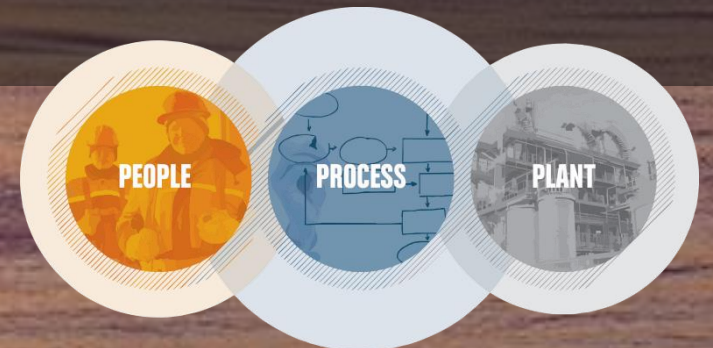


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# Managing Change within a Safety Case Regime

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# SSL OVERVIEW



Process safety consulting, training and engineering organisation (est 1993)

High consequence /low frequency



Key contributor in establishing HAZOP and risk analysis methods across NZ industry.



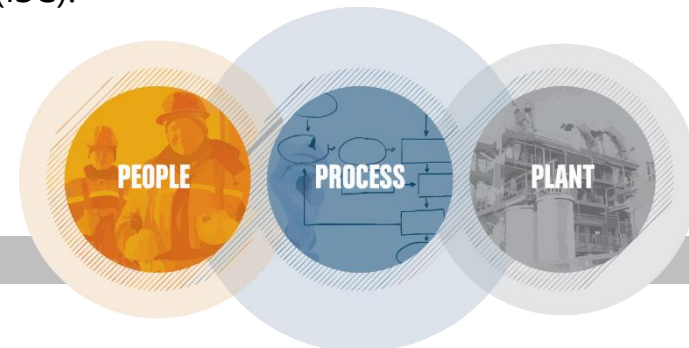
Oil and Gas, Refining, Petrochemicals, Dairy, Pulp and Paper, Geothermal

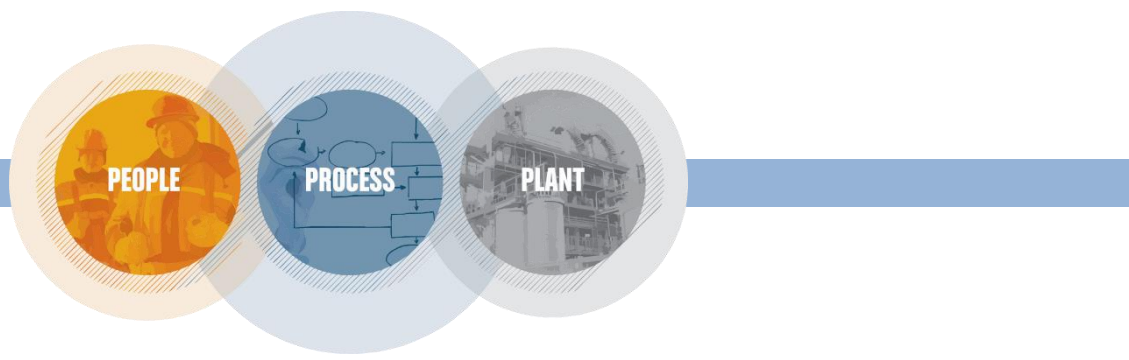


Safety Solutions is an industry supporting partner of the IChemE Safety Centre (ISC).



Paul Feltoe is MD of SSL



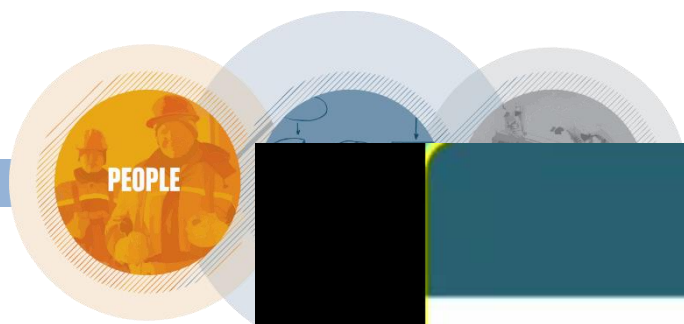


# Safety Cases and MoC – Why?

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**Key Aim of MoC: Ensure that change, does not inadvertently compromise safety**





# Why Safety Case Regime?

1999 Petroleum Regulations  
2013 Refresh of Petroleum Regulations  
2015 HSWA

Aim of a Safety Case Regime is to provide a mechanism for an operator to prove that their risks are being managed

O&G Facilities by definition are hazardous, but not necessarily high risk.



