COUNTY OF ORANGE

CONTRACT # MA-003-18010160

BY AND BETWEEN

AUDITOR-CONTROLLER'S OFFICE

AND

ENTERPRISE SERVICES LLC

FOR

MODERNIZATION OF LEGACY PROPERTY TAX SYSTEM

Contract

ATTACHMENTS

Contract for Modernization of Legacy Property Tax System

This Agreement number MA-003-18010160, hereinafter referred to as "Contract", for the modernization of the County's Legacy Property Tax System (hereinafter referred to as "Software Products"), made and entered into as of the date fully executed by and between Enterprise Services LLC, with a place of business at 1775 Tysons Blvd, Tysons, VA 22102, hereinafter referred to as "Vendor", and the County of Orange, a political subdivision of the State of California, hereinafter referred to as "County", which may be referred to individually as "Party" or collectively as "Parties".

RECITALS

WHEREAS, the County's legacy Assessment Tax System was developed in the late 1980's and is nearing its end of life; and

WHEREAS, the County wishes to modernize its legacy Assessment Tax System by re-platforming it from an IBM mainframe platform to an open system platform; and

WHEREAS, Vendor responded to a Request for Proposal ("RFP") for the modernization of the County's Legacy Property Tax System as further set forth herein; and

WHEREAS, the Vendor responded and represented that its proposed services shall meet or exceed the requirements and specifications of the RFP; and

WHEREAS, the County of Orange Board of Supervisors has authorized the Purchasing Agent, or authorized deputy, to enter into a contract for the Modernization of the County's Legacy Property System with the Vendor;

NOW, THEREFORE, the Parties mutually agree as follows:

ARTICLES

General Terms and Conditions:

A. **Governing Law and Venue**: This Contract has been negotiated and executed in the state of California and shall be governed by and construed under the laws of the state of California. In the event of any legal action to enforce or interpret this Contract, the sole and exclusive venue shall be a court of competent jurisdiction located in Orange County, California, and the Parties hereto agree to and do hereby submit to the jurisdiction of such court, notwithstanding Code of Civil Procedure Section 394. Furthermore, the Parties specifically agree to waive any and all rights to request that an action be transferred for trial to another County.

B. **Entire Contract**: This Contract, comprised of these terms and conditions, Attachments A, B, C, and D, which are incorporated herein, contains the entire Contract between the Parties with respect to the matters herein, and there are no restrictions, promises, warranties or undertakings other than those set forth herein or referred to herein. No exceptions, alternatives, substitutes or revisions are valid or binding on County unless authorized by County in writing. Electronic acceptance of any additional terms, conditions or supplemental contracts by any County employee or agent, including but not limited to installers of software, shall not be valid or binding on County unless accepted in writing by County's Purchasing Agent or his designee, hereinafter "Purchasing Agent."

C. **Amendments**: No alteration or variation of the terms of this Contract shall be valid unless made in writing and signed by the Parties; no oral understanding or agreement not incorporated herein shall be binding on either of the Parties; and no exceptions, alternatives, substitutes or revisions are valid or binding on County unless authorized by County in writing.

D. **Taxes**: Unless otherwise provided herein or by law, the price quoted by Vendor does not include California state sales or use tax.

E. **Preparation:** Vendor represents that: (a) it has had sufficient access to, and opportunity to inspect, all material components, workings, capabilities, procedures, and capacities of the County's networks, equipment, hardware, and Software associated with the provision of the Services and Deliverables, and the operation, support, and maintenance of the systems, and for full and complete analysis of the County's requirements in connection therewith (as specified in this Contract); (b) it has performed sufficient due diligence investigations regarding the scope and substance of the Statement of Work and the Deliverables; (c) it has received sufficient answers to all questions that it has presented to the County regarding the scope and substance of the Services and the Deliverables to be provided under this Contract; and (d) it is capable in all respects of providing the Services and Deliverables in accordance with this Agreement. Vendor hereby waives and releases any and all claims that it now has or hereafter may have against the County based upon any inaccuracy or incompleteness of the information it has received with regard to the scope and substance of the Services or the Deliverables to be provided under this Contract. Further, Vendor covenants that it shall not seek any judicial rescission, cancellation, termination or reformation of this Agreement or any provision hereof based upon any such inaccuracy or incompleteness of information except where such information was willfully withheld or intentionally misrepresented by the County.

F. **Acceptance/Payment**: Unless otherwise agreed to in writing by the County, 1) acceptance shall not be deemed complete unless in writing and until all the goods/services have actually been received, inspected, and tested to the satisfaction of County including the procedures set forth in Attachment D, Implementation Plan and Acceptance and Testing Procedures, and 2) payment shall be made in arrears after satisfactory acceptance in accordance with the requirements outlined in Attachment B, Cost/Compensation.

G. **Warranty:**

a. Unless otherwise specified in the Statement of Work, the warranties in this subsection a) begin upon Final Acceptance of all Deliverables or Services furnished under this Contract as set forth in Paragraph 30 below and end 90 days thereafter. The Vendor warrants that (i) Deliverables and Services furnished hereunder will substantially conform to the requirements of this Contract (including without limitation all descriptions, specifications, and drawings identified in the Scope of Work), and (ii) the Deliverables will be free from material defects in materials and workmanship. Where the Parties have agreed to design specifications and incorporated the same or equivalent in the Scope of Work directly or by reference, the Vendor warrants that its Deliverables provide all material functionality required thereby. In addition to the other warranties set forth herein, where the Contract calls for delivery of Commercial Software, the Vendor warrants that such Software will perform in accordance with its license and accompanying documentation. The County's approval of designs or specifications furnished by Vendor shall not relieve the Vendor of its obligations under this warranty.

b. The Vendor warrants that Deliverables furnished hereunder (i) will be free, at the time of delivery, of harmful code (i.e. computer viruses, worms, trap doors, time bombs, disabling code, or any similar malicious mechanism designed to interfere with the intended operation

of, or cause damage to, computers, data, or Software); and (ii) will not infringe or violate any Intellectual Property Rights. Without limiting the generality of the foregoing, if the County believes that harmful code may be present in any Commercial Software delivered hereunder, the Vendor will, upon the County's request, provide a new or clean install of the Software.

c. The Vendor warrants that it will not knowingly use the services of any ineligible contractor or subcontractor for any purpose in the performance of the Services under this Contract.

d. Unless otherwise specified in the Scope of Work:
   (i) The Vendor does not warrant that any Software provided hereunder is error-free or that it will run without immaterial interruption.
   (ii) The Vendor does not warrant and will have no responsibility for a claim to the extent that it arises directly from (A) a modification made by the County, unless such modification is approved or directed by the Vendor, (B) use of Software in combination with or on products other than as specified by the Vendor, or (C) misuse by the County.
   (iii) Where the Vendor resells Commercial Software it purchased from a third party, Vendor, to the extent it is legally able to do so, will pass through any such third party warranties to the County and will reasonably cooperate in enforcing them. Such warranty pass-through will not relieve the Vendor from Vendor's warranty obligations set forth above.
   (iv) The Vendor makes no other warranties and disclaims all other warranties or conditions, including implied warranties, to the extent allowed by applicable law.

e. All warranties, including special warranties specified elsewhere herein, shall inure to the County, its successors, assigns, customer agencies, and governmental users of the Deliverables or Services.

f. Except as may be specifically provided in Attachment A, Scope of Work or elsewhere in this Contract, for any breach of the warranties provided in this Section, the County's exclusive remedy and the Vendor's sole obligation will be limited to:
   (i) re-performance, repair, or replacement of the nonconforming Deliverable (including without limitation an infringing Deliverable) or service; or
   (ii) should the County in its sole discretion consent, refund of all amounts paid by the County for the nonconforming Deliverable or service and payment to the County of any additional amounts necessary to equal the County's Cost to Cover. "Cost to Cover" means the cost, properly mitigated, of procuring Deliverables or Services of equivalent capability, function, and performance.

g. No less than 60 calendar days before the expiration of the then current warranty period, including the warranty period described in subdivision "a" above, the County may extend the warranty period by notifying the Vendor in writing of the extension. The warranty period may be extended for a maximum 9 months. If the County exercises its option to extend the warranty period as described herein, the Vendor shall charge the County the extended warranty amount set forth in Attachment B.

H. **Patent/Copyright Materials/Proprietary Infringement**: Unless otherwise expressly provided in this Contract, Vendor shall be solely responsible for clearing the right to use any patented or copyrighted materials in the performance of this Contract. Vendor represents and warrants that any Software provided hereunder will not infringe upon or violate any patent, proprietary right, or trade secret right of any third party. Vendor agrees that, in accordance with the more specific requirement contained in Paragraph HH below (Indemnification Provisions), it shall indemnify, defend and hold County and County Indemnities harmless from any and all such claims, suits or proceedings and be responsible for payment of all costs, damages, penalties and expenses related to or arising from such claim(s), suits or proceedings, including, but not limited to, attorney's fees, costs and expenses.

If any Deliverable is or likely to be held to be infringing, Vendor shall at its expense and option either: (a) procure the right for the County to continue using it; (b) replace it with a non-infringing equivalent or modify it to make it non-infringing, provided such modification or replacement will not materially degrade any functionality listed in the specifications; (c) modify it to make it non-infringing; or (d) direct the return of the Deliverable and refund to the County the fees paid for such Deliverable. The remedies set forth in the preceding sentence are not exclusive of any others the County may have.

I. **Assignment or Sub-Contracting**: The terms, covenants, and conditions contained herein shall apply to and bind the heirs, successors, executors, administrators and assigns of the Parties. The Vendor remains legally responsible for the performance of all contract terms including work performed by third Parties under subcontracts. Any approved subcontractor will be subject to all applicable provisions of this Contract. Vendor shall be held responsible by County for the performance of any subcontractor whether approved by County or not. Furthermore, neither the performance of this Contract nor any portion thereof may be assigned or sub-contracted by Vendor without the express written consent of County. Any attempt by Vendor to assign or sub-contract the performance or any portion thereof of this Contract without the express written consent of County shall be invalid and shall constitute a material breach of this Contract. All subcontractors must agree to a non-disclosure agreement to be provided by the County. The Vendor shall provide no less than sixty (60) calendar days' written notification of its intent to assign, sell, delegate or otherwise dispose of the rights and obligations of this Contract.

J. **Non-Discrimination**: In the performance of this Contract, Vendor agrees that it will comply with the requirements of Section 1735 of the California Labor Code and not engage nor permit any subcontractors to engage in discrimination in employment of persons because of the race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, or sex of such persons. Vendor acknowledges that a violation of this provision shall subject Vendor to all the penalties imposed for a violation of Section 1720 et seq. of the California Labor Code.

K. **Termination**: In addition to any other remedies or rights it may have by law, County has the right to terminate this Contract without penalty (i) immediately with cause, if Vendor fails to cure within 30 days after receiving written notice describing the reason for termination, or (ii) after 30 days' written notice without cause, unless otherwise specified. Cause shall be defined as any breach of contract, any misrepresentation or fraud on the part of the Vendor. Exercise by County of its right to terminate the Contract shall relieve County of all further obligations, subject to payment of outstanding undisputed amounts. The Vendor must include in its contracts with subcontractors a termination provision similar to this provision to prevent any claims against the County arising from termination of subcontracts after the County's termination of this Contract. The Vendor is not entitled to make any claim against the County resulting from any subcontractor claim against the Vendor or the County to the extent inconsistent with this provision. If County fails to pay any undisputed amount(s) pursuant to the requirements of Attachment B, subject to Paragraph 6, Set-Off, and Paragraph 34, Disputed Amounts, and fails to pay all amounts within 30 days after receiving notice of non-payment of undisputed amounts, Vendor may terminate

affected Services or, at its option, this Contract by giving a further written notice specifying a termination date.

If after termination with cause, it is determined by a final ruling in accordance with Paragraph 16, Disputes - Contract, or a court ruling that there was no cause to terminate, the rights and obligations of the Parties shall be the same as if the termination had been issued without cause with the thirty (30) day written notice.

L. **Consent to Breach Not Waiver**: No term or provision of this Contract shall be deemed waived and no breach excused, unless such waiver or consent shall be in writing and signed by the party claimed to have waived or consented. Any consent by any party to, or waiver of, a breach by the other, whether express or implied, shall not constitute consent to, waiver of, or excuse for any other different or subsequent breach.

M. **Remedies Not Exclusive**: The remedies for breach set forth in this Contract are cumulative as to one another and as to any other provided by law, rather than exclusive; and the expression of certain remedies in this Contract does not preclude resort by either party to any other remedies provided by law.

N. **Independent Contractor**: Vendor shall be considered an independent contractor and neither Vendor nor its employees; nor anyone working under Vendor shall be considered an agent or an employee of County. Neither Vendor nor its employees; nor anyone working under Vendor shall qualify for workers' compensation or other fringe benefits of any kind through County.

O. **Performance**: Vendor shall perform all work under this Contract, taking necessary steps and precautions to perform the work as specified herein. Vendor shall be responsible for the professional quality, technical assurance, timely completion and coordination of all documentation and other services furnished by the Vendor under this Contract. Vendor shall perform all work diligently, carefully, and in a good and workman-like manner; shall furnish all labor, supervision, machinery, equipment, materials, and supplies necessary therefore; shall at its sole expense obtain and maintain all permits and licenses required by public authorities, including those of County required in its governmental capacity, in connection with performance of the work except as otherwise provided by the County; and, if permitted to subcontract, shall be fully responsible for all work performed by sub-contractors.

P. **Insurance Provisions:**

Prior to the provision of Services under this Contract, the Vendor agrees to maintain all required insurance at Vendor's expense, including all endorsements required herein, necessary to satisfy the County that the insurance provisions of this Contract have been complied with. Vendor agrees to maintain such insurance coverage and keep all Certificates of Insurance and endorsements on deposit with the County during the entire term of this Contract. In addition, all subcontractors performing work on behalf of Vendor pursuant to this Contract shall obtain insurance subject to the same terms and conditions as set forth herein for Vendor.

Vendor shall ensure that all subcontractors performing work on behalf of Vendor pursuant to this Contract shall be covered under Vendor's Commercial General Liability and Technology Errors & Omissions insurance as an Additional Insured or maintain insurance subject to the same terms and conditions as set forth herein for Vendor. Vendor shall not allow subcontractors to work if subcontractors have less than the level of coverage required by County from Vendor under this Contract. It is the obligation of Vendor to provide notice of the insurance requirements to every subcontractor and to receive proof of insurance prior to allowing any subcontractor to begin work. Such proof of insurance must be maintained by Vendor through the entirety of this Contract for inspection by County representative(s) at any reasonable time.

All self-insured retentions (SIRs) shall be clearly stated on the Certificate of Insurance. Any self-insured retention (SIR) in an amount in excess of Fifty Thousand Dollars ($50,000) shall specifically be approved by the County's Risk Manager, or designee, upon review of Contractor's current audited financial report. If Contractor's SIR is approved, Contractor, in addition to, and without limitation of, any other indemnity provision(s) in this Contract, agrees to all of the following:

1. In addition to the duty to indemnify and hold the County harmless against any and all liability, claim, demand or suit resulting from Contractor's, its agents, employee's or subcontractor's performance of this Contract, Contractor shall defend the County at its sole cost and expense with counsel approved by Board of Supervisors against same; and

2. Contractor's duty to defend, as stated above, shall be absolute and irrespective of any duty to indemnify or hold harmless; and
   The provisions of California Civil Code Section 2860 shall apply to any and all actions to which the duty to defend stated above applies, and the Contractor's SIR provision shall be interpreted as though the Contractor was an insurer and the County was the insured.

If the Contractor fails to maintain insurance acceptable to the County, the County may terminate this Contract.

Qualified Insurer

The policy or policies of insurance must be issued by an insurer with a minimum rating of A- (Secure A.M. Best's Rating) and VII (Financial Size Category as determined by the most current edition of the **Best's Key Rating Guide/Property-Casualty/United States or ambest.com).** It is preferred, but not mandatory, that the insurer be licensed to do business in the state of California (California Admitted Carrier).

If the insurance carrier does not have an A.M. Best Rating of A-/VIII, the CEO/Office of Risk Management retains the right to approve or reject a carrier after a review of the company's performance and financial ratings.

The policy or policies of insurance maintained by the Vendor shall provide the minimum limits and coverage as set forth below:

Coverage	Minimum Limits
Commercial General Liability	$1,000,000 per occurrence $2,000,000 aggregate
Automobile Liability including coverage for owned, non-owned and hired vehicles	$1,000,000 per occurrence
Workers' Compensation	Statutory
Employers' Liability Insurance	$1,000,000 per occurrence
Network Security & Privacy Liability (included in Vendor's Technology Errors & Omissions Coverage)	$1,000,000 per claims made
Technology Errors & Omissions	$1,000,000 per claims made

Required Coverage Forms

The Commercial General Liability coverage shall be written on Insurance Services Office (ISO) form CG 00 01, or a substitute form providing liability coverage at least as broad.

The Business Auto Liability coverage shall be written on ISO form CA 00 01, CA 00 05, CA 0012, CA 00 20, or a substitute form providing coverage at least as broad.

Required Endorsements

The Commercial General Liability policy shall contain the following endorsements, which shall accompany the Certificate of insurance:

1. An Additional Insured endorsement using ISO form CG 20 26 04 13 or a form at least as broad naming the ***County of Orange its elected and appointed officials, officers, agents and employees*** as Additional Insureds, or provide blanket coverage, which will state ***AS REQUIRED BY WRITTEN CONTRACT.***

2. A primary non-contributing endorsement using ISO form CG 20 01 04 13, or a form at least as broad evidencing that the Contractor's insurance is primary and any insurance or self-insurance maintained by the County of Orange shall be excess and non-contributing.

The Workers' Compensation policy shall contain a waiver of subrogation endorsement waiving all rights of subrogation against the County of Orange, its elected and appointed officials, officers, agents and employees.

All insurance policies required by this Contract shall waive all rights of subrogation against the County of Orange, its elected and appointed officials, officers, agents and employees when acting within the scope of their appointment or employment.

Vendor shall notify County in writing within thirty (30) days of any policy cancellation and ten (10) days for non-payment of premium and provide a copy of the cancellation notice to County. Failure to provide written notice of cancellation shall constitute a material breach of the Contract, upon which the County may suspend or terminate this Contract.

If Vendor's Professional Technology Errors & Omissions including Network Security & Privacy Liability are "Claims Made" policy(ies), Vendor shall agree to maintain coverage for one (1) year following the completion of the Contract.

The Commercial General Liability policy shall contain a severability of interests clause also known as a "separation of insureds" clause (standard in the ISO CG 0001 policy).

Insurance certificates shall be forwarded to the County agency/department address listed in Paragraph 22, Notices.

If the Vendor fails to provide the insurance certificates and endorsements within seven days of notification by CEO/Purchasing or the agency/department purchasing division, this failure may constitute a material breach of the Contract, upon which the County may suspend or terminate this Contract.

County expressly retains the right to require Vendor to increase or decrease insurance of any of the above insurance types throughout the term of this Contract, which shall be mutually agreed

upon. Any increase or decrease in insurance will be as deemed by County of Orange Risk Manager as appropriate to adequately protect County.

County shall notify Vendor in writing of changes in the insurance requirements once mutually agreed upon. If Vendor does not deposit copies of acceptable Certificates of Insurance and endorsements with County incorporating such changes within thirty (30) days of receipt of such notice, this Contract may be in breach without further notice to Vendor, and County shall be entitled to all legal remedies.

The procuring of such required policy or policies of insurance shall not be construed to limit Vendor's liability hereunder nor to fulfill the indemnification provisions and requirements of this Contract, nor act in any way to reduce the policy coverage and limits available from the insurer.

Q. **Bills and Liens**: Vendor shall pay promptly all indebtedness for labor, materials, and equipment used in performance of the work. Vendor shall not permit any lien or charge to attach to the work or the premises, but if any does so attach, Vendor shall promptly procure its release and, in accordance with the requirements of Paragraph HH below (Indemnification Provisions), indemnify, defend, and hold County harmless and be responsible for payment of all costs, damages, penalties and expenses related to or arising from or related thereto.

R. **Changes**: Vendor shall make no changes in the Contract, including the Scope of Work and the Implementation Plan and Acceptance and Testing Procedures (Attachments A and D), or perform any additional work without the County's specific written approval. If applicable, charges for approved changes will be as agreed upon in writing as set forth in Paragraph C.

S. **Change of Ownership**: Any change or transfer in ownership of the Vendor requires prior written approval from the County for this Contract to be assigned to the new owners. If the County provides this written approval, the Vendor agrees that when the change or transfer in ownership of the Vendor's business occurs before completion of this Contract, the new owners will be contractually required to assume the Vendor's duties and obligations contained in this Contract and complete them to the reasonable satisfaction of the County. If the County does not provide this written approval, the County reserves the right to terminate this Contract as stated in Paragraph K, Termination.

T. **Force Majeure**: Vendor shall be excused from performing and shall not be assessed with liquidated damages or unsatisfactory performance penalties during any failure to perform or delay beyond the time named for the performance of this Contract caused by any act of God, war, civil disorder, employment strike or other cause beyond its reasonable control, provided Vendor gives prompt written notice of the cause of the delay to County and Vendor uses commercially reasonable efforts to continue performance notwithstanding the cause beyond its reasonable control.

U. **Confidentiality**: Vendor agrees to maintain the confidentiality of all County and County-related records and information pursuant to all applicable statutory laws relating to privacy and confidentiality that currently exist or exist at any time during the term of this Contract. All such records and information shall be considered confidential and kept confidential by Vendor and Vendor's staff, agents and employees.

V. **Compliance with Laws**: Vendor represents and warrants that in performing the services under this Contract, Vendor shall fully comply, at Vendor's expense, with all standards, laws, statutes, restrictions, ordinances, requirements, and regulations (collectively "laws"), including, but not limited to those issued by County in its governmental capacity and all other laws applicable to the services at the time services are provided to and accepted by County. Vendor acknowledges that County is relying on Vendor to ensure such compliance, and pursuant to the requirements of Paragraph HH below (Indemnification Provisions), Vendor agrees that it shall defend, indemnify

and hold County and County Indemnities harmless from all third party claims for loss, liability, damages, costs, and expenses arising from or related to a violation of such laws.

The Vendor further represents and warrants that it shall at all times perform its obligations hereunder in compliance in all material respects with all applicable federal, state, and local laws and regulations of all applicable domestic jurisdictions, including, without limitation, any applicable requirements of any federal, state, and local authority regulating health, safety, employment, civil rights, the environment, Hazardous Materials, privacy, confidentiality, security, exportation or telecommunication, and all applicable laws and regulations relating to the collection, dissemination, transfer, storage and use of data, specifically including, without limitation, the privacy and security of confidential, personal, sensitive or other protected data. County represents and warrants that in using the services under this Contract, County shall fully comply, at County's expense, with all laws that apply to County.

W. **Freight (F.O.B. Destination):** Vendor assumes full responsibility for all transportation, transportation scheduling, packing, handling, insurance, and other services associated with delivery of all products deemed necessary under this Contract.

X. **Pricing**: The Contract fixed price set forth in Attachment B, Cost/Compensation, shall include full compensation for providing all required Goods in accordance with required specifications, or services as specified herein or when applicable, in the Scope of Work attached to this Contract as Attachment A, and no additional compensation will be allowed therefore, unless otherwise provided for in this Contract.

Y. **Intentionally Left Blank**

Z. **Terms and Conditions**: Vendor acknowledges that it has read and agrees to all terms and conditions included in this Contract.

AA. **Headings**: The various headings and numbers herein, the grouping of provisions of this Contract into separate clauses and paragraphs, and the organization hereof are for the purpose of convenience only and shall not limit or otherwise affect the meaning hereof.

BB. **Severability**: If any term, covenant, condition, or provision of this Contract is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remainder of the provisions hereof shall remain in full force and effect and shall in no way be affected, impaired or invalidated thereby.

CC. **Calendar Days**: Any reference to the word "day" or "days" herein shall mean calendar day or calendar days, respectively, unless otherwise expressly provided.

DD. **Attorney Fees**: In any action or proceeding to enforce or interpret any provision of this Contract, or where any provision hereof is validly asserted as a defense, each party shall bear its own attorney's fees, costs and expenses.

EE. **Interpretation**: This Contract has been negotiated at arm's length and between persons sophisticated and knowledgeable in the matters dealt with in this Contract. In addition, each party has been represented by experienced and knowledgeable independent legal counsel of their own choosing or has knowingly declined to seek such counsel despite being encouraged and given the opportunity to do so. Each party further acknowledges that they have not been influenced to any extent whatsoever in executing this Contract by any other party hereto or by any person representing them, or both. Accordingly, any rule or law (including California Civil Code Section 1654) or legal decision that would require interpretation of any ambiguities in this Contract against the party that has drafted it is not applicable and is waived. The provisions of this Contract shall be interpreted in a reasonable manner to affect the purpose of the Parties and this Contract.

FF. **Authority**: The Parties to this Contract represent and warrant that this Contract has been duly authorized and executed and constitutes the legally binding obligation of their respective organization or entity, enforceable in accordance with its terms.

GG. **Employee Eligibility Verification:** The Vendor warrants that it fully complies with all Federal and State statutes and regulations regarding the employment of aliens and others and that all its employees performing work under this Contract meet the citizenship or alien status requirement set forth in Federal statutes and regulations. The Vendor shall obtain, from all employees, consultants and subcontractors performing work hereunder, all verification and other documentation of employment eligibility status required by Federal or State statutes and regulations including, but not limited to, the Immigration Reform and Control Act of 1986, 8 U.S.C. §1324 et seq., as they currently exist and as they may be hereafter amended. The Vendor shall retain all such documentation for all covered employee, consultants and subcontractors for the period prescribed by the law. The Vendor shall indemnify, defend and hold harmless, the County, its agents, officers, and employees from third party claims for employer sanctions and any other liability which may be assessed against the Vendor or the County or both in connection with any alleged violation of any Federal or State statutes or regulations pertaining to the eligibility for employment of any persons performing work under this Contract.

HH. **Indemnification Provisions**: Vendor agrees to indemnify, defend with counsel reasonably approved in writing by County and hold County, its elected and appointed officials, officers, employees, agents and those special districts and agencies which County's Board of Supervisors acts as the governing Board ("County Indemnitees") harmless from any third party claims, demands or liability of any kind or nature, including but not limited to personal injury, property damage, misappropriation of trade secrets, patent infringement, violation of copyright, disclosure or exposure of personally identifiable information or other private information, or any other third party claims arising from or related to the Services, products or other performance provided by Vendor and its agents or subcontractors, pursuant to this Contract. If judgment is entered against Vendor and County by a court of competent jurisdiction because of the concurrent active negligence of County or County Indemnitees, Vendor and County agree that liability will be apportioned as determined by the court. Neither party shall request a jury apportionment.

II. **Audits/Inspections**: Vendor agrees to permit the County's Auditor-Controller or the Auditor-Controller's authorized representative (including auditors from a private auditing firm hired by the County) access during normal working hours to all books, accounts, records, reports, files, financial records, supporting documentation, including payroll and accounts payable/receivable records, and other papers or property of Vendor for the purpose of auditing or inspecting the Vendor's compliance with any term, condition or provision of this Contract. The inspection and/or audit will be confined to those matters connected with the performance of the Contract including, but not limited to, the costs of administering the Contract. The County will provide reasonable notice of such an audit or inspection.

The County reserves the right to audit and verify the Vendor's records before final payment is made.

Vendor agrees to maintain such records for possible audit for a minimum of three years after final payment, unless a longer period of records retention is stipulated under this Contract or by law. Vendor agrees to allow interviews of any employees or others who might reasonably have information related to such records. Further, Vendor agrees to include a similar right to the County to audit records and interview staff of any subcontractor related to performance of this Contract.

Should the Vendor cease to exist as a legal entity, Vendor's records pertaining to this Contract shall be forwarded to the surviving entity in a merger or acquisition or, in the event of liquidation, to the County's Project Manager.

Additional Terms and Conditions:

1. **Definitions, Acronyms and Abbreviations:** Unless otherwise specified, the following capitalized terms shall be given the meanings below:

   a. **ATS** – Assessment Tax System; the legacy Property Tax System the Auditor-Controller, Treasurer-Tax Collector, and Clerk of the Board Departments are currently using for property tax administration.
   b. **ATS II** – Assessment Tax System II; the client-server application the Assessor Department is currently using to support property assessment and valuation.
   c. **CA-IDEAL/IDEAL** – Computer Associates, Inc.'s integrated mainframe application development environment for z/OS.
   d. **CICS** – Customer Information Control System is an online transaction management and connectivity system for z/OS.
   e. **Commercial Software** – Software developed or regularly used that: (i) has been sold, leased, or licensed to the general public; (ii) has been offered for sale, lease, or license to the general public; (iii) has not been offered, sold, leased, or licensed to the public but will be available for commercial sale, lease, or license in time to satisfy the delivery requirements of this Contract; or (iv) satisfies a criterion expressed in (i), (ii), or (iii) above and would require only minor modifications to meet the requirements of this Contract.
   f. **Custom Software** – Software that does not meet the definition of Commercial Software.
   g. **Deliverables** – Goods, Software, Information Technology, telecommunications technology, hardware, and other items (e.g. reports) to be delivered pursuant to this Contract, including any such items furnished incident to the provision of services described in the Scope of Work.
   h. **ERMI** – Electronic Report Management and Imaging; County's document management system that provides online access to financial reports and documents.
   i. **ETL** – Extraction, Transformation and Load, activities that support database migration/replication.
   j. **Goods** – All types of tangible personal property, including but not limited to materials, supplies, and equipment (including computer and telecommunications equipment).
   k. **Information Technology** – Includes, but is not limited to, all electronic technology systems and services, automated information handling, system design and analysis, conversion of data, computer programming, information storage and retrieval, telecommunications which include voice, video, and data communications, requisite system controls, simulation, electronic commerce, and all related interactions between people and machines.
   l. **Intellectual Property Rights** – Intellectual property rights as may exist anywhere in the world including without limitation rights in trade secrets, trademarks, copyrights, and patents.
   m. **PTA** – Property Tax Administration
   n. **PDL** – Program Design Language; method for designing and documenting methods and procedures.
   o. **RACF** – Resource Access Control Facility; security system that provides access control and auditing functionality for z/OS.
   p. **RDBMS** – Relational Database Management System

q. **Services** – The work to be performed by Vendor under this contract as stated in Attachment A.
r. **Software** – An all-inclusive term which refers to any computer programs, routines, or subroutines supplied by the Vendor.
s. **VLS** – Virtual Library System

2. **Scope of Work:** The Scope of Work for this Contract is attached hereto as Attachment A.

3. **Term of Contract:** This Contract shall commence on October 2, 2017, and continue until October 8, 2020, unless otherwise terminated by either Party pursuant to Paragraph K, 13 or 42.

4. **Compensation:** The Vendor agrees to accept the specified compensation as set forth in Attachment B, Cost/Compensation as full remuneration for performing all Services and furnishing all staffing and materials required, for any reasonably unforeseen difficulties which may arise or be encountered in the execution of the Services until acceptance, for risks connected with the Services, and for performance by the Vendor of all its duties and obligations hereunder.

5. **Limitation of Liability:** Vendor's liability for damages to the County for any cause whatsoever, and regardless of the form of action, whether in contract or in tort, shall be limited to the Purchase Price. For purposes of this sub-section, "Purchase Price" will mean the Total Not to Exceed Limit amount for the Contract that is set forth in Attachment B.

   The foregoing limitation of liability shall not apply (a) to any liability under Paragraph V entitled "Compliance with Laws" (b) to liability under Paragraph H "Patent/Copyright Materials/Proprietary Infringement" or to any other liability (including without limitation indemnification obligations) for infringement of third party intellectual property rights; (c) to claims arising under provisions herein calling for indemnification for third party claims against the County for death, bodily injury to persons or damage to real or tangible personal property caused by the Vendor's negligence or willful misconduct; or (d) to costs or attorney's fees that the County becomes entitled to recover as a prevailing party in any action.

   The County's liability for damages for any cause whatsoever, and regardless of the form of action, whether in contract or in tort, shall be limited to the Purchase Price, as that term is defined in paragraph above. Nothing herein shall be construed to waive or limit the County's sovereign immunity or any other immunity from suit provided by law.

   In no event will either the Vendor or the County be liable for consequential, incidental, indirect, special, or punitive damages, even if notification has been given as to the possibility of such damages, except (i) to the extent that the Vendor's liability for such damages is specifically set forth in the Statement of Work, or (ii) to the extent that the Vendor's liability for such damages arises out of sub- section (a), (b), or (d) above.

6. **Set-Off:** The County may set-off against any and all amounts otherwise payable to the Vendor pursuant to any of the provisions of this Contract: (a) any and all amounts claimed by the County in good faith to be owed by the Vendor to the County pursuant to any of the provisions of this Contract; and (b) any and all amounts claimed by the County in good faith to be owed by the Vendor pursuant to any other written agreement between the Parties. Within twenty (20) days after any such set-off by the County, the County shall provide the Vendor with a written accounting of such set-off and a written statement of the reasons therefore. If the amount set-off is insufficient to cover the excess costs, the Vendor is liable for and must promptly remit to

the County the balance upon written demand. This right to set-off is in addition to, and not a limitation of, any other remedies available to the County.

7. **Conflict of Interest – Vendor's Personnel:** The Vendor shall exercise reasonable care and diligence to prevent any actions or conditions that could result in a conflict with the best interests of the County. This obligation shall apply to the Vendor; the Vendor's employees, agents, and relatives; sub-tier contractors; and third parties associated with accomplishing work and Services hereunder. The Vendor's efforts shall include, but not be limited to establishing precautions to prevent its employees or agents from making, receiving, providing or offering gifts, entertainment, payments, loans or other considerations which could be deemed to appear to influence individuals to act contrary to the best interests of the County.

8. **Conflict of Interest – County Personnel:** The County of Orange Board of Supervisors policy prohibits its employees from engaging in activities involving a conflict of interest. The Vendor shall not, during the period of this Contract, employ any County employee for any purpose.

9. **Vendor's Project Manager and Key Personnel:**
   a. Vendor shall appoint a Project Manager to direct the Vendor's efforts in fulfilling Vendor's obligations under this Contract. This Project Manager shall be subject to approval by the County and shall not be changed without the written consent of the County's Project Manager, which consent shall not be unreasonably withheld. The Vendor's Project Manager and key personnel shall be assigned to this project for the duration of this Contract and shall diligently pursue all work and Services to meet the project time lines and Deliverables.
   b. It is agreed that the following Vendor employees and positions are necessary for the successful performance of this Contract:

Key Personnel	Position
Tom DeAngelis	Project Manager
Russ Gibfried	Lead Architect
Ritesh Kolhapure	Testing Lead

   c. In the event one (1) or more of the above-named personnel are no longer available for the performance of this Contract, Vendor agrees to replace such personnel, after consultation and approval with the County, with personnel of a comparable level of experience, qualifications and ability. Such approval by the County shall not be unreasonably withheld.
   d. Vendor shall not substitute other persons for the key personnel or otherwise materially reduce the time commitment of any key personnel to the performance of this Contract without the prior written approval of the County, which approval shall not be unreasonably withheld.

10. **Conditions Affecting Work**: The Vendor shall be responsible for taking all steps reasonably necessary to ascertain the nature and location of the work to be performed under this Contract and to know the general conditions which can affect the work or the cost thereof. Any failure by the Vendor to do so will not relieve Vendor from responsibility for successfully performing the work without additional cost to the County. The County assumes no responsibility for any understanding or representations concerning the nature, location(s) or general conditions made by any of its officers or agents prior to the execution of this Contract, unless such understanding or representations by the County are expressly stated in the Contract.

11. **County Project Manager:** The County shall appoint a Project Manager to act as liaison between the County and the Vendor during the term of this Contract. The County's Project Manager shall coordinate the activities of the County staff assigned to work with the Vendor.

    If the County's Project Manager requests in writing the removal and replacement of the Vendor's Project Manager and key personnel, the Parties shall attempt to resolve the County's Project Manager's concerns on a mutually agreeable basis. If the Parties have not been able to resolve the County's Project Manager concerns within five (5) business days, the Vendor shall propose to the County's Project Manager the assignment of another. The Vendor shall accomplish the removal within 14 calendar days after written notice by the County's Project Manager. The County's Project Manager shall review and approve the appointment of the replacement for the Vendor's Project Manager and key personnel. Said approval shall not be unreasonably withheld.

12. **County Of Orange Child Support Enforcement:** In order to comply with the child support enforcement requirements of the County of Orange, within ten (10) days of notification of selection of award of Contract but prior to official award of Contract, the selected Vendor agrees to furnish to the Contract administrator, the Purchasing Agent, or the agency/department deputy purchasing agent:

    a. In the case of an individual contractor, his/her name, date of birth, Social Security number, and residence address;
    b. In the case of a contractor doing business in a form other than as an individual, the name, date of birth, Social Security number, and residence address of each individual who owns an interest of ten (10) percent or more in the contracting entity;
    c. A certification that the Vendor has fully complied with all applicable federal and state reporting requirements regarding its employees; and
    d. A certification that the Vendor has fully complied with all lawfully served Wage and Earnings Assignment Orders and Notices of Assignment and will continue to so comply.

    Failure of the Vendor to timely submit the data and/or certifications required may result in the Contract being awarded to another contractor. In the event a contract has been issued, failure of the Vendor to comply with all federal, state, and local reporting requirements for child support enforcement or to comply with all lawfully served Wage and Earnings Assignment Orders and Notices of Assignment shall constitute a material breach of the Contract. Failure to cure such breach within ten (10) calendar days of notice from the County shall constitute grounds for termination of the Contract.

13. **Termination by the County for Non-Appropriation:** This Contract is subject to and contingent upon applicable budgetary appropriations being made by the County of Orange Board of Supervisors for each County fiscal year (July 1 through June 30) during the term of this Contract. If such appropriations are not made, this Contract will be terminated after 30 days' written notice without liability to the County. Vendor acknowledges that funding or portions of funding for this Contract may also be contingent upon the receipt of funds from, and/or appropriation of funds by, the State of California to County. If such funding and/or appropriations are not forthcoming, or are otherwise limited, County may, after 30 days' written notice, terminate or modify this Contract without liability.

14. **County Data:**
    a. Subject to applicable law, the County shall permit Vendor and its subcontractors to have access to, and make appropriate use of, County Data solely to the extent Vendor requires such access and use in order to properly and appropriately perform the Services as contemplated by this Contract. Vendor may only access and use County Data in

connection with performance of its duties under this Contract or as specifically directed by the County in writing and may not otherwise use, disclose, modify, merge with other data, commercially exploit, or make any other use of County Data or take, or refrain from taking, any other action that might, in any manner or form, adversely affect or jeopardize the integrity, security, or confidentiality of County Data, except as expressly permitted herein or as expressly directed by the County in writing. Vendor acknowledges and agrees that, as between the Parties, the County owns all right, title, and interest in, and all Intellectual Property Rights in and to, all County Data.

b. Ownership by the County: All County Data, reports and other documents or materials created by the County through its use of the Vendor or by Vendor under this Contract, including all Intellectual Property Rights in or pertaining to the same, shall be owned solely and exclusively by the County. The Parties further agree that all materials, documents, data or information obtained from the County or any County medium furnished to Vendor in the performance of this Contract shall at all times remain the property of the County. Such data or information may not be used or copied for direct or indirect use by Vendor after completion or termination of this Contract without the express written consent of the County. All materials, documents, data or information, including copies, must be returned to the County upon the termination of this Contract.

15. **Pre-Existing Materials:** Each Party shall retain ownership to all its pre-existing or independently developed intellectual property that existed before the Effective Date of this Contract. Without limiting the foregoing, the ownership of all Intellectual Property Rights in County supplied materials remains at all times with the County and its third party licensees. Except for the limited license to use software or materials provided by the County as may be necessary for Vendor to perform Services under this Contract, Vendor is granted no right, title or interest in any County Intellectual Property Rights.

