



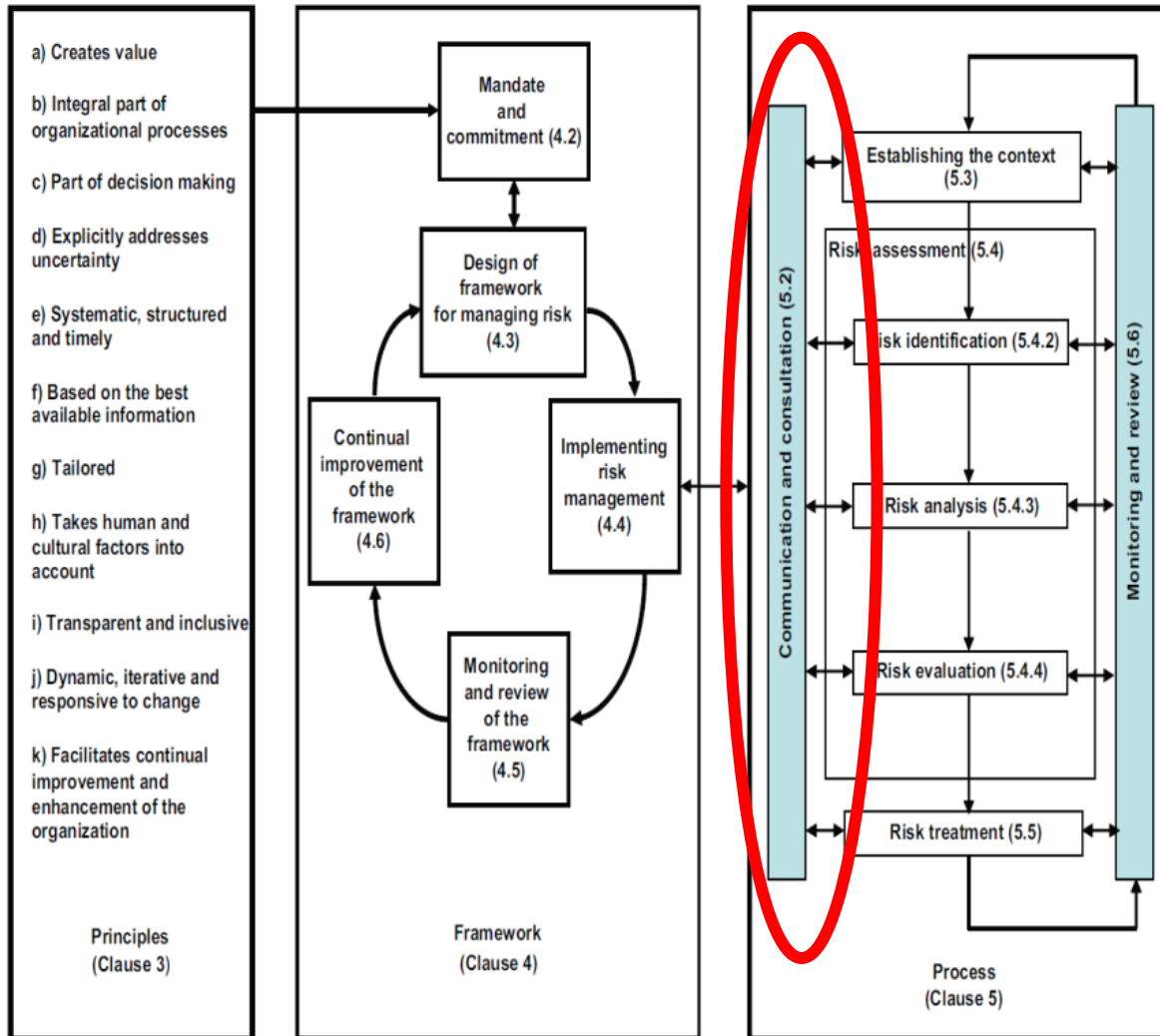
# Risikokommunikasjon; fra analyse til handling

ESRA: Risikokommunikasjon og barrierestyring, Høvik 08.06.2012

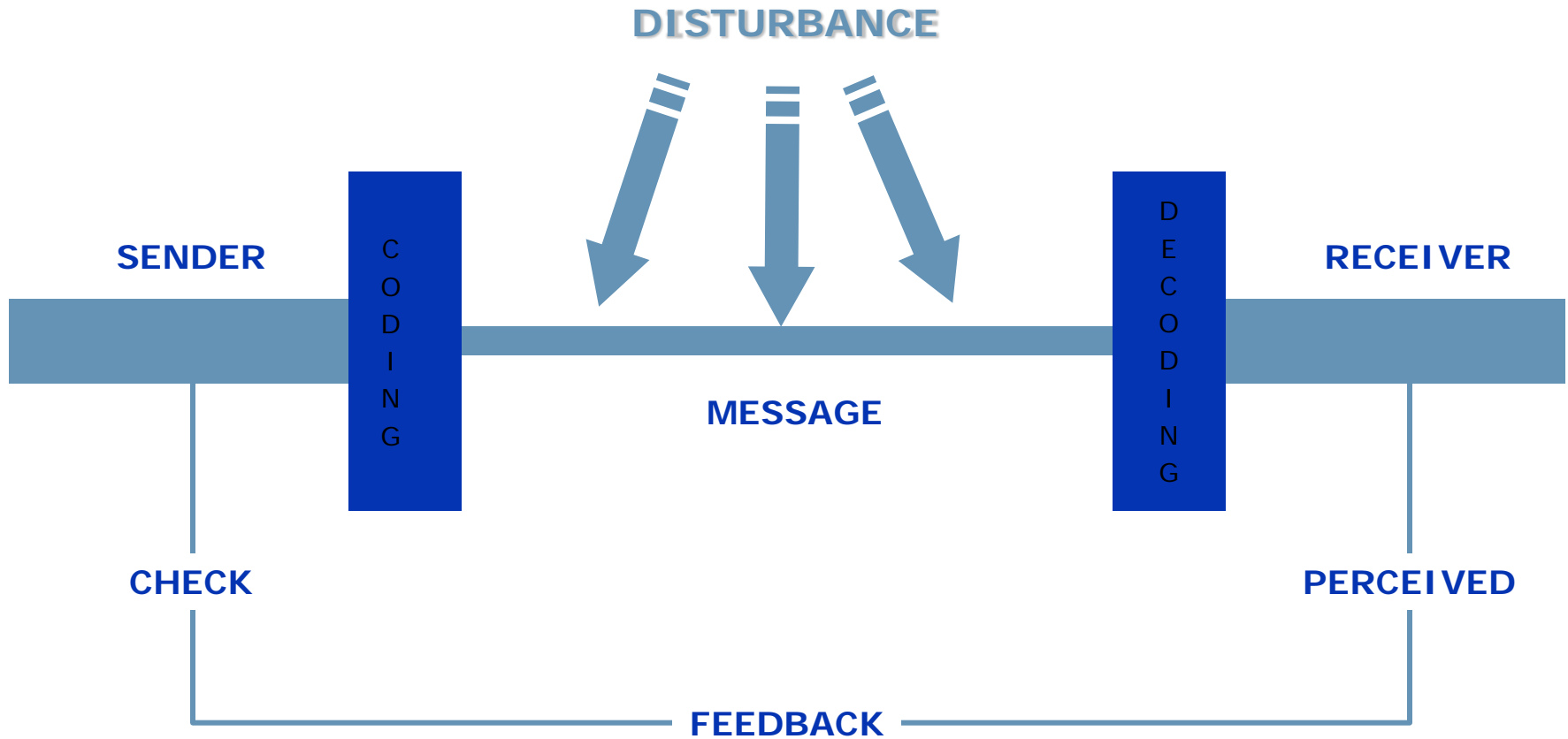
Eikeland, Falck, van de Merwe, Paaske, Wahlstrøm  
08.06.2012

# ISO 31000- Risk management

Figure 1 — Relationships between the risk management principles, framework and process



