

LOS ANGELES DEPARTMENT OF WATER & POWER APPROACH FOR CCB/MWM STABILIZATION ROOT CAUSE ANALYSIS



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Table of Contents

EXECUTIVE SUMMARY	1
PRINCIPAL CAUSES OF CURRENT SYSTEM INSTABILITY.....	1
RECOMMENDED REMEDIATION APPROACH	2
INTRODUCTION.....	4
ANALYSIS APPROACH.....	4
SUMMARY FINDINGS OF AREAS INVESTIGATED.....	5
DEFECT ANALYSIS.....	5
"TO-DO" BACKLOG ANALYSIS.....	5
SYSTEM-DEFINED USER ROLES ANALYSIS.....	6
CRITICAL REPORTS ANALYSIS.....	6
ORGANIZATION PREPAREDNESS ANALYSIS	6
SUMMARY OF CAUSES FOR SYSTEM INSTABILITY.....	7
ABSENCE OF ENGAGED PROJECT MANAGEMENT.....	7
PROJECT SCOPE TOO EXTENSIVE	7
LACK OF EXPERIENCED RESOURCES.....	7
CRITICAL PROJECT DELIVERABLES NEVER PRODUCED.....	8
DATA CONVERSION VALIDATION NEVER EXECUTED.....	8
MANDATORY CODE FREEZE NEVER ENFORCED	8
MINIMAL FINANCIAL TESTING PERFORMED.....	8
WORKFORCE UNPREPARED FOR TRANSITION TO POST-CUTOVER.....	9
REMEDIATION IMPLEMENTATION APPROACH.....	9
ESTABLISH A REMEDIATION IMPLEMENTATION TEAM.....	9
TARGET DEFECT RESOLUTION TO REDUCE LOST REVENUE	10
DECREASE DAILY VOLUME OF GENERATED "TO-DOS"	10
IMPLEMENT SYSTEM-DEFINED USER ROLES	10
CORRECT CRITICAL REPORTS.....	11
ADDRESS SYSTEM STABILITY AND WORKFORCE PREPAREDNESS	11
INSTITUTE AN OVERALL REMEDIATION IMPLEMENTATION PLAN.....	11
CONCLUSION & RECOMMENDATION.....	11



EXECUTIVE SUMMARY

At the request of the Los Angeles Department of Water & Power (LADWP), TMG Consulting, Inc. (TMG) has been tasked with preparing and presenting an approach for stabilizing the Customer Care & Billing (CCB) and Mobile Workforce Management (MWM) systems placed in production in early September, 2013. As a first-step to determining an overall stabilization approach, a root-cause analysis of the underlying challenges to stabilization was performed. This Executive Summary puts forth the principle causes of the current system instability and states specific recommendations as part of an overall remediation approach.

Principal Causes of Current System Instability

The principle causes of the current instability of the CCB/MWM systems, nearly one year since being placed in production, are a direct result of continuing many aspects of the flawed project approach leading to the premature cutover of systems not ready for production use and an organization not prepared for their proper operation. These principle causes are highlighted in the following list:

1. Absence of engaged Project Management resulting in missing, or ineffective, critical decision-making
2. Initial Project Scope overly ambitious, yet additional scope expansions were authorized
3. Integrator resources lacked in-depth experience for implementation size and complexity
4. Critical Project Deliverables never produced
5. Data Conversion validation never performed
6. Mandatory code freeze scheduled weeks prior to cutover never enforced
7. Virtually no Financial Testing performed
8. Activities to prepare and assist the workforce for post cutover transition never occurred
9. Training and change management activities could never gain traction due to delayed development and system instability
10. Testing activities poorly executed and managed
11. System security (user defined roles) configuration never fully implemented

Refer to the section entitled “Summary of Causes for System Instability” for details and additional information supporting the causes highlighted above.

