

| 1.1 Genero                                    | al Infor                   | mation   |  |                              |   |  |
|---|----------------------------|--|--|------------------------------|---|--|
| Agency or State                               | ency or State Entity Name: |  | Dep  | Department of Transportation |   |  |
| Organization Code:                            |                            | 2660   | 2660   |                              |   |  |
| Proposal Description:                         |                            |  | Enterprise Data Governance Technology Solution (EDGTS) |                              |   |  |
|   |                            | To support efficient management, discovery, and<br>sharing of Caltrans data assets in support of Senate Bill<br>1 and other program needs, Caltrans proposes to<br>evaluate, select and implement a suite of data<br>governance and management software. |  |                              |   |  |
| When do you w                                 | ant to sta                 | rt this project?:  | 10/1   | /2020                        |   |  |
| Department of                                 | Technolog                  | gy Project Number:   | 2660   | -547                         |   |  |
| 1.2 Submit                                    | tal Info                   | rmation  |  |                              |   |  |
| Contact Inform                                |                            |  |  |                              |   |  |
| Contact First No                              | ame                        |  | Con  | tact Last Name               | )   |  |
| Amanpreet                                     |                            |  | Kang   |                              |   |  |
| Contact Email                                 |                            |  | Contact Phone Number                                   |                              |   |  |
| Amanpreet.Ka                                  | ng@dot.c                   | <u>a.gov</u>   | 916-654-3557   |                              |   |  |
| Submission Dat                                | e:                         |  | 8/17/2020  |                              |   |  |
| Version Numbe                                 | er:                        |  |  |                              |   |  |
| Project Approv                                | al Executi                 | ve Transmittal   |  |                              |   |  |
| Attachment:                                   |                            | The Project Approval Executive Transmittal, per SIMM Section 19G, is included as ar attachment to the email submission.  |  |                              | IMM Section 19G, is included as an  |  |
| 1.3 Busines                                   | s Spor                     | sorship  |  |                              |   |  |
| Executive Spon                                | sors                       |  |  |                              |   |  |
| Title   |                            | First Name   |  | Last Name                    | Business Program Area   |  |
| Deputy Directo                                | r                          | Steven   |  | Keck                         | Finance   |  |
| Select + to add additional Executive Sponsors |                            |  |  |                              |   |  |
| Business Owner<br>Title                       | rs                         | First Name   |  | Last Name                    | Business Program Area   |  |
| Geospatial Dat<br>Officer                     | a                          | Chad   |  | Baker                        | Enterprise Data and Geospatial<br>Governance Program                      |  |
| Select + to add<br>Program Backg              |                            | al Business Owners<br>d Context  |  |                              |   |  |
|   | •                          | •  | •  | , ,                          | anages more than 50,000 lane mile:<br>dges; permits more than 400 public- |  |



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use airports; and operates three of the top five Amtrak intercity rail services. Caltrans administers technical assistance and grants to regional partners for local planning and projects. We recognize that California requires a robust, multimodal, efficient, sustainable transportation system that meets the diverse needs for both goods and people.

The Caltrans, Enterprise Data and Geospatial Governance (EDGG) Program was established in September 2017 to provide reliable, accessible, shareable, quality controlled and documented data for use by Caltrans and its partners that support analysis and decision making. The vision for the EDGG Program is to provide the right information to the right people at the right time. The goal of the Enterprise Data Geospatial Governance Program is to increase the usefulness of systems through enhanced data governance processes and tools.

Three essential components of data governance are:

- Data custodians and stewards understand the proper treatment of data.
- Processes that define standards, address data quality and provide consistent behavior and expectations across corporate data sets.
- Technology that enables effective data management and supports data quality assurance.

Caltrans business needs to rely on data that is accurate, complete, consistent, accessible, and interoperate between system. With the passage of Senate Bill 1 (SB 1), Caltrans has new requirements for enhanced project selection, tracking, and reporting. During the development of solutions to map the SB 1 projects, the struggle to provide authoritative, timely, and accurate data has caused significant delays, staff work, confusion, and incorrect information being shared. Any mistakes or delays in reporting the status of the SB 1 program to the public and legislature jeopardizes the future of the program itself.

Every business unit supplying and consuming SB 1-related data at Caltrans will ultimately benefit from a robust data governance framework because it enables Caltrans to efficiently manage, share, collaborate, create information, enhance transparency, and build trust.

The EDGG Program identified 10 existing systems that span the various database software, data types, and business areas within the department. These data systems are currently utilized by human resources, finance, construction, maintenance, traffic operations, planning, asset management, programming, system information, and environmental analysis business areas. These systems also include both geospatial and non-geospatial data.

The 10 systems participating in the Data Governance and Management effort for EDGG Program are as follows:

- California State Multi-Modal Accountability and Reporting Tool (CalSMART) This system is
  used to get project progress reporting for the following programs: Linear Referencing System
  (LSR), State of Good Repair (SGR), Local Partnership Program, State Highway Operations and
  Protection Program (SHOPP), Trade Corridors Enhancements Program (TCEP), and Solutions for
  Congested Corridors (SCCP).
- CGI Advantage Financial Management System (CGI Advantage) CGI Advantage provides enterprise-wide Financial and Procurement services for the Department of Transportation impacting all programs, divisions, and districts. COTS product from CGI customized to Department's needs.
- Contract Administration System (CAS) CAS is a COBOL database designed to keep records on the construction phase of all capital construction projects. Construction contracts are



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initiated into the CAS system by the headquarters Office of Engineers from the Bid Opening System (BIDS) when a winning bid is determined and approved.

