

# ORACLE ENTERPRISE ASSET MANAGEMENT

ORACLE eAM PROVIDES THE FOLLOWING FEATURES:

## ASSET MANAGEMENT

- Intuitive Asset Group definition
- Flexible asset creation: Manual, template, open interface / business API
- Ability to change an asset number without losing its attributes and history
- Parent / child asset hierarchy with cost rollup
- Support for all types of asset locations: User-defined areas, internal inventory locations, external physical locations, etc.
- Fully supported asset moves and asset transfers, preserving asset attribute integrity, maintenance strategy and history
- Ability to associate assets to production equipment
- Equipment downtime visibility for production planning
- Asset check-in / check-out
- User-specified asset operations log

## PREVENTIVE AND CONDITION-BASED MAINTENANCE

- Support for pre-defined asset maintenance activities (bill of materials and routing)
- Rule-based preventive maintenance strategy definitions (date rules or meter rules), including
  - Multiple-activity preventive maintenance
  - Base date / base meter preventive maintenance
  - Support for global and organization-specific PM
  - Easy meter definition and meter hierarchy setup
  - User-controlled forecast generation and resulting automatic work order creation
  - Failure analysis

*Oracle® Enterprise Asset Management (eAM) enables you to:*

- *Drive maintenance best practices and improve your organization's performance*
- *Empower all workers with easy to use self-service (Web and mobile) applications*
- *Manage the full asset lifecycle with a complete view of your all types of assets and equipment*
- *Replace costly stand-alone maintenance systems with Oracle's integrated solution*
- *Support compliance and corporate governance with an enterprise perspective*

*Oracle Enterprise Asset Management is part of the Oracle E-Business Suite™ — an integrated set of applications that are engineered to work together.*

## Asset Management

### Asset Definition

Oracle eAM makes it easy to define and manage your organization's multitude of assets. By establishing Asset Groups, users uniquely define groups of assets of the same type. Once established, users can associate standard information that can be inherited by the assets belonging to that group. Unlimited user-defined asset attributes can be used to store detailed information, such as nameplate data, engineering specifications, etc. Parts list of an asset or group of assets belonging to the same Asset Group can be maintained in the Asset Bill of Materials. This allows you to quickly identify necessary parts at time of maintenance.

Oracle eAM uses templates, associated with Asset Groups, to store asset attributes and asset-related information such as activities, meters, and preventive maintenance schedules. Upon asset creation, information from the templates is used to define the asset and its related information without manual intervention.

The new Global Asset Repository provides a single, consistent view of an asset regardless of its location or status. The asset number can also be changed at your discretion without losing the asset definition.

In order to address maintenance requirements across multiple industries or for enterprises who own diverse assets, Oracle eAM supports all types of Assets including Fixed Plant, Mobile, Infrastructure and Linear. Oracle eAM does this with a strong foundation, a flexible framework, and additional targeted capabilities. For example, in order to support Linear Assets, specific functionality was added to the Asset Definition, Work Definition/Execution, and Spatial Integration areas. Although these changes were made with linear assets in mind, many of the new

- Support for predictive maintenance with user-defined collection plans

#### **COLLECTION PLANS**

- Pre-defined collection plans
- Collection of inspection, RCM and downtime, user-defined variables data
- Rule-based creation of work requests and work orders

#### **WORK MANAGEMENT**

##### **Work Request**

- Streamlined work requests with approval Workflow
- Support for service requests initiated in Oracle Services

##### **Work Order**

- Inspection, lubrication and routine preventive maintenance work orders
- Emergency work orders
- Pre-planned work orders
- Audit trail
- User-defined work order types and work order statuses
- Work order relationship, including parent / child and follow up work orders

##### **Planning and Scheduling**

- Planner's workbench (Maintenance Workbench)
- Preventive maintenance forecast generation and work order implementation
- Integration with plant operations
- Single-page user interface for work order creation and scheduling
- Extensive work scheduling abilities, including part requests, equipment resource scheduling and employee scheduling
- Easy parts inventory look up from work orders and from the Maintenance Workbench
- Easy workflow configuration for work order approval

##### **Work Execution**

- Rebuildable component replacement
- Work hand-over (ability to hand over uncompleted work to other crews and shifts)
- Ability to post work time by work order, project or crew
- Flexible work completion process options (for specified

features may be applied to discrete assets, as well.

