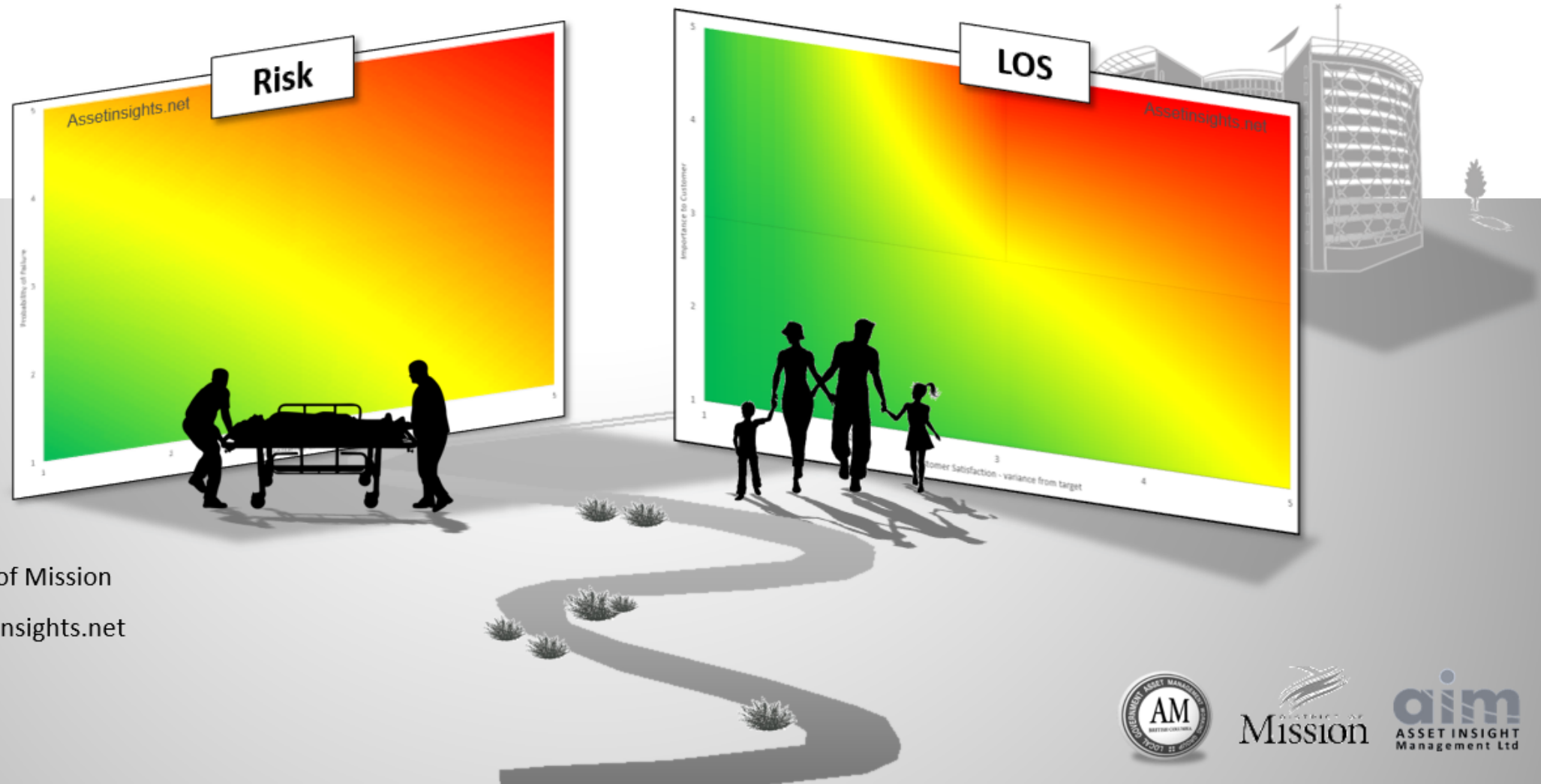


Asset Management BC (AMBC) Conference

The Converging of Two Journeys



Jason Kinch, District of Mission

David Albrice, Assetinsights.net

November 7, 2019



Agenda

- Introduction
- The LOS Journey
- The Risk Journey
- The Two Journeys Converged
- Q&A



AMBC Conference, Nov. 2019:

Introduction

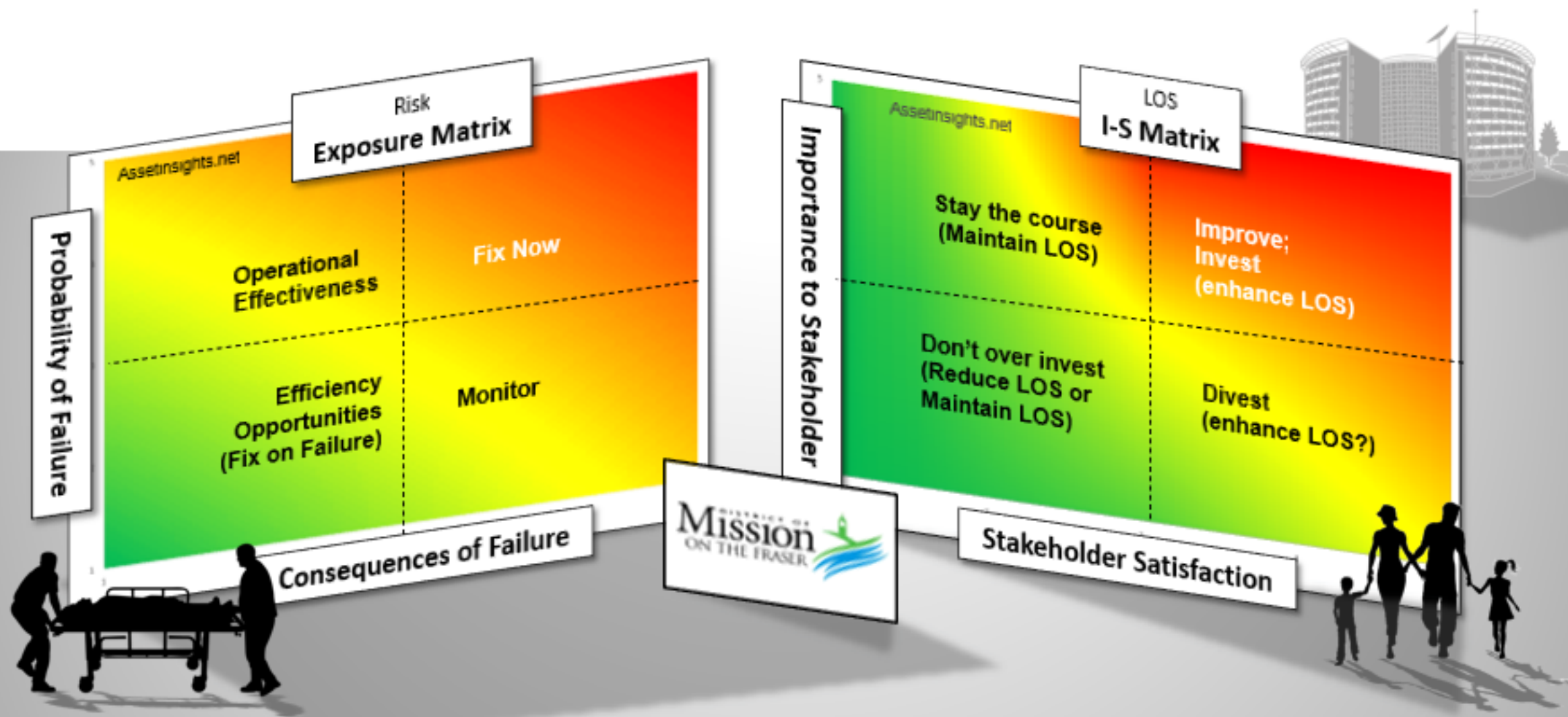




Best Practices & Guides for LOS & Risk



Best Practices & Guides for LOS & Risk

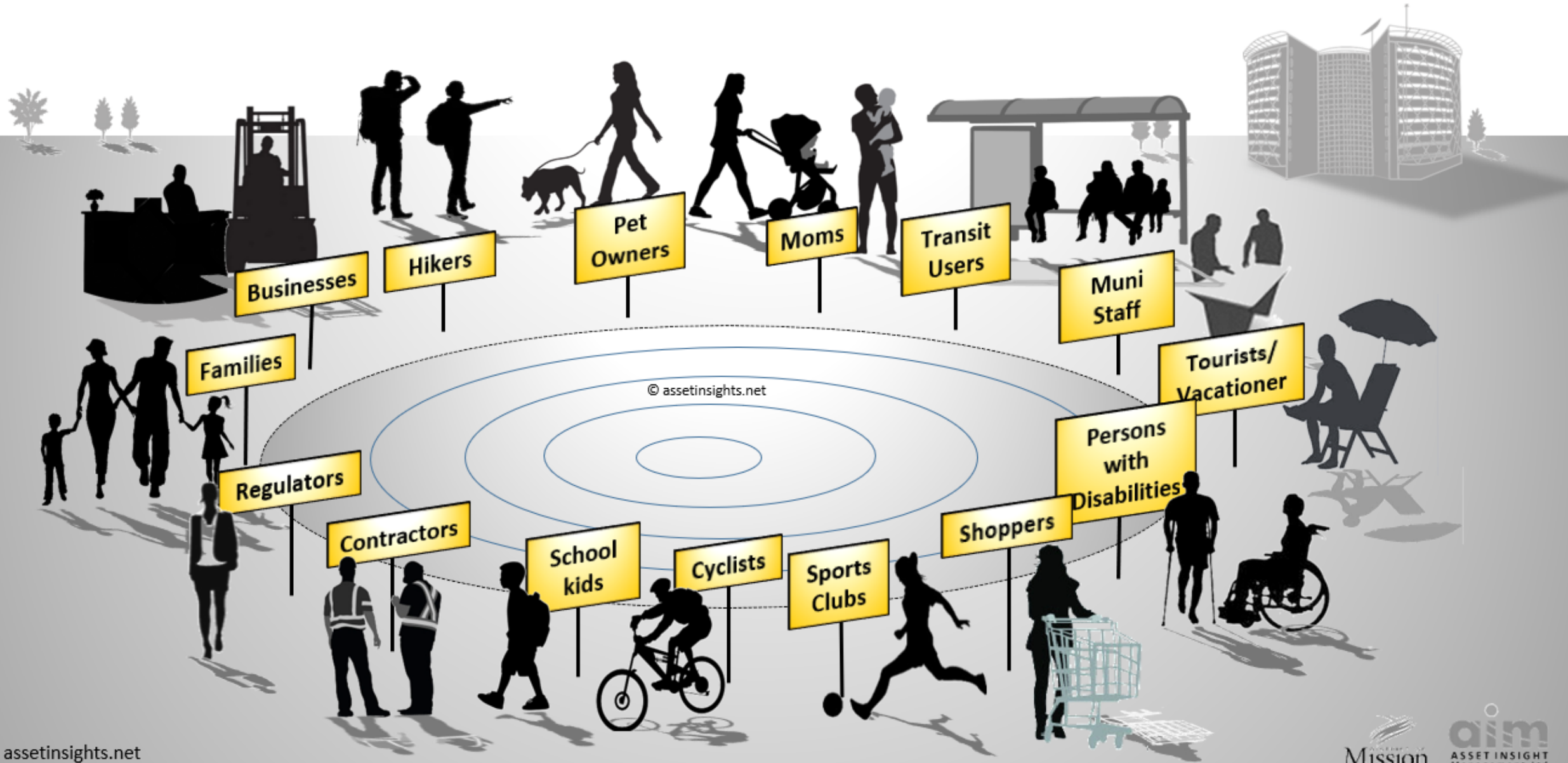


AMBC Conference, Nov. 2019:

The Many Moving Parts



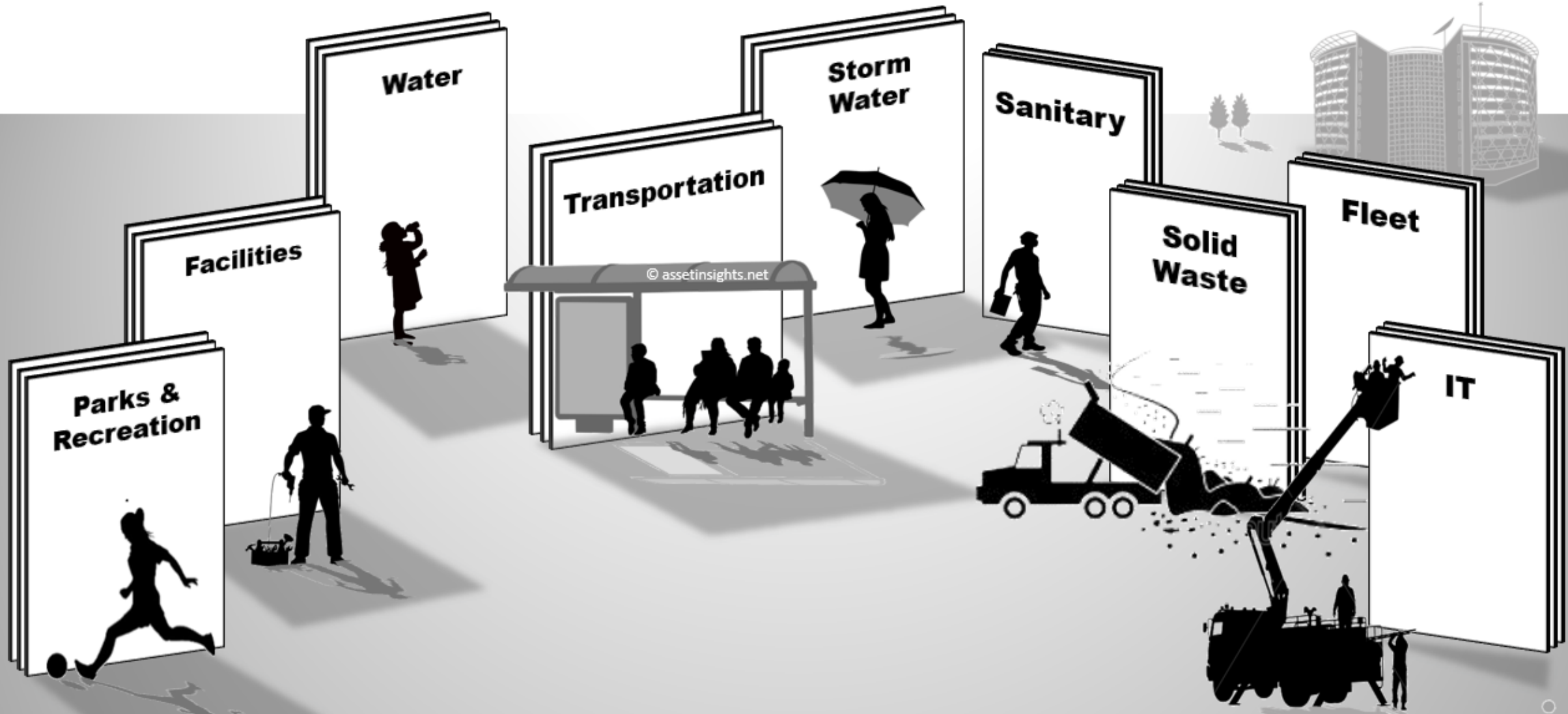
Stakeholders of Many Kinds



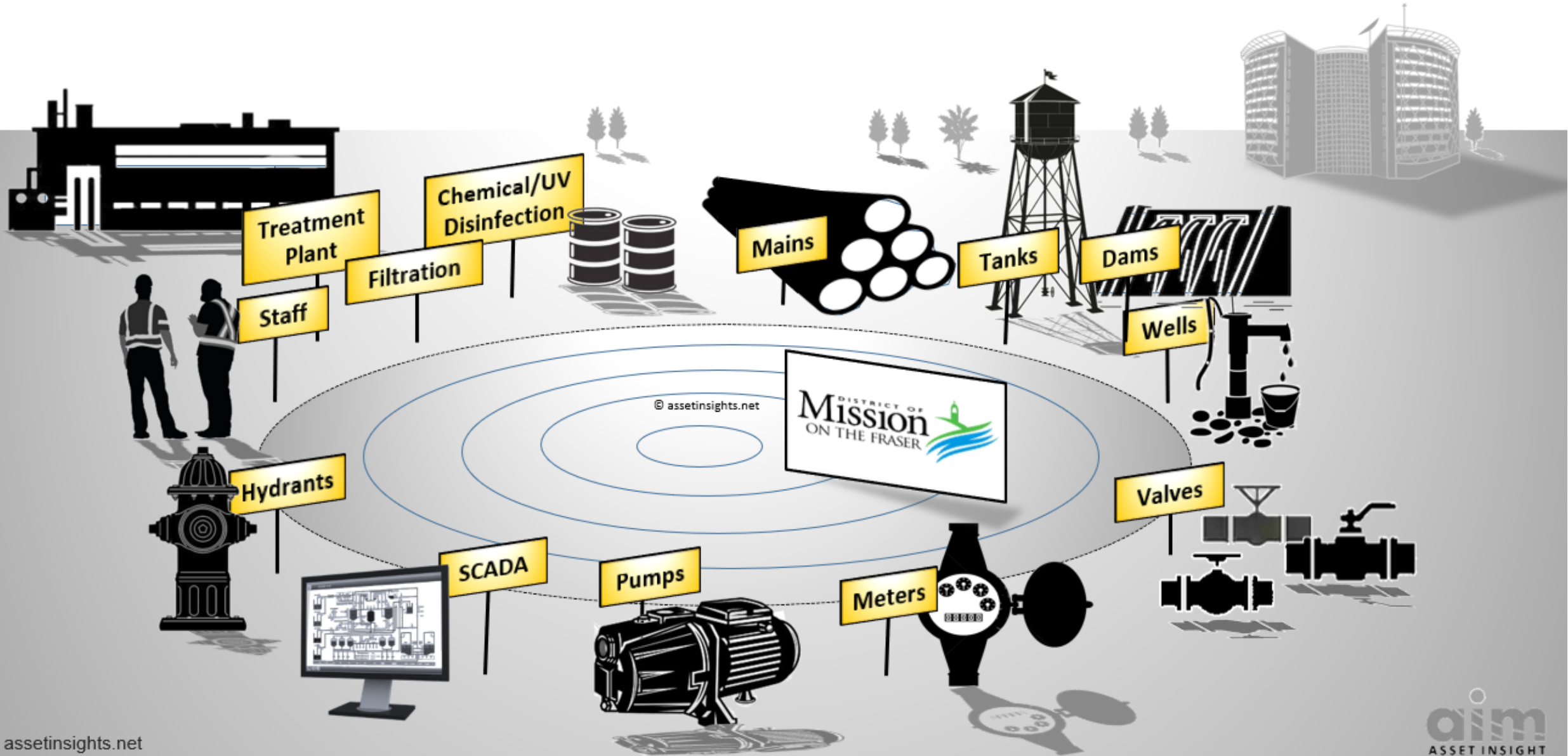
Drivers & Goals of Many Kinds



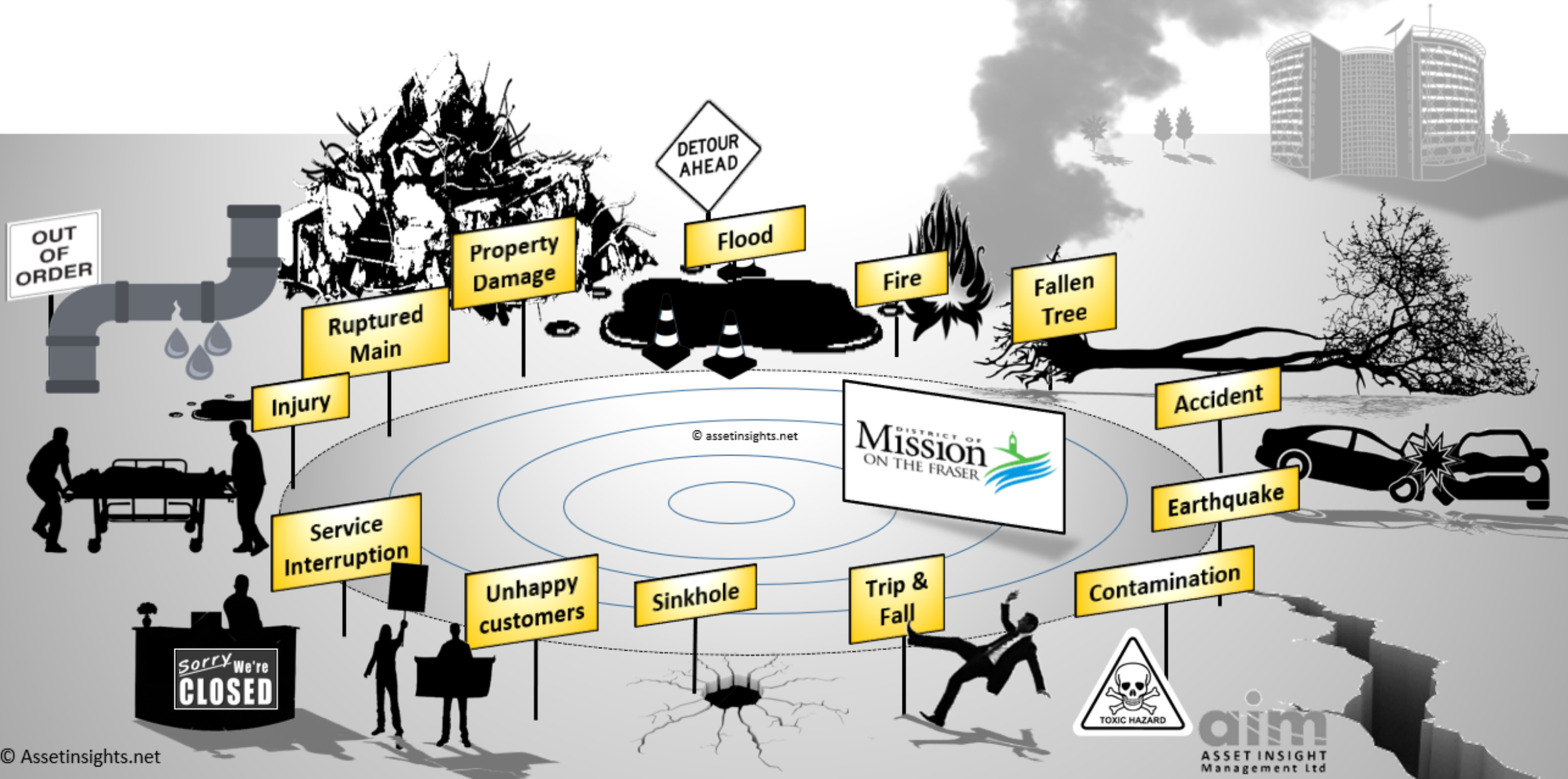
Asset Classes of Many Kinds



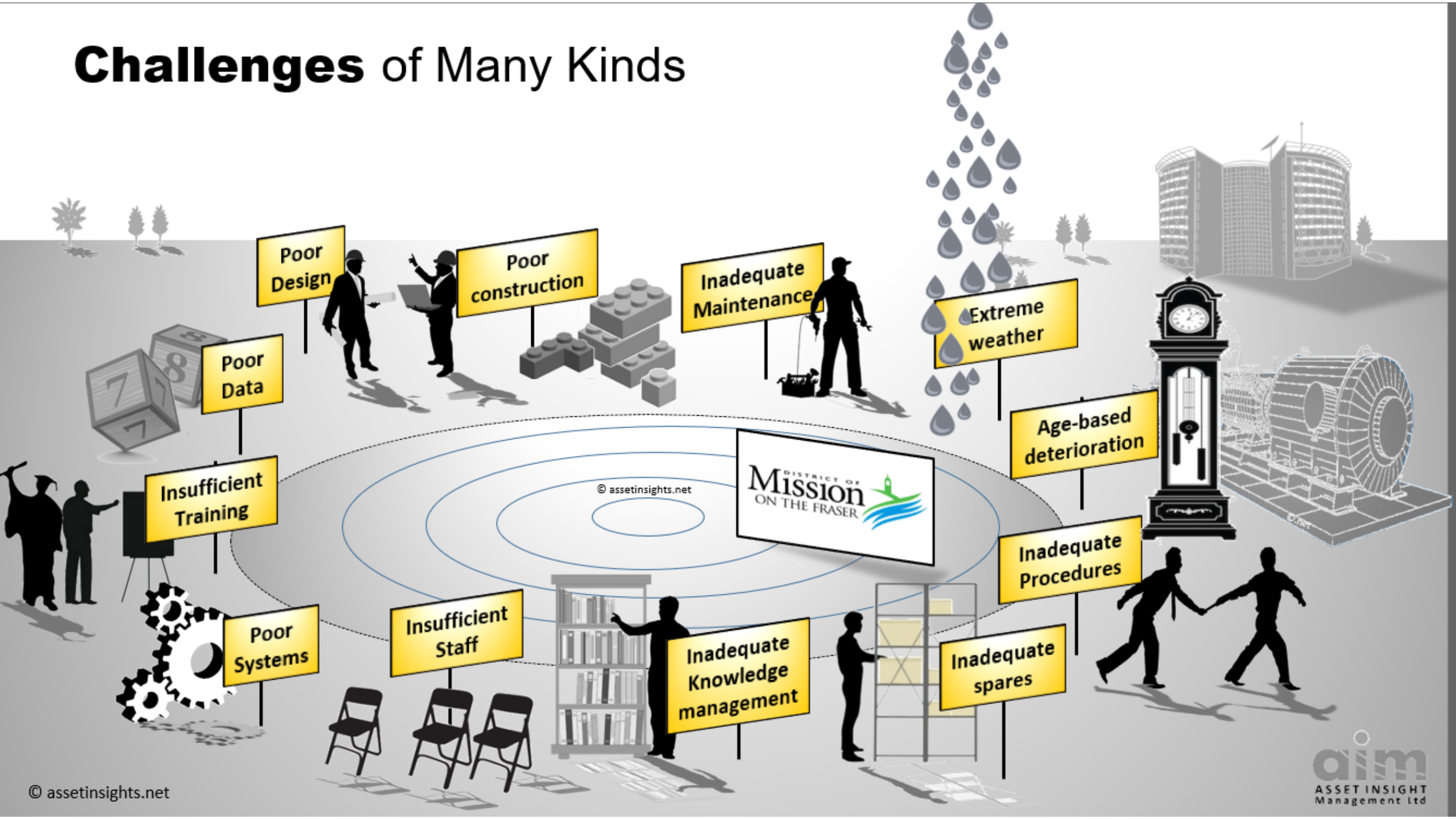
Assets of Many Kinds



Risks of Many Types

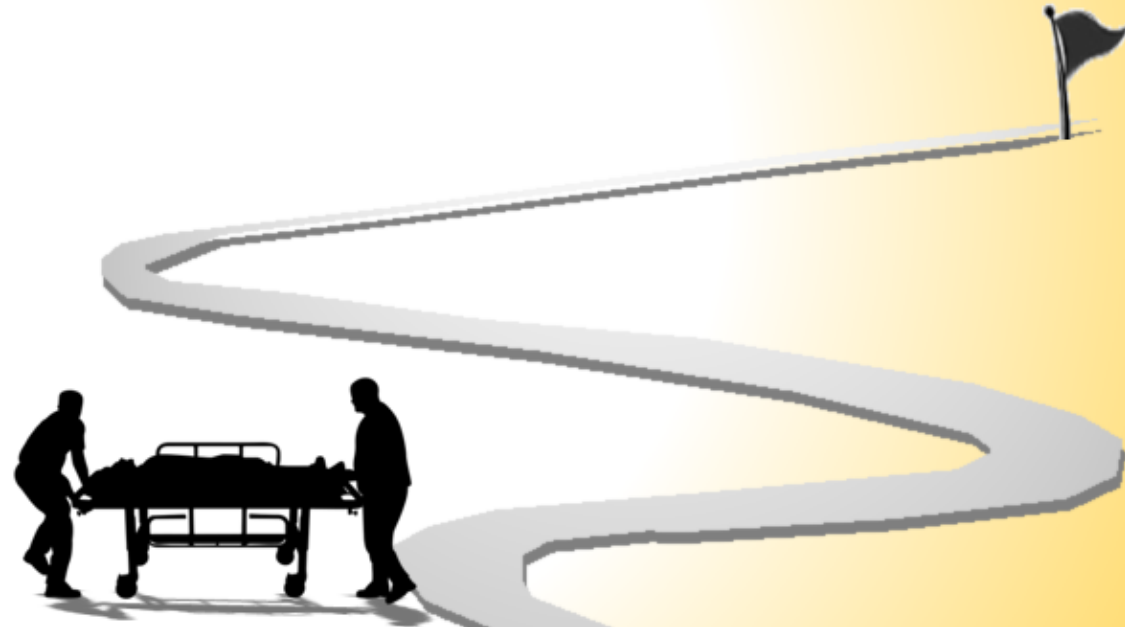


Challenges of Many Kinds

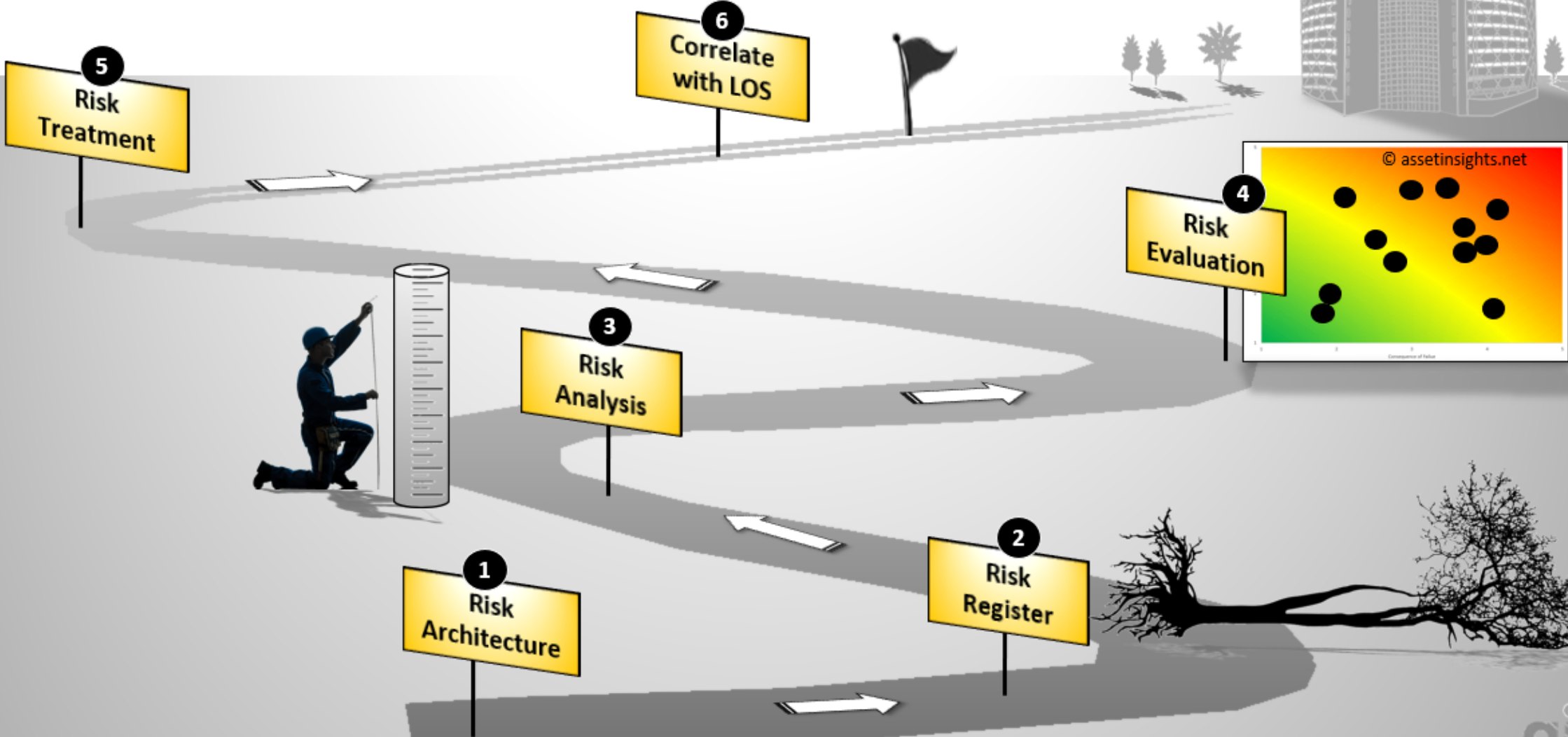


AMBC Conference, Nov. 2019:

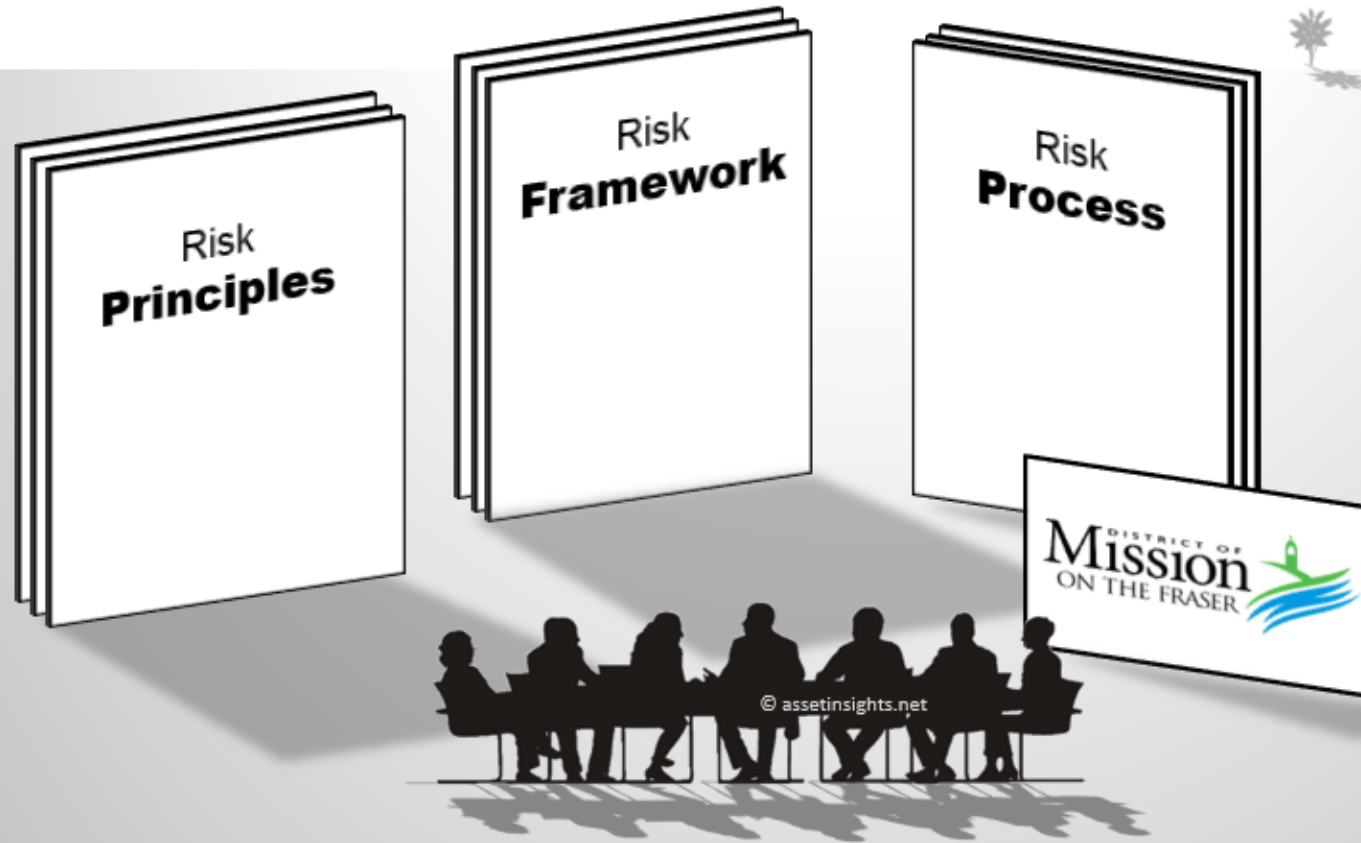
The Risk Journey



Risk Management Journey

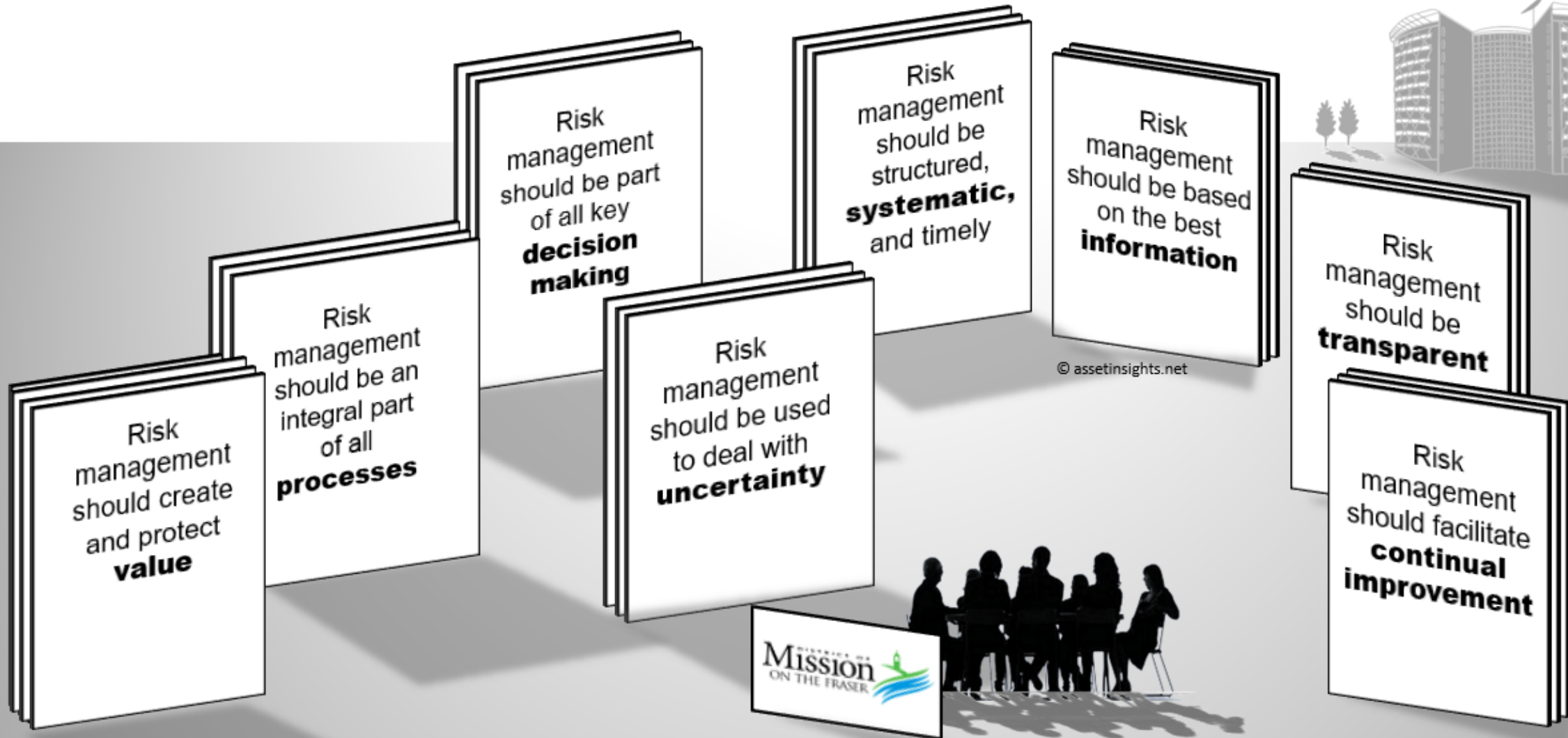


Risk Management Architecture



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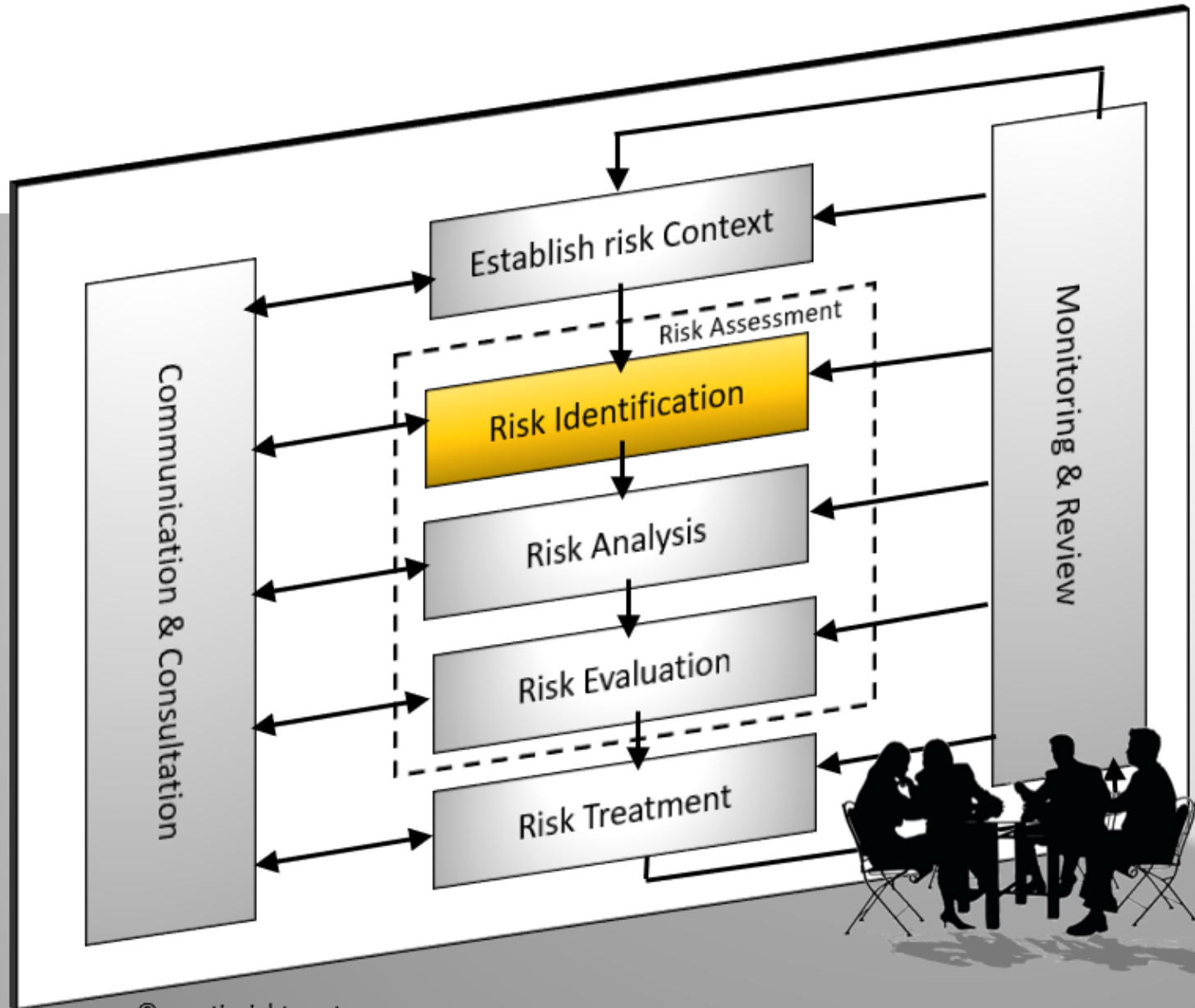
Risk Management Principles



Risk Management Framework



Risk Management Process



Risk Formulas

Levels of Complexity	Formula	Selected Formula
Level 1	<i>Risk = Likelihood X Consequences</i> This formula utilizes the consequence with the maximum value	X
Level 2	<i>Risk = Likelihood X Σ Consequences</i> This formula sums up the value of all the consequences	✓
Level 3	<i>Risk = Likelihood X Σ (Probability X Consequences)</i>	X
Level 4	<i>Risk = Likelihood X Σ (Probability X Severity X Scale)</i>	X

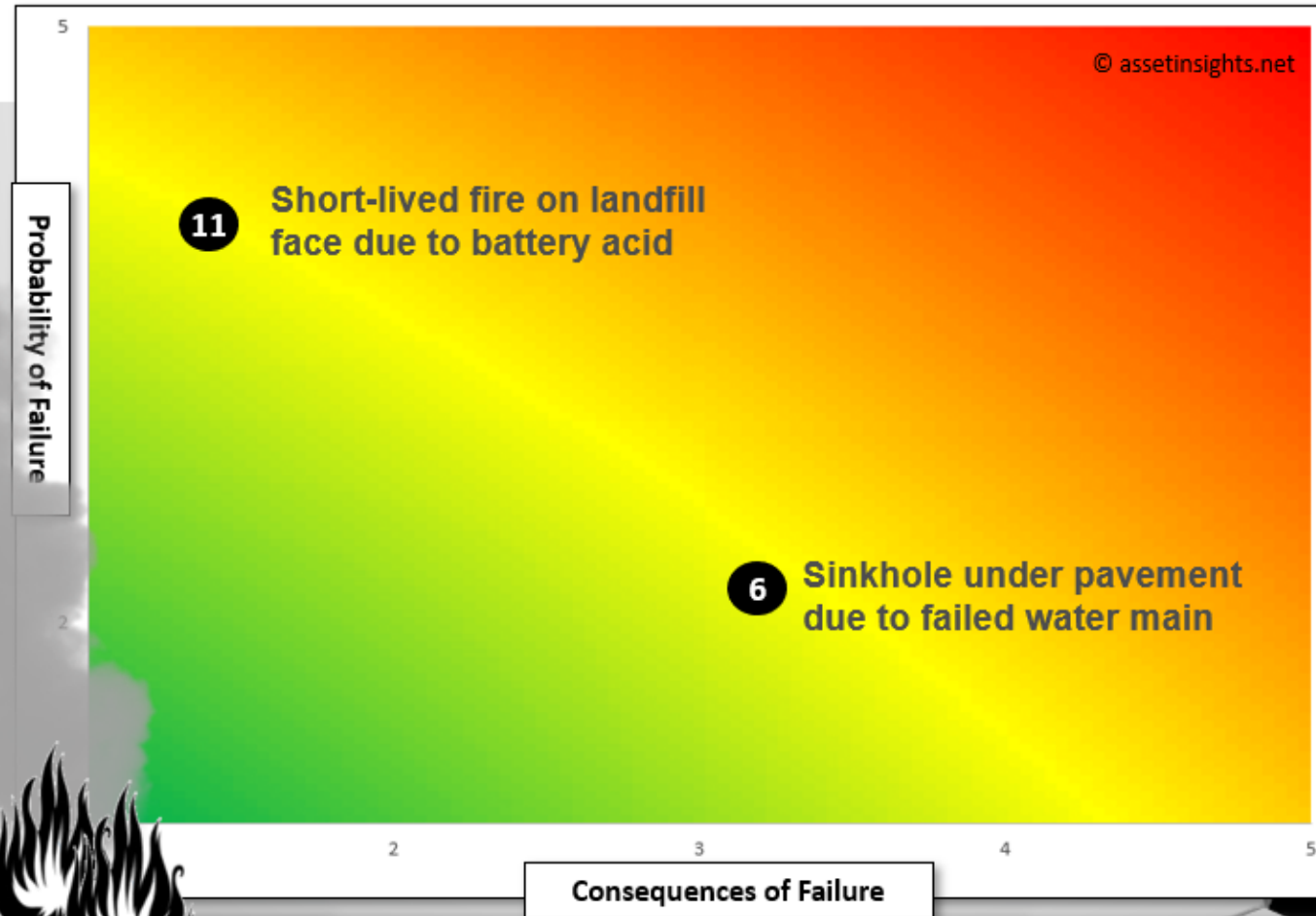


Risk Register (Pilot 2019)

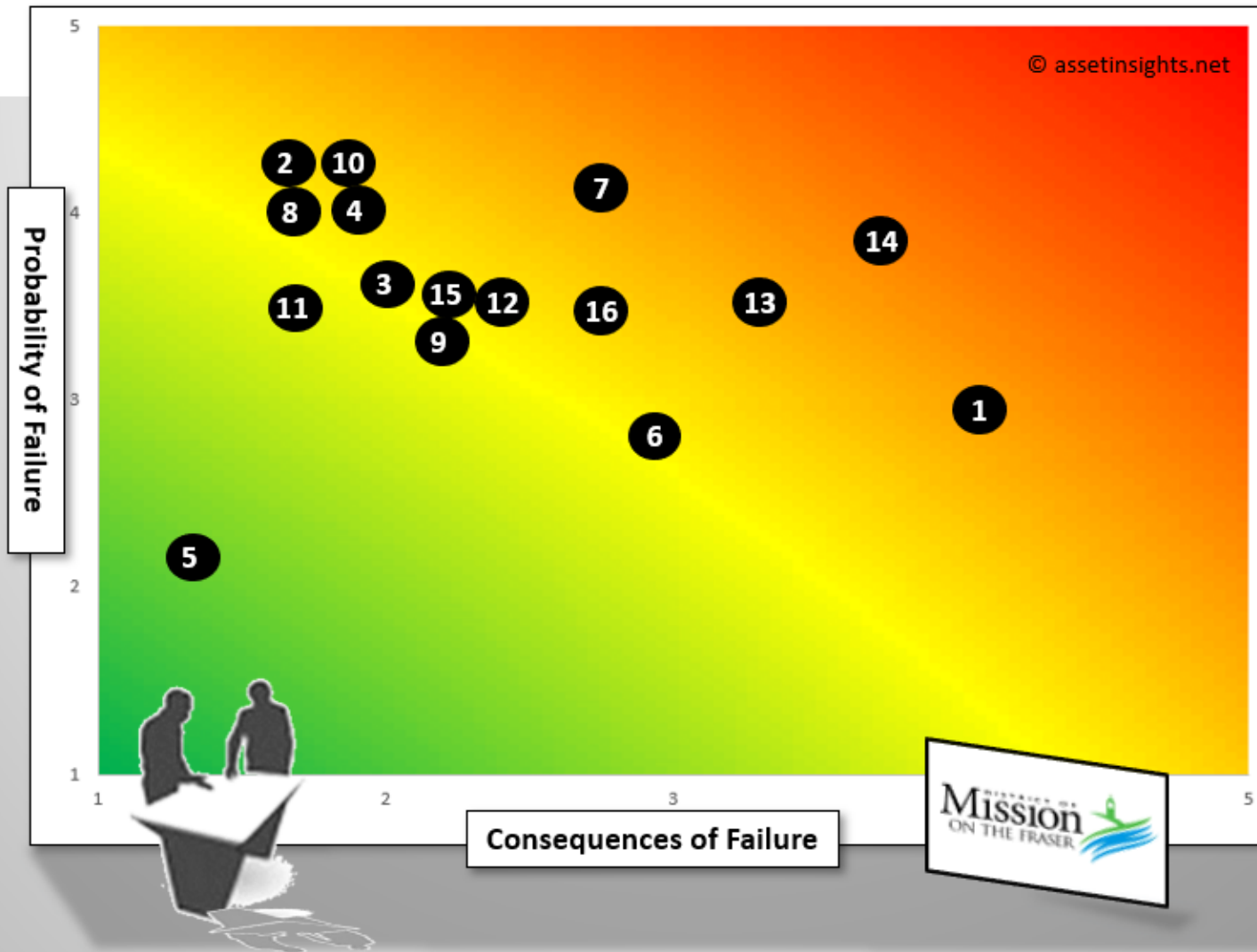
Asset Classes	ID.	Risk Event	Cause (due to...)	Risk Score	Risk Rank
Transportation	1	Vehicular bridge collapse	Structural failure based on gradual deterioration	34	#4
	2	Disruption of traffic on rural road	Tree falling and impeding both lanes of traffic and knocks out power due to windstorm	20	#14
Facilities	3	Contractor injury	Falls over edge of roof during roof repairs (inadequate fall protection in areas without guardrails)	21	#9
	4	Collateral water damage	Domestic water main rupture after hours	24	#7
Water	5	Boil water advisory	Ruptured domestic water main	21	#10
	6	Property damage (flooding) to multiple residential homes	Contaminated water from ruptured domestic water main	27	#6
Wastewater	7	Property damage (flooding) to multiple residential homes	Grease blockage in wastewater system	40	#2
	8	Service disruption	Root infiltration of a wastewater main	12	#16
Storm Water	9	Property damage (flooding) to multiple residential homes	Heavy rains causing tree debris to block trash racks in storm water system	21	#11
	10	Sinkhole under pavement	Failed storm water main	21	#12
Solid Waste	11	Leachate pump failure (after hours) in wet weather	Power outage	15	#15
	12	Short-lived fire on landfill-face	Cigarette or machine spark or disposed battery in dry weather conditions	24	#8
Parks & Recreation	13	Property damage to multiple residential homes along Jasper Avenue	Hazardous maple tree falls during windstorm	39	#3
	14	Significant ammonia release permeating neighbourhood during the night	Age-based deterioration of arena plant equipment	42	#1
Fleet & Equipment	15	Fire service interruption	Fire truck failure from unrecognized maintenance due to lack of operator training/experience	21	#13
	16	Property damage	Fire truck failure from unrecognized maintenance due to lack of operator training/experience	30	#5



