

Safety Management Systems – past, present, and future

Dr. Henriette Shen
HKARMS

Outline

- What is a Safety Management System
- Evolution of Safety Management Systems
- Development of a Safety Management System
- How effective is an SMS on safety performance
- Key elements of common standards
- System approach of common standards
- Safety Management Standards
- Lesson Learnt – Management of change
- Maturity of a Safety Management System
- SMS 2028

What is a Safety Management System?

- ▶ A planned, documented and verifiable method of managing hazards and associated risks
- ▶ It is a systematic, explicit and comprehensive process for managing safety risks. As with all management systems, an SMS provides for goal setting, planning, and measuring performance. A safety management system is woven into the fabric of an organization. It becomes part of the culture, the way people do their jobs. (Source: Wikipedia)



Evolution of Safety Management Systems

- ▶ Started with a haphazard collection of “best practice” activities for hazardous industries (prescriptive regulation before 1970s)
- ▶ Moved to a collection of practices to form the strategies by which an organization could demonstrate that all reasonably practicable steps are taken to ensure the safety and welfare of employees and others (organizational responsibility and self regulation from 1990s)

A SMS generates a safe system of work to exercise “duty of care”, and serves as a proof of diligence in legal or regulatory safety investigations.

The drivers for the development of SMSs internationally had been catastrophic industrial accidents.

Development of a Safety Management System

- ▶ Regulatory bodies aggregated safety management activities that appeared to be “best-practice” or “common-sense” to provide comfort and security to organisations’ demand for guidance to meet the self-regulation
- ▶ Basic common attributes of an SMS include:
 - ▶ Identification of safety hazards
 - ▶ Remedial action to maintain safety performance
 - ▶ Continuous monitoring and regular assessment of safety performance
 - ▶ Continuous improvement of the overall performance of the SMS

SMSs regulated for managing catastrophic industrial accidents or generic workplace injury have similar overarching structures and major components.

How effective is an SMS on safety performance?

- ▶ “While most studies analysed demonstrated positive effects of components of a safety management system, there are a number of studies that failed to identify positive effects.”
- ▶ “The findings of one of the studies suggested that the effectiveness of the SMS might only be seen at the organizational level, rather than influencing the rate of unsafe acts.” (safety behavior)
- ▶ “This suggests that in high risk industries, there may well be little relationship between the factors influencing occupational health and safety outcomes, and performance in process safety.”

Reference: A systematic review of the effectiveness of safety management systems, Australian Transport Safety Bureau Transport Safety Report, 2012

How effective is an SMS on safety performance?

- ▶ "...no consistent findings were demonstrated with respect to performance on various dimensions of an SMS and poor safety outcomes from the perspective of low-probability but high-consequence events in the major hazard process industries"
- ▶ "...there have only been a small number of quality empirical evaluations of SMSs and it is unclear as to whether any individual elements of a SMS have a stronger influence on safety over other elements, although management commitment and appropriate safety communications do affect attitudes to safety.
- ▶ "In a study from the UK offshore oil and gas industry which utilized objective safety performance data, 1. management commitment; and 2. health promotion and surveillance were found to be associated with decreased accident rates."

Reference: A systematic review of the effectiveness of safety management systems, Australian Transport Safety Bureau Transport Safety Report, 2012

How effective is an SMS on safety performance?

