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**Enterprise Resource Planning for Competitive Business World**

**By Asadul Alam**

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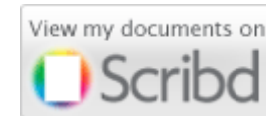
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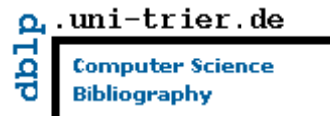
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# ENTERPRISE RESOURCE PLANNING FOR COMPETITIVE BUSINESS WORLD

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“ENTERPRISE RESOURCE PLANNING FOR COMPETITIVE BUSINESS WORLD”

A graduate project submitted to Dakota State University in partial fulfillment of the requirements for the degree of

Master of Science

in

Information Systems

November 5<sup>th</sup>, 2009

By

Asadul Alam

Project Committee:

Dr. Sreekanth Malladi

Dr. Mark Moran

Dr. Amit Deokar



PROJECT APPROVAL FORM

We certify that we have read this project and that, in our opinion, it is satisfactory in scope and quality as a project for the degree of Master of Science in Information Systems.

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Master's Project Title: Enterprise Resource Planning for Competitive Business World

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Committee member: Dr. Mark Moran Date:

Committee member: Dr. Amit Deokar Date:

### ACKNOWLEDGEMENT

- Dr. S. Malladi
- Dr. Amit Deokar
- Dr. Mark Moran
- Dr. Omar El-gayer
- Dr. Maureen Murphy
- SAP America
- HR Pundits
- DSU students and alumni
- Friends and Family

### DECLARATION

I hereby certify that this project constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions or writings of another.

I declare that the project describes original work that has not previously been presented for the award of any other degree of any institution.

Signed,

**Asadul Alam**

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**ABSTRACT**

Today large companies use different kind of ERP package to support their business needs. Some of these packages can be used out of box or customized. The types of ERP packages available in the market include Oracle, SAP, and People Soft etc. These are implemented at different part of organization such as Finance, Human Resource, Material Management and different type industry such as oil, gas, defense, financial etc.

This project demonstrates how ERP solution can improve business world. By using one of the popular customizable ERP solution packages, SAP, we demonstrate benefits and limitations. From the all sub module of SAP package, Human Resource module was chosen for an example implementation. The project includes Personal Administration Configuration for large enterprise, which emphasize the benefit of ERP over out of the box package

software.

## LITERATURE REVIEW AND CASE STUDY

### “The impact of Enterprise Resource System planning on firm performance”

Software is expected to reduce cost and increase firm performance. This is observed (3, 4) through the data of COMPUSTAT implementation of ERP system. (8-11)

ERP offers two type of benefits-tangible and (4) intangible benefit according to the study. Tangible benefits include significant inventory and personal reduction, production and order management improvement, financial close cycle, technology and procure management reduction. Intangible benefits according to the study are visibility, new or improved process, customer responsiveness, cost reduction, integration, and standardization. But some firm (5-7) states (5-7) high cost of implementation, best practice inabilities to suite all companies needs, ERP poses technical command and control perspective inappropriate to some situation.

ERP particularly on economic part reduce agency cost by bonding and monitoring cost, decision information cost by information processing, documentation, communication, opportunities cost due to communication. It also reduces external communication and operational cost.

Firm data collected and analyzed using COMPUSTAT indicate result before and after (3, 4) ERP implementation by ratio of cost to revenue there is no significant change except employee reduction and it automate the process.



### **“Enterprise Resource Planning (ERP) as a technology of power or panoptic control?”**

These case study shows ERP brings panoptic control of management over the organization but on the other hand it empower employee which management resisted. Both qualitative and quantities research methodology used in the research including a case study on hospital worker of Singapore.

These groups finds using qualitative methodology and quantatives methodology that it creates more system tracking capability, Management visibility, Peer visibility through work flow dependency and data interdependency. It also creates process oriented job expansion, extended access to information, enhanced user flexibility and reduced validation check.

In conclusion it is mention that to be adjustable to the organization it has to appropriate and formally translated up to the organization.

### **“Approach for conducting Enterprise Resource Planning Assessment”**

There are certain standard steps to implement ERP system according to this case study. First of all according to the study, we have to create business case, and then create a budget. Sequentially we have to create requirement documents and short list of solution or product available in the market.

Finally we have to see the demonstration from different vendor and call for request of proposal. The main factors we have to look in ROP are shortest return of investment, vendor availability, implementation partner and references. Considering the above we have to negotiate the contract. These are the standard ways to select and plan the ERP system for the organization.

## TERMINOLOGY

The following technical terms or keywords used in throughout the project:

- **Critical Path** - the path, through the network diagram, that show which activities, if delayed, will affect the project finish date. In other words, the critical path is made up of activities that cannot be delayed without delaying the finish of the project. It is not unusual to have more than one critical path on a project. This occurs when two or more paths tie for the longest path. In this event, schedule risk is increased because there is an increased number of ways the project could be delayed.
- **Dependency** – the sequencing of project activities or task.
- **Employee Group**-The employee group is an organizational entity which is governed by specific personnel regulations. An employee group is divided into several employee subgroups.
- **Employee Subgroup**-An employee subgroup is an organizational entity within an employee group which is governed by specific personnel regulations.
- **Execution process** – coordinating people and other resources to carry out the project plans and produce the products, services, or results of the project or project phase
- **Gantt chart** – a standard format for displaying project schedule information by listing project activities and their corresponding start and finish dates in a calendar format; sometimes referred as bar charts.
- **Kickoff meeting** – a meeting held at the beginning of a project or project phase where all major project stakeholders discuss project objectives, plans and so on.
- **Master Data**: In sap master data mean extensively employee's information.
- **Network Diagram** - a picture in which each activity is drawn in the order it must be performed and the amount of time each activity takes is represented with numbers.

- **Payroll Area**-This is an organizational unit which groups together employees for whom payroll is run at the same time and in the same way.
- **Personnel Area**-A personnel area is an organizational entity representing an area within an enterprise defined by specific aspects of personnel administration, time management and payroll. Personnel areas are subdivided into personnel subareas.
- **Personnel Subarea**-This is an entity which represents part of a personnel area which is distinguished from others by unique features of personnel administration, time management and payroll accounting.
- **Precedence Diagramming Method** - a network diagramming technique in which boxes represent activities.
- **Project charter** – a document that formally recognizes the existence of a project and provides direction on the project objectives and management.
- **Project sponsor** – the person who provides the directions and funding for a project.
- **Project scope statement** – a document that includes, at a minimum, a description of the project, including its overall objectives and justifications, detailed descriptions of all project deliverables, and the characteristics and requirements of products and services produced as part of the project.
- **Quality control** – monitoring specific project results to ensure that they comply with the relevant quality standards and identifying ways to improve overall quality.
- **Quality planning** – identifying which quality standards are relevant to the project and how to satisfy them.
- **Resource loading** – the amount of individual resources an existing schedule requires during specific time periods.
- **Risk** - an uncertainty that can have a negative or positive effect on meeting project objectives
- **Risk mitigation** - reducing the impact of a risk event by reducing the probability of its occurrence.
- **Scope** – all the work involved in creating the products of the project and process used to create them.
- **Scope control** – controlling changes to the project scope.
- **Scope creep** – the tendency for project scope to keep getting bigger.

- **Scope verification** – formalizing acceptance of the project scope, sometimes by customer sign-off.
- **Slack** – the amount of time a project activity may be delayed without delaying a succeeding activity or the project finish line date.
- **Unit test** – a test of each individual component (often a program) to ensure that is defect-free as possible.
- **User acceptance testing** – an independent test performed by end users prior to accepting the delivered system.
- **Work breakdown structure (WBS)** – a deliverable-oriented grouping of the work involved in a project that defines the total scope of the project.
- **WWW** – World Wide Web is a system of Internet servers that support specially formatted documents. The documents are formatted in HTML that supports links to other documents, as well as graphics, audio, and video files.

# I.PROJECT PLANNING:

## 1. PROJECT INITIATION:

### 1.1 PROJECT MANAGER AND KEY SHAREHOLDERS

This project will be conducted for academic research purposes and project sponsor is the project manager.

|                  |   |   |
|------------------|---|---|
| Project Manger   | – | Asadul Alam, DSU MSIS Student.  |
| Project Sponsor  | – | Asadul Alam.  |
| Business Manager | – | Dr. Sreekanth Malladi, Faculty Project Supervisor.                                      |
| Stakeholders     | – | Dr. Amit Deokar, Project Committee Member.<br>Dr. Mark Moran, Project Committee Member. |

### 1.2. BUSINESS CASE

**1.2.1 INTRODUCTION OR BACKGROUND:** The main goal of the project is to explain advantage and disadvantage of ERP software implementation in a company with a practical implementation. The project will also explain how the ERP system can be adjusted to new organization.

**1.2.2 BUSINESS OBJECTIVE:** To review the ERP adjustment with real up-to-date business world. The project may provide a reference point to future corporate decision maker s as a base of ERP implementation.

**1.2.3 CURRENT SITUATION:** ERP system is not implemented. Regular out of the box software has been implemented to meet day to day business need.

**1.2.4 ANALYSIS OF OPTION AND RECOMMENDATION:** Based on business objective and current situation including available technology and knowledge the best option we found is SAP.

**1.2.5 PRELIMINARY PROJECT REQUIREMENTS:** The main project requirements are:

- Remote access to server.
- Business Requirement Documentation.

**1.2.6 BUDGET ESTIMATE AND FINANCIAL ANALYSIS:** Though there is no sponsor at this point, the project can be in production as demo according to estimate cost.

**1.2.7 SCHEDULE ESTIMATE:** Project started on September 2008 and expected to be finish by May 2009.

### 1.3 PROJECT CHARTER:

**Project Title:** "Enterprise Resource Planning for Competitive Business world"

---

**Project Start Date:** September 10, 2008

**Project End Date:** May 9, 2009

---

**Budget Information:** Project will be developing for academic research purpose. No fund is allocated by the sponsor who will be tried to accrue in near future.

---

**Project Manager:** Asadul Alam, DSU MSIS Student.

---

**Project Objectives:**

**Approach:**

- Research the software suite available in the market and evaluate them.
- Train project development team on the new software development suite.
- Creation of customize project.
- Creation of blueprint and update according to change of requirements.
- Initialization and planning
- Review
- Implementation
- Review
- Create customize screen and option of hiring, termination, re-hiring, wage-type, position change, leave of absence with return, integration option with other sub modules.

**TABLE 1: ROLE AND RESPONSIBILITIES**

| Name                  | Role             | Responsibility  |
|-----------------------|------------------|---|
| Not decided Yet       | Project Sponsor  | Locate financial resources as needed and fund the project.                |
| Asadul Alam.          | Project Manager  | Plan and Execute project.   |
| Dr. Sreekanth Malladi | Business Manager | Document, Plan Project, Provide Staff and communicate with all employees. |
| Asadul Alam           | System Architect | ERP System Design and Documentation.                                      |
| Asadul Alam           | SAP Consultant   | ERP System Development and Document.                                      |
| Dr. Amit Deokar       | Stake Holder     | Monitor and Evaluate Project planning, imple                              |

|                |              |  |
|----------------|--------------|--|
|                |              | mentation.   |
| Dr. Mark Moran | Stake Holder | Monitor and Evaluate Project planning, implementation. |

**2. SCOPE STATEMENT**

**Project Title:** Enterprise Resource Planning for Competitive Business World.  
**Date:** 10/01/2008  
**Prepared By:** Asadul Alam, Project Manager

**2.1 PROJECT JUSTIFICATION:**

Even the project implementation cost is too high after two years of implementation; very little maintenance cost is required. SAP dramatically reduces head count and integrates the whole system among different department.

**2.2 PROJECT DELIVERABLES**

**2.2.1 MANAGEMENT RELATED DELIVERABLES:**

The project deliverables include the project charter, business case, team contract, scope statement, communication management plan, work breakdown structure, resource breakdown structure, schedule, budget estimates, final project report, final project presentation, status report and any additional documents required to manage the project.

**2.2.2. PRODUCT RELATED DELIVERABLES:**

Customized ERP system (SAP HR) for maintaining employee record.



### 2.2.3 PROJECT SUCCESS CRITERIAS:

The main success criteria of this project are consultant or implementation partners determine the criteria that will originally design and customize the system and main requirement for the project success.

### 3. PROCUREMENT MANAGEMENT:

The most critical part of this project is selecting the right software product to develop this application because almost half of the project cost is allocated to purchase the software. So Project Manager spent more time re-searching the products available in the market and evaluated them one by one to see whether they can help to meet the project requirements. There are over 5 products available in the market. Some of them include the following:

#### 3.1 PRODUCT RESEARCH:

Microsoft Dynamic

SAP

People Soft

#### 3.2 SELECTING A RIGHT PRODUCT:

After careful review of available products in the market, the project manager decided to use SAP HR, an SAP product as a tool to develop this application, which is the largest ERP solution software.

#### 3.3 WHY SAP:

- Most Reliable.
- Availability of good implementation partner.
- Cost effective solution compare to others in this particular situation.
- Excellent system integration within different department.

## 4.0 WORK BREAKDOWN STRUCTURE

### Project

#### 1.0 Initiating

- 1.1 Project Idea
- 1.2 Literature Review
- 1.3 Business Case
- 1.4 Prepare Team Contract
- 1.5 Project initiation completed

#### 2.0 Planning

- 2.1 Prepare Scope Statement
- 2.2 Prepare Work Breakdown Structure (WBS)
- 2.3 Identify risks
  - 2.3.1 Discuss risks
  - 2.3.2 Prepare risk plan
    - 2.3.2.1 Prepare Probability/Impact Matrix
    - 2.3.2.2 Prepare List of Prioritized Risks
    - 2.3.2.3 Prepare Risk Register
- 2.4 Prepare schedule and cost baseline
  - 2.4.1 Determine task resources
    - 2.4.1.1 Prepare organizational chart
  - 2.4.2 Determine task durations
  - 2.4.3 Determine task dependencies
  - 2.4.4 Prepare Gantt chart

2.4.5 Prepare Network Diagram

2.4.6 Prepare Milestone Report

2.5 Prepare Quality Assurance Plan

2.6 Prepare Communications Plan

2.7 Project planning completed

3.0 Executing

3.1 Interview users to obtain system requirements

3.2 Design

3.2.1 Design Project Structure

3.2.2 Design mockups for GUI screens and reports

3.2.3 Obtain user input from mockup reviews

3.2.4 Extranet Site Design Completed

3.3 Implementation

3.3.1 Customization-1

3.3.2 Customization-2

3.3.3 Customization completed

3.4 Test

3.4.1 Implement modifications

3.4.2 Testing completed

3.5 Train users

3.5.1 Develop training plan and curriculum

3.5.2 Deliver training

3.5.3 User training completed

3.6 Measure Project performance and benefits

3.7 Project execution completed

4.0 Monitoring and Controlling

4.1 Prepare Change Report Request Form/Process

4.2 Send out Status Reports

5.0 Closing

5.1 Prepare Project Documentation

5.2 Document lessons learned

5.3 Prepare Final Project Report

5.4 Obtain signed final Project Acceptance Agreement

5.5 Project closure completed

## 5. HUMAN RESOURCE MANAGEMENT

### 5.1 REQUIRED STAFF SKILLS:

Bringing the host customized applications to SAP Sever is a new project that needs to be implemented by the company. Since it is a special skilled software project, SAP Consultants require for both design and implementation.

#### 5.1.1 PROJECT SPONSOR:

The project Sponsor locates financial resources as needed and funds the project which to be retain in future.

#### 5.1.2 BUSINESS MANAGER:

The Business Manager owns the host applications. He supports project manager at every step starting from creating a business case, developing project plan and until the project implementation. He is responsible for answer-

ing questions about existing host applications. In addition, he provides staff and communicates with all employees about this project.

### **5.1.3 STAKE HOLDERS:**

Beside the business manager there are two stake holders who have a key interest in the project. They monitor and evaluate the project along with the business manager in a committee.

### **5.1.4 PROJECT MANAGER:**

The Project Manager is the person ultimately responsible for the outcome of the project. He is authorized to spend the project's budget and make decisions for the project. He provides the team with guidance on project deadlines and goals and communicates deliverables to Business Manager. Serving as the project liaison between Business Manager and the project team, the Project Manager defines the overall scope of the project, manages project resources and tracks the progress of the project.

### **5.1.5 SAP CONSULTANTS:**

SAP Consultant must have competent understanding of the SAP technology in place, knowledge and experience to configure and customize SAP Application to fit the requirements. The developers must have very good knowledge and working experience in other project related technology like PMP, DBMS. Working knowledge of Business Analyst and Quality Assurance personal also required. Security configuration knowledge is an added advantage.

## **5.2 PROJECT STAKEHOLDER ANALYSIS:**

Following table provides the detailed analysis of the project team member's like members name, strength, level of interest on the project and level interest on the project.

Table 2: STAKEHOLDER ANALYSIS

|  |  | Asadul Alam   | Dr. Sreekanth Malladi   | Dr. Amit Deokor  | Dr. Mark Moran   |
|--|--|---|---|--|--|
| <b>Organization</b>                          | To be identified   | DSU   | DSU   | DSU  | DSU  |
| <b>Role</b>                                  | Project Sponsor  | Project Manager, SAP Consultant, Trainer  | Business Manager  | Stake Holder   | Stake Holder   |
| <b>Unique facts about stakeholder</b>        | Was an attorney and worked his way up from Senior Contracting Officer and is new to Executive Leadership | PMP trained Senior Project Manager. Very smart, likes to complete any projects on time/budget, Customer Focused | Business focused, Knowledgeable in host applications and has led several software implementations at a local and national level | IBM and Microsoft Certified, systematic, Extremely knowledgeable                                   | Nice guy, very intelligent, likes everything in detail, has great sense of humor |
| <b>Level of Interest</b>                     | High   | High  | High  | High   | Very High  |
| <b>Level of Influence</b>                    | High   | Medium  | High  | High   | Very High  |
| <b>Suggestions on managing relationships</b> | Provide high-level status of the project   | Eager to learn and learn to lead. Keep him focused on the goals of the project.                                 | Has excellent communication with the executive leadership. He is a good voice when executive support is required.               | Needs frequent updates on project status, wants to be involved and aware of any issues that arise. | Highly motivated and easy to work with. Provides excellent service when needed.  |

5.3 RESOURCE LOADING:

Resource loading is the amount of individual resources an existing schedule requires during specific time.