# Key Aspects of a Safety Case Regime

- Major Accident Hazards
- Risk Management
- Emergency Response
- Performance management of SCEs
- Responsibilities and Engagement

**Change** is a threat to the performance of a safety case regime

- Barriers/ safeguards can be weakened
- Hazards can be added
- Opportunities to circumnavigate the barriers







CHANGE?

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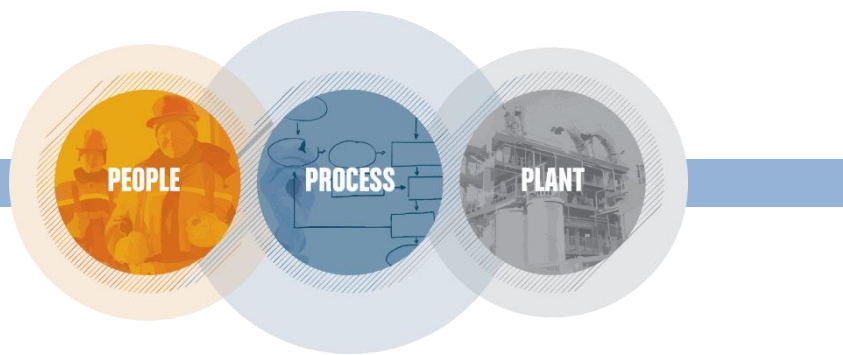
PROCEDURES &  
MANAGEMENT SYSTEMS

ORGANISATION/ PERSONNEL

SOFTWARE / CONTROL

OPERATIONAL STATE

PLANT



## PLANT / EQUIPMENT CHANGES

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SIMPLE UNAUTHORISED  
CHANGES – PLASTIC BAG  
OVER VENT



TAMEHERE COLD-STORE - REFRIGERANT  
CHANGE

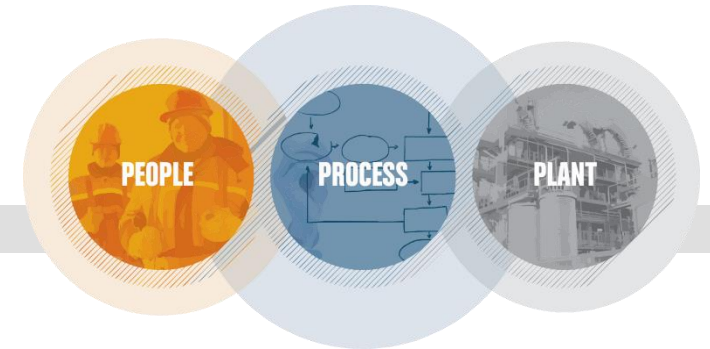
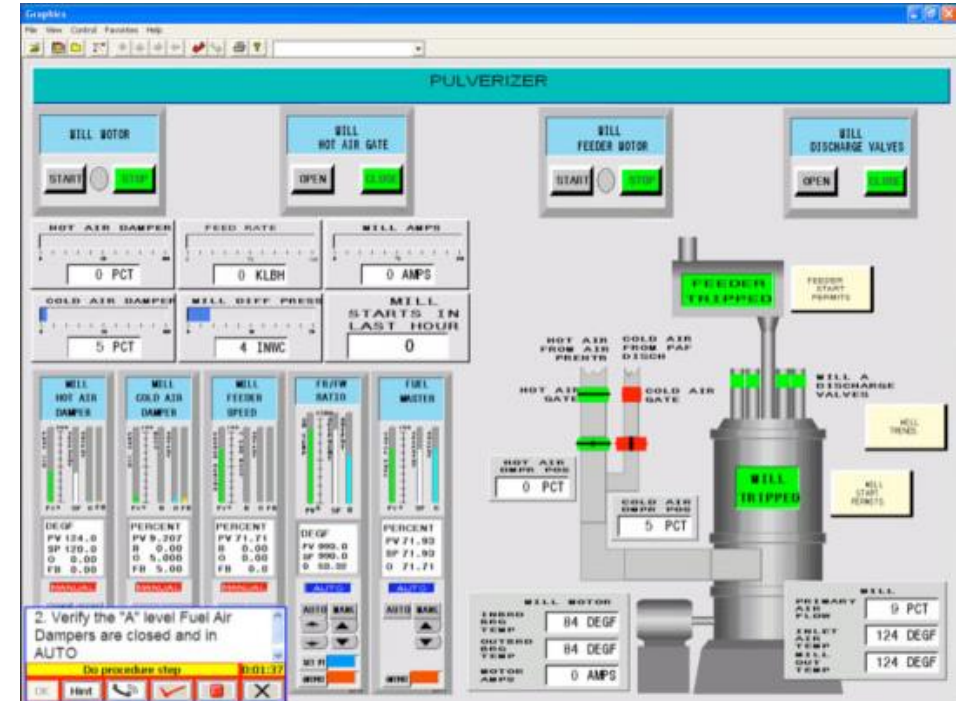


