Risk Assessment and Command Staff Exercises as Method to reduce Vulnerability of Offshore Wind Farms

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Topic

1 Background

2 Risk Assessment – Model and Procedure

3 Command Staff Exercises

4 Conclusions

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Offshore Wind Farms

Quelle: fk-wind:

- Part of Critical Infrastructure;
- Operators are focusing on reducing vulnerability;
- Research project „OWiSS - Offshore wind farms Safety and Security“ - supported by German Federal Ministry of Science and Education;
- Objective: Systematic investigation of vulnerability of offshore wind farms

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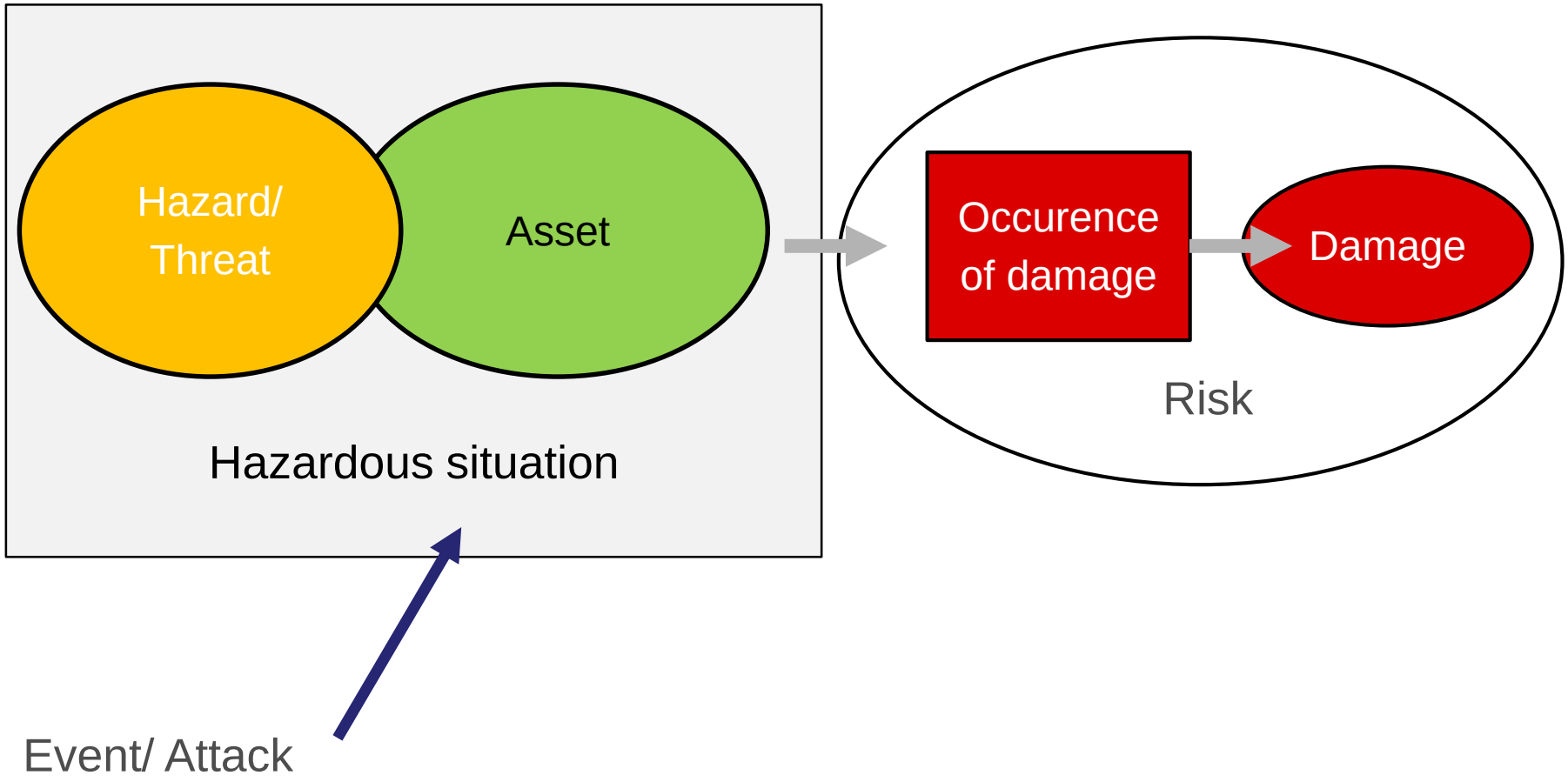
Risk Sources

