Leveraging Lucity Data for Water and Sewer Asset Management Rehabilitation Planning and Prioritization

InfoMaster®

esri Partner Network Gold

NASSCO's Pipeline Assessment & Certification Program • PACP Certified Software V6.0

NASSCO's Manhole Assessment & Certification Program • MACP Certified Software V6.0

NASSCO's Lateral Assessment & Certification Program • LACP Certified Software V6.0

Innovyze®

Innovyze at a Glance

49 of the top 50 cities in US

Innovyze is also proud to have...

84 of the top 100 cities in US

Consulting firms also make up the user base including...

9 of the top 10 ENR Design Firms

Broad Coverage in Major Cities Across the Globe

98% 49 of the top 50 cities in the US

100% Top ten cities in the UK

80% Eight of the top ten cities in East Asia

90% Nine of the top ten in New Zealand

100% Top ten cities in Australia

Strength in Numbers

Over **4,000** customers in over **60** Countries.

Leading Technology Platform

Complete Smart Water Network Tool-Set

CapEx — optimally size pipes & water facilities

OpEx — minimize operations costs

Real-Time — maximize ROI by having facilities "talk to" each other

Asset Management — minimize risk & optimally plan renewal activities

1996 MW Soft is founded in 1996

2009 MWH Soft Acquires Wallingford Software.

2011 MWH Soft Changes its name to Innovyze

Today World's Leading Provider

Milestone overview. Innovyze has grown to be a leading global provider of wet infrastructure business analytics software solutions designed to meet the technology needs of the water/wastewater industry.

esri Partner Network Gold

Esri Gold Business Partner/ Authorized Developer. Includes pre-release of all Esri software and full access to Esri technical development resources guaranteeing the highest level of GIS integration.

32 **Referrals,** in 2013, accounted for 32% of all software orders.

81 ...and Repeat Business accounted for 81% of Innovyze's Revenue.

Unmatched Customer Service

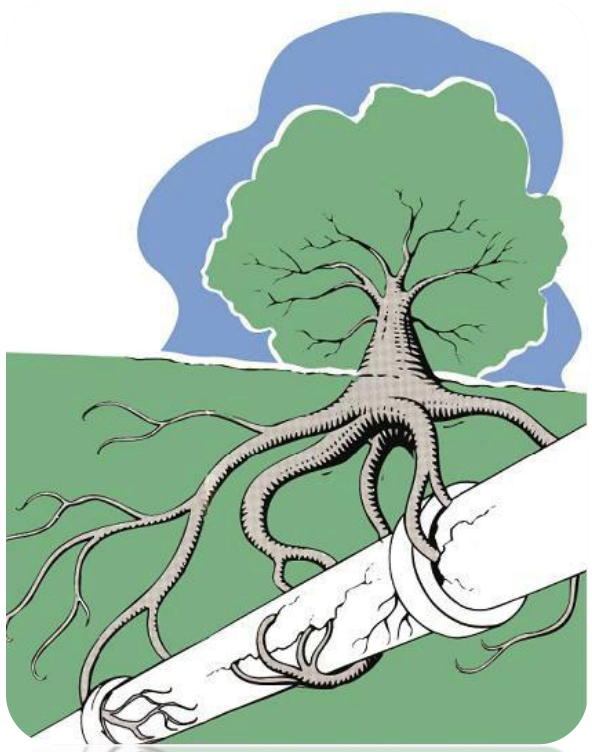
98%

98% of Support issues resolved within **24** hours, typical resolution is at time of initial contact (phone, web, e-mail)

All U.S. time-zones supported by experienced engineers/modelers.

InfoMaster Overview

- Software for asset management, and capital planning
- Water and wastewater systems
- GIS-centric (Esri ArcGIS based) data collection platform
- Maintenance management (CMMS)
- Independent of hydraulic model
- Framework for risk-based decision making



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How does InfoMaster help?