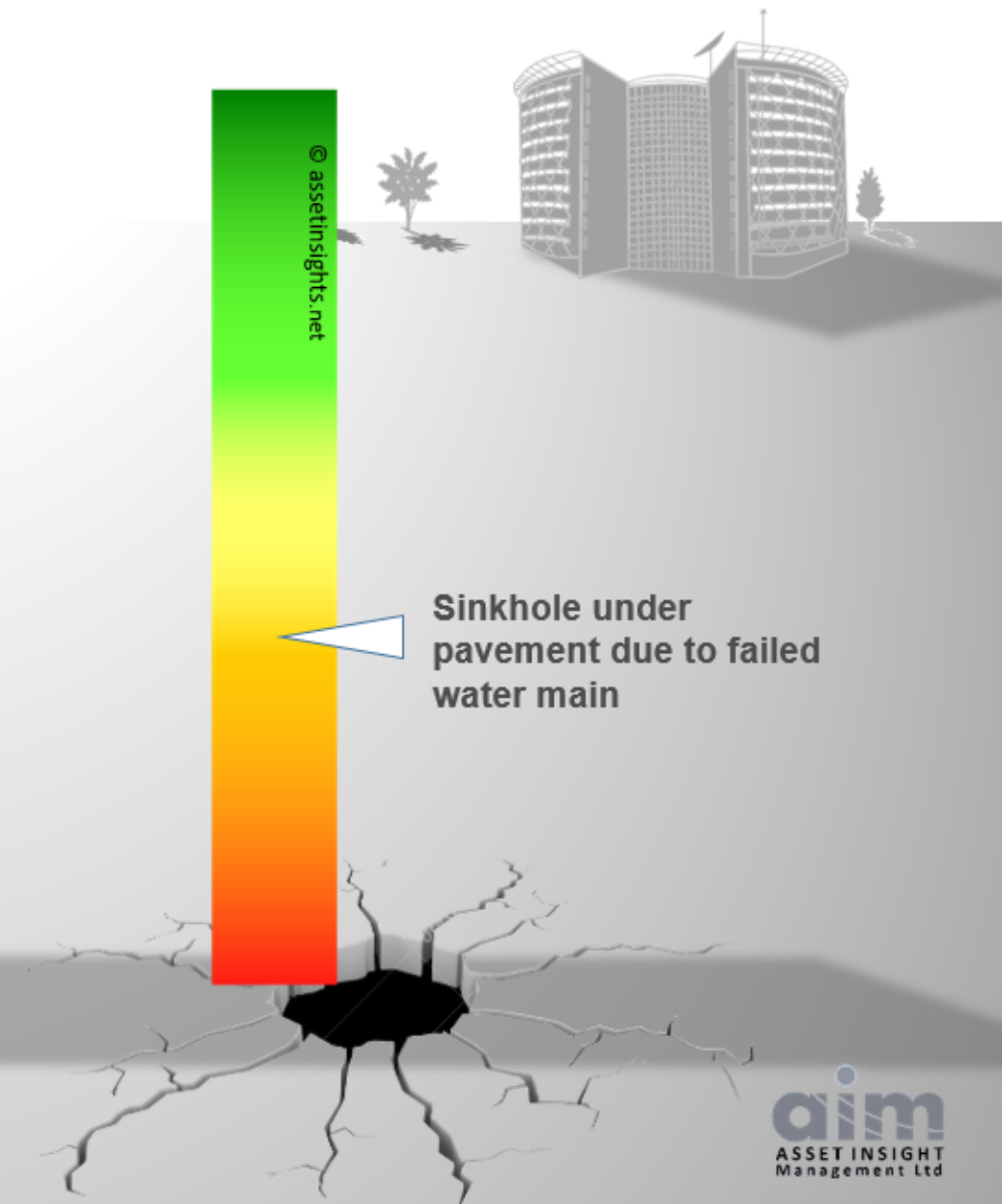
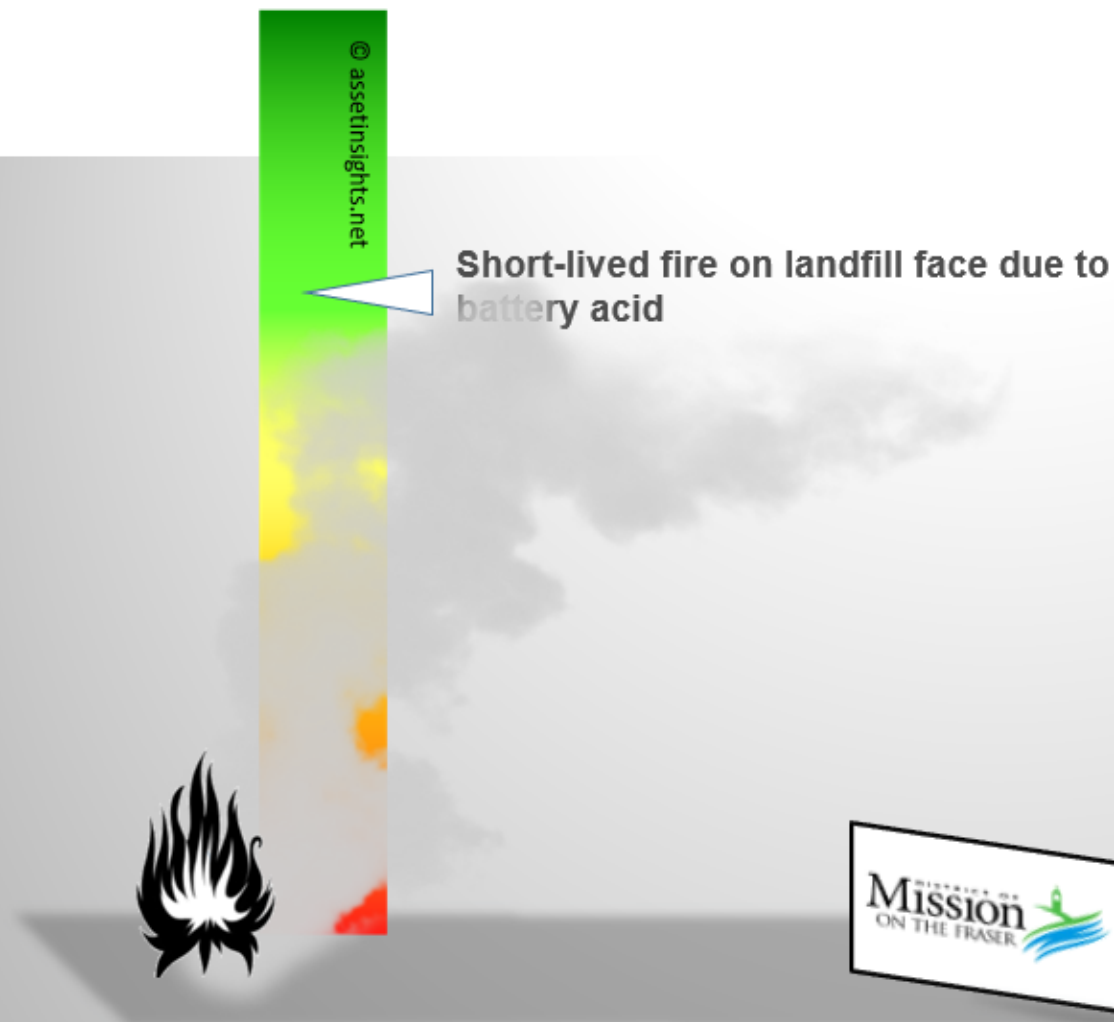
Risk Analysis