TEMPORARY FIXES



# SOFTWARE / CONTROL CHANGE

- Safeguarding system initiator overridden
- HMI graphics updated
- Alarm settings changed



# PROCEDURES & SAFETY MANAGEMENT SYSTEMS

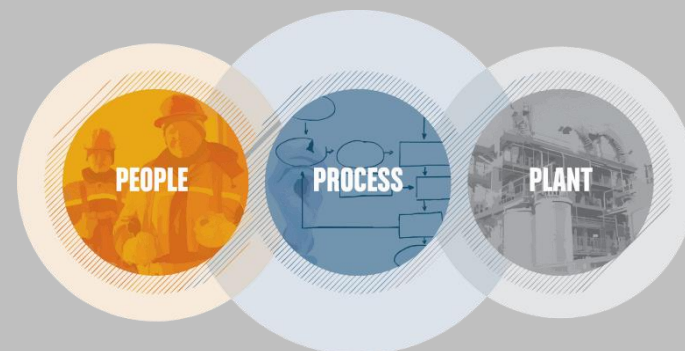
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Operating Procedures not updated to match plant changes

*Esso Longford*

Reactor bypass designed on floor of maintenance workshop

*Flixborough*



# ORGANISATION CHANGES

Personnel Changes

Staffing levels

Skills,

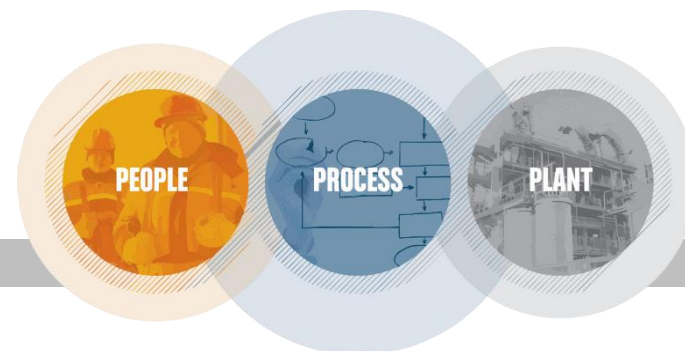
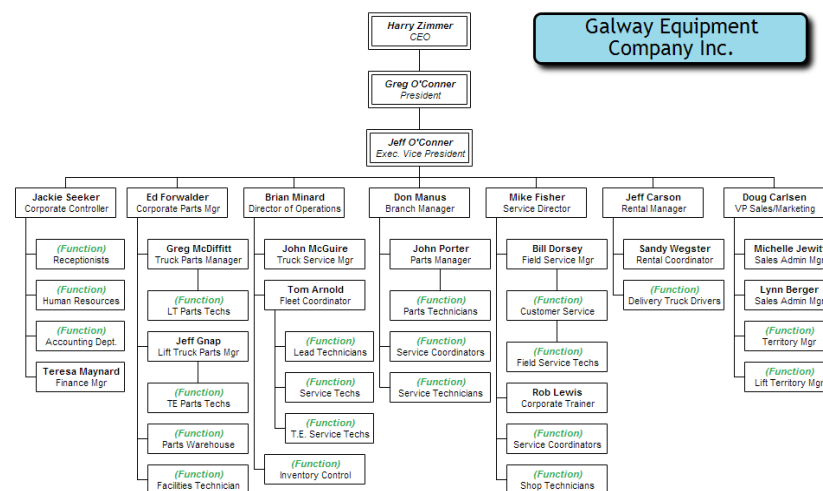
Change of Leadership