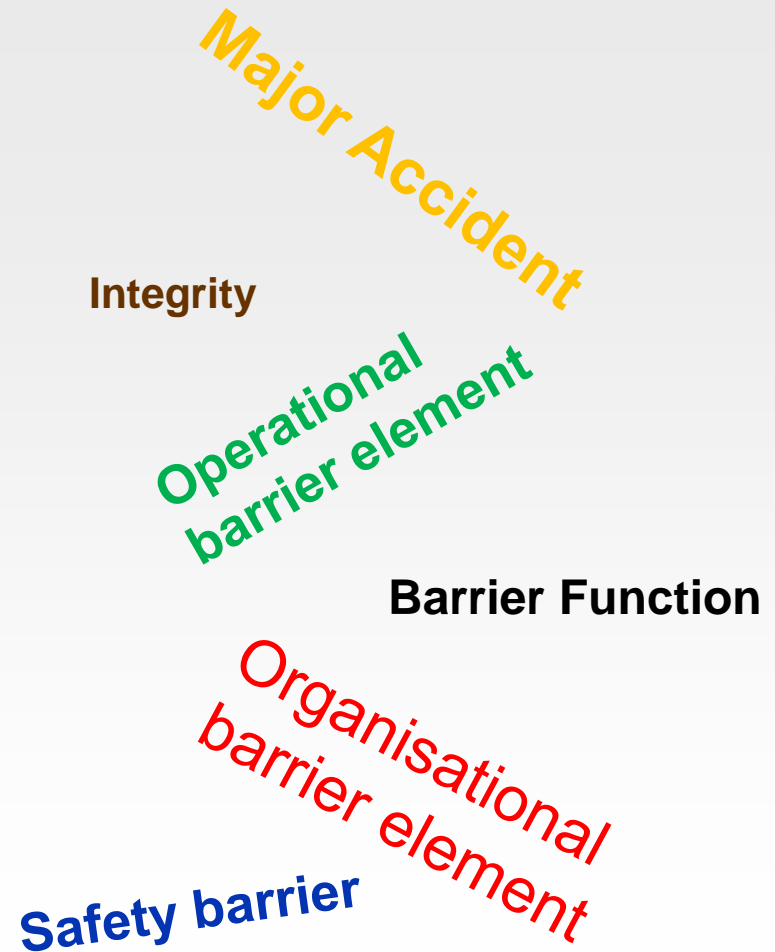
# Communication model



# Stan Kaplan's Theorems of Communication

From the plenary Address at the 1996 Meeting Society for Risk Analysis

- Theorem 1:  
50% of the problems in the world result from people using the same words with different meanings.
- Theorem 2:  
The other 50% comes from people using different words with the same meaning.





### In Memoriam

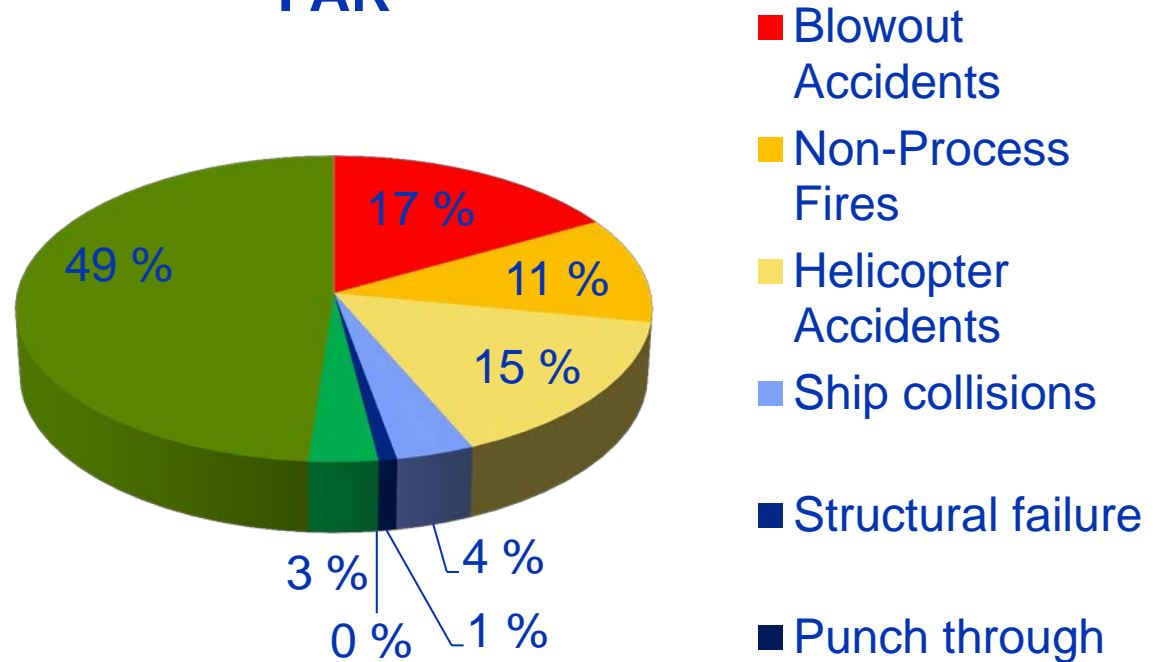
<p><b>Jason Anderson</b> Senior tool pusher</p> <p><b>Dewey Revette</b> Driller</p> <p><b>Stephen Curtis</b> Assistant driller</p> <p><b>Donald Clark</b> Assistant driller</p> <p><b>Dale Burkeen</b> Crane operator</p>	<p><b>Karl Kleppinger</b> Roughneck</p> <p><b>Adam Weise</b> Roughneck</p> <p><b>Shane Roshto</b> Roughneck</p> <p><b>Wyatt Kemp</b> Derrick man</p> <p><b>Gordon Jones</b> Mud engineer</p> <p><b>Blair Manuel</b> Mud engineer</p>
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# How is risk communicated?

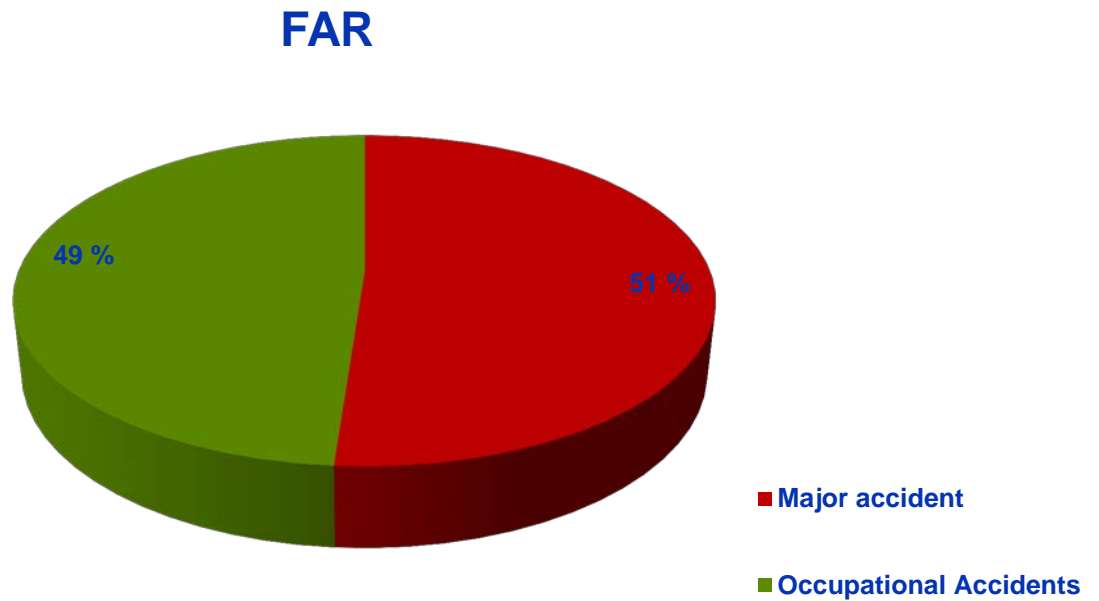
Accident scenario	FAR
Blowout Accidents	0,79
Non-Process Fires	0,53
Helicopter Accidents	0,73
Ship collisions	0,17
Structural failure	0,04
Punch through	0
Dropped Objects	0,15
Occupational Accidents	2,3
<b>Total</b>	<b>4,71</b>

## FAR



# How is risk communicated?

Accident scenario	FAR
Major accident	2,41
Occupational Accidents	2,3
<b>Total</b>	<b>4,71</b>



# Risiko kommunikasjon!



**DNV** avslører

## Vi avslører

### 4 vil dø!

- Brann i prosessområdet
- Eksplosjon i turet
- Evakuering

With reference to above... identified GAP... b the risk pic... identified to...

have a positive or uncha... find... reduced...

relative Rig 1. Of these... impact on the risk le...

