# A1-Information Systems

## ESSS System Analysis

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# ESSS System Request

**Project sponsor:** Jack Mills, VP of Human Resources

**Business Need:** Due to fast growth, a quick and centralized system to handle all employee information and internal employee and management tools

**Business Requirements:**

The functionality that the system should have is listed below:

- Print directory information, reports, and any other data stored in the database where security access permits
- Single database that stores all data in one location
- Employee read and write access to their own personal data (addresses, phone numbers, etc.)
- Secure off-site access to the system through the internet, and access at all company desktops
- Security access codes, so only authorized personnel can view certain information, such as HR viewing other employees' information, and managers viewing organizational structure data
- Management tools for viewing a summary of employee participation in United Way contributions, and generating organizational structure charts
- HR tools for adding new employees and editing existing employees
- Payroll tools for getting the most up to date employee information
- Secure access for United Way to view the United Way summary, that only allows access to no other parts of the system

**Business Value:**

Conservative estimates of tangible value to the company include:

- $100,000 in annual cost savings from lack of required maintenance for current system
- $172,500 in annual savings from automated information changes instead of manual
- Remove the need for five administrators and for extra weekly work by other employees, for an annual $150,000 in savings (estimated $30,000 annual salary)
- Eliminate the need for phone book, saving $27,000 annually
- Allow employees to work on the go and at home, resulting in higher employee satisfaction and better ability for employees to get their work done in a timely manner
- Higher participation in United Way

**Special Issues or Constraints:**

- Completion of task one of phase one in six months
- $225,000 budget

# ESSS Functional and Non-Functional Requirements

**Functional Requirements:**

- **Employees**
    - User access to their personal information (including first name, last name, mobile, home, and work phone, address, home and work email, and emergency contact information) to keep it up to date, and enter their payroll deduction options.
    - User ability to search the employee directory for other employees' work phone, work email, location, desk number, position, department, and superior
    - User ability to enter United Way contributions, first giving the option of whether or not to participate, then if they want to give a one time or continuous (each paycheck) contribution, then how much or what percentage they wish to give
- **Managers**
    - Ability to search for any information regular employees do not have access to (except payroll deduction options, savings bond purchases, and password)
    - Ability to view the United Way summary by location(s) and generate organizational structure charts by department(s)
- **Payroll Employees**
    - Employee directory allows payroll employees to log in and download the recently updated employee addresses
    - Employee directory allows payroll managers to log in and download the recently payroll deduction options, and any new savings bond purchases
- **HR Employees**
    - Ability to add a new employee to the system upon a new hire, including the new hire's first name, last name, mobile phone, home phone, address, home email, emergency contact information, ID Number, work phone, work email, location, desk number, superior, position, department, and start date
    - Ability to edit existing employees' information, including special permissions, location, desk number, superior, position, department, and end date
- **United Way**
    - Specific-for-United-Way access to the system, which only allows access to the United Way summary by location(s)
- **Printing**
    - Only where the user's access level allows:
        - Employee directory information
        - Employee's own United Way contributions, payroll deduction options, and savings bond purchases
        - Organizational structure charts
        - United Way Summary

**Non-Functional Requirements:**

- **Security Requirements**
    - Access levels

        - Specific higher access when needed (for specific projects, when user is of lower access)
    - Login/password for accessing the system
        - Password requirements
            - Minimum 8 characters
            - Must contain at least one lower case letter (a-z)
            - Must contain at least one upper case letter (A-Z)
            - Must contain at least one number or special character (0-9, *%#, etc.)
            - Must be changed every 30 days
            - Cannot use more than 4 of the same characters from the previous password
    - White listed internal IP's
        - Only internal, pre-approved, static IP addresses are allowed access
    - Usage logging/tracking
        - Username
        - Actions
            - File changes
        - Date
        - IP Address
- **Extensibility**
    - Ability to add additional applications for other departments or purposes
- **Operational Requirements**
    - Windows XP and later
    - Printing and/or viewing any documents in PDF, Word document, and RTF files
    - Graphical user interface
    - Remote access
        - VPN for mobile laptop use
        - VPN for accessing company desktops
- **Performance Requirements**
    - Large usage capacity on one central server
        - Server capacity for 20,000 simultaneous users
    - Real time data updates
    - 99.9% system uptime
- **Cultural & Political Requirements**
    - None

# ESSS Project Size Estimation

Size of the system:
**Total Unadjusted Function Points (TUFP):**

| Description | Complexity | | | | |
|---|---|---|---|---|---|
| | Total Number | Low | Medium | High | Total |
| **Inputs** | 6 | 5 x 3 | 1 x 4 | 0 x 5 | 19 |
| **Outputs** | 5 | 3 x 4 | 2 x 5 | 0 x 7 | 22 |
| **Queries** | 7 | 5 x 3 | 2 x 4 | 0 x 6 | 23 |
| **Files** | 5 | 6 x 7 | 0 x 10 | 0 x 15 | 42 |
| **Program Interfaces** | 2 | 1 x 5 | 0 x 7 | 1 x 10 | 15 |
| **Total Unadjusted Function Points (TUFP):** | | | | | **121** |

**Inputs:** Employee directory information (low), United Way contributions (low), payroll deduction options (low), savings bond purchases (low), login information (medium), HR edits of employee information (low).

**Outputs:** Employee directory information (medium), United Way summary (low), payroll deduction options (low), savings bond purchases (low), organizational structure charts (medium).

**Queries:** Employee directory information (low), payroll deduction options (low), savings bond purchases (low ), United Way contributions (low), login (low), employees by department (medium), superiors by department (medium).

**Files:** Employee directory (low), United Way contributions (low), login information (low), payroll update log (low), directory change log (low), organizational structure chart log (low), contribution log (low).

**Program Interfaces:** Mobile to desktop/database (high), internal program interface (low).

| | |
|---|---|
| Data Communications | **2** |
| Heavy Use Configurations | |
| Transaction rate | **1** |
| End-user efficiency | **2** |
| Complex processing | |
| Installation ease | |
| Multiple sites | **2** |
| Performance | |
| Distributed functions | |
| Online data entry | **2** |
| Online update | **3** |
| Reusability | |
| Operation Ease | **3** |
| Extensibility | **2** |
| **Total Processing Complexity (PC):** | **18** |

