

# 3owstar

An innovative approach that provides the most appropriate tools  
for the Asset Integrity Manager

by Rob Bos, CEO PIMS International B.V.

# Challenges for the Asset Integrity Manager

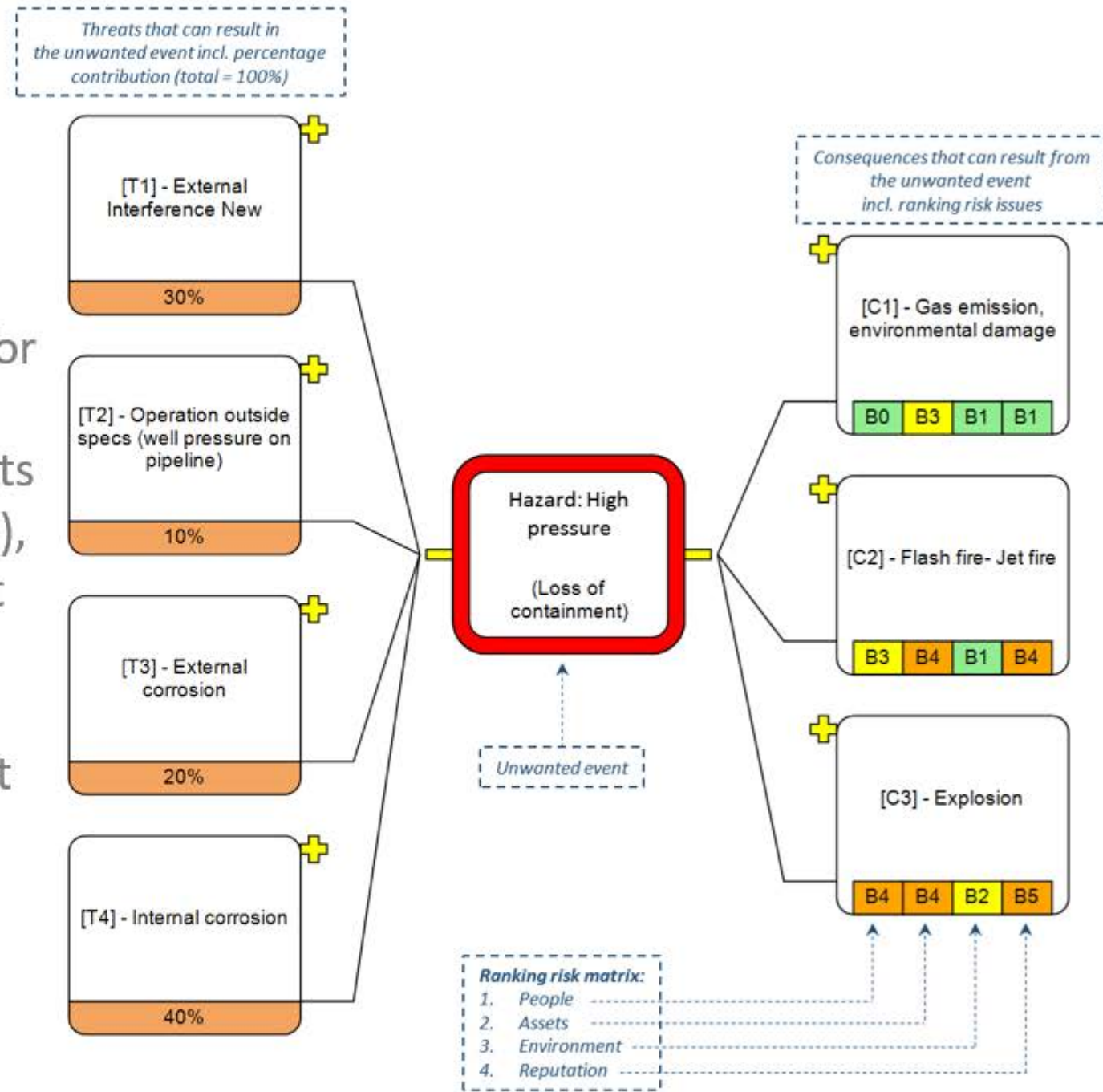
1. How to optimize the Inspection & Maintenance Plan
  - a. What are the threats to Integrity resp. Security of Supply,
  - b. What measures (=mitigations) are in place to control these threats,
  - c. What are the effectiveness and efficiency (costs!) of these measures.
  