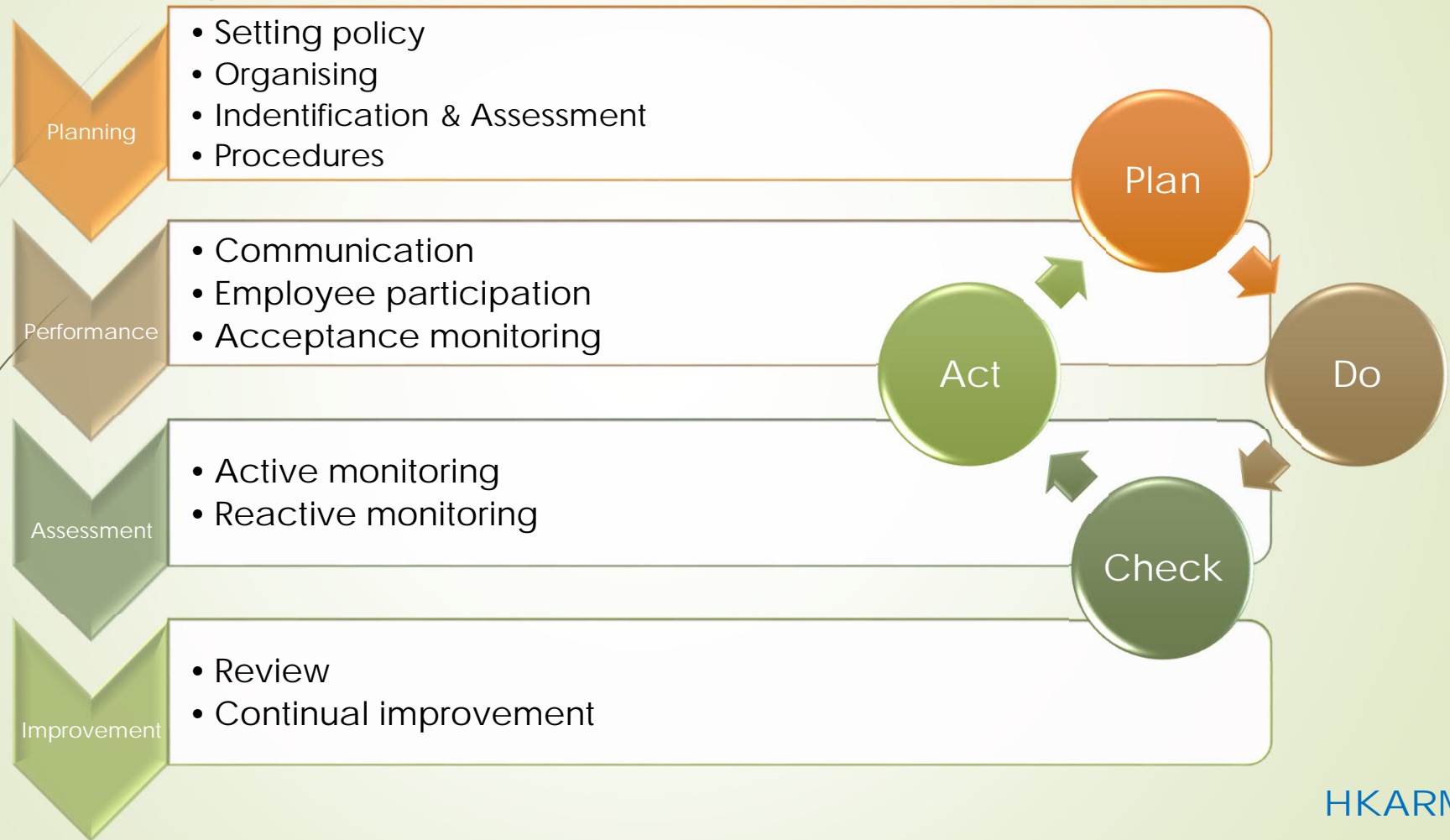
- ▶ "...it just might be the case that the ever growing list of components of an SMS may well result in dilution effort across the spectrum of safety management activities. This dilution of effort may well result in poorer safety performance as the critical components receive less time and effort..."

"...there is no clear objective empirical evidence as to whether there are any critical elements, ..."