**Adjusted Processing Complexity (APC):**
0.65 + (0.01 x 18) = 0.83

**Total Adjusted Function Points (TAFP):**
0.83 x 121 = 100.43

**Total Lines of Code Using Java:**
100.43 x 55 = 5,524 Lines of Code

**Project Effort Inn Person Months:**
(5524 / 1000) * 1.4 = 7.733 Person-Months

**Schedule Time in Months (with 2 programmers):**
7.286 / 2 = 3.867 Months

# ESSS Economic Feasability Analysis

| | | | | | | |
|---|---|---|---|---|---|---|
| **Annual Labor Cost Increase** | 3% | | | | | |
| **Discount Rate** | 6.00% | | | | | |
| | **2011** | **2012** | **2013** | **2014** | **2015** | **Total** |
| Maintenace savings | $150,000.00 | $300,000.00 | $300,000.00 | $300,000.00 | $300,000.00 | |
| Automated information changes | $86,250.00 | $172,500.00 | $172,500.00 | $172,500.00 | $172,500.00 | |
| Reduction of five administrators | $75,000.00 | $150,000.00 | $150,000.00 | $150,000.00 | $150,000.00 | |
| Elimination of printing phone book | $13,500.00 | $27,000.00 | $27,000.00 | $27,000.00 | $27,000.00 | |
| **Total Benefits** | $324,750.00 | $649,500.00 | $649,500.00 | $649,500.00 | $649,500.00 | $2,922,750.00 |
| **PV of Benefit** | $306,367.92 | $578,052.69 | $545,332.72 | $514,464.83 | $485,344.18 | $2,429,562.35 |
| **Cumulative PV of Benefits** | $306,367.92 | $884,420.61 | $1,429,753.34 | $1,944,218.17 | $2,429,562.35 | |
| | | | | | | |
| Server | ($60,000.00) | $0.00 | $0.00 | $0.00 | $0.00 | |
| Printer | ($10,000.00) | $0.00 | $0.00 | $0.00 | $0.00 | |
| Software licenses | ($5,000.00) | $0.00 | $0.00 | $0.00 | $0.00 | |
| Server software | ($20,000.00) | $0.00 | $0.00 | $0.00 | $0.00 | |
| Development labor | ($130,000.00) | $0.00 | $0.00 | $0.00 | $0.00 | |
| **Total Development Costs** | ($225,000.00) | $0.00 | $0.00 | $0.00 | $0.00 | |
| | | | | | | |
| Hardware | ($45,000.00) | ($90,000.00) | ($90,000.00) | ($90,000.00) | ($90,000.00) | |
| Software | ($10,000.00) | ($20,000.00) | ($20,000.00) | ($20,000.00) | ($20,000.00) | |
| Operational Labor | ($45,000.00) | ($92,700.00) | ($95,481.00) | ($98,345.43) | ($101,295.79) | |
| **Total Operational Costs** | ($100,000.00) | ($202,700.00) | ($205,481.00) | ($208,345.43) | ($211,295.79) | |
| | | | | | | |
| **Total Costs** | ($325,000.00) | ($202,700.00) | ($205,481.00) | ($208,345.43) | ($211,295.79) | ($1,152,822.22) |
| **PV of Cost** | ($306,603.77) | ($180,402.28) | ($172,525.81) | ($165,029.09) | ($157,892.51) | ($982,453.46) |
| **Cumulative PV of Cost** | ($306,603.77) | ($487,006.05) | ($659,531.86) | ($824,560.96) | ($982,453.46) | |
| | | | | | | |
| **Profit (Benefit - Cost)** | ($250.00) | $446,800.00 | $444,019.00 | $441,154.57 | $438,204.21 | |
| **PV of Profit** | ($235.85) | $397,650.41 | $372,806.91 | $349,435.74 | $327,451.68 | **$1,447,108.89** |
| **Cumulative PV of Profit** | ($235.85) | $397,414.56 | $770,221.47 | $1,119,657.21 | $1,447,108.89 | |
| | | | | | | |
| **NPV** | $1,447,108.89 | | | | | |
| **Return on Investment** | 147.30% | | | | | |
| **Break-Even Point** | 1.0006 | | | | | |

# ESSS Requirements Gathering Overview

**Questionnaire**
We will not be using a questionnaire, because we can get the information about what data is needed to be input into the system from document analysis. Also, we can only get so much closed ended information from a questionnaire, whereas we can get much more open ended information from interviews.

**JAD**
We will not be using this because the system is not especially complex, and we do not need to involve high level management. This would result in a high cost to bring together a meeting, and get a low return.

**Observation**
We will not be using observation because it will not provide much useful information. Also, since the majority of the purpose for this system is simple employee data storage, it could take a lot of time observing to get much of any useful information. This would result in a high cost and low return.

**Interviews**
We will also interview local users in Florida to ask more open ended questions. This will allow employees to expand on reasons why they want certain features, and to give them an opportunity to recommend new features. Also, they could point out any information they feel is left out from the old system.

**Document Analysis**
We will be using document analysis due to the quick and easy access to electronic documents and more. We will be using these four specific documents because they contain all the employee information that will be used in the system. If any data needs to be added, the lack of it in these forms will be noted.

# ESSS Requirements Gathering - Interviews

We will also interview local users in Florida to ask more open ended questions. This will allow employees to expand on reasons why they want certain features, and to give them an opportunity to recommend new features. Also, they could point out any information they feel is left out from the old system.

| Position | Purpose of Interview |
|---|---|
| Director, HR | High level perspective, and vision for new system |
| Data Entry Clerk | User perspective on old system and new system |
| Accounting Manager | To determine tax codes, and any nuances for United Way deductions |
| United Way Relations Manager | To ensure management will have the needed tools to mange United Way contributions |

Director, HR

1. Is there any employee data you feel should be integrated into the new system?
    a. What and why: to determine if there have been high level issues caused by lack of employee data, and if so, which ones.
2. What do you see as the most important purposes for the new system? Why?
    a. To ensure all primary requirements are met.
3. How much annual turnover do you see with company employees?
    a. To get an idea of how much new employee data will be added to the system annually.
4. How many employees do we have surrounding manual labor with the current system?
    a. To get an idea of the cost savings with manual labor surrounding the current system.
5. How do you envision this system will look, from interface, to information stored, to add-on applications (such as for managerial purposes), etc.?
    a. To give a high level, visionary employee a chance to ensure that the system will provide the expected business value with the new system.
6. What information would you like to be included in the organizational structure charts and why?
    a. To specify how management wants to see the charts structured, and what information they want included.
7. Do you have a copy of the current phone book and organizational structure? Are there any changes you would like to have implemented?
    a. To determine what the organizational structure diagrams and phone book currently looks like and any changes they would like to see made.
8. Who currently has access to what information? Are there any changes you would like to have implemented?
    a. To determine access levels for the new system, and any changes they would like to see made.
9. How many people do you envision using the system at one time?
    a. To get a better idea of how much load the server will need to handle.
10. How many managers does the company employ?
    a. To better understand how many reports and organizational charts will be pulled.

