

From “learning from failure” to “learning from positive practice”



November 3,
2023

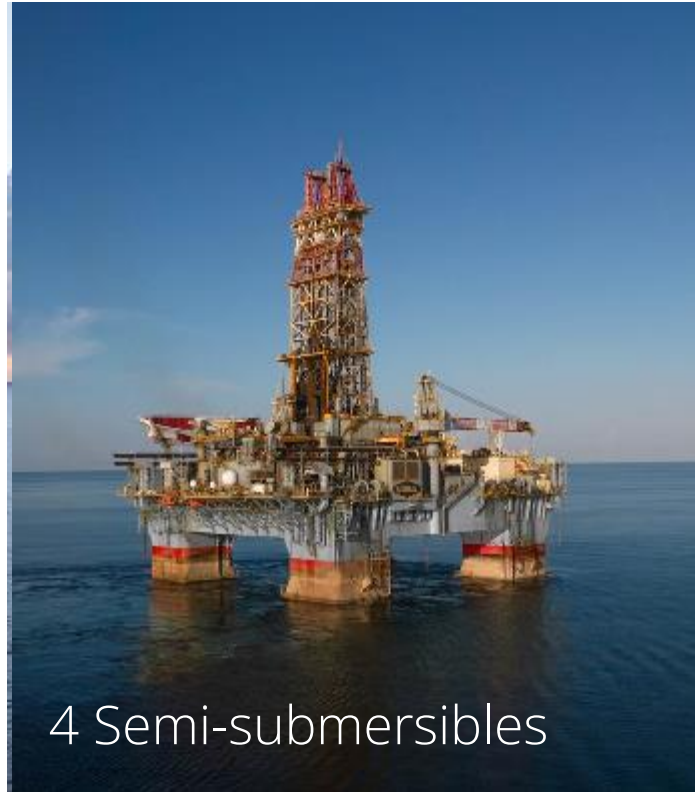
Thomas Koester, FORCE Technology, on assignment
for Noble Drilling A/S



*The case story about Noble's Safety-II
and "Learning from Normal Work"
journey*



Noble's fleet



Major accidents

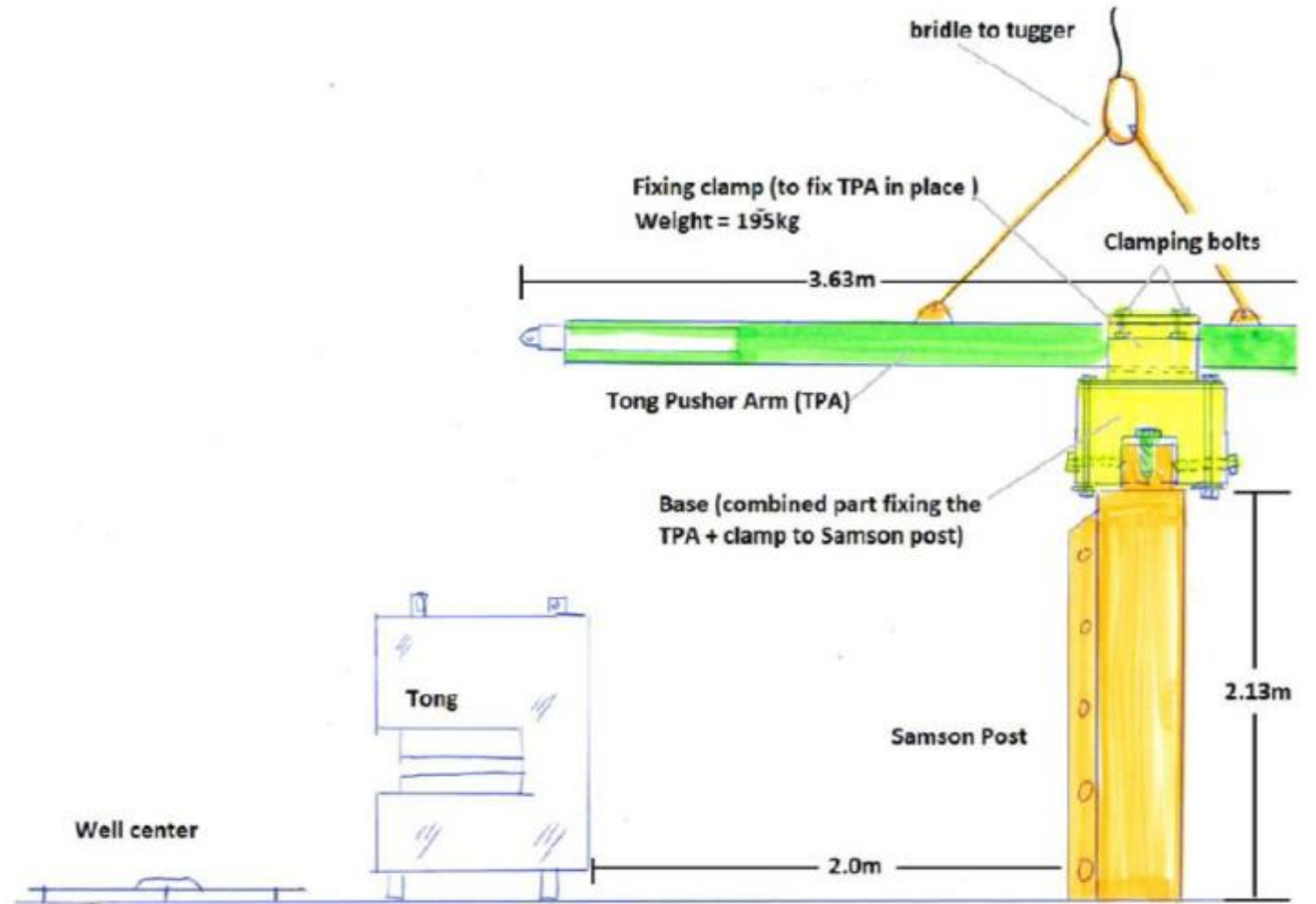


Source: The Guardian, Tim Webb, 28 October 2010

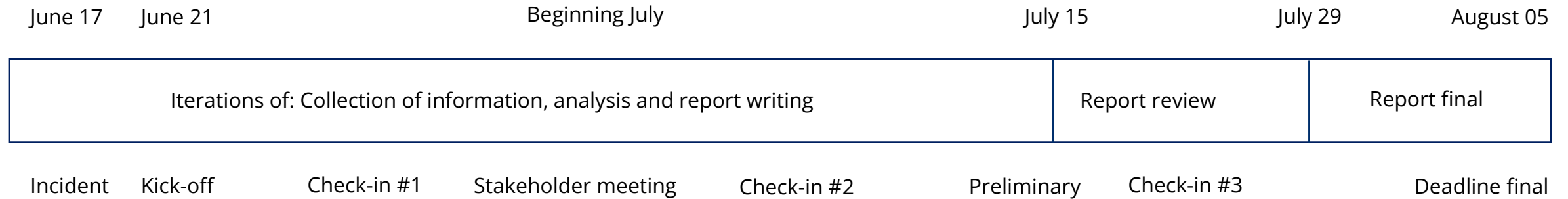
Health, Safety & Environment (HSE)



Investigation of incidents



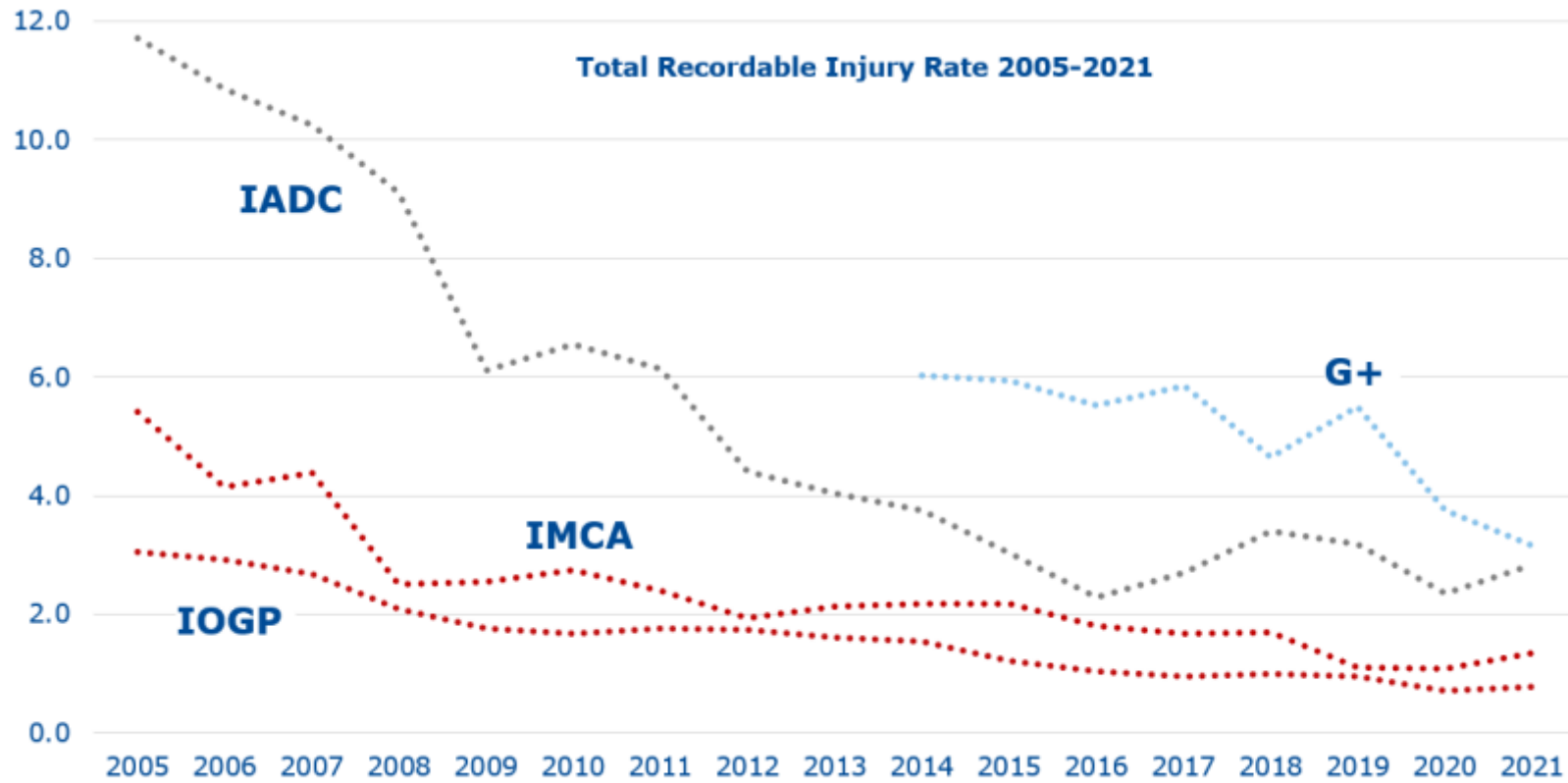
Investigation of incidents



Recommendations
Actions (technical, operational, organisational)
Follow-up



The safety plateau



• Total recordable injuries rate (TRIR) - the number of recordable injuries (including fatalities and LTIs) per million hours worked.