Company level

Take-over/merger, restructuring

Contracting Arrangements

*Eg BP Texas City*





# GOOD CHANGE MANAGEMENT = GOOD RISK MANAGEMENT ?



Many significant disasters in recent years have occurred because change had not been managed



Unmanaged change can alter the balance of risks – new hazards, weaker controls, more exposure etc



Change Creep can expose an organisation unknowingly to major risks

# What's in a Safety Case?

- Identification of major hazards (eg multiple fatality potential) – eg V123 rupture
- What are the controls and are they effective (eg PAHH432)?
- Summary of management systems (eg MoC etc) that are in place to ensure controls will work
- Evidence that these systems work and personnel know they need to work
- Wrapped up in report
- PEE regs require Safety Case to describe MoC system



# Oil and Gas – Case 1

- Proposal to move control room closer to facility
- Site had 15 major scenarios
- 8 scenarios had consequences that enveloped the control room
- Control room not rated for potential consequences

**MoC system lacked consideration of the scale of consequences**





# Oil and Gas – Case 2 (Buncefield tank farm)

- Tank high level switch left in disabled state
- Switch required lock in place to work (opposite of normal)
- Not fit for purpose and human error would eventually occur

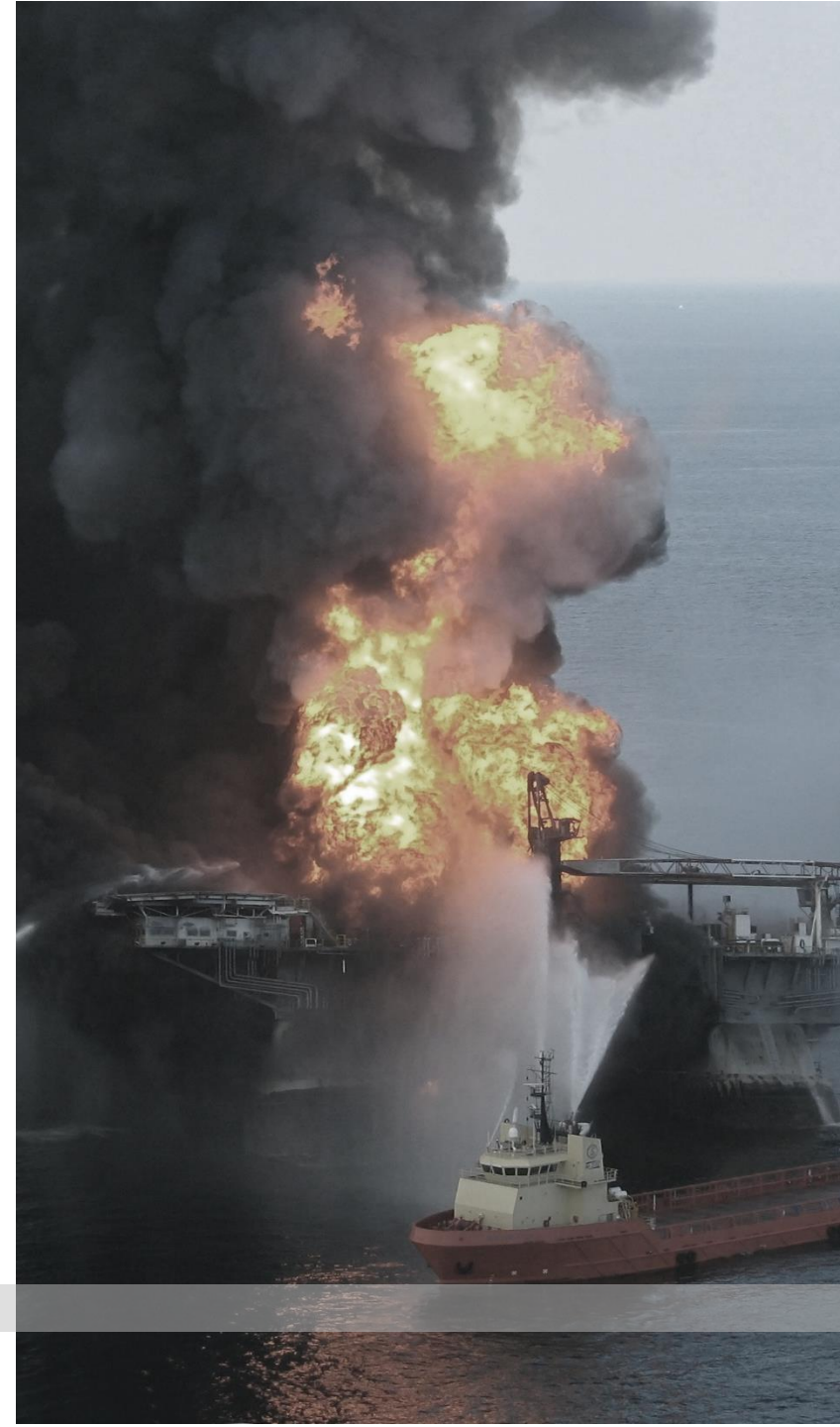
**MoC (within maintenance and operations) did not review how the equipment was going to be used.**



