Importance of FSM

Management of Functional Safety

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Guidance in Compliance

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Our Members

Who Are We?

- **We are a cross-industry group of organisations with a common interest in functional safety, particularly in applying IEC 61508 and related standards (e.g., IEC 61511, IEC 62061) correctly in order to demonstrate compliance and improve safety for all.**

- Our members include end-users (from many industry sectors), EPC companies, systems integrators, product manufacturers, consultants and certifiers. We also have active relationships with related industry organisations and safety regulators who often attend our meetings.

- We develop and publish many useful and informative guides and assessment tools which are available to all (not just our members) and are free of charge.
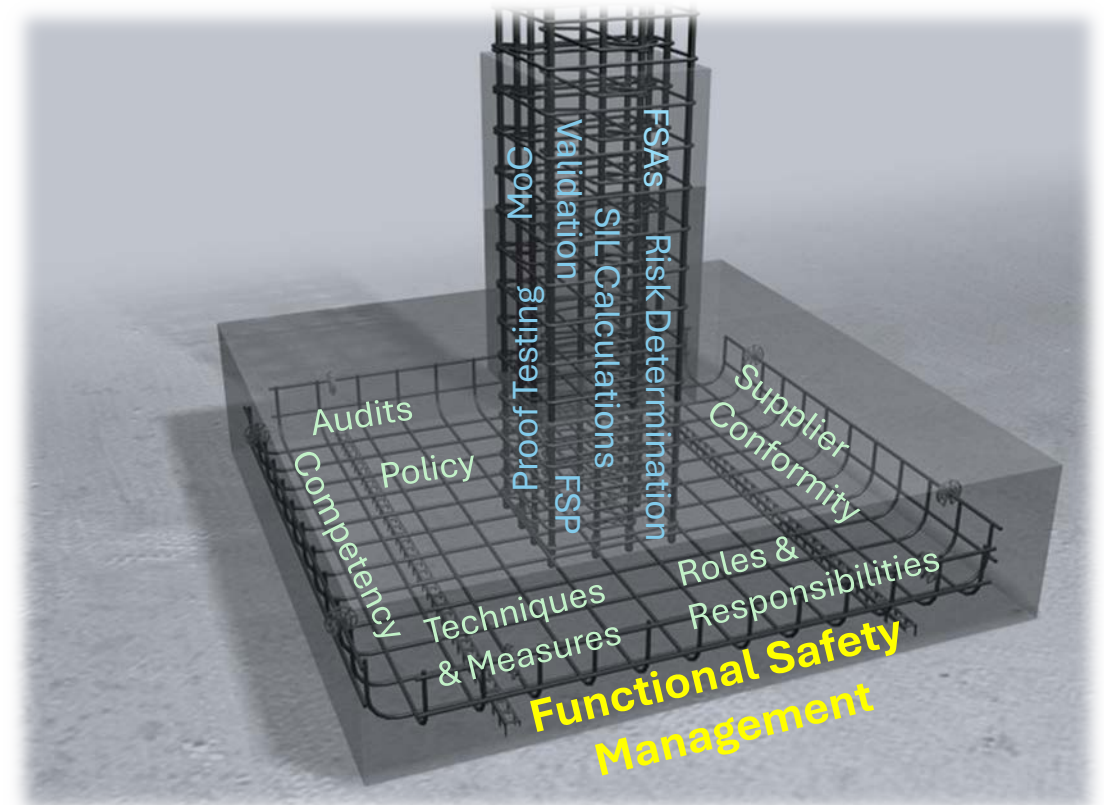
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FSM - Foundation

Functional **S**afety **M**anagement is the **<u>Foundation</u>** to everything we do in Functional Safety

