



Stage 2 Alternative Analysis

California Department of Technology, SIMM 19B.2 (Rev. 2.5, July/2021)

2.1 General Information

Agency or State Entity Name: Government Operations Agency

If agency/entity not in list then enter here. [Click or tap here to enter text.](#)

Organization Code: 0511

Proposal Name: Cradle-to-Career Data System (C2C)

Department of Technology Project Number (0000-000): 0511-004

2.2 Preliminary Submittal Information

Removed. Stage 2 Preliminary Assessment information moved to Stage 1 Business Analysis, Section 1.10.

2.3 Stage 2 Preliminary Assessment

Removed. Stage 2 Preliminary Assessment information moved to Stage 1 Business Analysis, Section 1.10.

2.4 Submittal Information

Contact Information

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Submission Date: 2/10/2022

Project Approval Executive Transmittal 0511-004 – C2C – S2AA – Executive Transmittal.pdf

Submission Type: New Submission

If Withdraw, select Reason: [Choose an item.](#)

If Other, specify reason here: [Click or tap here to enter text.](#)

Sections Updated

Sections Changed (List all the sections that have been updated.)

[Click or tap here to enter text.](#)

Summary of Changes (Summarize updates made.)

[Click or tap here to enter text.](#)

Condition (s) from Previous Stage(s)

Condition #: [Click or tap here to enter text.](#)

Condition Category: [Choose an item.](#)

If Other, specify: [Click or tap here to enter text.](#)

Condition Sub-Category: [Choose an item.](#)

If Other, specify: [Click or tap here to enter text.](#)

Condition: [Click or tap here to enter text.](#)

Assessment: [Choose an item.](#)

If Other, specify: [Click or tap here to enter text.](#)

Agency/State Entity Response: [Click or tap here to enter text.](#)

Status: [Choose an item.](#)

If Other, specify: [Click or tap here to enter text.](#)

NOTE: Use **Ctrl+c** and **Ctrl+v** to copy and paste as needed throughout the template.

TIP: Copy and paste to add Conditions as needed.

2.5 Baseline Processes and Systems

2.5.1 Description Currently, data are linked between educational agencies and to related data sets—such as financial aid, teacher credentialing, employment, health and social services—on an ad hoc basis or through state-funded programs that only reach a portion of the state. The Cradle-to-Career System will address this problem through three main technical components: 1) an analytical data set with associated dashboards, query builder, and access to approved data points for research purposes in a secure data enclave (work to be performed by a vendor hired for the project), 2) scaling CaliforniaColleges.edu to serve more students and to better integrate with other state agencies (work to be performed by an existing state resource), and 3) scaling eTranscript California to serve more students and share a broader range of records types (work to be performed by an existing state resource). The analytical data set, referred to as the P20W data set, does not yet exist. It will integrate information from the California Department of Education (CDE), California Community Colleges Chancellor's Office (CCCCO), California State University (CSU), University of California (UC), Bureau of Private Postsecondary Education (BPPE), California Student Aid Commission (CSAC), Commission for Teacher Credentialing (CTC), California Labor and Workforce Development Agency (CLWDA), and California Health and Human Services Agency (CHHS), as well as independent colleges. This analytical data set will be developed by a vendor hired for the project and implemented as a cloud solution. A Request for Information (RFI) was released in summer 2020 that identified a number of viable potential solutions. Each data provider will upload a predetermined set of data points through a secure Extract Transform Load (ETL) process into separate cloud repositories. A cloud-based master data management solution will combine information from the agency cloud repositories, deduplicate records, remove highly sensitive data points such as names and dates of birth, and assign unique identifiers. A deduplicated file with social security numbers will also be sent to the Employment Development Department (EDD) to provide employment and earnings records. The combined data set, with social security numbers removed, will be used to create a data warehouse that will populate dashboards and provision the query builder, both of which will apply suppression protocols to protect individual identities. Discrete groupings of anonymized individual-level information can also be extracted in fulfillment requests for research projects and accessed via a secure data enclave. A client relationship management system, which does not yet exist, will track research requests and progress toward approval, for display on a public website. The client relationship management system will use a SaaS solution to be configured by staff. A phased approach will be deployed to develop and implement the P20W data set, allowing for more rapid access to high-value information. In the first two years of development, data will be linked between the four public education segments (CDE, CCCCCO, CSU, UC), CHHS, CTC, CSAC, and CLWDA (including EDD). First, a smaller set of data points will be linked to document educational pathways that lead to teacher credentialing and record the long-term employment outcomes of those pathways. An initial dashboard will provide this information to the public. Then, additional data points will be integrated to populate five additional dashboards, for which specifications were developed during the planning process, in the order established by the Cradle-to-Career Data System. Finally, the data set will be expanded to include all of the planned data points from the initial data providers for the query builder and data request process, which will require that the secure data enclave and data request tracker have been completed. In the third year of development, independent colleges will begin providing information. In the fourth year, data from BPPE will be added and early learning and care data will be expanded. In the fifth year, the P20W data set will expand to include

additional workforce training, health, and social service information and additional potential data sets will be identified.

2.5.2 Business Process Workflow

The below workflows are for the proposed solution, as no current solution exists.

0511-004 - C2C - S2AA - Business Process Workflow - Dashboards.pdf

0511-004 - C2C - S2AA - Business Process Workflow - Data Requests.pdf

0511-004 - C2C - S2AA - Business Process Workflow - Query Builder.pdf

2.5.3 Current Architecture Information

Business Function/Process(es) – No current architecture exists

TIP: Copy and paste to add business processes with the same application, system, or component; COTS, MOTS or custom solution; runtime environment; system interfaces, data center location; and security.

Application, System, or Component: [Click or tap here to enter text.](#)

COTS, MOTS, or Custom: [Choose an item.](#)

Name/Primary Technology: [Click or tap here to enter text.](#)

TIP: Copy and paste to add Applications, Systems, or Components as needed.