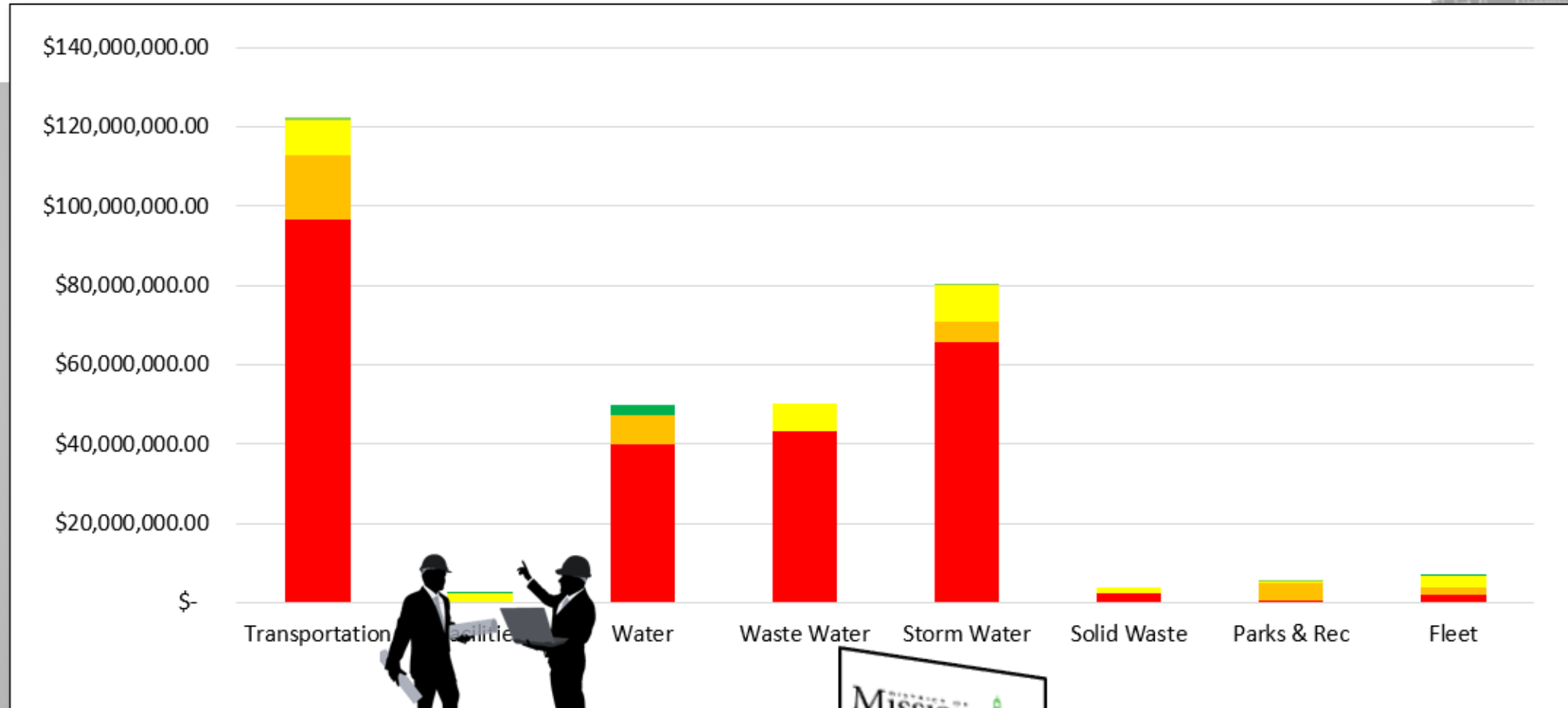
Risk Matrix with Register Plotted



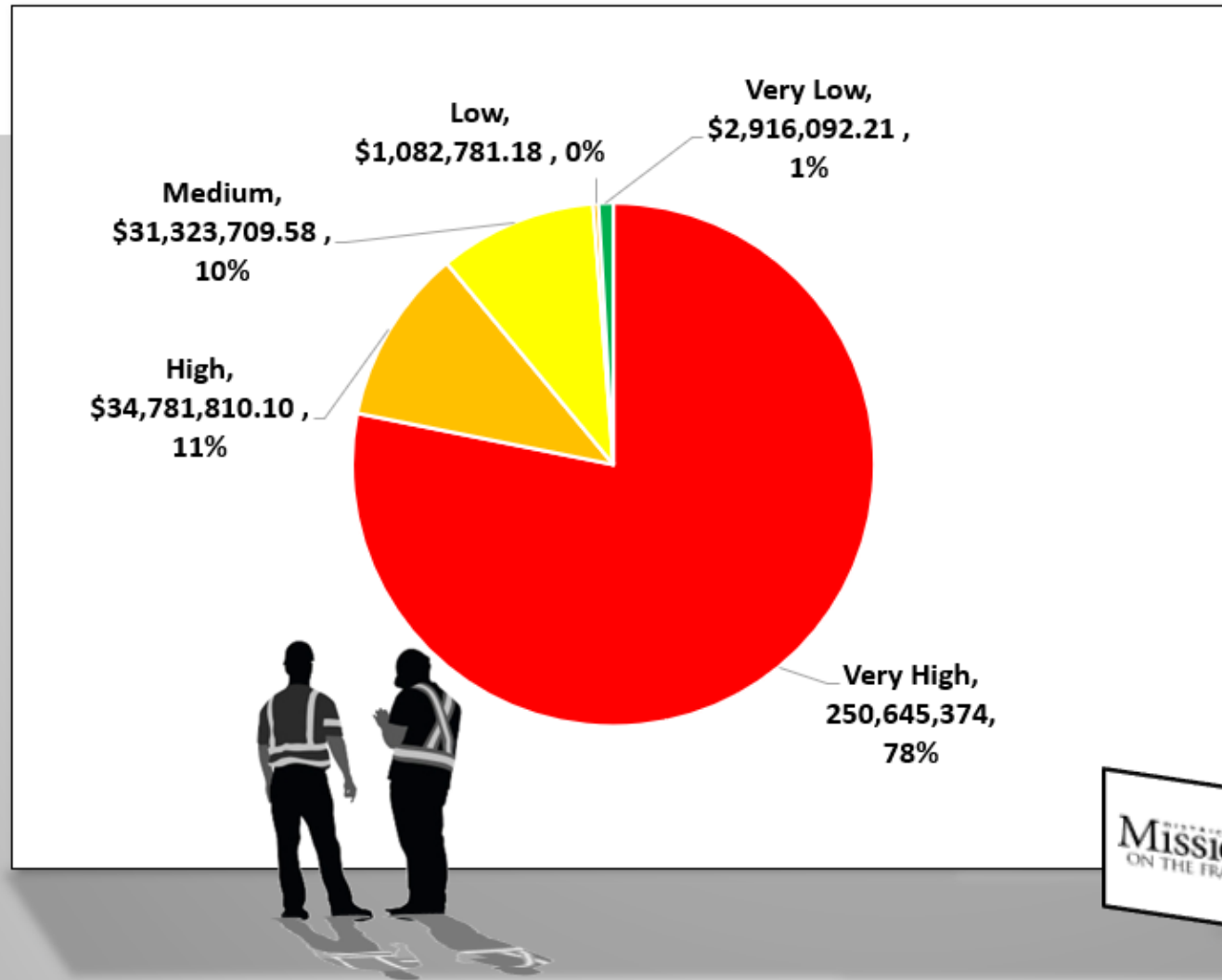
Risk Analysis – Data Quality



Risk Criticality Scores

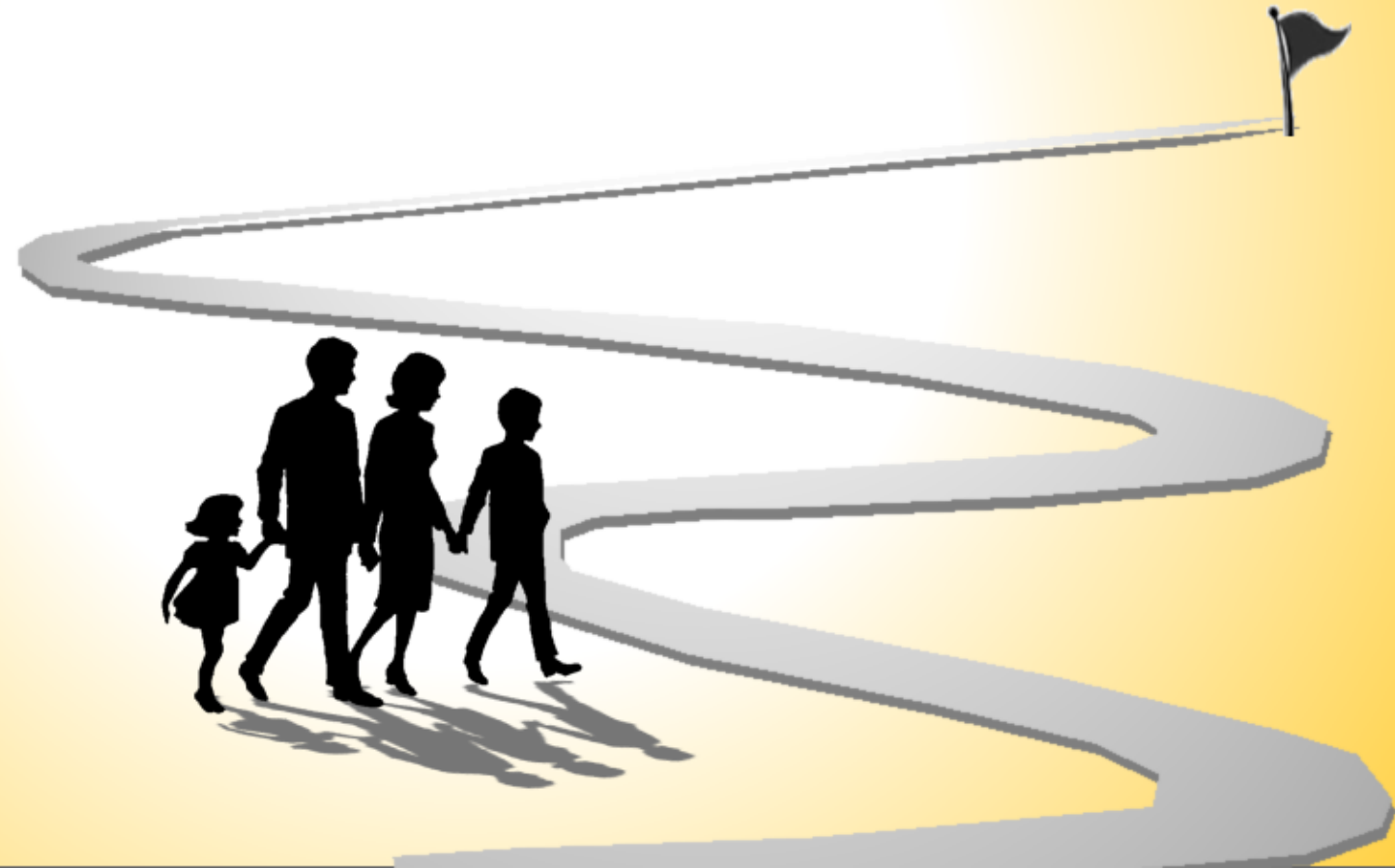


Risk Criticality Scores

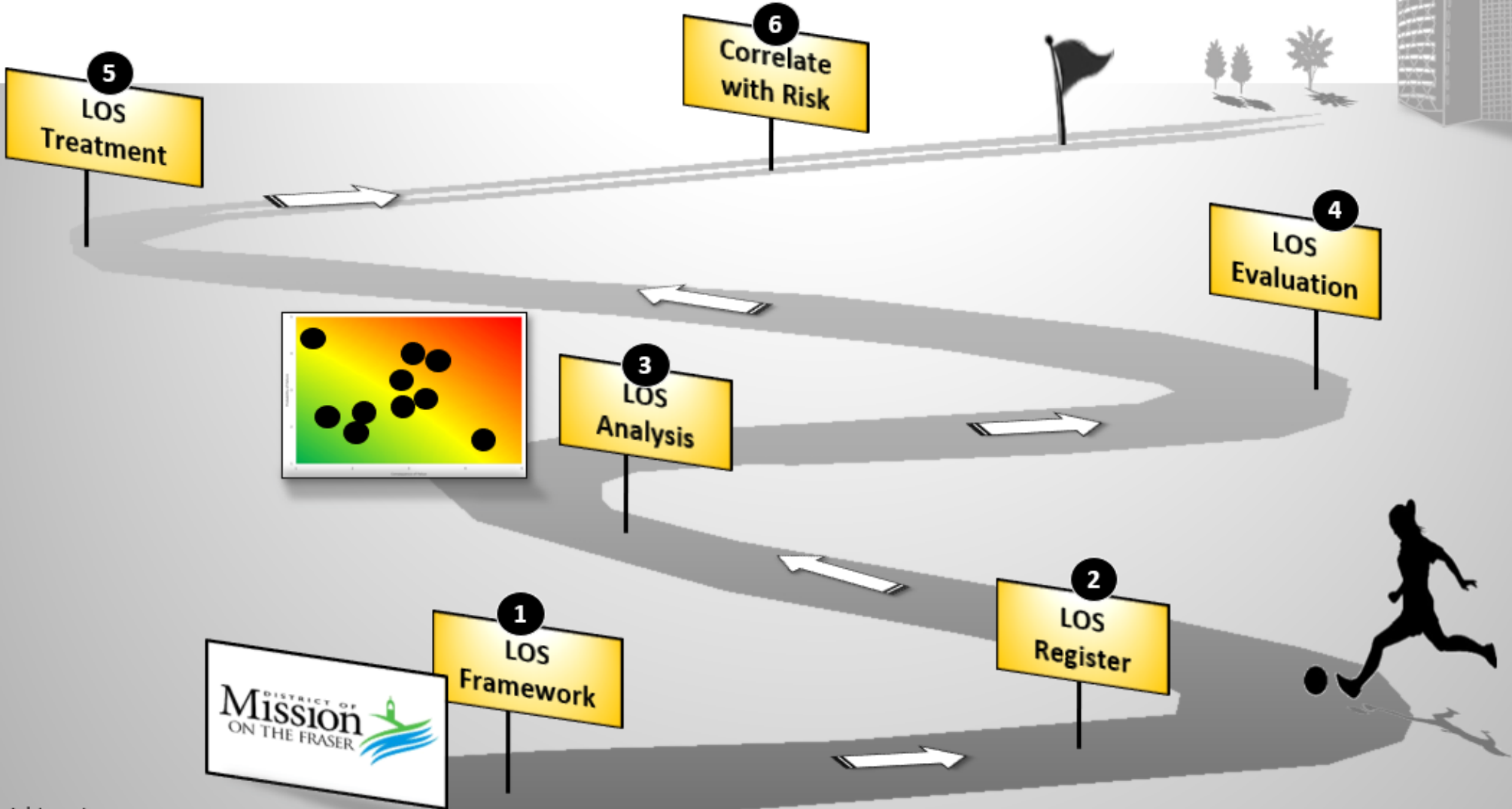


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The LOS Journey



LOS Journey

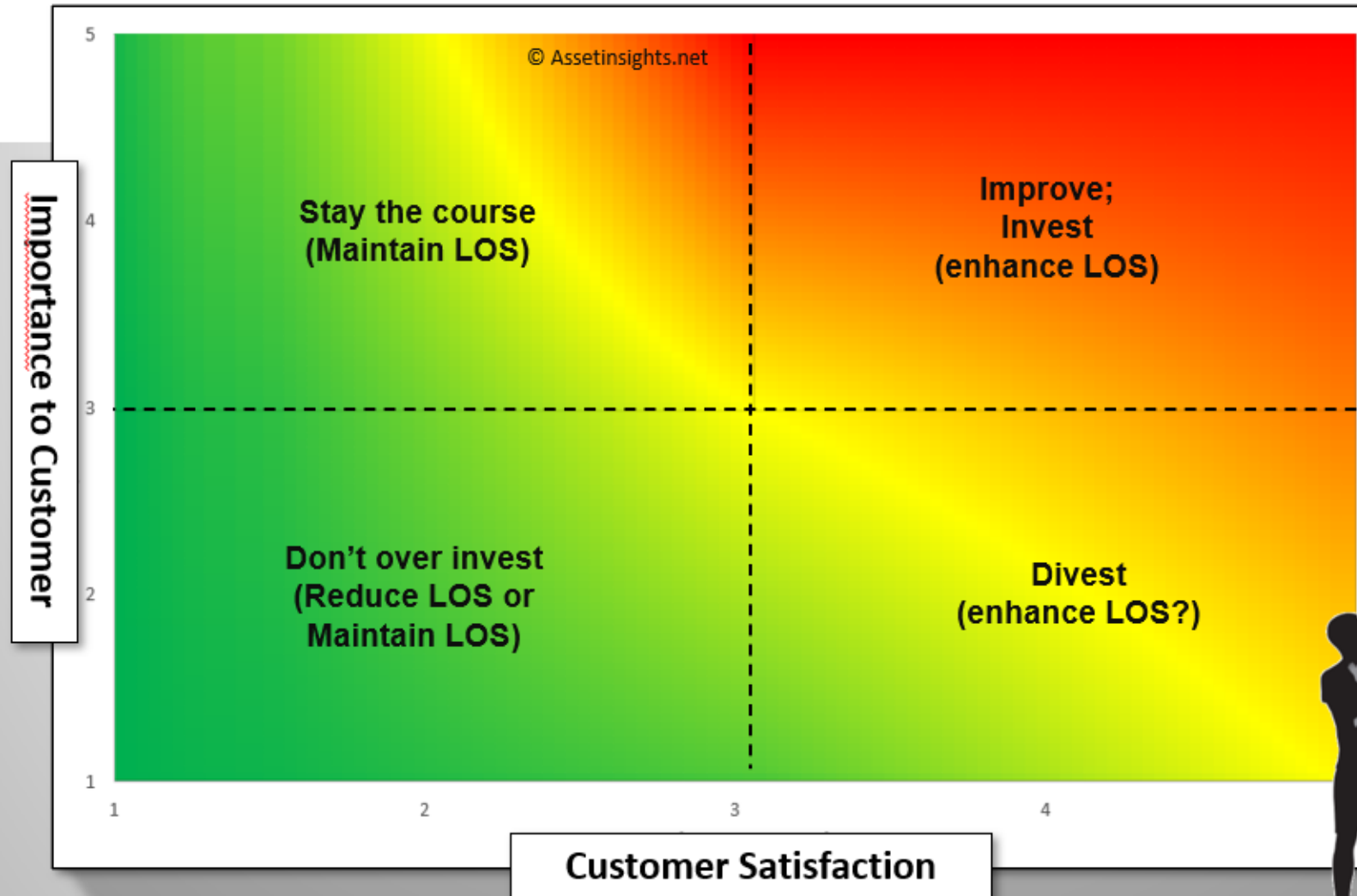


LOS Register (2017)

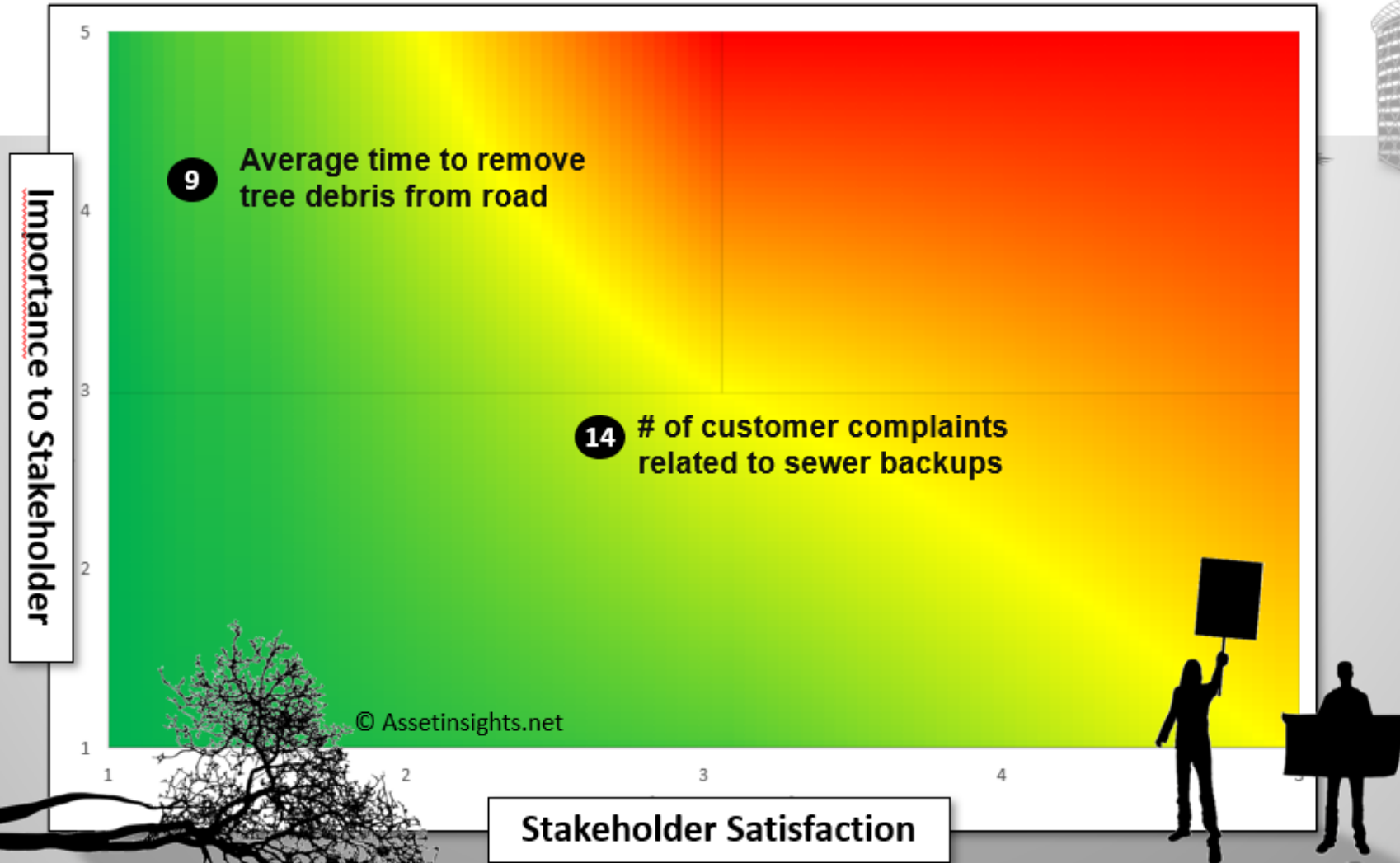
Service Area	ID	Key LOS Measures	Target (2018)	Actual (2016)
Parks, Recreation, Culture	1.1	No. of hazardous park tree complaints & hazardous boulevard tree complaints per year	0	25
	1.2	No. of registrants in swimming lessons	4500	4415
Facilities	2.1	% of LED retrofits (partial or complete) per year	2	1
	2.2	Ratio of insourced to outsourced maintenance	70:30	70:30
IT & Counter Service <i>(Excl from 2018 scope)</i>	3.1	No. of participants in civic engagement initiatives (open houses, in-person consultations and online consultations)	3,800	2,100
	3.2	Response time to medium priority ticket requests, in business days	2	3
Solid Waste	4.1	% Curb-side diversion rate	95%	63%
	4.2	% organic material within the curb-side collected garbage	0%	25%
Transportation	5.1	% of road network assets with PCI >70	80%	75%
	5.2	No. of complaints per year re: road condition (within District control)	500	600
	5.3	% of road gutter and curb swept (excluding plowed) on a monthly basis	100%	80%
	5.4	% of sidewalks in satisfactory condition (no corrective action)	100%	80%
Storm water	6.1	% of oil and grit separators inspected and/or cleaned per year	100%	80%
	6.2	% of CCTV per year	33%	20%
	6.3	% of outfalls inspected per year	100%	98%
Water	7.1	No. of main breaks (in the District + Region combined)	0	2
	7.2	No. of complaints regarding poor water quality per year	12	24
Wastewater	8.1	% of length CCTV inspected per year	20%	20%
	8.2	No. of blocked sewers services and mains per year	12	24
Fleet <i>(Excl. from 2018 scope)</i>	--	--	--	--