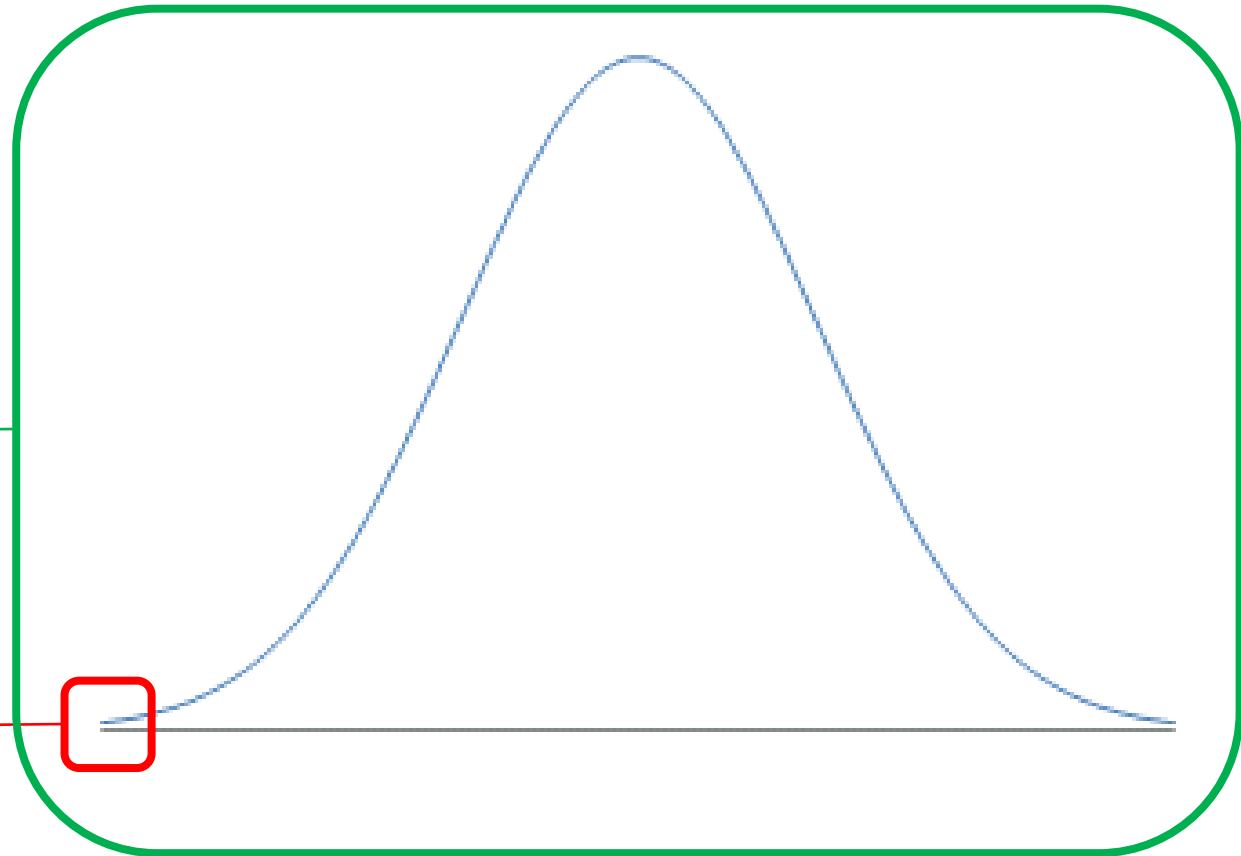


Source: IMCA. 2021 Safety Statistics

Safety-I and Safety-II

The focus of Safety-II:
Learn from everything – both success and failure, including what is covered by Safety-I

The focus of Safety-I:
Learn from failure, mistakes, incidents and accidents



Source: Hollnagel, E. et al. (2015). From Safety-I to Safety-II: A White Paper.

Different ways of learning about safety

Safety-I	Safety-II
Learning from failure and adverse events	Learning from positive practice
Negative cases	Positive examples
Trial and error	Positive reinforcement
Fixing and patching the holes to prevent failure from happening again	Building capacity and resilience based on positive observations
Reactive	Proactive

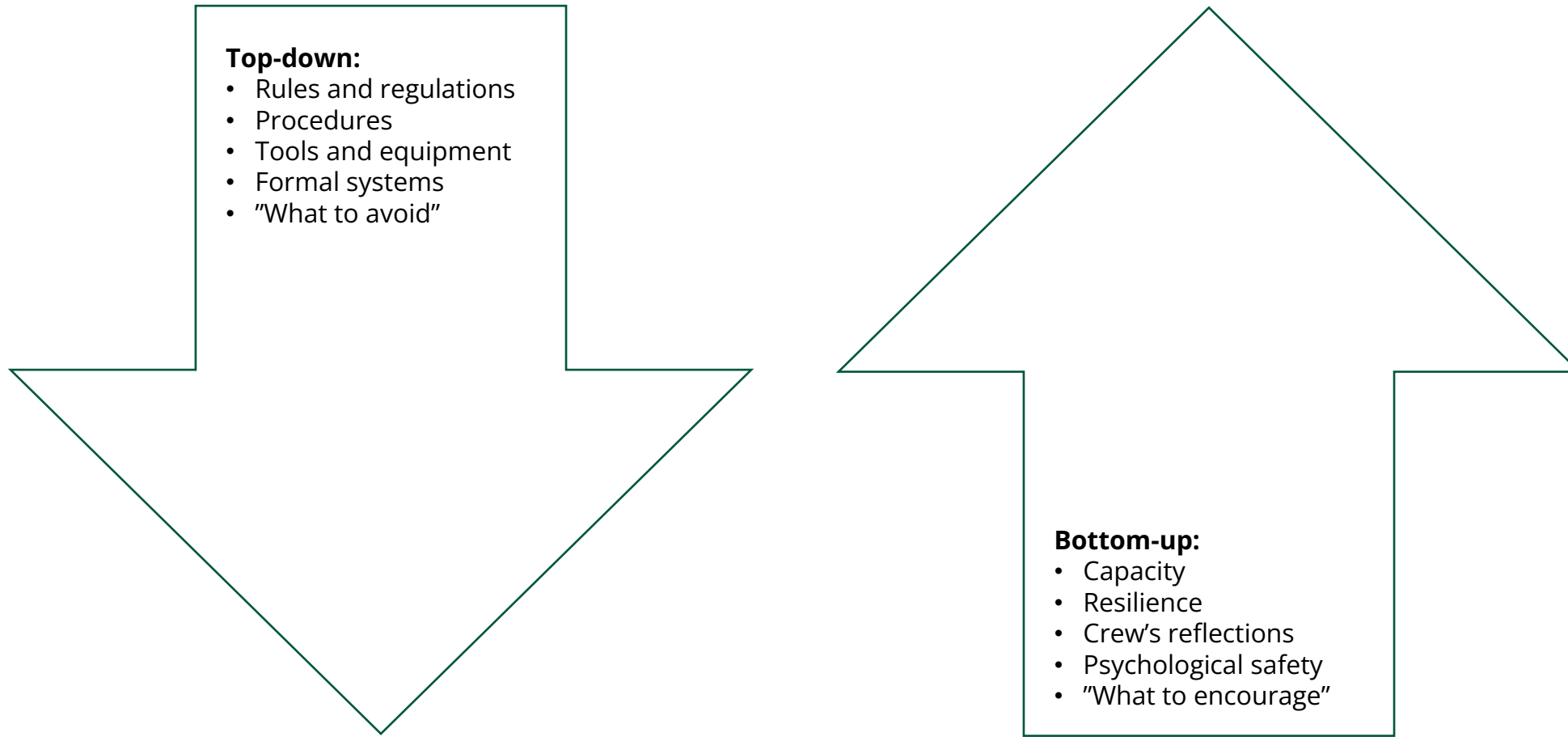


Core concepts in contemporary safety research

Safety-I and Safety-II	<ul style="list-style-type: none">• Two different ways of learning about safety: Learning from failure and learning from normal successful work
Safety as Capacity	<ul style="list-style-type: none">• The idea that safety is the presence of capacity and quality in a system (e.g., resilience) rather than the absence of adverse events and incidents.• Safety is "what to encourage" and not "what to avoid", i.e., safety is about adding or building capacity
Safety Differently	<ul style="list-style-type: none">• People are not the problem to control, they are the solution.• Rather than intervening in worker behavior, intervene in the conditions of their work.• Measure safety as the presence of positive capacities.
Resilience engineering	<ul style="list-style-type: none">• Building safe systems through strong connections between the elements in the system• If part of the system breaks down, other parts will compensate



The top-down and bottom-up approach to safety



WE DESIGN EVERY VOLVO TO LOOK LIKE THIS.



You're looking at a perfect Volvo. A Volvo that performed exactly as our safety engineers designed it to. Its front and rear ends, for example, collapsed on impact. As a result, much of the crash energy was absorbed instead of being passed on to the passengers.

The car's middle section, however, didn't collapse. That's because the entire passenger compartment is surrounded by Volvo's unique "safety cage." Made of six box section steel pillars, this protective housing is strong enough to support the weight of six Volvos.

But the passengers of this car were also protected in ways you can't see. Because inside are such standard features as a driver's side Supplemental Restraint System, a collapsible steering column and, of course, 3-point seat belts, front and rear.

