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Informed, Actionable, Water Asset Condition, Risk, and Rehabilitation Management in the Cloud



Informed, Actionable, Water Asset Condition, Risk, and Rehabilitation Management in the Cloud

Info360 Asset, Autodesk's software as a service (SaaS) solution, allows water utilities and local councils to streamline the process of capturing inspection data and media in the field for the purposes of asset capture, condition assessment, risk management, and capital planning prioritization.

Managing these deliverables and workflows in a cloud service, Info360 Asset makes it easy for any stakeholder in the utility to visualize, query and, report on asset condition, performance, risks associated with failure, and asset intervention recommendations.

Info360 Asset provides user-configurable analytic tools that leverage asset, condition, performance, spatial and user-defined data to build likelihood and consequence of failure models to determine overall risk for assets in a network. Risk models are continuously updated as inspections are collected in the field, presenting the results on a map and in dashboards.

With reliable asset, condition, performance and risk data, asset managers can more effectively prioritize maintenance, repairs, and renewals, and defend risk-based investment decisions to all stakeholders.



Info360 Asset



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Inspection Upload Portal

Connecting Field and Office

Streamline the process of delivering condition inspection and performance data and media from the field using Info360 Asset's upload portal.

Avoid costly inefficiencies associated with incorrect assets or duplicated inspections being performed. Increase crew performance and reliability, monitor productivity, and track the quality of deliverables.



Features

Field (utility or contractor):

- Notifications to field crews about which media have been uploaded successfully, those that have been submitted to the office, and which ones are missing.
- Deliverable uploads can be left at any progress state so that missing media files can be uploaded later.
- Verification application for the field supervisor to review and validate data and media prior to submitting to the utility.
- Immediate notification about which inspection(s) was rejected by the operator, and the reason why.

Utility operator:

- Notifications of recently uploaded inspections from the field crews.
- Monitor and track the status of inspections as they move through the review process.
- Auto-generated inspection IDs using the upstream manhole reference, the direction, and the inspection date and time.
- Display of inspections' status: reviewed and published to Info360 Asset registry, review in progress, and waiting for updating from the field.

Inspection Upload Portal

Connecting Field and Office

Benefits:

- Constant inspection data stream from the field to the office's centralized asset and inspection management system.
- The Notification system informs and provides clarity to both contractor and utility of inspection approval status.
- Faster access to field data leading to quicker resolution during emergency response (e.g., sewer overflows).
- Better service provided by the contractor, through higher quality, reliable, and more timely delivery.
- No more external hard drives, zip drives, storage, or backup disasters.
- No loss or misplacement of associated images and videos – avoid wasted time and money.
- Removal of dispersed media storage to avoid inefficient retrieval and poor sharing of data and media.
- Effectively scale your growing inspection program and all of its data.
- Validated and quality-controlled data leads to increased ROI.

The screenshot shows the 'Edit Media' interface in the Info360 system. The browser address bar shows 'inspections.info360.com/inspections/upload/FACP'. The interface includes a 'Drag and drop files here' area with an upload icon, a 'Summary' table, and a 'Progress' table.

Type	Expected	Uploaded	Status
Inspections	-	1	COMPLETED
Media	6	5	MISSING MEDIA

Name	Size	Status
07A-3623.007A-3622.01_6935_11_11_2019.mp4	85.38 MB	17%
07A-3623.007A-3622.01_6935_11_11_2019.mp4_MM4C_223.jpg	27.59 KB	COMPLETED
07A-3623.007A-3622.01_6935_11_11_2019.mp4_MWL5_245.jpg	47.94 KB	COMPLETED
07A-3623.007A-3622.01_6935_11_11_2019.mp4_MWL_2.jpg	57.92 KB	COMPLETED
07A-3623.007A-3622.01_6935_11_11_2019.mp4_CS_34.jpg	58.25 KB	COMPLETED
07A-3623.007A-3622.01_6935_11_11_2019.mp4_AMH_0.jpg	60.24 KB	COMPLETED

Condition Management and Assessment

Reviewing Inspections Scoring Defects and Updating Asset Condition

Info360 Asset's verification application empowers field and office workers to review the quality and accuracy of individual pipe and manhole inspections and associated observations.