#### **Asset Hierarchy**

Oracle eAM allows organizations to setup assets in a hierarchical structure with parent-child relationships. This hierarchical structure makes it easier to find and group assets as well as roll up asset costs. For example, a top-level asset would be defined as a company's office building. The child assets would be defined as each individual floor of the building. This structure could be further defined by establishing a relationship between offices and floors.

#### **Asset Operations**

Asset Operations Management provides the following capabilities:

**Asset Moves and Transfers:** Oracle eAM supports multiple asset locations: Organization area, internal inventory location and external physical location. You can move an asset or transfer an asset to another organization without losing the integrity of its attributes, maintenance strategies or work history using the Asset Move Workbench.

**Asset Check-in and Check-out:** Fleet operations are supported by the check-in / check-out functionality. During the check-in / check-out process, asset-related data, such as meter readings or collection plan can be entered. Work requests and work orders can also be part of the check-in / check-out process.

**Asset Operations Log:** Asset Operations Log provides for the tracking of all user-selected maintenance events of a critical asset. The asset operations log enables equipment operators to document problems identified during asset usage the problems can be addressed during the next scheduled maintenance.

#### **Reference Documents and Safety Procedures**

Before maintenance work can be performed on an asset, employees often need to refer to documents such as instructions to properly remove components of the asset or diagrams of the electrical circuits. These documents serve as an integral part of ensuring a safer work process. Since reference and safety information comes in many types of formats, Oracle eAM allows users to attach unlimited types of documents including CAD drawings, word documents, and URLs. Oracle eAM also has support for the more formal Work Permits.

#### **Preventive and Condition-Based Maintenance Activities**

Streamlining maintenance work is the first step in achieving effective maintenance strategies. Oracle eAM Activities provide users with a standard template for asset work orders. This can be applied to pre-planned work orders, such as routine or preventive maintenance work. The activities are standard jobs consisting of work descriptions, labor, equipment, and materials required to perform a certain task. Once defined, activities can be associated to a new work order to establish pre-defined tasks for recurring work.

#### **Preventive Maintenance (PM) Schedule**

Activities are used to create a library of Preventative Maintenance (PM) procedures. PMs include inspection, lubrication and routine maintenance work. Once PM procedures are created, they are associated with assets and are automatically

work steps and / or work order)

- Data capture at work order completion (meter readings, collection plan entries, failure data)
- Mass data entry (meter readings, charge time, work order completion, work order close)
- Support for Safety Management including Permits and Work Clearances (LOTO)
- Supplier self-managed work operations from iSupplier
- CFR 21 Part 11 implemented for work order completion
- Maintenance intelligence
- Maintenance key performance indicators delivered by Oracle Daily Business Intelligence (DBI)

#### **Stores Management**

- Flexible material request and issues process, including one-step issue
- Auto material allocation
- Available to promise status
- Direct requisitions (description based and non-stock material), with supplier catalog support

#### **Maintenance Cost Management**

- Cost estimation
- Actual cost calculation (material, labor and equipment resource usage)
- Cost roll up based on work order relationship or asset hierarchy
- Work order cost billing
- Work order cost capitalization

#### **Budgeting and Forecasting**

- Forecasts created from historical work order data or projected PM schedules
- Easy and consistent forecast generation with forecast templates
- Optional export of forecast data in various format, such as Excel, HTML, PDF

#### **Role-Based Workbench for**

- Planner
- Scheduler
- Supervisor
- Maintenance User
- Wireless Maintenance User (a

scheduled as work orders based on meter readings, list dates or time intervals. When implemented, a PM program helps an organization run more effectively and efficiently, with fewer unexpected breakdowns because the equipment is well-maintained.