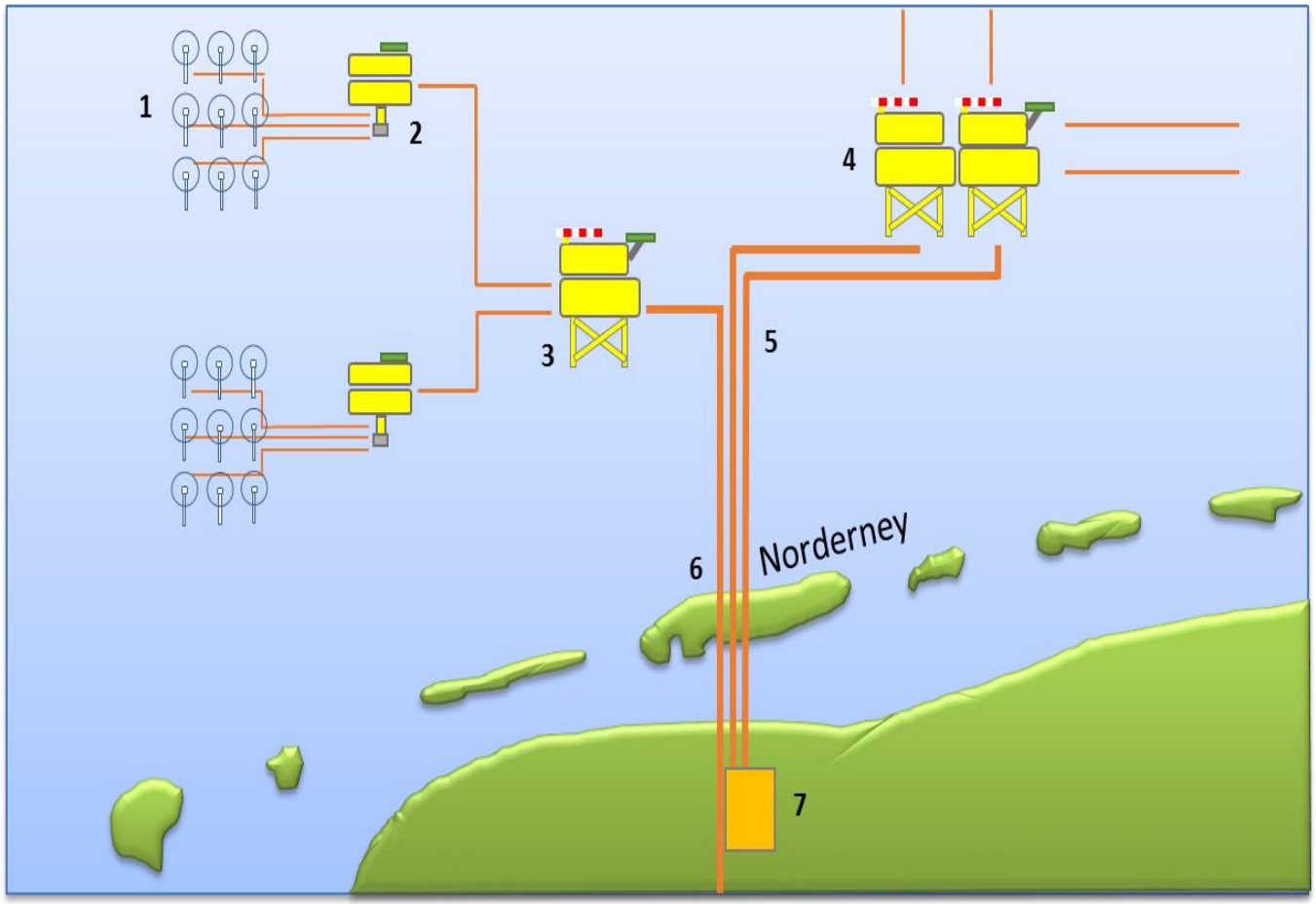
Model of Damage



Methodical Approach

Define the system

System „Offshore Wind Farm“



Methodical Approach

Define the system

Identify hazards and threats (Process)