- Federal Aid Data System (FADS) FADS is used to create, approve, and electronically transmit requests for the obligation of federal funds to the Federal Highway Administration (FHWA).
   FADS supports requests for emergency relief funding and tracks requests for emergency relief funds from the federal government to make repairs due to certain types of disasters that require immediate attention. FADS supports tracking milestones and other data for project phases.
- Integrated Maintenance and Management System (IMMS) The Maintenance Program is assigned the care and upkeep of State highways. Proper care and upkeep conserve the public's investment in the highway system and ensure that the system will continue to provide maximum benefits to the traveling public. The IMMS Application is used by field personnel in Caltrans Maintenance Division to plan, budget, schedule, report, & manage the Maintenance program's use of labor, equipment, & materials from assignment through completion of work.
- Level Of Service (LOS) Oracle System LOS supports data management for the conditions of Caltrans serviced roadways, rest areas, vista points, park and rides, and roadside landscape features.
- Linear Referencing System (LRS) Linear referencing is the method of storing geographic locations by using relative positions along with a measured linear feature. Linear Referencing System (LRS) is used to meet the federal Highway Performance Monitoring System data maintenance and submittal requirements for all public roads in California.
- Office Engineer Database (OE DB) OE DB is a group of Filemaker Pro systems used to track a
  project from contract submittal through award; create the project advertisement schedule;
  create, modify and process electronic bid books and to create the contract award
  documents. OCS also develops and maintains guides and tools for processing construction
  contract documents.
- Staff Central System This system provides enterprise-wide Human Resources, Time and Labor Time Reporting and Payroll, Learning Management, Certification, and Licensing services for the Department's 20,000 employees.
- Standard Tracking and Exchange Vehicle for Environmental (STEVE) System STEVE is a workflow tool that allows for the movement of documents through the environmental process, including archiving and tracking. It improves the department's ability to manage and retrieve.

| 1.4 Stakeholders                                     |                                     |
|--|-------------------------------------|
| Key Stakeholders                                     |                                     |
| Org. Name  | Name                                |
| Enterprise Data and Geospatial<br>Governance Program | Chad Baker, Geospatial Data Officer |
| Internal or External?                                | 🛛 Internal 🗆 External               |
| When is the Stakeholder impacted?                    |                                     |



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| Input to Business Process | During the Business<br>Process | Output of the Business Process |
|---------------------------|--------------------------------|--------------------------------|
| ×                         | $\boxtimes$                    | $\boxtimes$                    |

### How are Stakeholders impacted?

**Input to Business Process:** The Geospatial Data Officer has primary responsibility for the overall business and policy direction of the Enterprise Data and Geospatial Governance (EDGG) Program. The Geospatial Data Officer is responsible for the following:

- Implementing and sustaining the EDGG Program
- Secures resources for the program.
- Oversees the development and implementation of new policies, processes and enterprise tools to support effective data management practices.
- Liaisons with Enterprise Data Stewards (EDS), Business Data Stewards (BDS), District Enterprise Data Governance (EDG) Liasions and other boards, committees and working groups in support of enteprise data and geospatial governance implementation.
- Ensures EDGG Program direction is aligned with the goals and mission of Caltrans.

**During the Business Process:** The Geospatial Data Officer works to provide additional support, guidance, and training resources to ensure the successful utilization of enterprise data governance tools such that business areas can efficiently manage and utilize Caltrans data assets.

**Output of the Business Process:** The Geospatial Data Officer investigates current quality management practices by coordinating with business data stewards and data custodians to capture the state of data quality, the changes that are required to improve system data quality and any system-generated reports that capture metrics that help establish the condition of data quality at a system level. At an enterprise level, the Geospatial Data officer is responsible for providing reports and updates to executive staff on the progress of implementing data governance policies, practices, and procedures for the Caltrans organization.

### How will the Stakeholders participate in the project?

During all phases of the project, from Initiation to Closing, the Geospatial Data Officer will:

- Influence the project through decision making on scope, schedule, and resource requirements.
- Act as a focal point for decisions and issues that are beyond the authority of the project. management team.
- Champion the project across Caltrans.

| Org. Name  | Name  |                                |  |
|--|---|--------------------------------|--|
| Enterprise Data and Geospatial<br>Governance Program | Walter Yu, Enterprise Data and Geospatial Governance<br>Manager |                                |  |
| Internal or External?                                | 🛛 Internal 🗆 External   |                                |  |
| When is the Stakeholder impacted?                    |   |                                |  |
| Input to Business Process                            | During the Business<br>Process                                  | Output of the Business Process |  |
|  | $\boxtimes$   |                                |  |



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#### How are Stakeholders impacted?

**Input to Business Process:** The Enterprise Data and Geospatial Governance (EDGG) Manager is responsible for managing the EDGG Program and provides input and guidance on business processes, policies, and procedures. The EDGG manager is responsible for the following:

- Development and implementation of data governance policy and guidelines.
- Interacts with data stewards (EDS, BDS and District EDG Liaisons) to ensure that data, documentation and related information are provided on time.

**During the Business Process:** The EDGG Manager coordinates with the various Caltrans divisions, districts and programs to ensure the project meets purpose and need:

- Provides additional support and guidance to ensure successful utilization of enterprise data governance solution.
- Coordinates with data stewards (EDS, BDS and EDG District's Liaison) to understand user and system requirements.

**Output of the Business Process:** The EDGG Manager works with IT Project Manager and Business Project Manager to provide additional support and guidance:

- Ensures data stewards(EDS, BDS and EDG District's Liaisons), data custodians and other stakeholders have access to tools to effectively manage and share data.
- Audits current data management practices by interfacing with data stewards (EDS, BDS and EDG District's Liaisons) to ensure that project meets functional and system requirements.