Asset management framework/model

- Risk analysis
- Reliability analysis
- Defensible decision logic
- Prioritize tasks for O&M and CIP budgets

Maintenance management

- CCTV: Review, validate, map, analyze
- Tasks, incidents, complaints, etc.
- Work order management
- Mobile links field crews to office

Maps, graphs, and reports

- HTML and PDF reports

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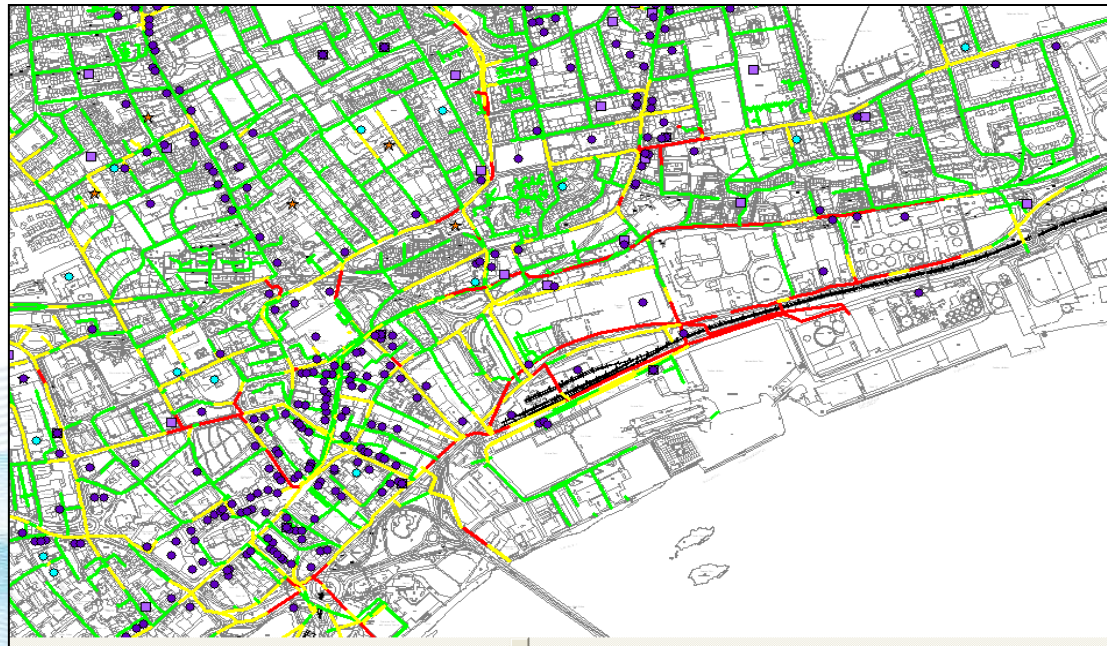
Risk Analysis Drives Capital and Operational Actions

- Integrate programs for enhanced decisions:
  - GIS
  - Asset Data
  - Field Work
  - Hydraulic Model
- Determine timelines
- Estimate budgets
- Use to attain additional funding

Risk Class	Capital Action
Extreme	High Priority in CIP / Yearly Operational Frequency
High	Standard Priority in CIP / Biannual Operational Frequency
Medium	Low Priority in CIP / 1 in 5 Years Operational Frequency
Low	1 in 10 Years Operational Frequency
Negligible	Wait for a problem to arise



