
COSOL
Maximo Data Chaos:
Why It Happens and How to Fix It

Introducing COSOL

We are a global provider of end-to-end asset management solutions that enable asset-intensive organisations to get the best from their people, process, systems and data.

Company Name	COSOL Limited
Structure	Public - ASX:COS
Years in Business	25+ years
People	430+ professionals globally

IBM Gold Partner

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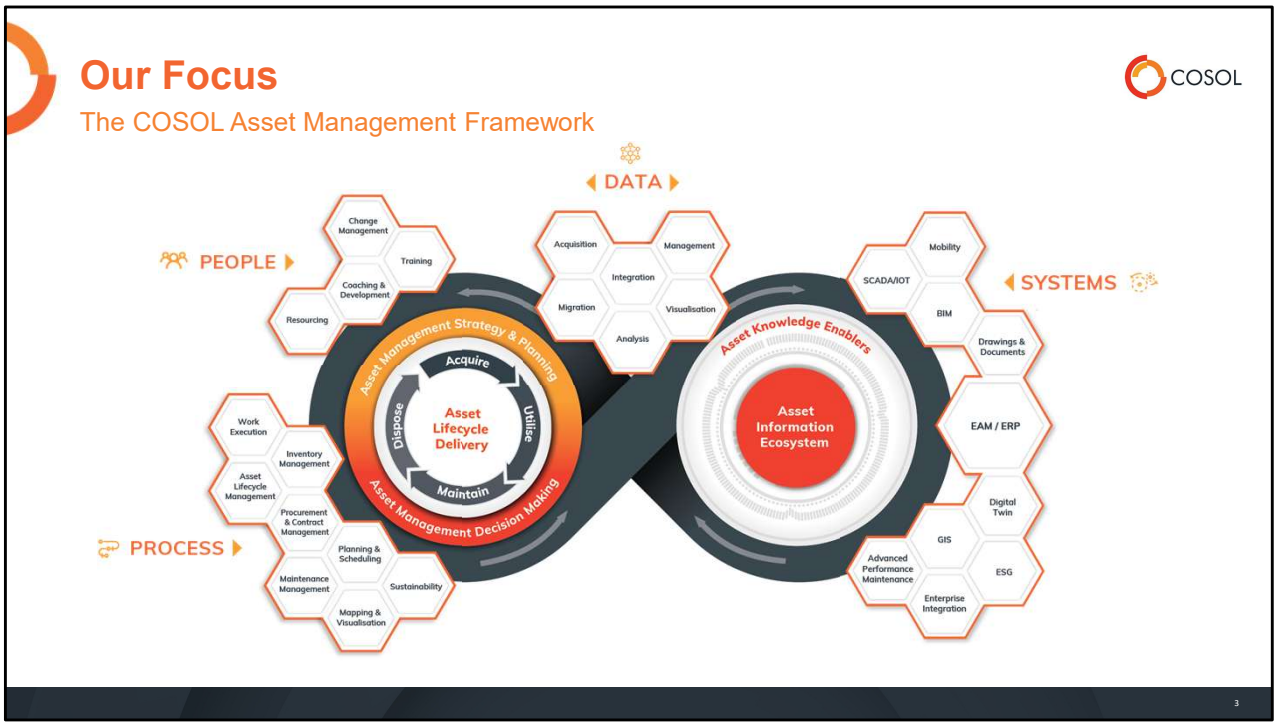
COSOL Limited is a global asset management solutions provider with over 25 years of industry experience. As an ASX-listed company (ASX:COS), COSOL employs 430+ professionals worldwide and maintains offices in Australia (Brisbane headquarters) and North America (Denver).

The company's IBM Gold Partner status provides privileged access to Maximo expertise, product roadmaps, and IBM development collaboration. This partnership ensures clients receive solutions built on current best practices with future platform compatibility. COSOL's methodology addresses asset management through four integrated areas: people, processes, systems, and data. This holistic approach is essential for sustainable improvements, particularly in data quality initiatives where technical solutions require supporting changes in governance, user behavior, and operational procedures to achieve lasting results.



The COSOL Asset Management Framework centers on two interconnected cycles: Asset Lifecycle Delivery (Acquire, Utilize, Maintain, Dispose) and the Asset Information Ecosystem. Each lifecycle phase generates and consumes data, creating dependencies disrupted by data quality issues.

The framework's four dimensions—People, Process, Systems, and Data—require holistic integration for sustainable improvement. People involves change management and training for data standards. Process covers work execution, inventory, maintenance planning, and procurement dependent on accurate data. Systems includes mobility, SCADA/IoT, EAM/ERP, and digital twins that are only effective with quality data. Data encompasses acquisition, management, integration, and analysis enabling all other elements.
This framework explains why technology-only solutions fail. Sustainable data quality requires coordinated changes across all dimensions with governance structures maintaining long-term standards. Poor data quality creates cascading effects throughout the asset management ecosystem, impacting maintenance scheduling to regulatory compliance.

COSOL serves asset-intensive industries where data quality significantly impacts operations and finances. These sectors involve substantial capital investments where maintenance decisions affect safety, compliance, and efficiency.

These are some of our customers in The Americas. We have many more customers, across all industries worldwide.

COSOL has several signature solutions as well as proprietary software. In addition to hosting, implementing, and supporting Maximo, we have powerful data management tools to support your business.

COSOL Maximo Services

- Data Management Tools
- Maximo Inventory Optimization
- Hosting
- Upgrades (“Fast Pass to MAS”)
- Integrations
- Maximo support – Managed or Ad Hoc
- Mobile selection workshops
- Advanced Analytics with ML and AI

COSOL's Maximo services address data challenges throughout the Maximo lifecycle, recognizing that quality issues stem from both technical and operational factors requiring comprehensive solutions.

Data Management Tools provide automated profiling, validation, cleansing, and loading specifically for Maximo's structures and business rules. Unlike generic tools, these understand Maximo's unique asset hierarchies, work management, and inventory relationships.

Maximo Inventory Optimization COSOL is IBM’s primary partner for MIO worldwide. MIO can deliver ROI within one year of first deployment, and our experience bears that out.

Hosting services ensure proper Maximo configuration and maintenance supporting data quality objectives through system optimization and performance management.

Upgrades, including "Fast Pass to MAS," resolve data inconsistencies accumulated over years of usage. COSOL's methodology incorporates comprehensive cleansing for clean platform transitions.

Integration services prevent data quality problems at source by implementing robust

patterns and validation at integration points where external systems feed Maximo.

Support offerings include ongoing data quality monitoring, while mobile workshops ensure field collection processes support quality objectives.

Advanced Analytics with ML/AI provide intelligent monitoring and predictive insights about potential data issues before operational impact.

Agenda

- Why is good data so important
- Why bad data happens in Maximo
- The business impact
- Why traditional fixes fail
- How COSOL solves it

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Why Does it Matter?

- Predictive maintenance depends on accurate input
- Reliability-centered maintenance relies on data integrity
- Analytics and continuous improvement require trustworthy data
- Maintenance planning and scheduling break down without it
- Digital maintenance tools depend on structured data

*Modern maintenance is no longer reactive. It's **data-driven**, and **data quality** is what makes the difference between firefighting and optimization.*

1. **Predictive Maintenance Depends on Accurate Input** Condition-based monitoring and failure prediction require reliable meter readings, accurate failure codes, and complete maintenance history. Bad or missing data causes false positives, missed degradation trends, and unreliable forecasts.