| Raman Perumal |  | Legacy System Web Presence |         |        |          | Who Does What |           |
|---------------|--|----------------------------|---------|--------|----------|---------------|-----------|
| ID            | Resource Name                            | Work                       |         |        |          |               |           |
| 1             | Raman Perumal (Web Developer)            |                            |         |        |          |               | 528 hrs   |
| ID            | Task Name                                | Units                      | Work    | Delay  | Start    | Finish        |           |
| 10            | Prepare Team Contract                    | 100%                       | 32 hrs  | 0 days | 09/25/07 | 10/01/07      |           |
| 40            | Develop Template                         | 100%                       | 24 hrs  | 0 days | 02/12/08 | 02/15/08      |           |
| 41            | Develop Screen Customizations            | 100%                       | 40 hrs  | 0 days | 02/15/08 | 02/22/08      |           |
| 42            | Develop Transformations                  | 100%                       | 40 hrs  | 0 days | 02/22/08 | 02/29/08      |           |
| 43            | Develop Macros                           | 100%                       | 24 hrs  | 0 days | 02/29/08 | 03/05/08      |           |
| 44            | Develop Local Print Support              | 100%                       | 24 hrs  | 0 days | 03/05/08 | 03/10/08      |           |
| 45            | Develop Email Interface                  | 100%                       | 24 hrs  | 0 days | 03/10/08 | 03/13/08      |           |
| 46            | Develop Help System                      | 100%                       | 40 hrs  | 0 days | 03/13/08 | 03/20/08      |           |
| 47            | Develop Admin Pages                      | 100%                       | 24 hrs  | 0 days | 03/20/08 | 03/25/08      |           |
| 50            | Webpage Unit Testing                     | 100%                       | 24 hrs  | 0 days | 03/25/08 | 03/28/08      |           |
| 51            | Website System Testing                   | 100%                       | 24 hrs  | 0 days | 03/28/08 | 04/02/08      |           |
| 52            | Website Integration Testing              | 100%                       | 24 hrs  | 0 days | 04/02/08 | 04/07/08      |           |
| 61            | Monitor User Activity                    | 100%                       | 16 hrs  | 0 days | 04/11/08 | 04/15/08      |           |
| 25            | Train Project Team on Software Product   | 100%                       | 168 hrs | 9 days | 12/10/07 | 01/08/08      |           |
| 2             | Dr. Sreekanth Malladi (Business Manager) |                            |         |        |          |               | 189.6 hrs |
| ID            | Task Name                                | Units                      | Work    | Delay  | Start    | Finish        |           |
| 4             | Prepare Business Case                    | 100%                       | 40 hrs  | 0 days | 09/11/07 | 09/17/07      |           |
| 5             | Prepare Project Charter                  | 100%                       | 40 hrs  | 0 days | 09/18/07 | 09/24/07      |           |
| 9             | Project Kickoff Meeting                  | 100%                       | 1.6 hrs | 0 days | 09/25/07 | 09/25/07      |           |
| 11            | Prepare Scope Statement                  | 100%                       | 72 hrs  | 0 days | 10/01/07 | 10/12/07      |           |
| 10            | Prepare Team Contract                    | 100%                       | 32 hrs  | 0 days | 09/25/07 | 10/01/07      |           |
| 26            | Project Plan Approved                    | 100%                       | 0 hrs   | 0 days | 12/13/07 | 12/13/07      |           |
| 6             | Project Charter Approved                 | 100%                       | 0 hrs   | 0 days | 09/24/07 | 09/24/07      |           |
| 14            | Scope Statement Approved                 | 100%                       | 0 hrs   | 0 days | 11/05/07 | 11/05/07      |           |
| 22            | Schedule and Cost Baseline Approved      | 100%                       | 0 hrs   | 0 days | 12/03/07 | 12/03/07      |           |
| 2             | Assign Project Manager                   | 100%                       | 4 hrs   | 0 days | 09/10/07 | 09/10/07      |           |
| 38            | Website Design Approved                  | 100%                       | 0 hrs   | 0 days | 02/12/08 | 02/12/08      |           |
| 68            | Project Sign Off                         | 100%                       | 0 hrs   | 0 days | 05/09/08 | 05/09/08      |           |
| 3             | Raman Perumal (Project Manager)          |                            |         |        |          |               | 837.6 hrs |
| ID            | Task Name                                | Units                      | Work    | Delay  | Start    | Finish        |           |
| 3             | Identify Key Stakeholders                | 100%                       | 4 hrs   | 0 days | 09/10/07 | 09/10/07      |           |
| 4             | Prepare Business Case                    | 100%                       | 40 hrs  | 0 days | 09/11/07 | 09/17/07      |           |
| 5             | Prepare Project Charter                  | 100%                       | 40 hrs  | 0 days | 09/18/07 | 09/24/07      |           |
| 9             | Project Kickoff Meeting                  | 100%                       | 1.6 hrs | 0 days | 09/25/07 | 09/25/07      |           |
| 10            | Prepare Team Contract                    | 100%                       | 32 hrs  | 0 days | 09/25/07 | 10/01/07      |           |
| 11            | Prepare Scope Statement                  | 100%                       | 72 hrs  | 0 days | 10/01/07 | 10/12/07      |           |
| 12            | Software Product Selection               | 100%                       | 120 hrs | 0 days | 10/12/07 | 11/02/07      |           |
| 13            | Prepare WBS                              | 100%                       | 8 hrs   | 0 days | 11/02/07 | 11/05/07      |           |
| 16            | Analyse Project Requirements             | 100%                       | 80 hrs  | 0 days | 11/05/07 | 11/19/07      |           |
| 17            | Determine Task Resources                 | 100%                       | 16 hrs  | 0 days | 11/19/07 | 11/21/07      |           |
| 18            | Determine Task Durations                 | 100%                       | 16 hrs  | 0 days | 11/21/07 | 11/23/07      |           |
| 19            | Determine Task Dependencies              | 100%                       | 16 hrs  | 0 days | 11/23/07 | 11/27/07      |           |
| 20            | Create Draft Gantt Chart                 | 100%                       | 16 hrs  | 0 days | 11/27/07 | 11/29/07      |           |
| 21            | Review and Finalize Gantt Chart          | 100%                       | 16 hrs  | 0 days | 11/29/07 | 12/03/07      |           |
| 23            | Identify, Discuss and Prioritize Risks   | 100%                       | 40 hrs  | 0 days | 12/03/07 | 12/10/07      |           |
| 24            | Identify Milestones                      | 100%                       | 24 hrs  | 0 days | 12/10/07 | 12/13/07      |           |
| 34            | Design Website Organization              | 100%                       | 40 hrs  | 0 days | 01/15/08 | 01/22/08      |           |
| 35            | Design Website Navigation                | 100%                       | 40 hrs  | 0 days | 01/22/08 | 01/29/08      |           |
| 36            | Design Webpage Layout                    | 100%                       | 40 hrs  | 0 days | 01/29/08 | 02/05/08      |           |
| 37            | Identify Accessibility Consideration     | 100%                       | 40 hrs  | 0 days | 02/05/08 | 02/12/08      |           |
| 32            | Software Product Installed               | 100%                       | 0 hrs   | 0 days | 01/15/08 | 01/15/08      |           |
| 53            | Website Testing Completed                | 100%                       | 0 hrs   | 0 days | 04/07/08 | 04/07/08      |           |
| 38            | Website Design Approved                  | 100%                       | 0 hrs   | 0 days | 02/12/08 | 02/12/08      |           |
| 48            | Website Construction Completed           | 100%                       | 0 hrs   | 0 days | 03/25/08 | 03/25/08      |           |
| 59            | Website Roll-out Completed               | 100%                       | 0 hrs   | 0 days | 04/11/08 | 04/11/08      |           |
| 63            | Project Status Reports                   | 100%                       | 24 hrs  | 0 days | 04/15/08 | 04/18/08      |           |
| 65            | Prepare Project Report                   | 100%                       | 48 hrs  | 0 days | 04/18/08 | 04/28/08      |           |
| 66            | Prepare Project Presentation             | 100%                       | 40 hrs  | 0 days | 04/28/08 | 05/06/08      |           |
| 67            | Document Lessons Learned                 | 100%                       | 24 hrs  | 0 days | 05/06/08 | 05/09/08      |           |
| 4             | Raman Perumal (System Architect)         |                            |         |        |          |               | 688 hrs   |
| ID            | Task Name                                | Units                      | Work    | Delay  | Start    | Finish        |           |
| 10            | Prepare Team Contract                    | 100%                       | 32 hrs  | 0 days | 09/25/07 | 10/01/07      |           |
| 16            | Analyse Project Requirements             | 100%                       | 80 hrs  | 0 days | 11/05/07 | 11/19/07      |           |
| 18            | Determine Task Durations                 | 100%                       | 16 hrs  | 0 days | 11/21/07 | 11/23/07      |           |
| 19            | Determine Task Dependencies              | 100%                       | 16 hrs  | 0 days | 11/23/07 | 11/27/07      |           |
| 25            | Train Project Team on Software Product   | 100%                       | 240 hrs | 0 days | 11/12/07 | 01/08/08      |           |
| 31            | Setup Software Product                   | 100%                       | 24 hrs  | 0 days | 01/10/08 | 01/15/08      |           |
| 34            | Design Website Organization              | 100%                       | 40 hrs  | 0 days | 01/15/08 | 01/22/08      |           |
| 35            | Design Website Navigation                | 100%                       | 40 hrs  | 0 days | 01/22/08 | 01/29/08      |           |
| 36            | Design Webpage Layout                    | 100%                       | 40 hrs  | 0 days | 01/29/08 | 02/05/08      |           |
| 37            | Identify Accessibility Consideration     | 100%                       | 40 hrs  | 0 days | 02/05/08 | 02/12/08      |           |
| 50            | Webpage Unit Testing                     | 100%                       | 24 hrs  | 0 days | 03/25/08 | 03/28/08      |           |
| 51            | Website System Testing                   | 100%                       | 24 hrs  | 0 days | 03/28/08 | 04/02/08      |           |
| 52            | Website Integration Testing              | 100%                       | 24 hrs  | 0 days | 04/02/08 | 04/07/08      |           |
| 48            | Website Construction Completed           | 100%                       | 0 hrs   | 0 days | 03/25/08 | 03/25/08      |           |

FIGURE 1:RESOURCE LOADING WHO DOES WHAT REPORT PAGE 1

| ID   | Resource Name                           | Work                                  |
|--|---|---------------------------------------|
| Raman Perumal Legacy System Web Presence Who Does What |   |                                       |
| "Raman Perumal (System Architect)" continued           |   |                                       |
| ID   | Task Name                               | Units Work Delay Start Finish         |
| 53   | Website Testing Completed               | 100% 0 hrs 0 days 04/07/08 04/07/08   |
| 55   | Setup and Configure Application Server  | 100% 8 hrs 0 days 04/07/08 04/08/08   |
| 56   | Setup and Configure Email Server        | 100% 8 hrs 0 days 04/08/08 04/09/08   |
| 57   | Setup and Configure Security            | 100% 8 hrs 0 days 04/09/08 04/10/08   |
| 58   | Deploy the Application                  | 100% 8 hrs 0 days 04/10/08 04/11/08   |
| 59   | Website Roll-out Completed              | 100% 0 hrs 0 days 04/11/08 04/11/08   |
| 61   | Monitor User Activity                   | 100% 16 hrs 0 days 04/11/08 04/15/08  |
| 5  | Dr. Wayne Pauli (Middleware Manager)    | 81.6 hrs                              |
| ID   | Task Name                               | Units Work Delay Start Finish         |
| 9  | Project Kickoff Meeting                 | 100% 1.6 hrs 0 days 09/25/07 09/25/07 |
| 10   | Prepare Team Contract                   | 100% 32 hrs 0 days 09/25/07 10/01/07  |
| 29   | Identify hardware requirements          | 100% 8 hrs 0 days 01/08/08 01/09/08   |
| 30   | Identify software requirements          | 100% 8 hrs 0 days 01/09/08 01/10/08   |
| 55   | Setup and Configure Application Server  | 100% 8 hrs 0 days 04/07/08 04/08/08   |
| 56   | Setup and Configure Email Server        | 100% 8 hrs 0 days 04/08/08 04/09/08   |
| 57   | Setup and Configure Security            | 100% 8 hrs 0 days 04/09/08 04/10/08   |
| 58   | Deploy the Application                  | 100% 8 hrs 0 days 04/10/08 04/11/08   |
| 6  | Dr. Dan Talley (Office Systems Manager) | 49.6 hrs                              |
| ID   | Task Name                               | Units Work Delay Start Finish         |
| 9  | Project Kickoff Meeting                 | 100% 1.6 hrs 0 days 09/25/07 09/25/07 |
| 10   | Prepare Team Contract                   | 100% 32 hrs 0 days 09/25/07 10/01/07  |
| 29   | Identify hardware requirements          | 100% 8 hrs 0 days 01/08/08 01/09/08   |
| 30   | Identify software requirements          | 100% 8 hrs 0 days 01/09/08 01/10/08   |
| 7  | Tom Jennings (Project Sponsor)          | 37.6 hrs                              |
| ID   | Task Name                               | Units Work Delay Start Finish         |
| 2  | Assign Project Manager                  | 100% 4 hrs 0 days 09/10/07 09/10/07   |
| 9  | Project Kickoff Meeting                 | 100% 1.6 hrs 0 days 09/25/07 09/25/07 |
| 10   | Prepare Team Contract                   | 100% 32 hrs 0 days 09/25/07 10/01/07  |
| 6  | Project Charter Approved                | 100% 0 hrs 0 days 09/24/07 09/24/07   |
| 14   | Scope Statement Approved                | 100% 0 hrs 0 days 11/05/07 11/05/07   |
| 22   | Schedule and Cost Baseline Approved     | 100% 0 hrs 0 days 12/03/07 12/03/07   |
| 26   | Project Plan Approved                   | 100% 0 hrs 0 days 12/13/07 12/13/07   |
| 68   | Project Sign Off                        | 100% 0 hrs 0 days 05/09/08 05/09/08   |

FIGURE 2: CONTINUATION ON RESOURCE LOADING FIG. PAGE 2



5.4 TEAM COMMUNICATION PLAN:

Table 3: TEAM COMMUNICATION TABLE

| Stakeholders    | Document Name                      | Document Format                                      | Contact Person | Due                  |
|-----------------|------------------------------------|--|----------------|----------------------|
| Project Manager | Project roll-out Announcement      | E-mail   | Asadul Alam    | 05/09/2009           |
|                 | Conference calls                   | Send details via e-mail and hold calls via telephone | Asadul Alam    | When required        |
|                 | Bi-weekly or Monthly Status Report | Soft copy e-mail attachment                          | Asadul Alam    | Bi-weekly or Monthly |

6. TIME MANAGEMENT

6.1 NETWORK DIAGRAM:

The Network Diagram displays the relationships between the activities of the project. This diagram will show the activities that are dependent upon each other and those that can occur simultaneously. This is essential to setting the timelines, milestones and assigning out tasks. The **precedence diagramming method (PDM)** is a network diagramming technique in which boxes represent activities.

6.2 GANTT CHART PRESENTATION:

Gantt charts show the project activities represented as horizontal bars and typically have a calendar along the horizontal axis. The length of the bar corresponds to the length of the activity. It is considered to be a good tool to use to communicate with management, because unlike the project network diagram, it is easy to understand at a glance. This chart displays the task name, duration, start date, finish date and predecessors for each task. Project external tasks, milestones, summary tasks, and arrow showing task dependencies also can be obtained from this chart.

The black diamond symbol represents a milestone. The thick black bars with arrows at the beginning and end represent summary tasks. The light blue horizontal bars represent the duration of each individual task. Arrows connecting these symbols show relationships or dependencies between tasks.

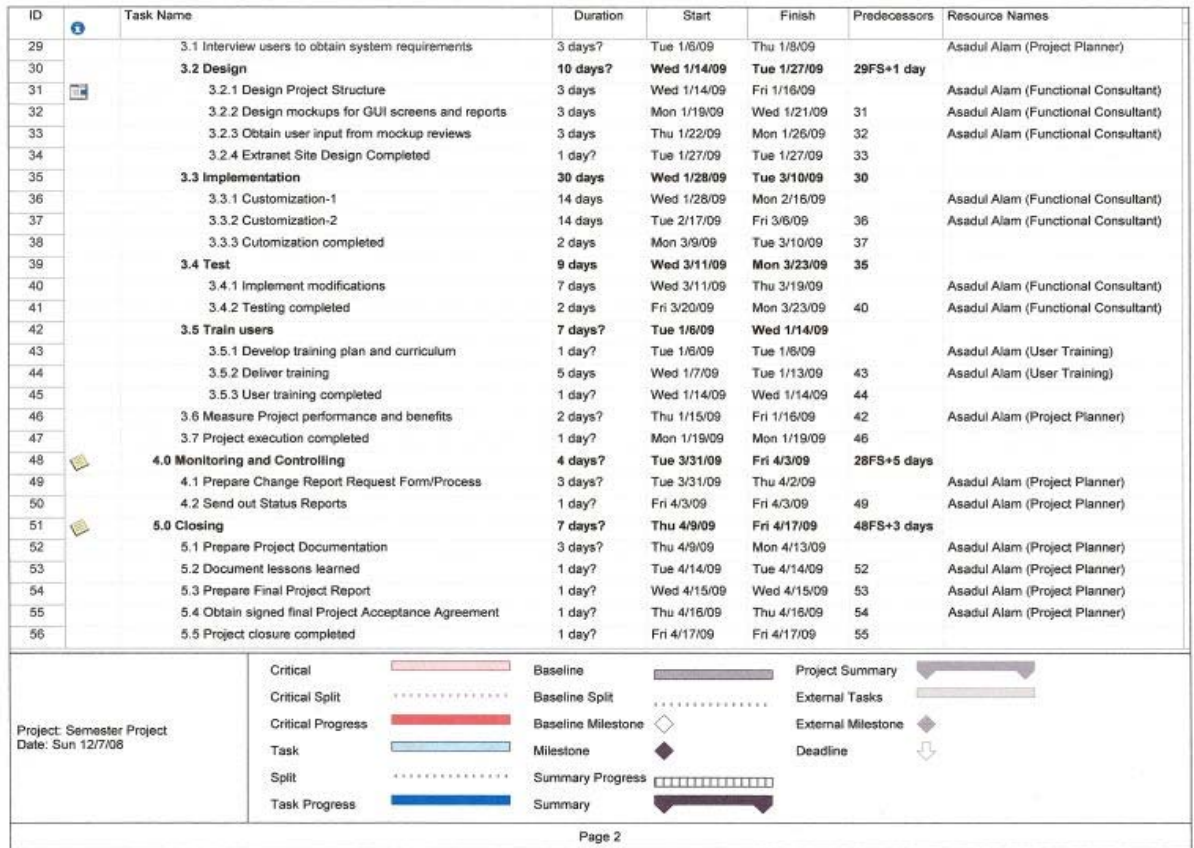


FIGURE 3: GANTT CHART

6.3 PROJECT MILESTONES:

Milestones need to be defined to ensure the goals and timelines are clear and continually met throughout the duration of the project. Although the milestones do not have timelines specifically attached to them, they help to make sure the project stays on track and show a sense of accomplishment through different points or phases of the project.

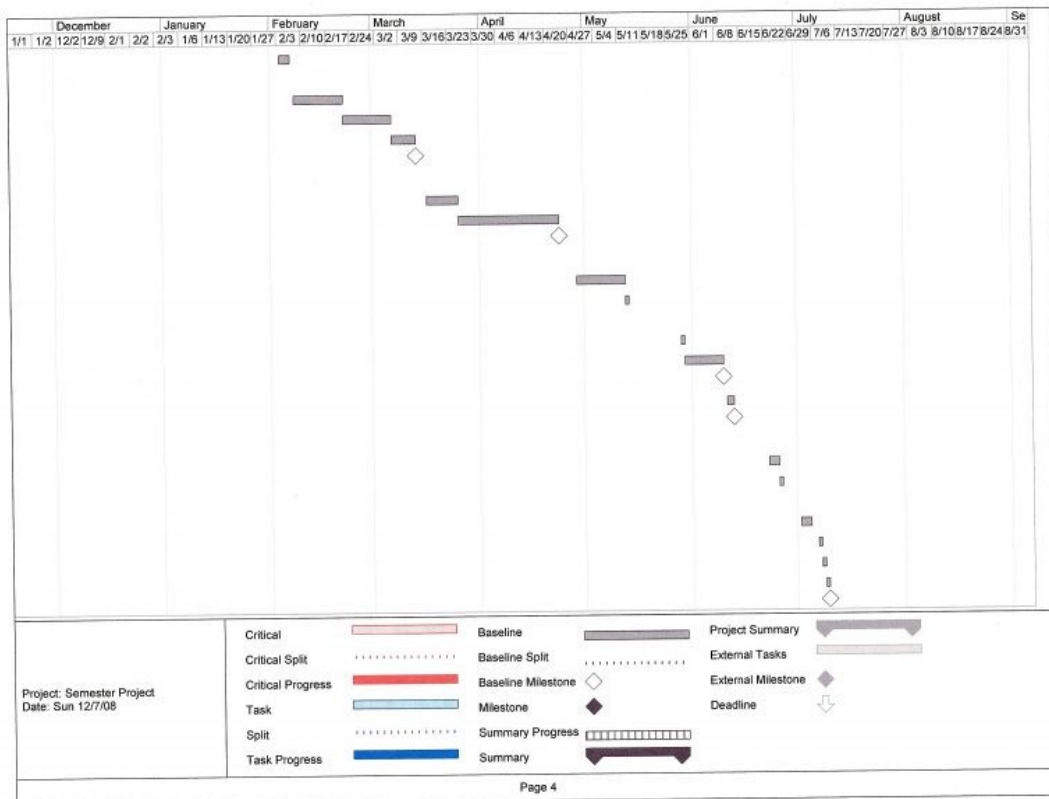
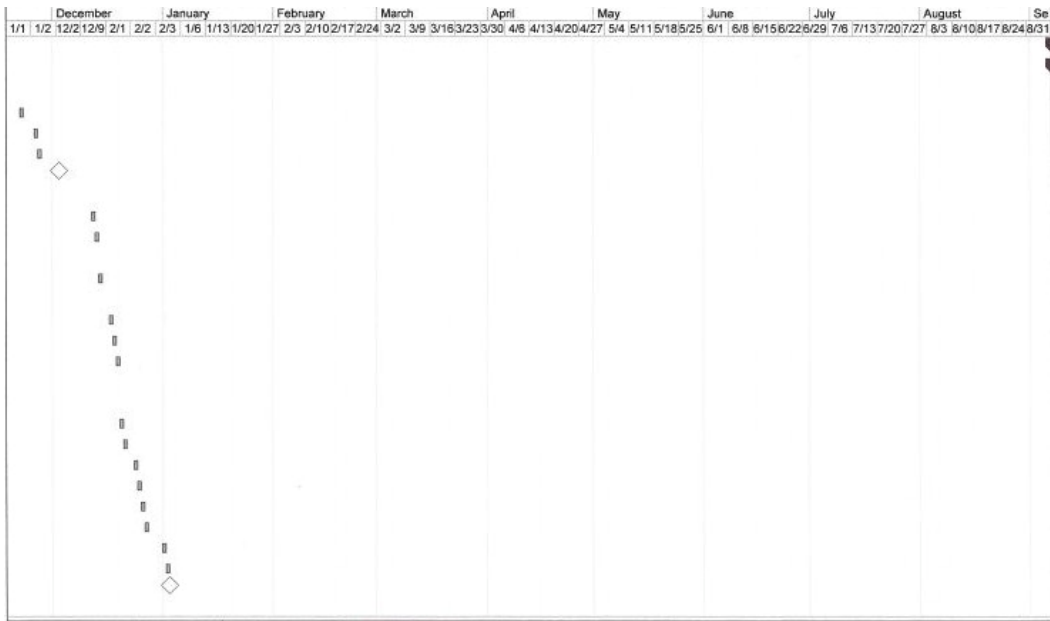
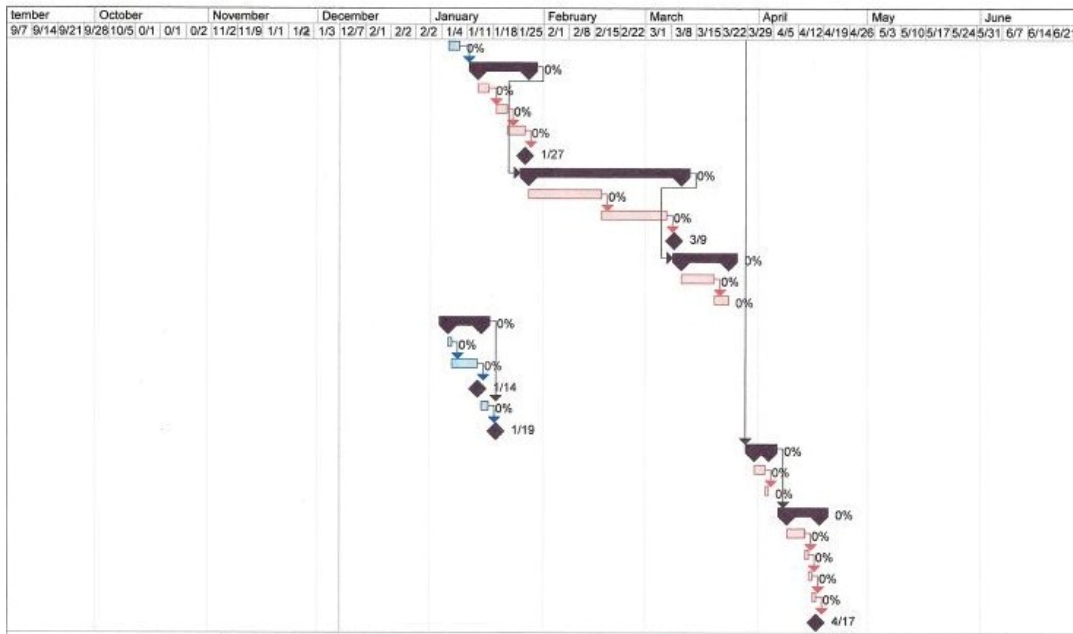


FIGURE 4. PROJECT MILESTONES

6.4 PROJECT CRITICAL TASKS AND CRITICAL PATH:

**Critical path** is the path, through the network diagram, that show which activities, if delayed, will affect the project finish date. In other words, the critical path is made up of activities that cannot be delayed without delaying the finish of the project. It is not unusual to have more than one critical path on a project. This occurs when two or more paths tie for the longest path. In this event, schedule risk is increased because there is an increased number of ways the project could be delayed.



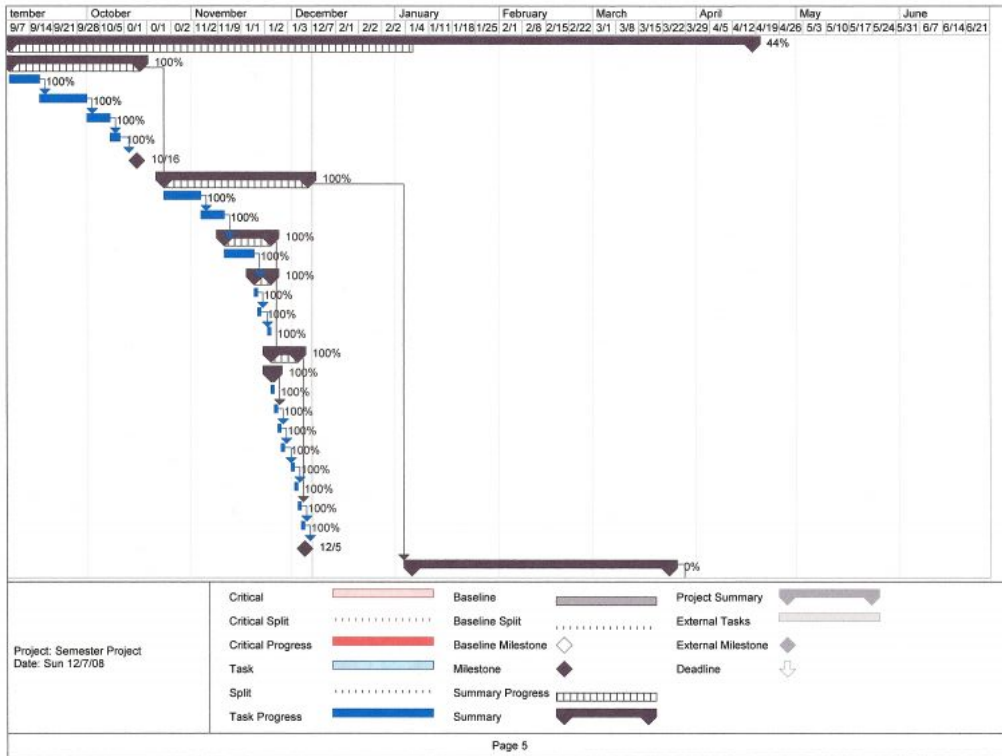


FIGURE 5: CRITICAL TASKS

## 7. COST MANAGEMENT:

**Project Cost Management** includes the processes required to ensure that a project team completes a project within an approved budget.

