

# Maximo Health, Safety and Environment Manager

Watson IoT™

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Maximo IOT



# Agenda



- Maximo HSE Overview
- Maximo Use Cases
  - Incident Reporter
  - Regulatory Compliance

# High Risk Industry

## Operational Risk

- Subject to major hazard risk – operations with significant risk to people, process and the environment

## Environmental Risk

- Operating in a sectors defined by regulatory authorities as subject to major hazards - COMAH, OSHA, EPA

## Regulatory Risk

- Enterprises requiring a high level of assurance that systems and procedures continue to operate as intended

## Dynamic Risk

## Compliance Risk

## Business Risk

# Customer Pain Points



People	Process	Environment
Unqualified to operate a piece of equipment/ Expired Operator Certifications	SOPs that aren't followed / No defined SOPs	Inability to prove Regulatory Compliance
HFACS contributing to failure	No Change Process in place	Inability stay current with regulatory changes
Not following established Operating Procedures	Control of work not in place	Equipment break down
PSSRs not in place, tracked or performed	Equipment certifications not up to date	Big Iron – Big Machines
Hazardous Nature of the Work – Height, Heat, Confined, Trench...	PPE not used properly, tracked properly or certified on a regular basis	No Intra-Shift Operational Communications

# Maximo HSE Manager 7.6.1 business processes



## Major Business Processes

Detailed Business Processes

	Operations Management	Control of Work	Asset & Work Management	HSE Management	Quality Management	Management of Change	Knowledge Management
	Manage operator logs	Risk Management	Asset management	Incident Management	Regulatory Compliance	Management of Change	Capturing Knowledge
	Shift handover	Permit to Work	Defect Management	Investigation Management	Managing non-conformance	Continuous Improvement	Identifying Solutions
	Production loss reporting	Isolation Management	Work Management	Managing Corrective Action	Audit Management		
	Bypass Management	Hazard Management	Turnaround management	Managing regulatory permits and environmental Consents	Competency Management		
	Managing Operational Actions		Failure management	Mobile Incident Reporting	Managing Supply Chain Quality		
	Define operating policies and procedures		Construction and Commissioning Management				



New processes

# What is Maximo Health, Safety and Environment Manager?



An Add-on solution to Maximo with a comprehensive capabilities to support HSE objectives across industries



Incident Management 	Operating Procedures 	Audit and Survey 	Failure Reporting 
Investigations 	Operating Policy 	Personnel Certification Tracking 	Solutions 
Change Management 	Risk Assessment 	Operators Log 	Defect Elimination 
Non-Conformance Management 	Risk Matrix 	Action Tracking 	Bypass Management 
Regulatory Compliance 	Location Profile 	Benefits & Losses 	Certifications 
Preparation Activities 	Improvements 	Lock Out and Tag Out Plan 	Permit to Work 



What  
Where  
Who  
Actions

Hazard Reports  
Safety Observation  
Incidents Injury  
OSHA Reportable  
One-Time Event?  
Near-Misses

Why

Equipment Certs  
Personnel Certs  
PPE Certified  
Operating Procedures followed  
Human Factors  
5 Whys  
Root Cause Analysis

Address the  
issue in a  
controlled way

# Identify – Mitigate – Take Action



ID Risk	Mitigate Risks	Action Plan
Incidents Power App Mobile Incident Reporter -Safety Observations -Hazard Reports Self Service Incident Reporting	Investigation - Root Cause - HFACS - Sequence of Events - 5 Whys	Actions
Audit and Survey	Operating Procedures / Operation Policy	Defect Elimination
Operator Log – with shift handover and carryovers	Permit to Work / Preparation Activities / PSSR	MOC
Regulatory Compliance	Personnel – Asset/Location Certification Tracking	Non-Conformance Management
Risk Assessment / Risk Matrix	Asset / Location Certification Tracking - PPE	OSHA Reporting 300 – 300A - 301
By-Pass Management / Isolation Management	FMECA Analysis	

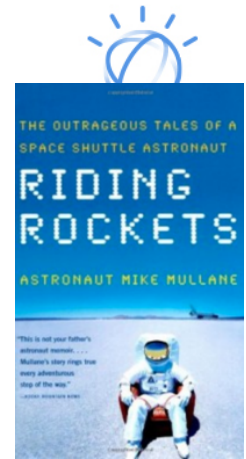


## Why take an integrated approach?



Mike Mullane

“The Space Shuttle program has a wealth of data tucked away in multiple databases without a convenient way to integrate and use the data for management, engineering or safety decisions”