#### How will the Stakeholders participate in the project?

During all phases of the project, from Initiation to Closing, the EDGG Manager ensures the project is in alignment with project requirements, provides support, business resources, and guidance to the project team. The EDGG Manager represents the proejct sponsor when he is not available, acts as the excalation point for the Project Managers and provides direction.

| Org. Name                         | Name                             |                                |  |  |
|-----------------------------------|----------------------------------|--------------------------------|--|--|
| Senate Bill 1 Program             | Angel Pyle, SB 1 Program Manager |                                |  |  |
| Internal or External?             | 🛛 Internal 🗆 External            |                                |  |  |
| When is the Stakeholder impacted? |                                  |                                |  |  |
| Input to Business Process         | During the Business<br>Process   | Output of the Business Process |  |  |
|                                   | $\boxtimes$                      | $\boxtimes$                    |  |  |



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#### How are Stakeholders impacted?

**Input to Business Process:** With the passage of Senate Bill 1 (SB 1), Caltrans has new requirements for enhanced project selection, tracking, and reporting.

**During the Business Process:** The SB 1 program manager will provide direction, and suggestions in a timely, and accurate manner to make sure the project is on track to comply with SB 1 guidelines.

**Output of the Business Process:** Given that the Enterprise Data and Geospatial Governance program was recently created, this stakeholder has traditionally performed their data quality checks manually. Their current business processes will be enhanced through the adoption of an enterprise tool. As data quality and governance practices become available for this stakeholder, business decisions will be based on data sets that are processed using quality assurance tools and established best practices for data quality management.

#### How will the Stakeholders participate in the project?

During all phases of the project from Initiation to Closing, this group will participate directly in the project planning, software implementation, and testing phases as subject matter experts on issues related to SB 1 data quality management processes and efforts.

Select + to add additional Stakeholders

| 1.5 Business Program  |   |                                  |  |  |
|---|---|----------------------------------|--|--|
| Org. Name   | Name  |                                  |  |  |
| Caltrans Programs:  | Business Data Stewards:   |                                  |  |  |
| <ul> <li>California State Multi-Modal<br/>Accountability and Reporting Tool<br/>(CalSMART)</li> </ul> | CalSMART  | eira/ Rich Williams/ Wendy King, |  |  |
| CGI Advantage Financial   | <ul> <li>Shelly Guzn<br/>Advantage</li> </ul>   | nan/ Meredith Aguiar, CGI        |  |  |
| Management System (CGI<br>Advantage)  |   | ki/ Robert Nagy, CAS System      |  |  |
| Contract Administration System (CAS)  | <ul><li>Keith Duncan/Zachary Stamas, FADS</li><li>Tong Yang/ Eric Uyeno, IMMS System</li></ul>  |                                  |  |  |
| Federal Aid Data System (FADS)  |   |                                  |  |  |
| <ul> <li>Integrated Maintenance and<br/>Management System (IMMS)</li> </ul>                           | <ul> <li>Manuel Morales, LOS System</li> <li>Gerry Schumacher/ Tim Tadlock, LRS</li> <li>Murugesh Ganapath/ Vivian Tam, Office of<br/>Engineer Database (OE DB)</li> <li>Tana Offenstein/Javier Passillas, Staff Central</li> </ul> |                                  |  |  |
| Level of Service (LOS)  |   |                                  |  |  |
| Linear Referencing System (LRS)   |   |                                  |  |  |
| Office Engineer Database (OE DB)  |   |                                  |  |  |
| Staff Central   | <ul> <li>Stefan T Sut</li> </ul>  | ton, STEVE                       |  |  |
| <ul> <li>Standard Tracking and Exchange<br/>Vehicle for Environmental (STEVE)</li> </ul>              |   |                                  |  |  |
| When is the unit impacted?  | 1   |                                  |  |  |
| Input to the Business Process   | During the<br>Business Process  | Output of the Business Process   |  |  |
|   | $\boxtimes$   | $\boxtimes$                      |  |  |

#### How is the business program unit impacted?



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**Input to Business Process:** Given that the EDGG Program was recently created, these stakeholders traditionally perform their data quality checks with time-consuming manual processes. Each data steward engages in multiple different Data Quality Management (DQM) processes, roles and responsibilities, tools, and best practices.

**During the Business Process:** All Caltrans Program Business Data Stewards perform their data quality checks and generate data sets to help establish a level of data integrity that the business data owners and decision-makers then use for the project and program development.

**Output of the Business Process:** All Caltrans Program Business Data Stewards perform their data quality checks and generate data sets to help establish a level of data integrity that the business data owners and decision-makers then use for the project and program development.

### How will the business program participate in the project?

All impacted data stewards (EDS, BDS and EDG District's Liaisons) will participate throughout the lifecycle of the project in the capacity of technical and business process subject matter experts including requirements gathering and review, process engineering, solution testing, and training.

| Org. Name  | Name   |   |  |
|--|--|---|--|
| <ul> <li>Caltrans Systems:</li> <li>California State Multi-Modal<br/>Accountability and Reporting Tool<br/>(CalSMART)</li> <li>CGI Advantage Financial<br/>Management System (CGI<br/>Advantage)</li> <li>Contract Administration System (CAS)</li> <li>Federal Aid Data System (FADS)</li> <li>Integrated Maintenance and<br/>Management System (IMMS)</li> <li>Level of Service (LOS)</li> <li>Linear Referencing System (LRS)</li> <li>Office Engineer Database (OE DB)</li> <li>Staff Central</li> <li>Standard Tracking and Exchange<br/>Vehicle for Environmental (STEVE)</li> </ul> | <ul> <li>Katrina Whit</li> <li>John Hanco</li> <li>Randy Stee</li> <li>Eric Uyeno,</li> <li>Kenneth Mu</li> <li>April Nitsos,</li> <li>Ping Qiu, Ot</li> </ul> | (Acting), CalSMART<br>tmore, CGI Advantage<br>ock, CAS System<br>n, FADS System<br>IMMS System<br>urray, LOS System<br>LRS<br>ffice of Engineer Database (OE DB)<br>stein/ Tom Hicks, Staff Central |  |
| Input to the Business Process  | During the<br>Business Process   | Output of the Business Process  |  |
|  | $\boxtimes$  |   |  |
| How is the business program unit impacted?   | How is the business program unit impacted?<br>During the Business Process: Currently, data owners use data sets to make business decisions. Data               |   |  |

owners typically go through great lengths to increase the validity and confidence in data before



making business decisions. Often when the data is inaccurate, the business must conduct rework which can negatively impact Caltrans business integrity.

