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Erfaringer fra oljeselskapene – Resultater fra Barriere-JIP

Therese van Roosmalen, Senior Safety Adviser
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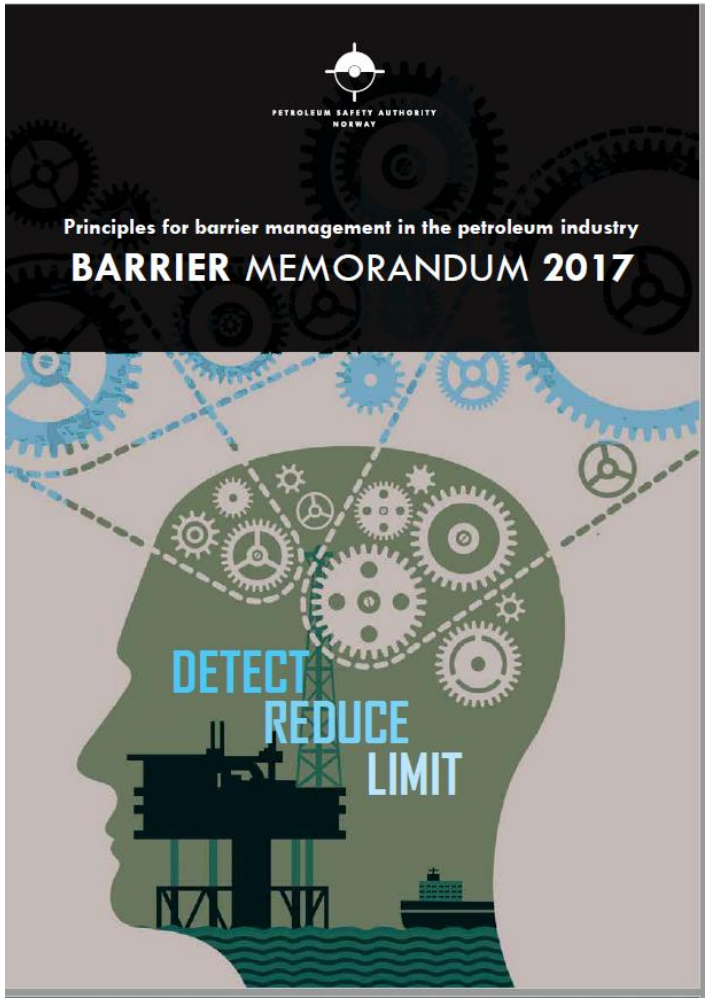
Agenda

- Introduction and background
- Phase I
- Phase II
- Network – Barrier Management in Operation



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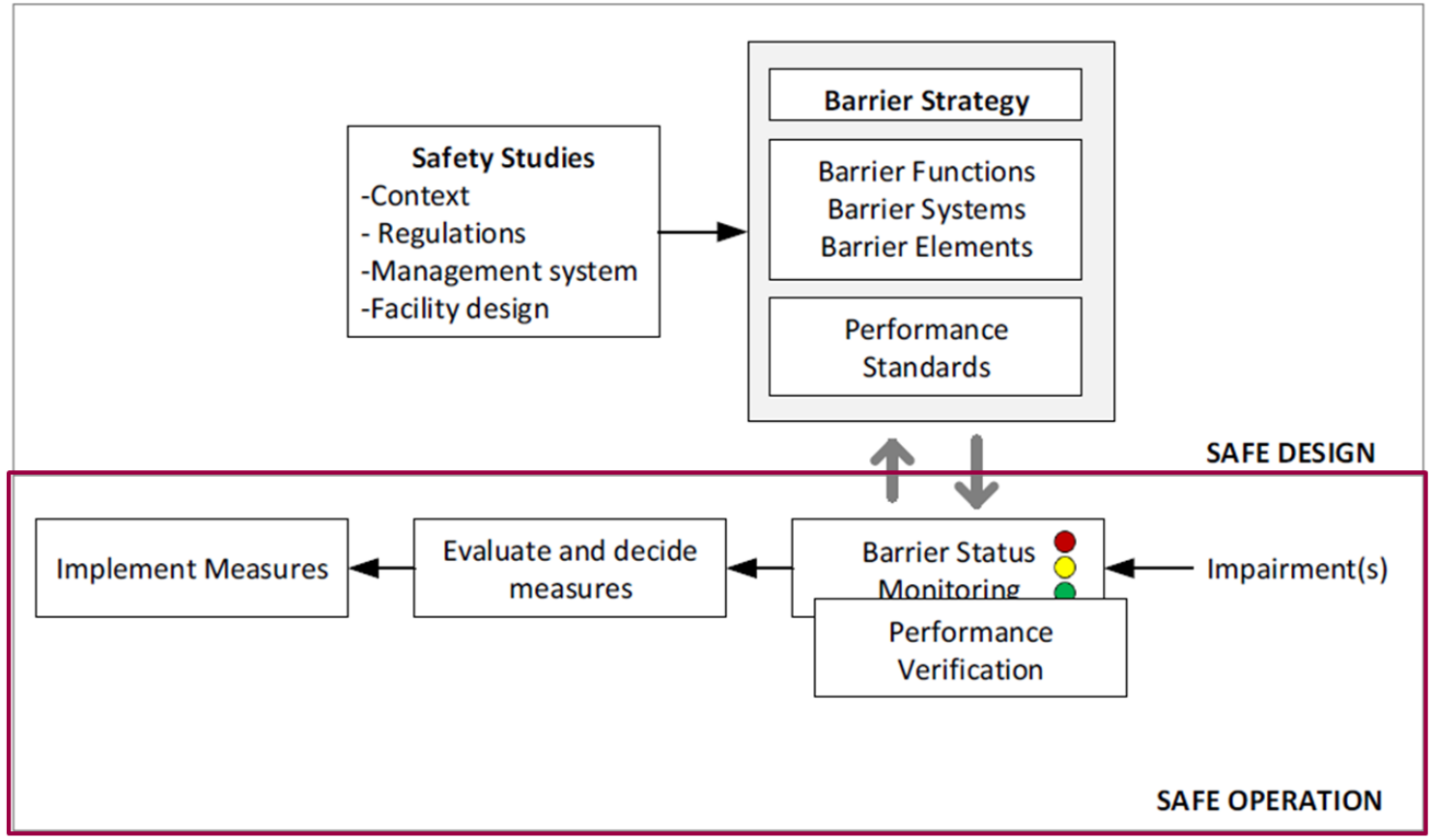
Barrier Management in Design vs. Operation