Risk Analysis

Likelihood of Failure

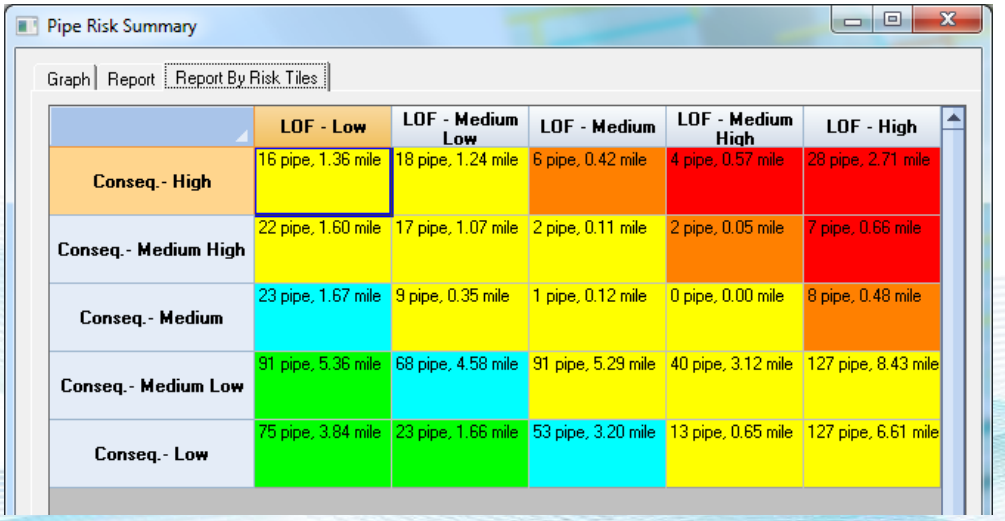
Hydraulic Model	• Pressure Changes • Roughness
Infrastructure Data	• Age • Material
GIS Data	• Soil Type • Railroads/Fault Lines
CMMS & Work Orders	• Break History • Repairs/Lining

Multiple Calculation Options

Calculation of Risk

Consequence of Failure

• Pipe/Valve Criticality • Flow Delivered	Hydraulic Model results
• Hospitals, Schools, etc • Power, Industry, etc.	Critical Facilities
• Population Density • Street Paving	GIS Data
• Traffic Analysis • Community Relations	Other



	LOF - Low	LOF - Medium Low	LOF - Medium	LOF - Medium High	LOF - High
Conseq.- High	16 pipe, 1.36 mile	18 pipe, 1.24 mile	6 pipe, 0.42 mile	4 pipe, 0.57 mile	28 pipe, 2.71 mile
Conseq.- Medium High	22 pipe, 1.60 mile	17 pipe, 1.07 mile	2 pipe, 0.11 mile	2 pipe, 0.05 mile	7 pipe, 0.66 mile
Conseq.- Medium	23 pipe, 1.67 mile	9 pipe, 0.35 mile	1 pipe, 0.12 mile	0 pipe, 0.00 mile	8 pipe, 0.48 mile
Conseq.- Medium Low	91 pipe, 5.36 mile	68 pipe, 4.58 mile	91 pipe, 5.29 mile	40 pipe, 3.12 mile	127 pipe, 8.43 mile
Conseq.- Low	75 pipe, 3.84 mile	23 pipe, 1.66 mile	53 pipe, 3.20 mile	13 pipe, 0.65 mile	127 pipe, 6.61 mile