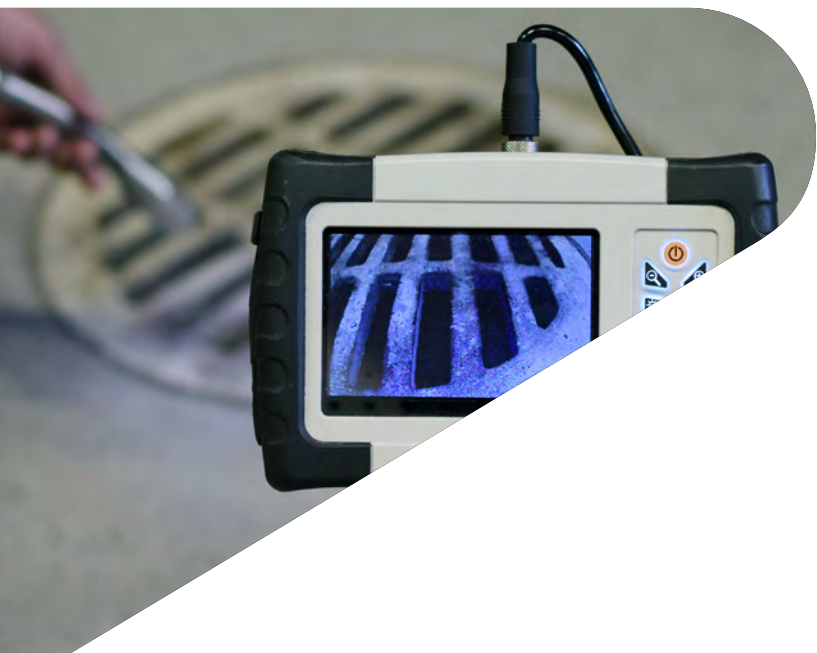
Supporting a well-defined workflow that guides the verification process starting from uploading inspections and the correct media, into review status to both check and add observations while viewing the associated video and images, through to either rejecting or approval of the condition inspection.

This fit-for-purpose verification includes a validation rules engine to ensure that the inspection complies to the national coding standards. Info360 Asset calculates condition ratings and grades using the relevant scoring algorithm. It also associates inspections to the correct assets and geo-locates individual observations for displaying on the map.



Features

- Synchronous integration and interaction between the inspection's observation table, image display, and video replay.
- Ability for inspection reviewers to add, update, or delete observations while watching the video.
- Auto-calculated condition ratings based on appropriate national standard.
- Auto-validation of observations based on Info360 Asset and national condition standards rule sets.
- Dashboard view of an inspection.
- Approved inspections published to asset registry.



Condition Management and Assessment

Reviewing Inspections Scoring Defects and Updating Asset Condition

Benefits

- Easy understanding of asset health for any utility stakeholder.
- Reliable and quality-controlled condition and asset data for risk modeling.
- Timely maintenance and repair prioritization due to productive inspection review and defect scoring processes.
- Repeatable, reliable, and consistent approach to condition modeling and assessment.
- Utilize specific defect observations to determine overall asset condition.
- Track and review condition of specific assets during its lifetime.

The screenshot displays the Info360 software interface for asset inspection. The main window shows a table of observations for asset ID N24-028.U.210725143000. The table includes columns for Distance, Code, CD, Time, At/From, To, 1st, 2nd, %, Struct., O&M, and Remarks. A video player on the right shows a live inspection feed of a pipe interior, with a timestamp of 11/08/2018 10:04:00 AM. Below the video are several thumbnail images of other inspection points.

