|  |
| --- |
| **NiSource** |
| **Columbia Pipeline Group (CPG)** |
| **Design Specification (SDS)**  **Project: NiPADS ProTool Enhancements** |

**Business Unit(s): CPG Engineering & Construction**

Document Version: 1.0

**Open Items**

1. Would like to drop the **List All**, **List Pending**, **Go To** links from the PCR header due to low value/high level of effort required.

**<Andy> List All must remain; Go To and List Pending can be dropped so long as the List All includes the status for project selection**

The following requirements have been dropped from the final design:

1. “Changing the project and selecting “Go to” in the Project Header section”
2. All user roles shall be able to display a list of all PCRs Pending final approval for that project by selecting “List All Pending” and scrolling through the list and selecting a PCR to review (similar to the Project List navigation).

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# Application Architecture

The solution will consist of the following major parts. Refer to the solution architecture diagram that follows.

1. **ProTool Interface**
2. **ProTool Database Components**

## Solution Architecture Diagram

Insert Solution Architecture Diagram

## Technical Process Diagram

The following shows the technical process of the solution:

Insert Technical Process Diagram

## Site Map

Insert Site Map here

## Batch Processes

Not applicable. There are no batch processes associated with this solution.

## Functional scalability

All existing hardware, software, and network infrastructure used by ProTool today shall continue to be leveraged for this solution going forward.

## Error Messages

1. **ProTool Database Components**

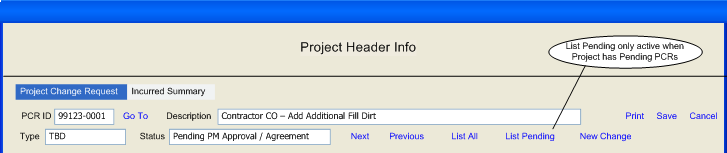
Any SQL Server errors including those thrown from within stored procedures will be rolled up to the permitting user interface code for handling as described previously.

# Application Component Design

## Project Change Request Interface

### Project Change Request Header

#### Project Change Request Header - Screen



#### Project Change Request Header – Functionality

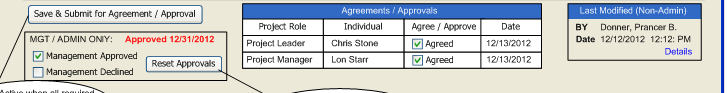
| **Sections** | **Field(s)** | **Control / Validation** | **Data Mapping** | **Notes** |
| --- | --- | --- | --- | --- |
|  | PCR ID | Textbox – Read-only | ProTool.ScopeChange.Project\_No AND ProTool.ScopeChange. Scope\_Version\_No | Concatenated field |
|  | Description | Textbox | ProTool.ScopeChange. Change\_Desc |  |
|  | Type | Textbox – Read-only | ProTool.ScopeChange. Change\_Type | 1. PCR 2. Formal PCR |
|  | Status | Textbox – Read-only | ProTool.ScopeChange. Change\_Status | 1. Initiated / In Progress 2. Pending PM Approval/Agreement 3. PM Approved 4. Awaiting Management Approval 5. Approved 6. Declined |
|  | Next | Link |  | Should only be active if a version greater than the currently displayed version exists |
|  | Previous | Link |  | Should only be active if a version less than the currently displayed version exists |
|  | New Change | Link |  | Shall create a new change request entry in the database. Increment the version no (based on the max version no). See Business Rules for more details |
|  | Print | Link |  | Shall invoke the Project Change Request Active Report |
|  | Save | Link |  | Shall Save any updates to the corresponding Scope Change version record in the database. |
|  | Cancel | Link |  | Shall revert the information on the screen back to the current database records. |

#### Project Change Request Header – Business Rules

| **Rule ID** | **Business Rule Description** | **Notes** |
| --- | --- | --- |
|  | Upon entering the Project Change request screen, the Project Tab Request will load and the most recent PCR for that Project shall populate the screen (Max PCR ID version for that project) if one is available (similar to today). |  |
|  | Changing the project by using other the Project Navigation (in the ProTool header) will cause the screen to reload with the most recent PCR for that project navigated to (same as today). |  |
|  | If no PCR for that project has been entered, the screen will appear grayed out pending **NEW** being selected (same as today). |  |
|  | The Type field shall be populated automatically (**PCR** or **Formal PCR**) based upon the approval actions selected by the project manager at the time of his/her approval or agreement. Until the PM acts, all PCRS shall by default be of type: **TBD** (To Be Determined) |  |
|  | The status of a PCR shall display based on the status of the approval routing in workflow. By default the status shall be set to: **Initiated / In Progress.** |  |
|  | Once Approved or Declined by final Action, the PCR shall be locked to editing and “PCR Locked” message shall display in red (similar in appearance to the Management approval in the MGT / ADMIN ONLY box when that is displayed. |  |
|  | Any user other than Viewer or IT Admin shall be able to create a new Project Change Request for a project by selecting the “New Change” link. The entire PCR screen should be read-only for those with the role of Viewer or IT Admin. |  |
|  | Any user with a role other than Viewer or IT Admin shall be able to enter/edit data on any PCR screens for which the PCR version is in the Initiated / In Progress State. All other states shall have restrictive editing capabilities (see PCR status states in the requirements document). |  |
|  | Upon creation the PCR will be assigned a number that consists of the Project Number and the next number in sequence in the scope\_version\_no starting with 0001 as the first for that project. (Behind the screens, a company ID shall also be required to keep the PCR unique since prior to 2012, project number was not unique) |  |
|  | All user roles shall be able to navigate through the PCR versions using the “Next” and “Previous” links |  |
|  | Moving from one PCR to another PCR within a project shall prompt user to save changes made as above. |  |
|  | Selecting **Print** will invoke the PCR Active Report, enabling the printing of a PCR form |  |
|  | Audit records shall be maintained for actions performed. |  |
|  | All user roles shall be able to display a list of all PCRs for that project by selecting “List All” and scrolling through the list and selecting a PCR to review (similar to the Project List navigation). |  |
|  | Any user other than Viewer or IT Admin shall be able to enter/edit data on PCR screens that are   * 1. not in approval routing (see Status table).   2. not approved.   3. not declined. |  |
|  |  |  |

