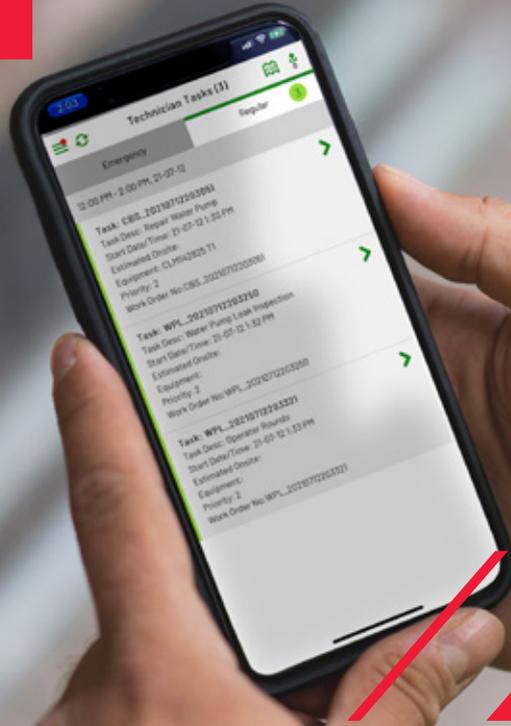> Optimize asset maintenance in the field or plant, while increasing efficiency, productivity and safety

HITACHI
Inspire the Next

Mobile field service management

Lumada FSM
# for outage management

⊚ **Hitachi Energy**

Optimize outage management
A simple solution for all types of work including emergencies and high priority jobs.

In today's rapidly changing digital world, asset-intensive industries are under increasing pressure to effectively inspect and maintain their critical assets and infrastructure. They must keep equipment up and running to reduce downtime and manage both planned and reactive maintenance requirements in an efficient manner while ensuring the reliability and safety of their equipment and personnel.

Lumada FSM from Hitachi Energy addresses these challenges with a highly scalable and intuitive application that offers improved productivity in inspections, maintenance, and repair for the service workforce through a single application. Lumada FSM equips your workforce with the tools needed to execute work orders with optimal efficiency.

Built on a platform that supports both on-premise and cloud-based deployments, Lumada FSM can be deployed as a multi-tenant SaaS application with industry leading security and disaster recovery. Providing support for Android™, iOS™ and Windows® 10 mobile device platforms, Lumada FSM allows users to view and complete work orders, rounds or inspections on a laptop, tablet, or smartphone from anywhere in the field or plant. Support for both online and offline network connectivity ensures your workforce stays productive and completes their work with optimal efficiency.
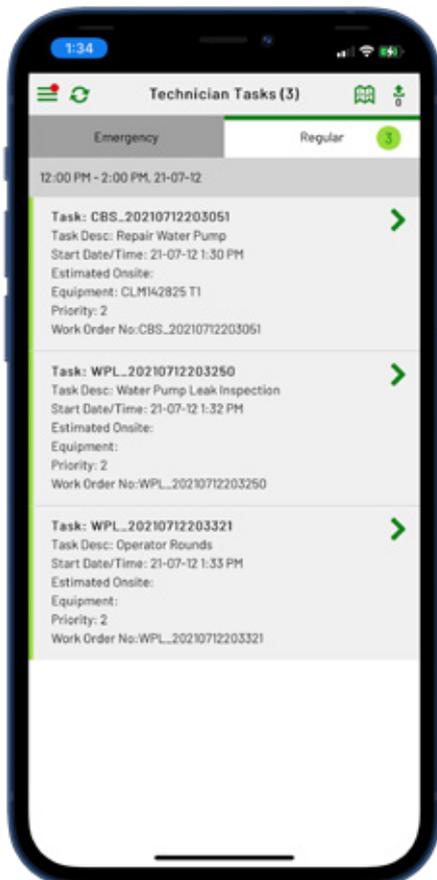
Every day, tens of thousands of technicians, supervisors, and operations personnel rely on mobile field service management (FSM) solutions from Hitachi Energy to execute work and solve their toughest operational challenges.

Using Lumada FSM for mobile execution of outage and maintenance work has proven to reduce outage duration, improve communications with the control center, and increase productivity and crew safety.