Develop possible scenarios (ETA)

Estimate likelihood and damage

Evaluate unacceptable scenarios

Evaluation

		Damage done to assets		
Likelihood		Damage (D) in Euro		
		D < 1 Mio. Euro	1 Mio. ≤ D < 5 Mio. Euro	5 Mio. Euro ≤ D
	high			
	medium			
	seldom			

Hazards and Threats - Results

	Threats	Hazards
Number of events	14	11
Number of scenarios	129	89
Number of not acceptable scenarios	105	

Hazards and Threats - Examples

Collision with Platform

- Blackout
- Damage to converter and transformer platforms possible

Quelle: H&M ing. Büro

Damage to Cable by anchoring

- Blackout
- Maintenance & Repair

Quelle: **www.rwe.com**

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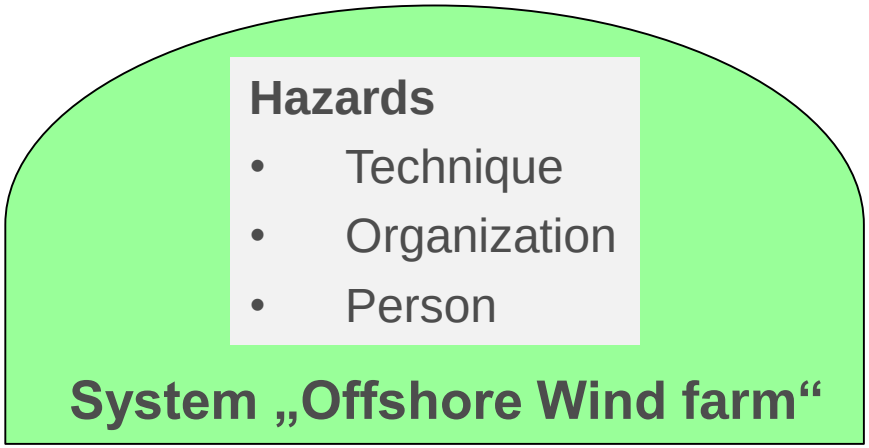
Preventive Measures - Focus

