Accounting and Finance Requirements Specification

Version 1.0

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# Executive Summary

## Project Overview

* An accounting system is a collection of interrelated processes designed to accumulate, organize, and report on an organization’s transactions. The ultimate goal of an accounting system is to generate reports based on this information to support management decision-making. These reports help management make well-informed decisions.
* In order to integrate a new and effective accounting system into an organization it must go through a process referred to as an “implementation.” An implementation involves a series of steps that begins with a plan and ends with the achievement of a “go live” milestone.

The following list of steps is a conceptual overview of the implementation process for a generic organization. Various factors, such as the expertise of an organization’s IT department or the organization’s available resources, will influence the design and the related implementation steps required to achieve the go-live plan.

## Purpose and Scope of this Specification

Accounting is widely applicable in the business sector. Today, in the modern world, most of the people are engaged in business sector and all businessmen follow Generally Accepted Accounting Principle to find out profit, loss and financial position of business firm.

Though, Government organizations do not follow Generally Accepted Accounting Principle its keep systematic records of all transactions in order to find the position of public fund.

Individuals also perform economic activities to earn their livelihood. They also perform some form of accounting to draw financial information for making personal economic decision.

In scope

Monitors and maintain all the accounting and financial transactions.

Gives accurate report pertaining to sales.

Gives detailed general ledger.

Manage payroll.

Accurate audited financial management.

**Out of Scope**

Dependence on historical cost

Inflationary effects

Based on specific time period

Not always comparable

Subject to fraud

No discussion of financial issues

No predictable value

# Product/Service Description

Accounting and financial services includes various types of services used in business to comply with federal, state and local regulations.  Services also involve consultation and planning to improve business performance and other necessary business needs.

Bookkeeping services (bookkeepers) help businesses manage cash flow transactions including all of the company's purchases, sales, receipts, and payments. Bookkeepers make sure that these transactions are posted to the correct ledger in accordance with accepted financial accounting services and practices. It is essential that bookkeepers maintain accurate records because this information is used to prepare the company's tax returns. Bookkeeping software can help maintain accuracy as well as eliminate much of the paperwork associated with manual bookkeeping practices.

Payroll services handle all aspects of payroll processing and employee payroll tax filing. Employers submit payroll data to the payroll service provider electronically or over the phone. Payroll service companies then process this data and transfer the appropriate funds from the employer to the employees via check or direct deposit. After the payroll processing is complete, payroll service companies will provide payroll reports to the employer.

Tax services prepare federal, state, and local tax returns for businesses based on the company's cash flow for the given year. Many businesses choose to consult accounting tax service providers for guidance on making tax-efficient business decisions. Additionally, accounting tax services can provide consulting with regard to tax law and compliance.

Accounting audit service providers ensure that their clients' financial information is being managed in compliance with accounting standards and regulations. Both public and private companies often choose to work with auditors to certify that no dishonest behavior such as embezzlement or misuse of funds is going on inside the organization. This practice reassures investors and employees that the company is being managed properly. Audits can be performed by an external auditing firm or by an internal member of the accounting department. However, internal accountants cannot audit any documents with which they were involved in any way. Some companies choose to use external auditing firms to eliminate the bias that is sometimes associated with internal auditors.

## Product Context

Wine is usually made from one or more varieties of the European species vitis vinifera, such as pinot noir, chardonnay, and merlot. It can also be made from other species grape or from hybrids, created by the genetic crossing of two species. Wine has been produced for thousand of years. The earliest known traces of wine are from Georgia, Iran, and Sicily although there is evidence of a similar alcoholic beverage being consumed earlier in China. Throughout history, wine has been consumed for its intoxicating effects.

## User Characteristics

Company - improve operations, become more profitable and stay out of trouble with local and federal tax agencies. Thorough and accurate accounting can also help you to make your case with potential lenders and investors when your business is looking for financing.