2. How to meet the Companies Policy on risk
  - a. What risk is acceptable and what is the actual risk level,
  - b. What risk reduction has been achieved by the mitigations that are in place,
  - c. Is there any way to achieve additional risk reduction and if yes, what to do and what does it cost.
  
3. How to control the Risk Mitigation Plan (including improvements if required)
  - a. How to select additional mitigations (improvements),
  - b. Monitoring of the Risk Mitigation Plan: what risk reduction is achieved by (part of) the improvements that have been implemented.
  
4. How to review the technical and economic performance of the mitigations
  1. What measures are taken and what does it cost (e.g. prevent sub-optimization),
  2. Which contractor is giving the most value for money.

# How PIMS International can support the Asset Integrity Manager (1)

## 1. Challenge: How to optimize the Inspection & Maintenance Plan?

### Solution PI: Bowstar

- Development of the bowtie diagram for each life cycle of the asset,
- Inventory of the effectiveness and costs for all mitigations (incl. improvements),
- Analyses of the effectiveness of threat reduction for each of the life cycles,
- Balancing between preventive and repressive mitigations to find the most economic risk reduction,
- Differentiation of threat mitigation between pipelines with different characteristics.



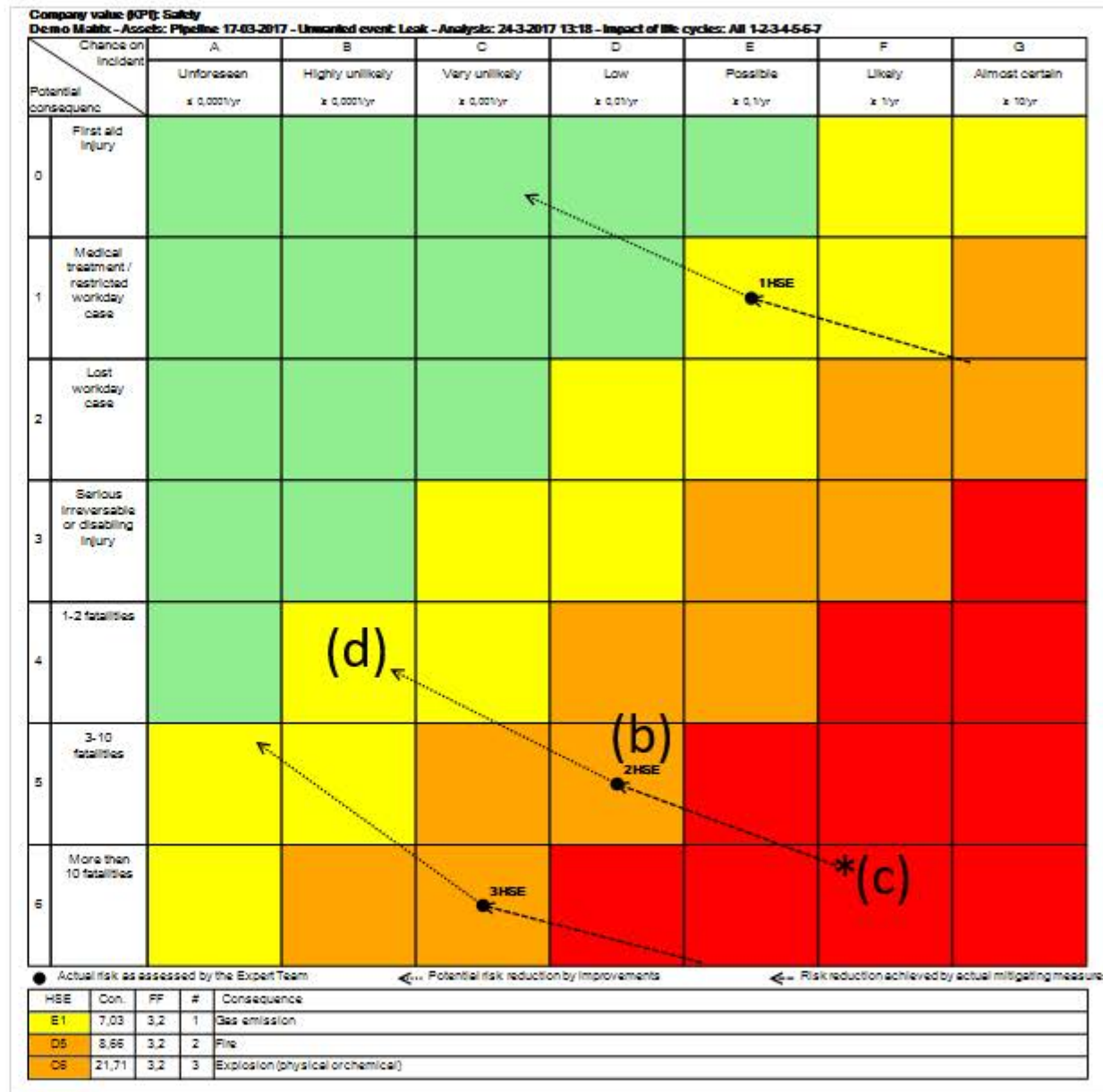
# How PIMS International can support the Asset Integrity Manager (2)