1. **Proactive measures**
   means to prevent damage or reduce risk

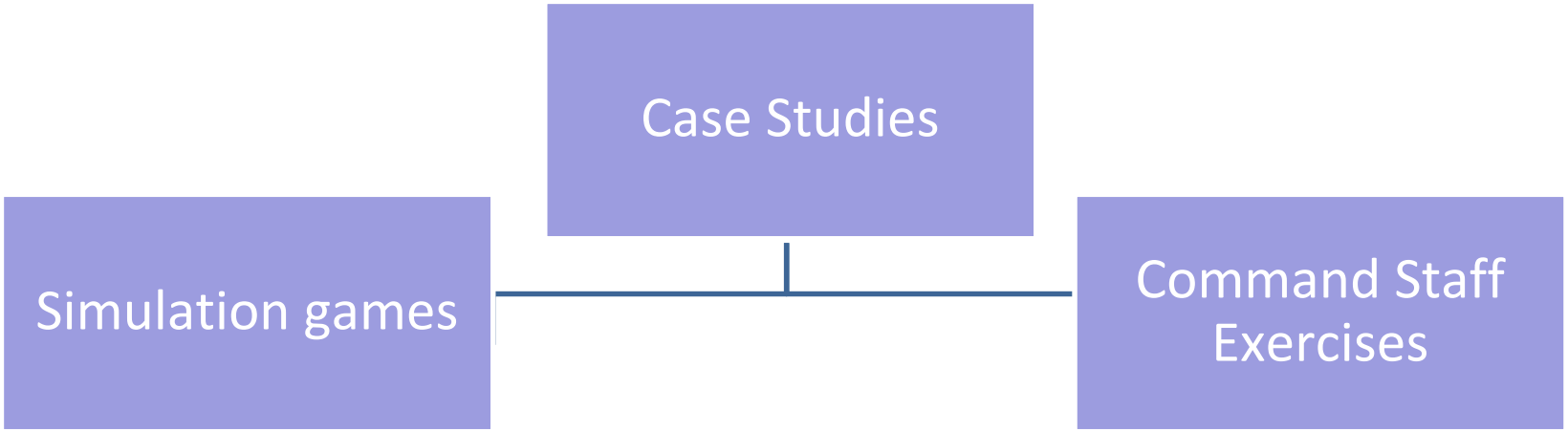


Risk Assess-ment

2. **Reactive measures**
   means to eliminate the damage as quick as possible

Com-mand Staff Exerci-ses

Case Studies - types



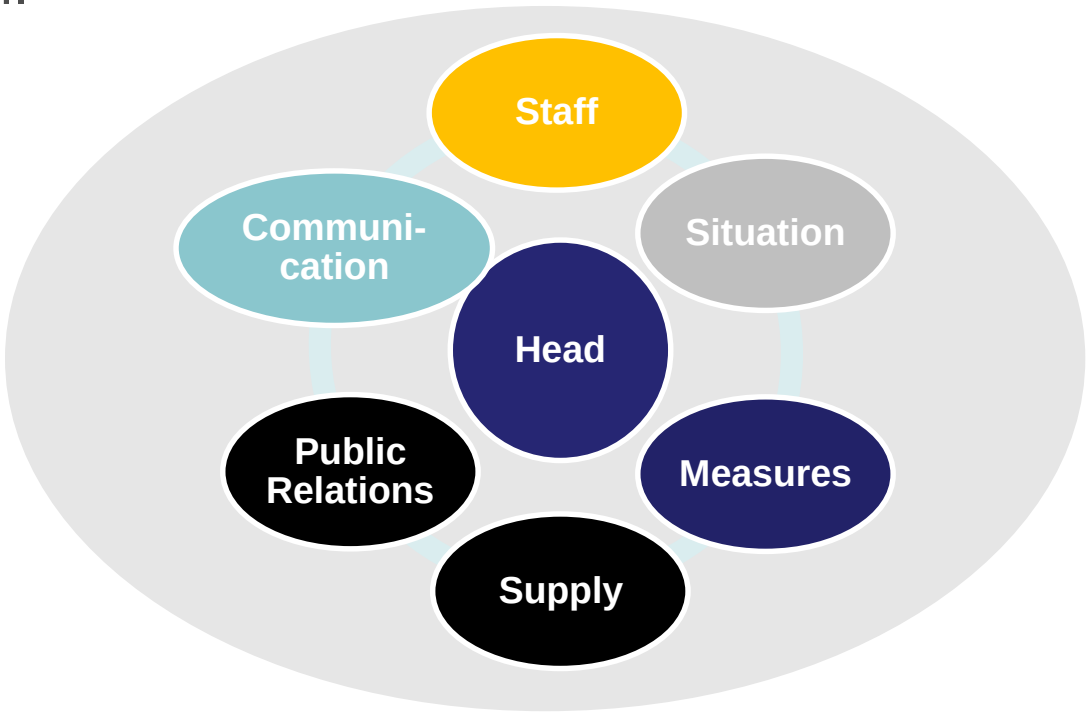
Command Staff Exercises - Method

- Method:
  Exercise of an Emergency under guidance of experts;
- Scenario: Employees staying on a plattform becoming seriously ill.

Quelle: OWiSS-Team HS BHV

Command Staff Exercises - Results

- Different emergency plans makes target-oriented action difficult;
- Different composition of command staff leads to incorrect communication.



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Conclusions

- Offshore wind farms are facing several risks;
- Research project „OWiSS“ provide a systematically approach on risks;
- Besides proactive measures vulnerability can be reduced by optimizing emergency management of operators.

Thank you for attention!

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