Staff -

Customer -

Producer -

Management

* + Marketing and Sales -
  + Supply Chain -
  + Human Resource -

## Assumptions

The basic assumptions of financial accounting are: (1) economic entity, (2) fiscal period, (3) going concern, and (4) stable dollar. These assumptions are very important because they form the building blocks on which financial accounting measurement is based.

## Constraints

Describe any items that will constrain the design options, including

Parallel operation with an old system

Audit functions (audit trail, log files, etc.)

Access, management and security

Criticality of the application

System resource constraints (e.g., limits on disk space or other hardware limitations)

Their design constraints (e.g., design or other standards, such as programming language or framework)

## Dependencies

List dependencies that affect the requirements.

Human Resource for the Daily Time Record (DTR) of each employee.

Human Resource for the salary rate of each employee.

Marketing and Sales for the sales report.

Supply Chain Management for the total cost budget.

# Requirements

Describe all system requirements in enough detail for designers to design a system satisfying the requirements and testers to verify that the system satisfies requirements.

Organize these requirements in a way that works best for your project. See Appendix DAppendix D, Organizing the Requirements for different ways to organize these requirements.

Describe every input into the system, every output from the system, and every function performed by the system in response to an input or in support of an output. (Specify what functions are to be performed on what data to produce what results at what location for whom.)

Each requirement should be numbered (or uniquely identifiable) and prioritized.

See the sample requirements in Functional Requirements, and System Interface/Integration, as well as these example priority definitions:

Priority Definitions

* 1. The following definitions are intended as a guideline to prioritize requirements.

Priority 1 – The requirement is a “must have” as outlined by policy/law

Priority 2 – The requirement is needed for improved processing, and the fulfillment of the requirement will create immediate benefits

Priority 3 – The requirement is a “nice to have” which may include new functionality

* 1. It may be helpful to phrase the requirement in terms of its priority, e.g., "The value of the employee status sent to DIS **must be** either A or I" or "It **would be nice** if the application warned the user that the expiration date was 3 business days away". Another approach would be to group requirements by priority category.

A good requirement is:

Correct

Unambiguous (all statements have exactly one interpretation)

Complete (where TBDs are absolutely necessary, document why the information is unknown, who is responsible for resolution, and the deadline)

Consistent

Ranked for importance and/or stability

Verifiable (avoid soft descriptions like “works well”, “is user friendly”; use concrete terms and specify measurable quantities)

Modifiable (evolve the Requirements Specification only via a formal change process, preserving a complete audit trail of changes)

Does not specify any particular design

Traceable (cross-reference with source documents and spawned documents).

## Functional Requirements

This part includes all of the functional requirements of the Accounting and Finance system. Below is the requirements which has a numbering scheme - BR\_LR\_0## (BR for Business Requirement, LR for Labor Relations), and for the small projects simply BR-## would suffice.

| Req# | Requirement | Comments | Priority | Date Rvwd | Reviewed / Approved |
| --- | --- | --- | --- | --- | --- |
| * BR\_LR\_05 | * The system should associate a archive for every accounting and finance job class | * Business Process = “database recording” | * 3 | * 11/15/18 |  |
| * BR\_LR\_08 | * The system should handle any number calculated expenses, profit, etc. (existing and new) associated with accounting and finance. | * Business Process = “Changing Dues in the System” | * 2 | * 11/15/18 |  |
| * BR\_LR\_10 | * The system should capture and maintain job class status (maintaining database record capacity) | * Business Process = “Maintenance” | * 2 |  |  |
| * BR\_LR\_16 | * The system should assign the Supervisor Code based on the value in the Job Class table and additional criteria as specified in the requirement specification of accounting and finance. | * November 15 – New requirement. | * 2 |  |  |
| * BR\_LR\_18 | * The system should provide the Labor Relations department with the ability to override the system-derived Unit code for to-be-determined employee types, including hourly appointments. | * November 15 – New requirement. It is one of three new requirements. | * 3 |  |  |

## User Interface Requirements

In addition to functions required, describe the characteristics of each interface between the product and its users (e.g., required screen formats/organization, report layouts, menu structures, error and other messages, or function keys).

