



MAXIMO STRATEGIC PLAN
SUBMITTED BY JFC & ASSOCIATES / March 3rd, 2020





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Executive Summary

This document sets out the Golden Gate Bridge Highway and Transportation District's (The District) **IBM Maximo® Strategic Roadmap Plan 2020-2025**. This plan is intended to provide help in decision-making and provide alignment between organizational and asset management objectives. It takes a long-term view, and considers the combination of organization needs, stakeholder expectations, and the realities of existing assets and asset management capabilities.

Using the guidance provided herewith will also transform the Information Systems department to strengthen the democratization between customers (Bus, Bridge, Ferry) and their asset management service and operational management capabilities.

The current state of Maximo within the Golden Gate Bridge (GGB) organization is best described as functional with limitations. Challenges with performance, application configuration items and system architecture point to the system operating based on legacy practices. From a technical perspective, the system needs to be upgraded with application process improvements and functional changes to better support the organization.

Overview

Objective/Purpose

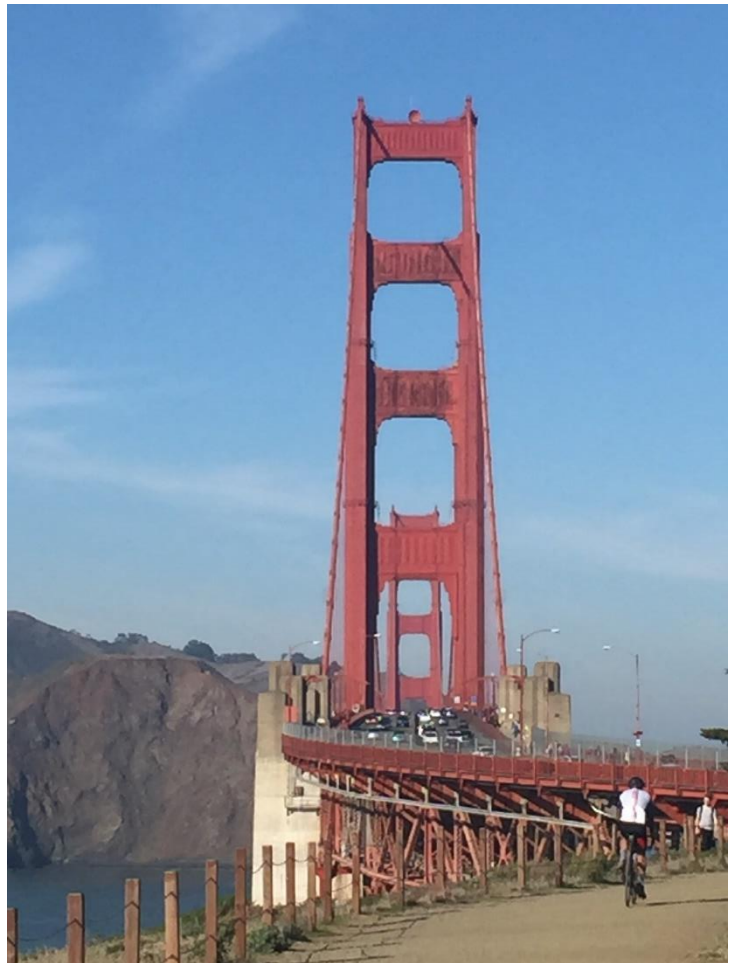
- The purpose of this plan is to set a short and long term (one to five year) roadmap for IBM Maximo®.
- The audience for this document is the Maximo Owner Group and Maximo Users.
- The rationale for this document includes:
 - Identify process or functionality differences between the current “As Is” Maximo System and proposed “To Be” Maximo system.
 - Determine how to eliminate or minimize the gap between the current and proposed systems with limited impact to the users.
 - Identify the organizational goals and any specific strategic objectives that exist in the organization's business plan.
 - Review policy commitments and other non-negotiable obligations.
 - Provide a systematic review of stakeholder expectations, including forecasts for how these are likely to change in the future (e.g. service or customer demands).
 - Identify gaps or opportunities for improvement provided these are filtered or weighted by significance and potential value.
 - Document the degree of uncertainty in assumptions about the future (increased uncertainty will require greater flexibility and contingency planning).



Acknowledgements

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State of Asset Management

Asset management is a practice employed by many companies and enterprises to make sure that they are getting the maximum value out of the operating assets and critical infrastructure that their business depends on, improving the availability, reliability, and uptime of different types of operating assets. The structure of technical product functionality can run very deep depending on the level to which the product is utilized and the skills of the team implementing the solution. The four major goals and key reasons of acquiring EAM systems for asset management are uptime, cost control, asset longevity, and safety. These goals directly affect C-suite objectives in the P&L statement and balance sheet for revenue, cash conservation, profitability, and risk management.

There are numerous built-in services and concepts that are often used to deliver functionality. New and expanded trends for EAM can range from:

- Embracing the Cloud Business Model
- Extend Predictive Maintenance Using IoT, Condition Monitoring and Cloud Computing
- Data Driven base for Asset Performance Management
- Sharing real-time actionable information throughout the organization with adjacent systems
- Role of EAM is expanding as a foundation for accessing capabilities such as mobility, predictive maintenance, machine learning, augmented reality and virtual reality

The critical underlying drivers for growth in terms of technology and functionality are listed below:

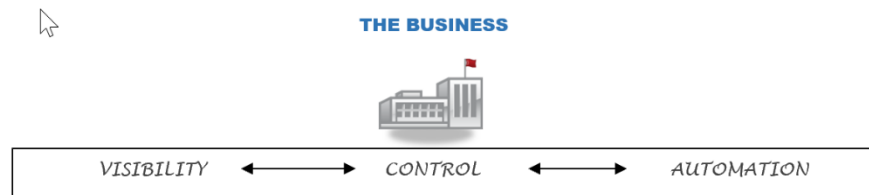
- Cloud Models offer potential for lower costs and risks
- Increasing Automation and Asset Complexity
- Aging assets require deeper insight to asset health
- Asset performance management requires broader and deeper EAM functionality
- Expanded Risk Management and Regulatory Compliance Mandates
- General changes in the workforce



Overall Approach – Asset Management Primer

The overall approach and methodology for leveraging Maximo is to establish the proper framework by which your assets' lifecycles can be effectively managed. This ensures that you are receiving the highest possible returns, which boils down to three basic items:

Visibility, Control and Automation.



Visibility is about understanding the what, where and how a business operates:

- What do I need to deliver as a service?
- Where are the components (people, assets or technology)?
- What is the expectation of the end user?

Having complete visibility across all organizations, services and assets provides key measurements in optimizing and driving efficiencies across all components, delivering the business and service goals.

Control ensures that checkpoints and validation are implied on all interactions (whether people, process or asset configurations) to ensure the most optimal and safest delivery of the business goals.

Automation is about driving efficiencies and selecting the most cost efficient, optimal delivery method to achieve the desired result. Through the ability to perform system integrations and establishing standard procedures, the goal is to provide seamless transparency.

All three of these areas work to provide a foundation of ensuring the business goals are met within the organization. Ultimately, the performance of your assets is dependent on these components working together.



Asset Management Pyramid of Excellence

To identify where an organization falls in this approach, it is critical to have a full understanding of the Asset Management Pyramid of Excellence:

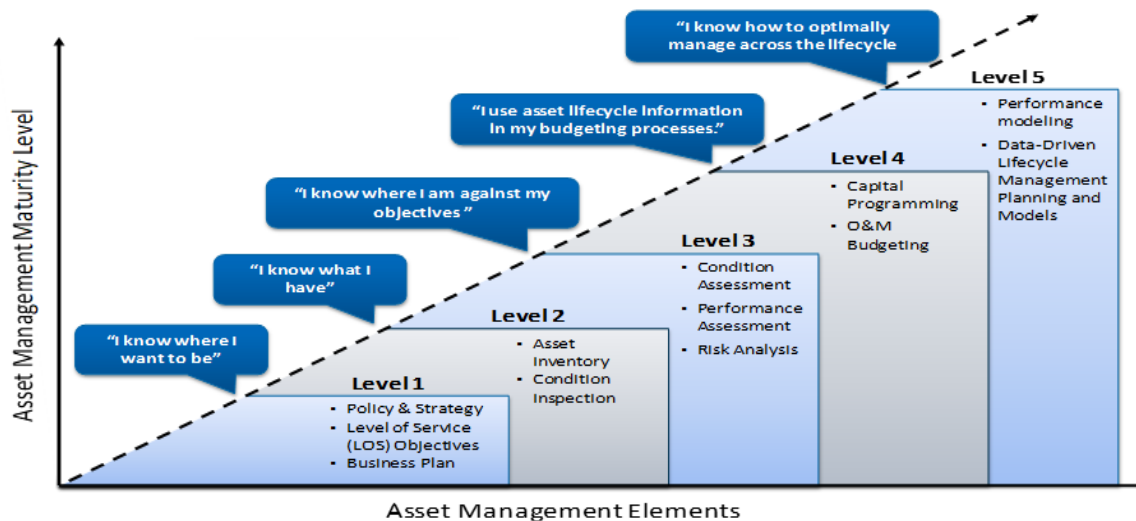


While there are elements within each of these categories in which GGB is actively engaged, there needs to be a mastery of the foundation before the next level can be achieved. Currently, the focus has been on establishing strategy and management frameworks around asset management. Through the expanded use of Maximo, our goal is to elevate the organization through a tactical approach. The project listings and various initiatives need to be held to this standard, and the growth of the organization charted against the ability to have complete control over the aspects critical to asset management.



Organizational Maturity

In determining a course of action, the organization must understand its Asset Management Maturity level. Knowing where the organization falls can help take the appropriate steps to improve its maturity. There are 5 Primary levels that organizations can use to benchmark their business:



- *I know where I want to be*
 - There is a clear set of objectives for managing the assets
- *I know what I have*
 - There is an accurate listing of all assets under management
- *I know where I am against my objectives*
 - Establishing condition assessments and risk analysis (consequence of failure, FEMA, RCM)
- *I use Asset Lifecycle information in my budgeting processes*
 - Capital and Operating budgets are established based on data from within Maximo
- *I know how to optimally manage across the Lifecycle*
 - Using information to perform modeling and forecasting of replacement as well as data to make informed decisions relative to both asset and work management functions

While GGB is currently between Level 1 and Level 2 on this chart, reaching higher levels is an obtainable goal provided there is a systematic approach in place. Using this plan, GGB's intention is to enable the organization to attain success in their asset management endeavors relative to how they utilize Maximo. The availability and reliability of data is one benefit of a business using Maximo. Questions involving business decisions (labor hours across jobs, tasks, groups, and skill involved) and actual labor costs are often difficult to answer. Uncovering the answers to asset management questions is a journey, not an



immediate destination. Maximo offers the ability to grow as you go, minimally engaging components until you are ready to use its additional functions and capabilities. This is not always a technical limitation, but an organizational process change as well. A data-driven approach coupled with a focus on enabling business process improvements is required to ensure data quality that supports quantitative decision-making.

JFC has created this document to address key findings relative to Maximo utilization, compilation of various project initiatives, review of data quality, reporting and KPI recommendations, system stability, continuous improvement, user support, interdepartmental collaboration, operating standards, and the leveraging of Maximo to support and manage critical assets across the enterprise.

Abstract High-Level Approach to the Plan

IBM Maximo® is the Maintenance Management Information System (MMIS) for the District. The District uses Maximo as their primary system of record for asset management and is primarily used by two divisions at Golden Gate Bridge Highway & Transportation District (the District); Ferry, Bus, and Procurement. JFC understands there has been an intention to get all three Divisions using Maximo but to date the Bridge division is not using Maximo. The District is currently on version 7.5.0.8 of Maximo, which is hosted at a datacenter in Las Vegas and managed by Central Square Technologies. The District wants to upgrade Maximo to 7.6.1 or the latest version and move it out of the Central Square environment, however the decision to employ Maximo SaaS or keep as a hosted application in a third-party environment has not been made yet. Finally, the District is aware that it does not use Maximo to its full potential and that there is an opportunity to utilize more functionality and enhance business processes. There are many dependencies to consider when deciding how to move forward with Maximo, and the District is seeking a consultant who has expertise in Maximo to help develop a strategic roadmap that addresses all the above-mentioned points. JFC meets these requirements and will document the intended approach by which Maximo and other resources will be used to achieve the objectives. The deliverables for this effort are to help form a clear picture of the 'to-be' and 'future' processes after the upgrade from Maximo 7.5.0.8 to Maximo 7.6.1, or the latest version from a technical and functional perspective. Discovery of business needs from the different District business areas will be performed, inclusive of a gap analysis and a prioritization for these needs.

Discovery and Methodology

The first step in developing any credible strategic plan is a recognition of the business' current situation. This requires having a clear understanding of the purpose of the organization and the environment in which it is operating, or the context.

Program Controls

Once agreement is reached on the prioritization of the items in the strategic plan, GGB will develop controls for the tactical implementation. The overarching control mechanism is the development of a GGB – Maximo 5-year plan. This plan will be developed to support the various initiatives outlined in the subsequent sections. Ultimately, project deliverables will include a working document that establishes a list of all projects, prioritization and resource assignments for both internal and external resources. The



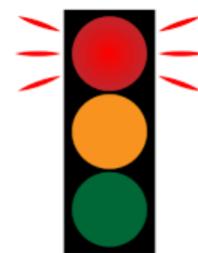
project planning document serves as the guiding point for the development of Maximo over time and will be used to measure performance and ensure priorities are aligned with the overall GGB strategic vision.

Top Line / Key Findings

Based on discovery and analysis of the existing environments and review of various project initiatives, JFC has listed several key findings that are the basis for discussion and decisions to be made by the GGB team. These findings, while preliminary in nature, clarifies the current situation and address recommendations. Sections of this report address specific technical, functional, data, reporting and risk-based items as identified by the JFC team.

Current Environment/System Architecture

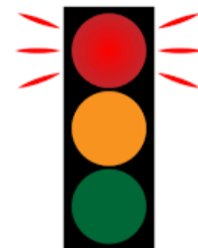
The current Maximo system is hosted by Central Square. The plan is to move the application out of the data center to a temporary location while it is upgraded. Maximo uses Oracle as a database platform and IBM WebSphere as the application server platform. The environment needs constant maintenance to keep it up and running. The application version 7.5.0.8 is no longer supported by IBM and the server OS Windows 2008 is no longer supported by Microsoft. The environment also has custom software (Rules Manager) which overlays security restrictions on top of Maximo.



System Utilization

The Priority Log was developed during working sessions with each of the GGB departments and was one review component for JFC. Group sessions identified areas within Maximo that were functionally not working as designed nor providing useful formatting of screens and reports.

Enhancements and leveraging additional functionality in Maximo as part of the upgrade process was also discussed in Group Sessions. Many of the items require changes to business processes, additional Maximo configuration, or rolling out new features/applications in Maximo. The Priority Log group's items are dependent on the upgrade.



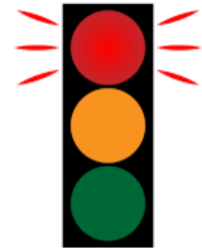
Additionally, it has been noted by various end users that the overall system performance or processes are slow. Our long-term recommendation focuses on building a more positive end-user experience where staff can rely on Maximo to manage their day-to-day work. Some of the slowness can be attributed to infrastructure while other issues are related to UI configuration (navigating between screens), the ability to acquire data, or overly complicated processes that can frequently error out.

