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Applied Risk Management:
A Company Perspective

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Chair elect:
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Strategies to manage risk can be divided into three categories:

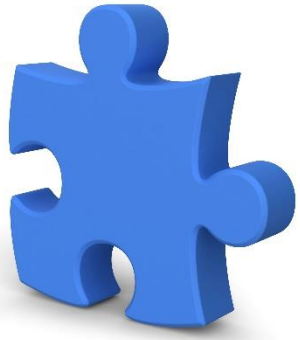
1. Risk assessment 
2. Robustness, resilience, cautionary/precautionary thinking
3. Dialogue, interaction, participation

[Terje Aven]

Aspects of risk asses-sment

Risk assessment and risk management in my application area is unique

Many challenges are in common



- Challenges
- Good practice
- Success criteria

Two rules which I will never compromise

Risk assessment principles:

1: Understand the system you are analysing

2: Explain risk results based on the real world, not abstract terms

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1: Understand the system you are analysing

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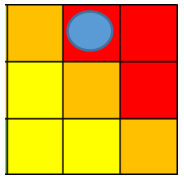
Which argument do you prefer?



Risk assessment principles:

1: Understand the system you are analysing

2: Explain risk results based on the real world, not abstract terms

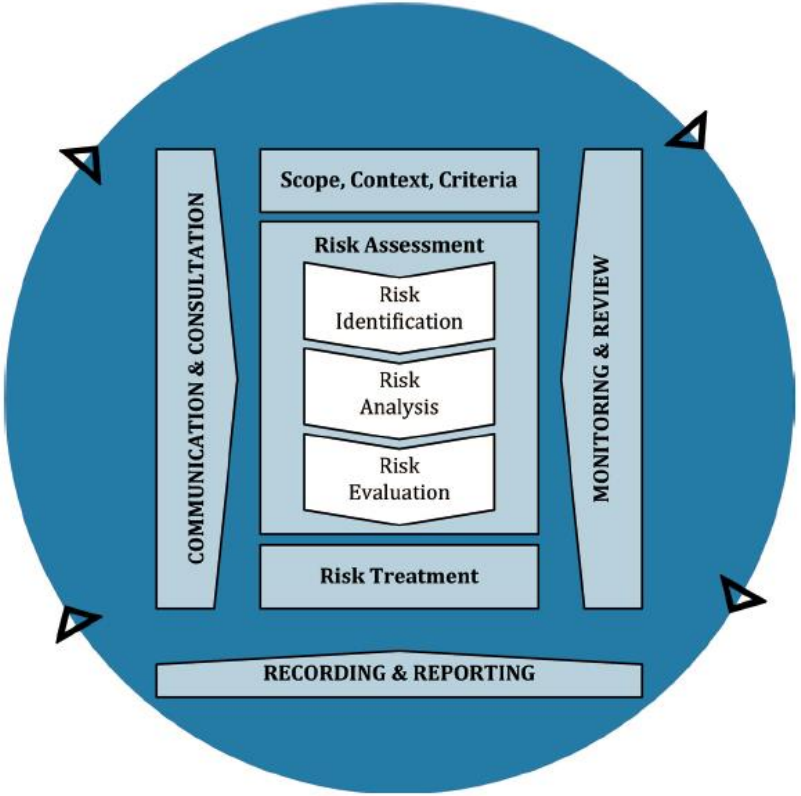
A: The barrier is recommended because it reduces the risk from «red» to «yellow»

B: The barrier is recommended because it prevents people being hit by a car

Two useful concepts when entering a new application area

Useful concept #1: Risk management process

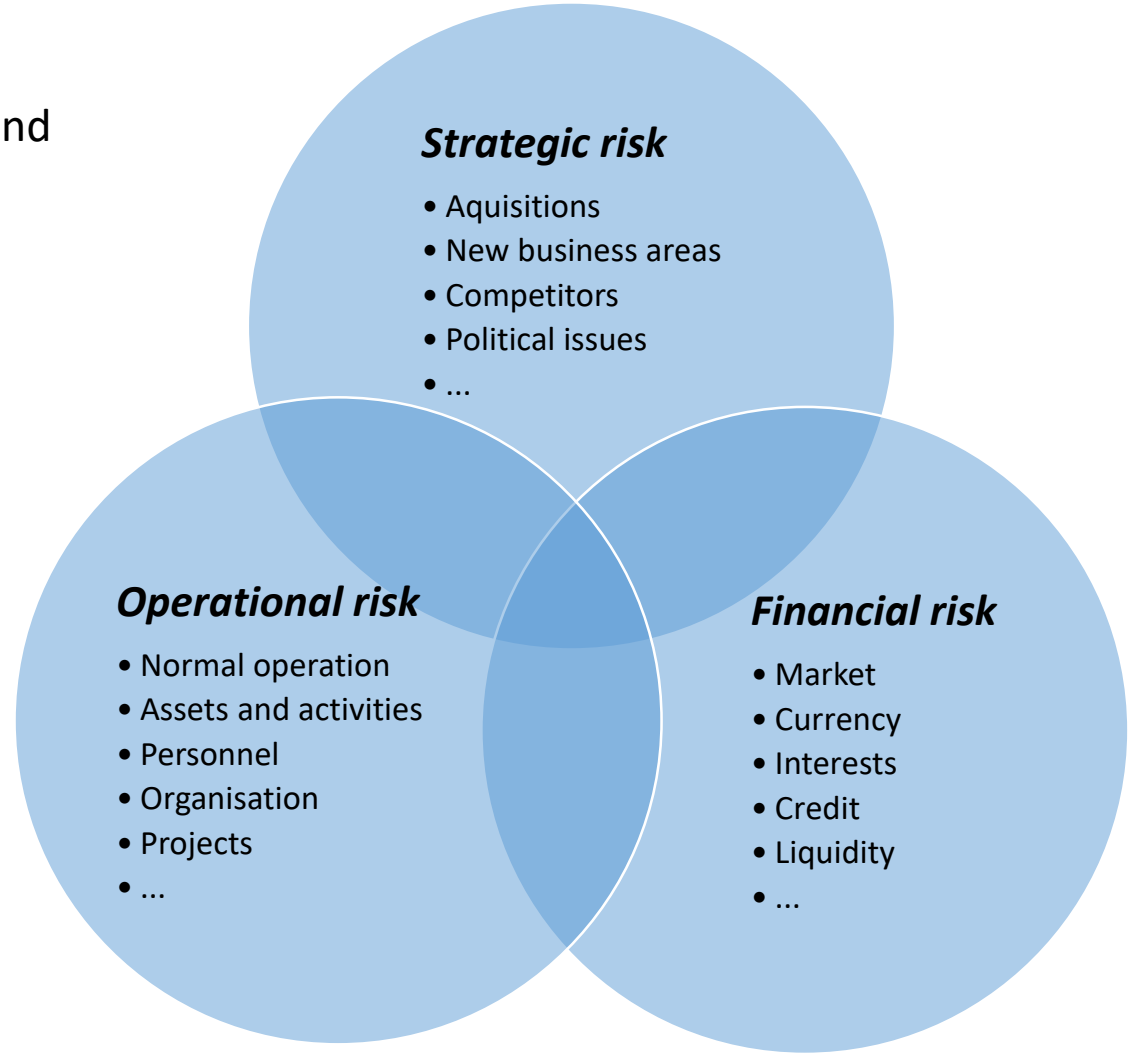
“General recipe”



