Building Safety in Petroleum Exploration and Production in the Northern Regions

WP4 Early warnings

”Mini-workshop”

Project Advisory Board Meeting

2/2/2009

Gardermoen

Contents

- Short introduction to WP4
  - Objectives
  - Overview
  - Deliverables – status
  - Main challenges
- Mini-workshop; Good criteria for early warning indicators

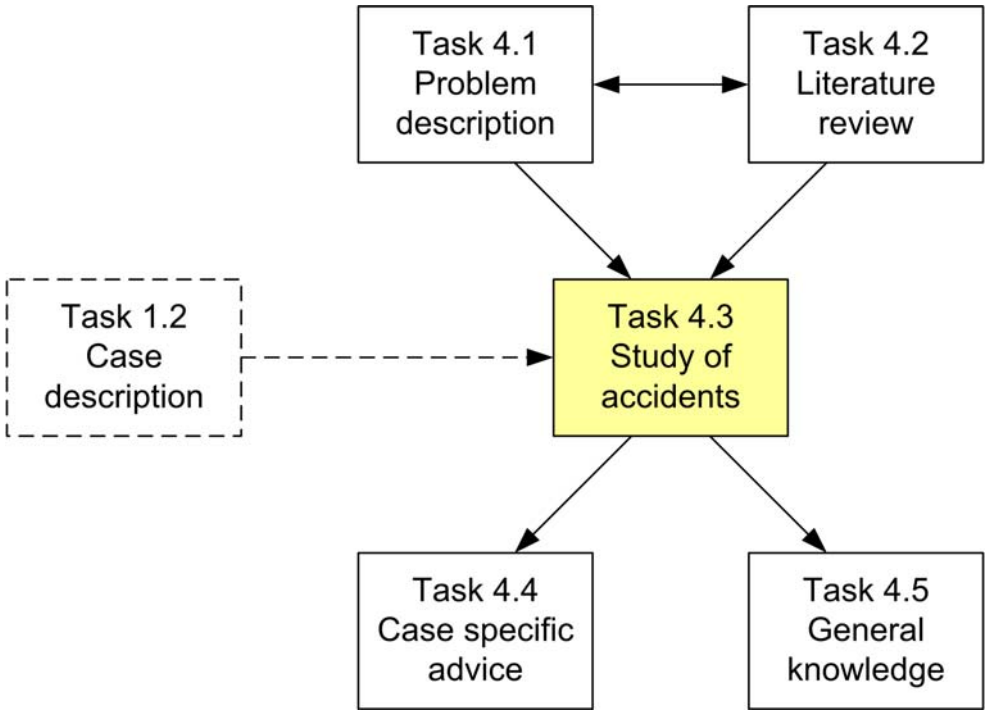
Objectives of WP4

- The objective of WP4 is to **provide early warnings of major accidents***, requiring development of new models and methods, or the adaptation of existing ones.

  *) Focus on environment means that also minor events will be included.