**Cost Estimating** involves developing an estimate of the costs of the resources needed to complete a project. It is a planning process that takes the WBS, the resource requirements, the activity duration estimates etc., and uses them to create the team's best estimate as to how much the activities are going to cost.

### 7.1. COST ESTIMATE:

1. Costs are provided in US dollars. Since the project length is eight months, inflation is not included. The total estimated cost is \$53,000.
2. None of the work is outsourced and the labor costs for users are not included.
3. There is no additional hardware cost.
4. There is no software cost as the software implemented on remote server with monthly access fees, which is 2000 dollars only for next two years.
5. Labor Cost is: Project Manager is 50/hr and 65/hr overtime, SAP Consultant is 65/hr and 80/hr overtime and trainer is 35/hr and 50/hr overtime.

Labor cost=53,600+2000(server access fees) =55,600

**7.2 COST BASELINE:**

**Project cost budgeting** involves allocating the project cost estimate to individual work items over time. These work items are based on the work breakdown structure for the project. It is a planning process and the schedule must be created before the cost baseline can be established. A **cost baseline** is a time-phased budget that project managers use to measure and monitor cost performance. Table 4 provides the details about the cost baseline distribution for each portion of the work break down structure.

**TABLE 4: PROJECT COST BASELINE**

|  |             |
|--|-------------|
| Project                                    | \$53,600.00 |
| 1.0 Initiating                             | \$10,000.00 |
| 1.1 Project Idea                           | \$2,800.00  |
| 1.2 Literature Review                      | \$4,000.00  |
| 1.3 Business Case                          | \$2,000.00  |
| 1.4 Prepare Team Contract                  | \$1,200.00  |
| 1.5 Project initiation completed           | \$0.00      |
| 2.0 Planning                               | \$12,000.00 |
| 2.1 Prepare Scope Statement                | \$2,800.00  |
| 2.2 Prepare Work Breakdown Structure (WBS) | \$2,000.00  |
| 2.3 Identify risks                         | \$4,000.00  |
| 2.3.1 Discuss risks                        | \$2,800.00  |
| 2.3.2 Prepare risk plan                    | \$1,200.00  |
| 2.3.2.1 Prepare Probability/Impact Matrix  | \$400.00    |
| 2.3.2.2 Prepare List of Prioritized Risks  | \$400.00    |

|   |             |
|---|-------------|
| 2.3.2.3 Prepare Risk Register                     | \$400.00    |
| 2.4 Prepare schedule and cost baseline            | \$2,400.00  |
| 2.4.1 Determine task resources                    | \$400.00    |
| 2.4.1.1 Prepare organizational chart              | \$400.00    |
| 2.4.2 Determine task durations                    | \$400.00    |
| 2.4.3 Determine task dependencies                 | \$400.00    |
| 2.4.4 Prepare Gantt Chart                         | \$400.00    |
| 2.4.5 Prepare Network Diagram                     | \$400.00    |
| 2.4.6 Prepare Milestone Report                    | \$400.00    |
| 2.5 Prepare Quality Assurance Plan                | \$400.00    |
| 2.6 Prepare Communications Plan                   | \$400.00    |
| 2.7 Project planning completed                    | \$0.00      |
| 3.0 Executing                                     | \$27,600.00 |
| 3.1 Interview users to obtain system requirements | \$1,200.00  |
| 3.2 Design  | \$4,680.00  |
| 3.2.1 Design Project Structure                    | \$1,560.00  |
| 3.2.2 Design mockups for GUI screens and reports  | \$1,560.00  |
| 3.2.3 Obtain user input from mockup reviews       | \$1,560.00  |
| 3.2.4 Extranet Site Design Completed              | \$0.00      |
| 3.3 Implementation                                | \$14,560.00 |
| 3.3.1 Customization-1                             | \$7,280.00  |
| 3.3.2 Customization-2                             | \$7,280.00  |
| 3.3.3 Customization completed                     | \$0.00      |
| 3.4 Test  | \$4,680.00  |



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|  |            |
|--|------------|
| 3.4.1 Implement modifications                  | \$3,640.00 |
| 3.4.2 Testing completed                        | \$1,040.00 |
| 3.5 Train users                                | \$1,680.00 |
| 3.5.1 Develop training plan and curriculum     | \$280.00   |
| 3.5.2 Deliver training                         | \$1,400.00 |
| 3.5.3 User training completed                  | \$0.00     |
| 3.6 Measure Project performance and benefits   | \$800.00   |
| 3.7 Project execution completed                | \$0.00     |
| 4.0 Monitoring and Controlling                 | \$1,600.00 |
| 4.1 Prepare Change Report Request Form/Process | \$1,200.00 |
| 4.2 Send out Status Reports                    | \$400.00   |
| 5.0 Closing                                    | \$2,400.00 |

## 8. TRACKING AND CONTROL

The Project Manager will update the status report on a bi-weekly or monthly basis to provide information about recent completions, accomplishments, and efforts expended. The Project Manager and the team will meet bi-weekly to discuss the progress of the project. In addition, the project manager will be available to answer questions about the progress of the application throughout this project.

The project status and meeting minute's reports will keep everyone up to date on what is happening in the project and also help them to be on same page.

### 8.1 STATUS REPORTING:

Table 5 shows the template of Status/Progress report. This template will be used to communicate the status of the project bi-weekly or monthly.

**TABLE 5: STATUS/PROGRESS REPORT TEMPLATE**

Status/Progress Report for the <Nth> Month, <Month> <Year>

Project Name: Legacy System Web Presence  
 Prepared by: Raman Perumal, Project Manager  
 Date: <Date>  
 Reporting Period: <Month, Year>

Work completed this reporting period:

|                              |
|------------------------------|
| 1. <List of completed task1> |
| 2. <List of completed task2> |
| 3. <List of completed task3> |

|                              |
|------------------------------|
| 4. <List of completed task4> |
| 5. <List of completed task5> |

**Work to complete or start in the next reporting period:**

|                                    |
|------------------------------------|
| 1. <List of to be completed task1> |
| 2. <List of to be completed task2> |
| 3. <List of to be completed task3> |
| 4. <List of to be completed task4> |
| 5. <List of to be completed task5> |

**What's going well and why:**

<Update>

**What's not going well and why:**

<Update>

**Suggestions/Issues:**

<Update>

**8.2 MEETING MINUTES:**

Table 6 below shows the template of meeting minutes report. This template will be used to communicate the meeting minutes to the project team right after the scheduled project meetings.

**TABLE 6: MEETING MINUTES TEMPLATE**

**Meeting Minutes – Meeting Date**

|                               |  |
|-------------------------------|--|
| <b>Meeting Title/Purpose:</b> | <Title of meeting or purpose of the meeting> |
| <b>Meeting Date/Time:</b>     | <Date and Time>                              |
| <b>Meeting Location:</b>      | <Meeting Location>                           |
| <b>Meeting Organizer:</b>     | <Meeting Organizer Name>                     |
| <b>Meeting Participants:</b>  | <Meeting Participant List>                   |
| <b>Summary</b>                | <Meeting Summary>                            |
| <b>Minutes Prepared by:</b>   | <Who Prepared>                               |
| <b>Prepared On:</b>           | <Prepared on Date>                           |

**8.3 CHANGE CONTROL MANAGEMENT:**

The goal of the Change Management process is to ensure that standardized methods and procedures are used for efficient and prompt handling of all changes, in order to minimize the impact of change-related incidents upon service quality, and consequently improve the day-to-day operations of the organization.

The project manager has the complete authority to assess and authorize change requests, from both internal and external sources, using a change management workflow customized to CII needs. The project manager's decisions are based on the Triple Constraints such as project scope, cost and time involved to incorporate the changes. As part of the approval process, the project manager needs to assess the impact of the change on the scope statement. At times, even small change can lead the project into scope creep. So it is Project Manager's responsibility to carefully evaluate any requirements and act strictly on making decisions since Project Manager is ultimate responsible for project success. Therefore, change management is tightly integrated with requirements management to ensure the change control board fully understands the implications of authorizing a change. As part of the implementation process, the project manager needs to ensure that development activities are traced back to approved change requests.

Any change to the requirement should be well documented and approved by Project Sponsor. The Table 7 shows the template of the change request process.

**TABLE 7: CHANGE REQUEST DOCUMENT TEMPLATE**

**Change Request Form – CRNnnn**

|                          |                             |
|--------------------------|-----------------------------|
| <b>Project Name:</b>     | Legacy System Web Presence  |
| <b>Date Submitted:</b>   | <Date>                      |
| <b>Summary of Change</b> | <Summary of change request> |

**Request:**

|                        |                          |
|------------------------|--------------------------|
| <b>Request #:</b>      | CRNnnn                   |
| <b>Submitter Name:</b> | <Submitter Name>         |
| <b>Details:</b>        | <Change request details> |

|                                |  |
|--------------------------------|--|
| <b>Workaround (if any):</b>    | <work around if any>                   |
| <b>Affect to the Schedule:</b> | <if any>                               |
| <b>Estimated Man hours:</b>    | <how many man hours>                   |
| <b>Approval Status:</b>        | <status>                               |
| <b>Approval Date:</b>          | <date>                                 |
| <b>Approved by:</b>            | Dr. Sreekanth Malladi, Project Manager |
| <b>Comments:</b>               | <if any>                               |

## 9. QUALITY MANAGEMENT

A Quality theory states that everyone in the company is responsible for quality and is able to make a difference in the ultimate quality of the product. It is a constant process improvement in the form of small changes in products or services. The definition of quality is every characteristic that influences satisfaction.

Software quality measures how well the software is designed and how well the software conforms to that design.

The Project Manager will enforce the project team to strictly follow the industry standard SAP best practice and guidelines to build this project. In addition, Project Manager will ensure that project team will document what and how they do while design and developing the project. This will make the application user interface easy to read and understand by any programmers that will make the application easily manageable in the future.

## 10. RISK MANAGEMENT PLAN

### 10.1 INTRODUCTION:

Project risk management is the art and science of identifying, analyzing, and responding to risk throughout the life of a project and in the best interests of meeting project objectives. It helps the software project managers prevent surprises, improve negotiations, meet customer commitments and reduce schedule slips cost overruns. To control the risk, project manager maintain a risk registrar.

### 10.2 RISK REGISTER OVERVIEW:

A risk register is a document that contains results of various risk management processes, often displayed in a table or spreadsheet format. It is a tool for documenting potential risk events and related information. Risk events refer to specific, uncertain events that may occur to the detriment or enhancement of the project.

The project manager has identified possible risk events and mitigation procedures to create risk management plan, using project scope statement as well as referring to other documents, including the project charter, WBS and stakeholder analysis.

The project manager and team members identified top ten risk events and rated the risk events. To perform the Qualitative Risk Analysis, the team has utilized a simple risk register, as shown in Table Where feasible; a mitigation strategy has been defined to lessen the consequences of the risk.

---

### IT Project Risks

1. Business
  - 1.1. Supplier Acceptance
  - 1.2. Cash Flow
2. Technical
  - 2.1. Hardware
  - 2.2. Software
  - 2.3. Network
3. Organizational
  - 3.1. Executive Support
  - 3.2. User support
  - 3.3. Team support
4. Project Management
  - 4.1. Estimates
  - 4.2. Communication
  - 4.3. Resources

### Knowledge Area Risks

1. Integration
  - 1.1. Inadequate planning
  - 1.2. Poor resource allocation
  - 1.3. Poor integration management
  - 1.4. Lack of post-project review
2. Scope
  - 2.1. Poor definition of scope or work packages
  - 2.2. Incomplete definition
3. Time
  - 3.1. Errors in estimating time or resource availability
  - 3.2. Errors in determining the critical path
  - 3.3. Poor allocation and management of float
4. Cost
  - 4.1. Estimating Errors
  - 4.2. Inadequate productivity, cost, change, or contingency



5. Quality
  - 5.1. Poor attitude toward quality
  - 5.2. Substandard design/materials/workmanship
  - 5.3. Inadequate quality assurance program
6. Human Resources
  - 6.1. Poor conflict management
  - 6.2. Poor project organization and definition of responsibilities
  - 6.3. Absence of leadership
7. Communications
  - 7.1. Carelessness in planning or communicating
  - 7.2. Lack of consultation with key stakeholders
8. Risk
  - 8.1. Ignoring risk
  - 8.2. Unclear analysis of risk
  - 8.3. Poor insurance management
9. Procurement
  - 9.1. Unenforceable conditions or contract clauses
  - 9.2. Adversarial relations

TABLE 8: RISK REGISTER

|             |        |           |                        |                        |
|-------------|--------|-----------|------------------------|------------------------|
| Probability | High   | Risk 8(k) | Risk 5(k)              | Risk 2(K)<br>Risk 3(K) |
|             | Medium |           | Risk 3(k)<br>Risk 9(k) | Risk 2(l)              |
|             | Low    | Risk 7(k) |                        | Risk 4(l)              |
|             |        | Low       | Medium                 | High                   |
|             | Impact |           |                        |                        |

## II. PROJECT DESIGN

### 1. ENTERPRISE STRUCTURE

Enterprise Structure represents the structure of the company according to personnel administrative perspectives from the point of view of the own company. The company structure describes elements of the company and their dependencies.

At Infinite Tech Comm. Solution, Inc. the enterprise structure will consist of the following personnel areas and subareas:

TABLE 9: PERSONAL AREA AND SUB-AREA

| Personnel Areas | Personnel Subareas   | Comments |
|-----------------|--|----------|
| PA 00 = Area 00 | 00AD - Administration<br>0LEG – Legal<br>0CST – Cost Mfg.<br>0ENV – Environmental<br>0SAF – Safety<br>0PER – Personnel<br>0SAL – Sales<br>0CSV – Customer Service<br>0PUR – Purchasing<br>0ACT – Accounting<br>0IFT – Information Technology                     |          |
| PA01 – Area 01  | 1MLT –P1 Melt<br>1DSA – P1Disa<br>1SOT – P1 Shakeout<br>1MLR – P1 Mill room<br>1QA – P1Quality Assurance<br>1SHP – P1 Shipping<br>1COR – P1 Core room<br>1MNT – P1Maintenance<br>1MMT – P1 Melt Maintenance<br>1EMT – P1 Electrical Maintenance<br>1LAB – P1 Lab |          |

|                        |  |  |
|------------------------|--|--|
|                        | <p>1ENV – Environmental</p> <p>1SAF – Safety</p> <p>1CSV – Customer Service</p> <p>1PAT – Pattern Shop</p> <p>1ENG – Engineering</p> <p>1ACT – Accounting</p> <p>1IEN – Industrial Engineering</p> <p>1MTG – Metallurgy</p> <p>1PEN – Pattern Engineering</p> <p>1PER – Personnel</p> <p>1PRM – Program Management</p> <p>1STK – Stockroom</p> <p>1LYO – Layout</p> <p>1IFT – Information Technology</p> <p>1WHS – Warehouse</p> |  |
| <p>PA 02 = Area 02</p> | <p>2MLT –P2.1 Melt</p> <p>2DSA – P2.1 Disa</p> <p>2SOT – P2.1 Shakeout</p> <p>AMLR – P2.1 Mill room</p> <p>AQA – P2.1 Quality Assurance</p> <p>ASHP – P2.1 Shipping</p> <p>ACOR – P2.1 Corerroom</p> <p>AMNT – P2.1 Maintenance</p> <p>AMMT – P2.1 Melt Maintenance</p> <p>AEMT – P2.1 Electrical Maintenance</p>  |  |

|                      |   |  |
|----------------------|---|--|
|                      | <p>ALAB – P2.1 Lab</p> <p>AENV – P2.1 Environmental</p> <p>ASAF – P2.1 Safety</p> <p>ACSV – P2.1 Customer Service</p> <p>APAT – P2.1 Pattern Shop</p> <p>APST – P2.1 Pressure Test</p> <p>AENG – P2.1 Engineering</p> <p>AACT – P2.1 Accounting</p> <p>AIEN – P2.1 Industrial Engineering</p> <p>AMTG – P2.1 Metallurgy</p> <p>APEN – P2.1 Pattern Engineering</p> <p>APER – P2.1 Personnel</p> <p>APRM – P2.1 Program Management</p> <p>ASTK – P2.1 Stockroom</p> <p>ALYO – P2.1 Layout</p> <p>AIFT – P2.1 Information Technology</p> <p>AWHS – P2.1 Warehouse</p> |  |
| <p>PA 03=Area 03</p> | <p>BMLT –P2.2 Melt</p> <p>BDSA – P2.2 Disa</p> <p>BSOT – P2.2 Shakeout</p> <p>BMLR – P2.2 Mill room</p> <p>BQCA – P2.2 Quality Assurance</p> <p>BSHP – P2.2 Shipping</p> <p>BCOR – P2.2 Corerom</p>   |  |

|                       |   |  |
|-----------------------|---|--|
|                       | <p>BMNT – P2.2 Maintenance</p> <p>BMMT – P2.2 Melt Maintenance</p> <p>BEMT – P2.2 Electrical Maintenance</p> <p>BLAB – P2.2 Lab</p> <p>BENV – P2.2 Environmental</p> <p>BSAF – P2.2 Safety</p> <p>BCSV – P2.2 Customer Service</p> <p>BPAT – P2.2 Pattern Shop</p> <p>BENG – P2.2 Engineering</p> <p>BACT – P2.2 Accounting</p> <p>BIEN – P2.2 Industrial Engineering</p> <p>BMTG – P2.2 Metallurgy</p> <p>BPEN – P2.2 Pattern Engineering</p> <p>BPER – P2.2 Personnel</p> <p>BPRM – P2.2 Program Management</p> <p>BSTK – P2.2 Stockroom</p> <p>BLYO – P2.2 Layout</p> <p>BIFT – P2.2 Information Technology</p> <p>BWHS – P2.2 Warehouse</p> |  |
| <p>PA04 = Area 04</p> | <p>4MLT –P4 Melt</p> <p>4DSA – P4 Disa</p> <p>4SOT – P4 Shakeout</p> <p>4MLR – P4 Mill room</p> <p>4QCA – P4 Quality Assurance</p> <p>4SHP – P4 Shipping</p>  |  |

|                        |  |  |
|------------------------|--|--|
|                        | <p>4COR – P4 Core room</p> <p>4MNT – P4 Maintenance</p> <p>4MMT – P4 Melt Maintenance</p> <p>4EMT – P4 Electrical Maintenance</p> <p>4LAB – P4 Lab</p> <p>4ENV – P4 Environmental</p> <p>4SAF – P4Safety</p> <p>4CSV – P4 Customer Service</p> <p>4PAT – P4 Pattern Shop</p> <p>4ENG – P4 Engineering</p> <p>4ACT – P4 Accounting</p> <p>4IEN – P4 Industrial Engineering</p> <p>4MTG – P4 Metallurgy</p> <p>4PEN – P4 Pattern Engineering</p> <p>4PER – P4 Personnel</p> <p>4PUR – P4 Purchasing</p> <p>4PRM – P4Program Management</p> <p>4STK – P4 Stockroom</p> <p>4LYO – P4 Layout</p> <p>4IFT – P4 Information Technology</p> <p>4WHS – P4 Warehouse</p> |  |
| <p>PA 05 = Area 05</p> | <p>CMLT – Plant 5.1 Melt</p> <p>CDSA – Plant 5.1Disa</p> <p>CSOT – Plant 5.1 Shakeout</p> <p>CMLR – Plant 5.1 Mill room</p>  |  |

|                 |   |  |
|-----------------|---|--|
|                 | <p>COA – Plant 5.1 Quality Assurance</p> <p>CSHP – Plant 5.1 Shipping</p> <p>CCOR – Plant 5.1 Core room</p> <p>CMNT – Plant 5.1 Maintenance</p> <p>CMMT – Plant 5.1 Melt Maintenance</p> <p>CEMT – Plant 5.1 Electrical Maintenance</p> <p>CLAB – Plant 5.1 Lab</p> <p>CENV – Plant 5.1 Environmental</p> <p>CSAF – Plant 5.1 Safety</p> <p>CCSV – Plant 5.1 Customer Service</p> <p>CPAT – Plant 5.1 Pattern Shop</p> <p>CENG – Plant 5.1 Engineering</p> <p>CACT – Plant 5.1 Accounting</p> <p>CIEN – Plant 5.1 Industrial Engineering</p> <p>CMTG – Plant 5.1 Metallurgy</p> <p>CPEN – Plant 5.1 Pattern Engineering</p> <p>CPER – Plant 5.1 Personnel</p> <p>CPUR – Plant 5.1 Purchasing</p> <p>CPRM – Plant 5.1 Program Management</p> <p>CSTK – Plant 5.1 Stockroom</p> <p>CLYO – Plant 5.1 Layout</p> <p>CIFT – Plant 5.1 Information Technology</p> <p>CWHS – Plant 5.1 Warehouse</p> |  |
| PA 06 = Area 06 | <p>DMLT – Plant 5.2 Melt</p> <p>DDSA – Plant 5.2 Disa</p>   |  |



|  |  |
|--|--|
| <p>DSOT – Plant 5.2 Shakeout</p> <p>DMLR – Plant 5.2 Mill room</p> <p>DQA – Plant 5.2 Quality Assurance</p> <p>DSHP – Plant 5.2 Shipping</p> <p>DCOR – Plant 5.2 Core room</p> <p>DMNT – Plant 5.2 Maintenance</p> <p>DMMT – Plant 5.2 Melt Maintenance</p> <p>DEMT – Plant 5.2 Electrical Maintenance</p> <p>DLAB – Plant 5.2 Lab</p> <p>DENV – Plant 5.2 Environmental</p> <p>DSAF – Plant 5.2 Safety</p> <p>DCSV – Plant 5.2 Customer Service</p> <p>DPAT – Plant 5.2 Pattern Shop</p> <p>DENG – Plant 5.2 Engineering</p> <p>DACT – Plant 5.2 Accounting</p> <p>DIEN – Plant 5.2 Industrial Engineering</p> <p>DMTG – Plant 5.2 Metallurgy</p> <p>DPEN – Plant 5.2 Pattern Engineering</p> <p>DPER – Plant 5.2 Personnel</p> <p>DPUR – Plant 5.2 Purchasing</p> <p>DPRM – Plant 5.2 Program Management</p> <p>DSTK – Plant 5.2 Stockroom</p> <p>DLYO – Plant 5.2 Layout</p> <p>DIFT – Plant 5.2 Information Technology</p> <p>DWHS – Plant 5.2 Warehouse</p> |  |
|--|--|

|                        |   |  |
|------------------------|---|--|
| <p>PA 07 = Area 07</p> | <p>EMLT – Plant 6.1 Melt<br/>                 EDSA – Plant 6.1 Disa<br/>                 ESOT – Plant 6.1 Shakeout<br/>                 EMLR – Plant 6.1 Mill room<br/>                 EQA – Plant 6.1 Quality Assurance<br/>                 ESHP – Plant 6.1 Shipping<br/>                 ECOR – Plant 6.1 Core room<br/>                 EMNT – Plant 6.1 Maintenance<br/>                 EMMT – Plant 6.1 Melt Maintenance<br/>                 EEMT – Plant 6.1 Electrical Maintenance<br/>                 ELAB – Plant 6.1 Lab<br/>                 EENV – Plant 6.1 Environmental<br/>                 ESAF – Plant 6.1 Safety<br/>                 ECSV – Plant 6.1 Customer Service<br/>                 EPAT – Plant 6.1 Pattern Shop<br/>                 EENG – Plant 6.1 Engineering<br/>                 EACT – Plant 6.1 Accounting<br/>                 EIEN – Plant 6.1 Industrial Engineering<br/>                 EMTG – Plant 6.1 Metallurgy<br/>                 EPEN – Plant 6.1 Pattern Engineering<br/>                 EPER – Plant 6.1 Personnel<br/>                 EPUR – Plant 6.1 Purchasing<br/>                 EPRM – Plant 6.1 Program Management<br/>                 ESTK – Plant 6.1 Stockroom<br/>                 ELYO – Plant 6.1 Layout</p> |  |
|------------------------|---|--|

|               |   |  |
|---------------|---|--|
|               | <p>EIFT – Plant 6.1 Information Technology</p> <p>EWHS- Plant 6.1 Warehouse</p>   |  |
| PA 08=Area 08 | <p>FMLT – Plant 6.2 Melt</p> <p>FDSA – Plant 6.2 Disa</p> <p>FSOT – Plant 6.2 Shakeout</p> <p>FMLR – Plant 6.2 Mill room</p> <p>FQCA – Plant 6.2 Quality Assurance</p> <p>FSHP – Plant 6.2 Shipping</p> <p>FCOR – Plant 6.2 Core room</p> <p>FMNT – Plant 6.2 Maintenance</p> <p>FMMT – Plant 6.2 Melt Maintenance</p> <p>FEMT – Plant 6.2 Electrical Maintenance</p> <p>FLAB – Plant 6.2 Lab</p> <p>FENV – Plant 6.2 Environmental</p> <p>FSAF – Plant 6.2 Safety</p> <p>FCSV – Plant 6.2 Customer Service</p> <p>FPAT – Plant 6.2 Pattern Shop</p> <p>FENG – Plant 6.2 Engineering</p> <p>FACT – Plant 6.2 Accounting</p> <p>FIEN – Plant 6.2 Industrial Engineering</p> <p>FMTG – Plant 6.2 Metallurgy</p> <p>FPEN – Plant 6.2 Pattern Engineering</p> <p>PPER – Plant 6.2 Personnel</p> <p>FPUR – Plant 6.2 Purchasing</p> <p>FPRM – Plant 6.2 Program Management</p> |  |

|  |   |  |
|--|---|--|
|  | FSTK – Plant 6.2 Stockroom<br>FLYO – Plant 6.2 Layout<br>FIFT – Plant 6.2 Information Technology<br>FWHS- Plant 6.2 Warehouse |  |
|--|---|--|

**2. PERSONAL STRUCTURE**

This section describes the processes related to employee master data at INFINITE TECH COMM. SOLUTION, Inc. and the relevant mapping process in SAP HCM system.