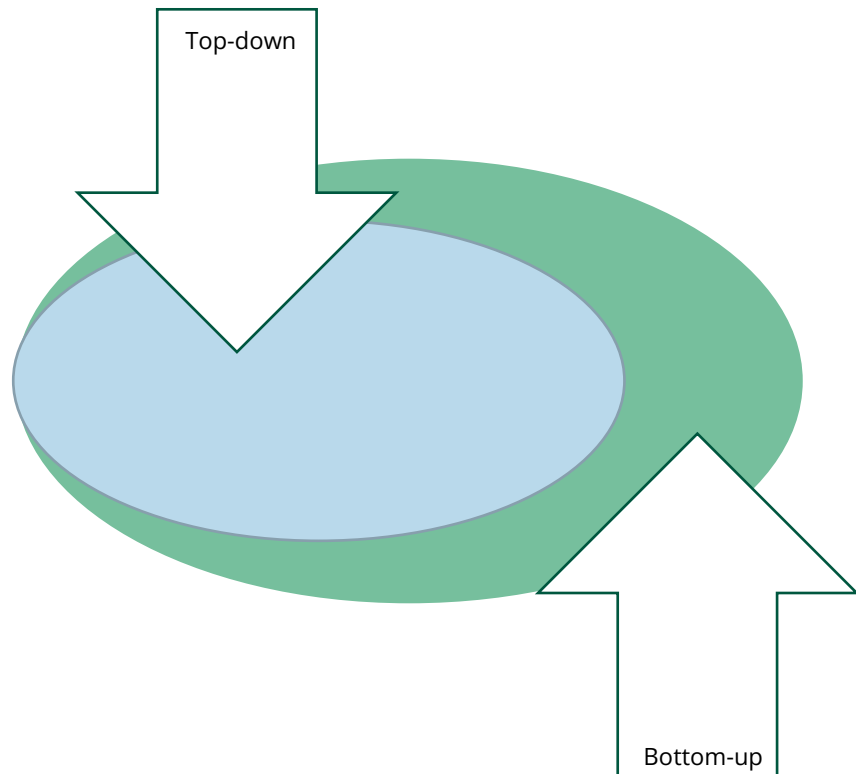
Every Volvo is designed to help protect its passengers in all these ways. And, as a result, will look remarkably similar to this one after being in the same type of accident.

If you're concerned about safety, you can't find a more beautiful car.

VOLVO
A car you can believe in.



Building capacity



Learning from Normal Work and the new view on safety

	The existing approach	The new approach
How do we define safety?	As the absence of incidents	As the presence of a positive quality or capacity
How do we learn about safety?	We study failure	We study successful work
How do we talk about safety?	We talk about incidents and accidents and what not to do	We talk about positive examples of how safety can be added to the processes
How do we improve safety?	We fix and patch the holes to prevent failure from happening again	We learn how to improve the processes and how to add safety to them to make them stronger and safer



Learning from Normal Work in the oil & gas industry

- Report from The International Association of Oil & Gas Producers: **“Learning from Normal Work”**, IOGP Report 642, November 2022
- Safety Collaboration Forum 2022: Letter signed by Total, Chevron, BP, Shell & Exxon talking about **“learn from safe work”** and **“learning from normal work”**
- Jan-Erik Hidle, HSSEQ Manager - Investigation - at Aker BP ASA about **learning from normal work** in Alwaysssafe.no video Q1, 2023
- **Learning from Normal Work** is a topic on several oil and gas conferences in 2023-2024: IADC conferences in Stavanger and Kuala Lumpur in 2023, Petronas Safety Day and IADC Health Safety Environment & Training, Houston, Feb 2024

Learning from normal work

SAFETY COLLABORATION FORUM 2022 PROJECTS & WELLS

31 October – 1 November 2022 | Houston, TX

On the 1st of November 2022, leadership of key companies active in the field of capital projects and wells participated in a safety collaboration forum. We are intent on playing an active role in making our industry safer and more efficient, and the following documents our reflections from the forum:

We believe relevant guidance exists to help us in our quest for safety excellence and we intend to use this guidance to achieve a higher level of consistent application within our respective organizations.

We acknowledge that care and respect are powerful drivers of Human Performance, intrinsic motivation, engagement, human health, and a positive working environment. By meeting the needs of individuals, we create an environment that encourages people to perform at their best.

We view proactive learning as an opportunity to gain a different perspective from both safe work and learning from incidents by engaging with our employees, particularly our frontline employees closest to the work.

We are pleased that our industry has greatly improved our safety results over the years. This also means there is less to learn from our lagging safety indicators, and we should therefore work together to define and implement leading indicators in our future safety efforts.

We believe that work needs to be verified as safe before it commences and recognize the value of start work check verification tools to help workers confirm that critical safeguards are in place and working for high-risk activities.

In safety, we have shared goals and believe in the power of partnership. We seek opportunities to work together and innovate towards those common goals.

We believe that collaboration on safety is a key pillar for improvement. To advance safety in our industry, we recognize that leadership commitment and Human Performance principles are key to setting the right tone for our employees, our companies, industry, and societies, while also making our respective operations more efficient and resilient to risk.

Supported on LinkedIn rather than by signature.



Noble's approach to Learning from Normal Work





Investigation and Operational Learning

We would like to combine

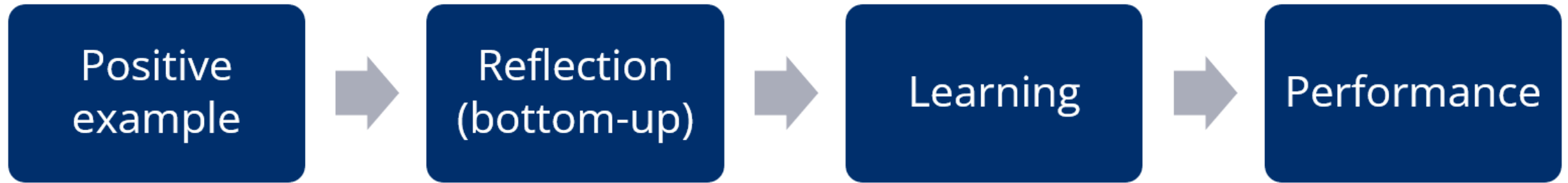
- Learning from adverse events, incidents, and near misses, i.e., **learning from failure**

and

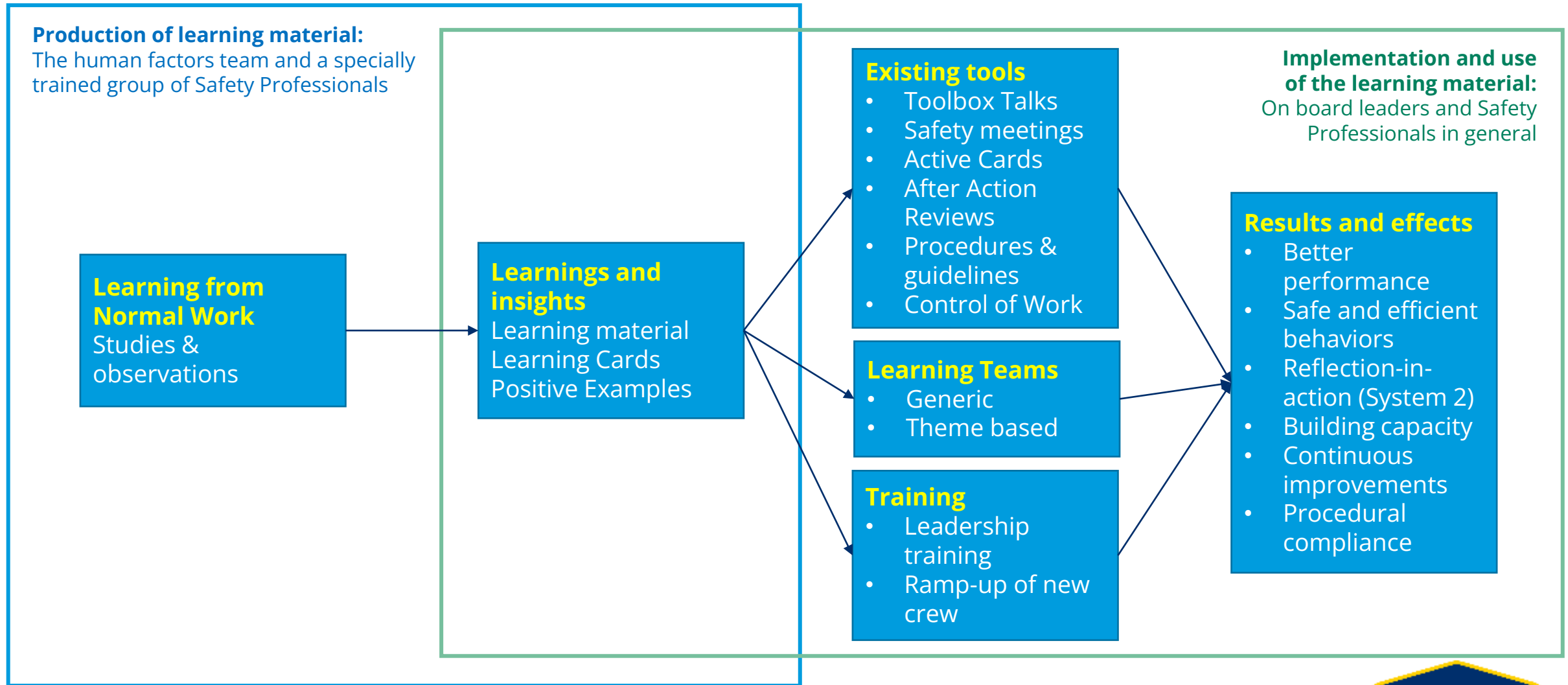
- Learning from normal and successful work, i.e., **learning from positive practice**



