

Six cornerstones of sound PSM lifecycle

Process safety congres, Dordrecht, May 14th 2025





Who we are



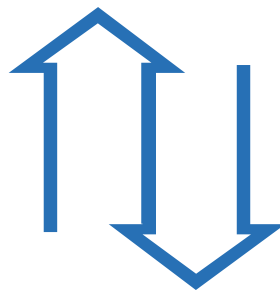
Vision

Creating a better world by making
processes **safer** and **more efficient**

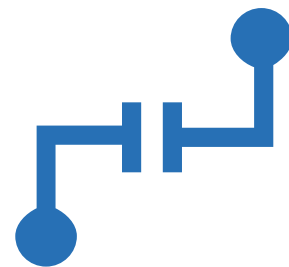




Process Safety



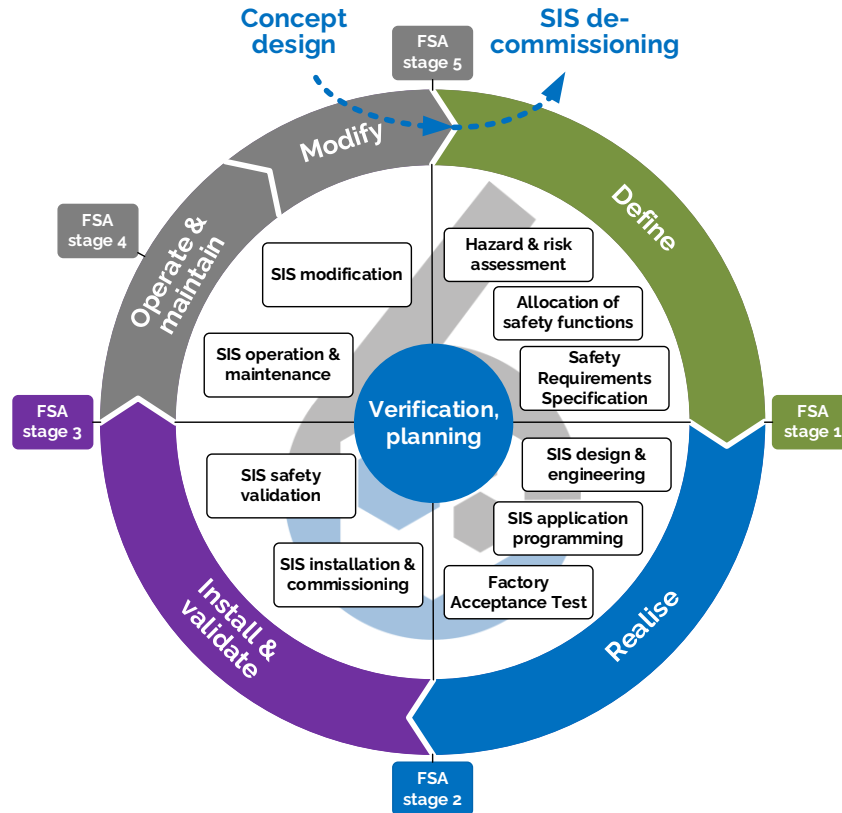
Process optimisation
Energy-efficiency

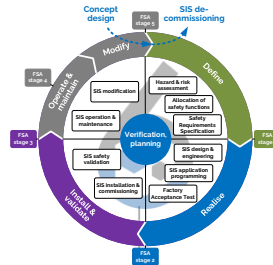