The current state of the implementation, characterized by the following, gives evidence that ongoing efforts using the same flawed project approach have resulted in no measurable improvement in stability. Specifically:

- Number of defects remains virtually unchanged since cutover, with numerous Severity Level 1 defects hindering daily operations
- “To-do” volumes generated on a daily basis are unsustainable, resulting in a growing backlog that is remediated by mass deletions when overall size becomes untenable
- Lingering conversion and configuration problems are causing large revenue losses due to unbilled or incorrectly billed accounts
- Sections of the organization remain unclear how to effectively utilize the systems in their daily operations, causing erroneous or inconsistent application of business processes
- Large numbers of external (non-LADWP) resources remain engaged to supplement staffing, yet system-defined user roles are not in effect to safeguard operations
- Solution security (user defined roles) configurations still not fully implemented 11 months after go-live leading to significant data security issues

Thus, an overall change in course, as outlined below, is required for LADWP to progress toward the intended level of customer service and operational efficiency expected from implementation of the CCB/MWM systems.

Recommended Remediation Approach

In order to stabilize the current CCB/MWM implementation, the root causes of the current instability, as noted above, must be remediated. The challenge is to balance urgency for immediate improvement without compromising the path to long-term stability and sustainable progress. To this end, the remediation approach as highlighted below must:

1. Establish a Remediation Implementation Team separate from Customer Services (CSD) and Information Technology Services (ITS) Divisions
2. Target defect resolution to reduce lost revenue from unbilled or incorrectly billed accounts
3. Decrease daily volume of generated “To-Dos” to a sustainable level
4. Introduce system-defined user roles to help standardize business processes
5. Review and correct critical reports to facilitate improved decision making



6. Simultaneously address system stability and workforce preparedness issues
7. Institute an overall Remediation Implementation Plan targeting the above items

Refer to the section entitled "Remediation Implementation Approach" for justification and additional information in support of the approach outlined above.

INTRODUCTION

In an effort to address ongoing challenges with day-to-day utilization and support of the CCB/MWM systems placed in operation by LADWP in early September, 2013, TMG proposed the following two-phased approach:

1. Root-Cause Investigation and Analysis
2. Remediation Implementation

The approach provides a methodology to systematically identify, analyze, prioritize and remediate obstacles to utilizing CCB/MWM in support of LADWP utility customer service and billing activities.

Through the initial phase detailed herein, underlying causes of the current challenges have been identified and categorized. Specific recommendations for consideration as part of an overall remediation approach are also detailed herein. The results of this analysis have been utilized to prepare a high-level plan (documented separately) for specific remediation activities to take place in the subsequent Phase 2.

ANALYSIS APPROACH

The following key elements of the implementation were investigated and analyzed in order to determine the root cause of the various challenges being encountered with the system:

- Severity 1 and 2 defects
- "To-Do" backlog
- System-defined user roles (with respect to LADWP policies and procedures)
- Critical reports (with respect to accuracy)
- Organization preparedness

These items were identified for investigation as their analysis provided insight into root causes of implementation shortcomings, whether due to flaws in technical architecture, misalignment with desired business policies and procedures, or insufficient workforce readiness. The above items were investigated in concert so as to determine any correlation in root cause. Particular focus was on items upstream in LADWP business processes, as challenges in these areas likely have a cascading, and possibly far-reaching, impact.

Investigation of the items listed above unveiled commonalities that allowed categorizing the types of remediation activities required. Grouping activities according to these categories facilitated high-level planning of remediation activities.

SUMMARY FINDINGS OF AREAS INVESTIGATED

Included in this section is a high-level summary of the findings of each key element investigated, as identified in the previous section. These investigation findings formed the basis for determining many of the root causes to the current system instability documented herein. Further details on these investigations are incorporated in the high-level remediation implementation plan documented separately.

Defect Analysis

The current status of logged defects was reviewed, as well as the overall approach to defect classification. The number of open defects remains extremely high, with no quantifiable progress in reduction during the nearly year since system cutover. Dozens of Severity Level 1 defects still exist, indicating that the fundamental problems at cutover (as demonstrated by open Severity Level 1 defects at that time) have not been resolved. The number of defects at go-live were a clear indication the solution was not close to ready to move into production. Typically, one severity 1 defect is a major issue and delays most go-lives. LADWP had several dozen severity one defects which was a clear indication not to go live. LADWP's contract with their Solution Integrator called for no severity 1 or severity 2 defects at go-live.

