To: P. Lin and G. Steffen

From: Alexander Gust

Date: 2/15/2015

Re: Project Timekeeper Detailed Design

Report Outline

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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.



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.

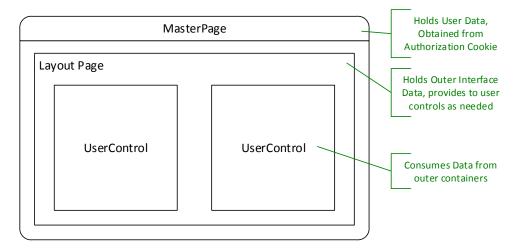


Figure 3 - Page Structure

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.

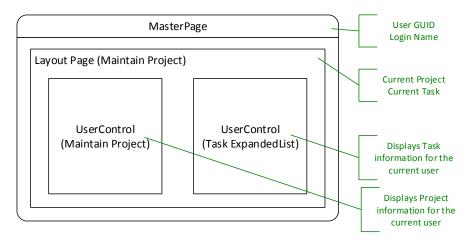


Figure 4 - Page Structure Details

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.

Project Timekeeper Alexander Gust Functional Diagram Data Storage Version 3

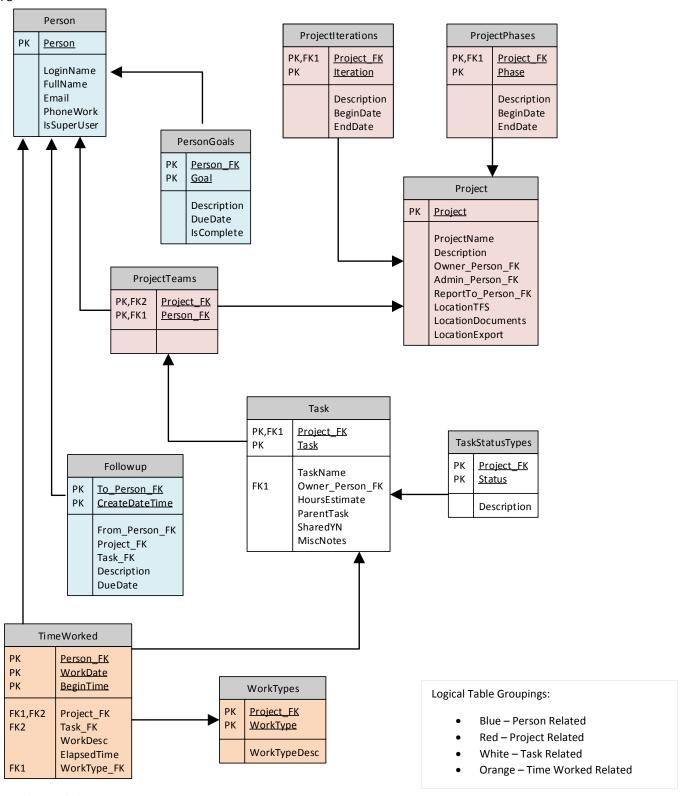


Figure 5 - Database Table Design

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	Uniqueldentifier GUID	х	х	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	Uniqueldentifier	Х	Х	Prime key (Part 1 of 2): Foreign key to the	
	GUID			Persons table.	
Goal	VARCHAR(20)	X	V	X	Prime key (Part 2 of 2): Unique identifier of a
Goal	VANCHAN(20)	^	^	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	
IsComplete	ын			(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	Uniqueldentifier	Х	Х	Partial Prime Key (Part 1 of 2): Foreign key to
	GUID			the Person table.
CreateDateTime	DATETIME	X	Х	Partial Prime Key (Part 2 of 2). Date Time
CreateDateTime	DATETIVIE	^ ^	Stamp from the system.	
From Person FK	Uniqueldentifier			Foreign key to the Person table. Identifies
FIOIII_PEISOII_FK	GUID			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
Description	VARCHAR(255)			item.
DuoData	DATETIME			Defines when a Follow-up item should be
DueDate	DATETIME			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)	Х	Х	Prime Key (Part 1 of 1). An identifier for the project (usually the project number).
ProjectName	VARCHAR(50)	Χ		Short description/name.
Description	VARCHAR(255)			Null or Description of a Project.
Owner_Person_FK	Uniqueldentifier GUID			Person acting as Project Manager/Owner. Foreign key to the Person table.
Admin_Person_FK	Uniqueldentifier GUID			Product Owner (Business Unit person). Foreign key to the Person table.
ReportTo_Person_FK	Uniqueldentifier 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)	Х	Х	Primary key (Part 1 of 2). Foreign key pointer to the Project table.
Dhaca	\/ABCHAB(20\	V		Primary key (Part 2 of 2). Unique identifier
Phase	VARCHAR(20)	X	Х	(Name) of a Phase/Milestone for a Project.
Description	VARCHAR(50)			Description of a Phase for a Project.
BeginDate	DATETIME	Х		Beginning date of a Phase for a Project.
EndDate	DATETIME	Χ		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)	Х	Х	Prime Key (Part 1 of 2): Foreign key to the Project table.
Iteration	VARCHAR(20)	х	Х	Prime Key (Part 2 of 2): The unique identifier of an Iteration for a Project
IterationName	DATETIME	Χ		The Name of an Iteration for a Project.
BeginDate	DATETIME	Χ		Beginning date of an Iteration for a Project.
EndDate	DATETIME	Х		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)	х	Х	Prime Key (Part 1 of 2): Foreign key to the Project table.
Person_FK	Uniqueldentifier GUID	Х	Х	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)	Х	Х	Prime Key (Part 1 of 2): Foreign key to the Project table.
Task	VARCHAR(20)	Х	Х	Prime Key (Part 2 of 2): Unique Identifier for a Task belonging to a Project.
TaskName	VARCHAR(255)	Χ		Description/Name of a Task for a Project.
Owner Person EV	Uniqueldentifier			Null or the Person to which this task is
Owner_Person_FK	GUID			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	Х		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)	Х	Х	Prime key (Part 1 of 2): Foreign key to the	