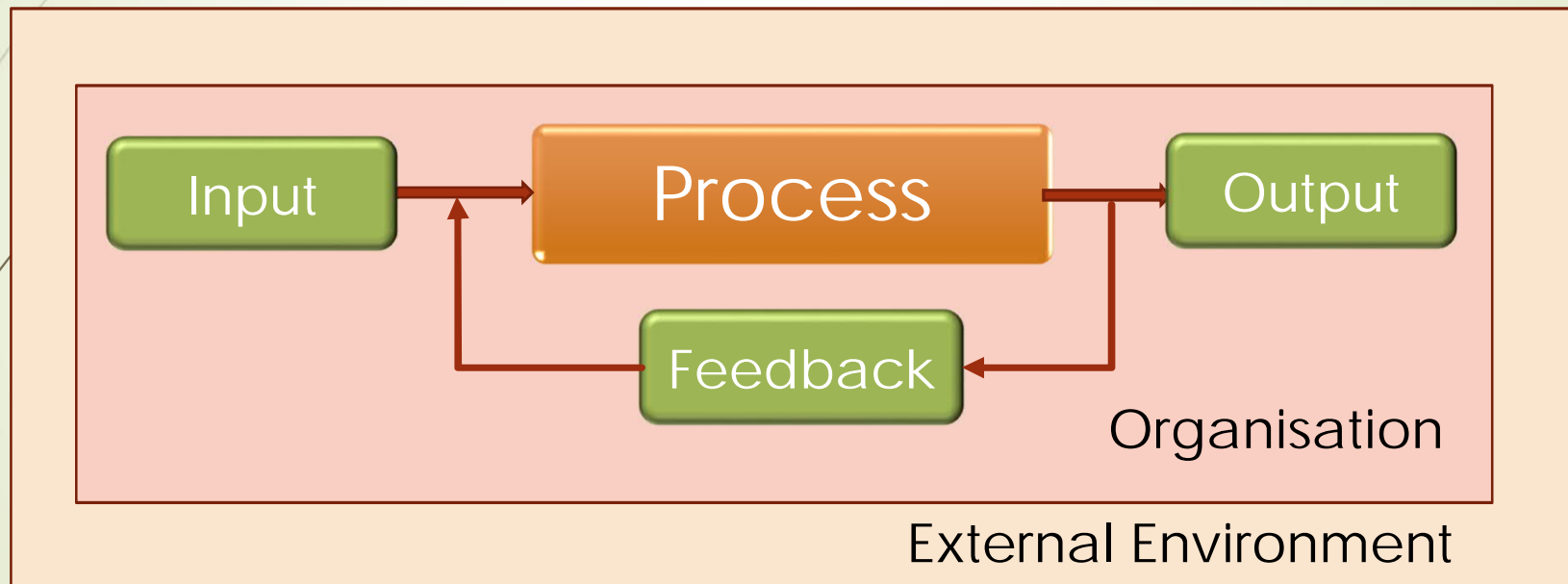
"...the effectiveness of SMSs may well not lie in specific components of the system, but rather in the level of sophistication and effort applied across the system as a whole."

Reference: A systematic review of the effectiveness of safety management systems, Australian Transport Safety Bureau Transport Safety Report, 2012

Key Elements of Common Standards



System Approach of Common Standards



System Approach of Common Standards – target setting

Targets

- ▶ A specific reduction in the number of accidents, incidents and cases of work-related illness
- ▶ A reduction in the level of sickness absence

Arrangements for performance evaluation

- ▶ Health surveillance
- ▶ Accident and illness reporting and investigation procedure
- ▶ Catering and food hygiene procedures

Safety Management Standards

ILO-OSH 2001

- Guidelines on OS&H management systems, applied on national or organizational level
- aligns closely with HSG 65 and BS 8800:2004 but has greater emphasis on employee involvement and national legislation compliance

HSG 65 rev 1997

- A guide published by HSE, used for auditing employers
- promotes actively managing H&S systematically (within the context of managing the whole business) and raises the importance of leadership and employee involvement; more concerned with continual improvement