Runtime Environment

Cloud Computing Used: [Choose an item.](#)

If “Yes,” specify: [Choose an item.](#)

Server/Device Function: [Click or tap here to enter text.](#)

Hardware: [Click or tap here to enter text.](#)

Operating System: [Click or tap here to enter text.](#)

System Software: [Click or tap here to enter text.](#)

System Interfaces: [Click or tap here to enter text.](#)

Data Center Location: [Choose an item.](#)

If Other, specify: [Click or tap here to enter text.](#)

Security

Access: (answer Yes or No to all choices)

Public: [Choose an item.](#)

Internal State Staff: [Choose an item.](#)

External State Staff: [Choose an item.](#)

Other: [Choose an item.](#) Specify: [Click or tap here to enter text.](#)

Type of Information (answer Yes or No to all choices)

Personal: [Choose an item.](#)

Health: [Choose an item.](#)

Tax: [Choose an item.](#)

Financial: [Choose an item.](#)

Legal: [Choose an item.](#)

Confidential: [Choose an item.](#)

Other: [Choose an item.](#) Specify: [Click or tap here to enter text.](#)

Protective Measures (answer Yes or No to all choices)

Technical Security: [Choose an item.](#)

Physical Security: [Choose an item.](#)

Backup and Recovery: [Choose an item.,](#)

Identity Authorization and Authentication: [Choose an item.](#)

Other, specify: [Click or tap here to enter text.](#)

Data Management

Data Owner Name: [Click or tap here to enter text.](#)

Data Owner Title: [Click or tap here to enter text.](#)

Data Owner Business Program: [Click or tap here to enter text.](#)

Data Custodian Name: [Click or tap here to enter text.](#)

Data Custodian Title: [Click or tap here to enter text.](#)

Data Custodian Business Program: [Click or tap here to enter text.](#)

TIP: Copy and paste to add Business Functions/Processes as needed.

2.5.4 Current Architecture Diagram

N/A

2.5.5 Security Categorization Impact Table

0511-004 – C2C – S2AA – Conceptual Solution Design.pdf

SECURITY CATEGORIZATION IMPACT SUMMARY

Confidentiality: Medium

Integrity: Low

Availability: Low

2.6 Mid-Level Solution Requirements

0511-004 - C2C - S2AA - Midlevel Solution Requirements.xlsm

2.7 Assumptions and Constraints

Assumptions/Constraints: Staff working hours occur on an 0800 to 1700 schedule.

Description/Potential Impact: Staff and consultant will work during core business hours, which will be enough time to meet project deadlines.

Assumptions/Constraints: Dedicated staff will remain in their current roles.

Description/Potential Impact: Key staff will stay on with the project. The Office of Cradle to Career have limited staffing resources, and turnover would be especially difficult to handle.

Assumptions/Constraints: Dedicated staff will cross train one another.

Description/Potential Impact: Cross training will help mitigate the risk of turnover or prolonged absences

Assumptions/Constraints: Project funding will be approved and remain available throughout the project lifecycle.

Description/Potential Impact: Project funding is necessary for implementation as the Office of Cradle-to-Career Data cannot operate without the necessary funds

Assumptions/Constraints: Project implementation has iterative deadlines based on priority of deliverables.

Description/Potential Impact: The features of the Cradle to Career System will be rolled out in phases, with the essential infrastructure being first.

Assumptions/Constraints: Privacy and security considerations

Description/Potential Impact: The Cradle to Career System requires personally identifiable information from data partners. State and federal privacy laws may impact the State's ability to gather specific data elements, and privacy considerations may pose a potential barrier to stakeholder, data provider buy in.

Assumptions/Constraints: The Cradle to Career System will be architected for scalability and integration of new data elements and data sets as the system matures over time.

Description/Potential Impact: The Cradle to Career System will be architected using loose coupling to easily integrate new data into the System. This framework will also allow for the system to respond rapidly to any changes in the data provided by partners in future years.

Assumptions/Constraints: The procurement timeline will be developed and agreed upon by CDT STP and the Office of Cradle-to-Career Data.

Description/Potential Impact: The agreed upon procurement timeline will include a streamlined process to ensure an expedited procurement.

Assumptions/Constraints: The legislation directed the designers of the Cradle to Career System to identify solutions using existing tools ["Design a data system that minimizes the need for new infrastructure, is adaptable, and is flexible to meet future needs." Ed.Code 10852(b)].

Description/Potential Impact: Leveraging existing and known successfully implemented solutions will ensure the success of the recommended solution, while obviating the requirement for alternative solutions.

Assumptions/Constraints: The Analytical tools can be built cost effectively using commonly available Software as a Service (SaaS) solutions, procured from existing solution providers that are willing to configure these tools ["Analytical tools' means the resources that provide for access to information for research and evaluation purposes such as dashboards, a query builder, summaries of key student and employment outcomes, and a research library, including, but not limited to, the P20W data set." Ed.Code 10861(c)].

Description/Potential Impact: Implementing and utilizing tools that are already in use at the state will provide a concrete basis for budgetary impacts which should be within the proposed budget for the project.

Assumptions/Constraints: Two operational tools were identified as within scope to scale with the Cradle to Career System ["Scale operational tools to better serve educators, students, and families." 10862(b)(3)]. the California College Guidance Initiative (CCGI) and eTranscript

California. [“Operational tools’ means the publicly supported educator-, student-, and parent-facing tools that use student-specific data to support college planning and education transitions, including, but not limited to, the CCGI and eTranscript California. All tools under this definition shall comply with the student privacy provisions of Section 49073.1. Pursuant to subdivision (d) of Section 10870, a local educational agency shall not be required to enter into a contract with a provider of publicly supported “operational tools” as defined in this subdivision.” Ed.Code 10861(k)].

Description/Potential Impact: The operational tools for CCGI and eTranscript California, two current state-funded projects that already have significant reach in the state, will be scaled to address data system requirements.

Assumptions/Constraints: Development of other linked data sets in similar timeframes creates opportunities to achieve economies of scale by utilizing common architecture and solutions [“Additional data elements necessary for partner entities to collect for future linkage to the data system.” Ed.Code 10857(a)(3)] [Enable the linkage, management, and monitoring of information on student progress through education, workforce training, employment, health, and social services” Ed.Code 10860(c)(1)].

Description/Potential Impact: No costly schema will be needed to integrate additional data sets.

TIP: Copy and paste to add Assumptions/Constraints and Descriptions/Impacts as needed.

