

“How to bring advantages of BowTies to the Organisation” Presenting a case of the UK MAA, Learning from Incidents with SIR



Geert van Loopik
Global Account Manager &
Trainer



Started in
2004

We make
barrier based
risk management
software.

Market
leader
In 11 industries

80-90
Events
each year



1500+ clients
in 83 countries

20-30%
annual growth in the last 6
years

200+
partners
around the world

The Essence

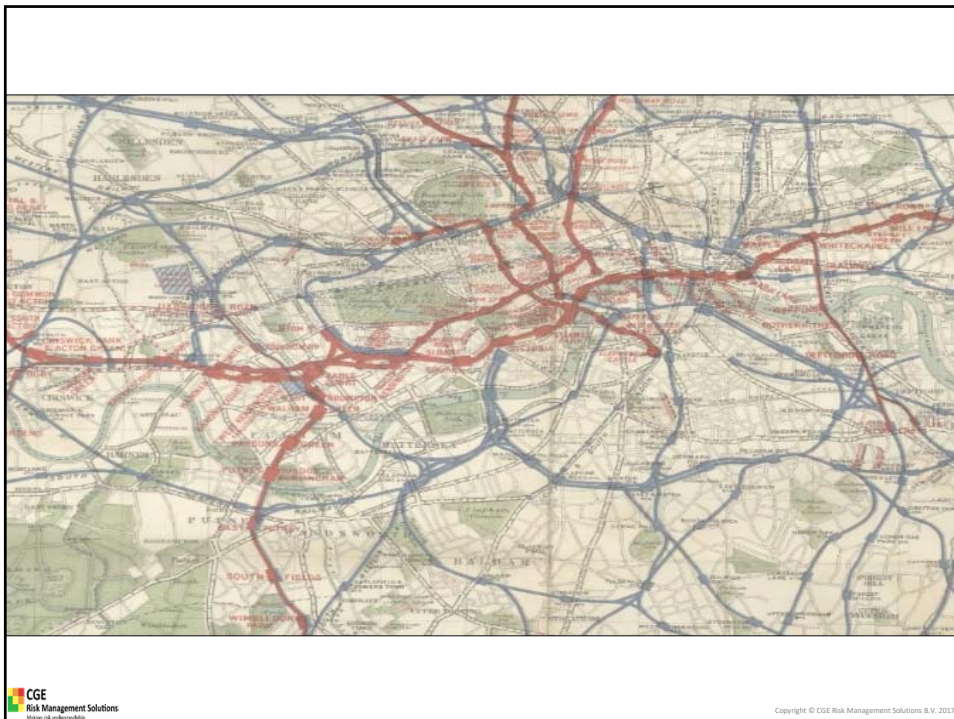
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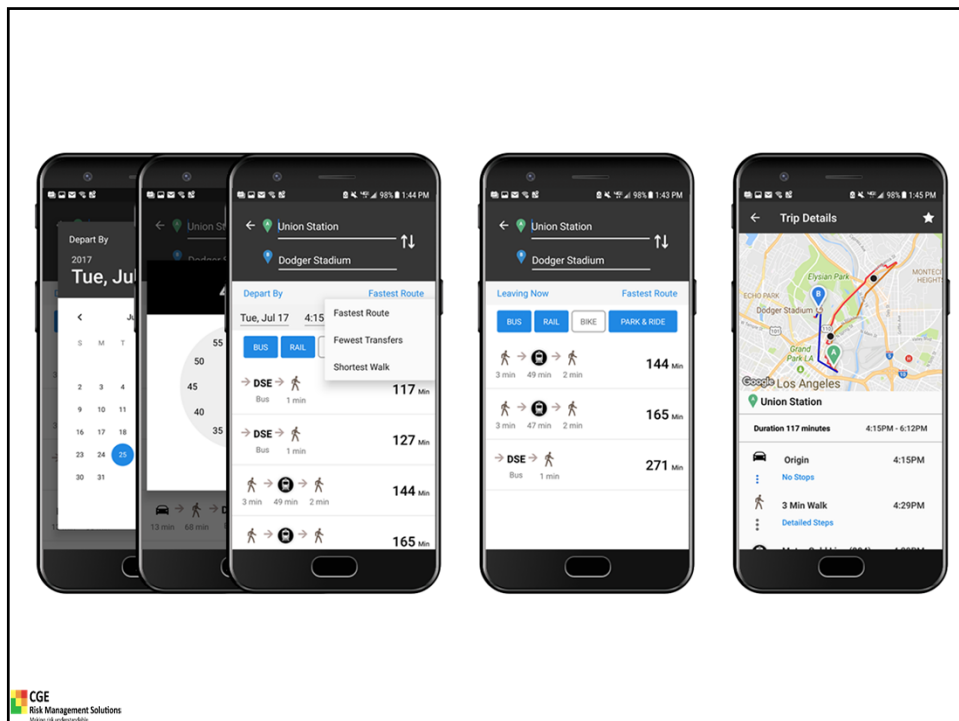
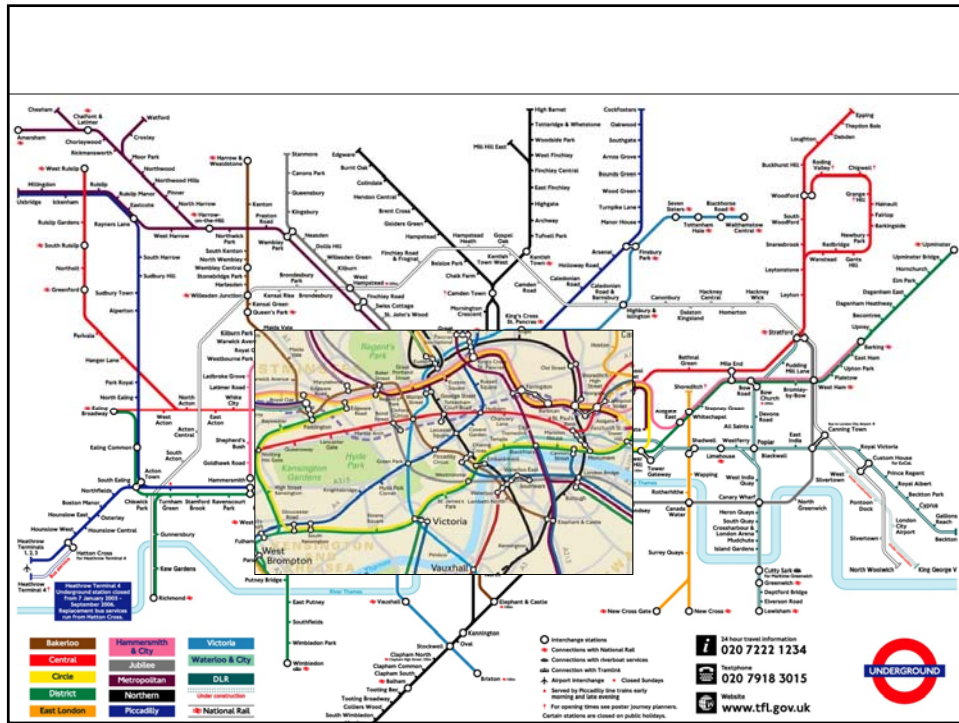
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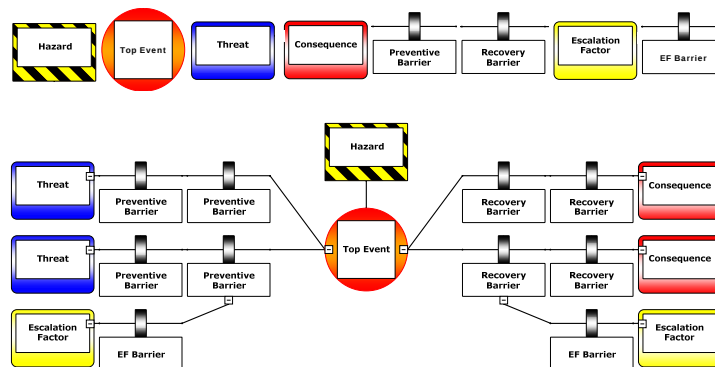
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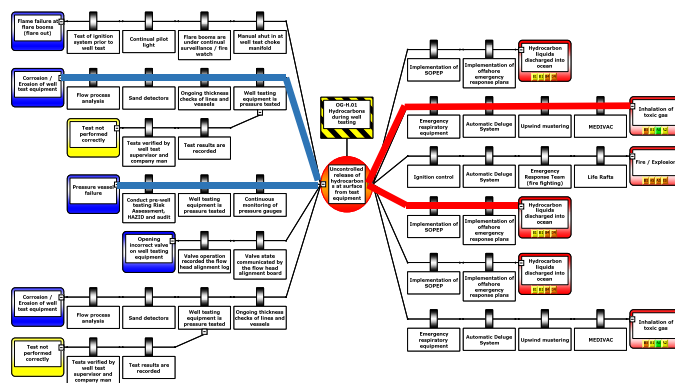




