KELTON

Delivering Measurement Excellence

Smart Asset
Management

Smart Asset Management

Transform your flow measurement data into remotely accessible insight.

- ✓ Prove flow measurement system performance and compliance.
- ✓ Increase reporting speed and accuracy.
- ✓ Reduce unproductive labour costs.
- ✓ Make better-informed decisions.
- ✓ Be certain about your uncertainty.

Smart Asset Management.

The fully integrated intelligent digital flow measurement solution for the global energy industry.

✓ **Connected.**   ✓ **Intelligent.**   ✓ **Accessible.**   ✓ **Secure.**   ✓ **The single solution.**

Smart Asset Management.

Smart Asset Management is the intelligent digital flow measurement solution for the global energy industry.

Seamlessly interfacing with your metering systems and data transmission points, or your existing data lake, Smart Asset Management brings all your flow measurement data together and, with its powerful and proprietary intelligent calculation tools and cloud-based processing capabilities, transforms your measurement data into remotely accessible insight.

Through its single cloud-platform interface and five connected and configurable modules, Smart Asset Management:

✓ provides **real-time insight** on your assets' performance

✓ proves flow measurement system **performance and compliance**

✓ **supports decision-making** and resource allocation

✓ **reduces unproductive** and unnecessary labour **costs**

✓ **increases reporting speed** and accuracy, including the validation of production reporting to help expedite customer invoicing and **improve transaction times** and cash flow

✓ helps you to **extend maintenance windows** through predictive and **performance-based maintenance** routines.

Smart Asset Management

Always up to date - all in one annual license.

Smart Asset Management is available via a single annual license fee.

As part of your annual license, you will have access to our dedicated support team and resources to ensure you always get the most from your system.

As a cloud-platform solution, you will also benefit from all module updates and enhancements as soon as they are implemented. That is why we call it an *evergreen* solution.

Smart Asset Management.

Transform your flow measurement data into remotely accessible insight with the next generation asset integrity management system.

1. Data Acquisition and Communication. (p.4-5)

- Lightweight intelligent data acquisition.
- Secure cloud-based communication.
- Delivering technically defensible data.

5. Performance Based Monitoring. (p.12-13)

- Live uncertainty.
- Predictive maintenance.
- Extend maintenance windows.

2. Flow Measurement Management. (p.6-7)

- Instrument management.
- Meter proving.
- Meter performance logs.

**One platform.
5x connected and
configurable modules.**

4. Complete Activity Management System. (p.10-11)

- Inspection management.
- Maintenance management.
- Audit tracking and reporting.

3. Automated Metering Reporting System. (p.8-9)

- Emissions reporting.
- Fiscal exposure management.
- Mismeasurement reports.

- ✓ Prove flow measurement system performance and compliance.
- ✓ Reduce unproductive labour costs.
- ✓ Increase reporting speed and accuracy.
- ✓ Be certain about your uncertainty.

www.kelton.co.uk/smart-asset-management

Data Acquisition and Communication

Next generation intelligent edge-based data acquisition and secure communication technology.

Digitalising the metering discipline.

The Fourth Industrial Revolution is shaping every aspect of our lives, for example, through Cloud computing and Artificial Intelligence.

By connecting physical assets such as machines with digital systems, businesses can generate accurate insights, respond in real-time to challenges, perform remote surveillance, and become more efficient.

In the oil and gas industry, digital transformation will revolutionise how we supply energy to the world and support the activities involved in doing this.

Keton has worked extensively with many international and national oil and gas companies to help transition metering to a digital and automated future.
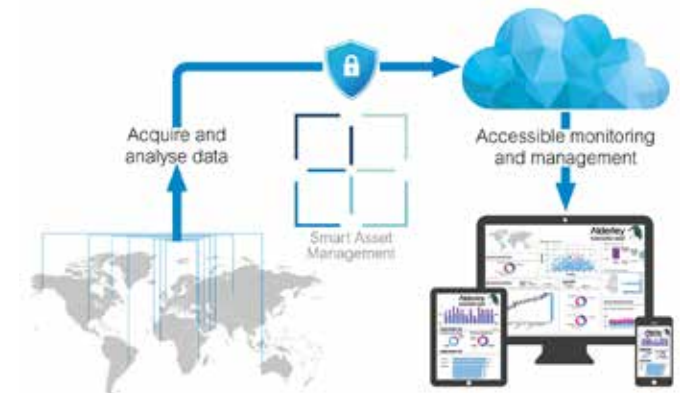
The data resolution challenge.