### Project Change Request Footer

#### Project Change Request Footer - Screen



#### Project Change Request Footer – Functionality

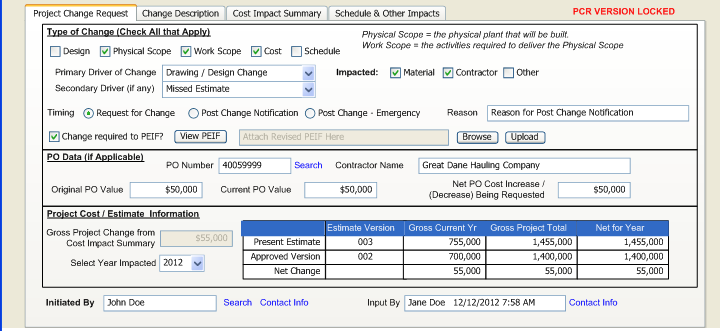
| **Sections** | **Field(s)** | **Control / Validation** | **Data Mapping** | **Notes** |
| --- | --- | --- | --- | --- |
|  | Save & Submit Agreement / Approval | Button |  |  |
| Agreements / Approvals | Project Role |  |  |  |
| Individual |  |  |  |
| Agree/Approve |  |  |  |
| Date |  |  |  |
| MGT/Admin Only | Management Approved | Checkbox |  |  |
|  | Management Declined | Checkbox |  |  |
|  | Reset Approvals | Button |  |  |

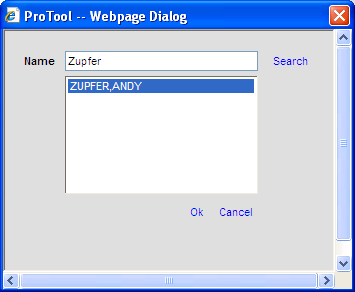
#### Project Change Request Footer – Business Rules

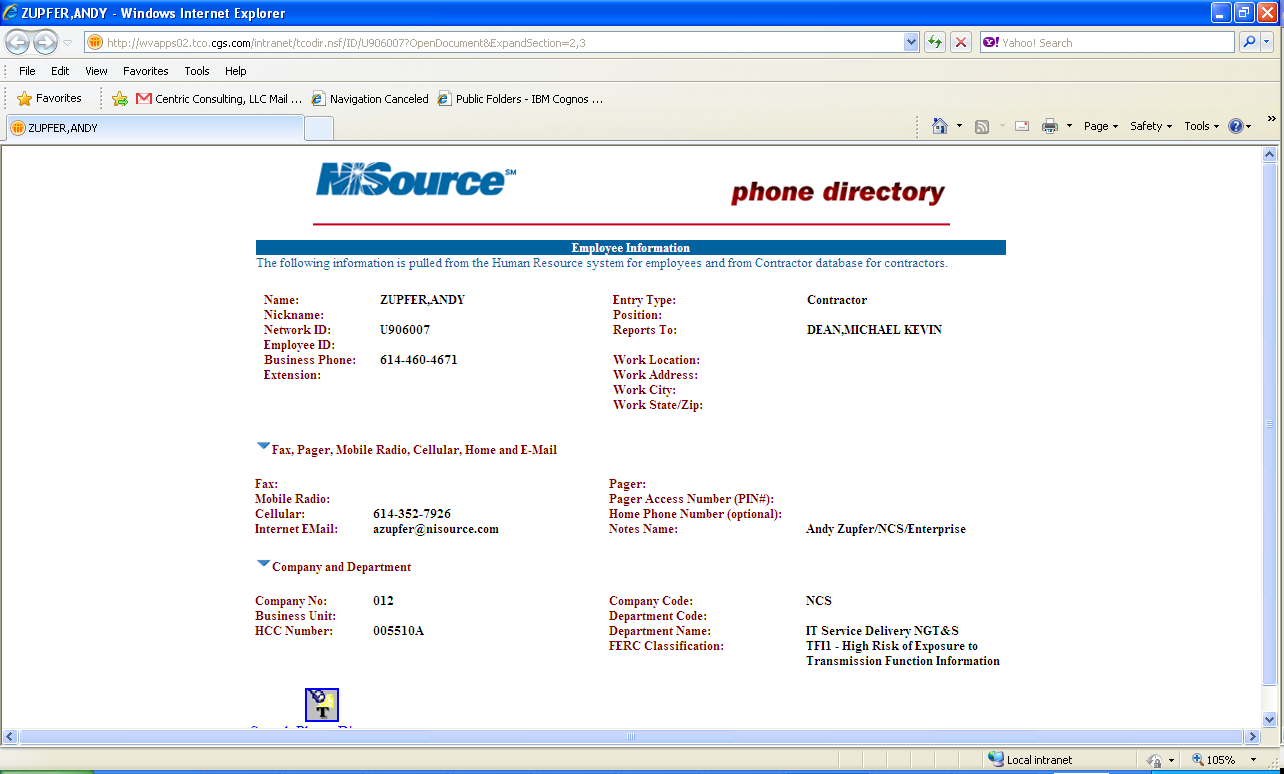
| **Rule ID** | **Business Rule Description** | **Notes** |
| --- | --- | --- |
|  | Upon Save and Submit for agreement, all Project Roles identified as Capital Notify shall receive notice that a change has been submitted, and that the roles selected as required to approve shall have text noting agreement / approval is needed. |  |
|  | Upon Save and Submit for agreement, if a revised PEIF is indicated, a notice shall also be sent to the Regulatory, Land, NRP, and AIR Admins, and any regulatory, land or environmental reviewers assigned to this project. |  |
|  | If a PM decides a revised PEIF is required after submittal, and attaches during a PM edit process, the notice shall be sent to the Regulatory, Land, NRP, and AIR Admins, and any regulatory, land, or environmental reviewers assigned to this project. |  |
|  | Once all required fields are complete or have data entered (see PCR tab table below), the Save and Submit for agreement button shall become active and available for selection. |  |
|  | Once all required fields are complete, any user other than Viewer or IT Admin shall be able to click on the “Save and Submit for Agreement” button to begin the routing for agreement and approval as appropriate. |  |
|  | Only MANAGEMENT APPROVERS and USER ADMINS shall have edit rights to Management Approval Comments box, no other ProTool system |  |
|  | The Reset Approval button shall only be active for those with the user role of: USER ADMIN |  |
|  | Upon selection of the “**Reset Approval”** button, all entries in the Scope Agreement table related to that specific Company Code, Project Number, Estimate Version, Scope Version in the Scope Agreements table shall be deleted. Previous audit records for that version shall remain intact. |  |
|  | The PCR shall indicate Management Action, and the date of that action in the MGT / ADMIN ONLY box. The MGT/ADMIN box |  |
|  | Audit records shall be maintained for actions performed. |  |
|  | Once routed for agreement approval, only those with the ability to approve (PM for that project, User Admin) shall be able to edit, and that right exists only until the appropriate user to which routed agrees, approves, or declines. |  |
|  | A PROJECT MANAGER assigned to the project is the only “agreement” role that may approve should the Project Manager determine that they have the authority to approve the change, and an email shall be sent to the Initiated by person, the input person, and those listed as capital notify, that the PCR has been approved, and the PCR shall be locked to further editing |  |
|  | A PROJECT MANAGER assigned to the project, may elect to forward the change to Management approval (FORMAL PCR), in which case their action shall indicate agreement rather than approval, and an email notice shall be sent to USER ADMINs indicating a Formal PCR requires action and the PCR shall be locked to further editing by the PM. |  |
|  | A Project Manager shall have the right to reject the requested change, in which case the PCR shall be show as Denied, Locked to further editing, and a notice sent to the Initiated by person, the input person, and those listed as capital notify. |  |
|  |  |  |