**Output of the Business Process:** A multitude of program reports and outputs are generated by the systems included in the scope. Currently, accuracy, timeliness, and completeness of reports and information delivery are negatively impacted by the manual nature of quality assurance practices used.

### How will the business program participate in the project?

All impacted business programs will participate throughout the lifecycle of the project. The program data owners identified here will either participate in the project as Subject Matter Experts (SMEs) or delegate to staff the SME role within their respective organizations. The business SMEs will help generate requirements, design processes, test features of the chosen solution, and receive any relevant training on new DQM processes.

| Org. Name                                    | Name  |  |  |
|--|---|--|--|
| List of Districts                            | District Enterprise Data Governance (EDG) Liaisons: |  |  |
| <ul> <li>District 1 – Eureka</li> </ul>      | Kevin Tucker, District 1 EDG Liaison                |  |  |
| District 2 – Redding                         | Kristen Kingsley, District 2 EDG Liaison            |  |  |
| District 3 – Marysville                      | Patrick Bishop, District 3 EDG Liaison              |  |  |
| <ul> <li>District 4 – Oakland</li> </ul>     | Dick Fahey, District 4 EDG Liaison                  |  |  |
| District 5 – San Luis Obispo                 | Garin Schneider, District 5 EDG Liaison             |  |  |
| • District 6 – Fresno                        | Tony Hunt, District 6 EDG Liaison                   |  |  |
| <ul> <li>District 7 – Los Angeles</li> </ul> | Roger Yoh, District 7 EDG Liaison                   |  |  |
| District 8 – San Bernardino                  | Mark Roberts, District 8 EDG Liaison                |  |  |
| • District 9 – Bishop                        | Brandon Fitt, District 9 EDG Liaison                |  |  |
| • District 10 – Stockton                     | David Cortez, District 10 EDG Liaison               |  |  |
| District 11 – San Diego                      | Clint Peace, District 11 EDG Liaison                |  |  |
| • District 12 – Irvine                       | Alma Villanueva, District 12 EDG Liaison            |  |  |
| When is the unit impacted?                   |   |  |  |

#### When is the unit impacted?

| Input to the Business Process              | During the<br>Business Process | Output of the Business Process |  |  |
|--|--------------------------------|--------------------------------|--|--|
|  | $\boxtimes$                    | $\boxtimes$                    |  |  |
| How is the business program unit impacted? |                                |                                |  |  |

### How is the business program unit impacted?

The District EDG Liaisons have responsibility for coordinating communication related to this project between their district management and affected district-based data stewards, data custodians and the project team.

**Input to Business Process**: When the EDGG Program needs data or information to make business decisions, the EDGS project team will communicate with District EDG Liaisons to coordinate providing of that data or information.



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During the Business Process: District EDG Liaisons will provide information to and from district-based data stewards and data custodians regarding business needs, tool functional requirements, and training needs.

Output of the Business Process: District EDG Liaisons will coordinate across districts to communicate needs, identify gaps, and champion utilization of tools to effectively manage Caltrans data assets.

How will the business program participate in the project?

The District EDG Liaison's role is to represent the interests of their district as it relates to enterprisewide implementation of data governance and management tools, to coordinate requests for information and feedback, and communicate with their executive management team and staff on the status of the effort.

| Select + to add additional Business Programs  |  |   |                             |  |  |
|---|--|---|-----------------------------|--|--|
| 1.6 Business Alignment  |  |   |                             |  |  |
| Business Driver(s)  |  |   |                             |  |  |
| Financial Benefit   |  |   |                             |  |  |
| Increased<br>Revenue  | Cost Savings   | Cost Avoidance  |                             | Cost Recovery  |  |
|   |  | $\boxtimes$   |                             |  |  |
| Mandate(s)  |  |   |                             |  |  |
|   | State  |   |                             | Federal  |  |
|   |  |   |                             |  |  |
| Improvement   |  |   |                             |  |  |
| Better Services to<br>Citizens  | Efficiencies to Program<br>Operations                        | Improved<br>Health and/ or<br>Human Safety                    |                             | Technology Refresh   |  |
| $\boxtimes$   | $\boxtimes$  |   |                             |  |  |
| Security  |  |   |                             |  |  |
| Improved  | Improved Business  | Improved<br>Technology<br>Recovery                            |                             | Technology End of Life   |  |
| Information<br>Security   | Continuity   |   |                             |  |  |
|   |  |   |                             |  |  |
| Security  |  | Recove  |                             |  |  |
| Security<br>🛛   | ⊠<br>Alignment   | Recove  | ery                         | 2019 Update  |  |
| Security  Strategic Business A  | ⊠<br>Alignment<br>Updated?                                   |   | ery                         |  |  |
| Security<br>Strategic Business A<br>Strategic Plan Last<br>Strategic Business C                         | ⊠<br>Alignment<br>Updated?                                   | Recove<br>5/1/2015<br>Alignment<br>Ensure the<br>Specifically | with<br>proper<br>1, transp | 2019 Update<br>stewardship of public funds.<br>parency regarding how Senate Bill 1 |  |
| Security<br>Strategic Business /<br>Strategic Plan Last<br>Strategic Business (<br>Caltrans Strategic / | ⊠<br>Alignment<br>Updated?<br>Goal<br>Management Plan (2015- | Recove<br>5/1/2015<br>Alignment<br>Ensure the<br>Specifically | with<br>proper<br>1, transp | 2019 Update<br>stewardship of public funds.  |  |

manage California's transportation-related assets. Strategic Business Goal Alignment