## Usability

Include any specific usability requirements, for example:

The system is easy to learn

The system is user-friendly

The system is aimed to understand usefulness of the Accounting and Finance System.

The system helps generate accounting reports of the company including Supply Chain Department, Human Resource Department, and Marketing and Sales Department.

## Performance

Specify static and dynamic numerical requirements placed on the system or on human interaction with the system:

Static numerical requirements may include the number of terminals to be supported, the number of simultaneous users to be supported, and the amount and type of information to be handled.

Dynamic numerical requirements may include the number of transactions and tasks and the amount of data to be processed within certain time period for both normal and peak workload conditions.

All of these requirements should be stated in measurable form. For example, "95% of the transactions shall be processed in less than 1 second" rather than “an operator shall not have to wait for the transaction to complete”.

### Capacity

### The Accounting and Finance system includes the cashiering functionalities that allows them to accept payment transactions, generate reports like collection, encashment, actual deposits, list of checks and other reports needed by the cashiers. The systems are allowed to print statement of accounts based on schedule and on the payment, plan selected by the students or parents during enrollment, like monthly, quarterly, annual and semi-annual.

### 3.4.2 Availability

Include specific and measurable requirements for:

Hours of operation

Level of availability required

Coverage for geographic areas

Impact of downtime on users and business operations

Impact of scheduled and unscheduled maintenance on uptime and maintenance communications procedures

Reliability (e.g., acceptable mean time between failures (MTBF), or the maximum permitted number of failures per hour).

### Latency

* Processing Speed
* Traffic Delays
* Digital Signal Processing Time
* Transactions per second
* Communication Latency
* Overall Network Performance/Speed

## Manageability/Maintainability

### Monitoring

Include any requirements for product or service health monitoring, failure conditions, error detection, logging, and correction.

### Maintenance

The System involves chart of account maintenance, involving chart of account maintenance, assisting with reporting and analysis, administering financial system security and providing support to administrative personnel involving budget matters.

Specify attributes of the system that relate to ease of maintenance. These requirements may relate to modularity, complexity, or interface design. Requirements should not be placed here simply because they are thought to be good design practices.

### Operations

Specify any normal and special operations required by the user, including:

Should display the real time overview of company expenses and proof.

Response time of the system in restarting due to loss of power supply or Internet connection.

Accuracy of standard costing used by the system.

Data encryption of every information in company employee.

Contingency plan and database back up for disaster recovery.

## System Interface/Integration

Specify the use of other required products (e.g., a database or operating system), and interfaces with other systems (e.g., UWHires package interfaces with PubCookie and ODS, HEPPS system interfaces with Budget system). For each interface, define the interface in terms of message format and content. For well-documented interfaces, simply provide a reference to the documentation.

Outline each interface between the product and the hardware or network components of the system. This includes configuration characteristics (e.g., number of ports, instruction sets), what devices are to be supported, and protocols (e.g., signal handshake protocols).

### Network and Hardware Interfaces

Specify the logical characteristics of each interface between the product and the hardware or network components of the system. This includes configuration characteristics (e.g., number of ports, instruction sets), what devices are to be supported, and protocols (e.g., signal handshake protocols).

### Systems Interfaces

Example systems interface requirements:

1. System1-to-System2 Interface

The <external party> will create and send a fixed length text file as an email attachment to [System2mail@u.washington.edu](mailto:heppsmai@u.washington.edu) to be imported into the System2 system for payroll calculation. This file must be received on EDIT day by 4:00 PM in order to be processed in the EDIT night run. The requirements below document the file specifications, data transfer process, and specific schedule. This file is referred to as "FileName" in this document.

File Structure and Format

* 1. The FileName file is a fixed length text file.
  2. The FileName file is an unformatted ASCII file (text-only).
  3. The FileName file contains a batch totals record and several detail records.