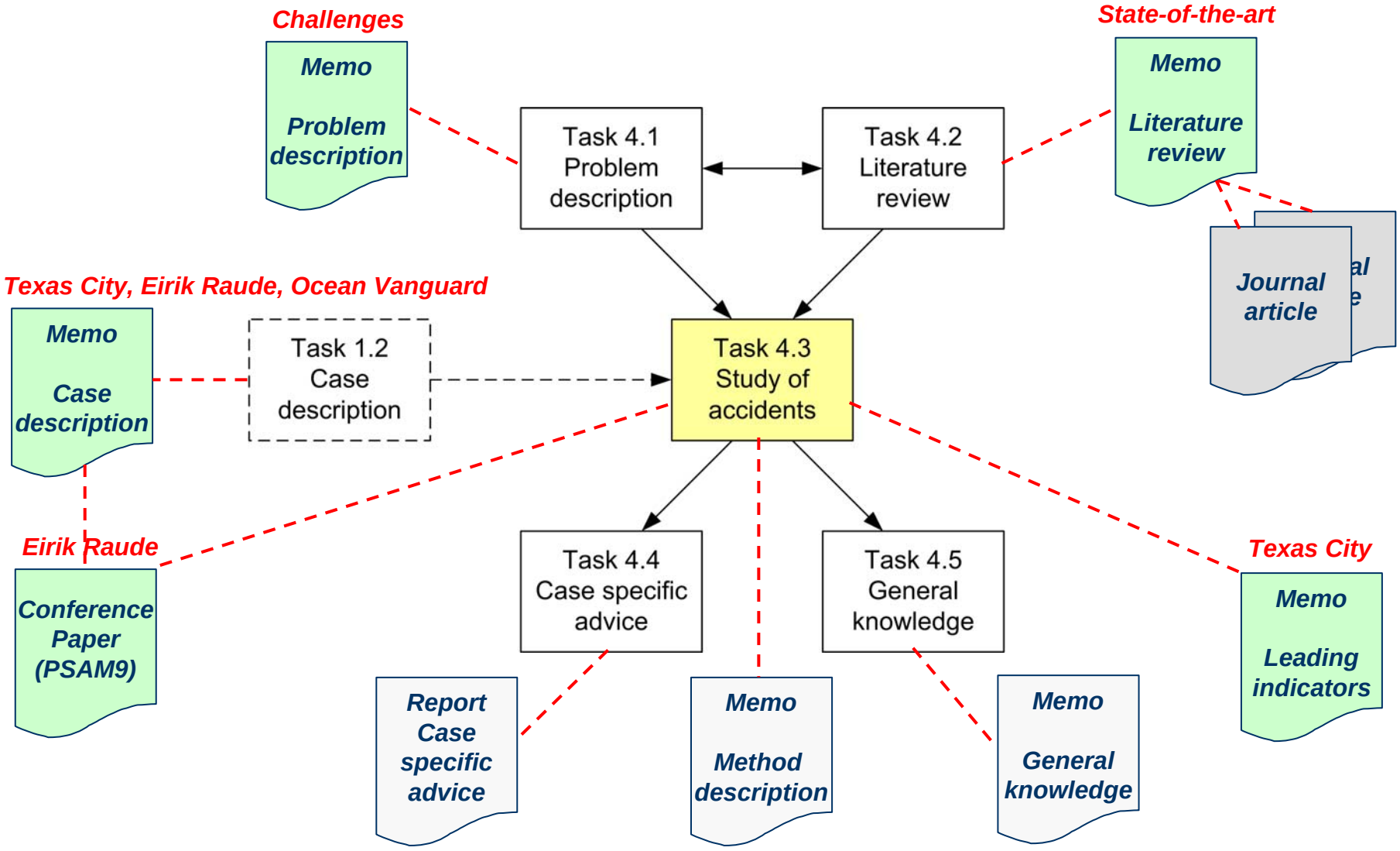
- In WP4 we will develop indicators providing early warnings of accidents, including events with environmental consequences, for petroleum activities in the Northern Regions in general and for the Goliat field in particular. The work will be based on:
  1. Analysis of the underlying causes of selected events (e.g., Texas City, Eirik Raude and the Riser event),
  2. Analysis and adaptation of existing methods, e.g. LIOH used in the nuclear industry (with links to the RE characteristics treated in WP1)

Overview of WP4



- The problem description (task 4.1) and the literature review (task 4.2) provide information to and from each other, and both gives input to the study of accidents (task 4.3), from which the results are generated (in task 4.4 and task 4.5).

Deliverables of WP4 - status



Main challenges

1. Sufficient focus on major accidents
2. Exceptional conditions for the Northern Regions
3. Evaluation of criteria for ”good” indicators

Melkøya, January 2006 (Finnmark Dagblad)