Most of the groups expressed consistent themes: UI issues, filtering data, searching, grouping, lack of standards, SMEs, and training. They also addressed difficulty in gathering and relying on data. In many cases, data must be extracted from multiple sources and must be reconciled manually, which is a cumbersome and time-consuming process.



System Integrations

GGB utilizes staging tables to send information between IFAS and Maximo. The integration is designed to send purchasing information between parties. The consensus is that the interface routinely holds up the workflow process in Maximo as well as department business processes. Records in both systems are kept from processing due to interface errors. To compound the problem, interface errors are difficult to troubleshoot. End users are not getting the information they need to investigate data integrity issues. Overall, there needs to be further discussion with regards to data transaction processes

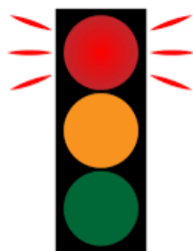


- Financial management of assets vs. Enterprise asset management
- Links between the two systems
- Standardized entry process (How are assets created?)

EJ Ward, the district's automated fuel management software, is integrated with Maximo fuel inventory. EJ Ward readings are transferred to Maximo using staging tables and a Cron task. Many groups expressed frustration in the reconciliation between the two systems. There is approximately a 3% difference in the inventory data between the two systems. The reconciliation is a manual process. In the case of emergencies, staff must go out and dip the tanks to confirm fuel levels. Higher confidence in fuel data is critical to data quality and reporting efforts in the future.

OnBase is a content management platform that the district uses to store and process invoices. Invoice information is pulled into Maximo through an ODBC connection and is based on PO number. However, the groups are not always getting the information they need. Like the IFAS integration, the connection to OnBase has the tendency to slow down the procurement process. Each OnBase record has a unique URL associated with it that is used to access the document. In the future, Procurement would like a way to bring this URL into Maximo.

Data Quality



Throughout our analysis, the quality of the data within Maximo relative to Work Orders, Assets, Preventive Maintenance records, Job Plans, and Inventory was rated as low, as was confidence in using data to drive decisions. Discrepancies exist between multiple systems, and in the case of emergency, reconciliation needs to be done manually. Generating reports and analyzing data is a time-consuming process. Data must be compiled manually from multiple systems and data silos within the organization. While standards have been established for the data, it is apparent that these are not being universally applied throughout the organization. Given the size, structure and focus of the current Maximo team, it is nearly impossible to manage the quality of the data.



Discovery Period – Broken up by Themes/Departments

As part of the data gathering phase, onsite workshops were conducted between October and December 2019. Sessions were held with all the departments: Bridge, Ferry, Bus, Capital & Grants, Procurement, RM&S, and Accounting. Managers, supervisors and end users all gave input during the workshops. Topics of discussion included how the agency Maximo system is being used and integrated into the daily operation of the organization. Staff also discussed common pain points and areas where they would like enhancements or additional functionality. These in-depth sessions provided an opportunity to gain a better understanding of the multiple systems used to support asset management at GGB, as well as plans for future improvements to systems. Workshops also helped to clarify and focus the approach to the strategic plan and project prioritization. Critical issues and key findings that emerged are broken into two groups. The first are themes and goals that are common among multiple departments, and the second are themes that are specific to an individual department.

Common Themes Across Multiple Divisions and Departments

User Interface

Users commented that the Maximo user-interface is confusing, difficult to use effectively, and requires too many steps to complete common tasks. Some departments reported having access to data from other departments on their user screens, which makes using Maximo more difficult. Discussion around enhancements focused on UI, process, and data improvements. End-users want to do their daily work in Maximo with fewer steps. Greater access to training and documentation resources in the new version of Maximo would help eliminate confusion and add consistency to data entry. Grouping like records by classification will improve both reporting and searching capabilities. Implementing and configuring additional out of the box features allows users to track items like qualifications and receive service requests from customers. In addition to interface changes, archiving older data in the database would improve system performance.

System Stability

Groups also discussed system stability. Due to infrastructure and version issues, there is a lack of updates and it is complicated to roll out new functionality. System performance is also affected, and Maximo can be slow to load information. The system requires constant maintenance from IS which is a drain on resources.

Inspections

Inspections are a key part of successful operations and workflow for many of the departments, and in many cases are required for regulatory compliance. Many departments feel they need a more reliable system for tracking their inspections and to look at historical data and asset performance. Asset performance trends and downtime trends are crucial for maintaining the fleet and PMs are not widely used if used at all, and interval maintenance is the norm across the organization.



Inventory

Inventory improvements are twofold; the first is focusing on the user experience. The ability to get information quickly is key. In the current Maximo system, staff spends excessive time searching across multiple fields or digging into menus or dialogs to get the information they need. The second improvement is focused on inventory controls. Further leveraging DataSplice for inventory counts and issues, as well as business process around storerooms. Users across the organization need a higher confidence in the inventory data in Maximo.

External Systems

Further complicating the Maximo upgrade is coordination with other upgrade projects including IFAS and EJ Ward. The IFAS upgrade has the largest impact because of the overlap in functionality and data between the two systems. The timing of the Maximo upgrade and how to handle the interfaces is critical to long term success. IS needs to prioritize portions of the two upgrade paths and coordination steps over the next year. Groups commented on discrepancies in the data between the systems and issues that the interfaces present in day to day tasks.

Reporting

A consistent theme through all the sessions is that reporting needs are not being met. Reporting needs span across individual assets, asset classes, and the entire fleet. There is a disconnect between information in multiple systems (IFAS, Maximo, On Base, EJ Ward). Greater reporting capability is needed to generate condition scores and to analyze common points of failure among the fleet. Overall, groups are not able to get the data they need when they need it. There is disparity between information in the multiple systems – IFAS, Maximo, On Base, EJ Ward. The process surrounding data entry and the system of record for assets is not clear. Some work has been done to tie the systems together and to reconcile information, however, most of the reconciliation must be done manually and is time consuming. Asset cost and spending information must be provided for NTD, RTCI and the FTA. Improved tracking of this information through a Dashboard and reports on an ongoing basis is critical. Tying operating costs back to grants is necessary as part of the grant reporting process. Data silos stored in spreadsheets need a home in Maximo. Out of the box functionality such as classifications could be used to store characteristics of land for reporting. Data entry, storage, and reporting is a primary focus for GGB.

Training & SOPs

All departments agree that Maximo training is a huge need. Training was provided at implementation but many of the staff have turned over since that time. Experienced users train new users, however, there is very little internal documentation and when trained users leave the information is lost. The lack of SOPs and standardization for data entry in Maximo causes confusion and has a negative impact on data integrity. Most users that we talked to requested ongoing training, self-service tools such as videos, and clear standards and SOP documentation for Maximo tasks.

Safety & Risk Management



Maximo has an HS & E add-on that could be leveraged to improve safety, reliability, environmental, and operational performance in compliance with regulations. There is a need across the organization to track permits, incidents, and safety regulations. Building out functionality in this area will reduce operational risk and improve safety.

Mobility

Mobility is a theme that is common to many of the other topics. Improvements in areas such as inventory, inspections, user interface, reporting and data integrity can all be improved through expanding mobile application features and usage. Currently the district uses DataSplice as a third-party mobile provider and has mobile access to some applications through Citrix. GGB wants to continue to leverage and expand the use of mobile products and configuration while retaining the functionality they have now. Staff can take advantage of new features in updated versions of DataSplice and Maximo including mobility tools now native to Maximo 7.6.

Additional Department Findings

IS Department

1. Maximo Application and Hosting

The current situation with Maximo is critical. The system needs to be upgraded as soon as possible in order to provide stability. A decision will be made based in part on recommendations in the strategic plan on the platform that best suits GGB's needs and staffing levels. As part of the upgrade to 7.6.1 it is important to pull out customization that no longer provides value and is complicating support and preventing regular upgrades and patches. Considering a move from Oracle to SQL Server addresses both usability issues and IS support. Security of the application and the environment should be reviewed internally (and at a high level) in addition to the review provided by the hosting company.

2. Supporting the Customer

IS currently supports the Maximo end users in the GGB departments. They receive an overwhelming amount of tickets and change requests for a variety of reasons including a lack of training, staff turnover, ad hoc reporting and enhancement requests. Rules Manager (custom software) adds a layer of complexity and makes support exponentially more difficult. Maximo 7.5 is not supported by IBM and coupled with the age of the hardware and server OS, the Maximo environment is unstable. IS needs standardized metrics to measure support and customer satisfaction (see Recommendations). Documentation and setting expectations with customers will go a long way in supporting Maximo for the business. Buy-in on a Maximo roadmap from upper management of the organization helps eliminate confusion and set a clear path.

3. Staffing, Skillsets, and Documentation

Internal staff development for Maximo is critical to success. In order to develop the necessary skills, the long-term strategic plan identifies what GGB's technical staff is responsible for supporting. Development of a Maximo steering committee at the tactical level will help create a roadmap for Maximo enhancements and changes. A clear set of priorities and guidelines allocates resources appropriately and focuses staff on the most business-critical work in Maximo. The loss of key staff on both the



business and technical side has seen key knowledge of Maximo walk out the door. Fostering an understanding of Maximo on the business side and developing Maximo Champions will help to create a partnership between IS and the users.

Bus Division

1. Inspections

There are opportunities to capture current paper-based inspections in Maximo. Currently Bus is processing multiple paper-based inspections that could be conducted in Maximo using the Inspection application or through DataSplice. Handheld devices can be used in online or offline mode to gather information and send to Maximo. Failed inspection points can be set to generate follow up corrective maintenance. Engineering inspections, elevator inspections, and bus defect cards are all areas where data could be collected electronically.

2. Service Requests for Facilities

Bus would like to leverage the Maximo Service Request application for the facilities department within Bus. Maximo Service Requests would allow end users a self-service interface into Maximo to create and log their own issues into the system. Users are also able to track and view updates on their requests through the self-service portal. Once upgraded to Maximo 7.6.1, GGB can leverage the new (and more user friendly) Service Request portal available in a web-browser or handheld device.

Bridge Division

1. Implementing Maximo for the Bridge

The Bridge is the most important asset and is the top priority in the Maximo rollout. The structural components are already named and codified. The information just needs to be loaded into the system. The ability to have Bridge assets in Maximo would give the department more visibility and ultimately improve reliability. Inspection tracking is critical, with technicians being able to enter data into Maximo from the field. Follow up work can be generated, and condition assessments can be made based on the work performed.

It is important for management to see condition over time and to have the ability to conduct a failure analysis on critical assets. Regulatory and reporting requirements are constantly becoming more stringent and Bridge needs Maximo to comply with regulatory authorities and to generate data to populate regulatory reporting. As part of the rollout, the department would also focus on safety. Maximo HS&E can track work permits and environment compliance.

Qualifications and training in Maximo ensure that technicians have current certifications for the work performed. The scope for a Bridge rollout is large and would be completed in phases so that day to day operations are not negatively impacted.



2. Implementing Maximo for Rolling Stock and Equipment

Establishing Maximo-based PM programs for all high value and/or critical rolling stock and equipment assets is second (high) priority to implementing Bridge inspection and maintenance in Maximo. This effort may be run concurrently with the Bridge inspection and maintenance implementation since key departmental stakeholders are different. Rolling stock and equipment includes multiple categories of on-road vehicles and a wide variety of off-road equipment ranging from large air compressors and generators to tractors, forklifts and other construction equipment. Key to this effort is establishing automated (where practical) PM meter reading inputs (miles, hours, cycles, etc.) into Maximo to drive PM work order generation. Ideally, rollout of Maximo for these categories would include automated service requests (tickets) for end-users that can be managed by the respective work scheduler.

3. Implementing Maximo for Facilities

A third phase in the Maximo rollout would be for Facilities. Developing a PM program and tracking the performance of that program is critical for supervisors and managers. Tracking both the corrective and preventive backlog in Maximo provides information on the appropriate staffing levels and schedule. The facilities category includes various buildings and structures, fixed plant and equipment, IT and communications infrastructure, along with extensive security monitoring and surveillance systems. The Bridge technicians and engineers also perform work for Bus and Ferry. Having access to Maximo, staff would track work performed for those sites and enter notes, logs, labor, and materials. Bridge wants to retain some standardization with the other implementations so the user interface and steps in Maximo are familiar. Ideally, rollout of Maximo for these categories would also include automated service requests (tickets) for end-users that can be managed by the respective work scheduler.

4. Implementing Maximo for Inventory and Stores

Currently, Bridge is using inventory in Maximo. However, there are satellite storerooms that are not tracked. Rolling out these storerooms in Maximo would be a phased approach with the primary focus on establishing standard inventories and inventory management for multiple satellite storerooms. Stock for the Bridge such as paint, abrasives, and fasteners are prioritized and will be issued first followed by fuel and maintenance/repair parts for rolling stock and equipment. Last would be wearable equipment such as safety vests and tools. Implementation must include mandatory QC inspections upon receipt for various items such as paint color testing and fastener load testing. Implementing Item Master, Inventory, and Stocked Tools provides the department greater inventory controls and availability of parts. One of the challenges Bridge staff face is not having the parts when they need them. Leveraging Maximo's inventory ordering algorithm would streamline the procurement process and would help keep the appropriate stock levels on hand. Issuing stock and conducting cycle counts through Maximo or DataSplice handhelds provides accurate inventory levels and reduces shrinkage. Maximo for inventory will ultimately provide the department with valuable materials cost data across their asset hierarchy.

Procurement

1. Workflow and Business Process in Maximo

The procurement workflow and business processes can be streamlined in Maximo. Users have too many steps to complete their daily tasks. Work, in the form of PRs and POs, frequently get hung up in the



system and cause delays in the business process. There are opportunities to leverage technology in the warehouses to get better control over existing stock and gain a better understanding of when that stock is needed to maintain the portfolio of assets. Improved processes will reduce shrinkage and provide more reliable (and timely) data.

Procurement has a list of changes that they'd like to make. These changes will improve the Maximo experience and shorten the time it takes to complete day to day tasks. Moving forward with system development has been hindered by technical issues with the current system including a version release that is no longer supported by the vendor (IBM). Increased business participation in the cycle of improvement of Maximo in the future is planned. Both IS and Procurement agree that there are opportunities for change. Most of the changes are focused on a streamlined user interface, revisioning, and Maximo workflow. More important than the timing of the changes is how those changes impact staff time. Testing and rollout require a significant commitment from Procurement staff so it's important they only go through the process once. Interfaces to other systems and where workflows are processed add layers of complexity that make it harder to find the information Procurement staff need and to do their jobs.

Ferry Division

1. Inventory Improvements

There are opportunities for inventory improvements in Maximo. Currently the warehouse data is not reliable and technicians can't trust if parts are available. The ability to have reliable information both in Maximo and out in the field on handhelds is critical. Improvements to process, data entry, and inventory controls will improve data quality and reduce shrinkage. Standardization and documentation across all storerooms will reduce confusion and help with training efforts. There are opportunities for kitting for frequent maintenance tasks.

2. Support

Ferry has a need to rely on subject matter expertise. Procuring these services and contracts has been a problem that needs to be addressed. Implementing a regular schedule of patching and upgrades will improve system stability and allow Ferry to use Maximo features currently not available in the installed version. IS support is responsive, but not meeting all of Ferry's needs.

3. Maximo Applications

The consensus within the department is that more could be done to leverage Maximo's capabilities. Leveraging Service Requests, along with making improvements within Work Management such as using classification and priority to properly manage maintenance tasks. Condition monitoring, HSE, scheduling tools, mobility (increased usage), asset up/down, and IOT will allow Ferry greater visibility into their asset portfolio and help them manage their work. Ferry would also like the ability to use Maximo in the shipyards. Resolving issues with the current Maximo workflow and ensuring that business process and the process in the application match will streamline day to day operations and reduce frustration. Removing customizations and focusing on configuration will make the system easier to support and upgrade while also meeting business process needs.



