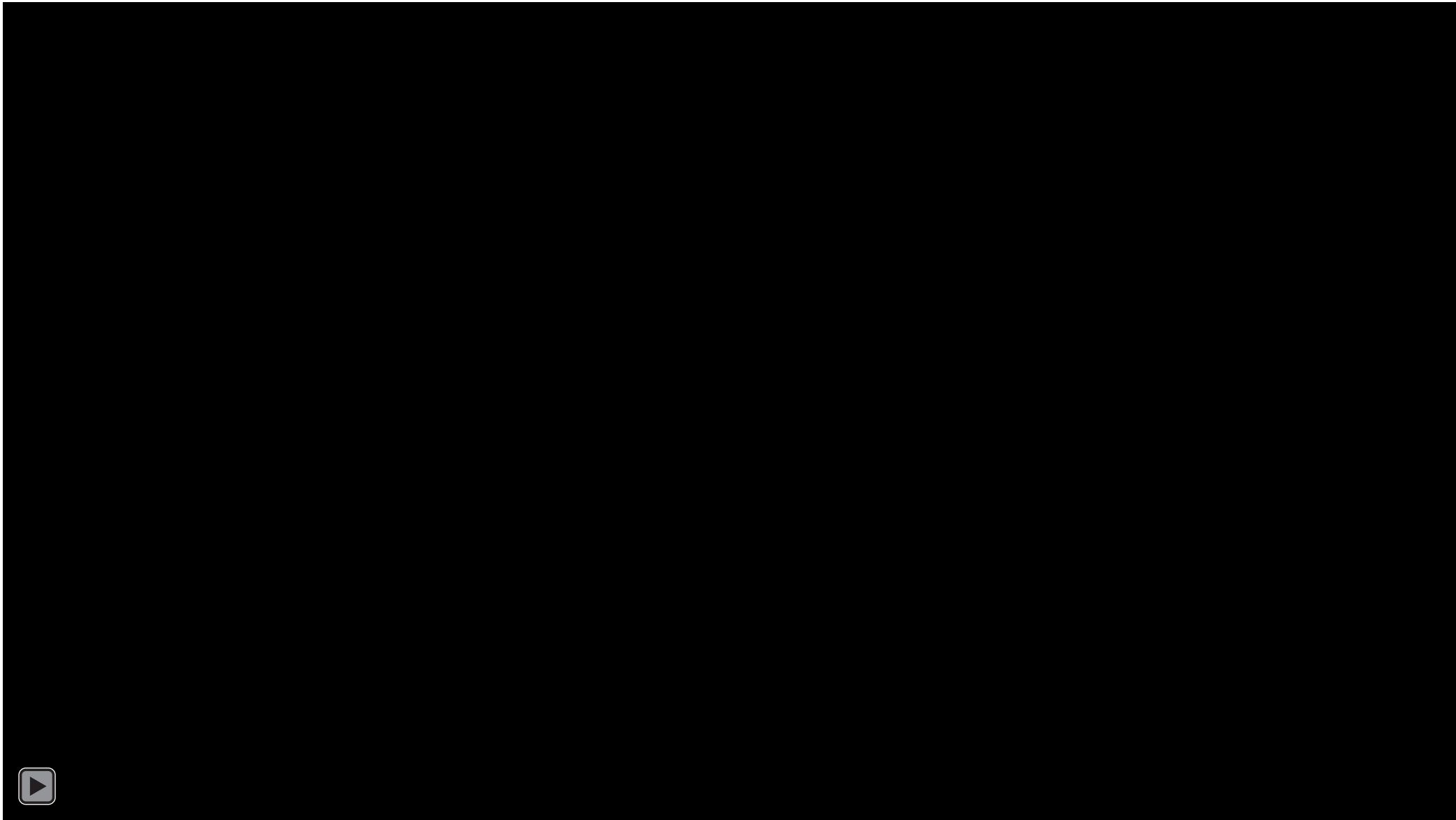




How to move your CUI from Reactive to Proactive



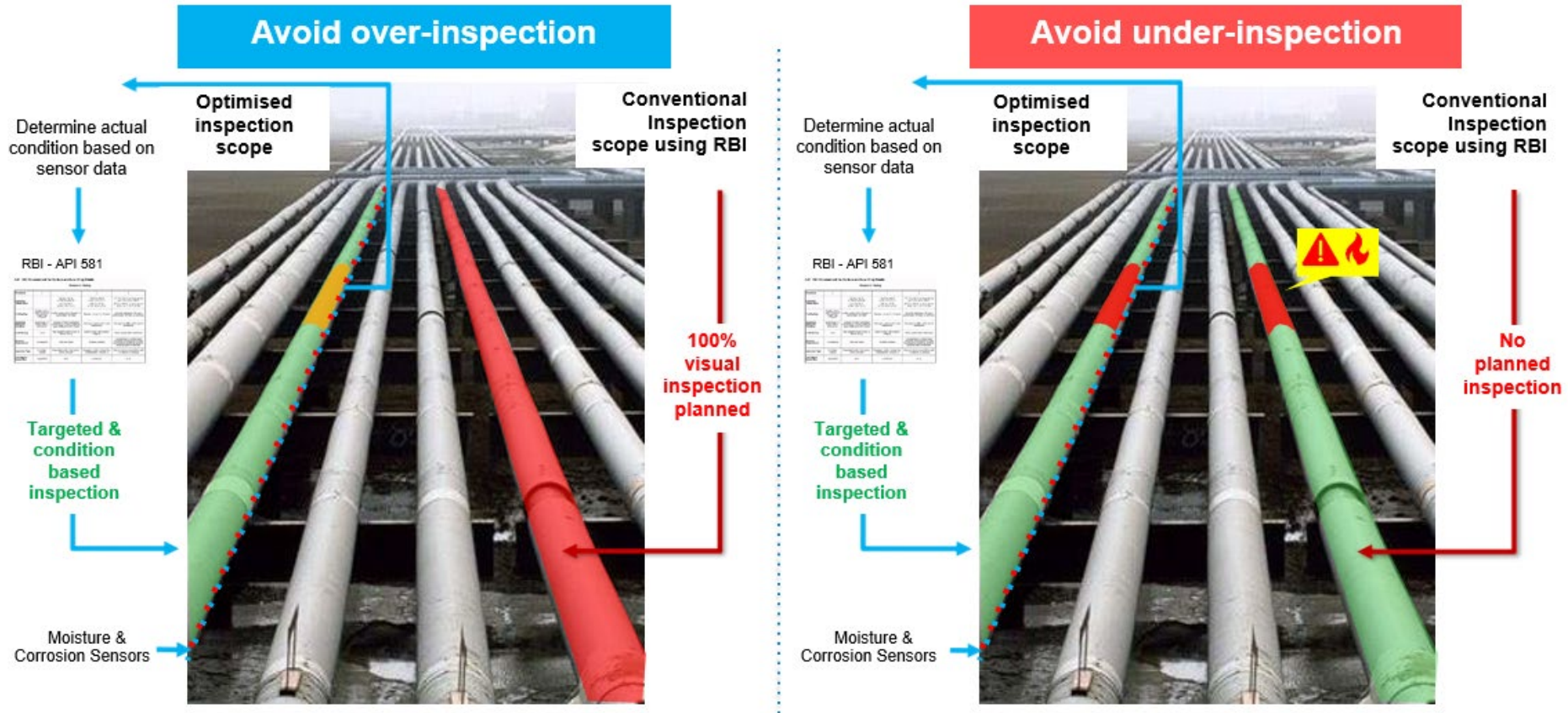


Corrosion under Insulation is a serious risk for companies looking at health, safety, environment and reputation.

Wouldn't you like to be in control?

- Being in Control limits risks of unexpected events.
- Being in Control will help prevent uncontrollable damage
- Being in Control will avoid the risk for unpredictable cost.
- Being in control will help You being a thought leader towards your management, stakeholders and within the Industry. It will strengthen your brand.
- Being in Control will make You an example in the community, even with the local government.

Most common practise of CUI detection.



Sitech CUI Implementation Strategy

6. Future use cases

The following use cases can be developed further: Digital Twin, reduction of leakage losses, alignment with other plans (energy, CO2, etc)



1. Objective condition of assets

Map the condition of the assets on the basis of objective criteria (age, material, defects,...)



Strategy

2. Prioritisation according to risk

Drawing up a prioritisation list of assets according to risk, and this by section and by area.



