|  |
| --- |
| Software Requirement Specification |

[Pick the date]

Contents

[Revision History 4](#_Toc311534100)

[1. Introduction 5](#_Toc311534101)

[1.1 Purpose and Organization 5](#_Toc311534102)

[1.2 Document Conventions 5](#_Toc311534103)

[1.3 Intended Audience and Reading Suggestions 5](#_Toc311534104)

[1.4 Project Scope 6](#_Toc311534105)

[1.5 References 6](#_Toc311534106)

[2. Overall Description 6](#_Toc311534107)

[2.1 Product Perspective 6](#_Toc311534108)

[2.2 Product Features 6](#_Toc311534109)

[2.3 User Classes and Characteristics 8](#_Toc311534110)

[Description 8](#_Toc311534111)

[2.4 Operating Environment 9](#_Toc311534112)

[2.5 Design and Implementation Constraints 9](#_Toc311534113)

[2.6 User Documentation 10](#_Toc311534114)

[2.7 System Features 10](#_Toc311534115)

[2.7.1 System Management 10](#_Toc311534116)

[2.7.2 Recruitment Management 11](#_Toc311534117)

[2.7.3 Employee Labor Contract Management 11](#_Toc311534118)

[2.7.4 Insurance Information Management 11](#_Toc311534119)

[2.7.5 Assessment Management 11](#_Toc311534120)

[2.7.6 Employee Labor Management 12](#_Toc311534121)

[2.7.7 Personal Information Management 12](#_Toc311534122)

[2.7.8 Payroll Management 16](#_Toc311534123)

[3. External Interface Requirements 17](#_Toc311534124)

[3.1 User Interfaces 17](#_Toc311534125)

[3.2 Hardware Interfaces 17](#_Toc311534126)

[3.3 Software Interfaces 17](#_Toc311534127)

[3.4 Communications Interfaces 17](#_Toc311534128)

[4. Other Nonfunctional Requirements 17](#_Toc311534129)

[4.1 Quality Attribute 17](#_Toc311534130)

[4.2 Quality Scenario 18](#_Toc311534131)

[4.2.1 Performance 18](#_Toc311534132)

[4.2.2 Security 19](#_Toc311534133)

[4.2.3 Usability 20](#_Toc311534134)

[4.2.4 Scalability 20](#_Toc311534135)

[4.2.5 Modifiability 21](#_Toc311534136)

[4.2.6 Availability 22](#_Toc311534137)

[4.3 Other Requirement 23](#_Toc311534138)

[5 Appendix A: Glossary 23](#_Toc311534139)

[6Appendix B: Analysis Models 24](#_Toc311534140)

[7Appendix C: Issues List 24](#_Toc311534141)

# Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Date | Reason for changes | Version |
| Team | 20/11/2011 | initial version | 1.0 |
| Quyet Nguyen | 7/11/2011 | Introduction, Figure 1: Features data relationship of HRM project | 1.0.1 |
| Nguyen Dinh | 29/11/2011 | Review for initial version | 1.0.2 |
| Nguyen Dinh | 04/12/2011 | Update section 1 and fix some bugs on entire document | 1.0.3 |
| Nguyen Dinh | 05/12/2011 | Update section 1 and 2.1, part of 2.2 | 1.0.4 |
| LocPhan | 05/12/2011 | Update 2.3, 2.4, 2.6 | 1.0.5 |
| LocPhan | 06/12/2011 | Update 2.5 | 1.0.6 |
| Nguyen Dinh | 06/12/2011 | Update 2.2 | 1.0.7 |
| Nguyen Dinh | 07/12/2011 | Review 2.3, review and update 2.4, 2.5, 2.6 | 1.0.8 |
| Nguyen Dinh | 07/12/2011 | Update part of 2.7 | 1.0.9 |
| Nguyen Dinh | 07/12/2011 | Update part 3 | 1.0.10 |
| Dang nguyen | 08/12/2011 | Update non-functional | 1.0.11 |

# Introduction

## 1.1 Purpose and Organization

The purpose of software requirement specification (SRS) document is to provide a technical view for all developers and stakeholders that can affect development progress. In addition, this document consolidates the functional requirements and quality attribute requirements of HRM. Before implementing the system, the SRS provides definitions and other pieces of information that contribute to a better understanding of the system. Therefore, it is a requirement for generating detail design document, requirement test cases, and all other articles that contribute to develop HRM project.

The document is organized as follows:

* Section 2 – Overall Description: provides an overall description about HRM including product perspectives, features, user, operating environment, design and implementing constraints, user document, and system features.
* Section 3 – External Interface Requirements: provides detail information about requirement in user interfaces, hardware interfaces, software interfaces, and communication interfaces
* Section 4 – Other Nonfunctional requirement: provides requirements about quality attribute including performance, security requirements etc.
* Section 5 to 7 – Appendix: for listing Glossary, analysis models, and issues list

## Document Conventions

Use the comment function in review tab of MS word ribbon to denote a concept or any information that needs to be clarified. That way, one can later on search for comments and remove them or restate the points as appropriate.

This document is expected to evolve and will be considered a “living” document for the duration of the project. Major modifications to the contents of this document must be recorded in the revision history table. The history of modifications can also be retrieved from the version control system in use.

