CLARITY

CLARITY Pipeline

Key Benefits

- Enables accurate positioning of Vehicle over pipeline
- Automated delivery of critical information
- Measurement based automatic Decision Making

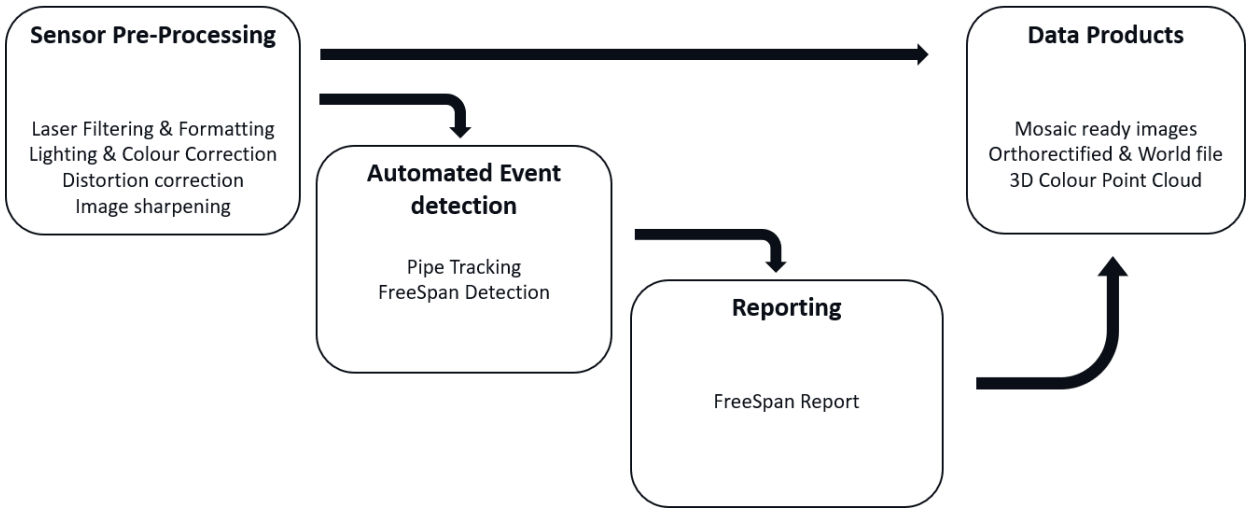
Highlights

CLARITY Pipeline is an Application Module available with CLARITY Software which enables autonomy on pipeline integrity inspection missions. The Application Module is designed specifically to streamline pipeline integrity inspection tasks, including pipe tracking, data processing, critical event reporting & data deliverables in an automated workflow process.

The workflow uses Cathx laser scanning technology to detect the pipeline on the seabed. The CLARITY Application Module analyses the acquired 3D data to identify the pipeline's position and detect FreeSpan areas where the pipeline is not adequately supported. Real-time laser data is processed instantaneously, detecting, identifying, and communicating events in real-time.

CLARITY Pipeline Application Module ultimately enhances operational efficiency, safety and compliance while reducing costs and environmental risks, making it an essential tool for the oil and gas industry.

Pipeline Application Module Workflow



For more information on our offerings visit our website

CLARITY Pipeline

Key Features

- Real Time Edge Processing
- Auto Event Detection
- Automated Reporting
- Critical Information Extraction

Pipe Tracking & FreeSpan Detection

Pipe Tracking is a real-time pipe detection Microservice, communicating the pipeline position to the host vehicle. It uses Cathx proprietary machine vision technologies, including 3D shape information, to accurately locate the pipeline on the seabed.

FreeSpan Detection locates the pipeline and seabed in real time, generating a FreeSpan Event when the user determined thresholds for FreeSpan is exceeded.

TECHNICAL SPECIFICATIONS

CLARITY

Minimum Hardware requirements to operate CLARITY	Operating System – Windows 10 Processor – i7 @2.8GHZ or higher RAM – 32GB .Net Core 5.0 Installed

PIPE TRACKER

Pipeline Tracking	Detection and tracking of top of pipeline in laser image
Operation location	Windows Desktop PC Vehicle Payload Processor
Data rates	Typically, 30Hz
Inputs	
Data	Cathx laser format (.bin or .clp2) either file or direct UDP broadcast from camera.
System configuration information	Lens distortion Laser sensor and laser emitter positions Lever-arms
Pipeline information	Expected pipe diameter in meters.

Output		
Formats available	UDP	Each result is written to the specified UDP port
	File	Results are written to the specified file
	Database	Results is written to a SQL database.
Pipe Tracker options	Centre of pipeline with respect to the vehicle	3D point – left-handed coordinate system Y = forward X = Starboard Z = Down
	Timestamp	All events timestamped
	Pipe radius	Estimated radius of the pipeline expressed in meters
	State	Current state of the pipe tracking algorithm (pipe located, no pipe detected)

FREE SPAN DETECTION

Free Span Detection	Detection of free span events in a pipeline
Operation location	Windows Desktop PC Vehicle Payload Processor
Data rates	Typically, 30Hz

Inputs

Data	Cathx laser format (.bin or .clp2) either file or direct UDP broadcast from camera.
System configuration information	Lens distortion Laser sensor and laser emitter positions Lever-arms
Pipeline information	Expected pipe diameter in meters Free span threshold in meters i.e., Distance from pipe centre to seabed before considered to be free span

Output

Formats available	UDP	Each result is written to the specified UDP port
	File	Results are written to the specified file
	Database	Results is written to a SQL database.
FreeSpan options	Event generated on free span detection	Timestamp of start of free span Timestamp of end of free span Max depth of free span
	Pipe radius	Estimated radius of the pipeline expressed in meters
	State	Current state of the pipe tracking algorithm (pipe located, no pipe detected)

Information is correct as of September 2023.
Technical specifications can change without notice.