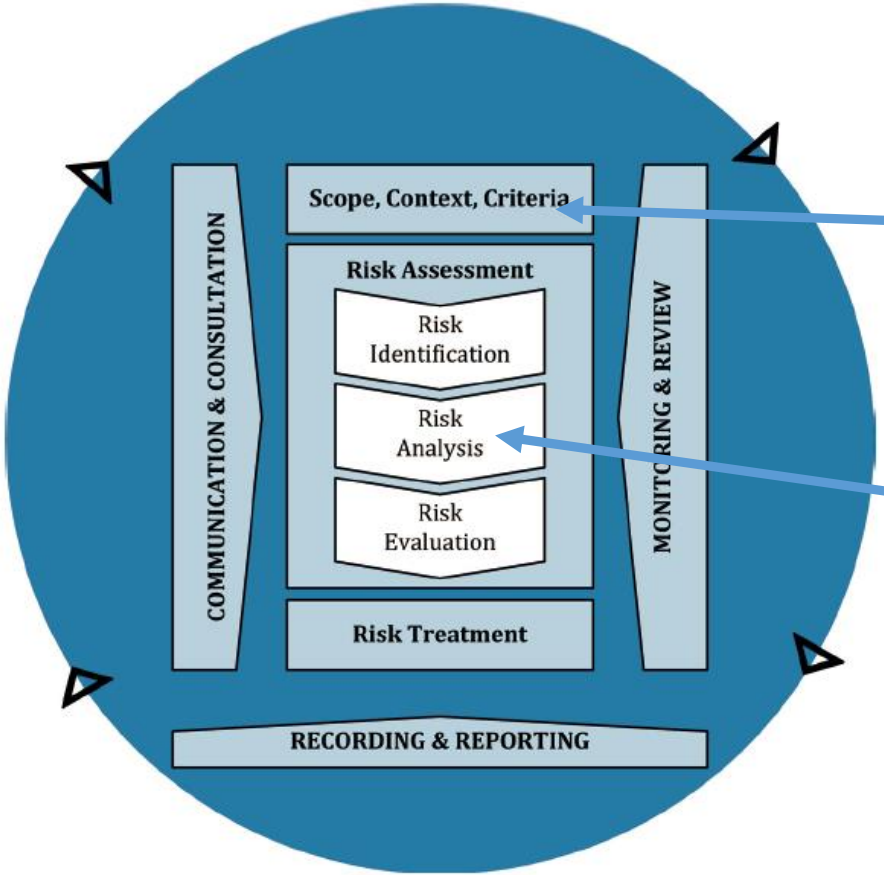
[ISO 31000:2018: Risk management]

Challenge:
Different education/background
Different responsibilities
Different standards

But they all talk about risk



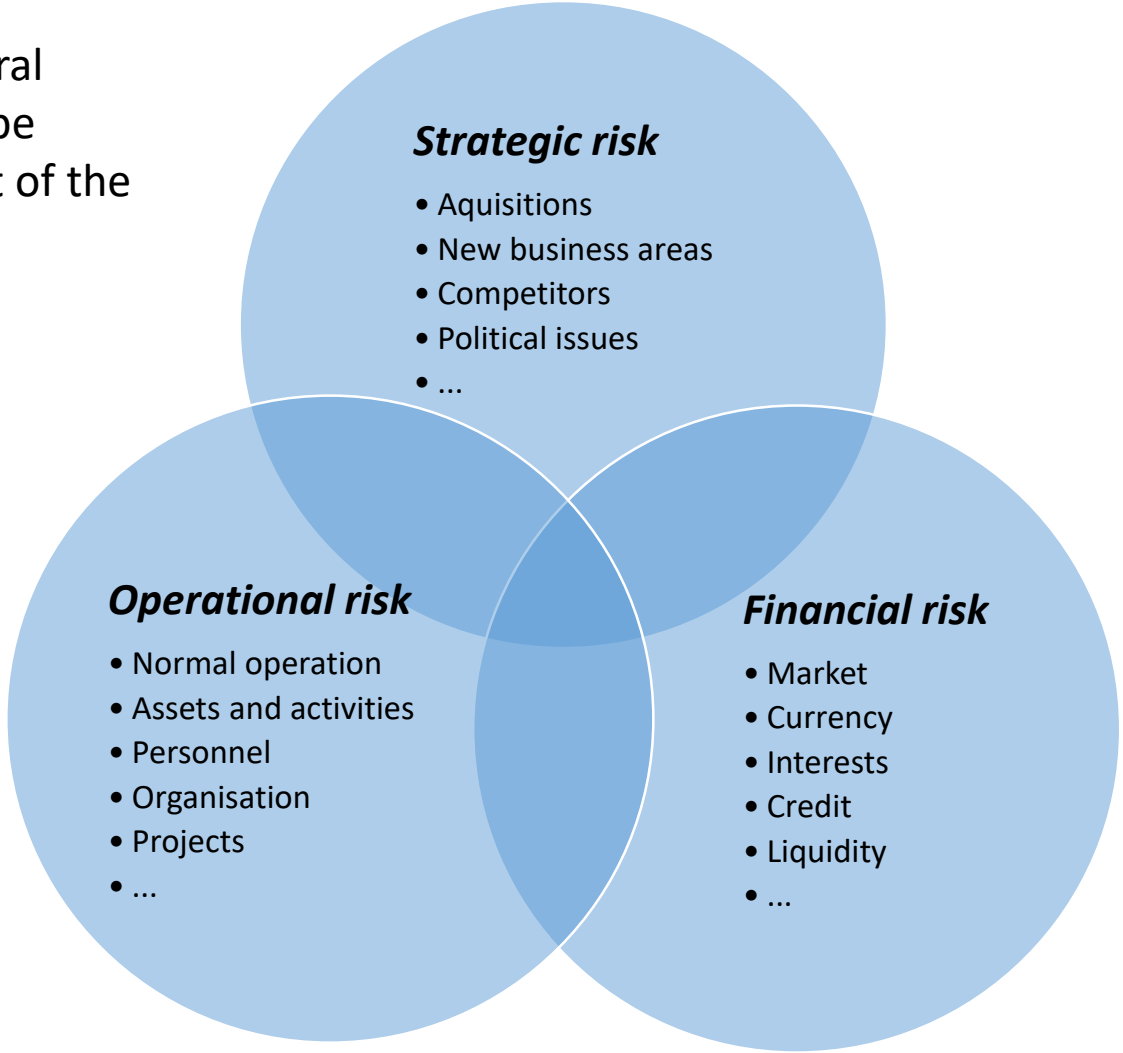
“General recipe”