5. Monitoring of synergy

Monitoring and communicating synergy, performance and other KPIs related to the monitoring



3. Drafting of multi-year planning

Drawing up a multi-year planning for maintenance and/or replacement works.



4. Simulation of policy choices

Simulation of policy choices and their impact on the assets, its condition, failures, synergy, costs, etc.



Optimisation of CUI Risk and Inspection Scoping



Identify

Site Survey

Select assets with High risk

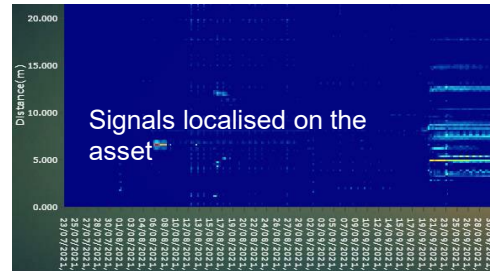
Overall CUI susceptibility

Number	Tag No.	Process Unit	Component	Assessment	CUI susceptible areas
1	YY-001-F-1201	Delayed Coker	Coke drums	Very Low	
2	YY-001-F-1202	Delayed Coker	Coke drums	Low	
3	YY-001-F-1203	Delayed Coker	Coke drums	Low	
4	YY-001-F-1204	Delayed Coker	Coke drums	Medium	
5	YY-001-F-1205	Hydrotreating	H2S Absorber	High	
6	YY-001-F-1209	Sulfonation	Feed drums	Very High	
7	YY-001-F-1209	Sulfonation	Feed drums	Very High	
8	YY-001-F-1208	Sulfonation	H2 drums	Very High	
9	YY-001-F-1209	Sulfonation	H2 drums	Very High	
10	YY-001-F-1209	Sulfonation	Feed drums	Very High	



Deploy

System Installation
Hardware and Software



Monitor

Remote Monitoring
Detection and Localisation

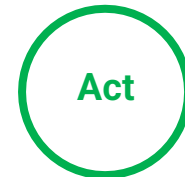
Risk

SHE	Last Change	Business	Last Change
H	09/11/2021	H	09/11/2021
M	15/01/2021	M	15/01/2021
M	23/02/2021	H	23/02/2021
L	05/04/2020	L	05/04/2020
M	11/10/2020	M	11/10/2020
M	01/09/2020	M	01/09/2020
L	09/08/2019	L	09/08/2019