4. *Data and Reporting*

Data quality and reporting needs are not being met. Managers have problems getting the inventory and procurement data they need. For example, reconciling PO data against work orders is incredibly time consuming. Automating engine hour information is needed to trigger PMs. Condition monitoring on Ferry assets provides management the ability to conduct thorough analysis. Eliminating data silos by putting Shipyard and inspection information into Maximo. Standardized reports and dashboards are needed to better prepare for the FTA audits

Capital & Grants

1. *Report Requirements*

Overall, C&G is not able to get the data they need when they need it. There is disparity between information in the multiple systems – IFAS, Maximo, On Base, EJ Ward. The process surrounding data entry and the system of record for Assets is not clear. There has been some work done to tie the systems together and to reconcile information, however, most of the reconciliation must be done manually and is time consuming. For each asset, purchase cost, maintenance cost, operating cost, salvage value, condition, age, useful life, and fund sources must be provided to:

- National Transit Database,
- Regional Transit Capital Inventory,
- FTA triennial audit – section 6,
- Caltrans or MTC performance audits,
- National Science Foundation grant reporting,
- Homeland Security/FEMA asset inventory, and
- FHWA performance monitoring.

Improved tracking of this information through a Dashboard and reports on an ongoing basis is critical. Tying operating costs back to grants is necessary as part of the grant reporting process. Data silos stored in spreadsheets need a home in Maximo. For example, out of the box functionality such as classifications could be used to store characteristics of land for reporting.

The C&G division needs a District-wide record of all capital assets worth more than \$5,000 and continuous monitoring of asset purchased by grant funds (federal, state, local). They serve internal customers (accounting, bus, ferry, bridge) and external partners (FHWA, FTA, Caltrans, MTC, SFCTA, MTA, SCTA) throughout the life of the asset - from initial purchase, maintenance cost, operating cost, to salvage. Validated data entry, consistent process, and expanded Maximo use will allow C&G to control grant-funded work orders and assets, comply with management oversight, and meet reporting requirements in a timely fashion.

KPIs & Reporting



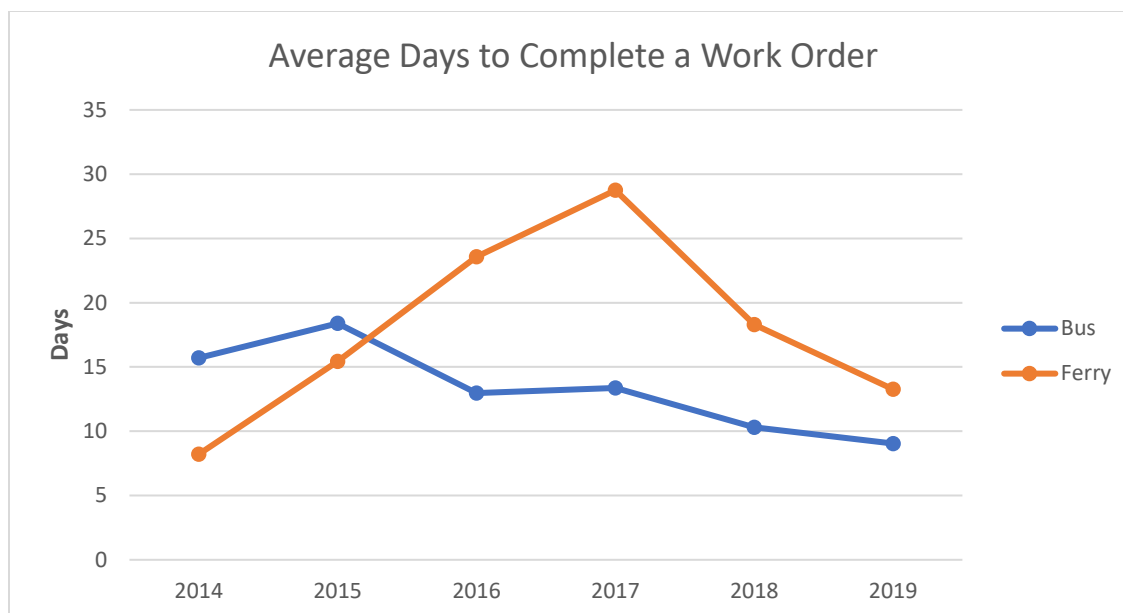
One of the benefits of using Maximo is the ability to extract key metrics and reports that can be used to help make data driven business decisions. Maximo has powerful reporting tools that can be leveraged out of the box. KPIs are indicators that can be added to Start Centers to monitor the performance in real time. BIRT is an open sourced reporting tool that can be used to run standard reports, create new reports, or to run ad-hoc reports. Cognos, which is now included with Maximo is an enterprise reporting tool that can be used to create dashboards and gives users the ability to generate reports and to drill down into reports on the fly. Reporting was one of the central themes of all the discovery sessions and it is a prominent component of the strategic plan.

The goal is for Maximo data to drive strategic decision making and governance of business process from the executive level. The process centers around **Asset performance management (APM)**. APM encompasses the capabilities of data capture, integration, visualization and analytics tied together for the explicit purpose of improving the reliability and availability of physical assets. APM includes the concepts of condition monitoring, predictive forecasting and reliability-centered maintenance (RCM). The dashboards described below will help to form a better connection between operation teams and GGB's Board of Directors. Improved metrics will also ensure that there is no disconnect between front line employees and managers.

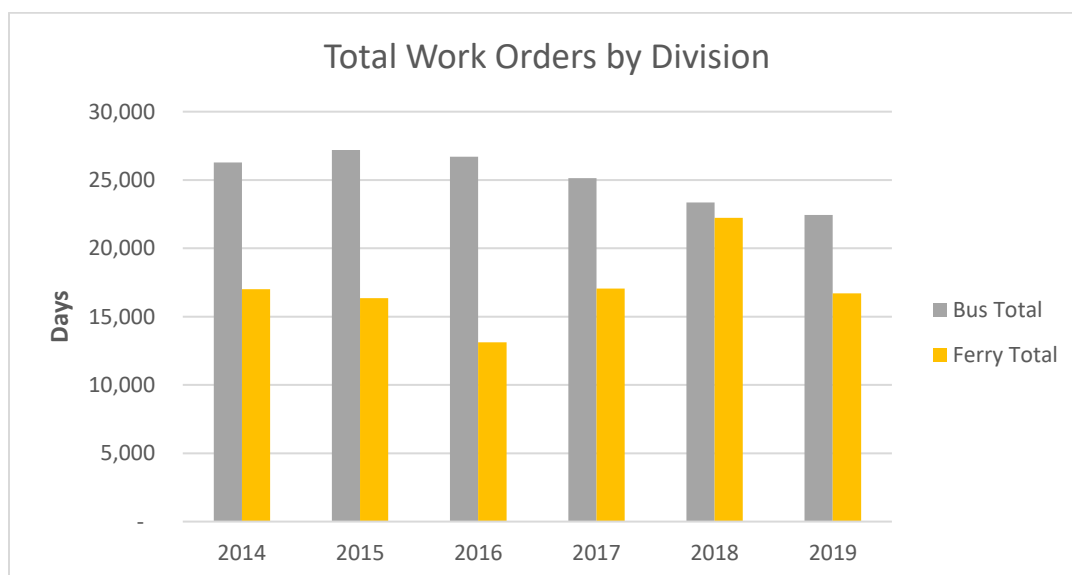
Over the course of the 5 year plan the reporting effort is broken into three phases. These phases are setup to take advantage of standardization and data improvements made in other Maximo improvement efforts (inventory controls, standardization, etc.). In these reporting efforts dashboards, consisting of reports, KPIs, FTA metrics, and graphs should be broken into three areas:

- **Strategic Dashboard:** Focused on management and is geared toward Executives, and senior staff.
- **Tactical Dashboard:** Provides analysis and is for managers and analysts.
- **Operational Dashboard:** Monitors the business and is for front-line workers and supervisors

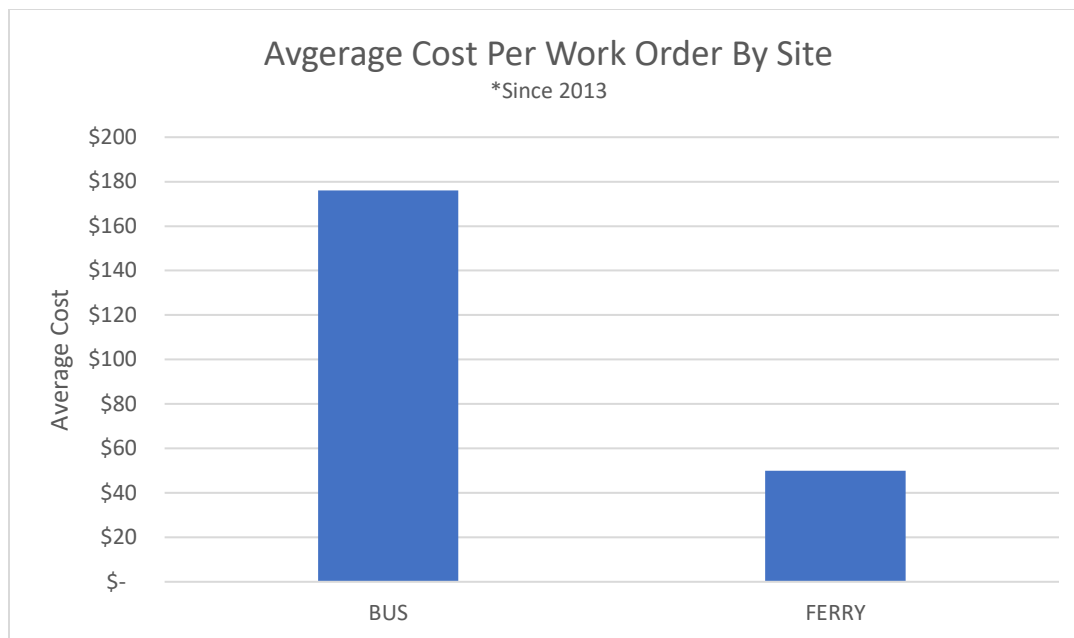
Below are some examples of metrics that can be added with data pulled from the GGB environment. Most important, at the outset of the strategic plan (and Phase 1 of reporting) some metrics are chosen so that benchmarks can be established. Targets for the metrics can be developed over time.



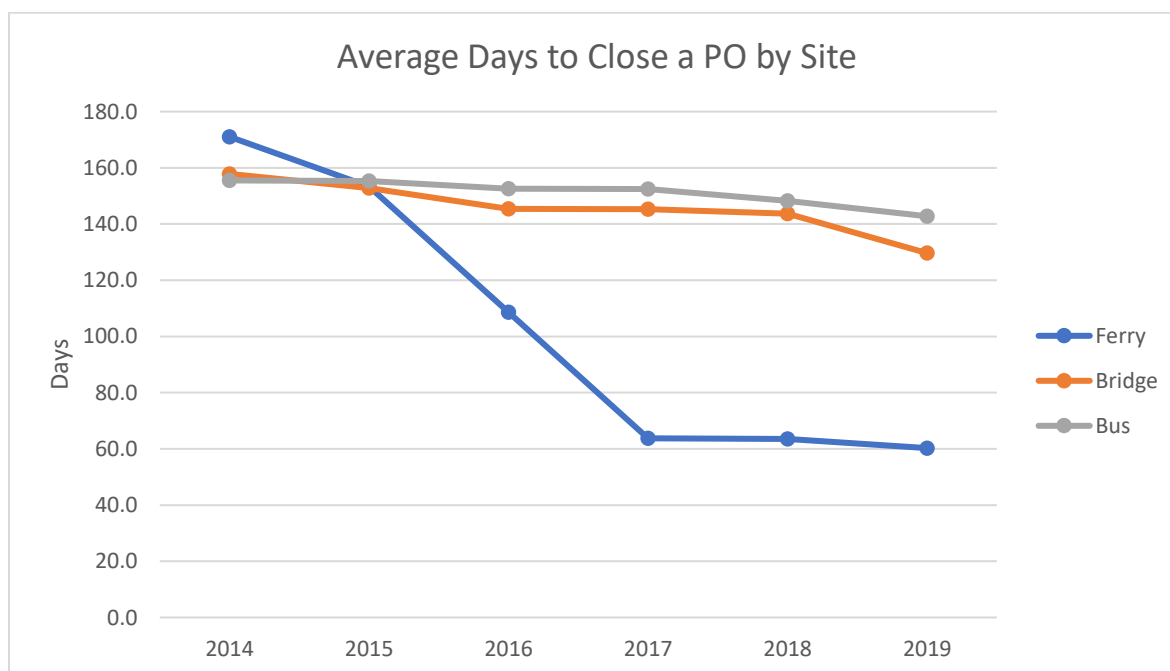
The above KPI is used to show trending of the average days to complete a workorder. A downward trend would likely indicate efficiencies of work execution management.



The above KPI indicated that total completed workorders by year and division. This KPI may help make decisions on staffing when compared to quantity of assets, staff size and asset age. Assuming the asset quantity did not change this KPI would indicate the system has a downward trend of workorder that could be indicative of your maintenance program is being effectively managed.



Average cost of a workorder is a KPI that allows managers to help make decisions when budgeting. When labor, materials and service costs are included on workorders this KPI will show a very close average. By adding costs to workorders the total costs are automatically added to an asset or location total costs. The total cost of an asset may then be used to compare against new asset replacement costs or repair costs.



The Average Days to Close a PO by site represent the average start to finish of a purchase order. This KPI may be used to determine productivity and efficiencies of the procurement process.



The specific dashboards and KPIs developed would be part of the reporting effort undertaken by GGB. Some additional recommendations for metrics include:

Work Identification

- Percentage of work requests in 'Request' status for less than 5 days
- Percentage of man-hours used for proactive work

Work Planning

- Percentage of work orders with man-hour estimates
- Percentage of work orders in 'rework'

Work Scheduling

- Percentage of scheduled man-hours to total man-hours

Work Execution

- Percentage of work orders completed before the required-by date
- Percentage of work orders with all data fields completed

Cost

- Maintenance cost divided by replacement asset value of plant and equipment

Failures

- Mean time between failures
- Failure frequency

Recommendations

The District understands there are opportunities for improvement in terms of asset management maturity by applying asset management concepts into daily operations and further buy-in across the agency. As such this plan is part of a continued process improvement.

In order to meet both the objectives of the organization and the individual departments, multiple projects must be undertaken to move Golden Gate Bridge up the Asset Management ladder. Our recommendations are guided by high level priorities outlined below. These are followed by a listing of the individual projects as well as the year 0 to year 5 Gantt chart broken out by year.

High Level Prioritization Across Divisions

When setting priorities for the Maximo roadmap the following criteria were used to prioritize the short-term timeline

- **Maximo Upgrade to 7.6.1** – Upgrading to the newest version of Maximo is critical to the overall objective of system stability. The current version is unsupported by IBM and it's impossible to rollout new patches to either the OS or application. Too much time is spent fighting fires to keep the system up and running.
- **Leverage Features of the new version** – Maximo 7.6.1 has new features that GGB can leverage to address the needs to multiple businesses. The new service request UI, better PO revisioning, and improved ad hoc reporting tools are all features that can be introduced with a low level of effort.