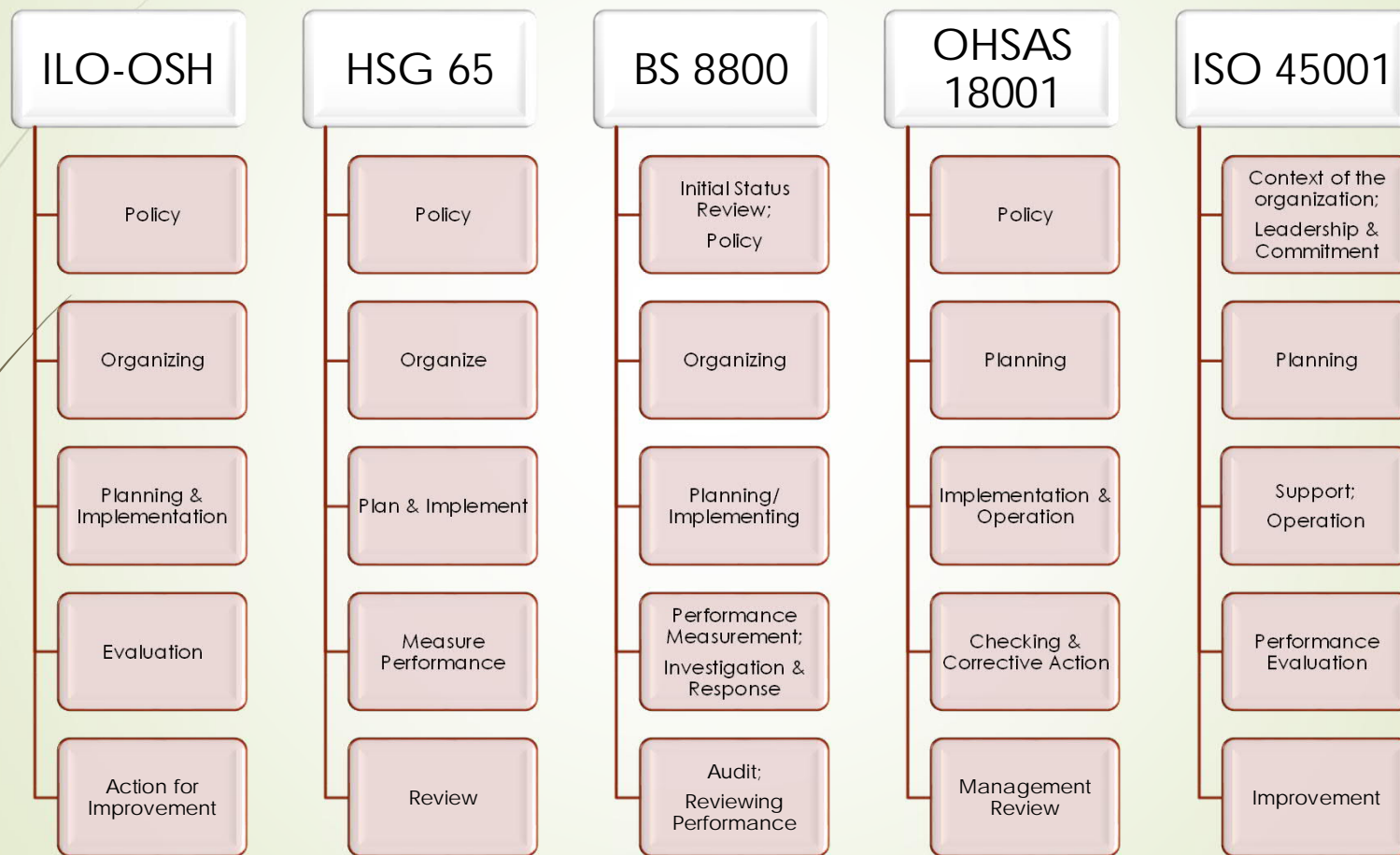
BS 8800 2004

- A guidance standard, based on the structure of HSG 65
- give detailed specifications for the design of a management system with intent and basic requirements same as OHSAS 18001

OHSAS 18001

- An accredited standard for OH&S management, aligns quite closely with HSG 65, BS 8800, and ILO OSH 2001
- Gives more emphasis on health, addresses management of change explicitly