The fundamental mechanics of Learning from Normal Work



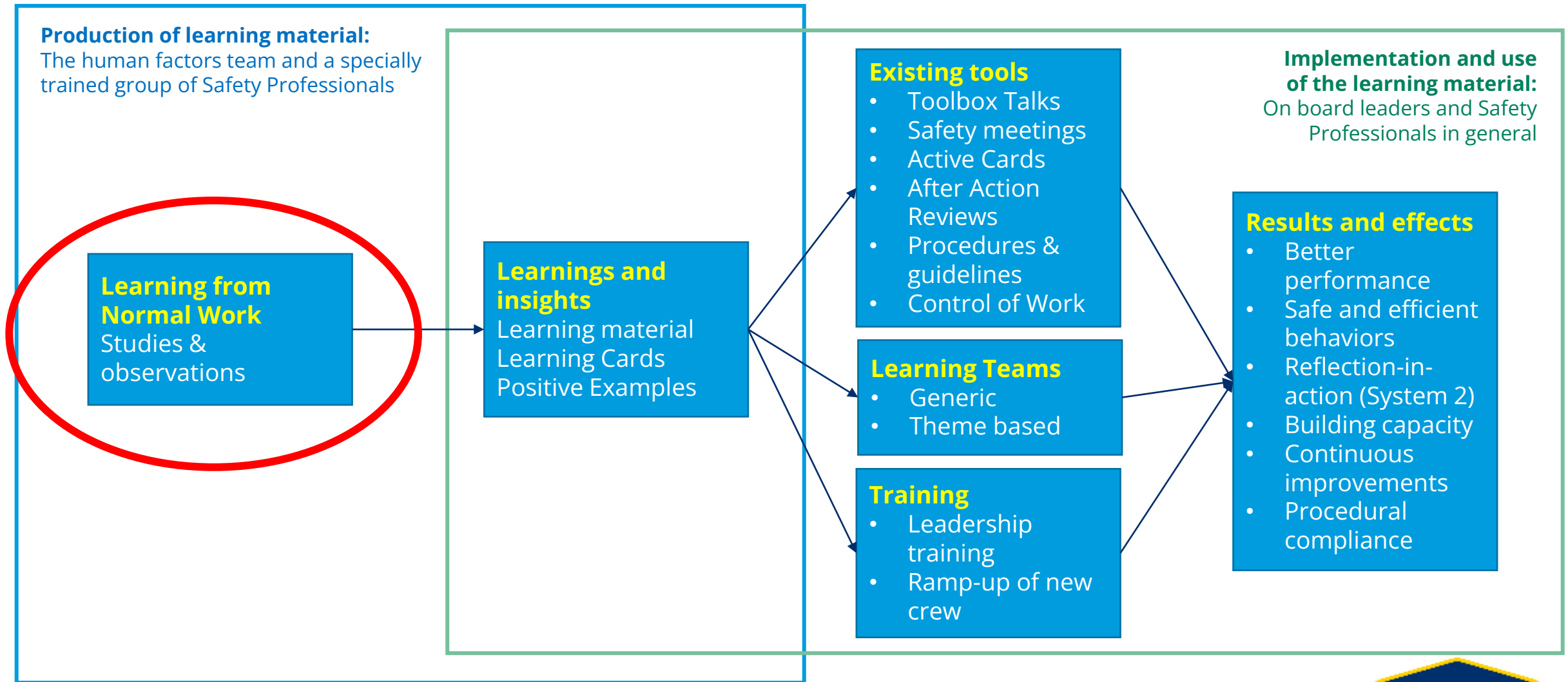
The Learning from Normal Work project



Collecting positive examples



The Learning from Normal Work project



The Rapid Ethnography Method

	Traditional ethnography	Rapid Ethnography
Time	Months or years	Hours or days
Preconception	None	Allowed
Focus	None	Allowed
Number of observers	1	2
Data	Only observations	Observations, data from informants and observer discussions





Making observations on board the rig

- Work in the red zone and red zone management
- Intervention related activities, e.g., change the BHA
- Lifting operations
- Maintenance and re-design of equipment
- Skidding the derrick
- Helicopter arrivals



Observation methods

We will use different methods for our observations depending on the situation:

- Silent observation – being “the fly on the wall” and just watching the action
- Observation and interaction with people – observing the process and asking questions to the persons being observed for them to elaborate on, having small on-site conversations where the people can point and explain
- Thinking-aloud – observing a person perform a job while he is describing and elaborating on his actions, i.e., thinking aloud
- *Recording photo and video for documentation*



The Learning from Normal Work Study

What it is not

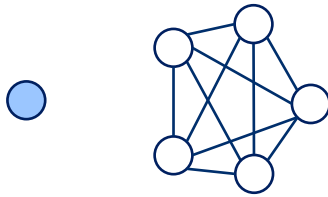
- It is not an audit
- It is not an inspection
- We do not look for or record failures and mistakes
- We do not look for or record procedural non-compliance
- We do not point fingers or make judgmental calls
- We do not act as an authority, e.g., teaching the personnel what to do

What it is

- It is an observation of normal everyday successful work
- We look for good examples of how safety is added to the process
- We record only positive observations, learnings and insights
- We are open minded and inspired by our observations
- We have a focus on the psychological safety of the personnel we observe

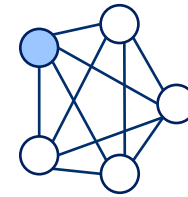


The "Expert Bias": Observing from outside a system and from within a system



Observing from outside a system:

- + Neutral and unbiased observations
- + Questioning the obvious
- ÷ Incomplete understanding of context
- ÷ Some events and actions cannot be decoded



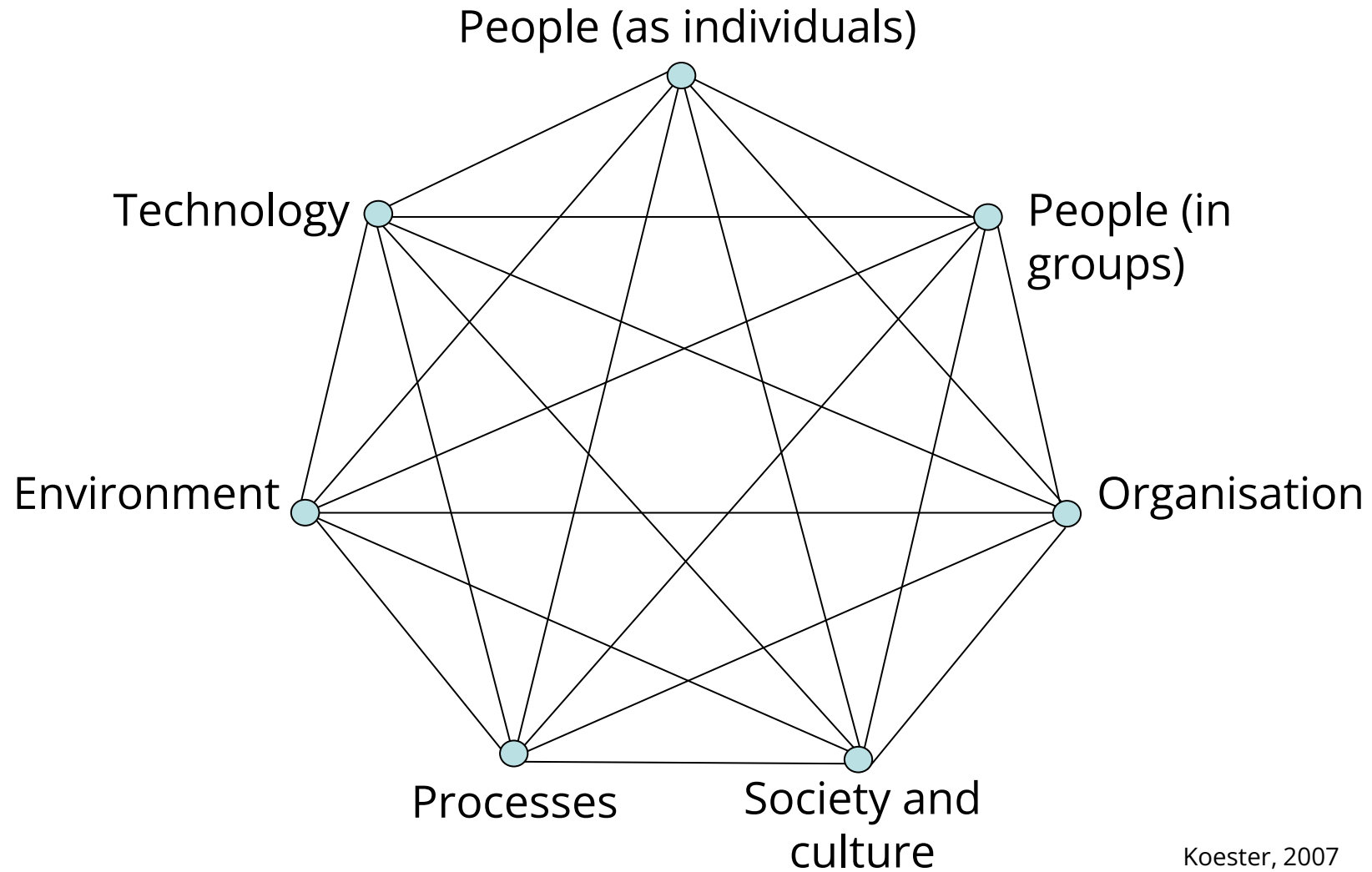
Observing from within a system:

- + Deep understanding of context and subject matter
- + First hand perspective on actions
- ÷ Risk of bias
- ÷ Risk of being "home blind"