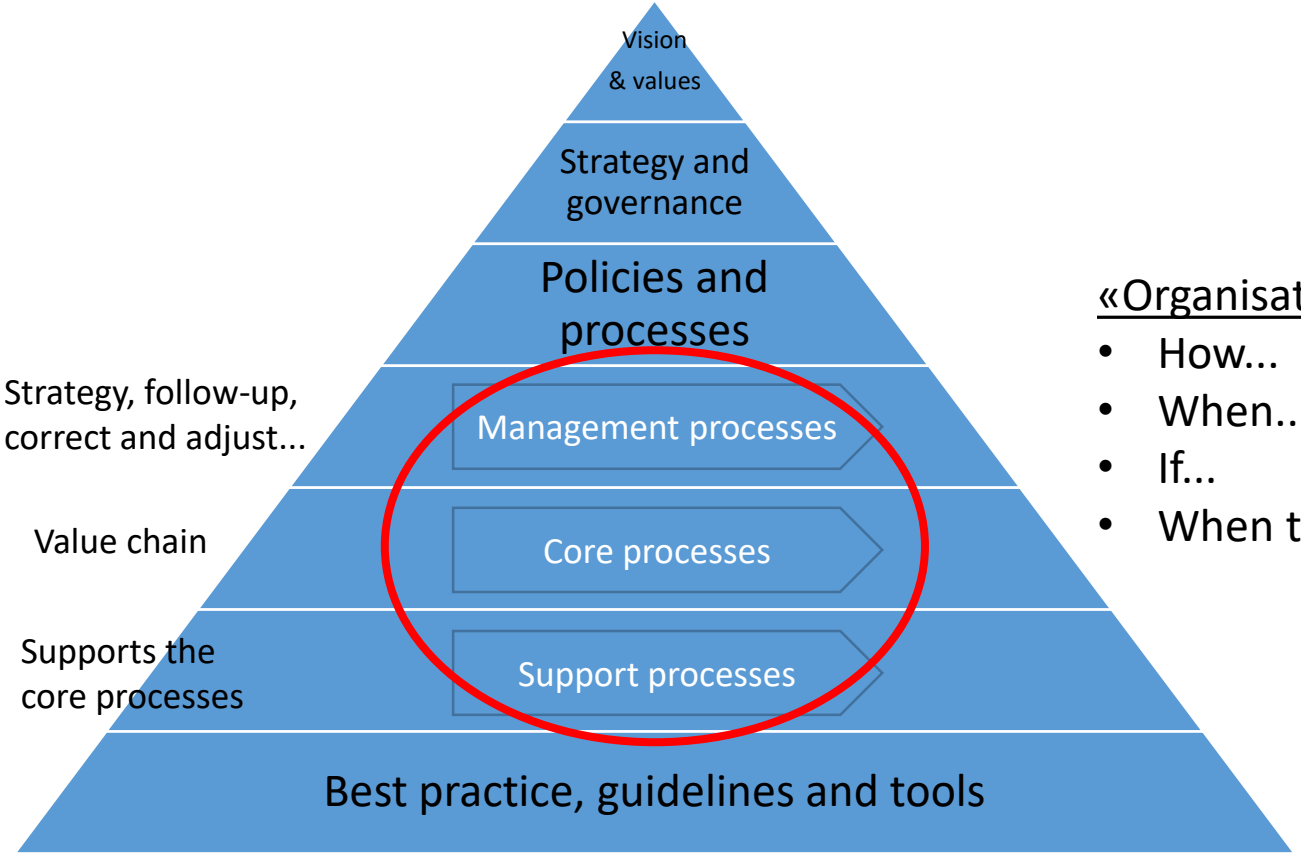
Different contexts

Different risk analysis methods

Provides one general «recipe» that can be applied to any part of the organisation