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| Caltrans Strategic Management Plan (2015-<br>2020)<br>Sustainability, livability, and economy<br>Strategic Goal 3: Make long-lasting, smart<br>mobility decisions that improve the<br>environment, support a vibrant economy,<br>and build communities, not sprawl. | When data is accessible, maintained, and trusted, the<br>result is enhanced transparency and data-driven<br>decisions that address and meet the diverse needs of<br>California and to address issues for goods movement,<br>greenhouse gas reduction, and smart mobility.   |  |  |
|---|---|--|--|
| Strategic Business Goal   | Alignment   |  |  |
| Caltrans Strategic Management Plan (2015-<br>2020)<br>Organizational excellence   | Adopting an enterprise data governance technology<br>solution puts Caltrans at the forefront of a mature and<br>effective data governance program with the likes of<br>Utah DOT, Florida DOT, and Minnesota DOT, which<br>have all been recognized nationally for their efforts in<br>enterprise data governance. |  |  |
| Strategic Goal 5: Be a national leader in<br>delivering quality service through excellent<br>employee performance, public<br>communication, and accountability  |   |  |  |
| Select + to add additional Business Goals and Alignment   |   |  |  |
| Executive Summary of the Business Broblem or Operaturity  |   |  |  |

### Executive Summary of the Business Problem or Opportunity

Due to decades of proliferating data sources, Caltrans data owners have developed separate data management processes, tools, and quality assurance practices. These tools and practices have no common management techniques, can conflict with each other, and do not support enterprise information without considerable intervention. Normal data custodian duties involve quality checks through exported data sets, often relying on visual review of data sets to check for errors. Errors found in data sets are often changed through manual data entry, or manual flat file imports into repositories to 'fix' data.

Caltrans lacks a repeatable and consistent Quality Control/ Quality Assurance (QC/QA) process. Currently, each business area develops their QC/QA process separately through manual scripting or other means of manual QC/QA data management. Data stewards (EDS, BDS and EDG District's Liaisons) could not quantify baseline error rates, and their Data Quality Management Plans are not efficient due to a lack of implementation of best standards, processes, and data management practices.

Due to the disparate quality management methodologies used by various Caltrans programs, there is an inability to establish a standardized process(es), and baselined business rules. Currently, no standard method exists for repeatable process development of data importing, modification, and exporting. Caltrans' business needs rely on data that is accurate, complete, consistent, accessible, and interoperate between system. Due to the lack of a standard methodology for managing data, terminology, and processes, the corporate data sets cannot efficiently be managed without time-wasting data crosswalks and data conversions between data sets.

With the passage of SB 1, Caltrans has new requirements for enhanced project accountability and transparency in the selection, tracking, and reporting of projects with SB 1 funding. Every business unit supplying, and consuming SB 1 related data struggle to support business decisions with accurate information. Mistakes and/ or delays in reporting the status of the SB 1 program to the public and legislature jeopardizes the future of the program itself and the \$54 billion needed for improvements to the California transportation infrastructure.



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The business opportunity exists for Caltrans to deploy and benefit from robust and standardized data quality management practices. Higher quality data enables business units to manage and share data assets, enhancing collaboration and transparency, and trust in the data to support effective decision making.

| <b>Business Problem or Opp</b> | ortunity and Objectives Table   |
|--------------------------------|---|
| Problem ID                     | Problem/ Opportunity  |
| P1                             | Efficiencies to Program Operations  |
|                                | Data Quality Management   |
|                                | Currently, each business area in Caltrans develops its QC/QA process<br>separately through manual scripting or other means of manual QC/QA<br>data management. Business areas often rely on recreating data quality<br>management processes from scratch every month, quarter, or year<br>depending on the data management needs of the program.              |
|                                | As a result of the disparate quality management methodologies used by<br>various Caltrans programs, there is an inability to establish standardized<br>baseline business rules and logic for error analysis so that business areas<br>can establish standard and repeatable QC/QA controls.   |
| Objective ID                   | 1.1   |
| Objectives                     | Upon go-live, all Business Data Stewards and Data Custodians, for the ten in-scope systems, will have the capability to implement standardized, and repeatable QC/QA process(es) across business units.   |
| Metric                         | The number of Business Data Stewards who are creating standardized and repeatable QC/QA processes.  |
| Baseline                       | 0%  |
| Target                         | 50%   |
| Measurement Method             | Internal audits will be conducted to show that standardized and repeatable QC/QA processes have been implemented.   |
| P2                             | Metadata Management   |
|                                | Caltrans business units suffer from time-consuming and error-prone<br>processes of establishing metadata for data sets. Since business units<br>conduct data management in silos, many data sets are governed using<br>metadata that is incomplete and/or in varying formats, which causes data<br>management rework and delays to processing and using data. |
| Objective ID                   | 2.1   |
| Objectives                     | Upon go-live, Business Data Stewards, for the ten in-scope systems, will have the capability to create and manage standardized dataset metadata.  |
| Metric                         | The number of Business Data Stewards that are creating standardized dataset metadata.   |