Results and examples from the data collection



The Human Factors System

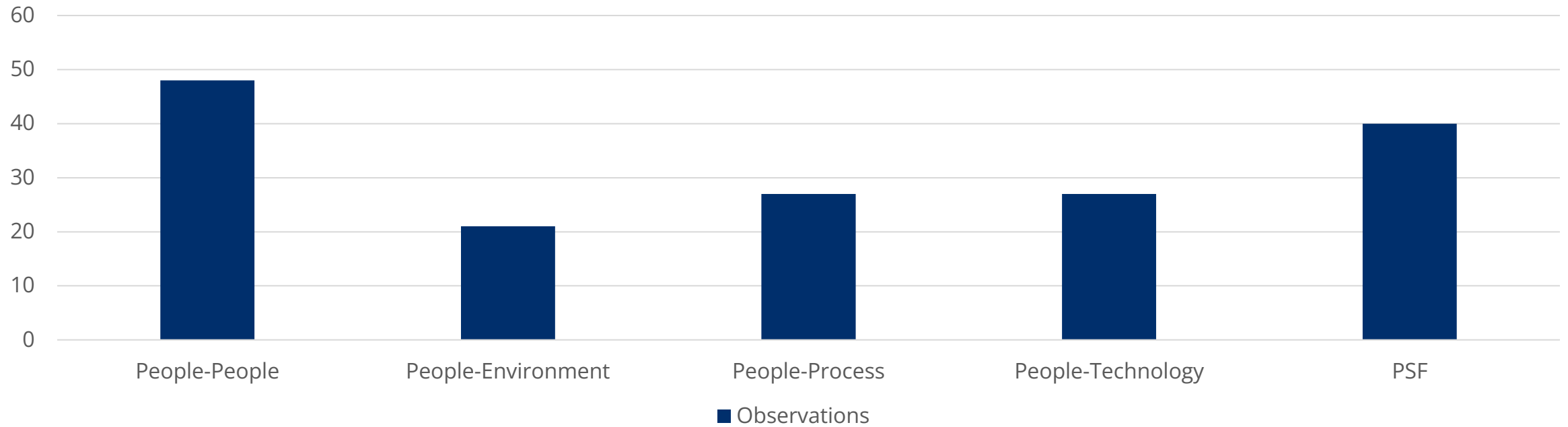


Koester, 2007
Grech et al., 2008

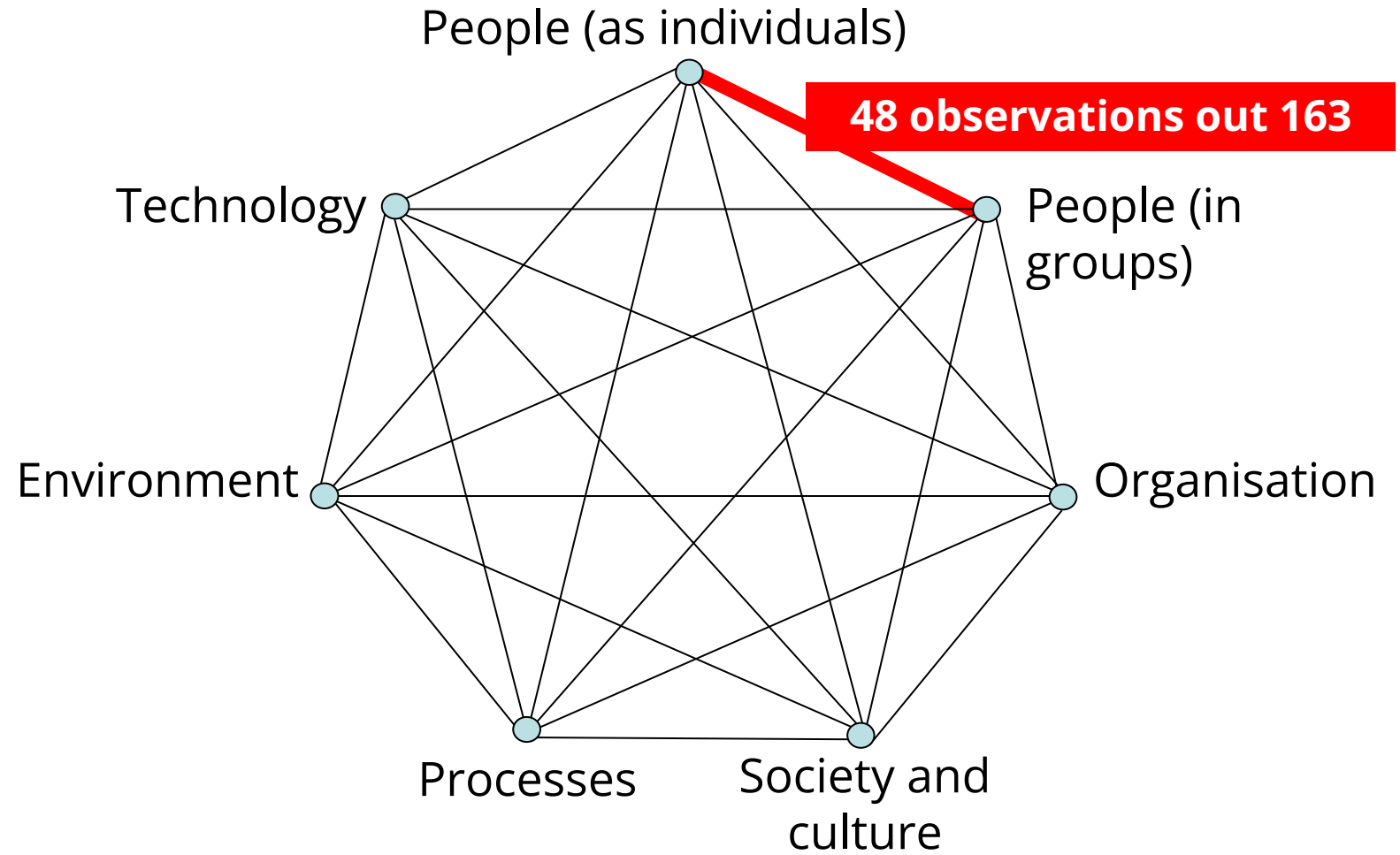


Summary of results

Observations



People – People interaction



Koester, 2007



Using different communication modalities

What happened?

- The crew on the drill floor wrote the serial numbers of the pipes they used to build stands on a board posted in front of and facing the driller's cabin.
- Numbers were written from bottom and up representing the order in which they appear in the stand.

Why is this a good idea?

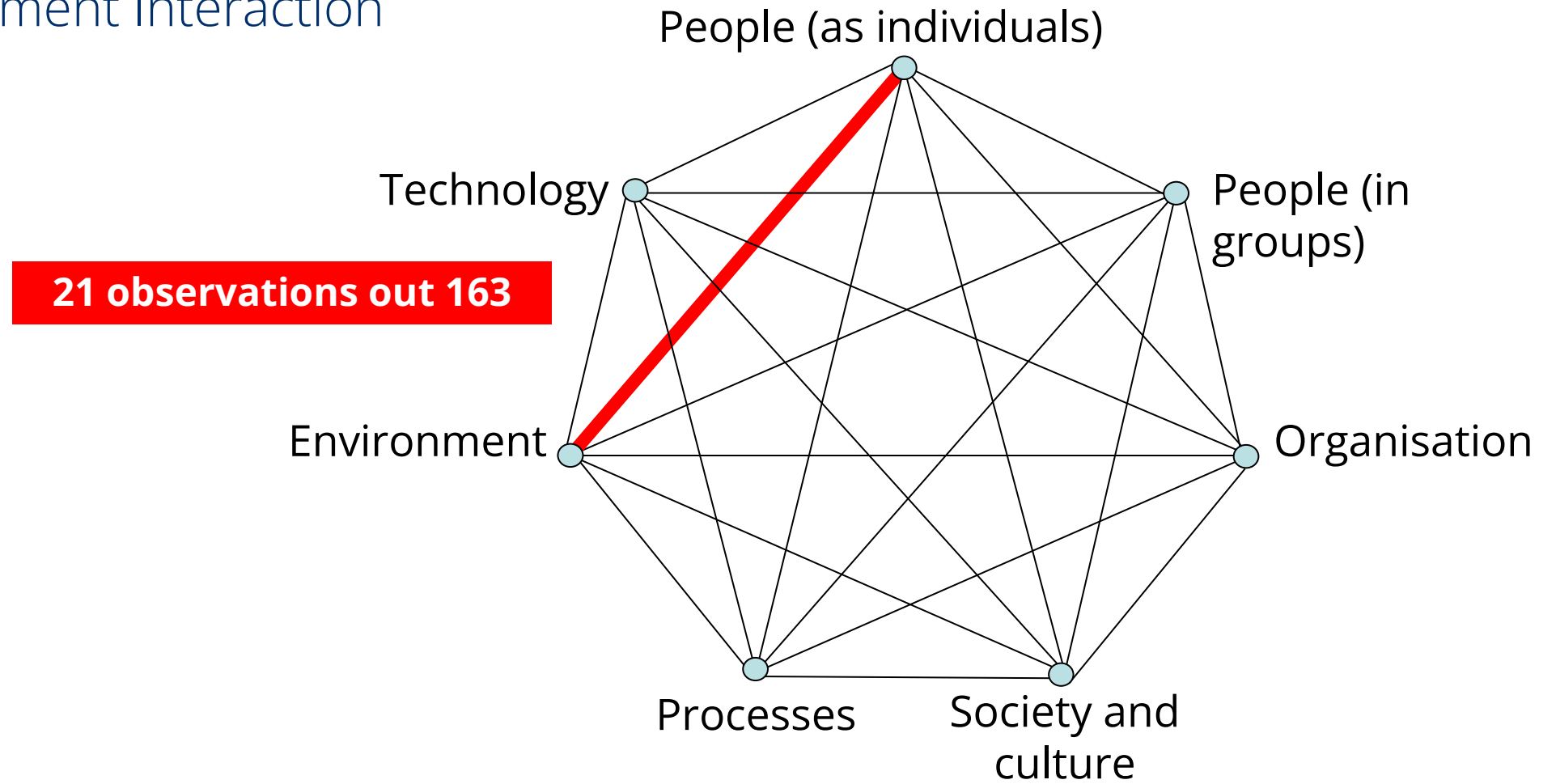
- Using written communication as a supplement to or instead of verbal radio communication has two advantages: (1) It helps cross checking of the information and (2) it makes information persistent.

How does this contribute to the safety in the process?

- There is the risk that numbers or information is misunderstood when communicated verbally over radio. The use of a board will help prevent misunderstandings and mistakes.
- Written information is persistent (does not disappear like verbal communication) and therefore do not rely on human memory which can be fragile. It is possible to check information on the board again should it be forgotten.