Having access to the data is one thing. Ensuring the accuracy and technical defensibility of the data is another.

Valuable data is generated from field devices that can be utilised to help make better business decisions.

However, traditional metering system architectures are not always equipped to provide the real-time process control and diagnostics data needed to support these decisions.

Traditional systems are typically designed with a multi-layered approach where data is handed-off between many different systems before being consumed for analysis (in some cases there are more than 20 data 'hops').

This architecture can lead to data distortion and poor data quality causing trust issues for users of the data.

In addition, many of these systems leave rich multivariable diagnostics data stranded within the field devices.

Making data visible with a lightweight solution.

Connect, a next generation intelligent edge-based data collection system, was developed specifically to make all your data visible and at the highest possible resolution.

As a lightweight edge-based solution, Connect assesses your data at the point of acquisition and conducts some key calculations at the edge, only publishing the necessary changes and results to Smart Asset Management to inform the intelligent analysis and automated reports.

It's this lightweight model which means Connect can be applied to all your measurement assets and data transmission points - wherever they are in the world.

Connect

- Lightweight intelligent data acquisition.
- Secure cloud-based communication.
- Flexible and scalable to connect with all your measurement devices.
- Delivering auditable, traceable, high resolution, technically defensible and globally accessible data.

Delivering high resolution and technically defensible data.

If your asset information is currently stranded at site and not already accessible through a data lake, Connect can be deployed to collect and translate any digital or analogue input to any output.

For example, Connect can interface with flow computers, transmitters, meters, and gas chromatographs, translate the data, and securely publish it into Smart Asset Management via the cloud.

This provides the real-time, high resolution and technically defensible data needed to transform your measurement data into remotely accessible insight.

Flow Measurement Management.

Everything you need to digitally record, statistically validate, and prove your measurement activity.

Flow Measurement Management

Containing a comprehensive library of flow measurement calculations and centrally manageable and accessible entry forms, Flow Measurement Monitoring gives you everything you need to record, validate, and prove your measurement activity.

- **Instrument management**: centrally control all your measurement instrument validation activities and support audits.

- **Meter prove**: manage proving activities and validate each prove with robust statistical techniques.

- **Electronic logbook**: securely record the history of all events relating to your measurement system.

- **Document management**: access all system related documentation when and where you need it.

Instrument management manages and records all activities relating to the validation of your metering system, such as flow computation and instrument calibration. This flexible application can be configured to match calculation options, calibration procedures, resolution, and tolerances, and provides a traceable and auditable record of all measurement activity to prove compliance.

Meter prove tracks the performance of all pulse generating flow meters and contains a powerful tool utilising robust statistical techniques to validate each prove.

As the validation criteria may differ between metering stations, the application can be configured to match the chosen method including control charts, performance curves and deviation from previous proves.

The full history of all events related to your measurement system is automatically recorded and stored in the integrated **electronic logbook**.

The logbook can be filtered, sorted, searched, and accessed across your network for complete visibility and transparency.

Document management controls all the documentation required to manage your metering system.

All relevant supporting information, including dispensations and measurement results, are tracked, and safely stored in a central repository for easy access and retrieval.

Automated Metering Reporting System.

Dynamic and fully auditable automated reporting of your flow measurement system performance.

- Emissions reporting.
- Fiscal exposure management.
- Mismeasurement reports.
- Deviation and dispensation reports.

Fully automated and auditable reports.

Many of your mandatory and often manual reporting processes, such as: ETS emissions reporting; mismeasurement, dispensation, and deviation reporting; and fiscal exposure reporting, can be fully automated - saving you time and money and reducing the risk of manual error.

In addition, with fully traceable and technically defensible data, the accuracy and timeliness of reporting improves - letting your teams assess the information and make decisions to improve performance, and enhancing process and transaction time of allocation reports to speed-up invoicing and therefore cash collection.