The Personnel Structure of INFINITE TECH COMM. SOLUTION, Inc. can be depicted in the following table format:

**TABLE 10: EMPLOYEE GROUP AND SUBGROUP**

| Employee Groups  | Employee Subgroups   | Comments  |
|------------------|--|---|
| Active employees | T0 – Hourly<br>T1 - - Hourly Leads<br>T2 - College Students<br>T3 – Part Time<br>T4 – Salaried (semi-monthly)<br>T5 – Salaried Key Group<br>T6 – Salaried Staff Group<br>T7 - Executives (CEO)<br>T8 – Co-Op/Interns (Salaried)<br>T9 – Salaried Sales Group<br>TA- Non-US Citizen Group | Non-Us Citizen Group employees are paid on Semi-Monthly basis with no FICA deduction. |
| Retirees         | T0 – Hourly  | These are the only employee subgroups   |

|  |  |            |
|--|--|------------|
|  | T1 – Hourly Leads<br>T4 – Salaried (semi-monthly)<br>T5 – Salaried Key Group<br>T6 – Salaried Staff Group<br>T7 – Executives (CEO) | applicable |
|--|--|------------|

**2.1 EMPLOYEE NUMBER RANGE ASSIGNMENT**

The current employee number is 4-digits in length. We will maintain these employee numbers in SAP HCM system as these numbers are also being used for time swiping in the homegrown time recording system. (SAP HCM system accommodates numbering of employees up to 8 digits)

In SAP, we will use a 6-digit number range from 100000 - 999999. We will use external number assignment in SAP to accommodate the numbers generated by the legacy system. SAP generated employee numbers will be the 4-digit legacy system number with a 2-digit prefix.

At some point of time, we will switch SAP number assignment from 'Internal' to 'External' number range assignment.

**2.2 HIRING PROCESS**

1. If the candidate is offered employment, the data from their employment application form is transferred to the 'Application file'.
2. Notify IT department if an employee needs a computer (special form)
3. Reserve employee (clock) number (will be automatic in SAP)
4. Employee orientation - covering forms & lecture, benefits, safety, harassment, quality, etc.
5. Employee fills out required forms:
  - a. Humana & VSP Insurance – dependents & birthdays
  - b. Life Insurance
  - c. W-4 form
  - d. I-9 form
  - e. Direct Deposit
  - f. Profit Sharing Beneficiary

6. Personnel Assistant enters information on system
7. Take employee picture and print new ID badge
8. Email appropriate departments/foreman of the new hire
9. Make personnel files for new employees

### 2.3 TERMINATION PROCESS:

The INFINITE TECH COMM. SOLUTION Company follows the following employee termination steps:

1. Termination sheet for personnel file. Send sheet to the foreman to complete.
2. COBRA – Fill out if an employee had insurance and keep a copy for the file.
3. Uniforms\_– Cancel with uniform service and in the system.
4. Humana & VSP – Pull insurance form and file. Terminate coverage with carriers.
5. 401(k) – If the employee participates, mail out 401(k) distribution forms. Zero out %
6. Profit Sharing – If an employee is eligible for, and has vested interest, mail distribution forms.
7. Life Insurance & voluntary life insurance – Mail out conversion and portability forms.
8. Vacation Pay – Verify vacation pay left, pro-rate their vacation pay and email to payroll.
9. I-9 Form – Pull I-9 form from active I-9 file and put in terminated I-9 file.
10. Certificate of Group Health Plan Coverage – (HIPPA) Fill out & mail, keep a copy.
11. Termination Sheet – Lotus Notes termination database. Complete and email-keep a copy for the file.
12. Lawson– Personnel action to termination the employee out of system. The system will terminate the employee when an update is completed. Email a notice of termination to the appropriate individuals.
13. HCRA (Health Care Re-imbusement Account) – If the employee elected this option notify Wage Works by email.
14. Tuition Reimbursement – If the employee was participating in the tuition reimbursement program, notify the Training Dept.
15. Retiree Termination – If an employee terminating is a retiree, mark in the system.

### 2.4 EMPLOYEE MASTER DATA:

In SAP, employee master data is stored using different info types. Various actions on employee master data are carried out using 'Personnel Actions'.

Employee master data at INFINITE TECH COMM. SOLUTION, Inc. will be mapped in SAP HCM system with the following info types (All other actions may use a subset of these info types):

TABLE 11: AVAILABLE INFOTYPE TO MAINTAIN EMPLOYEE INFORMATION.

| Info type Number | Sequence | Info type Name                    | Subtype                        |
|------------------|----------|-----------------------------------|--------------------------------|
| 0000             | 1        | Actions                           | N/A                            |
| 0001             | 3        | Organizational Assignment         | N/A                            |
| 0002             | 2        | Personal Data                     | N/A                            |
| 0006             | 4        | Address                           | N/A                            |
| 0007             | 8        | Planned Working Time              | N/A                            |
| 0008             | 9        | Basic Pay                         | N/A                            |
| 0009             | 10       | Bank Details                      | Bank Transfer as well as Check |
| 0208             | 5        | Work Tax Area                     | N/A                            |
| 0209             | 6        | Unemployment State                | N/A                            |
| 0210             | 7        | Withholding Info W4/W5 US         | N/A                            |
| 0014             | 11       | Recurring Payments and Deductions |                                |
| 0021             | 12       | Family Member/Dependents          | 1, 2, 2, and 2                 |
| 0077             | 13       | Additional Personal Data          | N/A                            |
| 9001             | 14       | Uniforms                          |                                |
| 0105             | 15       | Communication                     | N/A                            |
| 0019             | 16       | Monitoring of tasks               |                                |
| 0171             | 17       | General Benefits Information      | N/A                            |

The following info types are other commonly used info types as part of employee master data:

| Info type Number | Info type Name                   | Subtype |
|------------------|----------------------------------|---------|
| 0016             | Education                        | X       |
| 0015             | Additional Payments              | N/A     |
| 0024             | Skills                           |         |
| 0027             | Cost Distribution                |         |
| 0032             | Internal Data                    | X       |
| 0094             | Residence Status                 | X       |
| 0221             | Payroll Results Adjustment       | X       |
| 0234             | Additional Withholding Info – US | X       |

|      |                                   |   |
|------|-----------------------------------|---|
| 0235 | Other Taxes US                    | X |
| 0267 | Additional Off-Cycle Payments     | X |
| 2010 | Employee Remuneration Information | X |

**3. MANAGEMENT EVALUATION PROCESS DESIGN**

**3.1 THREE AND SIX MONTH EVALUATION PROCESS:**

**NOTE:** The below tasks will be entered in SAP HCM system in Monitoring of Task infotype

- 1) One month prior to the employee's 90 days or 180 days of employment, the personnel dept. sends a performance rating to the appropriate supervisor for completion.
- 2) Upon return of the evaluation, the personnel dept. will score, verify, and process an increase in pay if applicable. A personnel wage change form is generated and the evaluation filed.



3.2 AVILABLE PERSONAL ACTIONS:

The following will be the required 'Personnel Actions' for INFINITE TECH COMM. SOLUTION, Inc.:

TABLE 12: PERSONAL ACTIONS AVAILABLE FOR EMPLOYMENT

| Personnel Action Type | Reason for action               | Remarks |
|-----------------------|---------------------------------|---------|
| Hire                  | New Position                    |         |
|                       | Replacement                     |         |
|                       | Expansion                       |         |
|                       | Transfer from other TK Company  |         |
| Rehire                | New Position                    |         |
|                       | Replacement                     |         |
|                       | Expansion                       |         |
| Termination           | Miscellaneous                   |         |
|                       | Workplace Violence              |         |
|                       | Drug & Alcohol Policy Violation |         |
|                       | Attendance                      |         |
|                       | No Call – No Show               |         |
|                       | Theft                           |         |
|                       | Substandard Work Performance    |         |
|                       | Dishonesty                      |         |
|                       | Death                           |         |
|                       | Harassment                      |         |

|                 |                                      |  |
|-----------------|--------------------------------------|--|
|                 | Safety Violations                    |  |
|                 | Voluntary quit - New Job             |  |
|                 | Voluntary - Retirement               |  |
|                 | Voluntary – SS Disability Retirement |  |
|                 | Voluntary Quit – no reason           |  |
| Wage Change     | 6-month Evaluation                   |  |
|                 | Yearly Performance Review            |  |
|                 | Special Evaluation                   |  |
|                 | Job Change                           |  |
|                 | Correct Error                        |  |
|                 | Tech Rate – Across Board Increase    |  |
|                 | Base Rate – Across Board Increase    |  |
|                 | Salary – Across Board Increase       |  |
| Position Change | Promotion                            |  |
|                 | Transfer                             |  |
|                 | Job Title Change                     |  |
|                 | Hourly to Salary or Salary to Hourly |  |
|                 | Demotion                             |  |
|                 | Lead Group                           |  |
|                 | Key Group                            |  |

|                                 |                          |  |
|---------------------------------|--------------------------|--|
|                                 | Staff Group              |  |
|                                 | Correct Error            |  |
| Transfer – one plant to another | Promotion                |  |
|                                 | Transfer                 |  |
|                                 | Demotion                 |  |
|                                 | Correct Error            |  |
| Leave of Absence                | Short Term Disability    | Employee is active, but the info type's Basic pay, Garnishments and Recurring Payments/Deductions will be delimited. |
|                                 | Long Term Disability     | - as above-  |
|                                 | FMLA – Salary (unpaid)   | - as above-  |
|                                 | FMLA – Hourly (unpaid)   | - as above-  |
|                                 | Workers Comp             | - as above-  |
|                                 | Medical Lay-off (unpaid) | - as above-  |
|                                 | FMLA – Salary (paid)     |  |
|                                 | Military                 | Difference only will be paid during the period of absence  |
| Return from Leave of Ab-        | Short Term Disability    |  |

|       |                          |  |
|-------|--------------------------|--|
| sence | Long Term Disability     |  |
|       | FMLA – Salary (paid)     |  |
|       | FMLA – Hourly (unpaid)   |  |
|       | Military                 |  |
|       | Workers Comp             |  |
|       | Medical Lay-off (unpaid) |  |

**4. PAYROLL RELATED DESIGN**

**4.1 SHORT TERM DISABILITY:**

Short term disability is determined through the following procedure

1. Personnel Department receives payment along with a claim statement from Sun Life
2. Personnel gives check to employee; claim statement to Payroll
3. Payroll enters claim statement information in series (Pay117)— Gross pay, Federal tax, FICA Tax, and Net pay
4. After the claims are entered for the month – Payroll submits an edit and compares these totals to Sun Life’s Monthly Statement. When balanced, update.
5. Balancing to Sun Life totals is done quarterly and year-to-date. Currently, the disability is included on our W-2’s.
6. Employee does not receive a paycheck from INFINITE TECH COMM. SOLUTION when they are on disability. Any deductions will go into arrears. Sun Life should be taking child support from disability check and will submit to child support agency.
7. Payroll makes a copy of child support order and gives to Personnel department to submit to Disability Insurance.

#### 4.2 WORKERS COMPENSTATION:

1. The nurses provide a list of employees who are on worker's compensation.
2. Payroll will go through this listing to see if an employee has child support.
3. Payroll submits a copy of child support order to worker's compensation insurance. This is done at Waupaca location only. Other locations, the nurse submits a copy to the insurance company.
4. Worker's Compensation Insurance should deduct child support from the w/c check and submit to the child support agency.

#### 4.3 WAGE TYPE IN PERSONAL ADMINISTRATION:

The following is the recommended list of possible wage type ranges, which will be recorded on employee master data info types:

1000 -1099 – Wage types on Basic Pay

1100-1199 – Recurring Payments/Deductions

1200 -1299 – Payments of Additional Payments

1300 – 1399 – Deductions on Additional Payments

2000 – 2999 – Time Related wage types to be entered on IT2010 (Employee Remuneration Information).

These will be the wage types to be used to accommodate interface.

3000 – 3010 – Garnishments wage types

5000 – 5099 – Benefits EE contributions (Pre tax)

5100 - 5199 – Benefits EE Contributions (Post tax)

5200 – 5299 – Benefits ER Contributions

5300 – 5399 – Benefits Provider contributions

9000 – 9999 – Derived wage types in rules or remuneration statements

**Note:** Other ranges may be decided later as needed

**4.4 PAY SCALE STRUCTURES:**

INFINITE TECH COMM. SOLUTION will have the following pay scale types, areas and groups:

No pay scale levels are needed.

Pay scale types and pay scale areas are two digit codes followed by their names. Pay scale group can consist of 7-digit code followed by the name.

**TABLE 13: EMPLOYEE PAY SCALE STRUCTURE**

| Pay scale type | EE Sub Group | Pay Scale Text      | Pay Scale Area                     | Pay Scale Area Text  | EE Grouping (Hourly/Salaried) | Pay Scale Group | Pay Scale Level | Salary Range           |
|----------------|--------------|---------------------|------------------------------------|--|-------------------------------|-----------------|-----------------|------------------------|
| 01             | T0           | Base & Tech         | 00, 01, 21, 22, 04, 51, 52, 61, 62 | 00=Area 0<br>01=Area 1<br>21=Plant 2 phase 1<br>22=Plant 2 phase 2 | Hourly                        | BASEGRP         | N/A             | \$10.91 - \$15.19/hour |
|                |              |                     |                                    |  |                               | TECHGRP         |                 | \$11.42 - \$17.62/hour |
| 02             | T2           | Tech Student        | 00, 01, 21, 22, 04, 51, 52, 61, 62 | 04=Plant 4<br>51=Plant 5 phase 1<br>52=Plant 5 phase 2             | Hourly                        | TECHGRP         |                 | \$8.90 - \$15.19/hour  |
| 03             | T3           | Base/Tech Part-time | 00, 01, 21, 22, 04, 51, 52, 61, 62 | 61=Plant 6 phase 1<br>62= Plant 6 phase 2                          | Hourly                        | BASPGRP         |                 | \$10.91 - \$15.19/hour |
|                |              |                     |                                    |  |                               | TECPGRP         |                 | \$11.42 - \$17.62/hour |
| 04             | 1            | Lead                | 00, 01, 21, 22, 04, 51, 52, 61, 62 |  | Hourly                        | LEADGRP         |                 | \$14.89 - \$17.63/hour |

|    |                  |       |  |  |          |         |  |                                      |
|----|------------------|-------|--|--|----------|---------|--|--------------------------------------|
| 05 | 4, T8,<br>T9, TA | Semi  | 00, 01, 21, 22,<br>04, 51, 52, 61,<br>62 |  | Salaried | SEMIGRP |  | \$1000 -<br>\$10000 semi-<br>monthly |
| 06 | 5                | Key   | 00, 01, 21, 22,<br>04, 51, 52, 61,<br>62 |  | Salaried | KEYGRP  |  | \$1000 – 14000<br>semi-monthly       |
| 07 | 6, T7            | Staff | 00, 01, 21, 22,<br>04, 51, 52, 61,<br>62 |  | Salaried | STAFGRP |  | \$7,800-<br>\$30,000<br>monthly      |
|    |                  |       |  |  |          |         |  |                                      |

**Pay scale levels:**

No pay scale levels are needed

**Indirect valuation:**

Not applicable

**Position based pay rate or salary:** Not applicable at INFINITE TECH COMM. SOLUTION, Inc.

**5.1 DATE SPECIFICATIONS:**

The following date specifications will be used on info type 0041 (Date Specifications):

- 1 Original Hire Date
- 2 Department Seniority date
- 3 401(k) Eligibility Date (rehire)
- 4 Profit Sharing Eligibility Date (rehire)
- 5 Probation End Date
- 6 Performance Evaluation Date
- 7 Benefits Eligibility Date

**5.2 EMPLOYEE REPRIMANDS:**

We need to track the employee reprimands and run a report for further analysis. We would use either 'Monitoring of Tasks' or 'Company Instructions' info type.

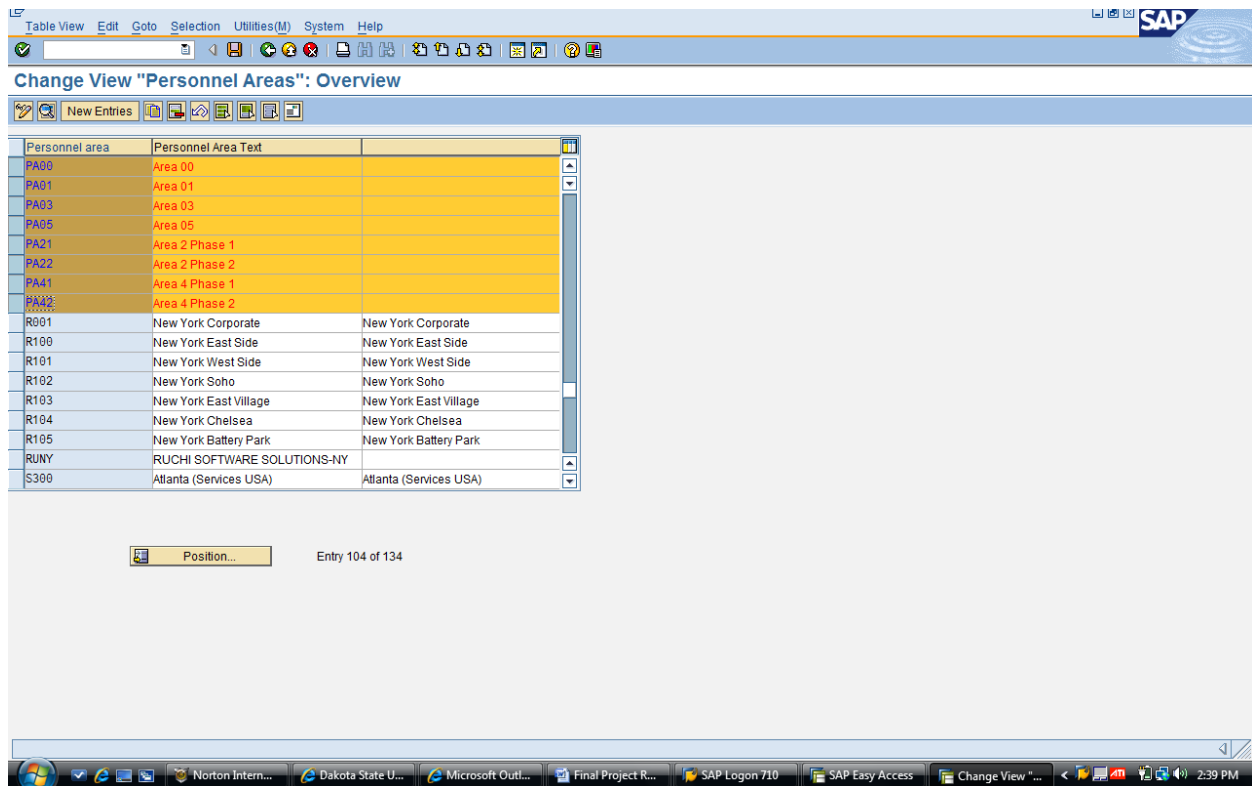
### III. PROJECT IMPLEMENTATION:

Project Implementation Configured by SAP IMG by the administrator shown below with step by step screen shots:

#### 1. IMPLEMENTATION OF PERSONAL AREA AND SUB AREA

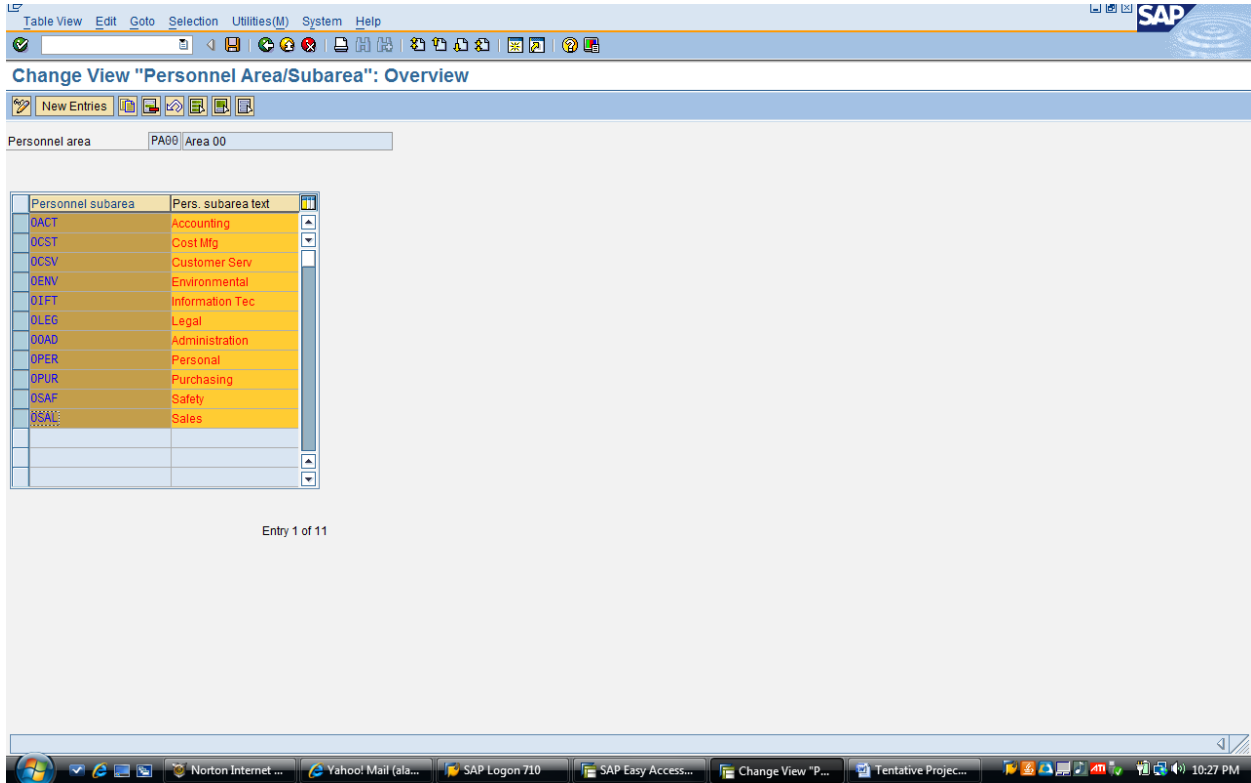
1.1 PERSONAL AREA IMPLEMENTATION: Company's has regional areas and sub regional areas.