Process Technology Transfer
Process engineering



Functional Safety Management acc. IEC61511





Functional Safety Management acc. IEC61511



1984...a year of disaster

Mexico city

November 19th

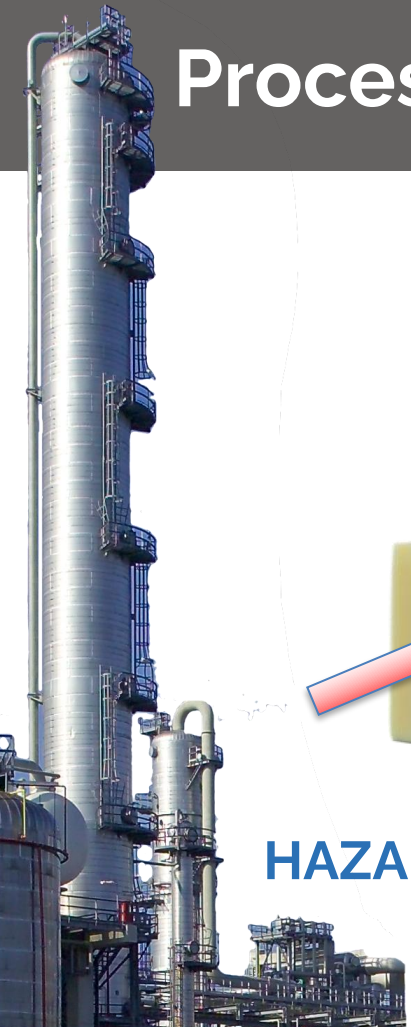


Bhopal

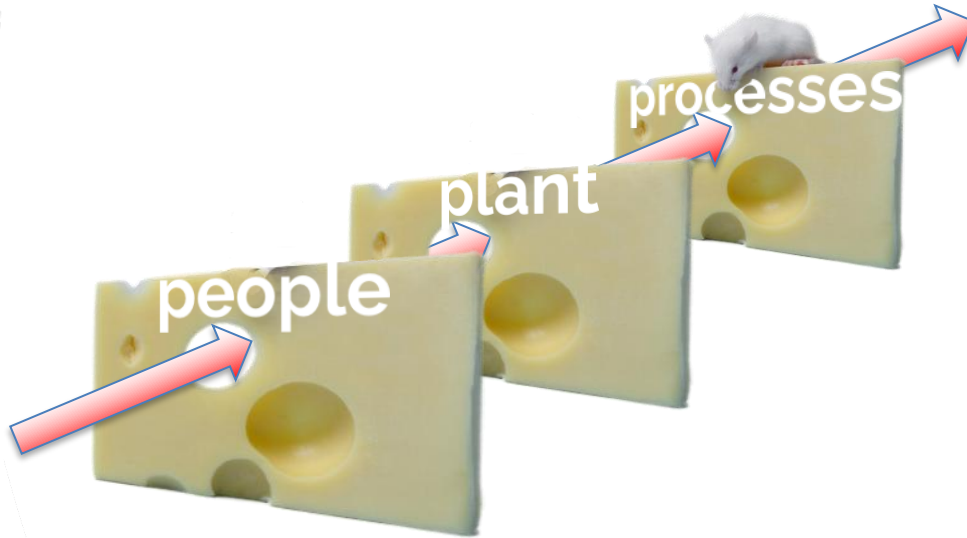
December 3rd



Process Safety Management



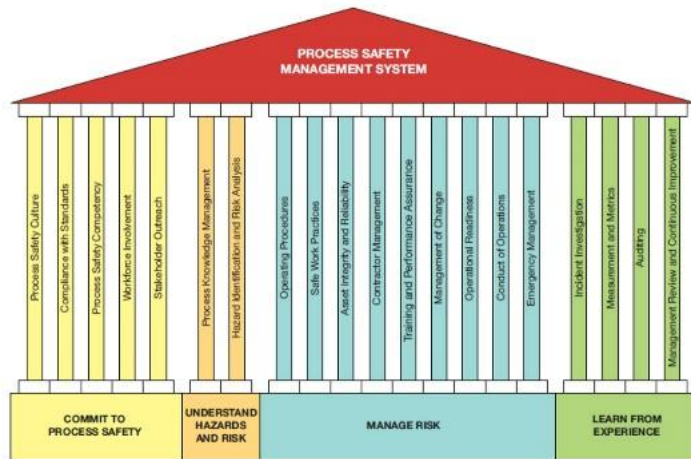
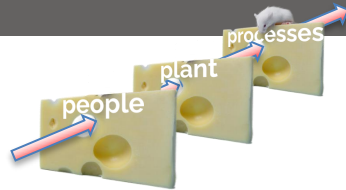
HAZARD