Use colloquial and clear language to communicate with the reader; avoid long, cluttered sentences.

Be objective and succinct; avoid redundancy of information.

The format of this document is not discourse or publication paper. In addition, we have assumed the reader of this document must be familiar with software engineering terminology. Therefore, it is not necessary to add the definition of basic technical terms (e.g. UML, XML)

Follow the process and guidelines defined in the Software Configuration Management Plan [SCMP].

This document’s font is Times New Roman and font size is 12 by default

## 1.3 Intended Audience and Reading Suggestions

Intended audience

|  |  |  |
| --- | --- | --- |
| No. | Audience | Purpose |
| 1 | Mentors | For reviewing and getting overall understanding about HRM |
| 2 | Development team | For developing architecture design, detail design, implementing, and testing document. |
| 3 | Other lecturers from VLU-CMU program | For reviewing and getting overall understanding about HRM |
| 4 | Lecturers from CMU | For reviewing and getting overall understanding about HRM |

Reading suggestions: The common practice among software engineers is that the SRS is not kept up-to-date after the system is implemented. Very often, during maintenance, developers make changes and additions to the actual system but do not update the SRS. Gradually the existing code becomes disconnected from the specifications in the SRS. Having that in mind, this document was created in a way that minimizes the burden of keeping requirements specifications rigorously up-to-date:

* Information in section 2 – overall description: 2.1 to 2.6 are rarely changed from initial version since they are high-level requirement and basic concepts of HRM. On the other hand, information in 2.7 is usually changed because of the fact that it states low-level requirements; however, easy-to-change parts are referred to separate artifacts. From time to time, the latest information will be updated into this document for consistency.
* Information in section 3- external interface requirements: is sometimes changed because those interfaces are somehow stable since easy-to-change parts are ported into other document. From time to time, the latest information will be updated into this document for consistency.
* Information in section 4 – other nonfunctional requirements: Quality Attribute Requirements is somewhat susceptible to change, but changes are manageable because the amount of information is not very large.

## 1.4 Project Scope

This document only goes detail in personal information management module although there are seven modules (will be described later) in Human Resource System – HRM – that is being developed by Software Center of VLU. In addition, HRM project will be developed within six months.

## 1.5 References

* Concept of Operation document
* Use case document
* [PIM]Functional Requirement and Business Rule
* Category Information document

# Overall Description

## 2.1 Product Perspective

Human Resource System is a new system that replaces the current Human Resource System at Van Lang University that is operated manuallyusingMicrosoftExcel.This method causes some difficulties in managing HR for VLU so that this proposed system will help Human Resource Planning and Managing Department easy to do so. This version will only describe requirements of overall system and details for personal information management module only. Other features will be described in detail later in another project.

## 2.2 Product Features

The following figure shows an overall view of all HRM feature and how it associates with each other



*Figure 1: Features data relationship of HRM project*

As shown above, HRM consists of eight key modules/features, which is described and prioritized as followed:

|  |  |  |  |
| --- | --- | --- | --- |
| ID | Name | Description | Priority (\*) |
| HRM.FE1 | System Management | Managing HRM system; include user management, authentication, configuration, etc. This feature will be hidden and filtered by users' permission; only administrator of HRM can access this feature | 1 |
| HRM.FE2 | Recruitment Management | Taking responsible for managing recruitment process. It includes interviewing, evaluating, managing probation, etc. | 8 |
| HRM.FE3 | Employee Labor Contract Management | Managing employee contract information: salary ratio, class, grade, contract date, staff name… Besides, this feature helps HR easy to manage payroll. Therefore, it has a definite link to Payroll Management module. | 3 |
| HRM.FE4 | Insurance Information Management | Collecting and gather information about insurance types, and manage premium. Beside, this feature bases on salary table to update insurance types of staff (including lecturer). | 6 |
| HRM.FE5 | Assessment Management | Gathering information about work of staff, lectures, discipline, reward, etc. Moreover, assessments will be updated at the end of each year. This will helps HR to calculate salary. | 7 |
| HRM.FE6 | Employee Labor Management | Receiving information about staff from Personal Information Management to manage working day, working hour. This will helps HR to calculate salary. | 4 |
| HRM.FE7 | Personal Information Management | It isthe most important feature. It will collect and manage information of all other features, In addition to Employee Labor Contract Management,whichupdates information from other features to manage. | 2 |
| HRM.FE8 | Payroll Management | Reportingand manage information about staff, lectures, salary etc. However, it is mainly about managing income of a staff of VLU | 5 |
| HRM.FE  9 | Report Statistic Management | Getting information that customer wants to report |  |

*\*Note that the lower priority number is, the higher priority it is*

## 2.3 User Classes and Characteristics



*Figure 2: System Context of HRM project*

|  |  |  |
| --- | --- | --- |
| Number | Actor | Description |
| 1 | Department Manager/ Vice Department Manager (Human Resource Planning and Managing Department) | * Manage all general information * Decentralize staff about using function of system * Use all features |
| 2 | Insurance Group | * Manage information about insurance for labor, insurance premiums, subsidize for staff: maternity, sickness… |
| 3 | Administrator | * Manage and maintain system. * Fix defect in software. |
| 4 | Manage LaborGroup | * Manage work hour, workload of staff, lectures * Manage time and attendance tracking |
| 5 | Salary group | * Staff of salary group is responsible for payroll management and employee management. * Manage about reward for labor |
| 6 | Assessment Group | * Assess emulation title * Assess performance |
| 7 | Human Resource Group | * Manage Recruitment * Responsible for Personal Information Management * Manage labor contract |