2.8 Dependencies

Dependency Element: P20W Data Set [“P20W data set’ means the data set adopted by C2C and requested from the data providers, including, but not limited to, the approximately 160 data points described in the report to the Department of Finance and the Legislature required by subdivision (a) of Section 10856 and as adjusted by C2C. C2C may add or remove requested data points based on changes in the usage of the element. As required by the Information Practices Act of 1977 (Chapter 1 (commencing with Section 1798) of Title 1.8 of Part 4 of Division 3 of the Civil Code) and the federal Family Educational Rights and Privacy Act (20 U.S.C. Sec. 1232g), data providers shall retain sole control over their source data and may reject, add, or remove data elements contributed to the P20W data set, as reflected in its participation agreement with the managing entity [the Office of Cradle-to-Career Data].” Ed.Code 10861(e)]

Dependency Description: To build the linked data set, data providers must sign legal agreements, provide documentation on the data points they are contributing, upload information into cloud repositories, and participate in data validation.

Dependency Element: Data Request Process [“Data requests in the public interest’ means those requests that enable parents, educators, health and human services providers, researchers, and policymakers to provide appropriate interventions and supports to address disparities in opportunities and improve outcomes for all students.” Ed.Code 10861(f)]

Dependency Description: To provide information for research requests, data providers must agree to the scope of data sharing, sign legal agreements, and review research outputs [“Creating, and revising from time to time, in consultation with the advisory boards, a data request process for use by researchers, policymakers, education systems, schoolsites, and college campuses for information that is all of the following:

- (A) In compliance with federal and state laws to protect individual privacy.
- (B) Not otherwise available via the public query tools maintained by the managing entity.
- (C) Allows for expedited access to summary data that has been properly deidentified.
- (D) Allows for data providers to approve data requests in the public interest, as defined pursuant to Section 10861” Ed.Code 10866(b)(6)].

Dependency Element: College eligibility monitoring tools

Dependency Description: To attain scale and improve information transfer, CDE’s CALPADS data system needs to be updated so that it can integrate with the tools developed by CCGI, and enhanced integrations are needed with CCCCO, CSU, UC, and CSAC. The Office of Cradle-to-Career Data will provide input into this process, but will not manage it and will not be procuring services to support this as CCGI is independently managed and funded.

Dependency Element: Inclusion of non-traditional learning artifacts in college transcripts

Dependency Description: To enhance the types of records that can be transmitted, the eTranscript California platform needs to be updated and better integrated with CCCCO. The C2C office will provide input into this process, but will not manage it and will not be procuring services to support this as eTranscript California is independently managed and funded.

Dependency Element: Inclusion of social service eligibility in application and transcript services

Dependency Description: To include an opportunity for students to determine whether they are eligible for food, housing, foster youth, and other supports as part of the process of applying to college, CDSS needs to build a tool that makes this determination, and that tool must be linked to CCGI and eTranscript California. The Office of Cradle-to-Career Data will provide input into this process, but will not manage it and will not be procuring services to support this as eTranscript California is independently managed and funded.

TIP: Copy and paste to add Dependency Elements and Descriptions as needed.

2.9 Market Research

2.9.1 Market Research Methodologies/Timeframes

Methodologies Used to Perform Market Research

Request for Information (RFI): Yes

Internet Research: Yes

Vendor Forums/Presentation: No

Trade shows: No

Published Literature: Yes

Leveraged Agreements: No

Collaboration with other Agencies/state entities or governmental entities: Yes

Other: Yes Specify: Presentations and documentation from other states that had implemented similar systems.

Time spent conducting market research: 6 months

Date market research was started: 3/1/2020

Date all market research was completed: 9/3/2020

2.9.2 Results of Market Research: Results of the Request for Information (RFI)

A member of CDT Statewide Technology Procurement (STP) described the process used to create the RFI, solicit information about possible MDM solutions, and compile results about the types of options that might be available. They reminded the group that an RFI is a market research activity, not an effort to evaluate individual vendors. Because the technical specifications for the data system had not been clearly determined at the point the RFI was released, the range of responses was quite varied, making it difficult to do an apples-to-apples comparison. This is particularly true for the budgets provided, some of which were only for core MDM features and others which included a broader range of related services such as data warehousing and visualization. Finally, they noted that the RFI had yielded an unusually large number of responses.

A member of WestEd, the primary organization responsible for guiding the 18 month planning process, provided an overview of the responses. Responses were reviewed in four ways: 1) ability to provide minimum security and compliance features, 2) ability to provide minimum MDM capabilities, 3) provider experience level, and 4) ability to address various types of feature requirements including the system solution, data management, data processing, data matching, and optional items on data publishing and release.

Vendors described four primary types of solutions:

- Commercial off the shelf MDM solutions
- Full-service solutions with a proprietary or partnered MDM
- Custom development solutions
- Other software solutions that did not provide MDM functionality

Many of the respondents described relevant experience, including supporting one of the partner entities, implementing a longitudinal data system, working with education data, and working with health and human services data. Projected costs varied significantly, and some respondents did not provide budget information. Among responses received, average costs for the start-up phase ranged from \$2.6 million to \$3.8 million, with annual costs after the start up phase averaging between \$1 million and \$1.4 million. Respondents reported an average of 20 months for full implementation. The subcommittee members who read the responses recommended that the following items be considered when developing a Request for Proposal (RFP):

- Budget and timeline
- Staffing level and decision-making authority for the managing entity
- More granular project scope and requirements
- Clarifying how the solution would integrate with and leverage state data systems and solutions

Recommendations Regarding Person-Matching and Technology Solutions

Whether to recommend an MDM solution

Although a concern was expressed that not all RFI respondents were able to meet the requirements, the group ultimately noted that there were sufficient qualified respondents to indicate that an MDM solution is a feasible approach for person-matching and developing unique identifiers for the Cradle-to-Career system. In each of the review rubrics, there were ten

or more respondents that met the criteria, with seven respondents that met all criteria. At the point that a more detailed features list can be developed, it is likely that respondents could be more specific about how they would support the desired functionality.