HARM



Process Safety Management



Source: CCPS

HAZARD





PSM Lifecycle

We see PSM as a **continuous** process and have therefore defined PSM as a **lifecycle**, analogously to the safety lifecycle as defined in **IEC-61511**

The PSM lifecycle according to our philosophy contains 6 cornerstones



Leadership ≠ management



Short summary on cultural and behavioral weaknesses

- **Normalization of deviation:** Tolerance for degraded safety barriers without prompt action.
- **Overreliance on individuals:** Leadership effectiveness is person-dependent rather than system-driven.
- **Inconsistent leadership competence:** No structured process safety competency framework for senior leaders
- **Lack of behavioral expectations:** Few organisations define or monitor leadership behaviors related to MAH management

*HSE, Process Safety Leadership Findings of Energy Division
Inspection Programme, February 2025*





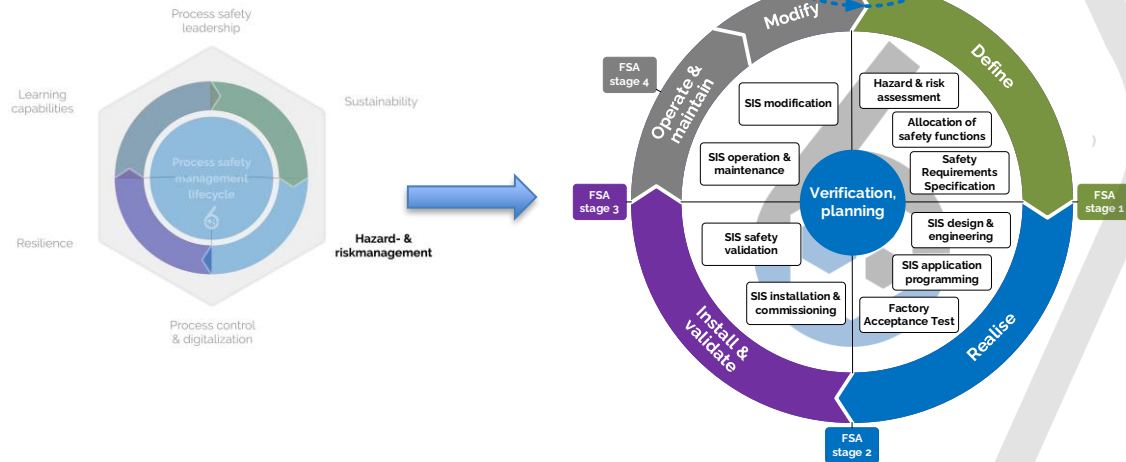
Sustainability

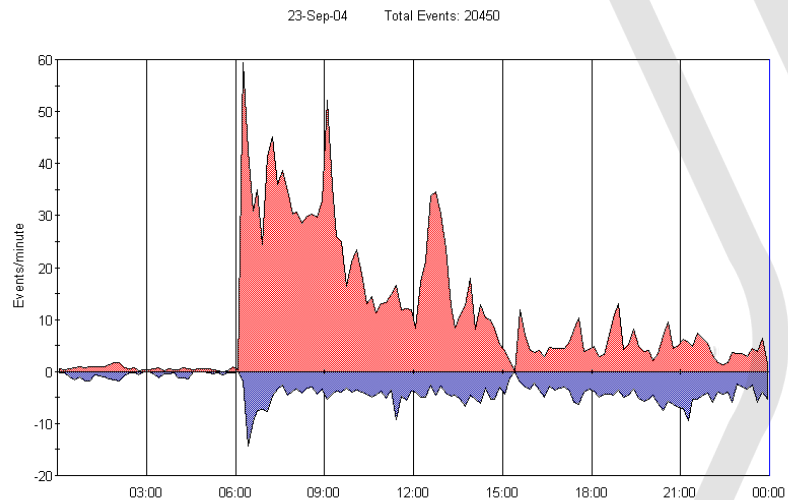
Without sound PSM the environmental and social advantages of sustainability are not fully utilized