Risk Class	Capital Action
Extreme	High Priority in CIP / Yearly Operational Frequency
High	Standard Priority in CIP / Biannual Operational Frequency
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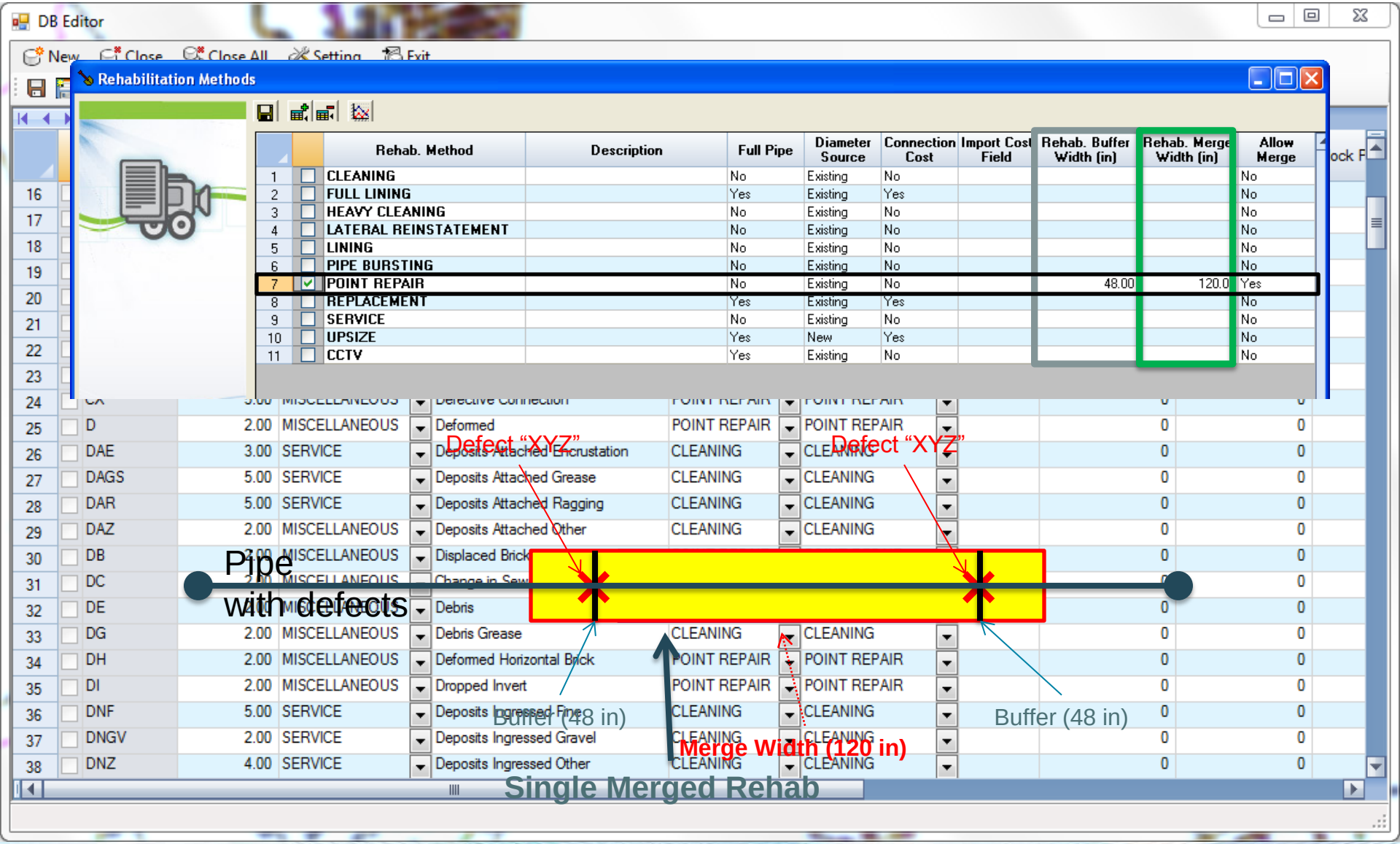
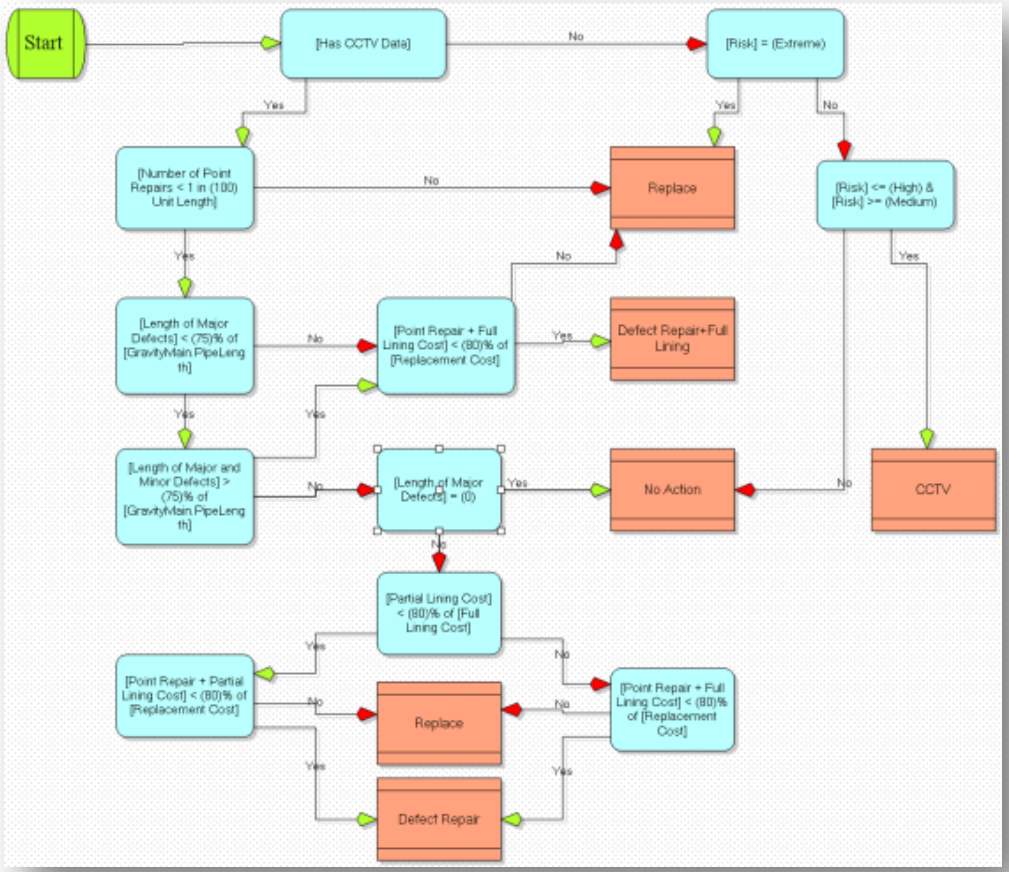
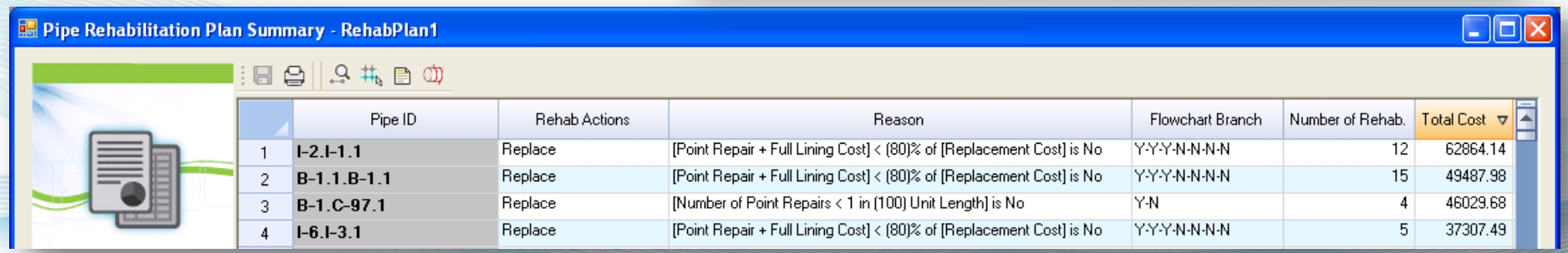
Defect-by-Defect Analysis