BARRIER MANAGEMENT IN OPERATION FOR THE RIG INDUSTRY
GOOD PRACTICES

SINTEF

Guidance for barrier management in the petroleum industry

JIP

Why this project?

Available barrier management guidance has mainly focused on the design-phase…

«*Audits and investigations have shown that companies have largely not identified the human contribution to barriers...*» - PSA, 2017

«*Decisions must be made on a good understanding of risk*» - PSA, 2017

«…still need to increase understanding of the connection between risk management and barrier management, as well as the connection between O&O and technical barriers» - Arbeids- og sosialdepartementet, 2017

Time to consolidate knowledge and establish best-practice…

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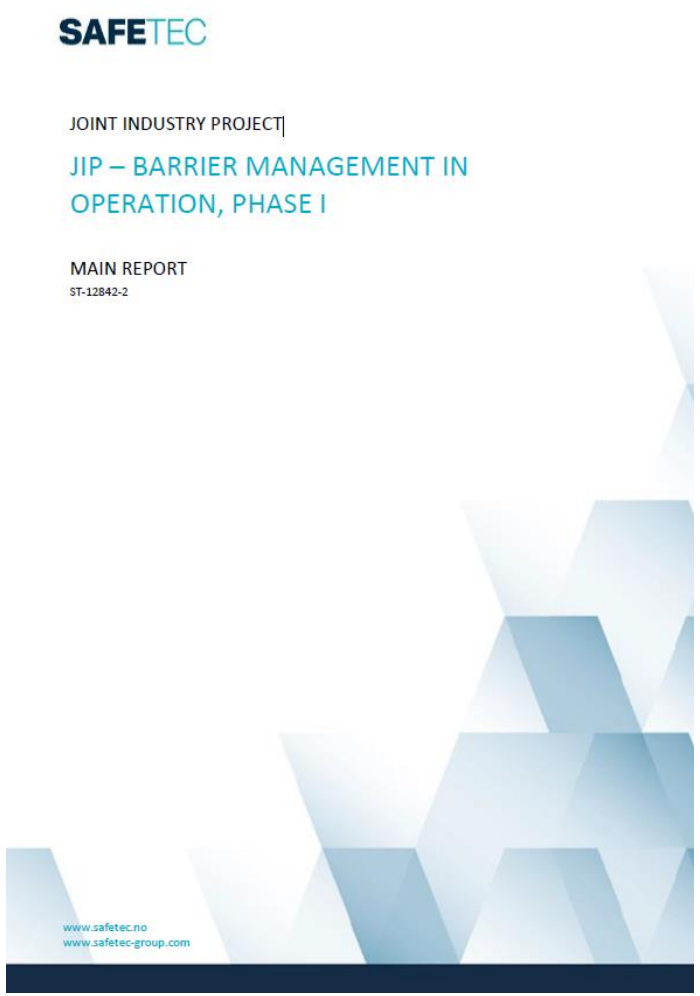
Barrier Management in Operation – Joint Industry Project (JIP)