Hazard & risk management

This is the point in the lifecycle where deepening does make sense





ALARM

As Low As Reasonably Manageable





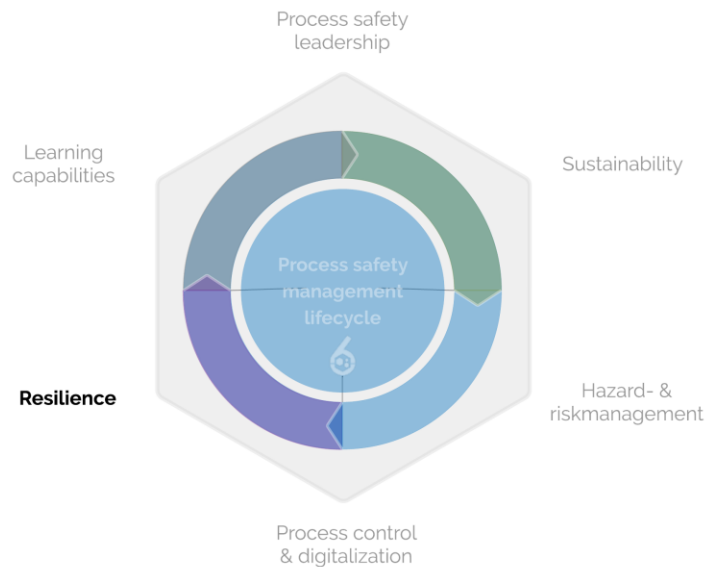
Download rapport

Risicobeheersing op onbekende of onwaarschijnlijke risico's

Shell richtte zich op het beheersen van, al dan niet complexe, risico's met een zekere waarschijnlijkheid van optreden. Risico's kunnen echter ook ontstaan door relaties en interacties van effecten die moeilijk te voorspellen zijn of minder waarschijnlijk lijken. Na een risicoanalyse kan er niet vanuit worden gegaan dat met het beheersen van de voorspelbare risico's alle scenario's geïdentificeerd zijn, en moet risicobeheersing zich ook richten op onbekende of onwaarschijnlijke risico's. Daarvoor is een systeem nodig dat generiek minder kwetsbaar is, flexibel kan reageren op een onverwachte gebeurtenis en zich kan aanpassen aan de omstandigheden van een zich ontwikkelend voorval. Voor Shell is het de opgave om na te gaan of hun huidige systeem dit risico dekt.

Rapport

- 1 Stroomuitval door brand, Shell Pernis 2017
- 2 Reacties op conceptrapport 'Stroomuitval door brand, Shell Pernis 2017'



resilience

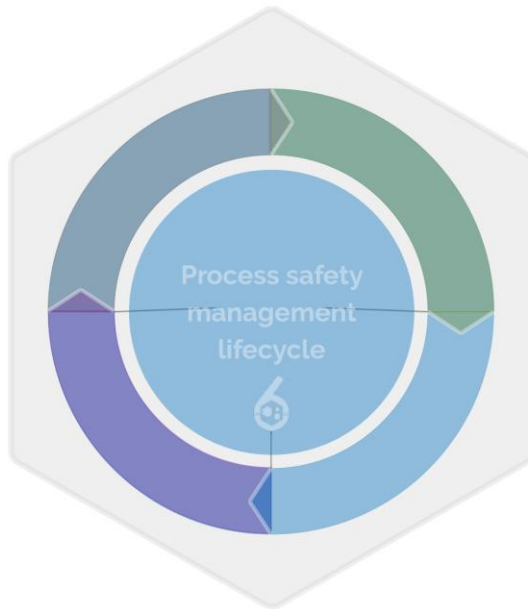
The ability to recover from unexpected scenario's

Pasman *et al.*, Resilience of Process Plant: What, Why, and How Resilience Can Improve Safety and Sustainability, July 2020



**Learning
capabilities**

Resilience



Process safety
leadership

Sustainability

Hazard- &
riskmanagement

Process control &
digitalization



Process Safety Lifecycle Management