### Project Change Request Tab

#### Project Change Request Tab - Screen







#### Project Change Request Tab – Functionality

| **Sections** | **Field(s)** | **Control / Validation** | **Data Mapping** | **Notes** |
| --- | --- | --- | --- | --- |
| Type of Change  **(Required Field)** | Design | Checkbox | ProTool.ScopeChanges.Change\_Type\_Design |  |
| Physical Scope | Checkbox | ProTool.ScopeChanges.Change\_Type\_Phy\_Scope |  |
| Work Scope | Checkbox | ProTool.ScopeChanges.Change\_Type\_Wk\_Scope |  |
| Cost | Checkbox | ProTool.ScopeChanges.Change\_Type\_Cost |  |
| Schedule | Checkbox | ProTool.ScopeChanges.Change\_Type\_Schedule |  |
| **Required Field** | Primary Driver of Change | Dropdown | ProTool.ScopeChanges.Primary\_Driver\_CD | Table driven values for the dropdown |
| **Required Field** | Secondary Driver (if any) | Dropdown | ProTool.ScopeChanges.Secondary\_Driver\_CD |
| Impacted | Material | Checkbox | ProTool.ScopeChanges.Material\_Impact |  |
| Contractor | Checkbox | ProTool.ScopeChanges.Contractor\_Impact |  |
| Other | Checkbox | ProTool.ScopeChanges.Other\_Impact |  |
| Timing  **Reason is a required field if Post Change Notification is selected** | Request for Change | Radio Button | ProTool.ScopeChanges.Change\_Timing |  |
| Post Change Notification | Radio Button |  |
| Post Change - Emergency | Radio Button |  |
| Reason | Textbox | ProTool.ScopeChanges.Change\_Timing\_Reason |  |
| **Required if PEIF is attached** | Change Required to PEIF? | Checkbox |  |  |
| **Shall be required if Change Required to PEIF checkbox is selected** | View PEIF | Button | ProTool.Attachments | Corresponds to the PEIF document (where Permitting\_Version IS NOT NULL and Scope\_Change\_Version = corresponding version) associated to the corresponding scope change version |
|  | File Name | Textbox – Read-only | ProTool.Attachments | Corresponds to the name of the document ready to be uploaded |
|  | Browse | Button | ProTool.Attachments | Used to browse the local file system for the attachment to upload |
|  | Upload | Button – Requires creating a PCR entry first before active. | ProTool.Attachments | Creates a new entry in the attachments table with the Scope Change Version and the incremental Permitting Version |
| PO Data | PO Number | Textbox | ProTool.ScopeChanges.PO\_Number | User enters a PO Number  \* Search link not enabled until user has entered 8 characters |
| Search | Link |  | Pulls in the Contractor Name and the PO Value when selected with a valid PO Number. |
| Contractor Name | Textbox  Read-Only | ProTool.Vendors.Name | Derived from Vendor table in ProTool based on the Vendor ID in the Purchase Order table (based on the PO Number) |
| Original PO Value | Textbox  Read-Only | ProTool.PurchaseOrders.TotalCost | Pulled from Purchase Order Table in ProTool database |
| Current PO Value | Textbox |  | Value Entered by the users  Following the initial load this field shall be calculated based on the Original PO Value + Net PO Cost Increase/Decrease |
| Net PO Cost Increase / (Decrease) Being Requested | Textbox – Calculated Value  Current PO Value – Original PO Value | ProTool.ScopeChanges.PO\_Change | Negative numbers should be in Red and ( ) |
| Project Cost / Estimate Information | Gross Project Change | Textbox  Read-only |  | Should be derived from the Net Change Net For the Year Selected. |
|  | Selected Year Impacted | Dropdown | Which years should be contained in the dropdown?  Current Year + 50 | The table (containing the Current Version, Approved Version, and Net Change should update based on the year selected |
| Current Version | Estimate Version |  | [ProTool].[EstimateYearByCategories].[Version\_No]  WHERE [ProTool].[EstimateYearByCategories].[Version\_No] = Max(Version\_No) |  |
| Gross Selected Year |  | [ProTool].[EstimateYearByCategories].Amount  Where  Company\_Cd=***Company AND***  Project\_No=***Project***  ***AND***  Version\_No = Max(Version\_No)  ***AND***  Estimate\_Year = Year Selected in Dropdown |  |
| Gross Project Total |  | [ProTool].[Estimates].Estimate\_Total  Where Version\_No = Max(Version\_No) |  |
| Net for Selected Year |  | Gross Current Year (see above) – [ProTool].[EstimateBillings].[Fixed\_Amount]  **OR If Fixed Amount is 0**  ([ProTool].[EstimateBillings].[Billable\_Pct] x Gross Current Year) |  |
| Approved Version | Estimate Version |  | [ProTool].[EstimateYearByCategories].Amount  WHERE Version\_No = Approved Version (See query below) |  |
| Gross Selected Year |  | [ProTool].[EstimateYearByCategories].Amount  WHERE Version\_No = Approved Version (See query below) |  |
| Gross Project Total |  | [ProTool].[Estimates].Estimate\_Total  WHERE Version\_No = Approved Version (See query below) |  |
| Net for Selected Year |  | Gross Current Year (see above) – [ProTool].[EstimateBillings].[Fixed\_Amount]  **OR If Fixed Amount is 0**  ([ProTool].[EstimateBillings].[Billable\_Pct] x Gross Current Year)  WHERE Version\_No = Approved Version (See query below) |  |
| Net Change | Estimate Version | Blank Table Cell | None |  |
| Gross Selected Year | Calculated |  | Current Version Gross For Year Selected – Approved Version Gross For Year Selected  Negative numbers should be in Red and ( ) |
| Gross Project Total | Calculated |  | Current Version Gross Project Total – Approved Version Gross Project Total  Negative numbers should be in Red and ( ) |
| Net for Selected Year | Calculated |  | Current Version Net For Year Selected – Approved Version Net For Year Selected  Negative numbers should be in Red and ( ) |
|  | Initiated By | Textbox – Read-only | Must use the Search component to populate |  |
|  | Search | Link | On Click should display a pop-up window (see above); allowing the user to enter in part of the name and get a list to select | See New Project Interface >> **Originating Person** Field |
|  | Contact Info | Link  Should be disabled if no name is in the Initiated by field | On Click should display a pop-up window (see above) that displays the contact information of the person selected. | See New Project Interface |
|  | Input By | Textbox | Should display the current user |  |
|  | Contact Info | Link  Should be disabled if no name is in the Input by field | On Click should display a pop-up window (see above) that displays the contact information of the person selected. | See New Project Interface |

