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**From:** Alexander Gust

**Date:** 2/15/2015

**Re:** Project Timekeeper Detailed Design

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# Report Summary

This report strives to convey the detailed design decisions that are being made as the project progresses. Detailed design is nearing completion. The table structure is estimated at 90% complete, while the design (both layout and structure) is approximately 75% complete. What is expressed here is the most accurate information available at this time, but is still subject to change as other interfaces are completed.

Included in this report is also a brief narrative regarding progress on Project Timekeeper. It is meant as an update to the previously issued Status Report Document dated January 26, 2015.

# Status of the Project

Work is largely on track, with the following interfaces being complete:

1. Login
2. Goals Expanded List
3. Goal Maintenance
4. Follow Up Items Expanded List
5. Follow Up Items Maintenance
6. Projects Expanded List
7. Project Maintenance
8. Tasks Expanded List
9. Task Maintenance
10. Project Teams Expanded List
11. Task Status Types Expanded List
12. Work Types Expanded List

Incomplete Interfaces:

1. Dashboard
2. Time Worked Expanded List
3. Time Worked Maintenance

All completed interfaces and stored procedures are scheduled for review on February 21, 2015. This is a delay from the original date of February 18, 2015. At this time, some of the scheduled testing time will be used to debug and unify both the layout and the database design across all completed interfaces.

After interfaces are complete, work will begin on the Reporting Interfaces.

## Updated Schedule Overview

Present: 2/15/2015  
Finalize and Debug Completed Interfaces: 2/21/2015

Halfway Milestone: 2/21/2015  
Begin Final Report, Make final requirement adjustments (determine feasibility of optional requirements)  
Begin work on Dashboard and Time Worked Interfaces

Complete remaining Interfaces: 3/26/2015  
Complete report interfaces: 4/19/2015  
Final testing complete, prototype ready: 4/22/2015

# Detailed Design

Layout

### Design

It was decided to make use of the Bootstrap framework [1] for page design. This allows for faster deployment of interfaces, and may allow for a mobile-compatible design as well if time allows. The Bootstrap interface was found insufficient for three element types including a calendar date picker [2], search-as-you-type drop down lists [3], and variable width modal dialogs [4], in which case CSS overrides were implemented. jQuery libraries were also included as a requirement of the chosen framework. An overview of included CSS and JS files is contained in Figures 1 and 2.

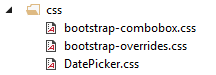
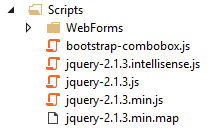


Figure 1- CSS Files

Figure 2 - JS Files

### Structure

Preliminary Interface Designs were created in November, 2014 to serve as a guideline for creation of all interface screens. See Appendix I for these figures.

A consolidated design structure was then chosen to accommodate all interfaces. The structure consists of an ASP.Net MasterPage, which holds and provides general data about the user, a Layout Page, which generally holds data from a URL parameter that is related to all possible UserControls on a page, and finally multiple user controls that consume the data from the two outer containers.



Figure 3 - Page Structure

For example, the Maintain Project interface was designed such that the User GUID and Login Name are provided by the MasterPage, the Current Project and Task numbers are held and provided by the Layout Page, and all such data is consumed by the two User Controls on this page.



Figure 4 - Page Structure Details

Database

Due to the adjustment in the Task Status Types design, the database table design was finalized as displayed in Figure 5. Table descriptions are found following the database table design figure.

Stored Procedures will be used to perform all operations on the tables. In general, a Select, Update, Insert and Delete procedure was developed for each table.



Logical Table Groupings:

* Blue – Person Related
* Red – Project Related
* White – Task Related
* Orange – Time Worked Related

Figure 5 - Database Table Design

**Database Table Descriptions and Design are as follows:**

### Person Table

* Contains basic info about a person who logs time on project(s)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data Type | Req’d | PK | Description |
| Person | UniqueIdentifier GUID | X | X | Prime Key (Part 1 of 1). The Active Directory GUID of a person to which work can be assigned. |
| LoginName | VARCHAR(50) |  |  | Login Name from Active Directory. Includes the Domain name. |
| FullName | VARCHAR(50) |  |  | The full name of a Person. |
| Email | VARCHAR(255) |  |  | Email address of a Person. |
| PhoneWork | VARCHAR(20) |  |  | Work phone number of a Person. |

### PersonGoals Table

* Contains one row for a Goal that a Person wishes to complete.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data Type | Req’d | PK | Description |
| Person\_FK | UniqueIdentifier GUID | X | X | Prime key (Part 1 of 2): Foreign key to the Persons table. |
| Goal | VARCHAR(20) | X | X | Prime key (Part 2 of 2): Unique identifier of a Goal for a Person. |
| Description | VARCHAR(255) |  |  | Description of a PersonGoal. |
| BeginDate | DATETIME |  |  | The date when a Goal should be completed. |
| IsComplete | BIT |  |  | Whether or not a Goal has been completed (1=Yes, 0=No). Default is 0. |