Whether to recommend an MDM-only or a more comprehensive solution

Given that a number of the respondents offered comprehensive solutions, the group discussed whether it would be preferable to put out a single RFP for all desired technical functionality or take a more modular approach. One subcommittee member was concerned that if the RFP only seeks an off-the-shelf MDM, it may be too rigid. Another participant indicated it would be valuable to work with a vendor that is flexible about technology solutions and has access to many different types of products. Having a single provider reduces the workload on the managing entity because the service provider would take on the task of coordinating across the modules. This can also help avoid a situation where multiple vendors are unable to coordinate to provide the desired solution. However, another subcommittee member stated that one value of outsourcing is the ability to bring in just the expertise that is needed at a given time.

The group discussed the importance of being able to balance the expected responsibilities between the managing entity staff and any vendor(s) selected. Some participants flagged the challenges of hiring contractors in a union setting, while others worried that the state would not be able to hire qualified IT staff. One participant requested examples of how state agencies have balanced responsibilities between staff and technology vendors. GovOps' current work with vendors to develop a homeless data system was flagged as an example of a flexible solution that was leveraging the skills of highly qualified staff, while CDE's experience developing CALPADS with an outside vendor and little staff support at the outset was offered as a cautionary tale.

One subcommittee member noted that when working with a vendor, it is critical to ensure knowledge transfer to staff. This is particularly true in tight budget years, when funding for external sources may be cut, or in cases where vendors demand high fees or decide to stop supporting a product. Another participant emphasized the importance of having core technical staff in place at the beginning of the project. The group was supportive of the idea that the contract should require the vendor to train the managing entity to be able to manage the product independently.

Some workgroup members noted that other states, such as Kentucky, had built custom solutions, and that California could use expertise from partner entities such as CHHS to build a model that meets California's needs. A member of WestEd, who previously provided technical assistance to state longitudinal data system, noted that the states that built custom solutions had much smaller populations and fewer agencies involved.

A member of WestEd also clarified that several state systems that had relied exclusively on outside vendors to deliver technology services had failed. A hybrid model is more likely to be successful and can also be more cost effective. Other subcommittee members, reflecting on their own experience, echoed the recommendation of taking a hybrid approach—just as it is risky to outsource expertise, it is also difficult to build everything in-house. Many members of

the group indicated that a hybrid solution that partners strong technical staffing with external vendors would be the best approach.

An informal poll regarding whether it was better to solicit a single vendor that could deliver a comprehensive solution or for the managing entity to select a variety of solutions showed that the majority supported taking a flexible approach. Further discussion surfaced the idea that flexibility might include one vendor that coordinates multiple products and partners. The group also discussed the risk of working with multiple vendors independently, because the contractors may not work together effectively or there could be poor communication and overlap between staff-based and contractorbased projects. The group stressed the importance of the managing entity staff being able to oversee all of the solutions, verify that they are delivering the expected functionality, and develop the skills to maintain and potentially adapt the product over time.

Gathering additional information about existing state technology solutions

Given CHHS' interest in leveraging its person-matching, open data portal, and secure data enclave solutions to support the Cradle-to-Career system, as well as other efforts underway such as the homeless data system and a new early care and learning data system, the group discussed what additional information would be helpful to gather about existing state technology solutions.

One participant expressed concern that existing systems may have been tailored for other requirements that may not meet the needs of the Cradle-to-Career system. Another worried that redirecting an existing system to a new purpose might dilute the ability of that system to serve its intended purpose. A third indicated that information should only be gathered from systems that were interested in supporting the Cradle-to-Career system.

One participant suggested getting more information about open data platforms and how those data standards could support the development process. A number of participations indicated that it would be helpful to have product demonstrations. However, others noted that it would be better to wait until the RFP was under development and the specifications list was more clear. A member of CDT reminded the group that if they have any product demos, then all interested vendors must also be given a chance to demonstrate their products.

In addition to the RFI process, there was a learning session where three other states gave detailed information about their data systems which were captured in the March 9th, 2020 SLDS learning session. See attached pdfs of PowerPoint presentations:

0511-004 – C2C – S2AA – Market Research – Kentucky.pdf

0511-004 – C2C – S2AA – Market Research – Minnesota.pdf

0511-004 – C2C – S2AA – Market Research – Washington.pdf

Additional market research was conducted during March of 2022. Members of the Cradle to Career team demo'ed various Master Data Management (MDM) tools including Informatica, Profisee, and Tamr. In addition, the team met with the Department of Homeland Security (DHS) and Michigan Health Information Network (MHIN). Both DHS and MHIN have worked

with multiple MDMs with much larger numbers of data sources and at much higher frequencies for data entity resolution than C2C's needs and both migrated to Tamr's tool for ease of use and adoption as well as the pricing model. Further research of Tamr verified the experiences of DHS and MHIN. The demo's and interviews concluded Tamr provides the best product based on ease of use and adoption, overall transparency of data, ease and speed of start time and effort required, pricing model, Snowflake integration, AWS marketplace availability, ease of configuration, strong UI/UX, and a key component of identity resolution with ability to export models.

Therefore, C2C is looking to procure Tamr in a separate solicitation for the MDM component of the overall C2C data system. The RFP for the System Integrator will specify this tool as part of the overall C2C data system requirements.

2.10 Alternative Solutions

2.10.1 Solution Type (Recommended or Alternative): Recommended

2.10.2 Name: System Integration Approach – SaaS

2.10.3 Description: The recommended alternative will leverage the expertise of a system integrator that will implement well known and quality SaaS solutions for identity resolution and data warehousing. The vendor will configure and implement a comprehensive solution to include data transfer, data analytics, and data reporting capabilities.

Approach (Answer Yes or No to all choices):

Increase staff – new or existing capabilities: Yes

Modify the existing business process or create a new business process: Yes

Reduce the services or level of services provided: No

Utilize new or increased contracted services: Yes

Enhance the existing IT system: No

Create a new IT system: Yes

Perform a business-based procurement to have vendors propose a solution: No

Other: No Specify: [Click or tap here to enter text.](#)

2.10.4 Benefit Analysis

Benefits/Advantages: Vendor experience in implementing and maintaining statewide public sector IT solutions.

Benefits/Advantages: Vendor experience in integrating educational data.

Benefits/Advantages: Proposed SaaS solution will use superior data analytics and reporting tools developed by major software publishers whose core competencies include data analytics

Benefits/Advantages: Proposed SaaS solution will use a proven cloud hosted environment that will meet the required security standards, are configurable, and will reduce the risk of system outages or downtime.