At the heart of Lumada FSM is FieldWorker, a lightweight mobile app that is purpose-built for all types of short-cycle and long-cycle work execution including maintenance, inspection, and repair activities. FieldWorker digitalizes and automates the entire work order process from order creation to completion. It plays a critical role in every aspect of the work order lifecycle, giving all operational staff - from the job site to the office – the visibility and capability to effectively execute and monitor work progress.

FieldWorker can be quickly downloaded and installed from online app stores and used on any tablet, phone or laptop device, providing greater flexibility for your workforce across the wide range of tasks they perform.

Bringing visibility and action together

Lumada Map

Lumada Map brings together information from systems such as EAM, GIS, FSM, APM and ADMS/OMS into a single, interactive and easy-to-use geospatial view. Users have intuitive access to key information in a single place without having to navigate multiple systems, interpret contextual variations, or understand data relationships. Filter and drill down into assets and asset health indicators, view technicians, crews and work orders, raise work requests and make assignments. With support for commonly used base layers such as ESRI, Bing or Google Maps, Lumada provides customers with greater choice, flexibility and personalization. Other third-party elements can also be ingested and displayed on the map such as weather and real-time traffic.

Work Assignment

Lumada FSM provides a high degree of flexibility when it comes to notifying technicians of emergency work.

- Assign emergency work directly out of the your ADMS/OMS to the crews' mobile devices.
- Assign work using the Lumada Digital Map or scheduling application. This enables you to see all crews and all types of work orders in a single view.
- Enable technicians to view and self-assign pending work from a "job jar" directly from their mobile device based on skills, location, and eligibility for the work to be performed. This eases supervisor or dispatch/planner effort and quickly provides visibility into nearby jobs.
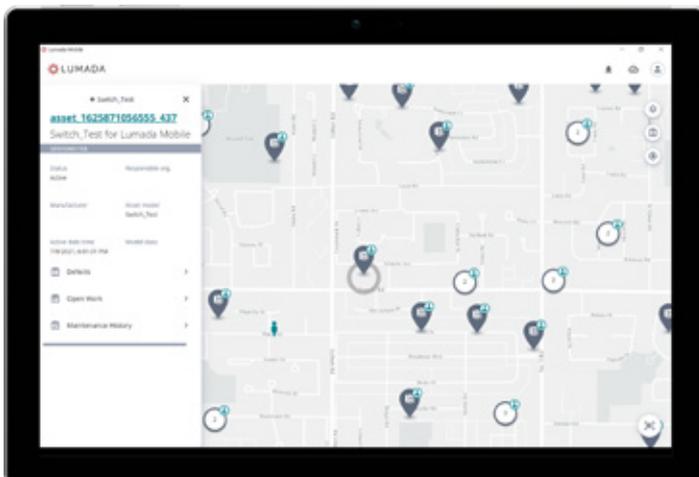
Network Viewer

Network Viewer brings as-built network visibility into the hands of crews and other field operations stakeholders. Displaying the as-operated network model is planned for future release and will provide regular updates from the ADMS system on the current state of equipment. This gives crews direct visibility into the current network state, improving safety and reducing calls to the control room. From within the application, and from any point on the network model, users can perform a downstream trace, taking into account the current switching status on the network. It highlights the traced elements of the network and, for data sets extending to the meter level, will report the number of meters traced downstream. This is not only beneficial to the crews, but also for maintenance planners to understand the impact of an asset's failure.

Personal Safety

Safety is paramount when performing work on assets. Lumada FSM helps to keep workers safe, while ensuring proper procedures are effectively followed.

- The tap of a button to sends an emergency notification to office staff or supervisors.
- GPS monitoring and route replay ("breadcrumbs") of technician movement to improve situational awareness, audits, and regulatory compliance.
- Configurable safety messages and reminders.
- Safety instructions, checklists, and guided workflows that require workers to acknowledge and follow all safety protocols and have the required personal protective equipment (PPE) to perform the job safely.
- Hands Free Inspector (HFI): Out-of-the-box integration pairs a phone or tablet to wearable computers , enabling workers to view job details and live chat with co-workers while keeping hands free to perform work safely.

Improve situational awareness by quickly locating assets and critical information.