- Ensures we manage
  - People-Plant-Process
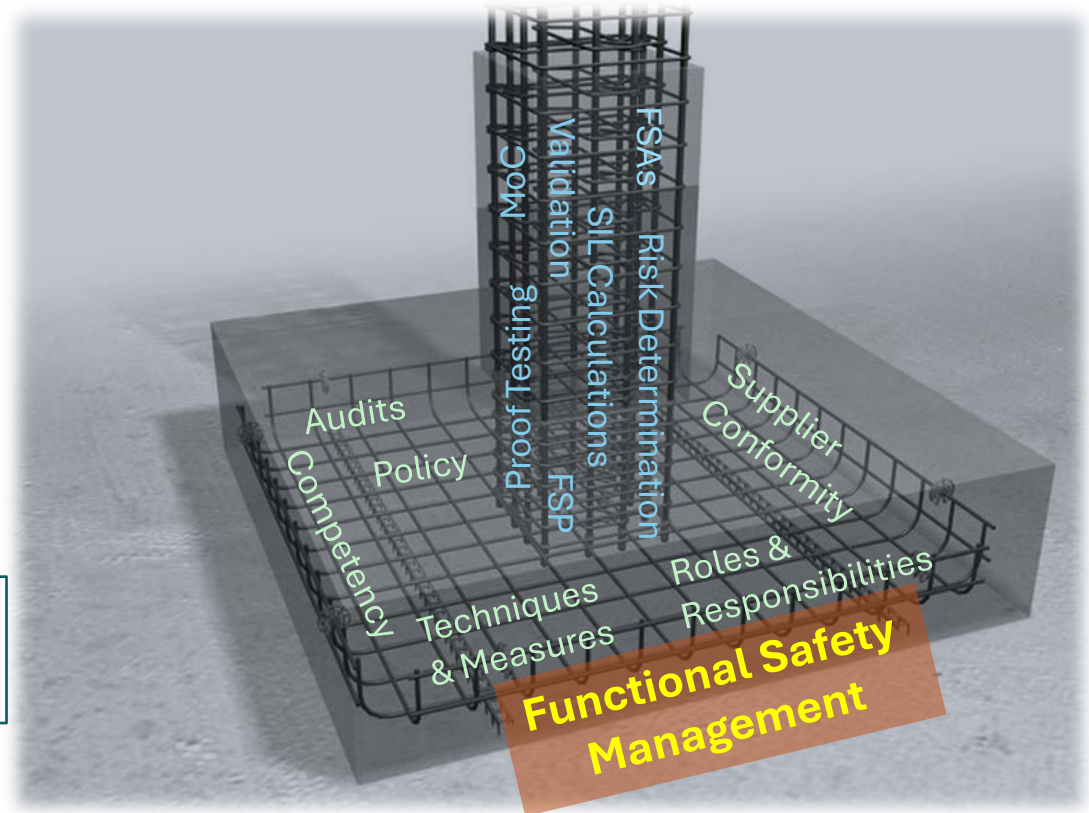
Through Leadership Commitment
  - Ensures Repeatability
  - Maintains Consistency
  - Provides Demonstrable Compliance
  - **Controls Systematic Failures.?**

FSM - Foundation

Functional **S**afety **M**anagement is the **Foundation** to everything we do in Functional Safety

Functional Safety Management
Is **Mandatory**
In all sector specific standards

IEC 61511 Clause 5.2.5.2 Extract

If a supplier makes any functional safety claims for a product or service, which are used by the organization to demonstrate compliance with the requirements of this part of IEC 61511, the supplier shall have a functional safety management system. Procedures shall be in place to demonstrate the adequacy of the functional safety management system.
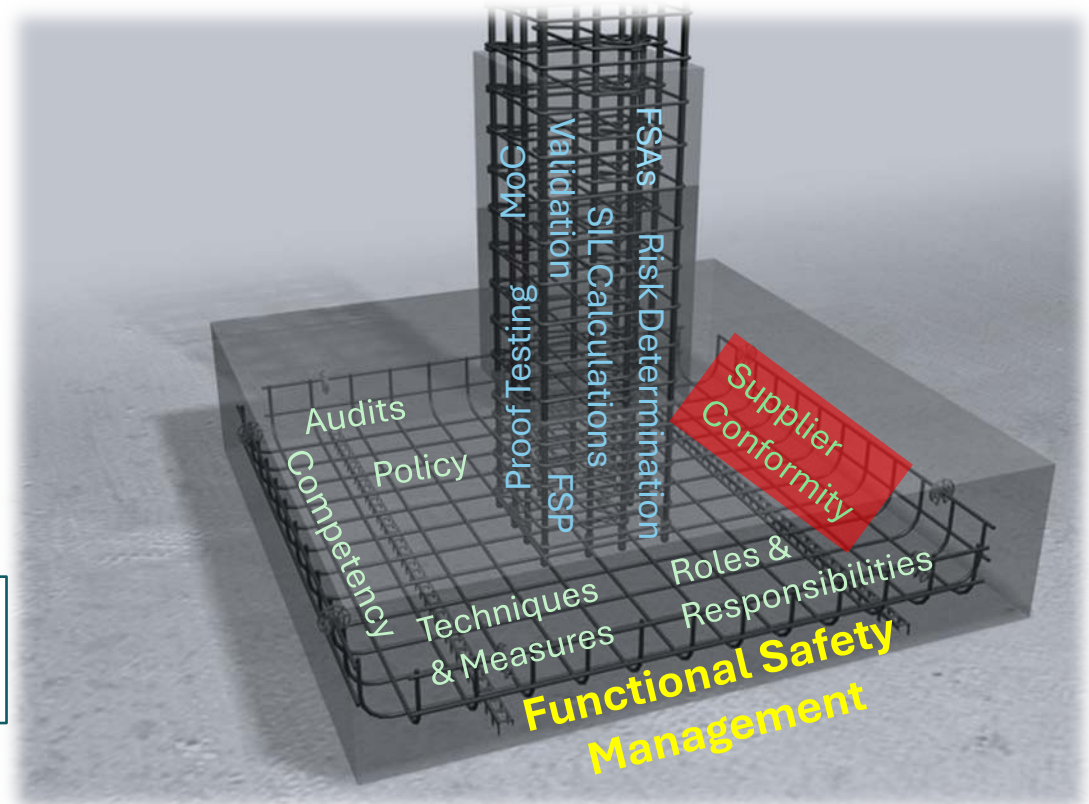