2. Reliability-Centered Maintenance (RCM) Relies on Data Integrity RCM uses historical data to define optimal PM intervals, risk profiles, and criticality rankings. Incomplete or inconsistent records prevent confident reliability assessment or intervention prioritization.

3. Analytics and Continuous Improvement Require Trustworthy Data Teams use dashboards and KPIs to optimize wrench time, MTTR, and PM compliance. Poor data quality distorts metrics, making performance appear better or worse than reality, leading to bad decisions.

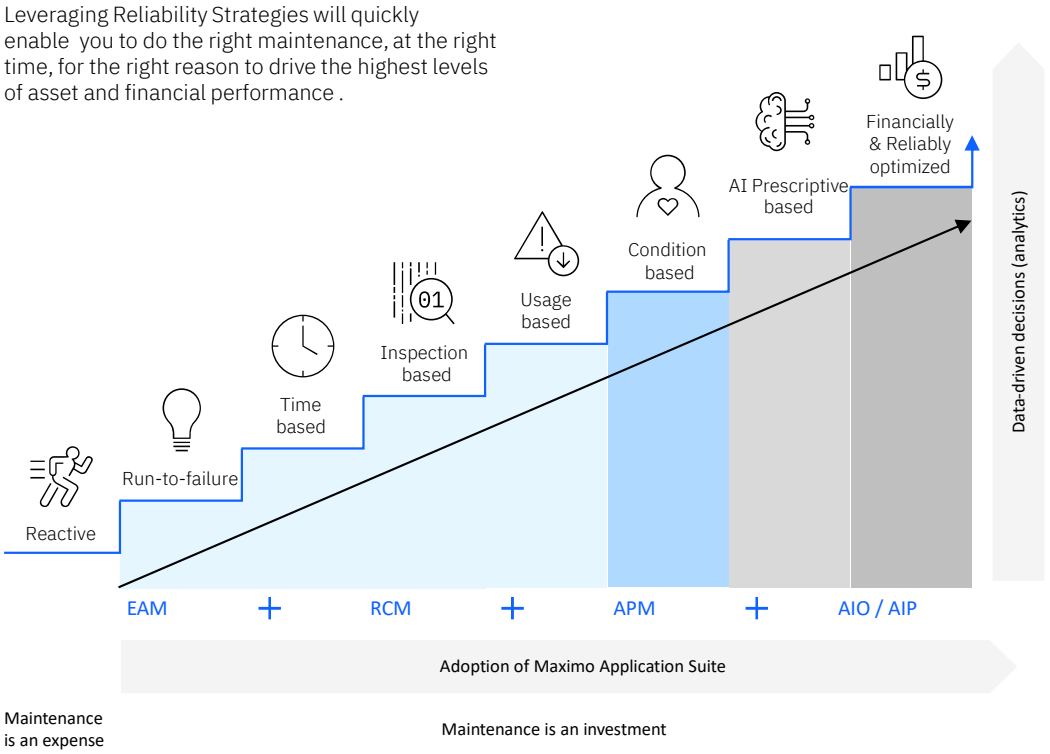
4. Maintenance Planning and Scheduling Break Down Without It Wrong data on job plans, inventory, or asset location results in unprepared technicians, delayed work, and missed preventive maintenance. Good data enables precise scheduling, resource forecasting, and effective backlog management.

5. Compliance and Risk Management Require Complete Records Safety-critical industries

must prove PMs completed on time, inspections followed protocol, and defects resolved. Bad data risks audit failure, regulatory fines, or safety incidents.

6. Digital Tools Depend on Structured Data Mobile apps, IoT integrations, and AI need standardized hierarchies, clean asset names, and consistent task codes. Without good data, modern tools become clunky, error-prone, or unusable.

Asset Maintenance Practices and Maturity Model



Source: IBM: Pursuit of Zero D Client Presentation

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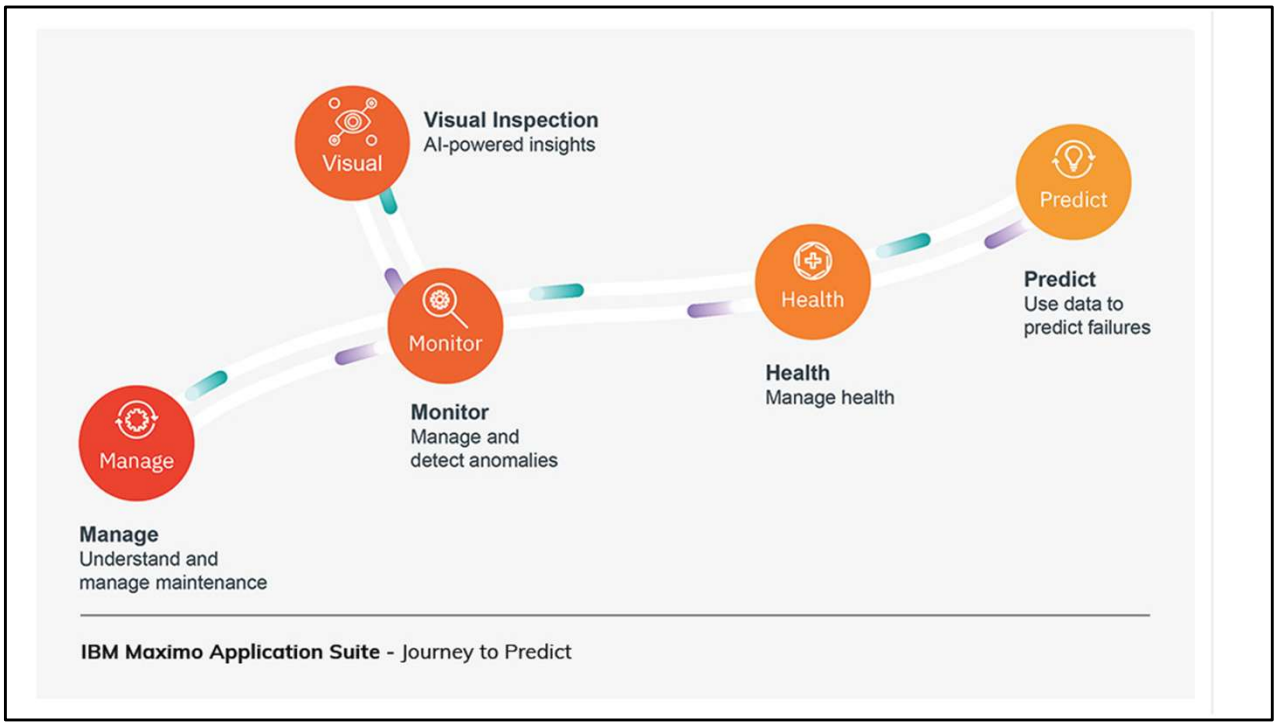
Asset Maintenance Practices and Maturity Model

Moving along and up the Maturity Model stairway requires increasing levels of data quality and quantity



Qualitative and quantitative data is necessary for accurate asset health visibility. For predictive maintenance, it is essential

The Data Chaos Problem

- Maximo starts clean and tidy
- Time changes everything
  - New integrations
  - New teams
  - New ideas
  - Lack of data discipline

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Maximo starts clean — during implementation, environments are carefully configured, data is vetted, and user adoption is supported with training and structure.

Over time, however, complex integrations with third-party systems, rushed updates under time pressure, and inconsistent standards across departments introduce disorder.