File Description: Batch Totals Record

* 1. The batch totals record can be placed at the beginning, in the middle, or at the end of the file.
  2. The batch totals record contains the following:

Record Type (value: XA)

Process Type (value: A)

Batch Number (3 digit number assigned by Payroll Dept)

Origin Code (AIG)

Total number of detail records

Total deduction amount

File Description: Detail Records

* 1. The FileName file contains a row for each record meeting xxx criteria.
  2. Each row in the FileName file contains the following fields, comma-delimited and encased in double-quotes where the data includes commas or spaces:

Employee Id

Record Type

Process Date (MMDDYY)

XYG Number

Element Code

Amount

Amount Sign

Year Flag

Total Amount

Total Amt Sign

## Security

### Protection

A standard security procedure with accounting and finance systems is to back up data and save the backup in a safe place outside the premises. The point is that if something happens to the system, such as fires, floods or other losses, data is safe and can be restored. A good security measure is to perform overnight backups as well as to restore backups once in a while to make sure the data is safe and usable.

### Authorization and Authentication

The systems have login IDs and passwords that authenticate the user, confirming that he is allowed to use the system. Do not share passwords and change them periodically. The authentication process usually involves giving rights to users, not all users have access to all information. Profiles can be set up giving certain users access only to the accounts payable module, while others can have access to reports only, limiting the risk of misuse of data.

## Data Management

* Financial data
* Income
* Expenses
* Profits
* Credit ratings
* Human Resource Management data
* Payroll
* Daily Time Record
* Credits and Loans of Employees
* Leaves and Absences of Employees
* Bonus and Advantages of Employees
* Supply Chain Management data
* Production expenses
* Supplier agreements
* Marketing and Sales data
* Gross sales
* Profits
* Products sold

## Standards Compliance

Specify the requirements derived from existing standards, policies, regulations, or laws (e.g., report format, data naming, accounting procedures, audit tracing). For example, this could specify the requirement for software to trace processing activity. Such traces are needed for some applications to meet minimum regulatory or financial standards. An audit trace requirement may, for example, state that all changes to a payroll database must be recorded in a trace file with before and after values.

## Portability

If portability is a requirement, specify attributes of the system that relate to the ease of porting the system to other host machines and/or operating systems. For example,

Percentage of components with host-dependent code;

Percentage of code that is host dependent;