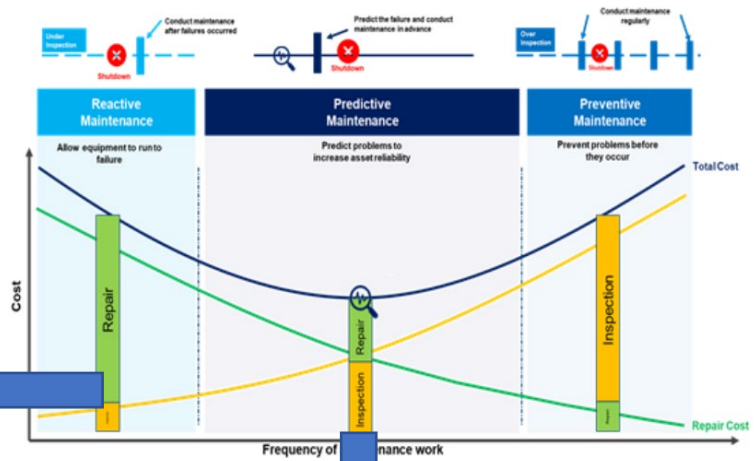
Predict

Risk Analytics
Software

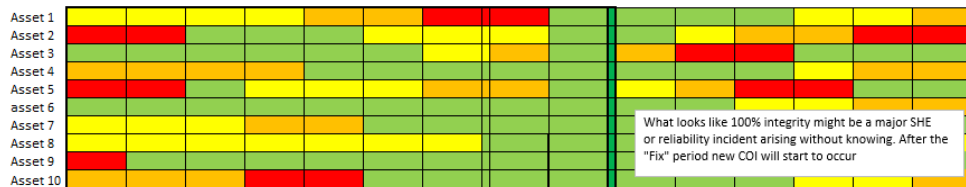


Act

Inspect and Repair
Proactive

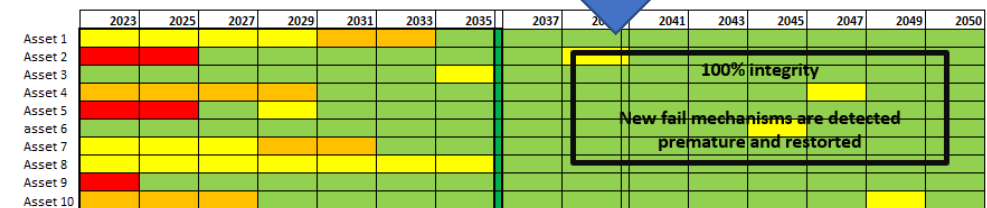


Traditional Approach



What looks like 100% integrity might be a major SHE or reliability incident arising without knowing. After the "Fix" period new COI will start to occur

Our Solution



CUI Dashboard - Risk Analytics for inspection optimisation

CUSTOMISED TO CUSTOMER'S RISK MATRIX

Applications

Welcome to CR's Asset Management Platform
Hello demo@corrosionradar.onmicrosoft.com!

[Demo] Pages

Go back ↩

Welcome

- Asset overview
- Asset details
- Sensor details

CUI Risk (DNVRP109)

CUI Risk (API 581)

CUI Survey (API 583)

Wall Thickness

Asset risk (live)

sitech services

[Demo] Pages

Go back ↩

Welcome

- Asset overview
- Asset details
- Sensor details

Asset information

Sensor ID	Sensor Type	Online	Corrosion	Moisture	SHE	Business	CUI Pof	Coating Pof	Material Pof	Water Pof	Design Pof
833ch1	Corrosion	Yes	None	Detected	H	M	H	H	H	H	H
833ch2	Moisture	Yes	Detected	None	L	L	M	H	H	L	H
84ch1	Corrosion	Yes	None	None	L	L	M	H	H	L	H
84ch2	Moisture	Yes	None	None	L	L	M	H	H	L	H

Risk

Variable	Value
version	1
creation_date	2020-10-01 10:10:00
not_inspection_history	No_NDT_Finding_3_to_8_years_at
coating_type	Hot_Dip_Galvanizing_PDG
coating_age	_31_31
pipe_material	Carbon_Steel
sensor_state	WET_Junction
type_of_insulation	Mineral_Wool
nominal_pipe_size	_15
pipe_scheibel	_40
operational_temperature	100

Site wide risk snapshot (live)

sitech services

[Demo] Pages

Go back ↩

Welcome

- Asset overview

Asset information			Sensor		Risk				
Asset Tag	Site Name	Sensors Online	Corrosion	Moisture	SHE	Last Change	Business	Last Change	
8-dm-p170183	Cracker 1	4/4	Detected	Detected	H	09/11/2021	H	09/11/2021	
8-dm-p10009	Cracker 1	4/4	None	Detected	M	15/01/2021	M	15/01/2021	
4-pl-83003-c3b	Cracker 1	2/2	None	Detected	M	23/02/2021	H	23/02/2021	
4-pl-83004-c3b	Cracker 1	4/4	None	None	L	05/04/2020	L	05/04/2020	
2-fl-65006-c3b	Refrigeration 6	2/2	None	None	M	11/10/2020	M	11/10/2020	
2-fl-62004-c3b	Refrigeration 6	2/2	Detected	Detected	M	01/09/2020	M	01/09/2020	
eg-bl-80329-c...	Refrigeration 6	2/2	None	None	L	09/08/2019	L	09/08/2019	
eg-dh-47464-...	Dehydration 2	2/2	Detected	Detected	H	09/08/2021	H	09/08/2021	

Risk Localisation

sitech services

[Demo] Pages

Go back ↩

Welcome

- Asset overview
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- Sensor details

Online

Online	Detections	CUI Pof	Coating Pof	Material Pof	Water Pof	Design Pof
Yes	Detected	H	H	H	H	H

CUI Pof by Distance(m)

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36

Moisture

Commissioning date
2020-12-23T08:00:00+00:00

Decommissioning date
Length
10-25

Greenfield: CUI Risk Monitoring with Moisture and Corrosion Sensing

Helical Configuration

Line Configuration

Mesh Configuration

Monitoring Vessels

Cloud / On-Premise Visualisation & Analytics Dashboard

Unique benefits:

1. Long Range / Spatial coverage
2. Flexible & Easy Deployment
3. Decision management

Node (electronics)

ATEX/IECEx Certification	II 2 GD Ex db IIB+H2 T3-T6 Gb Ex tb IIIC T85°C - T150°C Db
Ingress Protection	IP66
Power Source	Mains (24 VDC) / Long life Battery
Communications	Wireless: WiFi/Cellular/WirelessHART/LoRa Other options: USB Data Logger
Approx. Dimensions (mm):	284H X 245W X 169D (Without Antenna)
Approx. Weight	11.2 Kg

Sensors

Sensor Types	Corrosion Moisture
Sensor Length	Up to 100 m
Temperature Range (°C)	- 190 to +300 °C

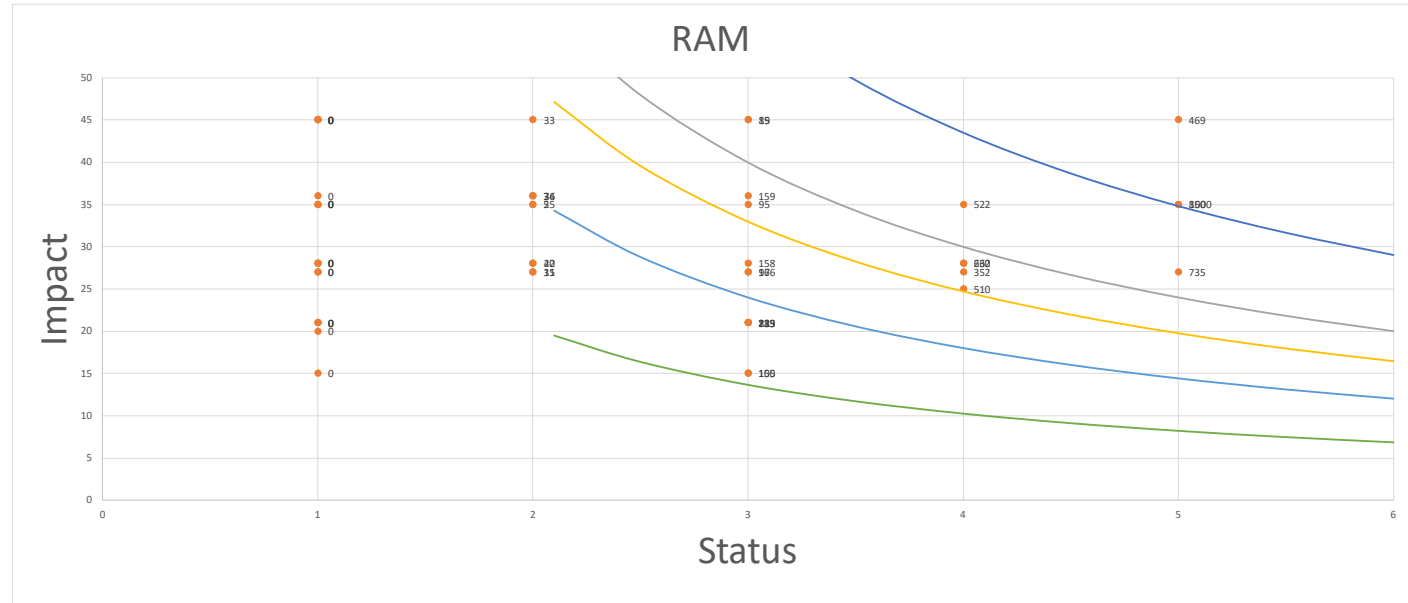
Predictable cost linked to the measured data

Cost calculation based on 4 piping conditions:

Status of the pipe	Work	Cost calculation
Rotten (water intrusion and severe progress of corrosion)	Replace the pipe	Length x Diam. x Labour x ...
Rusted (water intrusion and start of corrosion)	Recondition the pipe	Length x Diam. x Labour x ...
Wet (water intrusion detected)	Open the cladding and dry the insulation	Length x Diam. x Labour x ...
Dry	None	None

From Strategic to Tactical decision making.