In this release, you can implement cyclical maintenance with multiple activities for an asset with the Multiple-Activity schedule rule.

In addition, the Base Date / Base Meter rule option enables you to define a PM schedule independent of actual dates, as often required by regulatory needs.

When you implement PM forecasts, work orders are created with the work order status specified in each PM schedule definition.

Oracle eAM introduces the concept of local and global PM sets; this concept allows a maintenance planner to define PM strategies locally or at the corporate level.

Local PM sets are accessed only by the organization that defined them, while global PM sets are visible across the enterprise.

#### **Meters**

Through the collection and review of vital asset statistics, managers can make smart decisions on the maintenance and effective usage of assets and rebuildable inventory items. Meters attached to an asset or rebuildable inventory item can be used to report on operating conditions such as oil pressure, vibrations and temperature.

Oracle eAM offers unique capabilities to define multiple meters for assets and allows multiple assets to share these meters. Any readings for a meter are immediately updated to all associated assets. Meter readings drive an asset's PM schedule that is defined with a meter rule.

You can now implement meters that feed down the meter hierarchy. Readings of a target meter are automatically updated with the entered readings of a source meter, at a predefined ratio. Rollover and Reset of a target meter are also supported.

When you define a meter, you can set its meter readings as required data entry for all types of work orders and not just for PM-generated work orders. The Mass Meter Readings user interface allows you to enter readings for multiple meters.

#### **Failure Analysis**

Failure analysis is an important component of Reliability-Centered Maintenance. Oracle eAM allows you to define failure codes and organize them into hierarchical groupings called Failure Sets. Failure Sets are associated to Asset Groups and inherited by all assets in the Asset Group. Failure Sets ensure that failure data captured at work order completion is structured and valid.

A new user interface shows an asset's failure history and computed metrics (Mean Time Between Failure, Mean Time to Repair and Mean Cost to Repair, Failure Frequency). Various aggregation levels allow you to evaluate the comparative reliability and maintainability performance between assets, asset groups, asset categories, etc.

#### **Collection Plans**

Oracle eAM integrates with Oracle Quality to define flexible and configurable data collection requirements. Data collection results can trigger powerful automated

connected wireless solution for the Maintenance User workbench)

- Work Requester

**Flexibility to Support your Business**

- User-defined lookup codes for assets, work requests and work orders
- Access security based on responsibility and organization
- Open architecture for easy import and export of information
- Intuitive and customizable web-based user interface with embedded analytics
- Extensive reports and key performance indicators
- Real-time reporting
- Graphical views and "Drag and Drop" functionality
- Graphical workflow tool
- Oracle Approvals Management tool for work order approval process

response and follow up actions. If the collected data results in a condition outside the acceptable limits defined in the collection plan, a work request or work order can be created. Reliability Centered Maintenance (RCM) can be implemented easily with collection plans. Oracle Quality supports two new transactions (Asset Check In and Asset Check Out) with a new element called Asset Number.