Data Entry Clerk

1. Can you give an example of problems that commonly occur in the current system?

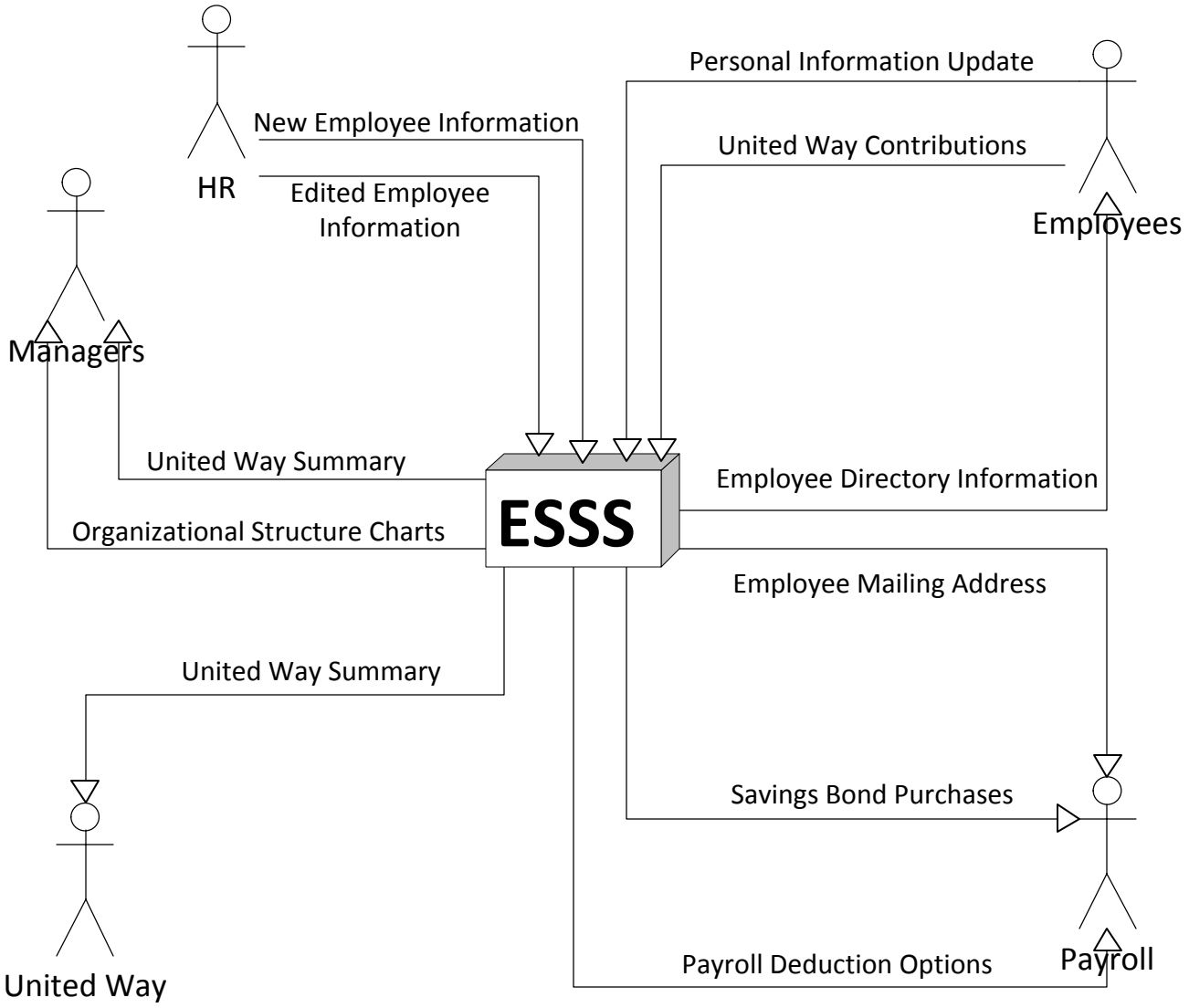
    a. What and why: to get a user's perspective of basic level issues with the current system that could relate to the new system.
2. What improvements would you like to see in the new system?
    a. To give a low level employee who commonly works with the current system a chance to point out anything they see wrong from a basic level.
3. How many hours a day do you spend entering data into the system?
    a. To find out how much cost savings we will see.
4. How much time do you think you should be spending entering data into the system?
    a. To determine how much improvement the user expects to see in the new system.
5. How many new entries do you have per week?
    a. To get an idea of the level of load we will see on the system.
6. What issues do you see with the current phone book and why?
    a. To get a low level employee's perspective on current issues with the phone book, with possible implications for the new system.
7. Is there any information that you currently do not have access that would be useful? If so, why?
    a. To see if there should be any possible changes with data access recommended to management.

# ESSS Requirements Gathering - Document Analysis

We will be using document analysis due to the quick and easy access to electronic documents and more. We will be using these four specific documents because they contain all the employee information that will be used in the system. If any data needs to be added, the lack of it in these forms will be noted.

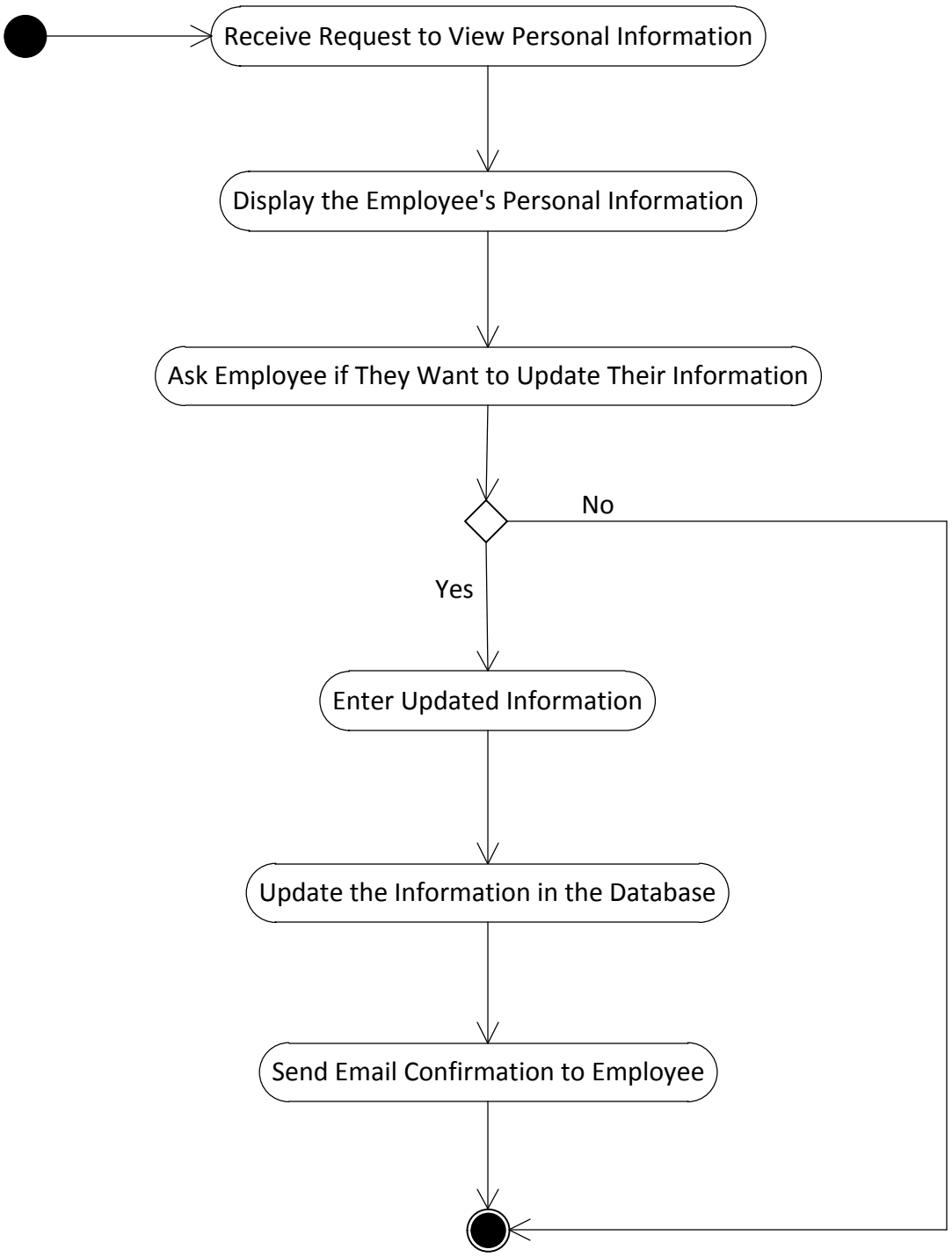
- Phonebook
  - We want to make sure we retain all the data in the old phone books that were used.
  - We also want to see if there's any types of information that are missing
  - Make sure data stays in a similar format to reduce end user training costs
- Personnel Form Examples
  - Again, make sure we incorporate any data from the old forms, and make sure to add in any data fields that are missing from the old system
  - Make sure data stays in a similar format to reduce end user training costs
- United Way Forms
  - Determine what data needs to be integrated into the United Way application
  - Get an idea for what kind of interface to use for data entry for the application
- HR Forms
  - Any forms used by HR that have data needed for the system will be analyzed to ensure all required data will be integrated
- Organizational Structure Charts
  - View current formatting to see how they are laid out and what information is included
- United Way Participation Reports
  - View current reports to see how information is laid out and what information is included