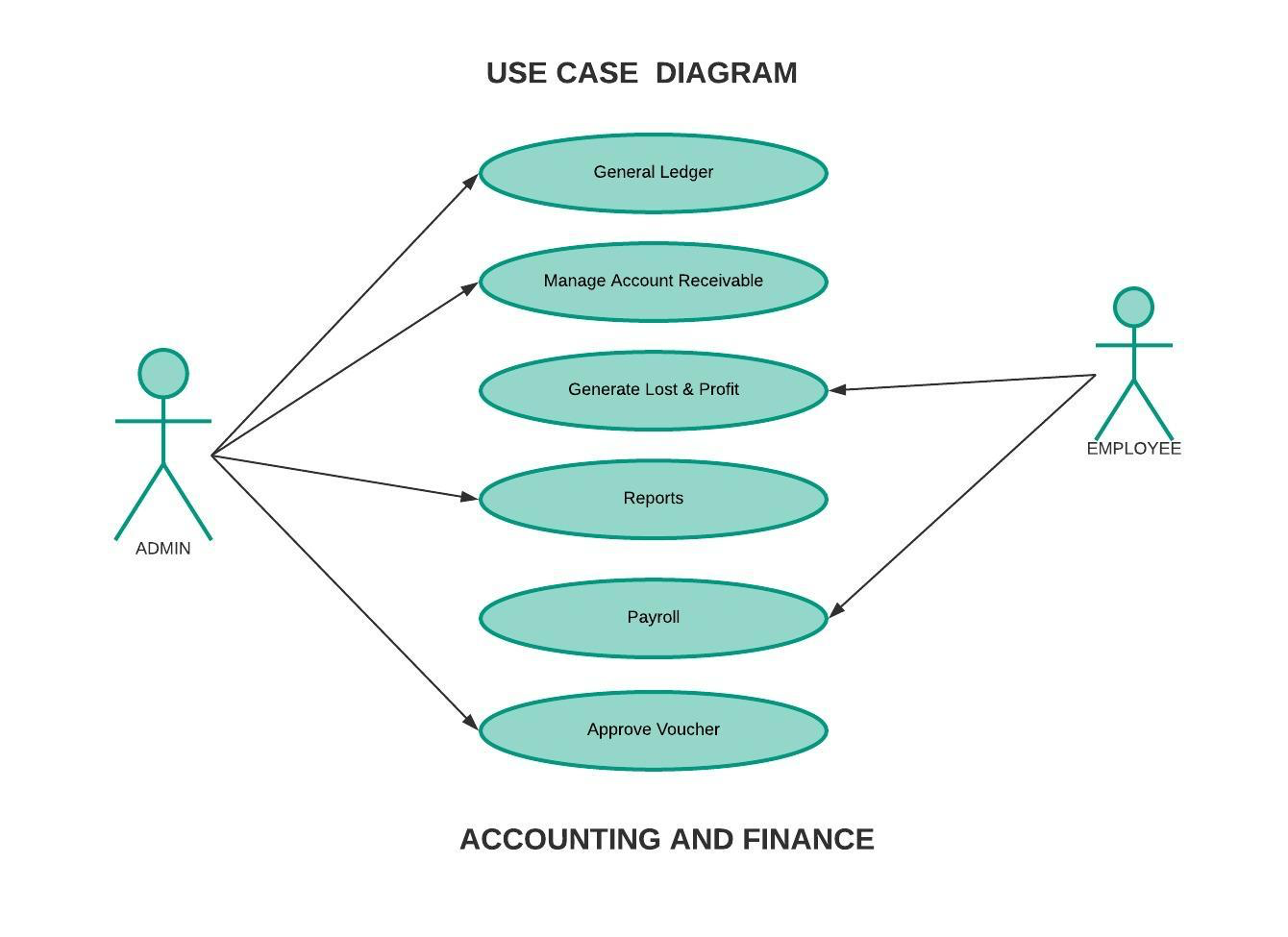
Use of a proven portable language;

Use of a particular compiler or language subset;

Use of a particular operating system;

The need for environment-independence - the product must operate the same regardless of operating systems, networks, and development or production environments.

# User Scenarios/Use Cases



Use case: **General Ledger**

*Description*: The admin must check the general ledger details per month

*Actor:* Admin

*Precondition:* The employee must provide the general ledger

*Post Condition:* Admin already examined.

Use case: **Manage Generate Lost and Profit**

*Description:* The admin must check the account receivable details per month

*Actor:* Admin

*Precondition:* Must provide all the information of the loss and profit statements.

*Post Condition:* Admin already check.

Use case: **Generate Loss and Profit**

*Description:* The admin check and manage all the loss and profit.

*Actor:* Admin

*Precondition:*

*Post Condition:* Admin already examined.

Use case: **Reports**

*Description:* The admin manage all the reports.

*Actor:* Admin

*Precondition:* Must have all the information reports including the balance sheet, income statement, cash flow statement

*Post Condition:* Admin

Use case: **Manage Payroll**

*Description:* The admin must generate the payroll.

*Actor:* Admin

*Precondition:* The employee must submit all the necessary requirements.

*Post Condition:* Admin already check the details.

Use case: **Manage Disbursement Voucher**

*Description:* The admin check and approve all the vouchers.

*Actor:* Admin

*Precondition:* The employee must provide all the needed information of the contract file.

*Post Condition:* Admin already approve disbursement voucher.