Emissions reporting.

Smart Asset Management's cloud-based Emissions Reporting System fully automates your emissions monitoring plan and reporting requirements.

Seamlessly connecting with your existing data lake or directly with your onsite data transmission points using our secure edge solution, and using specialist and traceable measurement uncertainty calculations, the Emissions Reporting System continually assesses your emissions performance.

Through dynamic and fully auditable reporting of your flow measurement system uncertainty, emission factors (in compliance with

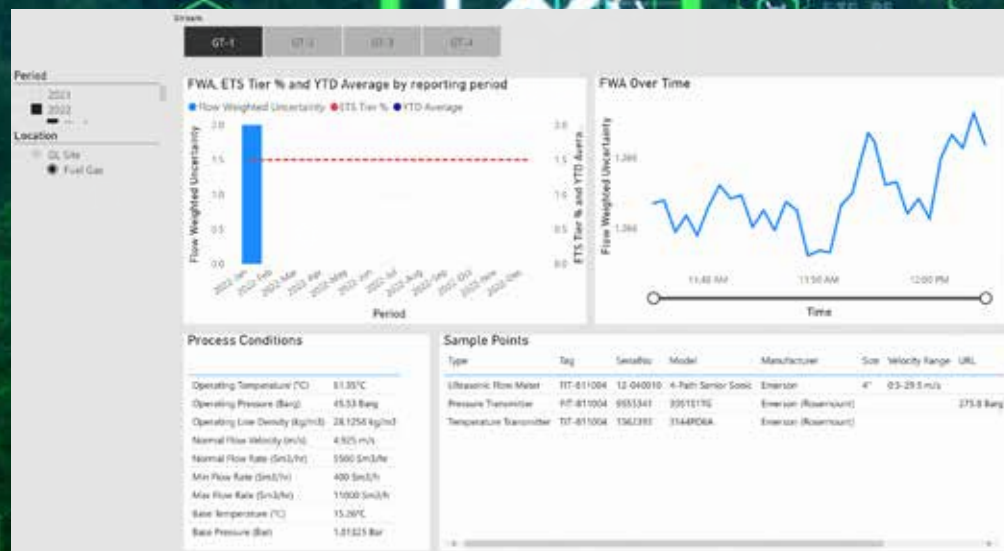*"This software has fully automated our ETS reporting, saving us 40+ man hours a month."*

Metering Technical Authority, UK North Sea

international standards such as BS 8609:2014 Natural Gas – calculation of carbon dioxide emission factors from composition), net calorific value and CO_2 mass tonnes, you can be assured of your emissions performance and prove ongoing compliance.

With automated report generation – aligned to your ETS submission requirements – you will save significant time and money versus traditional manual data collection, consolidation and reporting processes while optimising the resolution and technical defensibility of your measurement data.

Emissions Reporting System: features and benefits.

- ✓ A fully automated and auditable emissions monitoring and reporting solution.
- ✓ Utilises proven and traceable calculations to assess ongoing performance and prove compliance.
- ✓ Automated report generation aligned to your ETS submission requirements, accessible when and where you need them through a web client browser interface.
- ✓ Flexible and scalable to cover all your emissions monitoring and reporting requirements including options to integrate with vent and flare sensors for the reporting of NOx and SOx, among others.
- ✓ Part of the Smart Asset Management suite.
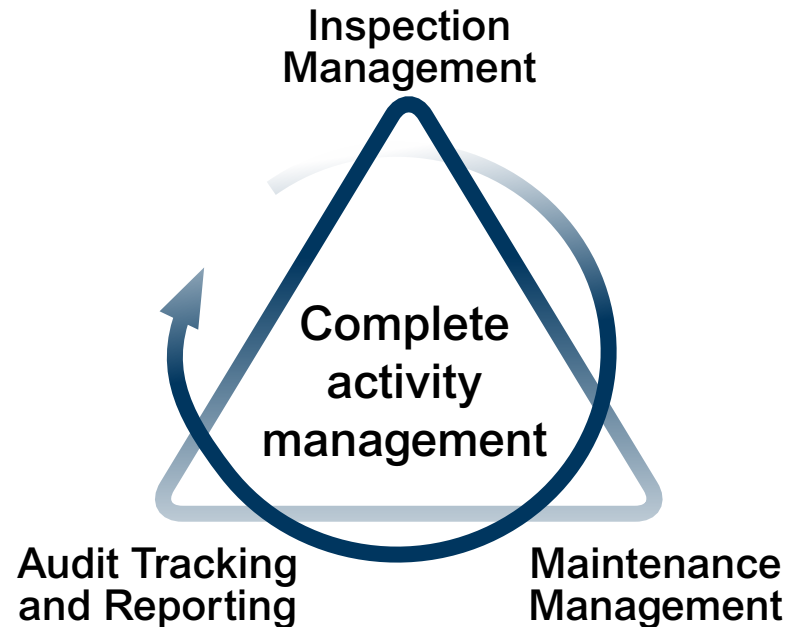
Complete Activity Management System.