**Example Billings Query:**

SELECT [Company\_Cd]

,[Project\_No]

,[Billable\_Pct]

,[Fixed\_Amount]

,[Version\_No]

,[Billing\_Year]

FROM [ProTool\_Staging].[ProTool].[EstimateBillings]

WHERE Billing\_Year='2013' AND Version\_No = (Select MAX(Version\_No) from [ProTool\_Staging].[ProTool].[EstimateBillings] WHERE Company\_Cd='CGT' AND Project\_No='16585' and Billing\_Year='2013')

**Example Approved Version Query**

SELECT [Company\_Cd]

,[Project\_No]

,[Estimate\_Year]

,[Version\_No]

,[Year\_Approval\_Fl]

FROM [ProTool\_Staging].[ProTool].[EstimateYears]

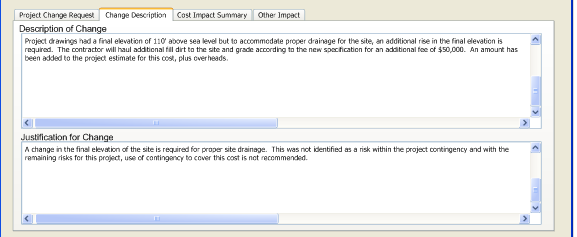
WHERE Company\_Cd='CGT' and Project\_No='16585' AND Estimate\_Year='2013' AND Version\_No = (Select MAX(Version\_No)FROM [ProTool\_Staging].[ProTool].[EstimateYears] WHERE Company\_Cd='CGT' and Project\_No='16585' AND Year\_Approval\_Fl='1')

#### Project Change Request Tab – Business Rules

| **Rule ID** | **Business Rule Description** | **Notes** |
| --- | --- | --- |
|  | Moving from one tab to another within a project or to another project shall prompt user to save changes made, if any changes have occurred since the last save (same as today). |  |
|  | Once routed for agreement approval, only those with the ability to approve (PM for that project, User Admin) shall be able to edit, and that right exists only until the appropriate user to which routed agrees, approves, or declines. |  |
|  | Any user other than Viewer or IT Admin shall be able to enter/edit data on PCR screens that are   * 1. not in approval routing (see Status table).   2. not approved.   3. not declined. |  |
|  | Audit records shall be maintained for actions performed. |  |
|  | Users may move from one sub tab (Project Change Request, Change Description….) to another for the within the same PCR are allowed (same as today) and the system shall retain the data until saved or cancelled. |  |
|  | If a PO change, User shall be able to search / enter the PO information within and select the PO affected. Upon selection the Supplier name, Original PO Value and Current Approved PO value shall populate. |  |
|  | If PO data provided is incorrect (PO approved values do not reflect accurately due to insufficient version control in Maximo, the user shall be able to edit the data in Original Value, Current Value fields. |  |
|  | If a revised PEIF is attached, a new Permitting Review version shall be created and the indicators set to an non-reviewed state, and the indicators on the previous Permitting Review version shall be disabled. |  |
|  | PCRs shall track major items impacted (schedule, cost, scope both work & physical, and design) (Required to submit for approval). |  |
|  | PCRs shall track the primary and if applicable secondary drivers of the change, via a drop down box populated by a short list of primary drivers. (Required to submit for approval). |  |
|  | PCRs shall track if the PCR is a request for change, or a post change (variation) notification. |  |
|  | PCRs shall track if the PCR is a post change variation driven by – Emergency |  |
|  | PCRs shall require a reason for Post Change Notification (text field) (Required to submit for approval if post change is selected) |  |
|  | PCRs shall allow for the determination of whether a changed PEIF is required, indicated by setting a check box to checked, and if so, shall allow for the attachment of that revised PEIF. |  |
|  | PCRs shall allow for the indication of impacts, (contractor, materials, and other). |  |
|  | PCRs shall display the Gross Impact change from the Cost Impact Summary screen, and shall indicate the year impacted for this change. |  |
|  | Upon selecting the year impacted, the PCR shall poll the estimate records and return the present estimate (max estimate version), and the Approved version for the year indicated, and shall display the Gross Estimated for the Year, the total for the Project, and the Net for the Year. |  |
|  | The PCR shall allow the selection of who initiated the PCR via a search similar to the Project Initiated by function. (Required to submit for approval) |  |
|  | The PCR shall indicate who created the PCR in the Input by field. |  |
|  |  |  |