As different teams update records independently, and external vendors contribute data without standard controls, inconsistencies creep in.

Naming conventions diverge, classifications drift, and duplicate or incomplete entries proliferate.

Eventually, the data loses coherence: reports contradict each other, users lose confidence in the system, and the Maximo platform becomes a bottleneck rather than an enabler.

Why it Happens in Maximo

- Manual data entry errors
- Lack of data standards
- KPI/Metrics priorities
- Decentralized ownership
- External contributors
- Limited governance framework

Manual data entry errors occur without consistent training, stewardship, or real-time validation, causing users to make mistakes in asset numbers, descriptions, or failure codes that multiply over time and create downstream reporting and operational issues.

Lack of data standards and validation rules exists because Maximo doesn't enforce strict controls by default. Without defined naming conventions, classification systems, and mandatory fields, departments enter data for immediate needs rather than enterprise requirements.

Decentralized ownership across departments creates problems when operations, maintenance, procurement, engineering, and finance update records independently without centralized governance, causing duplication, overwrites, and inconsistencies.

External contributors like vendors and contractors provide data via spreadsheets or integration files.

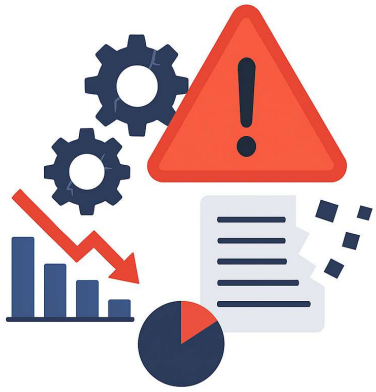
Limited governance framework means many organizations lack formal data stewardship roles, defined responsibilities, or approval workflows.

The Business Impact

The Real-World Consequences

- Missed Inspections and PMs
- Procurement errors
- Inventory shortages – or overstock
- Maintenance delays and downtime
- Incomplete and unreliable reporting
- Data Rework

- **$$$ cost to the business**



Missed inspections and compliance failures occur when incomplete or outdated data causes inspections to be missed, triggering regulatory violations or safety risks.

Procurement errors create fragmented purchasing, price discrepancies, and poor vendor performance visibility, weakening negotiation power and creating financial inaccuracies.

Inventory shortages or overstock result from inconsistent item master data causing inaccurate counts.

Maintenance delays and downtime happen when work orders link to inaccurate asset records or parts lists.

Unreliable reporting and analytics emerge from data inconsistencies making KPIs and performance metrics untrustworthy.

Expensive data rework occurs when organizations spend significant resources on cleansing initiatives that reoccur due to systemic data entry, governance, and ownership issues.

Why Traditional Fixes Fail

- Symptoms not causes
  - Problems return
- Lack of business context
- Lack of accountability

Cleansing projects fix symptoms, not causes — Traditional data cleansing efforts focus on correcting bad data that already exists. They do not address the root causes like poor standards, lack of validation, or disjointed processes. As a result, the same errors reappear after each cleanup effort.

Issues return without embedded governance — Without a lasting governance model that defines roles, rules, and accountability, any improvements quickly erode. Governance must be built into the tools and workflows, not managed ad hoc.

IT-driven fixes lack business context — When data issues are addressed solely by IT teams, they often miss critical business nuances. The result is technically accurate data that doesn't reflect how the business operates or makes decisions.

Shared ownership, no clear accountability — In many Maximo environments, multiple teams interact with asset, inventory, and location data. Without a defined data owner or approval workflow, mistakes go uncorrected and decisions get delayed. Responsibility is blurred, so no one steps up to maintain quality

How to Fix Maximo Data Chaos

First, treat the cause, not the symptoms

- Define data standards for all use cases
- Assign data stewards
- Ensure manual data entry follows the standards
- Constrain data loading to the standards
- Monitor and audit

To address Maximo data quality issues effectively, organizations must treat root causes rather than just symptoms. The solution requires a systematic approach:

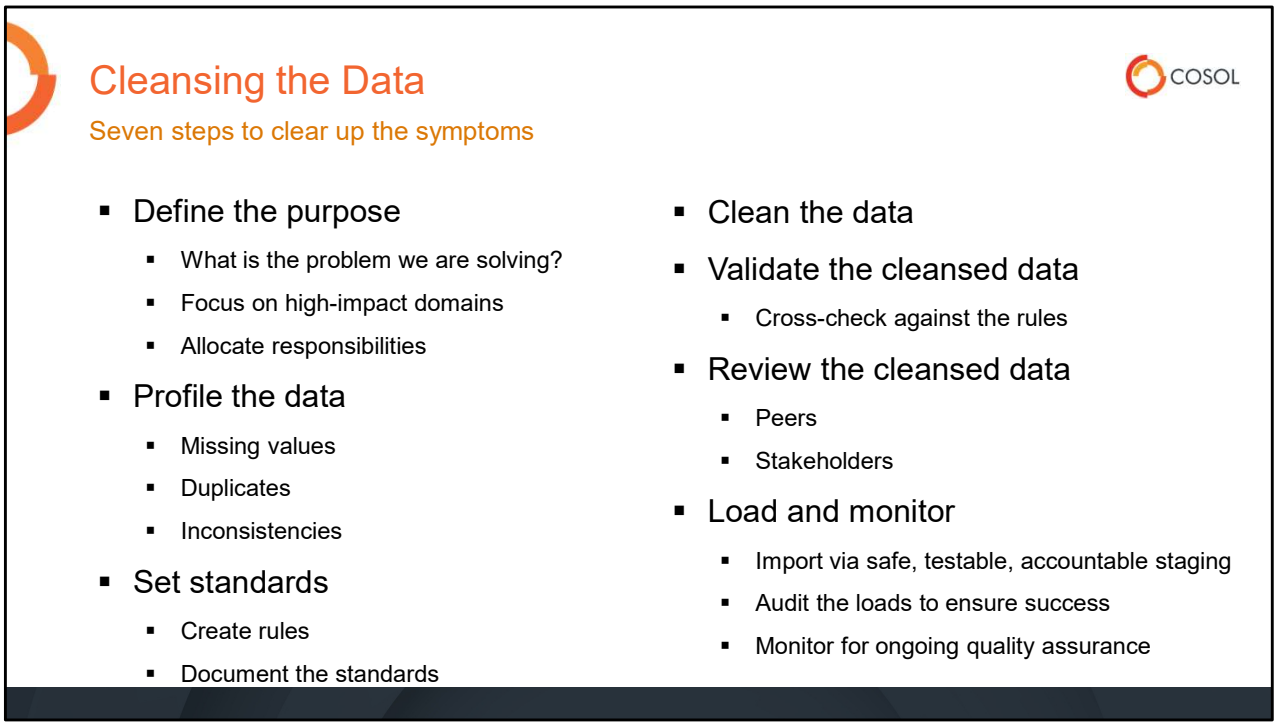
first, define comprehensive data standards for all use cases to establish clear guidelines;

second, assign dedicated data stewards to take ownership of data quality;

third, ensure manual data entry processes follow established standards through training and validation;

fourth, constrain data loading procedures to enforce standards at all entry points;

fifth, implement ongoing monitoring and auditing to maintain data integrity over time. This holistic approach addresses governance, processes, and controls to prevent data chaos from recurring



1. Define the Purpose Identify the specific problem (improve reporting, prep for go-live, meet compliance) and focus efforts on high-impact domains like assets, inventory, locations, and vendors.
2. Inventory and Profile the Data Identify all critical data sets and use an effective profiling tool to find missing/default values, duplicates, invalid formats, and outliers or inconsistencies.
3. Set Data Standards Create documented rules for required fields, naming conventions, classification hierarchies, and valid values so all stakeholders agree on the "clean" definition.
4. Clean the Data Use effective tools to fill missing values, remove duplicates or merge records, correct formats and spelling, and normalize fields.
5. Validate Against Business Rules Cross-check cleansed data against validation rules ensuring critical fields are filled, classifications are accurate, and record relationships make sense.
6. Review with Stakeholders Route cleansed datasets to owners for confirmation, track approvals, and document sign-off for accountability.
7. Load and Monitor Import cleansed data into Maximo using safe staging methods, run post-load audits to confirm correct data landing, and establish ongoing monitoring with exception reports.