A fully digital activity management solution to support the planning and completion of all site work.

Activity planning and management.

When any site activity is required, it is beneficial to have all relevant information to hand - for both the scheduling and the effective completion of campaigns.

Smart Asset Management's complete activity management system is the fully digital software solution to support the planning and completion of all maintenance, inspection, audit, and associated site activities.

It does this by placing all digital asset information, activity scheduling and progress reporting at your fingertips.

Inspection Management

Complete activity management

Audit Tracking and Reporting

Maintenance Management

Built-in scheduling.

For asset managers and planners, workflows and tasks can be scheduled and push-deployed to the on-site inspectors, maintenance technicians and auditors via syncing.

Workflows and schedules can also be automatically configured through the assignment of asset classifications or through predictive and performance-based monitoring - combining digital intelligence with on-site expertise.

On-site performance.

On-site, maintenance technicians, inspectors and auditors can access all key information via a zone-rated tablet device.

This gives site personnel an easily searchable digital document library and fully rendered and navigable asset graphics – enhancing the speed, efficiency and performance of maintenance, inspection, and audit activities.
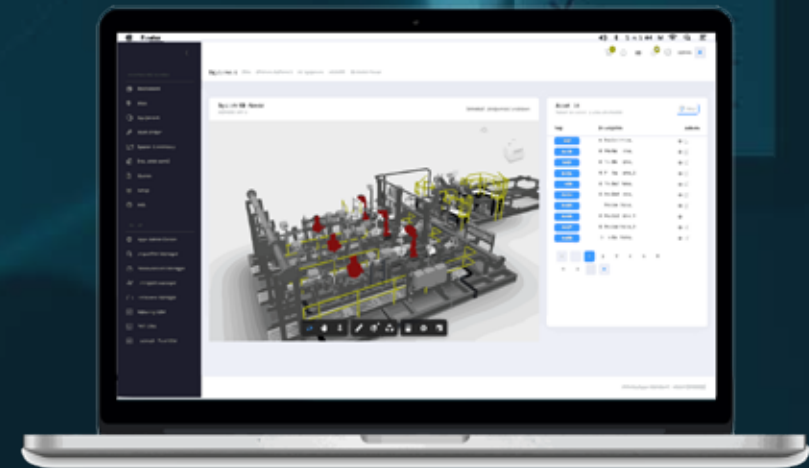
Typical asset information includes:

- operation and maintenance manuals.
- general arrangement diagrams.
- inspection and maintenance records.
- parts listing with spares ordering.
- push-deploy support requests to approved service providers.

Consistent and 2-way feedback.

With centrally standardised forms and two-way feedback, including the ability for on-site personnel to action workflows and upload relevant information and media directly into the tablet device, efficiency, traceability, visibility, completion, and security are all taken to the next level.

Connect to your ERP.