# ESSS Context Diagram



# ESSS Activity Diagram

## Update Personal Information



**{ESSS}**

**Author (s): Team B** **Date: 10/13/2011**

**Version: 1**

| | | |
|---|---|---|
| **USE CASE NAME:** | Generate Organizational Structure Chart | **USE CASE TYPE** |
| **USE CASE ID:** | 100A | **Business Requirements:** ☑ |
| **PRIORITY:** | Medium | |
| **SOURCE:** | | |
| **PRIMARY BUSINESS ACTOR:** | Manager | |
| **OTHER PARTICIPATING ACTORS:** | • None | |
| **OTHER INTERESTED STAKEHOLDERS:** | • None | |
| **DESCRIPTION:** | This use case describes the event of a manager generating an organizational structure chart. The manager selects which department(s) they wish to generate. Once they select the department(s), the ESSS will display the selected chart. If the manager so chooses, they can then print out the chart. | |
| **PRE-CONDITION:** | The user accessing the reports must be a manager.<br>The user must log into the system by providing their user ID and password. | |
| **TRIGGER:** | This use case is initiated when the user accesses the management reports. | |
| **TYPICAL COURSE OF EVENTS:** | **Actor Action** | **System Response** |
| | **Step 1**: The manager requests to generate an organizational structure chart. | **Step 2**: The system responds by asking the manager to select which department(s) they wish to generate. |
| | **Step 3**: The manager selects which department(s) they wish to include. | **Step 4**: The system gets the employees in the selected department(s) from the directory. |
| | | **Step 5**: The system gets the corresponding superiors from the directory. |
| | | **Step 6**: The system compiles the data and generates the organizational structure chart. |
| | **Step 7**: The manager views the chart. | **Step 8**: The system asks the manager if they want to print the chart |
| | **Step 9**: The manager instructs the system to print the chart. | **Step 10**: The system prints the chart and continues to display the chart. |
| **ALTERNATE COURSES:** | **Alt-Step 9**: The manager instructs the system not to print. | |
| **CONCLUSION:** | This use case concludes when the manager closes the application. | |
| **POST-CONDITION:** | None | |
| **BUSINESS RULES** | • Manager must have correct access to view organization structure chart<br>• Organizational structure charts will not be saved to prevent the use of outdated charts | |
| **IMPLEMENTATION CONTRAINTS AND SPECIFICATIONS** | • Use case must be available to the manager 24 x 7<br>• Frequency – it is estimated that this use case will be executed 5,000 times per day. It should support up to 1,000 concurrent users. | |
| **ASSUMPTIONS:** | • Reports will only update when they are re-generated | |
| **OPEN ISSUES:** | None | |

**{ESSS}**

**Author (s): _Team B_____** **Date: _10/13/2011___**

**Version: __1___**

| | | |
|---|---|---|
| **USE CASE NAME:** | View United Way Contribution Summary | **USE CASE TYPE** |
| **USE CASE ID:** | 1003B | **Business Requirements:** ☑ |
| **PRIORITY:** | Medium | |
| **SOURCE:** | | |
| **PRIMARY BUSINESS ACTOR:** | Manager or United Way | |
| **OTHER PARTICIPATING ACTORS:** | • None | |
| **OTHER INTERESTED STAKEHOLDERS:** | • None | |
| **DESCRIPTION:** | This use case describes the event of a manager or United Way accessing the United Way contribution summary. The user selects which location(s) they wish to view. Once they select the location(s), the ESSS will display the selected summary. If the user so chooses, they can then print out the report. | |
| **PRE-CONDITION:** | The user accessing the reports must be a manager or a United Way employee. The user must log into the system by providing their user ID and password. | |
| **TRIGGER:** | This use case is initiated when the user accesses the management reports. | |
| **TYPICAL COURSE OF EVENTS:** | **Actor Action** | **System Response** |
| | **Step 1**: The user requests to view the United Way contribution summary. | **Step 2**: The system responds by asking the user to select which location(s) they wish to view. |
| | **Step 3**: The user selects which location(s) they wish to view. | **Step 4**: The system gets the percentage of participation from the 'Contributing' Boolean value and determining where the employee with the listed ID is located. |
| | | **Step 5**: The system gets the types of contributions and amounts. |
| | | **Step 6**: The system generates and displays the selected summary. |
| | **Step 7**: The manager views the summary. | **Step 8**: The system asks the manager or United Way employee if they want to print the summary. |
| | **Step 9**: The manager or United Way employee instructs the system to print the summary. | **Step 10**: The system prints the summary and continues to display the summary. |
| **ALTERNATE COURSES:** | **Alt-Step 9**: The manager or United Way employee instructs the system not to print. | |
| **CONCLUSION:** | This use case concludes when the manager closes the application. | |
| **POST-CONDITION:** | None | |
| **BUSINESS RULES** | • Manager must have correct access to view organization structure chart<br>• United Way employee must have the pre-supplied login information (which only has access to these summaries) to access the ESSS<br>• Contribution summaries will not be saved to prevent the use of outdated information | |
| **IMPLEMENTATION CONTRAINTS AND SPECIFICATIONS** | • Use case must be available 24 x 7<br>• Frequency – it is estimated that this use case will be executed 200 times per day. It should support up to 50 concurrent users. | |
| **ASSUMPTIONS:** | • Summaries will update when they are re-loaded, not once they are on- | |

| | |
|---|---|
| | screen |
| **OPEN ISSUES:** | None |

**{ESSS}**

**Author (s): _Team B_____** **Date: _10/13/2011_**

**Version: __1_____**

| | | |
|---|---|---|
| **USE CASE NAME:** | Update Personal Information | **USE CASE TYPE** |
| **USE CASE ID:** | 101A | **Business Requirements:** ☑ |
| **PRIORITY:** | High | |
| **SOURCE:** | | |
| **PRIMARY BUSINESS ACTOR:** | Employee | |
| **OTHER PARTICIPATING ACTORS:** | • None | |
| **OTHER INTERESTED STAKEHOLDERS:** | • Manager<br>• HR Employee<br>• Payroll Employee | |
| **DESCRIPTION:** | This use case describes the event of an employee updating their personal information. The employee selects what information to update. Once they select which information to update, the ESSS will allow the information to be edited, assuming their permission level allows. When the employee is done editing their personal information, the database is updated. | |
| **PRE-CONDITION:** | The user must log into the system by providing their user ID and password. | |
| **TRIGGER:** | This use case is initiated when the user accesses their personal information. | |
| **TYPICAL COURSE OF EVENTS:** | **Actor Action** | **System Response** |
| | **Step 1**: The employee requests to view their personal information. | **Step 2**: The system displays the employee's personal information currently stored in the database. |
| | **Step 3**: The employee views their personal information | **Step 4**: The system asks the employee if they want to update their information. |
| | **Step 5**: The employee enters the updated information | **Step 6**: The system updates the information in the database and sends a confirmation email. |
| **ALTERNATE COURSES:** | **Alt-Step 5**: The employee verifies their information is correct and closes the application. | |
| **CONCLUSION:** | This use case concludes when the employee closes the application. | |
| **POST-CONDITION:** | None | |
| **BUSINESS RULES** | • Employee can only edit their own information. | |
| **IMPLEMENTATION CONTRAINTS AND SPECIFICATIONS** | • Use case must be available to the employee 24 x 7.<br>• Frequency – it is estimated that this use case will be executed 1,500 times per day. It should support up to 500 concurrent users.<br>• The first day of system implementation the company will need to stagger when employees can update their information by location and department. | |
| **ASSUMPTIONS:** | • All personal information in the database is up to date (it is the employee's responsibility to ensure it is up to date). | |
| **OPEN ISSUES:** | None | |