### Followup Table

* Contains follow-up (to-do) or notification items.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data Type | Req’d | PK | Description |
| To\_Person\_FK | UniqueIdentifier GUID | X | X | Partial Prime Key (Part 1 of 2): Foreign key to the Person table. |
| CreateDateTime | DATETIME | X | X | Partial Prime Key (Part 2 of 2). Date Time Stamp from the system. |
| From\_Person\_FK | UniqueIdentifier GUID |  |  | Foreign key to the Person table. Identifies who created the Followup item. |
| Project\_FK | VARCHAR(20) |  |  | Null or Foreign key to the Projects table. |
| Task\_FK | VARCHAR(20) |  |  | Null or Foreign key to the Tasks table. |
| Description | VARCHAR(255) |  |  | Description of the intended follow-up action item. |
| DueDate | DATETIME |  |  | Defines when a Follow-up item should be completed. |

### Project Table

Contains basic info about projects. Maintained by the Project Owner or Business Admin.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data Type | Req’d | PK | Description |
| Project | VARCHAR(20) | X | X | Prime Key (Part 1 of 1). An identifier for the project (usually the project number). |
| ProjectName | VARCHAR(50) | X |  | Short description/name. |
| Description | VARCHAR(255) |  |  | Null or Description of a Project. |
| Owner\_Person\_FK | UniqueIdentifier GUID |  |  | Person acting as Project Manager/Owner. Foreign key to the Person table. |
| Admin\_Person\_FK | UniqueIdentifier GUID |  |  | Product Owner (Business Unit person). Foreign key to the Person table. |
| ReportTo\_Person\_FK | UniqueIdentifier GUID) |  |  | The Person to which the Project Owner reports information related to this Project. Foreign key to the Person table. |
| LocationTFS | VARCHAR(255) |  |  | Network location of or Link to a TFS Project. |
| LocationDocuments | VARCHAR(255) |  |  | Network location of common documents for this Project. |
| LocationExport | VARCHAR(255) |  |  | Network location of folder into which Time Entries are to be placed. |

### ProjectPhases Table

Contains definition of Project Phase time box(s). Rows will not exist for those projects that aren't using Phases. Two part primary key (Project + Phase). Maintained by the Project Owner.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data Type | Req’d | PK | Description |
| Project\_FK | VARCHAR(20) | X | X | Primary key (Part 1 of 2). Foreign key pointer to the Project table. |
| Phase | VARCHAR(20) | X | X | Primary key (Part 2 of 2). Unique identifier (Name) of a Phase/Milestone for a Project. |
| Description | VARCHAR(50) |  |  | Description of a Phase for a Project. |
| BeginDate | DATETIME | X |  | Beginning date of a Phase for a Project. |
| EndDate | DATETIME | X |  | Ending date of a Phase for a Project. |

### ProjectIterations Table

Contains definition of Project Iterations. Rows will not exist for those projects that aren't using Iterations. Two part primary key (Project + Iteration). Maintained by the Project Owner/Manager.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data Type | Req’d | PK | Description |
| Project\_FK | VARCHAR(20) | X | X | Prime Key (Part 1 of 2): Foreign key to the Project table. |
| Iteration | VARCHAR(20) | X | X | Prime Key (Part 2 of 2): The unique identifier of an Iteration for a Project |
| IterationName | DATETIME | X |  | The Name of an Iteration for a Project. |
| BeginDate | DATETIME | X |  | Beginning date of an Iteration for a Project. |
| EndDate | DATETIME | X |  | Ending date of an Iteration for a Project. |

### ProjectTeams Table

Intersection table that defines who is allowed to work on a Project. Maintained by the Project Owner.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data Type | Req’d | PK | Description |
| Project\_FK | VARCHAR(20) | X | X | Prime Key (Part 1 of 2): Foreign key to the Project table. |
| Person\_FK | UniqueIdentifier GUID | X | X | Prime Key (Part 2 of 2): Foreign key to the Person table. |

### Task Table

Contains basic info about tasks.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data Type | Req’d | PK | Description |
| Project\_FK | VARCHAR(20) | X | X | Prime Key (Part 1 of 2): Foreign key to the Project table. |
| Task | VARCHAR(20) | X | X | Prime Key (Part 2 of 2): Unique Identifier for a Task belonging to a Project. |
| TaskName | VARCHAR(255) | X |  | Description/Name of a Task for a Project. |
| Owner\_Person\_FK | UniqueIdentifier GUID |  |  | Null or the Person to which this task is assigned. Foreign key to the Person table. |
| HoursEstimate | SMALLINT |  |  | Estimated number of hours to complete. |
| ParentTask | VARCHAR(20) |  |  | Null or the Task Identifier of the higher level (Parent) Task. Time cannot be logged against Parent Tasks. |
| SharedYN | BIT | X |  | Time can be logged against a shared task by anyone on the Project Team (1=Yes, 0=No). Default is 0. |
| MiscNotes | VARCHAR(255) |  |  | Any miscellaneous notes for a Task. |