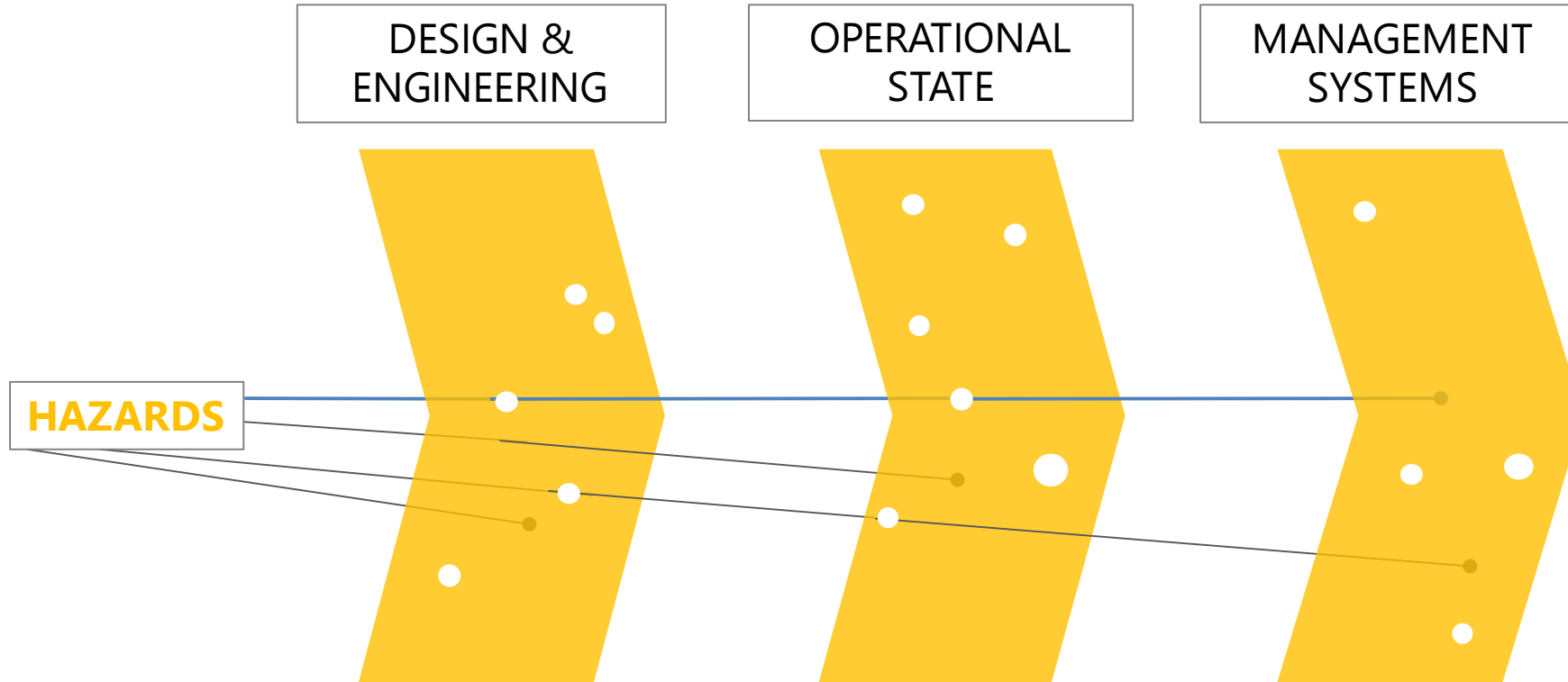
# Oil and Gas – Case 3

- Plant size tripled over 7 years
- Production facility – initially 7 operators (1 senior - nominally a supervisor)
  - ...but supervision aspect of job gradually ceased
