Stage 1 Business Analysis

General Information

Agency or State Entity Name:

Public Utilities Commission

Organization Code:

8660

Name of Proposal:

RSSIMS Bulk Record Update

Proposed Start Date: **June, 2016**

Department of Technology Project Number: 8660-073

Submittal Information

Submission Date:

10/8/2014

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Business Sponsor and Key Stakeholders

Executive Sponsors

Title	First Name	Last Name	Business Program Area
Deputy Director	Paul	King	Safety and Enforcement Division
Chief Information Officer	Daniel	Quach	Administrative Services, IT Services

Business Owners

Title	First Name	Last Name	Business Program Area
Program Manager	Daren	Gilbert	Rail Transit Safety Section (RTSS)
Program Manager	Daren	Gilbert	Rail Crossings Engineering Section (RCES)
Program Manager	Roger	Clugston	Railroad Operations Safety Branch (ROSB

Key Stakeholders

Title	First Name	Last Name	Business Program Area/Group	External
Director	Denise	Tyrell	Safety and Enforcement Division	

Business Analysis

1.1 Business Drivers

Financial Benefit:	☐ Increased Revenues ☑ Cost Savings ☑ Cost Avoidance
Mandate(s):	☐ State ☐ Federal
Improvement:	☑ Better services to citizens ☑ Efficiencies to program operations ☐ Technology refresh

1.2 Statutes or Legislation

Statutes or Legislation:	☐ New statutes or potential legislation ☐ Changes to existing legislation	☑ Not Applicable
Bill Number:		
Legal Code:		
Additional Information:		

1.3 Program Background and Context

The Safety and Enforcement Division administers safety oversight of railroads; light rail transit systems and highway/rail crossings; licensing, consumer protection, and safety oversight of motor carriers of passengers, household goods and water vessels; and regulatory oversight of hot air balloons and some air carriers.

Rail Transit Safety Branch (RTSB)
RTSB implements the Commission's safety oversight program over light rail, rapid rail, and cable cars. The seven major transit systems in California are:

- Sacramento Regional Transit District
- San Francisco Bay Area Rapid Transit
- San Francisco Municipal Railway
- Santa Clara Valley Transportation Authority
- Los Angeles County Metropolitan Transportation Authority
- San Diego Trolley Inc.
- North (San Diego) County Transit District

RTSB also provide safety oversight for other fixed guideway systems such as Angel's Flight funicular (in the City of Los Angeles), Port of Los Angeles Waterfront Red Car Line, the Grove Trolley, the Americana on Brand Trolley, the Getty Museum tram, the Sacramento Airport automated people mover and the San Francisco International Airport Intermodal AirTrain System.

Rail Crossings Engineering Branch (RCEB)
RCEB Implements the Commission's safety oversight program over rail crossings, by ensuring that they are properly designed, constructed, and maintained. There are approximately 9,000 public and 4,000 private crossings (approximately 13,000 total) in California. RCEB investigates crossing accidents and makes recommendations to local roadway agencies, railroads and light rail transit agencies for crossing improvements. RCEB jointly administers with Caltrans the Federal Section 130 Rail Crossing Hazard Elimination Program, the State Section 190 Grade Separation Program, and the Crossing Maintenance Fund.

Railroad Operations Safety Branch (ROSB)
The Railroad Operations Safety Branch ensures that California communities and railroad employees are protected

from unsafe practices on freight and passenger railroads by promoting and enforcing federal and state rail safety rules and regulations, and continuous inspection efforts.

Rail Safety and Security Information Management System (RSSIMS)
RSSIMS is used to centrally maintain CPUC's rail safety data and was successfully implemented in 2013. This database contains on the order of 10,000 highway-rail crossing inventory records, each record containing about 100 core pieces of information and over 300 total data elements. Due to frequent changes in physical and operational characteristics of rail lines there is a large volume of data for each crossing that must be maintained. The initial rollout of the RSSIMS system did not include a feature to create and modify records using bulk record update processing.

Currently each record update must be individually processed in the RSSIMS database. For example, when additional trains or different railroads begin service over a particular rail line, which may include hundreds of crossings, each individual crossing record must be updated one at a time. The process of updating records individually is both labor-intensive and error-prone as described below.

There are 45 different types of data records stored in the RSSIMS system, all with state information related to rail safety. The largest data set in the system is the inventory of rail crossings, but the system also includes incidents, inspections, crossings, rail agencies and their contacts, among other information. There are currently approximately 75 CPUC staff that regularly use the RSSIMS system to maintain rail safety information.