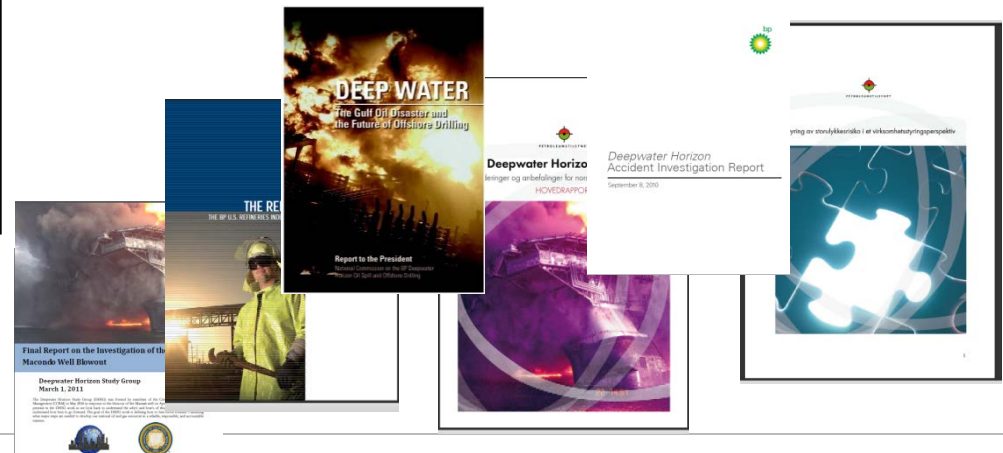
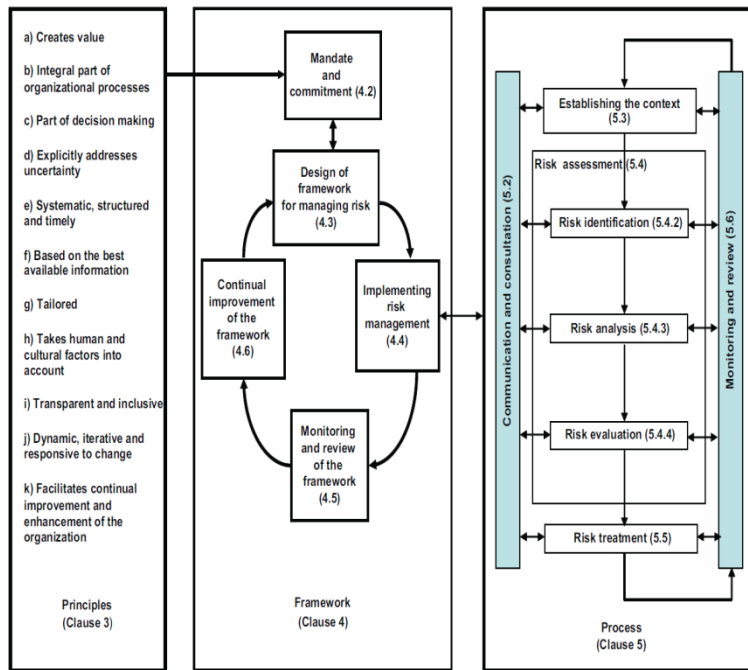


# Major Accident Risk Management (ISO 31000)

- Managing major accident with focus on
  - Management Commitment
  - Safety barrier management
  - Organisational learning
    - individual risk understanding
    - Incident and accident investigation
  - Safety culture
  - Risk treatment and ALARP
  - Communication

.....as an integrated part of corporate governance !

Figure 1 — Relationships between the risk management principles, framework and process



# Major Accident Risk Management

- QRA is a part of all these elements



# Expectations and needs

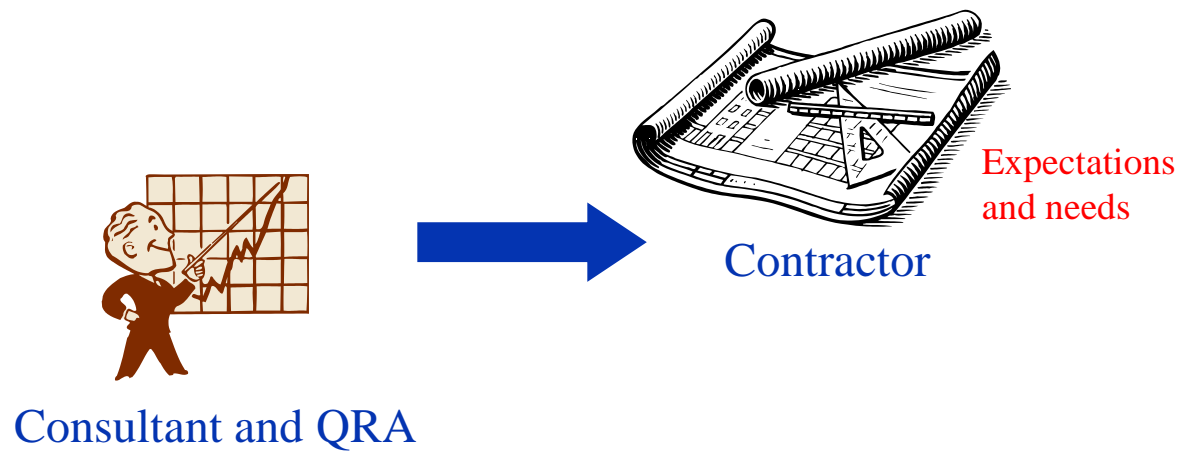
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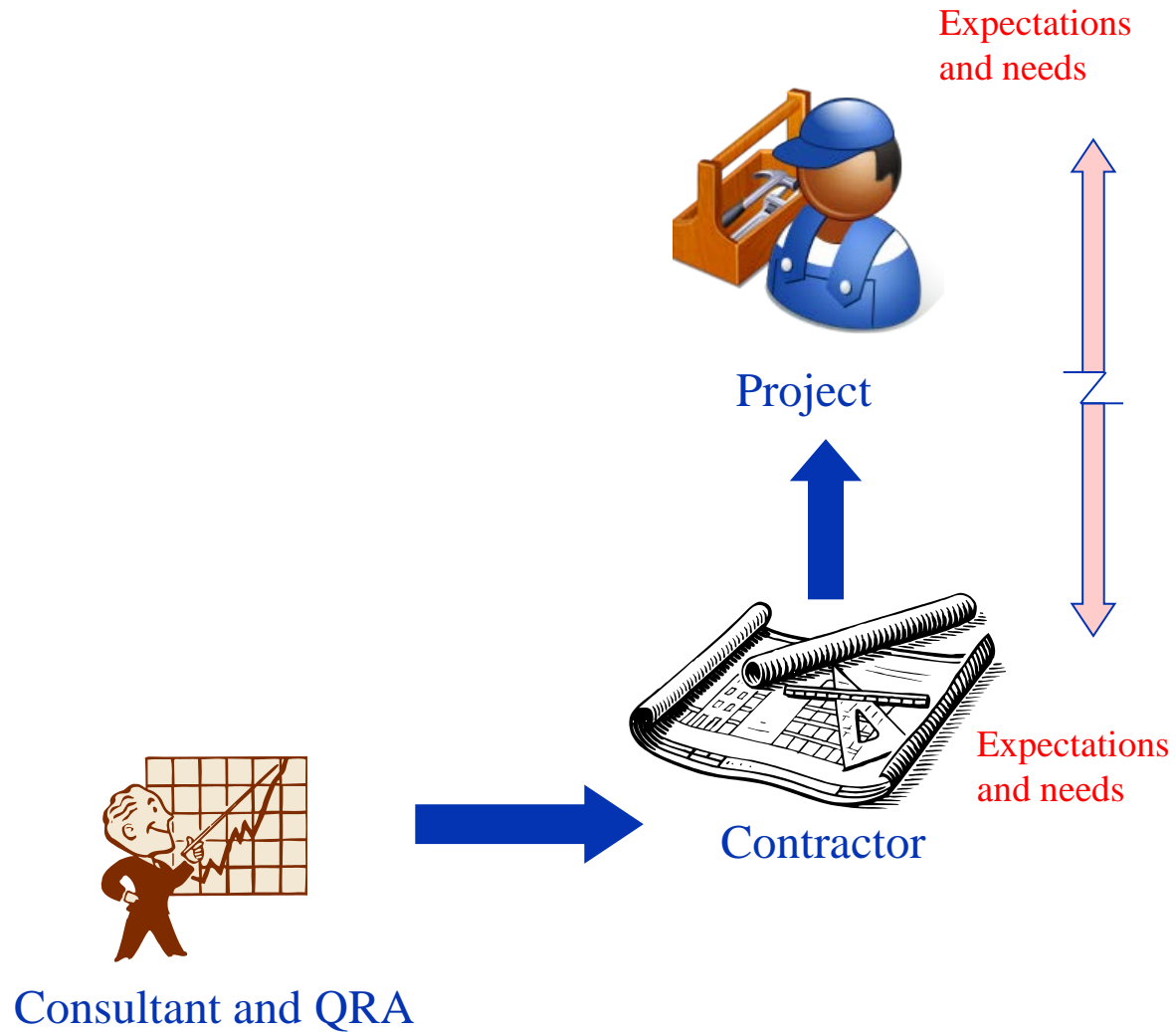
## Consultant and QRA