Benefits/Advantages: Cost efficiency, using SaaS services, without the required developers to create a solution from scratch.

Benefits/Advantages: Using SaaS solutions reduces the design complexity.

Benefits/Advantages: Using SaaS solutions reduces time to implementation.

Benefits/Advantages: Using SaaS solutions reduces cost of management.

Benefits/Advantages: Using SaaS solutions reduces IT staff required to maintain and implement.

TIP: Copy and paste to add Benefits/Advantages as needed.

Disadvantages: SaaS costs may grow over time as the scale increases.

TIP: Copy and paste to add Disadvantages as needed.

Anticipated Time to Achieve Objectives After Project Go-Live

(Choose one: Within 1 Year, 2 Years, 3 Years, 4 Years, Over 4 Years)

Objective Number: 1.1 – Analytic Tools **Objective Timeframe** 2 years

Objective Number: 2.1 – Scale Existing State-Funded CCGI **Objective Timeframe** 2 years

Objective Number: 3.1 – Scale Existing State-Funded eTranscript California **Objective Timeframe** 2 years

TIP: Copy and paste to add Objective Numbers and Timeframes as needed.

Anticipated Time to Achieve Financial Benefits after Project Go-Live

Increased Revenues: [Choose an item.](#)

Cost Savings: [Choose an item.](#)

Cost Avoidance: [Choose an item.](#)

Cost Recovery: [Choose an item.](#)

2.10.5 Assumptions and Constraints

(List the assumptions and constraints, and describe the impact to the project):

This would need to be a collaborative effort with the Data Providers. Given the Governance structure, it's not reasonable to dictate timelines to them, but work with them to ensure timeliness. However, that work cannot begin without legal agreements in place.

TIP: Copy and paste to add Assumptions/Constraints as needed.

2.10.6 Implementation Approach

Identify the type of existing IT system enhancement or new system proposed

(Answer Yes or No for each)

Enhance the current system: No

Develop a new custom solution: No

Purchase a Commercial off-the-Shelf (COTS) system: No

Purchase or obtain a system from another government agency (Transfer): No

Subscribe to a Software as a Service (SaaS) system: Yes

Other: No Specify: [Click or tap here to enter text.](#)

Identify cloud services to be leveraged (Answer Yes or No for each)

Software as a Service (SaaS) provided by OTech: No

Software as a Service (SaaS) provided by commercial vendor: Yes

Platform as a Service (PaaS) provided by OTech: No

Platform as a Service (PaaS) provided by commercial vendor: Yes

Infrastructure as a Service (IaaS) provided by OTech: No

Infrastructure as a Service (IaaS) provided by commercial vendor: No

If no cloud services will be leveraged by this alternative, provide a justification of why cloud services are not being leveraged: [Click or tap here to enter text.](#)

Identify who will modify the existing system or create the new system (Select Yes or No for each):

Agency/state entity IT staff: No

A vendor will be contracted: Yes

Inter-agency agreement will be established with another governmental agency. No

Specify agency name(s): [Click or tap here to enter text.](#)

Other: No Specify: [Click or tap here to enter text.](#)

Identify the implementation strategy:

All requirements will be addressed in this proposed project in a single implementation.
No

Requirements will be addressed in incremental implementations in this proposed project. No

Some requirements will be addressed in this proposed project. The remaining requirements will be addressed at a later date: Yes

Specify the year when the remaining requirements will be addressed: FY 2022-23

Identify if the technology for the proposed project will be mission critical and public facing:

The technology implemented for this proposed project will be considered mission critical and public facing. No

2.10.7 Architecture Information

Business Function/Process(es): See the conceptual solution design diagram, "0511-004 – C2C – S2AA – Conceptual Solution Design.pdf" for more information.

TIP: Copy and paste to add business processes with the same application, system, or component; COTS, MOTS, or custom solution; runtime environment; system interfaces, data center location; and security.

Application, System, or Component: There is not an existing system. When the components are determined, the Data Architect will define the data architecture. Data Architecture will be developed iteratively during PAL and could include vendor input.

TIP: Copy and paste to add an Application, System, or Component as needed.

COTS, MOTS, or Custom: [Choose an item.](#) (SaaS)

Name/Primary Technology: [Click or tap here to enter text.](#)

Runtime Environment

Cloud Computing Used: Yes

If "Yes," specify: [Choose an item.](#)

Server/Device Function: [Click or tap here to enter text.](#)

Hardware: [Click or tap here to enter text.](#)

Operating System: [Click or tap here to enter text.](#)

System Software: [Click or tap here to enter text.](#)

TIP: Copy and paste to add system software information if the application, system, or component uses additional system software.

System Interfaces: [Click or tap here to enter text.](#)

Data Center Location: Commercial data center

If Other, specify: [Click or tap here to enter text.](#)

Security

Access: (answer Yes or No to all choices)

Public: No

Internal State Staff: Yes

External State Staff: No

Other: No Specify: [Click or tap here to enter text.](#)

Type of Information (answer Yes or No to all choices)

Personal: Yes

Health: Yes

Tax: No

Financial: No

Legal: No

Confidential: No

Other No Specify: [Click or tap here to enter text.](#)

Protective Measures (answer Yes or No to all choices)

Technical Security: Yes

Physical Security: No

Backup and Recovery: Yes

Identity Authorization and Authentication: Yes

Other, specify: [Click or tap here to enter text.](#)

Data Management

Data Owner Name: Each data provider remains the data steward (we do not use the term owner as this is public data).

Data Owner Title: Each respective data provider serves as the data steward for their contributing data per the legislation.

Data Owner Business Program: The Office of Cradle-to-Career Data

Data Custodian Name: Dan Lamoree

Data Custodian Title: Data Architect (IT Manager II)

Data Custodian Business Program: The Office of Cradle-to-Career Data

TIP: Copy and paste to add Business Functions/Processes as needed.

TIP: Copy and paste to add Alternative Solutions; include Sections 2.10.1 thru 2.10.7 as needed.