Pipe by Pipe Analysis

- Employ **ANY** Logic
- Utilize **ANY** Data
- Defensible
- Repeatable
- Fast

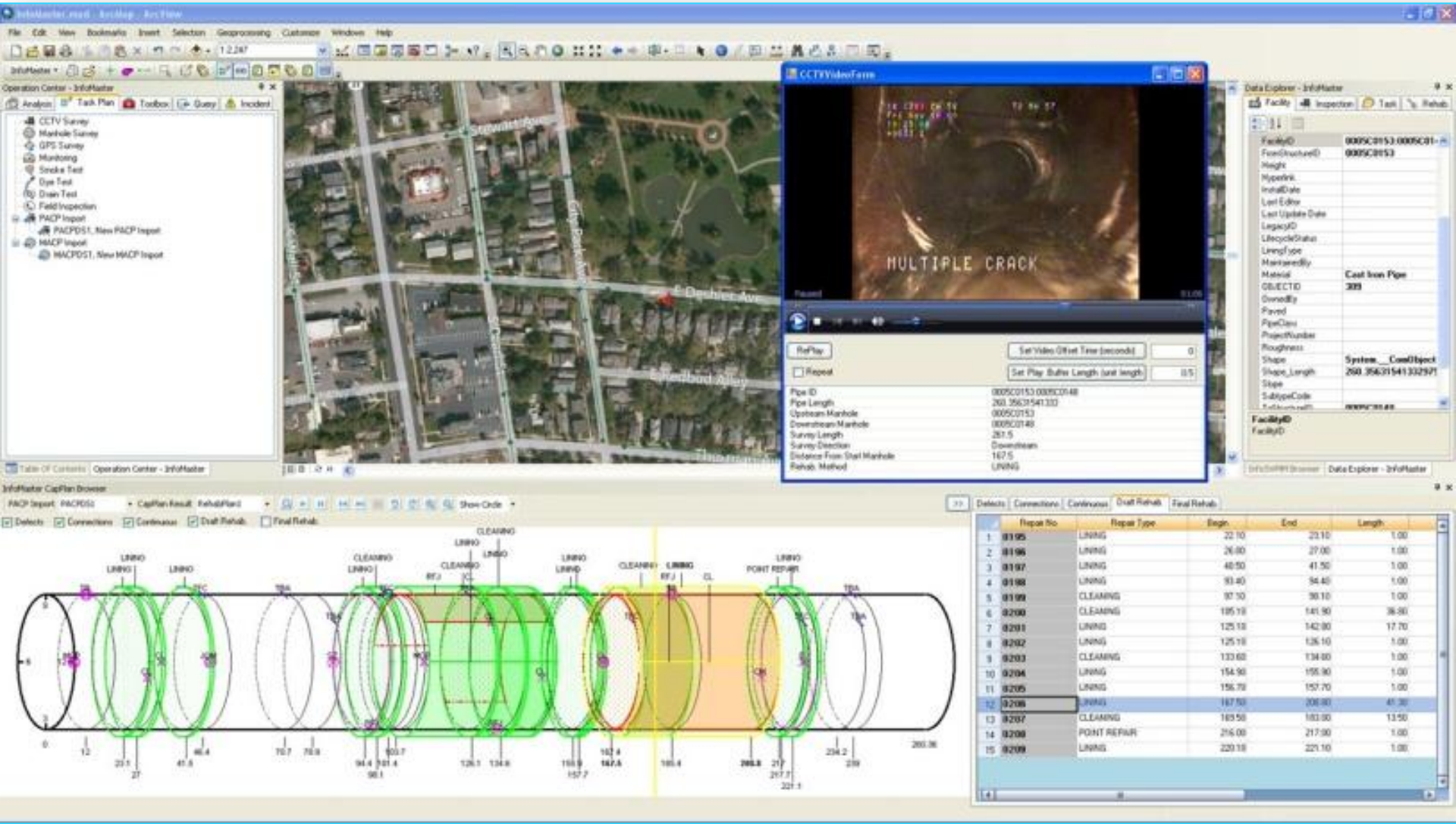




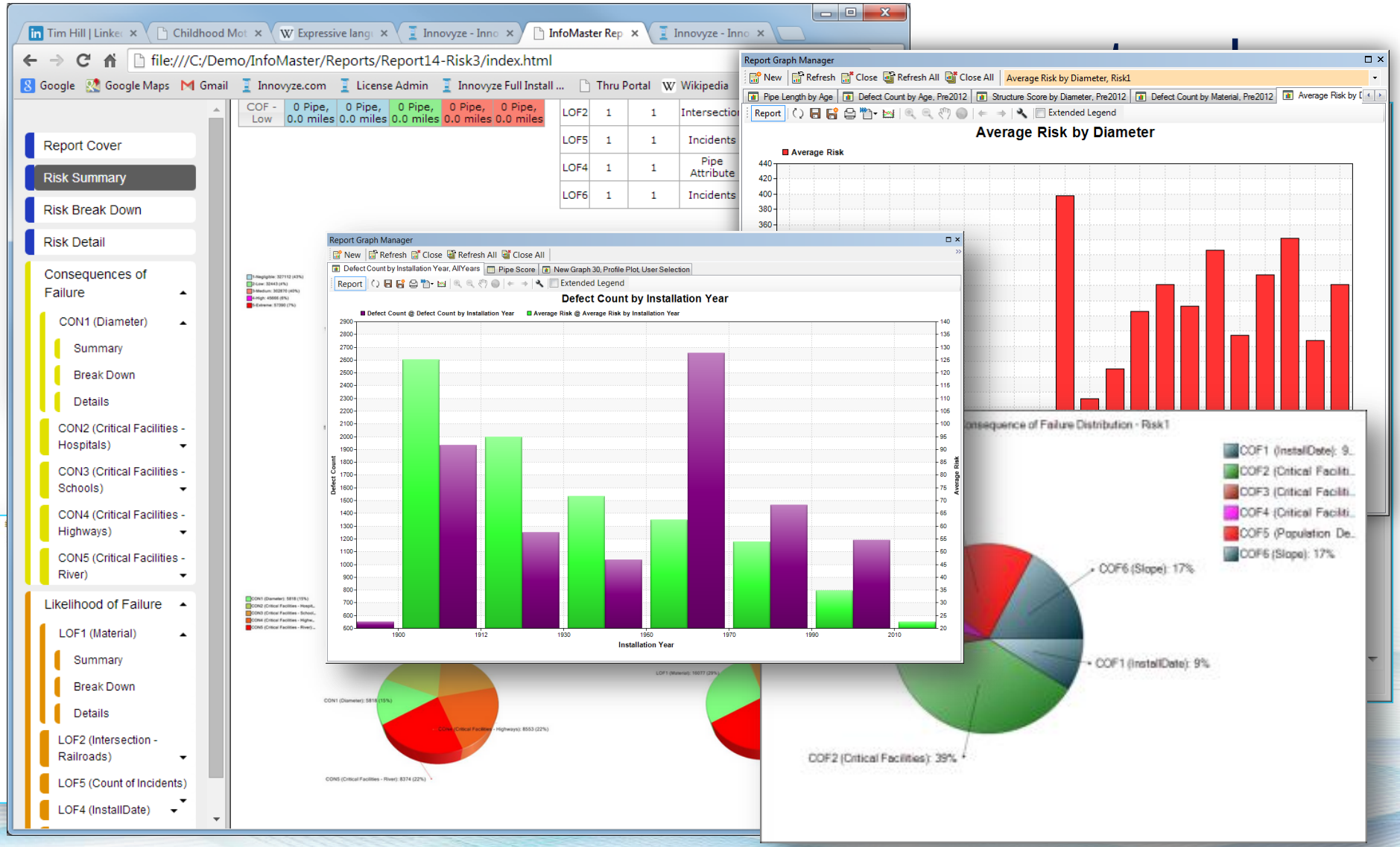
	Pipe ID	Rehab Actions	Reason	Flowchart Branch	Number of Rehab.	Total Cost
1	I-2.I-1.1	Replace	[Point Repair + Full Lining Cost] < (80)% of [Replacement Cost] is No	Y-Y-Y-N-N-N-N	12	62864.14
2	B-1.1.B-1.1	Replace	[Point Repair + Full Lining Cost] < (80)% of [Replacement Cost] is No	Y-Y-Y-N-N-N-N	15	49487.98
3	B-1.C-97.1	Replace	[Number of Point Repairs < 1 in (100) Unit Length] is No	Y-N	4	46029.68
4	I-6.I-3.1	Replace	[Point Repair + Full Lining Cost] < (80)% of [Replacement Cost] is No	Y-Y-Y-N-N-N-N	5	37307.49