## 2.4 Operating Environment

|  |  |  |
| --- | --- | --- |
|  | Type | |
| Client computer | Server |
| Operating System | * Windows XP SP2 * Windows Vista * Windows 7 | * Windows server 2003 * Windows server 2008 |
| Hardware | * Hard disk space: About 40 GB (full installation incl. two language modules). About 110 MB (minimal installation incl. two language modules) * Memory: more than 512 MB free memory with default cache settings * CPU: Equal or more than Pentium 4 - 2.0 GHz | * Hard disk space: 250 GB * Memory: Min 4.000 MB free memory * CPU: more than 2 CPU 3.0 GHz * Network: WinSockets-compatible TCP/IP (if you are using the TCP protocol with the BFO Server) NetBIOS-compatible LAN (if you are using the NETB protocol with the BFO Server) LAN network connection should be 100 Mb/sec or better. |

## 2.5 Design and Implementation Constraints

|  |  |
| --- | --- |
| Constraint ID | Description |
| TC.PIM.1 | Implementingusing Silverlight and Telerik, WCF (Window Communication Foundation) |
| TC.PIM.2 | Network is ADSL/Mega WAN |
| TC.PIM.3 | Default language is Vietnamese |
| TC.PIM.4 | Using Microsoft Word, Excel for documenting, importing, and exporting the data. |
| BC.PIM.5 | The end of the project is in April 30th,2012 |

## 2.6 User Documentation

|  |  |
| --- | --- |
| File name | Description |
| User manuals | User manualis a .doc type file (Word). Moreover, this file guides how to use software easily. |
| On-line help | On-line help is a tool, which integrated in software product. In addition, it describes all system functions, and guides to how to fix common problems. |
| Concepts of Operation | This document (.doc type) allows all stakeholders to understand clearly about requirements and get agreement with each other on its requirements. |

## 2.7System Features

Reference to [PIM]Functional Requirement and Business Rule

### 2.7.1 System Management

Feature priority: 1

Description:

* System security management:
  + Managing users who logging in the system.
  + Managing users and user groups.
  + Change password for users.
  + Update data for each group, each user.
  + Distribute permissions to exploit the program for each group, each user.
  + Manage logs of each time user change data in database
  + Ensure that unauthenticated access is eliminated
  + Configuration

*This feature is developed in parallel with Personal Information Management by Software Center of VLU*

### 2.7.2 Recruitment Management

Feature priority: 8

Description:

* Detailed management about applicants’ profiles
* Keeping track of detailed information on the job interviews
* When applicants are chosen, the records will be automatically updated to official profiles of the staff
* Planning and monitoring the training plan implementation of the whole staff.
* Keeping track of the training, and the cost for training implementation.
* Keeping track of the advanced training cost and payment for each member in the teaching staff.

*This feature will be developed later.*

### 2.7.3 Employee Labor Contract Management

Feature Priority: 3

Description

* Detailed management about the contracts between the employees and employers: probation contracts, job training, the time limited and unlimited official contracts.
* Keeping track of renewal contract.
* Keeping track of storing profiles when employees quit working or suspend the contract.

This feature will be developed later.

### 2.7.4 Insurance Information Management

Feature priority: 6

Description

This feature gathers all information about employee insurance for user to manage, including

* Strict management processes collecting social insurance unification in the entire system.
* Strict control procedures for comparison and settlement of revenues for units participating in social insurance.
* Building a database system of centralization and uniformity throughout the system. Sharing information to the department concerned departments through

This feature will be developed later

### 2.7.5 Assessment Management

Feature priority: 7

Description: This feature allows user to managing any employee information associated with assessment such as

* Managing discipline and reward of each employee or a group of employee
* Report discipline and reward information for wage changes
* Allows user to register works at each pre-defined period for each lecturer
* Etc.

This feature will be developed later

### 2.7.6 Employee Labor Management

Feature priority: 4

Description: This feature helps user to managing working day and working hour for each staff in addition to managing overview information

This feature will be developed later

### 2.7.7 Personal Information Management

Feature priority: 2

Description

* Personal information management:
* Detailed informationof employees’ background such as employees’ ID number, date of birth, place of birth, gender, number of insurance, address, telephone, current accommodation, working department, title, job title etc.
* Managing family relationships information.
* Managing qualification, foreign language proficiency, information technology, and politics.
* Managing employees’ storage of working records
* Managing employees’ working experience
* Keeping track of employees’ reward or penalty records
* Keeping track of employee’s wages changes.
* Tracking the information on transferring work.
* Supporting and monitoring benefits of employees associated with social insurance and health insurance.
* Tracking absent of all kinds such as illness absent, maternity absent etc.
* Report on personnel management:
  + Curriculum vitae
  + The statistics records of workers
  + Horizontal list of current excerpts and teachers
  + List of taking leaves
  + List of staffs-teachers whose contracts are expired
  + List of staffs-teachers who are going to retire
  + List of staffs - teachers are rewarded and disciplined