rroject_rk	V/ ((C1)/ (1(20)	,		Projects table.	
Status			Prime key (Part 2 of 2): Unique identifier of a valid Task Status for a Project. (Null=No status InProcess=Actively being worked on,		
				valid Task Status for a Project. (Null=No status,	
				InProcess=Actively being worked on,	
	VARCHAR(20)	Х	Х	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	Uniqueldentifier		Х	Prime Key (Part 1 of 3): Foreign key to the
	GUID		Person table.	
WorkDate	DATETIME		x	Prime Key (Part 2 of 3): The date on which
	2			work was done.
BeginTime	DATETIME		Х	Prime Key (Part 3 of 3): The time at which work
begiiiiile DATETIME		^	started.	
Duningt FI/	VARCHAR(20)			Foreign key (Part 1 of 2): Foreign key to the
Project_FK				Task table.
Took FV	\/ADCHAD/20\			Foreign key (Part 2 of 2): Foreign key to the
Task_FK	VARCHAR(20)			Task table.
WorkDesc	VARCHAR(150)			Brief description of the work done.
Flames dTimes	NUMERIC/E 3)			The amount of time worked (quarter hour
ElapsedTime	NUMERIC(5,2)			increment) as decimal.
Maria Tima a FIX	\/ADCHAD(20\			The type of work performed. Foreign key to
WorkType_FK	VARCHAR(20)			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)	Х	Primary key (Part 1 of 2): Foreign key to the		
-7	- (- /			Projects table.
MorkTypo	VARCHAR(20)	A D(20)	Х	Primary key (Part 2 of 2). Uniquely identifies a
WorkType	VARCHAR(20)		^	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
usp_Projects_Get_ForOwner_AllRows	those users with additional authority over certain projects.
usp_Projects_Get_ForPerson_AllRows	They can view projects that they own, as well as projects on which they are listed as owning a special role.
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.
	Non-security intered procedure retained for ruture use.
usp_Tasks_Get_OneRow	Non-Security intered procedure retained for ruture use.
usp_Tasks_Get_OneRow usp_Tasks_Update_OneRow	Non-Security intered procedure retained for ruture use.
	Non-Security intered procedure retained for ruture use.
usp_Tasks_Update_OneRow	Non-Security intered procedure retained for ruture use.
usp_Tasks_Update_OneRow usp_TaskStatusTypes_Add_OneRow	Non-Security intered procedure retained for ruture use.
usp_Tasks_Update_OneRow usp_TaskStatusTypes_Add_OneRow usp_TaskStatusTypes_Delete_OneRow	Non-Security intered procedure retained for ruture use.
usp_Tasks_Update_OneRow usp_TaskStatusTypes_Add_OneRow usp_TaskStatusTypes_Delete_OneRow usp_TaskStatusTypes_Get_AllRows	Non-Security intered procedure retained for ruture use.
usp_Tasks_Update_OneRow usp_TaskStatusTypes_Add_OneRow usp_TaskStatusTypes_Delete_OneRow usp_TaskStatusTypes_Get_AllRows usp_TaskStatusTypes_Get_ForProject_AllRows	Non-Security intered procedure retained for future use.
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	Used to obtain the possible Team Member roles for a Project.
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_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	
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 usp_WorkTypes_Add_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 usp_WorkTypes_Add_OneRow usp_WorkTypes_Copy_ForProject_AllRows	
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 usp_WorkTypes_Add_OneRow usp_WorkTypes_Copy_ForProject_AllRows usp_WorkTypes_Delete_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 usp_WorkTypes_Add_OneRow usp_WorkTypes_Copy_ForProject_AllRows usp_WorkTypes_Delete_OneRow usp_WorkTypes_Get_AllRows	