| Baseline           | 0%   |
|--------------------|--|
| Target             | 50%  |
| Measurement Method | Audits will confirm that Business Data Stewards are creating and managing dataset metadata.  |
| P3                 | Data Dictionary Management   |
|                    | Caltrans business areas suffer from time-consuming and error-prone<br>processes of establishing data dictionaries for data sets. Since business<br>units conduct data management in silos, many data sets are governed<br>using data dictionaries that are incomplete and/or in varying formats,<br>which causes data management rework and delays to processing and<br>using data.      |
| Objective ID       | 3.1  |
| Objectives         | Upon go-live, Business Data Stewards, for the ten in-scope systems, will have the capability to create and manage standardized dataset data dictionaries.  |
| Metric             | The number of Business Data Stewards that are creating standardized dataset data dictionaries.   |
| Baseline           | 0%   |
| Target             | 50%  |
| Measurement Method | Audits will confirm that Business Data Stewards are creating and managing dataset data dictionaries.   |
| P4                 | Data Catalog Management  |
|                    | Currently, Caltrans lacks a centralized listing of data sets and associated<br>Business Data Stewards. This information gap results in lost time spent trying<br>to find if a dataset exists. Also, business units face a decrease in the quality<br>of decision making due to using outdated datasets or not using existing<br>authoritative datasets because they couldn't be located. |
| Objective ID       | 4.1  |
| Objectives         | Upon go-live, a data catalog exists enabling Business Data Stewards, for<br>the ten in-scope systems, the ability to search and retrieve information<br>from a comprehensive catalog of authoritative corporate datasets.  |
| Metric             | The capability to efficiently retrieve information on authoritative corporate datasets using a comprehensive catalog of datasets.  |
| Baseline           | No listing of data sets and data owners.   |
| Target             | 50% of corporate data sets and owners are cataloged.   |
|                    |  |



| Measurement Method                   | Audits will confirm that a data catalog exists that includes data stewardship.  |
|--------------------------------------|---|
| Р5                                   | Extract-Transform-Load (ETL) Management   |
|                                      | Currently, Business Data Stewards lack a consistent method for moving<br>large amounts of data between business units and systems. This gap in<br>capability results in lost time and errors from having to migrate data using<br>manual processes or custom scripting which can be difficult to maintain.  |
| Objective ID                         | 5.1   |
| Objectives                           | Upon go-live, Business Data Stewards, for the ten in-scope systems, will have ability to efficiency migrate data between systems.   |
| Metric                               | The capability to efficiently migrate data between systems through automated means using a standard tool.   |
| Baseline                             | 0%  |
| Target                               | Business Data Stewards and assigned staff are trained in the use of the standard tool that have the need to create automated data migration processes.  |
| Measurement Method                   | Survey of Business Data Stewards and assigned staff to ensure they have<br>the capability to perform the data migrations using the standard tool.   |
|                                      |   |
| Р6                                   | Business Glossary   |
| Ρ6                                   | <b>Business Glossary</b><br>Caltrans lacks a standard process to manage and discover the definitions  |
| Ρ6                                   | <b>Business Glossary</b><br>Caltrans lacks a standard process to manage and discover the definitions<br>of the terminology used by the various business areas. There are no means   |
| P6<br>Objective ID                   | <b>Business Glossary</b><br>Caltrans lacks a standard process to manage and discover the definitions<br>of the terminology used by the various business areas. There are no means<br>available to manage and discover terminology, and related definitions.<br>Without a standard methodology for managing data terminology and<br>definitions, staff runs the risk of misinterpreting data which can result in   |
|                                      | Business Glossary<br>Caltrans lacks a standard process to manage and discover the definitions<br>of the terminology used by the various business areas. There are no means<br>available to manage and discover terminology, and related definitions.<br>Without a standard methodology for managing data terminology and<br>definitions, staff runs the risk of misinterpreting data which can result in<br>incorrect data analysis, reporting, and decision making.  |
| Objective ID                         | <ul> <li>Business Glossary</li> <li>Caltrans lacks a standard process to manage and discover the definitions of the terminology used by the various business areas. There are no means available to manage and discover terminology, and related definitions. Without a standard methodology for managing data terminology and definitions, staff runs the risk of misinterpreting data which can result in incorrect data analysis, reporting, and decision making.</li> <li>6.1</li> <li>Upon go-live, Business Data Stewards, for the ten in-scope systems, will have a solution to manage the terminology, definitions, and vocabulary</li> </ul>   |
| Objective ID<br>Objectives           | <ul> <li>Business Glossary</li> <li>Caltrans lacks a standard process to manage and discover the definitions of the terminology used by the various business areas. There are no means available to manage and discover terminology, and related definitions. Without a standard methodology for managing data terminology and definitions, staff runs the risk of misinterpreting data which can result in incorrect data analysis, reporting, and decision making.</li> <li>6.1</li> <li>Upon go-live, Business Data Stewards, for the ten in-scope systems, will have a solution to manage the terminology, definitions, and vocabulary that defines business data.</li> <li>The existence of a standardized glossary and related definitions for</li> </ul> |
| Objective ID<br>Objectives<br>Metric | Business Glossary         Caltrans lacks a standard process to manage and discover the definitions of the terminology used by the various business areas. There are no means available to manage and discover terminology, and related definitions. Without a standard methodology for managing data terminology and definitions, staff runs the risk of misinterpreting data which can result in incorrect data analysis, reporting, and decision making.         6.1         Upon go-live, Business Data Stewards, for the ten in-scope systems, will have a solution to manage the terminology, definitions, and vocabulary that defines business data.         The existence of a standardized glossary and related definitions for authoritative data.     |