**Work Management**

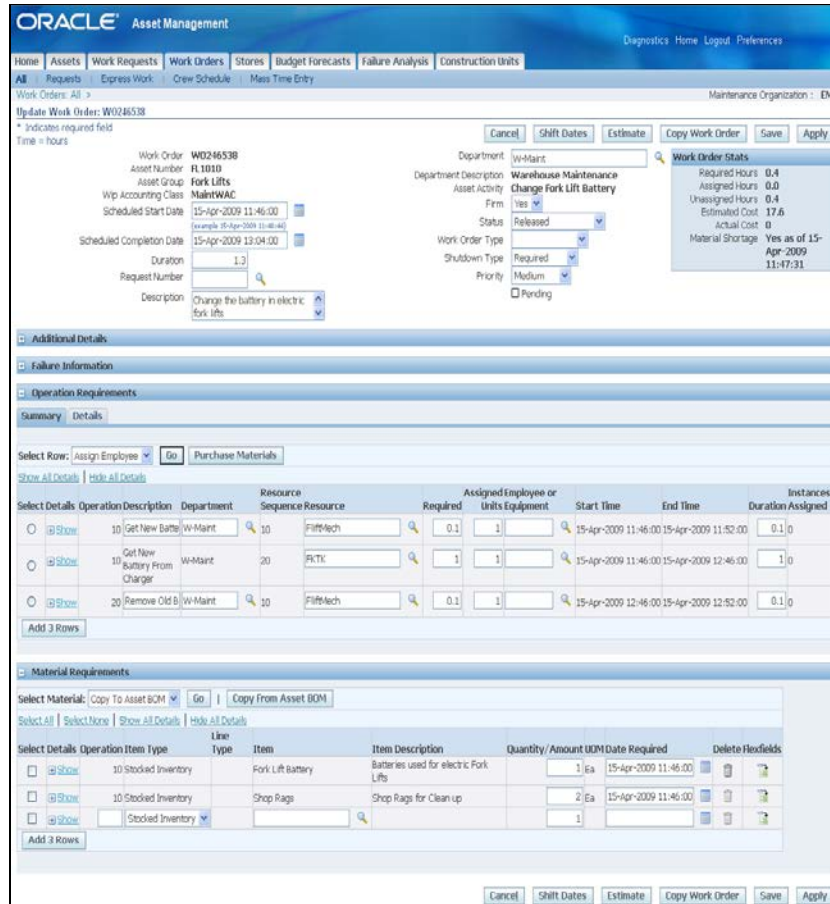
**Work Requests**

Work Management is at the core of all maintenance operations and includes the identification of maintenance issues through work requests, as well as the ability to execute maintenance work through work orders. By creating a work request, you initiate a process, notifying the maintenance supervisor that an issue is encountered and resolution is requested. Oracle Workflow is utilized to route work requests through any required approval process. If work is deemed warranted, the work request is approved and a work order is created for the request.

**Work Orders**

Work Orders are used for the planning, scheduling, and execution of work. Work plans include the identification of labor, material and equipment. Work Orders for assets can be automatically generated from Preventive Maintenance forecasts or the issue of inventory rebuildable spare parts. Work orders can also be manually created as a routine job. Copy Work Order is a convenient way to create a new work order from an existing one.

The user experience provides a single-page user interface for work order creation, planning and scheduling as shown in Figure 1.



**Figure 1 – Single-Page Work Order User Interface**

Express Work provides users with a quick way to report work that has been completed without any planning – often referred to as ‘after-the-fact’ reporting. The Debrief Work Order feature enables users to report labor, charge time, issue stocked items and complete the work from a single page.

The user-defined work order status provides flexibility in tracking and managing your work orders. Oracle eAM introduces a user-defined Workflow and Approval process for the Work Order Release flow, enabling you to enforce compliance as dictated by your business processes. In addition, the work order cost estimate calculation and material shortage check are an easy click away, speeding up your Work Order Release decision-making process.

Leveraging XML Publisher, you can define your own template for work order printing. Multiple selected work orders can be printed at any given time. Besides the standard Simple and Advanced Search capabilities, Oracle eAM also provides the powerful Work Order Text Search, which can be tailored to your search needs.

**Work Order Relationships**

With Oracle eAM, you can manage complex work order networks and not just individual work orders. Work order relationships link work order together for reference, cost, reporting or scheduling. With work order relationship, a complex overhaul with multiple work units that may be independent from each other or have an end-to-start requirement can be easily set up and scheduled within the scheduled

dates of the overhaul. You can also create a follow-up work order while on a task for another work order.

### **Planning**

Maximizing asset availability, increasing plant productivity and decreasing maintenance costs are the enterprise objectives that work planning and forecasting can help achieve. Oracle eAM Maintenance Workbench is the tool to help simplify maintenance planning in a complex production environment.