Distance	Code	CD	Time	At/From	To	1st	2nd	%	Struct.	O&M	Remarks
0 ft	AMH		00:00:00				0				Starting manhole 018-3520.0
0 ft	MWL		00:00:04				5				
300.9 ft	MGP		00:00:06				0				PIPE HAS HOLE AT 9 TO 1 O'CLOCK
300.9 ft	HSV		00:00:23	9	1	0	0				
320.1 ft	AMH		00:00:30				0				Finishing manhole 018-3521.0

Remaining Life and Risk Assessment

Determining Accurate Business Risk Exposure

With Info360 Asset condition and risk modeling capabilities, leverage asset information, current and historical inspections, GIS derived spatial data and user-defined tables to accurately evaluate asset condition and performance, assess risk of failure on an asset or cohort basis based on user defined likelihood (LoF) and consequence of failure (CoF) weighted models.

Create multiple risk models based on either the entire water or wastewater network or a subset of assets based on user defined criteria. Define as many data-driven LoF and CoF components using both managed Info360 Asset data and external data sources, such as GIS layers.

Allow Info360 Asset to calculate risk scores based on asset attributes, such as depth of sewer; condition, such as peak defect scores; and using proximity analysis to identify assets that are close to critical infrastructure or environmentally sensitive areas. Assign different weightings to all modeled components to emphasize or deprioritize their impact on the overall risk.

Features

- Update and monitor current asset condition based on latest inspections.
- Calculate likelihood (LoF) and consequence (CoF) of failure to determine the overall risk of failure.
- Model multiple LoF and CoF methods using condition, asset, performance, and user-defined and mapping data.
- Update risk model based on newer condition inspections and incidents.
- Risk reporting including dashboards, graphs, thematic maps.
- Create multiple risk models based on the entire network or a subset.



Remaining Life and Risk Assessment

Determining Accurate Business Risk Exposure

Benefits

- Apply known condition and deterioration to understand remaining useful life of an asset.
- Accurately analyze risks of failure to avoid severe environmental, economic and social consequences.
- Understand the spatial distribution of risk within your network.
- Monitor and track risk associated with an individual asset, cohorts, location, and function.
- Easily explain where risk results came from.
- Avoid the impact of brain drain by capturing knowledge of risk, and likelihood and consequences of failure.

The screenshot shows the 'Edit Component' interface in the Info360 system. The title bar indicates 'Mike Demo May 2022'. The main content area is titled 'Step 2 - Score Setup for Heavy travel roads'. On the left, there is a sidebar with navigation icons for MAP, INSPECTIONS, RISK, DATA, and ADMIN. The 'Set Score' section features a table with 7 classes, each with a score and a value range. A '7 Classes' dropdown menu is visible above the table. To the right of the table is a map showing a street network with a green highlighted area.

Score	Value
2	< 25
3	25 - 35
4	35.1 - 45
5	45.1 - 55
6	55.1 - 65
7	65.1 - 75
8	> 75
0	--



Guiding Asset Intervention

Informing Asset Renewal Decisions

Info360 Asset provides capital planners and operations and maintenance (O&M) practitioners with a guidance tool to help prescribe renewal actions. It offers a way to visualize business logic including queries, userdefined actions, and related costs, that are all articulated to help recommend the right asset interventions.

The graphical view of decision trees as well as queries being based on asset properties, inspections, condition scores, and risk help asset practitioners justify recommended asset activities.

Features

- Build rehabilitation decision trees using an intuitive canvas.
- Validate the tree logic as you build it with user-friendly validation logs to directly point you to any issues with your tree.
- View the asset count that meets each branch condition to immediately see the total accumulative assets that meet the criteria as you build the tree.
- As you interactively build the decision tree, view the count of assets at each query point to dynamically review the total number of accumulated assets that meet the overall criteria.
- Collaborate with other stakeholders with view-only access to the decision tree and its results.
- Create multiple trees to capture various scenarios or timeframes you are planning for.
- Assign unit and item costs to actions that are used to determine cost of asset intervention derived from the decision tree.
- Override calculated rehabilitation costs and describe why
- Lock recommended rehabilitation action when work is going to be performed
- Decision tree results can be visualized in two different ways:
 - within the table listing decision tree results and total cost for each asset of the network
 - within each asset detail page to show the previous and latest decision tree and results