| <ol> <li>Does the proposed development or project execution anticipate sharing resources (state staff,<br/>vendors, consultants or financial) with other priorities within the Agency/ state entity (projects,<br/>PALs, or programmatic/ technology workload)?</li> </ol> |   |   |  |  |  |  |  |  |
|--|---|---|--|--|--|--|--|--|
| ● Yes   ○ No   ○ Clear   |   |   |  |  |  |  |  |  |
| 2. Does the Agency/ state entity anticipate this proposal will result in the creation of new business processes or changes to existing business processes?   |   |   |  |  |  |  |  |  |
| O No O New Processes O Existing Proce  | ○ No ○ New Processes ○ Existing Processes ◎ Both New and Existing ○ Clear |   |  |  |  |  |  |  |
| 1.7 Project Management   | 1.7 Project Management  |   |  |  |  |  |  |  |
| Project Management Risk Score:   | 0.9   |   |  |  |  |  |  |  |
| Attach completed Statewide<br>Information Management Manual<br>(SIMM) Section 45 Appendix A:   | SIMM 45 Appendix A as an<br>ail submission.                               |   |  |  |  |  |  |  |
| Existing Data Governance and Data  |   |   |  |  |  |  |  |  |
| <ol> <li>Does the Agency/ state entity have<br/>governance body with well-define<br/>responsibilities to support data gov<br/>existing data governance org char</li> </ol>   | <ul> <li>Unknown</li> <li>Yes</li> <li>No</li> <li>Clear</li> </ul>       | If applicable,<br>include the data<br>governance org<br>chart as an<br>attachment to your<br>email submission.  |  |  |  |  |  |  |
| 2. Does the Agency/ state entity have<br>policies (data policies, data stando<br>defined, documented, and implen<br>attach the existing data governand<br>standards used.  | <ul> <li>Unknown</li> <li>Yes</li> <li>No</li> <li>Clear</li> </ul>       | If applicable,<br>include the data<br>governance<br>policies as an<br>attachment to your<br>email submission.   |  |  |  |  |  |  |
| 3. Does the Agency/ state entity have<br>standards, controls, and procedure<br>documented, and implemented?<br>existing documented security polic<br>controls used.  | <ul> <li>Unknown</li> <li>Yes</li> <li>No</li> <li>Clear</li> </ul>       | If applicable,<br>include the<br>documented<br>security policies,<br>standards, and<br>controls as an<br>attachment to your<br>email submission.      |  |  |  |  |  |  |
| 4. Does the Agency/ state entity have<br>policies, standards, controls, and p<br>defined, documented, and implen<br>attach the existing documented p<br>governance plan, and standards u<br>additional information below.  | <ul> <li>Unknown</li> <li>Yes</li> <li>No</li> <li>Clear</li> </ul>       | If applicable,<br>include the<br>documented<br>accessibility<br>policies, standards,<br>and controls as an<br>attachment to your<br>email submission. |  |  |  |  |  |  |



| 5. Do you have existing data that you are going to want to access in your new solution?                       |                                 |   |            | 0       | Unknowr<br>Yes<br>No<br>Clear | ir<br>n<br>o<br>y | f applicable,<br>nclude the data<br>nigration plan as<br>an attachment to<br>your email<br>ubmission. |
|---|---------------------------------|---|------------|---------|-------------------------------|-------------------|---|
| 6. If data migrat data.   | quality of the                  | e   |            | Not ap  | oplicable                     |                   |   |
| 1.8 Criticality Assessment  |                                 |   |            |         |                               |                   |   |
| <b>Business Criticalit</b>  | y                               |   |            |         |                               |                   |   |
| Legislative Mand  | N/A<br>⊠                        |   |            |         |                               |                   |   |
| Bill Number(s)/ C   | ode(s):                         |   |            |         |                               |                   |   |
| Language that ir requirements:  |                                 |   |            |         |                               |                   |   |
| Business Comple   | 2.4                             | Include the completed SIMM 45 Appendix C as an attachment to your email submission. |            |         |                               |                   |   |
| Noncompliance   | lssues                          |   |            |         |                               |                   |   |
| Indicate if your c<br>the how the busi  | ompliance is                    | ssues c   | ınd provi  | de a no | arrative explaining           |                   |   |
| Programmatic<br>Regulations   | HIPPA/ CJIS/ FTI/ PII/<br>PCI   | Secu  | rity       | ADA     |                               | Other             | N/A   |
|   |                                 |   |            |         |                               |                   | $\boxtimes$   |
|   |                                 |   |            |         |                               |                   |   |
| 1. What is the proposed project start date?   |                                 |   |            |         |                               | 1/30/20           | 23  |
| 2. Is this proposal anticipated to have high public visibility?   |                                 |   |            |         |                               | O Yes             | 🖲 No 🔅 Clear  |
| If "Yes," please identify the dynamics of the anticipated high visibility below:                              |                                 |   |            |         |                               |                   |   |
|   |                                 |   |            |         |                               |                   |   |
| 3. If there is an existing Privacy Information Assessment, include as an attachment to your email submission. |                                 |   |            |         |                               |                   |   |
| 4. Does this prop<br>geographic lo  | aff located                     | in mul <sup>.</sup>   | tiple      | • Yes   | 🗘 No 🔿 Clear                  |                   |   |
| If "Yes," provide of in the space prov  | an overview of the ge<br>vided. | ographic  | dynamics b | elow o  | and ente                      | r the sp          | pecific information   |
|   |                                 |   |            |         |                               |                   |   |



California Department of Technology, SIMM 19A.2 (Rev. 2.4), Revised 4/2/2018

Caltrans enterprise data governance is managed from the Sacramento headquarters office and will impact employees that are at district and headquarters offices. In some cases, district data is provided to headquarters employees for aggregation and reporting. In such instances, those district business units may be required to interact and participate in aspects of the DQM software and processes yet to be developed.