### Change Description Tab

#### Change Description Tab - Screens



#### Change Request Tab – Functionality

| **Sections** | **Field(s)** | **Control / Validation** | **Data Mapping** | **Notes** |
| --- | --- | --- | --- | --- |
|  | Description of Change  **Required** | Text Area | ProTool.ScopeChanges.Project\_Impact |  |
|  | Justification of Change  **Required** | Text Area | ProTool.ScopeChanges.Change\_ Justification |  |

#### Change Request Tab – Business Rules

| **Rule ID** | **Business Rule Description** | **Notes** |
| --- | --- | --- |
|  | Moving from one tab to another within a project or to another project shall prompt user to save changes made, if any changes have occurred since the last save (same as today). |  |
|  | Once routed for agreement approval, only those with the ability to approve (PM for that project, User Admin) shall be able to edit, and that right exists only until the appropriate user to which routed agrees, approves, or declines. |  |
|  | Any user other than Viewer or IT Admin shall be able to enter/edit data on PCR screens that are   * 1. not in approval routing (see Status table).   2. not approved.   not declined. |  |
|  | Audit records shall be maintained for actions performed. |  |
|  | The PCR shall allow for the input of a text field to describe the change being requested. (Required to submit for approval) |  |
|  | The PCR shall allow for the input of a text field to enter the justification of the change. (Required to submit for approval) |  |

### Cost Impact Summary Tab

#### Cost Impact Summary Tab - Screens



**Summary Project Cost Groups**

|  |  |  |  |
| --- | --- | --- | --- |
| **Project Cost Group** | **Change Amount** | **Project Cost Group** | **Change Amount** |
| Environmental | $8,900 | AFUDC/IDC Overheads |  |
| Legal/Government Affairs/Outreach |  | Contingency |  |
| Right of Way |  | Excluded from Capital |  |
| Engineering |  | Accruals |  |
| Removal/Demo |  | AGSEO |  |
| Inspecting |  | Reimbursements |  |
| Commissioning |  | **Total Changes** | $8,900 |

**Detailed Project Cost Groups**

|  |  |  |  |
| --- | --- | --- | --- |
| **Project Cost Group** | **Change Amount** | **Project Cost Group** | **Change Amount** |
| Environmental Survey/Permitting |  | Project Mgmt. & Controls  (Internal Labor & Outside Services) |  |
| Legal/Government Affairs/Outreach |  | Internal Labor |  |
| Land Acquisition/ROW and Land Agent |  | Construction Inspection  (Internal Labor & Outside Services) |  |
| Land Damages |  | X-Ray Inspection  (Outside Services) |  |
| Engineering  (Outside Services) |  | Environmental Inspection  (Outside Services) |  |
| Survey  (Outside Services) |  | Commissioning  (Internal Labor & Outside Services) |  |
| Materials - Pipe, Valves, & Fittings |  | Interest & Overheads |  |
| Materials - Engineered Items |  | Contingency |  |
| Materials - Other |  | Reimbursements |  |
| Demolition/Removal  (Internal Labor & Outside Services) |  | Closings |  |
| Prime Construction  (Internal Labor & Outside Services) |  | Plant Sales Proceeds |  |
| Other Construction  (Internal Labor & Outside Services) |  | Accruals |  |
| Other Costs |  | AGSEO |  |
|  |  | **Total Changes** |  |

#### Cost Impact Summary Tab – Functionality

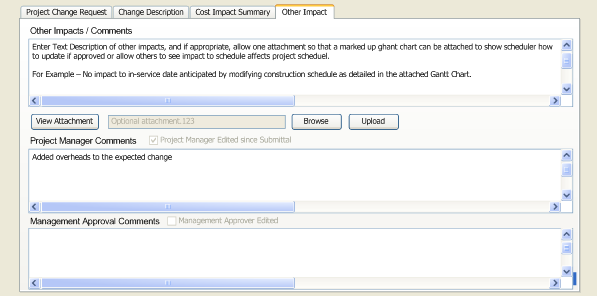
| **Sections** | **Field(s)** | **Control / Validation** | **Data Mapping** | **Notes** |
| --- | --- | --- | --- | --- |
|  | Estimate Accuracy | Dropdown | ProTool.ScopeChanges. Gate\_CD | Available Values:   1. Gate 1 2. Gate 2 3. Gate 3 4. Gate 4 5. Gate 5 |
|  | Detailed Estimate | Checkbox | ProTool.Estimates.Cost\_Category\_Type | 1= Summary  2 = Detailed |
|  | Project Cost Groups | Label | ProTool.ScopeChange\_Estimate | See above for the specific project cost groups based on the value of the Cost Category Type |
|  | Textbox | ProTool.ScopeChange\_Estimate.Amount |  |

#### Cost Impact Summary Tab – Business Rules

| **Rule ID** | **Business Rule Description** | **Notes** |
| --- | --- | --- |
|  | Moving from one tab to another within a project or to another project shall prompt user to save changes made, if any changes have occurred since the last save (same as today). |  |
|  | Once routed for agreement approval, only those with the ability to approve (PM for that project, User Admin) shall be able to edit, and that right exists only until the appropriate user to which routed agrees, approves, or declines. |  |
|  | Any user other than Viewer or IT Admin shall be able to enter/edit data on PCR screens that are   * 1. not in approval routing (see Status table).   2. not approved.   3. not declined. |  |
|  | Audit records shall be maintained for actions performed. |  |
|  | Users may move from one sub tab (Project Change Request, Change Description….) to another for the within the same PCR are allowed (same as today) and the system shall retain the data until saved or cancelled. |  |
|  | The cost impact summary shall allow for the input of impacts based upon the Project Cost Groupings similar to the Estimate by year screen (an entry on at least one line, even if zero, is required). |  |
|  | The Estimate accuracy shall be indicated, and shall default to blank. |  |