2.10 Alternative Solutions

2.10.1 Solution Type (Recommended or Alternative): Alternative

2.10.2 Name: Modify CHHS Technology Solution

2.10.3 Description: The State of California could modify data systems under development by CHHS to meet project goals, but this option is likely to be more costly, take longer, and have the same disadvantages as the Recommended alternative. Additionally, as directed by the legislature, solutions should leverage existing technologies where appropriate, and this solution does not address all the functionality required.

Approach (Answer Yes or No to all choices):

Increase staff – new or existing capabilities: Yes

Modify the existing business process or create a new business process: Yes

Reduce the services or level of services provided: No

Utilize new or increased contracted services: Yes

Enhance the existing IT system: Yes

Create a new IT system: No

Perform a business-based procurement to have vendors propose a solution: Yes

Other: No Specify: [Click or tap here to enter text.](#)

2.10.4 Benefit Analysis

Benefits/Advantages: Leverage an existing system currently being developed.

TIP: Copy and paste to add Benefits/Advantages as needed.

Disadvantages: The analytical tools need to be tailored to the specific legal and structural requirements of the data providers, per the terms of the authorizing legislation, and so it is unlikely an existing health data system could meet all required by federal education and financial aid requirements.

Disadvantages: The data elements for identity resolution do not exactly match as the data schemas are different and would cause added complexity of shoehorning the current identity resolution solution.

Disadvantages: Subject matter experts would not overlap for health data and educational data.

Disadvantages: The CCHS systems are planned but not in production.

Disadvantages: Any licensing underlying CHHS future systems would need to be licensed to the Cradle to Career System to meet legal requirements, which would still result in a procurement.

Disadvantages: CHHS would not satisfy all the necessary functionality as required by the legislature.

TIP: Copy and paste to add Disadvantages as needed.

Anticipated Time to Achieve Objectives After Project Go-Live

(Choose one: Within 1 Year, 2 Years, 3 Years, 4 Years, Over 4 Years)

Objective Number: 1.1 – Analytic Tools **Objective Timeframe** 3 years

Objective Number: 2.1 – Scale Existing State-Funded CCGI **Objective Timeframe** 3 years

Objective Number: 3.1 – Scale Existing State-Funded eTranscript California **Objective Timeframe** 3 years

TIP: Copy and paste to add Objective Numbers and Timeframes as needed.

Anticipated Time to Achieve Financial Benefits after Project Go-Live

Increased Revenues: [Choose an item.](#)

Cost Savings: [Choose an item.](#)

Cost Avoidance: [Choose an item.](#)

Cost Recovery: [Choose an item.](#)

2.10.5 Assumptions and Constraints

(List the assumptions and constraints, and describe the impact to the project): This alternative has all the same assumptions and constraints made in the recommended solution regarding data providers. Additionally, this alternative is constrained by a lack of subject matter expertise overlap between health data and educational data. The system integrator for CHHS may not have the aforementioned expertise and would require shoehorning a system with different legal requirements.

TIP: Copy and paste to add Assumptions/Constraints as needed.

2.10.6 Implementation Approach

Identify the type of existing IT system enhancement or new system proposed

(Answer Yes or No for each)

Enhance the current system: No

Develop a new custom solution: No

Purchase a Commercial off-the-Shelf (COTS) system: No

Purchase or obtain a system from another government agency (Transfer): Yes

Subscribe to a Software as a Service (SaaS) system: Yes

Other: No Specify: [Click or tap here to enter text.](#)

Identify cloud services to be leveraged (Answer Yes or No for each)

Software as a Service (SaaS) provided by OTech: No

Software as a Service (SaaS) provided by commercial vendor: Yes

Platform as a Service (PaaS) provided by OTech: No

Platform as a Service (PaaS) provided by commercial vendor: No

Infrastructure as a Service (IaaS) provided by OTech: No

Infrastructure as a Service (IaaS) provided by commercial vendor: No

If no cloud services will be leveraged by this alternative, provide a justification of why cloud services are not being leveraged: [Click or tap here to enter text.](#)

Identify who will modify the existing system or create the new system (Select Yes or No for each):

Agency/state entity IT staff: No

A vendor will be contracted: Yes

Inter-agency agreement will be established with another governmental agency. No

Specify agency name(s): [Click or tap here to enter text.](#)

Other: [Choose an item.](#) Specify: [Click or tap here to enter text.](#)

Identify the implementation strategy:

All requirements will be addressed in this proposed project in a single implementation. No

Requirements will be addressed in incremental implementations in this proposed project. No

Some requirements will be addressed in this proposed project. The remaining requirements will be addressed at a later date: Yes

Specify the year when the remaining requirements will be addressed: FY 2023-24

Identify if the technology for the proposed project will be mission critical and public facing:

The technology implemented for this proposed project will be considered mission critical and public facing. No

2.10.7 Architecture Information

Business Function/Process(es): [Click or tap here to enter text.](#)

TIP: Copy and paste to add business processes with the same application, system, or component; COTS, MOTS, or custom solution; runtime environment; system interfaces, data center location; and security.

Application, System, or Component: [Click or tap here to enter text.](#)

TIP: Copy and paste to add an Application, System, or Component as needed.

COTS, MOTS, or Custom: [Choose an item.](#) (SaaS)

Name/Primary Technology: [Click or tap here to enter text.](#)

Runtime Environment

Cloud Computing Used: Yes

If "Yes," specify: [Choose an item.](#)

Server/Device Function: [Click or tap here to enter text.](#)

Hardware: [Click or tap here to enter text.](#)

Operating System: [Click or tap here to enter text.](#)

System Software: [Click or tap here to enter text.](#)

TIP: Copy and paste to add system software information if the application, system, or component uses additional system software.

System Interfaces: [Click or tap here to enter text.](#)

Data Center Location: Commercial data center

If Other, specify: [Click or tap here to enter text.](#)

Security

Access: (answer Yes or No to all choices)

Public: No

Internal State Staff: Yes

External State Staff: No

Other: No Specify: [Click or tap here to enter text.](#)

Type of Information (answer Yes or No to all choices)

Personal: Yes

Health: Yes

Tax: No

Financial: No

Legal: No

Confidential: No

Other No Specify: [Click or tap here to enter text.](#)

Protective Measures (answer Yes or No to all choices)

Technical Security: Yes

Physical Security: [No](#)

Backup and Recovery: Yes

Identity Authorization and Authentication: Yes

Other, specify: [Click or tap here to enter text.](#)

Data Management

Data Owner Name: Each data provider remains the data steward (we do not use the term owner as this is public data).