# Expectations and needs

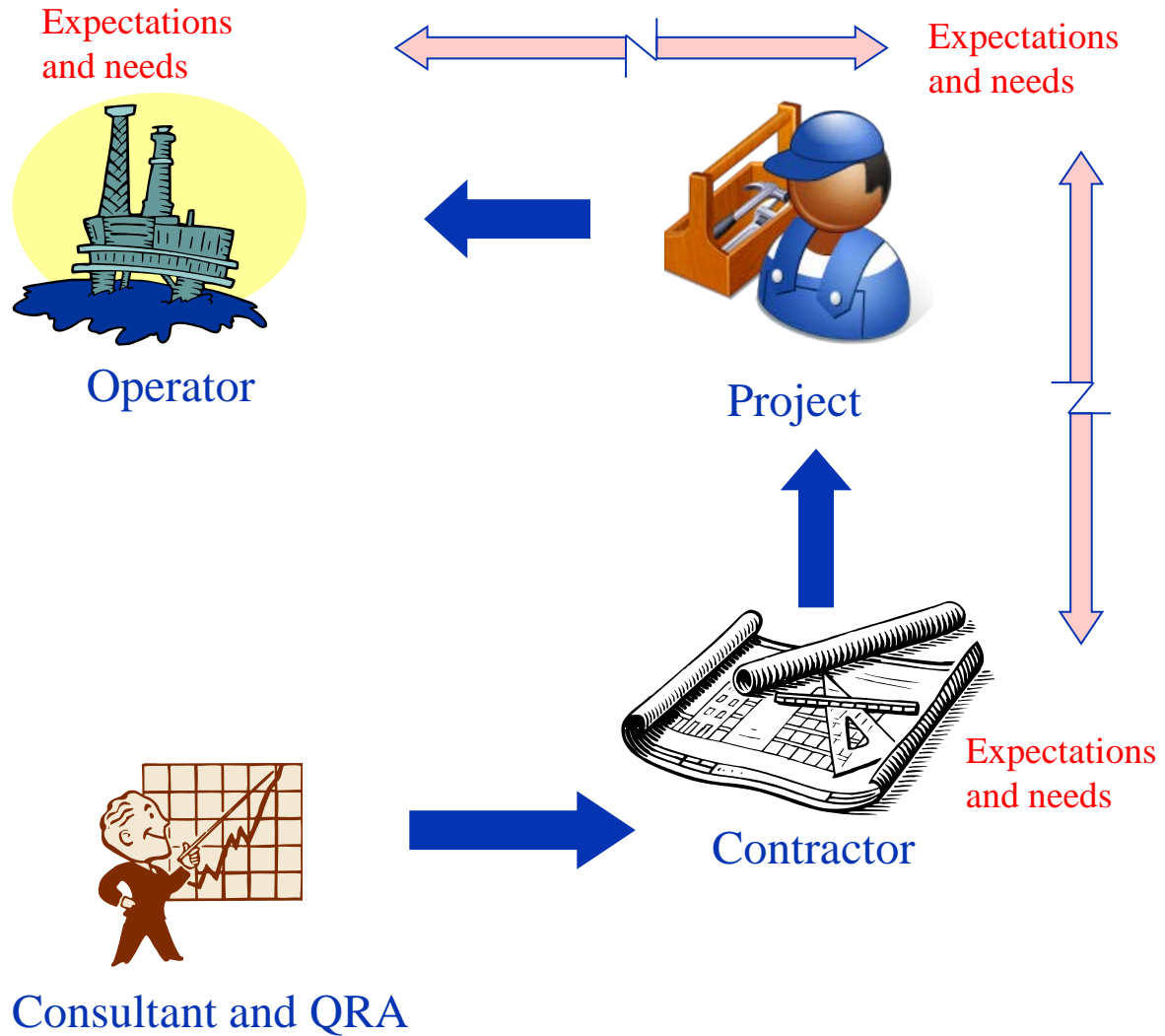
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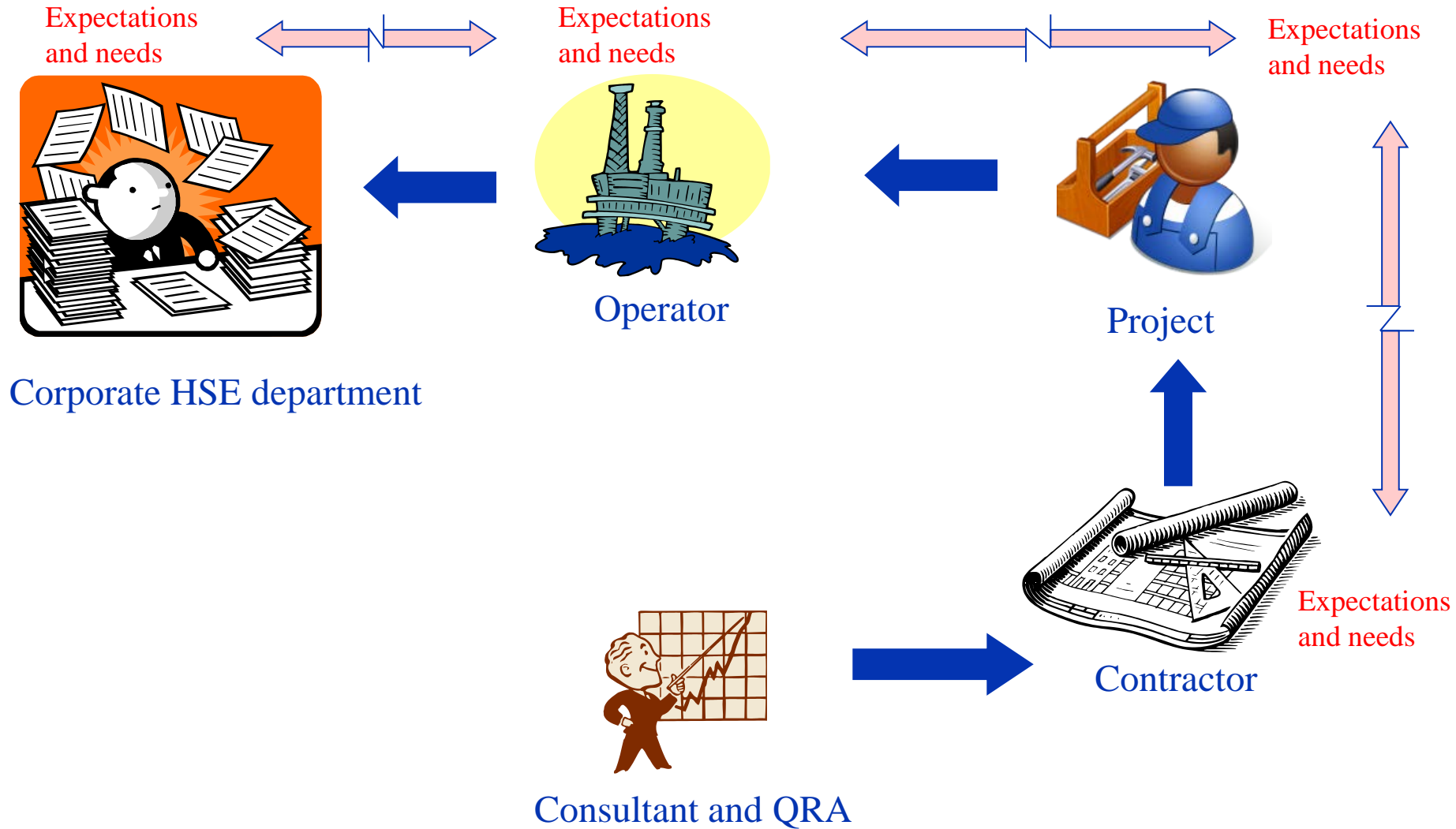
# Expectations and needs