In addition, Smart Asset Management's activity management solution can connect to your existing ERP system, such as SAP or Maximo, to access parts information and resource availability. This means all your site activity can be truly managed through the one solution.
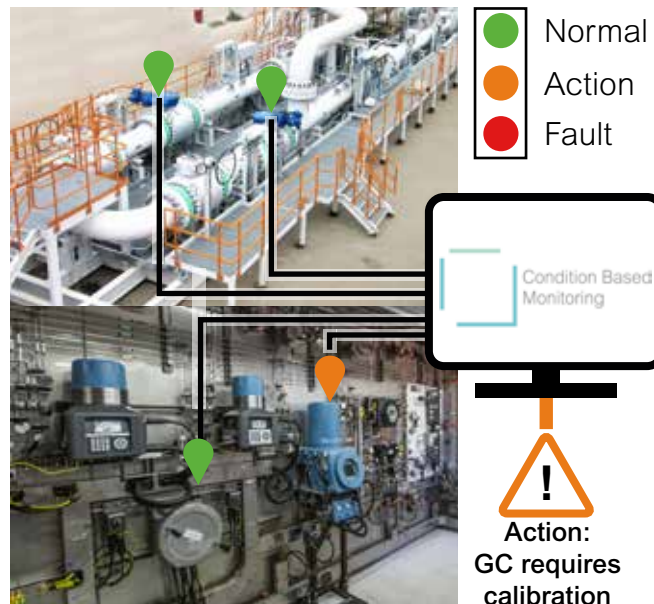
Performance Based Monitoring.

Next generation CBM integrated with real-time live uncertainty analysis to ensure ongoing performance.

Performance-based monitoring.

Through continuous assessment of your equipment, Smart Asset Management's innovative Performance Based Monitoring solution supports the early detection of potential problems with your assets.

It does this by combining all the benefits of a world-class condition-based monitoring system, such as 24/7 monitoring, automated alerts and clear traffic-light status indicators, deep-dive diagnostics, multi-layer analysis and built-in troubleshooting, with real-time asset performance monitoring.

This helps operators to immediately identify and take steps to resolve an issue, and highlights its potential operational, financial, and environmental impact to support decision-making and the effective prioritisation of resource.

Normal
Action
Fault

Condition Based Monitoring

!
Action:
GC requires
calibration

Extending maintenance windows.

Metering devices need to be shipped to an accredited calibration facility for recalibration. With a lack of performance-based insight, this is often time-based and typically occurs every 12 months. This happens even if the device is operating well within its required tolerances.

Swapping out primary meters and analysers for calibrations can sometimes result in costly damages during transit, and will result in the entire meter-run needing to be vented - releasing methane emissions on gas systems.

Smart Asset Management allows the operator to utilise the real-time performance data from their metering equipment to understand how and where they can potentially extend a maintenance or calibration window.

By understanding current and historical device performance, combined with the desired tolerances and existing time-based maintenance schedules, the operator can provide the proof needed to move from a time-based schedule to a risk- and performance-based schedule.