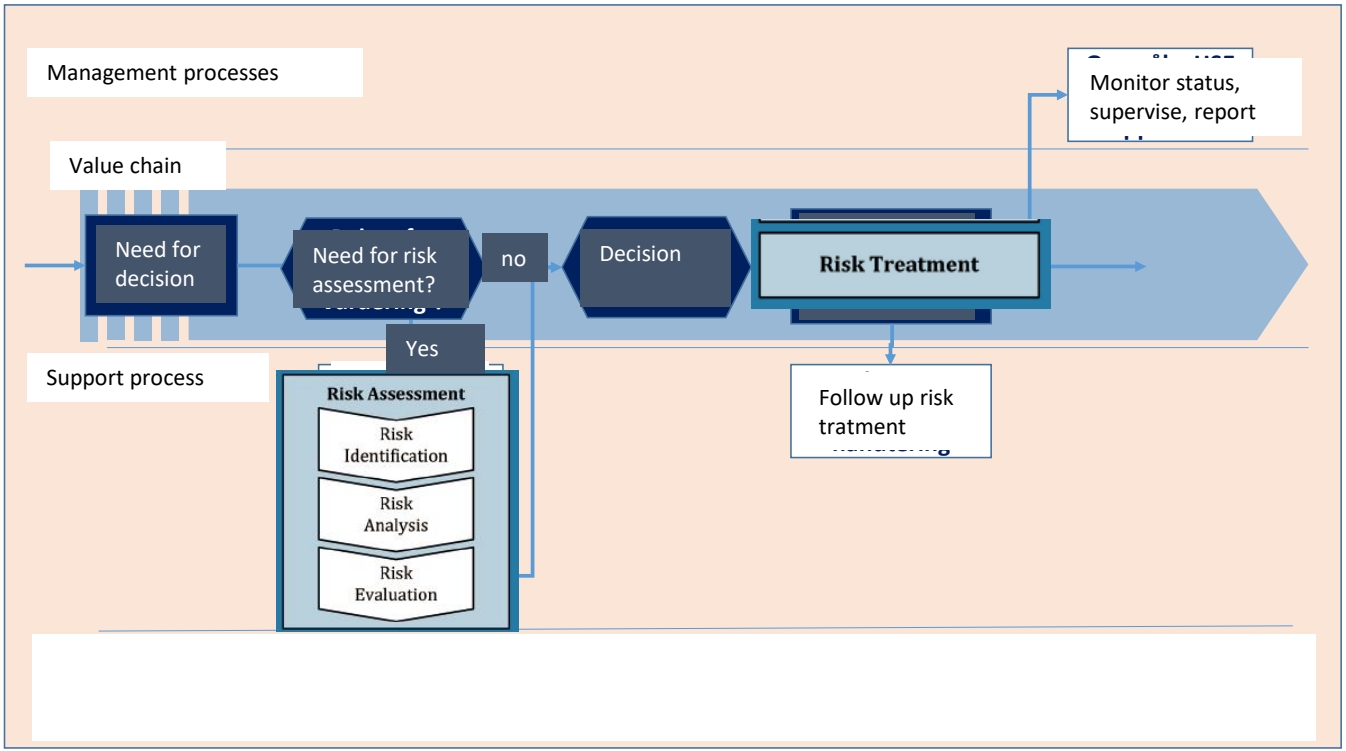


Management system



<u>«Organisation recipe»/ procedures:</u>

- How...
- When...
- If...
- When to carry out risk assessments?



In this way the «general recipe» can be applied to <u>any</u> risk informed decision

Useful concept #2: The bow tie model

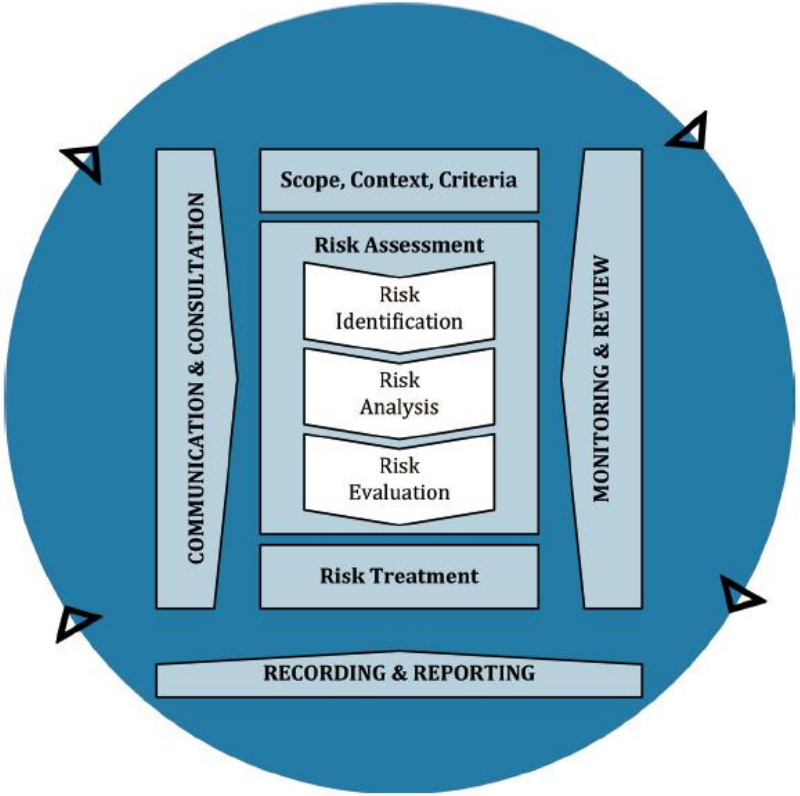
“Scenario mindset”

- A model is a simplification
- Too simple? Yes, probably
- Covers some parts of the puzzle

Simple and intuitive way to see different safety initiatives relative to each other

Effective way to communicate safety aspects to non-safety people

Useful concept #1: “General recipe”