Focus Areas

- Profile the existing data
- Fix the existing data
- Only enter good data
- Track and measure data quality performance

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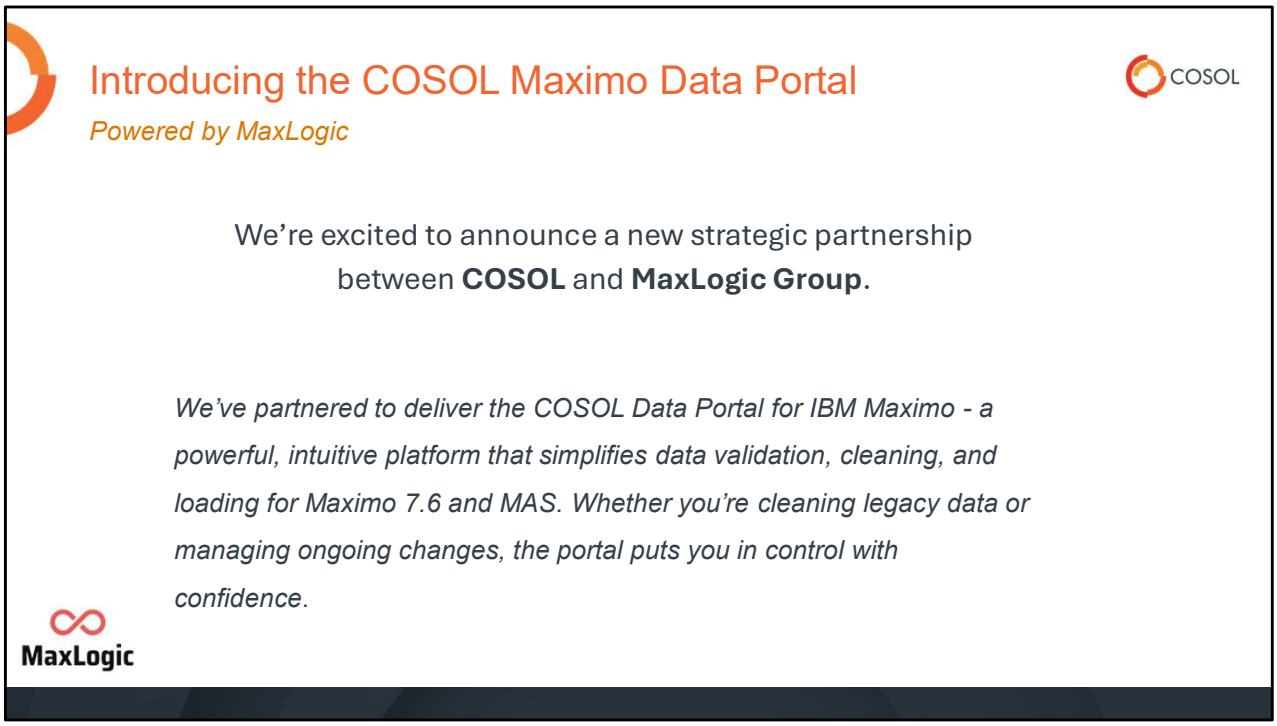
Maximo 5 to Maximo 6 in 2007

Maximo 7.6 to MAS in 2025

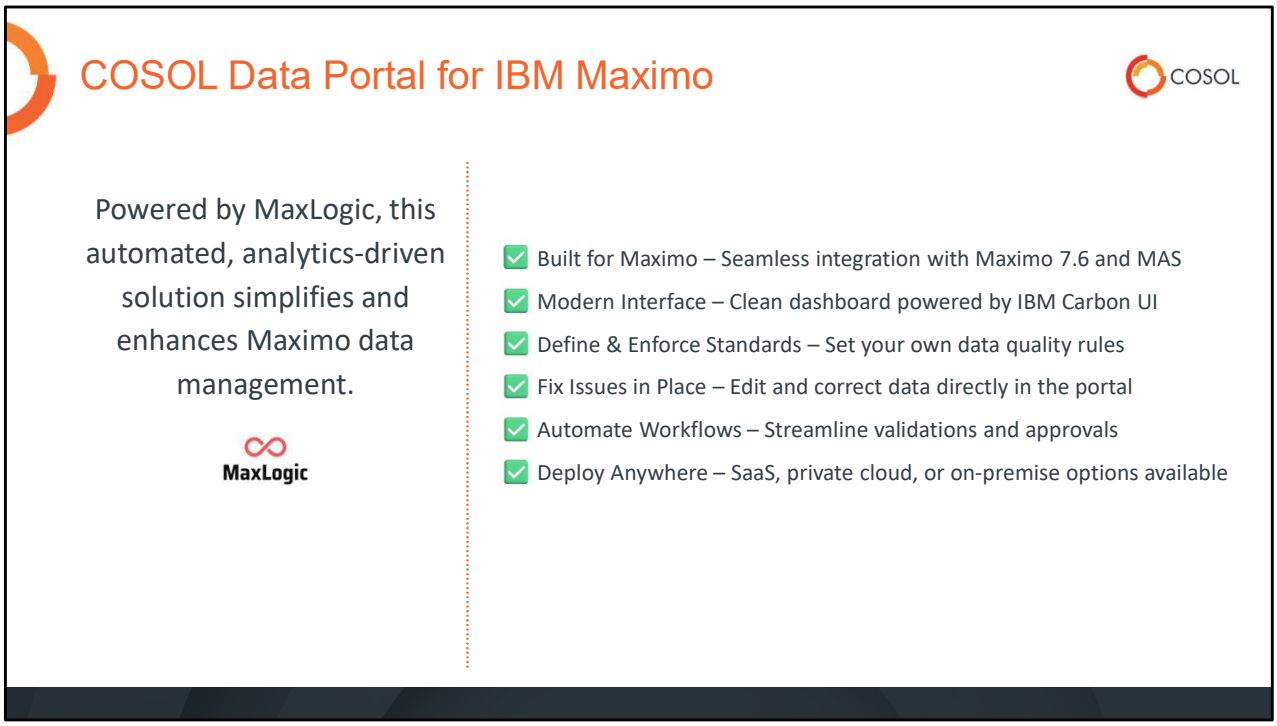
Managing data in 2024

Managing data in 2025



We're excited to announce a new strategic partnership between **COSOL** and **MaxLogic Group**.

We've partnered to deliver the COSOL Data Portal for IBM Maximo - a powerful, intuitive platform that simplifies data validation, cleaning, and loading for Maximo 7.6 and MAS. Whether you're cleaning legacy data or managing ongoing changes, the portal puts you in control with confidence.