#### 2.7.7.1 Functional Requirement, Business Rule and List of Use Cases

Reference to[PIM] Functional Requirement and Business Rule

#### 2.7.7.2 Use Case Diagram and Description

##### 2.7.7.2.1 Use Case Diagram

Legend:









##### **2.7.7.2.2 Use Case Description**

**Activities Diagram**

Data will be update to database server and system accept user use this information

Exception: System processes fail information or error request…

Create new information

Initialize system (log in)

Choose Personal Information Management feature

Manage detail information

Manage extend information

View information

User can choose everyone to view

User can edit, import, export, add, print data

Data will be saved

Data won’t be saved

Manipulation errors

Main use

*Reference to Use Case Description*

### 2.7.7.3 Descript table for data of use-case

**2.7.7.3.1 Manage detail information**

**Detail information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rules** |
| ID staff | Text and number | Read only | Xxyyyyyy: xx: recruitment year code Yyyyyy: number |
| Full name | Text | Read and edit | Use filter to arrange |
| Other name | Text | Read and edit | Use filter to arrange |
| Birthday | Date | Read and edit |  |
| Ethnic | Text | Read and edit | List |
| Religion | Text | Read and edit | List |
| Gender | Text | Read and edit | Check box |
| Age | Number | Read and edit | Arising from birthday |
| Birthplace | Text | Read and edit | List |
| Origin | Text | Read and edit | List |
| Hometown | Text | Read and edit | List |
| Identity card | Number | Read and edit |  |
| Issue day | Date | Read and edit |  |
| Issue place | Text | Read and edit |  |
| Address 1 | Text, Number | Read and edit |  |
| + Ward | Text, Number | Read and edit | List |
| + District | Text, Number | Read and edit | List |
| + City | Text, Number | Read and edit | List |
| Address 2 | Text, Number | Read and edit |  |
| + Ward | Text, Number | Read and edit | List |
| + District | Text, Number | Read and edit | List |
| + City | Text, Number | Read and edit | List |
| Address 3 | Text, Number | Read and edit |  |
| + Ward | Text, Number | Read and edit | List |
| + District | Text, Number | Read and edit | List |
| + City | Text, Number | Read and edit | List |
| Email Address | Text, Number | Read and edit |  |
| Phone number | Number | Read and edit |  |
| Mobile phone number | Number | Read and edit |  |
| Job | Text | Read and edit | List |
| Banking account | Text, Number | Read and edit |  |
| Tax code | Number | Read and edit |  |
| Note | Text | Read and edit |  |

**Job information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number | Read only | Xxyyyyyy:  xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit | Use filter to arrange |
| Job (recruit) | Text | Read and edit |  |
| Teaching Experience | Number | Read and edit |  |
| Start time | Number | Read and edit |  |
| Recruitment time | Date | Read and edit |  |
| Resign time | Date | Read and edit |  |
| Status | Text | Read and edit | List |
| Position | Text | Read and edit | List |
| Function | Text | Read and edit | List |
| Division | Text | Read and edit | List |
| Retirement | Check | Read and edit |  |
| Note | Text | Read and edit |  |

**Educated Information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID Staff | Text, Number | Read only | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Level | Text | Read and edit | List |
| Diploma | Text | Read and edit | List |
| Work group | Text | Read and edit | List |
| Major | Text | Read and edit |  |
| Graduated year | Number | Read and edit |  |
| Highest qualification | Text | Read and edit | List |
| Teaching professional certificate/ Theoretical teaching | Check | Read and edit |  |
| Philosophy post-graduation | Check | Read and edit |  |
| English certificate | Check | Read and edit |  |
| English level | Text | Read and edit |  |
| IT certificate | Check | Read and edit |  |
| IT level | Text | Read and edit |  |
| Note | Text |  |  |

**Political Information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item Name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number | Read only | Xxyyyyyy: xx: recruitment year code Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Level theoretical political | Text | Read and edit | List |
| Joined day labor union | Date | Read and edit |  |
| Joined day union | Date | Read and edit |  |
| Joined day party | Date | Read and edit |  |
| Official joined day party | Date | Read and edit |  |
| Joined day the army | Date | Read and edit |  |
| Function/Highest function | Text | Read and edit |  |
| Note |  |  |  |

**Health Information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number | Read only | Xxyyyyyy: xx: recruitment year code Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Health status | Text | Read and edit |  |
| Numberinsurance | Number | Read and edit |  |
| Register place | Text, Number | Read and edit | List |
| Note |  |  |  |

**Other Information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item Name** | **Type** | **Action** | **Rule** |
| ID staff | Text, number |  | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Teaching signification | Text | Read and edit |  |
| Note |  |  |  |

**2.7.7.3.1 Manage extend information**

**Personal history**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item Name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number | Read only | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Learning process | Text, Number | Read and edit |  |
| Working process | Text, Number | Read and edit |  |
| Note | Text |  |  |

**Family relationship**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item Name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number | Read only | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Full name (supported people) | Text | Read and edit |  |
| Birthday | Number | Read and edit |  |
| Relation | Text | Read and edit | List |
| Job | Text | Read and edit |  |
| Live place | Text | Read and edit |  |
| Note | Text | Read and edit |  |