- Operators added as plant grew, but supervision not

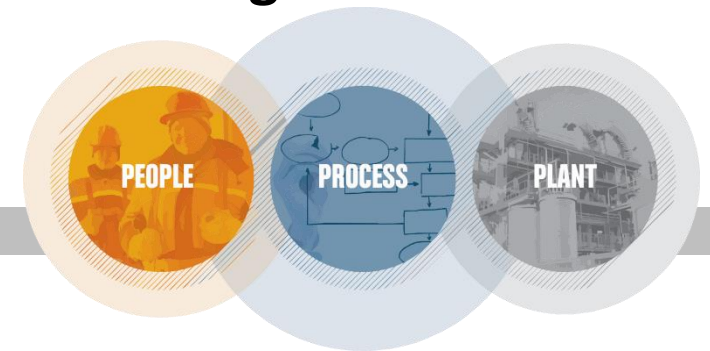
**MoC system of organisational change not in place**



# The Aim of MoC



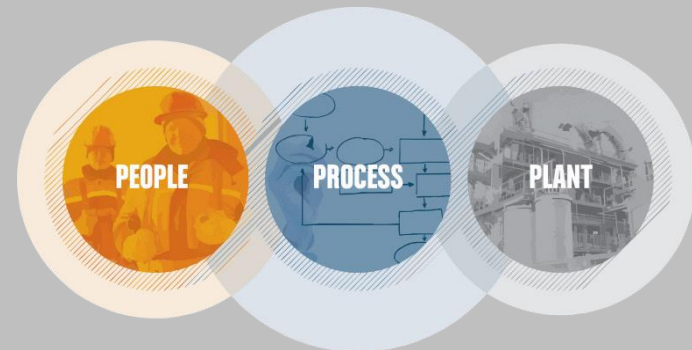
**Minimise/ Eliminate the holes and don't allow them to grow**