### Other Impact Tab

#### Other Impact Tab - Screens



#### Other Impact Tab – Functionality

| **Sections** | **Field(s)** | **Control / Validation** | **Data Mapping** | **Notes** |
| --- | --- | --- | --- | --- |
|  | Other Impacts/ Comments | Text Area | ProTool.ScopeChanges.Scope\_Notes |  |
|  | View Attachment | Button  Should only be active if there’s a corresponding Non-PEIF document in the Attachments table. | ProTool.Attachments | Corresponds to the non-PEIF document (where Permitting\_Version = NULL and Scope\_Change\_Version = corresponding version) associated to the corresponding scope change version |
|  | File Name | Textbox – Read-only | ProTool.Attachments | Corresponds to the name of the document ready to be uploaded |
|  | Browse | Button | ProTool.Attachments | Used to browse the local file system for the attachment to upload |
|  | Upload | Button - Requires creating a PCR entry first before active. | ProTool.Attachments | Creates a new entry in the attachments table  Set Permitting\_Version = NULL and Scope\_Change\_Version = *Scope Change Version* |
|  | Project Manager Comments | Text Area | ProTool.ScopeChanges.Project\_Manager\_Comments |  |
|  | Project Manager Edited Since Submittal | Checkbox |  |  |
|  | Management Approval Comments | Text Area | ProTool.ScopeChanges.Management\_Approval\_Comments |  |
|  | Management Approver Edited | Checkbox |  |  |

#### Other Impact Tab – Business Rules

| **Rule ID** | **Business Rule Description** | **Notes** |
| --- | --- | --- |
|  | Moving from one tab to another within a project or to another project shall prompt user to save changes made, if any changes have occurred since the last save (same as today). |  |
|  | Once routed for agreement approval, only those with the ability to approve (PM for that project, User Admin) shall be able to edit, and that right exists only until the appropriate user to which routed agrees, approves, or declines. |  |
|  | Any user other than Viewer or IT Admin shall be able to enter/edit data on PCR screens that are   * 1. not in approval routing (see Status table).   2. not approved.   3. not declined. |  |
|  | Only the Project Manager assigned to the project being displayed shall have right to edit the Project Manager Comments field. |  |
|  | If a Project Manager changes a field on the PCR, other than indicating approval, agreement, or declining after the save and submit for agreement has occurred, the “Edits made by Project Manager” checkbox shall be selected (displayed on the Other Impacts tab) |  |
|  | If a USER ADMIN or MANAGEMENT APPROVER changes a field on the PCR, other than indicating approval, agreement or declining after the save and submit for agreement has occurred, the “Edits made Prior to Approval” checkbox shall be selected (displayed on the Other Impact tab) |  |
|  | Only MANAGEMENT APPROVERS and USER ADMINS shall have edit rights to Management Approval Comments box, no other ProTool system role shall have this edit right to this field. |  |
|  | Users may move from one sub tab (Project Change Request, Change Description….) to another for the within the same PCR are allowed (same as today) and the system shall retain the data until saved or cancelled. |  |
|  | The PCR shall allow for the entry of other information / comments / impacts as text. |  |
|  | The PCR shall allow for the attachment of one supporting document / file. |  |
|  | The PCR shall allow for the Project Manager to enter comments |  |
|  | The PCR Shall allow for the User Admins / Management Approvers to enter comments. |  |
|  | The PCR shall display the persons assigned to the roles assigned to a project with “change agreement” selected (Roles Maintenance Screen), and shall indicate the status and date of their Agreement / Approval (PM Only where applicable). (Similar to today) |  |

# Information Architecture

## Logical Data Model

No Entity Relationship Diagram (ERD) is available at this time.

## Physical Data Model

### ProTool Data Source

The following ProTool tables will be used for this solution.

**Table: AuditEvents**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| Audit\_Event\_ID | Int | No | PK |  |
| Audit\_Event\_Dsc | varchar(500) | Yes |  |  |

**Audit\_Event\_ID** **Audit\_Event\_Dsc**

26 Scope Change Modified

27 Scope Change Locked

28 Scope Change Unlocked

29 Scope Change Approval Checked

30 Scope Change Approval Unchecked

31 Scope Change Agreement Checked

32 Scope Change Agreement Unchecked

33 New Scope Change Version Created

34 Scope Change Version Deleted

Are there any additional Audit Events that James’s desires?

**Table: Audit**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| Company\_Cd | Int | No | PK |  |
| Project\_No | varchar(500) | No | PK |  |
| User\_ID | varchar(10) | No | PK |  |
| Audit\_ID | Int | No | PK | Sequential number based on the User ID |
| Audit\_Event\_ID | Int | No |  | Pulled from AuditEvents table |
| Audit\_Date | Datetime | No |  |  |
| Version\_No | Smallint | Yes |  | Estimate Version |
| Estimate\_Year | varchar(4) | Yes |  | Estimate Year |
| Scope\_Version\_No | Smallint | Yes |  | N/A to this solution as such it will be NULL |
| Admin\_Fl | Bit | No |  | Denotes the ProTool role of the person making the auditable event. 1 if Admin, 0 if not. |

**Table: ScopeChanges**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| Company\_Cd | varchar(3) | No | **PK** |  |
| Project\_No | int | No | **PK** |  |
| Version\_No | smallint | No | **PK** |  |
| Scope\_Version\_No | smallint | No | **PK** |  |
| Change\_Type | Varchar(20) | Yes |  | New Field |
| Change\_Desc | varchar(1500) | No |  |  |
| Change\_Status | Varchar(100) | Yes |  | ***New Field*** |
| Change\_Type\_Design | Bit | Yes |  | ***New Field*** |
| Change\_Type\_Phy\_Scope | Bit | Yes |  | ***New Field*** |
| Change\_Type\_Wk\_Scope | Bit | Yes |  | ***New Field*** |
| Change\_Type\_Cost | Bit | Yes |  | ***New Field*** |
| Change\_Type\_Schedule | Bit | Yes |  | ***New Field*** |
| Primary\_Driver\_CD | Int | Yes |  | ***New Field*** |
| Secondary\_Driver\_CD | Int | Yes |  | ***New Field*** |
| Material\_Impact | Bit | Yes |  | ***New Field*** |
| Contractor\_Impact | Bit | Yes |  | ***New Field*** |
| Other\_Impact | Bit | Yes |  | ***New Field*** |
| Change\_Timing | Varchar(100) | Yes |  | ***New Field*** |
| Change\_Timing\_Reason | Varchar(250) | Yes |  | ***New Field*** |
| PEIF\_Updated | Bit | Yes |  | ***New Field*** |
| PO\_Number | Int | Yes |  | ***New Field*** |
| PO\_Change | Int | Yes |  | ***New Field*** |
| Year\_Impacted | Int | Yes |  | ***New Field*** |
| Initiated\_By\_ID | varchar(10) | Yes |  | ***New Field*** |
| Last\_Input\_By\_ID | varchar(10) | Yes |  | ***New Field*** |
| Management\_Decision | varchar(10) | Yes |  | ***New Field*** |
| Project\_Impact | varchar(1500) | Yes |  |  |
| Change\_ Justification | varchar(1500) | Yes |  |  |
| Gate\_CD | Int | Yes |  | ***New Field*** |
| Scope\_Notes | varchar(400) | Yes |  |  |
| Project\_Manager\_Comments | varchar(1500) | Yes |  | ***New Field*** |
| Project\_Manager\_Edited | Bit | No |  | ***New Field*** |
| Management\_Approval\_Comments | varchar(1500) | Yes |  | ***New Field*** |
| Management\_Edited | Bit | No |  | ***New Field*** |
| Locked\_Scope\_Fl | Bit | No |  |  |
| Scope\_Locked\_By\_ID | varchar(10) | Yes |  |  |
| Scope\_Locked\_Date | datetime | Yes |  |  |
| Scope\_Approval\_Fl | bit | Yes |  |  |
| Scope\_Approval\_Date | datetime | Yes |  |  |
| CostEstimate\_Version\_No | smallint | Yes |  |  |