## 2. Challenge: How to meet the companies Policy on risk?

### Solution PI: Bowstar



- Development of companies specific risk matrix,
- Ranking the actual risk level by casuistry or Expert Opinion
- Calculate backwards the risk level that would exist if no measures were taken
- Calculate forwards the risk level that can be achieved by the implementation of additional mitigations or improved existing ones



# How PIMS International can support the Asset Integrity Manager (3)

3. Challenge: How to control the Risk Mitigation Plan (including improvements if required) ?

Solution PI: Bowstar 

- a. Completion of the Assets Risk Register,
- b. Record the status of improvements (implemented for what percentage)
- c. Analyses of the risk reduction achieved by the percentage of each improvement that has been implemented (blue arrow)

Risk Register Record

(a)

General Documents Mitigations Matrix

Given attributes

Asset category: Pipeline 17-03-2017  
 Unwanted event: Leak  
 Consequence: Fire  
 Risk topic: Safety  
 Matrix score: D5 -> C4  
 Color: Orange -> Yellow  
 Register id: 14

Principal: Rob Bos  
 Department: Pipeline Integrity  
 Report: www.pims-international.com  
 Status report: Final  
 Date report: 10-3-2016  
 Risk ranking: 6,6666  
 Last changes: 10-3-2016

Attributes

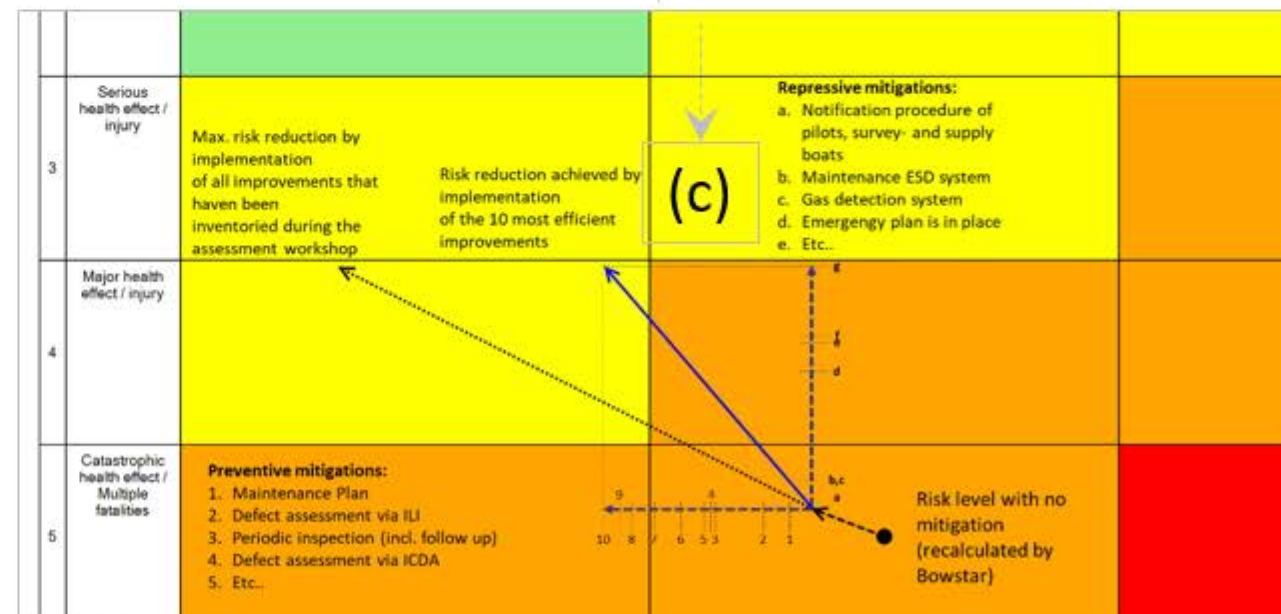
Location: Folland Noord 3, Haren  
 Assigned to: Roy Bekius  
 Date solved: 28-3-2014  
 Status: Open

Clarification:  
 Column D is ranked because a leak in combination with fire has occurred in company. It is likely that the leak + fire will be caused by 3rd Party activities and as a consequence that more people are at the location with fatalities as consequence (worst case)

Risk Register Record

(b)

#	P/R	Status	Mitigation title
1	Preventive	74%	Operator not involved in design. Involve employees in design
2	Preventive	30%	Research to find causes of MIC and adjust route selection to avoid
3	Preventive	78%	Inspection onsite by 1st party to secure proper performance of the 2nd ...