Review of the approach to defect classification identified inconsistencies in the application of Severity Level (1, 2, etc.). This combined with varied use of Priority (Critical, High, Medium, etc.) tends to cloud the true significance of a defect. The net result is that defect resolution continues to take a siloed approach, where a defect is addressed in isolation, without consideration of its impact or cause with relation to other defects.

The defect resolution process needs to be overhauled, shifting focus from the current classification method, to assessment of defects from a holistic perspective driven by business impact (e.g., incorrect or delayed billings, misapplication of payment priorities, customer call volumes, etc.). Only through a shift to business focus, starting with "upstream" processes, will measurable progress be achievable within a reasonable timeframe.

"To-Do" Backlog Analysis

Due to the inability of the workforce to keep up with the daily volume of "To-Dos" (defects) produced, the backlog continues to grow until a point is reached where it is reduced through mass deletions. As a "To-Do" represents a specific unit of work integral to a business process, mass deletions can have far-reaching and hard to identify negative impacts on overall system operation. At the point of analysis, the "To-Do" backlog was nearing 500,000 yet it is unclear as to the effectiveness any efforts being taken to manage the volume.

The backlog analysis was performed from two perspectives. The first categorized "To-Dos" based on impacts to billing, servicing or neither. The second focused specifically on bill

segment errors that were preventing billing (i.e., unbilled revenue). This second analysis categorized accounts by amount of unbilled revenue, which can drive a targeted approach to fixing unbilled accounts. Analyses such as these will be useful in prioritizing activities in a way that will expedite benefits from system remediation efforts.

System-Defined User Roles Analysis

Instituting basic data validation rules and system-defined user roles enables system operation in accordance with business processes, policies and procedures. Due to premature cutover, these steps were overlooked for the most part. Failure to accomplish this has left the systems virtually “wide open”, thus prone to basic data entry errors and highly vulnerable to unauthorized changes with respect to LADWP procedures.

As part of the remediation implementation approach, user groups will be redefined such that the tasks they are authorized to perform are properly aligned with their roles. This effort will be incorporated as a key element of overall organization preparedness component of the remediation implementation approach.

Critical Reports Analysis

Critical Reports provide financial and summary information and are typically used for decision-making, including monitoring service level agreements with other City entities (e.g. Bureau of Sanitation). A review of a limited sample of these reports revealed that incorrect information is being reported, thus rendering them useless for decision-making.

Further analysis is required to determine what erroneous information is attributable to other aspects of system instability, as opposed to incorrect interpretation of reporting requirements. Overhaul of critical reports should occur in the context of overall remediation of defects.

Organization Preparedness Analysis

Current challenges being faced by the LADWP workforce in performing their daily responsibilities are widespread, and are clearly exacerbated by system instability. However, indicators leading up to cutover pointing to the lack of organization preparedness were widely ignored.

Excessive defects and “To-Do” volumes, as discussed in previous sections, pose obvious challenges for the workforce. Late code delivery and testing complications inhibited training from advancing beyond the introductory level. Most significantly:

- Metering operations impacted by rerouting introduced by RouteSmart
- Crews unfamiliar with the CCB/MWM integration controlling processing of field orders
- Branch offices unprepared for post cutover walk-in traffic

- Generally, operating personnel not ready to use the newly cutover systems

Focus on organization preparedness is an essential component of the overall remediation implementation approach. As impediments to system stability are methodically removed, the workforce must be trained in proper operation of the systems. Through these combined activities the benefits of the overall remediation effort will be maximized.

SUMMARY OF CAUSES FOR SYSTEM INSTABILITY

Continuing instability of the CCB/MWM systems are a direct result of continuing many aspects of the flawed project approach that allowed premature cutover of systems not ready for production use, as well as an organization ill-prepared for their proper operation. These principle causes are detailed in the following sections.