From the Maintenance Workbench, the planner or supervisor can initiate requested work, manage existing work orders, and generate forecasts based on asset actual, planned and estimated usages (date intervals, meter readings, PM schedules). The planner can use the forecast horizon and actual work inclusion to manage the dynamic adjustments of the plan. Work orders can be auto-created when forecasts are implemented. To minimize manual intervention, Generate PM Work Orders can be optionally scheduled as a background process. Using PM Set, you can control the number of PM suggestions generated for your plan prior to implementing them.

Construction Estimating introduces Construction Units (often referred to as Compatible Units), which are standardized, repetitive units of work, comprising labor, material and equipment that are used to plan different types of jobs.

### **Scheduling**

Effective scheduling is critical for an organization to manage and control costs. Planners and supervisors need the ability to schedule work with the appropriate personnel, request the correct parts and equipment needed to complete the work order.

Employee Scheduling enables you to search for available employees by skill sets and competency. The displayed department resource availability and employee current workload facilitate assignments and resource re-shuffling if needed.

Oracle eAM provides the flexibility to schedule a work order at several levels, including the work order header, operations, resource, and resource instance. The new Bottom-up scheduling functionality ensures that the scheduling will start at the available bottom level, and that there are no 'out-of-boundary' schedule dates. For example, a resource's schedule start and end dates will be within the operation's scheduled dates.

Oracle eAM also has bi-directional integrations with Primavera and Microsoft Projects for Work Order scheduling. The level of integration with each of these scheduling tools varies based on their respective native capabilities.

Available to Promise (ATP) check and material shortage check provide inventory component availability information. Material request can be initiated manually or set-up to be requested automatically from inventory upon release of the work order. Purchase requisitions for required description based material and non-stock inventory items can be initiated from the work order directly to Procurement. These features help ensure that required parts are available when work is scheduled.

### **Visualization**

In many environments, the ability to see where the assets are located is critical to effective planning and scheduling of work. This is often seen in maintenance

environments with disparate assets – such as in utilities. Oracle eAM is integrated with the Web-based source map viewer of Google Maps and ESRI to allow users to view Assets and related work on a map. The ESRI integration will also provide the means to locate work on a map and perform basic execution tasks on these work orders.

### **Work Execution**

Once a work order is executed, Oracle eAM captures all required data, including material and resource usage, notes, costs, inspections, meter readings, collection plans, failure information. To support CFR Part 11, Work Order Completion can be set up with a user-defined Approval Workflow and e-Records and e-Signature (ERES) capabilities. The completed work order is a snapshot for traceability and compliance requirements.

### **Materials Management**

When combined with Oracle Inventory, Oracle eAM has the ability to plan and manage direct and parts materials. Users can identify parts needed from parts inventory or from vendor catalogs. These items can be processed based on material requested dates and work order status. Users can quickly issue and charge material to the work order or request that warehouse items be picked up at the appropriate time.

### **Maintenance Cost Management**

Oracle eAM enables organizations to reduce equipment and maintenance costs through the effective collection of asset maintenance costs and work history.

### **Estimated Costs**

The cost of maintenance work can be estimated based on material, labor and equipment requirements. Estimated costs provide an up front assessment of the work to be performed and a comparative guideline against the costs of similar work, previously completed. Estimated costs can also provide the basis for work order approval. For example, any work with an estimated cost greater than a certain amount must be approved before work can begin.

### **Actual Costs**

Actual costs are generated as maintenance work is executed and completed. Material, labor, and equipment charges are collected, defined, charged to the appropriate valuation accounts and posted to Oracle Subledger Accounting (SLA).

These costs can be rolled up based on Asset Parent / Child Hierarchies. Collected cost information enables managers to make informed decisions about maintenance trends, an asset's operational cost, and replacement strategies. Cost variance analysis (estimated vs. actual) provides an insight into the actual work performance vs. planned.