# How PIMS International can support the Asset Integrity Manager (4)

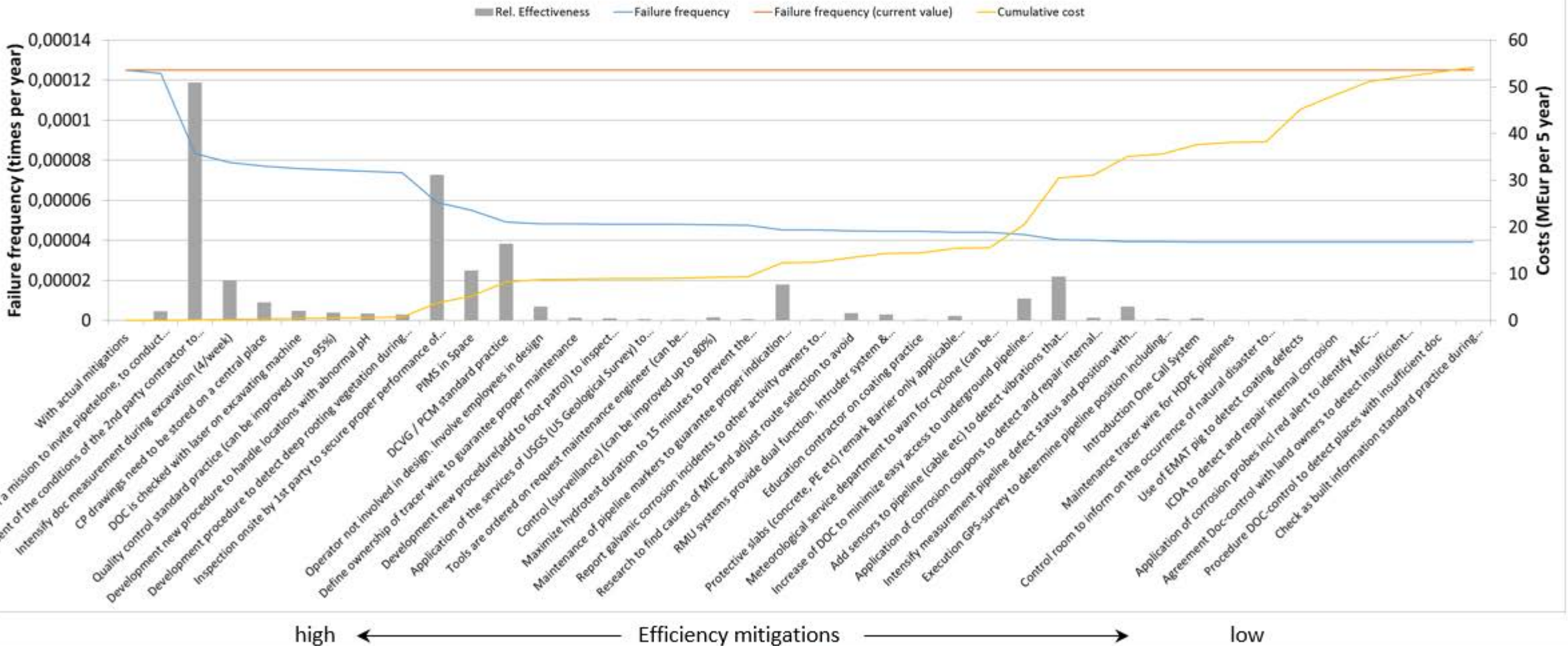
4. Challenge: How to review the technical and economic performance of the mitigations