16. **Disputes – Contract:** The Parties shall deal in good faith and attempt to resolve potential disputes informally. If the dispute concerning a question of fact arising under the terms of this Contract is not disposed of in a reasonable period of time by the Vendor's Project Manager and the County's Project Manager, such matter shall be brought to the attention of the Auditor-Controller Deputy Purchasing Agent (DPA) by way of the following process:

    a. The Vendor shall submit to the agency/department assigned DPA a written demand for a final decision regarding the disposition of any dispute between the Parties arising under, related to, or involving this Contract, unless the County, on its own initiative, has already rendered such a final decision.

    b. The Vendor's written demand shall be fully supported by factual information, and, if such demand involves a cost adjustment to the Contract, the Vendor shall include with the demand a written statement signed by a senior executive indicating that the demand is made in good faith, that the supporting data are accurate and complete, and that the amount requested accurately reflects the contract adjustment for which the Vendor believes the County is liable.

    c. Pending the final resolution of any dispute arising under, related to, or involving this Contract by the DPA, the Vendor agrees to diligently proceed with the provision of Services under this Contract. The Vendor's failure to diligently proceed shall be considered a material breach of this Contract.

d. Any final decision of the County shall be expressly identified as such, shall be in writing, and shall be signed by the County Purchasing Agent or his designee. If the County fails to render a decision within ninety (90) days after receipt of the Vendor's demand, the Vendor's demand shall be deemed denied. Nothing in this section shall be construed as affecting the County's right to terminate the Contract for Cause or Terminate for Convenience as stated in Paragraph K herein.

17. **Errors and Omissions:** All reports, files and other documents prepared and submitted by Vendor shall be complete and shall be carefully checked by the professional(s) identified by Vendor as the Vendor's Project Manager and key personnel attached hereto, prior to submission to the County. Vendor agrees that County review is discretionary and Vendor shall not assume that the County will discover errors and/or omissions. If the County discovers any errors or omissions prior to approving Vendor's reports, files and other written documents, the reports, files or documents will be returned to Vendor for correction. Should the County or others discover errors or omissions in the reports, files or other written documents submitted by Vendor after County approval thereof, the reports, files or documents will be returned to Vendor for correction at no additional cost and the Vendor must make commercially reasonable efforts to avoid causing any resulting delays in the project, schedule, or Services to be performed by Vendor.

18. **Gratuities:** The Vendor represents and warrants that no gratuities, in the form of entertainment, gifts or otherwise, were offered or given by the Vendor or any agent or representative of the Vendor to any officer or employee of the County with a view toward securing the Contract or securing favorable treatment with respect to any determinations concerning the performance of the Contract. The rights and remedies of the County provided in the clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under the Contract.

19. **News/Information Release:** The Vendor agrees that it will not issue any news releases in connection with either the award of this Contract or any subsequent amendment of or effort under this Contract without first obtaining review and written approval of said news releases from the County through the County's Project Manager.

20. **Promotional/Advertisement:** The use and/or reproduction of the County's name and/or logo for any purpose, including commercial advertisement, promotional purposes, announcements, or press releases, without the County's prior written consent is expressly prohibited.

21. **Publication:** No copies of sketches, schedules, written documents, computer based data, photographs, maps or graphs, including graphic art work, resulting from performance or prepared in connection with this Contract, are to be released by the Vendor and/or anyone acting under the supervision of the Vendor to any person, partnership, company, corporation, or agency, without prior written approval by the County, except as necessary for the performance of the Services under this Contract. All press releases, including graphic display information to be published in newspapers, magazines, etc., are to be administered only by the County unless otherwise agreed to by both Parties.

22. **Notices:** Any and all notices, requests demands and other communications contemplated, called for, permitted, or required to be given hereunder shall be in writing, except through the course of the Parties' project managers' routine exchange of information and cooperation during the terms of the work and Services. Any written communications shall be deemed to have been duly given upon actual in-person delivery, if delivery is by direct hand, or upon delivery on the actual day of receipt or no greater than four calendar days after being mailed by US certified, registered mail or overnight delivery, return receipt requested, postage prepaid, whichever

occurs first. The date of mailing shall count as the first day. All communications shall be addressed to the appropriate party at the address stated herein or such other address as the Parties hereto may designate by written notice from time to time in the manner aforesaid.

For Vendor:
Enterprise Services LLC
Attention: Tom DeAngelis
16550 W Bernardo Dr.
Bldg. 2
San Diego, CA 92127-1870

With a copy to:
Enterprise Services LLC
Attn: General Counsel
1775 Tysons Blvd.
Tysons, VA 22102

For County:
County of Orange
Attn: Albert Zavala
Auditor-Controller's Office
12 Civic Center Plaza, Room 200
Santa Ana, CA 92701

23. **Ownership of Documents:** The County shall permanently own all directly connected and derivative materials produced under this Contract by the Vendor. All documents, reports and other incidental or derivative work or materials furnished hereunder shall become and remain the sole property of the County and may be used by the County as it may require without additional cost to the County. None of the documents, reports and other incidental or derivative work or furnished materials shall be used by the Vendor without the express written consent of the County.

24. **Vendor's Records:** The Vendor shall keep true and accurate accounts, records, books and data which shall correctly reflect the business transacted by the Vendor in accordance with generally accepted accounting principles. These records shall be stored in Orange County for a period of three years after final payment is received from the County. Storage of records in another county will require written approval from the County of Orange assigned buyer.

25. **Precedence:** The Contract documents consist of this Contract and its attachments. In the event of a conflict between or among the Contract documents, the order of precedence shall be the provisions of the main body of this Contract, i.e., those provisions set forth in the articles of this Contract, and then the attachments.

26. **Location of Performance:** Except where the Vendor obtains the County's prior written approval, the Vendor shall perform all of the Services only from or at any location at which the County operates a data center or performs any IT-related services or functions during the term of this Contract within the geographic boundaries of the County. Any County approval for the performance of Services outside of the geographic boundaries of the County shall be limited to the specific instance and scope of such written approval.

27. **Trans Border Data Flows:** County of Orange data will be stored in Orange County, except where the Vendor obtains the County's prior written approval before moving the data to other locations within the continental United States.

28. **Reports and Meetings:** The Vendor shall develop reports and any other relevant documents necessary to complete the Services and requirements as set forth in this Contract. The County's Project Manager and the Vendor's Project Manager will meet on reasonable notice to discuss the Vendor's performance and progress under this Contract. If requested, the Vendor's Project Manager and other project personnel shall attend all meetings. The Vendor shall provide such information that is requested by the County for the purpose of monitoring progress under this Contract.

29. **Acceptance of Services:** Unless otherwise agreed to in writing by County, acceptance of the Services or any portion thereof shall not be deemed complete unless in writing and until all the Services have actually been received, inspected, and tested to the reasonable satisfaction of County, including but not limited to the testing set forth in Paragraph 30, Acceptance Testing**.**

30. **Acceptance Testing:** All Deliverables shall be provided to the County by Vendor in conformity with all requirements, specifications, Acceptance Criteria, and time periods set forth or referenced in this Contract. Vendor shall at all times utilize complete and thorough Acceptance Testing Procedures, and appropriate Acceptance Criteria, all of which shall be subject to review and approval by the County's Project Manager, and no such activities shall be deemed completed until all Acceptance Criteria, whether set forth in this Contract or set forth in any schedule hereto or otherwise mutually agreed upon by the Parties in writing, have been successfully met.

    a. Acceptance Testing: Vendor shall notify the County of completion of each Deliverable by providing a "Deliverable Acceptance Memorandum," identifying the Deliverable Number and title. Following Vendor's notification to County that Vendor has completed a Deliverable identified in this Contract, at a mutually agreed scheduled time thereafter, County shall begin testing or reviewing the Deliverable to determine whether it conforms to the applicable specifications and/or standards (collectively, the "Acceptance Criteria"). After County has completed such testing or review upon expiration of the agreed-upon testing or review period (the "Acceptance Testing Period"), County shall sign the Deliverable Acceptance Memorandum, signifying that the Deliverable meets the Acceptance Criteria and that acceptance of such Deliverable has occurred ("Acceptance"); or notify Vendor in writing that the Acceptance Criteria have not been met and the reasons therefor. If the Deliverable is identified as being part of a larger, integrated system being developed thereunder, then any Acceptance under the terms of this subsection shall be understood as being conditional acceptance ("Conditional Acceptance"), and such Deliverable shall be subject to Final Acceptance, as described below. Any Deliverables neither accepted nor rejected within thirty (30) calendar days from Vendor's notification of delivery are deemed accepted.

    b. Cure: If County determines that a Deliverable does not conform to the applicable Acceptance Criteria, and that it is in the County's interest to allow Vendor time to correct the problem, County shall deliver to Vendor a written exception report describing the nonconformity (the "Exception Report"). Within ten (10) calendar days following receipt of the Exception Report, Vendor shall: (a) perform a Root Cause Analysis to identify the cause of the nonconformity; (b) provide County with a written report detailing the cause of, and procedure for correcting, such nonconformity; (c) provide County with satisfactory evidence that such nonconformity will not recur; and (d) use best efforts to correct critical errors (as determined by County) and use commercially reasonable efforts to correct all other errors reasonably requested by County and accepted by Vendor; provided, however, that if the nonconformity of critical errors is incapable of cure within such ten (10) calendar day period then, within such ten (10) calendar day period, Vendor shall present to County a mutually agreeable plan to cure such nonconformity within a reasonable amount of time.

Upon Vendor's notice to County that Vendor has cured any such nonconformity, County shall re-test the defective Deliverable for an additional testing period of up to thirty (30) calendar days or such other period as the Parties may mutually agree upon in writing, at the end of which period the process described in subsection (b) above shall be repeated. In the event County rejects Deliverable(s) a second time and Vendor disagrees with such rejection, then the Parties shall escalate the issue(s) to senior management of both Parties for mutual resolution.

c. Final Acceptance: Upon achievement by Vendor of the final Deliverable, "Go-Live", described in Attachment B (Cost/Compensation), Vendor will submit a Deliverable Acceptance Memorandum to the County of such Go-Live Deliverable. Upon Acceptance by the County of the Go-Live Deliverable, the County Project Manager shall sign the Deliverable Acceptance Memorandum for the Go-Live Deliverable and final acceptance of the system and all Deliverables shall constitute "Final Acceptance." Neither Conditional Acceptance, Acceptance nor Final Acceptance by County shall constitute a waiver by County of any right to assert claims based upon defects not discernible through conduct of the applicable test procedures and subsequently discovered in a Deliverable or the system within three (3) months of the County's Final Acceptance thereof. Nothing else, including County's use of the system, or any component thereof, shall constitute Final Acceptance, affect any rights and remedies that may be available to County and/or constitute or result in "acceptance" under general contract law, any state uniform commercial code or any other law.

31. **Rights in Work Product:**
    a. All inventions, discoveries, intellectual property, technical communications and records originated or prepared by the Vendor pursuant to this Contract including papers, reports, charts, computer programs, and other Documentation or improvements thereto, and including the Vendor's administrative communications and records relating to this Contract (collectively, the "Work Product"), shall be the Vendor's exclusive property. The provisions of this sub-section a) may be revised in the Scope of Work.
    b. Software and other materials developed or otherwise obtained by or for the Vendor or its affiliates independently of this Contract or applicable purchase order ("Pre-Existing Materials") do not constitute Work Product. If the Vendor creates derivative works of Pre-Existing Materials, the elements of such derivative works created pursuant to this Contract constitute Work Product, but other elements do not. Nothing in this Paragraph 30 will be construed to interfere with the Vendor's or its affiliates' ownership of Pre-Existing Materials.
    c. The County will have Government Purpose Rights to the Work Product as Deliverables under this Contract. "Government Purpose Rights" are the unlimited, irrevocable, worldwide, perpetual, royalty-free, non-exclusive rights and licenses to use, modify, reproduce, perform, release, display, create derivative works from, and disclose the Work Product. "Government Purpose Rights" also include the right to release or disclose the Work Product outside the County for any County government purpose and to authorize recipients to use, modify, reproduce, perform, release, display, create derivative works from, and disclose the Work Product for any County government purpose. Such recipients of the Work Product may include, without limitation, County contractors. "Government Purpose Rights" do not include any rights to use, modify, reproduce, perform, release, display, create derivative works from, or disclose the Work Product for any commercial purpose.
    d. The ideas, concepts, know-how, or techniques relating to data processing, developed during the course of this Contract by the Vendor or jointly by the Vendor and the County may be used by either party in connection with the Services without obligation of notice or accounting.

e. This Contract shall not preclude the Vendor from developing materials outside this Contract that are competitive, irrespective of their similarity to materials which might be delivered to the County pursuant to this Contract.

32. **Software License:** Vendor hereby grants to the County and the County accepts from the Vendor, subject to the terms and conditions of this Contract, a perpetual, irrevocable, royalty-free, non-exclusive, license to use the Software Products in this Contract as necessary for County's receipt and use of the Services (hereinafter referred to as "Software Products").

a. The County may use the Software Products in the conduct of its own business, other California counties, and any division thereof.
b. The license granted above authorizes the County to use the Software Products in machine-readable form on the County's computer system located at the site(s) specified in the Scope of Work. Said computer system and its associated units (collectively referred to as CPU) are as designated in the Scope of Work. If the designated CPU is inoperative due to malfunction, the license herein granted shall be temporarily extended to authorize the County to use the Software Products, in machine-readable form, on any other County CPU until the designated CPU is returned to operation.
c. By written notice, the County may redesignate the CPU in which the Software Products are to be used provided that the redesignated CPU is substantially similar in size and scale at no additional cost. The redesignation shall not be limited to the original site and will be effective upon the date specified in the notice of redesignation.
d. Acceptance of Commercial Software (including third party Software) and Custom Software will be governed by the terms and conditions of this Contract and no separate agreement.

33. **Security Deliverables and Documents:** As this Contract may involve Vendor having direct access to County proprietary information, IT staff, and systems; the County has outlined various Deliverables and documents in relation to Vendor's data security that shall be provided by the Vendor to the County within thirty (30) calendar days prior to the Software Products' implementation. The County shall review these Deliverables and documents prior to final approval and actual access to the resources or transfer of any information related to this Contract.

Deliverables and documents to be provided by Vendor as follows:

a. <u>Staff Related Items</u>

- Pre-Employment Screening Policy/Procedure
- Background Checking Procedure
- Staff Roster and Duties

b. <u>Security Related Items</u>

- IT Security Staff Usage Policy
- IT Security Policies and Procedures
- IT Operations Security Policy
- Document & Intellectual Property Management Polices

c. <u>IT Systems Related Items</u>

- Policies Related to Data, Tapes, and Resources that will be removed from County Facility
- Policies Related to Access to County Data Internally or Via Remote Access

34. **Disputed Amounts:** The County may withhold payment of fees or any other charges otherwise due to Vendor under this Contract to the extent that the County disputes such charges in good faith. In such case, the County shall provide to Vendor a reasonably detailed written explanation of the basis for the dispute and shall continue to make payments of undisputed amounts as otherwise provided in this Contract. If any disputed amounts are later determined to have been improperly withheld (i.e., properly charged by Vendor), then the County shall be obligated to pay the withheld amount in accordance with this Contract, until paid in full. If any paid amounts are later disputed by the County and determined to have been improperly paid (i.e., improperly charged by Vendor), then Vendor shall promptly pay the County, in cash, the improperly paid amount. The failure of the County to withhold payment shall not waive any other rights the County may have with respect to disputed amounts or overpayments. Except as otherwise provided herein, any dispute relating to amounts owed by a Party hereunder, shall be considered a disagreement.

35. **Information Access:** Vendor shall, at all times, use appropriate safeguard and security measures so as to ensure the confidentiality and security of all County Data. At all times during the term of this Contract, Vendor shall, and shall cause the Vendor personnel and subcontractors, and the employees or agents of any of the foregoing, to, fully comply with all of the County's policies and procedures regarding data access and security, including those prohibiting or restricting remote access to the Software Products' Systems and County Data, as set forth in the Security Policies. Vendor shall, and shall cause the Vendor personnel and subcontractors to, fully comply with and abide by all such Security Policies at all times during the term of this Contract. The County shall authorize, and Vendor shall issue, any necessary information-access mechanisms, including access IDs and passwords, and in no event shall Vendor permit any such mechanisms to be shared or used by other than the individual Vendor person to whom issued. Vendor shall provide each Vendor Person with only such level of access as is required for such individual to perform his or her assigned tasks and functions. From time to time throughout the term of this Contract, upon request from the County but at least once every three months, Vendor shall provide the County with an accurate, up-to-date list of those Vendor personnel having access to the Software Products' systems, or County Data, and the respective security level or clearance assigned to each such Vendor person. All Software Products' Systems, and all data contained therein, including County Data, used or accessed by Vendor personnel: (a) shall be used and accessed by such Vendor personnel solely and exclusively in the performance of their assigned duties in connection with, and in furtherance of, the performance of Vendor's obligations hereunder; and (b) shall not be used or accessed except as expressly permitted hereunder, or commercially exploited in any manner whatsoever, by Vendor, the Vendor personnel or any subcontractor, at any time. Vendor acknowledges and agrees that any failure to comply with the provisions of this Paragraph shall constitute a breach of this Contract and entitle the County to deny or restrict the rights of such non-complying Vendor personnel to access and use the Software Products' systems and County Data, as the County in its sole discretion shall deem appropriate.

36. **Enhanced Security Measures:** The County may, in its discretion, designate certain areas, facilities, or Software Products' systems as ones that require a higher level of security and access control. The County shall notify Vendor in writing reasonably in advance of any such designation becoming effective. Any such notice shall set forth in reasonable detail the enhanced security or access-control procedures, measures, or requirements that Vendor shall be required to implement and enforce, as well as the date on which such procedures and measures shall take effect. Vendor shall, and shall cause the Vendor personnel and subcontractors to, fully comply with and abide by all such enhanced security and access measures and procedures as of such date.

37. **General Security Standards:** At all times during the term of this Contract, Vendor shall maintain a level of security with regard to the Software Products' system and County Data for which Vendor has agreed in this Contract to provide or manage physical security, that in all events is at least as secure as each of the following levels of security: (a) that are maintained by Vendor with regard to its own systems, data, and facilities of a similar nature and import; and (b) that are common and prevalent in the industry and in accordance with industry best practices.

38. **Breach of Security:** Any material breach or violation by Vendor or its subcontractors, or the employees or agents of any of the foregoing, or of the Security Policies, shall be deemed a material breach of a material obligation of Vendor under this Contract, and any chronic or critical breach by Vendor or its subcontractors, or the employees or agents of any of the foregoing, or of the County's security policies shall be deemed an incurable and material breach of a material obligation of Vendor under this Contract.

39. **Security Audits**: Each year of the contract, County may perform or have performed security reviews and testing based on a Software Products' infrastructure review plan. Such testing shall include all pertinent County security standards as well as any customer agency requirements, such as federal tax requirements. Vendor shall inform County of any security audit or assessment performed that includes County hosted content, within thirty (30) calendar days of such audit or assessment.

40. **Business Documents**: At the request of the County, the Vendor must provide copies of its latest articles of incorporation, by-laws, or partnership agreement, as applicable.

41. **Anti-Malware Protections:** The Vendor's data center shall have strong access controls and secure practices, such as specialized authorization system(s), in effect at all times to prevent unauthorized physical and virtual access to hosted County systems. Vendor servers and network equipment hosted at the data center shall be properly secured from the threat of cyber hackers and viruses through appropriate intrusion detection tools, proactive 24x7x365 monitoring and prompt installation of new Software updates, hot fixes and security patches.

    Vendor shall use industry best practices regularly to identify, screen, and prevent any Disabling Device in resources utilized by Vendor in connection with the provision or receipt of the Services and shall not itself knowingly or intentionally install (and shall prevent its Subcontractors from knowingly and intentionally installing) any Disabling Device in resources utilized by Vendor, the County, or any Subcontractor, in connection with the provision or receipt of the Services. A "Disabling Device" is a virus, timer, clock, counter, time lock, time bomb, or other limiting design, instruction, or routine that would purposely and inappropriately erase data or programming or cause any resource to become inoperable or otherwise incapable of being used in the full manner for which such resource was intended to be used, and any device that may be used as a host to access County Data or launch attacks on the Software Products.

    Vendor shall assist the County in reducing and mitigating the effects of any Disabling Device discovered in any resource related to the provision or receipt of the Services, especially if such Disabling Device is causing a loss of operating efficiency or data. Timers, clocks, counters, and time locks included as part of any Commercial Software, used by the County, by the manufacturer of that Software shall not be considered Disabling Devices for purposes of this Paragraph.

42. **Termination – Orderly:** After receipt of a termination notice from the County of Orange, the Vendor shall submit to the County a claim for unpaid charges the County has incurred under this Contract, if applicable. Such claim shall be submitted promptly, but in no event later than sixty (60) days from the effective date of the termination, unless one or more extensions in writing are granted by the County's Project Manager upon written request of the Vendor. Upon termination County agrees to pay the Vendor for all Services performed prior to termination, including any pro-rated work completed towards a Deliverable or milestone and for unfinished Deliverables, which meet the requirements of the Contract and that have not been excused, provided, however, that such compensation plus previously paid compensation shall not exceed the total compensation set forth in the Contract. Upon termination or other expiration of this Contract, each Party shall promptly return to the other Party all papers, materials, and other properties of the other held by each for purposes of execution of the Contract. In addition, each Party will assist the other Party in orderly termination of this Contract and the transfer of all aspects, tangible and intangible, as may be necessary for the orderly, non-disruptive business continuation of each Party.

43. **Stop Work:**
    a. The County may, at any time, by written Stop Work Order to the Vendor, require the Vendor to stop all, or any part, of the work called for by this Contract for a period up to 45 days after the Stop Work Order is delivered to the Vendor, and for any further period to which the Parties may agree. The Stop Work Order shall be specifically identified as such and shall indicate it is issued under this Paragraph. Upon receipt of the Stop Work Order, the Vendor shall immediately comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the Stop Work Order during the period of work stoppage. Within a period of 45 days after a Stop Work Order is delivered to the Vendor, or within any extension of that period to which the Parties shall have agreed, the County shall either:

        (i) Cancel the Stop Work Order; or

        (ii) Terminate this Contract in whole or in part in writing as soon as feasible. County will provide thirty (30) days' advance notice of the termination of the Contract to Vendor if a stop work has been issued by County.

    b. If a Stop Work Order issued under this Paragraph is canceled or the period of the Stop Work Order or any extension thereof expires, the Vendor shall resume work. The County shall make an equitable adjustment in the delivery schedule, the Contract price, or both, and the Contract shall be modified, in writing, accordingly, if:

        (i) The Stop Work Order results in an increase in the time required for, or in the Vendor's cost properly allocable to the performance of any part of this Contract; and

        (ii) The Vendor asserts its right to an equitable adjustment within 30 days after the end of the period of work stoppage; provided that if the County decides the facts justify the action, the County may receive and act upon a proposal submitted at any time before final payment under this Contract.

    c. If a Stop Work Order is not canceled and the work covered by the Stop Work Order is terminated, Vendor will be paid for accepted Deliverables, and for all work in progress

properly performed in accordance with this Contract through the effective date of termination based on a reasonable percentage of completion.

d. The County shall not be liable to the Vendor for loss of profits because of a Stop Work Order issued under this Paragraph.

44. **Employee Qualification Verification:** Subject to and in accordance with applicable law, the Vendor, prior to assigning an individual as the Vendor personnel and at the Vendor's sole expense, shall have appropriately verified the qualifications of such individual, including verifying employment history, conducting reference checks, verifying non-employer technical certifications or education completed or degrees awarded. Within thirty (30) days of the Effective Date and every twelve (12) months on the anniversary of the Effective Date thereafter, the Vendor will certify in writing to the County that each and every employee of the Vendor and any subcontractor working on the County's account or having access to County Data meets all employee qualifications required in this Contract and under law. Failure to provide such certification constitutes a material breach of this Contract.

45. **Data Location**: Except where Vendor obtains the County's prior written approval, the physical location of Vendor's data center where County data is stored shall be within the Continental United States.

46. **General County Responsibilities**
The County's responsibilities for this Contract include the following:

- The County will plan and complete final UAT testing within 10 weeks.
- The County will provide a work space on County premises for a maximum of 12 vendor staff.
- The County will provide the required infrastructure/hosting required for the project as mutually agreed upon.
- The County will make available current valid Microsoft product licenses for SQL Server database as Vendor plans to use this software for data management purpose for the target application.
- The County will be responsible for data cleansing and provide current Legacy Data that is accurate and complete.
- The County will not require a code freeze in order for an organization outside Audit and control to certify and accredit the application before live data is allowed in production.
- The County will provide Vendor with access to the legacy system and will permit Vendor to remotely access the non-production legacy environments from other locations in the United States such as Plano, Texas, Pontiac, Michigan, and El Paso, Texas for testing.
- The County will make available, when scheduled, the necessary knowledgeable and capable Government/sub-contractor resources to participate in the project activities such as but not limited to: requirements clarification/definition sessions, storyboarding, project reviews, deliverable reviews, user acceptance reviews, and/or user acceptance testing to achieve the agreed-upon project schedule.
- The County will provide Vendor with an inventory of all data to be migrated, its location and access at contract execution.
- The County will ensure that the format of the legacy data will not change once data migration work begins as per project schedule.

- The County will provide existing test scripts, at the beginning of each iteration, that are 100% valid for conversion to automated test scripts. These test scripts will cover legacy functionality that can be used for testing the converted system. These test scripts will be sufficient to cover all functionality that will be converted and no new scripts to cover existing legacy functionality will be required.
- The County will provide suitable test data for the new system at the time of the first testing iteration (Month 4) without Personally Identifiable Information (PII).
- The County Legacy System will require modernization/conversion of no more than 940,000 lines of code.
- If the County requires the Vendor to fix any existing defects in the converted system that are the result of defects in the legacy system, the County will issue a change order as described in the Scope of Work.
- The County will work to slow or freeze any code changes to the Legacy system after User Acceptance Testing to allow for a deployment to production. Data element changes will be kept to a minimum.
- The County has confirmed that Hyland is the software that generates and stores the actual letters and correspondence.
- The County will work with the Vendor during the project kickoff to mutually agree upon the following:
    - Governance and Escalation path for defects and project issues and process
    - County personnel participation/engagement definition – roles, responsibilities, timings, expectations

CONTRACT SIGNATURE PAGE

The Parties hereto have executed this Contract on the dates shown opposite their respective signatures below

VENDOR*: ENTERPRISE SERVICES LLC

Signature _____ Date 8-8-17

Steve Tolbert
Print Name

Vice President, State and Local Government
Title

Signature _____ Date 8/5/2017

Vineet Kumar
Print Name

CFO, State and Local Government
Title

* **If the contracting party is a corporation**, two **(2) signatures are required as further set forth in this paragraph.** The first signature shall be: a) the Chairman of the Board; b) the President; or c) any Vice President. The second signature shall be: a) the Secretary; b) any Assistant Secretary; c) the Chief Financial Officer; or d) any Assistant Treasurer.

COUNTY OF ORANGE
A political subdivision of the State of California

Signature _____ Date _____

Print Name _____

Title _____

Approved by Board of Supervisors on: _____

Approved as to form
Office of the County Counsel
Orange County, California

By _____ Date August 14, 2017
Deputy County Counsel
MARK SERVINO

ATTACHMENT A
SCOPE OF WORK

Executive Summary

The current Assessment Tax System (ATS) is the County's major source of revenue via tax proceeds. Last year, County property owners paid approximately $5.8 billion in taxes, which are used to fund a variety of services and products to its citizens. A number of these citizens elected the current Auditor-Controller (AC) and expect the property tax system to be accurate, transparent, and auditable.

Vendor clearly understands that the County wants to improve and modernize the technical components of the current ATS system while maintaining functional aspects such as the user interface, reports, and business rules. By maintaining the same functionality, the County minimizes user training and the impact to operations. The County's objective to migrate to a new modern platform will attract skilled talent from a larger base while taking advantage of new technologies such as analytics and mobility. To meet these objectives and extend the useful life of the ATS asset, the County has selected Vendor to bring its experience, resources, tools and methodology to bear on the modernization of its system.

Understanding of County Needs

The County clearly articulated its business problem in its solicitation for the modernization of its Legacy Property Tax System: ATS. It is mission critical to the County to provide automated support for approximately 90% of the County's current property tax-related business processes. ATS is a large and complex system with 2,670 programs and over 900,000 lines of CA-IDEAL source code and 600+ DB2/DATACOM tables, delivering more than 930,000 parcels and 1.1 million transactions. Below are some of the key County business and technical requirements for the modernized system:

- A single integrated solution to support the Auditor-Controller Office, the Treasurer-Tax Collector, and the Clerk of the Board.
- Successfully convert and migrate the ATS application, data, and utilities from the mainframe to a new open system platform.
- Established business processes are not to be altered to minimize change impact on the County.
- The new modernized system must perform (batch and online) in a similar way to the legacy ATS system.
- User and batch interfaces, reporting, and auditing features need to function as they do today.
- Validate the data and improve it where necessary.
- A flexible data architecture including secure and simple data access to support the current business processes as well as future needs such as predictive analytics via contemporary business intelligence solutions post-implementation.
- An architecture and related technical components that will make future enhancements easy to complete.
- Comprehensive application documentation.
- Efficient knowledge transfer to post-implementation County resources.
- Compliance with the County security policies and protect the data.

The County is facing significant current and potential challenges in maintaining the ATS system, making a successful modernization critical to operations. Some of these challenges and risks include the following:

- CA-IDEAL programming skills are becoming scarce in the marketplace and the current team of experts are coming closer to retirement every day.
- Legacy applications carry certain complexity built over time that require expertise to maintain and enhance.
- Tax law and other policy changes will continue into the future and have strict deadlines for implementation.
- Accurate data within a more flexible database allows the County to take advantage of contemporary data-driven analytics methods, techniques, and tools post implementation.

- Accuracy, transparency, and auditability is paramount—not just for the County but for the citizens who have elected and trust the Auditor-Controller's Office to do a competent job with property tax calculation, assessment, and collection.

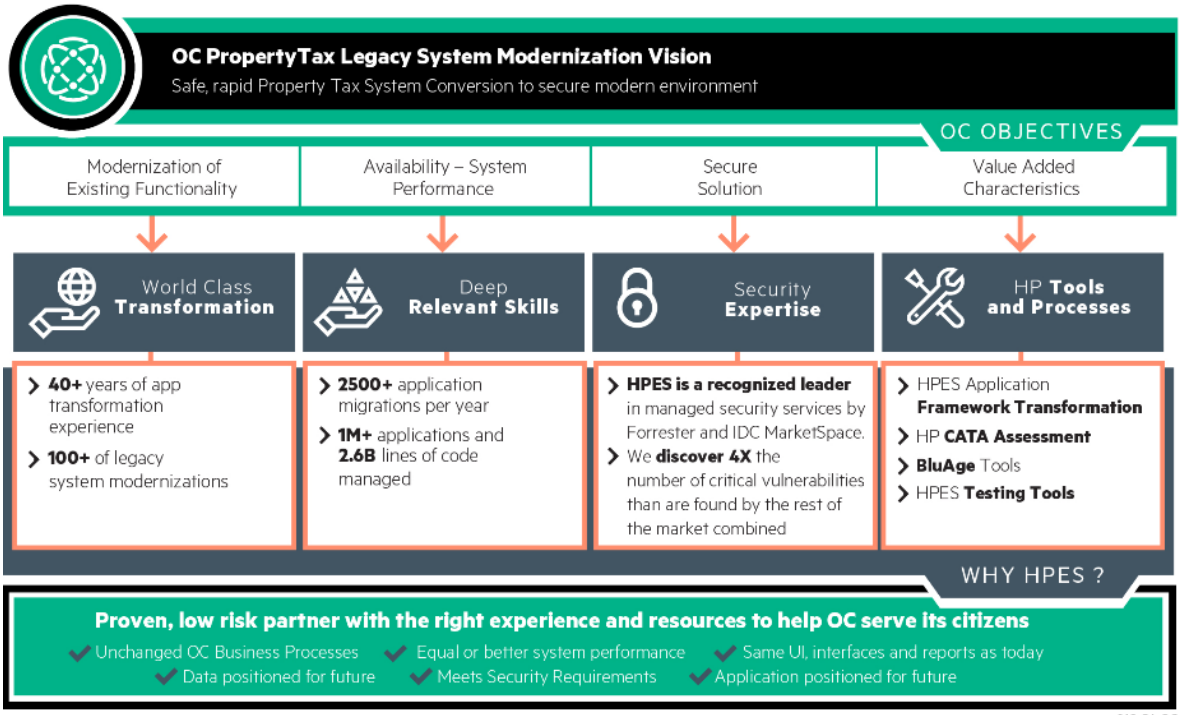
The County requires a partner that is competent, collaborative, and delivers in an efficient and effective manner to address these challenges and realize these benefits.

Approach

Vendor shall utilize its application Transformation Services' Re-Architect strategy to re-platform the ATS system. Vendor will address the current business risks associated with ATS by moving to a more technically modernized application and infrastructure. The County will enjoy a contemporary architecture, programming language, and database for ongoing use and enhancement. The Vendor's approach will extend the useful life of the ATS asset effectively and efficiently for years to come. Finally, Vendor will work transparently and collaboratively with the County, sharing modernization and governance best practices throughout the duration of this mission critical initiative.

Figure 1 illustrates Vendor's vision for the County's modernization of its property tax legacy system.

Figure 1. Vendor's Qualifications Summary



Proven outcomes for Orange County.

Vendor's Team. Vendor will provide the County with a modernized property tax system, leveraging the current system functionality, and technically build for the future. The modernized property tax system will help the County achieve its objectives and realize measurable benefits immediately post implementation. Vendor clearly understands, respects, and will follow the County's mission, project objectives, and business requirements for this modernization. With more than five decades of transformation experience, Vendor brings deep and relevant application transformation processes and experiences that it will apply to deliver the County's specific requirements.

The Vendor's team has the necessary application transformation knowledge, as well as extensive mainframe and contemporary platform experience, to deliver a low-risk, smooth transformation. Vendor looks forward to collaboratively working with the County and benefiting from the County's extensive property tax system knowledge during the course of the project.

Vendor's experienced technical resources will work closely with the County to make sure that the project deliverables meet the County's needs. The Vendor Project Manager, Tom DeAngelis, will be onsite to foster collaboration, knowledge sharing, deliverable transparency, and teamwork throughout our project as well as a smooth transition post-production with the County. Tom and our other key personnel bring a wealth of experience to the project. Vendor has included resumes for Tom and other Vendor team leaders in this Contract.

Vendor's extensive experience in application modernization drove its decision to use automation to help with this technical re-platform initiative. One part of its solution leverages tools from a firm called Blu Age. Vendor has worked with Blu Age on a number of automated code conversion initiatives during the past ten (10) years, and currently works with Blu Age on a number of other initiatives. Blu Age's software adds significant value to Vendor's solution not only because of the speed of the legacy to modern programming language code conversion, but also the minimal risk inherent in this approach. The converted solution is well formed using mature industry standard designs resulting in easy to maintain solutions and more successful projects.

Vendor knows that its proven, low-risk approach combines software automation and expertise providing the best results to the County. Vendor's quality methods for modernization, management, development and testing, and implementation are tested, repeatable, quality certified and used by its thousands of projects worldwide. Vendor's project team brings extensive qualifications, stable financials, worldwide reach, modern system architecture acumen, technical domain expertise, and application transformation experience.

Vendor's Expertise. The strength of the Vendor's services along with the functions and features of a software tool will deliver success.

Vendor brings more than fifty (50) years of experience delivering application modernization services and a proven and patented Application Transformation Framework. Unlike many of its competitors who have attempted to add application modernization capabilities to recently acquired tools, Vendor has grown its capabilities organically and developed the Application Transformation Framework. The Vendor has completed over 2,600 modernization programs, including hundreds of mainframe modernization projects. Vendor's mainframe expertise dates to the founding of its services business over fifty (50) years ago, and Vendor continues to be a leader in mainframe services with more than 1 billion lines of code under Vendor management. In addition, the Vendor's team brings:

- Deep knowledge and experience in modernizing systems across Government organizations.
- Strong client references where Vendor has successfully executed similar conversions at the scale that the County requires.
- Senior project team members with the required experience, skills, leadership capabilities, and commitment to serve the County and drive this project to a successful conclusion.
- Strong partner in Blu Age for automated code conversion.
- Excellent legacy system assessment, future state architecture, database, integration, and testing expertise.
- Sound IT governance and collaboration methods, techniques, and tools aligned to the County's COBIT 5.0 Maturity Level for its process areas.
- Ongoing focus on customer service to make the ATS modernization a success for the County.

Vendor's Solution & Approach

1. CONVERT IDEAL PDL

The County seeks to transition to a modern technical platform while maintaining all of the functionality of the current system. The County has described this modernization as a "re-platform". Within Vendor's Applications Transformation Services it has a number of modernization strategies. The County's re-platform approach aligns perfectly with Vendor's Re-Architect strategy. Vendor's solution will modernize the programming language and the database along with the technical features of the property tax system. In addition, Vendor's approach includes the PDL report and built-in functions and supporting utilities. From a user perspective, the Vendor's approach will maintain the CICS panels, function keys and messages that the property tax users enjoy today.

Vendor will follow its re-architect methodology to export the IDEAL PDL code from the VLS legacy system library into the new repository. Vendor will demonstrate that this approach is effective through automated methods, experienced experts and rigorous testing. Vendor will demonstrate to the County that the actual results equal expected results and the overall process worked successfully.

Vendor will convert the PDL code to a modernized, well-architected Java environment. The Vendor's experts completed a detailed review of the County's RFP's requirements to architect its solution including Java Enterprise Edition (JEE) and Java Spring Framework. Vendor will leverage automated software to not only make the process more efficient, but to leverage 'already built' parts of its solution in an auditable, iterative and controlled way. The Vendor's approach also includes the work of Vendor experts to successfully re-platform the legacy system. The Vendor has found that this combination of experts and automation will be best to deliver the County's requirements during this important initiative. The Vendor also understands the County wants to keep its ATS screens. The Vendor will map and accommodate all the required CICS panels in the re-platformed system.

Vendor shall use the style-sheet and the Blu Age Studio software to retain the current function as close to the "look and feel" of the 3270 Emulation panel. Vendor will deliver functional equivalence between the legacy and new systems even though the Vendor will enhance the technical implementation of these features. The Vendor knows that the County wants to maintain its current ATS2 user interface to the legacy ATS system. The Vendor will assess the way that the current system delivers the HTML screens, their organization and screen behaviors via the legacy CICS panels and function keys. Vendor may make suggestions for improvement as needed and Vendor will include this interaction in its rigorous testing via its iterative approach.

Vendor will preserve the functionality of the program function keys through JavaScript in the modernized application. Vendor will include the testing of the application's user interface behavior for each function key during this re-platform project.

Vendor will model the conversation control flow with UML models noting function keys, sequences and special processing. The Vendor will store these artifacts in the KMD. The County will have this technical documentation to support the re-platformed system. Then Vendor will forward engineer into the Java programming language leveraging these complete and approved artifacts and rigorously test that this code meets the County's requirements. Vendor will reflect any changes in the underlying UML model as necessary.

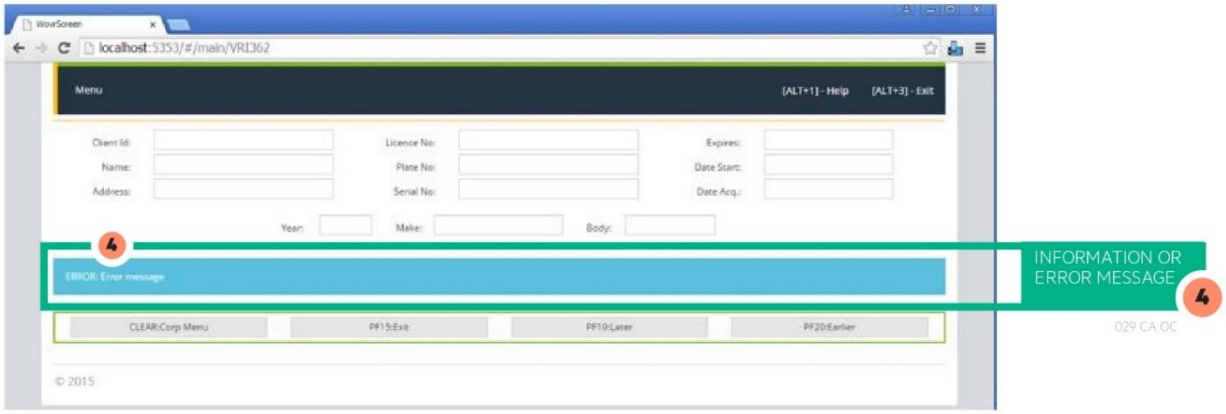
The Vendor will provide functional equivalence of the legacy ATS application in the re-platformed environment with minimal to no changes to reduce user learning curve. The Vendor understands that any new functionality is not part of this initiative. Vendor will still document and review the screen layout – color, font, size, control boxes and other attributes. The County will have a modern architecture with a contemporary front-end framework, such as Angular 2 and CSS4, to leverage if and when it is ready to improve the property tax user experience.