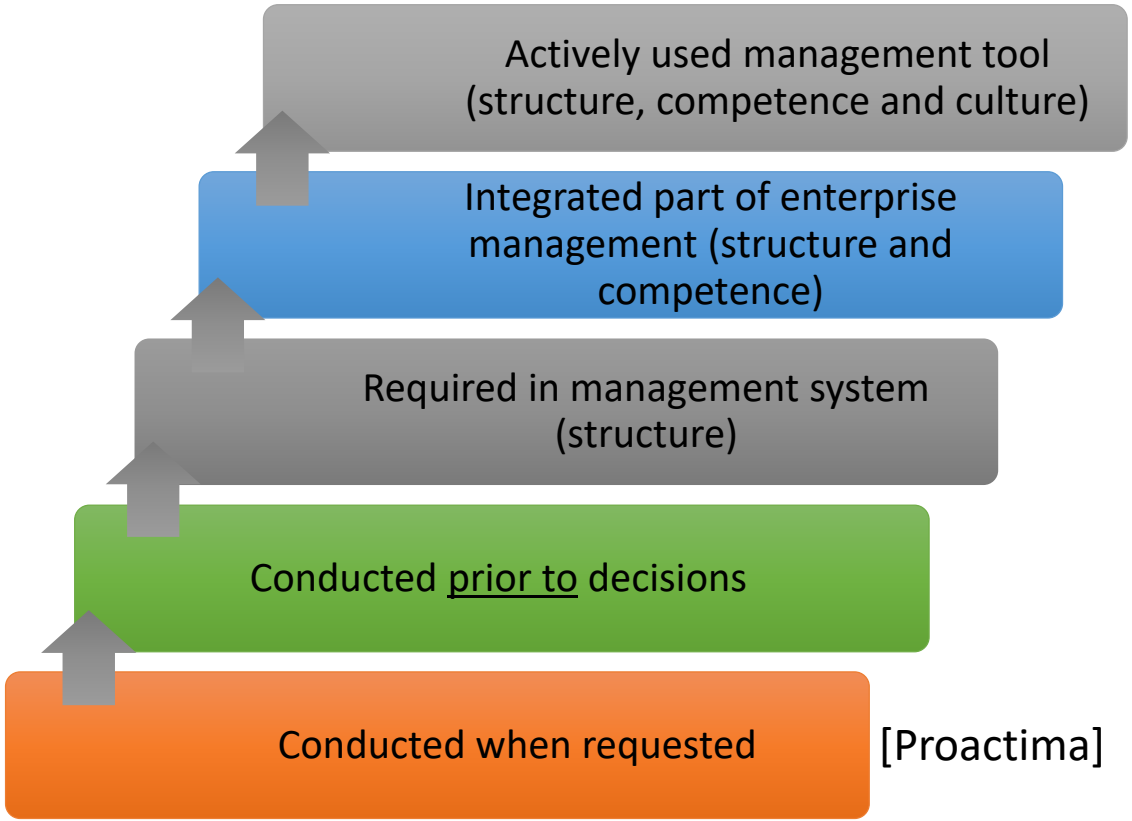


Useful concept #2: “Scenario mindset”

Provide a structure


Structure
Templates & tools
Processes & procedures
Organisation, roles & responsibility
Leadership
Culture
Attitudes, behaviour, loyalty, compliance
Assessment, verification, audit
Communication, management
Competence
Training (individual/group)
Coaching
Support, experience

Use of risk assessment - maturity levels



[Proactima]

Tolerability of risk –
the use of risk acceptance criteria

We are planning a new facility. How can risk assessment help us to ensure a safe design?

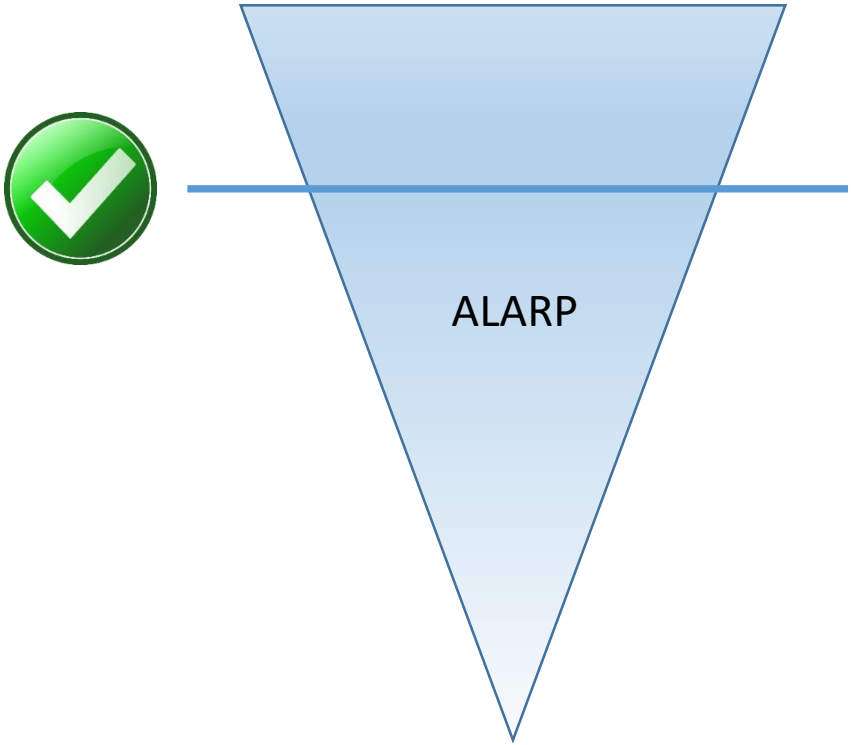
We have designed a new facility. Now we need a risk assessment to verify that the design is aceptable

Generate alternatives
Compare risk
Emphasise differences
Highlight uncertainties
Suggest alternatives

Yes?
No?

Example from Norwegian oil and gas industry

Examples:
FAR < 10
P(impairment of safety function$_i$) < 10^{-4}



Quantitative risk acceptance criteria

Strong focus on risk calculation results relative to risk acceptance criteria

Risk based decision making

Risk informed decision making

Can risk acceptance criteria (unintentially) push decisions from risk informed to risk based?