Water utility field crews can respond faster and more effectively to service needs with interactive map-based view of assets on mobile devices.

- Asset clustering on map by type
- Offline geospatial views when network is unavailable
- Online and offline asset search capability
- View asset details, associated defects, open and completed work orders
- Quickly view asset details using barcode or QR code scanning
- Submit defects and work requests for any asset in online and offline modes

Integration

Hitachi Energy recognizes that water utilities may have a wide range of existing IT systems that Lumada FSM must talk to. Lumada FSM uses open interfaces and a modern technology stack that can be integrated with virtually any other system. Standard out-of-box integrations are available for Hitachi Energy Enterprise Asset Management (EAM) systems (Ellipse, Asset Suite and Lumada) and Outage Management System (OMS). Integrations have also been developed for customers with other systems such as Esri, IBM Maximo, Oracle, and SAP.

Feeding work order data into Lumada FSM using simple APIs ensures the workforce can execute work orders regardless of where the order originates. Bi-directional data flows, completed work orders and all data captured by the technician can be viewed or updated in an EAM system in near real-time based on data entered.

Configuration

Using a powerful, lightweight configuration tool, customers can self-manage and configure the user interface quickly and easily to save time and cost. A wide range of ensure that the design of the mobile interface can align with key workflow processes for any type of capabilities job. Changes to the interface can be pushed out to the workforce at any time to ensure they are using the latest forms and information when executing work and completing digital forms. Capabilities include:

- Out-of-the-box pre-configured forms and workflows for inspection and maintenance work.
- Dynamic/context sensitive fields to simplify workflows.
- Validation rules to enforce consistent workflows and ensure complete, accurate data is captured.
- Math computations for auto populating fields on forms.
- Configurable rules and settings for the update or completion forms that are used to capture information.
- Configurable forms utilizing filtered pick lists/checklists, multi-level dropdown menus, yes/no buttons, free text, repeating groups, signature capture, location capture, a sketch pad, etc.

Driving greater operational value

Lumada FSM is relied upon every day by asset-intensive organizations to transform the way they work and improve asset performance. The benefits are clear:
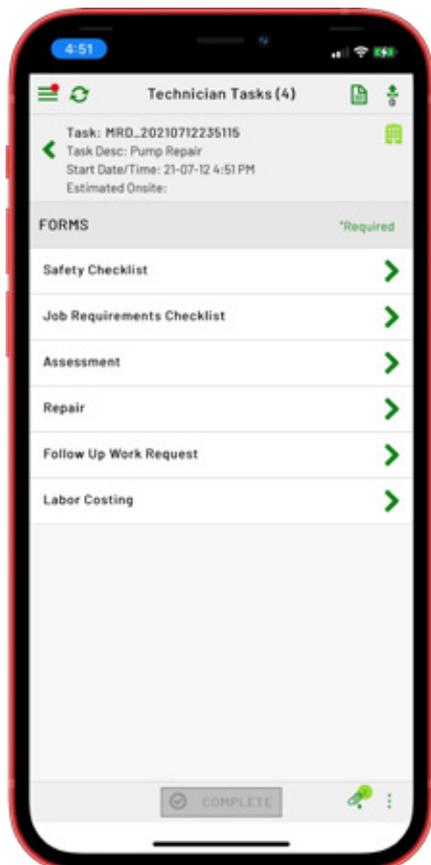
GREATER EFFICIENCY

15%-25% typical field worker productivity gains through reduced paperwork, better access to information, improved communications, offline support, and other features.

IMPROVED DATA QUALITY

Eliminate paper and paper related processes resulting in less data entry and rework and eliminating transcription errors. Capture better data to drive continual improvements in asset and worker performance. Ensure information is not lost or mishandled.

REDUCED RISK OF SAFETY INCIDENTS

Enforce best practices and pre-job safety requirements for greater situational awareness and improved communications across all operational personnel.
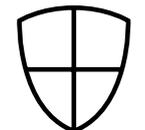
OPTIMIZED ASSET PERFORMANCE

Reduce work backlog and reactive maintenance. Respond to high priority work much faster and more efficiently. Keep your assets up and running and help optimize maintenance strategies through better work practices in the plant or field.