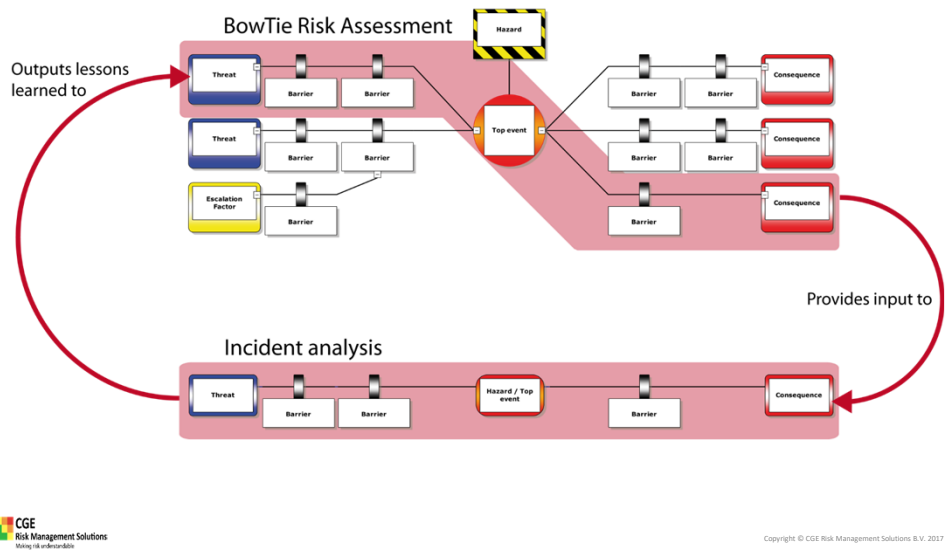
Bowtie in 8 steps



An Incident is often an occurring scenario of a BowTie



Learning from incidents



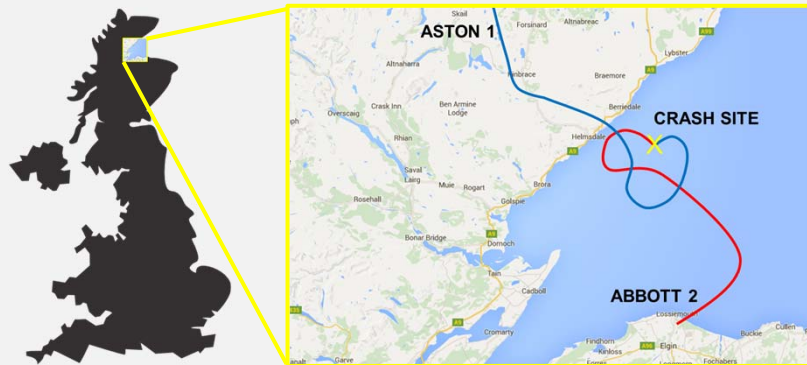
Presenting the case of the UK MAA

A 6 year journey towards learning from incidents and (occurrences)

- First a proof of concept for LFI (1 BowTie, 72 incidents plotted)
- Implementing structured Learning from incidents
- (200+ Bowties, 15000 occurrences yearly)