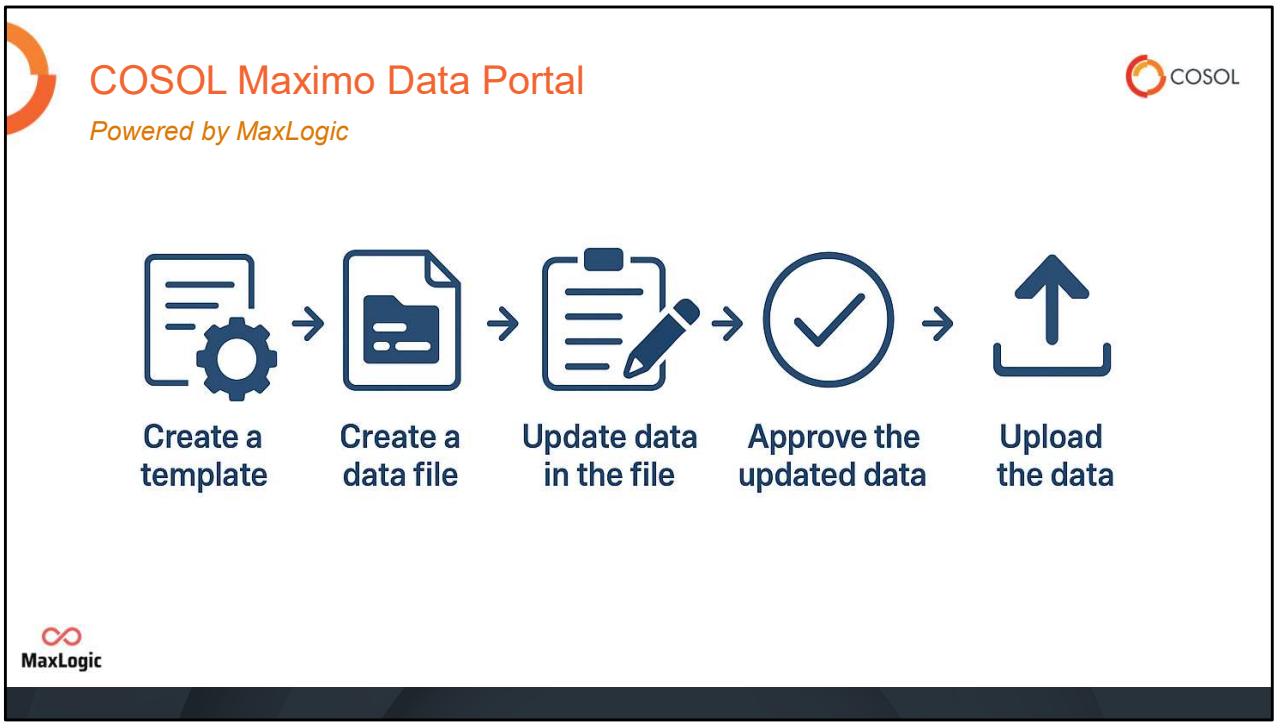


1. Ensure Trusted, Actionable Data Across the Enterprise The Data Portal enforces structured templates and rule-based validation ensuring asset, inventory, and classification data are complete, correct, and consistent. Audit trails and approvals provide accountability and traceability, improving confidence in operational, maintenance, and planning data.
2. Reduce Rework and Prevent Bad Data from Entering Maximo By validating data before it reaches Maximo, the portal acts as a governance gate. Teams can reject or revise submissions in controlled staging, significantly reducing rework, missed maintenance, and inaccurate inventory demand.
3. Accelerate Data Onboarding for Projects, Regions, and Suppliers The portal enables data loading using pre-approved templates, even by external teams, without compromising quality. This accelerates onboarding of new regions, suppliers, or system cutovers with minimal IT involvement.
4. Embed Accountability and Collaboration Built-in commenting, multi-role workflows, and scheduled approvals support collaboration between engineering, maintenance, procurement, and IT. Everyone has visibility with no unchecked changes.
5. Support Strategic Asset Management Initiatives Clean data foundations enable accurate asset classifications, consistent failure codes, and updated location structures supporting reliability-centered maintenance, critical spares planning, and mobile technician enablement.
6. Standardize External Contributions Without Losing Control The portal enables

controlled external input through governed templates, allowing contractors and vendors to contribute while maintaining internal standards and system security.

7. Strengthen Compliance Built-in governance creates traceable approval processes aligned with ISO 27001, ITSM, and data integrity regulations, simplifying audit compliance while improving stewardship.

8. Enable Proactive Monitoring and Continuous Improvement Dashboards, exception reports, and trend insights allow stakeholders to measure improvements, monitor problem areas, and drive ongoing data quality assurance.



The process is simple:

Create a template that defines the data standard. A template applies to a specific Object Structure, such as ASSET.

The template will inherit all the business rules already in Maximo, including any custom rules such as those in a conditional UI setting.

You can add additional rules that apply within the portal. In the case of data cleansing, these rules will flag noncompliance so they can be fixed.

For new data loads, they ensure the data is compliant from the very start – even if the rules are not enforced in Maximo.

Create a data file using the template.

A data file comprises existing data that has been pulled from Maximo, new data from a csv file, or a combination of both.

Update the data within the file. Fix any errors and enter values where required.

The portal includes a user-friendly grid view for data editing. It includes many tools to simplify and optimize the process.

The data file will be placed in a workflow for approval.

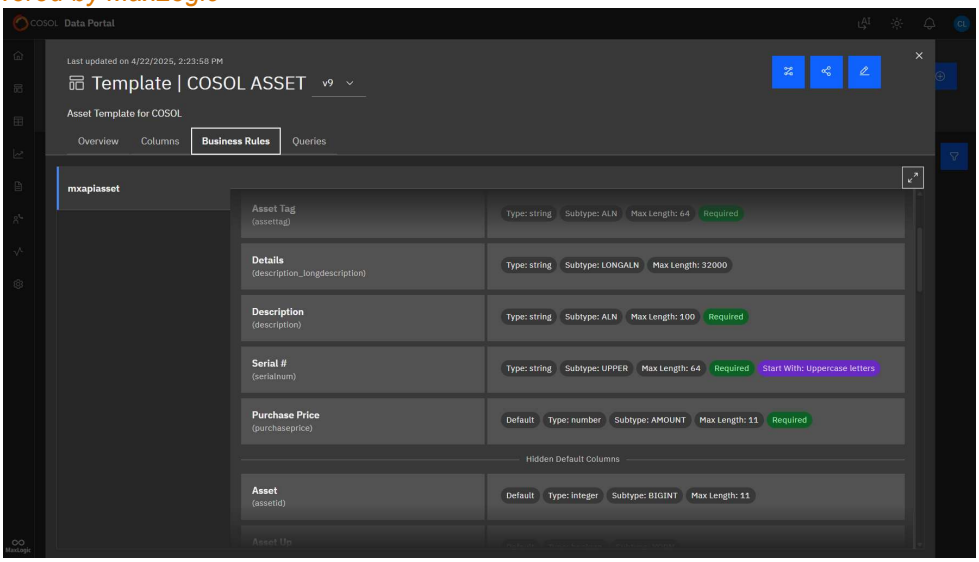
- The workflow is in the portal, there is no need to create Maximo workflows
- You can define as many approvers as you like.
- There is an option for just one, or all reviewers requiring approval.
- After approval the file will be staged for upload.