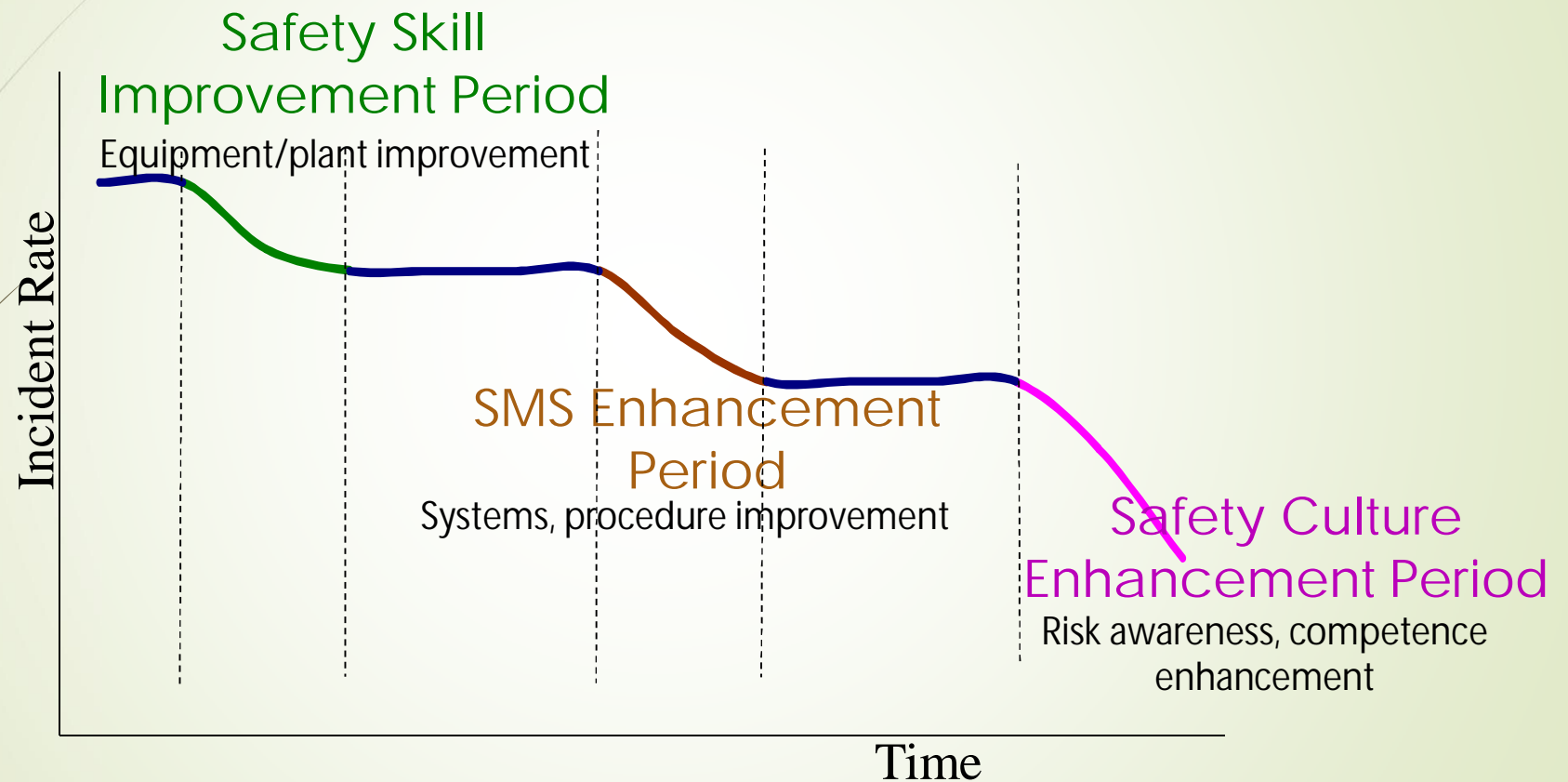
Safety Management Standards



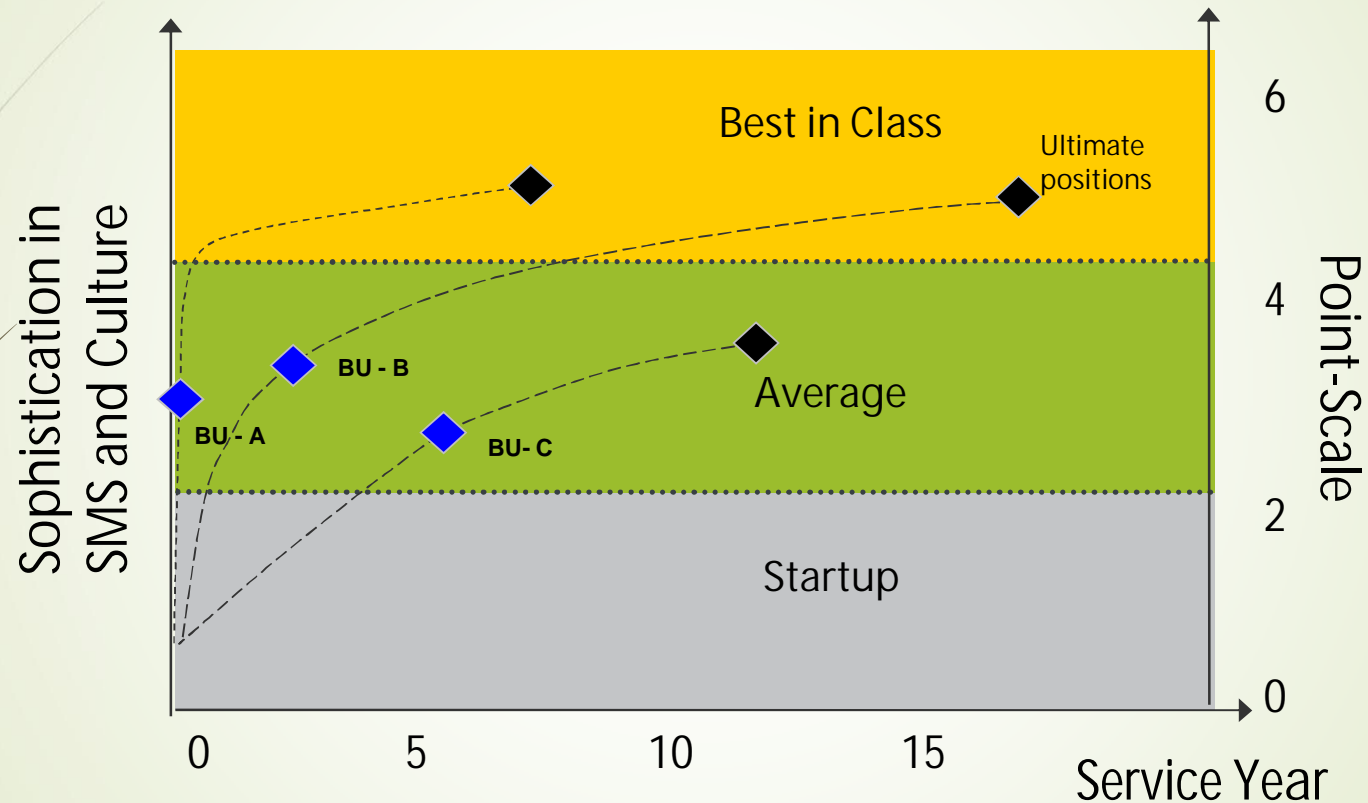
Lesson Learnt: Management of Change

- ▶ Leadership role in a change
- ▶ Involvement of stakeholders from the beginning of an expected change
- ▶ Promotion and communication
- ▶ Minimizing the introduction of new hazards and OH&S risks as the change occurs

Maturity of a Safety Management System



Maturity of a Safety Management System



Business units take different pace in developing SMS and target different level of sophistication.