Columbia Accident Investigation Board as quoted in Organization Learning at Nasa: The Challenger and Columbia Accidents by J Mahler & M Casamayou





# Reporting a high risk incident reporting process using Maximo Incident Reporter

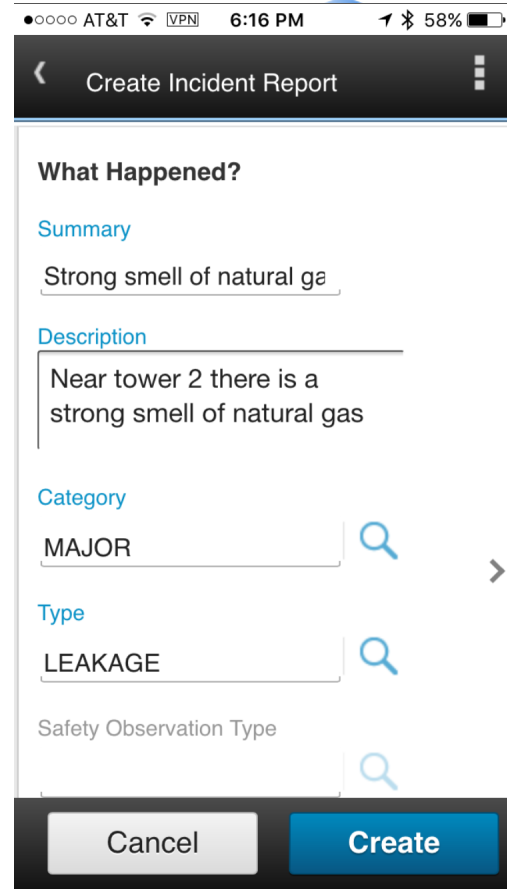
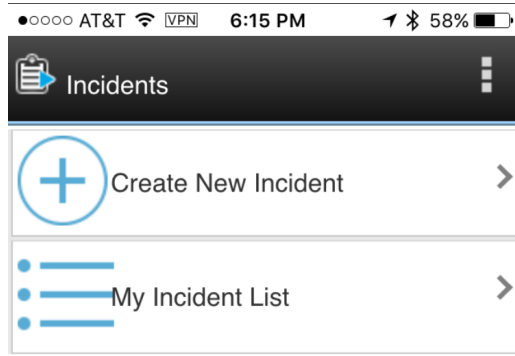


## Maximo Incident Reporter

wilson

•••••

Log In



AT&T VPN 6:17 PM 58%

### Create Incident Report

**What Happened?**

**Summary**  
Strong smell of na

**Description**  
Near tower 2 th  
strong smell of

**Category**  
MAJOR

**Type**  
LEAKAGE

Safety Observation Type

Cancel Create

- Pick from Gallery
- Take Photo
- Settings
- About
- Log Out





AT&T 8:22 PM 33%

Attachment Details

Name \*  
Leaking Hose Junctio

Description  
The second hose from the right





Folder  
Attachments


File Type  
jpg

File Size (KB)  
522

Cancel Save



●○○○○ AT&T  6:18 PM   57% 

< Create Incident Report 

**Where did it happen?**

Capture GPS coordinates?


Street Address

\_\_\_\_\_

City

\_\_\_\_\_





State


Tap to enter 

Address Description

\_\_\_\_\_ >

Cancel Create


●○○○○ AT&T  6:19 PM   57% 


< Create Incident Report 

Address Description


\_\_\_\_\_ >


Location

Tap to enter 



Asset

Tap to enter 



Cancel Create



Who was involved? -- + >

### Add Persons Impacted

Name

Phone

E-mail

Person Role

Tap to enter

Cancel Create

#### Select Value

Injured/ill	Indicates that the person was injure...
Primary	Incident is a direct result of the acti...
Secondary	Incident is an indirect result of the a...
Witness	Indicates that the person is a witness

Cancel Clear Value



●○○○○ AT&T 6:21 PM 57%

← Create Incident Report

Asset

Tap to enter

Who was invol... 1

Action Taken

Action Taken

Action Taken Comment

Cancel Create

●○○○○ AT&T 6:21 PM 57%

Select Value

5

AUTHORITY Reported to Authority

SOLUTION Temporary Solution in P...