Vendor's approach includes all the application messages that will remain the same. Vendor will discover them within the legacy system and include them in the automated reverse-engineering activity. Vendor

will also handle other system messages that the legacy system may have in a number of configuration tables on the current database. Vendor will use automatically generated ETL scripts to migrate this information to the modernized database. Vendor will test using like-to-like scenarios and include application and system messages in these tests.

Vendor assumes the current application's system messages are instructive and informative to the user. If the County can improve upon these messages, one option would be to affect this change in the legacy system prior to this project. As stated above, Vendor will successfully migrate and test the migration of system codes from the legacy system into the re-platformed ATS leveraging its UML2 iterative approach. If there is a requirement for a new system message, then Vendor will identify and implement those new messages and related visual effects as appropriate as shown in. Figure 2.

Figure 2. System Message Display



Contemporary architecture frameworks improves the user experience even with error messages.

Vendor will utilize the following process to test, demonstrate and certify that the 'conversion codes' (as part of the automated reverse and forward engineering via UML2) work as shown in Table 1. Vendor has shared additional insights into the testing process in the testing section of this Contract.

Table 1. Conversion Code Testing Processes

SCENARIO	PROCESS STEPS
Online	• Capture the screen behaviors of the current legacy application using video screen capture. • Match against test cases that exist and create ones that do not exist. • Generate HTML mockups and playable static screens with parameter-driven macros. This is important to prove that the re-platformed ATS provides the same outcomes as the legacy application. • Manually inspect and verify the first run of the re-platformed ATS against the legacy system-related artifacts (e.g. video recordings). • Record the re-platformed ATS screen flow. This artifact is helpful for re-running tests. • Work with the County and the artifacts to execute the required tests in the prescribed manner. • Complete this work in an iterative fashion so it can start as soon as data is available on the demonstration server and complete this work in smaller, more manageable increments.
Interfaces, Reports and Batch Processing	• Run and record legacy batch processing with sample data • Store this data in the KMD on the development server. • Identify the data used in the batch test above and migrate it to the target MS SQL Server running the development version of the modern database. • Run the same batch processing routine using the same data in the new environment. • Compare the resulting files, tables and datasets with the legacy system batch data via automation looking for:

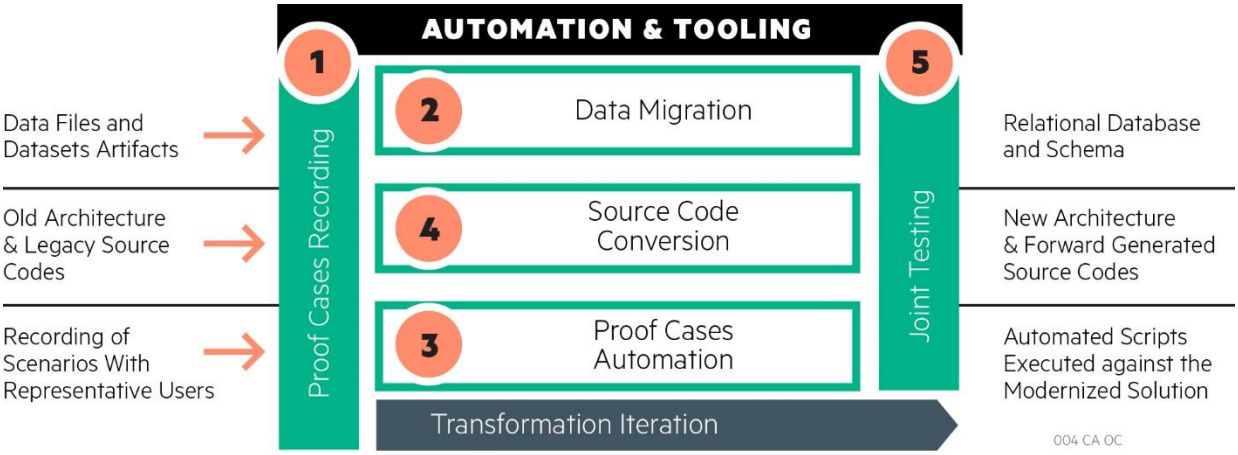
SCENARIO	PROCESS STEPS
	• Technical properties, such as format, code page, line endings (in case of file outputs). • Data equivalence (identical results are expected in both, legacy and modernized files) • Other properties of the data such as sort order and other attributes • Complete additional testing using the Blu Age Compare tool to verify that all the files and database content at a persistency level is sound as well.

For the conversion, Vendor will utilize an iterative, incremental, and low-risk conversion approach. Within each iteration Vendor will:

- Evaluate the legacy proof cases and make adjustments to the converted cases if needed.
- Perform a minimal data migration so functions converted can be tested.
- Validate that the existing proof cases have been automated sufficiently.
- Convert the source code through Blu Age.
- Demonstrate the functionality at the end of each 2 month iteration so that Vendor and the County can validate that the converted functionality matches legacy functionality. Figure 3 depicts this process.

This approach allows the County to tangibly see artifacts, gauge progress, suggest refinements, and manage change on an incremental, continuing basis during the ATS modernization project. This increases transparency and collaboration between the County and Vendor with less risk compared to a traditional Waterfall project.

Figure 3. Iteration Conversion Overview



The Vendor's approach combines Vendor's extensive modernization expertise with automated tools.

Low-Risk, Well-Paced Implementation. Vendor will have two integrated and self-contained development teams that have code converters, data converters, and testers. Based on the original RFP requirements and the current property tax system, Vendor will use two-month increments for Vendor's iterations.

Vendor will work with the County to refine this plan as needed. Vendor will use a key artifact called the functional criticality matrix. This matrix, jointly developed with the County during the Assessment phase, defines the importance and order in which Vendor transforms the ATS functionalities and capabilities. Table 2 provides a suggested order for conversion based on the RFP.

Table 2. Conversion Order

ITERATION	SUGGESTED CONVERSION AREA
Iteration 0	• Complete POC conversion and Assessment Phase
Iteration 1	• IDEAL – Secured System (TX2)
Iteration 2	• IDEAL – Unsecured System (UN2) IDEAL – Auditor-Controller System (AC2)
Iteration 3	• IDEAL – Clerk of the Board System (COB) IDEAL -Assessor Interface System (ACT)
Iteration 4	• IDEAL – ATS Front-End Security (FAST) IDEAL Panels (CICS Map)
Iteration 5	• IDEAL Reports
Iteration 6	• Refactor Items

At the end of every iteration, the working conversion code is tested and compared to the legacy ATS functionality. For items that do not work as they do in the Legacy system, Vendor will make note and schedule those items for Iteration 6 which will address Refactor Items. Vendor has found that sometimes the legacy system itself does not produce the anticipated results. In these cases, Vendor advises the client to correct the legacy code before conversion. Very old legacy mainframe systems handle calculations differently – related to order of the calculation's components, memory management constraints of the past, and other situations. Vendor anticipates that these situations may happen within the legacy ATS. Regardless, Vendor will work with the County to make sure to account for these different reconciliation items.

In every iteration, Vendor will complete the required deliverables for the defined unit of functionality. Deliverables include but are not limited to:

- Data migration scripts (from DB2)
- Source code conversion (from IDEAL PDL including online, batch, interfaces, and reports)
- Automated proof cases (utilizing MS Visual Studio and MS Test Manager software)
- Functional scenario demonstrations in the stand-alone target environment
- Iteration report providing status, lessons learned, issues, risks, and resolutions.

Vendor uses continuous deployment and automation in the delivery of its solution. Vendor will continuously deploy updates in an automated manner to its code conversion, data conversion, and testing scripts in the development environment. On a bimonthly basis, at the end of each iteration, the iteration functionality will be deployed to a stand-alone environment to allow for additional testing with the County for User Acceptance Testing. Functionality that does not match legacy discovered by the County will be noted and scheduled for fixing in iteration 6. Iteration 6 is designed for addressing any issues discovered through Vendor's iteration demonstrations and is expected to be smaller than the other iterations.

2. CONVERT MAINFRAME JOB CONTROL LANGUAGE (JCL)

Vendor's batch conversion covers all artifacts including JCL scripts. Vendor will leverage the automation via the Blu Age forward engineering cartridges to migrate the JCL scripts to run on Spring Batch. Spring Batch is an open source, non-proprietary framework for batch processing. It is a lightweight comprehensive solution designed to enable the development of robust batch applications found in modern enterprise systems. This solution carries zero dependencies on software proprietary libraries because the re-platformed ATS application will run on top of the targeted framework via Spring Batch.

Spring Batch provides reusable functions essential in processing large volumes of records in a Java based environment, including but not limited to the following:

- Logging/tracing
- Transaction management
- Job processing statistics
- Job restart
- Step skips
- Resource management including prioritization
- Optimization and partitioning techniques for high-performance batch processing
- Scalability for future growth and technical improvements via parallel processing
- Data partitioning, along with database tuning and other MS SQL database features like the read-ahead mechanism, for faster batch processing turnaround times

Vendor understands that the County wants to maintain the current scheduling software in the re-platformed environment. Vendor will validate that the County has used and refined the information in the current job scheduling system and is pleased with current batch processing flows across the various end-of-period cycles (e.g., year-end).

During the Assessment, Vendor's analysts will analyze the current batch-processing environment and all its features via the Blu Age reverse engineering cartridge via discussions with the County. To facilitate these discussions, the cartridge's output features provide the following:

- Each JCL file will be displayed as a graph (a set of nodes and edges).
- Each node represents an identified step:
  - Expressed as a specific color regarding its type
  - Augmented with modernization recommendation
- For each step, input/output data will be highlighted.
- The user will be notified of missing files and unknown call types.
- Modernization tips will be displayed according to the step type.

Vendor will meet the requirement to use the current Job Scheduling software in the re-platformed environment. Table 3 describes the modernization strategy of select batch execution steps found in legacy production systems' JCL.

Table 3. Sample IDEAL-related JCL Commands

STEP	OPTIONS	DESCRIPTION
EXEC PGM		Start Program. Vendor will modernize the step using Blu Age IDEAL PDL cartridge.
	Sort/DFSOPRT	Sort Step. The Blu Age Spring Batch cartridge provides Java Sort utilities in case of files and "order by" statement in SQL Query in case of database tables.

STEP	OPTIONS	DESCRIPTION
	IDCAMS / REPO	Access Method Services. Used for VSAM files usually modernized to a database. Not needed in case of database access mechanisms.
	IEBGENER	Mainframe file handling. In some cases, it is used to copy files (most of the time dfsort is used to copy, but there are still jobs using IBGENER to copy files). Copying files can be interpreted as a print on a particular device or a send mail functionality. There is no generic rule to convert those command.
	IEFBR14	Do nothing (was used to allocate/deallocate files); ignored. Mostly used to delete or allocate files. When needed, can be modernized using Blu Age file operation tasklets.
	IKJEFT01	IKJEFT01 can execute (via TSO) CLIST and REXX functions.
	GDG	GDG provides a mechanism for handling different versions of a file on the mainframe. The Spring Batch cartridge provides a mechanism to reproduce the GDG mechanism if still using files.
	ICETOOL	See DFSORT as it has almost the same role.
EXEC PROC		Call to another JCL proc (procedure aka combination of programs) – Explore the called PROC – often parameters for steps during the Assessment phase
ISPSTART		Call to utility through a parameter.

In summary, Vendor will deliver re-platformed batch processing execution via the Control-M scheduler, and Control-M will execute the modernized Java batch program. The Vendor's approach is similar to dealing with CA-IDEAL utilities above. The current Microsoft operating system includes many features that may replace the functions that the legacy IBM z/OS utilities provide the current ATS. As part of Vendor's analysis, Vendor will identify and evaluate all useful z/OS utilities as well as any special application-driven utility processing routines and accommodate them in the new Microsoft operating system running the re-platformed ATS.

3. CONVERT ATS DATA FROM DB2 DATABASE

Vendor's methodology of exporting data from the source DB2 RDBMS and loading to the target RDMS is a multi-step process. Vendor proposes its proven techniques to export data from the source system, load into a staging instance and perform translation / transformation of source data, and finally loading/testing to the target database.

The data migration work will not be successful via a simple data export / import routine via an automated software utility. Vendor will complete enhancements to the target data model to remove any performance bottlenecks within the targeted SQL Server database. Changes may include:

- Data type changes
- Constraints and referential integrity
- Table Normalization
- Index additions
- Database objects

As with the code migration, Vendor will align data migration into iterations. Vendor's rationale is:

- The re-architected target database will not have a one-to-one relationship with the source database tables. Vendor will modify the target database to a limited extent so that the impact on the modernization project will be minimal. Vendor will concentrate on the database changes to remove any serious bottlenecks due to some inefficient legacy objects that impedes the use of the new RDBMS system smoothly and effectively but at the same time the application coding and functionality will not change.
- The new data model for the target database will have normalization and de-normalization of tables to use the latest development of RDBMS technologies.
- There could be need for data transformations as the field data type or size might change or some integrity (primary, foreign, or unique key) constraints are implemented. The code values could change from source to target.
- The source system might have some parent and child relationships and it was not strictly implemented and the target system will reject all these records.

Vendor will perform the entire data migration/conversion in three steps:

Data Extraction from Source System

Vendor will use the Blu Age modernization tool to export table definitions from the source system and create UML2 models. These models will be used by the tool to create the ETL script that will be executed by the Talend ETL tool.

Data Transformation

Vendor will create a temporary staging database instance containing set of tables for storing the source and target staging data. Talend ETL tool will run the ETL script generated by the Blu Age tool to export data from the source system and load to the source staging database. The staging instance will be used only for the data migration purpose and it will be dropped after all source data have been migrated.

Vendor will work with the County resource knowledgeable about the source data. While Vendor expects the data to be cleansed by the County, there may be some instances where minimal cleansing may be the best path forward. Vendor has allocated up to 40 hours for this minimal cleansing of the data. Vendor will develop the data cleansing script based on the business rules provided by the County resource. The cleansed data will be loaded to the target staging tables.

Data Load to Target System

Talend ETL tool will be used to perform transformation & translation and load the data to the target database tables.

Data Conversion Resources

Vendor will use dedicated data conversion resources to perform all tasks related to extraction of data from the source database and finally loading to the target database.

Tools Used

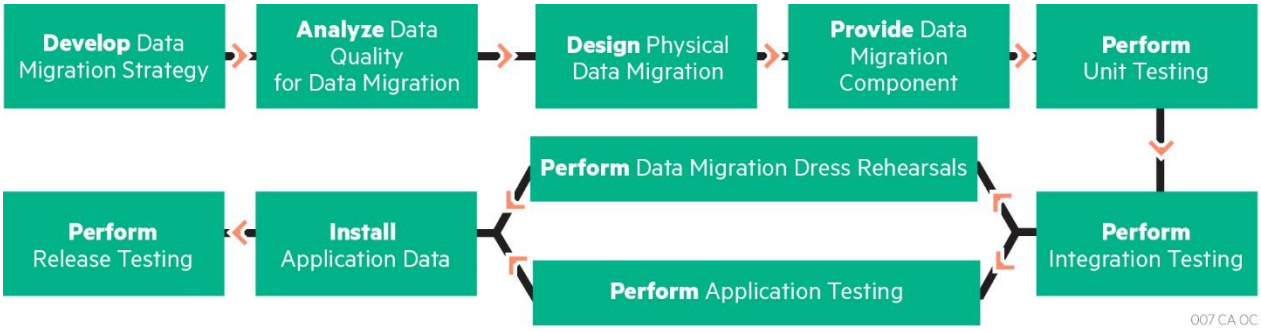
Vendor's data conversion team will use the tools listed below for data extraction, transformation, and load (ETL), data administration, data reconciliation, and reporting.

- Blu Age – Reverse Engineering Cartridge
- Talend ETL
- Microsoft SSRS Reporting Tool
- SQL Server Management Studio

Process Diagram

The Vendor's data migration process consists of a series of activities, including project level testing activities that the Data Conversion Team will support during the migration. Although presented primarily in a linear set of steps, in practice there will be some overlap and iteration between these activities. Figure 4 illustrates the data migration process.

Figure 4. Data Migration Process Diagram



Successful data migration starts with the Assessment phase, leverages automation and collaborative Vendor and County activities.

Table 4 provides a description of each data activity in the data migration process. Figure 5 below illustrates the data conversion process.

Table 4. Process Activity Description

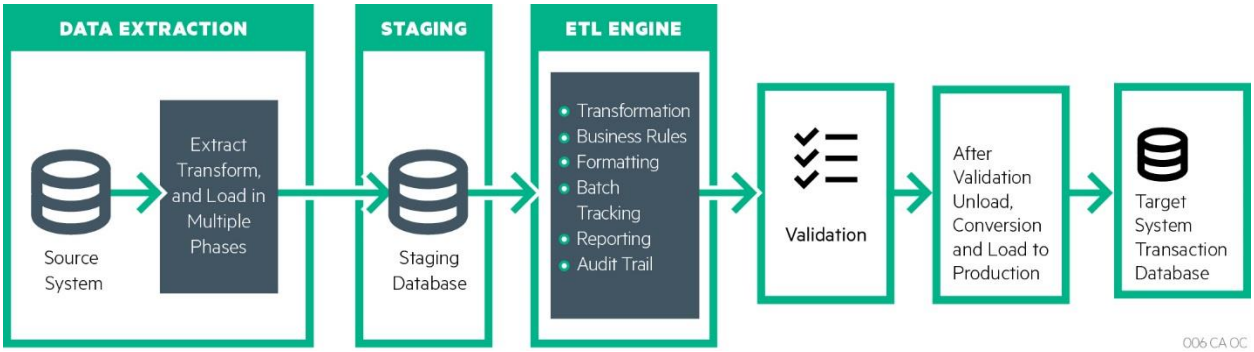
MIGRATION PROCESS ACTIVITY	DESCRIPTION
Develop Data Migration Strategy	Defines and documents the high-level scope of the data migration and begin the design of the physical migration. The strategy encompasses previously identified requirements. Additional research is performed as needed to determine an applicable strategy to meet the requirements. The strategy elements, method and schedule for migrating data from the source to the target, accounting for auditability, security and privacy, data retention and archiving considerations are documented in the Data Migration Strategy document.
Analyze Data Quality for Data Migration	Addresses identifying data quality issues as discovered via data profiling. Performing this upfront profiling provides the awareness to data quality issues and data anomalies prior to testing the migration. Identifying data quality issues early or during the data migration process: • Identifies data that may cause data migration issues, providing a proactive rather than reactive approach • Allows for data correction during the data migration process, at the source prior to

MIGRATION PROCESS ACTIVITY	DESCRIPTION
	extraction or during data migration transformation. Data conversion process allows for the auditability and traceability of the changes made to the data for any data issues. During the assessment phase Vendor will determine if the current data and the related programs that changes this data is not correct then Vendor will document these situations and develop the remedial programs with the help of the County resources. Analyzing data quality during the data migration process includes: • Reviewing data profiling and data quality results that may have been previously generated • Performing full data profiling and data quality analysis or only performing additional data profiling and data quality analysis to address gaps found in initial profiling results that are needed to support the migration • Determining and documenting through the *Data Quality and Profiling Reports for Data Migration* – an artifact from the project – Source data corrections to be made, by whom and how the corrections will be made – Transformations necessary to correct data issues discovered – Data that will remain as is (allowable exceptions) Vendor's audit and reconciliation processes are integrated into each data migration step. These procedures are not only vital to verify the quality of the data, but also to facilitate the County's audit function and make sure other stakeholders are confident in the migration process. Vendor understands that the re-platformed data may not follow the same legacy system structure. Vendor has included a reconciliation process in Vendor's approach to understand the differences and resolutions as needed. For example, The Vendor may recommend that it consolidate, split, ignore and/or convert source records as part of the data migration process and Vendor's reconciliation approach will accommodate these structural variations. Vendor will provide Reconciliation Summary Statement and Reconciliation Detailed Report outlining the key metrics and also provide backups for summary to help manage through these situations. Vendor will use multiple techniques to handle the data migration audit. • Update the records in the staging table with any lookups / derivations / processing that occurred against the record. This serves two purposes – by examining these fields prior to the transfer, Vendor will know in advance what is likely to happen and secondly, by examining these fields post migration, the Vendor gets some insight into why certain things ended up as they did. • Maintain a detailed debug log which serves as a reference point to explain why things were done in a certain way. • Maintain an audit trail through each step of the process; from source ETL files, through the staging tables and into the base tables.
Design Physical Data Migration	The detailed source to target attribute data mapping portion of this activity is tailored to the requirement. The design activity is the detailed and final process-level analysis, design and planning activity prior to the data migration execution. Therefore, from a design perspective, this activity addresses all items identified in the strategy not previously detailed. ***Testing Specifications*** are also created during this activity to include the test plans which will be executed during the unit, integration and dress rehearsal testing activities. The test planning documents are focused on testing the migration of the data, though the data itself may be validated by the Client via the application to confirm the migration

MIGRATION PROCESS ACTIVITY	DESCRIPTION
	has been successfully completed. ***Data Migration Acceptance Criteria*** is also created during this activity to reflect the Client acceptance criteria for an acceptable data migration.
Provide Data Migration Components	The focus of this activity is the creation of the elements necessary to execute the data migration. The elements include the *Data Migration Components (SW)* and the *Data Migration Details*, the detailed work stream used to execute those components. The components will consist of ETL tool use and ETL object creation, OS level scripts and/or database tool use and scripts. This activity includes obtaining an understanding of the design, assigned components and timelines through the review of the Design Physical Data Migration documents. The documents include attribute mapping information that will need to be referenced during component creation and test plans that will be executed during the testing phases. The documents also contain additional information related to how the migration will proceed and items that may need to be included within the components or work stream.
Perform Initial Testing	During this activity the *Data Migration Components (SW)* are first tested using a subset of the legacy data. The *Data Migration Details* are practiced and refined as well during this testing. The related testing specifications are exercised, test results and defects are captured. This activity is iterative until the components are functioning acceptably.
Perform Integration Testing	This activity provides for the integrated testing of multiple sets of *Data Migration Components (SW)* and *Data Migration Details* using a subset of the legacy data. The Integration testing specifications are exercised, test results and defects are captured. This activity is iterative until the components are functioning acceptably.
Perform Data Migration Dress Rehearsals	The dress rehearsals are full production data migration trial runs into the user acceptance environment. This process is iterative, providing for the verification and validation of the converted data, and allowing for potential changes to the data migration software due to data anomalies. The scope and purpose of the activity extends beyond the validation of conversion components to the validation of the end to end process for migrating the data including all the logistical elements. Within the defined acceptance criteria, *Client Data Migration Software Acceptance Signoff* is sought to indicate successful completion of the dress rehearsals. This is a software signoff to indicate that the software is functioning as expected. This is second of the two Client signoffs required by the process.
Perform Application Testing	Data testing will integrate with the Application Testing in an iterative manner throughout the project.
Install Application Data	This activity is to perform the full production data migration into the production environment using the tested and signed-off *Data Migration Components (SW)* and the *Data Migration Details*.
Perform Release Testing	The Data Conversion Team supports the Release Testing as led by the project team.

Figure 5 below illustrates the data conversion process.

Figure 5. Data Conversion Process



Vendor will use Vendor's data reconciliation/reporting capabilities to facilitate legacy and re-platform ATS information consistency.

Audit and reconciliation are not only vital to verify the quality of the data, but also to secure the County's confidence in the migration process.

Vendor will follow two types of audit and reconciliation processing – quantitative and qualitative checks. With the County approval, these checks are a necessary precondition to continue with data migration.

Note that these checks are incorporated into the Testing Specifications defined in the Design Physical Data Migration activity. It documents the plans, cases, and data required for testing the system before its deployment. Testing Specifications are included for both automated and manual components; for testing as individual units, as integrated modules or subsystems; and for formal acceptance testing of the system to be delivered.

The data in the destination may or may not follow the same structure as that of the source system and so our reconciliation process will allow the Vendor to understand the differences and how the data can be married as a result. Source records may be consolidated, split, ignored and/or converted as part of the data migration process and Vendor's reconciliation approach will accommodate these structural variations.

Each reconciliation will have two components, as follows:

- The first will be a summary statement outlining a couple of key metrics such as a count and a value.
- The second covers the detailed reports that provide the backup for the summary; this is necessary to be able to isolate and understand differences and to answer the inevitable questions that will arise from the reconciliation statements. It list individual transactions from both systems, structured in a similar way.

Reconciliation statements summarize the Reconciliation Detail Report and perform various derivations based on the characteristics of the reconciliation in question.

Vendor use multiple techniques to handle data migration audit:

- The first technique is to update the records in the staging table with any lookups / derivations / processing that occurred against the record. This serves two purposes: by examining these fields prior to the transfer, Vendor know in advance what is likely to happen; by examining these fields post migration, Vendor get insight as to why certain things ended up as they did.
- The second technique is a detailed debug log which serves as a reference point to explain why things were done in a certain way.
- The third technique is to maintain audit trail through each step of the process; from source ETL files, through the staging tables and into the base tables.

Table 5 describes the outputs produced by the Vendor's data migration process that will allow the Vendor to test, demonstrate and certify that all intended data, attributes and table structure are exported correctly.

Table 5. Test Migration Process Outputs

TEST MIGRATION PROCESS OUTPUT	DESCRIPTION
Data Migration Strategy	A high-level planning document produced during the *Develop Data Migration Strategy* activity for how the data will be migrated from the source system to the target system and includes a review of related considerations. The strategy serves as the foundation for the ensuing data migration activities. Documents source and target data stores, requirements for extracting, converting and loading data. Documents at a high-level the methods and tools to complete the migration. Documents requirements for access to source data stores and future needs for source-based data.
Data Migration Acceptance Criteria	Client acceptance criteria developed during the *Design Physical Data Migration* activity**.** Documents the criteria which is used to determine a successful migration of data. The criteria includes allowable tolerances for data that may not be cleansed through the migration process.
Data Migration Software Acceptance Signoff	Software signoff document used during the *Perform Data Migration Dress Rehearsal* activity. This documents the client certifies: • The dress rehearsal results have been reviewed and that the migration has resulted in an accurate representation of the data as defined by the acceptance criteria. • The County accepts the data migration software to migrate the data into the production system.
Data Quality and Profiling Reports for Data Migration	Reports produced during the *Analyze Data Quality for Data Migration* activity. Results of performing data quality and profiling analysis and review.
Physical Data Migration Design	Design document produced during the *Design Physical Data Migration* activity. Contains the designed approach for the systematic or automatic conversion of existing data and data structures. Includes detailed source to target data mapping, including methods and tools to perform the migration.
Testing Specifications	Testing documents developed during the *Design Physical Data Migration* activity. Documents the plans, cases, and data required for testing the system before its deployment. Testing specifications are included for both automated and manual components; for testing as individual units, as integrated modules or subsystems; and for formal acceptance testing of the system to be delivered. Vendor assumes that the County will provide quality test artifacts from the current system.
Test Results	Captured during the testing activities. Documents the results of tests performed on the new system. Based on the Vendor iterative approach, Vendor will test code modernization and data migration in a coordinated way.
Test Defect Log	Captured during the testing activities. Documents information about the defects and issues discovered during testing and tracks them to closure. Vendor will share with County the defects found during each data migration run and provide the remediation steps for the defects. Vendor will compare the defect logs generated during the next run to prove that the earlier defects were eliminated and the ultimate goal will be to move to production when the defect logs count are reduced to zero
Implementation Report	Created/updated during the *Install Application Data* activity, to document the data migration deployment and it will include the reconciliation and audit reports.
Data Migration Metrics	Created/updated during the *Install Application Data* activity, to document the data

TEST MIGRATION PROCESS OUTPUT	DESCRIPTION
and Control Charts	migration deployment. This will provide many metrics to measure the effectiveness and efficiency of data migration: • Percentage of migrated records • Percentage of migrated tables • Percentage of data with quality problems • Number of customization required • Number of migration errors • Downtime due to data migration • Percentage of reconciliation errors • Percentage of cleansed records

Data Conversion Approach. Vendor will develop and document Data Migration Strategy that will contain high-level approach and scope of the data conversion and cleansing. The strategy encompasses previously identified requirements. Additional research is performed as needed to determine an applicable strategy to meet the requirements. The strategy elements, method and schedule for migrating data from the source to the target, accounting for auditability, security and privacy, data retention and archiving considerations are documented in the Data Migration Strategy document.

Elements considered when developing the strategy include the following. Where applicable responsibility for each element is defined.

- Defining the sources, targets and allowable outage windows
- Defining the source to target relationship, migration tools, data volume and network implications
- Source-side archiving and retention
- Domain or reference data requirements
- Manual data migration processes
- External interfaces that need to be accessed by the new target system
- Client data security and privacy issues to be considered during data migration (ETL)
- Client-specific data migration considerations
- Post data migration activities
- Data migration timing and approach
- Data migration testing, audit and reconciliation
- Client agreement of the strategy and interval checkpoints/signoffs

Other than the dress rehearsal signoff, the strategy is the only other output requiring Client signoff.

Legacy Data Issues. Legacy data issues will fall in two major areas, as follows:

- **Data duplication:** Same data appears more than once in target. The County will provide Vendor the survivorship rule (i.e., which record to retain in case of duplication), and Vendor will retain the data accordingly.
- **Data cleansing issues:** Vendor will identify the data cleansing issue based on information that the County provides. A simple example could be a mandatory field. This can be resolved either by a workaround like populating a constant value or value based on some logic that Vendor can handle. If modifying the legacy system and regenerating the source data is required, that work is the County's responsibility.

Iterative Data Cleansing Process. Vendor uses the iterative data cleansing processes to determine the quality of the data early in the conversion process. The goals are always to increase the percentage of data that can be converted using automated tools. Remove duplicate data from the source data based on duplication rules and identify data cleansing issues with Legacy data so that it can be used properly by the target system. An example is a mandatory field.

Vendor will work with County to perform the data cleansing task. Vendor expects the County to be knowledgeable about their data. The County will provide the rules for data cleansing. Vendor will provide technical expertise and develop the data cleansing scripts. The County will be responsible to validate that all data has been cleansed within the tolerance limit. This collaborative approach provides the ingredient for data cleansing success.

Document Logical/Physical Data Model and Data Dictionary. Vendor will develop and document the logical/physical data model and data dictionary based on the UML2 model. Vendor will create the data models. Vendor needs a clear understanding of the new target database requirements to complete this work.

The documented data models and data dictionary will be loaded to the development repository. Vendor will update the documentation for data model and data dictionary changes as needed.

Vendor will provide the County with data migration tool access to execute all data migration scripts related to the following:

- The data extraction from the source database using Blu Age – Reverse Engineering Cartridge
- Loading to the staging database through Talend ETL tool
- Data cleansing using Talend ETL / Database scripts
- Transformation, translation, loading to the target database using Talend ETL / Database scripts.
- Reconciliation/Audit/Metrics reports using JasperReports / Database scripts

Vendor will also provide all data migration-related test scripts, test scenarios, and test plan. The County will be able to run all data conversion reports either through database scripts or the reports created in the JasperReports tool. Vendor will run the scripts as requested by the County as well.

The County must approve the documented data migration acceptance criteria during the Design Physical Data Migration activity. The criteria include allowable tolerances for data that may not be cleansed through the migration process.

During the mock conversion, detailed data validation is included as part of the test scripts to make certain that converted data appears correctly in the target system, based on the rules defined in the data maps. Identified issues will be categorized as data, application, or environmental defects.

Vendor will complete the data migration build and test activities for 600+ source tables in seven iterations. Vendor will synchronize with the application-centric iterations. The benefit of this process is that Vendor can test and verify the re-architected application and converted data at the same time.

The County will also conduct validation and report findings to Vendor during the testing period. Vendor work to resolve errors and reload the environment, using the same source system extracts. Then the County has the opportunity to revalidate the updated artifacts.

Data Migration Software Acceptance Signoff document will be used during the Perform Data Migration Dress Rehearsal activity. This will document the client certifies:

- That the dress rehearsal results have been reviewed and that the migration has resulted in an accurate representation of the data as defined by the acceptance criteria.
- That the client accepts the data migration software to migrate the data into the production system.

Final Data Migration. The focus is to identify and resolve data conversion issues and errors. To facilitate this process, conversion error reports will be generated from the data conversion toolset, which identify the records that were not converted. Vendor will use the reports to analyze any failed conversion attempts, document the planned approach for subsequent attempts, and execute and oversee conversion reruns or manual correction processes as appropriate.

The Delta Data. Another important aspect of the data migration project is accounting for the data input to the production legacy system in between the last export of legacy system and the data conversion process

run. It is important to note that the window of conversion process is finite and the legacy system still operates during the window of conversion process execution. At the last stage, the legacy system has to be frozen to eliminate any new delta data and then upload the delta data generated before legacy freeze to the target database. Vendor and the County will work together to determine the plan during the Assessment phase.

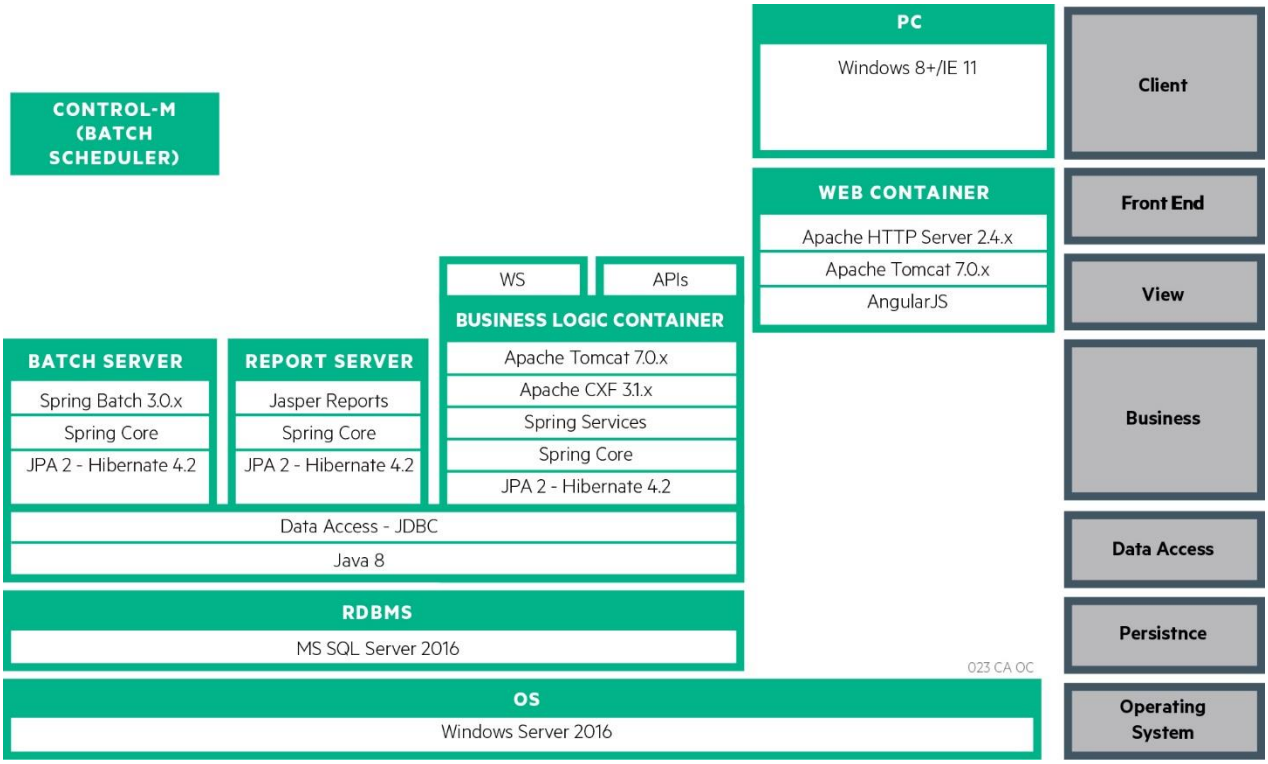
4. ARCHITECT THE NEW PLATFORM

Vendor will work with the County to understand all relevant standards that the re-platformed ATS must comply. Vendor's solution has an open system architecture based on contemporary hardware and the Windows Server operating system. Vendor clearly knows that the County wants to support this environment in the post-production stage Manage Phase. Vendor selected Java for the proposed programming language and Microsoft's SQL Server relational database management system software. Vendor's architecture is flexible, scalable and open allowing the County to change components or extend this application with additional capabilities such as mobility, business intelligence and data analytics in the future.

The following section highlights the target architecture for the new system which Vendor will include in a technical specification document along with other artifacts during the project. Vendor will also recommend a target hardware and software infrastructure and related procedures to develop, test, run and maintain the targeted system in an automated, controlled way. Vendor's solution will include source code control, configuration management and automated testing. Vendor will work with the County to ensure that these environments are ready when Vendor needs them including availability requirements for development, testing, IT operations and the user community for normal and peak times. Vendor's solution will leverage as much from the current environment as required such as the data within the Control-M scheduler software. The required infrastructure will include servers and related software for the application, database, interfaces/integration and optimal performance ala load balancing. Vendor will document the specifics around the performance requirements of the new system in terms of response times for on-line operations and turnaround times for batch processing and test toward these objective targets. Finally, Vendor will provide the County with documentation related to back-up and recovery in case of a disaster which affects the operation of the new system.

Architecture. Vendor has read the detailed County requirements in the RFP. The Vendor has identified a number of options and has proposed this architecture summary for the ATS modernization initiative which is an open system environment that can be supported by County IT or Auditor-Controller IT. Figure 6 depicts an overview of Vendor's target application architecture for the proposed ATS. As mandated, it will be in compliance the County's technical requirements.

Figure 6. Proposed ATS Architecture



Vendor proposed architecture positions the County for the future.

Open System Environment and Operating System and County IT support

The converted system will run on Windows Server 2016 and virtual machines. Vendor has defined server sizes and storage tiers based in the current Orange County Office of Information Technology Service Catalog (http://ocgov.com/civicax/filebank/blobdload.aspx?BlobID=43549) for data center services to meet the requirement for County IT support. Vendor has made choices in Vendor's architecture for MS SQL server 2016 and Windows Server 2016 operating system to drive to the best value to deliver upon the County's requirements. The Vendor has chosen this approach based on Vendor's understanding of the County's technology standards. Vendor will work with the County to validate Vendor's thoughts during the assessment phase of the re-platforming project.

Database Platform and Business Intelligence Platform

Vendor' point of view on the County's business-intelligence related software product recommendation requirement is as follows:

- Overall Reporting Objective = with the over 600 tables in the current system, Vendor recommends that the County documents:
  - The current business purpose and other attributes of each of these tables.
  - Reporting needs that these tables do not satisfy distinguishing the information that is available within the current system vs. the information that is not there today.
  - Tables that are redundant among each other, useful in the new system, static in nature (i.e. the data will never change), and finally those tables that may go away.
  - Evaluation of the variety of software tools which the County already has (e.g. data warehouses) and the selection criteria for any new business intelligence tools.
  - Progress to date evaluating the marketplace for software which would deliver against these requirements.
- Vendor plans to convert the DB2 and DATACOM tables into the new property tax tables in SQL Server as per the County's RFP and based upon the County's decisions that Vendor noted above.

- Vendor plans to create, test and implement the required automation of extract file(s) and related records from these tables to interface with County systems including data warehouses external to the legacy property tax system. Vendor will design these interfaces in a flexible manner to accommodate any new business intelligence related software project that the County selects.