There are likely to be individual program-wide and district-wide DQM efforts under the umbrella of enterprise data governance that would utilize the guidance and best practices developed in this effort.

| City   | State | Number of Locations | Approxin                  | nate Number of Staff                  |  |  |
|--|-------|---------------------|---------------------------|---------------------------------------|--|--|
| District 1 – Eureka  | СА    |                     |                           | Enterprise Data<br>Ince (EDG) Liaison |  |  |
| District 2 – Redding   | СА    |                     | 1 District                | EDG Liaison                           |  |  |
| District 3 – Marysville  | СА    |                     | 1 District EDG Liaison    |                                       |  |  |
| District 4 – Oakland   | СА    |                     | 1 District EDG Liaison    |                                       |  |  |
| District 5 – San Luis Obispo   | СА    |                     | 1 District EDG Liaison    |                                       |  |  |
| District 6 – Fresno  | СА    |                     | 1 District                | EDG Liaison                           |  |  |
| District 7 – Los Angeles   | СА    |                     | 1 District                | EDG Liaison                           |  |  |
| District 8 – San Bernardino  | СА    |                     | 1 District                | EDG Liaison                           |  |  |
| District 9 – Bishop  | СА    |                     | 1 District                | EDG Liaison                           |  |  |
| District 10 – Stockton   | СА    |                     | 1 District                | 1 District EDG Liaison                |  |  |
| District 11 – San Diego  | СА    |                     | 1 District EDG Liaison    |                                       |  |  |
| District 12 – Irvine   | СА    |                     | 1 District EDG Liaison    |                                       |  |  |
| Headquarters – Sacramento  | СА    |                     | 10 Business Data Stewards |                                       |  |  |
| Select + to add Locations  |       |                     |                           |                                       |  |  |
| 1.9Funding   |       |                     |                           |                                       |  |  |
| <ol> <li>Does the Agency/ state entity anticipate requesting additional<br/>resources through a budget action to complete the project<br/>approval lifecycle?</li> </ol> |       |                     |                           | C Yes 🖲 No 🗢 Clear                    |  |  |
| 2. Will the state possibly incur a financial sanction or penalty if this proposal is not implemented? If yes, please identify the financial impact to the state below:   |       |                     | C Yes 🖲 No 🗢 Clear        |                                       |  |  |
|  |       |                     |                           |                                       |  |  |
| 3. Has the funding source(s) been identified for this proposal?  |       |                     | 🖲 Yes 🗘 No 🔅 Clear        |                                       |  |  |



| FUNDING SOURCE   |                    | FUND AVAILABILITY DATE |                    |  |  |  |
|--|--------------------|------------------------|--------------------|--|--|--|
| General Fund   |                    | Date Picker            |                    |  |  |  |
| Special Fund   | $\boxtimes$        | FY 19/ 20              |                    |  |  |  |
| Federal Fund   |                    | Date Picker            |                    |  |  |  |
| Reimbursement  |                    | Date Picker            |                    |  |  |  |
| Bond Fund  |                    | Date Picker            |                    |  |  |  |
| Other Fund   |                    | Date Picker            |                    |  |  |  |
| If "Other Fund" is checked,<br>specify the funding:  |                    |                        |                    |  |  |  |
| 1.10 Reportability As  | sessm              | ent                    |                    |  |  |  |
| 1. Does the Agency/ state e<br>Project found in the State<br>4819.2?   | ତ Yes ○ No ○ Clear |                        |                    |  |  |  |
| If "No," this initiative is no complete the Project App  |                    |                        |                    |  |  |  |
| 2. Does the activity meet the found in SAM Section 481   |                    |                        |                    |  |  |  |
| If "Yes," this initiative is no<br>Approval Lifecycle. Please<br>Portfolio Report. And prov  | 🗘 Yes 🖲 No ု Clear |                        |                    |  |  |  |
| 3. Has the project/ effort been previously approved and considered an ongoing IT activity identified in SAM Section 4819.2, 4819.40? |                    |                        | ි Yes 🖲 No ි Clear |  |  |  |
| If "Yes," this initiative is no<br>Approval Lifecycle. Please<br>Portfolio Report.   |                    |                        |                    |  |  |  |
| 4. Is the project directly asso<br>by SAM Section 4812.32?   |                    |                        |                    |  |  |  |
| Single-function process-co<br>devices, or telemetry syste<br>exclusively for voice com<br>(VOIP) phone systems; ac                   |                    |                        |                    |  |  |  |
| If "Yes," this initiative is no<br>Approval Lifecycle. Pleas<br>Portfolio Report.  |                    |                        |                    |  |  |  |



| 5.       | Is the primary objective of<br>mobile computing commo<br>4989?   | O Yes 🖲 No O Clear   |                |  |  |  |
|----------|--|----------------------|----------------|--|--|--|
|          | If "Yes," this initiative is a ne<br>Project Approval Lifecycle<br>entity. Submit a copy of th<br>Analysis to the CDT and tro<br>Report. |                      |                |  |  |  |
| 6.       | Does the project meet all<br>(COTS) Software and Clou<br>delegation as defined in S  | O Yes 🖲 No O Clear   |                |  |  |  |
|          | If "Yes," this initiative is a new Project Approval Lifecycle entity; however, submit an   |                      |                |  |  |  |
| 7.       | Will the project require a B   | ○ Yes ⓒ No ○ Clear   |                |  |  |  |
| 8.       | Is it anticipated that the pl<br>threshold assigned by CD1   | • Yes • No • Clear   |                |  |  |  |
| 9.       | Are there any previously in<br>entity or this project by the   | O Yes 🖲 No O Clear   |                |  |  |  |
|          | If "Yes," provide the detail   | s regarding the cond | litions below. |  |  |  |
| 10       | . Is the system specifically r   | ○ Yes                |                |  |  |  |
| D        | epartment of Techi   | nology Use On        | ly             |  |  |  |
| Or<br>Dc | iginal "New Submission"<br>Ite   | 1/11/2021            |                |  |  |  |
| Fo       | rm Received Date   | 1/11/2021            |                |  |  |  |
| Fo       | rm Accepted Date   | 1/11/2021            |                |  |  |  |
| Fo       | rm Status  | Approved             |                |  |  |  |
| Fo       | rm Status Date   | 1/11/2021            |                |  |  |  |
| Fo       | rm Disposition   |                      |                |  |  |  |
| Fo       | rm Disposition Date  | 1/11/2021            |                |  |  |  |