# Deleted or Deferred Requirements

Identify any requirements that have been deleted after approval or that may be delayed until future versions of the system. For example:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Req# | Business Requirement | Status | Comments | Pri | Date Rvwd | SME Reviewed /Approved |
| * BR\_LR\_01 | * The system should validate the relationship between Bargaining Unit/Location and Job Class. | * April 2005: Deleted. * This requirement has been replaced by BR\_LR\_036 and BR\_CC\_33. | * Business Process = “Assigning a Bargaining Unit to an Appointment” | * 1 | * 7/13/04 | * Bob Dylan, Mick Jagger |
| * BR\_LR\_02 | * The system should validate that the supervisor indicator is correct according to job class. * Deferred to Phase 2B: 3/29/2005 | * April 2005: Deferred to Phase 2B. | * Business Process = “Assigning a Bargaining Unit to an Appointment” | * 3 | * 7/13/04 | * Bob Dylan, Mick Jagger |
| * BR\_LR\_03 | * The system should derive the bargaining unit code, union code, and supervisor indicator from the job class code and location. | * April 2005: Deleted * Replaced by BR\_LR\_16 and BR\_LR\_17. | * Business Process = “Assigning a Bargaining Unit to an Appointment”; This will eliminate the need, typically, for the user to enter the bargaining unit code, union code and supervisor indicator. | * 1 | * 7/13/04 | * Bob Dylan, Mick Jagger |

# Requirements Confirmation/Stakeholder sign-off

Include documentation of the approval or confirmation of the requirements here. For example:

|  |  |  |
| --- | --- | --- |
| Meeting Date | Attendees (name and role) | Comments |
| * 7/13/07 | * Bob Dylan, Labor Relations SME * Mick Jagger, Labor Relations SME * Ringo Starr, Technical Project Manager * Debbie Harry, Technical Analyst * Janis Joplin, Technical Analyst * Fred Meyer, Project Manager | * Confirmed BR\_LR\_01 – BR\_LR\_15 |
| * 04/15/05 | * Bob Dylan, Labor Relations SME * Mick Jagger, Labor Relations SME * Ringo Starr, Technical Project Manager | * Deferred / Deleted: BR\_LR\_01 - BR\_LR\_04, BR\_LR\_07, BR\_LR\_12, BR\_LR\_14, BR\_LR\_15, BR\_LR\_06, BR\_LR\_17 |

APPENDIX

The appendixes are not always considered part of the actual Requirements Specification and are not always necessary. They may include

Sample input/output formats, descriptions of cost analysis studies, or results of user surveys;

Supporting or background information that can help the readers of the Requirements Specification;

A description of the problems to be solved by the system;

Special packaging instructions for the code and the media to meet security, export, initial loading, or other requirements.

When appendixes are included, the Requirements Specification should explicitly state whether or not the appendixes are to be considered part of the requirements.

Definitions, Acronyms, and Abbreviations

Define all terms, acronyms, and abbreviations used in this document.

**Accounting and Finance** - a collection of interrelated processes designed to accumulate, organize, and report on an organization’s transactions.

**Accounting and financial services** - includes various types of services used in business to comply with federal, state and local regulations.

**Bookkeeping services** – it helps businesses manage cash flow transactions including all of the company's purchases, sales, receipts, and payments.

**Payroll services** - handle all aspects of payroll processing and employee payroll tax filing.

**Tax services** – it prepares federal, state, and local tax returns for businesses based on the company's cash flow for the given year.

Accounting and Finance System –

Wine –

Marketing and Sales Management –

Human Resource Management –

Supply Chain Management -

DTR – Daily Time Record

References

List all the documents and other materials referenced in this document.

Requirements Traceability Matrix

The following trace matrix examples show one possible use of naming standards for deliverables (FunctionalArea-DocType-NN). The number has no other meaning than to keep the documents unique. For example, the Bargaining Unit Assignment Process Flow would be BUA-PF-01.