People – Environment Interaction



Koester, 2007

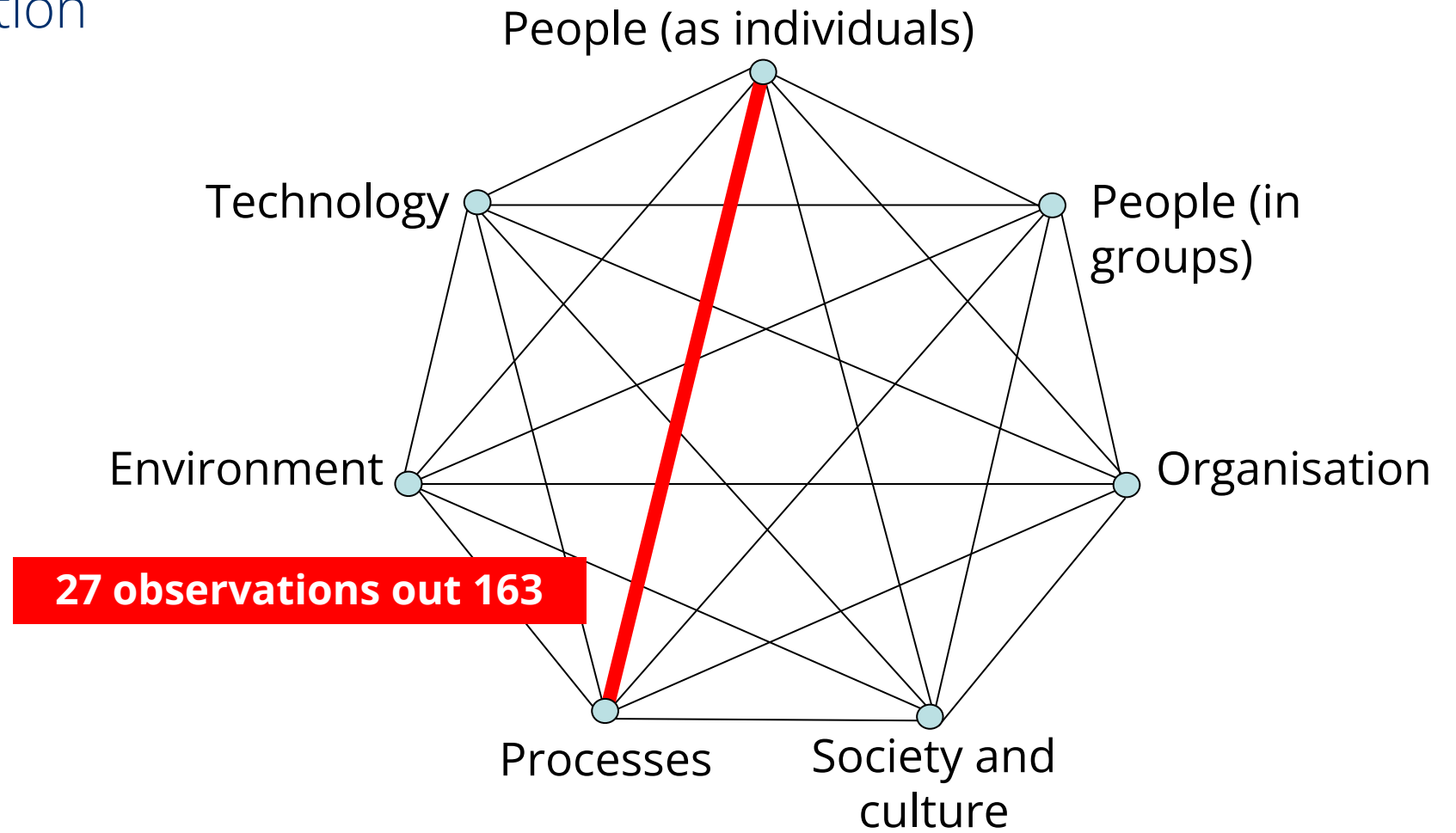




The "Stop and Think" barrier

- The border between the Red Zone 1 and Red Zone 2 is marked by a red line on the drill floor
- In this example, there is an additional tape serving as "stop and think" barrier
- The idea is, that unintended automated (System 1) behaviour, e.g., walking in and out of the Red Zone when not authorized, is changed to reflected behaviour (stop and think, System 2 thinking)
- The stop and think barrier was discussed at the TBT because the actions on the drill floor were expected to be repetitive and in a fast pace where it would be likely that roughnecks would drop from System 2 to System 1 thinking.
- TBT: *"The "Stop and think" barrier between Red Zone 1 and Red Zone 2 should be installed because they [roughnecks] should go out to alternative stand by position [at the side of the Driller's Cabin] and it will go so fast that it is easy to forget".*

People – Process Interaction



Koester, 2007



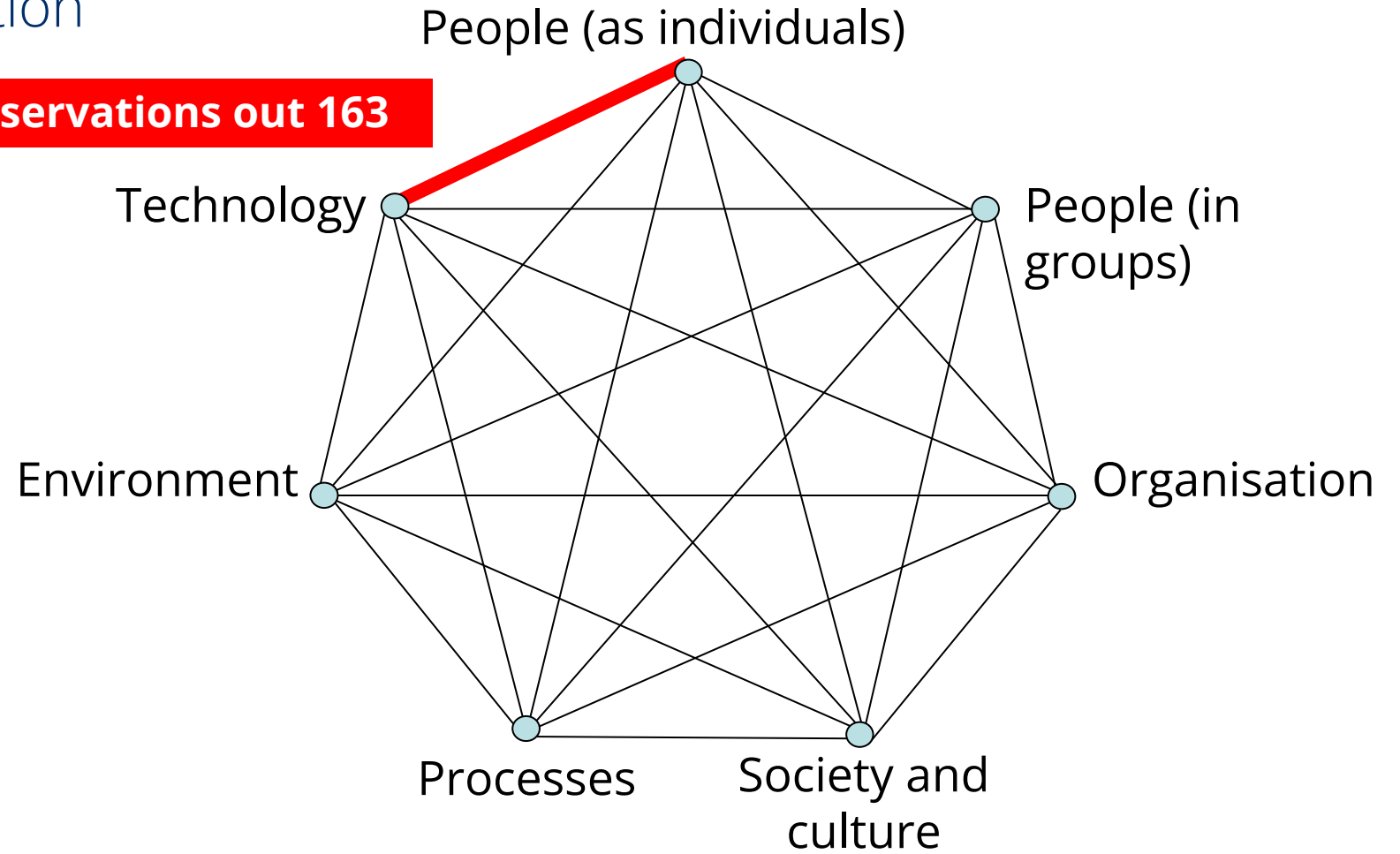
Waiting as an activity and primary task

- Observing movements of equipment
- Looking up
- Maintaining eye contact with Driller's Cabin
- Observing for failures, risks and unexpected issues to report and/or use the Stop the Job authority
- Policing the Red Zone



People – Technology Interaction

27 observations out 163



Koester, 2007



Confirmation of equipment

What happened?

- The roughneck approached the driller's cabin with an object and presented it in front of the driller to have confirmation.

Why is this a good idea?

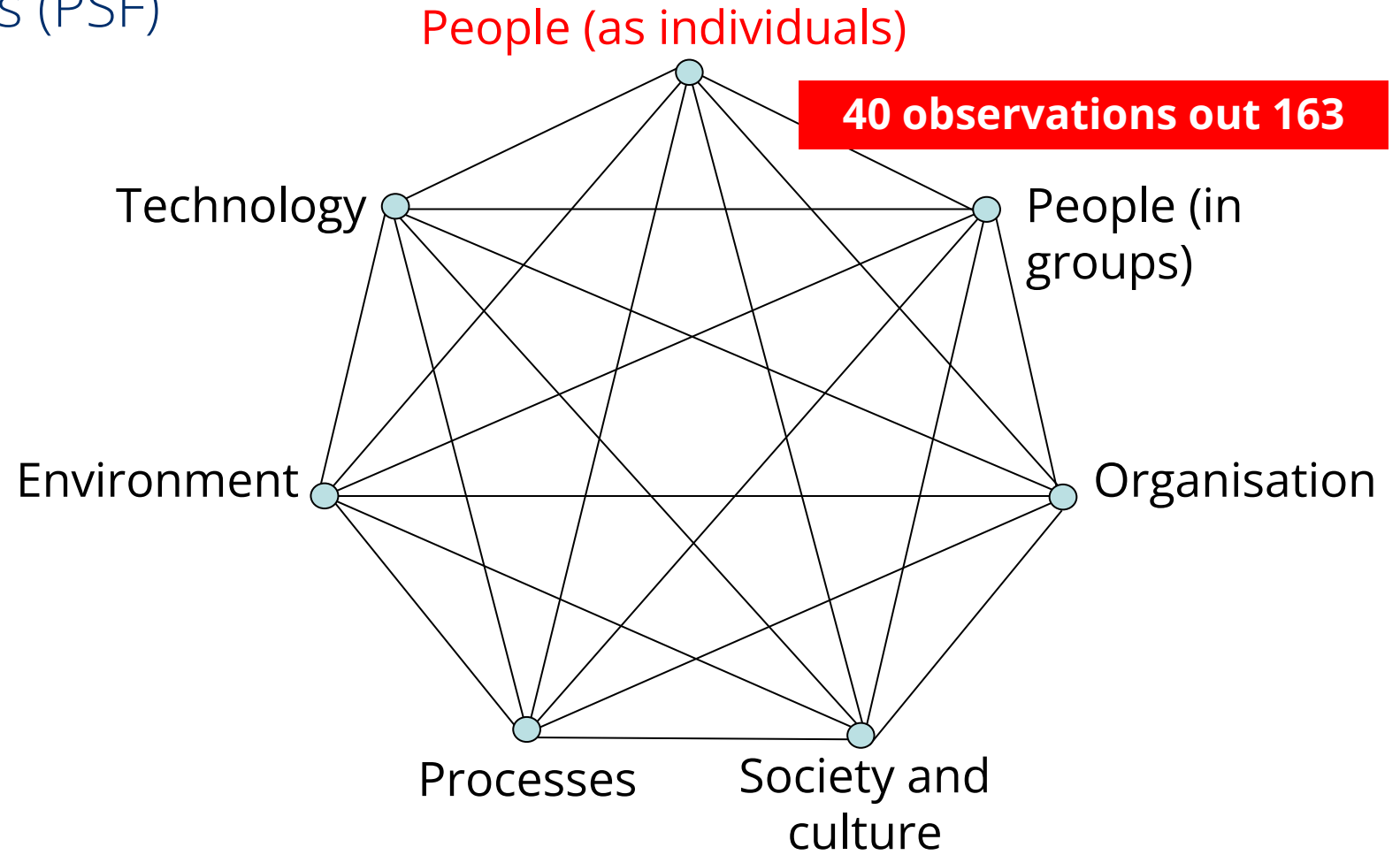
- Working with the right equipment is essential for the success of the job, and cross-checking equipment with the driller is a way to make sure that the equipment is the right one for the job.

How does this contribute to the safety in the process?

- Cross-checking equipment will add safety to the process because it will support identification of potential wrong equipment which could lead to further mistakes or failure.



Performance Shaping Factors (PSF)



Koester, 2007



Avoid working with a sense of urgency

What happened?

- During the TBT the driller reminded the crew that they should take the time they need for the job and with no need to rush.

Why is this a good idea?

- Everyone should be aware that it is important not to rush, but it is always a good idea to bring a reminder.

How does this contribute to the safety in the process?

- Working in an atmosphere of urgency can lead to more mistakes and possible re-work where work must be done again to correct mistakes. Therefore, working with a sense of urgency might look more efficient but actually it is less efficient and potentially also more unsafe.