Solution PI: Bowstar

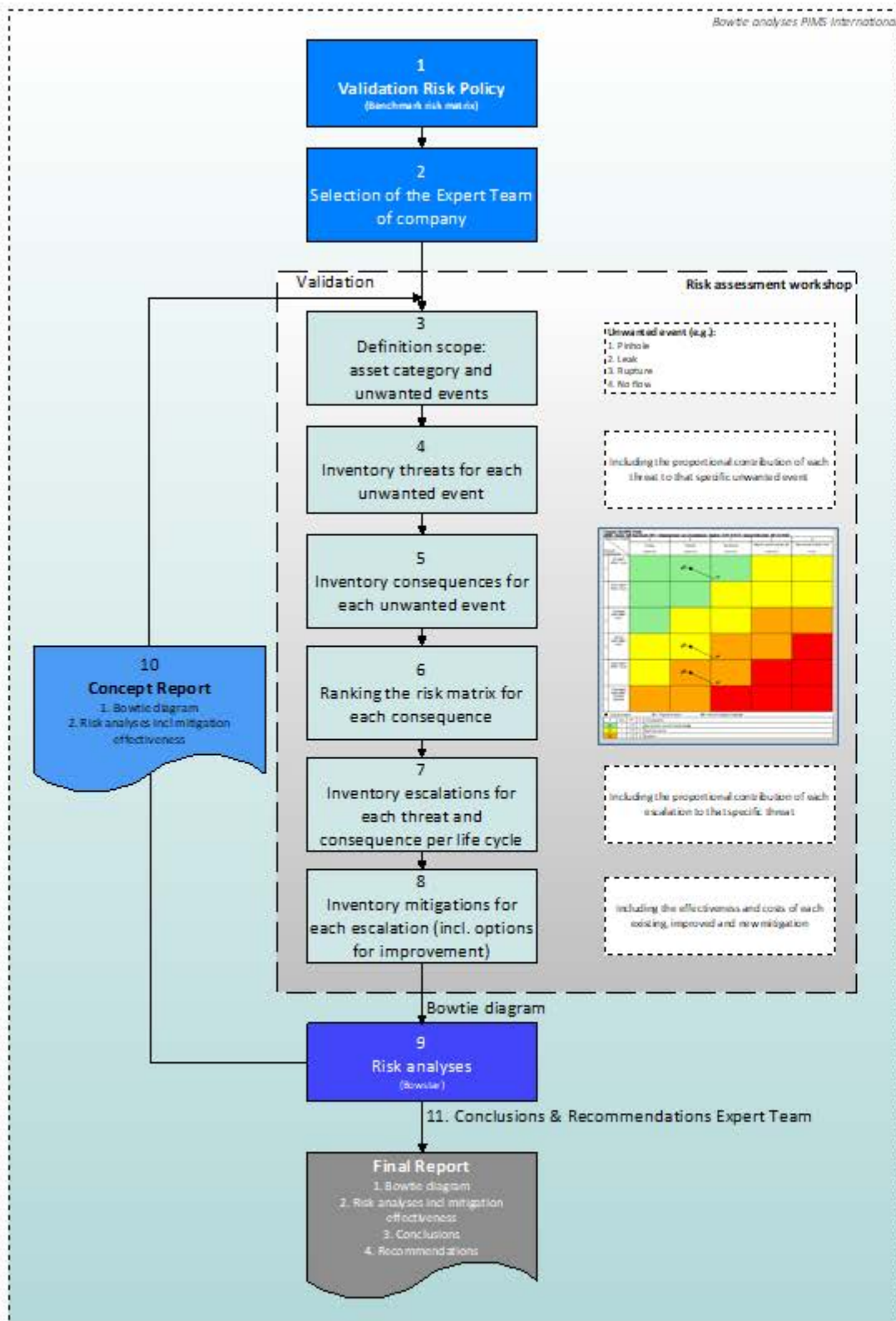


Analyses of costs vs. the resulting failure frequency reduction next to the relative effectiveness value

Analyses of the reduction of failure frequency as function of the costs of Inspection and Maintenance



# How it's done: Roadmap to a successful risk assessment with Bowstar



1. Used by key players in the industry,
2. Lots of templates from these key players that simplify your risk assessment and guarantees optimal results,
3. Maximum support by the very user friendly software package,
4. The results are automatically transported to the:
  1. Risk Register of Bowstar to control the risk mitigation program,
  2. GIS-environment of Bowstar to find the high risk sections of the linear assets by dynamic segmentation (e.g. pipelines, high voltage power lines, dikes, railroads, water supply etc.).
5. Full integration with Microsoft Office:
  1. Generation of detailed Diagram Report in MS Word, using a company specific template,
  2. MS Excel up- and download of the diagram, analyses results etc.,
  3. Clipboard function to copy diagram, results, graphs etc. to your own text file.
6. Professional software package. Compatible with Windows, OSX, Linux etc. developed in C#

Companies have used our services, publications



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