**Table: ScopeChange\_Estimate**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| Company\_Cd | varchar(3) | No | **PK** |  |
| Project\_No | Int | No | **PK** |  |
| Cost\_Category\_Cd | Smallint | No | **PK** |  |
| Scope\_Version\_No | smallint | No | **PK** |  |
| Cost\_Category\_Type |  | No |  |  |
| Amount | Int | Yes |  |  |

**Table: ScopeChangeEstimate**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| Company\_Cd | varchar(3) | No | **PK** |  |
| Project\_No | Int | No | **PK** |  |
| Version\_No | smallint | No | **PK** |  |
| Scope\_Version\_No | smallint | No | **PK** |  |
| Cost\_Category\_Cd | Smallint | No | **PK** |  |
| Cost\_Category\_Type |  | No |  |  |
| Amount | Int | Yes |  |  |

**Table: ScopeChangeDrivers**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| Driver\_Cd | varchar(3) | No | **PK** |  |
| Description | Varchar(100) | No |  |  |

**Table: Estimates**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| Company\_Cd | varchar(3) | No | **PK** |  |
| Project\_No | int | No | **PK** |  |
| Version\_No | smallint | No | **PK** | For any estimate created via PCR the value will be an increment based on the Max(Version\_No) |
| Locked\_Estimate\_Fl | bit | No |  | For any estimate created via PCR the value will be True (1) |
| Estimate\_Total | int | No |  |  |
| Brief\_Note | varchar(1000) | Yes |  | For any estimate created via PCR the value will be Null |
| Cost\_Category\_Type | Int | Yes |  |  |
| AGSEO\_Exempt | Bit | No |  | For any estimate created via PCR the value will be False (0) |

**Table: EstimateYearbyCategories**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| Company\_Cd | varchar(3) | No | **PK** |  |
| Project\_No | Int | No | **PK** |  |
| Cost\_Category\_Cd | Smallint | No | **PK** |  |
| Version\_No | Smallint | No | **PK** |  |
| Amount | Int | No |  |  |
| Estimate\_Year | varchar(4) | No | **PK** |  |
| Contingency | Int | Yes |  |  |
| User\_Id | varchar(10) | Yes |  |  |
| Trans\_Date | datetime | Yes |  |  |
| January | Float | Yes |  |  |
| February | Float | Yes |  |  |
| March | Float | Yes |  |  |
| April | Float | Yes |  |  |
| May | Float | Yes |  |  |
| June | Float | Yes |  |  |
| July | Float | Yes |  |  |
| August | Float | Yes |  |  |
| September | Float | Yes |  |  |
| October | Float | Yes |  |  |
| November | Float | Yes |  |  |
| December | Float | Yes |  |  |

**Table: EstimateBillings**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| **Company\_Cd** | varchar(3) | No | PK |  |
| **Project\_No** | Int | No | PK |  |
| Third\_Party\_Name | varchar(50) | Yes |  |  |
| Billing\_Type\_Cd | Int | No |  |  |
| Contract\_Identifier | varchar(30) | Yes |  |  |
| Billing\_Method\_Cd | Int | Yes |  |  |
| **Billable\_Pct** | decimal(10, 4) | Yes |  |  |
| **Fixed\_Amount** | Int | Yes |  |  |
| CIAC\_Rate | decimal(10, 4) | Yes |  |  |
| Insurance\_Deductible | Int | Yes |  |  |
| OH\_Method\_Cd | Int | No |  |  |
| OH\_NonStd\_Rate | decimal(10, 4) | Yes |  |  |
| **Version\_No** | smallint | No | PK |  |
| Billing\_Item\_No | Int | No | PK |  |
| Billing\_Level\_Cd | smallint | No |  |  |
| **Billing\_Year** | varchar(4) | Yes |  |  |
| Estimate\_OH\_Rate | decimal(10, 4) | Yes |  |  |
| Billing\_Comment | varchar(1000) | Yes |  |  |

The fields indicated in bold will be used for the Project Cost /Estimate Information section of this solution

**Table: EstimateYears**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| **Company\_Cd** | varchar(3) | No | PK |  |
| **Project\_No** | Int | No | PK |  |
| **Estimate\_Year** | varchar(4) | No | PK |  |
| **Version\_No** | Smallint | No | PK |  |
| January | float | Yes |  |  |
| February | Float | Yes |  |  |
| March | Float | Yes |  |  |
| April | Float | Yes |  |  |
| May | Float | Yes |  |  |
| June | Float | Yes |  |  |
| July | Float | Yes |  |  |
| August | Float | Yes |  |  |
| September | Float | Yes |  |  |
| October | Float | Yes |  |  |
| November | Float | Yes |  |  |
| December | Float | Yes |  |  |
| **Year\_Approval\_Fl** | bit | Yes |  |  |

The fields indicated in bold will be used for the Project Cost /Estimate Information section of this solution

**Table: ScopeAgreements**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| Company\_Cd | varchar(3) | No | PK |  |
| Project\_No | Int | No | PK |  |
| Version\_No | Smallint | No | PK | Corresponds to the Forecast Version |
| Scope\_Version\_No | Smallint | No | PK |  |
| Project\_Role\_CD | Smallint | No | PK |  |
| User\_ID | varchar(10) | No |  |  |
| Agreement\_Date | Datetime | Yes |  |  |
| Agreement\_Fl | Bit | No |  |  |