Using the Learning from Normal Work data from 5 rigs

163 observations of positive practice

71 Learning Cards

Recommendations

On board Learning
Teams

Meetings and
discussions about
safety

Training of new
personnel and
leadership training

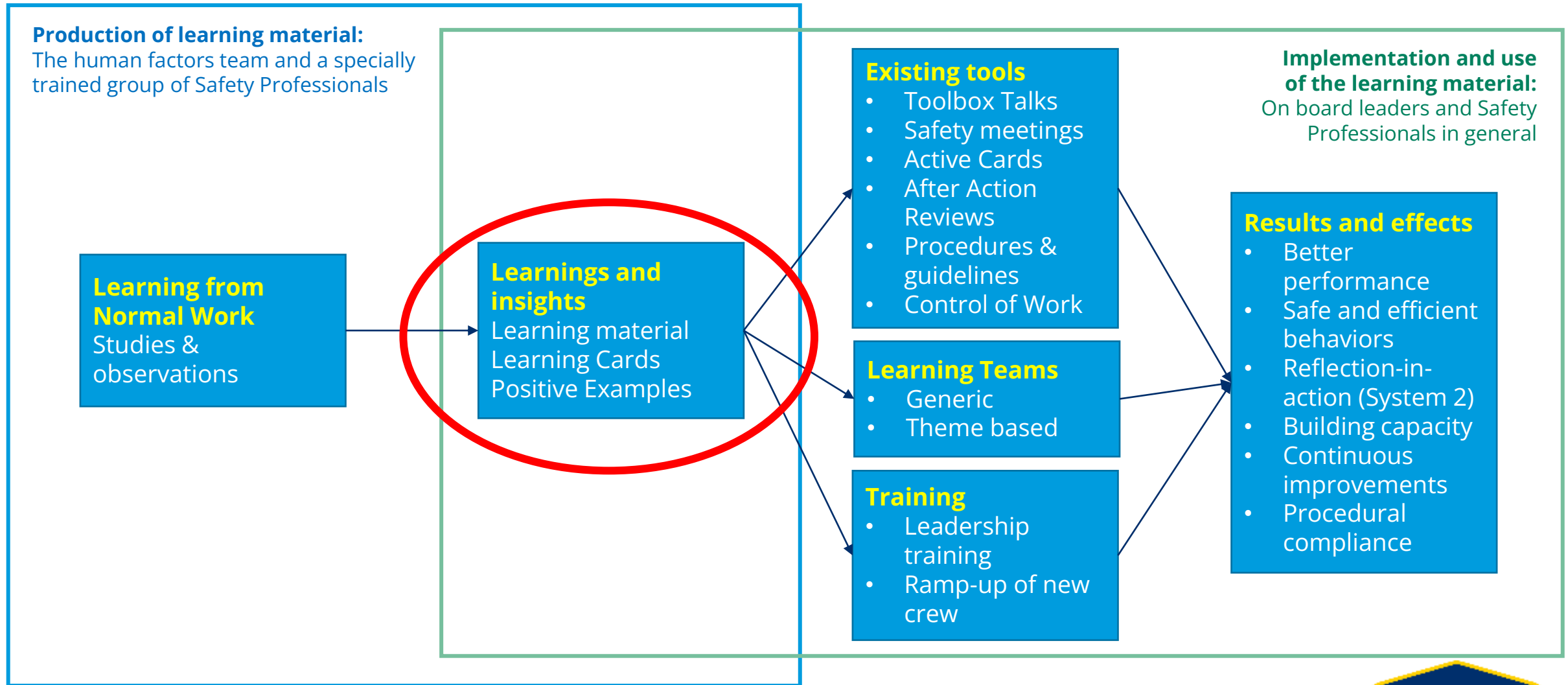
Sharing with the whole
fleet



The Learning Material: Learning Cards & Positive Examples



The Learning from Normal Work project



Safety ALERT



Alert 23-2

WHAT HAPPENED:

While a jackup rig was being wet towed, a section of deck grating located immediately outside an egress point from the Living Quarters was found to have been dislodged under the action of the waves being forced up the side of the hull. The dislodged grating was part of a platform located directly over water, more than 20 ft. above the rig's floating draft. The sea state recorded at the time showed 8-10 ft. significant wave height.



Contributing Factors

Design - Since the original design and construction of the rig, the GRP (glass fiber reinforced plastic) grating, and fasteners used in this area were not expected to be subject to wave action. While the dislodged section of grating was found essentially intact, it had been evidently forced up from its fasteners by the wave run-up.

LESSONS LEARNED:

1. The company undertook a review of all similar grated platforms across its jackup fleet and decided to replace all GRP grating and fasteners in areas directly over water and located at an elevation below the rig's life boat platforms. The GRP grating was replaced with steel grating and fasteners with specification and quantities to resist wave action.
2. Also, the company is collaborating with the competent authorities to determine whether construction standards for this type of structure need to be revised.



Learning Card #0049

Waiting outside the red zone

What happened?

- Crew on the drill floor practiced an active waiting when not working inside the red zone but standing by outside the red zone
- They were observing movements of equipment, looking up in the derrick and maintaining eye contact with the Driller's Cabin

Discussion questions:

- **Why is this a good idea?**
- **How does this contribute to the safety in the process?**
- **How can it be used in other situations?**
- **Are there any other things they could do while waiting?**



Positive Example #0049

Waiting outside the red zone

What happened?

- Crew on the drill floor practiced an active waiting when not working inside the red zone but standing by outside the red zone
- They were observing movements of equipment, looking up in the derrick and maintaining eye contact with the Driller's Cabin

Why is this a good idea?

- The crew use the waiting time to stay alert and in their System 2 mode (reflection-in-action) and to update their situation awareness.
- Waiting becomes an important job and not just passive waste of time.

How does this contribute to the safety in the process?

- The crew keep their eyes on the process and any unforeseen events, mistakes and issues with equipment and they are ready to "stop the job" if necessary.
- The crew keep their eyes on personnel entering Red Zone.





Other Learning Card examples



The "Stop and Think" barrier

What happened?

- The border between the Red Zone 1 and Red Zone 2 is marked by a red line on the drill floor
- On this day, both zone 1 and zone 2 was active and zone 2 could not be used as a safe area
- Work was prepared and in the discussion in the toolbox talk it was agreed to set up a piece of tape as a "stop and think barrier"

Discussion questions:

- **Why is this a good idea?**
- **How does this contribute to the safety in the process?**
- **How can it be used in other situations?**

Finding the best place to spot

What happened?

- During the TBT the driller asked the crew to find the best place to spot equipment during a job, also if they needed to spend some time finding the best place.

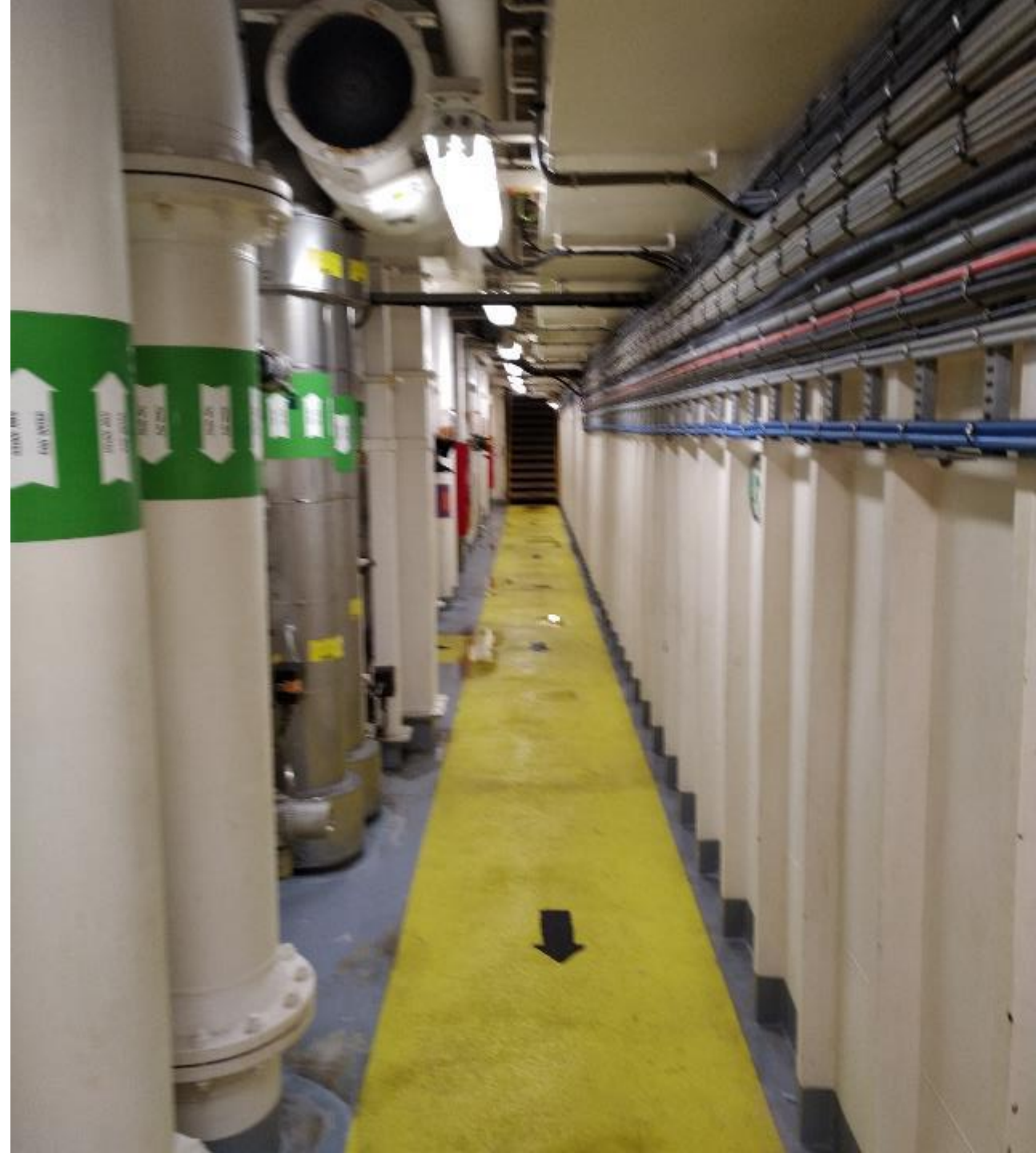
Discussion questions:

- **Why is this a good idea?**
- **How does this contribute to the safety in the process?**
- **How can it be used in other situations?**



What did we learn about safety on a general level?