Interactive Review

- InfoMaster users can modify proposed rehab / O&M

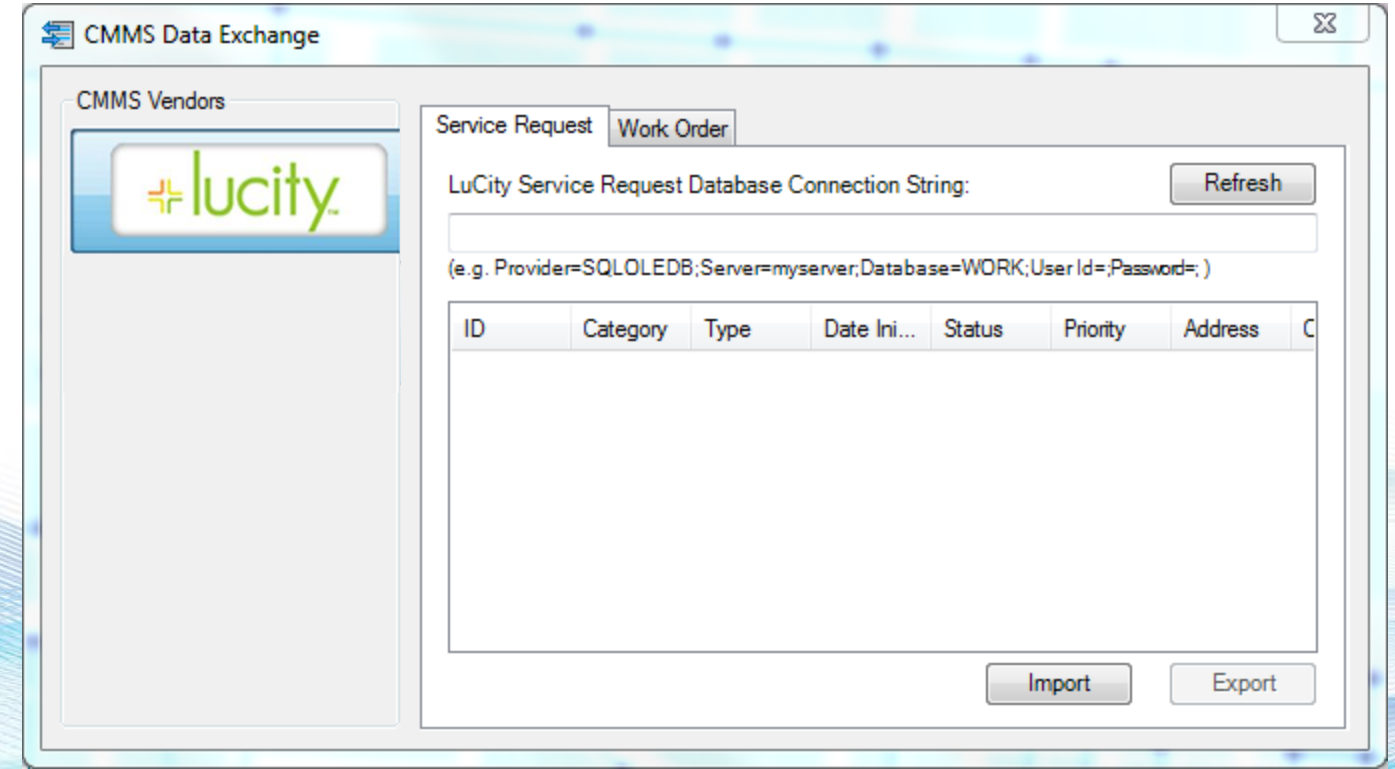


Out-of-the-Box Data & Reporting Hub



Exchange Data with Lucity

- Pull in Likelihood of Failure info
  - Breaks, leaks, service calls, customer complaints, etc.
- Push back Prioritized Tasks
  - Inspections, cleaning, lining, pigging, etc.



Introducing InfoMaster

- Live demonstrations
  - Wastewater collection system
  - Potable water distribution system

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