Risk governance

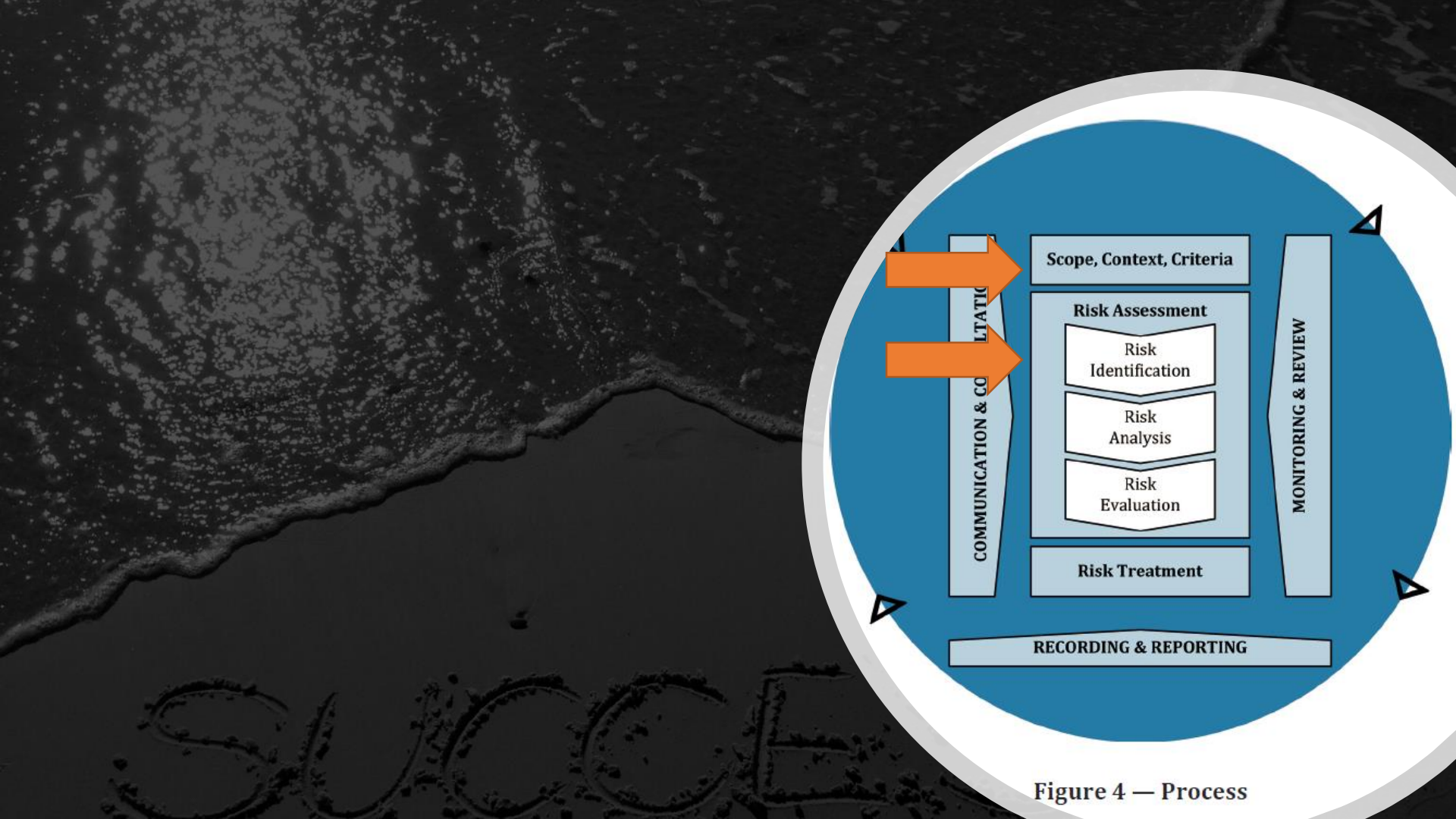
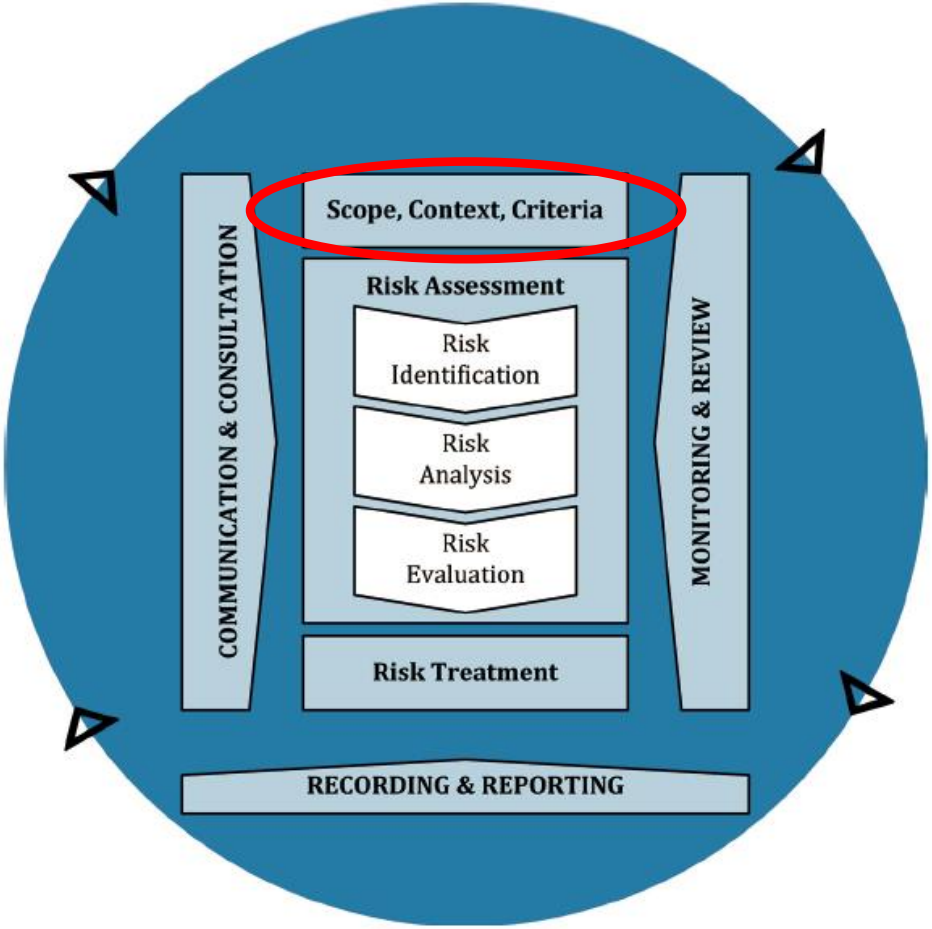
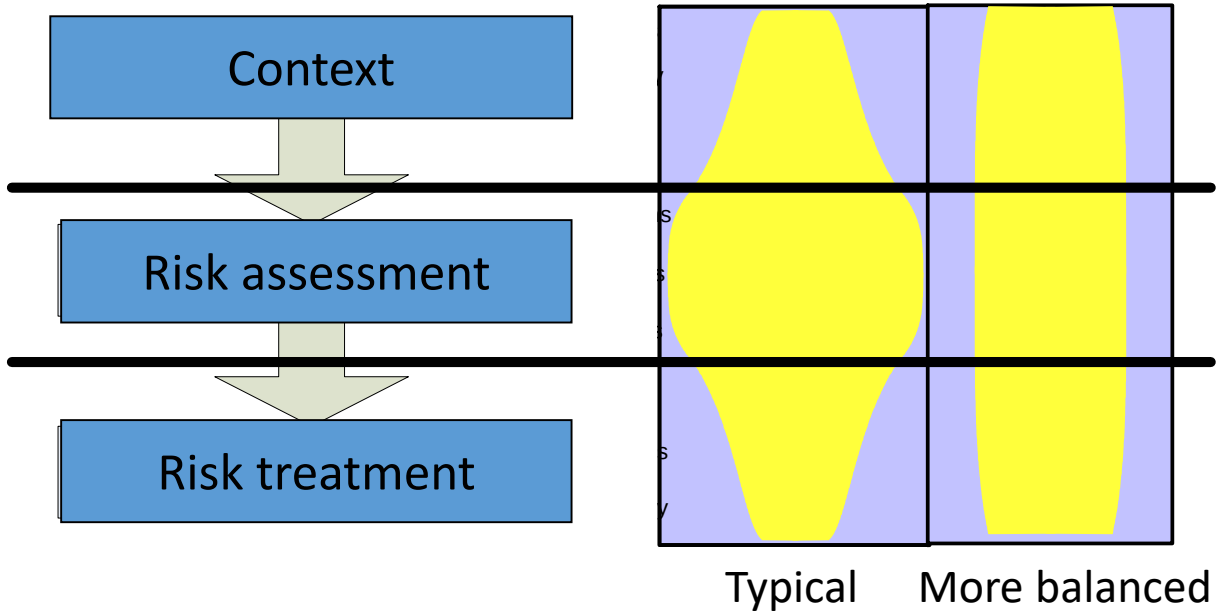