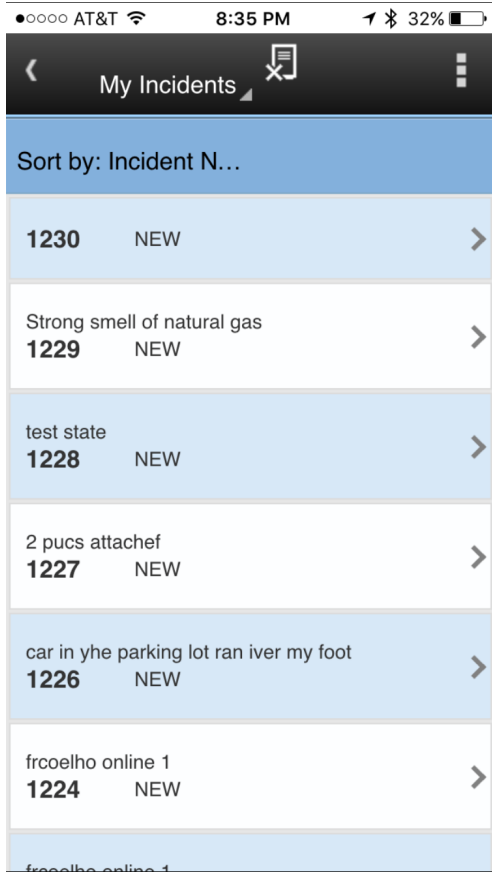
SUPERVIS... Reported to Supervisor

VICINITY Warning Placed in Vicinity

VIOLATION Advised Violator of Viol...

Cancel Clear Va...





Welcome, Mike Wilson

Administration | New Template | Report Admin

Find Navigation Item

Go To Applications

- My Recent Applications
- Administration
- Analytics
- Assets
- Change
- Change (Oil)
- Contracts
- Financial
- IT Infrastructure
- Integration
- Inventory
- Operations (Oil)
- Planning
- Preventive Maintenance
- Purchasing
- Release
- Safety and Quality Manag...
- Security
- Self Service
- Service Desk
- Service Level
- System Configuration
- Task Management
- Work Orders

### Incident Reporting Center

- Safety Observation - Near Miss
- Hazard Report - Near Miss
- Injury-Illness - Minor
- New Incident

### Security, Users and Groups

- Users
- Security Groups
- People
- Person Groups

### Workflow Configuration

- Workflow Designer
- Roles
- Actions
- Communication Templates
- Workflow Administration
- Escalations

### Reporting

- Report Administration
- KPI Manager

### Bulletin Board

There are currently no bulletin board messages to view.

### Major Leak Incidents

Reported Date	Incident	Reported By	Phone	Incident Category	Incident Type	Summary
9/15/16 8:15 PM	1229	WILSON	(617) 555-9017	MAJOR	LEAKAGE	Strong smell of natural gas

1 - 1 of 1

### Inbox / Assignments

No Assignments found for Mike Wilson

### PM vs CM Work - All Work Orders (%)

Last Run: 9/15/16 9:36 PM

PM Performance (%)

Status	KPI	Actual	Target	Variance
-	PM Performance (%)	0	95	-95

### Bedford Work Orders

Chart Type: BAR

View By: Priority



Incident: 1229 | 
 Owner: | 
 Owner Group: | 
 Incident Type: LEAKAGE | 
 Incident Category: MAJOR | 
 Safety Observation Type: | 
 Status: NEW

Address Information

User Information

Incident Details

Summary: Strong smell of natural gas | 
 Site: BEDFORD | 
 Reportable?  | 
 Classification: | 
 Class Description:

Details:   
 Near tower 2 there is a strong smell of natural gas

Action Taken: AUTHORITY | 
 Action Taken Details: Reported to Area Supervisor

Reported Priority: | 
 Internal Priority: | 
 Is Defect?  | 
 Investigation Required?  | 
 High Context?  | 
 From Review Required?  | 
 SLA Applied?

Persons Impacted by Incident  Filter >  1 - 1 of 1

Person Impacted	Name	Phone	E-mail	Person Role	External Person?
SMITH	Roland Smith	(617) 375-88	roland.smith@interspeed.net	Witness	<input type="checkbox"/>

Select People | New Row

Attachments  Filter >  1 - 1 of 1

Document	Description
LEAKING HOSE JUNC	The second hose from the right

Attach File | Add Link to Web Page

Risk and Consequence

Hazard: | 
 Risk Assessment:

Impact

Worldwide Incident?  | 
 Regional Incident?  | 
 Global Issue?  | 
 Related to Global ID:



**Incidents (Oil)**

Find Incident

Find Navigation Item

Go To Applications

Available Queries

All Records

All Bookmarks

Major Leaks Incidents

Common Actions

- New Incident
- Save Incident
- Clear Changes
- Change Status
- Select Owner
- Take Ownership
- Search Solutions
- Incident in queue
- Incident in progress
- Pending Incident
- Resolve Incident
- Create Report

**More Actions**

- View History
- View Costs
- Edit History Incident
- Create

Apply Incident Template

Persons Impacted

Person Impacted

SMITH

Attachments

Document

LEAKING HOSE JUNC

Risk and Consequence

Hazard:

- Service Request
- Incident
- Investigation**
- MOC Request
- MOC
- Release
- Work Order
- Improvement
- Action
- Risk Assessment
- Solution
- Communication

**Incidents (Oil)**

Find Incident

Find Navigation Item

Incident

1229 Strong smell of natural gas

Originating Record: NEW

Originating Record Class: BEDFORD

Related Tickets

Related Record Key	Description	Class	Status	Relationship
1178	Strong smell of natural gas	INVESTIGATIO	NEW	FOLLOWUP

Related Record Key: 1178 Strong smell of natural gas

Class: INVESTIGATIO

Asset:

Location:

Classification:

Select Ticket New Row



Find Investigation

Find Navigation Item

List View

Investigation

Sequence of Events

Activities

Related Records

Solution Details

Log

Failure Reporting

Specifications

After Action Review

Analysis

Available Queries

All Records

All Bookmarks

Common Actions

New Investigation

Save Investigation

Clear Changes

Change Status

Select Owner

Take Ownership

Search Solutions

Investigation in queue

Investigation in progress

Pending Investigation

Resolve Investigation

Create New

More Actions

View History

View Costs

Edit History Investigation

Create

Apply Investigation Template

Modify/Delete Work Log

Service Address

Map

Investigation:

Owner:

Owner Group:

Status:

Attachments

1178

NEW

## Investigation Details

Summary:

Strong smell of natural gas

Details:

Font:  Size:  Format: None

Near tower 2 there is a strong smell of natural gas

Internal Priority:

Reported By:

WILSON

Name:

Mike Wilson

Phone:

(817) 555-9011

E-mail:

m.wilson@helwig.com

## Sequence of Events

Filter

1 - 4 of 4

Sequence	Date	Description	Conditions	Witness	Name
▶ 10	9/14/16 9:49 PM	Spacer Displacement Complete		LIBERI	Diane Liberi
▶ 20	9/15/16 9:51 PM	Annular Preventer Closed, bleed Drill pipe pre		KELLER	John Keller
▶ 30	9/15/16 9:51 PM	Drill Pipe pressure decreases to 200 PSI		KELLER	John Keller
▶ <input type="text"/>	9/15/16 9:51 PM	Negative Pressure Test	<input type="text"/>	KAZMIER	Tom Kazmier

New Row



Find Investigation

Find Navigation Item

- Go To Applications
- Available Queries
  - All Records
  - All Bookmarks
- Common Actions
  - New Investigation
  - Save Investigation
  - Clear Changes
  - Change Status
  - Select Owner
  - Take Ownership
  - Search Solutions
  - Investigation in queue
  - Investigation in progress
  - Pending Investigation
  - Resolve Investigation
- More Actions
  - View History
  - View Costs
  - Edit History Investigation
  - Create
  - Apply Investigation Template
  - Modify/Delete Work Log
  - Show Similar Tickets
  - Add/Modify Human Factors Categories
  - Apply SLA
  - View SLAs
  - Select/Deselect SLAs

List View Investigation Sequence of Events Activities Review Actions Related Records Solution Details Log Failure Reporting Specifications After Action Review

Analysis Service Address Map

Investigation: 1178 Strong smell of natural gas Site: BEDFORD Status: NEW

RCA Cause Analysis FMECA Human Factors

### Human Factors Details

Mandatory?  \*Required By: EXTERNAL Human Factors Lead: HENRY

Target Completion: 9/23/16 Approved?  Name: Earl Henry

Actual Completion:  Approved By:  Name:

Approval:

### Human Factors Results

Human Factor	Category	Subcategory	Description	Action Required?	Improvement Required?
Preconditions for Unsafe Act	Operator Condition	Physical/Mental Limitation	Operator was nearing the end of a 24 hour sh	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### Details

\* Human Factor: Preconditions for Unsafe Act

\* Category: Operator Condition

\* Subcategory: Physical/Mental Limitation

Description: Operator was nearing the end of a 24 hour shift with no sleep

Improvement Required?  Action Required?