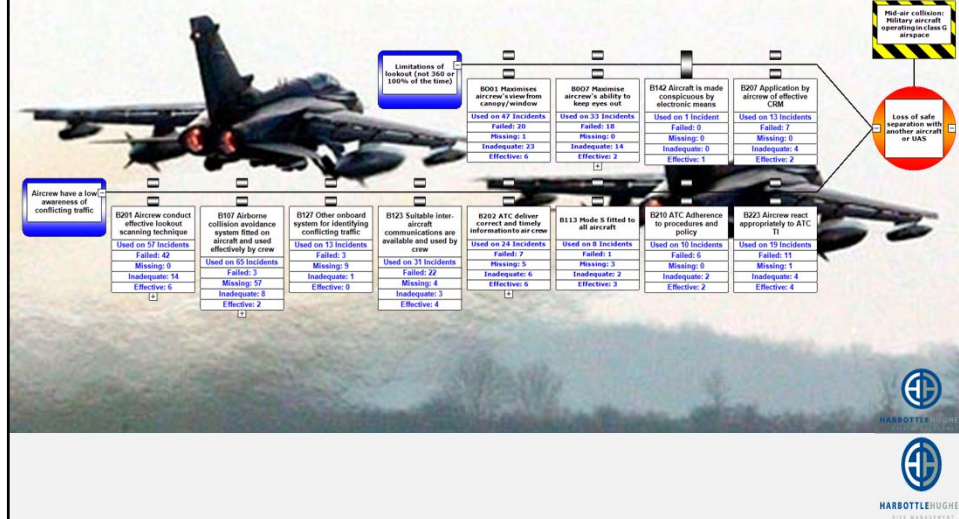
MORAY FIRTH, NE SCOTLAND 03 JULY 2012



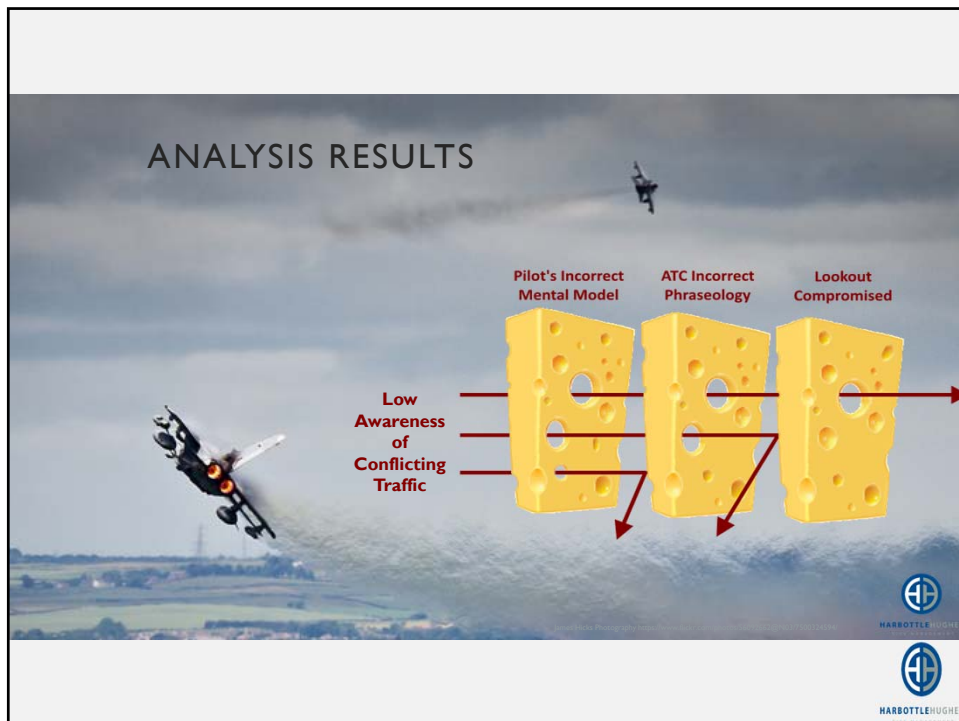
METHODOLOGY

- Create Loss of safe separation bowtie
- Peer review
- 71 Airprox incidents spanning 4 years
- Rules and assumptions

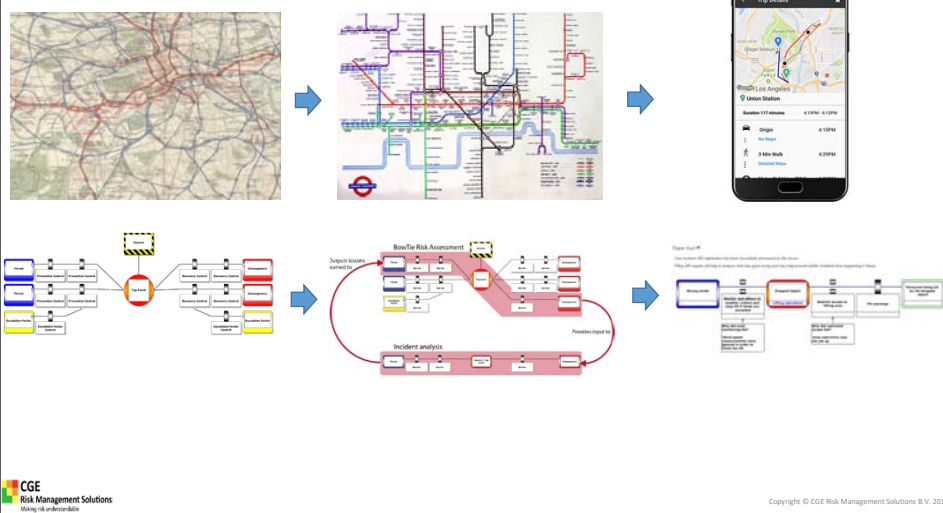
UNDERSTANDING OF LOSS OF SAFE SEPERATION AND PLOTTING 71 AIRPROX INCIDENTS ON ITS' BOWTIE



ANALYSIS RESULTS



So it works for learning from incidents but how does it fair for 12000 occurrences a year?