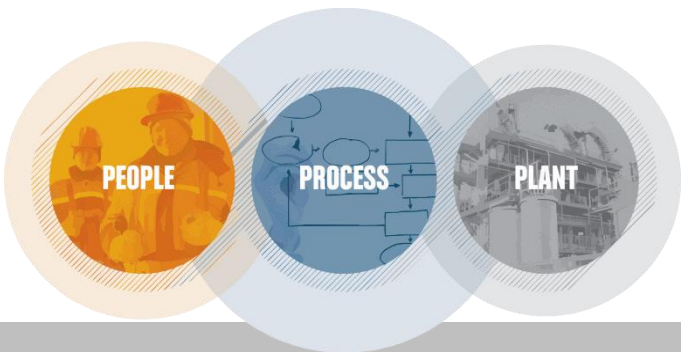
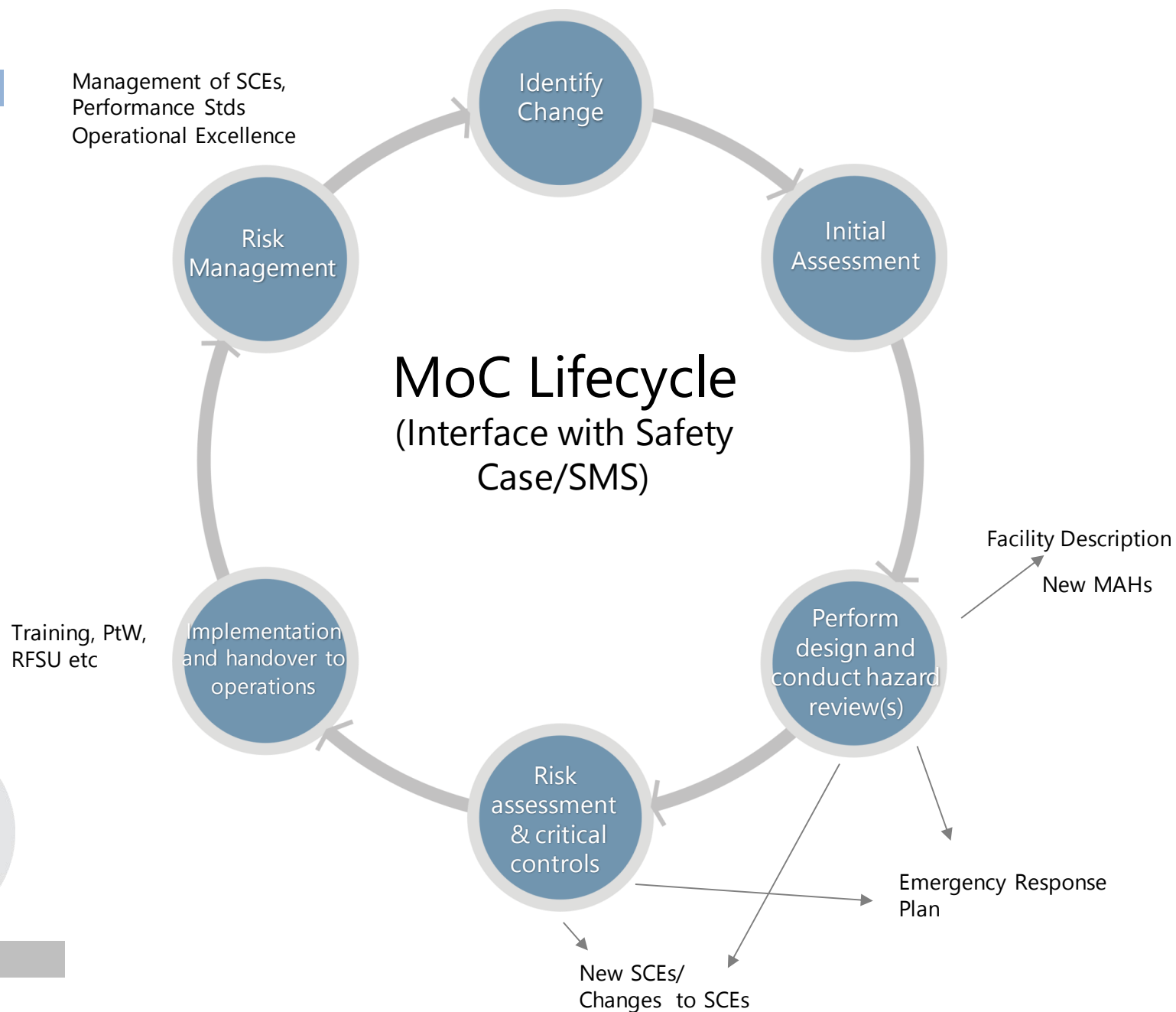


# Designing an MoC System – key features

- Multiple stages (4 to several)
  - Identify, Assess, Implement, Review
- Conscious approvals before moving on to each stage
- Includes all types of change and size (scaleable)
- Assess impact on safety
- Documented, traceable and audited



# MoC needs to be Safety Case aware



# CLOSING

**MoC is the main way an operator can defend the Safety Case and maintain the safety integrity of the installation.**