New Row







# Regulatory Compliance Use Case

**Regulatory Compliance (Oil)**

Find Regulator [icon] [icon] [icon] [icon] [icon]

**List View** Regulation Log Where Used

Regulation: **NFPA10** Standard for Portable Fire Extinguishers [icon]

Organization: [input] [icon] Site: [input] [icon]

Applies To: GENERIC [input] [icon]

Regulation Owner: [input] Owner Group: [input]

Status: ACTIVE

Regulation Type: SAFETY [icon] Attachments [icon]

Status Date: 4/20/17 5:40 AM

Regulation Number: NFPA10 Valid From: 4/20/17 [icon]

Regulation Sub-Section: [input] Expiration Date: [input] [icon]

Safety Critical Element: [input] [icon]

External System Reference: [input]

Regulatory Authority: National Fire Protection Association

Insurance Requirements?

Regulatory Region: [input] Supports Safety Case?

Regulatory Country: United States

Safety Case Reference: [input]

Details:

Font [input] Size [input] Format None [input]

Use Import  
Functionality to load  
related regs



## Associate Regulations to different Objects

Regulatory Compliance (Oil) | Mike Wilson

Find Regulation

List View | Regulation | Log | **Where Used**

Regulation: NFPA10 | Standard for Portable Fire Extinguishers | Status: ACTIVE | Organization: | Site:

Assets | Locations | Job Plans | Hazards | Permit and Certificate Types | Operating Policies | Operating Procedures | Items | PMs | Audit and Survey

Assets | Filter | 1 - 1 of 1

Asset	Description	Site
1004	Fire Extinguisher	BEDFORD

Report / Query within the related objects using advanced search to:

1. Track Compliance Cost
2. Prove Compliance during audit
3. PMs to Schedule the Compliance Work



Associate Regulations to different Objects

**Regulatory Compliance (Oil)**

Find Regulation

Regulation: NFPA10 Standard for Portable Fire Extinguishers Status: ACTIVE Organization: Site:

Assets Locations Job Plans Hazards Permit and Certificate Types Operating Policies Operating Procedures Items PMS Audit and Survey

**Work Order Tracking (Oil)**

Asset: 1004 Fire Extinguis

Find Work Order

Work Order: Site: BEDFORD Status: WAPPR

Regulations

Regulation	Description	Regulation Number	Regulation Type	Regulatory Authority	Applies to Work Order?
There are no rows to display.					

Select Regulations New Row

Work Order

**Preventive Maintenance (Oil)**

Find PM

Find Navigation Item

Go To Applications Available Queries

All Records All Bookmarks RSB1 Common Actions New PM Save PM

PM: MPM-6767 Fire Extinguisher Master PM Site: BEDFORD Status: DRAFT

Regulations

Regulation	Description	Regulation Number	Regulation Type	Regulatory Authority
REG41KC	Fire protection performance standard		Internal	SAFETY
NFPA10	Standard for Portable Fire Extinguishers	NFPA10	SAFETY	National Fire Protection Association

Select Regulations New Row

PMs

Watson IoT



## Questions

Kyle Harding (kharding@us.ibm.com)










Backup




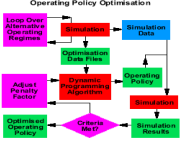
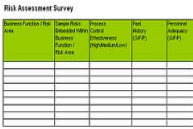
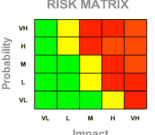

# What is Maximo Oil and Gas/HSE Manager?



Capability	Benefit
<b>Incidents</b> 	Addresses the continuous need for customers to improve operational performance by creating, reviewing, and analyzing incidents. Includes Self Service Create and Review Incidents. A mobile Incident Reporter application is also included
<b>Investigations</b> 	Allows customers to identify the root cause of problems arising from incidents on their plants that may be safety, environmental, or production related.
<b>Management of Change</b> 	Allows customers to support change requirements in a more robust way with multiple levels of reviews/approvals, authorization of change, pre and post start actions
<b>Defects, Non-Conformance</b> 	Provides non-conformance management capabilities designed to automate, manage, and streamline for identifying, evaluating, reviewing, and handling on non-conforming engineering specifications, materials, components, parts and processes.
<b>Regulatory Compliance</b> 	Identifies regulatory compliance against assets and locations and associates job plans and work orders to these regulations to ensure compliance – significantly reducing the costs associated with compliance