Importance-Satisfaction (I-S) Matrix



Importance-Satisfaction (I-S) Matrix

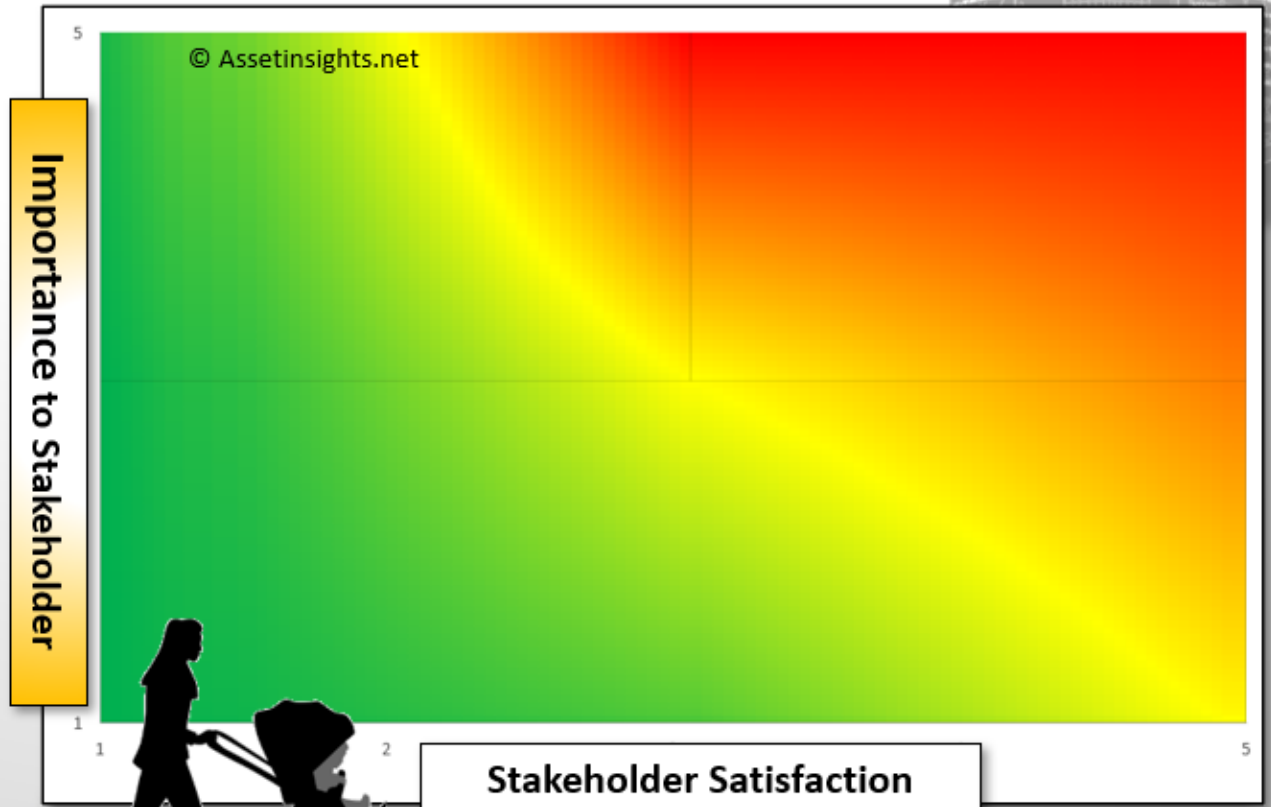


Importance to Stakeholder Methods

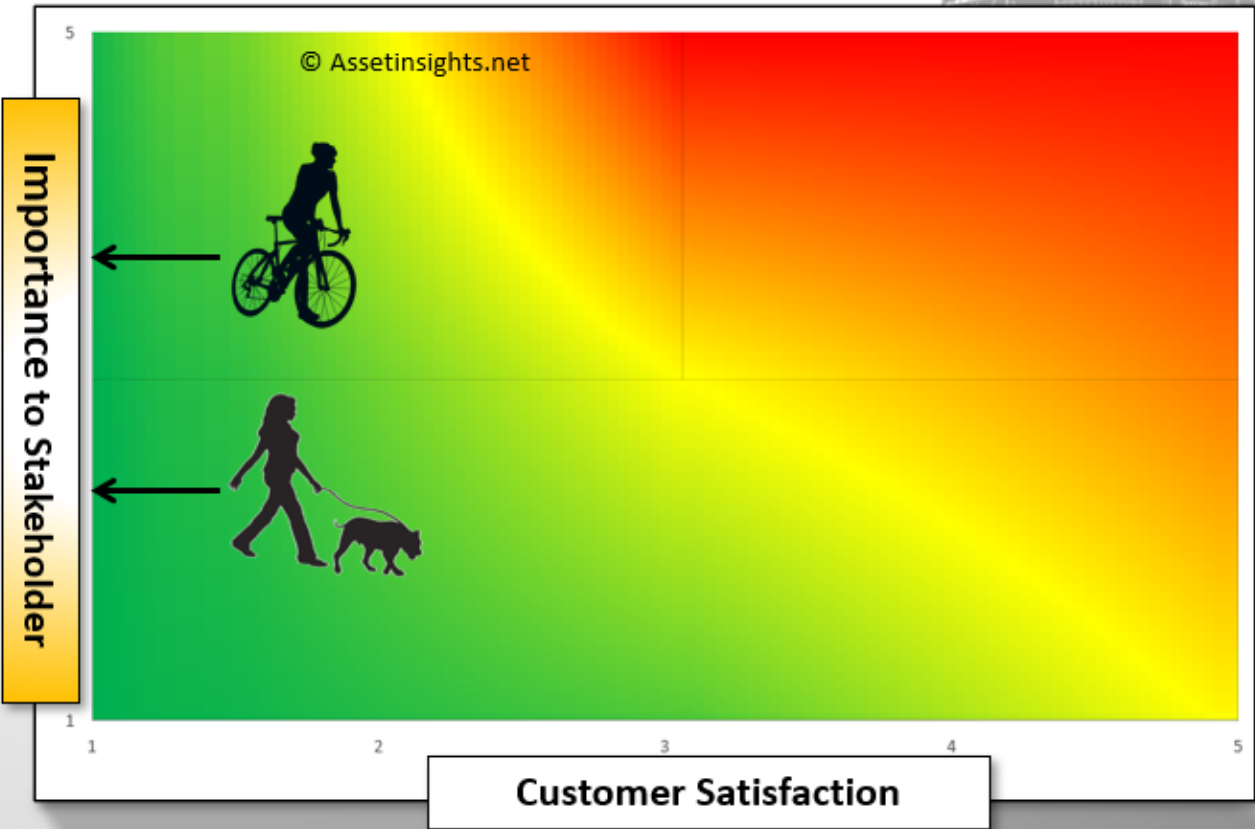
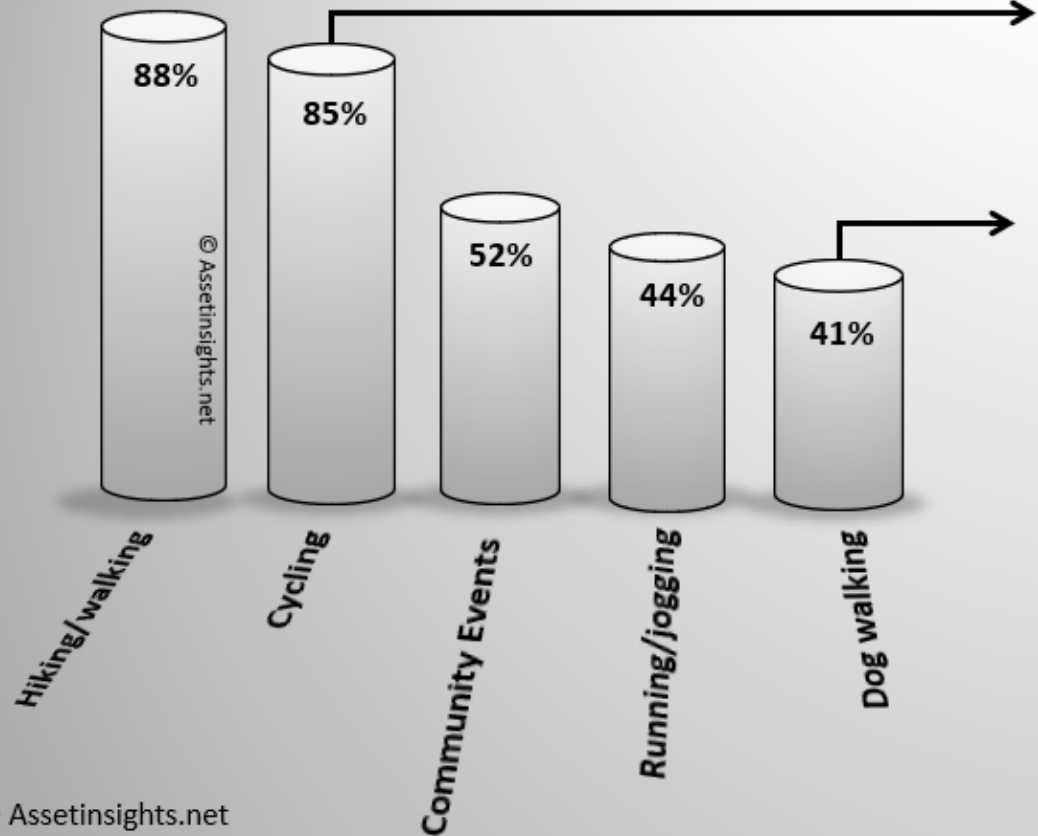
Customer Top-10 surveys

Willingness to pay surveys

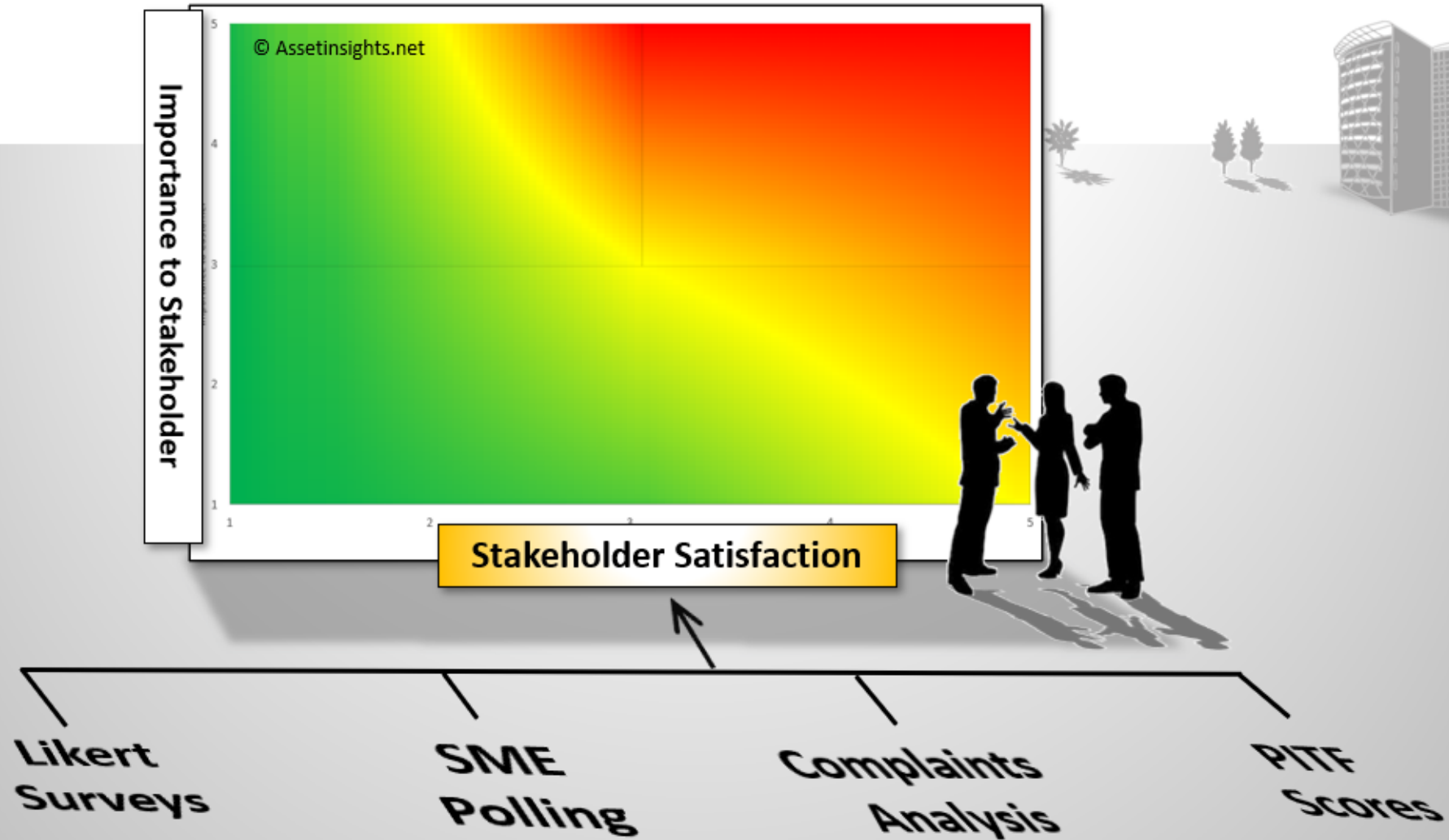
Asset criticality rankings



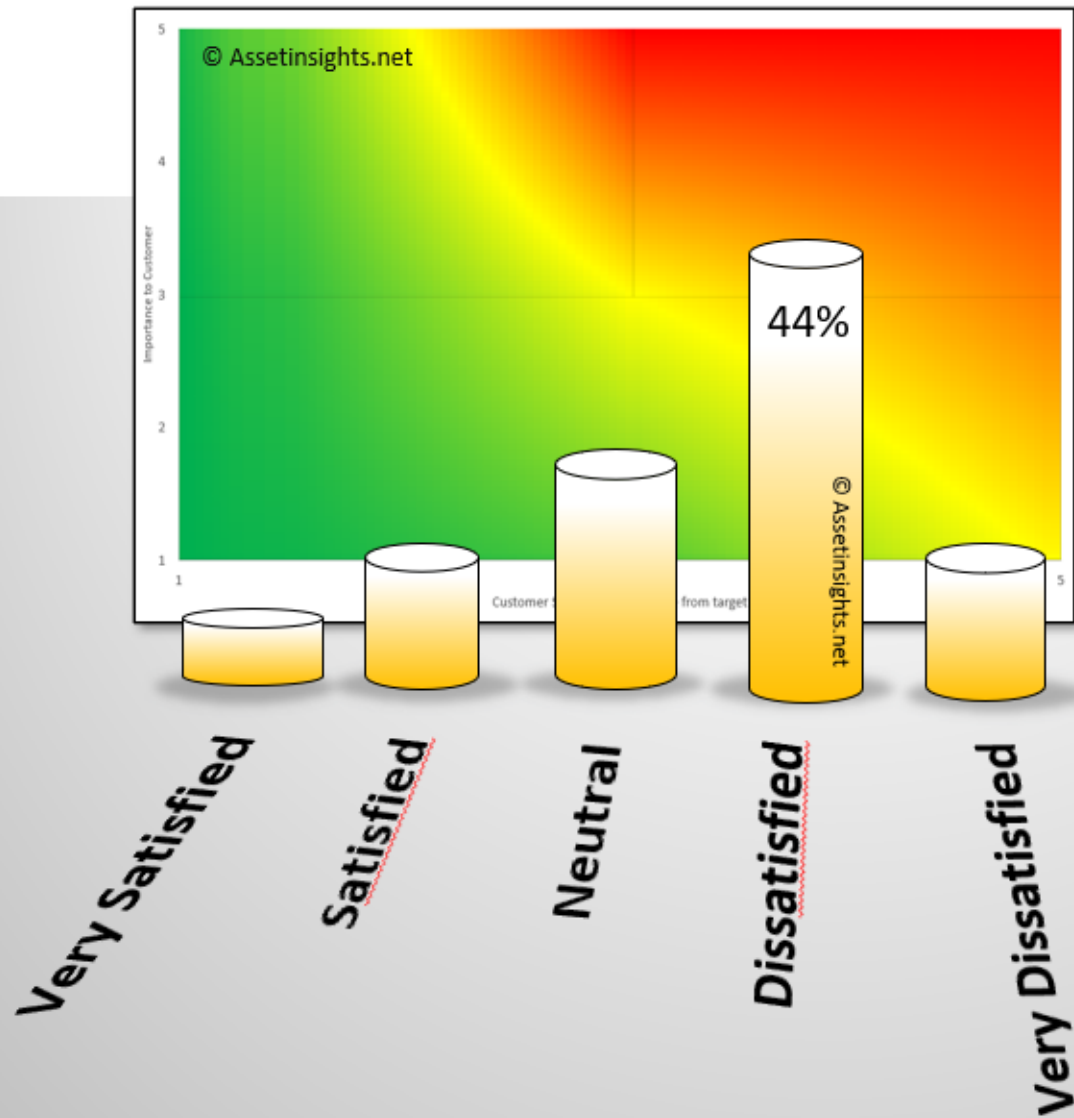
Importance to Stakeholder via Top 10-Survey