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**Author (s): Team B** **Date: 10/13/2011**

**Version: 1**

| | | | |
|---|---|---|---|
| **USE CASE NAME:** | Access Employee Directory | | **USE CASE TYPE** |
| **USE CASE ID:** | 101B | | **Business Requirements:** ☑ |
| **PRIORITY:** | Medium | | |
| **SOURCE:** | | | |
| **PRIMARY BUSINESS ACTOR:** | Employee | | |
| **OTHER PARTICIPATING ACTORS:** | • None | | |
| **OTHER INTERESTED STAKEHOLDERS:** | • None | | |
| **DESCRIPTION:** | This use case describes the event of an employee accessing the employee directory. The employee can search by location, department, position, name, and/or phone number. When the employee executes their search, the system retrieves the information. When the employee is done viewing the information, they can choose to print. | | |
| **PRE-CONDITION:** | The user must log into the system by providing their user ID and password. | | |
| **TRIGGER:** | This use case is initiated when the user queries the employee directory. | | |
| **TYPICAL COURSE OF EVENTS:** | **Actor Action** | **System Response** | |
| | **Step 1**: The employee searches the directory by any or all of: location, department, position, name, or phone number. | **Step 2**: The system queries the database for the employee search request and displays the information from the database. | |
| | **Step 3**: The employee views the information. | **Step 4**: The system asks the employee if they want to print the information. | |
| | **Step 5**: The employee tells the system not to print the information. | **Step 6**: The system continues to display the information. | |
| **ALTERNATE COURSES:** | **Alt-Step 5**: The employee tells the system to print the information. | | |
| | **Alt-Step 6**: The system prints the information and continues to display the information. | | |
| **CONCLUSION:** | This use case concludes when the employee closes the application. | | |
| **POST-CONDITION:** | None | | |
| **BUSINESS RULES** | • None | | |
| **IMPLEMENTATION CONTRAINTS AND SPECIFICATIONS** | • Use case must be available to the employee 24 x 7.<br>• Frequency – it is estimated that this use case will be executed 20,000 times per day. It should support up to 5,000 concurrent users. | | |
| **ASSUMPTIONS:** | • All personal information in the database is up to date (it is the employee's responsibility to ensure it is up to date). | | |
| **OPEN ISSUES:** | None | | |

**{ESSS}**

**Author (s): Team B** **Date: 10/13/2011**

**Version: 1**

| | | | |
|---|---|---|---|
| **USE CASE NAME:** | Enter United Way Contribution | | **USE CASE TYPE** |
| **USE CASE ID:** | 101C | | **Business Requirements:** ☑ |
| **PRIORITY:** | Medium | | |
| **SOURCE:** | | | |
| **PRIMARY BUSINESS ACTOR:** | Employee | | |
| **OTHER PARTICIPATING ACTORS:** | • None | | |
| **OTHER INTERESTED STAKEHOLDERS:** | • Manager<br>• Payroll Employee<br>• United Way | | |
| **DESCRIPTION:** | This use case describes the event of an employee entering their United Way contributions for the year. The employee selects if they wish to contribute for the year. If they choose to contribute, they will be given options to select, and the information will be stored in the database. | | |
| **PRE-CONDITION:** | The user must log into the system by providing their user ID and password. | | |
| **TRIGGER:** | This use case is initiated when the user accesses the United Way application. | | |
| **TYPICAL COURSE OF EVENTS:** | **Actor Action** | **System Response** | |
| | **Step 1**: The employee requests to enter their annual United Way contributions. | **Step 2**: The system gives the employee the option of whether or not to contribute. | |
| | **Step 3**: The employee selects 'yes'. | **Step 4**: The system asks the employee what type of contribution they would like to make. | |
| | **Step 5**: The employee selects the type of contribution they would like to make. | **Step 6**: The system asks the employee how much or what percentage they would like to make. | |
| | **Step 7**: The employee enters how much or what percentage they would like to make. | **Step 8**: The system enters the information into the database and sets the employee attribute UnitedWayComplete to true. | |
| **ALTERNATE COURSES:** | **Alt-Step 3**: The employee selects 'no', and the system sets the employee attribute UnitedWayComplete to true, then closes the application. | | |
| **CONCLUSION:** | This use case concludes when the employee closes the application. | | |
| **POST-CONDITION:** | None | | |
| **BUSINESS RULES** | • | | |
| **IMPLEMENTATION CONTRAINTS AND SPECIFICATIONS** | • Use case must be available to the employee 24 x 7.<br>• Frequency – it is estimated that this use case will be executed 1,000 times per day. It should support up to 250 concurrent users.<br>• When employees are required to enter this information, they need to be staggered throughout a week's time. | | |
| **ASSUMPTIONS:** | • All employees will have entered their contributions by the end of the period given. | | |
| **OPEN ISSUES:** | None | | |

**{ESSS}**

**Author (s): Team B** **Date: 10/13/2011**

**Version: 1**

| | | | |
|---|---|---|---|
| **USE CASE NAME:** | Add New Employee | | **USE CASE TYPE** |
| **USE CASE ID:** | 102A | | **Business Requirements:** ☑ |
| **PRIORITY:** | Medium | | |
| **SOURCE:** | | | |
| **PRIMARY BUSINESS ACTOR:** | HR Employee | | |
| **OTHER PARTICIPATING ACTORS:** | • None | | |
| **OTHER INTERESTED STAKEHOLDERS:** | • Manager<br>• Employee<br>• Payroll Employee | | |
| **DESCRIPTION:** | This use case describes the event of a HR employee adding a new employee to the system and entering their basic information. The HR employee adds a new employee in the system by entering the employee's personal information. The information is then updated in the database. | | |
| **PRE-CONDITION:** | The HR employee must log into the system by providing their user ID and password. | | |
| **TRIGGER:** | This use case is initiated when an HR employee adds a new employee in the system. | | |
| **TYPICAL COURSE OF EVENTS:** | **Actor Action** | **System Response** | |
| | **Step 1**: The HR employee requests to create a new employee object in the database. | **Step 2**: The system creates a new employee object in the database. | |
| | **Step 3**: The HR employee enters the new employee's personal information, including first and last name, mobile and home phone, address, home email, emergency contact information, ID Number, work phone, work email, location, desk number, superior, position, department, and start date. | **Step 4**: The new employee's information is updated in the database and sends and email to the new employee asking them to verify their personal information. | |
| **ALTERNATE COURSES:** | | | |
| **CONCLUSION:** | This use case concludes when the HR employee closes the application. | | |
| **POST-CONDITION:** | None | | |
| **BUSINESS RULES** | • | | |
| **IMPLEMENTATION CONTRAINTS AND SPECIFICATIONS** | • Use case must be available to the employee 24 x 7.<br>• Frequency – it is estimated that this use case will be executed 100 times per day. It should support up to 50 concurrent users. | | |
| **ASSUMPTIONS:** | • The HR employee will already have the new employee's information to be entered. | | |
| **OPEN ISSUES:** | None | | |

