be update later) * Xác nhận: Button | | 2 | Admin input the information and click “Xác nhận” | System apply new configuration  [Exception 1, 2] |   **Alternative Scenario:** N/A  **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Not valid information | System show message “Thông số nhập vào không hợp lệ” | | 2 | Cannot apply new configuration | System show message “Có lỗi, thiết lập cấu hình thất bại” |   **Relationships:** N/A  **Business Rules:** N/A | | | |

Table 25: <Admin> Configure system

##### <Admin> Create staff account

Use Case Diagram



Figure 26: <Admin> Create staff account

Use Case Specification

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE – AD002** | | | |
| **Use Case No.** | AD002 | **Use Case Version** | 2.0 |
| **Use Case Name** | Create Staff Account | | |
| **Author** | Tran Le Tuan | | |
| **Date** | 15/01/2014 | **Priority** | Normal |
| **Actor:** Admin  **Summary:**  Admin use this case to create account for staff  **Goal:**  A new account staff will be added to database  **Triggers:**   * In our system, the account of a staff will be added only by admin * To create a new account, admin must: * From the admin Home Page, click the menu item “Quản lí tài khoản” * In the Account Manager Page, click on the Tab “Tạo tài khoản” * Input new account information, click “Đồng ý” to finish.   **Preconditions:**   * Admin must login system   **Post Conditions:**   * **Success:** A new account will be created. The account will be displayed on account list * **Fail:** No account created.Transfer to error page or still in current page   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Click menu item “Quản lí tài khoản”. | Redirect to Account Manager Page, includes a panel with 2 tabs:   * Danh sách tài khoản * Tạo tài khoản   Current tab is Account List. This tab includes:   * Table with 5 columns:   + Mã số: Label   + Tên: Label   + Email: Label   + Chức vụ: Label   + Tình trạng: Checkbox * Dropdownlist: Khóa, Đã kích hoạt * Đồng ý: Button | | 2 | Click Tab “Tạo tài khoản”. | Display a tab panel includes:   * Tên Tài Khoản: Textbox (min length: 5, max length: 30, required). * Mật mã: Textbox (password box, min length: 5, max length: 30, required). * Chức vụ: dropdownlist: Nhân viên, Thành viên. * Đồng ý: Button * Hủy: Button | | 3 | Input new account information.  Click “Đồng ý” button.  [Alternative 1] | System will add the account to database.  Show the tab panel “Danh sách tài khoản”  [Exception 1,2,3,4] |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Click on “Hủy” button | The form is emptied |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Actor Action | System Response | | 1 | Not enter enough require information. | Display error message: “Thông tin khai báo chưa đầy đủ.” | | 2 | Username/password is not in range [5,30] | Display error message: “Tên tài khoản/Mật mã phải từ 5 đến 30 kí tự” | | 3 | Confirm password is not equal password | Display error message:  “Mật mã nhập lại không trùng khớp.” | | 4 | Username or email existed in database | Display error message:  “Tài khoản hoặc Email đã tồn tại.” |   **Relationships:** Manage Account  **Business Rules:**   * Each account is active when added to database. * The “Nhập lại mật khẩu” value must match “Mật khẩu” value. | | | |

Table 26: <Admin> Create staff account

## Software System Attribute

### Usability

#### Graphic User Interface

* All the text, label and image should be in Vietnamese.

#### Usability

* Website admin, staff should need only two days of training to use the system.
* The guest, user can use the system easily without training.

#### Installation

* The system must be easy to deploy. Customer can deploy successfully and learn to configure, maintain the system within one day of training.
* The mobile app must be easy to install. Compatible with Android OS 4.0 or higher.
* The attached manual guide must be clear.

### Reliability

* N/A

### Availability

* N/A

### Security

* Privacy: Each role of user has a specific permission to interact with system.
* System always checks authorization and authenticated before doing anything.
* Only admin can grant permission to staff.

### Maintainability

* N/A

### Portability

* N/A

### Performance

* N/A

## ERD

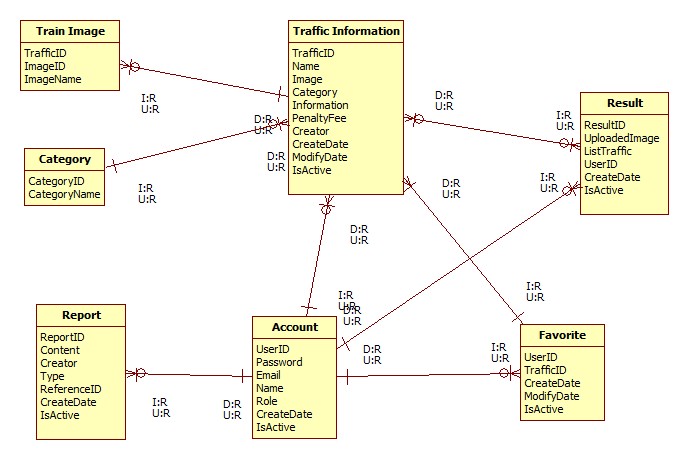


Figure 27: ERD - Conceptual Diagram

**Data Dictionary**

|  |  |
| --- | --- |
| **Entity Data dictionary: describe content of all entities** | |
| **Entity Name** | **Description** |
| Traffic Information | Describe information about traffic sign |
| Train Image | Describe information about image use to train/recognize a traffic sign |
| Category | Describe all type of traffic sign |
| Report | Describe information about report of user. Contain wrong information report and wrong recognition report |
| Account | Describe all information about user in the system |
| Result | Describe information about search auto result |
| Favorite | Describe information about favorite traffic sign of user |