Regional areas are the top level organizational structure under the company and each regional area has couple sub regional area. Here regional areas are setup as personal areas in the SAP system using IMG:

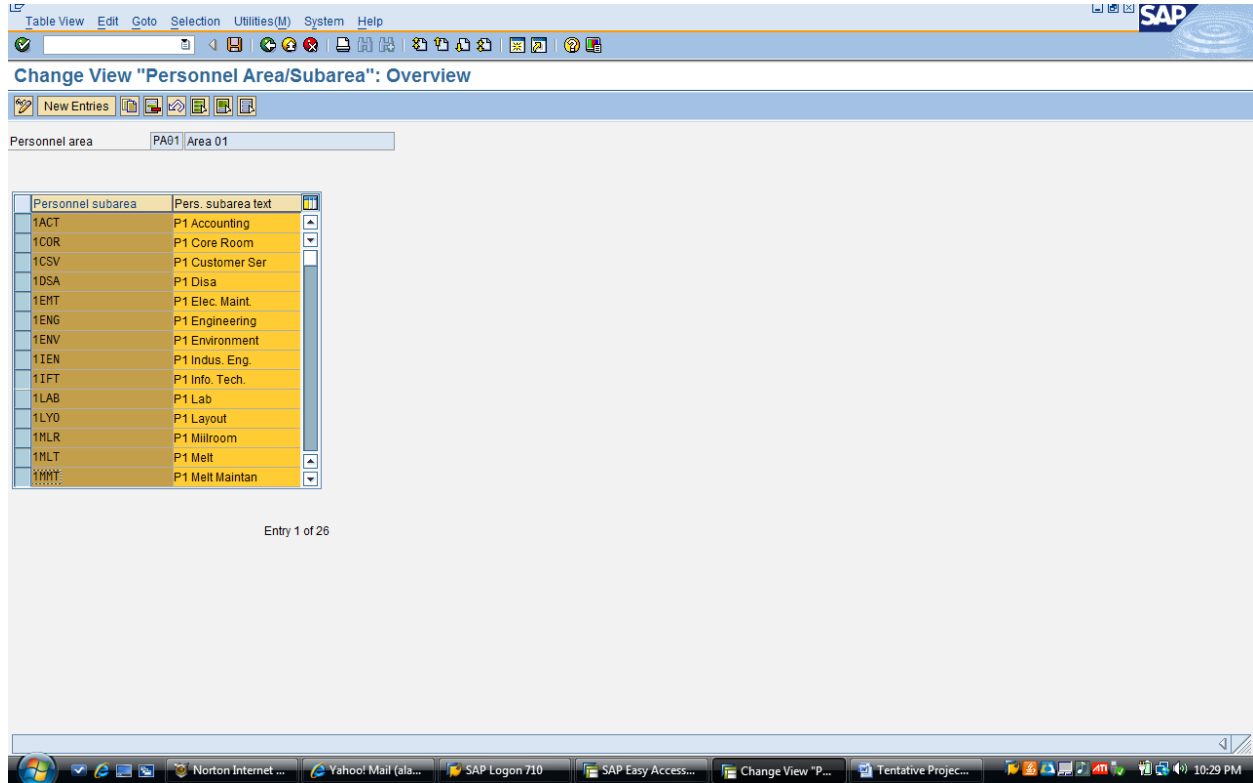




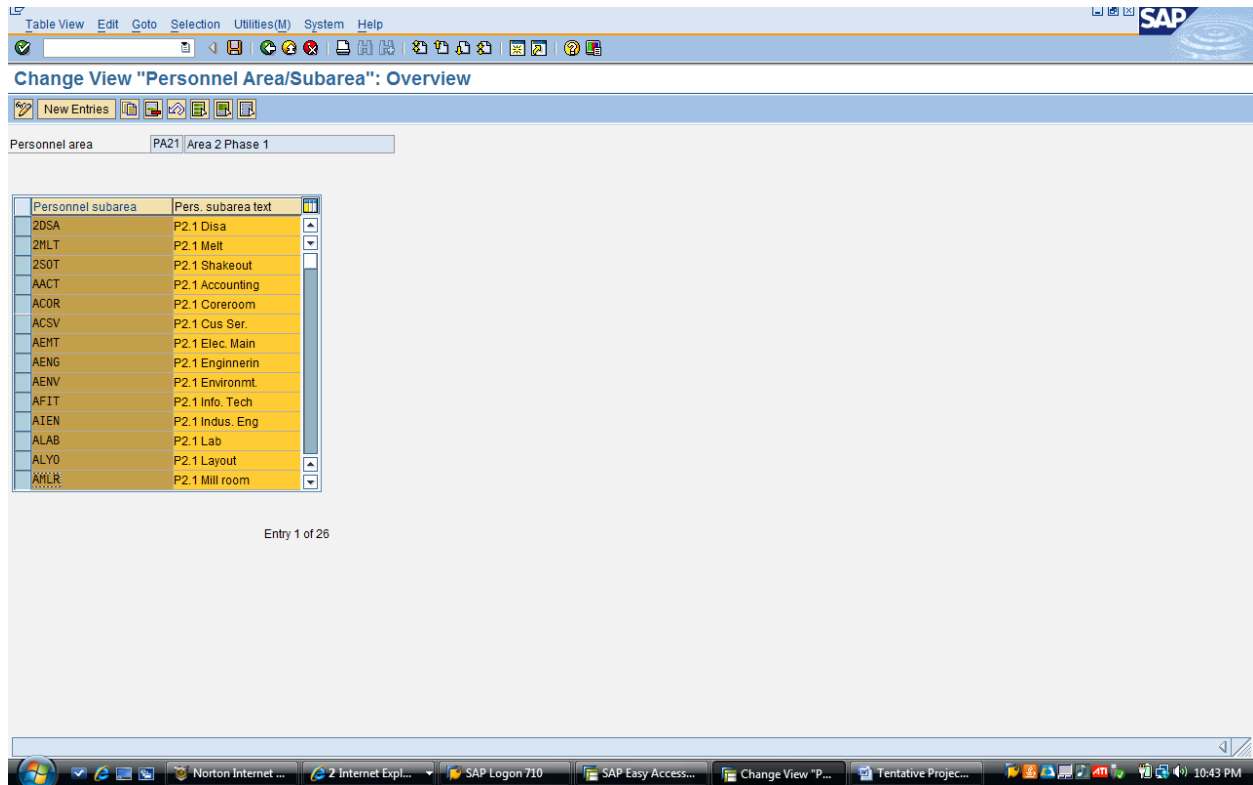
1.2.0 SUB AREA OF AREA 00: Company's regional area 00(personal area in SAP) are divided in to sub regional area (personal sub area in SAP).The figure shows the SAP table containing all the personal sub area and related text in two column:



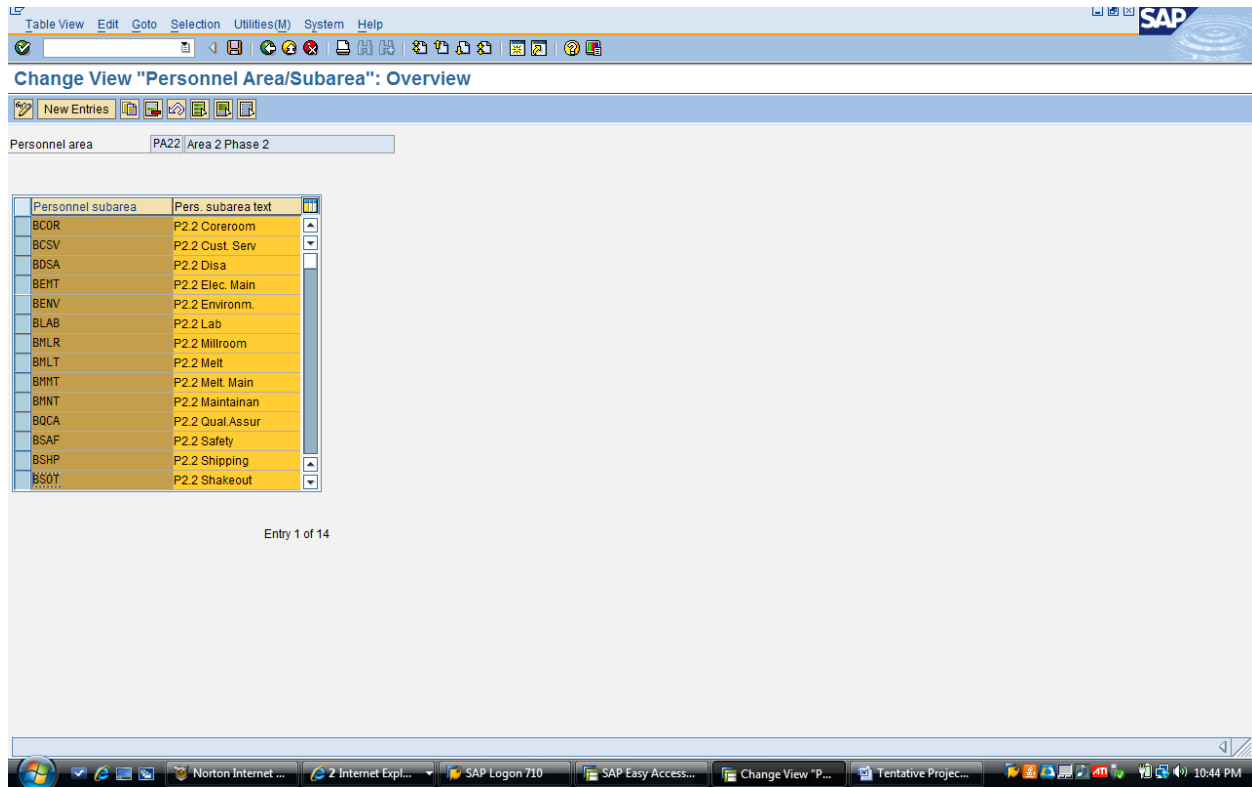
1.2.1 SUB AREA OF AREA 01: The Company divides area to sub area for the easy maintenance of organizational work. It has another regional area 01(personal area in SAP) are divided into the sub regional area (personal sub area in SAP).In two column personal sub area of area 01 and text shown:



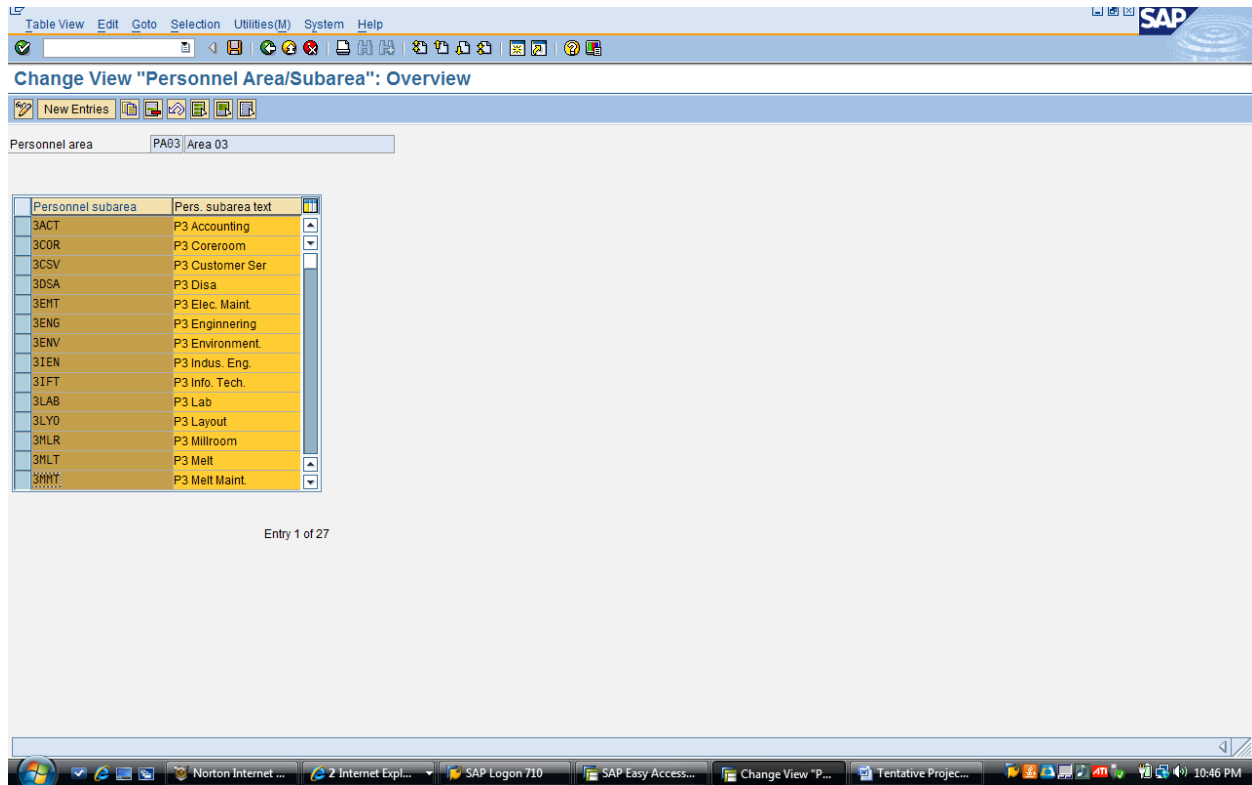
1.2.2.1 SUB AREA OF AREA 21: Company's uses phases to implement temporary or development region .It has another regional area 02 phase 1(personal area in SAP) which divided into sub regional area (personal sub area in SAP).The figure shows SAP Table of two column one showing personal sub area and another corresponding text.



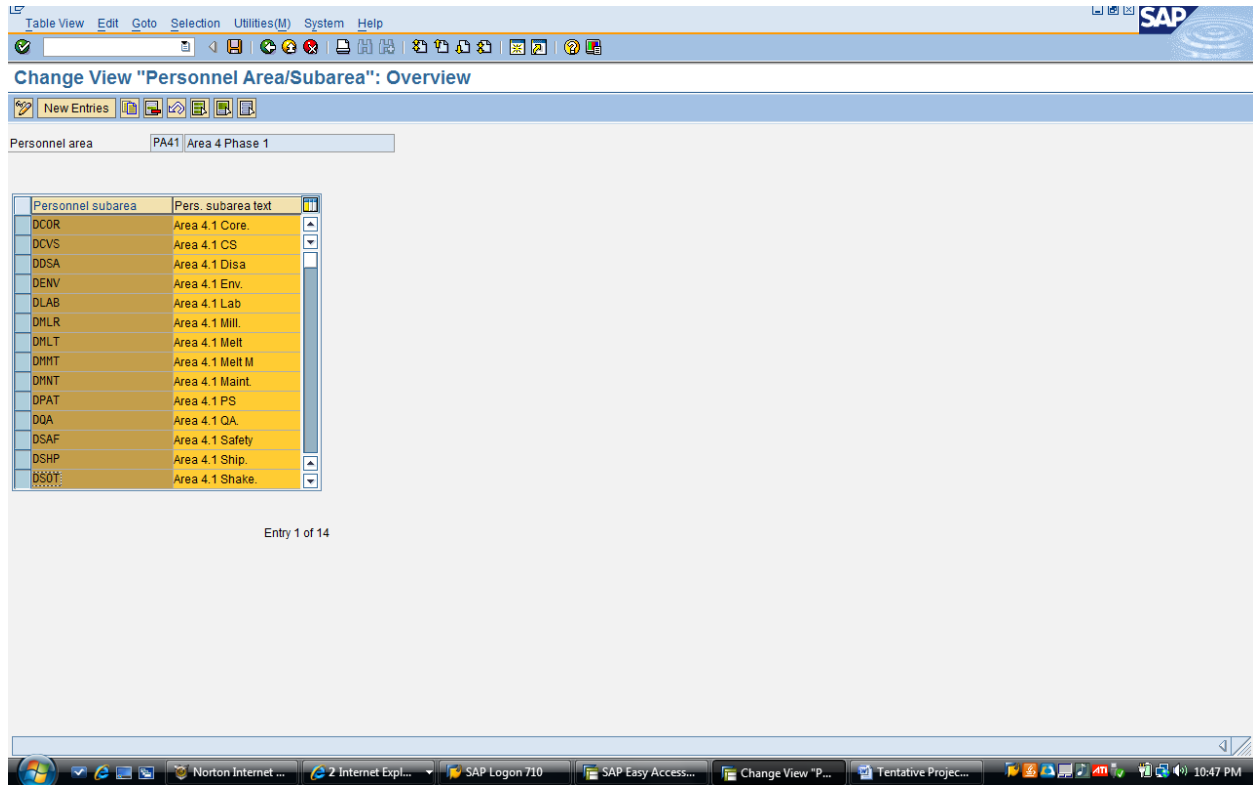
1.2.2.2 SUB AREA OF AREA 22: Company has another developmental regional area 02 phases 2(personal area in SAP) that are divided into the sub regional area (personal sub area in SAP).The figure below shows SAP table containing two column one showing personal sub areas of area 22 and another corresponding text.



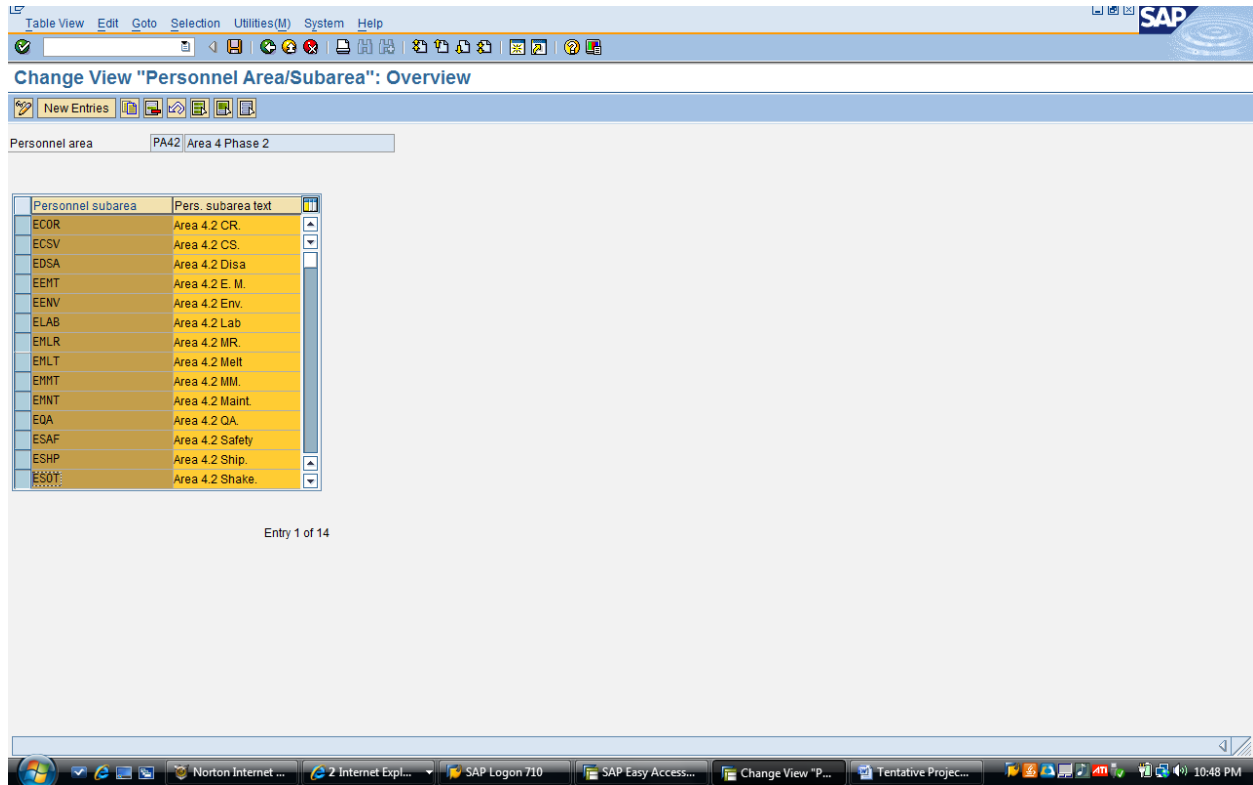
1.2.3 SUB AREA OF AREA 03: Another regional area 03 (personal area in SAP) are divided into the sub regional area (personal sub area in SAP).The figure below shows two column where the first column shows personal sub areas of area 03 and second the corresponding text.