- If the County would like Vendor to help with implementing this new business intelligence reporting capability, then Vendor will be happy to deliver upon this initiative as a change in scope to this current initiative or as a separate yet integrated project engagement.

Vendor proposes that the data tier will feature Microsoft SQL Server 2016 on Windows. The schema design will allow for business data, reporting data, and image data to be separated. The business intelligence server will utilize JasperReports Server which is an open source Business Intelligence solution that meets most reporting needs of enterprise customers using Java Spring.

Talend Open Studio for Data Integration is open source ETL product. It is a data integration product designed to combine, convert and update data in various locations across a business. This will be used in the forward generation process to extract, transform and load the data. This tool will not be present in the runtime environment but will be present during the migration process.

Target Conversion Language

Vendor will convert the ATS to a modernized, well-architected Java environment. Vendor experts completed a detailed review of the County's RFP's requirements to architect Vendor's solution including Java Enterprise Edition (JEE) and Java Spring Framework.

Technical Specification Summary (Physical Design of the Developed System)

Vendor has defined the projected data center infrastructure needed to support the new application in an open systems environment, including server, storage, and database instances. It provides high availability by removing any single point of failure in the design. The design also can be maintained with minimal scheduled maintenance windows such as monthly patching windows. It will also support peak payment processing requiring extended availability. The final Infrastructure design, including network mapping and I/P addressing will be completed during the re-platforming project once Vendor has completed and a detailed assessment of the current application environment.

Table 6 defines the initial projection for Infrastructure specifications. This table is an initial draft of the recommended infrastructure components for the re-platformed ATS Vendor has defined server sizes and storage tiers based in the current Orange County Office of Information Technology Service Catalog (http://ocgov.com/civicax/filebank/blobdload.aspx?BlobID=43549) for data center services. Vendor have made choices in Vendor's architecture for MS SQL server and Windows operating system to drive to the best value to deliver upon the County's requirements. Vendor has chosen this approach based on Vendor's understanding of the County's technology standards. Vendor will work with the County to validate Vendor's thoughts during the assessment phase of the re-platforming project.

Table 6. Initial Re-platformed ATS infrastructure

ENVIRONMENT	APPLICATION TIER	OPERATING SYSTEM	VM QTY	VIRTUAL CORES PER VM	RAM PER VM	SERVICE CATALOG VM SIZE	STORAGE GB	SERVICE CATALOG STORAGE TIER	DATABASE TYPE	DATABASE INSTANCE QTY
Production	Web/App Server Cluster	Windows	4	4	8	Medium	400	1		
Production	Batch Cluster	Windows	12	4	8	Medium	1200	1		
Production	Report Cluster	Windows	4	4	8	Medium	400	1		
Production	Database Cluster	Windows	2	4	32	Medium	1,800	1	MSSQL	2
UAT	Web/App Server Cluster	Windows	4	4	8	Medium	400	1		
UAT	Batch Cluster	Windows	12	4	8	Medium	1200	1		
UAT	Report Cluster	Windows	4	4	8	Medium	400	1		
UAT	Database Cluster	Windows	2	4	32	Medium	1,800	1	MSSQL	2
Development	Web/App Server Cluster	Windows	1	2	16	Medium	100	2		
Development	Batch Cluster	Windows	3	2	16	Medium	300	2		
Development	Report Cluster	Windows	1	2	16	Medium	100	2		
Development	Database Cluster	Windows	1	2	16	Medium	450	2	MSSQL	2
Test	Web/App Server Cluster	Windows	2	2	2	Medium	200	2		
Test	Batch	Windows	6	2	8	Medium	600	2		

ENVIRONMENT	APPLICATION TIER	OPERATING SYSTEM	VM QTY	VIRTUAL CORES PER VM	RAM PER VM	SERVICE CATALOG VM SIZE	STORAGE GB	SERVICE CATALOG STORAGE TIER	DATABASE TYPE	DATABASE INSTANCE QTY
	Cluster									
Test	Report Cluster	Windows	2	2	8	Medium	200	2		
Test	Database Cluster	Windows	1	2	32	Medium	900	2	MSSQL	2
Disaster Recovery	Web/App Server Cluster	Windows	4	4	8	Medium	400	1		
Disaster Recovery	Batch Cluster	Windows	12	4	8	Medium	1200	1		
Disaster Recovery	Report Cluster	Windows	4	4	8	Medium	400	1		
Disaster Recovery	Database Cluster	Windows	1	4	32	Medium	1,800	1	MSSQL	1

Note that Vendor has included a suggested 12 VMs for batch processing. This will allow for multi-threaded processing to allow batches to complete in the same turnaround times as today.

The following are some key Vendor's assumptions associated with the data center Infrastructure that will host the new application environments:

- The new application will leverage existing network and security Infrastructure within the County's data center, including load balancers, network switches, routers, and firewalls.
- The hosting provider such as Orange County IT can meet availability, network segmentation, disaster recovery, and data retention requirements determined during assessment
- The County will provide all data center related hosting services, including server administration, storage administration, security administration, and network management.
- The County will procure and own all Microsoft operating system and SQL licenses.
- The County can provide Vendor access to virtual machines and storage to meet the implementation schedule as each application environment is needed.

Vendor understands that it will take time for the County to procure, install and support this infrastructure for the re-platformed ATS initiative. Vendor has provided a preliminary schedule to help plan for these investments in Table 7. This advanced planning for critical path infrastructure will help keep the ATS modernization on schedule.

Table 7. ATS infrastructure Availability Requirement

ENVIRONMENT	MONTH 1	MONTH 2	MONTH 3	MONTH 4	MONTH 5	MONTH 6	MONTH 7	MONTH 8	MONTH 9	MONTH 10	MONTH 11	MONTH 12-23
Development		●	●	●	●	●	●	●	●	●	●	●
Test				●	●	●	●	●	●	●	●	●
UAT						●	●	●	●	●	●	●
Production								●	●	●	●	●
DR										●	●	●

The final technical specifications for the logical and physical Infrastructure that will support the new application environments will be defined during the Technical Design phase of the re-platforming process, including server configurations, storage, network, and security components. Vendor will use data gathered during the project Analysis Phase as input to the Infrastructure technical design. Vendor's approach is to design the Infrastructure to minimize the overall operating cost to the County while meeting the performance and availability requirements that have been defined.

Vendor's infrastructure design process follows an established methodology that has been used successfully on thousands of projects worldwide. It is based on a repository of template artifacts and design standards for high performance, robustness, and security. This process validates that the infrastructure design is complete and meets all requirements for the applications and people it will support.

The Infrastructure design will align with the County's existing architecture standards, including county-preferred hardware platforms, operating system, and database technologies. Vendor will look for opportunities to leverage the County's existing Infrastructure investments where possible as part of the final design.

Vendor will work with the County to assist in preparing a final infrastructure design to include the following:

- Documenting the server three-tier server environment with separate database, application, and presentation layers
- Firewalls between applications and data for additional security
- Network topology diagram showing relationships and interconnectivity to the County's data center network zones
- Infrastructure components such as physical and virtual servers and the software they host
- Storage and tapeless backup devices, showing usable data volumes and replication strategy
- Component-level bill of material (BOM) for each device in the design
- High-level implementation plan and schedule.
- Defining a backup and recovery solution to meet County data retention requirements
- Detailed specifications for each item: descriptive configuration information that supplements the BOM provided in the draft design.
- Final detailed implementation schedule and tasks.

Source Control and Change Management

Vendor will utilize Microsoft Team Foundation Server for source code control of artifacts, converted code and storage of UML models generated by Blu Age. During the conversion process Vendor will store all Vendor's artifacts and deliverables in this tool.

Vendor will promote Vendor's destination code from development to test as needed. Once UAT is built and ready, Vendor will migrate all destination code builds to UAT that have been demonstrated to the County for their testing. Once UAT is complete, Vendor's implementation process will begin for promotion to production including any change requests for promotion to production.

During the Post-Implementation warranty period, Vendor will turnover project artifacts to the County. If the County does not wish to maintain a Team Foundation Server license, Vendor can install an open source, source code control tool such as Git. Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency. Git is easy to learn and has a tiny footprint with lightning fast performance. Vendor will discuss this decision with the County during Vendor's Assessment phase.

High Availability

Vendor's solution provides high availability by removing any single point of failure in the design. The design also can be maintained with minimal scheduled maintenance windows such as monthly patching windows. It will also support peak payment processing requiring extended availability. This is only a projection based on the initial information that was provided in the RFP. The final Infrastructure design, including network mapping and I/P addressing will be completed during the re-platforming project once Vendor has completed and a detailed assessment of the current application environment.

The system will be available more than 18 hours a day, 7 days a week. The system will support pay processing and other processes that require extended availability in peak activity times during the year.

Scheduling and Control for Batch

Vendor understands that the County wants to maintain the current scheduling software BMC Control-M in the re-platformed environment. During the Assessment Phase, Vendor's analysts will spend time to understand the current batch processing environment and all its features via the Blu Age reverse engineering cartridge and through discussions with the County. To facilitate these discussions, the cartridge's output features:

- Each JCL file is displayed as a graph (a set of nodes and edges)
  - Each node represents an identified step and is designated with a specific color regarding its type
- Augmented with modernization recommendation
- For each step, the input/output data is highlighted
- The user is notified about missing files and unknown call types.
- Modernization tips are displayed according to the step type.

Control-M does maintain a Java programming interface. Steps for how the new scripts will run are as follows:

- Identify all jobs during the Assessment Phase
- Convert existing batch jobs to destination Java language
- Use Control-M Application Integrator to build integrations with all converted jobs
- Use Control-M Enterprise Manager to validate that new converted jobs are listed and ready to run and any that are missed are added
- Test that all jobs will run and compare against legacy.

Vendor will validate that the County has used and refined the information in the current job scheduling system and is pleased with the current batch processing flows across the various end of period cycles (for

example, year-end). Vendor looks forward to these discussions with the County as Vendor meets the requirement of using Control-M in the re-platformed environment.

Performance and Scalability of the Re-Architected Application

Vendor appreciates the County's aggressive batch turnaround and response time requirements for the re-platformed ATS. Examples include:

- Comparable performance and response times that are better or the same as the current legacy ATS.
- Response time must be less than or equal to 1 second for at least 90% of the time for simple inquiries during normal transaction volume and distribution.
- For 200+ users generating simple queries or updating transactions, the system response time must be less than or equal to 3 seconds for at least 90% of the time, excluding network latency time.
- The new platform must be able to support data and CPU intensive batch processes as highlighted in the RFP's Attachment A Schedule 6 and Schedule 7
- All environments shall have a reasonable response time and performance comparable to the current legacy production setup.

With Vendor's Assessment phase and subsequent architectural solutions and contemporary techniques for the target environment, Vendor will work to meet these response time requirements. Vendor has the experience to identify situations where there is resource contention as with a network or a less than optimally written query against a production dataset. Vendor will introduce ways to potentially improve upon these situations in the re-platformed ATS.

The County should be confident that the modern, n-tier architecture of the re-platformed ATS environment will provide many benefits to the County such as the abilities to:

- Horizontally scale the tiers independently (e.g., add additional servers to improve performance and handle increasing loads)
- Decouple workloads (e.g., batch) so that they can be placed on servers dedicated (and tuned) for that workload.
- Proactive and practical analysis of volumes and other factors and the impact within the modern, n-tier architecture to balance the tiers and the related communication paths with response time requirements.

Vendor will meet the following. For 200+ users generating simple queries or updating transactions while under average load and during core working hours and excluding extraordinary events, Vendor's solution will meet the following Online Response Times:

- 90% of the transactions will complete within 2 seconds
- 98% of the transactions will complete within 5 seconds
- 100% of the transactions will complete within 10 seconds
- Rendering of HTML in the Browser is not included in this calculation since that is a dependency on the users station and network speeds
- Transactions that involve other outside systems that Vendor does not control will be the County's responsibility to refine to meet its performance requirements
- System will scale to performance requirements based on existing user base and levels at time of contract signature.
- Batch processing time will complete during the existing Batch processing windows. Batch processing can be processed with multiple threads and does not have any sequential dependencies that would prevent multithread batch processing.

Back Up

The Vendor's solution assumes the new application server and storage Infrastructure will be able to leverage the existing backup system used today for other open systems platforms. Vendor will work with the County during the design phase of the re-platforming project to define backup schedules and batch

processes to automatically back up incrementally daily with full backup weekly. If this assumption is incorrect Vendor will work with the County during the design phase to develop an alternate backup solution.

Disaster Recovery

A Disaster Recovery plan typically includes certain essential elements. Among those elements are:

- A disaster definition: what constitutes a disaster event?
- Roles and Responsibilities matrix: outline responsibilities for all those involved.
- Disaster declaration process: how to go about to declare a disaster event.
- A Call Tree and notification methods: who needs to be notified when a disaster is declared and the method(s) of communication.
- Detailed information about the recovery site and how to activate the recovery site.
- Technical Recovery Procedures (TRP) for systems and the applications that run on those systems.

If a disaster is declared, ATS will rely on the DR plan in place for the County's hosting facility and the available capabilities for recovery. Vendor can provide detailed Technical Recovery Procedures (TRP) for the application. These procedures can be inserted in a DR Plan that includes more complete elements of DR plan such as how to switch over to a DR site once a disaster is declared. Vendor will work with the hosting provider to develop or extend a Disaster Recovery Plan to include the converted application. Additionally, Vendor has included in its table of servers a disaster recovery set of servers to order that matches Production as a suggested size for a disaster recovery site.

5. Test the Re-Platformed Application

The Vendor's delivery team will include testing experts that participate in each iteration. They will deliver the various testing artifacts and meet related milestones from the RFP. Vendor's low-risk, collaborative approach is a key benefit of the multiple iterations and testing integration. Many organizations utilize the Waterfall approach for this type of project where testing starts after others have generated all the code. Under Vendor's iterative approach, Vendor will perform testing within each iteration. Table 8 lists and explains the testing performed within each 2-month iteration.

Table 8. Two-Month Iteration Testing

TESTING TYPE	DESCRIPTION	PERFORMED BY	TOOL USED	ENVIRONMENT	WHEN?
Initial	Initial Testing confirms that the individual function performs as expected	Vendor Developer	Visual Studio and Microsoft Test Manager	Development	During Iteration
Component	Component Testing confirms that a related group of functions work together properly.	Vendor Developer	Visual Studio and Microsoft Test Manager	Development	During Iteration
Integration	System Integration Testing confirms that the necessary communications and setup exist to perform Functional Testing and addresses the need to assess whether the system interfaces with other applications or systems without interfering with how they operate.	Vendor Tester	Visual Studio and Microsoft Test Manager	Test	End of Iteration
System	System Testing encompasses an integrated system or a logical	Vendor Tester	Visual Studio and Microsoft	Test	End of Iteration

TESTING TYPE	DESCRIPTION	PERFORMED BY	TOOL USED	ENVIRONMENT	WHEN?
	subset of application functions the system will deliver. It verifies compliance with functional and nonfunctional system requirements and specifications. The process normally involves creating test conditions for evaluating the application and its infrastructure.		Test Manager		
Parallel	System Testing performed against both the new and legacy application in a Test environment to verify matching functionality.	Vendor Tester and, optionally, County Tester	Visual Studio and Microsoft Test Manager	Test	End of Iteration
Performance	Performance Testing combines users, applications, and infrastructure to create a total experience. Examines the performance dynamics of applications and provides valuable system metrics useful for analyzing system capacity, resource use, transaction response times, and overall system performance.	Vendor Tester and County Tester	Visual Studio and Microsoft Test Manager	Performance	End of Iteration
Regression	Regression Testing involves selectively retesting previously tested functions and running selected test cases to make sure that new development and defect fixes have not introduced or revealed new faults.	Vendor Tester	Visual Studio and Microsoft Test Manager	Test	End of Iteration and during post-production ATS change validation

Vendor will configure the Microsoft Visual Studio testing tool suite to enable the Vendor to manage and document a series of test scenarios and test cases that test the entire solution. Vendor will also utilize these tools to test performance so that the performance of the system will meet or exceed the performance of the legacy system.

User Acceptance Testing. Another important step is User Acceptance Testing (UAT). The primary purpose is to verify that the converted system matches the legacy system and for the County to provide its acceptance of the ATS modernization. Defects in the legacy system will be noted but will not be addressed as part of the project. Vendor will facilitate a UAT session after Iterations 2, 4, and 6. The final UAT will be more comprehensive, and Vendor have allocated additional time for it. Reaching this stage is a major accomplishment for the County and for Vendor. With multiple iterations of UAT, Vendor expects the final iteration to run very smoothly. Table 9, User Acceptance Testing lists and describes the final testing that is completed.

Table 9. User Acceptance Testing

TESTING TYPE	DESCRIPTION	PERFORMED BY	TOOL USED	ENVIRONMENT	WHEN?
User Acceptance Testing (UAT)	Vendor' testing experts work with and support the County with problem resolution and response to questions in a timely manner. Vendor help the County evaluate test outcomes, generate reports, and trace requirements. The UAT Plan has a complete list of test cases to conduct. Before adding any additional test scripts or test cases to the UAT Plan, Vendor will present these artifacts for County approval.	County Tester	County's choice	UAT	After all iterations are complete

6. CREATE THE INTERFACE FILES IN THE RE-PLATFORMED APPLICATION

Vendor will deliver the correct interface capabilities to run the re-platformed ATS. Vendor will start with Vendor's Assessment phase and leverage Vendor's iterative approach for code, data, and testing, to deliver the County's requirements including for interfaces such as the following:

- ATS II System
- CAPS+ ERP System
- ACI Worldwide Payment Processing System
- Hyland's OnBase Document Management System

Vendor clearly understands that the current application's interface format and fields must remain the same in the newly re-platformed ATS, to include the transmission method. The following highlights Vendor's process to meet this requirement:

- Save legacy interface files in the development repository.
- Use the re-platformed ATS to create the same interface files.
- Leverage the automated software to compare the two interface files.
- Look for consistencies with:
  - Technical properties, such as format, code page, line endings, etc.
  - Data equivalence; identical results are expected in both legacy and modernized files.
- Once verified, an automated comparison process will be used for re-runnable proof cases for non-regression.
- Work with the County to verify that interface processing works for each external entity under conditions where data is valid as well as invalid.
- Document the interface handling and ETL process for subsequent production operation, making certain that the transmission method and the data sources and target destinations remain the same.

7. ENSURE A SECURE APPLICATION

As part of the transformation, Vendor will move the ATS application from a fully Resource Access Control Facility (RACF) security model to a Role Based Access Control (RBAC)-based security architecture. This approach makes certain that it is seamless to the end user yet takes advantage of the flexibility of RBAC security as well as enables more detailed audit trails for user activity, permission management, and compliance.

The migration from RACF to RBAC will be largely transparent to the end user; this lowers the impact of the migration and enables a seamless workflow from the legacy tax application to the new. The proposed ATS RBAC model differs from the current RACF in that it assigns permissions to specific operations with meaning in the organization rather than to low-level data objects via user access. In the course of transforming the ATS application, and to meet project security objectives, Vendor will use the four best-practice application security services, as shown in Table 10 to meet all security requirements.

Table 10. Best-Practice Application Security Services

SECURITY SERVICE	DESCRIPTION	WHEN PERFORMED	BENEFIT TO COUNTY
CATA	Comprehensive Application Threat Assessment consists of the following: • Security Requirements Gap Analysis to produce a list of control gaps and an action plan to remediate • Architectural threat analysis to identify changes to reduce risk of latent security defects	Between Iterations 1 and 2	• Reduces risk of introduction of undiscovered (latent) vulnerabilities and security defects during the application transformation lifecycle • The overall result of the CATA effort is to make certain the application can pass a security assessment
Application Scanning Service	Uses automated tools that scan the re-factored application within the County's network. Automated vulnerability scanning provides quick-check results and detects whether the new application contains any known vulnerabilities, based on a comprehensive and constantly updated catalog of risks.	Near the end of Iteration 4	• Allows the County to fine-tune the network settings • Reduces risk of a security breach • Identifies potential threat surfaces within the application, and assists in mitigation of those risks • Provides detailed vulnerability data in support of security assessment
Application Penetration Testing	An in-depth application penetration test as well as assessment of server-side executables, third-party products, and any possible exploitation of hidden weaknesses within the converted code itself.	Near the end of Iteration 4	• Reduces risk of a security breach • Tests user authentication and authorization in the new RBAC model in the new application • Verifies authentication and access restrictions as mapped to County policy
Code Review	Provides an in-depth review of any connector code or configuration files that may contain vulnerabilities.	Near the end of Iteration 4	• Reduces risk to the County by identifying vulnerabilities within the produced code base or configuration files • Provides code specific input for security assessment

8. ENSURE TRANSPARENCY AND AUDITABILITY

8.1 Ad-hoc and Scheduled Audits

For the converted system audits can be run against either logs or SQL database tables that will maintain records about auditable events such as who logged in, when they logged in, and all actions that were performed. Auditors will be able to drill down in SQL Server queries or search through logs to see all user actions as long as those actions are also captured in legacy. Correspondence systems will also record all audit trail information that is captured in legacy to its own table or log. Batch activity events will also be recorded to logs or tables or both. Logging and tracing errors is also fully recorded in the converted system.

8.2 Recording Auditable Events

To meet these requirements, the code will record all auditable events through Log4J to either logs or tables or both to match the legacy environment. Log4J is a standard open source Java tool for writing events to tables and logs. Different instances of Log4J can be set up to generate different outputs for batch, login, data queries, correspondence or really any division that is set up in Legacy. Auditing can be set to log the activities such as logon events, directory service access, or any views or changes to specific tables. All updates or deletes to any data are recorded for a database-level audit. This complete solution will allow the destination system to match the current functionality and allow for future enhancements.

Batch and interactive applications use the same logging framework but have different Log4J configurations. This feature allows the County to independently manage the Log4J configurations within the re-platformed ATS or even other applications.

8.3 Recording Application Errors

Log4J's most common use may be for tracking errors. Errors are captured in the code and written to logs or tables. The application can then be configured to write debug, informational, or just error messages. Table 11 lists examples from the regular application logs.

Table 11. Log4Js

SAMPLE APPLICATION LOG	
Error:	• 2014-01-24 15:57:46,313 ERROR – A last name or SSN or RET ID is required. • 2014-01-24 15:57:46,313 ERROR – navigation.app.internal.pf.PFPersonSearch | Vetoing transaction: | User: cltdev01 | cltdev01:R_Search:1390597066301:+Lfvo3W+z2RjTdM6BnF5LiyK • The only difference between debug, info, and error is the severity that is displayed.
Debug:	• 2014-01-24 15:57:35,526 DEBUG – navigation.web.internal.sa.SAWorkSitePref | WebAppSecurityXSSLog : XSS Vulnerability testing for current request finished : | User: cltdev01 | cltdev01:R_START:1390597055523:+Lfvo3W+z2RjTdM6BnF5LiyK
Info:	• 2014-01-24 15:57:35,466 INFO – navigation.app.internal.pf.PFWorkSitePref | BasePF.doMethod: checking retry flag | User: cltdev01 | cltdev01:R_CHANGE_WORK_MODE:1390597054216:+Lfvo3W+z2RjTdM6BnF5LiyK

Queries. The destination database will store the user ID or batch ID and timestamp for every insert, update, or delete to any desired table in the database. The audit trail information can be queried to produce ad-hoc reports using an ad-hoc query tool. The target system will also capture system access activities (for example, a user logging into the application through its logging subsystem).

9. MANAGE PROJECT

The property tax application is a mission-critical application for the County; many stakeholders depend upon its performance and functionality. Therefore, this project requires the experienced, mature IT Governance and project management that Vendor will provide. This section describes Vendor's approach to managing project cost and schedule as well as deliverable quality and effective IT Governance. Vendor's approach to IT governance and project management will contribute to successful completion of this project.

Vendor will deliver on time and within budget, with Vendor's project status transparent to the County Project Manager at all times. Vendor will work in an efficient and diligent manner to produce high-quality deliverables on time. Vendor will also look for opportunities to provide the County with added value through thought leadership and insights from the company on the most prominent IT topics in the industry today. The objective is for the County to have access to the latest thinking to leverage innovation and new ideas when setting the County's strategic direction.

The following sections describe Vendor's project structure, project management team responsibilities, and the escalation process.

9.1 Project Structure

Vendor will use a comprehensive project plan with tasks, estimated work effort by task, critical path relationships among tasks, start and finish dates, and related deliverables. The project resource view will show the assigned person for each task. The project structure will show the relationship of the team members to accomplish the County's overall mission.

Key Personnel

Vendor has selected Tom DeAngelis, a highly qualified and experienced Project Manager, to manage this project. Tom will be supported by two outstanding technical leaders also named as Key Personnel – Russ Gibfried as Vendor's Lead Architect, and Ritesh Kolhapure as Vendor's Testing Lead – based on their relevant experience and qualifications for this project. Vendor provide full resumes for these critical resources in Table 12 summarizes their key qualifications and experience.

Table 12. Key Personnel

KEY POSITION	KEY PERSONNEL QUALIFICATIONS AND RELEVANT EXPERIENCE
Project Manager, Tom DeAngelis	Tom DeAngelis is a Project Manager and Senior Consultant in the USPS Applications Practice. Tom has more than 10 years of experience managing, developing, and implementing cost-effective, efficient IT strategic projects, in both government and commercial industry. He brings strong program management fundamentals and has consistently managed projects on schedule and within budget. He leverages his strong leadership, communication, and organizational skills to build partnerships with his clients and effectively manage his teams. He has worked in a variety of industries – including Federal, state, and local government – and software and telecommunications. Additionally, he has managed application rationalization assessments for the Federal Government and local government as well as the banking sector in South America. He has recently led IT transformation initiatives involving application modernization and enterprise-wide IT consolidation and discovery workshops, generating an architectural roadmap from current state to desired end state.
Lead Architect, Russ Gibfried	Russ Gibfried is a senior architect and experienced IT leader with more than 25 years of experience in the IT industry. He has 12 years of experience in Enterprise Architecture with expertise in strategic planning and delivery of enterprise-wide IT initiatives and projects spanning distributed/mobile/cloud and outsourced models. He has a successful background working with C-level executives, introducing innovation and IT strategies and defining actionable roadmaps that improve organizational productivity, reduce costs, and enable business center functions through standardization and integration. His experience

KEY POSITION	KEY PERSONNEL QUALIFICATIONS AND RELEVANT EXPERIENCE
	includes the following: • Fortune 500 experience aligning business and IT strategies in complex corporate environments • Proven success in providing innovative solutions on critically sensitive issues • Affinity for accomplishing objectives affecting multiple disciplines and departments • Specialized skills in the use of architecture frameworks, methodologies, and patterns through solution delivery (Open Group CA Level 2 certified, TOGAF 9 certified, IT4IT, DevOps, Agile, ITIL 3.0, Gartner/Meta) • Effective at breaking down complex problems to a level that work groups can understand and own • Excellent communication, presentation, and organizational skills • Fluent in English and has conversation abilities in German/Spanish and beginning Mandarin.
Testing Lead, Ritesh Kolhapure	Ritesh Kolhapure is a seasoned IT professional with a broad background in all phases of applications projects. He has extensive experience in testing processes, tools and methodologies. His experience includes the following: • Over 9 years of experience in the software industry with in-depth knowledge of the SDLC • Result-driven Quality Assurance professional with solid knowledge in manual and automated software testing and extensive experience in software development methodologies including both Agile (Scrum) and Waterfall models • Using the Agile model on the current project for over three years • Familiar with the financial, DMV, DoD and health care domain • Proven experience using test management and defect tracking systems such as HP Quality Center (ALM), Jira, Agile Manager • Serving as QA Lead, overseeing quality-assurance, automated regression, structured and data migration testing spanned across 4 teams on the DMV software solutions projects • Performed system, unit, performance, regression, data migration and interface testing. Provided the development team and senior management with detailed reports on quality metrics, identified bugs/flaws and recommended fixes. • Hands on expertise with test automation tools such as QTP, UFT, ALM • Experience in performance of Build Validation and Verification, Positive and Negative, Boundary Values Analysis, Smoke (Sanity), Functional, Integration, System, Regression, Ad-hoc (Exploratory), Cross–Browser, User Interface and User Acceptance tests. • Proficient in multiplatform (Windows. Linux, MacOS) and cross browser testing • Solid SQL skills, can write complex SQL queries; functions and stored procedures for backend testing and End-2-End testing. • Experienced in the ETL process to fit operational needs for a database or data warehouse • Good knowledge in Perl, Oracle, Windows, Unix Shell programming • Experience in CGI/DBI/DBD programming in Perl using JavaScript and HTML

Organizational Structure

Vendor's project team reports to the Vendor's State and Local Government Accounts division under Steve Tolbert and is led by Vendor's California Account Executive: Cathy Varner. Cathy is a highly effective, experienced Vendor leader located in the southern California region overseeing Vendor's contracts with the County of San Diego and cities of Anaheim and Irvine. Vendor's streamlined and efficient structure allows the vendor to plan and execute all tasks described in the Scope of Work (SOW) and enables achievement of the high-quality project deliverables. The team has clear and direct lines of

accountability for all SOW tasks. Vendor's Project Manager Tom DeAngelis, Lead Architect Russ Gibfried, and Testing Lead Ritesh Kolhapure will provide overall direction to the project team.

Vendor will use two development teams located in Plano, Texas, Pontiac, Michigan, and El Paso, Texas, to facilitate the iterative approach for this project. Each team will mark up different sections of CA-IDEAL source code and convert it to UML as well as processing data migrations. This approach results in an overall shorter implementation timeline for this project, enabling the Vendor to demonstrate measurable and observable accomplishments made along the way. The two teams will share leveraged resources such as Apps Transformation Consultants, Technical Advisors, Testing Team, and Blu Age SME.

Team Responsibilities

PM Tom DeAngelis serves as the primary Point of Contact for the County Project Manager. Tom is responsible for the performance of Vendor's team. He is accountable and responsible for execution of the project and has the authority to make decisions and commit resources necessary to execute courses of action required to achieve the contract objectives and performance goals. Table 13 describes the functional responsibilities for each organizational element of Vendor's team.

Table 13. Roles and Responsibilities

ROLE	FUNCTIONAL RESPONSIBILITIES
Project Manager	• Applies 10 years of relevant management and oversight experience, offering expertise that reduces risk • Serves as single POC for the County for all matters related to this contract • Manages the Vendor team to make sure Vendor meet/exceed all project requirements
Account Executive	• Assists the Project Manager with contract scope management, issue resolution, and change control as needed in a proactive, positive way • Responsible for invoice review, approval, and submission • Establishes and grows the relationship between Vendor and the County • Looks for ways to bring Vendor innovation, insights, and services to assist the County achieve its business and IT goals and objectives
Vendor Executive Leadership	• Provides guidance to the Account team as needed related to corporate policy, procedures, and business practices. • Provides assistance obtaining Vendor corporate resources as needed by the project team
Apps Transformation Principal	• Provides guidance and insight related to current and future application technical platforms and the approach to progress toward the project objective • Participates in key project meetings; reviews progress; walks through key deliverables; provides assistance with issue identification, decision making, and escalation flow; and plays the role of advisor at key touch points for the duration of the ATS re-platform initiative • Builds relationships with County leadership providing information on Vendor Apps Transformation Global Practice expertise and how to use the information to assist the County in meeting business and IT goals and objectives
Other Technical Advisors	• As requested, provide wisdom from their respective areas of expertise to help the ATS re-platform project meet its goals and objectives
Lead Architect	• Applies 12 years of relevant legacy and modern architecture experience, offering expertise that reduces risk • Serves as technical POC for the County • Manages the technical implementation to make sure Vendor meet or exceed all

ROLE	FUNCTIONAL RESPONSIBILITIES
	project requirements • Responsible for all Technical Requirements including Security
Testing Lead	• Applies 14 years of progressive testing experience, offering expertise that reduces risk across all the relevant ATS components • Responsible for all testing deliverables and activities
Tester	• Responsible for executing testing, reporting issues, and completion status of testing
Team Lead	• Responsible for the progress of tagging and converting the existing system to UML2 • Responsible for progress of data conversion
Blu Age SME	• Assists team in all matters related to Blu Age software – cartridges, processes, and training
Data Analyst	• Assists Data Architect in converting code
Data Architect	• Overall Data Conversion Lead who understands both legacy DB2 database and the target Microsoft SQL Server database • Reviews existing data and provides information to the County on progress and data issues and resolutions
Conversion Developer	• Reads existing CA-IDEAL and JSL and tags this for Blu Age Conversion to UML2
System Administrator	• Responsible for installing target applications on Virtual Machine operating systems starting with Development, Test, and User Acceptance Testing • Will train a County-provided System Administrator on how to build Production and Disaster Recovery as part of Knowledge Transfer • Support patching of Development, Testing, and User Acceptance Testing

RACI Chart

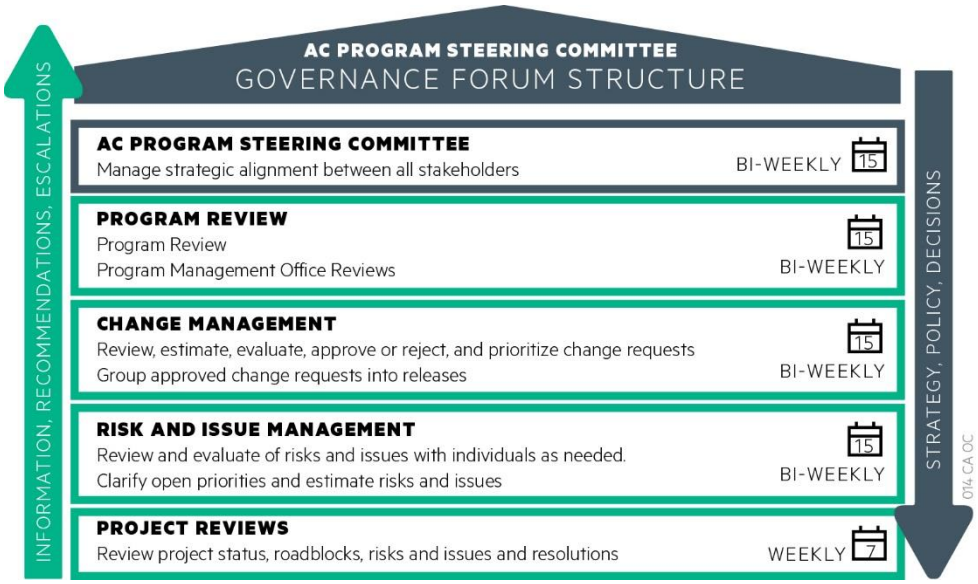
The RACI chart is an excellent artifact with which to clarify the roles and responsibilities of both the County's and Vendor's people working toward overall project success. During the Assessment, Vendor will have a resource view of the project work plan, and the County can identify members of its staff who will be assigned to assist; their participation will help to secure the success of the overall program. Once the County identifies the specific names and Vendor has the refined work plan, the next step is to document whether each County or Vendor team member is Responsible, Accountable, Consulted, or Informed regarding a specific task. The County and the Vendor leadership review and refine this list and communicate this artifact along with the work plan at the project kickoff. Vendor may modify the RACI chart during the course of the project, yet it makes sense to have this artifact to align participants to the work at hand. The RACI chart helps the Vendor to provide needed training, communication, and alignment around the overall plan. Overall the RACI chart aligns responsibility and authority clearly across all stakeholders.

Governance Process

Effective governance starts with the project manager and involves several governance groups from the County: the Auditor-Controller Steering Committee, the Project Management Office, and leadership of the AC IT Director and other key stakeholders.

Figure 7 illustrates the Steering Committee structure; the following section describes this structure in more detail.

Figure 7. AC Steering Committee



A well-executed Steering Committee structure provides the County with the governance necessary to effectively set Strategic Direction and Policy and provide a collaborative environment in which to address issues, priorities, and escalations.

Program Review

The Auditor-Controller Steering Committee will provide the structure and forum for the bi-weekly program review. The Vendor's Project Manager and other stakeholders will cover the program progress, issues, and proposed resolutions as well as the impact of any change as needed. County participants will be the Auditor-Controller, Treasurer-Tax Collector, Clerk of the Board, AC IT Director, AC IT Project Management Office Leader, and the ATS Manager. The Vendor will also present and discuss the major milestones at this forum. In addition, the Steering Committee may help the project team resolve any open issues that Vendor cannot resolve on its own.

Change Management

Vendor will hold bi-weekly meetings that focus exclusively on the management of change. This communication forum will include the review, estimation, evaluation, approve/reject decision, and change request release prioritization.

Risk and Issue Management

Vendor will use a forum to focus on specific risks and issues and their management. At this forum, Vendor will review and evaluate the situations with specific individuals as needed. People will provide clarifications on the open points as well as risk mitigation strategies.

Project Reviews

Vendor will keep abreast of status. In weekly Project Reviews, the County's and Vendor's Project Managers as well as other interested stakeholders will review accomplishments from the past week, plans for the next week, any new roadblocks, and status of risks and issues to further understand the proposed resolutions. This forum will also include an update of the financials.

These various governance forums work together in a well-executed governance structure. For example, the Auditor-Controller Steering Committee would provide guidance on strategy and policy decisions; the Project Reviews and other forums would communicate relevant information, issues and their resolutions,

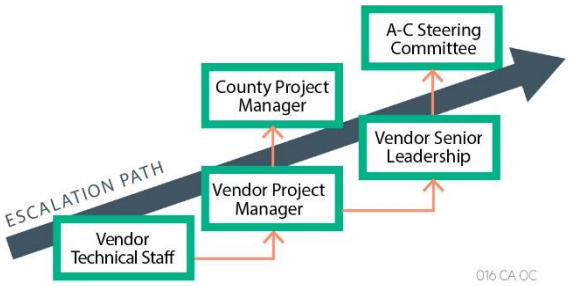
and escalations as needed. This two-way, transparent and collaborative governance structure will make certain that the ATS modernization project meets overall expectations for the desired outcome.

Escalation Process

The escalation process is a key component of Vendor's communications and management strategies. The following core principles apply to Vendor's escalation process:

- Vendor's escalation process closely aligns with Vendor's Governance model.
- All reasonable efforts are made to resolve issues at the lowest level within the project, thereby avoiding escalation where possible.
- Speed of escalation is based upon criticality and priority of the issue.
- Escalations support the collaborative working relationship between Vendor and the County.
- Escalations are fully transparent and treated as proactive communications that bolster Vendor's "Always Accountable" posture on the ATS re-platform project.

Figure 8. Project Escalation Path



Vendor designed Vendor' project escalation process to enable issue resolution at the lowest level. Vendor's process also enables timely, joint escalation based on the severity of the issue.

Project Escalations. Figure 8 illustrates the escalation path for this project. Every effort is made to resolve project-level issues within the project framework. Project-level issues include cost and schedule variance, staffing, quality, scope, and others. Project issues are escalated for visibility or information if (a) the issue affects more than one functional area or (b) the County or Vendor issue owner believes that leadership should be aware of the issue. Issues are also escalated for leadership action or resolution if an effective action plan cannot be developed or completed at the project level.

9.2 Project Control Document (PCD)

The Project Control Document is an essential governance artifact. Vendor and the County stakeholders will use it throughout the project. It will help the ATS re-platform team to agree on objectives of the Statement of Work. The Project Control Document, Statement of Work, and related IT Governance activities will act as a means to coordinate and communicate with all parties and stakeholders at the County and in the vendor community. IT Governance will provide a mechanism to manage changes that will occur over the life of the contract. In summary, the Project Control Document – coupled with sound IT Governance processes, activities, and sub-activities – will maximize the value to the County related to the ATS re-platform initiative. Some guiding IT Governance principles for Vendor's ATS re-platform project include the following:

- Success comes from an effective relationship among people, process, and tools
- A model that is adaptive to the County's requirements, especially appropriate controls
- Executive level-driven from the Auditor-Controller
- Responsiveness to change
- Evolutionary toward a refined approach

9.2.1 Project Management Standards

Project management standards are essential. and Vendor's Project Management Methodology (PMM) will guide the team on the ATS re-platform project. Vendor will apply Vendor's proven PMM to satisfy the specified County objectives for the ATS re-platform project. PMM represents a defined systematic methodology and standards for planning, directing, monitoring, adjusting, and controlling a series of interrelated activities. PMM standards include procedures, metrics, techniques, and job aids that will assist the ATS re-platform project manager and team in applying proven project management practices.