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FSM - Foundation

Functional **S**afety **M**anagement is the **<u>Foundation</u>** to everything we do in Functional Safety

Example

UK - COMAH 2015 Regulation

SCR 2005 Regulation

Places accountability on the Duty Holder

?? Due Diligence of Suppliers – FSM ??

IEC 61511 Clause 5.2.5.2 Extract

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FSM – Quantitative Vs Qualitative
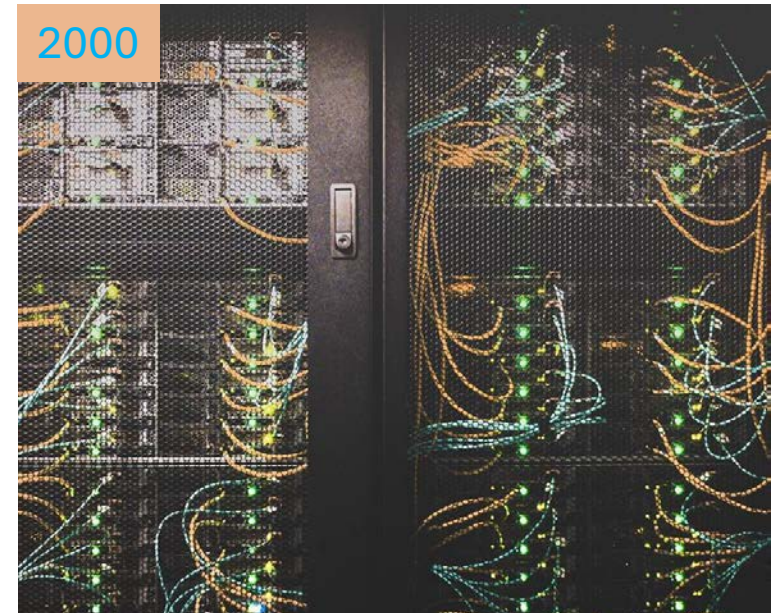
Quantitative
- **Random Hardware Failures**
- **Predictable**
- **Hardware based systems**
  - **E.g. Relay Logic Systems**

1970

Introduction of Software based Safety Systems meant predicting failures wasn't just about Random Hardware Failures

We had to consider *Systematic Failures.?*

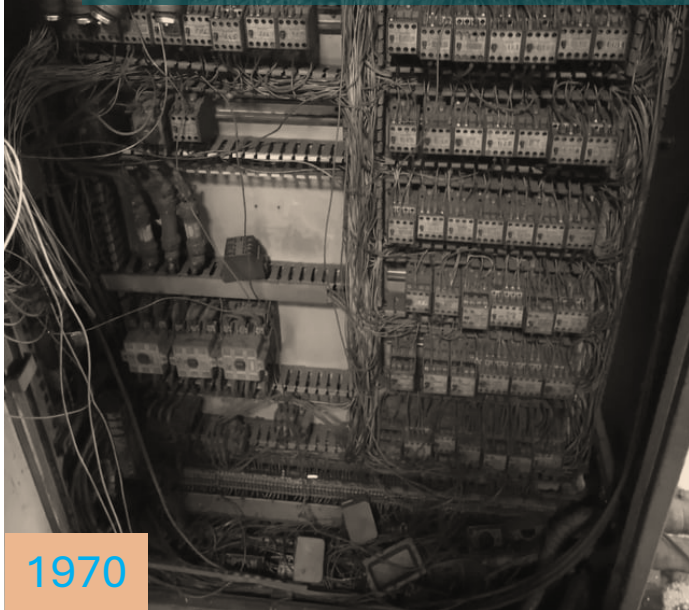**FSM play a Pivotal role in preventing Systematic Failures being introduced**

2000

Qualitative
- **Systematic Failures**
- **Unpredictable**
- **Software Based System**