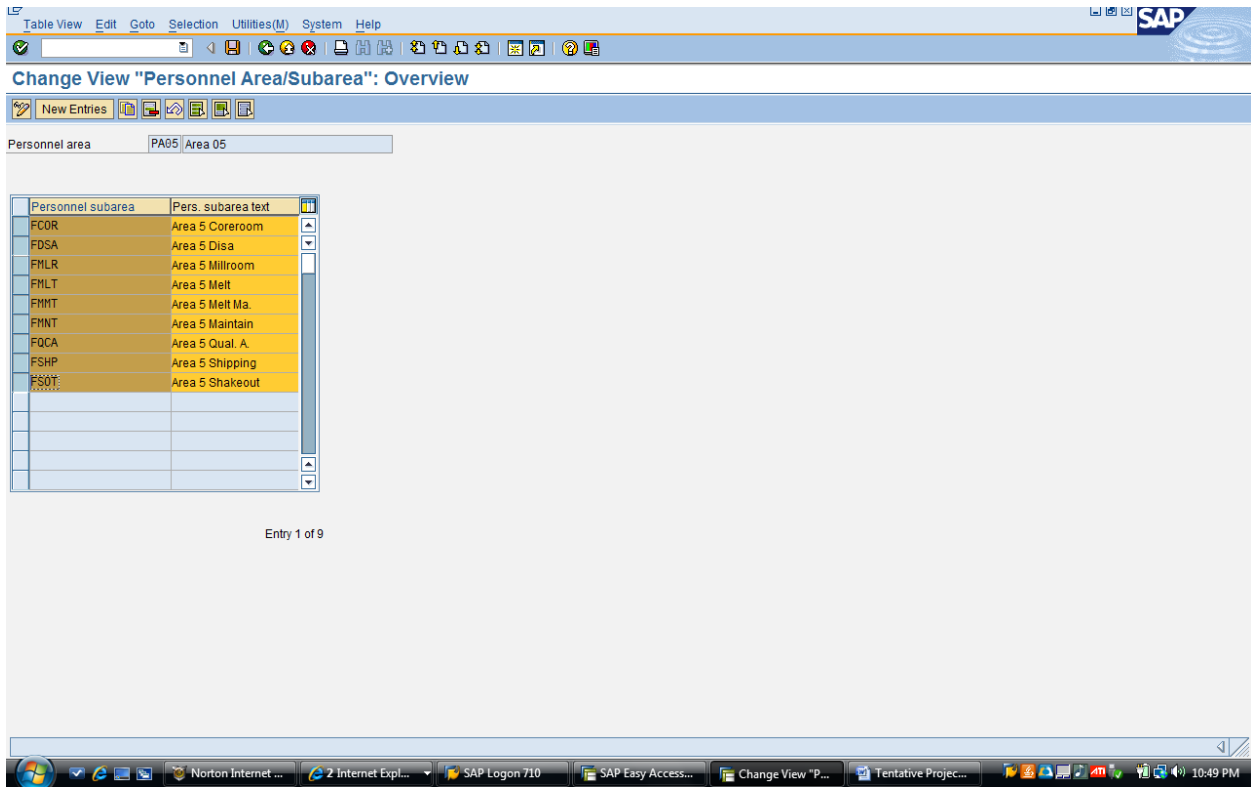
1.2.4.1 SUB AREA OF AREA 41: Company's another regional area 04 phase 1(personal area in SAP) are divided into following sub regional area (personal sub area in SAP).The following figure consists of two column where one are personal sub areas of area 41 and another are corresponding text.



1.2.4.2 SUB AREA OF AREA 42: The Company has two temporary regions. This regional area 04 phases 2 (personal area in SAP) are divided into the sub regional areas (personal sub area in SAP).In the following figure the developmental site 04 phases 2's sub area shown with corresponding text accordingly to two columns:



1.2.5 SUBAREA OF AREA 5: Another regional area 05 (personal area in SAP) are divided into following sub regional area (personal sub area in SAP).The figure below contain two column, one with personal sub areas of area 05 and another corresponding text related to sub area.





1.3.8 ASSIGNMENT OF PERSONAL AREA TO COMPANY:-First Infinite Tech Comm. Solution is defined and finally assigned to the country base assignment. Finally all the organizational structure above (Personal Area and Sub Area) assigned to the company. All configurations done by SAP reference IMG.The outcome shown below:

| Pers.area | Personnel Area Text      | Company Code | Company Name             | Ctry Grpg |
|-----------|--------------------------|--------------|--------------------------|-----------|
| PA00      | Area 00                  | 6480         | Infinite Tech Comm       | 10        |
| PA01      | Area 01                  | 6480         | Infinite Tech Comm       | 10        |
| PA02      | Area 02                  | 6480         | Infinite Tech Comm       | 10        |
| PA03      | Area 03                  | 6480         | Infinite Tech Comm       | 10        |
| PA04      | Area 04                  | 6480         | Infinite Tech Comm       | 10        |
| PA05      | Area 05                  | 6480         | Infinite Tech Comm       | 10        |
| PA06      | Area 06                  | 6480         | Infinite Tech Comm       | 10        |
| PA07      | Area 07                  | 6480         | Infinite Tech Comm       | 10        |
| PA08      | Area 08                  | 6480         | Infinite Tech Comm       | 10        |
| PA09      | Area 09                  | 6480         | Infinite Tech Comm       | 10        |
| PA31      | Neue Produktionsstätte   | CABB         | Training                 | 99        |
| R001      | New York Corporate       | 3000         | IDES US INC              | 10        |
| R100      | New York East Side       | 3000         | IDES US INC              | 10        |
| R101      | New York West Side       | 3000         | IDES US INC              | 10        |
| R102      | New York Soho            | 3000         | IDES US INC              | 10        |
| R103      | New York East Village    | 3000         | IDES US INC              | 10        |
| R104      | New York Chelsea         | 3000         | IDES US INC              |           |
| R105      | New York Battery Park    | 3000         | IDES US INC              |           |
| RUNY      | RUCHI SOFTWARE SOLUTIONS | RUSS         | RUCHI SOFTWARE SOLUTIONS | 10        |
| S300      | Atlanta (Services USA)   | S300         | IDES Services            | 10        |
| SG01      | Singapore                | 5100         | IDES Singapore           | 25        |
| TW01      | Taiwan                   | 4200         | Taiwan                   | 42        |
| UCAB      | New York                 | 3000         | IDES US INC              | 10        |
| ZA01      | Board                    | ZA01         | IDES South Africa        | 16        |
| ZA02      | Executive Management     | ZA01         | IDES South Africa        | 16        |

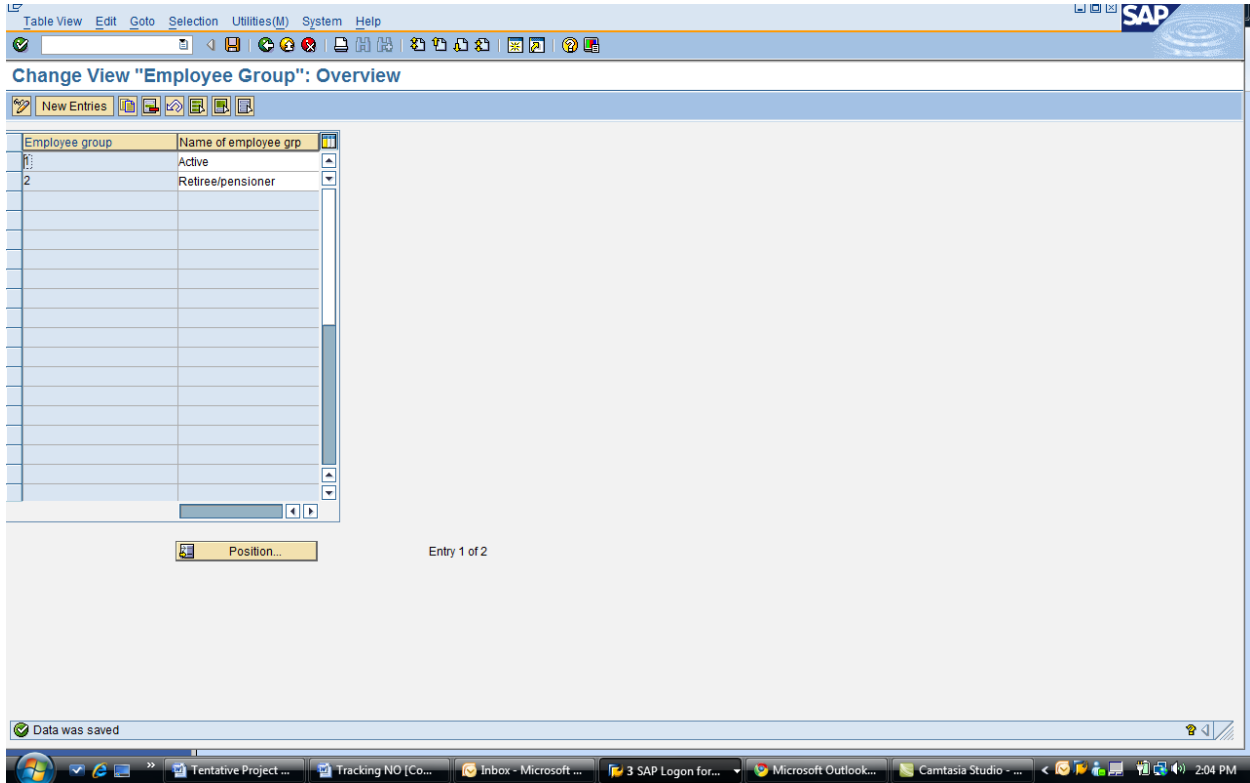
Position... Entry 103 of 136

Data was saved

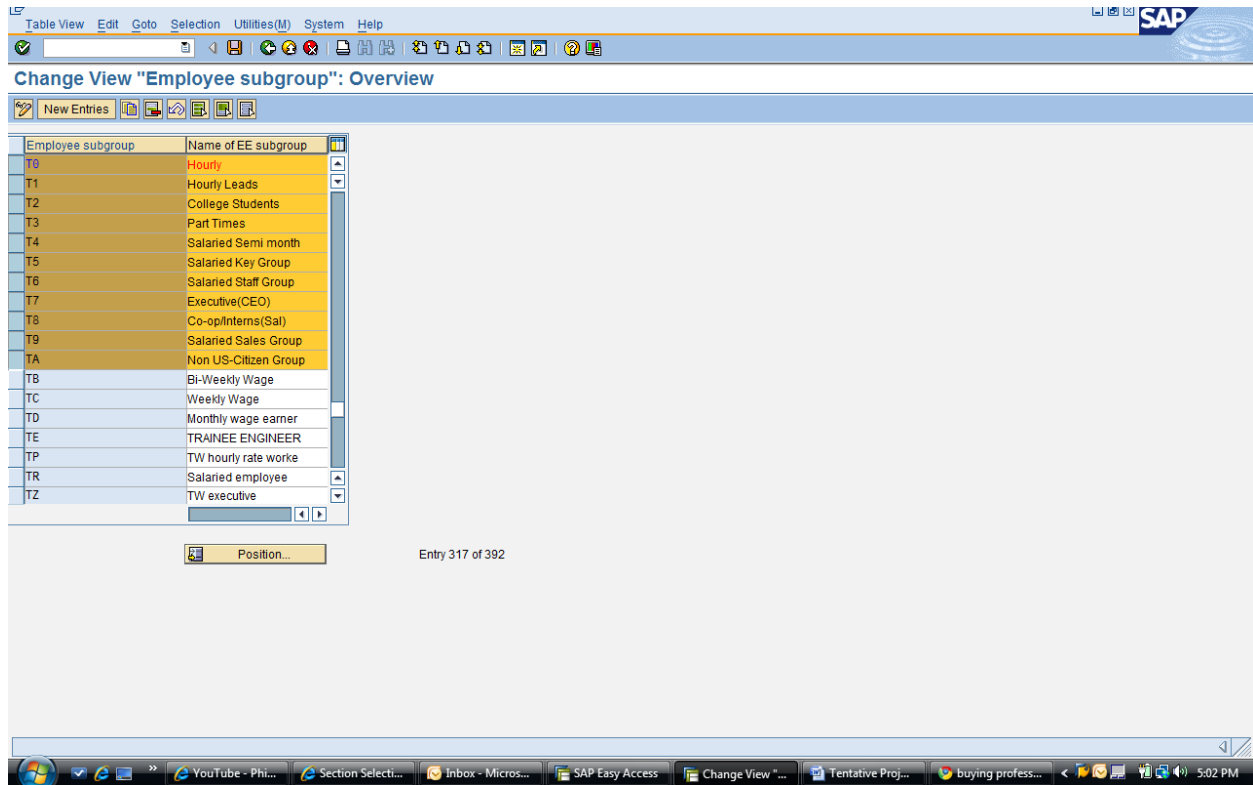
Change View "Assignment of Personnel Area to Company Code": Overview

2. IMPLEMENTATION OF EMPLOYEE GROUP AND SUB GROUP:

**2.1 EMPLOYEE GROUP:** The Company's total employees are categorized in two categories according to the company policy in the SAP system. These are Active and Retire or pensioners are the two employee group. The figure below shows SAP table containing two columns where the first one is Employee group no and another one is the corresponding group name.

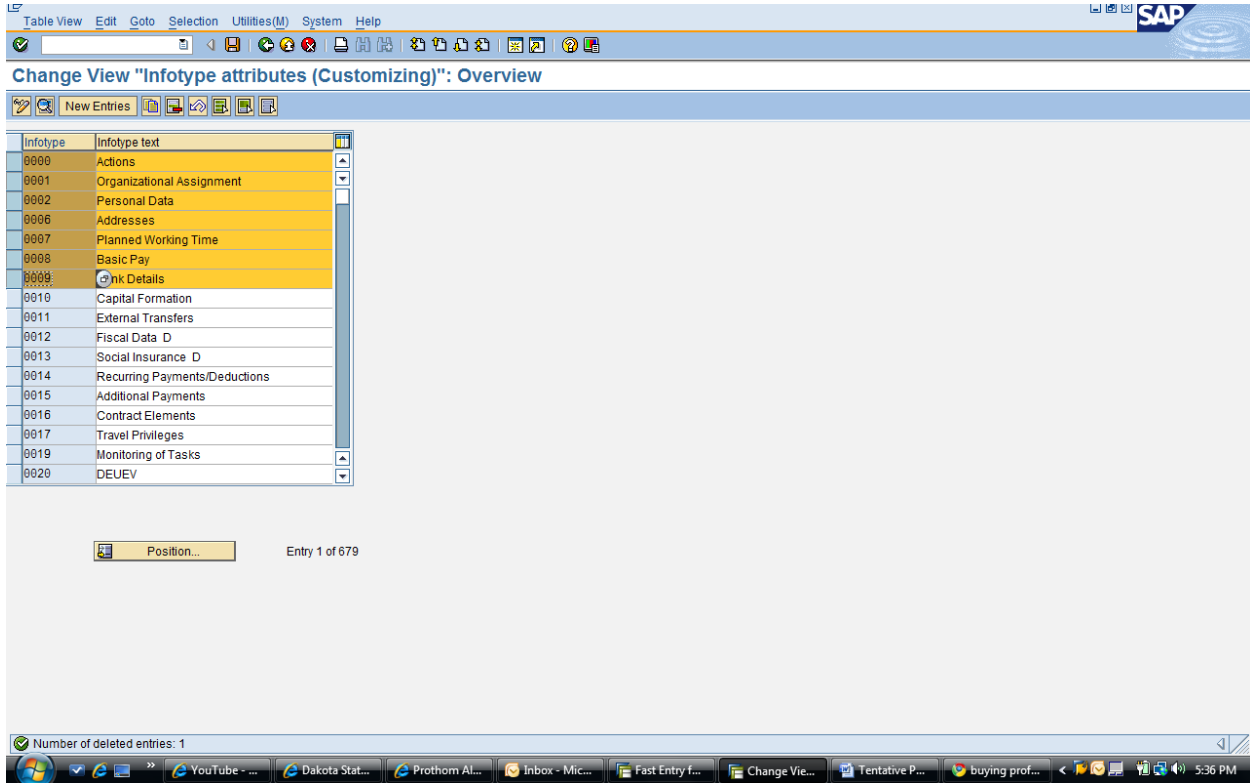


**2.2 EMPLOYEE SUBGROUP:** Each employee group has again couple employee sub group. These subs grouping help to maintain the employee specially related to the payroll. Figure below shows two columns, one containing Employee sub group number and another corresponding name:

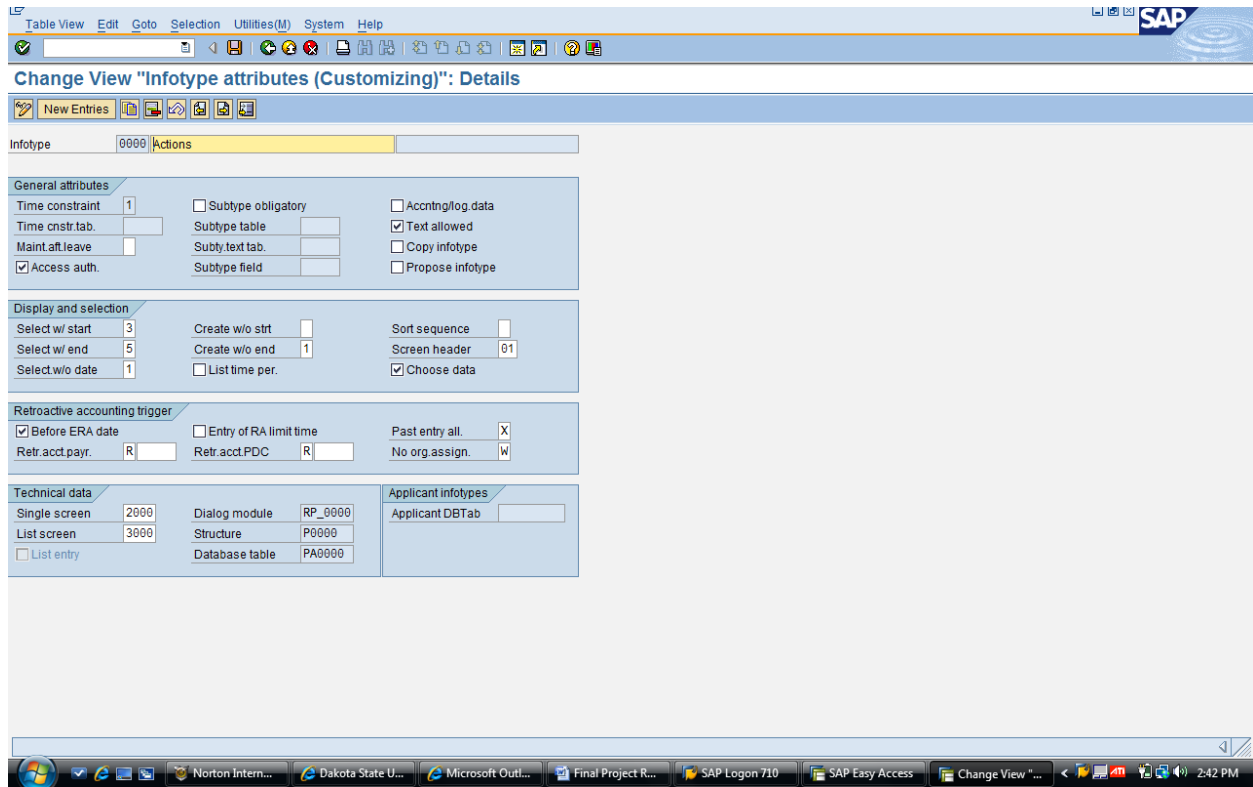


2.3 INFO TYPE CUSTOMIZATION:

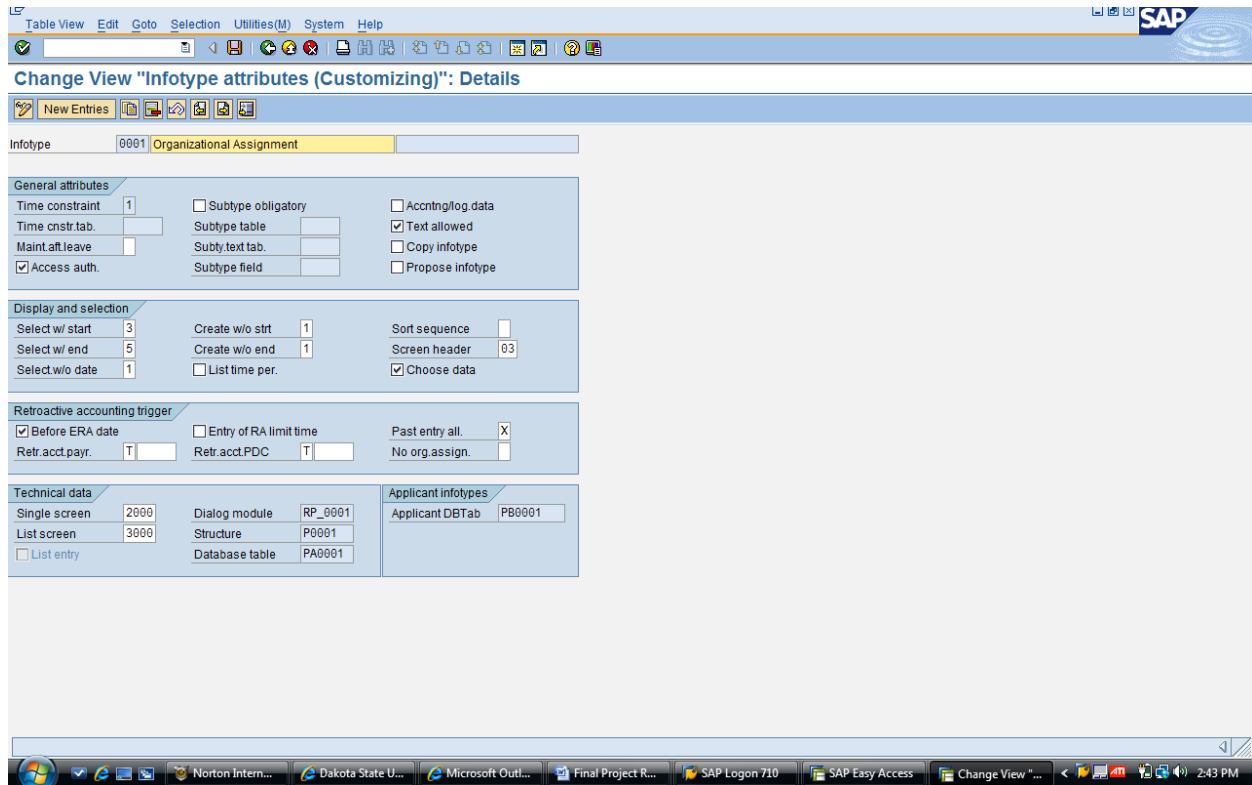
INFOTYPE 0001 TO 0009: Info type (which store employee’s information) customization is done time to time according to the company’s employee data collection and retention policy and requirements by reference IMG. The info types customizing procedure are follows:



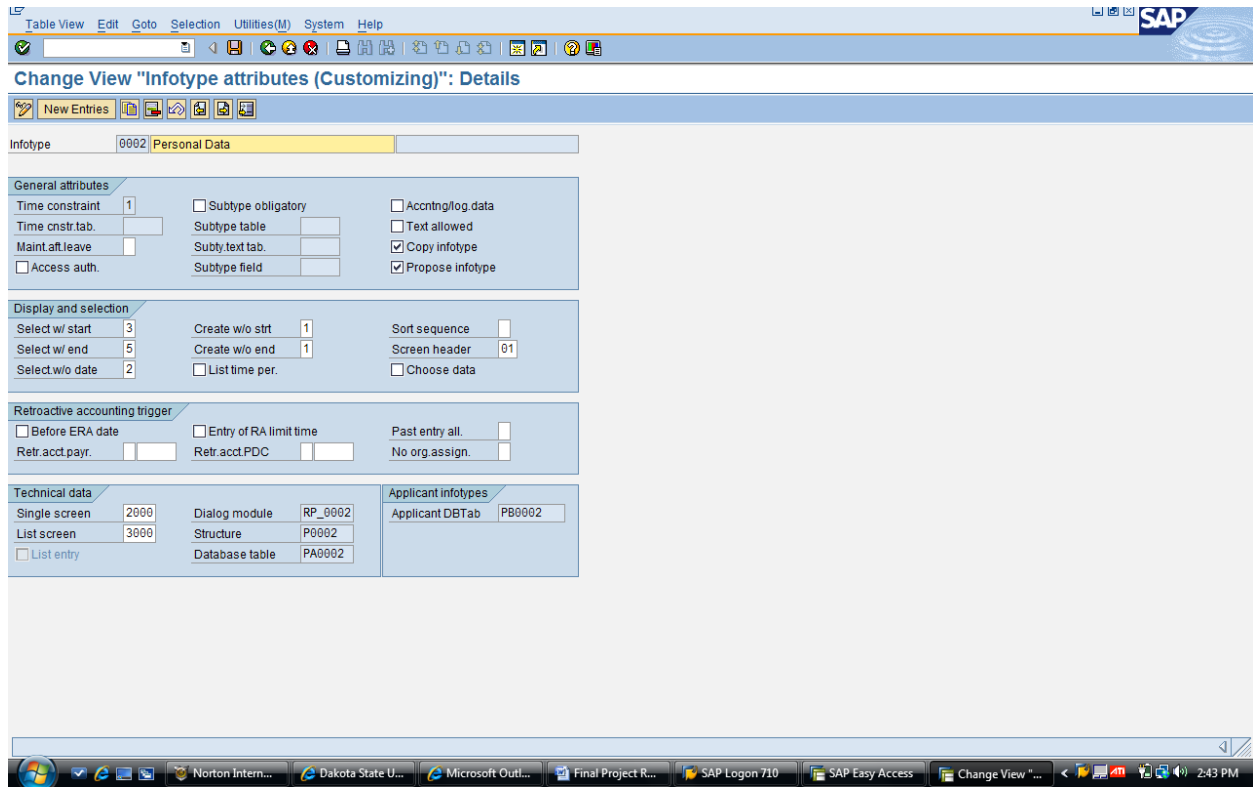
**2.3.1 INFO TYPE 0000 CUSTOMIZATION:** Info type 0000 is the Actions info type. This is customized by adding or deleting attributes according to the company employee information requirements policy. The figure below shows multiple check box and blank box attributes and those that are chosen:



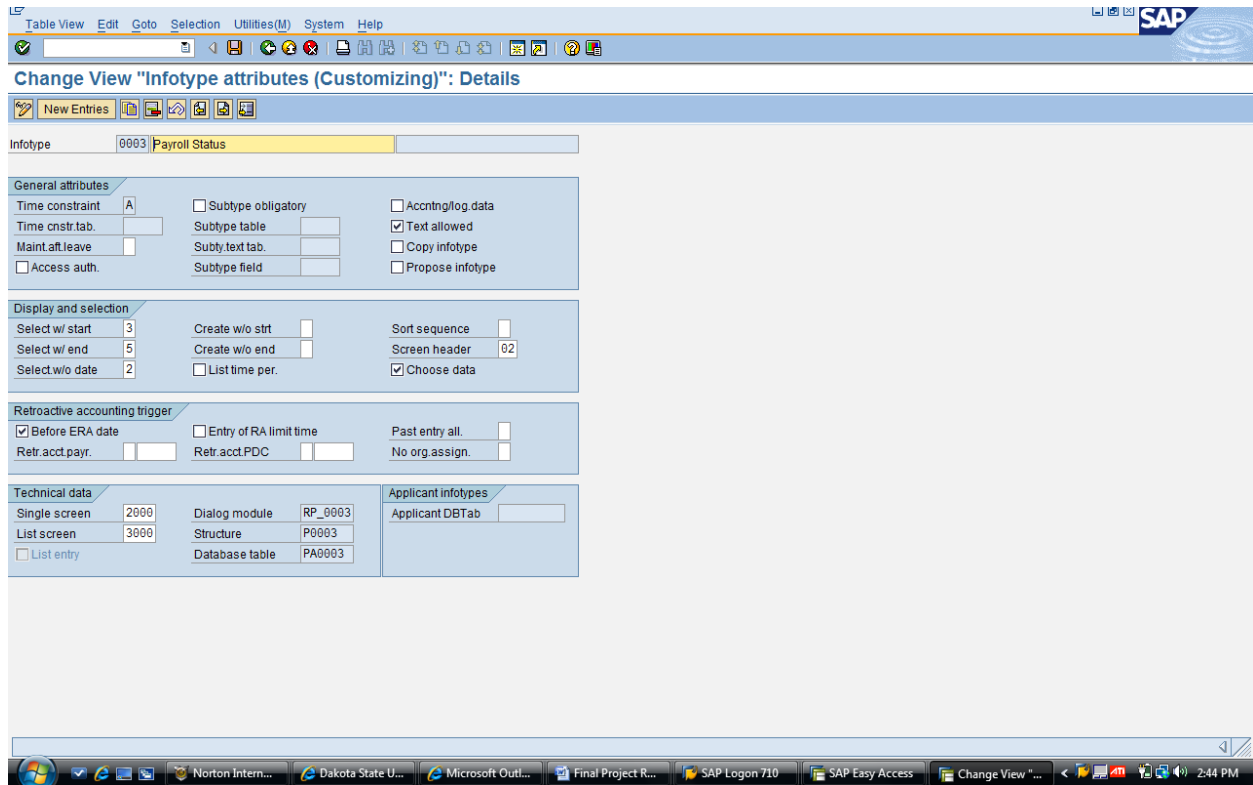
2.3.2 INFO TYPE 0001 CUSTOMIZATION: Info type 0001 is organizational assignment .With this info type attributes company organizational assignment configured. Figure below shows the attributes option chosen for the company that includes check and blank box.



**2.3.3 INFO TYPE 0002 CUSTOMIZATION:** By setting up attributes as follows company employee personal data requirement implemented. Government law is an import factor for employee personal information policy which consequently affects SAP HR this info type.

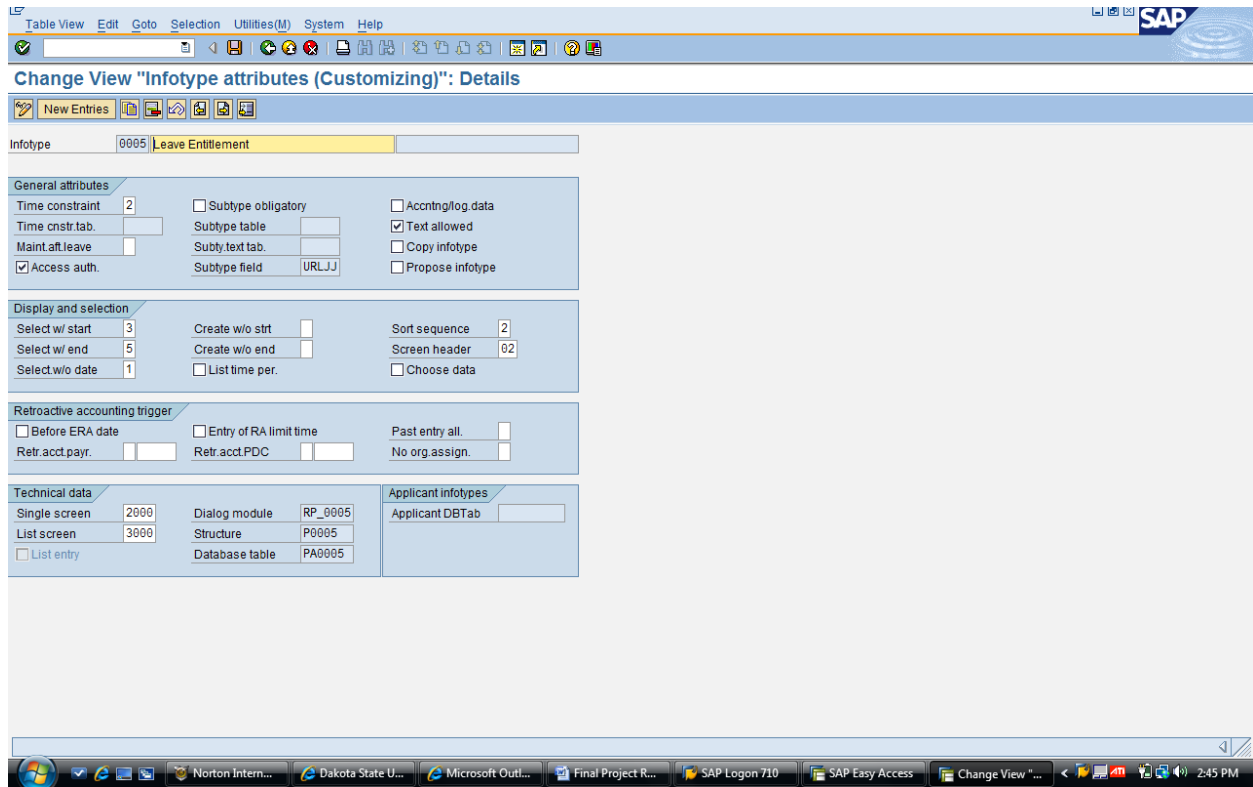


**2.3.4 INFO TYPE 0003 CUSTOMIZATION:** With payroll status info type 0003 company payroll information setup. Company does the configuration according to the government law, employee’s address and their own policy. Figure below shows the payroll status info type attribute option defined for the company.

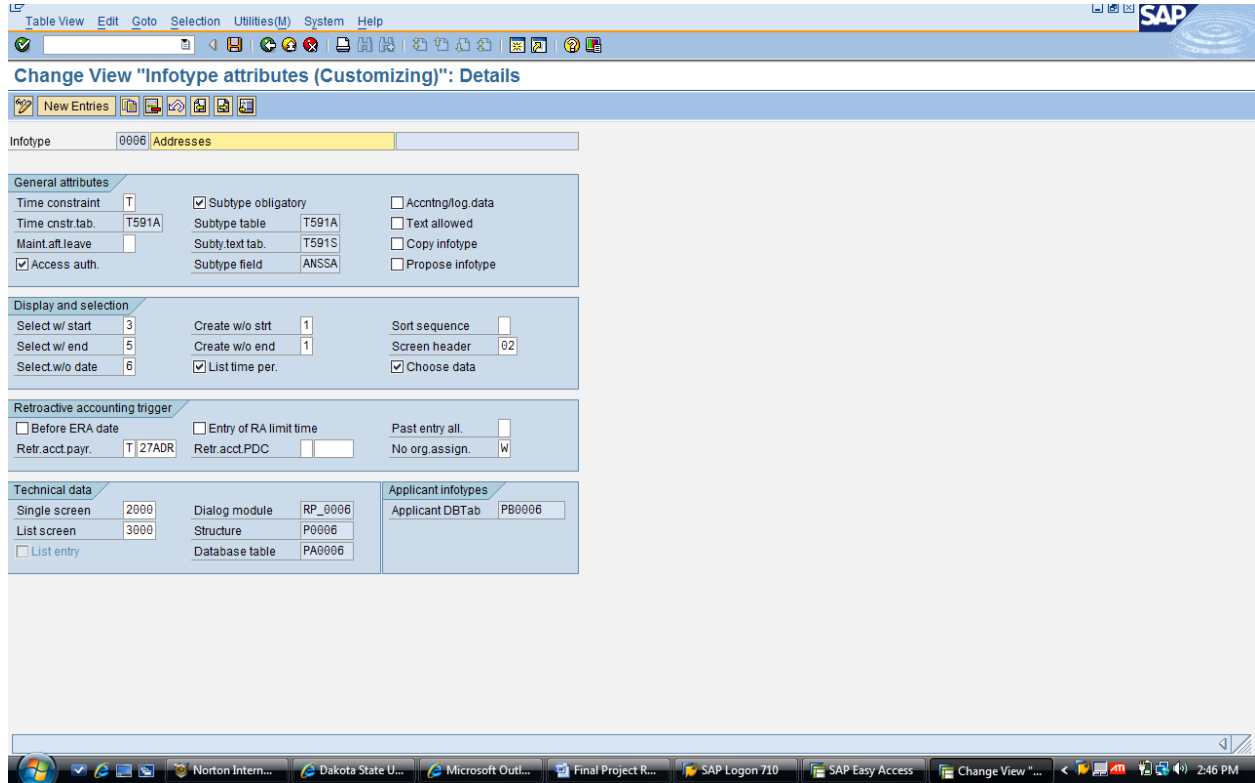




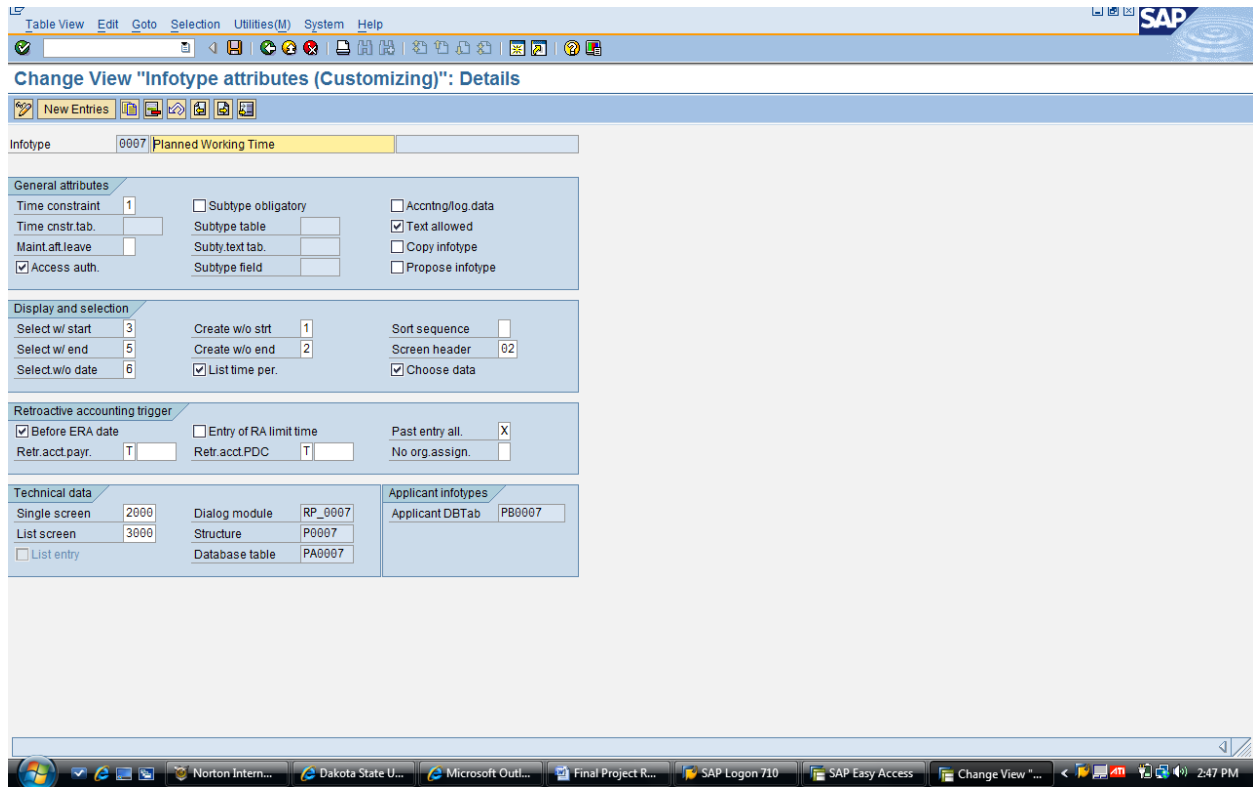
2.3.5 INFO TYPE 0005 CUSTOMIZATION: Info type 0005 used with attributes to setup employee's leave entitlement and monitoring it. The following figure shows the option chosen for the company which include check box and blank or drop down box.



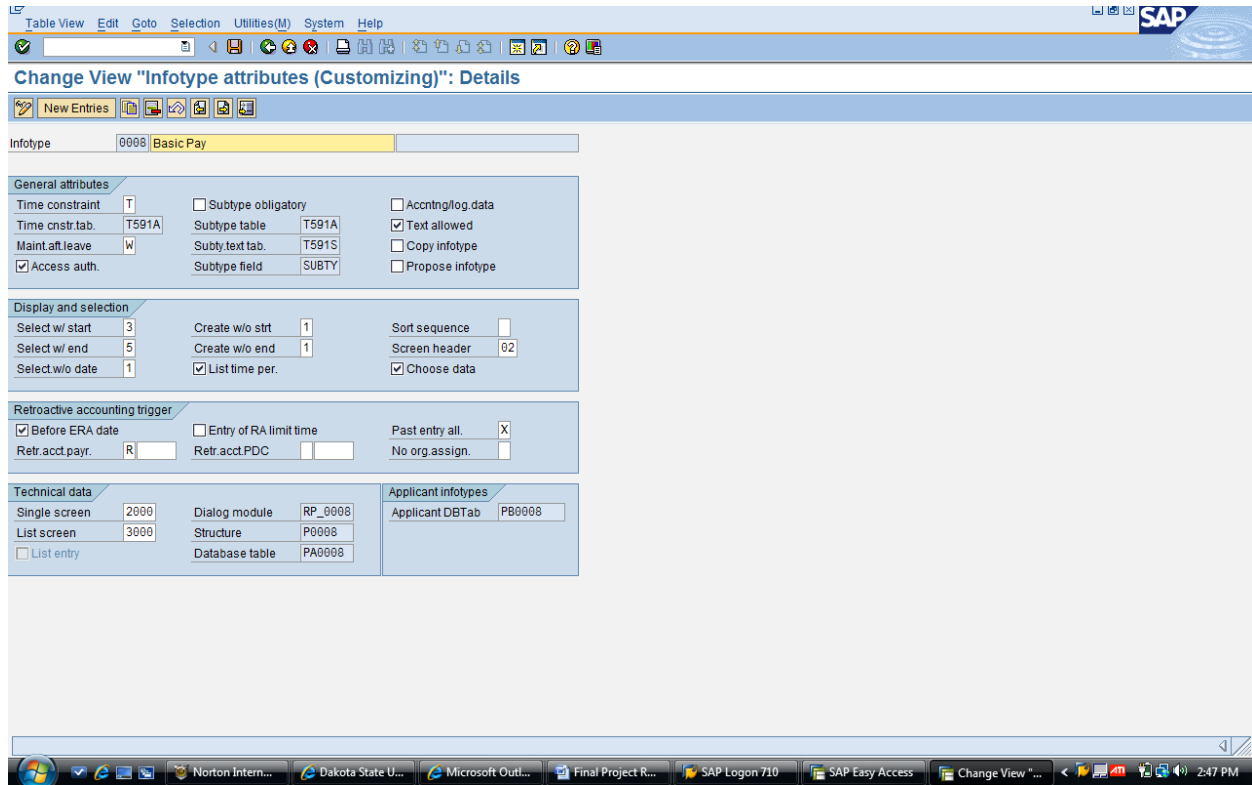
**2.3.6 INFO TYPE 0006 CUSTOMIZATION:** Info type 0006 is the address info type. This used to specify the address attribute in the SAP system that has been set up according to the policy. This is very important info type as payroll depends on it. The following figure shows multiple info type chosen for the company including blank box and check box.



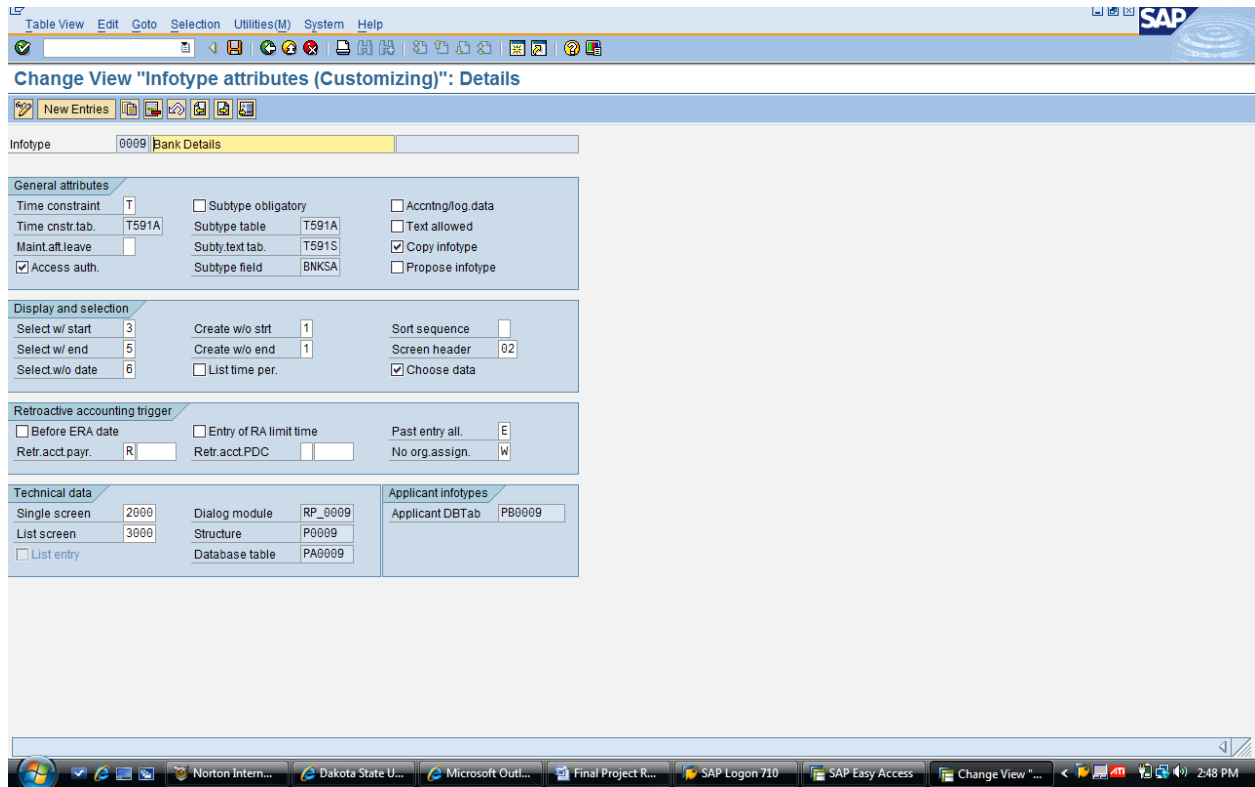
**2.3.7 INFO TYPE 0007 CUSTOMIZATION:** Info type 0007 set the process of calculation of working time. This also a very important info type customization as payroll depends on this. Figure below shows the chosen option of this info type which includes both drop box and check box.



**2.3.8 INFOTYPE 0008 CUSTOMIZATION:** This very import info type 0008 store employee's basic pay related information according to company's policy. Info type attributes set using SAP IMG. Basic pay has some info type requirement such as action, address and banking information. In addition payroll data and benefit, tax, deduction depends on this info type.