Data Owner Title: Each respective data provider serves as the data steward for their contributing data per the legislation.

Data Owner Business Program: The Office of Cradle-to-Career Data

Data Custodian Name: Dan Lamoree

Data Custodian Title: Data Architect (IT Manager II)

Data Custodian Business Program: The Office of Cradle-to-Career Data

TIP: Copy and paste to add Business Functions/Processes as needed.

TIP: Copy and paste to add Alternative Solutions; include Sections 2.10.1 thru 2.10.7 as needed.

2.11 Recommended Solution

2.11.1 Rationale for Selection: During the planning process, an independent evaluator examined whether CHHS' data system could be expanded to meet the Cradle-to-Career System needs and found that this was not a feasible solution because the model was unlikely to scale seamlessly and the attempt to do so could impair existing functionality. Instead, the planning workgroup recommended working with an established vendor that could provide a SaaS solution, ideally in a manner consistent with other linked data sets in the state. This approach will be more timely, less expensive, and more cost effective.

2.11.2 Technical/Initial CA-PMM Complexity Assessment

(Reference section 2.11.2 in the Stage 2 Alternative Analysis Preparation Instructions, [SIMM](#)19B.1 and Complexity Assessment instructions [SIMM](#) Section 45D.)

Technical Complexity Score: 2.2

Complexity Zone: Zone II/III - Medium Criticality/Risk

2.11.3 Procurement and Staffing Strategy

Select an **Activity**: Solicitation Development

Responsible (answer Yes or No to all choices)

Agency/state entity staff: Yes

STP staff: Yes

CDT Project Approvals and Oversight staff: Yes

CA-PMO staff: No

DGS staff: No

Contractor: No

Other: No Specify: [Click or tap here to enter text.](#)

When Needed (answer Yes or No to all choices.)

Stage 3 Solution Development: Yes

Stage 4 Project Readiness and Approval: Yes

After project is approved (after Stage 4 Project Readiness and Approval): Yes

Cost Estimate Verification (answer Yes or No to all choices)

Market research conducted (MR): Yes

Cost estimate provided (CE): Yes

CDT CE: No

DGS CE: No

Request for Information (RFI) conducted: Yes

Comparable vendor services have been used on previous contracts (CV): Yes

Leveraged Procurement Agreement (LPA): No

Complete Only if Contractor Responsible for Activity

Procurement Vehicle: [Choose an item.](#)

If Other, specify: [Click or tap here to enter text.](#)

Contract Type: [Choose an item.](#)

If Other, specify: [Click or tap here to enter text.](#)

Select an **Activity**: Conduct Procurement (Identity Resolution)

Responsible (answer Yes or No to all choices)

Agency/state entity staff: Yes

STP staff: Yes

CDT Project Approvals and Oversight staff: Yes

CA-PMO staff: No

DGS staff: No

Contractor: No

Other: No Specify: [Click or tap here to enter text.](#)

When Needed (answer Yes or No to all choices.)

Stage 3 Solution Development: Yes

Stage 4 Project Readiness and Approval: No

After project is approved (after Stage 4 Project Readiness and Approval): No

Cost Estimate Verification (answer Yes or No to all choices)

Market research conducted (MR): Yes

Cost estimate provided (CE): Yes

CDT CE: No

DGS CE: No

Request for Information (RFI) conducted: Yes

Comparable vendor services have been used on previous contracts (CV): Yes

Leveraged Procurement Agreement (LPA): No

Complete Only if Contractor Responsible for Activity

Procurement Vehicle: [Choose an item.](#)

If Other, specify: [Click or tap here to enter text.](#)

Contract Type: [Choose an item.](#)

If Other, specify: [Click or tap here to enter text.](#)

Select an **Activity**: Conduct Procurement (Data Warehouse)

Responsible (answer Yes or No to all choices)

Agency/state entity staff: Yes

STP staff: Yes

CDT Project Approvals and Oversight staff: Yes

CA-PMO staff: No

DGS staff: No

Contractor: No

Other: No Specify: [Click or tap here to enter text.](#)

When Needed (answer Yes or No to all choices.)

Stage 3 Solution Development: Yes

Stage 4 Project Readiness and Approval: No

After project is approved (after Stage 4 Project Readiness and Approval): No

Cost Estimate Verification (answer Yes or No to all choices)

Market research conducted (MR): Yes

Cost estimate provided (CE): Yes

CDT CE: No

DGS CE: No

Request for Information (RFI) conducted: No

Comparable vendor services have been used on previous contracts (CV): Yes

Leveraged Procurement Agreement (LPA): No

Complete Only if Contractor Responsible for Activity

Procurement Vehicle: [Choose an item.](#)

If Other, specify: [Click or tap here to enter text.](#)

Contract Type: [Choose an item.](#)

If Other, specify: [Click or tap here to enter text.](#)

TIP: Copy and paste to add Activities as needed.

DGS Delegated Purchasing Authority

Will any of the activities identified above result in a competitive or non-competitive solicitation that will be over the agency/state entity's DGS delegated purchasing authority? Yes

2.11.4 Enterprise Architecture Alignment: A system integrator and procurement of a data warehouse and identity resolution SaaS solutions will move the project to a cloud based solution that scales as directed by the legislature.

Information Technology Capability (Select Yes or No to identify capabilities that may be needed for this project.)

Public or Internal Portal/Website: New Enterprise Capability Needed

Public or Internal Mobile Application: [Choose an item.](#)

Enterprise Service Bus: [Choose an item.](#)

Identity and Access Management: New Enterprise Capability Needed

Enterprise Content Management (including document scanning and eForms capabilities): [Choose an item.](#)

Business Intelligence and Data Warehousing: New Enterprise Capability Needed

Master Data Management: New Enterprise Capability Needed

Big Data Analytics: New Enterprise Capability Needed

2.11.5 Project Phases

Phase Title: P20W

Description: Infrastructure for data collection and enrichment

Phase Deliverable: P20W Data Set

Phase Title: Dashboards

Description: The creation of multiple dashboards for public consumption

Phase Deliverable: Dashboards on teacher retention, college-going outcomes, transfer outcomes, employment outcomes, financial aid impact, long-term education and career outcomes, early learning and care outcomes by third grade

Phase Title: Data Requests

Description: Access to individual-level data

Phase Deliverable: Secure enclave, request tracker

Phase Title: Query Builder

Description: Custom tables for public consumption

Phase Deliverable: Query builder

TIP: Copy and paste to add Project Phases as needed.