**{ESSS}**

**Author (s): _Team B_____** **Date: _10/13/2011_**

**Version: __1_____**

| | | |
|---|---|---|
| **USE CASE NAME:** | Edit Employee Information | **USE CASE TYPE** |
| **USE CASE ID:** | 102B | **Business Requirements:** ☑ |
| **PRIORITY:** | Medium | |
| **SOURCE:** | | |
| **PRIMARY BUSINESS ACTOR:** | HR Employee | |
| **OTHER PARTICIPATING ACTORS:** | • None | |
| **OTHER INTERESTED STAKEHOLDERS:** | • Employee | |
| **DESCRIPTION:** | This use case describes the event of an HR employee editing an employee's information. The HR employee selects what information to edit. Once they select which information to edit, the ESSS will take in the new information, assuming their permission level allows. When the employee is done editing their personal information, the database is updated. | |
| **PRE-CONDITION:** | The user must log into the system by providing their user ID and password. | |
| **TRIGGER:** | This use case is initiated when an HR employee accesses an employee's information. | |
| **TYPICAL COURSE OF EVENTS:** | **Actor Action** | **System Response** |
| | **Step 1**: The HR employee requests to view an employee's information. | **Step 2**: The system displays the employee's personal information currently stored in the database. |
| | **Step 3**: The HR employee views the employee's current information and enters the new information (could include special permissions, location, desk number, superior, position, department, or end date) | **Step 4**: The system updates in the information in the database and sends a confirmation email to the employee and the employee's superior. |
| **ALTERNATE COURSES:** | | |
| **CONCLUSION:** | This use case concludes when the system sends the confirmation emails. | |
| **POST-CONDITION:** | None | |
| **BUSINESS RULES** | • Only HR employees can edit an employee's information. | |
| **IMPLEMENTATION CONTRAINTS AND SPECIFICATIONS** | • Use case must be available to the employee 24 x 7.<br>• Frequency – it is estimated that this use case will be executed 1,500 times per day. It should support up to 500 concurrent users. | |
| **ASSUMPTIONS:** | • None | |
| **OPEN ISSUES:** | None | |

**{ESSS}**

**Author (s): _Team B_____** **Date: _10/13/2011___**

**Version: __1____**

| | | |
|---|---|---|
| **USE CASE NAME:** | Get Current Address | **USE CASE TYPE** |
| **USE CASE ID:** | 104A | **Business Requirements:** ☑ |
| **PRIORITY:** | Medium | |
| **SOURCE:** | | |
| **PRIMARY BUSINESS ACTOR:** | Payroll Employee | |
| **OTHER PARTICIPATING ACTORS:** | • None | |
| **OTHER INTERESTED STAKEHOLDERS:** | • Employee | |
| **DESCRIPTION:** | This use case describes the event of a payroll employee updating the employee addresses in the payroll system to ensure paychecks go to the correct address. | |
| **PRE-CONDITION:** | The user must login to the system by providing their user ID and password. | |
| **TRIGGER:** | This use case is initiated when a payroll employee accesses the directory. | |
| **TYPICAL COURSE OF EVENTS:** | **Actor Action** | **System Response** |
| | **Step 1**: The payroll employee requests the addresses updated since the last payroll address update (the date is stored in the update log file in the directory). | **Step 2**: The system queries the directory for any addresses updated since the given date (last updated date is in the change log file in the directory). |
| | | **Step 3**: The system compiles the data in a file and includes both the employee ID number and the updated address. |
| | | **Step 4**: The system sends the file to the payroll employee's computer. |
| | **Step 5**: The payroll employee receives the file and submits it to the payroll system. | |
| **ALTERNATE COURSES:** | | |
| **CONCLUSION:** | This use case concludes when the payroll employee receives the file. | |
| **POST-CONDITION:** | None | |
| **BUSINESS RULES** | • The user must be logging in from an internal computer. | |
| **IMPLEMENTATION CONTRAINTS AND SPECIFICATIONS** | • Use case must be available to the payroll department 24 x 7<br>• Frequency – it is estimated that this use case will be executed 25 times per day. It should support up to 25 concurrent users. | |
| **ASSUMPTIONS:** | • None | |
| **OPEN ISSUES:** | None | |

**{ESSS}**

**Author (s): Team B** **Date: 10/13/2011**

**Version: 1**

| | | |
|---|---|---|
| **USE CASE NAME:** | Get Savings Bond Purchases | **USE CASE TYPE** |
| **USE CASE ID:** | 104B | **Business Requirements:** ☑ |
| **PRIORITY:** | Medium | |
| **SOURCE:** | | |
| **PRIMARY BUSINESS ACTOR:** | Payroll Employee | |
| **OTHER PARTICIPATING ACTORS:** | • None | |
| **OTHER INTERESTED STAKEHOLDERS:** | • Employee | |
| **DESCRIPTION:** | This use case describes the event of a payroll employee updating the employee savings bond purchases in the payroll system. | |
| **PRE-CONDITION:** | The user must login to the system by providing their user ID and password, which must have payroll level access. | |
| **TRIGGER:** | This use case is initiated when a payroll employee accesses the directory. | |

| **TYPICAL COURSE OF EVENTS:** | **Actor Action** | **System Response** |
|---|---|---|
| | **Step 1**: The payroll employee requests the savings bond purchases made since the last payroll savings bond purchases update (the date is stored in the update log file in the directory). | **Step 2**: The system queries the directory for any savings bond purchases made since the given date (last updated date is in the change log file in the directory). |
| | | **Step 3**: The system compiles the data in a file, consisting of the employee savings bond purchases and employee ID number. |
| | | **Step 4**: The system sends the file to the payroll employee's computer. |
| | **Step 5**: The payroll employee receives the file and submits it to the payroll system. | |

| | |
|---|---|
| **ALTERNATE COURSES:** | |
| **CONCLUSION:** | This use case concludes when the payroll employee receives the file. |
| **POST-CONDITION:** | None |
| **BUSINESS RULES** | • The user must be logging in from an internal computer.<br>• Only payroll managers are given access to this data. |
| **IMPLEMENTATION CONTRAINTS AND SPECIFICATIONS** | • Use case must be available to the payroll department 24 x 7<br>• Frequency – it is estimated that this use case will be executed 25 times per day. It should support up to 25 concurrent users. |
| **ASSUMPTIONS:** | • None |
| **OPEN ISSUES:** | None |