Vendor has based PMM on several elements. First is the industry standard Project Management Institute (PMI) Project Management Body of Knowledge (PMBOK), which includes scope, quality, resource, schedule, risk, communications, contract and financial areas. PMM also leverages the CMMI Institute's Capability Maturity Model. Both have Control Objectives for Information and Related Technologies (COBIT) 5.0 as a process guide across the IT Governance areas, activities, and sub-activities. Finally, Vendor has successfully completed many relevant projects over the last 50 years, and Vendor will apply this expertise as well.

All Vendor project managers complete PMM training and use the tools and techniques that support this methodology. Vendor is CMMI Level 5 compliant to consistently develop and share project artifacts during the ATS re-platform initiative for the County. As stated earlier, Vendor will regularly conduct a variety of standard project status meetings. Vendor will make progress, monitor risks, address issues, and manage staff and change accordingly to enable success for the County. Table 14 highlights the standard PMM discipline and approach.

Table 14. Standard PMM Discipline and Approach

PMM DISCIPLINES	APPROACH
Schedule Management	Identifies and documents tasks, dependencies, duration, assigned resources, resource estimates, critical path, and progress to schedules.
Cost Management	Develops a quantitative assessment of the likely costs of the resources required to complete the project.
Risk Management	Determines and communicates the broad degree of risk that the project faces, and initiates risk management.
Project Plan	A collection of formal approved documents that communicate project expectations and are used to manage and control project execution.
Supplier Management	By managing supplier relationships, the project manager confirms suppliers are performing as promised, on schedule, and for the agreed price.
Project Reporting	Reporting and communicating project status informs the County, Vendor leaders, and the ATS re-platform project team about overall project performance. The project manager monitors variances in actual communication activities against the activities described in the Communication Management Plan, identifies issues, and takes action to resolve them.

9.2.2 Planning and Control Documents for Project Planning, Administration, and Management

The following are standard planning and control documents that Vendor will use on the ATS re-platform project.

- **Timesheets –** Every project member completes a timesheet on a weekly basis. It includes the assigned tasks, original estimated work hours for that task, start and completion dates, estimate to complete in terms of hours (which shows the remaining work hours for a task by individual, not just a calculation of the hours remaining after subtracting the actual hours worked to date from the original estimate), actual hours worked on each task for the individual, and any comments. Comments would be provided, for example, if a person increases the estimate to complete work hours or changes a forecast date.

- **4-Up Reports –** A one-page document that highlights at the ATS re-platform team level four areas including accomplishments from the last week, plans for the next week, any issues and proposed resolutions, and an overall financial summary of the project.

- **Issue Log** – This is a living document in which project team members may enter an issue and a proposed resolution. The project manager reviews and refines the issues log weekly and includes it as backup to the 4-Up report. It may contain additional information related to the issue or proposed resolution, identify the person assigned to that issue, and give the status (e.g., approved by the AC Steering Committee) and the impact to the overall plan if any.

- **Change Requests** – This centralized document tracks suggestions for improvement. It captures the owner of the change request and the category, priority, and business case to accomplish it. It also captures the status of the change request. Vendor and County leaders may jointly determine that the change request cannot be cost justified, in which case it may be cancelled with no further action.

- **Walkthrough and Approval Sheets** – These items provide the required discipline to make sure that project deliverables are progressing. The walkthrough and approval sheets represent that the County and Vendor stakeholders are collaborating to review, refine, and approve key artifacts from the ATS re-platform project. The Approval Sheet summarizes the participants, topic, documentation by title, and disposition of each review (for example, accepted with changes). Deliverable walkthrough rigor enables the project to stay on track and gives the County confidence that Vendor are progressing toward Vendor's objective.

- **Work Plan and Schedule** – Vendor will use MS Project as the automated project management tool for many of these Project Management artifacts. The most important of these is the ATS re-platform project work plan and schedule. Vendor will baseline this plan at a number of points during the project. Vendor has created the initial work plan for the ATS re-platform proposal. This plan will be refined after the Assessment and as needed, taking into consideration findings about the scope, approach, County participation, and target dates. The Vendor project manager will enter time and other information weekly and publish a new plan so all participants and stakeholders know where are and where we need to go.

- **Controls and Compliance** – Vendor anticipates that the County may periodically audit the ATS re-platform project. The project management artifacts described above will help with this review. Vendor is prepared to fully participate in the spirit of full transparency, address any observations, and document Vendor's intended corrective actions as needed in a timely and effective manner.

- **County Auditor-Controller IT Policies and Procedures** – Vendor clearly understands that Vendor's ATS re-platform project is not an isolated event. It is incumbent upon the Vendor to be aware and comply with relevant policies and procedures as well as suggest refinements to these guidance documents during the course of the project. Vendor look forward to working with the AC IT Project Management Office and the other County stakeholders in this area.

9.2.3 Project Management and Oversight of Vendor Staff

Vendor's Project Manager and Technical Leads have the responsibility to manage the project and provide oversight, coaching, and mentoring to Vendor's staff. Vendor use a variety of methods, techniques, and tools to manage the performance of Vendor's staff. One such method is Vendor's employee performance review process. Semi-annually, every Vendor employee must document a self-appraisal of their accomplishments. Other colleagues provide feedback as well under the umbrella of a 360-degree appraisal process. Then, each person's immediate supervisor holds a formal review meeting with each direct report around performance. The supervisor grades that person as above, meeting, or below expectations. This grade directly drives the person's career track and compensation. Customer satisfaction and contributions to the team play a significant role in a person's performance evaluation.

Vendor also has a program called VoC or Voice of the Customer. Vendor take this evaluation very seriously. The VoC allows Vendor's clients to provide direct feedback on the entire experience in working with Vendor as well as specific individuals as appropriate. The VoC directly affects the career and compensation of the Vendor account executive and other leaders. In summary, Vendor has a

performance-based culture and Vendor look to Vendor's clients' satisfaction with Vendor's services as a barometer for Vendor's company's and Vendor's professionals' success. When Vendor's clients succeed, Vendor succeeds.

9.2.4 Status Reporting, Regular Project Meetings and Other Governance Meetings

Status Reporting

The Vendor and County Project Managers will work together to finalize the frequency and format of status reporting. The Vendor Project Manager will provide sample formats from Vendor's corporate repository of best practices and collaborate with the County Project Manager to define the details. Vendor's status reports will include weekly and monthly reports to cover the following areas:

- Accomplishments for the current period
- Plans and focus areas for the next period
- Any issues and proposed resolution along with current status
- Project metrics such as work completed compared to plan, deliverable target dates, and overall financial metrics

Regular Project Meetings

Vendor's team uses daily stand-up meetings as brief huddles to discuss what was completed on the previous day, what is scheduled for today, and any issues that need to be raised and addressed. Vendor will conduct weekly reviews with the County Project Manager, providing full transparency of the project status.

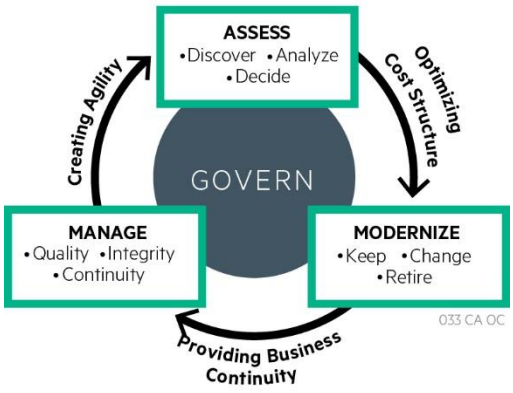
Governance Meetings

Monthly governance meetings will include a high-level briefing of project status and a discussion of any policy and/or escalation issues that need to be addressed. Attendees include the Vendor Project Manager and Technical Leads, the County Project Manager, and representatives from the office of the Assessor, Auditor-Controller, Clerk of the Board, and Treasurer-Tax Collector along with any other stakeholders determined by the County Project Manager.

9.2.5 Management Strategies and Process

The ATS re-platform project will follow the Vendor's iterative process. This approach allows various the Vendor and County subject matter experts to work together in a highly collaborative manner. The project begins with the Assessment phase. The Vendor will follow its Advise–Transform–Manage Framework. A key part of Vendor's Advise component is the three-step Assessment Process shown in Figure 9. This up-front activity will deliver important insights and decisions about the go-forward plan. From a Governance perspective, Vendor strongly recommends that Vendor progress through this Assessment work and solidify our joint approach to CA-IDEAL to Java programming, database migration, and all the other ATS re-platform modernization requirements.

Figure 9. Assessment Process



The Vendor Assessment process delivers key insights and decisions to develop an effective go forward plan.

Results:

- Modernized, agile-like environment where IT and the functional areas work together
- Total cost of ownership (TCO) is lowered to enable the County to accomplish the mission with ATS more efficiently based on discovered insights.

Assessment:

The Vendor's Assessment phase will deliver the following benefits to the County:

- Realize the scope, scale, and all Critical Success Factors
- Align mission objectives with IT services
- Identify quick wins
- Identify potential roadblocks
- Gain joint perspective on strategic and tactical priorities
- Attain stakeholder buy-in
- Leverage best practices
- Build preliminary ATS re-platform road map

The most valued outcomes of the Assessment phase are the activities and procedures for IT Governance of the ATS re-platform project. These outcomes will include the following:

- Memorandums of Understanding for Vendor's services including roles and responsibilities of the Vendor and County Project Managers.

- The requirement to capture actual work time as well as comparison of this information with the baseline project plan including related forecast activity and assigned resource work-hour estimates to complete, target dates, and individual and overall deliverable progress.

- A single evaluation criterion for the overall ATS re-platform success, and an objective way to evaluate progress, issues, proposed resolutions, and changes to the original baseline objectives.

- Standardized, effective, and efficient root cause analysis work session technique to share information about a particular problem along with a transparent way to resolve each issue via a high-performance project team that is thoroughly trained in this IT Governance activity to keep the ATS re-platform project on track.

- An active way to use contingency in the work plan for situations where unplanned activities and estimates are trending unfavorably to accomplish the revised forecast of actual work hours by task, person, target date, and deliverable as needed.

- A disciplined way to understand and evaluate any perceived changes to scope. This standard methodology will use the risk, relative benefit, and concept of opportunity cost to select the best approach where there may be a deviation from scope.

- A deliverable walkthrough schedule to show the major checkpoints for reviews and approvals. Vendor will use the RACI chart to guide these discussions. A RACI chart shows specifically the persons who are Responsible, Accountable, Consulted, and Informed relative to artifact signoffs.

Before Vendor completes the Assessment phase, Vendor will create a detailed work plan and related resource view that will show not only individual responsibilities for a task but also assigned personnel including how each person's job relates to the others on the team to accomplish the ATS re-platform project.

Vendor will need to clearly understand all activities related to the operations and enhancement of the current ATS. It makes sense to evaluate these production system support activities and compare them to the ATS re-platform project work.

Another sound Governance technique is to apply efficiency in project reporting and briefings. During the Assessment, the County and Vendor will agree on the best IT Governance structure for the ATS re-platform project. This collaboration will help the project team minimize the number of data calls, meetings, and ad hoc status requests for all stakeholders.

A sound IT Governance structure will help the County gain efficiencies, visibility, and a cadence of early corrective action – not only on the ATS re-platform project but also on other initiatives, leveraging the success of this approach across the Auditor-Controller team and the County.

The IT Governance structure will include Steering Committee meetings as well as discussions with the Auditor-Controller Project Management Office, the AC IT Director, and the County's Project Manager. To make certain these conversations are efficient, effective, and mainly transparent in the spirit of open collaboration throughout the ATS re-platform project, Vendor will use the following:

- **Artifacts** – Leverage the existing Auditor-Controller IT Governance artifacts as appropriate.
- **Sprint Management** – Conduct daily stand-up meetings with the project team. These are brief huddles in which team members may describe yesterday's accomplishments, plans for the day, and any issues and proposed resolutions. These sessions help to make sure weekly status reports are accurate.
- **4-Up Reports** – Vendor uses an effective, at-a-glance format for Vendor's weekly project status reports. These documents will include accomplishments from the past week, plans for the next week, any issues along with proposed resolution summaries, and a 'true-up' of project metrics such as work expended to date and forecast to complete compared to the project plan baseline, deliverable target dates, and overall project financials.

Vendor will bring a number of proven management strategies and processes that will keep the ATS re-platform project on track. the County included quite a number of ingredients for success in the ATS RFP, including the following:

- **Process** – Vendor has accomplished a number of these technical modernization projects, and Vendor looks forward to working with the County in documenting and following the best approach to accomplish Vendor's joint objectives for this important initiative. Although the re-platform project's iterative process may be new to some people at the County, it is a proven approach. Vendor looks forward to working closely and transparently so all stakeholders see the benefits of this approach.

- **Roles** – Vendor knows that specificity helps drive responsibility and accountability. Vendor knows that defining a Project Organization Chart is good, yet not sufficient. The Vendor will clearly document all project roles and assign an individual to each role. Inevitably, one person may have to fill multiple roles – such as a technical analyst assisting with training materials creation. The Vendor will reflect this situation in its work plan as a deliverable from the Assessment.

- **Automation** – Vendor strongly believes that it needs to start right with the right tools. Vendor needs to complete its Assessment phase, provide training, and clearly understand the role and timing that the software tools provide to the team.

- **Communication** – Vendor and the County will maintain a constant flow of quality information throughout this initiative. Weekly status report emails are helpful but not sufficient. Regular client meetings, informal deliverable reviews in advance of formal walkthroughs, and a strong project manager engaged on a daily basis all help to make certain that issues do not catch the County off-guard.

- **Training** – Everyone on the project team may need some additional training in a number of areas based on individual assignments. As the re-platform modernization strategy may be new to the County, it makes sense to bring all stakeholders up-to-speed to improve their awareness of this approach to do a good job in their roles. It is important too for the Vendor team members to quickly understand the County's policies, procedures, organization, and standards. Training will improve everyone's productivity and confidence in the overall strategy and their individual workloads.

- **Initiative** – The project team will take the initiative to work collaboratively with the ATS user community. This interaction will help to manage scope and prioritize requirements versus like-to-

haves. In addition, there may be opportunities to refine workflows and business processes where it makes sense in accordance with the spirit of the ATS re-platform technical modernization.

- **Change Management** – Vendor knows a key ingredient to its success will be rigorous control of scope. Vendor and the County will work together to make certain that project team members understand the agreed upon scope in detail. This insight is critical for many reasons – especially to evaluate a new request relative to this scope such as a law change or a public record request that the in-flight target ATS may satisfy. As this project's mission is a technical re-platform, Vendor's team members will keep this objective in mind as Vendor works together with the County to manage change requests via a standard operating IT Governance practice.

- **Escalation** – Vendor and the County will raise issues immediately and manage them effectively. Vendor will proactively work together to avoid schedule, budget, and quality issues similar to scope creep. Vendor will document issues and escalate to the appropriate team members and stakeholders. Vendor will not just 'throw an issue over the wall' or simply enter that issue into an automated issue management system without the proper steps for timely and effective escalation and resolution. Vendor will work with the County and its Governance structure to make this process an efficient and transparent one. Vendor will follow an iterative process to effectively and efficiently complete the re-platform project. Vendor will work closely with the County subject matter experts and other stakeholders to plan, organize, complete, and control project deliverables. This collaborative, high-achieving team is empowered to identify, size, and prioritize issues every day. Most of the time, Vendor will be able to resolve prioritized issues in the normal course of working through the project. At times, though, there may be the need to escalate an issue. First, the County Project Manager will engage with the Vendor Project Manager to gauge progress against tasks, with assigned resources, toward deliverables. The County's and the Vendor's Project Managers will talk about issues and potential resolutions. Depending on the situation, the Project Managers together will be able to decide how to resolve the issue. In other cases, they may wish to escalate that issue and the proposed resolution including the impact to the ATS Re-Platform project to the AC IT Program Management Office and the AC IT Director. Vendor understands that it needs to brief the Auditor-Controller and the Auditor-Controller Steering Committee about an issue. Vendor will work with the County to apply a unified approach to raise as well as to resolve an issue.

The following sections define and describe Vendor's management strategies and processes for these specific areas:

9.2.5.1 Project Planning and Management

Vendor will follow a sensible approach to target dates. Vendor will agree on the specific project scope, approach, client participation, and work effort estimates by prioritized activity, deliverable, and resource before committing to target dates. Vendor will use walkthroughs, governance meetings, and other artifact reviews to facilitate not only progress against plan but quality in its results. Vendor's project planning and management approach provides the County with the low-risk path to success with the ATS re-platform initiative.

9.2.5.2 Scope Management and Change Request Management

Scope Management is one of the most critical aspects of sound IT Governance. Vendor has found that on any project there can be legitimate, jointly agreed upon scope changes; there are Governance activities to accommodate this change in the overall project definition. The Vendor's project manager and other leadership will be keenly aware of the terms of the project and will alert the County if any potential scope change is detected. Vendor has transparent and fair methods to adjust the baseline and the related services contract for these circumstances. More common, though, is the case where scope expands due to a number of small changes ("scope creep"). The results of these changes occurring without proper Governance may be unfavorable with regard to work quantity, quality, and cost variances and therefore must be managed closely.

Vendor will follow effective change request management. Vendor will review, evaluate, estimate, approve or reject, and prioritize all change requests with the County. It may make sense to group individual change requests together for a particular release. The Vendor's Project Manager is responsible for the coordination of meetings with the County's Project Management Office leader. The frequency customarily is bi-weekly, yet Vendor can visit these weekly as needed.

The inputs will be the current change request log with all non-approved and non-rejected changes as well as the meeting minutes and other artifacts to gauge prior and suggested actions, decisions, issues, and risks. The output will be the disposition of change requests, release plans, and meeting minutes from this session. Using the RACI Chart, the usual participants will be the County Project Manager, the individual responsible for releases, and the Vendor's Project Manager. When there is a need to escalate a particular change request, one route would be with the Auditor-Controller Steering Committee – especially if the financial impact of the desired change is above a certain amount.

The County and Vendor leadership will work together to document the overall change management standards and high-level processes for the ATS re-platform project as needed. Vendor may decide to refine these change management procedures leveraging the AC IT Project Management Office's Governance standards. Vendor will leverage automated tools to efficiently capture and track requests for and impacts of change.

9.2.5.3 Issue and Risk Management (Including Identification and Mitigation)

Issue Management. The purpose of issue management is to identify, escalate, and resolve issues that occur during the project. Issues may be raised by individual team members or project stakeholders. The Vendor's Project Manager has the responsibility to make sure issues are resolved in a timely manner. He will do this working side by side with the Technical Leaders and the County Project Manager. The customary frequency to address issues is daily, with a weekly review of the status to verify that all issues are progressing toward resolution. The input will be the current Issues Log document and meeting minutes from prior sessions. The output will be the current meeting minutes and the updated Issues Log document. This meeting's attendees include the Vendor's Project Manager, County Project Manager, Technical Leads, and the applicable team members or stakeholders. For issues that are stalled, a separate meeting will be called to determine resolution strategy.

Risk Management. The purpose of project risk management is to increase the likelihood and impact of positive events and decrease the likelihood and impact of negative events. Figure 10 depicts the six-step process Vendor uses to perform Risk Management for projects.

Figure 10. Vendor Risk Management Approach

Vendor proactively identifies risks, and then rapidly implements mitigation strategies to eliminate risks from occurring or minimize impact if a risk does occur.

Step 1 – Risk Management Planning. During Project Start-Up Vendor collaborates with the County Project Manager to finalize procedures for Risk Management, confirming Vendor's approach aligns with established County risk management procedures and best practices, and to incorporate additional County-specific requirements (such as for risk handling, reporting, and escalation).

Step 2 – Risk Identification. Risk Identification is the continual process of identifying risks throughout the duration of the project. The goal is to identify risks that can prevent, degrade, or delay the

achievement of project objectives; risk opportunities are also identified that may create, enhance, or accelerate objectives. Project risks fall into three categories:

- **Known Risks** – Risks that have been identified and analyzed, so they can be managed
- **Predictable Risks** – Risks that experience tells the Vendor that we have a high probability of encountering
- **Unknown Risks** – Risks that could happen, but the likelihood or timing of the events occurring is unknown at this time

Vendor's team accesses a corporate repository of lessons learned that includes numerous risks identified on similar client engagements along with successful mitigation strategies. This process helps Vendor's team to identify the vast majority of potential risks across all three categories, and apply proven mitigation plans to address risk. Identified risks are logged into the Project Risk Register, which is owned and managed by the Vendor's Project Manager.

Steps 3 and 4 – Risk Qualification and Quantification Analysis. Analysis is performed to validate that the risk in fact exists, gauge the probability of the risk occurring, and determine the impact to schedule, cost, and quality. The Vendor's Project Manager uses the Probability and Impact ratings to determine an overall risk score for each risk (Very High, High, Medium, Low), then updates the corresponding entry in the Risk Register. Risks are prioritized and next steps defined as part of the risk management process.

Step 5 – Risk Response Planning. After risks are assessed and prioritized, Risk Response Planning takes place to develop risk action and contingency plans, and to guide decisions to avoid, mitigate, or transfer certain risks and ignore, enhance, or pursue certain opportunities. Risk Response Plans are logged in the Project Risk Register. The risk owner is assigned and responsible for developing options and actions to mitigate/manage risk appropriate to the severity and impact of the risk. Although primary responsibility falls to the risk owner, everyone on the team is responsible for helping to address identified risks.

Step 6 – Risk Monitoring and Control. Frequent and proactive review of risks is a critical component of success on the ATS re-platform project. Risks are continually managed throughout the project lifecycle. The Vendor PM hosts a weekly meeting to review Risk Response Plan statuses and determine whether any assistance or escalation is needed on the highest-ranked risks. Any new risks or changes in risk are documented. Any risks that do not have an effective action plan or are not executing to the plan are escalated for resolution. Risks associated with change requests are reviewed as part of the change control process. Risk assessments, residual risks, and acceptable levels of risk are reviewed at planned intervals, taking into consideration any changes in project direction and policy. The impact, probability, and strategy are reviewed/updated, including the Risk Response Plans as needed.

All risks are tracked through closure. In this step, the Vendor's Project Manager, collaborating with the County's Project Manager, determines whether the Risk Response plan has been completed and the risk has been mitigated. The Vendor Project Manager closes the risk as appropriate and documents results of the response plan for inclusion in Vendor's lessons learned repository.

9.2.5.4 Quality Management

Quality Management Methodology and Approach. Vendor views quality as the daily practice of delivering software development management and services that perform to client expectations across several dimensions: accurate and timely deliverables; adherence to established standards, policies, and procedures; frequent and candid communications; and service excellence. Vendor has always been a leader in quality, beginning with Vendor's early adoption of International Organization for Standardization (ISO) quality standards and Capability Maturity Model Integration (CMMI) for Development (CMMI–Dev). As detailed in the callout box to the right, Vendor hold a comprehensive set of certifications that demonstrates Vendor's corporate commitment to these industry standards. The ISO certifications and CMMI ratings confirm Vendor's dedication to quality and provide a strong foundation of repeatable standard processes and methods that Vendor will tailor and leverage to fit the needs of the County and the ATS re-platform project, resulting in an efficient implementation of proven processes and tools to control quality.

Vendor's Project Manager, with assistance from Vendor's U.S. Public Sector (USPS) Quality Office, will make certain Vendor delivers a quality product to the County. Immediately after contract award, the USPS Quality Office conducts what Vendor refers to as Accelerated Delivery Planning (ADP) – a best-practice, multi-day, collaborative startup and planning session for new projects. The ADP helps to create a common understanding of agreed contractual commitments along with a shared vision of scope and deliverables, roles and responsibilities, and escalation processes.

Once the project is under way, Vendor's Project Manager, supported by Quality Office advisors, will make certain quality is ongoing through use of Vendor's Quality Assurance and Quality Control activities (outlined in Table 15 enabling Vendor and the County team to reflect on what is going well and what can be improved. These processes help the Vendor to evaluate how the partnership is working, to identify waste, and in general to improve the efficiency and effectiveness of the teams. Periodic reviews throughout the implementation keep the joint Vendor and County team unified and help prevent lengthy corrective activities that can result from lack of delivery quality.

Table 15. Quality Management Activities

QUALITY ASSURANCE ACTIVITIES	QUALITY CONTROL ACTIVITIES
• Process Audits • User Feedback/Surveys • Performance Tracking and Reporting • Health Checks • Escalation	• Work Product, Deliverables, and Service Quality Reviews • Verification and Validation • Corrective/Preventive Actions • Continual Improvement • Quantitative Management

Product Quality including Requirements Traceability and Testing Techniques. Vendor's team will provide a robust QA Test Plan that outlines the strategy for requirements traceability as well as each of the required testing areas needed to validate the developed system and any converted code. Throughout test development and execution, Vendor will use a Requirements Traceability Matrix to comprehensively depict test coverage and keep testing focused on high-risk, high-priority requirements – or, in this case, business scenarios and system functionality. The Test Plan will also cover each test level (unit/component test, system test, regression test, parallel test, and stress/load performance test) and will detail the following:

- Schedule of intended testing activities, including test development, test execution, metrics collection, and reporting
- Testing roles and responsibilities
- Features and configurations to be tested including screens, business rules, batch processes, reports, and interfaces
- Required testing environment, tools, and test data
- Test design techniques and coverage applicable to each test level
- Entry, exit, suspension, and resumption criteria for each test level
- Any risks specific to a test level that require mitigation

The goal for testing is to prove that the functionality of the new system is the same as the legacy system, through reviewing the test results of the new system as compared to results from the same processes run against the legacy system. To achieve this goal, Vendor will use its standardized testing processes, methods, and tools as they apply to the Vendor's Applications Modernization Framework.

9.2.5.5 Communications Strategy

The Vendor's Communications Strategy is to provide full transparency into every facet of the project and make visible to the County's Project Manager the status of each activity, task, issue, and risk within the project plan. Vendor will provide a detailed communication plan during project startup as part of the Project Management Plan (PMP). Vendor's Project Manager will work with the County's Project Manager to finalize this plan and make sure that it is executed throughout the project. To meet the

specific communication needs of other County personnel and stakeholders, Vendor's Project Manager will work with the County's Project Manager to define requirements.

Project communication includes structured status reports and communications that provide meaningful reports on project metrics that clearly indicate the progress of the project as well as less formal communications among the project management team. The key benefits of this approach are to make sure that the needs are understood and that expectations are met as well as to proactively identify and mitigate risks and project issues that develop before they impact the project. The basic elements of Vendor's communications plan is outlined in the remainder of this section.

Team Communications. Vendor begins at the individual level with team members, empowering and enabling them to assume full ownership of their assignments and deliver accurate and transparent status reporting. As a result, Vendor's participants will produce a weekly status report as well as a timesheet. The status report will highlight to the Project Manager each individual's accomplishments, issues, and/or project concerns.

In addition to status reports, team status meetings will be held periodically, and the Vendor's Project Manager will update the team on the project's progress (plan versus actual), discuss status on outstanding issues, identify project risks, and discuss any administrative issues (for example, time reporting). In addition, this meeting will provide a forum in which actively involved team members can discuss technical or functional project issues and determine appropriate resolution actions.

Status Reports and Management Reporting. The Vendor Project Manager will draw information from Microsoft Project and individual team status reports to create a weekly project status report. This report will provide a concise picture of the ATS re-platform project status, work efforts completed, project issues, and any deliverables submitted for review, among other items deemed pertinent.

In addition to the weekly status report, Vendor's Project Manager will meet regularly with the County Project Manager as well as other key County personnel to provide an overall status of project accomplishments compared to the plan. Vendor team members will attend as needed to discuss any issues and/or problems encountered. The weekly project status report will be the input to these meetings.

9.2.5.6 Change Management

Because Vendor is re-platforming and maintaining like-for-like system functionality, Vendor expects minimal impact to the County culture. However, to be successful with any type of change, Vendor needs to consider solid organizational change management principles. Given the Vendor's experience over the past fifty years implementing changes for clients, Vendor is well versed in this area and has offered the following insights and will guide the County on its recommendations.

The foundation for change must take into consideration the culture of the County and the relationships among the Auditor-Controller, central leadership, the Office of the Chief Information Officer for the County, AC-IT team, and ATS user community. Vendor has found that the foundations for change require certain prerequisites such as the Strategic Business Plan and priority of the ATS re-platform project, IT strategy briefings with guiding principles on the importance of this initiative, the proposed architecture for the new ATS, and the overall Governance structure.

During the first few months, Vendor help the County focus on leadership and organizational readiness, which includes the following actions:

- Create management awareness and support for the ATS initiative and overall governance.
- Make sure sponsors and related stakeholders clearly know and embrace their roles and responsibilities, leveraging the RACI chart for the ATS re-platform project.
- Establish an environment where individuals cede to the goals and objective of the Auditor-Controller.
- Tie leadership performance to the objectives of the ATS re-platform project.
- Establish and communicate the measurement program to track and gauge this project's success.
- Craft key messages for the Auditor-Controller to communicate regularly with all stakeholders.

- Follow the prescribed governance structure to remove obstacles and resolve issues swiftly, communicating actively along the way.
- Make certain that management communicates with their respective organizations regularly.
- Organize key personnel to the project – not just in addition to fitting responsibilities into their already full-time jobs.
- Provide sufficiently skilled resources to accomplish project goals in the areas of current artifact validation, deliverable reviews, and testing.
- Stress the importance of sound project management to all project participants, including accurate time capture and effective walkthroughs.
- Tie performance management to desired new behaviors related to the new ATS.
- Secure and use funding and support for hardware, software and other infrastructure and other investments in a timely way with enough lead time to keep the project on-track.

As the project progresses past the first few months, the following are good management of change activities that the County may want to accomplish:

- Communicate detailed announcements related to the ATS project with the overall business objectives for this initiative.
- Reinforce messages using multiple communication channels like emails, newsletters, all-hands meetings, and cascading meetings across the County.
- Create a shared understanding document by role and share this information.
- Conduct question-and-answer sessions with stakeholders.
- Create artifacts and provide end-user and IT Operations training
- Align with the normal Property Tax Annual Calendar, and then announce go-live dates for the new ATS phased rollout.
- Reinforce key messages.
- Make refinements to process, artifacts, and messaging as needed.
- Plan for continual improvement so the County may leverage this approach on other initiatives driving change across the organization.
- Document and communicate the one-time and recurring savings as well as other expected and realized benefits for the ATS re-platform project.
- Even though the new ATS will be a technical re-platform, establish a usability lab environment to give users the opportunity to see the system in a training/test environment prior to going live; answer users' questions and respectfully capture their ideas for improvement.

9.2.6 Managing Tasks that Span the Life of the Project

Project Management

Vendor's Project Manager is responsible for assigning tasks and managing task completion for this project. He uses automation tools such as MS Project to facilitate tracking. Detailed tasks are developed in a Work Breakdown Structure, and assigned to staff; the schedule is optimized and then monitored for percentage complete and forecast to schedule. Issues and risks are managed using Issue and Risk Logs, regular status meetings, and escalation as needed. Weekly and monthly project status reports are delivered to the County Project Manager to provide full transparency into the project status at all times. Informal one-on-one communication takes place regularly between the Vendor's Project Manager and County's Project Manager to promote collaboration and tight alignment on this project.

9.2.7 Solution and Report Development

Vendor's team will follow an iterative development process that is very similar to Agile but more in line with the current system development objectives of the County. To effectively manage the solution and report development, Vendor will begin with joint planning and signoff approval from the County to begin. During the Iteration 0 Assessment, Vendor will validate the solution meets County requirements. Daily stand-up meetings will be held to report progress, roadblocks, and plans for the next day. County personnel will be invited to attend to hear status from the project team. The County will provide a legacy

system subject matter expert, who is involved in the project on a daily basis and provides the County with an insider look at Vendor's progress. At the end of an iteration, Vendor will demonstrate functionality to the County, comparing to the legacy system. Reports and results will match exactly to what is produced in the legacy system. Vendor will also report progress formally in monthly status reports and at the end of each iteration demonstration.

9.2.8 Data Conversion

Vendor will follow the same iterative process for managing Data Conversions. Vendor will jointly plan and agree to the Data Conversion approach during Iteration 0. Vendor will produce compare and contrast reports against the legacy data and review these with the County. Vendor will incorporate Data Conversion results into the overall weekly and monthly project status reports provided to the County.

9.2.9 Testing

Vendor will use detailed test plans and schedules to effectively manage the various stages of testing such as unit testing, system testing, stress testing, and user acceptance testing. Vendor will use existing test artifacts and test results to make sure the new code produces the same results as the legacy system. For User Acceptance Testing, Vendor will facilitate and provide support to the testing process while the assignments and schedules are driven by the County leadership and performed by the County test team.

In summary, Vendor has a well-established, structured management approach and strategies to effectively manage all tasks and work-streams on the project which will enable the Vendor to deliver on time, on budget, and within scope.

10. MANAGE COMMUNICATION AND TRAINING

10.1 Proper Training

Training, education, and ongoing coaching is essential not only for specific IT Governance methods, techniques, and tools that Vendor and the County decide to follow, but also for components of the ATS re-platform approach to gain efficiencies during the project. Examples include using automation software to reverse engineer the legacy code and the resulting Universal Mark-up Language (UML) artifacts that it creates target architecture concepts, data models, forward engineering code generation automation, deliverable walkthroughs, and the overall iterative (versus waterfall) methodology to accomplish a high-quality ATS re-platformed system in the shortest time with the lowest risk.

Vendor will work with the County to provide proper training to technical and business users of the ATS using the following approach.

10.1.1 Develop Knowledge Transfer Plan

During project start-up, Vendor will work with the County to identify owners of the current system as well as the recipients for knowledge transfer. Vendor's knowledge transfer process is shown in Table 16.

Table 16. Knowledge Transfer Processes

PHASE	VENDOR ACTIONS	DELIVERABLES
Project Start-up and Assessment Phase	• Identify knowledge transfer recipients • Review existing training documentation to determine where County needs to update training to match existing functionality • Deliver Knowledge Transfer Plan with a schedule of delivered functionality • Discuss with County whether additional training courses will be needed	Initial Knowledge Transfer Plan
End of Each Iteration	• Demonstrate converted functionality • Update existing training documentation with any changes such as how to log in	Updated Knowledge Transfer Plan
Final Knowledge Transfer	• After UAT, complete final training materials and finalize Knowledge Transfer Plan	Final updated Knowledge Transfer Plan

10.1.2 Training Options

As part of the Knowledge Transfer Plan mentioned in the previous section, Vendor will discuss potential training courses and determine whether they are needed. Since the Vendor is converting existing functionality and not changing any functionality, Vendor anticipates that it will need to update existing documentation for website management, creating and managing templates and workflows. Vendor does not anticipate creating documentation for new functionality.

If the County does later decide changes to existing functionality is needed or additional training is required, Vendor will design training as needed.

10.1.3 Training for Newly Released Product Features (if Applicable)

Because Vendor is converting a "like-for-like" system, Vendor does not anticipate creating any new functionality. For any minor changes such as how to log in, Vendor will update the County's existing documentation. If the County does later decide changes to existing functionality is needed or additional training is required, the Vendor will design training as needed.

10.1.4 Training for Application Maintenance Tools

Vendor anticipates that the County will provide trained Java resources to maintain the re-platformed system once the new system is in production. The County will need to provide these resources with software to manage and enhance the re-platformed ATS running in Java, on Windows, and using Microsoft SQL Server. Vendor does not anticipate new tools will be needed to support the application that are not provided by the County.

10.2 Summarize Experience and Lessons Learned

As stated earlier, each iteration will conclude with a demonstration of the converted functionality. During the demonstration, Vendor will capture feedback from County staff regarding any functionality missed and lessons Vendor has learned. Vendor will deliver this experience and lessons learned to the County as a formal deliverable with each iteration.

11. Manage Project and Processes Documentation

11.1 Project Artifacts

Vendor will provide source code, object code, scripts, and all configuration item artifacts to the County at the end of the project. Vendor's Re-Architect methodology will also create a significant amount of documentation for later application support; Vendor will also provide this to the County. Much of this documentation will be generated automatically through the Vendor's Blu Age Conversion tool. Vendor deliverables for this project include the following:

- **Project plans**
- **Completed requirements traceability matrix**
- **Data conversion scripts**
- **New system source code**
- **All test cases, data, and scripts**
- **Naming standards**
- **Use cases**
- **Data dictionary**
- **Interface specifications**
- **Operations guides (training/reference material)**
- **Operations job schedules**
- **Production support handbooks**
- **User's guides**
- **Training plans and materials**
- **Implementation guides**

11.2 Training Documentation

Vendor will update existing training material and deliver to the County during each iteration and at project end.

11.3 Technical Guides and Manuals

Vendor will update existing technical guides and manuals and deliver to the County during each iteration and at project end.

11.4 System Documentation

Vendor will update existing system material such as system documentation, troubleshooting guide, and system administration manuals and deliver to the County during each iteration and at project end. In addition, Vendor's Blu Age tool will generate additional code documentation to facilitate maintenance of the converted system.

12. IMPLEMENT THE RE-PLATFORMED APPLICATION

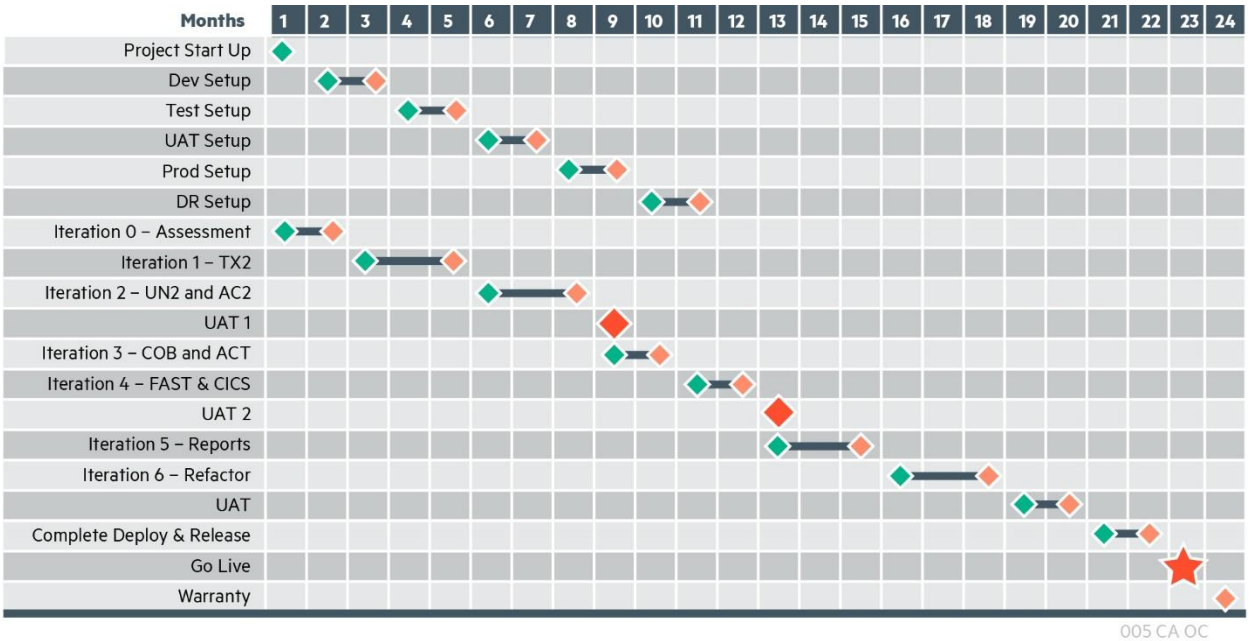
Go-Live Strategy. Vendor will follow its Deploy and Release processes for implementing the re-platformed application. These processes are certified under CMMI quality standards. The process is transparent, flexible, provides for County approvals on milestones, and will complete on schedule and aligned with County Property Tax processing dates. Vendor's knowledge transfer and training approach as part of transition will leave the County confident in the conversion of the application and data and confident they can support and run the converted system.

Vendor's process includes County reviews, approvals, and checkpoints. Vendor will deploy Vendor's specialists who bring both process and technology expertise to increase productivity, create quality results and reduce project risk. Vendor's integration and data management professionals will focus on modernizing system interfaces and converting data for use in the new system. The Vendor's testing practice specialists will leverage the Vendor's process and industry leading testing tools to perform unit, integration, and UAT testing activities. Vendor will use County-provided infrastructure for the development, test, UAT, and production environments to deliver.