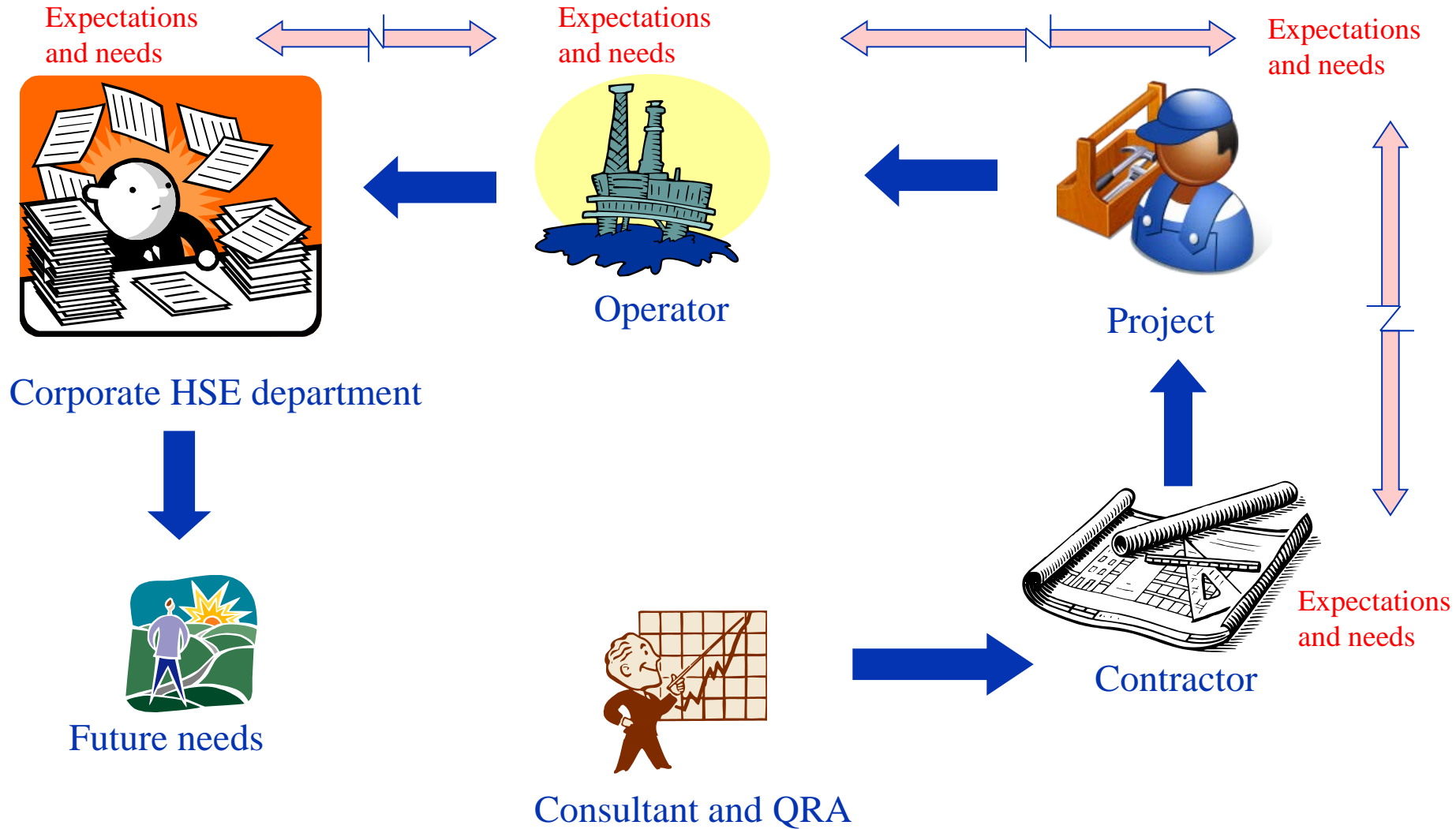
# Expectations and needs



# Expectations and needs

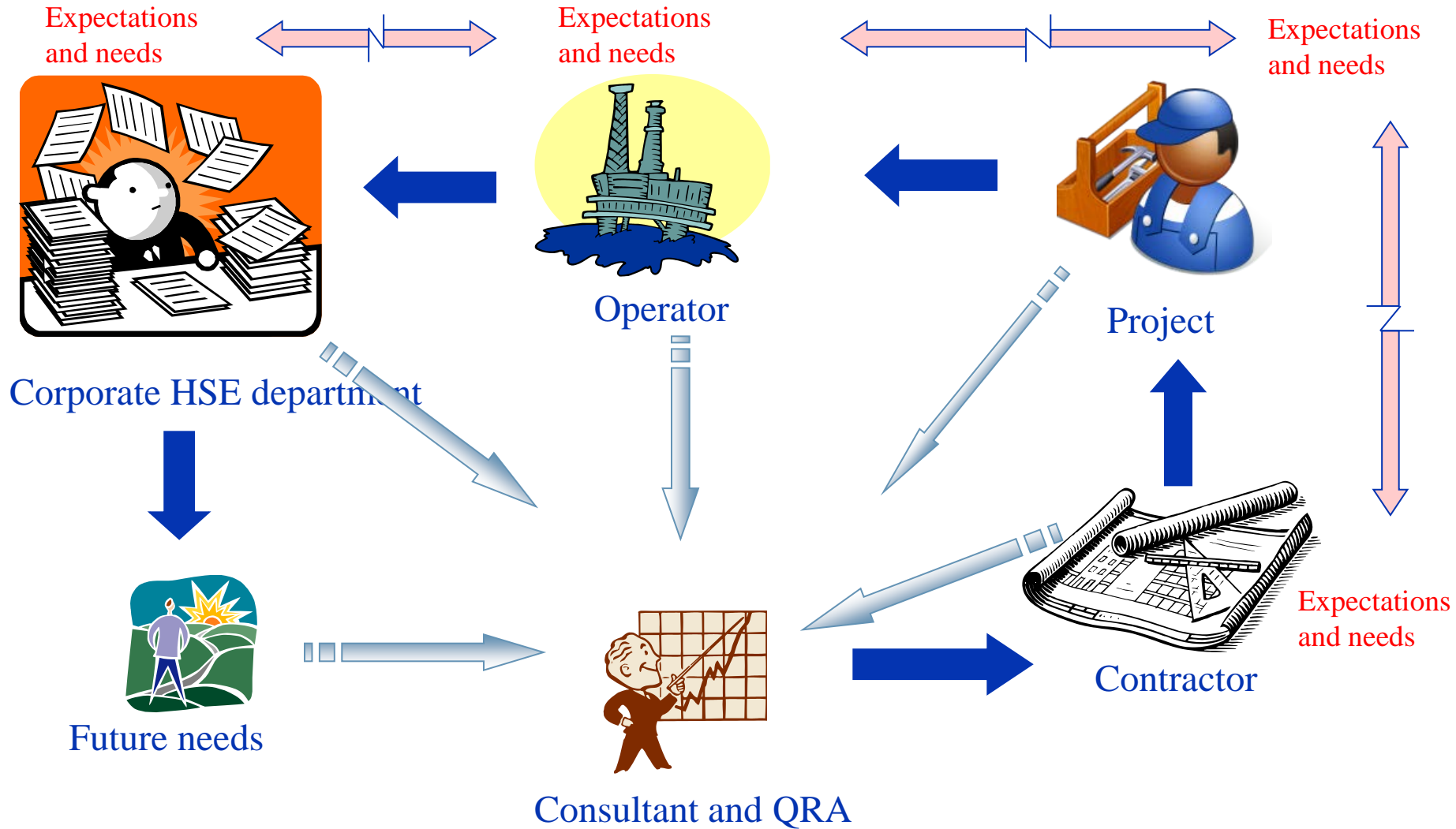


# Expectations and needs

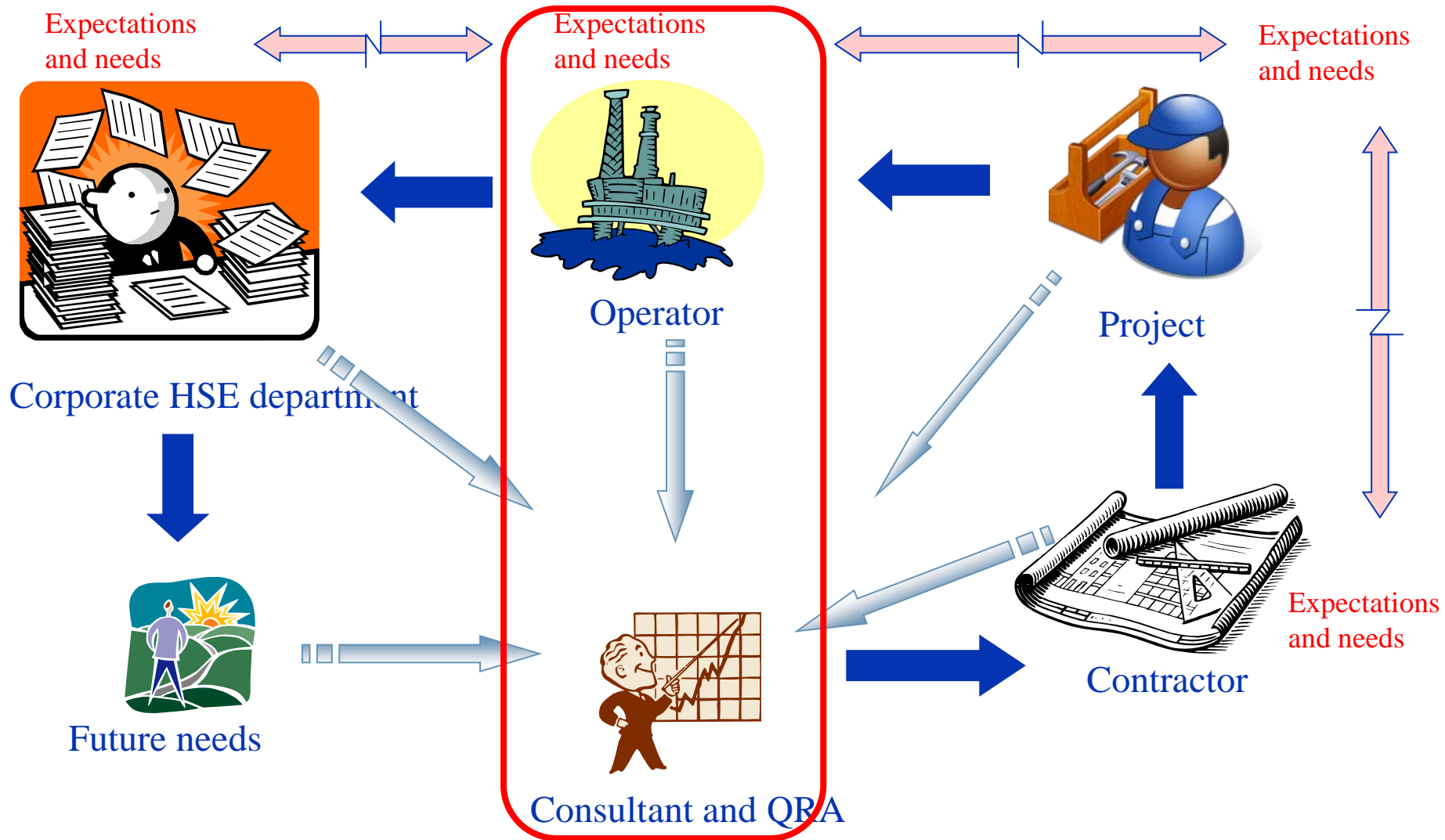




# Expectations and needs



# Expectations and needs



# Challenges; balancing risk, cost, production



- Equipment failure
- Operational accidents
- Safety Barrie status
- Audits

Policy and plans,



TTS

Aspect	Scoring Criteria
Design	3 Conforms to today's requirements.
	2 Non-conformity with today's requirements, but for older plants complies with original design requirements. The solution is of safety reasons acceptable.
	1 Non-conformity with both requirements of today as well as the original design requirements, or
0 Conforms with original design requirements, but the solution is of safety reasons unacceptable.	
Condition	3 Reflect physical condition of the system.
	2 Better than norm.
	1 Norm - Generally good condition.
0 Worse than norm. The condition is of safety reasons acceptable.	
Operation	3 The Condition is of safety reasons unacceptable.
	2 Reflect the system's operational condition has a reasonably good practice for maintenance and operation.
	1 Better than norm.
0 Norm - Following good practice.	
1 Worse than norm. The operation is of safety reasons acceptable.	
0 The operation is of safety reasons unacceptable.	