1.4 Business Problem or Opportunity Summary

These enhancements to the existing system would be valuable for a number of different processes and record types, but is most critical for rail crossing inventory. The Rail Crossings Engineering Branch (RCEB) of the Safety and Enforcement Division (SED) is required by federal regulations to maintain on the order of 10,000 highway-rail crossing inventory records.

In the near future, similar bulk record update processing functionality may be needed for bridge safety records that are being compiled. The records would be added to the RSSIMS system as a new record type. Bridges have been identified as a potential safety hazard by the Federal Railroad Administration. CPUC intends to monitor the safety of railroad bridges as a key element of railroad system safety. RSSIMS would provide a centralized system to maintain such information.

CPUC staff and management have emphasized a desire to create records from what is currently stored in spreadsheets. RTSB has thousands of rail transit inspections and corrective action plans which would be included in the RSSIMS system. It would be very time consuming to manually enter this information. RTSB has also emphasized a desire to automate the upload of large numbers of files related to these inspection records and corrective action plans. RCEB has very similar needs related to crossings inventory information and ROSB has similar needs related to bridge inventory data and other work records.

With the ability to perform bulk updates of crossing records in RSSIMS, RCEB staff will be able to maintain more accurate data in a timelier manner with less staff time. There would be significant long-term impact on protecting public safety by allowing more complete, accurate and timely rail crossing inventory data to be maintained in CPUC records. This information allows for risk assessment of the thousands of highway-rail crossings throughout the state. Hazard rankings allow prioritization of funding and other efforts to pursue improvements at those locations, ultimately reducing the number of incidents and accidents at those identified locations and providing better public safety.

There is no change to security or access rights; this is an internal CPUC application only and is accessible only to authorized CPUC staff.

1.5 Business Problems or Opportunities and Objectives Table

ID	Problems and Opportunities
1	Problem: Lower productivity of engineers when performing railroad crossing database updates. It takes too much time for engineers to maintain inventory information one crossing record at a time. Engineers have to search for a record, wait for search results, navigate to the correct record, navigate to the edit screen, navigate to the appropriate tab of data, scroll to the appropriate field, update the field, scroll to the save button, wait for the save to be confirmed, then navigate back to the search screen and rerun the search for the next crossing. For a novice user this may require 5 minutes to complete. The capability does not exist to enter the same data change for multiple records, a situation that exists often (e.g., the data update applies to all crossings on a given rail line). Opportunity: Provide efficiencies to the existing RSSIMS system by including bulk records updates of data on existing records (train counts, train speeds, etc.), bulk creation of records from a spreadsheet (such as a set of previously unrecorded private crossings), and bulk formula runs to carry out the same calculation on hundreds of records (for risk-based prioritization).

ID	Objective
1.1	Reduce the data entry workload for engineers when updating railroad crossing records in the RSSIMS database by providing bulk record update processing to the exiting RSSIMS system for updating basic information on the railroad crossing records. Example: Allow an entire railroad line to be bulk updated with train count information, a railroad corridor may have 10 to 100 crossings that all need the same updates. Now these crossings are being updated one at a time. Similar updates may be appropriate in the future for railroad bridge records.

Metric	Baseline	Target	Measurement Method
Current staff time required to update group of 100 records all needing the same data changes Note: Approximately 5,000 public railroad crossing records updated annually.	500 minutes to make a very simple update to 100 crossing records, one at a time which equates to 5 minutes per record. (Approx. 25,000 minutes or over 400 hours annually.)	5 minutes to update the first record, plus 15 minutes to set up bulk processing for other 99 records, plus 10 minutes to validate 100 changed records prior to bulk DB update: Total = 30 minutes or 94% time savings. (Approx. 1,500 minutes or 25 hours annually.) > Upon successful completion and sign off of all project deliverables and release of solution to Production environ-ment.	Time study and engineer survey.

ID	Problems and Opportunities
2	PROBLEM: Time consuming process to update RSSIMS database with the most current results of hazard/risk assessment formulas. Due to the excessive time involved, it is not feasible to currently run such calculations across the entire set of crossing data maintained in RSSIMS. Engineers can currently run a formula within the RSSIMS application and store the results on an individual record. However, to run a formula and store the

results across the approximately 5,500 records (open, public, at-grade railroad crossings) is both time consuming and error prone.

ID	Objective
2.1	Improve engineering productivity by providing RSSIMS functionality to bulk process current RSSIMS records in order to perform hazard analysis/risk assessment and enable a larger number of records (e.g., 1,000+ records) to be selected for simultaneous processing through the Hazard Assessment calculation process. An automated process would provide greater consistency to help ensure that a calculation is run for all selected records with the most recent data. Similar functionality is generally needed throughout RSSIMS where a group of records meeting selection criteria receive formula-driven updates to any number of data fields that are saved back to the RSSIMS database.