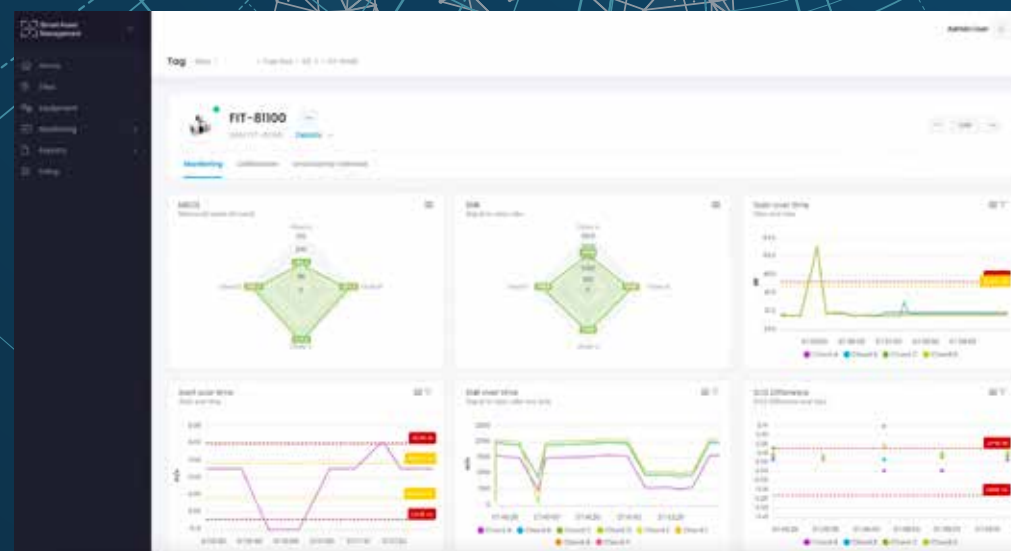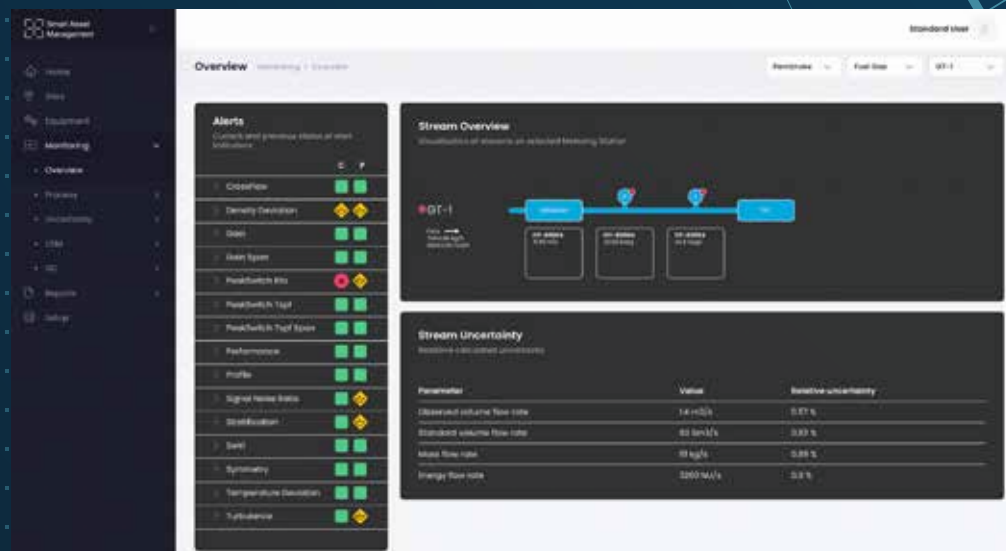# Remote diagnostics and support.

With all information available remotely, your measurement team - wherever they are in the world - can securely access all your asset information to support the ongoing performance of the flow measurement system.

If you need further assistance, Kelton's measurement experts can provide a remote monitoring service to ensure ongoing system performance and deep-dive diagnostics to identify the root cause of any issue, if found. Furthermore, and supported by your measurement or onsite team, Kelton's experts can perform remote troubleshooting to resolve the issue.

If an issue requires manual intervention, Kelton's remote team are again on hand to support.

Utilising the latest handsfree communication technologies, Kelton's offsite experts can guide your onsite personnel through the correct troubleshooting process to remedy the issue or obtain further insight to ensure a prompt resolution if expert mobilisation is needed - saving you time and money and avoiding unnecessary site visits.

Smart Asset Management

Why Kelton?

The energy industry's consultancy partner.

Assured performance

Leading inspection and audit services to give you the assurance you need in your flow measurement system performance.

Certified compliance

Independently certified proof that your system conforms to the relevant standards, guidelines and commercial agreements.

Simplifying uncertainty

UncertaintyPlus validates and proves the actual uncertainty performance aligned to the required standards.

Complete control

Connecting seamlessly with your flow measurement assets or data lake, Smart Asset Management gives you complete visibility and control of your performance, wherever you are.

Delivering calculation confidence

Spearheading industry standards, FloCalc breaks through the complexity of flow measurement calculations to provide the confidence you need.

Delivering peace of mind

With an intimate knowledge of operational best practice, Kelton is your trusted partner for ongoing system support.

Consultancy services from Kelton.