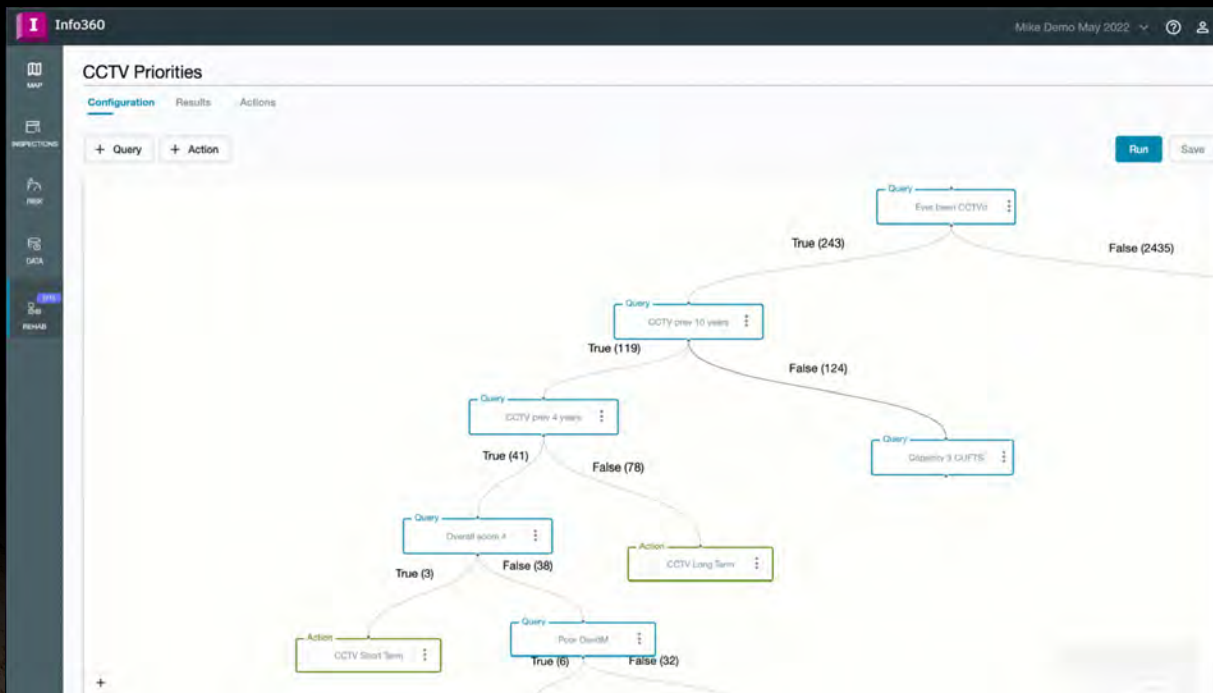


Guiding Asset Intervention

Informing Asset Renewal Decisions

Benefits

- Prioritize O&M and capital improvement plans.
- Prescribe maintenance, repair, rehabilitation, renewal, and inspection actions.
- Recommend asset actions for the short and long term.
- Easily justify interventions by explaining how asset recommendations were derived, speeding up the approval process.
- Calculate and roll up individual asset costs for budget planning.



Visualization of Asset, Condition and Risk on a Map

Democratizing Asset Data and Sharing Results

Whether in the office or in the field, empower your stakeholders to access asset information: they can visualize and locate asset condition, risk, and renewal decisions on a map supporting theming and symbology. Regardless of your role or how and where you are accessing the system, you can rely on Info360 Asset as the “single source of truth” for your assets, condition inspections, incidents, risk calculations, and asset intervention decisions.