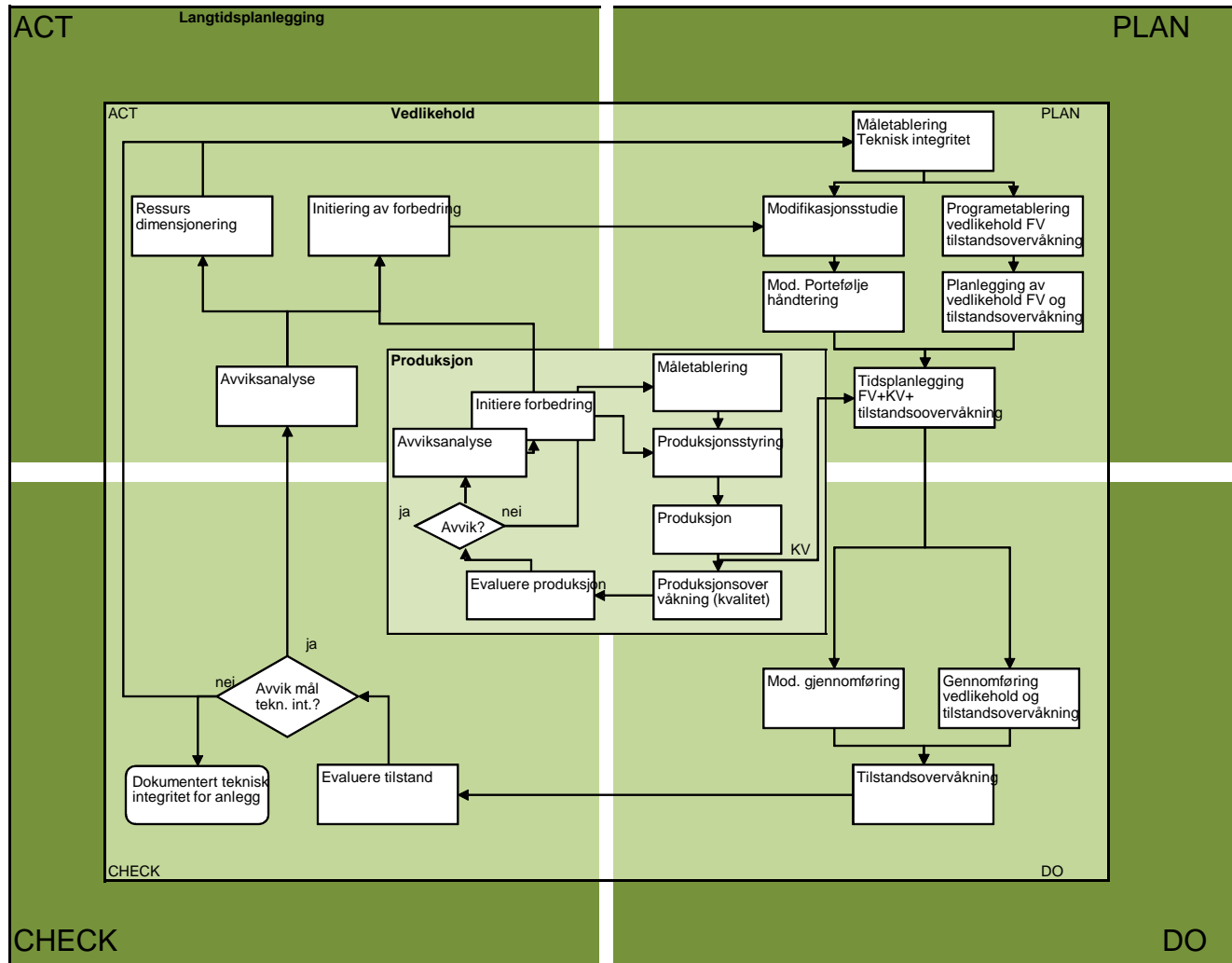
FAR values



Design criterion

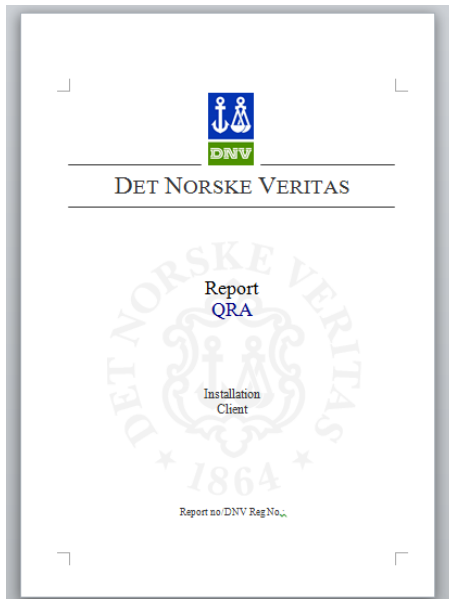


# Forskjellige behov avhengig av styringsnivå



# Krav til QRA

# Krav til operativt miljø



# Krav til QRA prosessen

# Utfordringen

## QRA

- Forutsetninger og antagelser må ha en eier
- Ansvar og eierskap til risiko

## QRA Prosessten

- Åpen og transparent kommunikasjon
- Involvering

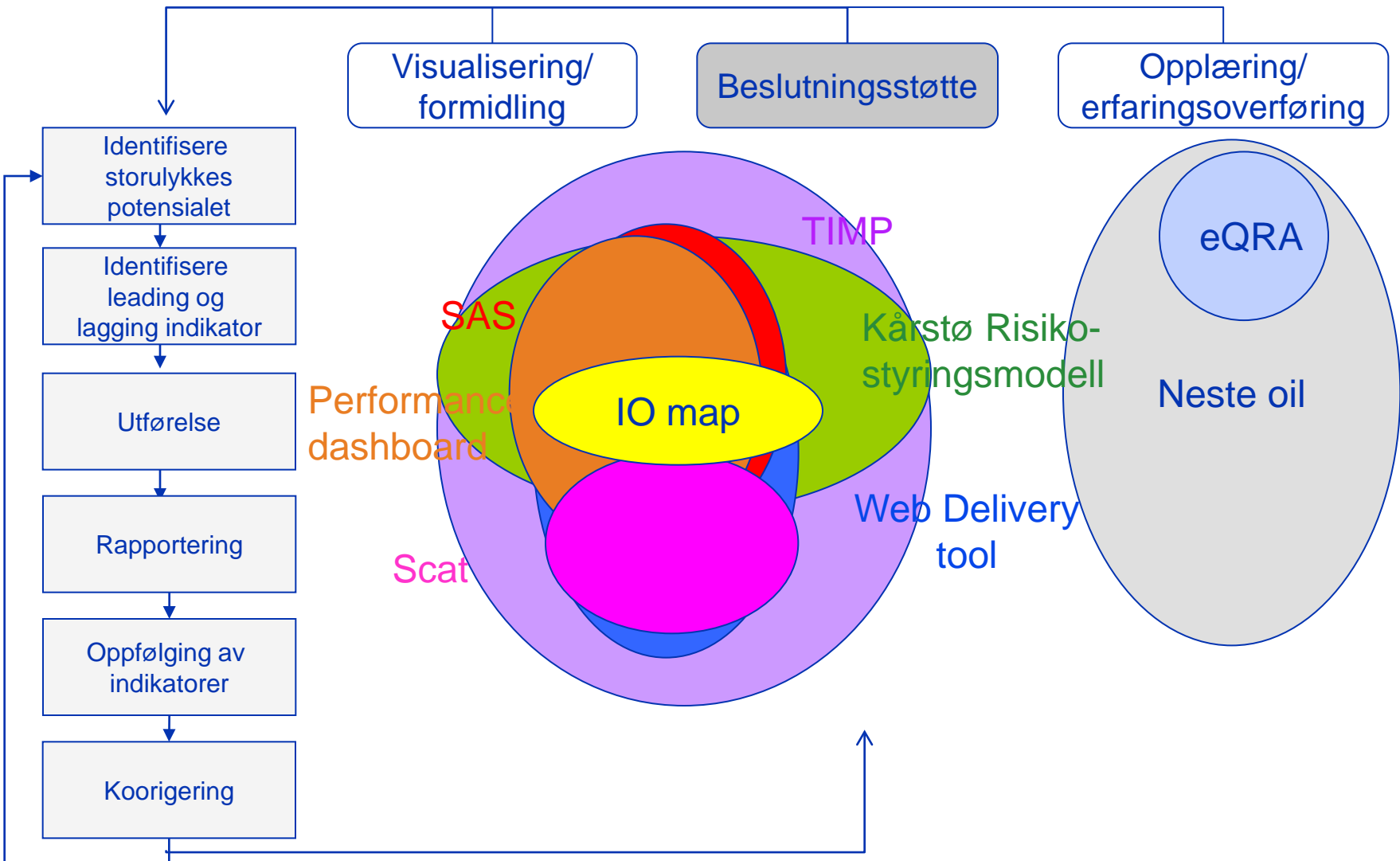
## Operativt

- Kultur for å bruke informasjon
- Tilgjengeliggjøring av informasjon- push vs pull
- Verktøy for beslutningsstøtte