For example (1):

| **Business Requirement** | **Area** | **Deliverables** | **Status** |
| --- | --- | --- | --- |
| * BR\_LR\_01 * The system should validate the relationship between Bargaining Unit/Location and Job Class.---Comments: Business Process = "Assigning a Bargaining Unit to an Appointment" (Priority 1) | * BUA | * BUA-CD-01 * Assign BU Conceptual Design | * Accepted |
| * BUA-PF-01 * Derive Bargaining Unit-Process Flow Diagram | * Accepted |
| * BUA-PF-01 * Derive Bargaining Unit-Process Flow Diagram | * Accepted |
| * BR\_LR\_09 * The system should provide the capability for the Labor Relations Office to maintain the job class/union relationship.---Comments: Business Process = "Maintenance" (Priority 1) | * BUA | * BUA-CD-01 * Assign BU Conceptual Design | * Accepted |
| * BUA-PF-02 * BU Assignment Rules Maint Process Flow Diagram | * ReadyForReview |

For example (2):

| **BizReqID** | **Pri** | **Major Area** | **DevTstItems DelivID** | **Deliv Name** | **Status** |
| --- | --- | --- | --- | --- | --- |
| * BR\_LR\_01 | * 1 | * BUA | * BUA-CD-01 | * Assign BU Conceptual Design | * Accepted |
| * BR\_LR\_01 | * 1 | * BUA | * BUA-DS-02 | * Bargaining Unit Assignment DB Modification Description | * Accepted |
| * BR\_LR\_01 | * 1 | * BUA | * BUA-PF-01 | * Derive Bargaining Unit-Process Flow Diagram | * Accepted |
| * BR\_LR\_01 | * 1 | * BUA | * BUA-UCD-01 | * BU Assign LR UseCase Diagram | * ReadyForReview |
| * BR\_LR\_01 | * 1 | * BUA | * BUA-UCT-001 | * BU Assignment by PC UseCase - Add Appointment and Derive UBU | * Reviewed |
| * BR\_LR\_01 | * 1 | * BUA | * BUA-UCT-002 | * BU Assignment by PC UseCase - Add Appointment (UBU Not Found) | * Reviewed |
| * BR\_LR\_01 | * 1 | * BUA | * BUA-UCT-006 | * BU Assignment by PC UseCase - Modify Appointment (Removed UBU) | * Reviewed |
| * BR\_LR\_09 | * 1 | * BUA | * BUA-CD-01 | * Assign BU Conceptual Design | * Accepted |
| * BR\_LR\_09 | * 1 | * BUA | * BUA-DS-02 | * Bargaining Unit Assignment DB Modification Description | * Accepted |
| * BR\_LR\_09 | * 1 | * BUA | * BUA-PF-02 | * BU Assignment Rules Maint Process Flow Diagram | * Accepted |
| * BR\_LR\_09 | * 1 | * BUA | * BUA-UCD-03 | * BU Assign Rules Maint UseCase Diagram | * Reviewed |
| * BR\_LR\_09 | * 1 | * BUA | * BUA-UCT-045 | * BU Assignment Rules Maint: Successfully Add New Assignment Rule | * Reviewed |
| * BR\_LR\_09 | * 1 | * BUA | * BUA-UCT-051 | * BU Assignment Rules MaintUseCase: Modify Rule | * Reviewed |
| * BR\_LR\_09 | * 1 | * BUA | * BUA-UCT-053 | * BU Assignment Rules MaintUseCase - Review Assignment Rules | * Reviewed |
| * BR\_LR\_09 | * 1 | * BUA | * BUA-UCT-057 | * BU Assignment Rules MaintUseCase: Inactivate Last Rule for a BU | * Reviewed |
| * BR\_LR\_09 | * 1 | * BUA | * BUA-UI-02 | * BU AssignRules Maint UI Mockups | * ReadyForReview |
| * BR\_LR\_09 | * 1 | * BUA | * BUA-TC-021 | * BU Assignment Rules Maint TestCase: Add New Rule (Associated Job Class Does Not Exist) - Success | * ReadyForReview |
| * BR\_LR\_09 | * 1 | * BUA | * BUA-TC-027 | * BU Assignment Rules Maint TestCase: Modify Rule - Success | * ReadyForReview |
| * BR\_LR\_09 | * 1 | * BUA | * BUA-TC-035 | * BU Assignment Rules Maint TestCase: Add New Rule (Associated Job Class Does Not Exist) - Error Condition | * ReadyForReview |
| * BR\_LR\_09 | * 1 | * BUA | * BUA-TC-049 | * BU Assignment Rules Maint TestCase: Modify Rule - Error Condition | * ReadyForReview |