Knowledge Transfer will start early and will continue with each iteration and complete before roll out. The County will gauge progress through each Iteration demonstration and will also begin knowledge transfer by viewing and providing confirmation that the converted functionality matches legacy. Vendor will progress through three iterative UAT sessions so the County can identify any issues early on that can be corrected before schedules are impacted. Vendor will complete knowledge transfer and training after UAT including side-by-side work with County resources who will support the converted system after Go-Live to provide confidence the County can continue operations after the project is complete. Finally, The Vendor will provide for 90 days of Post-Implementation Warranty Support.

Applicable Timeline. Figure 11 shows Vendor's high-level implementation schedule. The schedule consists of five iterations in addition to a start-up Iteration 0 and a re-factor iteration. UAT, Implementation, and Roll-Out account for another 4 months, resulting in an implementation timeline of 23 months. A fully loaded project plan is included in Attachment D Implementation Plan.

Figure 11. High-Level Implementation Timeline



Vendor's low-risk implementation schedule will be tightly governed with Orange County.

Vendor's low-risk implementation schedule will be tightly governed with Orange County. Vendor's Go-Live period will complete well before any end of year activities for the County and addressed in the County's business timelines and indicated in the County's RFP's scope of work.

The Vendor's iterations were developed based on the County's RFP ATS Application Attributes table below. Vendor assumes that each Iteration will cover a set of attributes such as the Secured System and the associated Batch Jobs, Reports, and Panels. During Assessment, Vendor may adjust what set of Attributes will be converted based on the County prioritization and what can fit into an iteration.

SCHEDULE 3: ATS APPLICATION ATTRIBUTES

Area	**Number of modules**	
Estimated No. of IDEAL Programs		2,760
Estimated Lines of Code		900,000+
IDEAL – Secured System (TX2)	Online CICS Batch	281 408
IDEAL – Unsecured System (UN2)	Online CICS Batch	144 180
IDEAL – Auditor-Controller System (AC2)	Online CICS Batch	67 150
IDEAL – Clerk of the Board System (COB)	Online CICS Batch	70 160
IDEAL -Assessor Interface System (ACT)	Online CICS Batch	0 32
IDEAL – ATS Front-End Security (FAST)	Online CICS Batch	19 19
IDEAL Panels (CICS Map)	617	
IDEAL Reports (including Letter, Forms, Bill, and Notices)	1,038	
Job in Scheduler (Control-M)	498	
Job in IDEAL (CICS Batch)	0	
DB2 Tables	600+	
COBOL	Used as application utility for DB2 – will not convert	

Resource Schedule

Table 17 shows the timeline for resources being added to the project.

Table 17. Timeline for Project Resources

ROLE	TIMELINE	FUNCTIONAL RESPONSIBILITIES
1 Project Manager	Oct 2017- End of Project and Warranty Period	• Serves as single POC for the County for all matters related to this contract • Manages the Vendor team to make sure Vendor meet or exceed all requirements of the project
1 Apps Transformation Principal	Oct 2017- End of Project	• Provides guidance and insight • Participates in key project meetings, and play the role of advisor at key touch points for the duration. • Builds relationships with County leadership providing information on Vendor Apps Transformation Global Practice expertise
1 Lead Architect	Oct 2017- End of Project and Warranty Period	• Applies 12 years of relevant legacy and modern architecture experience, offering expertise that reduces risk • Serves as technical POC for the County • Manages the technical implementation to make sure Vendor meet or exceed all requirements of the project • Responsible for all Technical Requirements including Security
1 Testing Lead	Oct 2017- End of Project and Warranty Period	• Applies 14 years of progressive testing experience, offering expertise that reduces risk across all the relevant ATS components • Responsible for all testing deliverables and activities
2 Testers	Dec 2017-End of Project	• Responsible for executing testing and reporting issues and completion status of testing
2 Team Leads	Dec 2017- End of Project	• Responsible for the progress of tagging and converting the existing system to UML2 • Responsible for progress of data conversion
Blu Age SMEs (Various)	Oct 2017 – Go Live	• Assists team in all use relating to Blu Age software – cartridges, processes, and training • Blu Age will provide several FTEs during Assessment Phase. 1 FTE will remain through conversion iterations. SME hours will also be available for any issues coming up after code conversion period.
Data Analysts	Sep 2018-End of Project	• Assists Data Architect converting code
1 Data Architect	Oct 2017- End of Project	• Overall Data Conversion Lead who understands both Legacy DB2 database and the target Microsoft SQL Server database • Responsible for reviewing existing data and providing information to the County on progress and data issues and resolutions
Conversion Developers	Oct 2017- Go Live 1 will stay for Warranty Support	• Reads existing CA-IDEAL and JCL and tags this for Blu Age Conversion to UML2 • Assisting in Compiling Converted Application
1 Vendor System Administrator	Oct 2017-End of Project	• Responsible for installing target applications on Virtual Machine operating systems starting with Development, Test, and User Acceptance Testing.

ROLE	TIMELINE	FUNCTIONAL RESPONSIBILITIES
		• Will train a County provided System Administrator on how to build Production and Disaster Recovery as part of Knowledge Transfer • Support patching of Development, Testing, and User Acceptance Testing.
Change Manager	Oct 2017- Go Live	• Assists with updating existing county training materials and operations documentation and application support documentation.

Vendor will require a full-time equivalent from the County who understands the current environment during the length of the project. This may be a range of persons from the County as needed but should amount to a full-time equivalent. Additionally in Month 8 – 12 Vendor will require a System Administrator from the County for establishing and configuring Production and a Disaster Recovery environment. After Month 12, the System Administrator will be needed for about 40 hours of labor per month to maintain and patch the environments. Bringing this person on in Month 8 will assist with knowledge transfer.

Vendor will also require County resources for the converted system. This will require the following new resources:

- 2 Java Developers to manage the existing code maintenance
- 1 Tester to manage code maintenance testing
- 1 Microsoft SQL Server DBA to manage the converted database.

County Access to its Current System

The County will be able to access the current system during the entire program. Vendor will require System and Functionality subject matter experts (SMEs) for deliverable reviews and sign offs. Vendor will require SMEs to be available to answer questions as well. Vendor has estimated that this effort equates to one full time equivalent. Vendor will schedule its sessions with County staff in advance of need whenever possible based on available calendars.

Deliver Software with the Configuration as Documented in Approved Architecture

Vendor will deliver to the County the Software with the Configuration as Documented in the Approved Architecture. Software will be appropriately configured for production in Java code files that will meet the County's business and project requirements as stated in the scope of work. Vendor assumes that the infrastructure will be provided by Orange County IT from their Orange County Service Catalog (http://ocgov.com/civicax/filebank/blobdload.aspx?BlobID=43549). The County will also have all software products deployed on its equipment on time.

Implement Re-Platformed Software Products According to Implementation Plan

Seamless transitions from legacy to converted systems require sound, tested deploy and release strategies that make up the Implementation Plan. The deploy and release processes described below are customized from Vendor's methodology. It includes artifacts such as Software Release Checklist and Initial System Release Checklists to validate that Vendor covers all issues and best practices for a release.

- **Deploy System –** Includes packaging the application or solution for delivery, gaining final approval, and making the package available for release.
- **Release System –** Installs all components of the solution in the production environment, tests installed applications, trains all users and support personnel, conducts formal user acceptance testing and provides any start-up support according to the internal agreement.

Deploy System

This process contains activities to:

- Install all components of the development effort in the production environment
- Test the installed application
- Train all users and support personnel and provide any start-up support according to the internal agreement

Table 18 describes activities in the Deploy System process.

Table 18. Deploy System Process Activities

DEPLOY SYSTEM ACTIVITIES	DESCRIPTION/TASKS
Establish Production Environment	• During Month 8-12, Vendor will work with the County provided System Administrator to train and build the Production and Disaster Recovery environments. • Test team will additionally test the latest release in the production environment matches the results from the other environments.
Install Application Data	• Convert Data during each iteration following the processes outlined in Table 28 Data Conversion Task Timelines and described in detail in Section "3. CONVERT ATS DATA FROM DB2 DATABASE" • Schedule an incremental data migration immediately preceding go-live
Install Application Software	• Final migration of converted applications, screens, reports, and JCL scripts. • Document Production Jobs and make sure scheduler is aligned to different processes and batch processes (e.g. yearend process even though the go-live maybe at a different time) • Make sure Control-M scheduler is aligned and tested to the required sequence of events
Perform Release Testing	• Perform a set of tests demonstrating migrated applications, screens, reports, and JCL scripts are working properly • Provide report to the County for approval
Obtain Release Commitment (Go-Live)	• Upon Successful release test, obtain sign off from the County that Production Operations may begin.
Conduct Knowledge Transfer and Training	• Conduct training and knowledge transfer in accordance with the training plan. • Walk through with the County's IT operations a number of facts and procedures such as the anticipated results, understanding clock time of jobs and actions to take.
Monitor Production Application	• Observe the system to determine whether functions operate as expected and meet expected performance levels. • Collect and store post-release defects discovered during the warranty period. • Baseline appropriate measurement data.
Turn Over Deployment	• Following the knowledge transfer plan, turn the application over to the County support staff who will be responsible for ongoing support. • Communicate known errors and workarounds to the people who will support the application. • Make sure that the application is performing acceptably • Address any concerns among the support staff.

Release System

The Release System process includes packaging the application or solution for delivery, performing formal acceptance testing, gaining final approval, and making the package available for release. Table 19 describes activities in the Release System process.

Table 19. Release System Process Activities

RELEASE SYSTEM ACTIVITIES	DESCRIPTION/TASKS
Package Release Components	• Using the configuration management and measurement data, identify the status of individual configuration items that are part of the release. • Build the release from the appropriate components and store it in a controlled environment. • Update system documentation as appropriate.
Compare Results With Approach	• Evaluate the iteration goals against iteration results. • Document iteration shortcomings where goals were not met for incorporation into future iterations. • After reviewing iteration results, gather and evaluate the iteration metrics. • Where possible, use metrics-evaluation results to influence future iterations, to identify additional reuse opportunities, and to improve the design. • Capture other lessons learned from this iteration to improve later iterations. • Verify that work products (deliverables) created before this point in the project are updated based on the iteration results. • Review the Configuration Status Accounting Report to verify that all configuration items are listed
Perform Cross Capability Integration	• Validate interfaces and separate components and jobs are working • Remediate issues as needed
Conduct Technical Deploy Review	• Distribute the major deliverables to the County giving adequate review time. • Complete the technical review checklist.
Obtain Deploy Commitment	• Validate that the release package is complete and meets the County requirements. • Meet and obtain commitment from the County • Baseline the system in the release repository for Configuration Management.
Coordinate Formal Acceptance Testing	• Coordinate formal acceptance testing (There are 3 UAT sessions in the schedule conducted after every 2 iterations) using the approved formal acceptance testing specifications and the test strategy. • Record and retain testing results. • Track all problems discovered to resolution. If applicable, collect, analyze, and store prerelease defects discovered during formal acceptance testing. • Retest as appropriate.
Make System Available	• Using the configuration management data, ensure that the proper system configuration is built. • Collect final performance metrics • Move the system to the distribution environment, as needed. • Create the release documentation as needed. • Communicate to the County that the release is ready for deploy to production.

During the assessment phase (Iteration 0), Vendor will work with the County to complete a release checklist for the go-live strategy. This will include identifying all stakeholders including operations

owners, acceptance criteria for a final release, and knowledge transfer needs. The release checklist will include elements to validate that Vendor covered all issues and best practices for a release.

The Production Environment is scheduled to be complete in Month 9 with assistance from a County provided System Administrator who will be added in Month 8. This will greatly facilitate knowledge transfer so the system can be maintained after go-live. Vendor highly recommends the system administrator support the application when it goes live.

Following successful User Acceptance Testing and completion of testing related services and deliverables (software code and all final documentation such as Release Notes and updates to the Technical Guides), Vendor will work with the County to finalize the production go-live process and make any updates to the go-live checklist and validate all items are complete and ready for release. This typically includes validating all training and knowledge transfers and completing any final incremental data migrations and completing any change management requests with the hosting provider.

Vendor will then complete all items on the checklist and review the checklist results with the County to obtain approval to implement. Vendor will migrate the completed system to production and conduct smoke tests to validate final migrations and communicate results back to the County that the system is now operational.

Vendor's plan calls for a Go-Live before any year-end activities and keeping in mind the County Business Milestones.

Identify Any Required Post Implementation Activities

After successful Go-Live Delivery, Vendor will provide all code and configuration items to the county to any document or code repository the County will use for ongoing maintenance. Vendor will provide a 90-day warranty period where the County can contact Vendor's project manager and lead architect concerning any issues that come up. Vendor anticipates providing advisement during warranty from a Java developer, tester, project manager, lead architect, and system administrator. As Vendor's process indicates, all knowledge transfer and processes for managing on-going operations will already have been completed prior to Go-Live.

Develop a Transition Plan that Both Addresses Application Support and Migration of all Data

Vendor will develop an initial knowledge transfer plan during the Assessment Phase. Knowledge Transfer will occur during the Assessment Phase as Vendor identifies the stakeholders requiring knowledge transfer and Vendor communicates further on how the new system will operate. With each iteration, Vendor will demonstrate the converted functionality to the County and the County will assist in providing the right personnel to see the iteration demonstrations as part of knowledge transfer. Vendor will update the knowledge transfer plan with any information gained from the demonstration. If the demonstration identifies additional needed recipients or existing county documentation that needs updating for knowledge transfer, Vendor will incorporate that into the document. This document will be updated and delivered at the end of each iteration. A final knowledge transfer plan will be delivered after the last iteration. If after the iterations, additional training and communications needs updating, Vendor will provide the additional training in the additional eight weeks between completion of UAT and Go-Live. This will also be the period where the 200+ County personnel will review training materials.

Application Support

The converted system will be Java based. As Vendor's Attachment C Staffing Plan indicates, The County will need to provide at least two Java developers, a tester, and a Microsoft SQL server database administrator for supporting the application after Go-Live. This staffing recommendation does not include any additional program management support of the new resources. The resources should be available to work six weeks before Go-Live. Before Go-Live, they will work with Vendor's Java developer and data analysts to understand and support the converted system. By Go-Live, the resources should understand and support the live system. During the warranty period, Vendor will provide for 40 hours each month a Java developer, tester, and DBA to advise these resources or fix any defects that Vendor have introduced.

Batch and other administration will remain largely unchanged and will be managed by existing staff through the Control-M tool. The system administrator provided by the County and listed above will continue to patch environments. The system administrator initially after Go-Live may need to increase support slightly to maintain support for Development, Test, and UAT.

Migration of All Data

Vendor's implementation plan for migrating all data includes Vendor's Data Conversion process and Vendor's high-level schedule of data conversion. Data Conversion process is described in section 3 Convert ATS Data from DB2 Database above. The implementation plan for data conversion is listed in the Attachment D Implementation Plan and Acceptance and Testing Procedures.

Summary

Vendor will successfully deliver this project by leveraging Vendor's Application Transformation Framework, a strong and experienced leadership team, and unique combination of automated tools, skilled people, and a proven process.

ATTACHMENT B
COST/COMPENSATION

1. **Compensation**: This is a fixed price Contract between the County and the Vendor for the Goods and Services as set forth in this Contract. The Vendor agrees to supply all Goods and Services to provide and fully implement the Software Products. The Vendor agrees to accept the specified compensation set forth in this Contract as full remuneration for performing all services and furnishing all staffing and materials required, including any reasonably unforeseeable difficulties which may arise or be encountered in the execution of the Services until acceptance, for risks connected with the Services, and for performance by the Vendor of all its duties and obligations hereunder. The County shall have no obligation to pay any sum in excess of the total Contract amount specified in Section 2 below, unless authorized by amendment.

2. **Total Not to Exceed Amount: $6,150,816.51**

   a. **Implementation and Base Warranty Fixed Price: $5,838,658.65**

   b. **Optional 3 Month Warranty Fixed Price: $54,052.62**

   c. **Optional 6 Month Warranty Fixed Price: $108,105.24**

   d. **Change Orders Not to Exceed: $150,000**

3. **Payment Deliverable Schedule:**

   County shall pay Vendor for Professional Services according to Table 31.

   County shall pay Vendor for Professional Services based upon the Deliverable Schedule as specified in Table 31 (payment upon acceptance of a Deliverable as defined in Paragraph 30). Table 32 further describes the deliverables and acceptance criteria.

   Payments shall consist of the total due for the Deliverable, less ten (10) percent retention. Vendor shall submit an invoice for the retained amount upon Final Acceptance as defined in Paragraph 30.

Table 20. Payment Deliverable Schedule

DELIVERABLE NAME/MILESTONE	ESTIMATED DUE DATE	DELIVERABLE FIXED PRICE	RETENTION (10%)	INVOICE AMOUNT
Updated Project Plan	10/31/2017	$790,340.37	$79,034.04	$711,306.33
Iteration 0 – Assessment Report	11/30/2017	$291,962.11	$29,196.21	$262,765.90
Iteration 1 – Secured System Dev Environment Complete	1/30/2018	$589,225.92	$58,922.59	$530,303.33
Iteration 1 – Secured System	3/2/2018	$625,145.95	$62,514.59	$562,631.36
Iteration 2 – Unsecured System and Auditor-Controller System – UAT Environment Complete	4/10/2018	$411,659.08	$41,165.91	$370,493.17
Iteration 2 – Unsecured System and Auditor-Controller System	5/31/2018	$591,166.54	$59,116.65	$532,049.89

DELIVERABLE NAME/MILESTONE	ESTIMATED DUE DATE	DELIVERABLE FIXED PRICE	RETENTION (10%)	INVOICE AMOUNT
Iteration 3 – Clerk of the Board System and Assessor Interface System	7/31/2018	$514,414.81	$51,441.48	$462,973.33
Iteration 4 – ATS Front-End Security and Panels	10/1/2018	$482,366.90	$48,236.69	$434,130.21
Iteration 5 – Reports first set	11/5/2018	$187,081.59	$18,708.16	$168,373.43
Iteration 5 – Reports second set	11/30/2018	$187,081.59	$18,708.16	$168,373.43
Iteration 5 – Reports third set	12/28/2018	$183,146.47	$18,314.65	$164,831.82
Iteration 6 – Refactor 1	2/28/2019	$301,292.69	$30,129.27	$271,163.42
Iteration 6 – Refactor 2	4/3/2019	$121,981.88	$12,198.19	$109,783.69
UAT Complete	6/10/2019	$305,360.81	$30,536.08	$274,824.73
Go-Live	8/30/2019	$256,431.94		$256,431.94
Retention Invoice	8/30/2019		$558,222.67	$558,222.67
Total before options:				$5,838,658.65
Optional 3 month Warranty Extension Month 1		$18,017.54	NA	$18,017.54
Optional 3 month Warranty Extension Month 2		$18,017.54	NA	$18,017.54
Optional 3 month Warranty Extension Month 3		$18,017.54	NA	$18,017.54
Optional 6 month Warranty Extension Month 1		$18,017.54	NA	$18,017.54
Optional 6 month Warranty Extension Month 2		$18,017.54	NA	$18,017.54
Optional 6 month Warranty Extension Month 3		$18,017.54	NA	$18,017.54

DELIVERABLE NAME/MILESTONE	ESTIMATED DUE DATE	DELIVERABLE FIXED PRICE	RETENTION (10%)	INVOICE AMOUNT
Optional 6 month Warranty Extension Month 4		$18,017.54	NA	$18,017.54
Optional 6 month Warranty Extension Month 5		$18,017.54	NA	$18,017.54
Optional 6 month Warranty Extension Month 6		$18,017.54	NA	$18,017.54
Total with Warranty Options				$6,000,816.51
Change Order Not to Exceed Amount				$150,000.00
Total Including Change Orders and Optional Warranty				**$6,150,816.51**

Table 21. Deliverable Description and Acceptance Criteria

DELIVERABLE NAME/MILESTONE	DELIVERABLE DESCRIPTION AND ACCEPTANCE CRITERIA
Updated Project Plan (Month 1)	• Blu Age Conversion Tools Software Capability • Conversion Set up • Pre-Employment Screening • Background Checking Procedure • Staff Roster and Duties • IT Security Staff Usage Policies and Procedures • IT Operations Security Policy • Document & Intellectual Property Management • Policies Related to Data, Tapes, and Resources that will be removed from County Facility • Policies Related to Access to County Data Internally or Via Remote Access • Updated Recurring Project Plan which will include: – Project Scope – Risk Management Plan – Communication Plan – Project Schedule – Knowledge Transfer Plan Framework – Cost Management Plan – Project Reports – Financial and Invoice schedule – Acceptance Criteria for Deliverables – Issue Log – Staffing Plan – Project Governance
Iteration 0 – Assessment	• Any Updates to Previous Deliverables

DELIVERABLE NAME/MILESTONE	DELIVERABLE DESCRIPTION AND ACCEPTANCE CRITERIA
Report (Month 2)	• Technical Specification Document (version 1) of the Target Architecture that will include: – Updated Virtual Server Configurations – Updated Storage Needs – Updated Networking Needs – Database Designs – Target Architecture Designs – Source Code Control and Configuration Management – Interface Design – Technical Recovery Procedures for Disaster Recovery Plan • Receive Iteration 0 Assessment Report which will include: – Interface and Reporting Strategy (Version 1) – Code Conversion Strategy and Data Migration Strategy (Version 1) – Testing Strategy (Version 1) – Change Management Plan (Version 1) – Implementation Plan (Version 1) including knowledge transfer and training plan – Requirements Traceability Matrix (Version 1)
Iteration 1 – Secured System (Month 3)	• Data and Code Conversion Status update • Use County's Development Environment • Knowledge Transfer Plan Initial
Iteration 1 – Secured System (Month 5)	• Data and Code Conversion Status update • Use County's Test Environment • Knowledge Transfer Plan Initial • Live Demonstration of functionality • Demonstration/Walkthrough Report • Completed Test Scripts for Functionality • Any Updates to Previous Deliverables
Iteration 2 – Unsecured System and Auditor-Controller System (Month 6)	• Data and Code Conversion Status and Plan update • Use County's UAT Environment • Knowledge Transfer Plan Iteration 1
Iteration 2 – Unsecured System and Auditor-Controller System (Month 8)	• Data and Code Conversion Status and Plan update • • Live Demonstration of functionality • Demonstration/Walkthrough Report • Completed Test Scripts for Functionality
Iteration 3 – Clerk of the Board System and Assessor Interface System (Month 10)	• Data and Code Conversion Status and Plan Update • Iteration 1 and 2 code and data is in UAT so UAT 1 testing can begin • Knowledge Transfer Plan Iteration 2 • Use County's Production Environment • Live Demonstration of Functionality • Demonstration/Walkthrough Report • Completed Test Scripts for Functionality

DELIVERABLE NAME/MILESTONE	DELIVERABLE DESCRIPTION AND ACCEPTANCE CRITERIA
Iteration 4 – ATS Front-End Security and Panels (Month 12)	• Data and Code Conversion Status and Plan update • Use County's Disaster Recovery Environment • Knowledge Transfer Plan Iteration 3 • Live Demonstration of Functionality • Demonstration/Walkthrough Report • Completed Test Scripts for Functionality
Iteration 5 – Reports (Month 13)	• Data and Code Conversion Status and Plan update • Iteration 3 and 4 code and data is in UAT so UAT 2 testing can begin • Report of Functionality (1st set of reports)
Iteration 5 – Reports (Month 14)	• Data and Code Conversion Status and Plan update • Report of Functionality (2nd set of reports) • Completed Test Scripts for Functionality
Iteration 5 – Reports (Month 15)	• Data and Code Conversion Status and Plan update • Live Demonstration of Functionality • Demonstration/Walkthrough Report (All reports) • Completed Test Scripts for Functionality
Iteration 6 – Refactor 1 (Month 17)	• Data and Code Conversion Status and Plan update • Refactor Report
Iteration 6 – Refactor 2 (Month 18)	• Data and Code Conversion Status and Plan update • Knowledge Transfer Plan Final • Live Demonstration of Functionality • Demonstration/Walkthrough Report • Completed Test Scripts for Functionality • Any Updates to Previous Deliverables are Finalized
UAT Complete (Month 20)	• Data and Code Conversion Status update • All code and minimal data is in UAT so Final testing can begin • Deliver UAT Report and Data Conversion Report • Change to Final Version of Any Previous Deliverables • Build Production Cutover Scripts • Perform Mock Cutover
Go-Live (Month 23)	• Data Conversion Complete • Implementation Plan including Knowledge Transfer complete • Go-Live checklist designed • Go-Live checklist complete • Execute and Validate Production Cycle Process • Final Data Conversion Report and System is live
Project Management Monthly Deliverables	• 4-Up Report • Issues Log

DELIVERABLE NAME/MILESTONE	DELIVERABLE DESCRIPTION AND ACCEPTANCE CRITERIA
	• Change Management Log • Project Schedule updates
Acceptance Criteria for Documentation	• All Deliverables will be delivered to the County and allow 5 days for County review. • Vendor and the County will meet to review and approve deliverables • If there is no response after 5 days from initial submission Vendor will consider the County accepts the deliverable as is • If any written issues result from a deliverable review, Vendor will submit an update to the County within 4 days. • At this point, Vendor assumes the County has accepted the deliverable • This approach will enable Vendor and the County to keep the project on schedule and within budget
Acceptance Criteria for Iteration Demonstrations	• Vendor will demonstrate the converted functionality works successfully and matches legacy • Any defects that do not match legacy in Iterations 0-5 will be noted during the demonstration and moved to resolution during Iteration 6 – Refactor • The system functionality after Iteration 6 will match legacy with reconciling items in consideration • After the demonstration, Vendor will submit an approval sheet outlining the functionality displayed and any defects noted for documentation of the demonstration and this will enter the acceptance criteria for documentation
Acceptance Criteria for UAT Complete	• The Final UAT session will be facilitated by Vendor • UAT is complete when all test scripts are complete by the County and defects noted are either also in legacy or are considered minor • Minor defects are defects that do not prevent operation of the system and do not require a work around and the system could Go Live without resolution. • Vendor will issue an approval sheet to the County that will enter acceptance criteria for documentation
Acceptance Criteria for Go-Live	• All Deploy and Release artifacts are submitted • The System is Operational • Monthly report for each month during the warranty period.
Optional Warranties	• Monthly report for each month during the warranty period.

4. Payment Terms:

Invoices are to be submitted for services rendered, not more frequently than monthly, following acceptance of the deliverables referenced in each invoice. Invoices shall be submitted to the user agency/department to the ship-to address, unless otherwise directed in this Contract.

Vendor shall reference Contract number on invoice. Payment will be net 30 days after receipt of an invoice in a format acceptable to the County of Orange as set forth in Section 5 below, and verified and approved by the agency/department and subject to routine processing requirements. The responsibility for providing an acceptable invoice rests with the Vendor.

Billing shall cover Services and/or Goods not previously invoiced. The Vendor shall reimburse or issue credit to the County of Orange for any monies paid to the Vendor for goods or services not provided or when Goods or Services do not meet the Contract requirements.

Payments made by the County shall not preclude the right of the County from thereafter disputing any items or services involved or billed under this Contract and shall not be construed as acceptance of any part of the Goods or Services.

Payments will be made by ACH and an ACH form will be provided to the vendor to complete prior to starting work.

5. Payment/Invoicing Instructions:

The Vendor shall provide an invoice on Vendor's letterhead for services rendered. Each invoice will have a number and will include the following information:

- Vendor's name and address:
- Vendor's remittance address (if different from 1 above)
- Name of County agency department
- County Contract number
- Service date(s)
- Service description, including the completed deliverables that are the subject of the invoice
- Vendor's Federal I. D. number:
- Total:

The responsibility for providing an acceptable invoice to the County for payment rests with the Vendor. Incomplete or incorrect invoices are not acceptable and will be returned to the Vendor for correction. The County's Project Manager, or designee, is responsible for approval of invoices and subsequent submittal of invoices to the Auditor-Controller for processing of payment.

Invoices and support documentation are to be forwarded to:

County of Orange
Auditor-Controller's Office
Attention: Administration/Christine Nguyen
12 Civic Center Plaza, Room 200
P.O. Box 567
Santa Ana, CA 92702

6. Change Orders

a. **Change Order Process.** The County may, at any time by a written change order, propose changes to the scope of work. Such changes may include changes to the technical requirements, to the system operation based on changes, for example, in tax law, or to the business services under this contract. The change order will specify the scope of the change and the expected completion date. Any change order shall be subject to the same terms and conditions of the Contract unless otherwise specified in the change order and agreed upon by the Parties. A change order under this section will not be an amendment to the Contract unless it changes the general terms and conditions or the terms of payment in the Contract. Except as may be agreed to by the County, Vendor shall respond to a change order request within ten (10) business days after receipt, advising the County of any cost or schedule impact. The Parties will negotiate in good faith and in a timely manner all aspects of the proposed change order. No change order will have any force or effect unless signed by authorized representatives of the Parties.

b. Change Order. The County's Project Manager may approve change orders pursuant to this Section 6 of Attachment B for a total amount that may not exceed $150,000.

c. Vendor Rates for Change Orders:

The Vendor shall charge the following rates for change orders issued pursuant to this Section 6 of Attachment B. Additional labor categories, if needed, will be added upon mutual written consent.

Labor Category	Year 1	Year 2	Year 3
Subject Matter Expert	$ 167.91	$ 173.14	$ 177.69
Program Manager – On Site or remote	$ 143.53	$ 145.25	$ 146.99
Architect	$ 106.84	$ 108.12	$ 109.42
Sys Admin	$ 142.86	$ 144.57	$ 146.31
Test Lead	$ 98.34	$ 99.52	$ 100.72
Tester	$ 82.63	$ 83.62	$ 84.62
Performance Tester – On Site or remote	$ 143.53	$ 145.25	$ 146.99
Team Lead	$ 98.34	$ 99.52	$ 100.72
Code Converter	$ 82.63	$ 83.62	$ 84.62
Data Architect	$ 142.86	$ 144.57	$ 146.31
Data Analyst	$ 82.63	$ 83.62	$ 84.62
Change Management	$ 98.34	$ 99.52	$ 100.72
Java Support	$ 106.84	$ 108.12	$ 109.42
Financial Support	$ 106.84	$ 108.12	$ 109.42

7. **Optional Warranty Coverage.** Pursuant to Paragraph G(g) of the General Terms and Conditions, if the County provides the Vendor with a minimum of sixty (60) days' notice prior to the expiration of the current warranty period, the Vendor shall charge the County the following amounts for such extended warranty services:

Additional 3 Months: $ 54,052.63
Additional 6 Months: $ 108,105.26

ATTACHMENT C
STAFFING PLAN

Table 22. Primary Staff

NAME	KEY PERSONNEL POSITION	YEARS OF EXPERIENCE
Tom DeAngelis	Project Manager	10
Russ Gibfried	Chief Architect	12
Ritesh Kolhapure	Testing Lead	9

The roles for each of these organizational elements are defined in Table 23. Resumes for personnel are provided in section 9.1.

Table 23. Roles and Responsibilities

ROLE	FUNCTIONAL RESPONSIBILITIES
Project Manager	• Applies 10 years of relevant management and oversight experience, offering expertise that reduces risk • Serves as single POC for the County for all matters related to this contract • Manages the Vendor team to make sure Vendor meet or exceed all requirements of the project
Account Executive	• Assists the Project Manager with contract scope management, issue resolutions and change control as needed in a proactive, positive way. • Responsible for invoice review, approval, and submission. • Establishes and grows the relationship between Vendor and the County looking for ways to bring Vendor innovation, insights and services to assist the County achieve its business and IT goals and objectives.
Vendor Executive Leadership	• Provides guidance to the Account team as needed related to corporate policy, procedures, and business practices. • Provides assistance obtaining Vendor corporate resources as needed by the project team.
Apps Transformation Principal	• Provides guidance and insight related to current and future application technical platforms and the approach to progress the project objective. • Participates in key project meetings, review progress, walkthrough key deliverables, provide assistance with issue identification, decision making and escalation flow, and play the role of advisor at key touch points for the duration of the ATS re-platform initiative. • Builds relationships with County leadership providing information on Vendor Apps Transformation Global Practice expertise and how to use the information to assist the County in meeting business and IT goals and objectives.
Other Technical Advisors	• As requested, provides wisdom from their respective areas of expertise to help the ATS re-platform project meet its goals and objectives.
Lead Architect	• Applies 12 years of relevant legacy and modern architecture experience, offering expertise that reduces risk • Serves as technical POC for the County • Manages the technical implementation to make sure Vendor meet or exceed all

ROLE	FUNCTIONAL RESPONSIBILITIES
	requirements of the project • Responsible for all Technical Requirements including Security
Testing Lead	• Applies 14 years of progressive testing experience, offering expertise that reduces risk across all the relevant ATS components • Responsible for all testing deliverables and activities
Tester	• Responsible for executing testing and reporting issues and completion status of testing
Team Lead	• Responsible for the progress of tagging and converting the existing system to UML2 • Responsible for progress of data conversion
Blu Age SME	• Assists team in all use relating to Blu Age software – cartridges, processes, and training
Data Analyst	• Assists Data Architect converting code
Data Architect	• Overall Data Conversion Lead who understands both Legacy DB2 database and the target Microsoft SQL Server database • Responsible for reviewing existing data and providing information to the County on progress and data issues and resolutions
Conversion Developer	• Reads existing CA-IDEAL and JSL and tags this for Blu Age Conversion to UML2
System Administrator	• Responsible for installing target applications on Virtual Machine operating systems starting with Development, Test, and User Acceptance Testing. • Will train a County provided System Administrator on how to build Production and Disaster Recovery as part of Knowledge Transfer • Support patching of Development, Testing, and User Acceptance Testing.

- **County Project Manager.** The County will provide a project manager with overall responsibility to manage County responsibilities and coordinate with the Vendor project manager on a daily basis. The project manager ensures that:
  - Functionality owners of the legacy ATS system are present during Iteration demonstrations and UAT
  - Commit to provide all application support and IT operations personnel who will continue to operate the new system and require knowledge transfer
  - Assisting the team on finding legacy subject matter expertise as needed and providing they will have time to meet to discuss their subject

- **Legacy Subject Matter Expertise.** Expertise on the existing system will normally come from a number of resources who are familiar with all parts of the existing system. Vendor estimate that the amount of support in sum will be the equivalent of a full-time resource for the life of the project. Vendor will require Legacy SMEs to be available as Vendor work through Vendor's conversion to answer questions. Vendor will however work to not interrupt critical operations and work to not burden staff from their current work as much as possible. Vendor will schedule Vendor's sessions with staff in advance of need whenever possible based on available calendars.

- **User Acceptance Testing Resources.** While Vendor can facilitate User Acceptance Testing and will provide the results of Vendor's own testing, Vendor would expect the County to be in charge of providing testing resources who are familiar with the system and can conduct User Acceptance

Testing. User Acceptance Testing is scheduled for two months in months 16 and 17 of the 18-month rollout.

- **System Administration Resources for Production and Disaster Recovery Environments.** Vendor understands that the County must understand completely how the converted system will run and how it will be maintained after this contract. Vendor will provide system administration to build the Development, Test, and User Acceptance environments. However, if the County can provide System Administrators who can build Production and Disaster Recovery with instruction from Vendor, this will facilitate knowledge transfer for ongoing maintenance of the existing system and keep costs down for this contract. This would require an individual who can install applications such as Microsoft SQL Server on a Virtual Machine server starting in Month 8 through month 12 close to full time. After month 12, this resource would be used to install security patches and upgrades monthly and other minor system administration duties. Vendor would expect that, after month 12, the resource would be needed about 40 hours per month.

- **Existing Operations Staff.** The owners of each portion of functionality will need to be present at the iteration demonstration for that portion of functionality that is scheduled for that iteration to provide feedback and concurrence that the converted system matches legacy. Any person who operates the system needs to review any training material that is updated and provide concurrence they have reviewed and understand the material. The 200+ users of the system will need to review training materials during month 17 and 18.

- **New Operations Staff.** In addition to the County existing staff of operations, the County will need new skill sets to maintain the converted system. The skill sets below are what is needed to maintain the existing system and does not incorporate managing any changes to the system or any management of the resources. Vendor recommends the County bring on this staff at least 4 to 6 weeks prior to Go-Live in order to transition to operating the new system. These resources will be needed close to full time for the first 3 months. Vendor makes no recommendation as to County required staffing beyond 3 months after Go-Live. This means the County will need the following:
  - 1 senior Java Developer (at least 7 years with object oriented coding development and at least 3 years' experience with Java Development)
  - 1 mid-level Java Developer (at least 4 years of object oriented coding development and at least 2 years of Java Development)
  - 1 mid-level tester (at least 4 years' experience testing a web based system (may pull from existing operations staff)
  - 1 mid-level Microsoft SQL Server DBA (at least 4 years of DBA experience and 2 years of SQL Server DBA experience)

- **Hosting Staff and Services.** Currently, Vendor assumes that hosting services will be ordered from the Orange County Office of Information Technology Service Catalog unless, during assessment, other hosting alternatives are determined by the County to better meet their needs. Hosting services include but are not limited to Server Administration, Network Administration, Storage Administration, Operating Security Scans of the applications for defects and physical security, and staff and tools for change, incident, and problem management once operations begin.

ATTACHMENT D
IMPLEMENTATION PLAN AND ACCEPTANCE AND TESTING PROCEDURES

1. Deliver Software Product

Vendor will deliver the Java code files (the Software Product) directly to the County. Vendor will convert the legacy CA-IDEAL and DB2 environment to a Java environment using Java Spring Framework with Microsoft SQL Server. At the end of the contract the County will own a working system in the County's production environment that matches the functionality of the legacy system that runs in Java on Microsoft SQL server and uses the County's existing Control-M software for job scheduling.

2. Professional Services

Vendor will provide professional services, along with Vendor's partner Blu Age, to re-platform and implement the County's Assessment Tax System. Professional Services that Vendor provide are described in the Staffing Plan, including services needed from the County.

3. Project Planning

Prior to the project kickoff meeting with the County, Vendor will perform an Accelerated Delivery Planning (ADP) session to facilitate the project initiation. ADP is a multiday, collaborative startup, planning, and coaching session for new projects. Coaching is conducted by members of the Vendor Quality Office in partnership with the program and project leadership for rapid development or refinement of project management artifacts in real time. This establishes the foundation for a robust Management Plan to support successful delivery.

Work to complete Vendor's initial Project Plan will begin immediately following project award. Vendor will meet with the County to discuss project startup activities, and confirmation by the County of Vendor's initial Project Plan will occur immediately following award. Vendor will complete Vendor's Project Plan deliverable after Vendor conduct initial project planning meetings to validate assumptions, confirm expected deliverables, review the submitted Project Plan, confirm the project escalation process, and confirm County priorities.

4. Conversion of Programs, Screens, Reports, JCL, Data, and Implementation and Knowledge Transfer and Training

Vendor will follow Vendor's re-platform strategy to successfully complete a like-for-like conversion of IDEAL PDL to modern Java Enterprise Edition, Java Spring, and related components. Vendor's low-risk, iterative approach. Table 24 describes the schedule and details tasks.

Table 24. Deploy System Process Activities

PORTION OF SCHEDULE	DESCRIPTION/TASKS
Iterations 0–6	• Convert PDL Source software programs, screens, reports, and job control languages to UML2. • Validate UML2. • Modify UML2 where appropriate (based on patterns, relationships, and only "valid current" functions). • Convert UML2 to Java based on the target architecture, and install and configure the converted Java System. • Convert data. • Interface with the user experience and other internal/external entities. • Initially test the converted system and data. • Perform a System Test (completing this and prior steps in an iterative fashion based on business functions). • Demonstrate functionality to the County, and then move to a User Acceptance Testing (UAT) region (County is scheduled to conduct UAT sessions after iterations 2, 4, and 6).
Deploy and Release (Implementation and Knowledge Transfer and Training)	• Package release components. • Compare results with approach. • Perform cross-capability integration. • Conduct a Technical Deploy Review. • Obtain deploy commitment. • Coordinate Formal Acceptance Testing. • Make the system available.