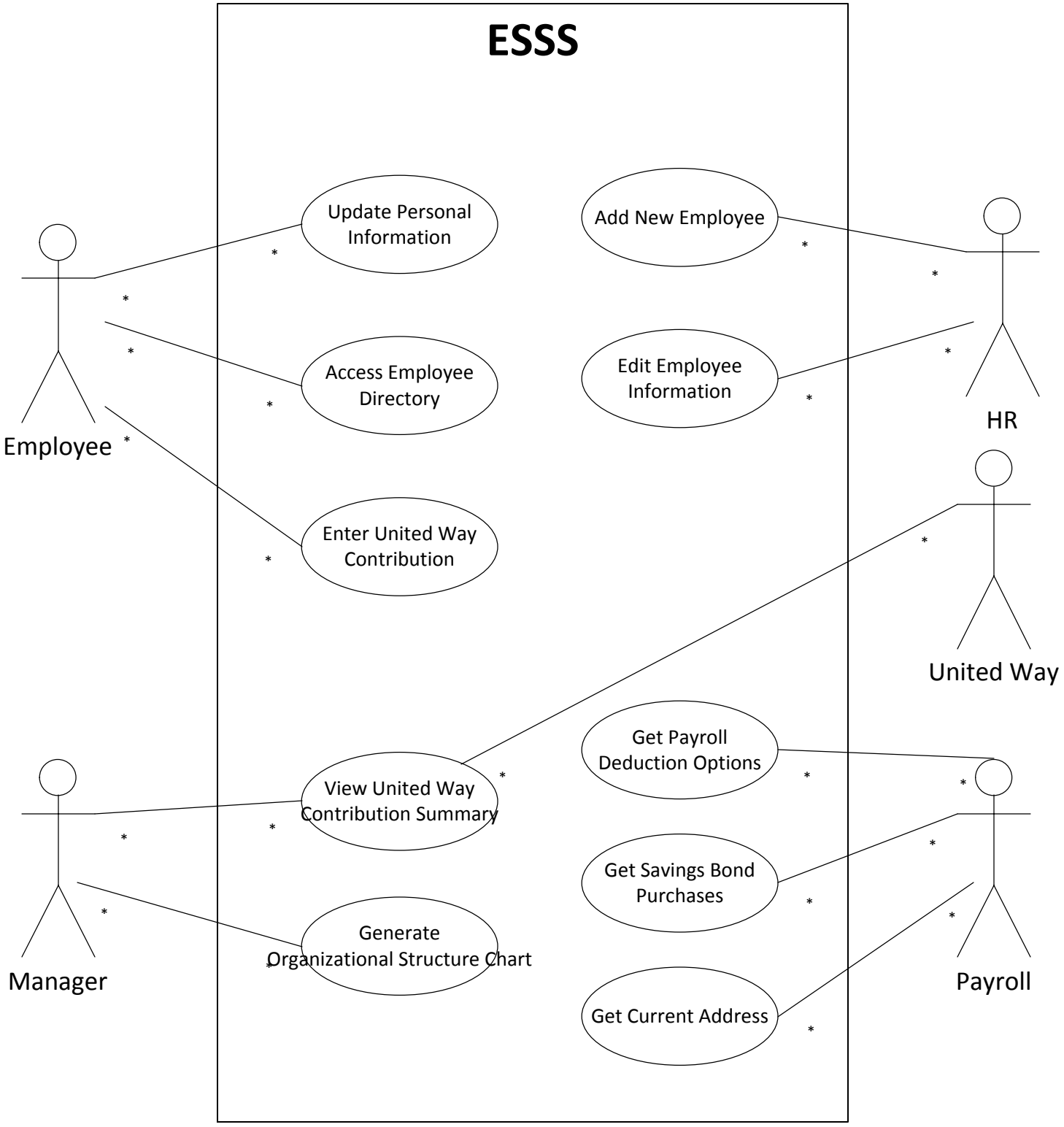
**{ESSS}**

**Author (s): Team B** **Date: 10/13/2011**

**Version: 1**

| | | |
|---|---|---|
| **USE CASE NAME:** | Get Payroll Deduction Options | **USE CASE TYPE** |
| **USE CASE ID:** | 104C | **Business Requirements:** ☑ |
| **PRIORITY:** | Medium | |
| **SOURCE:** | | |
| **PRIMARY BUSINESS ACTOR:** | Payroll Employee | |
| **OTHER PARTICIPATING ACTORS:** | • None | |
| **OTHER INTERESTED STAKEHOLDERS:** | • Employee | |
| **DESCRIPTION:** | This use case describes the event of a payroll employee updating the employee payroll deduction options in the payroll system. | |
| **PRE-CONDITION:** | The user must login to the system by providing their user ID and password, which must have payroll level access. | |
| **TRIGGER:** | This use case is initiated when a payroll employee accesses the directory. | |
| **TYPICAL COURSE OF EVENTS:** | **Actor Action** | **System Response** |
| | **Step 1**: The payroll employee requests the payroll deduction options updated since the last payroll deduction options update (the date is stored in the update log file in the directory). | **Step 2**: The system queries the directory for any payroll deduction options updated since the given date (last updated date is in the change log file in the directory). |
| | | **Step 3**: The system compiles the data in a file, including the employee payroll deduction options and employee ID number. |
| | | **Step 4**: The system sends the file to the payroll employee's computer. |
| | **Step 5**: The payroll employee receives the file and submits it to the payroll system. | |
| **ALTERNATE COURSES:** | | |
| **CONCLUSION:** | This use case concludes when the payroll employee receives the file. | |
| **POST-CONDITION:** | None | |
| **BUSINESS RULES** | • The user must be logging in from an internal computer.<br>• Only payroll managers are given access to this data. | |
| **IMPLEMENTATION CONTRAINTS AND SPECIFICATIONS** | • Use case must be available to the payroll department 24 x 7<br>• Frequency – it is estimated that this use case will be executed 25 times per day. It should support up to 25 concurrent users. | |
| **ASSUMPTIONS:** | • None | |
| **OPEN ISSUES:** | None | |

# ESSS Use Case Diagram



## *CRC Card*

**Front:**

| **Class Name:** Organizational Structure Chart | **ID:** 200A | **Type:** Concrete |
|---|---|---|
| **Description:** For managers to generate, print, and view organizational charts. | | **Associated Use Cases:** 100B |
| **Responsibilities**<br>PrintChart()<br>GenerateOrgChart() | | **Collaborators**<br>Directory<br>Employee<br>Manager |

**Back:**

**Attributes:**

Log

**Relationships**:

**Generalization (a-kind-of):**

**Aggregation (has-parts):**

**Other Associations:** Employee, Manager, Directory

## *CRC Card*

**Front:**

| **Class Name:** Directory | **ID:** 201A | **Type:** Concrete |
|---|---|---|
| **Description:** For employees and applications to access the directory. | | **Associated Use Cases:** 100A, 101A, 101B, 102A, 104A, 104B, 104C |

| **Responsibilities** | **Collaborators** |
|---|---|
| PrintDirectory() | Organizational Structure Chart |
| AccessLevelCheck() | Employee |
| UpdateDirectory() | PayrollEmployee |
| SearchDirectory() | |
| GetCurrentAddress() | |
| GetSavingsBondPurchases() | |
| GetPayrollDeductionOptions() | |
| GetEmployeesByDepartment() | |
| GetSuperiorsByDepartment() | |

**Back:**

**Attributes:**

| | |
|---|---|
| Change Log | |
| Payroll Update Log | |

**Relationships**:

**Generalization (a-kind-of):**

**Aggregation (has-parts):** Person, Employee, Payroll Employee

**Other Associations:**

## *CRC Card*

**Front:**

| **Class Name:** Person | **ID:** 201B | **Type:** Superclass |
|---|---|---|
| **Description:** An individual person | | **Associated Use Cases:** 101A, 102A |

| **Responsibilities** | **Collaborators** |
|---|---|
| CreatePerson() | Employee |
| RemovePerson() | |
| UpdatePerson() | |

**Back:**

**Attributes:**

| | |
|---|---|
| First Name | Emergency Contact Name |
| Last Name | Emergency Contact Phone |
| Mobile Phone | Emergency Contact Address |
| Home Phone | |
| Address | |
| Home Email | |

**Relationships**:

**Generalization (a-kind-of):**

**Aggregation (has-parts):**

**Other Associations:** Employee, Manager, HR Employee

## *CRC Card*

**Front:**

| **Class Name:** Employee | **ID:** 201C | **Type:** Subclass |
|---|---|---|
| **Description:** An individual who is a Person, and an Employee | | **Associated Use Cases:** 100A, 100B, 101A, 101B, 101C, 102A, 102B, 1003B, 104A, 104B, 104C |

| **Responsibilities** | **Collaborators** |
|---|---|
| CreateEmployee() | Person |
| RemoveEmployee() | HR Employee |
| UpdateEmployee() | Manager |
| | Payroll Employee |
| | Directory |
| | United Way Contributions |
| | Organizational Structure Charts |