Structured analysis of occurrences in BowTieServer

- Single reporting system ASIMS
- Circa 12,000 reports per year
- Data is imported into BowTieServer
- Occurrences are analysed and linked to 200+ BowTies

[illegible]

BowTieServer SIR

(Scenario Based Incident Registration)

Navigation: Bowties Reports Incident HAZID Wiki Admin | Stephen Tonks

INU 1 + INU 2 FAIL ON SHUTDOWN

Home > Overview > INU 1 + INU 2 Fail On Shutdown

Buttons: Back Reason

Details

Type	Incident
Organisational Unit	Vehicle Fleet
Created by	Andrew Smith
Created at	15/4/2018
Occurred at	15/4/2018 3:04:00 PM (UTC+01:00)
Name	INU 1 + INU 2 FAIL On Shutdown
Description	During shutdown, after switching the Starter ECU off as part of the Shutdown Checks, INU 1 failed, closely followed by an INU 2 fail.

SWMR Code

Included HVT

Incurrence Type

Other

Event Type

Incident

Page of Report

Full Page

Follow up

Owner	Andrew Smith
Risk assessments	
Incident Category	Incident
Incident Type	Other
Incident Type	Full Page

Analyses

Name	Type	Status
INU 1 + INU 2 FAIL ON SHUTDOWN	BowTieCMT	Complete

Location on map

Flowchart

Flowchart illustrating the incident analysis process:

```
graph LR
    A[Strong winds] --> B[Resistor and solenoid to starter circuitry and INU 1 fail to start engine]
    B --> C[Engine operation]
    C --> D[Engine operation]
    D --> E[Engine operation]
    E --> F[Engine operation]
    F --> G[Engine operation]
    G --> H[Engine operation]
    H --> I[Engine operation]
    I --> J[Engine operation]
    J --> K[Engine operation]
    K --> L[Engine operation]
    L --> M[Engine operation]
    M --> N[Engine operation]
    N --> O[Engine operation]
    O --> P[Engine operation]
    P --> Q[Engine operation]
    Q --> R[Engine operation]
    R --> S[Engine operation]
    S --> T[Engine operation]
    T --> U[Engine operation]
    U --> V[Engine operation]
    V --> W[Engine operation]
    W --> X[Engine operation]
    X --> Y[Engine operation]
    Y --> Z[Engine operation]
    Z --> AA[Engine operation]
    AA --> AB[Engine operation]
    AB --> AC[Engine operation]
    AC --> AD[Engine operation]
    AD --> AE[Engine operation]
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    AR --> AS[Engine operation]
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    AZ --> BA[Engine operation]
    BA --> BB[Engine operation]
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    BC --> BD[Engine operation]
    BD --> BE[Engine operation]
    BE --> BF[Engine operation]
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    BH --> BI[Engine operation]
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    BK --> BL[Engine operation]
    BL --> BM[Engine operation]
    BM --> BN[Engine operation]
    BN --> BO[Engine operation]
    BO --> BP[Engine operation]
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    BQ --> BR[Engine operation]
    BR --> BS[Engine operation]
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    JW --> JX[Engine operation]
    JX --> JY[Engine operation]
    JY --> JZ[Engine operation]
    JZ --> KA[Engine
```

Scenario based Incident Registration (SIR)

1. Select applicable categories

Process / Hazard	Unusually Atmosphere	Unusually Atmosphere
☐ Confined Space Entry	☐ Dropped object	☐ Dropped object
☒ Lifting operations	☐ Accommodation fire	☐ Accommodation fire
☐ Fuel Ignition Conditions in Accommodation	☐ Man over board	☐ Man over board
☐ Work near water		

Remarks:

Please enter additional remarks about relevant consequences not listed above.

[Back](#) [Next](#)

What to do on this page?

If you select one or more of the hazards from the list you will be asked specific questions about the incident scenario. If none is chosen you will be asked a few generic questions instead.

Background

The kind of scenario you are selecting are inserted as hazards with their top event. They are the central node of diagrams known as BowTie diagrams which are used in risk analysis.



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Making it understandable

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Scenario based Incident Registration (SIR)

2. Select applicable Consequences

Select all Consequences that nearly happened or actually occurred

Consequence	Process
N/A Occurred Nearly happened	
☐ ☐ ☒ Personnel being hit by the dropped object	Lifting operations ?
☒ ☐ ☐ Dropped object landing in sea	Lifting operations ?
☒ ☐ ☐ Dropped object impacts ground	Lifting operations ?
☒ ☐ ☐ Object impacts live equipment	Lifting operations ?

Remarks:

Please enter any additional remarks about Consequences not listed above.