Absence of Engaged Project Management

This single factor prompted missing, or ineffective, critical decision-making resulting in:

- Failure to recognize or act upon key indicators pointing to system's lack of readiness for move to production
- Failure to recognize or act upon organization's lack of preparedness for daily operation of new systems
- Decision to cutover to production despite overwhelming evidence that neither the CIS/MWM systems or the organization were ready
- Failure to have a detailed project plan to manage and track project status
- Basis of all other principal causes of current instability

Project Scope Too Extensive

- The original project scope was far too ambitious, putting successful implementation at risk from the start
- Multiple large applications (CCB, MDM, MWM) touted to be "tightly integrated" were found not to be
- Several newer, untried technologies were introduced (e.g. ExaData, SOA, MWM etc.)
- As the project progressed, scope expansion continued (e.g., shift to Monthly Billing, ultimately reversed back to Bi-Monthly Billing)

Lack of Experienced Resources

- In general, integrator resources assigned to the project were filling new roles for which they lacked experience

- The LADWP implementation was the largest and most complex implementation project ever undertaken by the integrator
- Neither the client or the Solution Integrator (SI) provided a Project Manager who ever managed a project this big or complex

Critical Project Deliverables Never Produced

- Though indicative of incomplete project tasks and failure to follow the contracted methodology, the project was allowed to advance to subsequent stages
- Traceability was lost, ambiguous interpretation of requirements led to poorly-defined specifications and lack of adherence to business process necessities
- Contract terms were not followed or managed to

Data Conversion Validation Never Executed

- No balancing reports produced to verify correct conversion of accounts, customers, premises, service points, meters, etc. despite multiple requests by the project auditors
- Major source of invalid or incomplete configuration of account, service point and meter data which are generating inordinate volumes of “to-dos”
- Inability to handle this volume results in high numbers of estimated bills, with highly generalized estimating further contributing to billing inaccuracies

Mandatory Code Freeze Never Enforced

Although scheduled weeks prior to cutover to allow a stabilization period, a mandatory code freeze was never enforced, resulting in

- Multiple code releases being introduced weekly, right up to cutover, without thorough regression testing to assess impact of fixes on previous testing
- Introduced errors in areas already tested, severely hampering testing progress and thwarting ability to execute end-to-end testing of business processes
- Cutover with high number of open defects, including numerous Severity Level 1 that still remain

Minimal Financial Testing Performed

Despite repeated cautioning of the potential devastating impact on revenue, thorough financial testing was never performed:

- Only one complete billing cycle tested prior to cutover; no month-, quarter- or year-end financial testing performed. Typically a project would run all twenty-one cycles at a minimum.

- Prime factor in the extensive number of incorrect bills being generated, resulting in lost revenue through customer non-payment
- Limited and incomplete testing of Credit & Collections processes failed to reveal major flaws, rendering these processes highly unreliable
- LADWP management was repeatedly warned of the risk created by a lack of testing

Workforce Unprepared for Transition to Post-Cutover

Numerous project activities intended to prepare and assist the workforce for post cutover transition never occurred, such as:

- Training never advanced beyond the introductory level, largely due to late code delivery and testing complications inhibiting preparation of advanced materials
- Role-based security levels supporting business processes were not put in place
- Key control reports designed to assist decision-making were incomplete or inaccurate
- Knowledge transfer on managing daily operations never took place
- CCB/MWM integration never fully understood; further complicated by installation of a new MWM release level shortly before cutover

REMEDATION IMPLEMENTATION APPROACH

Stabilization of the current CCB/MWM implementation requires mitigation of the root causes outlined above. The challenge is to balance urgency for immediate improvement without compromising the path to long-term stability and sustainable progress. To this end, essential components of a remediation approach are detailed in the following sections.