Metric	Baseline	Target	Measurement Method
Engineer productivity by work task: RSSIMS data management, update processing. Might be run for 100 or potentially thousands of records at a time. Example 1: Annually run a formula and store the results on over 5,000 crossing records.	5 minutes per record, for 100 records, requires 500 minutes. Example 1: This would require 25,000 minutes or around 416 hours annually.	5 minutes for first record plus 0 minutes per record if the formula runs successfully (80 records), and 5 minutes for each of the other 19 records for which the record needs simple manual updates. 100 minutes or an 80% improvement. Example 1: This would require 5,000 minutes or around 83 hours annually. > Upon successful completion and sign off of all project deliverables and release of solution to Production environ-ment.	Time study (Stopwatch measurement) and engineer survey of time spent on data management

ID	Problems and Opportunities
3	PROBLEM: Time consuming process when uploading supporting documents through RSSIMS for storage into the CPUC Content Server. RSSIMS records for railroad crossings, various types of safety inspections, and future record types such as bridge safety information require supporting materials (e.g., site pictures, inspection forms, etc.) that are required to be stored by CPUC and linked to the data record. When working with multiple records, the current process is time consuming for engineers. Administrative staff levels are insufficient to shift this task from engineering to administration. This can result in a lot of work upon returning to the office from field inspections. It would be an improvement if the files could be organized by a user while they are away from the office such so that those files could be quickly uploaded to RSSIMS upon returning.

ID	Objective
3.1	Improve engineer productivity by simplifying the process and reducing time needed to upload and link supporting documents to multiple data records at one time. This would be helpful for various RSSIMS record types. Enable multiple supporting files for a single record or a group of records to be uploaded as a single process rather than how is currently being done, one file at a time. Uploading one file at a time requires the user to constantly monitor the screen to confirm completion of one upload, then specify the next file. Much

of this time could be used for other tasks if the upload of multiple files is being handled by the application in the background.

Metric	Baseline	Target	Measurement Method
Engineer productivity	6 minutes per data record to upload and link supporting documents (2 minutes to navigate to the screen, 3 minutes to upload and link documents and 1 minute to add comments.) Engineers may often have a set of files for 10 crossings that were inspected in a given day. This is a total of 60 minutes for a single day of inspections.	10 minutes to initiate the upload to the specified 10 records, then 5 minutes to confirm and review the uploaded files upon completion. Total time may still require 60 minutes to complete, but only 15 minutes of that would require active involvement of the user. This would be a 75% improvement. > Upon successful completion and sign off of all project deliverables and release of solution to Production environ-ment.	Time study (stopwatch time) and engineer survey.

ID Problems and Opportunities

ID	
4	PROBLEM: RSSIMS database is not up to date and some vital data is missing that is needed to support hazard/risk assessment and statistical reporting of critical public safety information. RSSIMS database has many data fields that are blank or have not been updated since the system was placed into production. Some of this missing data is due to missing data from the original access database record migration. The missing/incorrect data is being updated only on an ad hoc basis when a crossing record is being updated for other reasons. However, this process of adding missing data or correcting existing data is not always performed by engineers because of time constraints or lack of knowledge pertaining to system usage. The CPUC rail staff need a means to bulk update RSSIMS records where multiple records can be simultaneously updated for a given change. The data updates will enable crossing records to process properly through the Hazard/Risk Assessment calculation process (Refer to Problem #2 of this document).

ID Objective

ID	
4.1	Develop a data management capability for users to identify multiple crossing records to be updated with the same data in a bulk processing mode. For example: Select all records whose DataField "X" is equal to "Value A (or Null)" and set DataField "X" to value = "0 (zero)." This same functionality should support loading the initial, default value for new data fields added to RSSIMS record types.

Metric	Baseline	Target	Measurement Method
Reduce or eliminate the number of RSSIMS records with missing or inaccurate information.	10% of Crossing records have missing or inaccurate information	> Within 3 months of the solution being implemented in the Production environment, 1% or less of Crossing	Perform the bulk processing upload to correct the missing or inaccurate data. Export search results and verify the updated fields have been populated with

	records have missing or inaccurate information.	the correct or missing values via the bulk processing upload.

1.6 Strategic Business Alignment

Strategic Business Goals	Alignment
Protect Public Safety	Bulk record updates will allow for complete, timely, accurate crossing inventory data which will allow for risk assessment of the thousands of highway-rail crossings throughout the state. This will provide the means to prioritize funding and other efforts to pursue improvements at high-risk locations, ultimately reducing the number of accidents at those locations.