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/tAlrl/.

Appendix I – Preliminary Layout Designs

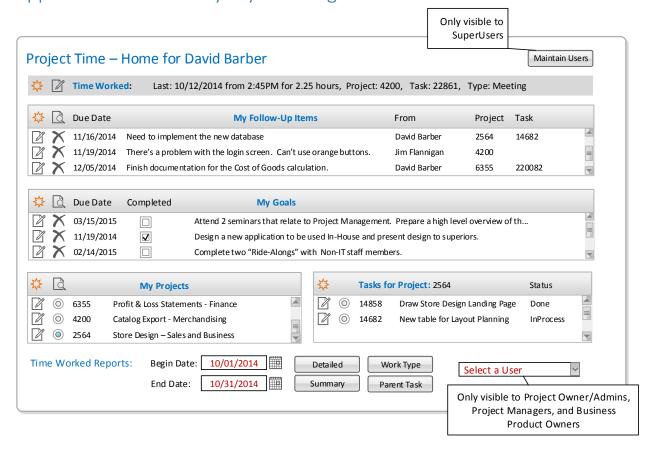


Figure 7 - Dashboard Interface Mockup

		From	Project	Task
11/16/2014 Need	to implement the new database	David Barber	2564	14682
11/19/2014 There'	s a problem with the login screen. Can't use orange buttons.	Jim Flannigan	4200	
12/05/2014 Finish	documentation for the Cost of Goods calculation.	David Barber	6355	220082
12/15/2014 Turn ii	n the Landing Web Page design to Larry.	David Barber	2564	14858
	making changes to the description. I'll click the	Save button when I'm d	one.	•
	12/05/2014			
oue Date	12/03/2014			
oue Date Project	6355 – HVAC Conversion	~		

Figure 8 - Follow Up Items Maintain Interface Mockup

Project Time – Maintain Goals for Frank Talbot			
Goal	Seminars		
Description	Attend 2 seminars that relate to Project Management. Prepare a high level overview of what you learned. Present the overview to your peers.		
Due Date	08/15/2015		
Completed	Yes No ©		
	Add Delete Save Back		