Figure 4 — Process


Scope, Context, Criteria
Risk Assessment
Risk Identification
Risk Analysis
Risk Evaluation
Risk Treatment
COMMUNICATION & CONSULTATION
MONITORING & REVIEW
RECORDING & REPORTING

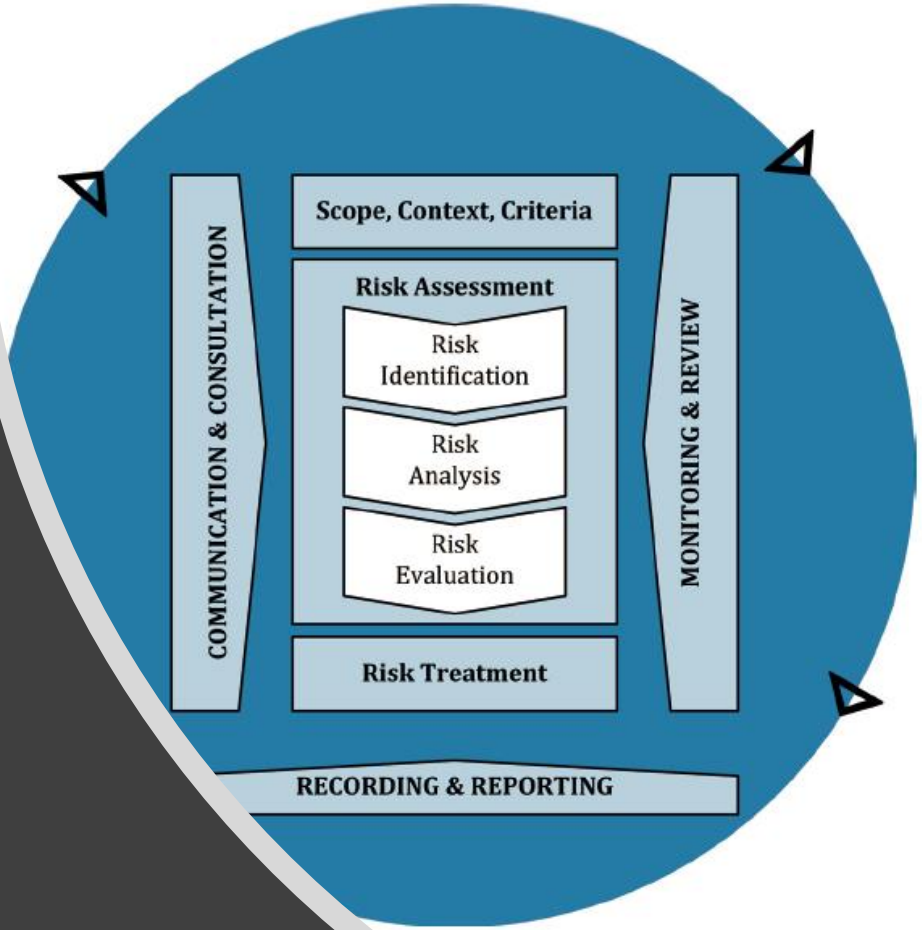

Context
Risk assessment
Risk treatment
Typical
More balanced

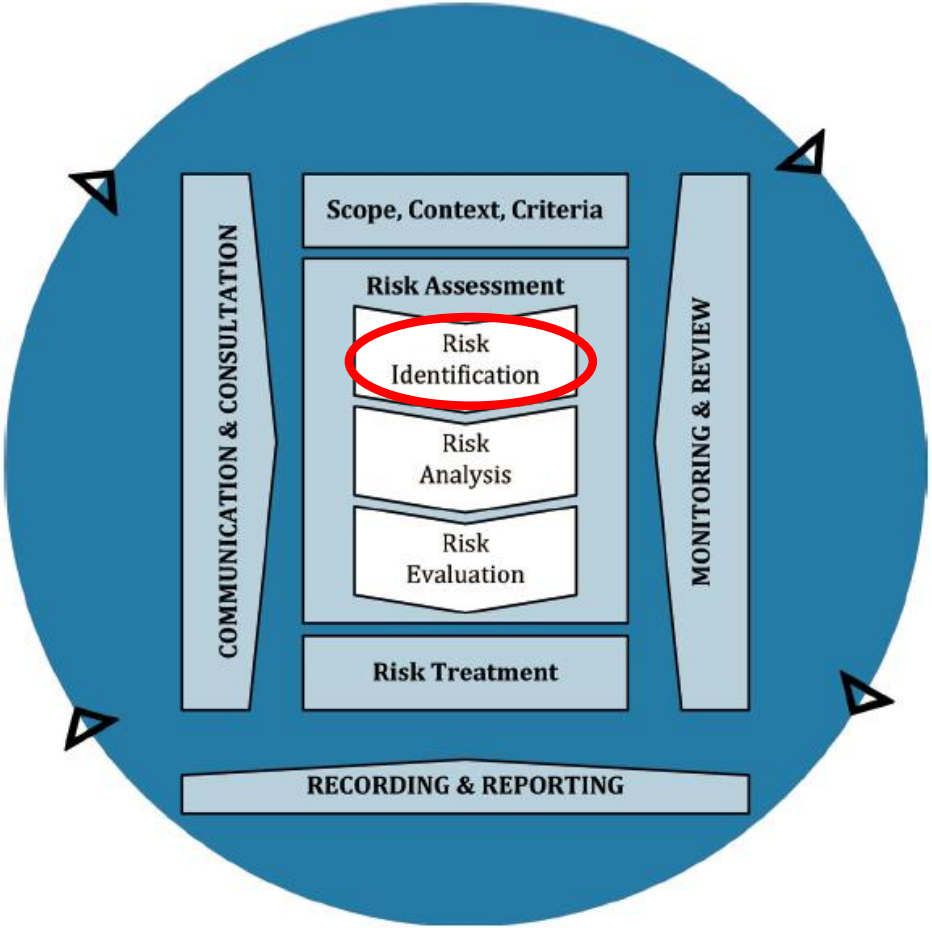
Perform the risk assessment twice

1) **Planning phase:** Simulate risk assessment to build confidence that what you get out of it will provide useful decision support

2) **Execution phase:** Carry out the risk assessment as planned

Never skip step 1




COMMUNICATION & CONSULTATION
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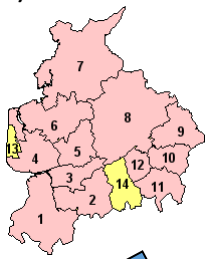
Hazard identification - common approach

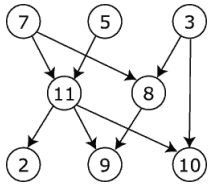
Physical areas:

1) Area 1
2) Area 2
3) Area 3
4) …



Activities:

1) Activity 1
2) Activity 2
3) Activity 3
4) ...



List of guide words:

- Technical condition
- Weather and climate
- Energy
- ...

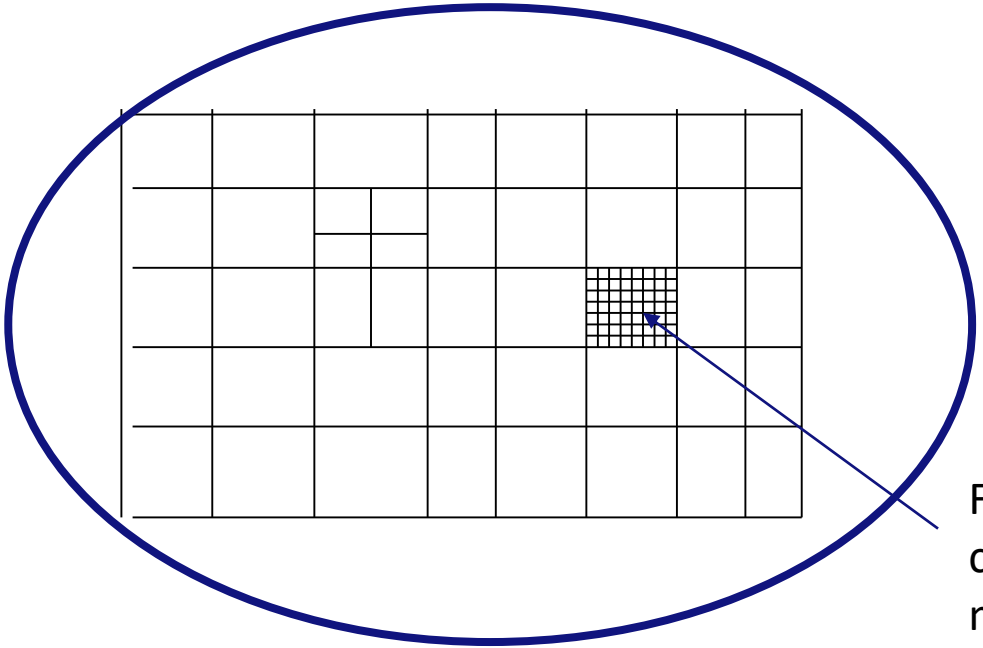
List of hazards

Alternative approach: Start with identifying what is unique

What is unique for this particular system?

Dig into unique areas to identify potential hazards

Dig into the characteristics



Traditional hazard identification

For unique characteristics: A more comprehensive hazard identification

Physical areas
Activities
Guide words

or...

Unique characteristics

Techniques for “creative thinking”

1. to study parts of the system one by one
2. to use a check list or a list of guide words
3. to identify the risk sources