### TaskStatusTypes Table

Defines the valid Status Types that any Task associated with a Project can have.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data Type | Req’d | PK | Description |
| Project\_FK | VARCHAR(20) | X | X | Prime key (Part 1 of 2): Foreign key to the Projects table. |
| Status | VARCHAR(20) | X | X | Prime key (Part 2 of 2): Unique identifier of a valid Task Status for a Project. (Null=No status, InProcess=Actively being worked on, Stopped=Waiting on something, Blocked=Cannot continue - Escalation needed, Done=Completed, Cancelled=No work is to be performed).Foreign key to the Tasks table. |
| Description | VARCHAR(50) |  |  | Null or Description of a Task Status Type. |

### TimeWorked Table

Contains the time entries. Uses a 3 part primary key made up of (Person, Date Worked, Begin Time).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data Type | Req’d | PK | Description |
| Person\_FK | UniqueIdentifier GUID |  | X | Prime Key (Part 1 of 3): Foreign key to the Person table. |
| WorkDate | DATETIME |  | X | Prime Key (Part 2 of 3): The date on which work was done. |
| BeginTime | DATETIME |  | X | Prime Key (Part 3 of 3): The time at which work started. |
| Project\_FK | VARCHAR(20) |  |  | Foreign key (Part 1 of 2): Foreign key to the Task table. |
| Task\_FK | VARCHAR(20) |  |  | Foreign key (Part 2 of 2): Foreign key to the Task table. |
| WorkDesc | VARCHAR(150) |  |  | Brief description of the work done. |
| ElapsedTime | NUMERIC(5,2) |  |  | The amount of time worked (quarter hour increment) as decimal. |
| WorkType\_FK | VARCHAR(20) |  |  | The type of work performed. Foreign key to the WorkTypes table. |

### WorkTypes Table

Contains the allowable Work Types/Categories. A Work Type/Category can be assigned to each TimeWorked entry.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data Type | Req’d | PK | Description |
| Project\_FK | VARCHAR(20) |  | X | Primary key (Part 1 of 2): Foreign key to the Projects table. |
| WorkType | VARCHAR(20) |  | X | Primary key (Part 2 of 2). Uniquely identifies a Type/Category of work for a Project. |
| WorkTypeDesc | VARCHAR(150) |  |  | Description of a Type of Work. |

Stored Procedure Summary

A unified naming convention was developed for all Stored Procedures. In general, it follows the pattern: [TableName]\_[Operation Type]\_[Additional Parameters Required]\_[Type of Return]

Table Name: The name of the table on which this data is based

Operation Types:

* Get: Returns row(s) from a table
* Add: Inserts a row into a table
* Update: Modifies a row on a table
* Delete: Delete a row from a table

Additional Parameters Required:

It is assumed that the primary key(s) will be provided for any Add/Update/Delete statements. However, at times, additional non-implied parameters will be required. In this case, it is specified in the [Additional Parameters Required] block of the statement name.

* ForPerson – Procedure requires the specification of a user’s GUID
* ForAdmin – Procedure requires the specification of the Project Admin’s GUID
* ForOwner – Procedure requires the specification of the Project Owner’s GUID

Type of Return:

* None Specified – Indicates a special return type. Used in the case of getting Counts only.
* OneRow – Return will be a single table row
* AllRows – Return will be multiple table rows that match the specified criteria