2.11.6 High Level Proposed Project Schedule

Proposed Project Planning Start Date: 1/1/2020

Proposed Project Planning End Date: 6/30/2021

Proposed Project Execution Start Date: 7/1/2022

Proposed Project Execution End Date: 6/28/2024

Activity Name: Stage 3 Solution Development

Start Date: 1/17/2022

End Date: 3/11/2022

Activity Name: Solicitation Development

Start Date: 1/31/2022

End Date: 2/18/2022

Activity Name: Solicitation Package Review

Start Date: 2/21/2022

End Date: 2/25/2022

Activity Name: Stage 4 Project Readiness and Approval

Start Date: 2/28/2022

End Date: 6/24/2022

Activity Name: Solicitation Release

Start Date: 2/28/2022

End Date: 5/20/2022

Activity Name: Solicitation Negotiations

Start Date: 5/23/2022

End Date: 6/24/2022

Activity Name: Solicitation Award

Start Date: 6/24/2022

End Date: 6/24/2022

Activity Name: Design

Start Date: 7/1/2022

End Date: 7/29/2022

Activity Name: Development

Start Date: 8/1/2022

End Date: 3/29/2024

Activity Name: Testing

Start Date: 4/1/2024

End Date: 6/28/2024

Activity Name: Go Live

Start Date: 6/28/2024

End Date: 6/28/2024

TIP: Copy and paste to add Activities as needed.

2.11.7 Cost Summary

Total Proposed Planning Cost: \$992,108

Total Proposed Project Cost: \$12,948,492

Total Proposed Future Operations IT Staff & OE&E Cost (Continuing): \$5,315,869

Total Proposed Annual Future Operations IT Cost (M&O): \$5,315,869

2.12 Staffing Plan

2.12.1 Administrative

Administrative support provided by the Office of Cradle to Career Data.

2.12.2 Business Program

A high-level project manager is currently being recruited to oversee development of the data tools.

2.12.3 Information Technology

CDT has been involved in planning for the tools, RFI, and RFP. C2C's Data architect will manage the vendors and ensure they are meeting requirements.

2.12.4 Testing

TBD, to be done in partnership with the data providers

2.12.5 Data Conversion/Migration

See the attached document: 0511-004 – C2C – S2AA - Data Conversion-Migration.pdf. Note that we are using data extracts from existing systems so this isn't a systems data conversion and migration process. Instead it is a data warehouse project.

2.12.6 Training and Organizational Change Management

The Office of Cradle to Career Data will hire a staff position to support data providers to successfully navigate the data upload and verification process, as well as review the dashboards, query builder, and data request process tracking. Data providers will also have a dedicated staff position to support implementation. The Office of Cradle to Career Data will work with WestEd, the primary organization responsible for guiding the 18 month planning process, on developing training materials, hosting onboarding sessions, and developing change management strategies for the data providers.

2.12.7 Resource Capacity/Skills/Knowledge for Stage 3 Solution Development

The C2C Data Architect will oversee development of the data tools

2.12.8 Project Management

2.12.8.1 Project Management Risk Assessment

Project Management Risk Score: 1.6

(Attach PM Risk Assessment to the email submission. [SIMM Section 45C](#))

0511-004 – C2C – S2AA – SIMM 45C.xlsx

2.12.8.2 Project Management Planning

Are the following project management plans or project artifacts complete, approved by the designated agency/state entity authority, and available for Department of Technology review? (Choose: Yes, No, Not Applicable. If No or Not Applicable, provide the artifact status in the space provided.)

Project Charter: No, TBD when C2C staff are hired

Scope Management Plan: No, TBD when C2C staff are hired

Risk Management Plan: No, TBD when C2C staff are hired

Issue and Action Item Management Plan: No, TBD when C2C staff are hired

Communication Management Plan: No, TBD when C2C staff are hired

Schedule Management Plan: No, TBD when C2C staff are hired

Human Resource Management Plan: No, TBD when C2C staff are hired

Staff Management Plan: No, TBD when C2C staff are hired

Stakeholder Management Plan: Yes, See attached pdfs: 0511-004 - C2C - S2AA - Legislative Report - 2020-04.pdf; 0511-004 - C2C - S2AA - Legislative Report - 2020-12.pdf; 0511-004 - C2C - S2AA - Legislative Report - 2021-07.pdf

Governance Plan: Yes, See attached pdfs: 0511-004 - C2C - S2AA - Legislative Report - 2020-04.pdf; 0511-004 - C2C - S2AA - Legislative Report - 2020-12.pdf; 0511-004 - C2C - S2AA - Legislative Report - 2021-07.pdf

2.12.9 Organization Charts:

0511-004 – C2C – S2AA – Org Chart.pdf

2.13 Data Conversion/Migration

Identify the status of each of the following data conversion/migration activities. If Not Applicable, explain why the activity is not applicable or if Not Started, explain when the activity is planned to begin and anticipated to be completed:

Data Conversion/Migration Planning: In Progress, [Click or tap here to enter text.](#)

Data Conversion/Migration Requirements: In Progress, [Click or tap here to enter text.](#)

Current Environment Analysis: In Progress, [Click or tap here to enter text.](#)

Data Profiling: In Progress, [Click or tap here to enter text.](#)

Data Quality Assessment: In Progress

Data Quality Business Rules: Not Started

Data Dictionaries: In Progress

Data Cleansing and Correction: Not Started

2.14 Financial Analysis Worksheets

0511-004 – C2C – S2AA – FAW.xlsx.

Department of Technology Use Only

Original "New Submission" Date: 2/11/2022

Form Received Date: 4/20/2022

Form Accepted Date: 4/20/2022

Form Status: Completed

Form Status Date: 5/16/2022

Form Disposition: Approved

Form Disposition Date: 5/16/2022