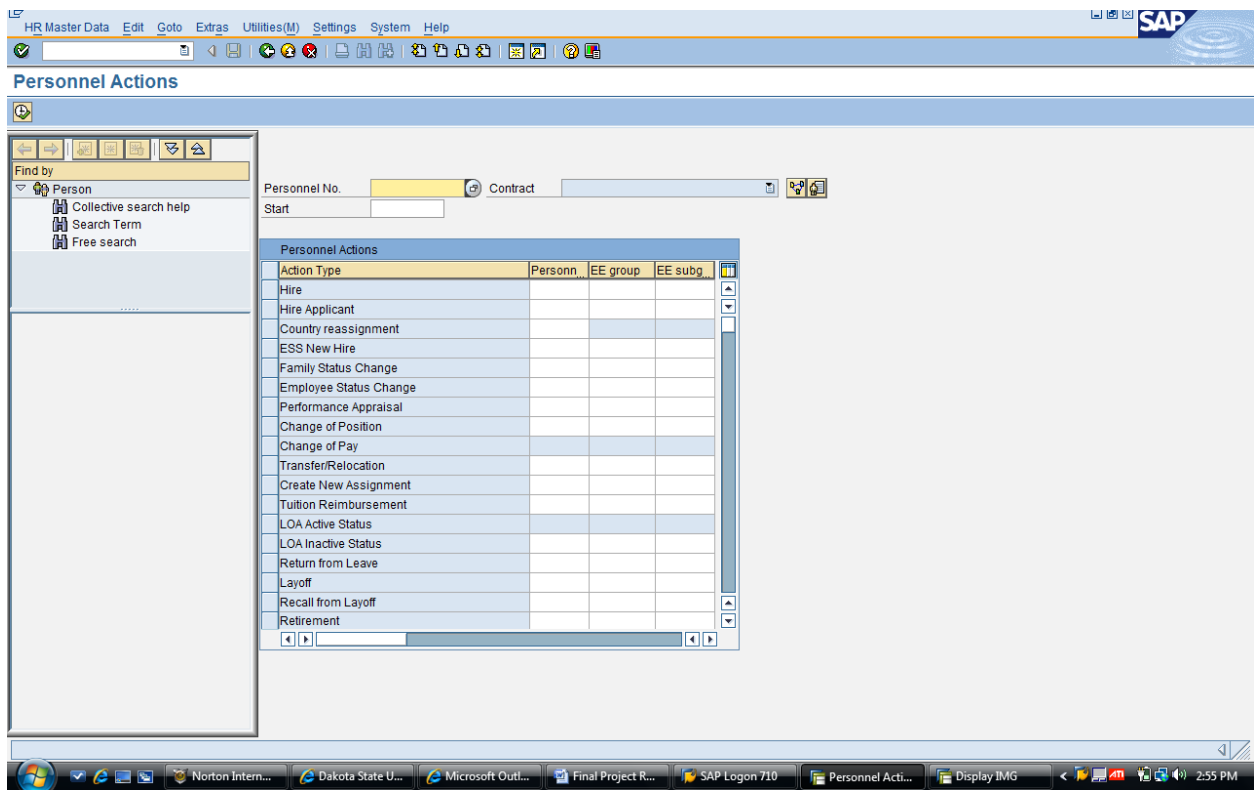
**2.3.9 INFOTYPE 0009 CUSTOMIZATION:** This info type store banking related information of the employee. It has the following attributes to set up. Company does this according to the bank and their own policy. Figure below shows all the banking related attributes including check box and drop box chosen for the company:



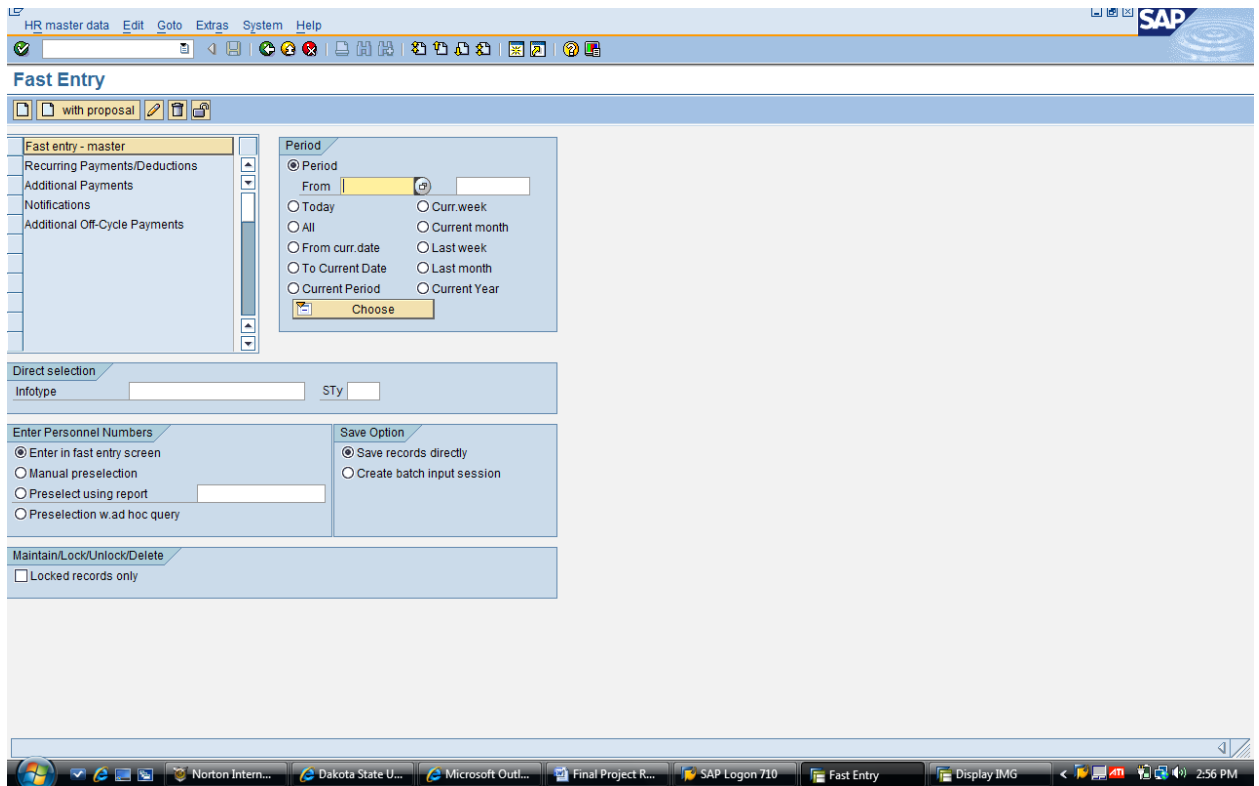
3. EMPLOYEE MANAGEMENT:

These are done by SAP Easy Access by SAP Clerks or SAP Consultants as follows:

3.1.1 PERSONAL ACTIONS OPTION: Using this option administrator manually maintain HR related activities. The main advance with this option is that it views every procedure in one glance. Figure below contain the option for all action type and their corresponding personal ID, EE Group and EE Subgroup:



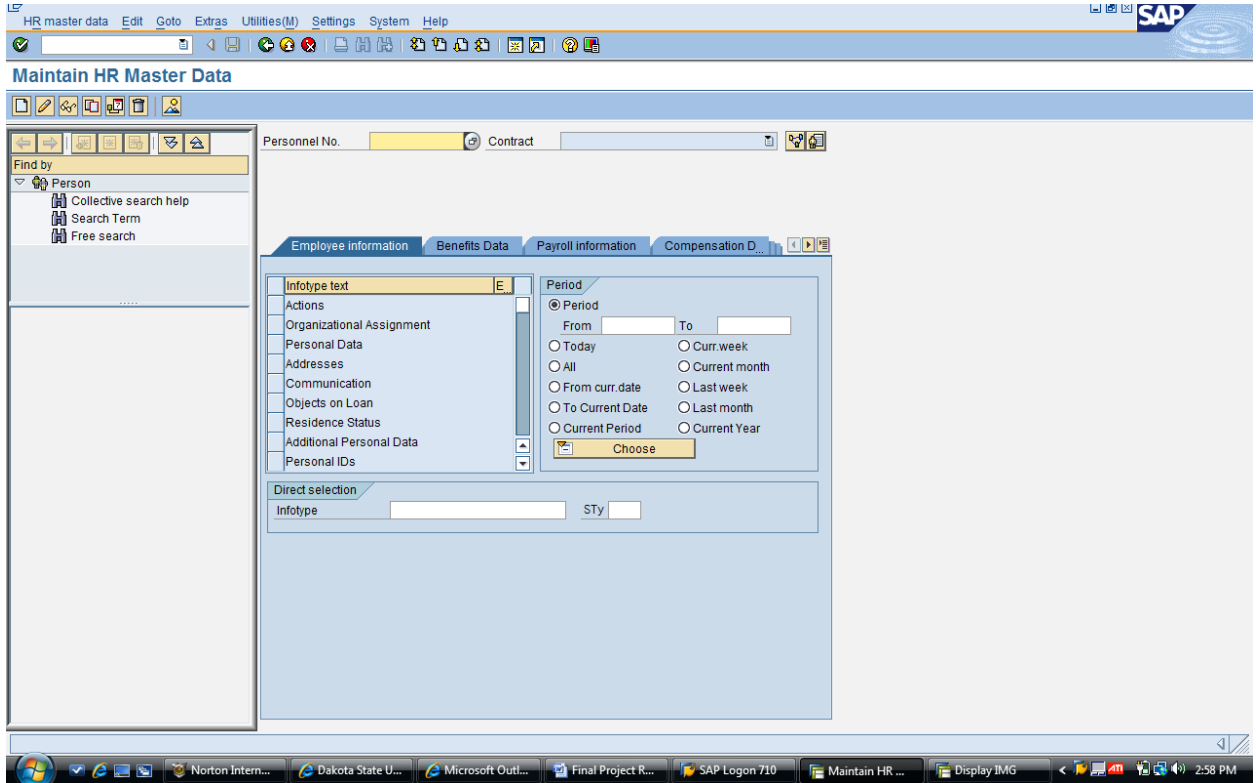
**3.1.2 FAST ENTRY OPTION:** This option gives all the frequent used activity or import activity to work with from one view. Figure below shows some chosen action and corresponding check box, radio box and blank box:



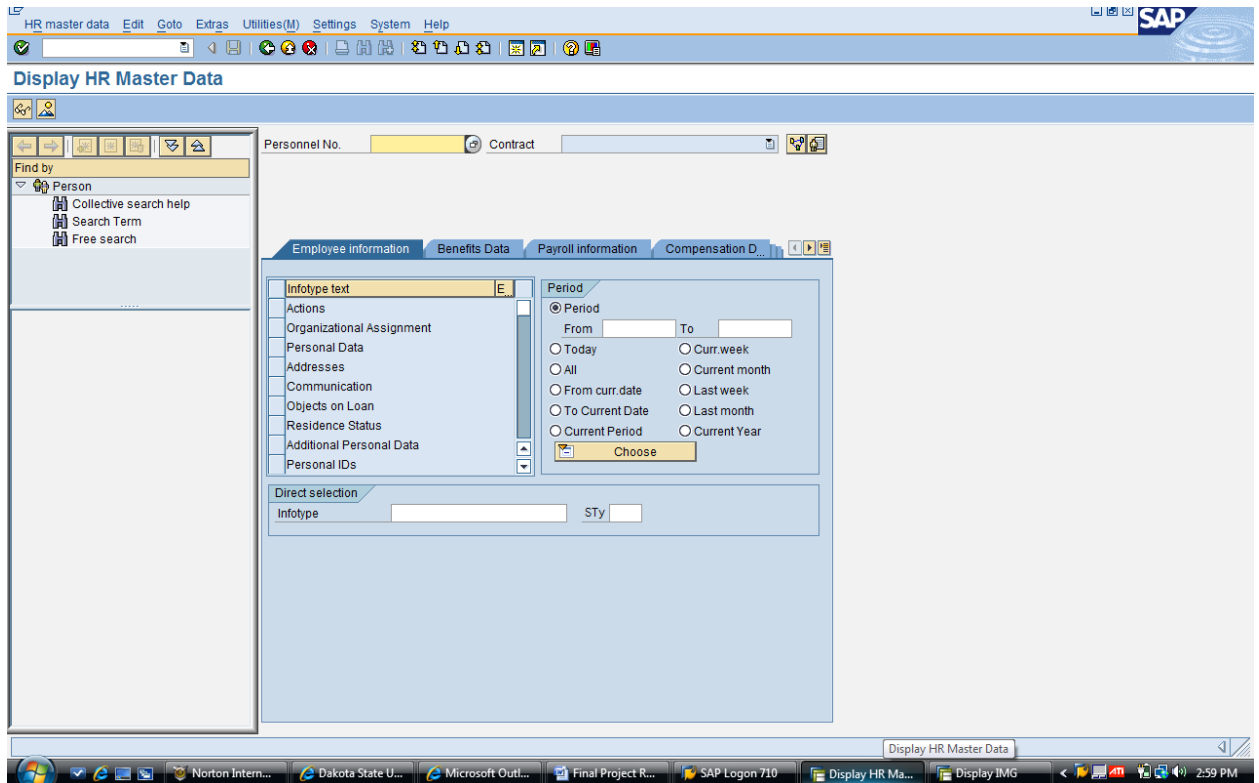




**3.2 MANTAING EMPLOYEE INFORMATION:** With this option administrations both maintain and view employee's information. Administrator normally uses this option as it includes both maintain and view option to active or switch with right click. Figure below shows the employee information (info type text, period check box and drop down box), benefit data, payroll information and compensation data option to choose from:

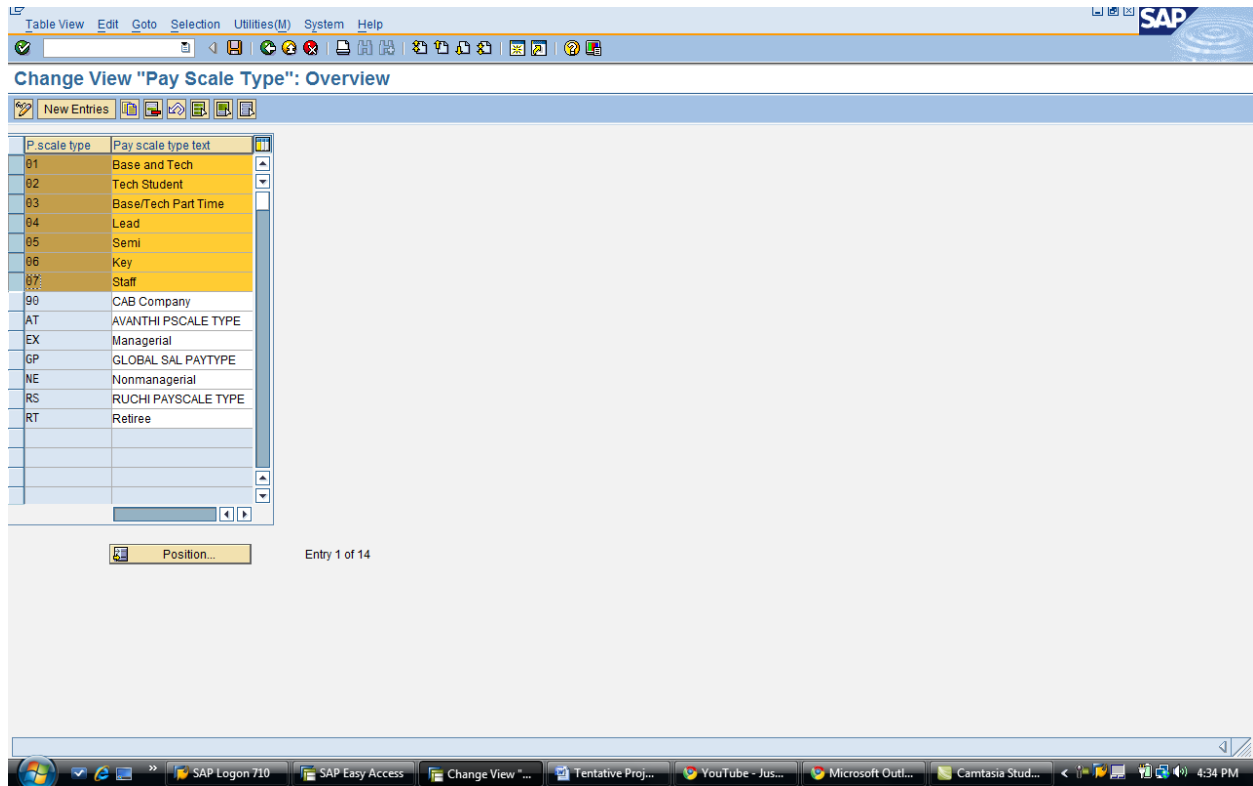


**3.3 DISPLAYING INFORMATION:** This option display information on different categories of data as follows. It includes employee information which categories to action and period with check box, benefit data, payroll data and compensation data. Figure shows the above mentioned information:

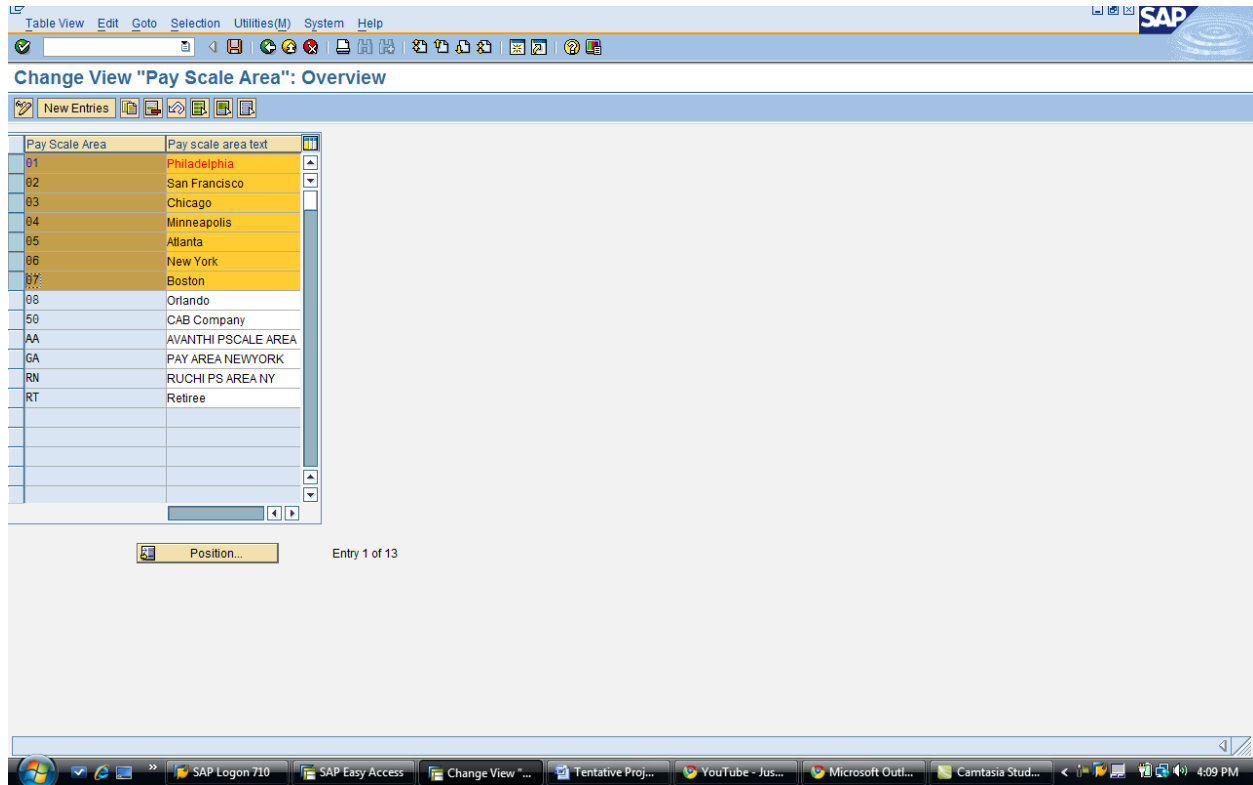


#### 4. EMPLOYEE Payscale MANAGEMENT

**4.1 PAY SCALE TYPE ASSIGNMENT:** This option allow administrator to set up different pay scale type according to the company's requirements. It is very important because without pay scale type pay scale level cannot be run periodically. Figure below shows different pay scale type and corresponding text in two column where first one is the type code number and the second one is corresponding text.



**4.2 PAY SCALE AREA ASSIGNMENT:** With this option administrator sets different pay roll area as follows. This is very important, because an employee can belong to many payroll areas regardless of personal area assignments. Also without pay roll area SAP system cannot run payroll. Figure below shows different payroll area code number and corresponding information or text:



**IV. Error! Not a valid bookmark self-reference.:**

The testing method the company has chosen is manual. Three levels of testing done constantly are upon requires. These are:

- 1. DATA TESTING:** Data testing is maintained by the supply clerk in co-operation with the employees and corrects by SAP Clerk. Employees can also update their record or personal data through ESS (Employee Self Service) System integrated with SAP Net Waver interface.
- 2. DESIGN TESTING OR INTERFACE TESTING:** Anytime an update is made, it opens for testing by the SAP clerk and business users. These update or maintenance keep track by Quality Center bug tracking tool and done through ticket system.
- 3. INTREGATED SYSTEM TESTING:** System is maintained by SAP Basis administrator in co-operation with chief system administrator and database administrator.

**CONCLUSION:**

Though there is controversy about SAP implementation benefit 70% of fortune 1000 companies already installed within the year 2000. This project first try to stress about both financial and organization benefits in term of cost. Finally it on the process of most used ERP software functional implementation with planning phase where detail blue print and implementation will be done on the phase. Sample deliverable also provided with the documentation to have sound understanding of the project.

**REFERENCES:**

Poston, R., Grab ski, S., "In impact of Enterprise Resource System Planning on firm performance" International Conference on Information Systems, 2000

Sia, S,K., Tang,M.,Soh,C., Boh,W,F.,Enterprise Resource Planning (ERP) as a technology of power or panoptic control, SIGMIS Database, 2002

Gurbaxani, V., and Whang, S. "The Impact of Information Systems on Organizations and Markets," Communications of the ACM (34:1), 1991, pp. 59-73.

Malone, T., Yates, F., and Benjamin, R. "Electronic Markets and Electronic Hierarchies," Communications of the ACM (6), 1987, pp. 485-497.

Davenport, T. H. Mission Critical—Realizing the Promise of Enterprise Systems, Boston: Harvard Business School Press, 2000. Fryer, B. "The ROI Challenge," CFO, September 1999, pp. 85-90.

Knorr, E. "ERP's Rough Waters," *Upside*, December 1999, pp. 209-213.

Arnold, V., Hunton, J., and Sutton, S. "On the Death and Dying of Originality in the Workplace: A Critical View of Enterprise Resource Planning Systems' Impact on Workers and the Work Environment," Working Paper, University of South Florida, 2000.

Harris, S. E., and Katz, J. L. "Organizational Performance and Information Technology Intensity in the Insurance Industry," *Organization Science* (2:3), 1991, pp. 263-295.

Simon, H. A. "A Behavioral Model of Rational Choice," *Quarterly Journal of Economics* (69), February 1955, pp. 99-118.

Zmud, R. W., and Apple, L. E. "Measuring Technology Incorporation/Infusion," *The Journal Of Product Innovation Management* (9:2), 1992, pp. 148-156.

Cash, J. I., and Konsynski, B. "IS Redraws Competitive Boundaries," *Harvard Business Review* (64:2), 1985, pp. 134-142. Coase, R. H. "The Nature of the Firm," *Economica* (4), 1937, pp. 386-405.