The upload will occur based on the staging instructions set in the workflow.

- This can be immediate on approval, which is normal for pre-prod environments
- Or it can be set to occur at a specific time and date.

COSOL Maximo Data Portal

Powered by MaxLogic



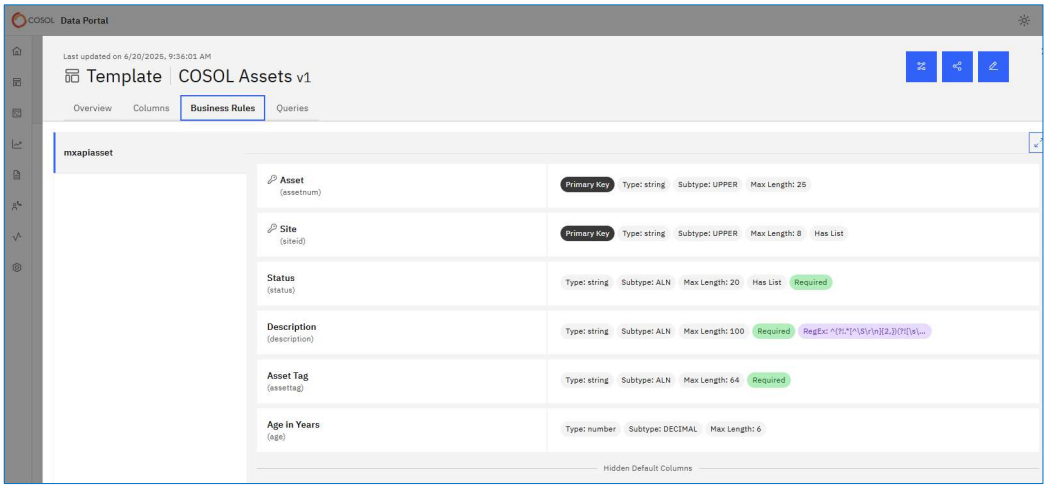
This is an example of a template

The rules recognized in Maximo are in the monochrome elements

Custom, portal, rules are in color.

COSOL Maximo Data Portal

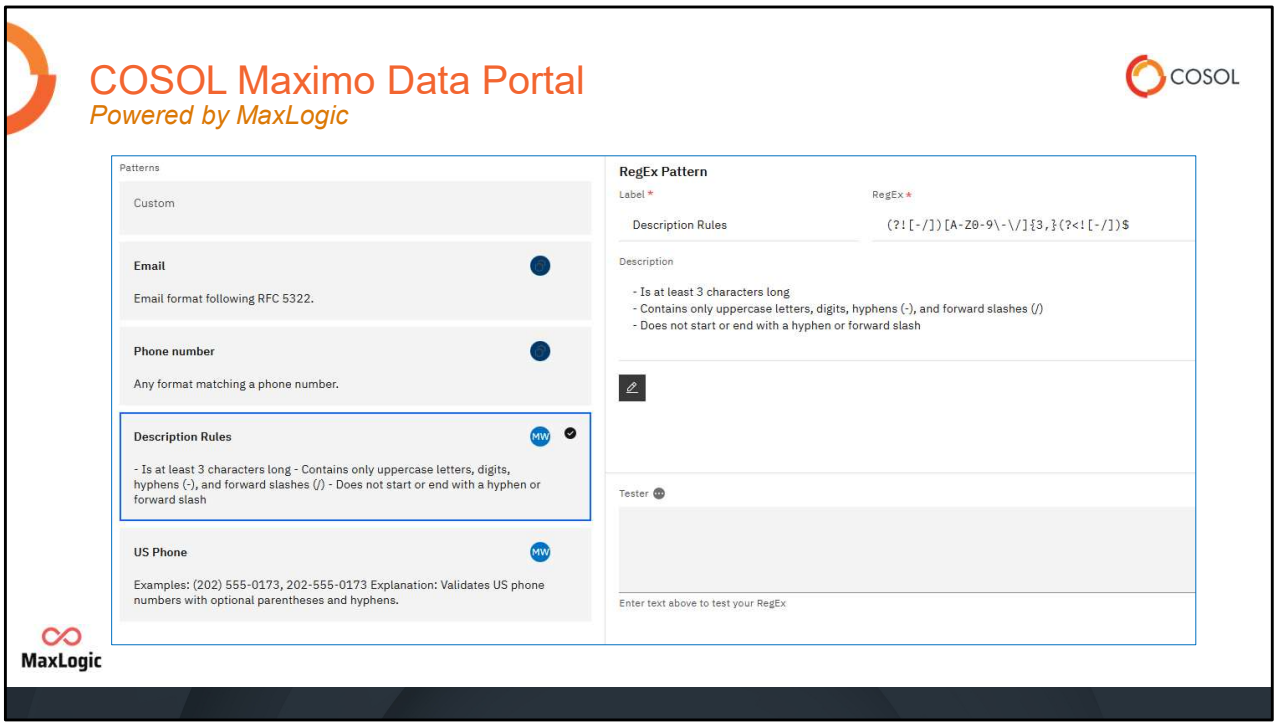
Powered by MaxLogic



The portal can be set to either dark mode or light mode based on user preference.

This example shows a Regular Expression (RegEx) rule for the formatting of a text field. RegEx allows you to ensure formatting standards are met, Examples include:

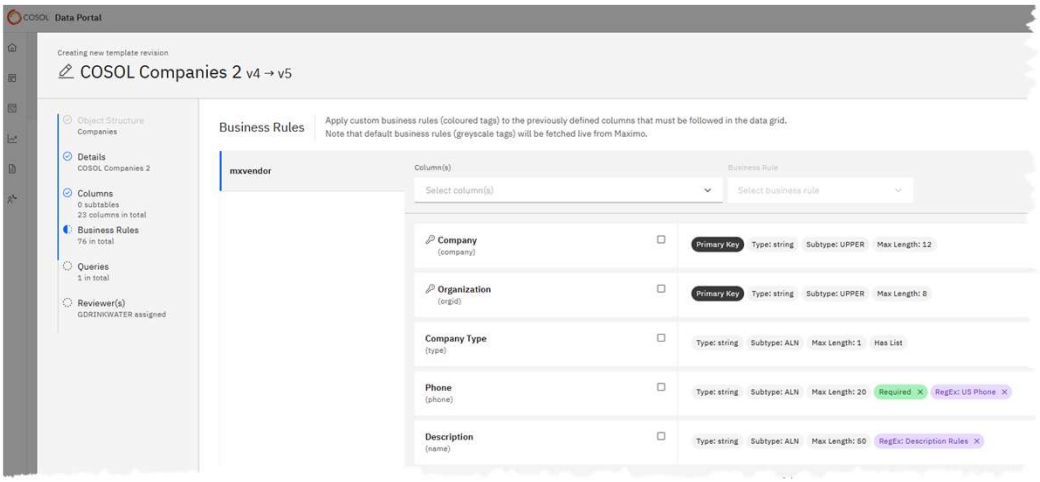
- Minimum length of a description
- Phone number or email formatting
- Starting letters or numbers
- Using sentence case in descriptions



The portal has a RegEx library to simply the process of both creating and using expressions