[Back to start](#) [Back](#) [Next](#)

What to do on this page?

Here is a list of predefined Consequences associated with the incident categories you have already selected. Please select any Consequences that nearly happened or did actually occur. For each selected Consequence you will be asked specific details as to how recovery measures did not work.

Background

In BowTie diagrams, Consequences happen after a top event has happened.



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Scenario based Incident Registration (SIR)

3. Select applicable Threats

Threat	Process
☐ Structural failure of the crane	Lifting operations
☐ Load too heavy	Lifting operations
☐ Incorrect loading/rigging	Lifting operations
☒ Strong winds	Lifting operations
☐ Snagging of gear/load	Lifting operations
☐ Operator overextending the load and tipping the crane	Lifting operations

Remarks

Please enter any additional remarks about Threats not listed above.

[Back to start](#)

[Back](#)

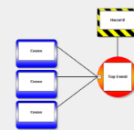
[Next](#)

What to do on this page?

A list is presented with predefined Threats associated with the incident categories you have already selected. Please check any item that applies. An additional Threat not mentioned in the list can be entered in the remarks text field below.

Background

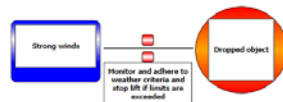
In BowTie diagrams, top events are caused by Threats.



Scenario based Incident Registration (SIR)

4. Performance details of safety measures

Monitor and adhere to weather criteria and stop lift if limits are exceeded - Barrier 1 of 3



- ☐ Yes this safety measure functioned correctly
- ☒ No it did not or perhaps partially
- ☐ This Barrier is not applicable for this scenario

Why did wind monitoring fail?

- ☐ Wind speed wasn't monitored
- ☐ Wind speed was monitored incorrectly
- ☐ Wind speed measurements were incorrect
- ☐ Wind speed measurements were ignored in order to finish the lift
- ☐ I don't know why

Remarks

Please enter any additional remarks about conditions not listed above.

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[Review](#)

Barrier 1 of 3

What to do on this page?

Please provide information about this safety measure (also known as a Barrier).

- Was the measure in place?
- Did it function?
- Or do some specific failure reasons apply?

Background

In BowTie diagrams, Barriers are in place to prevent Threats from leading to a Top event and more Barriers are in place to prevent a Top event from leading to Consequences.