Seamless transitions from legacy to converted systems require sound, tested deploy and release strategies that constitute the Implementation Plan. The deploy and release processes described as follows are customized from Vendor's Enabling Delivery and Global Excellence (EDGE) Framework process and Artifact Repository. EDGE will be used on thousands of projects worldwide with refinements from these projects, and it includes artifacts such as Software Release Checklist and Initial System Release Checklists to verify that Vendor covers all issues and best practices for a release.

- **Deploy System –** Includes packaging the application or solution for delivery, gaining final approval, and making the package available for release.
- **Release System –** Installs all components of the solution in the production environment, tests installed applications, trains all users and support personnel, conducts formal User Acceptance Testing, and provides any startup support according to the internal agreement.

Deploy System

This process contains activities to perform the following:

- Install all components of the development effort in the production environment.
- Test the installed application.
- Train all users and support personnel, and provide any startup support according to the internal agreement.

Table 25 describes activities in the Deploy System process.

Table 25. Deploy System Process Activities

DEPLOY SYSTEM ACTIVITIES	DESCRIPTION/TASKS
Establish Production Environment	• During Month 8-12, Vendor will work with the County provided System Administrator to train and build the Production and Disaster Recovery environments. • Test team will additionally test the latest release in the production environment matches the results from the other environments.
Install Application Data	• Convert Data during each iteration following the processes described in the Vendor Response Questions – Question #11 • Schedule an incremental data migration immediately preceding go-live
Install Application Software	• Final migration of converted applications, screens, reports, and JCL scripts. • Document Production Jobs and make sure scheduler is aligned to different processes and batch processes (e.g. yearend process even though the go-live maybe at a different time) • Make sure Control-M scheduler is aligned and tested to the required sequence of events
Perform Release Testing	• Perform a set of tests demonstrating migrated applications, screens, reports, and JCL scripts are working properly • Provide report to the County for approval
Obtain Release Commitment (Go-Live)	• Upon Successful release test, obtain sign off from the County that Production Operations may begin.
Conduct Knowledge Transfer and Training	• Conduct training and knowledge transfer in accordance with the training plan. • Walk through with the County's IT operations a number of facts and procedures such as the anticipated results, understanding clock time of jobs and actions to take.
Monitor Production Application	• Observe the system to determine whether functions operate as expected and meet expected performance levels. • Collect and store post-release defects discovered during the warranty period. • Baseline appropriate measurement data.
Turn Over Deployment	• Following the knowledge transfer plan, turn the application over to the County support staff who will be responsible for ongoing support. • Communicate known errors and workarounds to the people who will support the application. • Make sure that the application is performing acceptably • Address any concerns among the support staff.

Release System

The Release System process includes packaging the application or solution for delivery, performing formal acceptance testing, gaining final approval, and making the package available for release. Table 26 describes activities in the Release System process.

Table 26. Release System Process Activities

RELEASE SYSTEM ACTIVITIES	DESCRIPTION/TASKS
Package Release Components	• Using the configuration management and measurement data, identify the status of individual configuration items that are part of the release. • Build the release from the appropriate components and store it in a controlled environment. • Update system documentation as appropriate.
Compare Results With Approach	• Evaluate the iteration goals against iteration results. • Document iteration shortcomings where goals were not met for incorporation into future iterations. • After reviewing iteration results, gather and evaluate the iteration metrics. • Where possible, use metrics-evaluation results to influence future iterations, to identify additional reuse opportunities, and to improve the design. • Capture other lessons learned from this iteration to improve later iterations. • Verify that work products (deliverables) created before this point in the project are updated based on the iteration results. • Review the Configuration Status Accounting Report to verify that all configuration items are listed
Perform Cross Capability Integration	• Validate interfaces and separate components and jobs are working • Remediate issues as needed
Conduct Technical Deploy Review	• Distribute the major deliverables to the County giving adequate review time. • Complete the technical review checklist.
Obtain Deploy Commitment	• Validate that the release package is complete and meets the County requirements. • Meet and obtain commitment from the County • Baseline the system in the release repository for Configuration Management.
Coordinate Formal Acceptance Testing	• Coordinate formal acceptance testing (Vendor has three UAT sessions in the schedule conducted after every 2 iterations) using the approved formal acceptance testing specifications and the test strategy. • Record and retain testing results. • Track all problems discovered to resolution. If applicable, collect, analyze, and store prerelease defects discovered during formal acceptance testing. • Retest as appropriate.
Make System Available	• Using the configuration management data, ensure that the proper system configuration is built. • Collect final performance metrics • Move the system to the distribution environment, as needed. • Create the release documentation as needed. • Communicate to the County that the release is ready for deploy to production.

During the assessment phase (Iteration 0), Vendor will work with the County to complete a release checklist for the go-live strategy. This will include identifying all stakeholders including operations owners, acceptance criteria for a final release, and knowledge transfer needs. The release checklist will include elements to validate Vendor covered all issues and best practices for a release.

The Production Environment is scheduled to be complete in Month 9 with assistance from a County provided System Administrator who will be added in Month 8. This will greatly facilitate knowledge

transfer so the system can be maintained after go-live. Vendor highly recommends the system administrator would support the application when it goes live.

Following successful User Acceptance Testing and completion of testing related services and deliverables (software code and all final documentation such as Release Notes and updates to the Technical Guides), Vendor will work with the County to finalize the production go-live process and make any updates to the go-live checklist and validate all items are complete and ready for release. This typically includes validating all training and knowledge transfers and completing any final incremental data migrations and completing any change management requests with the hosting provider.

Vendor will then complete all items on the checklist and review the checklist results with the County to obtain approval to implement. Vendor will migrate the completed system to production and conduct smoke tests to validate final migrations and communicate results back to the County that the system is now operational.

Vendor's plan calls for a Go-Live before any year end activities and keeping in mind the County Business Milestones.

5. County Reviews, Approvals, and User Acceptance Testing

Vendor will submit all deliverables to the County and provide a 5-day period for the County to review and accept them. Also, Vendor will schedule a session to walk through the deliverable with the County during that 5-day window. If there are any exceptions raised that would prevent acceptance from the County then Vendor will address those over the next 4 days and return the deliverable back to the County for County review and acceptance.

Additionally, every iteration will have a formal deliverable to demonstrate the converted functionality to the County, looking for the County's acceptance. Vendor's Release and Deploy processes described above provide for County Reviews and request commitments from the County before Vendor can Go-Live. Vendor will facilitate User Acceptance Testing, and Vendor will have scheduled User Acceptance Testing to occur after Iterations 2, 4, and 6.

6. Integrate Re-platformed Assessment Tax System

Vendor will integrate the re-platformed Assessment Tax System with the identified system interfaces, including ATS II, CAPS+, the ACI Worldwide Payment Processing System, and Hyland's OnBase Document Management System. Vendor will accomplish this by converting the existing functionality as Vendor do for the rest of the system. Vendor's team will use Vendor's Blu Age Comparison tool to verify that the results from testing the interfaces are equivalent. The resultant system interfaces will be through industry-standard interfaces, such as flat file transfers Vendor clearly understands that the current application's interface format and fields must remain the same in the newly re-platformed ATS.

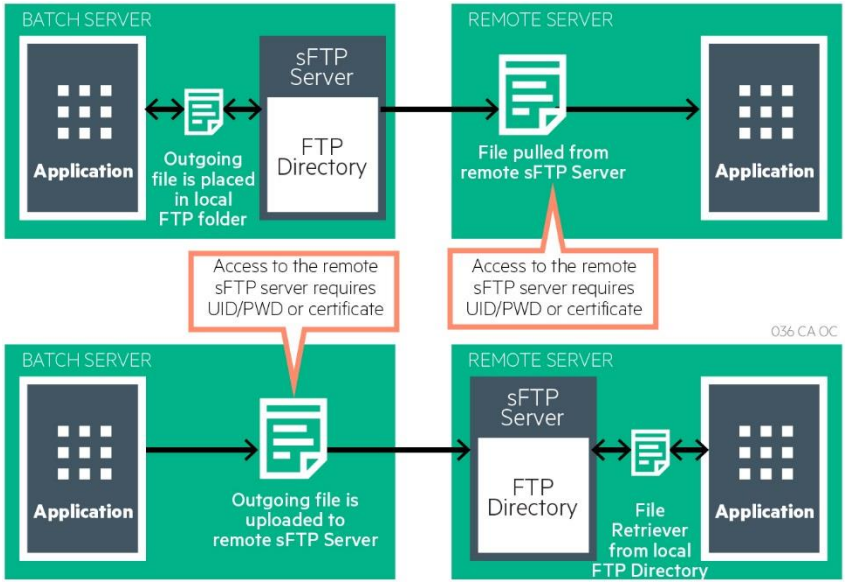
The following highlights Vendor's process to meet this requirement:

- Save legacy interface files in the development repository.
- Use the re-platformed ATS to create the same interface files.
- Leverage the automated software to compare the two interface files.
- Look for consistencies with:
  - Technical properties, such as format, code page, and line endings
  - Data equivalence; identical results are expected in legacy and modernized files.
- Once verified, Vendor will use an automated comparison process for re-runnable proof cases for non-regression.
- Work with the County to make certain that interface processing works for each external entity under the conditions where data is valid as well as invalid.
- Document the interface-handling process for subsequent production operation – making certain that the transmission method and the data sources and target destinations remain the same.

Figure 12 illustrates one interface verification scenario:

- The application is creating a file in the local sFTP folder (or subfolder) that can be accessed by a remote application using sFTP remote access.
- The application is uploading a newly created file to the remote sFTP Server, which can be accessed locally by the remote application.

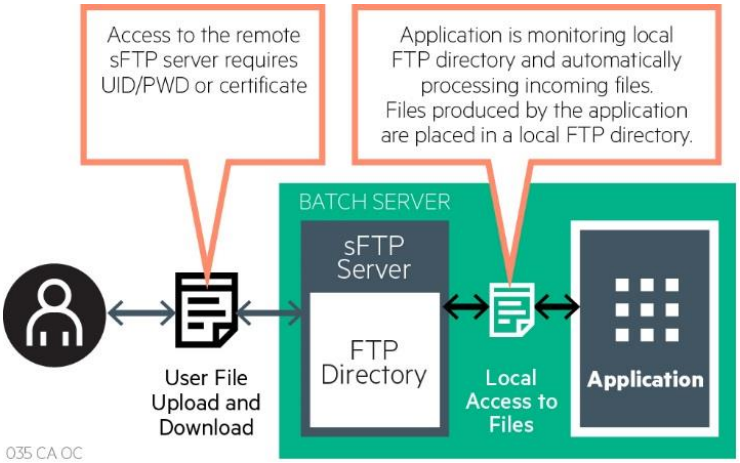
Figure 12. An Interface Scenario



This is a conceptual design to meet the interface requirement within the re-platformed ATS.

Figure 13 illustrates file-based communication between the user and the application; the user can upload and download files using the sFTP protocol.

Figure 13. File-Based Communication



This is a conceptual design of another type of interface for the re-platformed ATS.

7. Implementation Plan Approach

Vendor's Implementation Plan includes an iterative approach. Within each iteration Vendor will accomplish the following:

- Evaluate the legacy proof cases and make adjustments to the converted cases if needed.
- Perform a minimal data migration so functions converted can be tested.
- Validate that the existing proof cases have been automated sufficiently.

- Convert the source code through Blu Age.
- Demonstrate the functionality at the end of each 2-month iteration so that Vendor and the County can validate that the converted functionality matches legacy functionality.

This approach allows the County to tangibly see artifacts, gauge progress, suggest refinements, and manage change on an incremental, continuing basis during the PTS Modernization project. This increases transparency and collaboration between the County and Vendor with less risk compared to a traditional Waterfall project.

Vendor's Implementation Plan includes collaborating with the County during an Assessment phase to validate priorities and scope for each iteration – and then five standard 2-month iterations followed by one shorter refactor iteration to address any issues that could not be completed in the other iterations. Table 27 shows a suggested conversion area for each iteration.

Table 27. Suggested Conversation Area for Each Iteration

CONVERSION ITERATION ORDER	SUGGESTED CONVERSION AREA
Iteration 0 – Assessment	• Complete POC conversion and Assessment Phase
Iteration 1 – Secured System	• IDEAL – Secured System (TX2)
Iteration 2 – Unsecured System and Auditor-Controller System	• IDEAL – Unsecured System (UN2) IDEAL – Auditor-Controller System (AC2)
Iteration 3 – Clerk of the Board System and Assessor Interface System	• IDEAL – Clerk of the Board System (COB) IDEAL – Assessor Interface System (ACT)
Iteration 4 – ATS Front-End Security and Panels	• IDEAL – ATS Front-End Security (FAST) IDEAL Panels (CICS Map)
Iteration 5 – Reports	• IDEAL Reports
Iteration 6 – Refactor	• Refactor Items

At the end of every iteration the working conversion code is tested and compared to the legacy ATS functionality. For items that do not work as they do in legacy, Vendor will note those items and schedule those for Iteration 6 for Refactor Items. Vendor has found that sometimes the legacy system itself does not produce the anticipated results. In these cases Vendor advises the client to correct the legacy code before conversion. Very old legacy mainframe systems handle calculations differently – related to order of the calculation's components, memory management constraints of the past, and other situations. Vendor anticipates that these situations may happen within the legacy ATS. Regardless, Vendor will work with the County to make sure that Vendor account for these different reconciling items.

In every iteration Vendor will complete the required deliverables for the defined unit of functionality. Deliverables include, but are not limited to, the following:

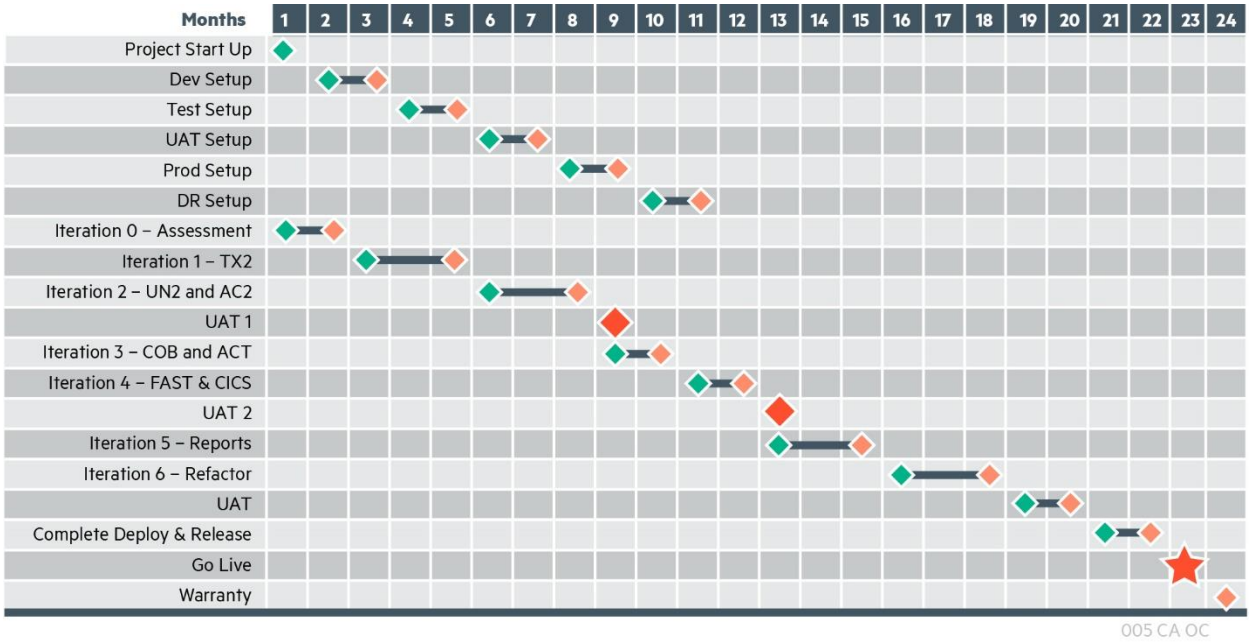
- Data migration scripts (from DB2)
- Source code conversion (from IDEAL PDL, including online, batch, interfaces, and reports)
- Automated proof cases (using MS Visual Studio and MS Test Manager software)
- Functional scenario demonstrations in the standalone target environment
- Iteration report providing status, lessons learned, issues, risks, and resolutions.

Vendor uses continuous deployment and automation in the delivery of Vendor's solution. Vendor will continuously deploy updates in an automated manner to Vendor's code conversion, data conversion, and

testing scripts in the development environment. On a bi-monthly basis, at the end of each iteration, the iteration functionality will be deployed to a standalone environment to allow for additional testing, User Acceptance Testing, with the County. Functionality that does not match legacy discovered by the County will be noted and scheduled for fixing in Iteration 6. Iteration 6 is designed to address any issues discovered via Vendor's iteration demonstrations and is expected to be smaller than the other iterations.

Applicable Timeline. Figure 14 shows Vendor's high-level implementation schedule. The schedule consists of five iterations in addition to a startup Iteration 0 and a re-factor iteration. UAT, Implementation, and Roll-Out account for another 4 months – resulting in an implementation timeline of 23 months.

Figure 14. High-Level Implementation Timeline



Vendor's low-risk implementation schedule will be tightly governed with Orange County.

Vendor's low-risk implementation schedule will be tightly governed with the County. Vendor's Go-Live date of August 30, 2019, completes well before any end-of-year activities for the County and addresses the County's business timelines indicated in the Scope of Work.

County Resources

Vendor will require a full-time equivalent from the County who understands the current environment during the length of the project. This may be a range of persons from the County as needed but should amount to a full-time equivalent. Additionally, in Months 8–12 Vendor will require a System Administrator from the County to establish and configure production and a disaster recovery environments. After Month 12 the System Administrator will be needed for about 40 hours of labor per month to maintain and patch the environments. Bringing this person on in Month 8 will assist with knowledge transfer.

Project Plan:

Below is the initial project plan that will be finalized during the first month after the Effective Date and can change by mutual written agreement as the project plan is executed. The detailed, resource-loaded project schedule with tasks, durations, dependencies, and start and end dates is as follows (for purposes of this table, "OC" means the County):

Task Name	Start	Finish	Predecessors	Resource Names
OC	**Mon 10/2/17**	**Fri 9/3/21**		
Project Start	Mon 10/2/17	Mon 10/2/17		
Deliver Updated Project Plan	**Mon 10/2/17**	**Tue 10/31/17**		
Project Start up (Month 1)	**Mon 10/2/17**	**Tue 10/31/17**		**Lead Architect, Project Manager, OC Legacy SME**
Develop updated project plan	**Mon 10/2/17**	**Tue 10/31/17**		
Develop Risk Management Plan	Mon 10/2/17	Mon 10/2/17		Project Manager
Develop Communication Plan	Mon 10/2/17	Mon 10/2/17		Project Manager
Develop Project Schedule	Mon 10/2/17	Thu 10/5/17		Project Manager
Develop Knowledge Transfer Plan Framework	Mon 10/2/17	Mon 10/2/17		Project Manager
Develop Cost Management Plan	Mon 10/2/17	Tue 10/3/17		Project Manager
Determine Project Scope	Mon 10/2/17	Thu 10/5/17		Blu Age SME, Project Manager
Determine Project Reports	Mon 10/2/17	Tue 10/3/17		Project Manager
Determine Financial and Invoice schedule	Mon 10/2/17	Wed 10/4/17		Project Manager
Determine Acceptance Criteria for Deliverables	Mon 10/2/17	Tue 10/3/17		Project Manager
Develop Staffing Plan	Mon 10/2/17	Wed 10/4/17		Project Manager, Test Lead, Team Lead 1,Team Lead 2
Develop Issue Log	Mon 10/2/17	Mon 10/2/17		Project Manager
Develop Project Governance	Mon 10/2/17	Mon 10/2/17		Project Manager
Confirm Blu Age Conversion Tools Software Capability	Tue 10/3/17	Fri 10/6/17	2	Blu Age SME
Perform Conversion Setup	Tue 10/3/17	Fri 10/6/17	2	Blu Age SME
Perform Pre-Employment Screening	Tue 10/3/17	Fri 10/6/17	2	
Execute Background Checking Procedure	Tue 10/3/17	Fri 10/13/17	2	
Develop Staff Roster and Duties	Tue 10/3/17	Wed 10/4/17	2	Project Manager

Determine IT Security Staff Usage Policies and Procedures	Tue 10/3/17	Wed 10/4/17	2	
Determine IT Operations Security Policy	Tue 10/3/17	Wed 10/4/17	2	
Determine Document & Intellectual Property Management	Tue 10/3/17	Wed 10/4/17	2	
Determine Data, Tape and Resource policies	Tue 10/3/17	Wed 10/4/17	2	
Determine Remote Access Policies	Tue 10/3/17	Wed 10/4/17	2	
OC Approval for Vendor deliverables	Tue 10/31/17	Tue 10/31/17	43	
Vendor Deliverables	**Mon 10/2/17**	**Tue 10/31/17**		
Updated Project Plan	Mon 10/2/17	Tue 10/31/17		
Blu Age Conversion Tools Software Capability	Mon 10/2/17	Mon 10/2/17		
Conversion Set Up	Mon 10/2/17	Mon 10/2/17		
Pre-Employment Screening Complete	Mon 10/2/17	Mon 10/2/17		
Background Checking Procedure	Mon 10/2/17	Mon 10/2/17		
Staff Roster and Duties	Mon 10/2/17	Mon 10/2/17		
IT Security Staff Usage Policies and Procedures	Mon 10/2/17	Mon 10/2/17		
IT Operations Security Policy	Mon 10/2/17	Mon 10/2/17		
Document & Intellectual Properly Management	Mon 10/2/17	Mon 10/2/17		
Data, Tapes, and Resources policy	Mon 10/2/17	Mon 10/2/17		
Remote Access Policies	Mon 10/2/17	Mon 10/2/17		
Prepare Deliverables for Delivery	Tue 10/3/17	Tue 10/3/17		
Provide Deliverables to OC for review	Fri 10/20/17	Wed 10/25/17	41	
Recover and Repair Deliverables for Final Approval	Thu 10/26/17	Tue 10/31/17		
Iteration 0 - Assessment Report	**Mon 10/2/17**	**Thu 11/30/17**		
Prepare Assessment Report	Mon 10/2/17	Mon 10/16/17		**Data Architect 1,Lead Architect,OC Legacy SME,Project**

				Manager,Team Lead 1
Perform System Admin Tasks (configuration builds)	Mon 10/2/17	Thu 10/12/17		System Admin
Testing planning and preparation	Mon 10/2/17	Thu 10/12/17		Test Lead
OC approval for Vendor deliverables	Mon 10/2/17	Tue 10/10/17		
Vendor Deliverables	**Mon 10/2/17**	**Thu 10/5/17**		
Assessment Report	Mon 10/2/17	Mon 10/2/17		
Target System Architecture	Mon 10/2/17	Mon 10/2/17		
Key Strategies Document	Mon 10/2/17	Mon 10/2/17		
Blu Age cartridge upgrade requirements	Mon 10/2/17	Mon 10/2/17		
Non functional requirements identified	Mon 10/2/17	Mon 10/2/17		
Detailed project schedule	Mon 10/2/17	Mon 10/2/17		
Transformation assessment report	Mon 10/2/17	Mon 10/2/17		
Prepare Deliverables	Mon 10/2/17	Mon 10/2/17		Project Manager
Provide Deliverables to OC for review	Mon 10/2/17	Thu 10/5/17		
Recover and Repair Deliverables for Final Approval	Mon 10/2/17	Mon 10/2/17		
OC Deliverables	**Mon 10/2/17**	**Mon 10/2/17**		
As-is system documentation	Mon 10/2/17	Mon 10/2/17		
Known issues description	Mon 10/2/17	Mon 10/2/17		
Iteration 0 - Assessment Report	**Mon 10/2/17**	**Thu 11/30/17**		
Development Environment effort	Tue 10/3/17	Fri 10/27/17	2	**Data Architect 1,Lead Architect,OC Legacy SME,Project Manager,System Admin**
Develop Technical Specification Document	Tue 10/3/17	Fri 10/13/17	2	Converter 1,Converter 2,Converter 3,Converter 4,Converter 5,Converter 6,Team

				Lead 1,Team Lead 2,Test Lead,Tester 1,Tester 2,Converter 7
Develop Iteration 0 Assessment Report	Tue 10/3/17	Fri 10/13/17	2	Data Analyst 1,Data Analyst 2
OC approval for Vendor deliverables	Mon 10/2/17	Mon 10/2/17	55FF	
Develop Automated Test Scripts	Mon 10/2/17	Tue 10/17/17		
Develop Iteration strategies and plans	Mon 10/2/17	Thu 10/26/17		
Vendor Deliverables	**Mon 10/2/17**	**Thu 11/30/17**		
Confirmed architecture stack	Thu 10/26/17	Thu 10/26/17	49	Lead Architect
Operational Development Environment	Thu 10/26/17	Thu 10/26/17	49	
Iteration 0 Assessment Report	Thu 10/12/17	Thu 10/12/17	51	
Technical Specification Document (Version 1)	Thu 10/12/17	Thu 10/12/17	50	
4-Up Report	Wed 10/25/17	Wed 10/25/17		
Issues Log	Wed 10/25/17	Wed 10/25/17		
Change Management Log	Wed 10/25/17	Wed 10/25/17		
Project Schedule Updates	Wed 10/25/17	Wed 10/25/17		
Prepare Deliverables	Wed 10/25/17	Wed 10/25/17		
Provide Deliverables to OC for review	Thu 10/26/17	Mon 11/20/17		
Recover and Repair Deliverables for Final Approval	Wed 11/1/17	Thu 11/30/17	65	
Iteration 1 - Secured System part 1	**Fri 12/1/17**	**Tue 1/30/18**		
Conversion effort (software, screens, reports and JCL)	Fri 12/1/17	Wed 1/3/18		**Lead Architect,OC Legacy SME,Project Manager,System Admin,Test Lead**
Iteration 1 - Secured System	Fri 12/1/17	Wed 1/3/18		Blu Age SME,Converter 1,Converter 2,Converter 3,Converter 4,Converter

				5,Converter 6,Converter 7,Team Lead 1,Team Lead 2,Tester 1,Tester 2
Database schema conversion	Fri 12/1/17	Wed 1/3/18		Data Analyst 1,Data Analyst 2,Data Architect 1
OC approval for Secured System Dev Environment Complete	Fri 12/1/17	Fri 12/1/17		
OC approvals for Iteration Vendor deliverables	Fri 12/1/17	Fri 12/1/17		
Complete Secure System Dev Environment	Fri 12/1/17	Fri 12/22/17		
Vendor Deliverables	Fri 12/22/17	Thu 1/11/18		
Secured System Dev Environment Complete	Fri 12/22/17	Fri 12/22/17		
Prepare Deliverables	Fri 12/22/17	Fri 12/22/17		
Provide Deliverables to OC for review	Fri 12/22/17	Thu 12/28/17		
Recover and Repair Deliverables for Final Approval	Fri 12/22/17	Fri 12/22/17		
4-Up Report	Wed 1/3/18	Wed 1/3/18	68,69,70	
Issues Log	Wed 1/3/18	Wed 1/3/18	68,69,70	
Change Management Log	Wed 1/3/18	Wed 1/3/18	68,69,70	
Project Schedule Updates	Wed 1/3/18	Wed 1/3/18	68,69,70	
Prepare Deliverables	Wed 1/3/18	Wed 1/3/18		
Provide Deliverables to OC for review	Thu 1/4/18	Tue 1/9/18	83	
Recover and Repair Deliverables for Final Approval	Tue 1/9/18	Tue 1/30/18	84	
Iteration 1 - Secured System part 2	**Mon 1/8/18**	**Fri 3/2/18**		
Conversion effort (software, screens, reports and JCL)	Mon 1/8/18	Tue 2/20/18	68	**Lead Architect,OC Legacy SME,Project Manager,System Admin,Test Lead**
Code conversion iteration 1	Mon 1/8/18	Fri 2/9/18		Blu Age SME,Converter 1,Converter 2,Converter 3,Converter

				4,Converter 5,Converter 6,Converter 7,Team Lead 1,Team Lead 2,Tester 1,Tester 2
System testing	Mon 1/8/18	Fri 2/9/18		Test Lead,Tester 1,Tester 2
Database schema conversion	Mon 1/8/18	Fri 2/9/18		Data Analyst 1,Data Analyst 2,Data Architect 1
Live Demonstration of functionality	Thu 2/15/18	Wed 2/21/18		
OC approvals for Vendor deliverables	Fri 3/2/18	Fri 3/2/18		
Vendor Deliverables	**Thu 2/1/18**	**Fri 3/2/18**		
Data and Code Conversion Status Update	Tue 2/20/18	Tue 2/20/18		
Test Environment is Operational	Tue 2/20/18	Tue 2/20/18		
Initial Knowledge Transfer Plan	Tue 2/20/18	Tue 2/20/18		
Demonstration and Walkthrough Report	Tue 2/20/18	Tue 2/20/18		
Iteration 1 report	Tue 2/20/18	Tue 2/20/18		
4-Up Report	Tue 2/20/18	Tue 2/20/18		
Issues Log	Thu 2/1/18	Thu 2/1/18		
Change Management Log	Thu 2/1/18	Thu 2/1/18		
Project Schedule Updates	Tue 2/20/18	Tue 2/20/18		
Prepare Deliverables	Tue 2/20/18	Tue 2/20/18		
Provide Deliverables to OC for review	Wed 2/21/18	Mon 2/26/18	103	
Recover and Repair Deliverables for Final Approval	Tue 2/27/18	Fri 3/2/18	104	
Iteration 2 - Unsecured System and Auditor-Controller System part 1	**Mon 3/5/18**	**Tue 4/10/18**		
Conversion effort (software, screens, reports and JCL)	Mon 3/5/18	Mon 4/2/18		**Lead Architect, OC Legacy SME, Project Manager, System Admin, Test Lead**
Code conversion iteration 2	Mon 3/5/18	Mon 4/2/18		Blu Age SME,Converter 1,Converter 2,Converter

				3,Converter 4,Converter 5,Converter 6,Converter 7,Team Lead 1,Team Lead 2,Tester 1,Tester 2
Database schema conversion	Mon 3/5/18	Mon 4/2/18		Data Analyst 1,Data Analyst 2,Data Architect 1
OC approvals for Vendor deliverables	Thu 4/5/18	Thu 4/5/18		
Vendor Deliverables	**Thu 3/29/18**	**Tue 4/3/18**		
4-Up Report	Thu 3/29/18	Thu 3/29/18		
Issues Log	Thu 3/29/18	Thu 3/29/18		
Change Management Log	Thu 3/29/18	Thu 3/29/18		
Project Schedule Updates	Thu 3/29/18	Thu 3/29/18		
Prepare Deliverables	Thu 3/29/18	Fri 3/30/18		
Provide Deliverables to OC for review	Fri 3/30/18	Wed 4/4/18		
Recover and Repair Deliverables for Final Approval	Wed 4/4/18	Tue 4/10/18		
Iteration 2 - Unsecured System and Auditor-Controller System part 2	**Mon 3/5/18**	**Thu 5/31/18**		
Conversion effort (software, screens, reports and JCL)	Thu 3/29/18	Fri 5/18/18		**Lead Architect, OC Legacy SME, Project Manager, System Admin, Test Lead**
Code conversion iteration 2	Thu 3/29/18	Mon 4/30/18		Blu Age SME, Converter 1, Converter 2, Converter 3, Converter 4, Converter 5, Converter 6, Converter 7, Team Lead 1, Team Lead 2, Tester 1, Tester 2
System testing	Thu 3/29/18	Mon 4/30/18		Test Lead, Tester 1, Tester 2
Database schema conversion	Thu 3/29/18	Mon 4/30/18		Data Analyst 1, Data Analyst 2, Data Architect 1
Demonstration of transformed	Wed 4/25/18	Mon		

functionality		4/30/18		
OC approvals for Vendor deliverables	Thu 5/31/18	Thu 5/31/18		
Vendor Deliverables	**Tue 5/1/18**	**Thu 5/31/18**		
Demonstration/Walkthrough Report	Mon 5/21/18	Mon 5/21/18		
Data and Code Conversion Status and Plan update	Tue 5/1/18	Tue 5/1/18		
UAT Environment is Operational	Mon 5/21/18	Mon 5/21/18		
Knowledge Transfer Plan Iteration 1	Mon 5/21/18	Mon 5/21/18		
Iteration 2 report	Mon 5/21/18	Mon 5/21/18		
4-Up Report	Tue 5/1/18	Tue 5/1/18		
Issues Log	Tue 5/1/18	Tue 5/1/18		
Change Management Log	Mon 5/21/18	Mon 5/21/18		
Project Schedule Updates	Tue 5/1/18	Tue 5/1/18		
Prepare Deliverables	Mon 5/21/18	Tue 5/22/18		
Provide Deliverables to OC for review	Tue 5/22/18	Tue 5/29/18		
Recover and Repair Deliverables for Final Approval	Tue 5/29/18	Thu 5/31/18		
Iteration 3 - Clerk of the Board System and Assessor Interface System	**Fri 6/1/18**	**Tue 7/31/18**		
Conversion effort (software, screens, reports and JCL)	Fri 6/1/18	Fri 7/20/18		**Lead Architect, OC Legacy SME, Project Manager, System Admin,Test Lead, OC System Admin**
Code conversion iteration 3	Fri 6/1/18	Tue 7/3/18		Blu Age SME,Converter 1, Converter 2, Converter 3, Converter 4, Converter 5, Converter 6, Converter 7, Team Lead 1, Team Lead 2, Tester 1, Tester 2
System testing	Fri 6/1/18	Tue 7/3/18		
Database conversion	Fri 6/1/18	Tue 7/3/18		Data Analyst 1, Data Analyst 2, Data

				Architect 1
Conduct first UAT on converted code	Fri 6/1/18	Tue 7/3/18		
OC approvals for Vendor deliverables	Tue 7/31/18	Tue 7/31/18		
Vendor Deliverables	**Tue 7/3/18**	**Tue 7/31/18**		
Disaster Recovery Plan	Thu 7/19/18	Thu 7/19/18		
4-Up Report	Thu 7/19/18	Thu 7/19/18		
Issues Log	Tue 7/3/18	Tue 7/3/18		
Change Management Log	Thu 7/19/18	Thu 7/19/18		
Project Schedule Updates	Thu 7/19/18	Thu 7/19/18		
Prepare Deliverables	Thu 7/19/18	Fri 7/20/18		
Provide Deliverables to OC for review	Fri 7/20/18	Wed 7/25/18		
Recover and Repair Deliverables for Final Approval	Wed 7/25/18	Tue 7/31/18		
Iteration 4 - ATS Front-End Security and Panels	**Wed 8/1/18**	**Mon 10/1/18**		
Conversion effort (software, screens, reports and JCL)	Thu 7/19/18	Tue 9/18/18		**Lead Architect, OC Legacy SME, Project Manager, System Admin, Test Lead, OC System Admin**
Code conversion iteration 4	Wed 8/1/18	Fri 8/31/18		Blu Age SME,Converter 1,Converter 2,Converter 3,Converter 4,Converter 5,Converter 6,Converter 7, Team Lead 1, Team Lead 2, Tester 1, Tester 2
System testing	Wed 8/1/18	Fri 8/31/18		Test Lead, Tester 1, Tester 2
Database migration plan/design effort	Wed 8/1/18	Fri 8/31/18		Data Analyst 1, Data Analyst 2, Data Architect 1
OC application approvals for Vendor deliverables	Fri 9/28/18	Fri 9/28/18		
Vendor Deliverables	**Fri 8/31/18**	**Fri 8/31/18**		
Database migration plan/design	Fri 8/31/18	Fri 8/31/18		

effort				
Deployment Plan	Fri 8/31/18	Fri 8/31/18		
4-Up Report	Tue 9/18/18	Tue 9/18/18		
Issues Log	Tue 9/18/18	Tue 9/18/18		
Change Management Log	Tue 9/18/18	Tue 9/18/18		
Project Schedule Updates	Tue 9/18/18	Tue 9/18/18		
Prepare Deliverables	Tue 9/18/18	Tue 9/18/18		
Provide Deliverables to OC for review	Tue 9/18/18	Wed 9/19/18		
Recover and Repair Deliverables for Final Approval	Tue 9/25/18	Mon 10/1/18		
Iteration 5 - Reports First	**Mon 10/1/18**	**Mon 11/5/18**		**Blu Age SME, Converter 1, Converter 2, Converter 3, Converter 4, Converter 5, Converter 6, Converter 7, Data Analyst 1, Data Analyst 2, Data Architect 1, Lead Architect, OC Java Developer, OC Legacy SME, OC System Admin, Project Manager, Team Lead 1, Team Lead 2, Test Le...**
Conversion effort (software, screens, reports and JCL)	Mon 10/1/18	Mon 10/29/18		
Conduct second UAT on converted code	Mon 10/1/18	Mon 10/29/18		Tester 1
Execute first pass of functional, non-functional, and integration test plans	Mon 10/1/18	Mon 10/29/18		
Execute regression tests	Mon 10/1/18	Mon 10/29/18		Test Lead, Tester 2
OC approvals for Vendor deliverables	Mon 11/5/18	Mon 11/5/18		
Vendor Deliverables	**Fri 10/26/18**	**Wed 10/31/18**		

4-Up Report	Fri 10/26/18	Fri 10/26/18		
Issues Log	Fri 10/26/18	Fri 10/26/18		
Change Management Log	Fri 10/26/18	Fri 10/26/18		
Project Schedule Updates	Fri 10/26/18	Fri 10/26/18		
Prepare Deliverables	Mon 10/29/18	Mon 10/29/18		
Provide Deliverables to OC for review	Mon 10/29/18	Thu 11/1/18		
Recover and Repair Deliverables for Final Approval	Fri 11/2/18	Mon 11/5/18		
Iteration 5 - Reports Second	**Thu 11/1/18**	**Fri 11/30/18**		
Conversion effort (software, screens, reports and JCL)	Thu 11/1/18	Wed 11/21/18		**Blu Age SME, Converter 1, Converter 2, Converter 3, Converter 4, Converter 5, Converter 6, Converter 7, Data Analyst 1, Data Analyst 2, Data Architect 1, Lead Architect, OC Java Developer, OC Legacy SME, Project Manager, Team Lead 1, Team Lead 2, Test Lead, Tester 1, Test...**
Code conversion	Thu 11/1/18	Tue 11/13/18		
System testing and refactoring	Thu 11/1/18	Tue 11/13/18		
Legacy system admin work	Thu 11/1/18	Tue 11/6/18		OC System Admin
Live Demonstration of Functionality	Wed 11/7/18	Tue 11/13/18		
OC approvals for Vendor deliverables	Fri 11/30/18	Fri 11/30/18		
Vendor Deliverables	**Tue 11/13/18**	**Fri 11/30/18**		
Complete Interfaces	Mon 11/26/18	Mon 11/26/18		

Data and Code Conversion Status and Plan update	Mon 11/26/18	Mon 11/26/18		
Iteration 3 and 4 code and data is in UAT so UAT 3 testing can begin	Mon 11/26/18	Mon 11/26/18		
Knowledge Transfer Plan Iteration 4	Mon 11/26/18	Mon 11/26/18		
Completed Test Scripts for Functionality	Fri 11/16/18	Fri 11/16/18		
Demonstration/Walkthrough Report	Fri 11/16/18	Fri 11/16/18		
4-Up Report	Mon 11/26/18	Mon 11/26/18		
Issues Log	Fri 11/16/18	Fri 11/16/18		
Change Management Log	Mon 11/26/18	Mon 11/26/18		
Project Schedule Updates	Mon 11/26/18	Mon 11/26/18		
Prepare Deliverables	Mon 11/26/18	Mon 11/26/18		
Provide Deliverables to OC for review	Tue 11/13/18	Fri 11/16/18		
Recover and Repair Deliverables for Final Approval	Fri 11/30/18	Fri 11/30/18		
Iteration 5 - Reports Third	**Tue 11/13/18**	**Fri 12/28/18**		
Conversion effort (software, screens, reports and JCL)	Mon 11/26/18	Tue 12/18/18		
Code conversion	Mon 11/26/18	Mon 12/17/18		
System testing and refactoring	Tue 11/13/18	Tue 12/18/18		
Legacy system admin work	Mon 11/26/18	Thu 11/29/18		
Live Demonstration of Functionality	Mon 12/17/18	Thu 12/20/18		
OC approvals for Vendor deliverables	Thu 12/27/18	Thu 12/27/18		
Vendor Deliverables	**Mon 12/17/18**	**Fri 12/28/18**		
Complete Interfaces	Mon 12/17/18	Mon 12/17/18		
Data and Code Conversion Status and Plan update	Mon 12/17/18	Mon 12/17/18		
Iteration 3 and 4 code and data is in UAT so UAT 3 testing can begin	Mon 12/17/18	Mon 12/17/18		