Figure 9 - Goals Maintain Interface Mockup

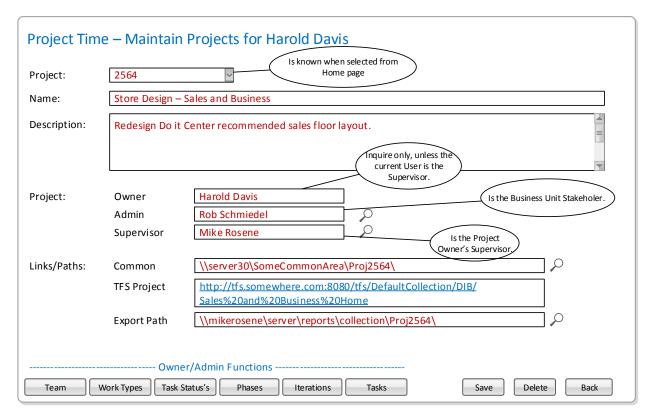


Figure 10 - Projects Maintain Interface Mockup

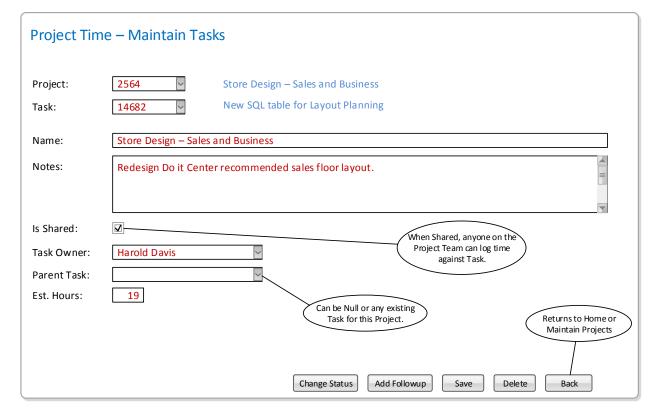


Figure 11 - Tasks Maintain Interface Mockup

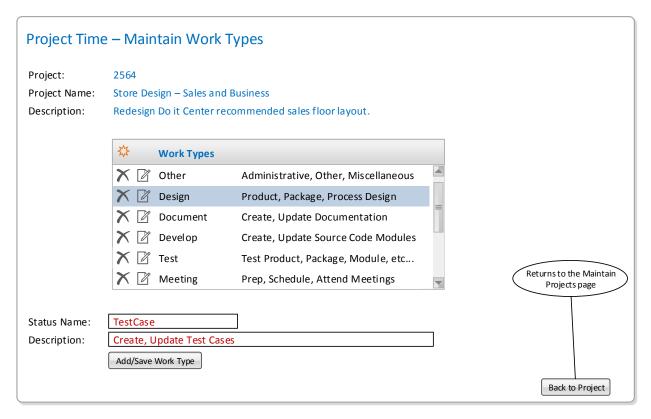


Figure 12 - Work Types Maintain Interface Mockup

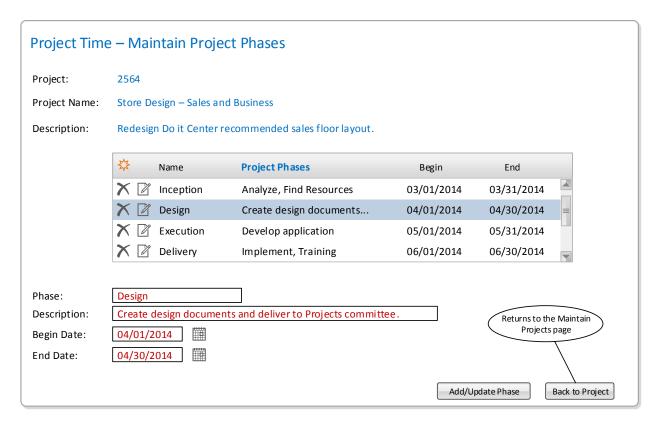


Figure 13 - Project Phases Maintain Interface Mockup

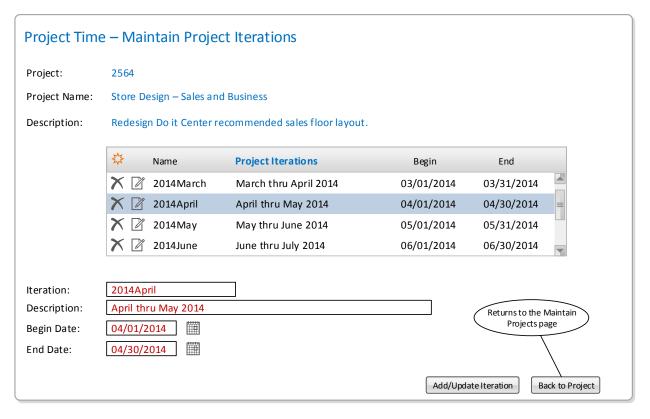