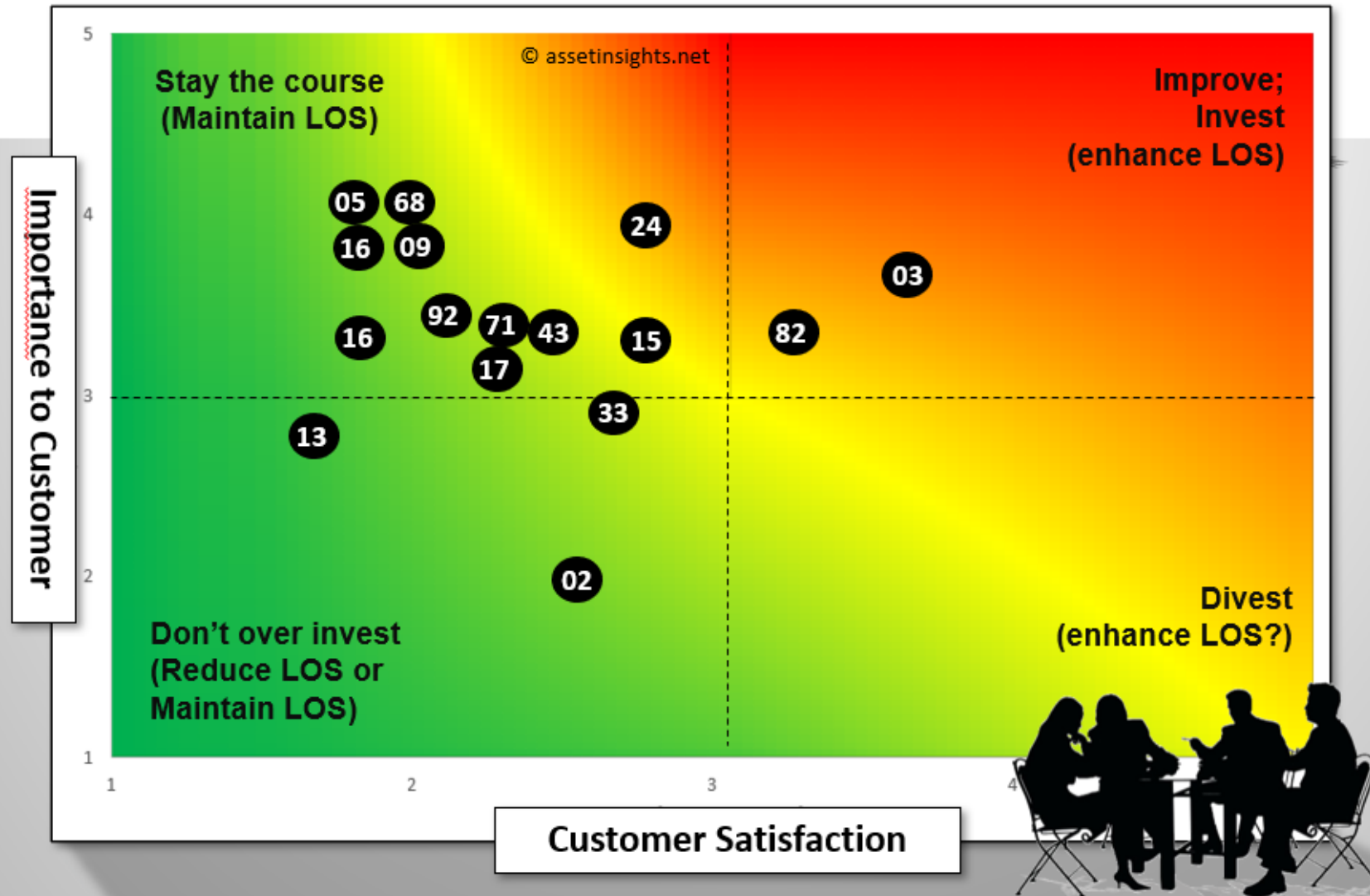
Stakeholder Satisfaction Methods



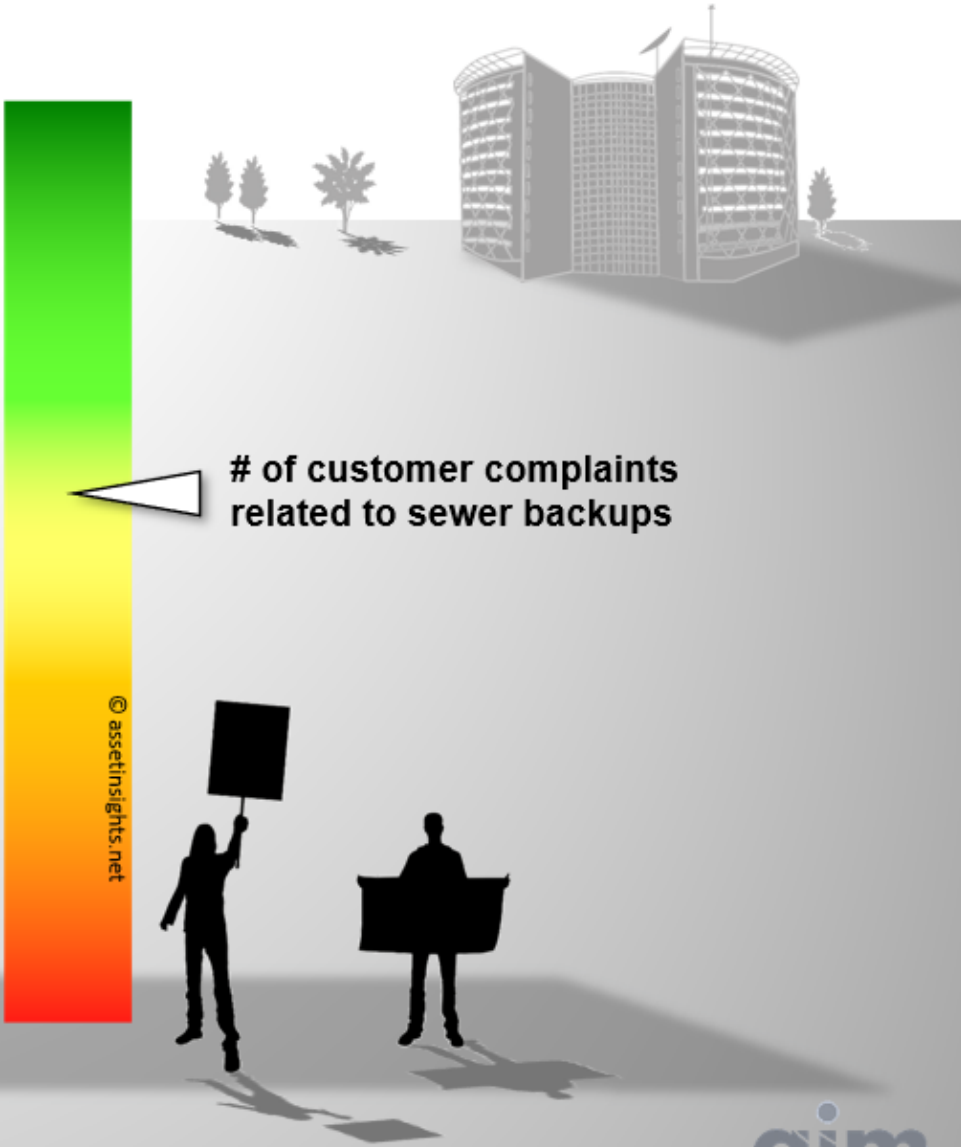
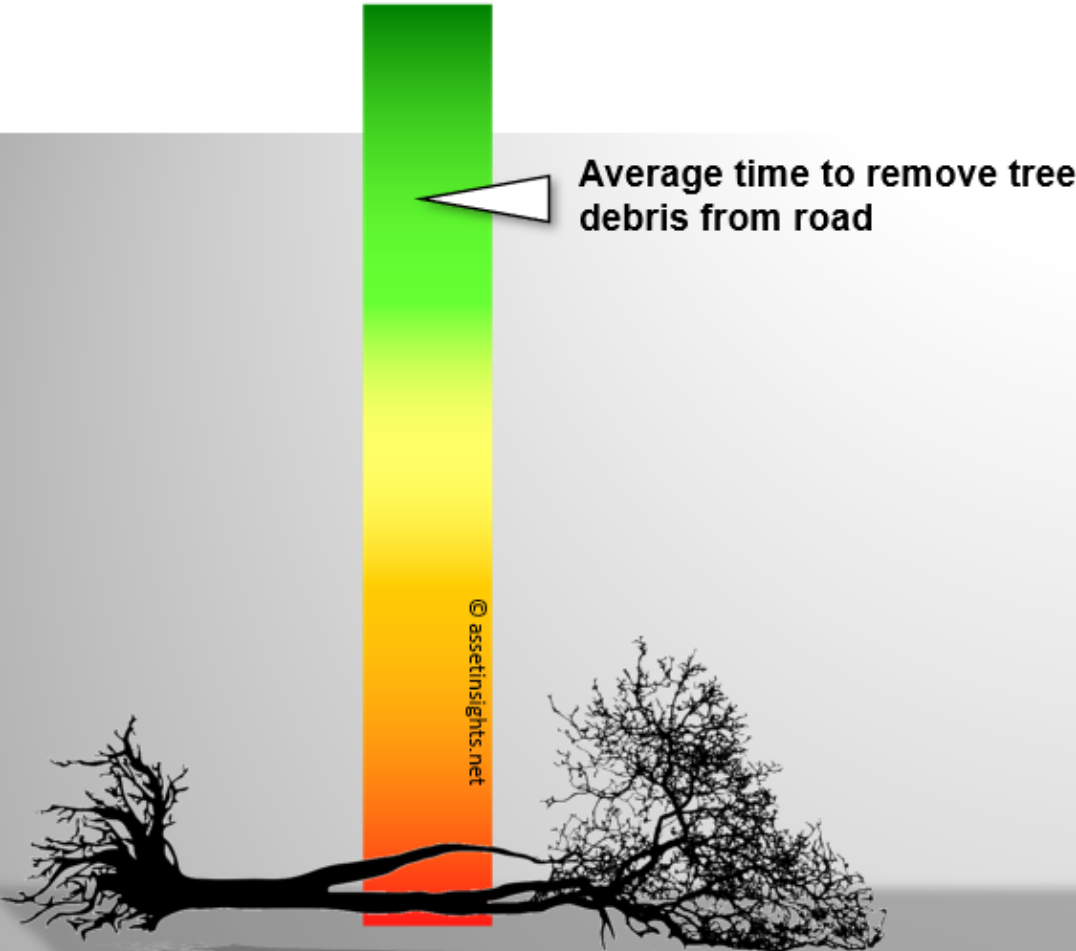
Stakeholder Satisfaction via Likert Surveys



I-S Matrix Populated into a Scatter Plot

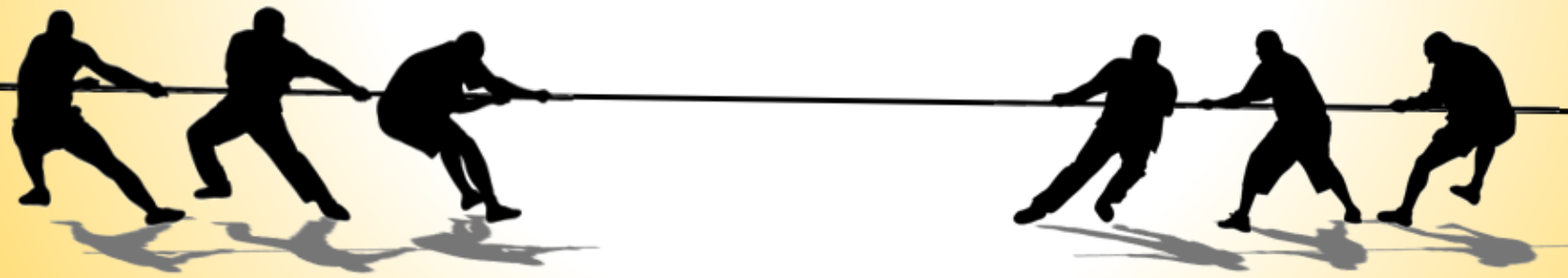


LOS Analysis – Data Quality

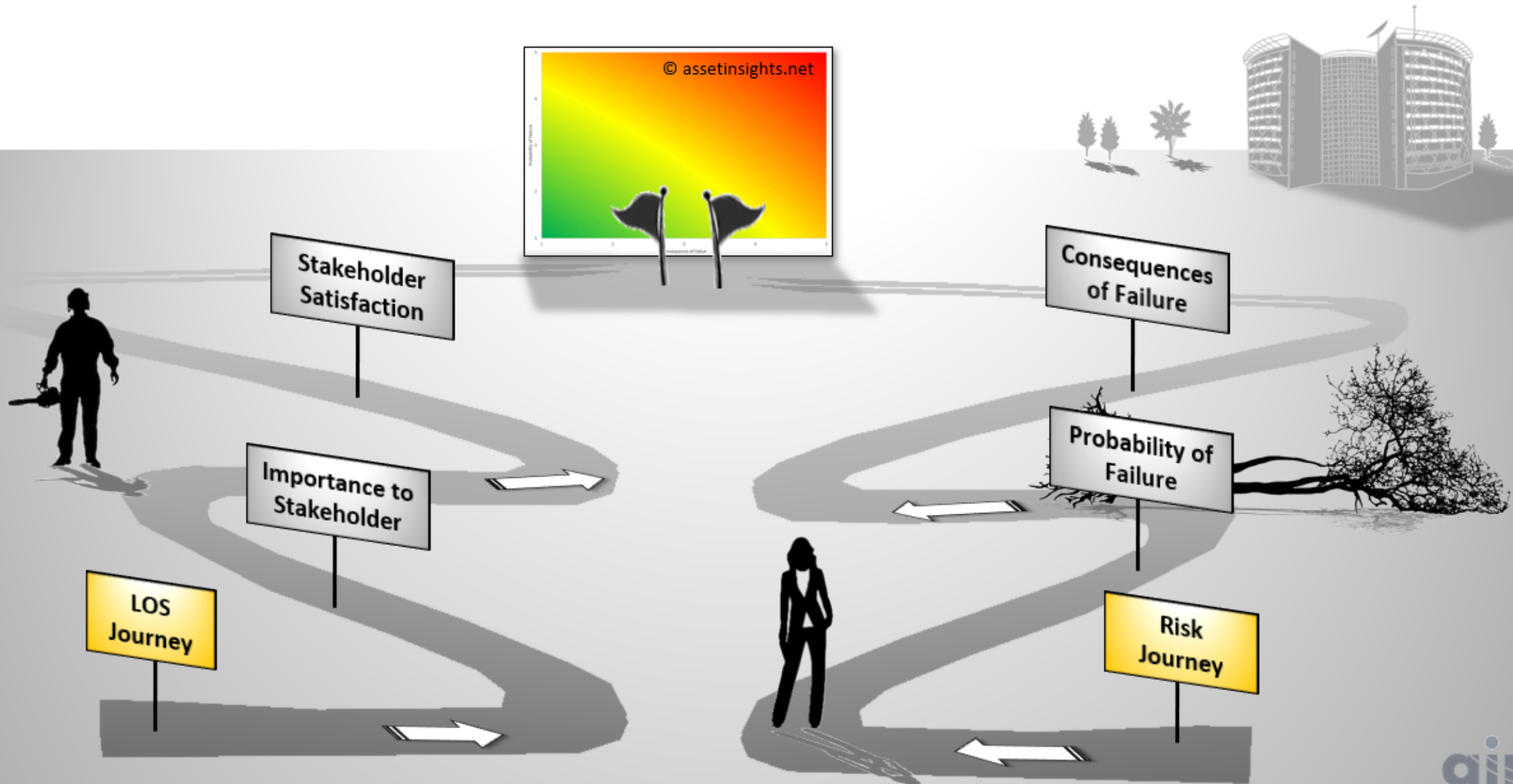


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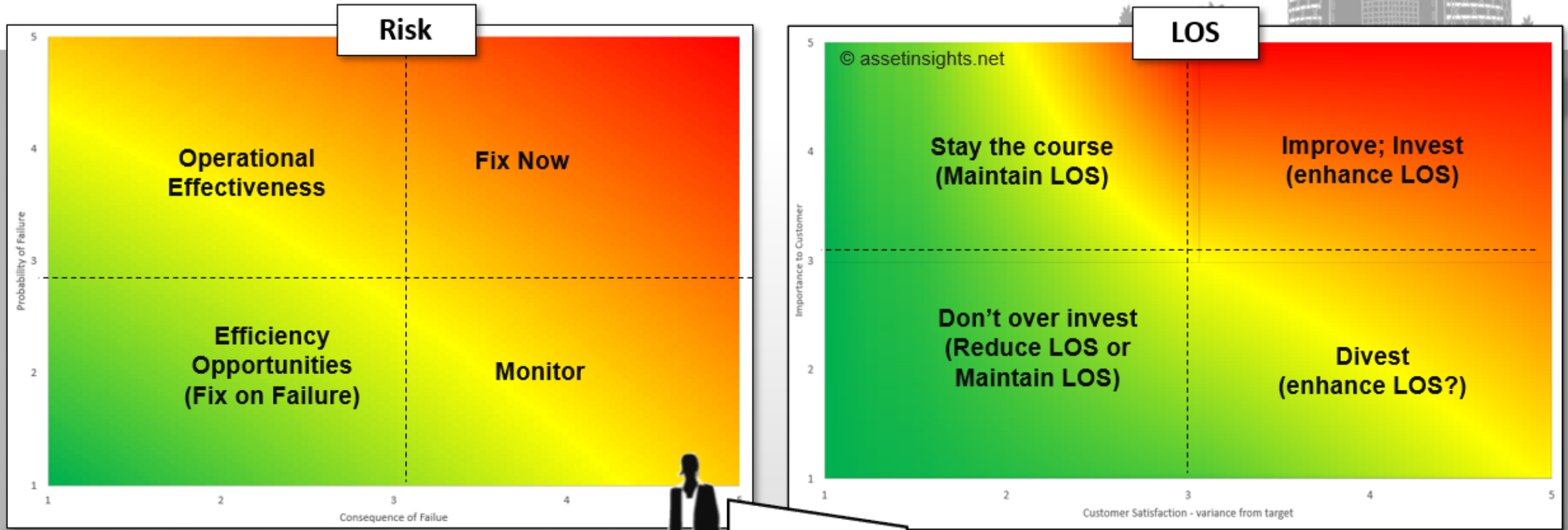
Converging the two Frameworks