- **Objectives:**
  - Establish an arena for the industry to share experience and consolidate best practice on barrier management in operation
  - Further develop the practice for monitoring and verification of operational and organisational barriers
  - Develop a guideline for using barrier status information as decision-basis to ensure “safe operation”

- **Phase 1**
  - “State-of-the-art” for Barrier Management in Operation
    - Monitoring and verification of O&O barriers
    - BSP as decision-support tool
    - Short, medium and long-term monitoring and verification

- **Phase 2**
  - Operational and Organisational Barriers in Operation
  - Guidance for Using Barrier Status as Decision-Support for Safe Operation

JIP phase 1 - Main findings from interviews and document review

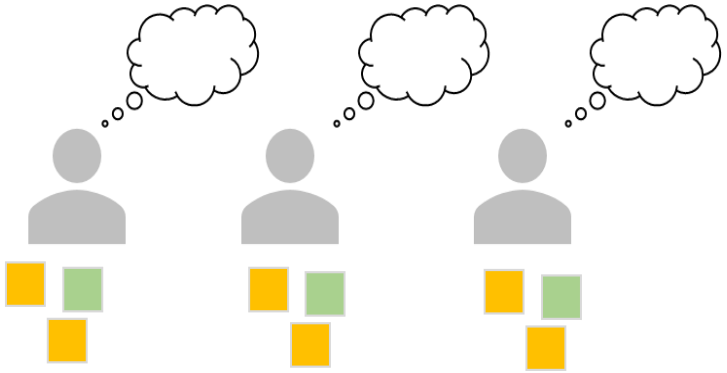


- Principles and framework for barrier management.
- Facility specific barrier strategy (or equivalent).
- Barrier performance requirements.
- Most effort has been put into work with technical barriers.
- Level of detail in the established systems for barrier management varies between operators.

JIP phase 1 - Lessons learned workshop – Methodology

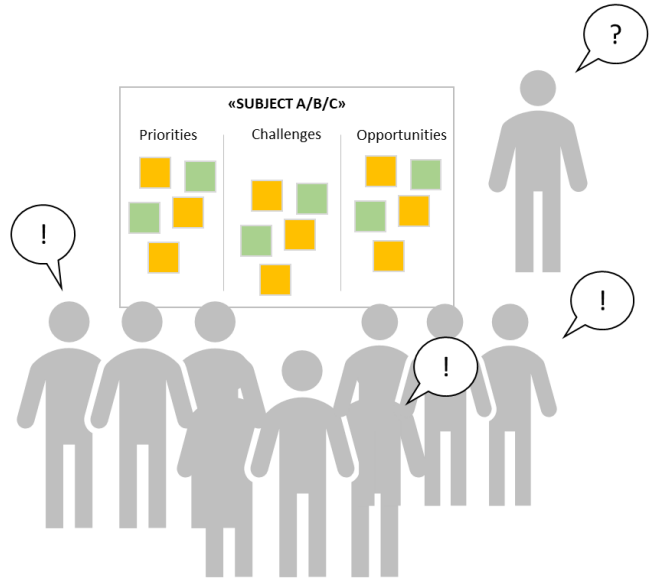
Step 1: Safetec introduces topic to be discussed.

Step 2: “Creative silence”. Individually brainstorm ideas and thoughts on sticky notes.



Step 3: Interactive group discussion using sticky notes. Facilitated by Safetec. For each of the topics, the following is discussed:

1. What is the **intent**?
2. What are the **success criteria**?
3. What are the **pitfalls**?
4. Any **opportunities/ideas** for further improvement and innovation?