# What is Maximo Oil and Gas/HSE Manager?








Capability	Benefit
<b>Operating Procedures</b> 	Capabilities for documented, step-by-step operating procedures
<b>Operating Policy</b> 	Governance application for structuring your operating policy
<b>Risk Assessment</b> 	Iterative document that links all associated Health, Safety and Environment activities and organizational data. Allows customers to analyze the risks associated with work carried out through the Maximo products, identifying hazards and defining the impact ranking
<b>Risk Matrix</b> 	An application that models both probability and consequences of events supporting risk management processes
<b>Improvements</b> 	Manages continuous improvement programs like Six Sigma or similar methodologies







# What is Maximo Oil and Gas/HSE Manager



Capability	Benefit
<p><b>People (Competency Extensions)</b></p> 	<p>Improves competency assurance through capabilities for adding, modifying, and updating competencies of the workforce</p>
<p><b>Operators Log</b></p> 	<p>Electronic log used by shift operators for recording and qualifying events which occur during an individuals shift watch</p>
<p><b>People (Certification) Tracking</b></p> 	<p>Complete history of all personnel job roles, certifications, training and current qualifications</p>
<p><b>Action Tracking</b></p> 	<p>Allows customers to track statutory implications to ensure certain types of work and actions are completed by the agreed dates</p>
<p><b>Benefits &amp; Losses</b></p> 	<p>Captures benefits/losses associated with improvements or costs associated with incidents, failures, survey/audit findings</p>


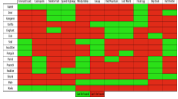


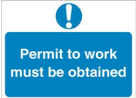

# What is Maximo Oil and Gas/HSE Manager



Capability	Benefit
<b>Failure Reporting</b> 	Reporting mechanism for capturing metrics to support consistent Failure Reporting and Corrective Action process (FRACAS)
<b>Solutions</b> 	Searchable learning repository associated with lessons learned, or with proven solutions having a safety, operational, maintenance or engineering context
<b>Defects</b> 	Integrated approach to manage or eliminate defects
<b>Bypass Management</b> 	Use to manage bypass operations, also known as inhibits, or overrides, for safety related systems such as Emergency Shutdown, Fire and Gas Systems, Alarm Panels and soft alarms on DCS systems. It can also be used to manage bypasses of mechanical systems such as sprinklers. A further use case is management of security system bypasses.







# What is Maximo Oil and Gas/HSE Manager?



Capability	Benefit
<b>Certifications</b> 	A certification record contains the details that are used to verify that standards for assets or locations are met. They can also be used to make sure that personnel are qualified for specialized tasks.
<b>Location Profile</b> 	Location profiles contain information on production data. You can use location profiles to reduce the production losses that can result from planned or unplanned maintenance shutdowns.
<b>Preparation Activities</b> 	An application to manage the preparation activities that are associated with different phases of scheduled work packages. Preparation activities are tasks that are usually carried out either before assets are put into operation or in preparation for a plant turnaround.
<b>Lock Out/ Tag Out Plan</b> 	Lock out and tag out operations specify a plan of isolation for assets or locations to ensure the safety of the plant. The plans describe how to remove work assets from service and place them back into service
<b>Permit to Work</b> 	A permit to work provides for the effective management of hazards in the work place. The permit to work is frequently used with one or more work orders. You can also generate a permit to work based on an existing work order or task.
<b>Audit and Survey</b> 	Audits are used to evaluate compliance with industry-related regulations or with internal regulations. You can use either audits or surveys to evaluate locations and assets for regulatory compliance.

# What is Maximo Oil and Gas/HSE Manager?



Capability	Benefit
<b>Operational Actions</b> 	Consolidates standard actions across multiple different applications. Supports the sign-off of completion of actions in a single place. Allows standard actions to be added to a Start Center
<b>Log Book</b> 	Provides a way to bring together individual operator logs into a Log Book. Supports the shift handover process.
<b>Isolation Management</b> 	Supports the scenario where customers want to manage isolation separately from a permit. Fully integrated with permit to work if required.
<b>Incident Reporter</b> 	A Maximo Anywhere based mobile application to report an incident, hazard or safety observation. Supports disconnected operation. Also provides the ability to view your reported incidents from the mobile device
<b>Certifications (Environmental Consents)</b> 	Extension of Certification application to support the management of environmental consents and regulatory permits.
<b>Assets &amp; Locations (FMECA Criticality)</b> 	Extensions to Assets and Locations to provide failure mode analysis and criticality analysis.