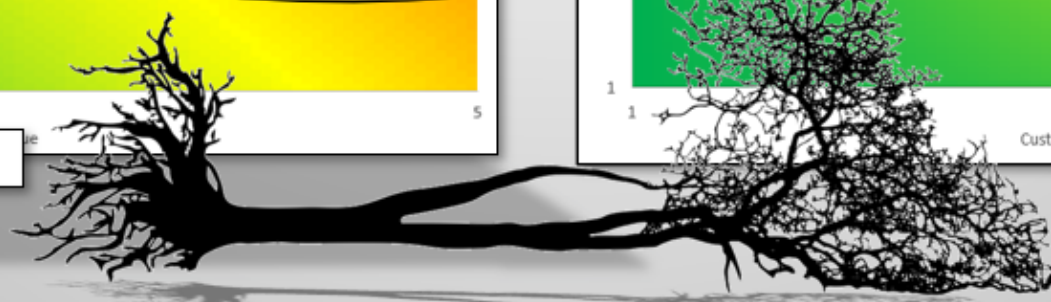
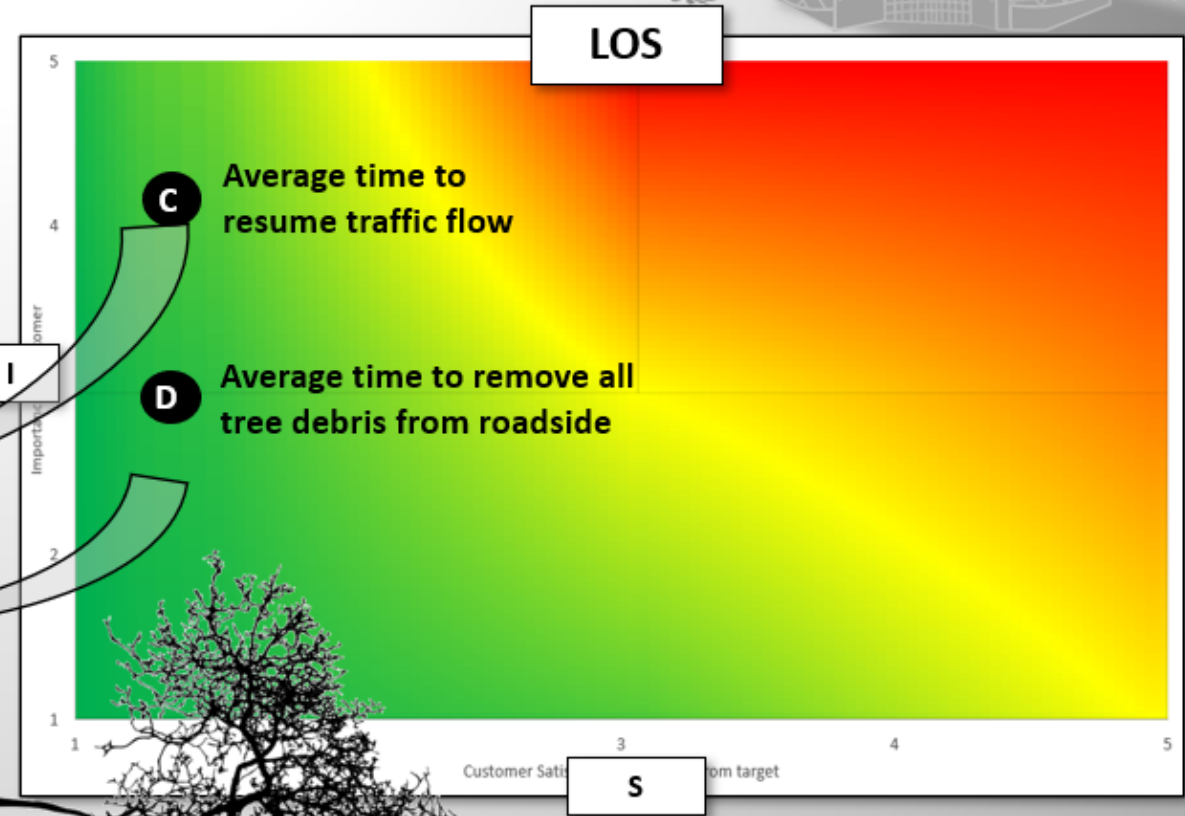
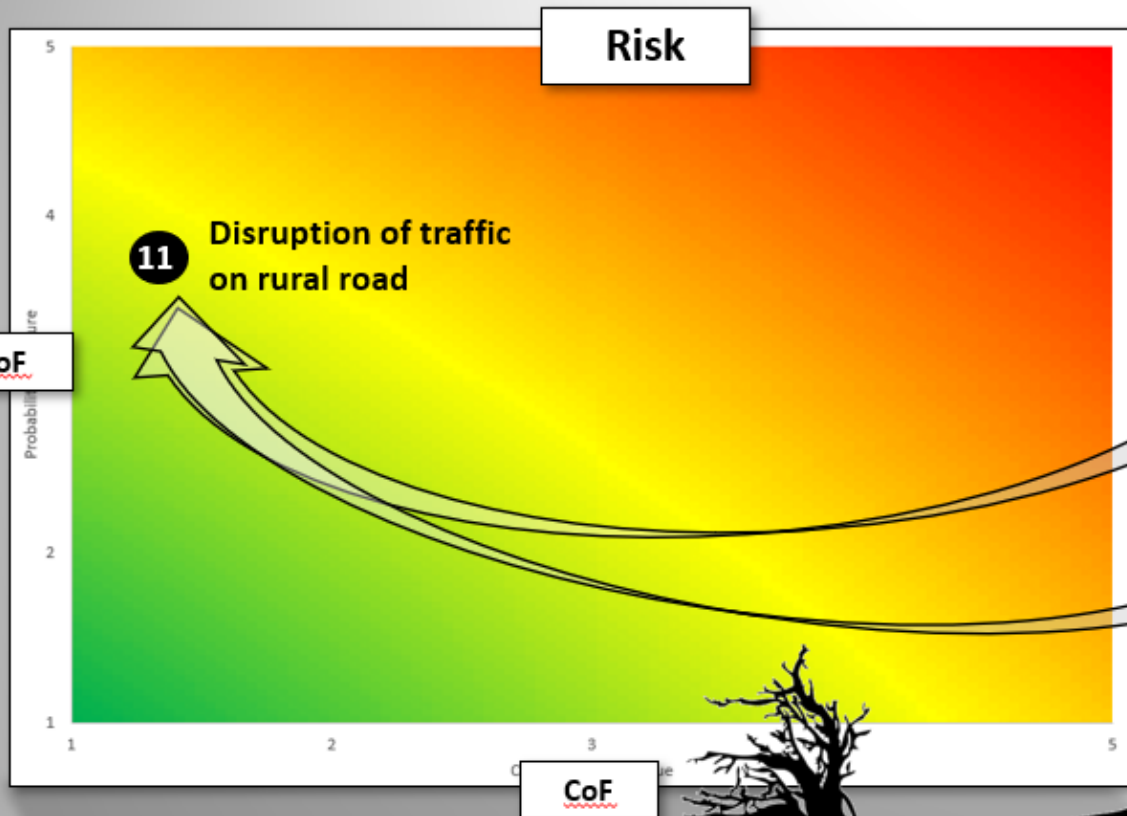
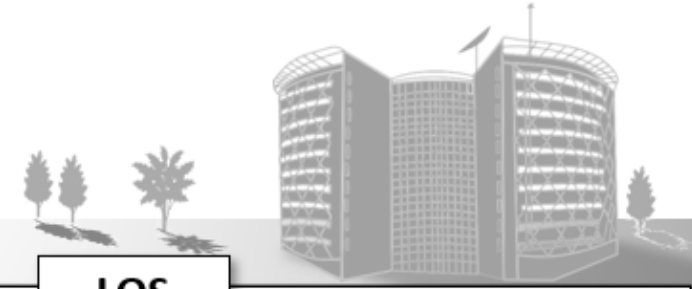
The LOS & Risk Journeys



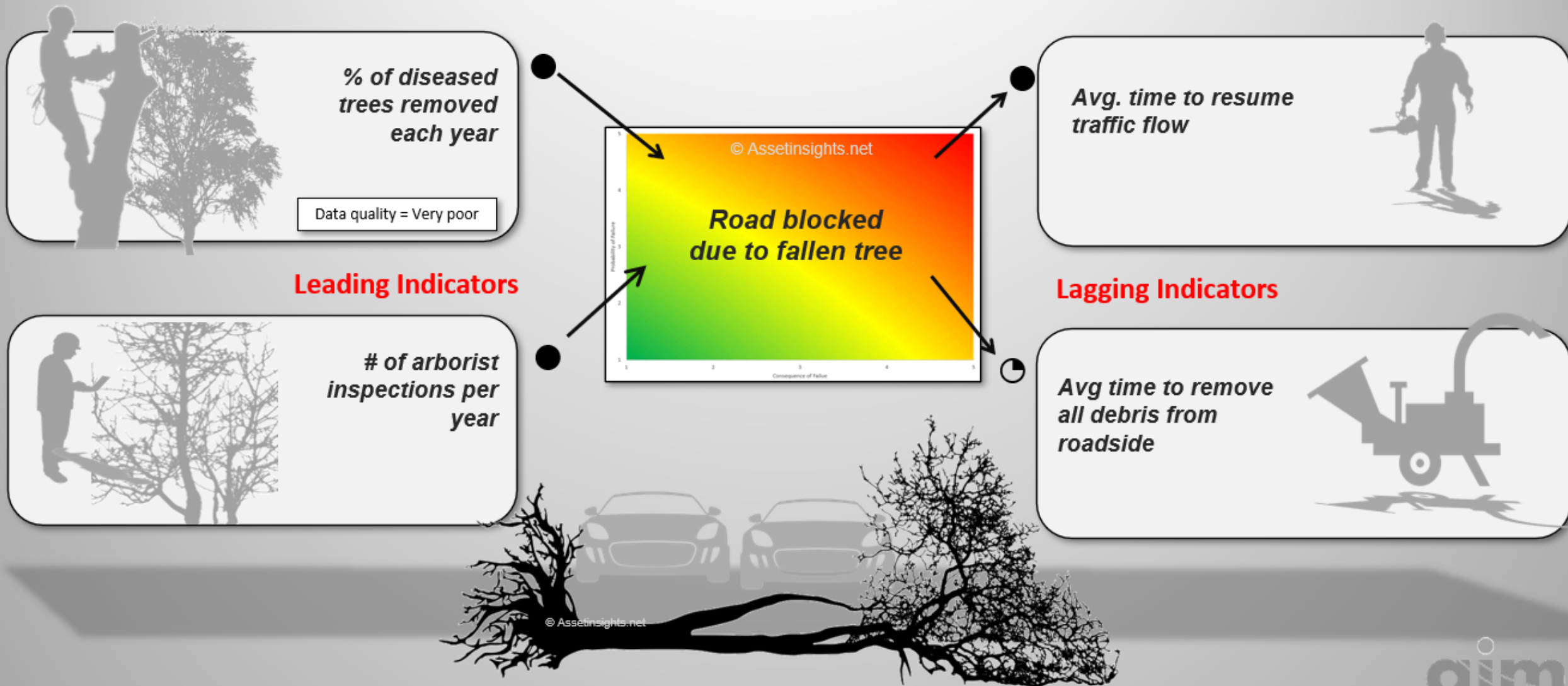
Risk & LOS Frameworks



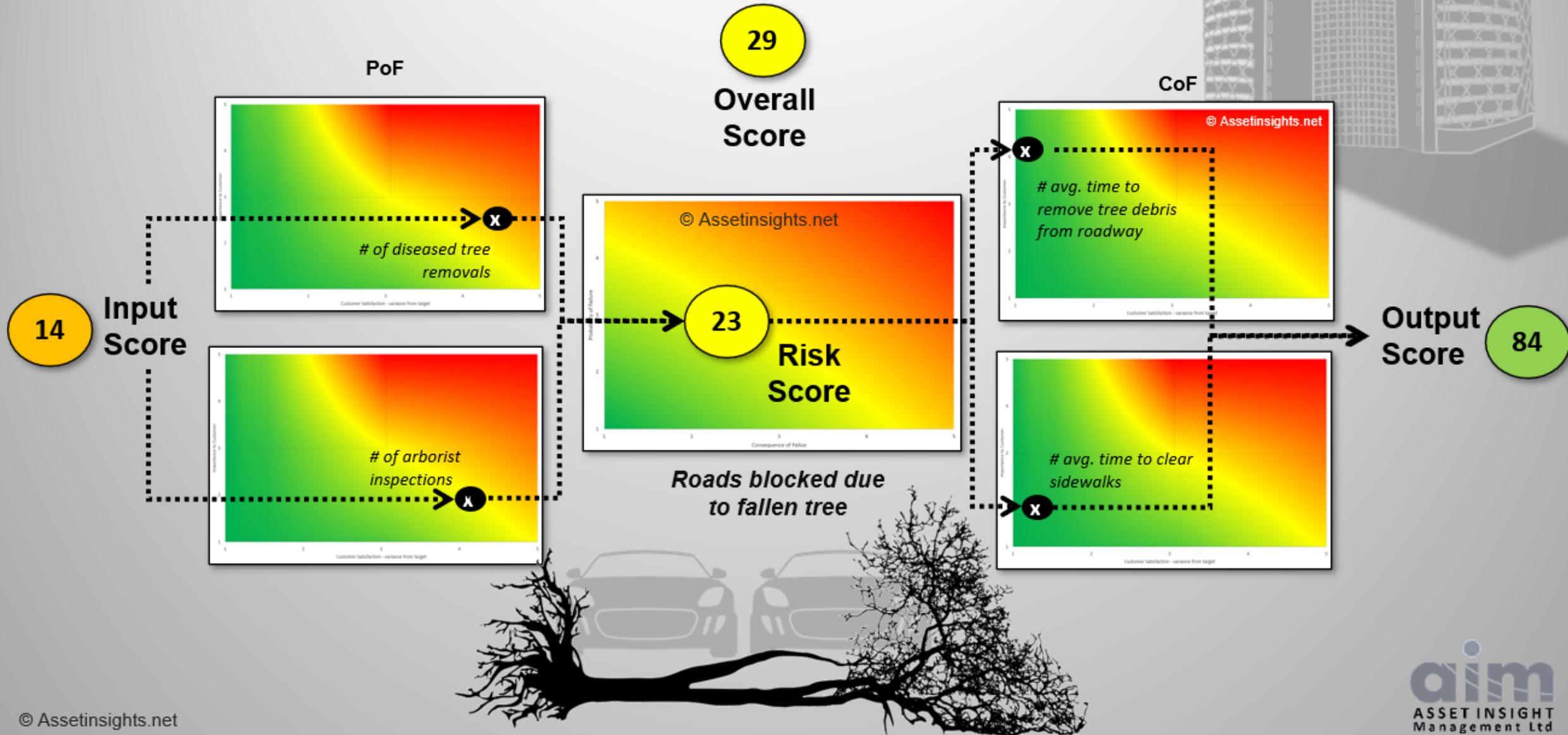
Risk & LOS Frameworks Interlocked



Risk & LOS Interlocked a Simple Illustration



Risk-LOS Interlock



Questions



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