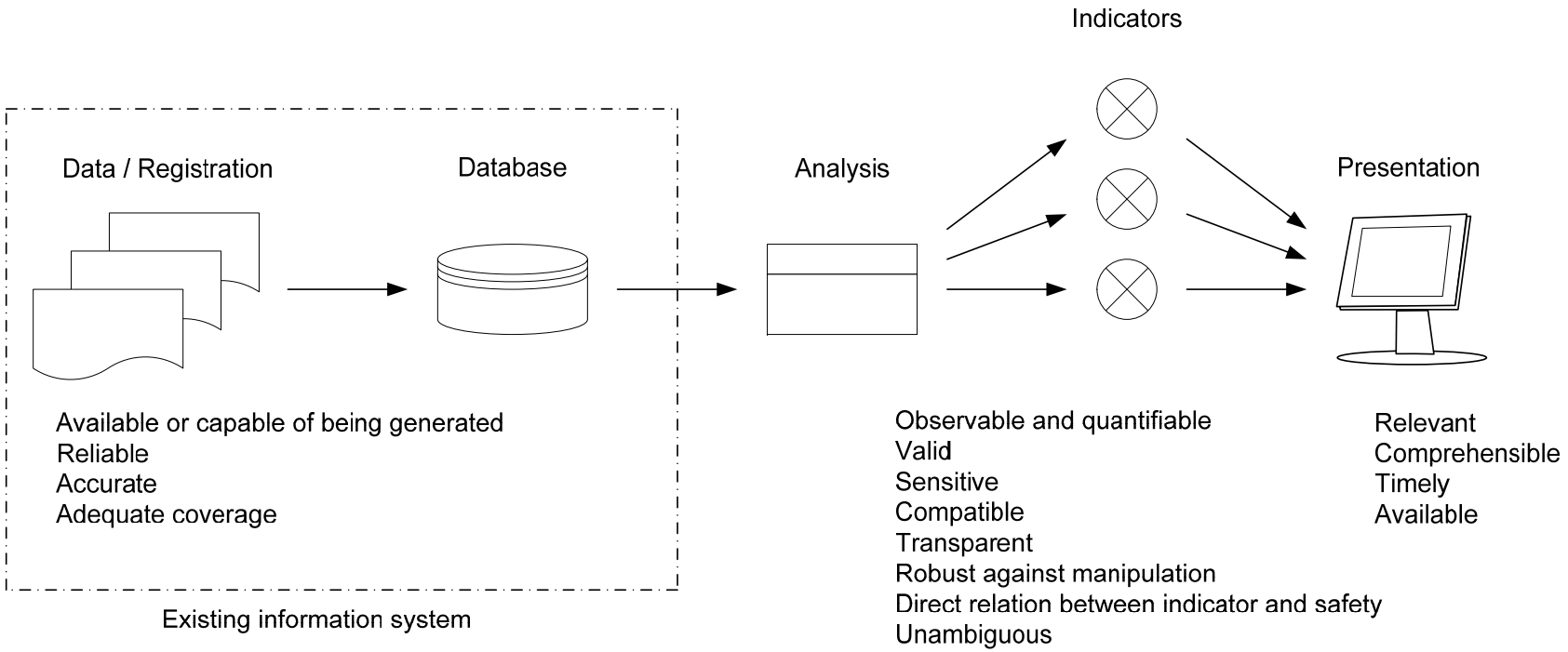
1. Sufficient focus on major accidents

- "**The lost time rate is not a measure of process safety**" (Kletz, 2003).
- "In many of the accidents the **companies concerned had very low lost-time accident rates**. This introduced a feeling of complacency, a feeling that safety was well managed" (Kletz, 2001).
- However, even though the critical overdue maintenance log could provide an early warning, i.e., the system was in place, **failure in using the system correctly resulted in the system failing to provide an early warning (ref. Eirik Raude).**

2. Exceptional conditions for the Northern Regions

- **No discharge is allowed in the northern regions and areas as the Barents Sea**.
- One of the challenges with this is that it involves the **surveillance of systems and equipment that previously have not been considered critical**.
- Petroleum exploration and production in the northern regions is an area of social debate in Norway. **One 'minor mistake' by one of the actors involved may harm the whole petroleum industry**.

3. Criteria for “good” indicators



It is also possible to include criteria for the safety information system as a whole, such as:

- Efficient and understandable
- Administratively feasible
- Able to be integrated into normal operational activities
- Promotion of involvement

A – Absolute requirement
V – Very important requirement

Evaluation of criteria

Examples:
- Number of leaks
- Percentage of maintenance actions identified which are completed to specified timescale

No	Criteria	Kriterier	Evaluation (A, V, -)
1	Data available	Data tilgjengelig	
2	Data capable of being generated	Data kan framskaffes	
3	Accurate data	Nøyaktige data	
4	Data (or indicator) having adequate coverage	Data eller indikator er dekkende (for forholdet)	
5	Observable	Observerbar	
6	Quantifiable	Kvantifiserbar	
7	Valid	Valid (måler det den skal måle)	
8	Sensitive	Sensitiv (følsom/foranderlig)	
9	Compatible	Kompatibel (forenlig)	
10	Transparent	Klar (gjennomsiktig/forståelig)	
11	Robust against manipulation	Robust mot manipulasjon	
12	Direct relation between indicator and safety	Direkte sammenheng mellom indikator og sikkerhet	
13	Unambiguous	Utvetydig/entydig	
14	Significance should be understood	Betydning må være forstått	
15	Manageable set	Håndterbart sett (av indikatorer)	
16	Meaningful	Meningsfull	
17	Controllable	Kontrollerbar (mulig å påvirke/forandre)	
18	Simple	Enkel	
19	Other:	Andre:	