The Essence

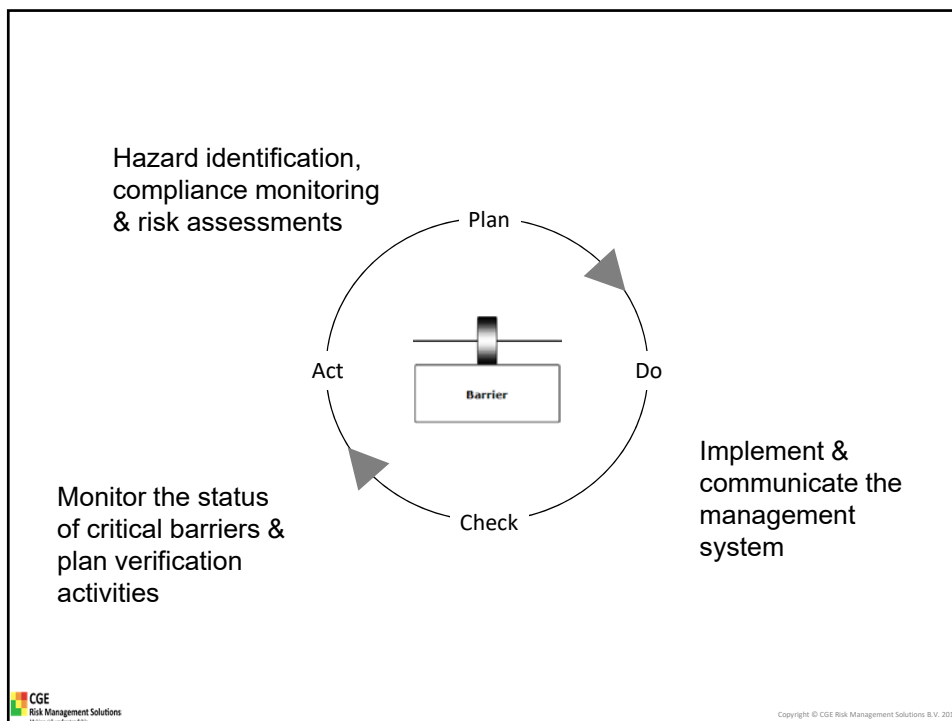
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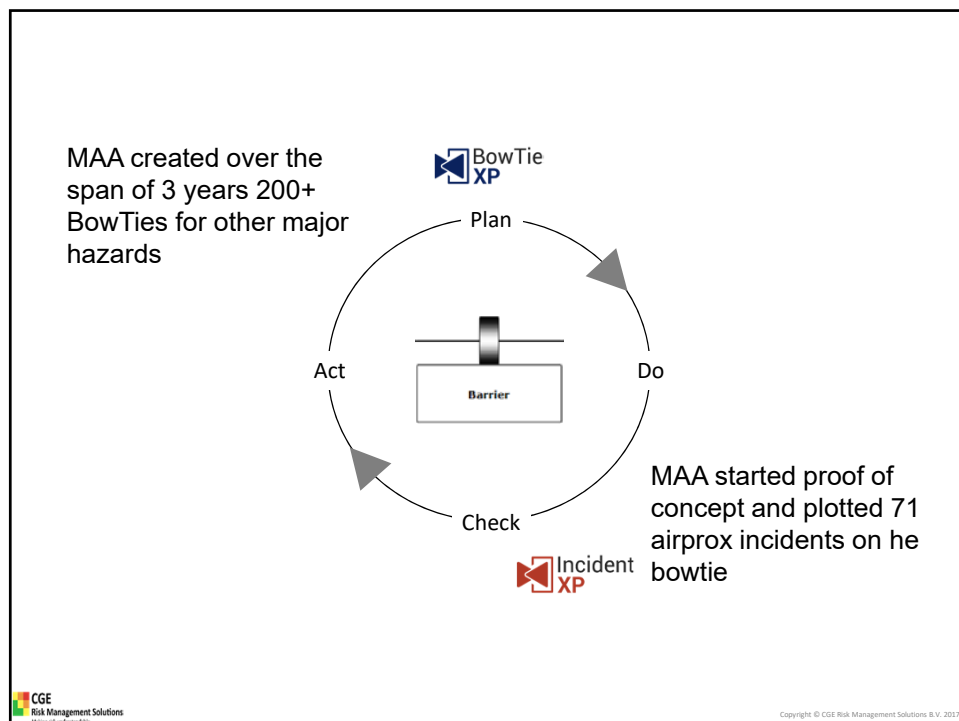
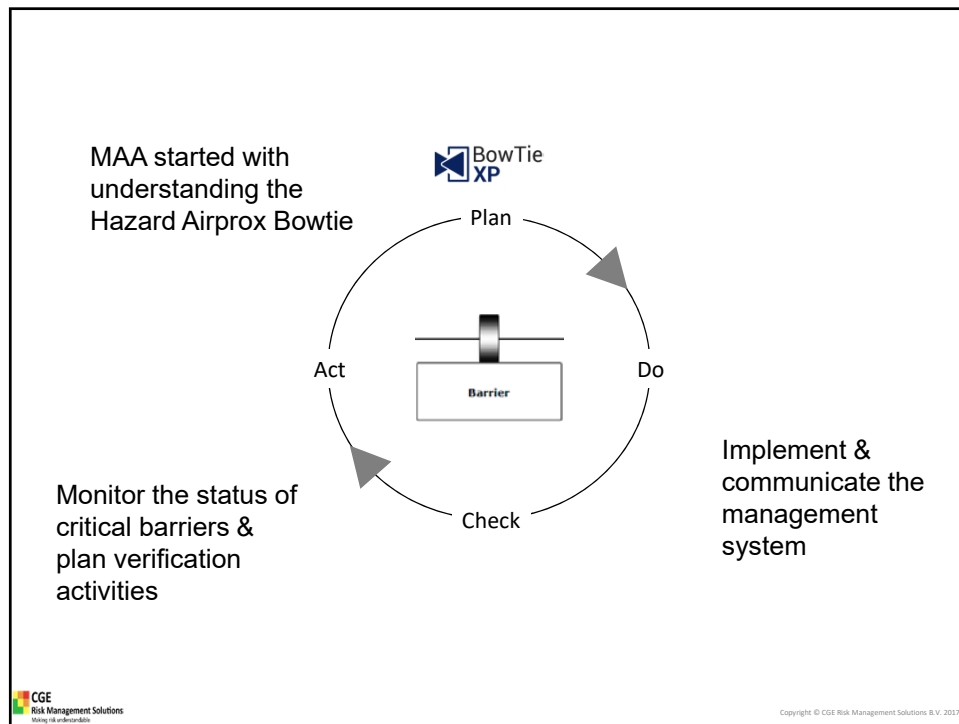