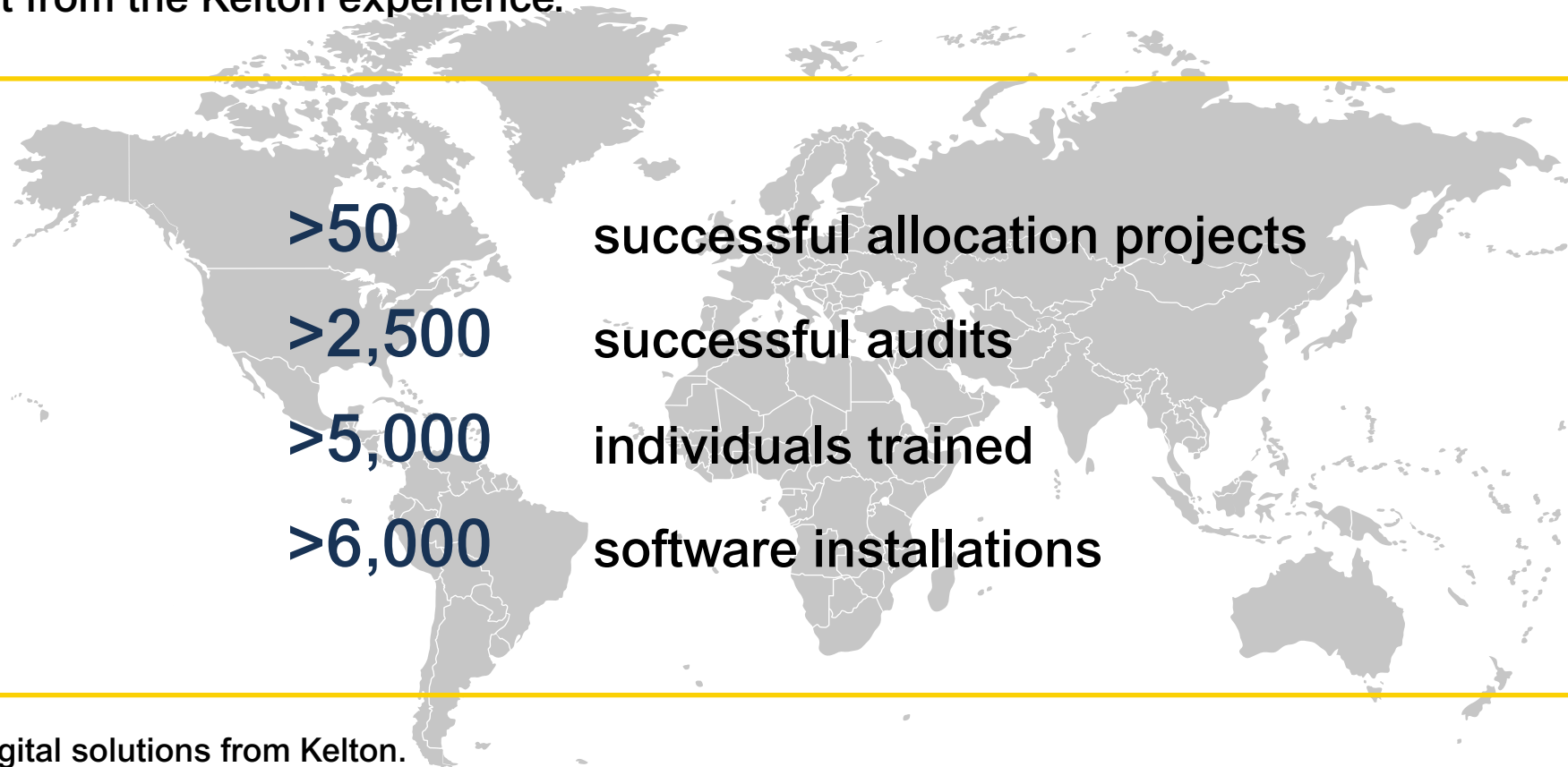| System Compliance	System Assurance	System Support
• Inspection	• Design uncertainty	• Support partnerships
• Audit	• Modelling	• Training
• Certification	• System uncertainty	• Manuals/Procedures/ Guidelines

Benefit from the Kelton experience.

>50	**successful allocation projects**
>2,500	**successful audits**
>5,000	**individuals trained**
>6,000	**software installations**

Other digital solutions from Kelton.

FLOCALC

The most comprehensive set of calculations available to flow measurement engineers

UNCERTAINTYPLUS

The desktop solution to remove the uncertainty from your uncertainty modelling

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ISO 14001
ISO 45001

INTEGRATED
MANAGEMENT