Stakeholder Strategy					
Range	EHS	Economical	Environmental	Quality	Innovation
0-5	5	2	4	3	3



OPEX

Budget X+1
248

CAPEX

Budget Year X+1
2319

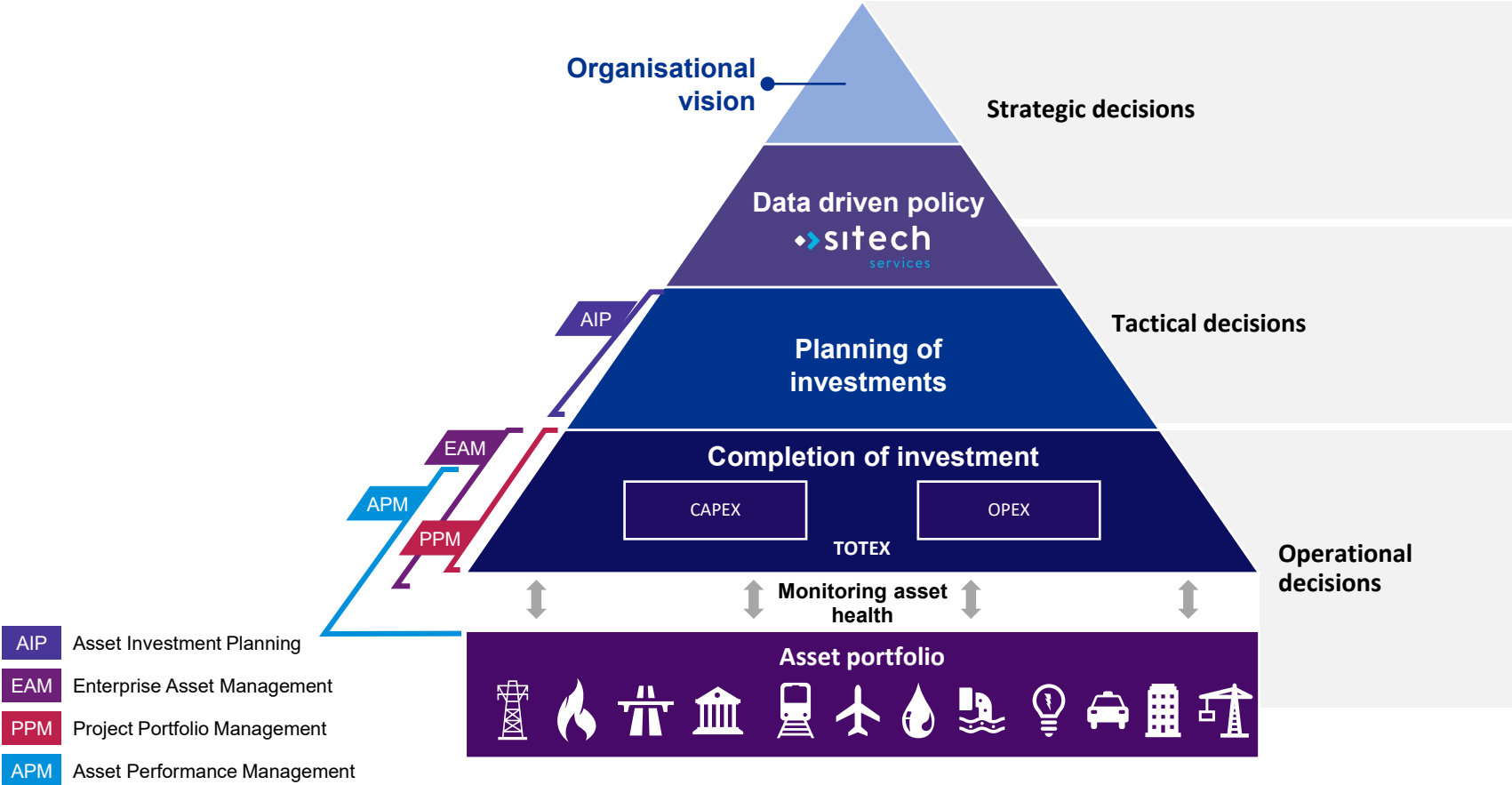
Budget Year X+2
1361

Budget Year X+3
2008

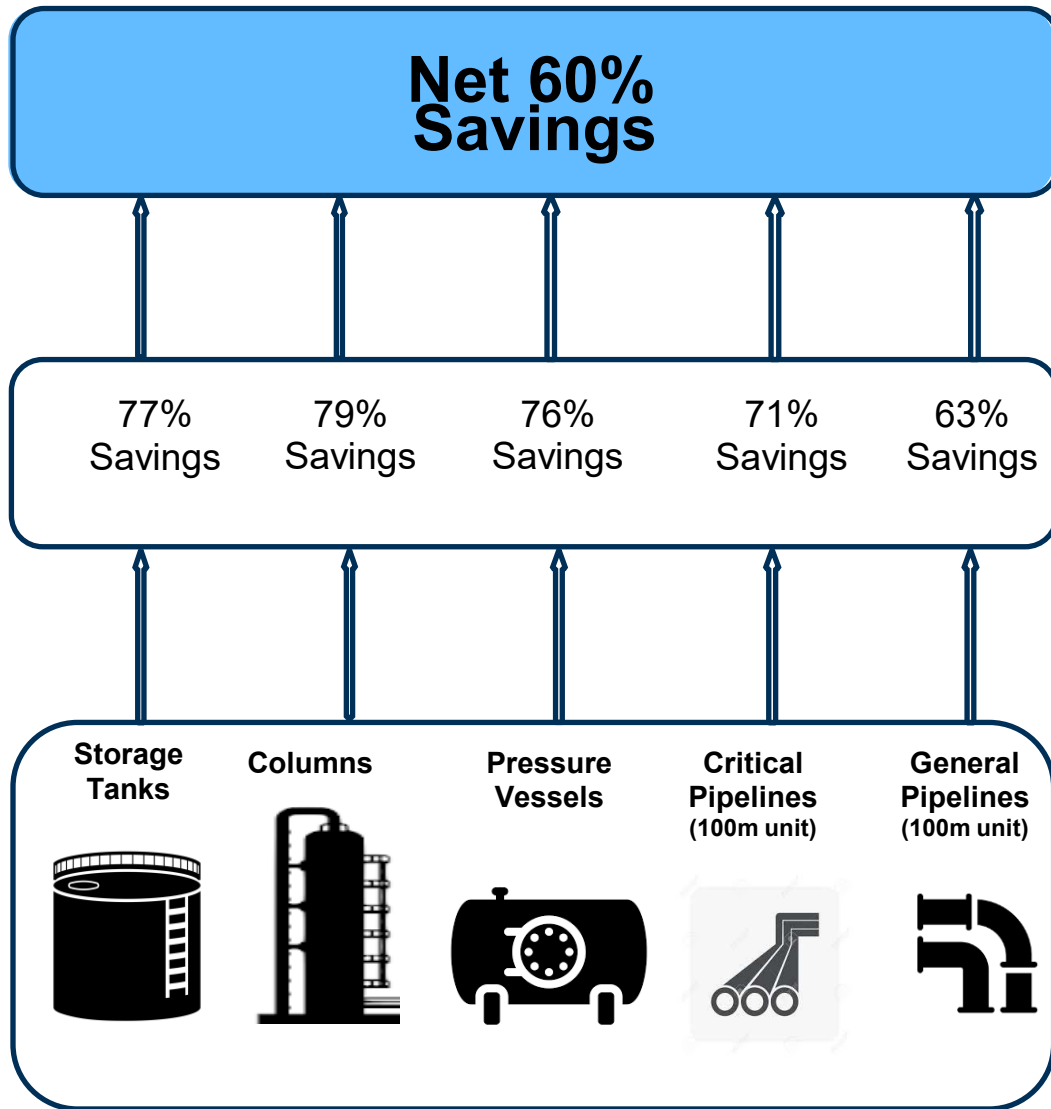
Budget Year X+4
421

Budget Year X+5
974

SITECH platform as enabler for data-driven policy



A SITE WITH ~€15M ANNUAL CUI COST



Inspection Tasks	No Monitoring	With CUI Monitoring
Scaffolding Per year	€6,4M	€2,1M
Insulation Per year	€5,6M	€1,8M
Other Costs Per year	€3M	€1M
Monitoring	Nil	€1,2M
TOTAL CUI COST	€15M	€6,1M
Net Saving	Nil	€8,9M
Net Saving %		60%