Knowledge Transfer Plan Iteration 4	Mon 12/17/18	Mon 12/17/18		
Completed Test Scripts for Functionality	Mon 12/17/18	Mon 12/17/18		
Demonstration/Walkthrough Report	Mon 12/17/18	Mon 12/17/18		
4-Up Report	Mon 12/17/18	Mon 12/17/18		
Issues Log	Mon 12/17/18	Mon 12/17/18		
Change Management Log	Mon 12/17/18	Mon 12/17/18		
Project Schedule Updates	Mon 12/17/18	Mon 12/17/18		
Prepare Deliverables	Fri 12/21/18	Fri 12/21/18		
Provide Deliverables to OC for review	Wed 12/26/18	Wed 1/2/19		
Recover and Repair Deliverables for Final Approval	Mon 12/17/18	Mon 12/17/18		
Iteration 6 - Refactor part 1	**Wed 1/2/19**	**Thu 2/28/19**		
Integration testing and Refactoring effort	Wed 1/2/19	Wed 2/20/19		**Blu Age SME, Converter 1, Converter 2, Converter 3, Converter 4, Converter 5, Converter 6, Converter 7, Data Analyst 1, Data Analyst 2, Data Architect 1, Lead Architect, OC Java Developer, OC Legacy SME, Project Manager, Team Lead 1, Team Lead 2, Test Lead, Tester 1, Test...**
System admin work (configuration builds)	Thu 2/14/19	Wed 2/20/19		OC System Admin, System Admin
OC approvals for Vendor deliverables	Thu 2/28/19	Thu 2/28/19		
Vendor Deliverables	**Wed 1/2/19**	**Thu 2/28/19**		
Security testing results	Thu 2/14/19	Thu 2/14/19		

Transparency and Auditability results	Thu 2/14/19	Thu 2/14/19		
4-Up Report	Wed 1/2/19	Wed 1/2/19		
Issues Log	Wed 1/2/19	Wed 1/2/19		
Change Management Log	Wed 1/2/19	Wed 1/2/19		
Project Schedule Updates	Wed 1/2/19	Wed 1/2/19		
Prepare Deliverables	Wed 2/20/19	Thu 2/21/19		
Provide Deliverables to OC for review	Thu 2/21/19	Tue 2/26/19		
Recover and Repair Deliverables for Final Approval	Tue 2/26/19	Wed 2/27/19		
Iteration 6 - Refactor part 2	**Fri 3/1/19**	**Wed 4/3/19**		
Integration testing and Refactoring effort	Fri 3/1/19	Thu 3/21/19		**Blu Age SME,Converter 1, Data Analyst 1, Data Analyst 2, Data Architect 1, Lead Architect, OC Java Developer, OC Legacy SME, Project Manager, Test Lead, Tester 1, Tester 2**
System admin work	Fri 3/22/19	Thu 3/28/19		OC System Admin, System Admin
OC approvals for Vendor deliverables	Wed 4/3/19	Wed 4/3/19		
Vendor Deliverables	**Thu 3/21/19**	**Wed 4/3/19**		
4-Up Report	Thu 3/28/19	Thu 3/28/19		
Issues Log	Thu 3/21/19	Thu 3/21/19		
Change Management Log	Thu 3/28/19	Thu 3/28/19		
Project Schedule Updates	Thu 3/28/19	Thu 3/28/19		
Prepare Deliverables	Thu 3/28/19	Thu 3/28/19		
Provide Deliverables to OC for review	Thu 3/28/19	Tue 4/2/19		
Recover and Repair Deliverables	Wed 4/3/19	Wed		

for Final Approval		4/3/19		
UAT Complete	**Fri 3/29/19**	**Mon 6/10/19**		
Support UAT, Final clean up, and knowledge transfer and training efforts	Thu 3/21/19	Wed 5/22/19		**Lead Architect, Project Manager, Converter 1, Data Analyst 1, Data Analyst 2, Data Architect 1, OC Java Developer, OC Legacy SME, Test Lead, Tester 1, Tester 2**
System admin work	Wed 5/22/19	Wed 5/29/19		OC System Admin, System Admin
Go-Live checklist Designed	Wed 5/29/19	Mon 6/3/19		
OC approvals for Vendor deliverables	Mon 6/10/19	Mon 6/10/19		
Vendor Deliverables	**Fri 3/29/19**	**Mon 6/10/19**		
Data and Code Conversion Status Update	Fri 3/29/19	Fri 3/29/19		
All code and minimal data is in UAT for Final Testing	Fri 3/29/19	Fri 3/29/19		
Deliver UAT Report and Data Conversion Report	Fri 3/29/19	Fri 3/29/19		
4-Up Report	Wed 5/29/19	Wed 5/29/19		
Issues Log	Wed 5/22/19	Wed 5/22/19		
Change Management Log	Wed 5/29/19	Wed 5/29/19		
Project Schedule Updates	Wed 5/29/19	Wed 5/29/19		
Prepare Deliverables	Wed 5/29/19	Wed 5/29/19		
Provide Deliverables to OC for review	Thu 5/30/19	Tue 6/4/19		
Recover and Repair Deliverables for Final Approval	Wed 6/5/19	Mon 6/10/19		
Complete Deploy and Release Work	**Tues 6/11/19**	**Wed 7/31/19**		
Complete Knowledge Transfer and Training	Tues 6/11/19	Wed 7/31/19		
Work with OC on release checklist	Tue 6/11/19	Tue 6/25/19		
Go Live	**Thu 8/1/19**	**Fri 8/30/19**		

Rollout work	**Thu 8/1/19**	**Fri 8/30/19**		**Lead Architect, Project Manager, Converter 1, Data Analyst 1, Data Analyst 2, Data Architect 1, OC Java Developer, OC Legacy SME, Test Lead, Tester 1, Tester 2, Team Lead 1**
Obtain signoff on release checklist	Mon 8/19/19	Thu 8/22/19		
Release checklist approved	Thu 8/22/19	Thu 8/22/19		
Complete final incremental data migration	Thu 8/1/19	Mon 8/12/19		
Install UAT released application	Thu 8/1/19	Tue 8/6/19		
Perform release testing	Fri 8/9/19	Wed 8/14/19		
Execute final checklist items	Wed 8/14/19	Mon 8/19/19		
Provide release test results to OC	Mon 8/26/19	Mon 8/26/19		
Obtain OC approval to implement	Tue 8/27/19	Fri 8/30/19		
System admin work	Thu 8/1/19	Tue 8/6/19		OC System Admin
System Live in Production	Fri 8/30/19	Fri 8/30/19		
Live system approved by OC	Fri 8/30/19	Fri 8/30/19		
Original 3 month Warranty	**Sat 8/31/19**	**Sat 11/30/19**		
Overall duration	**Sat 8/31/19**	**Sat 11/30/19**		
Potential warranty work	Tue 9/3/19	Fri 9/6/19		Lead Architect, OC System Admin, Project Manager, Test Lead, System Admin
Optional 3 month Warranty	**Sun 12/1/19**	**Sat 2/29/20**		
Overall duration	**Sun 12/1/19**	**Sat 2/29/20**		
Potential warranty work	Thu 12/12/19	Tue 12/17/19		Lead Architect, OC System Admin, Project Manager, Test Lead, System Admin
Optional 6 Month Warranty	**Sun 3/1/20**	**Mon 8/31/20**		

Overall duration	**Sun 3/1/20**	**Mon 8/31/20**		
Potential warranty work	Mon 3/23/20	Thu 3/26/20		Lead Architect, OC System Admin, Project Manager, Test Lead, System Admin

Scope, Level of Effort, and Schedule for Configuration and Conversion

Each iteration will include configuration, code translation, and data conversion to meet the County's requirements. The project will require the three Key Personnel to begin on Day One along with Blu Age subject matter experts (SMEs) to assist with the Assessment. In Month 3 Vendor's team will ramp up with Code Converters, Team Leads, and three Data Conversion Specialists. Vendor will require a full-time equivalent from the County who understands the current environment. This may be a range of persons from the County as needed, but should amount to a full-time equivalent. Additionally, in Months 8–12 Vendor will require a System Administrator from the County to establish and configure production and disaster recovery environments. After Month 12 the System Administrator will be needed for about 40 hours of labor per month to maintain and patch the environments. Bringing this person on in Month 8 will assist with knowledge transfer.

With every iteration in Months 2–12 Vendor will be installing and configuring the system and conducting code translation and data conversion (enough to validate functionality). The remaining data conversion schedule is described next.

Vendor plans to start the data conversion from the second month and complete the final migration by the end of the 23rd month. Table 28 provides details of the planned timeline of each data conversion-related sub-process and timelines for this portion of the proposed Project Plan. Vendor will coordinate these activities with the rest of the project and the County.

Table 28. Data Conversion Task Timelines

TASKS	**MONTHS**				
	2–3	**4–5**	**6–18**	**19–22**	**23**
Analysis • Source data assessment. • Collect existing source data specifications. • Analyze data quality for data migration. • Develop data migration strategy. • Prepare Data Conversion Plan.	**X**				
Design • Understand target schema. • Perform gap analysis. • Set up data conversion environment. • Configure ETL tool. • Prepare ETL scripts for tool to populate source staging schema. • Collect existing legacy data. • Design physical data migration.		**X**			
Build and Test (in six iterations) • Perform data mapping. • Build data maps to migrate data from source data to		**Iteration 1**	**Iteration 2** **Iteration 3** **Iteration 4**		

TASKS	MONTHS				
target data. • Develop code for data migration. • Prepare DC test plan/test cases. • Define data reconciliation. • Identify data cleansing issues. • Develop and test data cleansing scripts. • Define ways to measure/improve data quality. • Perform Unit Testing. • Perform Integration Testing. • Provide data migration components.			**Iteration 5 Refactor-Iteration 6**		
Mock Runs • Perform Data Migration Dress Rehearsals. • Perform Application Testing.				**X**	
Deploy • Install application data. • Perform Release Testing. • Perform final live data migration.					**X**

As described in Vendor's Implementation Plan approach, each iteration will cover different scope sections from the legacy system, and that will be determined during Iteration 0. Vendor has provided a fully loaded schedule that includes a peak of 20 full-time equivalent (FTE) employees from Vendor and a peak of two FTEs from the County.

The required Staffing Plan section describes the roles, Key Personnel, and required County participation. The high-level and detailed Project Plan is described in Vendor's Implementation Plan. Each iteration will include configuration for converted code, code translation, and data conversion.

Methodology and Approach for Project Quality

Vendor views quality as the daily practice of delivering software development management and services that perform to client expectations across several dimensions: accurate and timely deliverables; adherence to established standards, policies, and procedures; frequent and candid communications; and service excellence. Vendor has always been a leader in quality, beginning with Vendor's early adoption of International Organization of Standardization (ISO) quality standards and CMMI for Development (CMMI–Dev). Vendor holds a comprehensive set of certifications that demonstrate Vendor's corporate commitment to these industry standards. The ISO certifications and CMMI ratings confirm Vendor's dedication to quality and provide a strong foundation of repeatable standard processes and methods that Vendor will tailor and leverage to fit the needs of the County and the ATS re-platform project – resulting in an efficient implementation of proven processes and tools to control quality.

Vendor's Project Manager (PM), with assistance from Vendor's U.S. Public Sector (USPS) Quality Office, will make certain that Vendor delivers a quality product to the County. Immediately after contract award, the USPS Quality Office will conduct what Vendor refers to as Accelerated Delivery Planning (ADP), which is a best-practice, multi-day, collaborative startup and planning session for new projects. The purpose of the ADP Methodology is to create a common understanding of agreed-upon contractual commitments and a shared vision of scope and deliverables, roles and responsibilities, and escalation processes.

Once the project is underway, Vendor's PM – supported by Quality Office advisors – will make certain that quality is ongoing through the use of Vendor's Quality Assurance and Quality Control activities, outlined in Table 29, this allows Vendor and the County team to reflect on what is going well and what can be improved. Conducting these processes allows the Vendor to evaluate how the partnership is

working, to identify waste, and in general to improve the efficiency and effectiveness of the teams. Performing periodic reviews throughout the implementation keeps the joint Vendor and County team unified and helps prevent lengthy corrective action activities that can result from lack of delivery quality.

Table 29. Quality Management Activities

QUALITY ASSURANCE ACTIVITIES	QUALITY CONTROL ACTIVITIES
• Process audits • User feedback/surveys • Performance tracking and reporting • Health checks • Escalation	• Work Product, Deliverables, and Service Quality Reviews • Verification and validation • Corrective/preventive actions • Continual improvement • Quantitative management

Methodology and Approach for Managing and Mitigating Project Risk

The purpose of project risk management is to increase the likelihood and impact of positive events and decrease the likelihood and impact of negative events. Figure 15 depicts the six-step process that Vendor uses to manage and mitigate project risks.

Figure 15. Vendor' Risk Management Approach

Vendor proactively identify risks and then rapidly implement mitigation strategies to eliminate risks from occurring or minimize impact if a risk does occur.

Step 1 – Risk Management Planning. During Project Startup Vendor work together with the County PM to finalize procedures for risk management. Vendor confirm that Vendor's approach aligns with established County risk management procedures and best practices, and Vendor incorporate additional County-specific requirements (such as for risk handling, reporting, and escalation).

Step 2 – Risk Identification. Risk identification is the continual process of identifying risks throughout the duration of the project. The goal is to identify risks that can prevent, degrade, or delay the achievement of project objectives; risk opportunities are also identified that may create, enhance, or accelerate objectives.

Project risks fall into three categories:

- **Known Risks** – Risks that have been identified and analyzed, so they can be managed
- **Predictable Risks** – Risks that experience tells us we have a high probability of encountering
- **Unknown Risks** – Risks that could happen, but the likelihood or timing of the events occurring are unknown at this time.

Vendor's team accesses a corporate repository of lessons learned that includes numerous risks identified on similar client engagements along with successful mitigation strategies. This process helps Vendor's team identify the vast majority of potential risks across all three categories and apply proven Mitigation Plans to address risk. Identified risks are logged into the Project Risk Register, which is owned and managed by the Vendor PM.

Steps 3 and 4 – Risk Qualification and Quantification Analysis. Analysis is performed to validate that the risk in fact exists; gauge the probability of the risk occurring; and determine the impact to schedule, cost, and quality. The Vendor PM uses the Probability and Impact ratings to determine an overall risk score for each risk (Very High, High, Medium, or Low) and then updates the corresponding entry in the Risk Register. Risks are prioritized and next steps are defined as part of the Risk Management process.

Step 5 – Risk Response Planning. After risks have been assessed and prioritized, Risk Response Planning occurs to develop Risk Action and Contingency Plans and to guide decisions to avoid, mitigate, or transfer certain risks and ignore, enhance, or pursue certain opportunities. Risk Response Plans are logged in the Project Risk Register. The risk owner is assigned and responsible for developing options and actions to mitigate/manage a risk appropriate to the severity and impact of the risk. Although the primary responsibility falls to the risk owner, everyone on the team is responsible for helping to address identified risks.

Step 6 – Risk Monitoring and Control. Frequent and proactive review of risks is a critical component of success on the ATS re-platform project. Vendor will continually manage risks throughout the project life cycle. The Vendor PM will host a weekly meeting to review the Risk Response Plan statuses and determine whether any assistance or escalation is needed on the highest-ranked risks. Any new risks or changes in risk are documented. Any risks that do not have an effective action plan or are not executing to the plan are escalated for resolution. Risks associated with change requests are reviewed as part of the Change Control process. Risk assessments, residual risks, and acceptable levels of risk are reviewed at planned intervals – taking into account any changes in project direction and policy. The impact, probability, and strategy are reviewed/updated, including the Risk Response Plan, as needed.

All risks are tracked until closed. In this step the Vendor PM, collaborating with the County PM, determines whether the Risk Response Plan has been completed and whether the risk has been mitigated. The Vendor PM closes the risk as appropriate and documents the results of the Response Plan for inclusion in Vendor's Lessons Learned Repository.

Product Quality and Traceability from Legacy to Converted System

Traceability from Legacy

During the Iteration 0 assessment Vendor will identify with the County all components that comprise the current system that should be scheduled for conversion. Because Blu Age first converts all of the code to a UML model and the tool converts the UML to modern code, traceability is easily maintained in the UML model. Business users can read the UML model and can trace that to the legacy system and to the converted code generated by Blu Age.

Product Quality

Vendor's approach to provide product quality comes from a few methods:

- The Blu Age tool generates very well-formed Java code once the UML2 model has been validated to be correct and adheres to Java Spring standards.
- The destination solution uses industry standards for an n-tier architecture by separating presentation, business logic, and data. This separation allows for more security between layers and easy scalability at any layer.
- Source code quality will be checked using an open source tool, SonarQube. Vendor have used this at WellMark and found it to be very helpful with the Convert-Build-Test-Release process for other clients in producing quality-related methods, techniques, and artifacts that are easily maintained.
- The program will follow the Vendor Application Transformation Framework, which uses methods and processes from Vendor's Global practice.

8. Methodology and Approach to Testing

Vendor's Implementation Plan is to develop a testing strategy and a Comprehensive Test Plan (CTP). The testing strategy provides guidance and establishes a framework for defining, planning, executing, and

managing all testing activities. Vendor will work with the County staff to determine the level of strategy that best meets the County's needs. Vendor anticipates using the clients test scripts and assume Vendor will not need to create additional test scripts. Vendor capture and document testing requirements based on clearly understood business needs and priorities. Vendor's testing strategy focuses on specifying and facilitating an efficient and cost-effective approach to all testing activities and supports the following:

- Achieving the County's business goals
- Defining how the project's application development approach applies to testing activities
- Meeting the approved requirements
- Managing risks
- Making informed decisions.

Vendor's approach to developing the testing strategy is to supplement and support the project life cycle with the following testing-specific information:

- Testing roles and responsibilities
- Testing methodology
- Test levels to be performed
- The coverage that each test level provides
- Deliverables associated with each test level
- The approach to managing and measuring all testing activities
- Required testing environments and tools.

Vendor's testing strategy describes testing activities for each test level in detail, including relevant assumptions, constraints, and risks.

Testing activities require planning and management to be fully succeed. Based on the priorities identified in Vendor's testing strategy, a CTP covering each required test level provides tactical guidance by specifying the following factors:

- The required number and types of testing personnel
- The schedule of intended testing activities, including test development, test execution, metrics collection, and reporting
- The features and configurations to be tested
- The required testing environment and test data
- Test design techniques applicable to each test level
- Entry, exit, suspension, and resumption criteria for each test level
- Any risks specific to a test level that require mitigation.

The best testing strategy and test plans can only succeed if they are well implemented. Vendor testing delivery managers apply and adapt the processes, techniques, and templates of the Enterprise Testing Method to effectively manage and control the planning, execution, and completion of all testing activities. Testing management and measurement involve the following actions:

- Establishing and maintaining detailed estimates, a test schedule, resource plans, and procedures for all testing phases
- Managing the preparation of test plans, scenarios, and test cases for each test level
- Managing the execution of test cases, tracking and resolving defects, and verifying the completion of tests
- Managing testing close-down.

To make sure the application is ready for delivery into production, Vendor will apply a comprehensive metrics program – supported by standard testing management tools – to every testing engagement. This program generates reports that provide insight into the status of all testing throughout the project. With this information Vendor will confirm that tests are mitigating risks on high-priority requirements. These metrics support timely corrective action and informed decision-making by all project stakeholders –

particularly "go/no-go" decisions on progressing through project phases. Vendor' System Testing Life Cycle consists of the following stages:

- Test Requirement and Impact Analysis
- Test Strategy and Planning
- Test Environment Readiness
- Test Case and Script Design
- Test Execution and Defect Tracking
- Test Reporting and Acceptance and Metric Analysis.

Table 30 provides additional details on these stages.

Table 30. Stages of System Testing Life Cycle

STAGE	INPUT/ENTRY CRITERIA	ACTIVITIES	DELIVERABLES
Test Requirement and Impact Analysis	• Detailed application release scope, type of release (minor or major), changes, and detailed schedule • Updated design, business requirements and specifications, and use cases baseline documents • Relevant test artifacts from development team for every build • Release notes impact-analysis document for every build	• Understand application functionality and its implementation, current release plans, types, frequency, and timelines • Map functional and integration test scenarios and cases against test requirements • Create test traceability by applying agile risk-based and priority-based testing techniques • Analyze impact and gaps on existing test case against applications' functional and technical changes; identify update and add test cases, if any	• Test scope for every phase and release • Updated Test Traceability Matrix (TTM) • Number of existing test cases and scripts that need to be modified or updated for the current release • Number of new test cases or scripts that need to be prepared • Effort estimation and timeline to complete test case preparation • Exit criteria checklist
Test Strategy and Planning*	• Release scope, type, frequency, and plan • Baselined test requirement • Baselined TTM • Number of test cases and scripts that need to be modified or updated • Number of new test cases and scripts that need to be prepared • Effort estimation, number of test cycles, and timeline to complete	• Test strategy and scope for every release • Prepare, review, sign off, and baseline the detailed test plan and test strategy document • Define Defect, Change, Configuration Management Plan, and Communication and Risk Management Plans; review and baseline • Tailor pre-release checklist; review it with all stakeholders, and then baseline • Estimate effort, schedule, and resource planning	• Reviewed, approved, baselined test strategy and plan • Effort estimation and schedule • Defect, Change, Configuration Management Plan, Communication and Risk Management Plans • Pre-release checklist
Test Environment Readiness	• Release notes for every build • Test plan/strategy document	• Access and verify that the test environment is accessible • Verify that the test tools	• Status of test environment • Smoke test results; based on these results

STAGE	INPUT/ENTRY CRITERIA	ACTIVITIES	DELIVERABLES
	• Network connectivity and test environment accessibility, stability, and availability • Stable test environment, with latest build installed in the test environment • Installation and configuration of test tools • Sanity checklist/test passed on the environment with latest build	identified are available with expected details • Verify that the master test data is available • Review and validate sanity test results • Run smoke test to ensure critical functions work.	the actual testing will be performed • Updated pre-release test checklist
Test Case and Script Design	• Baselined test scope, strategy, and plan • Baselined effort estimation and schedule • Baselined Defect, Change, Configuration, Communication Plan, and Risk Management Plan • Baselined TTM • Baselined design, business requirements and specifications, and use cases documents • Updated TTM	• Identify functional, technical test scenarios • Update affected test case and script • Design new test cases and scripts: review, sign off, and baseline • Design test data: review, sign off, and baseline • Collect metrics • Identify smoke test suite: review, sign off, and baseline • Update test traceability, arrive at test coverage, and sign off	• Baselined test cases, scripts, and test data • Baselined smoke test suite • Baselined test traceability • Sign-off by stakeholder
Text Execution and Defect Tracking**	• Baselined test cases and scripts, test data, and smoke test suite • Baselined test plan • Test entry criteria passed • Stable test environment with latest build and sanity checklist passed • Baselined TTM • Pre-release test checklist passed	• Execute smoke test suite • Based on smoke test results, decide whether to proceed with further testing • Execute test cases and scripts using TTM according to priority • Update test-related metrics • Validate findings and log defects • Validate exit criteria	• Detailed defect logs of the build tested • Test result summary for the build • Test metrics report for the release
Test Reporting and Acceptance and Metric Analysis	• Test results summary • Defect logs • Metrics collected across different test phases • Deliverables from previous phases	• Analyze test results and defect logs • Review test results, defects identified, and status with County staff and sign off • Analyze metrics collected across different test phases and identify process improvement • Review acceptance criteria • Prepare retro plan	• Test phase completion report for the release • Test completion and acceptance sign-off • Lessons learned and updating the knowledge management repository • Implementation Plan for process improvement identified

Vendor follows a unique approach for test strategy and planning for the Software Development Life Cycle. Vendor has a defined test strategy and planning methodology based on Vendor Global Methods, a repository of templates and knowledge gained from years of experience in the industry.

Vendor uses Microsoft Visual Studio for end-to-end test management and defect management for the engagement with the County.

9. Vendor's Comprehensive Test Plan

Iteration Testing

The Vendor's delivery team will include testing experts that participate in each iteration. They will deliver the various testing artifacts and meet related milestones from the RFP. Vendor's low-risk, collaborative approach is a key benefit of the multiple iterations and testing integration. Under the Waterfall approach the testers' work starts after others have generated all of the code. Using the Iterative approach, Vendor will perform testing within each iteration. Table 31 lists and explains the testing performed within each iteration.

Table 31. Two-Month Iteration Testing

TESTING TYPE	DESCRIPTION	PERFORMED BY	TOOL USED	ENVIRONMENT	WHEN?
Initial	Initial testing confirms that the individual function performs as expected.	Vendor Developer	Visual Studio and Microsoft Test Manager	Development	During iteration
Component	Component testing confirms that a related group of functions work together properly.	Vendor Developer	Visual Studio and Microsoft Test Manager	Development	During iteration
System Integration	System integration testing confirms that the necessary communications and setup exist to perform functional testing and address the need to assess whether the system interfaces with other applications or systems without interfering with how they operate.	Vendor Tester	Visual Studio and Microsoft Test Manager	Test	End of iteration
System	System testing encompasses an integrated system or a logical subset of application functions the system will deliver. It verifies compliance with functional and nonfunctional system requirements and specifications. The process normally involves creating test conditions for evaluating the application and its infrastructure.	Vendor Tester	Visual Studio and Microsoft Test Manager	Test	End of iteration

TESTING TYPE	DESCRIPTION	PERFORMED BY	TOOL USED	ENVIRONMENT	WHEN?
Parallel	System testing is performed against both the new and legacy applications in a test environment to verify matching functionality.	Vendor Tester and, optionally, County Tester	Visual Studio and Microsoft Test Manager	Test	End of iteration
Performance	Performance testing combines users, applications, and infrastructure to create a total experience. It examines the performance dynamics of applications and provides valuable system metrics that are useful for analyzing system capacity, resource use, transaction response times, and overall system performance.	Vendor Tester and County Tester	Visual Studio and Microsoft Test Manager	Performance	End of iteration
Regression	Regression testing involves selectively re-testing previously tested functions and running selected test cases to make sure that new development and defect fixes have not introduced or revealed new faults.	Vendor Tester	Visual Studio and Microsoft Test Manager	Test	End of iteration and during post-production ATS change validation

Vendor will configure the Microsoft Visual Studio testing tool suite to enable the Vendor to manage and document a series of test scenarios and test cases that test the entire solution. In addition, Vendor use these tools to test performance so that the performance of the system will meet or exceed the performance of the legacy system.

User Acceptance Testing. The third step in the Vendor Application Transformation Framework is the Accept phase. The primary purpose of this phase is for the County to provide their acceptance of the ATS modernization and verify that the converted system at least matches the legacy system. Defects in the legacy system will be noted, but they will not be addressed by the program. Vendor will facilitate a UAT session after Iterations 2, 4, and 6. The final UAT will be more comprehensive, and Vendor has allowed more time for that one. Reaching this stage is a major accomplishment for both the County and Vendor. After multiple iterations of UAT the final one on many projects ends up running very smoothly. The benefit of the Vendor's approach is that, at the start of the Accept phase, Vendor will already have completed various types of testing in the Convert phase. Table 32 lists and describes the final testing that is completed in the Accept phase.

Table 32. Accept Phase Testing

TESTING TYPE	DESCRIPTION	PERFORMED BY	TOOL USED	ENVIRONMENT	WHEN?
User Acceptance	Vendor' testing experts work with – and support – the County	County Tester	County's choice	UAT	After all iterations

TESTING TYPE	DESCRIPTION	PERFORMED BY	TOOL USED	ENVIRONMENT	WHEN?
Testing (UAT)	with problem resolution and response to questions in a timely manner. Vendor help the County evaluate test outcomes, generate reports, and trace requirements. The UAT Plan has a complete list of test cases to conduct. Before adding any additional test scripts or test cases to the UAT Plan, Vendor will present these artifacts for County approval.				are complete

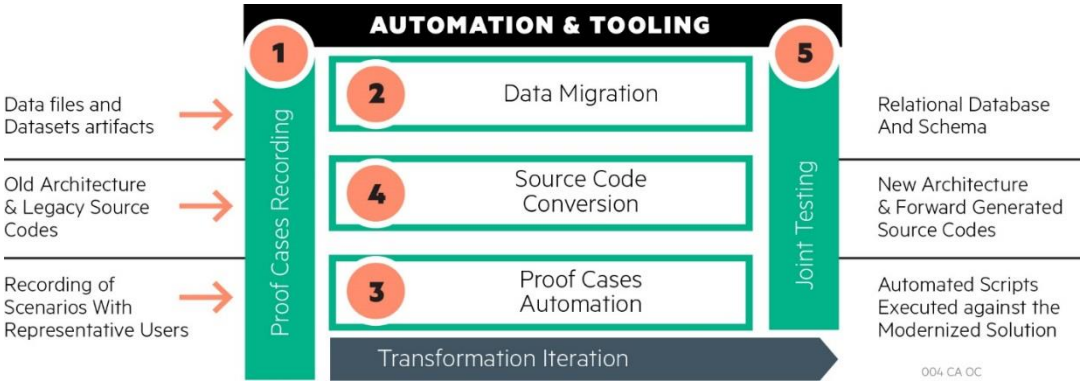
10. Time-Phased, Deliverable-Based Iterative Approach

Vendor's re-platforming task and its implementation will require a time-phased, deliverable-based approach to meet the County requirements as a low-risk conversion approach. Within each iteration Vendor will achieve the following:

- Evaluate the legacy proof cases and make adjustments to the converted cases if needed.
- Perform a minimal data migration so functions converted can be tested.
- Verify that the existing proof cases have been automated sufficiently.
- Convert the source code via Blu Age.
- Demonstrate the functionality at the end of each iteration so that Vendor and the County can verify that the converted functionality matches legacy functionality. This process is depicted in Figure 16.

The *advantages* of this approach allows the County to tangibly see artifacts; gauge progress; suggest refinements; and manage change on an incremental, continuing basis during the ATS Modernization project. This increases transparency and collaboration between the County and Vendor, with less risk compared to a traditional Waterfall project.

Figure 16. Iteration Conversion Overview



Vendor' approach combines Vendor's extensive modernization expertise with automated tools.

Low-Risk, Well-Paced Implementation. Vendor will have two integrated and self-contained development teams that have code converters, data converters, and testers. Vendor analyzed the County's RFP requirements and the overall business requirements of the current property tax system in order to develop its Implementation Plan, and Vendor will be using 1-3 month increments for Vendor's iterations.

Vendor will work with the County to refine this plan as needed. Vendor will use a key artifact called the Functional Criticality Matrix. This matrix, jointly developed with the County during the Assessment phase, defines the importance and order in which the Vendor transforms the ATS functionalities and capabilities. Although Vendor will develop the matrix jointly with the County, Table 33 presents a possible suggested order for conversion based on the RFP.

Table 33. Conversion Order

ITERATION	CONVERSION AREA
Iteration 0	• Complete POC conversion and Assessment Phase
Iteration 1	• IDEAL – Secured System (TX2)
Iteration 2	• IDEAL – Unsecured System (UN2) IDEAL – Auditor-Controller System (AC2)
Iteration 3	• IDEAL – Clerk of the Board System (COB) IDEAL – Assessor Interface System (ACT)
Iteration 4	• IDEAL – ATS Front-End Security (FAST) IDEAL Panels (CICS Map)
Iteration 5	• IDEAL Reports
Iteration 6	• Refactor Items

At the end of every iteration Vendor will test the working conversion code and compare that to the legacy ATS functionality. For items that do not work as they do in legacy Vendor will note those items and schedule those items for Iteration 6 for Refactor Items. Vendor has found that sometimes the legacy system itself does not produce the anticipated results. In these cases Vendor advises the client to correct the legacy code before conversion. Very old legacy mainframe systems handle calculations differently – related to the order of each calculation's components, memory management constraints of the past, and other situations. Vendor anticipates that these situations may happen within the legacy ATS. Regardless, Vendor will work with the County to make sure that Vendor accounts for these different reconciling items.

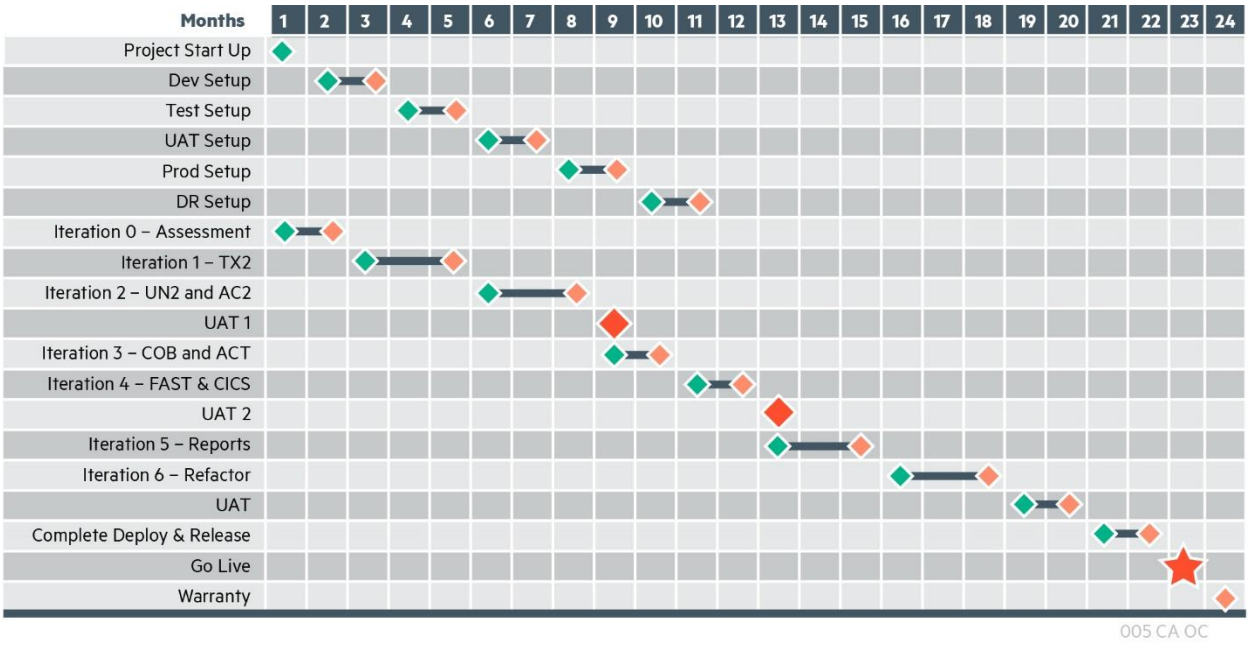
In every iteration Vendor will complete the required deliverables for the defined unit of functionality. Deliverables include, but are not limited to, the following:

- Data migration scripts (from DB2)
- Source code conversion (from IDEAL PDL, including online, batch, interfaces, and reports)
- Automated proof cases (utilizing MS Visual Studio and MS Test Manager software)
- Functional scenario demonstrations in the standalone target environment
- Iteration report providing status, lessons learned, issues, risks, and resolutions.

Vendor uses continuous deployment and automation in the delivery of its solution. Vendor continuously deploys updates in an automated manner to Vendor's code conversion, data conversion, and testing scripts in the development environment. On a bi-monthly basis, at the end of each iteration, Vendor will deploy the iteration functionality to a standalone environment to allow for additional testing, User Acceptance Testing, with the County. Functionality that does not match legacy discovered by the County will be noted and scheduled for correction in Iteration 6. Iteration 6 is designed to address any issues discovered through Vendor's iteration demonstrations and is expected to be smaller than the other iterations.

Applicable Timeline. Figure 17 shows Vendor's high-level implementation schedule. The schedule consists of five iterations in addition to a startup Iteration 0 and a re-factor iteration. UAT, Code Freeze and minimal data change month and preparation for Roll out, and Roll-Out account for another 4 months – resulting in an implementation timeline of 23 months.

Figure 17. High-Level Implementation Timeline



Vendor's low-risk implementation schedule will be tightly governed with the County.

11. Methodology and Approach for Project Planning

Project management standards are essential, and Vendor' Project Management Methodology (PMM) will guide the team on the ATS re-platform project. Vendor will apply its proven PMM to satisfy the specified County objectives for the ATS re-platform project. PMM represents a defined systematic methodology and standards for planning, directing, monitoring, adjusting, and controlling a series of interrelated activities. PMM standards include procedures, metrics, techniques, and job aids that will assist the ATS re-platform project manager and team in applying proven project management practices. Vendor has based PMM on several elements. The first is the industry standard Project Management Institute (PMI) Project Management Body of Knowledge (PMBOK), which includes scope, quality, resource, schedule, risk, communications, contract, and financial areas. In addition, PMM leverages the Carnegie Mellon University Systems Engineering Institute's Capability Maturity Model. Both have COBIT 5.0 as a process guide across the IT Governance areas, activities, and sub-activities. Finally, Vendor has successfully completed many relevant projects over the last 50 years, and Vendor will apply this expertise as well.

Using PMM, Vendor's team will develop a comprehensive Project Plan with tasks, estimated work effort by task, critical path relationships among tasks, start and finish dates, and related deliverables. The project resource view will show the assigned person for each task. The project structure will show the relationship of the team members to accomplish the County's overall mission.

All Vendor project managers complete PMM training and training for the tools and techniques that support this methodology. As a firm, Vendor is CMMI Level 5-compliant in order to consistently develop and share project artifacts during the ATS re-platform initiative for the County. Vendor will conduct a variety of standard project status meetings on a regular basis. Vendor will make progress, monitor risks, address issues, and manage staff to enable success for the County. Table 34 highlights the standard PMM discipline and approach.

Table 34. Standard PMM Discipline and Approach

PMM DISCIPLINES	APPROACH
Schedule Management	Identifies and documents tasks, dependencies, duration, assigned resources, resource estimates, critical path, and progress against schedule
Cost Management	Develops a quantitative assessment of the likely costs of the resources required to complete the project.
Risk Management	Determines and communicates the broad degree of risk that the project faces and initiates risk management.
Project Plan	A collection of formal approved documents that communicate project expectations and are used to manage and control project execution.
Supplier Management	By managing the supplier relationships, the project manager confirms that suppliers are performing as promised, on schedule, and for the agreed-upon price.
Project Reporting	Reporting and communicating the project status informs the County, Vendor leaders, and the ATS re-platform project team about overall project performance. The project manager monitors variances in actual communication activities against the activities described in the Communication Management Plan, identifies issues, and takes action to resolve them.

12. Component Identification and Traceability

During the Iteration 0 assessment, Vendor will identify with the County all components that comprise the current system that should be scheduled for conversion. Because Blu Age first converts all of the code to a UML model and the tool converts the UML to modern code, traceability is easily maintained in the UML model. Business users can read the UML model and can trace that to the legacy system and to the converted code generated by Blu Age.

13. Testing and Implementation of the Re-platformed System

Testing activities are described in Section 1.11, under Iteration Testing. Implementation activities are described in Section 1.4, Conversion of Programs, Screens, Reports, JCL, Data, and Implementation and Knowledge Transfer and Training.

14. Integration with the New Application Security

The converted system will use Java Spring Security, which has been integrated into Java Spring since 2008. Java Spring Security provides authorization and authentication features and allows developers to easily expand the functionality to meet more complex authentication and authorization needs. During iterations Vendor will analyze the current system security and decide what will move over to the converted system and what will be covered with Java Spring Security.

Additionally, the converted application will reside on a modern n-tier architecture. This permits separation of the presentation, business logic, and data tiers of the application using network equipment – such as firewalls, intrusion detection, and other network devices.