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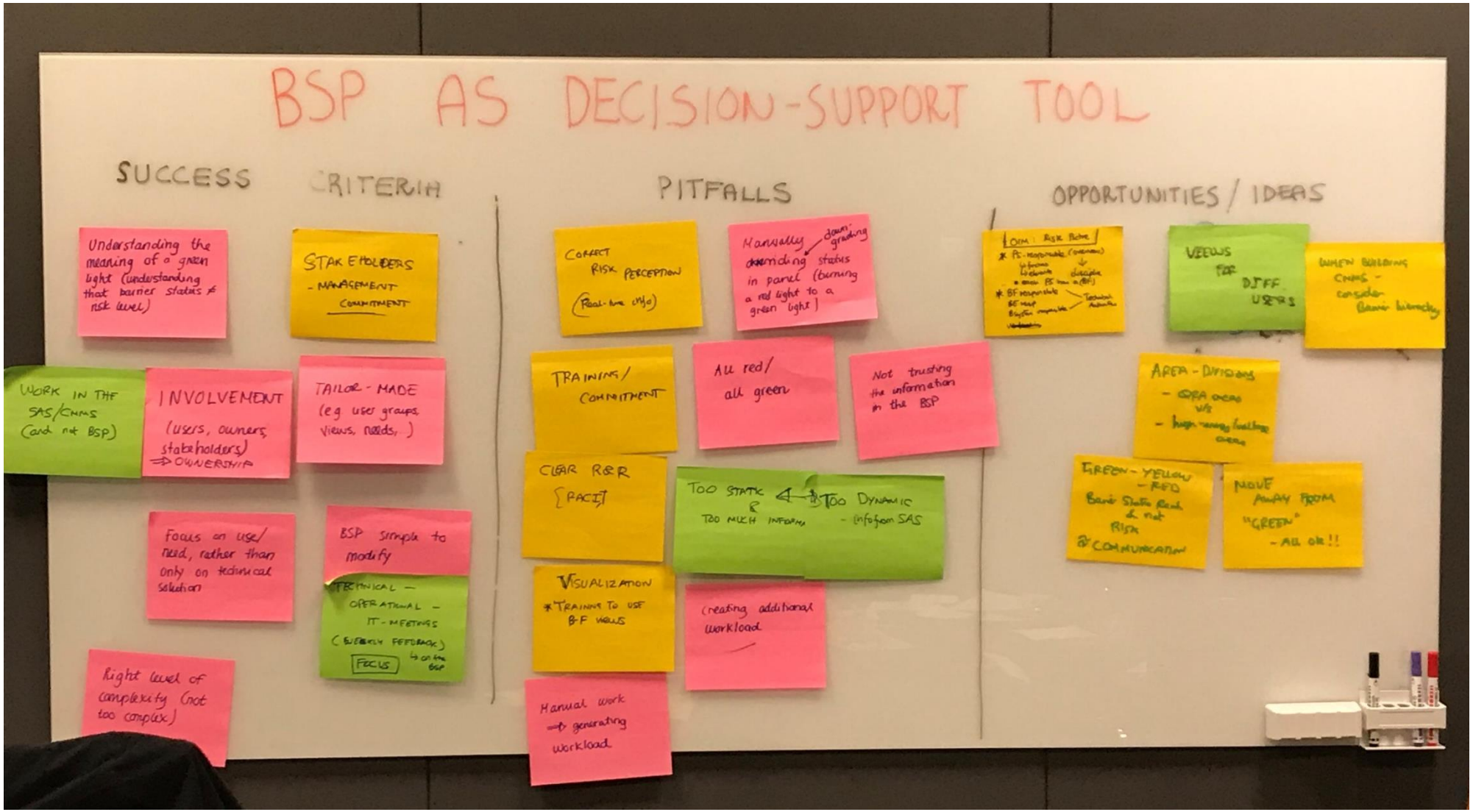
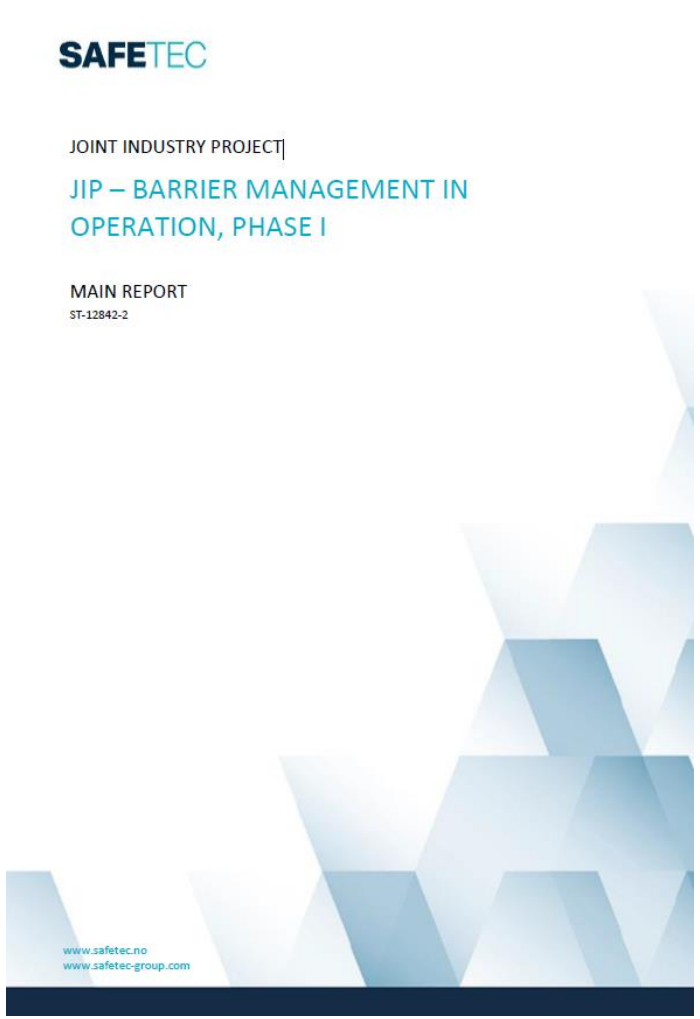
JIP Phase 1- BSP AS A DECISION-SUPPORT TOOL