- **Resolve the highest priority tactical issues** – There are tactical issues in Maximo that are impeding staff's ability to conduct day to day business. The highest priority items from the list (appendix D) should be included in the upgrade.
- **Remove customizations** – Custom software such as Rules Manager is no longer needed. Maximo can natively handle the desired functionality. Custom software makes Maximo more difficult to support and upgrade.

When prioritizing the long-term strategic objectives, the following areas were used to guide priorities.

- **System Stability** – Overall stability of the Maximo environment is critical to the long-term success of Maximo. The environment needs to be one that can be supported successfully by IS. The Maximo architecture also needs to be scaled to meet the needs of the district and the continuous improvement of Maximo and Asset Management practices. A regular patching and upgrade schedule will allow staff to focus on improvement Maximo instead of fighting fires.
- **Standardization of Operating Procedures** – A lack of training and operating procedures around Maximo use has contributed to data issues, usability problems, and general frustration with the application. Codifying Maximo use and procedures around new and existing assets will improve usability, data, reporting, and interfaces between systems.
- **Institutional Knowledge & Training** – Communication and training around Maximo; especially reinforcing SOPs ensure that the system is being used as intended.
- **Expanding Maximo Use and Applications** – Once the system is stable and a baseline is set for Maximo use, expanding the applications leveraged by the division is the next objective. Classifications, HSE, and Qualifications are some of the Maximo applications that the district could benefit from.
- **Improving Data Quality** – SOPs, training, and expanded Maximo use will help to improve data quality. Using more of Maximo's capabilities will eliminate some of the data silos. Improving interfaces and procedures around adding new assets improves data accuracy between systems. Efforts to improve inventory data could benefit all departments.
- **Data & Analysis to Drive Business Decisions** – As improvements are made to Maximo the business will be able to rely on reporting and data from the system to further enable and inform business decisions. Timelines for External system projects – Another important driver of project timeline are projects related to other systems, especially ERP. Some of the initiatives like interfaces, data integrity, SOPs (related to Asset creation), reporting, and Data Warehouse are dependent on the timeliness of other initiatives.

Upgrade Path for Architecture and Software

One of the most important objectives of the Strategic Plan is to have a stable and current Maximo environments. In the short term the priority will be moving the 7.5 Maximo environment from Central Square to a place where it can be hosted until the upgrade is complete. Upgrading to Maximo 7.6.1 will



bring Golden Gate Bridge to both a Maximo and Server environment that is under support by IBM and Microsoft. As part of that upgrade a platform can be selected that will be in line with IS resources and GGB's Maximo use. During this process database platforms can be migrated from Oracle to Microsoft SQL Server. In the new 7.6.1 GGB will be able to leverage new features in Maximo, such as improved ad hoc reporting, as well as the new Maximo-X interfaces. The new interfaces will be especially helpful in the efforts to roll out Service Requests to more areas. The new platform is much more user friendly and works well on handheld devices.







During the upgrade process it is also recommended to remove custom software such as Rules Manager. Maximo now has the ability to perform the same type of security restrictions natively. DataSplice should also be upgraded along with Maximo. Both newer versions of Maximo and DataSplice will allow IS to move forward on many of the issues and enhancement items (Appendix D). Once on the stable and supported environment it will be critical to get on a regular patching schedule of 1-2 Maximo Fix Packs per year as well as a major version upgrade every 3-4 years. Golden Gate bridge will also be able to begin projects that add Maximo features such as IBM Scheduler (for scheduling work orders) and the HSE module (Incidents, Permits, Regulations).

An important decision to make at the outset of the plan is the architecture and platform that will be used for Maximo in the long term. Selecting the right model will allow the District to focus on asset management opportunities instead of spending so much time on system maintenance. The recommendation is to move Maximo to a Platform as a Service (PaaS) cloud model inclusive of staff augmentation.

The following chart details the models for application hosting from a high level, including the PaaS model.



Cloud Computing Summary of Key Differences

 On-Premises	 IaaS Infrastructure as a Service	 PaaS Platform as a Service	 SaaS Software as a Service
Application	Application	Application	Application
Data	Data	Data	Data
Runtime	Runtime	Runtime	Runtime
Middleware	Middleware	Middleware	Middleware
O/S	O/S	O/S	O/S
Virtualization	Virtualization	Virtualization	Virtualization
Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage
NetWorking	Networking	Newtworking	Networking
Application	Application	Application	Application
 You Manage	 Other Manages		



A PaaS partner team of dedicated individuals bring the appropriate level of expertise and staff augmentation to support GGB's Maximo environment. A team would bring skills in the following areas:

- Application Administration
- Network and Systems Administration
- Database Administration
- Windows Server Administration
- Virtual Machine Environment Management
- Active Directory
- Web Based Application Support and Java Programming
- Mobile Solutions
- Mobile Application Administration and Support
- Mobile Device Provisioning and Support
- BIRT, Cognos Report Writing & Training
- Performance Benchmarking and Tuning
- Disaster Recovery Planning
- Data Governance
- Business Process Management
- Project Management
- Security Protocols
- Risk Management
- Integrations
- Custom Solutions
- Managed Services
- GIS Services
- Cloud Solutions
- Analytics
- Service Management
- On-Premise and On-Cloud Support
- Subject Matter Expertise

The PaaS model will provide GGB the resources and staff to meet the objective of a stable Maximo environment. It will also allow the organization the ability to easily ramp up and down to meet changing demand without shouldering the cost and liabilities of adding more full-time staff to support the Maximo initiatives in the Strategic Plan.

IS also needs standardized metrics for tracking their performance for supporting Maximo across the organization. Metrics that should be tracked and reported on going forward include:

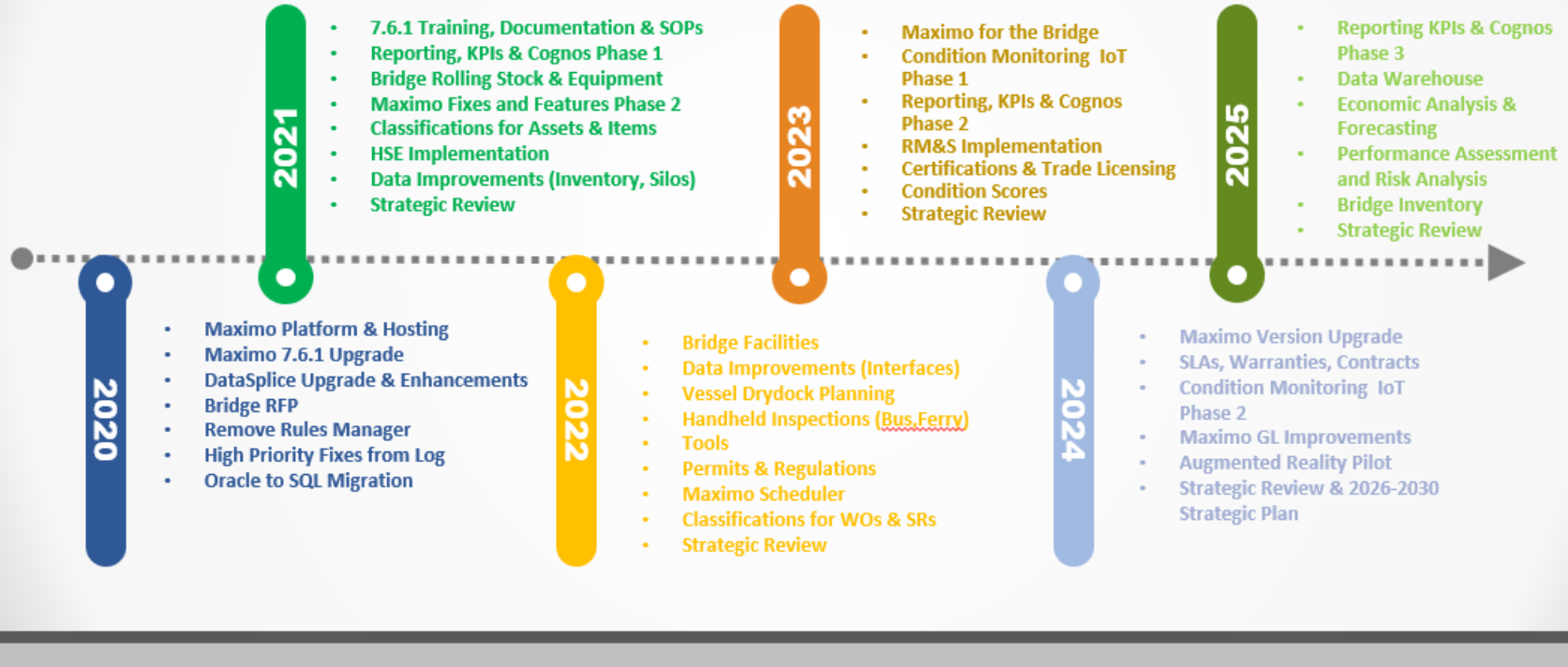
- Maximo Uptime
- Ticket first response time
- Ticket Volume including issues vs. enhancements
- Ticket Resolution Time by type
- Ticket Backlog
- Overall Customer Satisfaction for Maximo Support

Projects & Timelines

The following slide gives an overview of projects and initiatives that can be taken over the next 5 years to stabilize the current environment and use more of Maximo's potential to manage Assets across the organization. Following the high-level view, there is a short description of each project and how it fits into the timeline.



Golden Gate Bridge Maximo





2020 Projects

Maximo Platform & Hosting: The initial focus for Maximo will be on moving off the current Central Square hosting platform. The next seven months will be spent planning where Maximo should live during the upgrade and what the infrastructure will look like in the long run.

Maximo 7.6.1 Upgrade: The Maximo upgrade will commence in November of 2020 and is estimated to be a one-year project. This upgrade will bring Maximo in the District up to version 7.6.1. This project will begin after the Central Square migration. However, the RFP process could begin sooner.

DataSplice Upgrade & Enhancements: DataSplice should be upgraded with Maximo. This provides an opportunity to work on issues and enhancements listed in Appendix. The DataSplice upgrade is less complex than Maximo, but the Go-Lives should be coordinated between the two projects.

Bridge RFP: Bridge can begin starting their RFP process prior to the start of the Maximo Migration and subsequent upgrade. Those two timelines can run concurrently. The Bridge RFP could cover all of the Bridge implementations and initiatives or just one of the phases. Given the scope for a full Bridge implementation it will likely need to be separated into multiple phases over the five-year period.

Remove Rules Manager: In order to meet the objective of system stability and supportability, custom software should be removed. Uninstalling Rules Manager and using out of the box Maximo functionality is a process that can begin before the upgrade. Most of this effort would be in planning what Rules would need to be enforced with conditions or automation scripts in Maximo.

High Priority Fixes: The high priority fixes are those issues and enhancements deemed the highest priority by the groups (see Appendix D) The list should be ranked in numerical order by the departments and the Maximo steering committee. Some fixes can be done in 7.5, while others will be part of the 7.6.1 upgrade or future Maximo projects.

Oracle to MS SQL: A back end database migration was brought up multiple times in discovery sessions. There are user benefits in terms of searching, and benefits for the organization in terms of support. Microsoft SQL Server will be less expensive to maintain in the long run. This could split off from the upgrade or the timing between the two could be coordinated.

2021 Projects

7.6.1 Training, Documentation & SOPs: Training, documentation, and SOPs are an ongoing effort and a key component to the long-term strategic plan. The 2021 effort would coincide with the Maximo upgrade and would create a baseline of documentation and ongoing training efforts. Standardization and procedures in regard to Maximo will enable the data and reporting efforts that are part of future efforts in the plan.

Reporting, KPIs & Cognos Phase 1: The reporting effort will need to be broken into multiple phases. The first phase would involve installing and implementing some basic dashboards in Cognos. It would also service to develop baseline KPIs and Start Centers in Maximo, and BIRT reports to help meet some of the regulatory and audit requirements. This phase would include TAM specific KPI metrics in place by Q2 2020.



Maximo for the Bridge: This is the most important for the Bridge phases and is slotted first. It is the most important Asset and having visibility in Maximo is critical to improving reliability.

Maximo Fixes and Features Phase 2: The phase 2 of fixes and enhancements related to Maximo would involve the remaining priority 1 items and some priority 2 items. The list should be a living and breathing document that changes over time and is managed by the tactical (end-user) steering committee that is recommended as part of this plan.

Classifications for Assets & Items: Classifications for Assets and Items is an ongoing project that would follow the Maximo upgrade. Some of this work would be part of the Bridge implementation. Bus and Ferry could add classifications along their own timelines. This work can be done independently from other projects. It aids both the reporting efforts, standardization, and improvements to the user interface.

Health Safety & Environment (HSE) Implementation: HSE functionality was requested by Bridge, Bus, and Ferry. It is an add-on to Maximo that should be undertaken after the Maximo upgrade projects. More details on HSE are listed in the Appendix B. Groups do not have to start using HSE when it's installed. A major effort to leverage permits and regulations is scheduled in 2022.

Data Improvements (Inventory, Silos): Data improvements will come in a variety of forms over the course of the plan. Some will be the result of other projects (like Fixes or Training), but in this case there is a specific initiative focused on two areas. Inventory improvements, in the form of inventory controls and technology enhancements (Maximo & DataSplice) will improve data quality. Moving data silos, information stored in Excel or other sources, over to Maximo will also increase visibility and access to information. Improvements to Data are necessary for later reporting and analysis phases of the plan.

Strategic Review: At the end of every year, the core team and managers should review progress for the year and how it the projects are tracking toward the overall strategic objective.

2022 Projects

Bridge Rolling Stock & Equipment: The Maximo rollout of Rolling Stock & Equipment is also a high priority for Bridge. Even though some key stakeholders are different, it's scheduled not to run concurrent with the first phase due to the HSE implementation, which Bridge will be involved with (and need to leverage).

Data Improvements (Interfaces): The next set of data improvements would come from reworking the interfaces with other systems. This includes ERP, OnBase and EJ Ward. Because other timelines are involved the process is scheduled in year 3.

Vessel Drydock Planning: Maximo use in the shipyard is a high priority item for Ferry. Currently they do not have Maximo access from that location and Maximo is not used to track work.

Handheld Inspections (Bus, Ferry): Handheld inspections are an ongoing task. They can be added at different times by the departments after the Maximo and DataSplice upgrades. Either application can be used for inspections and the use cases were detailed in both the themes and issues log.

Tools: The tools and stocked tools applications are available out of the box in Maximo. Those applications can be leverage like item master and inventory for tools used in the different trades.



Permits & Regulations: After HSE is installed in the Maximo environment, both Permits and Regulations can be rolled out to Bridge, Bus and Ferry. All three departments expressed a need to track both in Maximo. The rollout could be limited to a pilot or could be more comprehensive.

Maximo Scheduler: Ferry expressed the need for a scheduling tool, and the application can be leveraged by other areas as well. Maximo Scheduling is not mutually exclusive (areas could choose to use it or not). Since it is an IBM add-on for Maximo it also is not a heavy technical lift.

Classifications for WOs & SRs: This project could be moved earlier in the strategic plan. However, it was slotted to coincide with the Bridge rollout for facilities. Classifying Work Orders and Service Requests will help with grouping like problems, automatic routing of work to different trades, and will improve data quality for the overall reporting effort.

Strategic Review: This is the second yearly review for progress on the strategic plan.

2023 Projects

Bridge Facilities: The rollout to Bridge Facilities would build on the first phase of the Bridge Maximo implementation, expanding the PM program to additional assets and locations.

Condition Monitoring IoT Phase 1: Phase 1 involves collecting meter reading data through inspections and IoT devices. Condition monitoring setup in Maximo would generate work orders based on asset health.