**Task**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number | Read only | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Campus | Text, Number | Read and edit | List |
| ID Division | Text, Number | Read and edit | List |
| Working Division | Text | Read and edit |  |
| Working group | Text | Read and edit | List |
| Main work | Text | Read and edit |  |
| Division number | Number | Read and edit | List |
| Place number | Number | Read and edit | List |
| Function | Text | Read and edit | List |
| Appointed day | Number | Read and edit |  |
| Appointment number | Text, Number | Read and edit |  |
| Position | Text | Read and edit | List |
| Lecture group | Text | Read and edit | List |
| Note | Text |  |  |

**Position**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number | Read only | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Given day | Number | Read and edit |  |
| Position name | Text | Read and edit | List |
| Note | Text | Read and edit |  |

**Position Happenings**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number | Read only | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Now position | Text | Read and edit | List |
| Start time | Date | Read and edit |  |
| Planned complete time | Date | Read and edit |  |
| Allowed day | Date | Read and edit |  |
| Allowed position | Text | Read and edit | List |
| Allowed position number | Text, Number | Read and edit |  |
| Decision day | Number | Read and edit |  |
| Note | Text |  |  |

**Wage change**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number | Read and edit | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Official scale | Text | Read and edit | List |
| ID scale | Text, Number | Read and edit |  |
| Grade | Number | Read and edit | List |
| Salary coefficient | Number | Read and edit | List |
| Official type | Text | Read and edit | List |
| Keeping scale time | Number | Read and edit |  |
| Increasing scale time | Number | Read and edit |  |
| Type(decree) | Text, Number | Read and edit |  |
| Salary table type | Text | Read and edit |  |
| Position qualification degree | Number | Read and edit |  |
| Achieve day[C1] | Date | Read and edit |  |
| Function coefficient[C2] | Number | Read and edit |  |
| Achieve day[C2] | Date | Read and edit |  |
| Access work coefficient[K1] | Number | Read and edit |  |
| Achieve day[K1] | Date | Read and edit |  |
| Quantity students’coefficient[K2] | Number | Read and edit |  |
| Achieve day[K2] | Date | Read and edit |  |
| Work effect personal coefficient[H1] | Number | Read and edit |  |
| Achieve day[H1] | Date | Read and edit |  |
| Work effect team coefficient[H2] | Number | Read and edit |  |
| Achieve day[H2] | Date | Read and edit |  |
| Allowance | Number | Read and edit |  |
| Allowance day | Date | Read and edit |  |
| Allowance finished day | Number | Read and edit |  |
| Note | Text |  |  |

**Reward**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number | Read only | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Reward code | Text, Number | Read and edit | Auto update |
| Reward name | Text | Read and edit |  |
| Decision number | Text, Number | Read and edit |  |
| Reward day | Date | Read and edit |  |
| Amount | Number | Read and edit |  |
| Note | Text |  |  |

**Discipline**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number | Read only | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Discipline code | Text, Number | Read and edit | Auto update |
| Discipline name | Text | Read and edit |  |
| Decision number | Text, Number | Read and edit |  |
| Discipline day | Date | Read and edit |  |
| Amount | Number | Read and edit |  |
| Note | Text |  |  |

**Facilitate**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number | Read only | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Facilitate code | Text, Number | Read and edit |  |
| Facilitate name | Text | Read and edit |  |
| Supply day | Date | Read and edit |  |
| Return day | Date | Read and edit |  |
| Note | Text | Read and edit |  |

**Syllabus**

***Subject***

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number |  | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text |  |  |
| Number | Number | Read and edit |  |
| Subject name | Text | Read and edit |  |
| Subject director | Text | Read and edit |  |
| Attendance member | Text | Read and edit |  |
| Sponsor division | Text | Read and edit |  |
| Working day | Date | Read and edit |  |
| Finished day | Date | Read and edit |  |
| Acceptance time | Date | Read and edit |  |
| Management level | Text | Read and edit |  |
| Source cost | Text | Read and edit |  |
| Cost | Number | Read and edit |  |
| Access result | Text | Read and edit |  |
| Real application | Text | Read and edit |  |
| Application place | Text | Read and edit |  |

***Paper***

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number |  | Select from staff list |
| Full name | Text |  |  |
| Number | Number | Read and edit | List |
| Paper name | Text | Read and edit |  |
| Magazine name | Text | Read and edit |  |
| Magazine number | Text, Number | Read and edit |  |
| Publish year | Number | Read and edit |  |
| Note | Text | Read and edit |  |

***Curriculum***

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Number |  | Select from staff list |
| Full name | Text |  |  |
| Number | Number | Read and edit | List |
| Paper name | Text | Read and edit |  |
| Magazine name | Text | Read and edit |  |
| Magazine number | Text, Number | Read and edit |  |
| Publish year | Number | Read and edit |  |
| Note | Text | Read and edit |  |

***Thesis Guidance***

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Number |  | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Number |  |  |
| Trainee name | Text | Read and edit |  |
| Train course | Text | Read and edit | List |
| Note | Text | Read and edit |  |