- Safety is added to the processes on board through small details in people's way of communicating, their interaction and behavior and small features in the design of technology and workplace.
- Flexibility and adjusting to the situation is essential for safe communication, interaction and use of technology. There is no such thing as one size fits all.



What did we learn about interacting with the crews we observed?

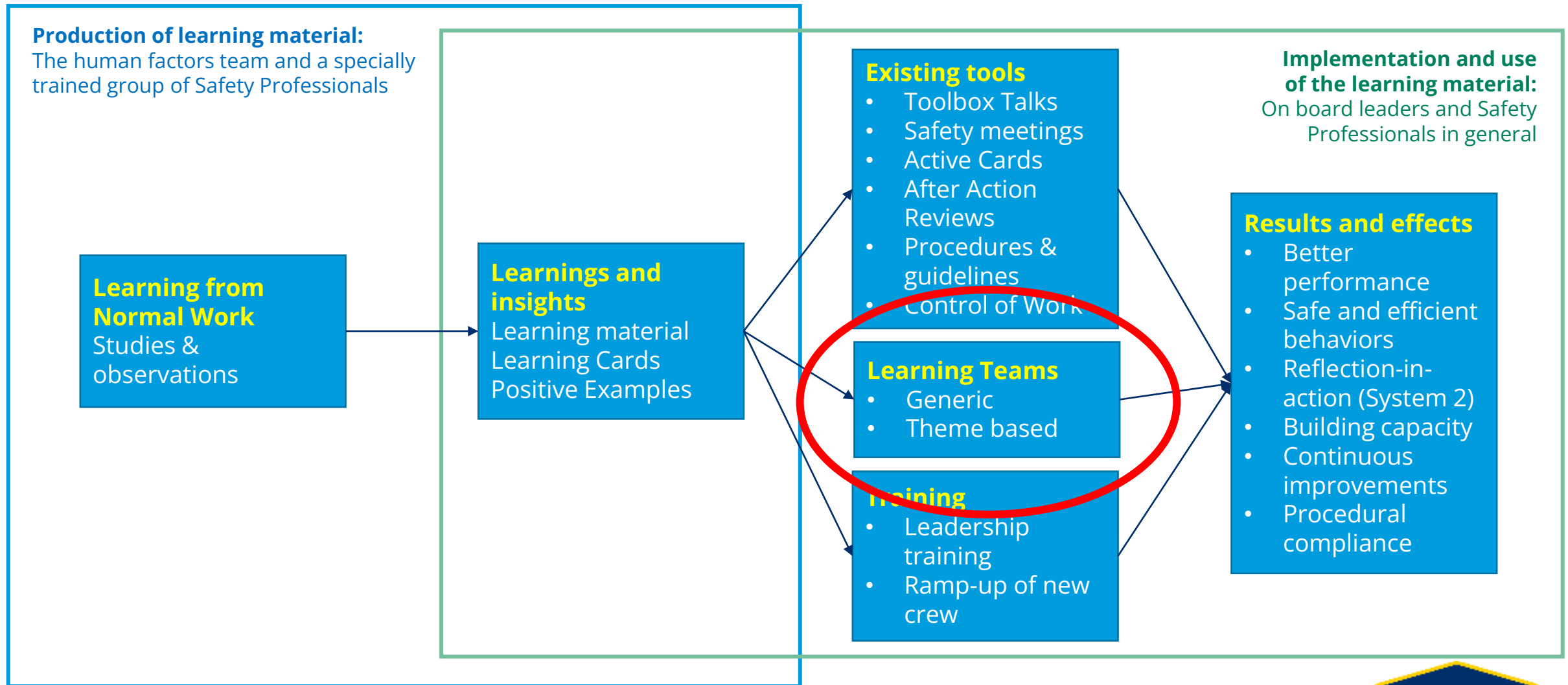
- The psychological safety and the comfort of the people being observed in their work situations should have the highest priority, especially when coming from a Safety-I tradition where the focus has been on failures and non-compliance.
- People being observed will start to open up after the observers have had informal conversations and spent time with them



The Learning Teams format



The Learning from Normal Work project



Different methods for learning

Top-down	Bottom-up
Passive	Active / Interactive
Listening	Reflecting
Teaching	Learning
Prescriptive (telling what to do)	Asking questions
System 1	System 2



Different methods for learning

Top-down	Bottom-up
Passive	Active / Interactive
Listening	Reflecting
Teaching	Learning
Prescriptive (telling what to do)	Asking questions
System 1	System 2

The 3 steps in the program:

Testing and validating with personnel in the frontline

1. **LfNW Theory and Method**. This is an introduction to the Learning from Normal Work concepts and method including the Learning Teams format.
2. **Learning Teams leaders**. This is a 1-hour Learning Teams session for leaders where we will be the facilitators. Topic will be System 1 and System 2 combined with selected Learning Cards. Leaders participating in this will get the hands-on experience of the format and at the same time be introduced to the System 1 and System 2 concepts.
3. **Learning Teams crew**. This is a Learning Teams session, e.g., 10-60 minutes, where the leaders will host and facilitate a session for their own team with our support. This is the opportunity to bring what have been learned and experienced during (1) and (2) into practice.



Summary and takeaways



What have we done?

- We have tested and evaluated the Learning from Normal Work (Safety-II) method on board five Noble rigs since August 2022 including drill ships, jack-ups and semi-submersible rigs
- The scope was to look for **positive examples of safe practice** and to **change the narrative about safety** from only talking about safety as the absence of incidents to include talking about safety as the positive presence of a quality and capacity
- We have collected 163 observations of **positive practices** which are adding safety to the work processes
- We have primarily looked at work on **the drill floor**, but we have also looked at, e.g., lifting operations and maintenance



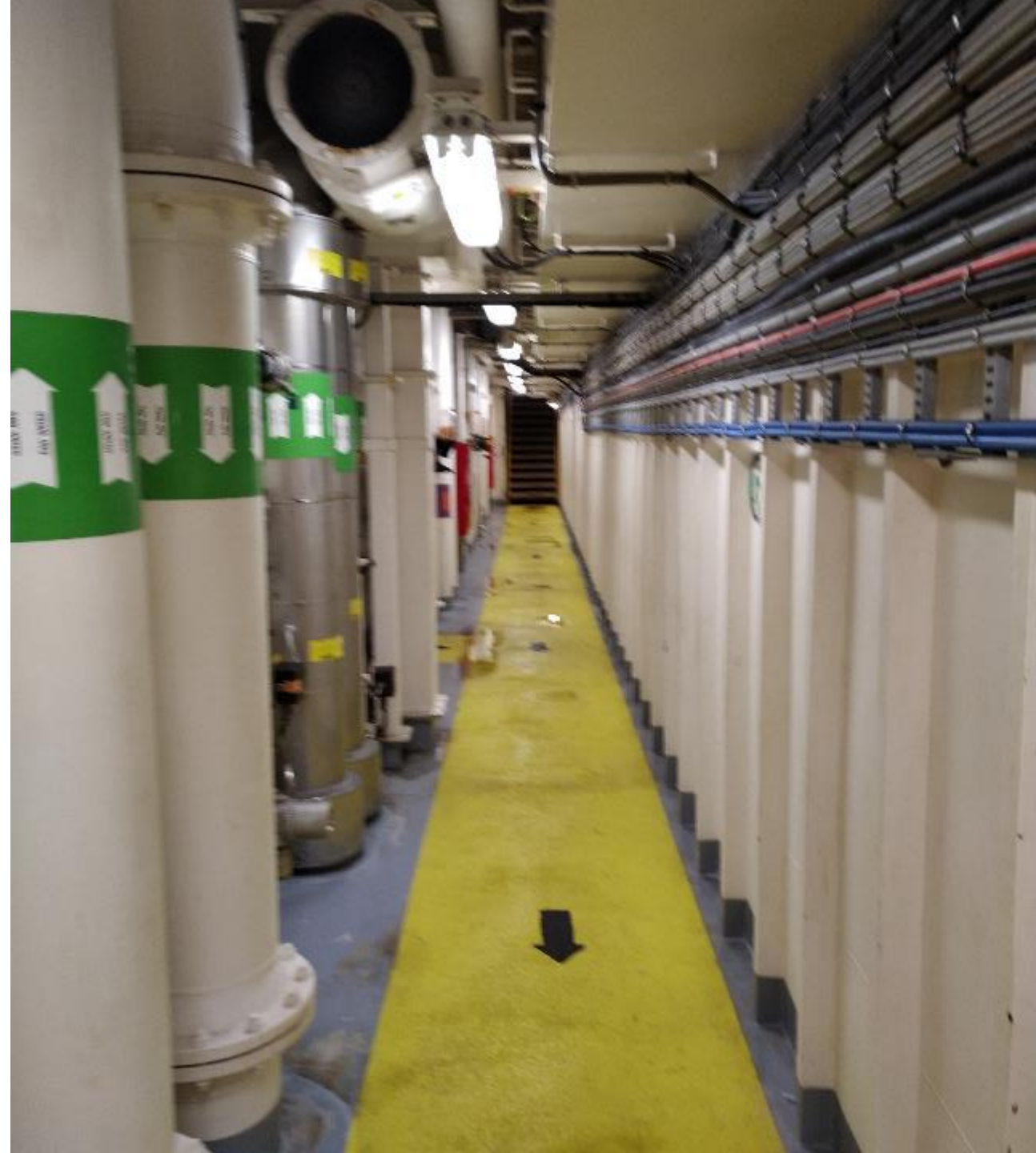
How can we describe the overall success of the project?

- The project was an **eye-opener** for the involved rigs, leaders and crews who were introduced to **a new narrative about safety.**
- We managed to create learning material which can be used in **positive discussions about safety.**
- The material can be used **to inspire** across rigs, for introduction of new people and for general inspiration in the organization.



What did we learn about safety on a general level?

- Safety is added to the processes on board through **small details** in people's way of communicating, their interaction and behavior and small features in the design of technology and workplace.
- **Flexibility and being able to adjust to the situation** is essential for safe communication, interaction and use of technology. There is no such thing as "one size fits all".



What did we learn about the Learning from Normal Work method?

- The focus on positive behaviors of the crew has an element of **positive reinforcement**. The crew experience that their performance is positive and creates safety.
- An observation is **a probe or sample** taken in time and space which can illustrate a point, but it does not necessarily represent the practice of all people in any given situation.
- You must have **observational skills and experience** to capture good observations. This is more important for the observations than the technical background of the observer.
- We are still getting new observations after visiting five rigs.



What did we learn about interacting with the crews we observed?

- The **psychological safety** and the comfort of the people being observed in their work situations should have the highest priority, especially when coming from a Safety-I tradition where the focus has been on failures and non-compliance.
- People being observed will start to open up after the observers have had **informal conversations** and spent time with them



Thank you for listening!

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