Reporting, KPIs & Cognos Phase 2: The second phase of reporting would leverage data quality improvement from previous efforts and would allow for more detailed and comprehensive dashboards in Cognos. Bridge data could also be added in this phase.

RM&S Implementation: This phase would follow HSE, Permits & Regulations based on the needs of the departments. The implementation should be relatively straightforward taking between 3-5 months.

Certifications & Trade Licensing: All departments have a need for Qualifications and certification tracking. It's a relatively small application in Maximo and could be rolled out to all departments at once. It makes sense to wait for Bridge for this rollout and could be part of Maximo for the Bridge Asset phase.

Condition Scores: After handheld inspections and condition monitoring efforts it will be easier to generate condition scores in Maximo. The inspection process for Bus can be built to help populate data needed to generate the scores.

Strategic Review: This is the third annual review of Strategic Plan progress.

2024 Projects

Maximo Version Upgrade: GGB should plan on a major Maximo upgrade every 3-4 years. Putting it on the schedule and planning in advance will greatly lower overall upgrade costs and maintain system reliability.

SLAs, Warranties, Contracts: Adding use of these applications in Maximo. This is scheduled for later in the plan in case any of these items will be stored and tracked in the ERP system.



Condition Monitoring IoT Phase 2: Capturing additional areas for condition monitoring and the use of more comprehensive IoT tracking.

Maximo GL Improvements: Adding GL account information to Maximo that would allow more specific tracking on maintenance spending. Such as routes for Ferry.

Augmented Reality Pilot: A pilot to look at 3D models to help engineers diagnose problems and determine solutions. Staff would use technologies like BIM and wearable tech to access Maximo data.

Strategic Review & 2026-2030 Strategic Plan: At the end of 2024 Golden Gate Bridge should engage in the long-term planning process for the next 5 years.

2025 Projects

Reporting KPIs & Cognos Phase 3: The final reporting phase would develop the type of consolidated analytical reports that are needed for a full risk analysis and well as economic forecasting into the future.

Data Warehouse: At this point in the plan other timelines should coverage and provide an opportunity to consolidate data from multiple systems into a single source. A data warehouse project may begin in 2025 but would likely continue into future years.

Economic Analysis & Forecasting: Data quality improvements, upgraded interfaces and expanded Maximo use will enable staff to do the economic analysis that was talked about during the discovery phase.

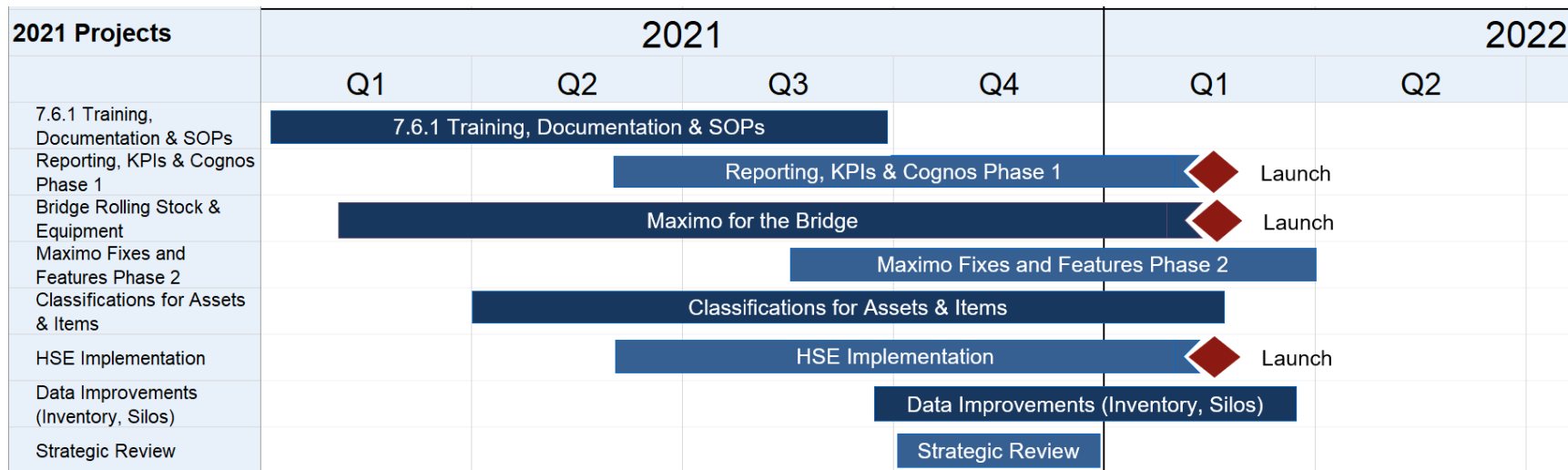
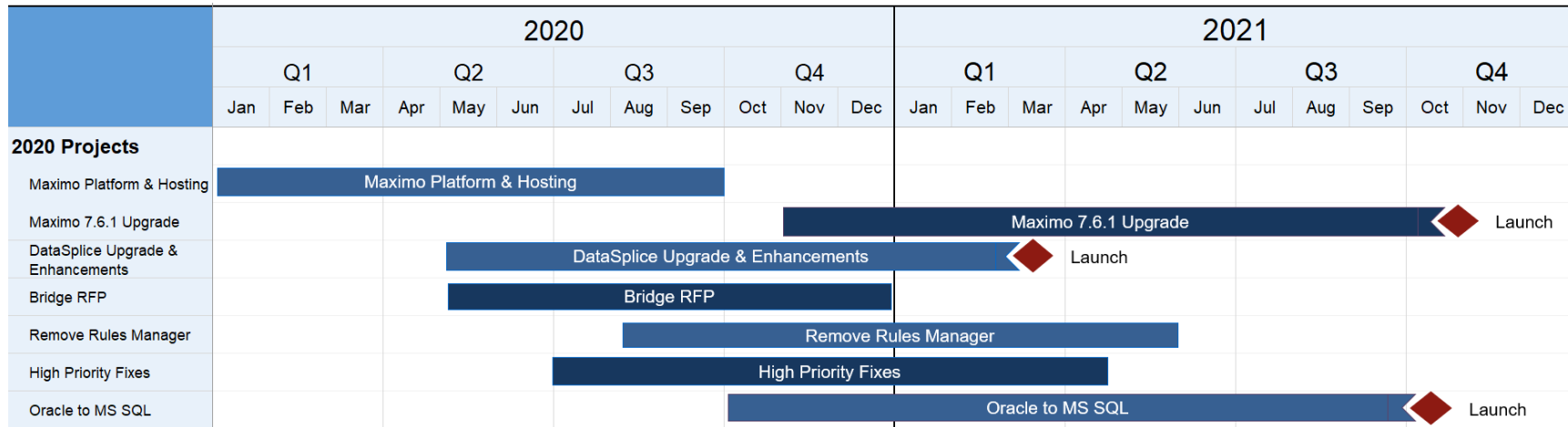
Performance Assessment and Risk Analysis: The objective would be that by 2025 GGB could use Maximo data to do a thorough analysis of all assets under management, assess risk, and make quantitative strategic decisions for the future. This item will continue into future years.

Bridge Inventory: The final initiative in the rollout of Maximo for the Bridge is for satellite storerooms. This effort is scheduled to begin after the next major Maximo upgrade in 2024. The implementation would build on existing use by establishing stocked items for the satellite storerooms, inventory controls, a QC process, and leveraging Maximo's automatic reordering capability.

Strategic Review: With most projects wrapping up in the middle of 2025, GGB can assess overall performance of the plan and objectives that have been met. As well as look at performance of the early items in years 6-10.



0-5 Year Gantt Charts





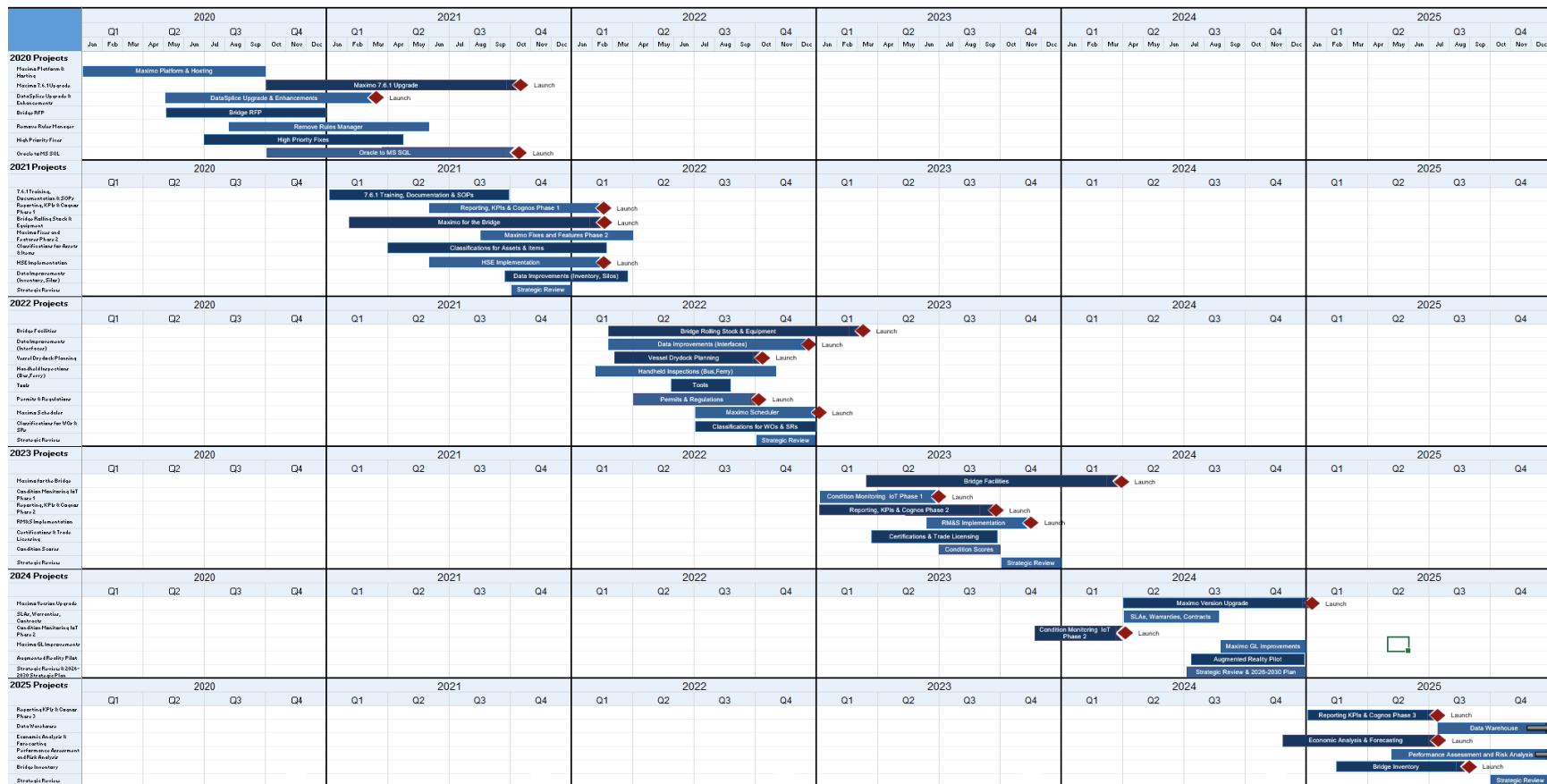
2022 Projects	2022				2023		
	Q1	Q2	Q3	Q4	Q1	Q2	
Bridge Facilities	Bridge Rolling Stock & Equipment				Launch		
Data Improvements (Interfaces)	Data Improvements (Interfaces)				Launch		
Vessel Drydock Planning	Vessel Drydock Planning			Launch			
Handheld Inspections (Bus, Ferry)	Handheld Inspections (Bus, Ferry)						
Tools		Tools					
Permits & Regulations		Permits & Regulations		Launch			
Maximo Scheduler			Maximo Scheduler		Launch		
Classifications for WOs & SRs			Classifications for WOs & SRs				
Strategic Review				Strategic Review			

2023 Projects	2023				2024		
	Q1	Q2	Q3	Q4	Q1	Q2	
Maximo for the Bridge		Bridge Facilities				Launch	
Condition Monitoring IoT Phase 1	Condition Monitoring IoT Phase 1		Launch				
Reporting, KPIs & Cognos Phase 2	Reporting, KPIs & Cognos Phase 2			Launch			
RM&S Implementation			RM&S Implementation		Launch		
Certifications & Trade Licensing		Certifications & Trade Licensing					
Condition Scores			Condition Scores				
Strategic Review				Strategic Review			



2024 Projects	2024					
	Q4	Q1	Q2	Q3	Q4	Q1
Maximo Version Upgrade			Maximo Version Upgrade			Launch
SLAs, Warranties, Contracts			SLAs, Warranties, Contracts			
Condition Monitoring IoT Phase 2		Condition Monitoring IoT Phase 2		Launch		
Maximo GL Improvements					Maximo GL Improvements	
Augmented Reality Pilot				Augmented Reality Pilot		
Strategic Review & 2026-2030 Strategic Plan				Strategic Review & 2026-2030 Plan		

2025 Projects	2025				
	Q4	Q1	Q2	Q3	Q4
Reporting KPIs & Cognos Phase 3		Reporting KPIs & Cognos Phase 3		Launch	
Data Warehouse				Data Warehouse	
Economic Analysis & Forecasting		Economic Analysis & Forecasting			Launch
Performance Assessment and Risk Analysis			Performance Assessment and Risk Analysis		
Bridge Inventory		Bridge Inventory			Launch
Strategic Review					Strategic Review





One Year Upgrade Timeline

The main goals for the next year are to improve the stability of the Maximo environment and upgrade to a supported IBM version (7.6.1). In order to do this, planning and execution must begin immediately. Given the complexity of the upgrade, the focus would be on removing customizations and fixing broken functionality. New applications and enhancements would be part of the longer timeline. Upgrading to the newest version of Maximo, along with planning for a regular schedule of patching and major upgrades is critical to executing the long-term strategic vision.

The Maximo 7.5 to 7.6.1 upgrade would begin with the RFP process and would proceed via mobilization, upgrade, and Go-Live. Given the number of applications and tables that GGB is using and based on the current Maximo version, the IBM upgrade process should be employed versus a reimplementation.