**Back:**

**Attributes:**

| | |
|---|---|
| ID Number | Location |
| Work Phone | Desk Number |
| Work Email | Superior |
| Username | Position |
| Password | Department |
| Payroll Deduction Options | Start Date |
| Savings Bond Purchases | End Date |
| Special Permissions | |

**Relationships**:

**Generalization (a-kind-of):** Person

**Aggregation (has-parts):**

**Other Associations:** Manager, HR Employee

## *CRC Card*

**Front:**

| **Class Name:** Manager | **ID:** 201D | **Type:** Subclass |
|---|---|---|
| **Description:** An individual who is a Person, an Employee, and a Manager | | **Associated Use Cases:** 100A, 100B |

| **Responsibilities** | **Collaborators** |
|---|---|
| CreateManager() | Employee |
| RemoveManager() | United Way Contributions |
| UpdateManager() | Organizational Structure Chart |

**Back:**

**Attributes:**

Manager ID Number
In Charge Of
Special Permissions

**Relationships**:

**Generalization (a-kind-of):** Employee

**Aggregation (has-parts):**

**Other Associations:** HR Employee

## *CRC Card*

**Front:**

| **Class Name:** HR Employee | **ID:** 201E | **Type:** Subclass |
|---|---|---|
| **Description:** An individual who is a Person, an Employee, a HR Employee, and can also be a Manager | | **Associated Use Cases:** 101A, 102A, 102B |

| **Responsibilities** | **Collaborators** |
|---|---|
| CreateHREmp() | Employee |
| RemoveHREmp() | |
| UpdateHREmp() | |
| EditEmployee() | |

**Back:**

**Attributes:**

HR ID Number

Special Permissions

**Relationships**:

**Generalization (a-kind-of):** Employee

**Aggregation (has-parts):**

**Other Associations:** Manager

## *CRC Card*

**Front:**

| **Class Name:** United Way Contributions | **ID:** 203A | **Type:** Concrete |
|---|---|---|
| **Description:** Allows employees to enter their contributions and generates a contribution summary for both managers and United Way | | **Associated Use Cases:** 101C, 1003B, 104B |

| **Responsibilities** | **Collaborators** |
|---|---|
| GetParticipationPercentage() | Employee |
| GenerateSummary() | Manager |
| EnterContributions() | |
| ClearAndLogData() | |

**Back:**

**Attributes:**

| | |
|---|---|
| UnitedWayUsername | Contribution Log |
| UnitedWayPassword | |
| Contributing | |
| ContributionType | |
| ContributionAmount | |
| EmployeeIdNumber | |

**Relationships**:

**Generalization (a-kind-of):**

**Aggregation (has-parts):**

**Other Associations:** Employee

## *CRC Card*

**Front:**

| **Class Name:** Payroll Employee | **ID:** 204A | **Type:** Concrete |
|---|---|---|
| **Description:** An individual who is a Person, an Employee, a Payroll Employee, and can also be a Manager | | **Associated Use Cases:** 104A, 104B, 104C |

| **Responsibilities** | **Collaborators** |
|---|---|
| createPayrollEmp() | Directory |
| removePayrollEmp() | Employee |
| updatePayrollEmp() | |

**Back:**

**Attributes:**

| | |
|---|---|
| Payroll ID Number | |
| Special Permissions | |

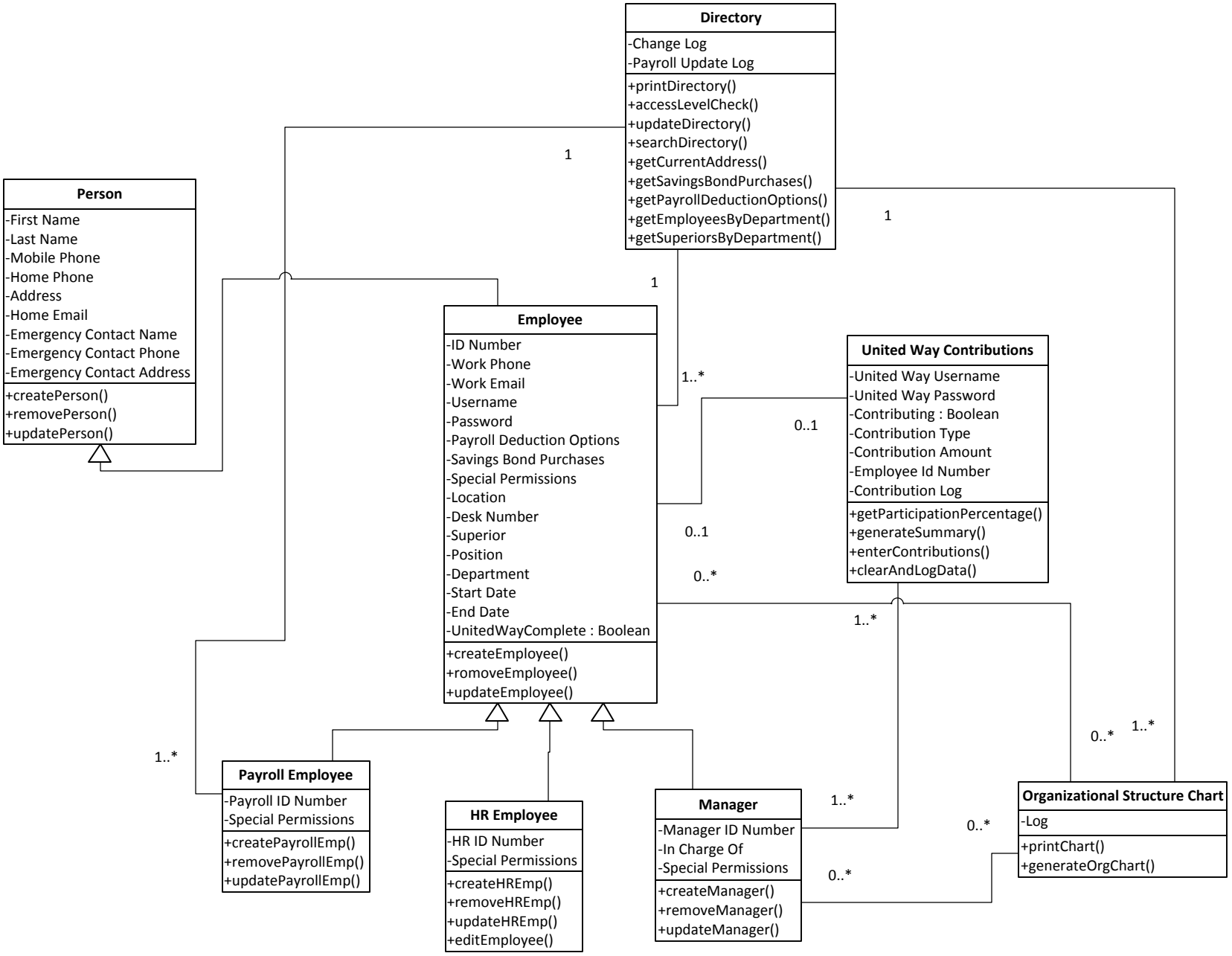
**Relationships**:

**Generalization (a-kind-of):**

**Aggregation (has-parts):**

**Other Associations:** Directory, Employee, Manager

# ESSS Class Diagram



# ESSS Sequence Diagram

## Generate Organizational Structure Chart