|  |  |
| --- | --- |
| Procedure Name | Special Notes |
| usp\_Counts\_Get\_ForPerson | Return total counts of Projects, Tasks, Work Items, Follow Up Items and Goals for a particular user. Will be used to populate headers on the dashboard. |
| usp\_Followup\_Add\_ForPerson\_OneRow |  |
| usp\_Followup\_Delete\_ForPerson\_AllRows |  |
| usp\_Followup\_Delete\_ForPerson\_OneRow |  |
| usp\_Followup\_Get\_ForPerson\_AllRows |  |
| usp\_Followup\_Get\_ForPerson\_OneRow |  |
| usp\_Followup\_Update\_ForPerson\_OneRow |  |
| usp\_PersonGoals\_Add\_ForPerson\_OneGoal |  |
| usp\_PersonGoals\_Delete\_ForPerson\_AllGoals |  |
| usp\_PersonGoals\_Delete\_ForPerson\_OneGoal |  |
| usp\_PersonGoals\_Get\_ForPerson\_AllGoals |  |
| usp\_PersonGoals\_Get\_ForPerson\_OneGoal |  |
| usp\_PersonGoals\_Update\_ForPerson\_OneGoal |  |
| usp\_Persons\_Add\_Person |  |
| usp\_Persons\_Get\_AllRows |  |
| usp\_Persons\_Get\_ByGuid | Provides a method of looking up a user record by GUID. Used in cases where additional user information is needed beyond the GUID and loginName that are typically required. |
| usp\_Projects\_Add\_OneRow |  |
| usp\_Projects\_Delete\_OneRow |  |
| usp\_Projects\_Get\_AllRows |  |
| usp\_Projects\_Get\_ForAdmin\_AllRows | These procedures are used when retrieving a list of projects for those users with additional authority over certain projects. They can view projects that they own, as well as projects on which they are listed as owning a special role. |
| usp\_Projects\_Get\_ForOwner\_AllRows |
| usp\_Projects\_Get\_ForPerson\_AllRows |
| usp\_Projects\_Get\_ForPerson\_OneRow |  |
| usp\_Projects\_Get\_OneRow |  |
| usp\_Projects\_Update\_ForPerson\_OneRow |  |
| usp\_ProjectTeams\_Add\_ForProject\_OneRow |  |
| usp\_ProjectTeams\_Delete\_ForProject\_AllRows |  |
| usp\_ProjectTeams\_Delete\_ForProject\_OneRow |  |
| usp\_ProjectTeams\_Get\_ForProject\_AllRows |  |
| usp\_ProjectTeams\_Get\_ForProject\_OneRow |  |
| usp\_ProjectTeams\_Update\_ForProject\_OneRow |  |
| usp\_Tasks\_Add\_OneRow |  |
| usp\_Tasks\_Delete\_OneRow |  |
| usp\_Tasks\_Delete\_Project |  |
| usp\_Tasks\_Get\_AllRows |  |
| usp\_Tasks\_Get\_ForPersonProject\_AllRows | Because the Tasks layout page receives its “Task” parameter via the URL, additional security filtering was needed. We need to be sure the Person is authorized to view the tasks in question (i.e. the Person is listed on the project). |
| usp\_Tasks\_Get\_ForProject\_AllRows | Non-Security filtered procedure retained for future use. |
| usp\_Tasks\_Get\_OneRow |  |
| usp\_Tasks\_Update\_OneRow |  |
| usp\_TaskStatusTypes\_Add\_OneRow |  |
| usp\_TaskStatusTypes\_Delete\_OneRow |  |
| usp\_TaskStatusTypes\_Get\_AllRows |  |
| usp\_TaskStatusTypes\_Get\_ForProject\_AllRows |  |
| usp\_TaskStatusTypes\_Get\_OneRow |  |
| usp\_TaskStatusTypes\_Update\_OneRow |  |
| usp\_TypeRoles\_Get\_AllRows | Used to obtain the possible Team Member roles for a Project. |
| usp\_WorkTypes\_Add\_OneRow |  |
| usp\_WorkTypes\_Copy\_ForProject\_AllRows |  |
| usp\_WorkTypes\_Delete\_OneRow |  |
| usp\_WorkTypes\_Get\_AllRows |  |
| usp\_WorkTypes\_Get\_ForProject\_AllRows |  |
| usp\_WorkTypes\_Get\_OneRow |  |
| usp\_WorkTypes\_Update\_OneRow |  |

Figure 6 - Stored Procedures

# References

|  |  |
| --- | --- |
| [1] | "Bootstrap Framework," [Online]. Available: http://getbootstrap.com/. |
| [2] | "bootstrap-datepicker," Eternicode, [Online]. Available: https://github.com/eternicode/bootstrap-datepicker. |
| [3] | D. Farrell, "bootstrap-combobox," [Online]. Available: https://github.com/danielfarrell/bootstrap-combobox. |
| [4] | "BootStrap 3 Variable Width Modal," [Online]. Available: http://codepen.io/ksondere/full/tAIrl/. |

# Appendix I – Preliminary Layout Designs



Figure 7 - Dashboard Interface Mockup



Figure 8 - Follow Up Items Maintain Interface Mockup



Figure 9 - Goals Maintain Interface Mockup



Figure 10 - Projects Maintain Interface Mockup



Figure 11 - Tasks Maintain Interface Mockup



Figure 12 - Work Types Maintain Interface Mockup



Figure 13 - Project Phases Maintain Interface Mockup



Figure 14 - Project Iterations Maintain Interface Mockup



Figure 15- Project Teams Maintain Interface Mockup



Figure 16 - Task Status Types Maintain Interface Mockup



Figure 17 - Time Worked Entry Maintain Interface Mockup



Figure 18 - Time Worked Expanded List Interface Mockup