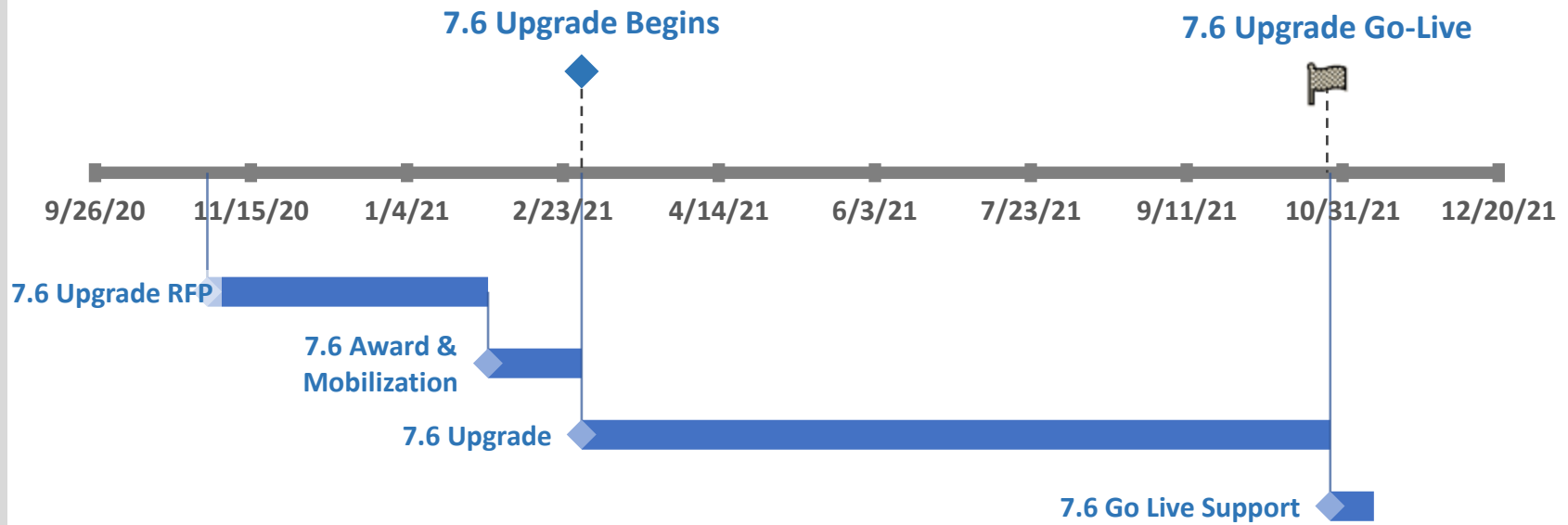
Ultimately, Maximo should be moved from Oracle to SQL Server. However, the recommendation is to treat the upgrade and database migration (Oracle to SQL) separately. Maximo configuration would be prioritized with some changes being part of the upgrade process and others deferred to future phases. As part of the upgrade some Bridge assets would be loaded into Maximo and inspections would be selected for a pilot. During the upgrade there would be a focus on removing customizations and custom software such as Rules Manager. A Maximo 7.6.1 environment that provides a stable environment and supplements internal Maximo application support is optimal.



Golden Gate Bridge 1 Year Timeline – 7.6 Upgrade

Start	End	Duration	Task	Notes
11/1/20	1/29/21	90 days	7.6 Upgrade RFP	<ul style="list-style-type: none"> Writing the upgrade RFP Soliciting responses Select an implementer
1/30/21	2/28/21	30 days	7.6 Award and Mobilization	<ul style="list-style-type: none"> Award the 7.6 upgrade project Formalize the agreement Kickoff meeting with key stakeholders
3/1/21	10/26/21	240 days	7.6 Upgrade	<ul style="list-style-type: none"> JFC is recommending using the IBM upgrade path and not a reimplementation New 7.6 architecture provisioned Upgrade the existing database staying on Oracle Oracle to SQL migration Remove Rules Manager Configuration changes done post DB migration <ul style="list-style-type: none"> Screen design/application cloning Workflow changes Resolving 7.5 user interface issues Rollout some enhancements & new functionality <ul style="list-style-type: none"> Classifications Service Requests Cognos Enhancements prioritized and scheduled between the upgrade and future phases Review system interfaces and make the necessary changes. Continue with flat file or DB links Develop an archiving strategy UAT Testing Bug Fixes Go Live Plan
10/27/21	11/9/21		7.6 Go Live and Support	<ul style="list-style-type: none"> Go Live for the 7.6.1 environment Onsite support for a two-week period after the go-live Recommending an ongoing remote support contract for backend and tier 3 after 11/9/21. Plan for decommissioning of Maximo 7.5 architecture

Golden Gate Bridge Maximo 1 Year Timeline





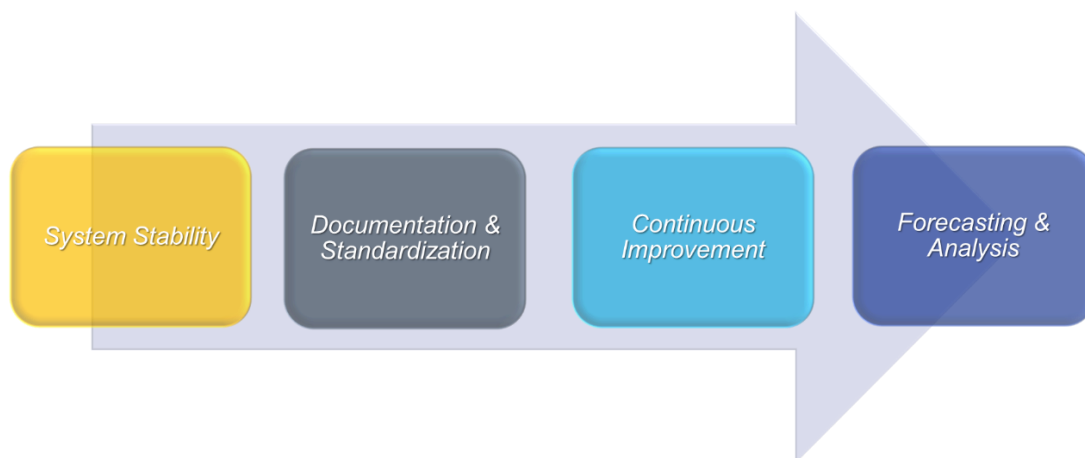
The Path Forward

The District's **IBM Maximo® Strategic Roadmap Plan 2020-2025** demonstrates how improvements to Maximo can be used to attain long-term objectives and is an opportunity to learn more about the organization, staff, and operations. Gaining this insight and enhancing Maximo based on business needs will improve work processes and the effectiveness of the District's Asset Management program.

Because Golden Gate Bridge operates in a fluid and changing environment, it is important to regularly reevaluate and adjust to meet the needs of the business. Success with Maximo is a result of the collective work done to move toward a common objective. In order to work toward those goals, there are critical factors to the execution:

- Commitment at all levels of the organization
- Resource Availability
- Coordination of multiple efforts needed to execute the Plan
- Collaboration between different divisions and all users in Maximo
- Regular progress assessment and recalibration of effort

The initiatives listed in the recommendations section balance the needs of individual departments with that of the entire District and are designed to build on one another to achieve long-term goals. Improvement begins with a strong foundation that prioritizes the following steps:



The objective of the Maximo Strategic Plan is to make continuous improvements over time and is a tool to guide the organization through change. This document is intended to be a living document that evolves over time to reflect organizational changes.



Appendix A – About IBM Maximo®

Since 2009, IBM Maximo® has been the District's enterprise asset management system for purchasing, inventory, and work management. It is designed to optimize the management of physical assets to maximize value and prolong equipment life.

Maximo Technical Platform

Server OS: Windows Server 2008 R2, Service Pack 1

App Server: IBM WebSphere version 7.0.0.15

Version: IBM Maximo® Asset Management 7.5.0.15

Server DB: Oracle 11.2

Technology Standards

Technology Standards	Current
Technical Standards	Nothing formal
Backup solution	Veeam
Business application environment	Virtual
Desktop hardware	Fat Desktops (Dell) i7 16Gb Ram
Desktop operating system	Windows 7 64 bit
Email system	Exchange 2013
Firewall	Cisco ASA 5525
Geographic information system (GIS)	ArcGIS
Handheld devices	Various types and brand
Imaging/content management system	None, closes are DMS with OnBase
Interactive voice response system	Not deployed
Internet browser	IE, Firefox, Chrome
Network operating system	Cisco IOS
Proxy server	N/A
Relational databases	MS SQL 2016 AOAG
Remote access	Cisco VPN
Report writer	Crystal Reports
Server hardware	Cisco UCS
Server operating system	Windows 2012 R2 and 2016
Server virtualization	VMWare
User authentication	MS Active Directory
Virus scanning software	Trend Micro
Web server software	Microsoft and Linux Appliances



Appendix B – IBM Maximo® Health, Safety and Environment Manager

Maximo helps to standardize how an enterprise manages risk in challenging operating environments. The primary objective of Health, Safety, and Environment (HS&E) initiatives is to reduce overall risk, comply with appropriate regulations, and create a safe and efficient operating environment for an organization. Achieving this objective is as much about standardizing HS&E practices as it is integrating these practices with day-to-day operations management. IBM Maximo® Asset Management provides a foundational enterprise platform that integrates Health, Safety, and Environment processes with work and asset management data to provide a single view of your processes, production, facilities, assets, personnel and operations. HS&E helps solve safety concerns by:

- Deploying an integrated and sophisticated Enterprise Asset Management solution that has a strong focus on asset availability, reliability, performance, safety, risk and compliance.
- Incident and Change management providing a central application for reporting all incidents spanning work, personnel, safety, health and environment
- Transparency and visibility across operations, safety, maintenance, and engineering domains of all types of changes, including safety plans, environmental controls, mechanical, operating procedures, and job plans
- Support of all manner of investigations to analyze recurring incidents or defects when Root Cause Analysis (RCA) or After-Action Review (AAR) is required
- Providing complete traceability into historical incidents, defects, work orders, earlier corrective actions/solutions or virtually any other type of HS&E activity pertinent to the investigation.
- Providing an integrated approach to manage and eliminate defects, hazards & precautions
- Supporting risk management and improved safety principles by increasing risk-visibility associated with work requirements around hazardous assets, equipment and locations.
- Providing iterative document that links with all associated HS&E activities and organizational data.



Appendix C – GGB Maximo Interfaces

The following table contains a listing of current Maximo application interfaces.							
Inter. #	Source App	Target App	Batch or Real Time?	Freq	Bi Direct.	Data Flow Description	Comments
1	IFAS	Maximo	Real Time		No	New employee records are sent into Maximo	
2	IFAS	Maximo	Batch	1x Daily	No	New GL/JL keys and objects are sent each night	
3	IFAS	Maximo	Real Time		No	New vendors are sent as they are entered	
4	Maximo	IFAS	Real Time		Yes	PO data/PO Approvals/PO Budget Checking data is sent back and forth between the two systems.	POs are created in Maximo and then they are copied into IFAS via the interface. First it runs approvals in Maximo, once the approval process starts it does a budget check in IFAS. If the budget check is fine, then it finalizes the approvals and send the approved PO back to be created.
5	Maximo	IFAS	Real Time		No	Receiving is done in Maximo and then sent to IFAS	The POs are paid through IFAS. The receiving is done in Maximo and then sent to IFAS. The system will not let the PO be paid until the appropriate amount of receiving is completed.
6	Maximo	IFAS	Batch	Realtime	No	Inventory transactions are done in Maximo and then sent to IFAS	
7	Maximo	IFAS	Real Time		Yes	This isnt a specific interface, but we have two interface tables....mxout_inter_trns and mxin_inter_trns. They control all of the other interfaces. A record is put in these tables when it is ready to go into one of the systems...out for IFAS in for Maximo.	The inserted record holds basic data of the transaction. Source system, destination system, source interface, transid number, etc.



Appendix D – Priority Log of Issues & Enhancements

Ref #	Department	Priority	Description	Resolution Path	Comments
2	ACCOUNTING	1-High	Maximo feed GL Account issues	Interface	All necessary info for troubleshooting is not in the feed. Time consuming to reconcile. Can add more Maximo fields
3	ACCOUNTING	1-High	Inventory Interface Balances are not correct	Interface	It's not clear if this is an issue with the interface or inventory controls
4	ACCOUNTING	1-High	Maximo On-Base interface issues	Interface	Ties up Invoices, POs and Workflow
5	ACCOUNTING	1-High	EJWard & Maximo discrepancies. Fuel data issues.	Interface	There is a 3% discrepancy in the data between the two systems.
12	ACCOUNTING	1-High	Auditors struggle with data from Maximo. Needs not met.	Interface	Likely configuration and interface
14	ACCOUNTING	1-High	Seamless numbering between the two systems	Interface	Review integration and numbering between systems.
15	ACCOUNTING	1-High	Changing workflow process is very cumbersome	Upgrade	This may be in reference to Purchasing. Problems are related to Maximo version and customization.
1	ACCOUNTING	2-Med	More granularity in the GL report	Configuration	Would like to break into assets and locations. Also by route for the Ferry.
13	ACCOUNTING	2-Med	If Maximo is being used as the inventory system it should be used more robustly across the organization, to track all assets, especially capital assets and record retention	Configuration	Adding additional assets to Maximo
16	ACCOUNTING	2-Med	Pathways need standardization, this would cut down labor hours	Configuration	SOPs
9	ACCOUNTING	2-Med	We see RECB items and not sure they are correct.	Interface	Interface issue ERP
11	ACCOUNTING	2-Med	Item description is not included in the interface	Interface	Add to feed, possibly need to add a place for the data in ERP.
7	ACCOUNTING	2-Med	Coordination between the departments and accounting regarding assets	Maximo Application	Data entry standards and SOPs
8	ACCOUNTING	2-Med	Standardization of process	Maximo Application	Differences between departments creates issues for accounting. Standard SOPs
10	ACCOUNTING	2-Med	Would like to fix classification items	Maximo Application	Classifications Application
6	ACCOUNTING	2-Med	Training Videos, more training in general. Team turnover and new staff have not been trained.	Upgrade	New staff struggle with Maximo. Training is not consistent. Need training repositories, more manuals and cross department training.



17	ACCOUNTING	3-Low	Would like to see cost information separated out by route for the Ferry	Configuration	Maximo GL configuration
22	BRIDGE	1-High	Inspection happens every two years, Bridge condition assessment report must be delivered to DOT	Configuration	Reporting effort
18	BRIDGE	1-High	Would like to see the Bridge in Maximo as assets, components or systems	Maximo Application	
20	BRIDGE	1-High	High priority is bridge inspection cycle, and condition assessment	Maximo Application	
23	BRIDGE	1-High	Work Management of the bridge is the second priority after inspections	Maximo Application	
30	BRIDGE	1-High	GGB is 7 units. They schedule the inspections to be completed in 2 years. Caltrans dictate timeline. Timeline needs to be tracked in Maximo	Maximo Application	PM schedules in Maximo
51	BRIDGE	2-Med	SOPs need to be created in terms of creating assets in multiple systems.	Business Process	This needs to be standardized across the entire org
61	BRIDGE	2-Med	Bridge does work on facilities for Ferry and Bus. Bridge staff would need access to update work orders under those sites	Business Process	
62	BRIDGE	2-Med	Standardization of processes in Maximo is important so Bridge users know how to accomplish tasks in other sites.	Business Process	across the entire org
25	BRIDGE	2-Med	Map inspection routes and could use a handheld to complete the form	Configuration	
26	BRIDGE	2-Med	Scanning of electrical and mechanical inspections is planned	Configuration	Could go into Maximo as attached docs
31	BRIDGE	2-Med	Inspection reminders sent from the system that the inspection needs to be completed.	Configuration	Escalations and Start Centers
32	BRIDGE	2-Med	Engineering has 50 different elements used on the bridge – UEI numbers. This information would need to be in Maximo	Configuration	
34	BRIDGE	2-Med	They continually look at condition and they would like to easily see how that changes over time in Maximo.	Configuration	Possibly a BIRT report
35	BRIDGE	2-Med	Would like to have color coded KPIs on inspections that are done, areas that need to be done, and areas that may need work.	Configuration	Visual cues to help them determine where the work needs to be done and where they are at.