Figure 14 - Project Iterations Maintain Interface Mockup

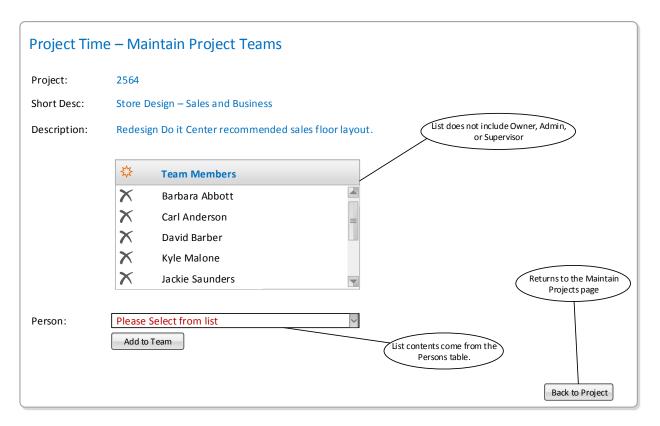


Figure 15- Project Teams Maintain Interface Mockup

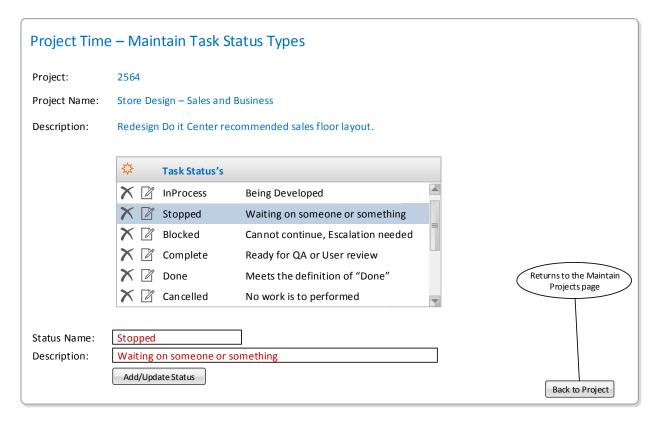


Figure 16 - Task Status Types Maintain Interface Mockup

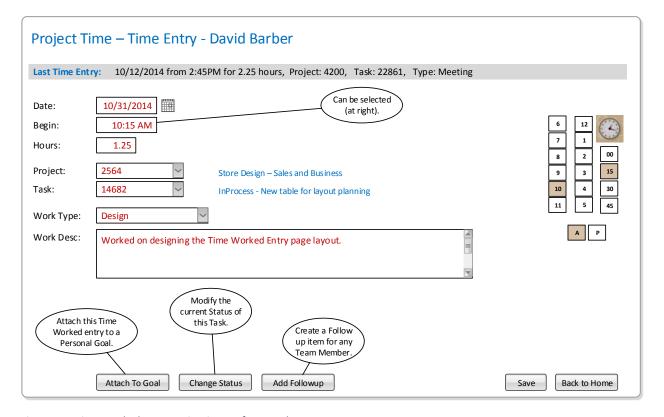


Figure 17 - Time Worked Entry Maintain Interface Mockup

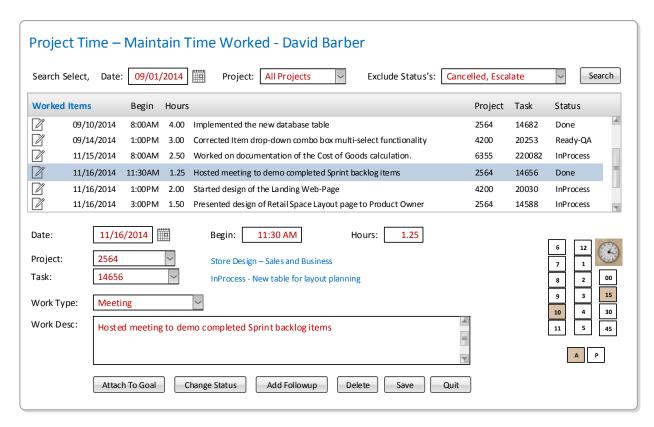


Figure 18 - Time Worked Expanded List Interface Mockup