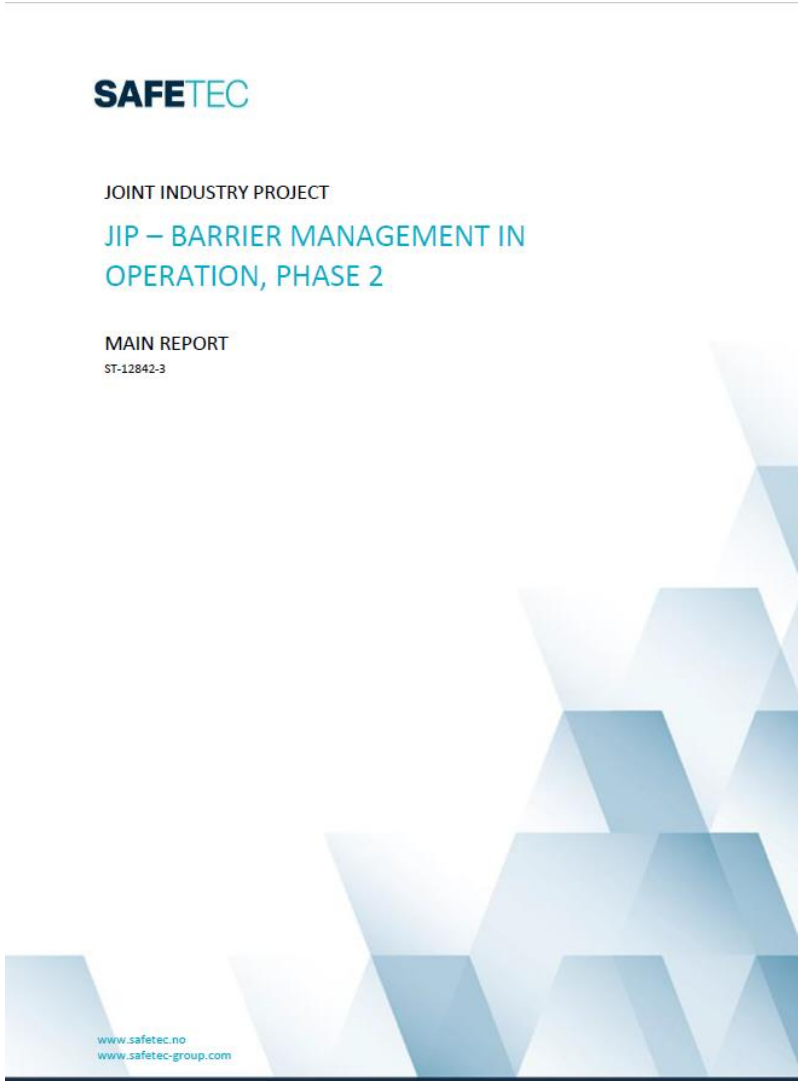


JIP Phase 1 – Main findings – BSP as decision-support tool



- All JIP participants share the goal of having a BSP to support and facilitate decision-making activities in day-to-day operation.
- A potential for improvement when it comes to the practical implementation of the BSP as a decision-support tool in day-to-day operation.
- Findings highlight five main aspects that are key to ensure that information in the BSP is useful for decision-making in operations:
  - Relevant – right information for the right people
  - Real-time – updated and valid status information
  - Realistic – aggregated status represents “reality”
  - Interpretable – understanding the barrier status information
  - Integrated – formalised in work processes

JIP phase 2 – Main themes



- **Operational and Organisational Barriers**
  - Performance Requirements
  - Performance Influencing Factors
  - Short, medium and long term monitoring
  - Training/awareness
- **Barrier Management and decision-making**
  - Roles & Responsibilities
- Workshops included presentation from PSA and stakeholders in the industry