***Research guidance***

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number |  | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text |  |  |
| Guidance number | Number | Read and edit |  |
| Guidance name | Text | Read and edit |  |
| Attendance student | Number | Read and edit |  |
| Start time | Date | Read and edit |  |
| Finish time | Date | Read and edit |  |
| Opponent number | Number | Read and edit |  |
| Opponent name | Text | Read and edit |  |
| Start time | Date | Read and edit |  |
| Inspection number | Number | Read and edit |  |
| Inspection name | Text | Read and edit |  |
| Position (council) | Text | Read and edit |  |
| Note | Text | Read and edit |  |

**Course Information**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number |  | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text |  |  |
| Course | Text | Read and edit |  |
| Course place | Text | Read and edit |  |
| Course type | Text | Read and edit |  |
| Learning system | Text | Read and edit |  |
| Started time | Number | Read and edit |  |
| Finished time | Date | Read and edit |  |
| Training cost | Number | Read and edit |  |
| Allowance | Number | Read and edit |  |
| Course number | Number, Text | Read and edit |  |
| Course day | date | Read and edit |  |
| Commitment | Text | Read and edit |  |
| Status | Text | Read and edit |  |
| Note | Text | Read and edit |  |

**Course result**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number |  | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text |  |  |
| Diploma name/Certificate name | Text | Read and edit |  |
| Certify day | Number | Read and edit |  |
| Diploma day/Certificate day | Number | Read and edit |  |
| Supply place | Text | Read and edit |  |
| Ministry supply number | Number | Read and edit |  |
| Division supply number | Number | Read and edit |  |
| Trainee type | Text | Read and edit |  |
| Graduated type | Text | Read and edit | List |
| Decision number (adjust salary) | Number, Text | Read and edit |  |
| Decision day (adjust salary) | Number | Read and edit |  |
| Decision number (reward) | Text, Number | Read and edit |  |
| Decision day (reward) | Number | Read and edit |  |
| Reward level | Number | Read and edit |  |
| Note | Text | Read and edit |  |

**Probation**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number |  | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Function | Text | Read and edit | List |
| Position | Text | Read and edit | List |
| Probation time | Date | Read and edit |  |
| Start time | Date | Read and edit |  |
| Probation result | Text | Read and edit |  |
| Note | Text | Read and edit |  |

**Supported people**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number |  | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Tax code | Number | Read and edit | Get from general information |
| Number of supported people | Number | Read and edit | Auto update |
| Full name | Text | Read and edit |  |
| Birthday | Date | Read and edit |  |
| Tax code | Number | Read and edit |  |
| Identify card number | Number | Read and edit |  |
| Relation | Text | Read and edit | List |
| Deducted day | Date | Read and edit |  |
| Finished deducted day | Date | Read and edit |  |
| Note | Text | Read and edit |  |

**Army rank**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number |  | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Enlist day | Date | Read and edit |  |
| Demobilization day | Date | Read and edit |  |
| Function/ Highest function | Text | Read and edit |  |

**Labor Union**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number |  | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Joined labor union day | Date | Read and edit |  |
| Function | Text | Read and edit |  |
| Note | Text | Read and edit |  |

**Union Task**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number |  | Xxyyyyyy: xx: recruitment year code  Yyyyyy: number |
| Full name | Text | Read and edit |  |
| Joined union day | Date | Read and edit |  |
| Joined union place | Text | Read and edit |  |
| Function | Text | Read and edit |  |
| Note | Text | Read and edit |  |

**Communist Party Task**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item name** | **Type** | **Action** | **Rule** |
| ID staff | Text, Number |  | Select from staff list |
| Full name | Text | Read and edit |  |
| Joined party day (reserve) | Date | Read and edit |  |
| Joined party day (actual) | Date | Read and edit |  |
| Joined party | Text | Read and edit |  |
| Address party | Text, Number | Read and edit |  |
| Function | Text | Read and edit |  |
| Note | Text | Read and edit |  |

### 2.7.8 Payroll Management

Feature priority: 5

Description

The input figures for the salaries such as the minimum wage, payment for further study, long - term training, payment for working overtime, the figures of salary adjustments based on the results and how to emulate the monthly salary as required. Modules also provide the output:

* Table of income apart from salary
* General report on payment of wages
* Report on salary increase plan (quarterly and monthly)

This feature will be developed later.

# External Interface Requirements

## 3.1 User Interfaces

User interfaces are shown on each use case description. The following figure will display flow of UI

## 3.2 Hardware Interfaces

HRM systems be installed directly on the computer/laptop

## 3.3 Software Interfaces

* HRM runs on Microsoft SQL Server, Mysql, and Oracle.
* Operating systems:
* Windows server 2003
* Windows server 2008
* Windows XP SP2
* Windows Vista
* Windows 7

## 3.4 Communications Interfaces

* Using Internet Explorer to access into HRM system
* All of decision and report will be sent via Email