For example (3):

| **BizReqID** | **CD01** | **CD02** | **CD03** | **CD04** | **UI01** | **UI02** | **UCT01** | **UCT02** | **UCT03** | **TC01** | **TC02** | **TC03** | **TC04** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| * BR\_LR\_01 |  |  | * X |  | * X |  | * X |  |  | * X |  | * X |  |
| * BR\_LR\_09 | * X |  |  | * X |  | * X |  |  | * X |  | * X |  | * X |
| * BR\_LR\_10 | * X |  |  | * X |  |  |  |  | * X |  | * X |  |  |
| * BR\_LR\_11 |  | * X |  |  |  |  |  |  |  |  |  |  |  |

Organizing the Requirements

This section is for information only as an aid in preparing the requirements document.

Detailed requirements tend to be extensive. Give careful consideration to your organization scheme. Some examples of organization schemes are described below:

By System Mode

Some systems behave quite differently depending on the mode of operation. For example, a control system may have different sets of functions depending on its mode: training, normal, or emergency.

By User Class

Some systems provide different sets of functions to different classes of users. For example, an elevator control system presents different capabilities to passengers, maintenance workers, and fire fighters.

By Objects

Objects are real-world entities that have a counterpart within the system. For example, in a patient monitoring system, objects include patients, sensors, nurses, rooms, physicians, medicines, etc. Associated with each object is a set of attributes (of that object) and functions (performed by that object). These functions are also called services, methods, or processes. Note that sets of objects may share attributes and services. These are grouped together as classes.

By Feature

A feature is an externally desired service by the system that may require a sequence of inputs to affect the desired result. For example, in a telephone system, features include local call, call forwarding, and conference call. Each feature is generally described in a sequence of stimulus-response pairs, and may include validity checks on inputs, exact sequencing of operations, responses to abnormal situations, including error handling and recovery, effects of parameters, relationships of inputs to outputs, including input/output sequences and formulas for input to output.

By Stimulus

Some systems can be best organized by describing their functions in terms of stimuli. For example, the functions of an automatic aircraft landing system may be organized into sections for loss of power, wind shear, sudden change in roll, vertical velocity excessive, etc.

By Response

Some systems can be best organized by describing all the functions in support of the generation of a response. For example, the functions of a personnel system may be organized into sections corresponding to all functions associated with generating paychecks, all functions associated with generating a current list of employees, etc.

By Functional Hierarchy

When none of the above organizational schemes prove helpful, the overall functionality can be organized into a hierarchy of functions organized by common inputs, common outputs, or common internal data access. Data flow diagrams and data dictionaries can be used to show the relationships between and among the functions and data.

Additional Comments

Whenever a new Requirements Specification is contemplated, more than one of the organizational techniques given above may be appropriate. In such cases, organize the specific requirements for multiple hierarchies tailored to the specific needs of the system under specification.

There are many notations, methods, and automated support tools available to aid in the documentation of requirements. For the most part, their usefulness is a function of organization. For example, when organizing by mode, finite state machines or state charts may prove helpful; when organizing by object, object-oriented analysis may prove helpful; when organizing by feature, stimulus-response sequences may prove helpful; and when organizing by functional hierarchy, data flow diagrams and data dictionaries may prove helpful.