# Forutsetninger for å lykkes med kommunikasjon av storulykkesrisiko

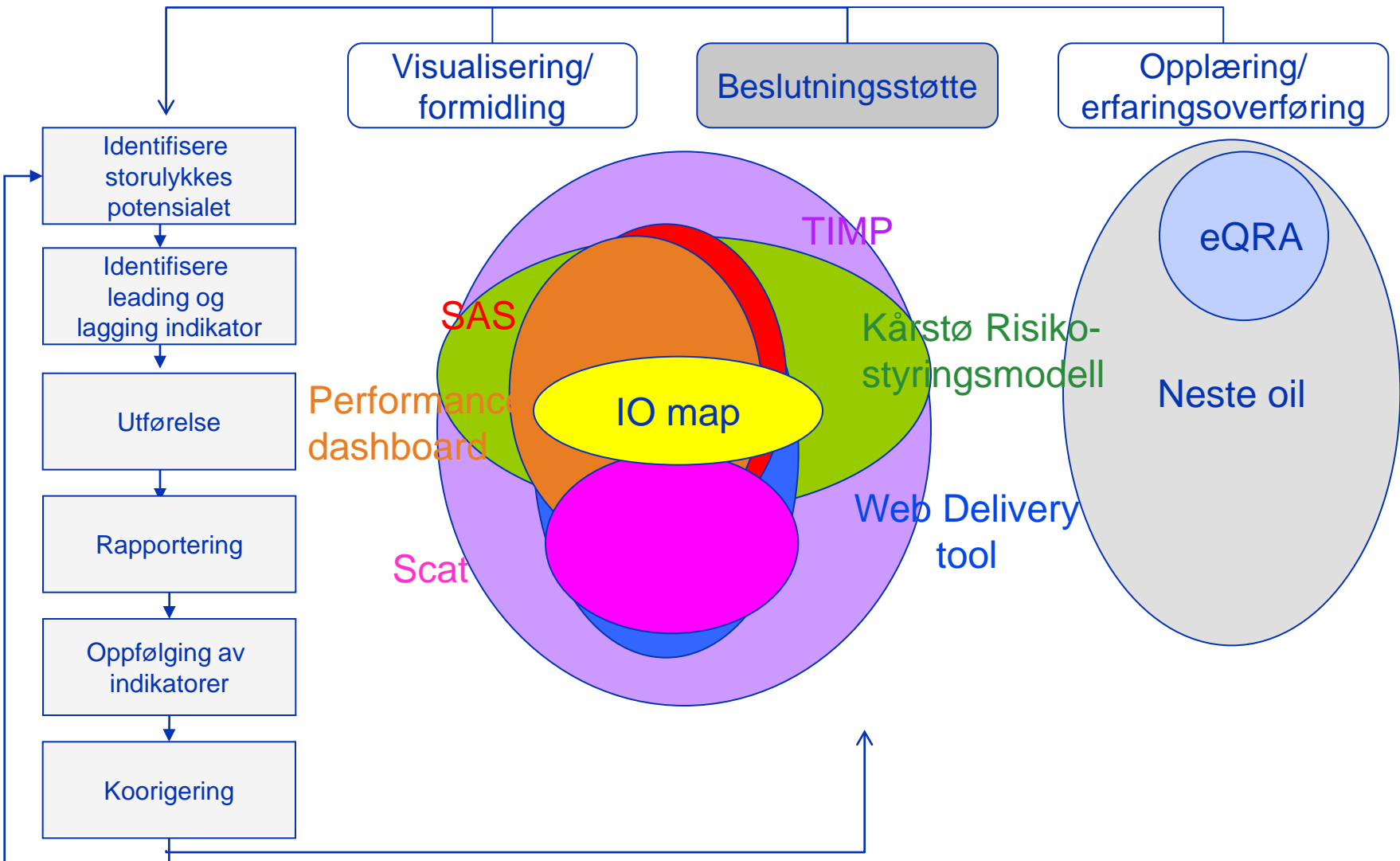


# Kommunikasjon av storulykkesrisiko: Andres erfaringer





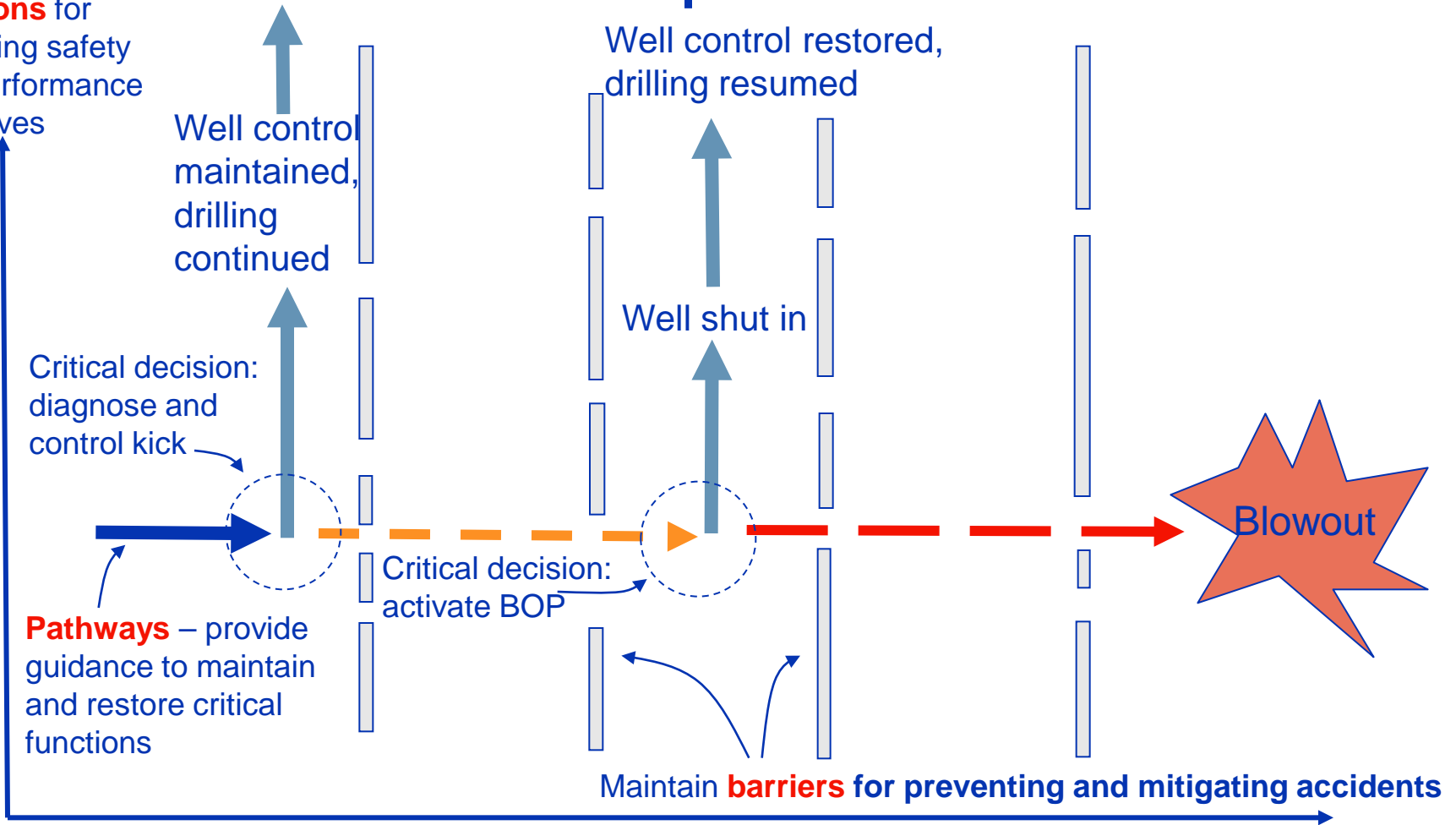
# Kommunikasjon av storulykkesrisiko: Andres erfaringer



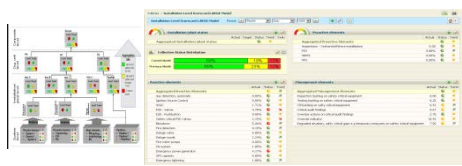
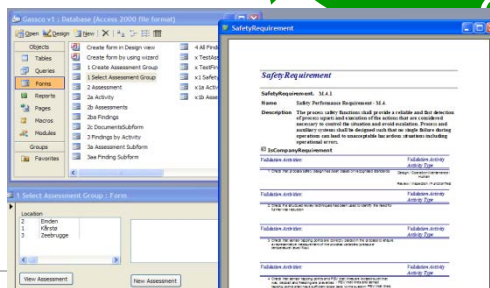
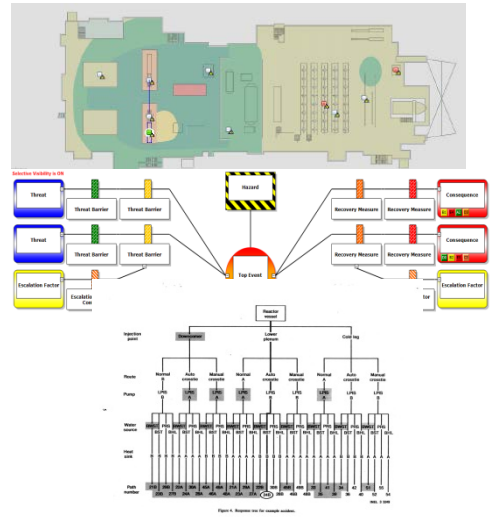
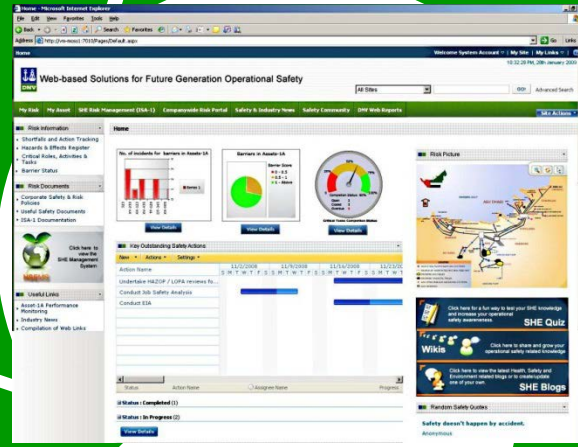
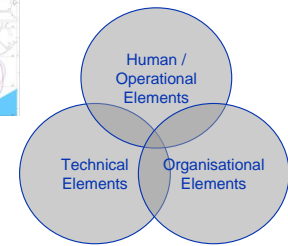
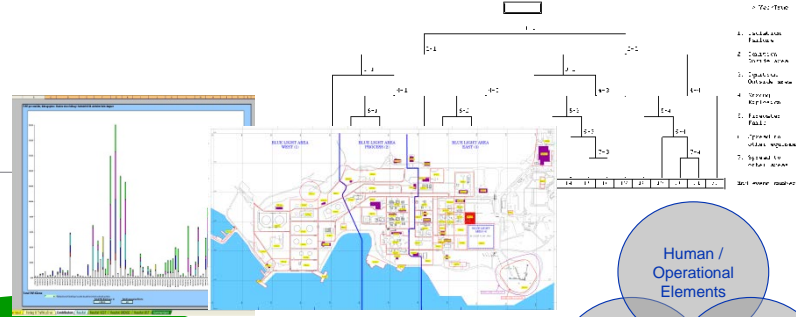
# An Integrated Operations framework for providing guidance to select pathways that lead to success rather than failure

## Safe and productive wells

Maintain **critical functions** for achieving safety and performance objectives



# Beslutningsstøtte



# Safeguarding life, property and the environment

[www.dnv.com](http://www.dnv.com)