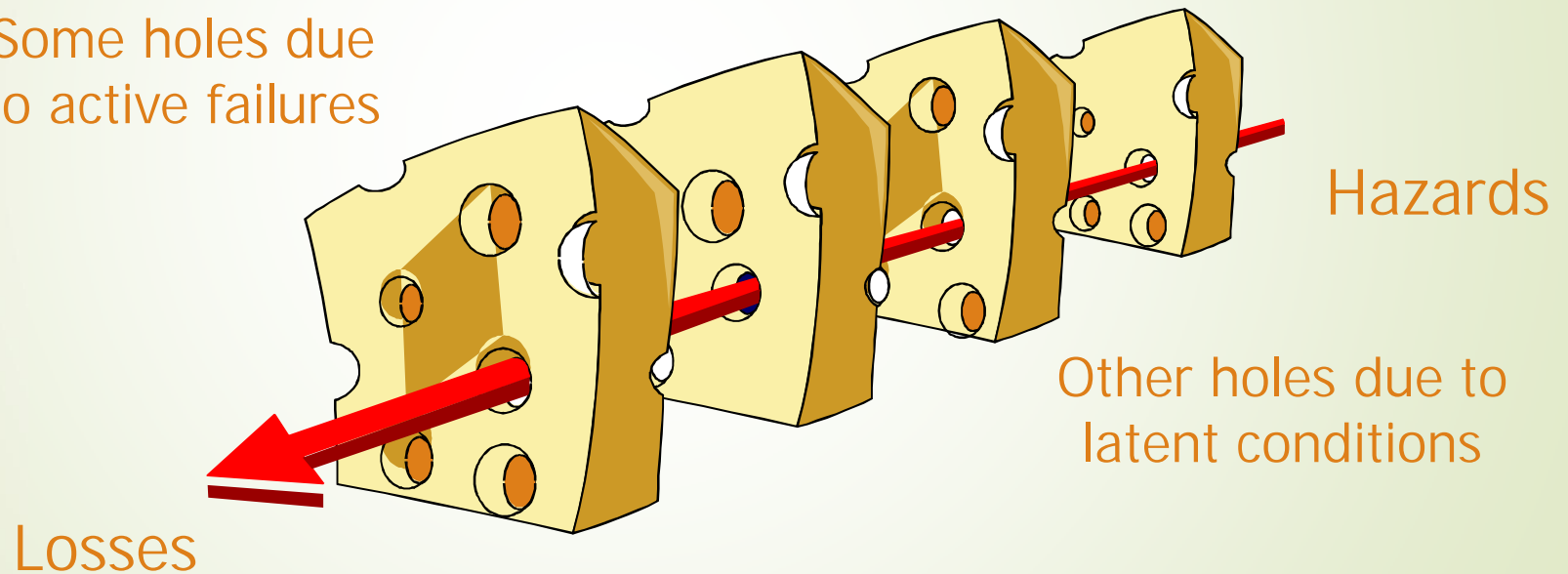
SMS in 2028

- ▶ A bigger switch to health and wellbeing as some of those higher risks are removed through automation?
- ▶ More distributed workforce, remote working in homes, self-driven cars and multiple locations via online platform without a structure interaction?
- ▶ New emerging risks for working with cobots (collaborative robots) and emergency fixing them when they go down?
- ▶ Change in health and safety roles when shifting from humans to intelligent systems (e.g. AI tool for automatic real-time recognition and reporting of hazards)

Something to Think About

- ▶ How safe is safe enough? If we remove a couple of layers of control, is that really going to affect safety?
- ▶ Is the SMS more tailored for minimizing active failures than latent conditions?

Some holes due
to active failures



Something to Think About

- ▶ Can we demonstrate reduction in accident occurrence within an industry or an organization is due to implementation of the SMS?
- ▶ What characteristics of SMS that are most related to the quality of an organization's safety management?
- ▶ "SMSs represent an accumulations of a wide range of common-sense interventions, and such accumulations have a tendency to continually grow." Is there any dilution effect by adding more components to an SMS?

An SMS is only as good as its implementation.

Thank you