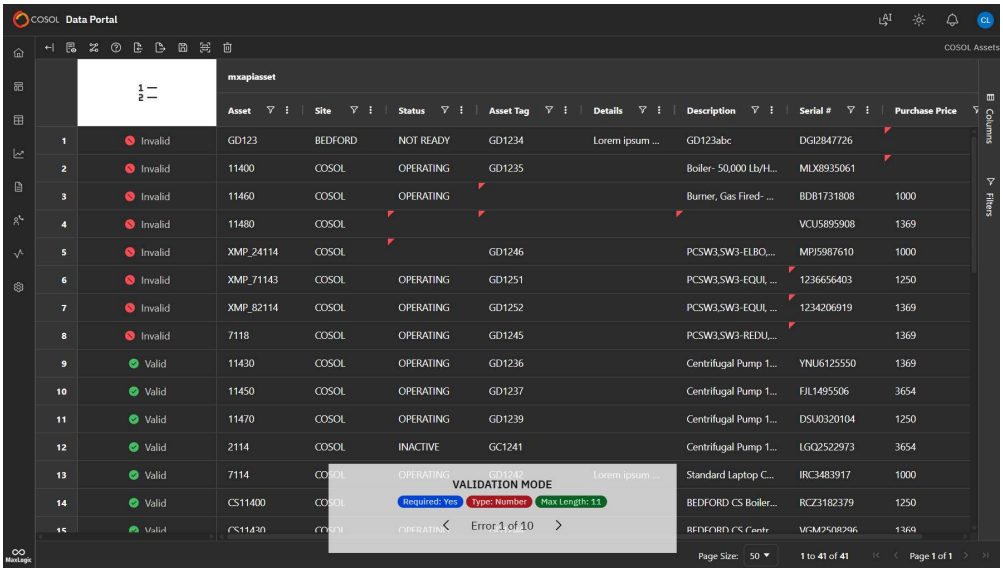
COSOL Maximo Data Portal

Powered by MaxLogic



After selecting an expression from the library, the description is displayed rathe than the raw code.

Intuitive Data Grid for Editing

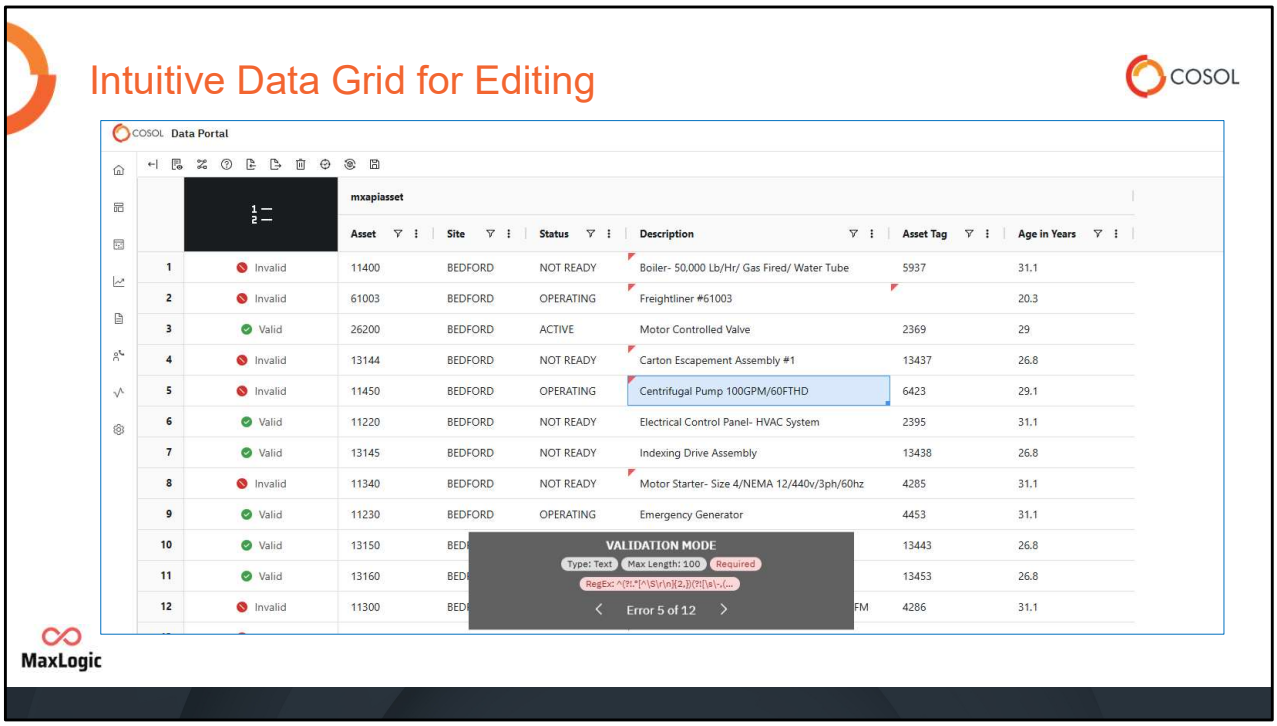


The data grid is used to display data based on the template. It is modeled on Excel for easy familiarity. It can show existing data from Maximo, new data to be uploaded from a csv file, or a combination of both.

Any data that does not comply with the template rules is flagged for review. There is a ‘validation mode’ that steps through the non-compliant fields one by one.

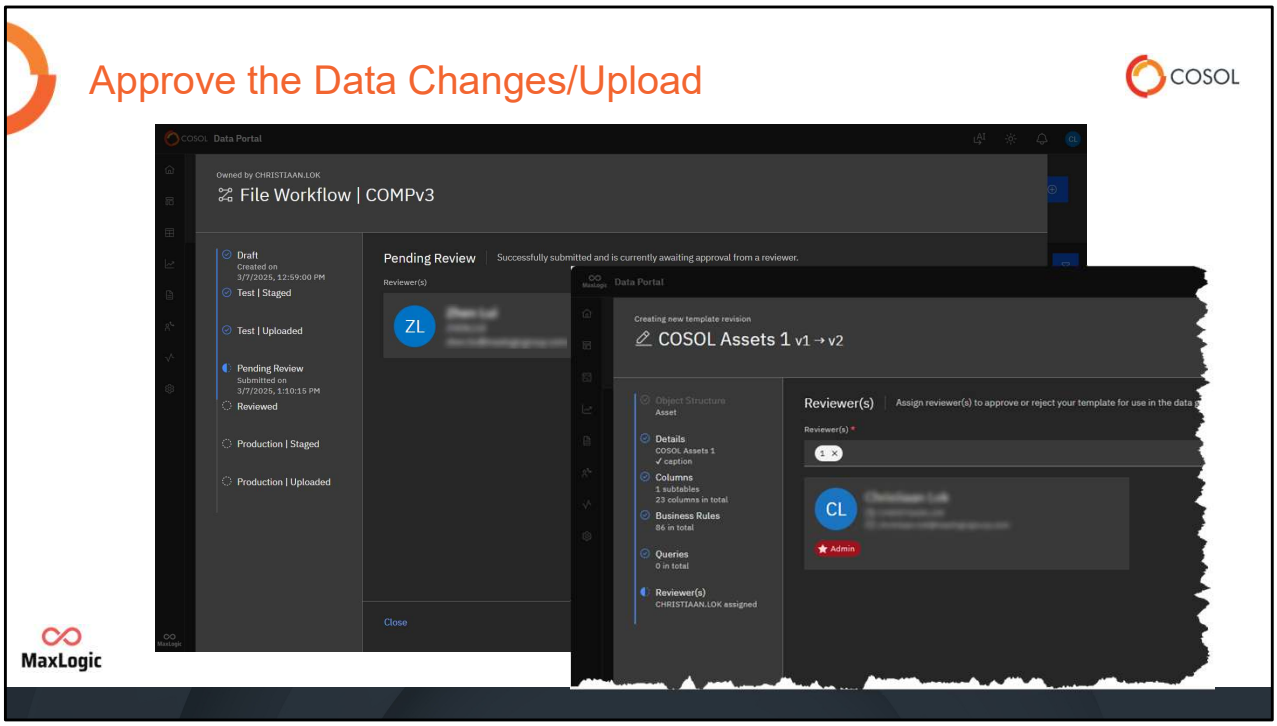
Data can be corrected directly in the grid where it is immediately revalidated.