Establish a Remediation Implementation Team

Formation of a team solely dedicated to addressing the root causes of the current system instability is the cornerstone of the remediation implementation approach. The team should be comprised of a mixture of LADWP staff and industry experts; preferably those acutely aware of the root causes to current instability.

Due to the criticality of this endeavor, the implementation team should report directly to the Senior Management. This reporting structure offers the following key advantages:

- Elevates decision-making to a level of authority unencumbered by root causes of the current system instability
- Enables CSD staff to return focus to managing daily operations

- Allows CSD management to assimilate system and workforce preparedness improvements as they become available
- Allows ITS staff to prioritize their remediation activities in conjunction with other ongoing endeavors
- Forms the basis for an ongoing system support model, housed in a separate business unit, once remediation efforts are successfully completed

Target Defect Resolution to Reduce Lost Revenue

Successful remediation of the current system instability requires a holistic approach to defect resolution incorporating the following key elements:

- Categorization of defects driven by business impact (e.g., billing errors)
- Focus initially on defects for “upstream” business processes as their remediation will likely have cascading positive impacts
- Strictly adhere to a (revised) release management strategy aimed at permanent resolution of defects

Decrease Daily Volume of Generated “To-Dos”

Reduction in the excessive daily volume of “To-Dos” generated and subsequent ever-increasing backlog will be accomplished based on the analysis performed through remediation efforts such as:

- Analyzing “To-Do” generation that can be eliminated through conversion or configuration corrections, or other defect resolution (e.g., certain bill seg errors)
- Considering control settings adjustments to eliminate unnecessary “To-Dos” (e.g., meter read hi-lo settings)
- Determining correlations between various types of “To-Dos” to coordinate their timely completion
- Establishing a prioritization approach for working “To-Dos” so those with higher impact are worked first (e.g. higher unbilled account balances)

Implement System-Defined User Roles

Implementing system-defined user roles based on LADWP business processes, policies and procedures will contribute to the remediation approach by:

- Redefining user groups such that authorized tasks are aligned to their roles
- Reducing basic data entry errors and vulnerability to unauthorized changes
- Supporting standardized business processes through role-based security levels

- Facilitating overall operational efficiency and workforce learning

Correct Critical Reports

Current errors in critical reports will be addressed in the remediation approach by:

- Identifying reports critical to decision-making and managing service levels
- Reviewing report requirements to ensure decision-making needs are addressed
- Determining what erroneous information is due to other aspects of system instability; include these in the defect resolution approach
- Correcting, testing and redeploying critical reports

Address System Stability and Workforce Preparedness

Overall challenges impacting daily operations of the Customer Services Division are a combination of the current instability of the CCB/MWM systems coupled with the inability of the LADWP workforce to effectively utilize these systems. Thus elimination of the challenges requires a remediation approach simultaneously addressing both contributing factors, including:

- An assessment, by functional area, of the proficiency of the workforce in accomplishing daily operational activities
- A workforce preparedness plan/approach targeted at closing the knowledge gaps identified by the assessment
- Timely resolution of significant impediments to system stability, and incorporation of these solutions in the overall workforce preparedness approach

Institute an Overall Remediation Implementation Plan

A comprehensive plan addressing all aspects of the remediation implementation approach is essential to guiding the effort to a successful conclusion. Key components of the remediation implementation plan include:

- Sponsorship and Management
- Governance and Team Organization
- Liaison and Support; relationship with CSD and ITS
- Analytics and reporting of key project metrics
- Well-defined workstreams, timelines and resource allocations

CONCLUSION & RECOMMENDATION



There is a follow on activity that recommends a stabilization plan and TMG recommends LADWP act immediately on that plan to stabilize the billing system. Revenue leakage is significant and will continue until LADWP addresses the root causes. Several revenue leaks created by careless implementation decisions have been identified. It is recommended that LADWP move quickly to address the issues. The current strategy led by the initial implementation team has not been able to show results since cutover. The current approach does not address root causes which is why To-Do's have continued to increase since cutover and collections have hit unmanageable levels. A new approach with new management is required to stabilize the system.

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