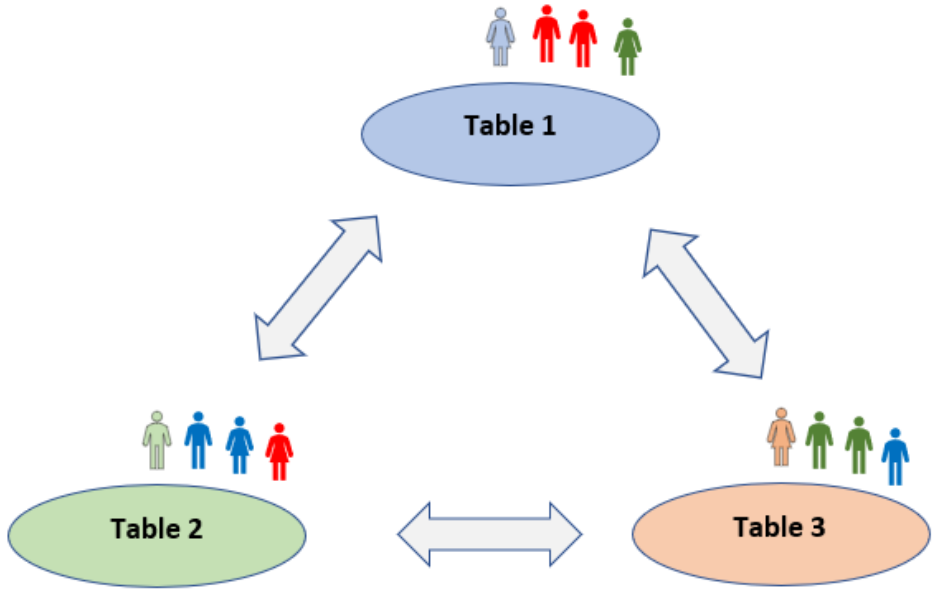
Example of themes covered in JIP phase 2

Topic 6 Barrier Management 2.0

Topic 5 Implementation and Use of Barrier Management Systems

Topic 4 Barrier Management in Daily Operations

Topic 1 Verification of Safety Critical Task Performance



Topic 2 Key Performance Indicators

Topic 3 Performance Influencing Factors

Verification of Safety Critical Task Performance

Safety Critical Task:

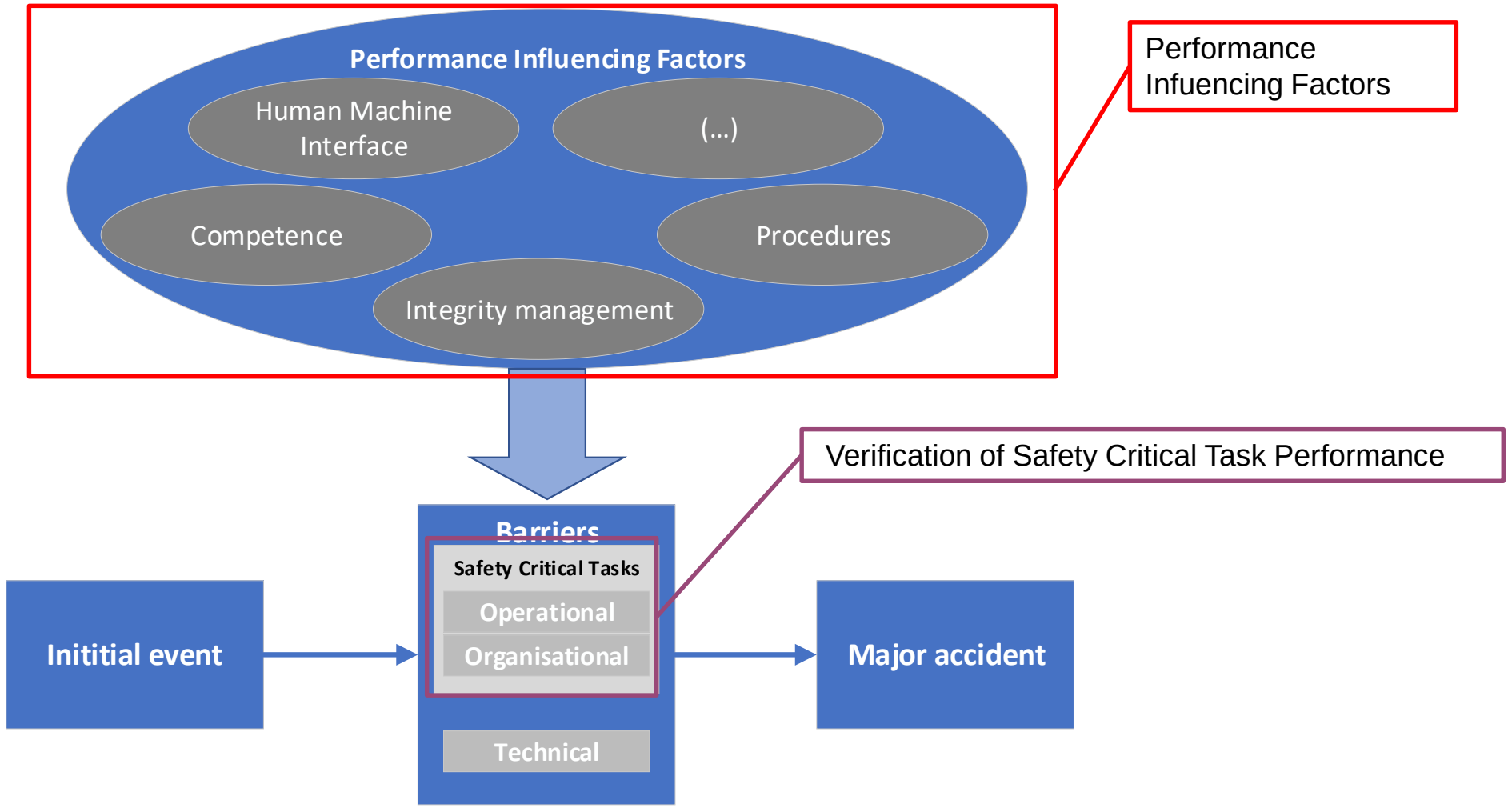
”Task where human factors could contribute to major accident hazards in positive or negative ways, including:

- *initiating events;*
- *prevention and detection;*
- *control and mitigation, and*
- *emergency response.”*

“Personnel must know which tasks they have been assigned and be ready to perform them”

PETROLEUMSTILSYNET

JIP Phase 2: Monitoring and Verification of O&O Barriers



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- Response time
- Action criteria
- Communication requirements
- Checkout

Performance Requirements

- Competence
- Availability
- Safety drills
- Co-training

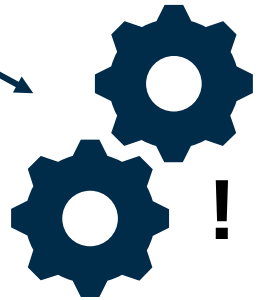
Performance Requirements

Procedures

Description of task
Availability
Quality
Compliance

Characteristics of task

Task complexity
Human-machine-interface
Ergonomics



Operational Barrier Element

Organisational Barrier Element

"State of mind"

Stress
Fatigue
Distraction
Workload

Human characteristics

Situational awareness
Decision-making
Perception
Resilience
Vigilance
Communication skills

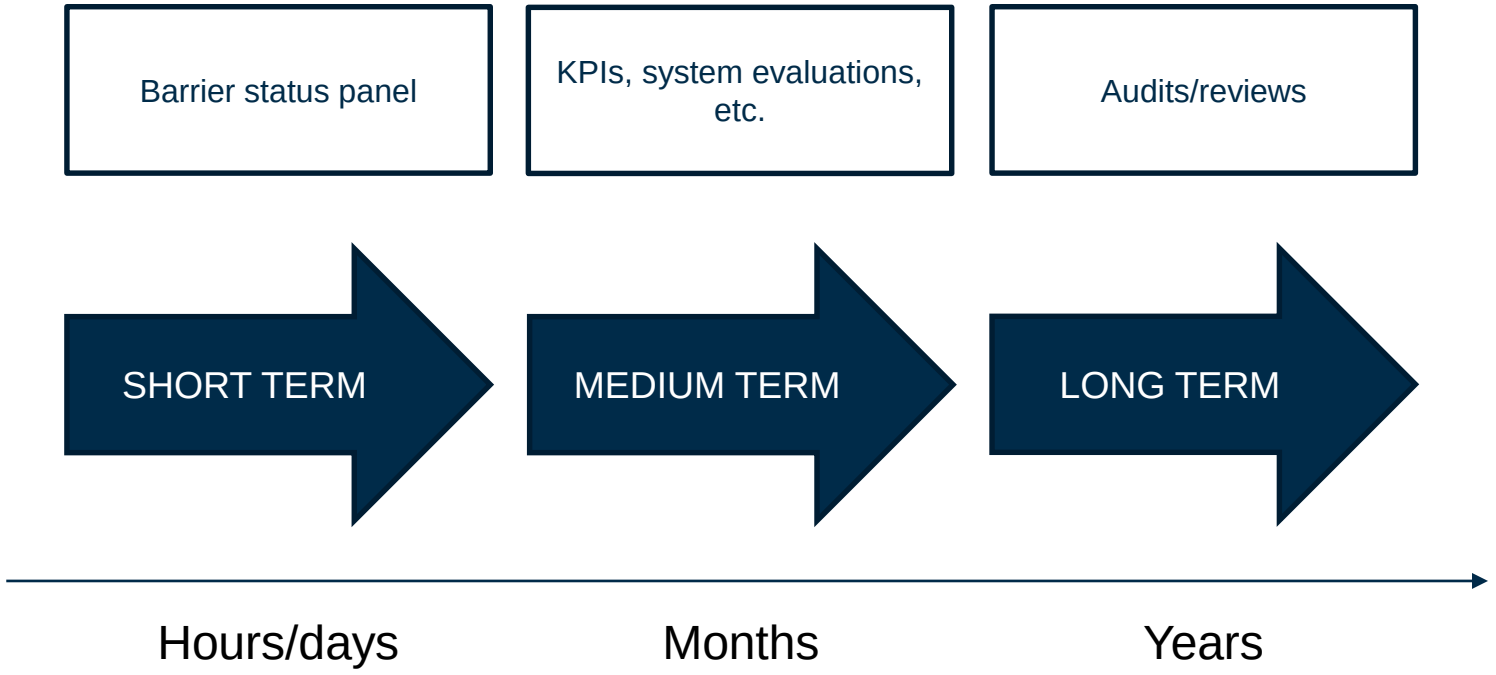
Working environment

Culture

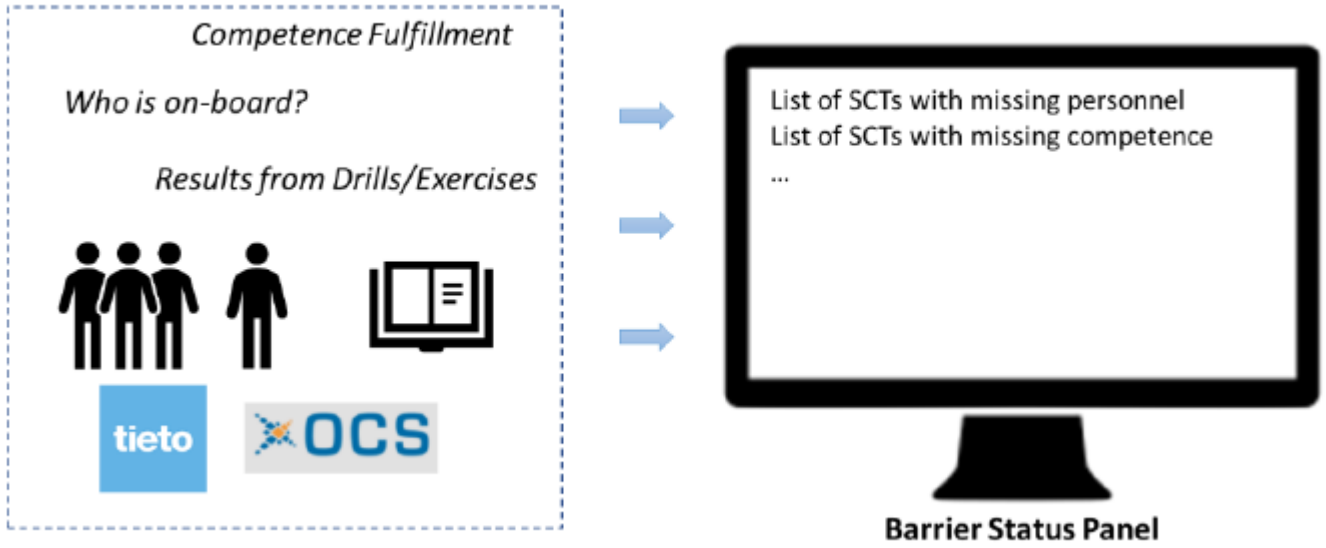
Teamwork & communication

Management

JIP Phase 2: Short, medium and long term monitoring and verification



Barrier Management and decision making – Example



Network – Barrier Management in Operation (NBMO)

- **NBMO is a natural extension of the JIP.**
  - The NBMO is a professional network for energy/oil and gas producing companies operating on the Norwegian Continental Shelf (NCS) and onshore in Norway.
  - Focus will be on barrier management in operation.
  - The network enables companies to discuss relevant topics, and exchange learning and experience.

- **Topics**
  - Security barriers
  - Subsea/tie-back
  - Work processes
  - Technical barriers (e.g. ignition source control)
  - Interface SIL and barrier management

Takk

Therese van Roosmalen,
Senior Safety Adviser
tmr@safetec.no
+47 45 23 76 23