Intuitive Data Grid for Editing



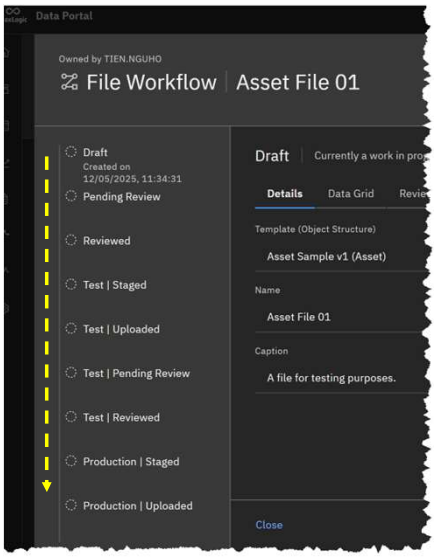
After all data has been corrected it can be uploaded (or reuploaded) into Maximo. The portal will not allow the upload process to occur until the file is fully compliant.

Approve the Data Changes/Upload



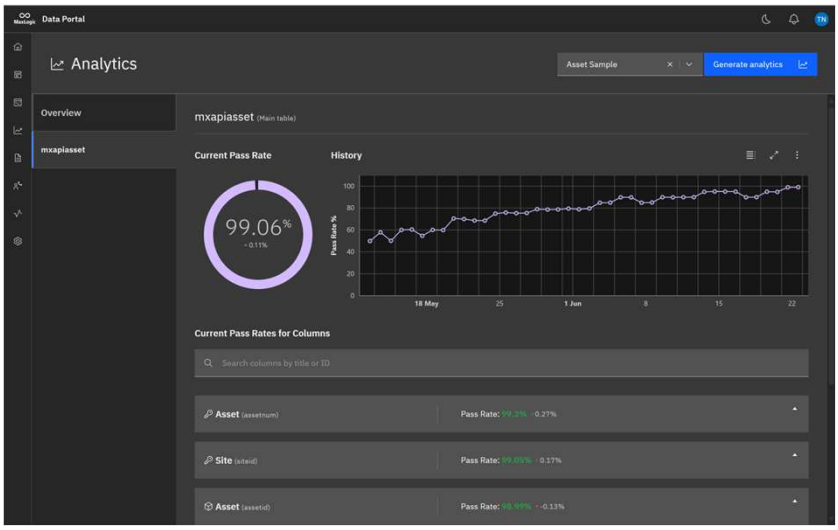
There are workflow process for both Templates and Data Files. You can add as many reviewers as you like, with approvals required from just one, or all reviewers.
The workflow process for Data Files includes the Maximo environments to be targeted, such as uploading to Test or QA first and then Production. Uploads can be staged to occur at a given time and date.

Use Workflow to Deploy Data



This shows the full workflow for a data file upload example. As the files moves through the stages the status is shown in the circles

Measure Improvement Through Data Analytics



The Analytics view shows the data quality relative to the standards you define in the template. The analytics can be set to run daily but can also be run on demand. A time progression shows how the data has improved (hopefully) over time.

You can drill down to the attribute level to see clearly where the problems are.

Reports can be exported for inclusion in corporate reports or presentations.

Business Value

- Ensure trusted, actionable data across the enterprise
- Support strategic asset management initiatives
- Strengthen regulatory, ISO, and audit compliance
- Enable proactive data quality monitoring and continuous improvement
- Move along the journey to Predict

- $$$ savings for the business

$$$ savings for the business

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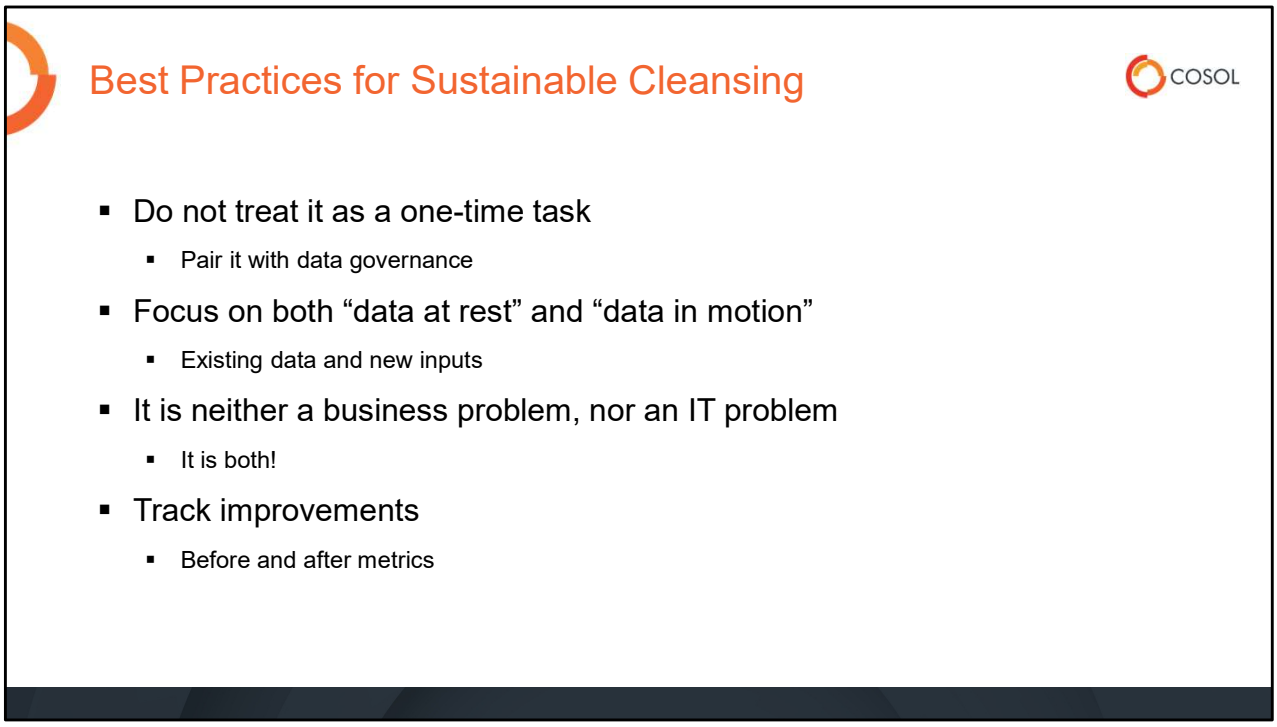

Best Practices for Sustainable Cleansing
Don’t treat cleansing as a one-time task — pair it with data governance.
Focus on “data at rest” (existing records) and “data in motion” (new inputs).
Involve both business users and IT — data quality is a shared responsibility.
Track improvements using before/after metrics (e.g., % missing fields, duplicates removed).