### **Cost and Work History**

In addition to maintenance costs, work history is also captured and retained. Users can reference completed work in order to review operations, resources, and costs. This information is helpful in understanding the scope of the work and the process by which it was completed. It also helps managers make better-informed decisions about future maintenance work.

Oracle eAM provides several reports to help management analyze an organization's maintenance costs. These reports display costs by specific periods, for selected assets, or for the entire organization.

**Work Order Cost Billing and Capitalization**

Oracle eAM allows you to bill internal and external customers for costs incurred and charged to a work order, leveraging Oracle Receivables. If the asset is associated with a fixed asset, Oracle eAM allows you to send complete or partial work order costs to Oracle Assets for additional capitalization of the fixed asset.

**Maintenance Intelligence**

Maintenance Intelligence, delivered by Oracle Daily Business Intelligence (DBI), provides key performance indicators for management to evaluate its maintenance costs and operations over time. Comparative analysis is readily available with various aggregation and 'slice and dice' options.

**Budgeting and Forecasting**

To improve your ability to forecast maintenance costs, Oracle eAM delivers a new tool to generate cost forecasts based on PM schedules and / or historical work order costs. Generated costs are bucketed into financial periods. These costs can be aggregated by accounts or work orders. The eAM Budgeting and Forecasting process also increases the efficiency of your budget analysis. The forecasted costs can be exported in standard file format (Excel, HTML, PDF) for further analysis and subsequent import into your favorite budgeting tools.

**Role-Based User Interfaces**

There are a variety of roles in any maintenance organization such as maintenance technician, supervisor, and planner. Oracle eAM provides role-based user interfaces based on an employee's responsibilities. The Maintenance User Workbench allows the technician to view his / her work, request material, charge time, and perform a hand-over and all other activities needed to complete the work as shown in Figure 2.

Oracle eAM also introduces the Supervisor Workbench. The Maintenance Supervisor can use the workbench to plan and perform all work activities for his / her department. A connected wireless solution for the Maintenance User Workbench is also provided in this release.

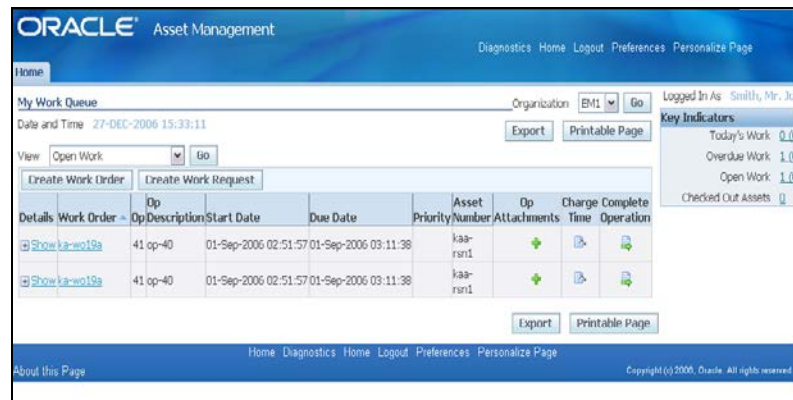


Figure 2 – Role based workbench specifically designed for the Maintenance User



Advanced integrated functionality is available to eAM customers who buy Oracle Advanced Supply Chain Planning, Oracle Assets, Oracle General Ledger, Oracle Human Resources, Oracle iProcurement, Oracle Manufacturing, Oracle Payables, Oracle Projects, Oracle Property Manager, Oracle Purchasing, Oracle Services, and Oracle Time and Labor.

### **Discrete Manufacturing and Advanced Supply Chain Planning**

Oracle eAM streamlines the coordination between production scheduling and maintenance scheduling. The load production downtime process generates equipment resource downtime caused by scheduled maintenance. The downtime is included by production scheduling as a constraint on its scheduling.

When a production plan is generated by Oracle Master Scheduling / MRP or Oracle Advanced Supply Chain Planning, equipment resource downtime can also be included as a capacity constraint. In this release, Oracle Shop Floor Management leverages Oracle eAM's operation log data to identify production equipment downtime for its production planning and scheduling.