Features

- Search and locate by asset name, within inspection tables, or geographically.
- Locate all asset types and distinguish by system type on the map.
- View condition, risk and asset properties while looking at its location on the map.
- Access more detailed asset property details, including associated inspection and media, its connected assets (e.g., upstream and downstream manholes of a pipe), and related failure risks and renewal decision summary.
- Navigate easily from one asset to another and to associated inspections and risk models.
- Easily share web maps with key stakeholders.
- View and query your GIS map data.

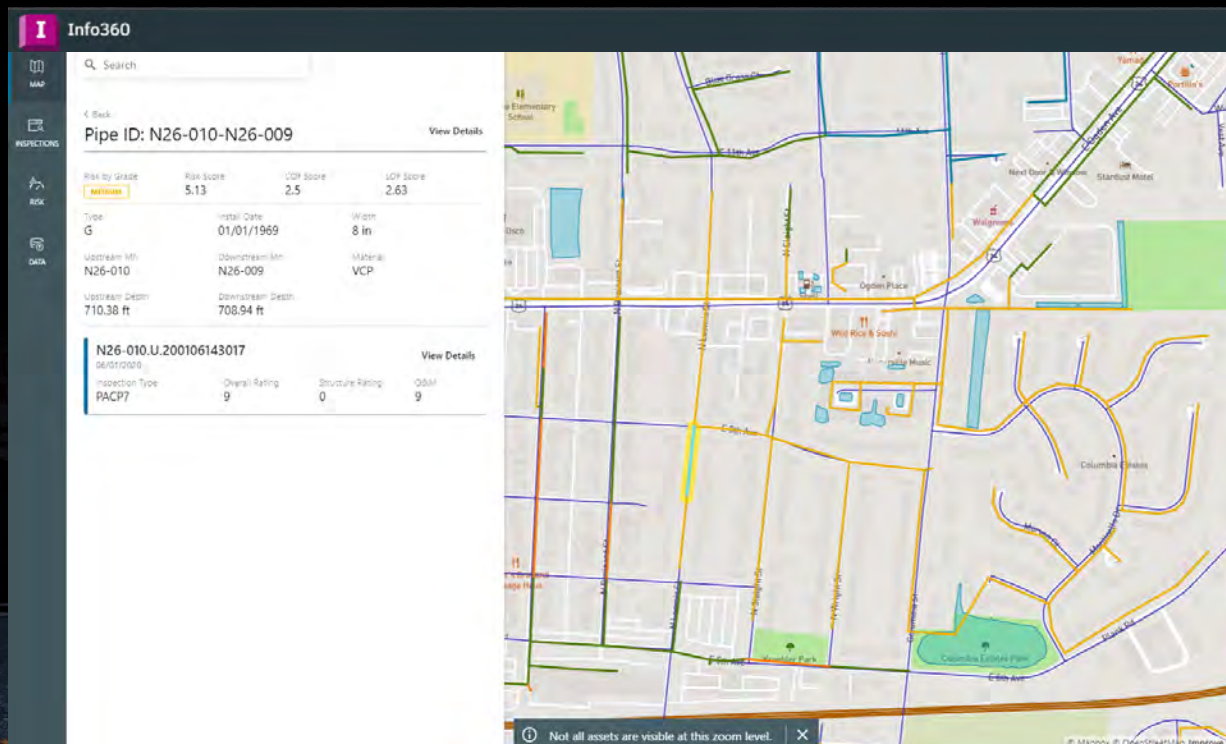


Visualization of Asset, Condition and Risk on a Map

Democratizing Asset Data and Sharing Results

Benefits

- Easy to use web-based mapping visualization tool for non-technical specialists.
- Democratize asset, condition, risk data, and renewal results to all stakeholders.
- Understand asset health at an individual asset level up to the entire network.
- Single source and access point to asset, condition, risk, and renewal for all stakeholders.
- Provide clear insight into how risk is determined, and rehabilitation planning decisions are made.
- Capture and preserve in-house engineering knowledge for risk modelling and rehabilitation planning.





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