# Other Nonfunctional Requirements

## 4.1Quality Attribute

|  |  |  |
| --- | --- | --- |
| QA. ID | Type | Description |
| QA.PIM01 | Performance | - The system will run with high performance, events occur and the system must respond in a timely fashion from 2 to 4 seconds |
| QA.PIM02 | Security | - The system will use newest information encode technology (encode information: username, password, data current between client and server)  - The product will release free defect to avoid lose information by hacker |
| QA.PIM03 | Usability | - The interface will show clearly, easy to understand, and visually   * To learn   + Interface familiar, consistent   + Clearly, science   + The Menu and Button are placed suitable for user’ habit too easy to execute * To use system effective   + Reuse command or data already entered   + Navigation support, comprehensive searching * To recover from errors   + Undo, cancel, recover from system failures |
| QA.PIM04 | Scalability | - The system will be easy to upgraded or added new module to the system |
| QA.PIM05 | Modifiability | - The system will be easy to added, deleted and modified function or new function |
| QA.PIM06 | Availability | - The HRM will often availability from 8:00 AM to 19:00 PM  - The HRM will have periodically backup of database to ensure that whenever the database server is crashed, the data will not be lost. |

## 

## Quality Scenario

## Performance

|  |  |
| --- | --- |
| Scenario number | HRM-PIM #1 |
| Scenario Description | Ability to handle many user interactions when they modify the “Personal Information” |
| Business Goals | Increase bearing’s the system |
| Relevant Quality | Performance |
| Attributes | Performance, Scalability |
| Scenario Components | Requesting is request to the system |
| Stimulus | The HRM staffs who responsible for modifying the “Personal Information” |
| Stimulus Sources | Updating or Modifying the “Personal Information” in both detailed and extended information. |
| Environment | The HRM system is in normal mode.  The number of user transactions is 10. |
| Artifact | The HRM system |
| Response | The HRM system process all transaction:   * Update the new information to database * Log the transaction. |
| Measure | The response time for each transaction is about 2-4 seconds. |
| Question |  |
| Issue |  |

|  |  |
| --- | --- |
| Scenario number | HRM-PIM #2 |
| Scenario Description | The performance when the user use browser to access for modify the “Personal Information” |
| Business Goals | HRM staff, lecturer can modifies their profile |
| Relevant Quality | Performance |
| Attributes | Performance |
| Scenario Components | HRM staff or lecturer modifies their profile |
| Stimulus | - The HRM staffs who want to modify personal information (detail and extend) at somewhere (not at VLU) by using browser through Internet to access HRM system  - The Lectures who want to update “Profile Management” (in extended information) at somewhere (not at VLU) by using browser through Internet to update the topic, article, or curriculum… |
| Stimulus Sources | Updating or Modifying the “Personal Information” in both detailed and extended information. |
| Environment | The HRM system is in normal mode. |
| Artifact | The HRM system. |
| Response | The HRM system process all transaction:   * Update the new information to database * Log the transaction. |
| Measure | The response time for showing is about 2 seconds. |
| Question |  |
| Issue |  |

|  |  |
| --- | --- |
| Scenario number | HRM-PIM #3 |
| Scenario Description | The performance when the HRM staffs want to import the data (decision) to save in HRM system. |
| Business Goals | Increase convenience for the system |
| Relevant Quality | Performance |
| Attributes | Performance, Usability |
| Scenario Components | HRM staff want import file to save in the system. |
| Stimulus | The HRM staffs |
| Stimulus Sources | The HRM staffs want to import the data, the decisions into database of HRM system |
| Environment | The HRM system is in normal mode. |
| Artifact | The HRM system |
| Response | All of data and decision are imported into database of HRM system. |
| Measure | The response time for importing data is about 5 seconds for 500 rows and 20 columns. |
| Question |  |
| Issue |  |

* + 1. **Security**

|  |  |
| --- | --- |
| Scenario number | HRM-PIM #4 |
| Scenario Description | Ability to protect the database from attacker |
| Business Goals | Increase security for the system |
| Relevant Quality | Security |
| Attributes | Security |
| Scenario Components | Protect the system |
| Stimulus | The unauthorized user |
| Stimulus Sources | Access and attack database server |
| Environment | The HRM system is in normal mode |
| Artifact | The HRM database, HRM server |
| Response | The HRM use WCF service so that the user will not know the path of database server and database is protected. |
| Measure | The unauthorized user |
| Question |  |
| Issue |  |

* + 1. **Usability**

|  |  |
| --- | --- |
| Scenario number | HRM-PIM #5 |
| Scenario Description | Ability to make user feel comfortable |
| Business Goals | Increase easy to use for user |
| Relevant Quality | Usability |
| Attributes | Usability |
| Scenario Components | User easy to use the GUI of the system |
| Stimulus | The end-users |
| Stimulus Sources | Want to feel comfortable and easy to use with the UI |
| Environment | The HRM system is in run time |
| Artifact | The HRM system user interface |
| Response | -The personal information is group into different category so that it will be easier to find the information.  -HRM supports the help and tutorial for user guidance.  -HRM system supports to show multiple views. |
| Measure | User feels comfortable |
| Question |  |
| Issue |  |

|  |  |
| --- | --- |
| Scenario number | HRM-PIM #6 |
| Scenario Description | Ability to make user feel comfortable |
| Business Goals | Increase easy to use for user |
| Relevant Quality | Usability |
| Attributes | Usability |
| Scenario Components | The system announces message when occurring error |
| Stimulus | The end-users |
| Stimulus Sources | Want to minimize the impact of the error |
| Environment | The HRM system is in run time |
| Artifact | The HRM system user interface |
| Response | -The error message will be shown when the error occur and direct the way to fix the problem to user  -User can cancel the operation when the errors occur. |
| Measure | Cancellation takes less than 2 seconds |
| Question |  |
| Issue |  |