4. to present the system’s characteristics graphically
5. to invent or create failures on purpose
6. to identify special/abnormal system’s characteristics

Example: AFD framework [Stan Kaplan]

Characteristic: The car has only three wheels

If we wanted the above characteristic to cause an accident. How could we do it?

Concluding remarks

If you are a decision maker

What are the decision alternatives?

How is the risk assessment going to provide decision support?

How do you need the risk results to be presented to provide decision support?

If you are a risk analyst

What are the decision alternatives?

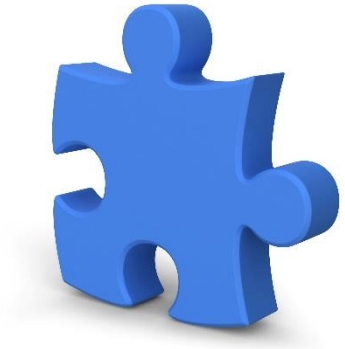
Planning is everything. Don’t use a hammer just because you have one

What is unique with the system you are analysing?

If you a researcher developing risk analysis tools

Understand how your tool is going to be used

A brilliant tool is not brilliant if it is unfit for purpose



ARMSG: Applied risk management specialty group

«ARMSG is focused on the practical issues of risk management, as distinct from advanced analytical approaches to risk analysis. We believe that those practical issues can often make more difference in what risks are incurred than advanced analytics can».
[John Lathrop, Chairman of ARMSG]

Applied risk management guidelines:
- Webinar October 24
- Roundtable in New Orleans

http://www.sra.org/armsg

80% consultant, 20% professor dilemma

Researchers: Like new ideas
«*What is new about this*»

Companies: Like proven concepts
«*How is this compared to what other companies do*?»

Comments or reflections?