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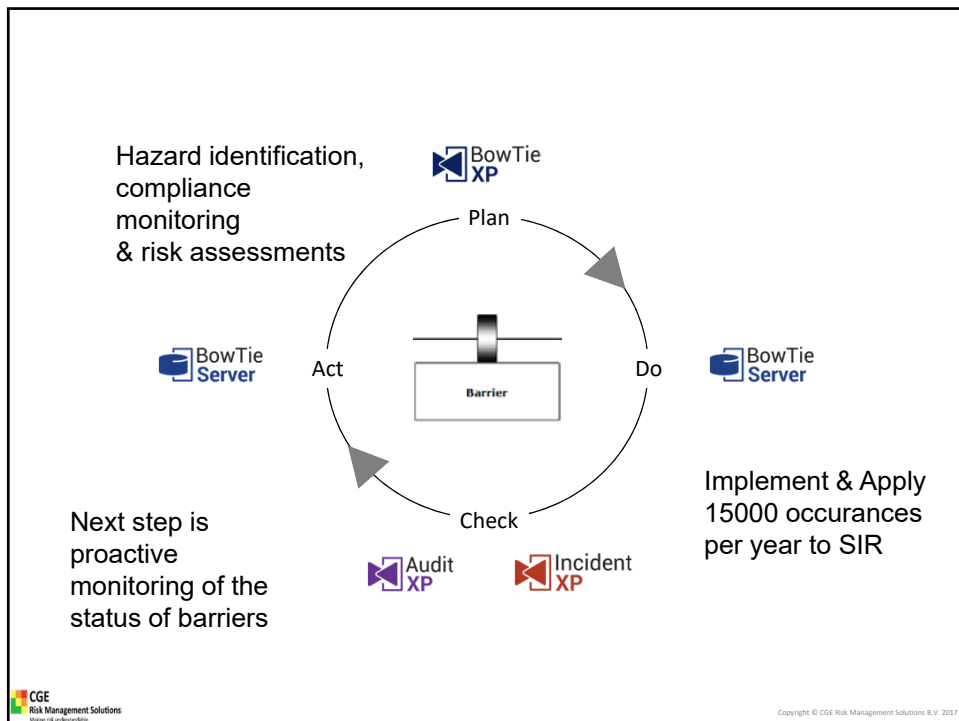
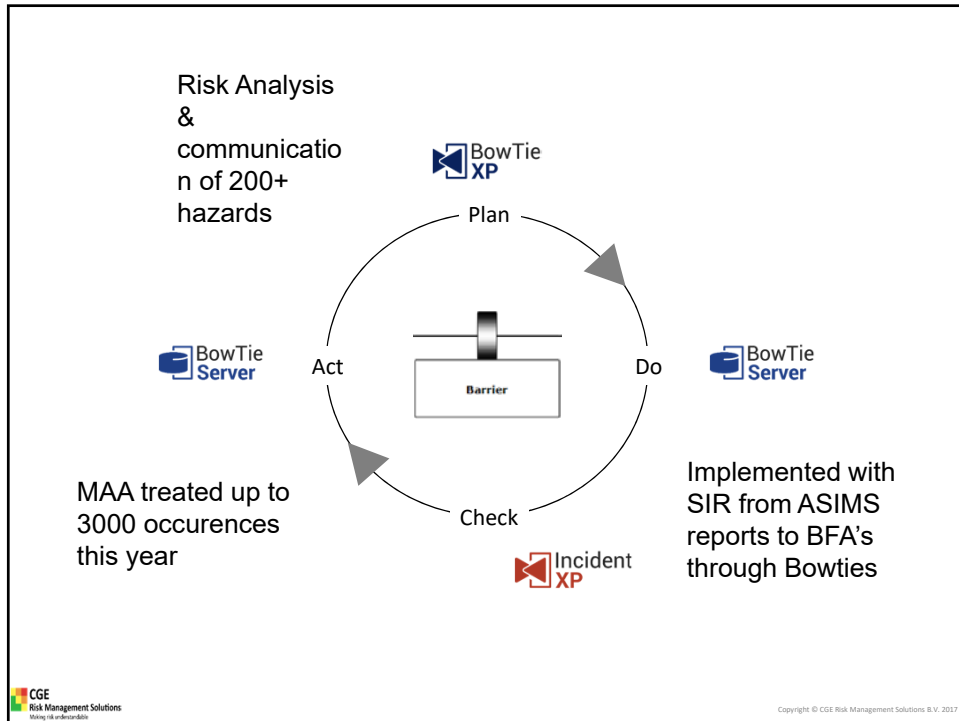


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Thank you

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