39	BRIDGE	2-Med	Security is important and certain users can't approve work. Inspections should flow through an approval process.	Configuration	Workflow process in Maximo
45	BRIDGE	2-Med	Environmental compliance, waste oil. Have to report to AQMD on VOCs. They track how much paint is used and a report is generated and send to the agency. SDS sheets are completed.	Configuration	
46	BRIDGE	2-Med	Start Center performance would be based on PM performance, attendance, lost time. Possibly wrench time.	Configuration	
19	BRIDGE	2-Med	Components are already named and codified on paper; this could be brought into Maximo	Maximo Application	Bridge is divided into 7 different units
21	BRIDGE	2-Med	Schema is already created for the Bridge; naming convention is already developed	Maximo Application	If this can be put in Maximo CSV format it can be uploaded
24	BRIDGE	2-Med	Staff would like to be able to look at a section of the bridge and see both an inspection and work history	Maximo Application	What were the atmospheric conditions when it was painted? What is the last time that this section was dealt with
27	BRIDGE	2-Med	Could generate follow up work orders from the inspections that they are doing.	Maximo Application	Out of the box for Maximo and DataSplice
28	BRIDGE	2-Med	Bridge would like to be able to document the build, upgrades, and what is the lifespan of the members.	Maximo Application	Data is currently in spreadsheets. Data would have to be put in Maximo format for upload.
29	BRIDGE	2-Med	Important to be able to make decisions based on the data. What needs to be replaced? What can be fixed?	Maximo Application	Work history for assets in Maximo
36	BRIDGE	2-Med	High steel string fasteners are an area that need attention in the Maximo implementation	Maximo Application	
42	BRIDGE	2-Med	Right now, the work plan will include the safety plan. Work is done with engineers to develop. What PPE is needed for the job?	Maximo Application	
43	BRIDGE	2-Med	Hot work permits are coming soon. Permits could be attached to a work order	Maximo Application	
44	BRIDGE	2-Med	They have qualifications with licenses for operating certain types of equipment.	Maximo Application	There is a lot of this in the security department. For example, Firearm training, Paint and iron, fall protection training. These could all be qualifications in Maximo



47	BRIDGE	2-Med	Important to capture labor and materials costs on the work and then roll up the asset hierarchy	Maximo Application	
50	BRIDGE	2-Med	Cable could either be a location broke into sections or a linear asset.	Maximo Application	
53	BRIDGE	2-Med	After Bridge rolling stock & equipment would be next (e.g. fall protection, wearable equipment)	Maximo Application	Off-road equipment, Generators, people need to go fuel time a few times per day. May be interested IoT to give engine hours, cycle counts, Compressor, automatically broadcast hours, fuel level, temperatures Tool tracking ability
56	BRIDGE	2-Med	Would want a picklist dropdown to reduce entry points	Maximo Application	Dropdowns in DataSplice. Maximo could use classifications for grouping
57	BRIDGE	2-Med	Bridge wants a better way to track workflows and maintenance information	Maximo Application	Discussed using Point and Shoot devices that would be able to scan barcodes.
58	BRIDGE	2-Med	Wireless Internet based maintenance reporting on equipment doesn't work for some inventory. This is due to certain inventory requiring physical inspections as part of the reporting	Maximo Application	An audit would be needed before putting the info in Maximo
59	BRIDGE	2-Med	Purchasing of stock is done with a p-card and then adding to trailers.	Maximo Application	Purchasing and Inventory may come later in the process
60	BRIDGE	2-Med	Need to set up a storeroom and economic orders quantities.	Maximo Application	One of the problems is that they don't have the stock when they need it.
64	BRIDGE	2-Med	Repair codes (failure hierarchy) problem, cause, remedy	Maximo Application	Need to be able to do a failure analysis
65	BRIDGE	2-Med	PM reports including on time PMs. Are we getting them done on time, what does the backlog look like?	Maximo Application	PM compliance
33	BRIDGE	3-Low	They would also like to create a 3D model of the bridge with status on inspection and repairs.	Maximo Application	BIM digital twin in Maximo for a model of the bridge.
37	BRIDGE	3-Low	Storing and recording bolts by lot number in Maximo inventory.	Maximo Application	
38	BRIDGE	3-Low	Doing failure analysis on rivets – they do have some tests.	Maximo Application	Results are put into spreadsheet format.
40	BRIDGE	3-Low	Safety is also something they would like to track in Maximo. Fall protection, harnesses, and other safety equipment.	Maximo Application	
41	BRIDGE	3-Low	Aaron would like to do a tool loan, check in and check out. Some controls on the safety equipment being checked out.	Maximo Application	



48	BRIDGE	3-Low	Are they getting more efficient or less efficient? What equipment is better to own and what is better to rent.	Maximo Application	Important for the strategic issues, how do we prioritize what is it that we need to do
49	BRIDGE	3-Low	Would like to prioritize the bridge assets by the value of the assets. Wait on the weed cutters and chain saws.	Maximo Application	
52	BRIDGE	3-Low	There is also a fleet that could be entered Maximo.	Maximo Application	
54	BRIDGE	3-Low	Need to add PM to on road vehicles for tracking	Maximo Application	
55	BRIDGE	3-Low	After PM then work management next (defect repair, failure mode, trends)	Maximo Application	
63	BRIDGE	3-Low	Security and access controls – cameras, alarms, door sensors could also live in Maximo. Some of this responsibility is Bridge and some is IT.	Maximo Application	
66	BRIDGE	3-Low	Reports setting boundaries on mileage	Maximo Application	
91	BUS	1-High	SOPs for Inventory and item creation	Business Process	
67	BUS	1-High	Site filters are not working correctly	Configuration	Users are seeing work orders that are not theirs. Remove customizations.
72	BUS	1-High	Can't count multiple bins	Configuration	Probably a configuration issue on the DataSplice side. The application has this functionality natively.
73	BUS	1-High	Rotating Items problems	Configuration	Would need to be investigated. Maximo processes rotating items out of the box.
78	BUS	1-High	Archive old data	Configuration	This is an important long-term consideration. Should plan to move transactional data to an archive
80	BUS	1-High	Track Work & Safety Plans	Configuration	
86	BUS	1-High	Need Spare Parts Information	Configuration	list could be done in Maximo now
92	BUS	1-High	Condition Score by Bus	Configuration	likely the product of multiple improvements - configuration, data integrity
102	BUS	1-High	Too many steps to complete daily tasks, streamline	Configuration	UI improvements
111	BUS	1-High	Managers and supervisors struggle to get the reports and information they need to manage their people and work	Configuration	Part of the larger reporting effort
121	BUS	1-High	The inventory issues and returns dialog box is difficult to get to. That information needs to be displayed on the main tab.	Configuration	This should be easy to add to the main tab



125	BUS	1-High	we don't have NTB reporting info (Keith)	Configuration	Reporting effort
84	BUS	1-High	Improved EJWard integration	Interface	likely after the upgrades
94	BUS	1-High	Shared Cost data between Maximo and IFAS	Interface	
127	BUS	1-High	There is no interface between cost information between Maximo and IFAS	Interface	after IFAS upgrade
77	BUS	1-High	Service Request for Facilities	Maximo Application	
79	BUS	1-High	Build out Classifications. Major area of opportunity for searching, grouping data, validation and reporting.	Maximo Application	High priority item across all departments
82	BUS	1-High	Improved System Performance	Upgrade	platform and system designed for current/future use
112	BUS	1-High	There are differences in Maximo usage and Asset Maintenance between Ferry, Bridge, and Bus. Hence, they will be using Maximo in different ways. That needs to be accounted for in configuration and UI (Ferry is repair tracking while Bus is asset lifecycle).	Upgrade	conditional UI removed and cloned application screens
83	BUS	2-Med	Develop training manuals and SOP	Business Process	Need to build training materials and SOPs
85	BUS	2-Med	Steering Committee for Maximo changes	Business Process	to guide Maximo improvements
105	BUS	2-Med	They have difficulty returning the records they are looking for	Business Process	Some of this is configuration, but it could also be training and process
123	BUS	2-Med	No consistency between catalog code and manufacturer – one item could have 5 different numbers.	Business Process	Inventory SOPs
68	BUS	2-Med	UI Conditions causing issues would like to clone apps	Configuration	Using cloned apps like Ferry is doing would allow groups to have interfaces specific to process while eliminating rules and conditions.
71	BUS	2-Med	Description Field can be wiped out by accident	Configuration	Can make it read only on main tab
74	BUS	2-Med	Inventory search boxes not working as desired	Configuration	Investigation and Configuration changes
75	BUS	2-Med	Easier to apply job plans to assets	Configuration	
81	BUS	2-Med	Leverage Asset Templates	Configuration	changes added one asset at a time and is time consuming
87	BUS	2-Med	Kitting for Inventory	Configuration	
90	BUS	2-Med	Update inventory application with changes to item master	Configuration	



93	BUS	2-Med	Notification for past due items	Configuration	Escalation or Start Center query
103	BUS	2-Med	Site filters are not working correctly so they see Ferry Data	Configuration	
104	BUS	2-Med	Cloning applications would be better than trying to use UI conditions	Configuration	pulling out rules manager and conditional UI
106	BUS	2-Med	Users need better searching capabilities	Configuration	Will not search like Google, but improvements can be made
107	BUS	2-Med	Need a simpler searching criterion, especially when it comes to work orders	Configuration	
110	BUS	2-Med	Large user base, 200 users, that need to be grouped by security and person group to better display relevant information and tasks in Maximo	Configuration	
113	BUS	2-Med	Leveraging Asset templates to bring in maintenance information across all assets. Many changes now must be added one asset at a time (repetitive and time consuming).	Configuration	
116	BUS	2-Med	Faster loading of the history tab, all they need to see is move/modify of an asset and work order history.	Configuration	Bus UI configurations
118	BUS	2-Med	Need to have the ability to count multiple bins	Configuration	This should work out of the box in DataSplice. Something may be broken
120	BUS	2-Med	DataSplice has issues with rotating items	Configuration	May not work out of the box with GGB environment and needs configuration
122	BUS	2-Med	Storekeepers could benefit from automated reminder emails for items that need to be order, and the status of items that are on POs.	Configuration	Add an Escalation
128	BUS	2-Med	FIT code information is difficult to get at. Fit Code can indicate what items work for what types of buses	Configuration	
130	BUS	2-Med	Chi would need to be able to report on asset class or asset type or site in addition to reporting on all of transportation.	Configuration	Part of the larger reporting effort
69	BUS	2-Med	Standardized Descriptions - Description Search	Maximo Application	Adding Classifications for Work Orders and Service Requests
70	BUS	2-Med	Grouping for Reporting and Data Entry	Maximo Application	Classifications in other Maximo applications such as Assets and Inventory would help with reporting and data consistency.
97	BUS	2-Med	HSE for Maximo	Maximo Application	install and configure add-on



99	BUS	2-Med	Permits	Maximo Application	
129	BUS	2-Med	Would like to be able to report on what types of parts are used on what buses	Maximo Application	Classifications are a major area of opportunity for reporting. Adding Classifications application
76	BUS	2-Med	Improved Searching	Upgrade	backend switch from Oracle to SQL Server would help with case sensitivity
115	BUS	2-Med	Case sensitivity is an issue with searching. That would change with a move from Oracle to SQL	Upgrade	DB conversion would help improve searching and ease of maintenance.
88	BUS	3-Low	Move key information to main tab	Configuration	can be done with application design
96	BUS	3-Low	Conduct Handheld Inspections	Configuration	Engineering, elevator, facilities, defect cards; are all opportunities
109	BUS	3-Low	Users see too many fields that are not relevant to their job	Configuration	Cloned UI will help, but some of this is because Maximo is an enterprise system. Users may see more fields than they need to.
117	BUS	3-Low	Inventory search boxes don't match between fields. End users have trouble finding data they need.	Configuration	
124	BUS	3-Low	Ability to search multiple fields concurrently for the same information would help them find parts quicker	Configuration	there may not be a way to automate this natively in Maximo
126	BUS	3-Low	KPIs, BIRT, or queries that report on past due items that are flagged	Configuration	Birt report or Start Center
131	BUS	3-Low	Offline DataSplice could be used to capture work order or inspection information from the buses.	Configuration	adding inspections in DataSplice
114	BUS	3-Low	May be able to bring sensor data over from EJ Ward. Improved integration with that system is needed.	Interface	May be possible with improved interface
98	BUS	3-Low	Qualifications Application	Maximo Application	
100	BUS	3-Low	Stocked Tools	Maximo Application	
101	BUS	3-Low	Inventory Usage	Maximo Application	
108	BUS	3-Low	Facilities would like self-service (Service Request) for end users	Maximo Application	
119	BUS	3-Low	Would like to increase the use of count books	Maximo Application	Could be used in other cases
89	BUS		Consistency in inventory numbering	Configuration	Catalog code and manufacturer. One item could have 5 numbers
95	BUS		Report on common points of failure	Configuration	Failure Hierarchy



134	C & G	1-High	Multiple points of data entry (at GGB) are having a negative impact on data quality.	Business Process	SOPs for Asset creation, training
152	C & G	1-High	Critically important to track grant spending. Was spent on the asset it was intended for?	Configuration	Reporting effort
133	C & G	1-High	OnBase, IFAS, and Maximo don't always match.	Interface	
144	C & G	1-High	Data in the three systems (Maximo, On Base, and IFAS) needs to match.	Interface	This has been brought up in multiple sessions
155	C & G	2-Med	Use Maximo to track when an asset goes into service	Business Process	
132	C & G	2-Med	C&G primary use of Maximo is for NTD reporting – for the NTD database. All info is pulled from Maximo except for Facilities.	Configuration	
135	C & G	2-Med	There is a need to be able to pull condition on assets; value, condition, and asset inventory.	Configuration	
136	C & G	2-Med	Additional asset data needed is price, funding source & amount, and depreciation.	Configuration	Data could be pushed to Maximo from other systems.
137	C & G	2-Med	Large federally funded assets need to be tracked in Maximo.	Configuration	
139	C & G	2-Med	C&G needs Dashboards with relevant information, and what assets are available to sell.	Configuration	Start Centers or Cognos
140	C & G	2-Med	Tri-annual audit review is scheduled for 2021.	Configuration	Bus and Ferry will need to be able to pull their maintenance records and show that they are a certain percentage on-time.
141	C & G	2-Med	Need a better way to filter FTA Assets	Configuration	For example, engine hours on a Ferry PM, Data required are maintenance records from Bus and Ferry to show they have a certain % done on time
142	C & G	2-Med	Grants and real estate are another part of the audit, but Chi has no place to put the information.	Configuration	Land purchased with FTA funds, Land could be made an asset class in Maximo, and then you could hide land from everyone else. Need to standardize reporting and searching for these land assets
145	C & G	2-Med	GGB assets are assigned an NTD ID. This ID needs to be in Maximo.	Configuration	
146	C & G	2-Med	Non purchased assets – like a leased vehicle, need to be maintained in Maximo.	Configuration	Maximo should be the system of record for Assets
154	C & G	2-Med	Want to know what percentage of asset is paid by district, grant, state	Configuration	This could be ERP or Maximo



138	C & G	2-Med	Due to depreciation, long term assets usually disappear from accounting before they are done being used.	Interface	Assets still need to be in Maximo
147	C & G	3-Low	Need to start capitalizing assets. PO information or data from Maximo to come into the On Base form.	Configuration	This is probably in the ERP
148	C & G	3-Low	They have AutoCAD files that they would like to bring into Maximo that technicians can see as attached docs.	Configuration	File size may be an issue, but these can be made viewable in Maximo and DataSplice
150	C & G	3-Low	There are some projects that are cross line department. Something that starts out as a smaller request they may bring in engineering. For example, an ADA ramp on a Bus project.	Configuration	
151	C & G	3-Low	Much of what they are doing with GL accounts is manual. Bike racks are a good example. They need to move the labor costs on installing the rack back to a local grant.	Configuration	GL account setup in Maximo. Should be able to accommodate with a Work Order GL
143	C & G	3-Low	Want a way to have Vehicle numbers sync across applications	Interface	
153	C & G	3-Low	Would like information from Maximo to feed into the OnBase form.	Interface	
149	C & G	3-Low	Longer-term consideration for ESRI. Bridge will also probably want mapping.	Maximo Application	Possible Spatial implementation
171	FERRY	1-High	Ferry would like to keep with a regular patching and upgrade schedule for Maximo.	Business Process	System stability is critical and part of long-term strategy
157	FERRY	1-High	PO approval process is tedious. Lots of steps, looking at the polines, then the work order, then back to the PO. When you replicate this out across all they must do, it is very time consuming.	Configuration	UI can be streamlined
180	FERRY	1-High	This is a pain point – to be able to prioritize work requests, so situations don't deteriorate. There are examples of where this is coming up.	Configuration	Classifications and prioritization
181	FERRY	1-High	Maximo needs to be able to enable our work management plan	Configuration	Maximo process now is tedious, and people work around to work with it. Data verification also must be accomplished by getting information from other sources.