Gate 1 Business Analysis Criteria Scorecard

ITPOC Administrative Evaluation

Submittal Completeness

- ☐ General Information
- ☑ Business Sponsor and Key Stakeholders
- ☑ 1.1 Business Drivers
- ☑ 1.2 Statutes or Legislation
- ☑ 1.3 Program Background and Context
- ☑ 1.4 Business Problem or Opportunity Summary
- ☑ 1.5 Business Problem or Opportunity and Objectives Table
- ☑ 1.6 Strategic Business Alignment

Comments

ITPOC Content Evaluation

1.3 Program Background & Context	Assessment
Have all business programs impacted by this proposal been identified?	◉ Meets Requirements ○ Deficiencies
Has an overview of each impacted business program area been provided?	◉ Meets Requirements ○ Deficiencies

1.4 Business Problem or Opportunity Summary	Assessment
How well has the business need, issue or problem that this proposal will address been defined?	◉ Meets Requirements

	○ Deficiencies
How well has the importance of this project been described, including why the proposal is being considered at this time?	◉ Meets Requirements ○ Deficiencies
Have the effects and/or impact of the statutes or mandates been identified? (if applicable)	◉ Meets Requirements ○ Deficiencies
Not applicable.	
Has the business impact of not executing the proposal been described?	◉ Meets Requirements ○ Deficiencies
Have information security and/or privacy considerations been described, such as confidentiality, integrity and availability?	◉ Meets Requirements ○ Deficiencies

1.5 Business Problem or Opportunity and Objectives Table	Assessment
Have the individual problems and opportunities that are expected to be met by this proposal been identified?	◉ Meets Requirements ○ Deficiencies
Have expected short-term and long-term objectives been identified? Is there one objective for each business problem or opportunity? Are they specific, measurable and realistic?	◉ Meets Requirements ○ Deficiencies
Have measurements for each objective been identified? Will the measurements adequately provide the data necessary to determine if the objectives have been met?	◉ Meets Requirements ○ Deficiencies

1.6 Strategic Business Alignment	Assessment
Has an adequate description of how the proposal will help to achieve the strategic goals been provided?	◉ Meets Requirements ○ Deficiencies

Critical Partner Evaluation

Enterprise Architecture	Yes
Can the Business Problem or Opportunity and Objectives be validated against the Business Strategy for alignment?	☐
Is the proposal in accordance with the organization's target (future state) enterprise architecture and enterprise roadmap (if these artifacts are available)?	☐

Are there any reference architectures, reusable assets, and/or shared business services in existing state-wide standards and guidance that can be included in Stage 2 Alternatives Analysis? ☐

IT Project Oversight and Consulting Division — Yes

Does the organization have capacity to take on more projects during the proposed time period of project initiation? ☐

Does the organization and project management infrastructure have (or appear to have) experience with similar projects and a demonstrated capability of delivering the project successfully? ☐

Does the proposal provide any opportunity for leveraging other existing initiatives or services in state? ☐

What, if any, issues and/or risks do you see that would affect the Stage 2 Alternative Analysis? ☐

Identify which of the following goals of the California IT Strategic Plan align with this proposal. Select all that apply:

- ☐ Accessible and Mobile Government
- ☐ Information is an Asset
- ☐ Leadership and Collaboration Yield Results
- ☐ Capable Information Technology Workforce
- ☐ Efficient, Consolidated, and Reliable Infrastructure and Services

California Information Security Office — Yes

Are there any privacy or confidentiality laws or regulations which will require a Privacy Impact Assessment? ☐

Have any information security and or privacy program requirements (SAM Section 5100, and SAM Chapter 5300) not been addressed, or require significant program remediation? ☐

Customer Delivery Division — Yes

Is there any opportunity to leverage Data Center Services? ☐

Office of Geospatial Information Systems — Yes

Is there any opportunity to leverage Geospatial Information Systems? ☐

Is there an opportunity to leverage existing GIS infrastructure and services? ☐

Gate 1 Exit Criteria

Criteria		Comment
Enterprise Architecture has reviewed	☐	
IT Project Oversight and Consulting Division has reviewed and approved	☐	
California Information Security Office has reviewed	☐	
Customer Delivery Division has reviewed	☐	
Office of Geospatial Information Systems has reviewed	☐	
Business Analysis deliverable is acceptable	☐	
Approval of the proposal(based on what is known at this stage) is highly probable	☐	

California Department of Technology Decision

Assessment

◉ Approved ○ Not Approved

○ Approved with conditions ○ Withdrawn

Explanation