Key capabilities

Work assignment

Dispatch from the Outage Management System (OMS), Lumada, third-party EAM systems, or self-dispatch

Audible and visual alerts or order notifications (e.g., new, removed, modified)

Unassign, reassign/refer work from the back office or while using the mobile device

Mobile views

As-built network model; As-operated network model (in development)

List view or map view of work location and orders

Live traffic and driving directions to work orders

View high priority or emergency work separate from regular priority work

Fully configurable forms based on job codes and workflow requirements

Work details

Priorities, job codes, location, directions

Sort/filter work order views based on different criteria

Safety and work instructions

Attachments (e.g., pictures, schematics, manuals), work or asset history details

View required parts and materials

Receive real-time updates from EAM such as work order changes

Integrate and view asset sensor data and probable cause information

Receive recommended course of action or next steps

Include URLs for access to additional work details, training videos for technicians

Order actions/activities

Suspend work, clock in/out (job on/off)

Support for orders with single activities, multiple activities, or tasks

Update user status (acknowledge order receipt, on-site, available, unavailable) and reflect in EAM

Create defect requests or raise new work requests and send to EAM system

Near real-time job updates from mobile to EAM (job progress, est. time to repair (ETR/ETC))

Submit forms and work results as you progress through job

Query parts availability, conduct parts requisitioning

Query back-office IT systems (e.g., EAM, GIS) for further asset or job details

Wearable computing to view job information hands-free, or communicate with other staff

Work order completion

Capture all details of work performed; validation rules to enforce accurate data capture

Easily configure and associate forms to any inspection or repair procedure

Use as many or as few forms as required to execute work and capture results

Automatically capture and submit timesheet data or timestamps for all activities

Use dynamic fields to simplify data capture and streamline form layout

Speech-to-text to automate data capture on certain fields on forms

Support for taking pictures, asset barcode/QR code scanning, GPS coordinate capture

Capture signature to verify work completed

Record parts/materials used, validate or comment on job instructions/steps

Complete and close out work or utilize a multi-step work order review and completion process

Device / communications

Out-of-box integration with Hitachi Energy's Outage Management System (OMS) and Lumada EAM

Ability to integrate with any third party EAM or other back-office system (e.g. Esri GIS)

Online and offline/disconnected support - seamlessly move in and out of coverage

Emergency/safety notifications or alerts sent to OMS in case of safety incidents

Works with any cellular or Wi-Fi network technology

Email and/or text notification to other personnel on job status

Support for iOS, Android and Windows 10 operating systems

Outage management powered by Lumada.

More than a system. An ecosystem.

LUMADA APM
Asset Performance Management

APM is designed to provide health and performance insights to prevent critical asset failures while optimizing asset lifecycle costs. Leverage online and offline data to drive more intelligent, risk-based approaches to asset management.

LUMADA EAM
Enterprise Asset Management

EAM delivers business outcomes at a sustainable and superior cost of operations and capital investment. EAM instills best practices and processes to help you manage assets from day to day and throughout their lifecycle.

LUMADA FSM
Field Service Management

FSM is a highly scalable and intuitive inspection, maintenance, and repair application. Designed for asset-intensive environments like substations, FSM equips mobile users to execute work orders in the field with optimal efficiency.

FSM is part of the Lumada portfolio for asset and work management, software that enables asset-intensive industries to be more adaptive, collaborative, insightful and predictive. More than a system, it's an ecosystem that embraces your existing technologies, enabling you to gain the benefits of the latest technological advances without sacrificing the investments you have already made.

 The Lumada software portfolio offers the latest in development and delivery paradigms, with a modular architecture that is designed to support customer needs for agile delivery in a changing market. Customers can deploy precisely what is needed, when it is needed—this "selective consumption" model liberates customers from the forced "rip and replace" upgrades of the past.

These solutions are interoperable with our customers' investments in other complementary solutions. For maximum flexibility and choice, Lumada solutions are available via the cloud or on premises.

PROVEN OPERATIONS AND INFORMATION TECHNOLOGY SOLUTIONS

CONTROLLING & PROTECTING

30%

OF THE NETWORKS GLOBALLY

ANALYZING & OPTIMIZING

$4T

OF ASSETS EVERY DAY

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