* + 1. **Scalability**

|  |  |
| --- | --- |
| Scenario number | HRM-PIM #7 |
| Scenario Description | Ability to run on multi database |
| Business Goals | Increase compatible |
| Relevant Quality | Scalability |
| Attributes | Scalability |
| Scenario Components | The system can run on multi database |
| Stimulus | The HRM database server |
| Stimulus Sources | Now, the HRM system uses SQL Database server but the HRM can also run on other database MySQL |
| Environment | The HRM system is in normal mode |
| Artifact | The HRM database |
| Response | The system can work well with new database |
| Measure | The time for changing to new database: 3 days |
| Question |  |
| Issue |  |

* + 1. **Modifiability**

|  |  |
| --- | --- |
| Scenario number | HRM-PIM #8 |
| Scenario Description | Ability to add new functionalities/modules such as recruitment, insurance… modules |
| Business Goals | Easy to add new function or module in the system |
| Relevant Quality | Modifiability |
| Attributes | Modifiability |
| Scenario Components | Add new function or module to the system |
| Stimulus | The developer, end-users |
| Stimulus Sources | The first release of HRM project is focusing on Personal Information Management module. But in next release the user wish to  -Add new functionalities/modules including recruitment, insurance, labor contract, payroll, assessment management, reward and penalty management, labor management modules |
| Environment | The HRM system is in build time |
| Artifact | The HRM system client and server side |
| Response | -Locates places in architecture to be modified.   * The UI component on client side * The services and business flow on server side.   -Makes modification without affecting other functionality  -Tests modification  -Deploys modification |
| Measure | The time for adding: 2-3 days  The resource for adding: 2 resources (one for integration and the other for testing and deploy) |
| Question |  |
| Issue |  |

|  |  |
| --- | --- |
| Scenario number | HRM-PIM #9 |
| Scenario Description | Ability to modify the user interface (UI) |
| Business Goals | Users will change interface that they want |
| Relevant Quality | Modifiability |
| Attributes | Modifiability |
| Scenario Components | Change interface |
| Stimulus | The developer, end-users |
| Stimulus Sources | Modifying the user interface includes the screen layout, text, GUI images… |
| Environment | The HRM system is in build time |
| Artifact | The HRM system client side |
| Response | -Locates UI part for modification  -Makes modification without affecting the functionality in other tiers  -Test the modification. |
| Measure | The time for modifying: 1-2 days (depend on the size of modification)  The resource for adding: 1 resources (one for modifying and the other for testing and deploy) |
| Question |  |
| Issue |  |

|  |  |
| --- | --- |
| Scenario number | HRM-PIM #10 |
| Scenario Description | Ability to modify the client from using Silverlight to Windows Form (WPF) |
| Business Goals | Increase flexibility: run on web or Window Form |
| Relevant Quality | Modifiability |
| Attributes | Modifiability |
| Scenario Components | The system can run on Web or Window Form |
| Stimulus | The developer, end-users |
| Stimulus Sources | Wish to modify the client side from using Silverlight (web browser application) to windows form application (WPF) |
| Environment | The HRM system is in build time |
| Artifact | The HRM system client |
| Response | -Locates part for modification   * The View and Model component   -Makes modification without affecting the functionality in other tiers  -Tests UI |
| Measure | The time for modifying: 5-7 days  The resource for adding: 2 resources (one for modifying and the other for testing and deploy) |
| Question |  |
| Issue |  |

* + 1. **Availability**

|  |  |
| --- | --- |
| Scenario number | HRM-PIM #11 |
| Scenario Description | Ability for working when the server crashes |
| Business Goals | Ensure database availability while handling request |
| Relevant Quality | Availability |
| Attributes | Availability |
| Scenario Components |  |
| Stimulus | The HRM database server |
| Stimulus Sources | Before crashing about 60 minutes, the server will warn and ask the user what data need to be backup to be able to work at home. |
| Environment | The HRM system is in normal mode |
| Artifact | The HRM database |
| Response | The system will back up the data that the user request |
| Measure | Database connection timeout: 60 seconds  The time for automatically backup depends on size of data  Time for preparing the server: 1 hour |
| Question |  |
| Issue |  |

# Appendix A: Glossary

| **Code** | **Description** |
| --- | --- |
| FR.<abc>.<xxx> | Functional requirement code  <abc>: Project name  <xxx>: Number of functional requirement |
| UC.<abc>.<xxx> | Use-case code  <abc>: Project name  <xxx>: Number of use-case |
| BR.<abc>.<xxx> | Business rule code  <abc>: Project name  <xxx>: Number of business rule |
| BC.<abc>.<xxx> | Business constraints code  <abc>: Project name  <xxx>: Number of business constraints |
| TC.<abc>.<xxx> | Technical constraints code  <abc>: Project name  <xxx>: Number of technical constraints |
| QA.<abc>.<xxx> | Quality attributes  <abc>: Project name  <xxx>: Number of quality attributes |
| R.<abc>.<xxx> | Report code  <abc>: Project name  <xxx>: Number of report |
| F.<abc>.<xxx> | Form code  <abc>: Project name  <xxx>: Number of form |