### **Fixed Assets**

For reference, Oracle eAM allows you to associate an asset to a fixed asset defined in Oracle Assets. Using Work Order Cost Capitalization, selected work order charges can be sent to Oracle Assets for additional capitalization

### **iSupplier Portal**

Integration with Oracle iSupplier Portal provides the capability for Web-based collaboration with suppliers / subcontractors. The accuracy and timing of suppliers' reporting is greatly improved. Through iSupplier, a supplier can report work completion and any required collection data and meter readings.

### **iProcurement**

Oracle eAM integrates with Oracle iProcurement to provide an intuitive, Web-shopping interface to order direct items for maintenance work orders. A powerful search engine and multi-supplier self-guiding catalog capabilities are the trademarks of Oracle iProcurement for item selection.

### **Projects**

Oracle eAM is integrated with Oracle Projects to provide a complete, seamlessly integrated business solution for maintenance project management. You can specify a project and task for your maintenance work order. Transaction costs are collected and passed to Oracle Projects for subsequent project cost analysis and management.

### **Property Manager**

Oracle eAM integrates with Oracle Property Manager to provide a comprehensive real estate management solution that automates and enhances property definition, space utilization management, and lease administration. Users can link an eAM asset directly to a Property Management location name and code.

### **Process Manufacturing**

Oracle eAM integrates with Oracle Process Manufacturing (OPM) Scheduling to improve the coordination between production scheduling and maintenance scheduling. Scheduled maintenance downtime updates resource availability in the OPM Resource Calendar

### **Service**

**KEY BENEFITS**

- Drive maintenance best practices and improve your organization's asset performance
- Empower all workers with easy to use self-service (web and mobile) applications
- Manage the full asset lifecycle with complete view of your assets and equipment
- Support compliance and corporate governance with an enterprise perspective

**RELATED PRODUCTS**

- Oracle Asset Tracking
- Oracle Advanced Supply Chain Planning
- Oracle Daily Business Intelligence
- Oracle Assets
- Oracle General Ledger
- Oracle Human Resources
- Oracle iProcurement
- Oracle Manufacturing
- Oracle Primavera
- Oracle Projects
- Oracle Property Manager
- Oracle Purchasing
- Oracle Services
- Oracle Time and Labor
- Endeca Extensions for Oracle eAM

**RELATED SERVICES**

Following services are available from ORACLE SUPPORT services:

- Update Subscription Services
- Product Support Services
- Oracle E-Business Suite Accelerators
- Oracle Application Solution Centers
- Oracle University
- Oracle Consulting

Integration to Oracle Service allows you to log a maintenance service request. This provides the maintenance planner or supervisor with visibility into service requests logged against his / her department's asset, and can assign work appropriately to them.

**Time and Labor**

With Oracle Time and Labor (OTL), employees can enter the hours they have worked by work order on a self-service timecard. Once the timecard is submitted, Oracle eAM will charge the time to the work order resource and assigned employee.

**Summary**

Oracle eAM provides a complete maintenance solution that enables best practices for maintenance management. It supports preventive, condition-based, reactive and emergency maintenance to all types of assets. Seamless out-of-the-box integration to Oracle E-Business Suite™ supports an uninterrupted, real-time function and information flow for asset management. A complete work management solution, including forecasting, planning, scheduling, execution and completion, provides the necessary tools to increase maintenance efficiency and maximize asset availability.

**Oracle E-Business Suite — The Complete Solution**

Oracle E-Business Suite enables companies to efficiently manage customer processes, manufacture products, ship orders, collect payments, and more — all from applications that are built on unified information architecture. This information architecture provides a single definition of your customers, suppliers, employees, and products — all important aspects of your business. Whether you implement one module or the entire Suite, Oracle E-Business Suite enables you to share unified information across the enterprise so you can make smarter decisions with better information.



Oracle is committed to developing practices and products that help protect the environment

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