189	FERRY	1-High	FTA audit preparation	Configuration	They know the data that the FTA wants. Maybe some type of yearly prep to get ready since it's all last minute. Trying to think and prepare ahead. A yearly exercise to get ready and prepare data. John would recommend auditing themselves and get ready. Also have SME in Maximo at these meetings. They might check things down a rabbit hole.
190	FERRY	1-High	Compliance on PMs. FTA can stop by any time.	Configuration	Important to understand the measure that FTA uses, understanding where to find that data.
191	FERRY	1-High	Damon – deferred maintenance was a report that we struggled with. It was a metric that they couldn't provide.	Configuration	Reporting effort
156	FERRY	1-High	customizations need to be removed for easier updates	Upgrade	Rules Manager removed during the upgrade
162	FERRY	2-Med	Lots of duplicate work orders	Business Process	training effort
163	FERRY	2-Med	There are some training and personnel issues	Business Process	This captain is continually opening 12 different work orders for the same issue. Having the ability to categorize and report on these types of issues.
169	FERRY	2-Med	John G – establishing the best practices and then follow up with the end users to see what is happening and how that is working.	Business Process	
170	FERRY	2-Med	Businesses to be able to work with the SMEs with industry experts.	Business Process	ability to have consultant support
185	FERRY	2-Med	Steps for investigating whether customization is needed	Business Process	SOPs and steering committee
158	FERRY	2-Med	Better way to report KPI to Operations which is Damon's customers	Configuration	Reporting effort
159	FERRY	2-Med	KPIs, how often we miss runs? How are often are we down? Reasons for Out of Service	Configuration	Reporting effort
160	FERRY	2-Med	Entering hours on the meter reads in one screen, not having to go to every asset. Upload is better, but still not great. Issues with the UI – too many steps to complete tasks.	Configuration	DataSplice inspections would be a good fit. Quick entry
161	FERRY	2-Med	Example PO there's no priority by price, \$8 vs \$800K treated the same	Configuration	
164	FERRY	2-Med	Would like a cleaner interface, easier ways to look at data and filtering between sites	Configuration	UI improvements



165	FERRY	2-Med	Inventory accuracy is an area for change and opportunity. Things getting taken off the shelf are not getting recorded.	Configuration	
172	FERRY	2-Med	John - there are a few applications in 7.6 that they would be able to leverage in the new version. Would also like to refine security and groups, and what they have access to.	Configuration	
174	FERRY	2-Med	Would like to use HSE in the future	Configuration	HSE implementation
176	FERRY	2-Med	Condition monitoring would be a future want. Being able to generate a work order when there are issues.	Configuration	
177	FERRY	2-Med	Being able to leverage asset up/down time. What routes are the ferry traveling on. What vessels are currently out of service?	Configuration	
178	FERRY	2-Med	Service Request – currently add times to response SLA	Configuration	Classifications for Service Requests and Work Orders
182	FERRY	2-Med	Damon- being able to access Maximo from the shipyard. They don't have this in the shipyard.	Configuration	Historical maintenance records on a component. Putting in a new work order Looking at the inventory 90% of the need at the shipyard is work management
183	FERRY	2-Med	Fang would like Ferry to be able to leverage mobility in the newer version. Would like to be do their work from an iPad.	Configuration	Leveraging DataSplice
184	FERRY	2-Med	Facilities is in Maximo for Ferry. PM program is not as well built out as the vessels. But the buildings, parking lot, lights, fuel farm. They are all added to Maximo.	Configuration	
186	FERRY	2-Med	Inventory and procurement data are not as good.	Configuration	Data Quality
187	FERRY	2-Med	Better engine hours, Integration of the service reports from vendors, Possible warranty application, capturing everything that is done in the shipyard. Is this something that is potentially covered by a warranty, who is responsible for paying for it? Condition based monitoring, vibration analysis, oil analysis, fuel analysis	Configuration	



188	FERRY	2-Med	Trying to do this more across all of operations. I.e. reports that say 50 of the work orders were duplicates. Improvements to the dashboard on the engineering side. Looking that the metrics behind the work orders.	Configuration	Data analysis
192	FERRY	2-Med	Possible Future Maximo Applications	Configuration	Classifications (for Work Requests) SLAs, Qualifications, HSE (add-on), Inspections (or DataSplice Forms) Warranties, KPIs, Condition Monitoring
175	FERRY	2-Med	Review integrations between other systems.	Interface	EJ ward, IFAS
167	FERRY	3-Low	John G would like some sort of notification on the conferences so that they can plan around their schedule.	Business Process	Steering committee
168	FERRY	3-Low	IS attending as a group to try and help support but need the input from the business side to see how to leverage the new technologies.	Business Process	
179	FERRY	3-Low	Weekends – Ferry's still run on weekends, but SRs get stuck.	Business Process	
166	FERRY	3-Low	Creating job kits for work orders. Check availability of parts, requesting parts in the field. Having more information on DataSplice and in the field.	Configuration	Inventory improvements
173	FERRY	3-Low	John – there were a couple of examples (vendor insurance and rfq comments) where in 7.6 we can leverage Maximo to solve existing problems.	Upgrade	
196	IS	1-High	Lack of documentation on how things are supposed to operate.	Business Process	SOPs are needed for Maximo
203	IS	1-High	Procurement process is way too complicated in their opinion.	Configuration	Procurement workflows needs to be streamlined
195	IS	1-High	Enhancements are typically the biggest pain point. It's difficult to make changes in the system. Because they are dealing with the operational issues related to 7.5.	Upgrade	
204	IS	1-High	Weekly maintenance is necessary on the WebSphere side to keep Maximo running.	Upgrade	Resolved with the upgrade
205	IS	1-High	Out of the box version would be preferable to GGB	Upgrade	removing customization



193	IS	2-Med	IS will be identifying some champions	Business Process	Maximo steering committee
194	IS	2-Med	More training and outreach need to be done so users are aware of what the software can provide.	Business Process	Customers are not aware of the feature set in Maximo.
197	IS	2-Med	No understanding of workflow in Maximo.	Business Process	training effort
198	IS	2-Med	Many requests to do things different or question the way that things are done in Maximo.	Business Process	
199	IS	2-Med	IS gets lots of requests for training from the departments.	Business Process	
200	IS	2-Med	New users causing issues in the system because they don't understand how it is supposed to function.	Business Process	training effort
206	IS	2-Med	Daily back end updates – PO status change.	Configuration	Mostly procurement asking for the back-end updates.
208	IS	2-Med	Users want a tool to report themselves. But there are a lot of exceptions in the data that prevent the end user from developing reports.	Configuration	Cognos might be an option here
210	IS	2-Med	NTB reporting came up as part of the ERP proposal process. This has driven some chart of accounts requirements	Configuration	
209	IS	2-Med	They have dual site HA SQL cluster, would like to move everything to SQL eventually.	Upgrade	Oracle to SQL Migration. Moving Maximo would help with some of their searching issues (case sensitivity)
201	IS	3-Low	Tracking enhancements in their ticket system.	Business Process	Right now, they are in the ticket system, possibly need new fields or categories to track over time and prioritize.
202	IS	3-Low	There is opportunity in how IS Maximo work is tracked and managed.	Business Process	Storing in Maximo or in a separate system? Pros and Cons for IT tickets vs. SRs in Maximo.
211	IS	3-Low	IT has started to focus more on getting the data in with the multiple systems and then using BI to pull out the information that they need.	Configuration	There is a longer-term plan (or early discussions) on data warehouse.
207	IS	3-Low	Archiving is something that they are interested in. Might be part of the next upgrade. It will be important to determine how far back data can be archived.	Upgrade	
214	PROCUREMENT	1-High	A list of Maximo changes for Procurement never went live, those changes are still desired	Configuration	The wish list contains PO revisioning, workflow changes, screen changes. Maintained in an Excel file



221	PROCUREMENT	2-Med	There is a lack of knowledge on how things operate cross-department. The three warehouses all operate slightly differently. Storekeepers can adjust balances without an approval process. Stronger controls are needed.	Business Process	Training and inventory improvements
212	PROCUREMENT	2-Med	Opportunity to refine the PR/PO process. Both can get hung up in workflow	Configuration	
218	PROCUREMENT	2-Med	Warehouses are behind in technology, could us RFID technology	Configuration	Handheld improvements
223	PROCUREMENT	2-Med	Lack of spare parts lists is an issue. Better tracking would help with brake jobs for Bus	Configuration	Can be done in 7.5
225	PROCUREMENT	2-Med	No automated way to track expiring contracts. Long term contracts span multiple years and the track process wastes a lot of staff time.	Configuration	Long term contracts are a challenge due to the multiple lines in the PO and how it comes into the budget
227	PROCUREMENT	2-Med	Important to be able to tag a capital purchase. Storekeeper needs to process extra steps on the asset	Configuration	
229	PROCUREMENT	2-Med	Procurement would like to get Cognos on the roadmap	Configuration	Reporting effort
230	PROCUREMENT	2-Med	Procurement data needs are primarily Maximo, would like to do spend analytics	Configuration	Cognos and reporting efforts
231	PROCUREMENT	2-Med	Would like to use commodity codes in the future, need to group purchases	Configuration	
232	PROCUREMENT	2-Med	Could end users categorize purchases?	Configuration	
233	PROCUREMENT	2-Med	How do we streamline vendor purchases?	Configuration	
234	PROCUREMENT	2-Med	Can we leverage trends with historical data?	Configuration	Reporting and analysis with BIRT and Cognos
235	PROCUREMENT	2-Med	They want to organize data by vendor and see how much they spent on an item	Configuration	Analysis helps to negotiate discounts on contracts from suppliers
236	PROCUREMENT	2-Med	All analysis is manual. They need a tool to automate and standardize report generation	Configuration	Cognos
238	PROCUREMENT	2-Med	Procurement doesn't trust their dashboard showing inventory accuracy	Configuration	



215	PROCUREMENT	2-Med	Interface between Maximo and IFAS can cause issues. If a work order is closed before the invoice is paid, payment will not go out	Interface	
216	PROCUREMENT	2-Med	Links between both IFAS and On base don't always work correctly (ODBC connection to Maximo)	Interface	Invoices are stored in On Base as hyperlinks and then are processed for approval
219	PROCUREMENT	2-Med	IFAS interface issues around receiving services in Maximo and paying in IFAS	Interface	IFAS interface will be addressed as part of the ERP upgrade
237	PROCUREMENT	2-Med	In a fuel emergency data is pulled from 3 different sources: Maximo, EJ ward, Veedor root (tank level sensor system).	Interface	If they are unsure of how much fuel is left, they must go out and check the tank
224	PROCUREMENT	2-Med	Tracking warranties could be important with the new electric buses and the batteries	Maximo Application	Warranty application
220	PROCUREMENT	2-Med	DataSplice challenges could be configuration, training or internet issues	Upgrade	DataSplice configuration and upgrade
228	PROCUREMENT	2-Med	Pre 7.6 training is desired to be ready for the upgrade	Upgrade	training effort
213	PROCUREMENT	3-Low	Buyers hold small orders until there is a volume quantity to order	Business Process	
217	PROCUREMENT	3-Low	They would like to leverage labeling or barcoding in the future	Configuration	Scanning in DataSplice
222	PROCUREMENT	3-Low	Desire to process credit card inventory transactions in Maximo	Configuration	
226	PROCUREMENT	3-Low	Would like to approve POs in DataSplice or Maximo Mobility	Upgrade	DataSplice upgrade, PO app can be added
239	PROCUREMENT		Possible Future Maximo Applications	Configuration	Assets (increased usage) Warranties, DataSplice POs, Contracts, classifications
240	RM & S	1-High	They are interested in applications that can manage workflow of projects. Managing projects or tasks, and the workflow or work done in emergency management.	Maximo Application	Could leverage workflow in Maximo
242	RM & S	1-High	Hitting target dates for reporting requirements – near miss reporting.	Maximo Application	Birt report or Start Center



245	RM & S	1-High	John described the use of Permitting to keep track of Hot work and other necessary work permits and link to qualifications to make sure the person doing the work is licensed and qualified to do so. Also make sure that the certifications are valid and not expired.	Maximo Application	Tracking permits in HSE
258	RM & S	1-High	Evacuation plans are required by OSHA and need to be tracked	Maximo Application	These can be added into Maximo
249	RM & S	2-Med	Is there a way to track disaster related work? FEMA has strict requirements on how to track response for Reimbursement. Can this be done in Maximo? I.e. vehicles that they are driving, who is doing the work	Configuration	Maximo can track response teams, plans, job plan and tie that to a service request and work order
241	RM & S	2-Med	Would also like to be able to track certifications	Maximo Application	Qualifications application
243	RM & S	2-Med	Hot work or safety evaluations for those tasks. Have the forms in the Maximo application or stored somewhere easily accessible.	Maximo Application	
244	RM & S	2-Med	Also, would like weekly tracking inspections. For example for Ferry. Would like to be able to do these electronically. So that they can have visibility	Maximo Application	Could be in Maximo or in DataSplice
246	RM & S	2-Med	Storm water analysis, they take samples, and upload that info to a database, they would like to be able to track the storm water sampling in Maximo. We must track these sites	Maximo Application	Could be stored as Meter reads
247	RM & S	2-Med	Crane inspections, what task? would be a work order and connected to a job plan	Maximo Application	
250	RM & S	2-Med	Maximo can track training such as lock out tag out. Can scan certifications and attach to a person record	Maximo Application	
252	RM & S	2-Med	want to be able to track recurring tasks	Maximo Application	PM program
253	RM & S	2-Med	want mobility for inspections, to fill them out on a tablet	Maximo Application	DataSplice inspections
256	RM & S	2-Med	Waste oil and forms in Maximo	Maximo Application	



254	RM & S	3-Low	They track used oil in another system. Hazwaste disposal and transportation is tracked in a separate place.	Business Process	Probably not stored in Maximo
248	RM & S	3-Low	want to put state forms into Maximo	Configuration	
251	RM & S	3-Low	Question about tracking space in Maximo – not a space management system but does have a few overlapping features with tririga. Can keep sq. footage and track costs for assets and locations	Maximo Application	Not Maximo's core competency, but it can store some of this information
255	RM & S	3-Low	They also track some quantities of inventory (for example oil on hand) Could be a storeroom. They check tanks regularly. (Manifest application)	Maximo Application	could be inventory even if it's used oil
257	RM & S	3-Low	Ability to look at Maxdemo	Upgrade	Creating a demo instance during the upgrade