**Table: Attachments**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| Company\_Cd | varchar(3) | No | PK |  |
| Project\_No | Int | No | PK |  |
| Attachment\_Name | varchar(50) | No | PK |  |
| Attachment | Image | No |  |  |
| Attached\_By\_ID | varchar(10) | No |  |  |
| Attached\_By\_Date | Smalldatetime | No |  |  |
| Private\_FL | Bit | Yes |  | NULL |
| Permitting\_Version | Int | Yes |  | Corresponds to the Permitting Version. One and only one PEIF is allowed for a Permitting version. |
| Scope\_Change\_Version | Int | Yes |  | **New Field** |

Will be used to stored the PEIF and any other corresponding attachments (found on the Other Impact tab)

**Table: Permits**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| Company\_Cd | varchar(3) | No | PK |  |
| Project\_No | Int | No | PK |  |
| Version\_No | Smallint | No | PK | This will be incremented by 1 from max version no for the corresponding Project No and Company Cd. |
| Reg\_Status | Int | No |  | Status will be set to 3 since this is a new permit version |
| NRP\_Status | Int | No |  |
| Land\_Status | Int | No |  |
| Air\_Status | Int | No |  |
| Reg\_Reviewer | varchar(10) | Yes |  | This will retain the same user as the previous permit version |
| NRP\_Reviewer | varchar(10) | Yes |  |
| Land\_Reviewer | varchar(10) | Yes |  |
| Air\_Reviewer | varchar(10) | Yes |  |
| Reg\_Required | varchar(10) | No |  | Will be set to **3 -** **TBD** since this is a new permit version |
| NRP\_Required | varchar(10) | No |  |
| Land\_Required | varchar(10) | No |  |
| Air\_Required | varchar(10) | No |  |
| Reg\_ATC | varchar(10) | No |  | Will be set to **No** since this is a new permit version |
| NRP\_ ATC | varchar(10) | No |  |
| Land\_ ATC | varchar(10) | No |  |
| Air\_ ATC | varchar(10) | No |  |
| FERC\_Docket\_No | varchar(25) | Yes |  | This will retain the same value as the previous permit version |
| Reg\_Last\_Reviewed | Datetime | Yes |  |
| NRP\_Last\_Reviewed | Datetime | Yes |  |
| Land\_Last\_Reviewed | Datetime | Yes |  |
| Air\_ Last\_Reviewed | Datetime | Yes |  |
| Reg\_Date\_Cleared | Datetime | Yes |  |
| NRP\_ Date\_Cleared | Datetime | Yes |  |
| Land\_ Date\_Cleared | Datetime | Yes |  |
| Air\_ Date\_Cleared | Datetime | Yes |  |
| Reg\_Comments | varchar(1500) | Yes |  |
| NRP\_ Comments | varchar(1500) | Yes |  |
| Land\_ Comments | varchar(1500) | Yes |  |
| Air\_ Comments | varchar(1500) | Yes |  |
| Project\_Clear\_Date | Datetime | Yes |  |

* If the **Change Required to PEIF** box is checked in the PCR form, a new Permitting version will be created in the database (see comments on the data cleared vs. data copied from previous version.

**Table: Vendors**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| **Vendor\_Id** | varchar(12) | No | PK |  |
| **Name** | varchar(50) | Yes |  |  |
| Address | varchar(50) | Yes |  |  |
| City | varchar(50) | Yes |  |  |
| State | varchar(50) | Yes |  |  |
| ZipCode | varchar(50) | Yes |  |  |
| Contact | varchar(50) | Yes |  |  |
| Phone | varchar(20) | Yes |  |  |

The fields indicated in bold will be used for the PO Data section of this solution

**Table: PurchaseOrders**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Nullable** | **Indexes** | **Comments** |
| Purchase\_Order\_Id | bigint | No | PK |  |
| **PO\_Num** | varchar(8) | No |  |  |
| Description | varchar(120) | Yes |  |  |
| Order\_Date | Datetime | Yes |  |  |
| PO\_Type | varchar(12) | Yes |  |  |
| Status | varchar(20) | Yes |  |  |
| Status\_Date | Datetime | Yes |  |  |
| **Vendor\_Id** | varchar(12) | Yes |  |  |
| **Total\_Cost** | decimal(10, 2) | Yes |  |  |
| Supervisor | varchar(30) | Yes |  |  |
| Requested\_By | varchar(30) | Yes |  |  |
| Change\_By | varchar(30) | Yes |  |  |
| Change\_Date | Datetime | Yes |  |  |

The fields indicated in bold will be used for the PO Data section of this solution.

## Data Conversion Specifications

There will be no data conversion required for this solution.

# Infrastructure Architecture

## Environment Topology diagrams

Insert Topology Diagram Here

## IT Resources

|  |  |
| --- | --- |
| Application Source Code Location | TBD |
| Database Deployment Scripts | TBD |
| SQL Server DEV  (ProTool DB) | Connection String:  Provider=SQLOLEDB.1;Data Source=BW2CHADBSQLT09\S2K8TST;Initial Catalog=ProTool; User ID=ProTool;Password=tin9cup |
| SQL Server TEST  (ProTool DB) | Connection String:  Provider=SQLOLEDB.1;Data Source=BW2CHADBSQLT09\S2K8TST;Initial Catalog=ProTool; Integrated Security=SSPI |

## Security Specifications and Access Matrix

Need to identify the ProTool roles and what access each role will have to this interface

## Backup and Recovery Design

All backup and recovery activities should be covered under the existing ProTool support. There are changes required to the current backup and recovery plan (for ProTool)

# Revision History

**Document Title:**

**Document Filename:**

**Document Location:**

**Document Purpose:** *[optional – use if the Title does not fully describe]*

Document Owners(s):

| **Name** | **Role** |
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The version history for this document:

| **Version Number** | **Date Issued** | **Issued By** | **Section Modified** | **Summary of Amendments** |
| --- | --- | --- | --- | --- |
| 1 | 3/6/2013 |  | Initial Draft |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |
| 4 |  |  |  |  |