E.g. PLC Systems

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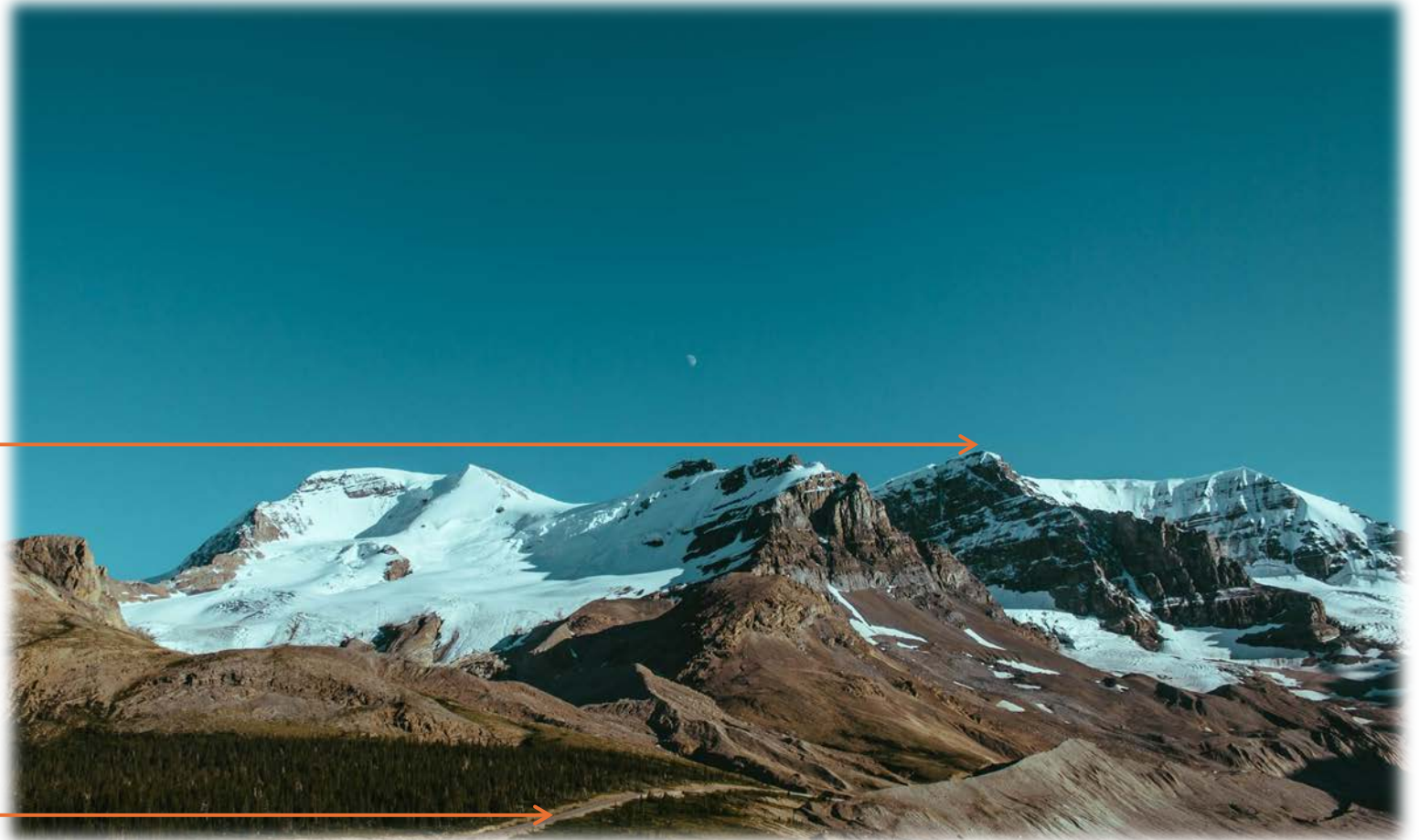
FSM – Starting Point

If we set out to scale a mountain such as Everest in a single stint

We know this is not achievable and failure will be inevitable

So we adopt setpoints, places we can take a break, regroup, recover before carrying on
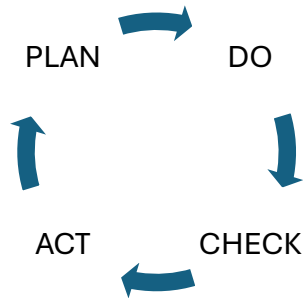
Utopia

Start Here

FSM – Starting Point

If we set out to **develop** a fully compliant **FSM** in a single stint

We know this is not achievable and failure will be inevitable

So we adopt setpoints, places we can take a break, Audit, Review, Update before we carrying on
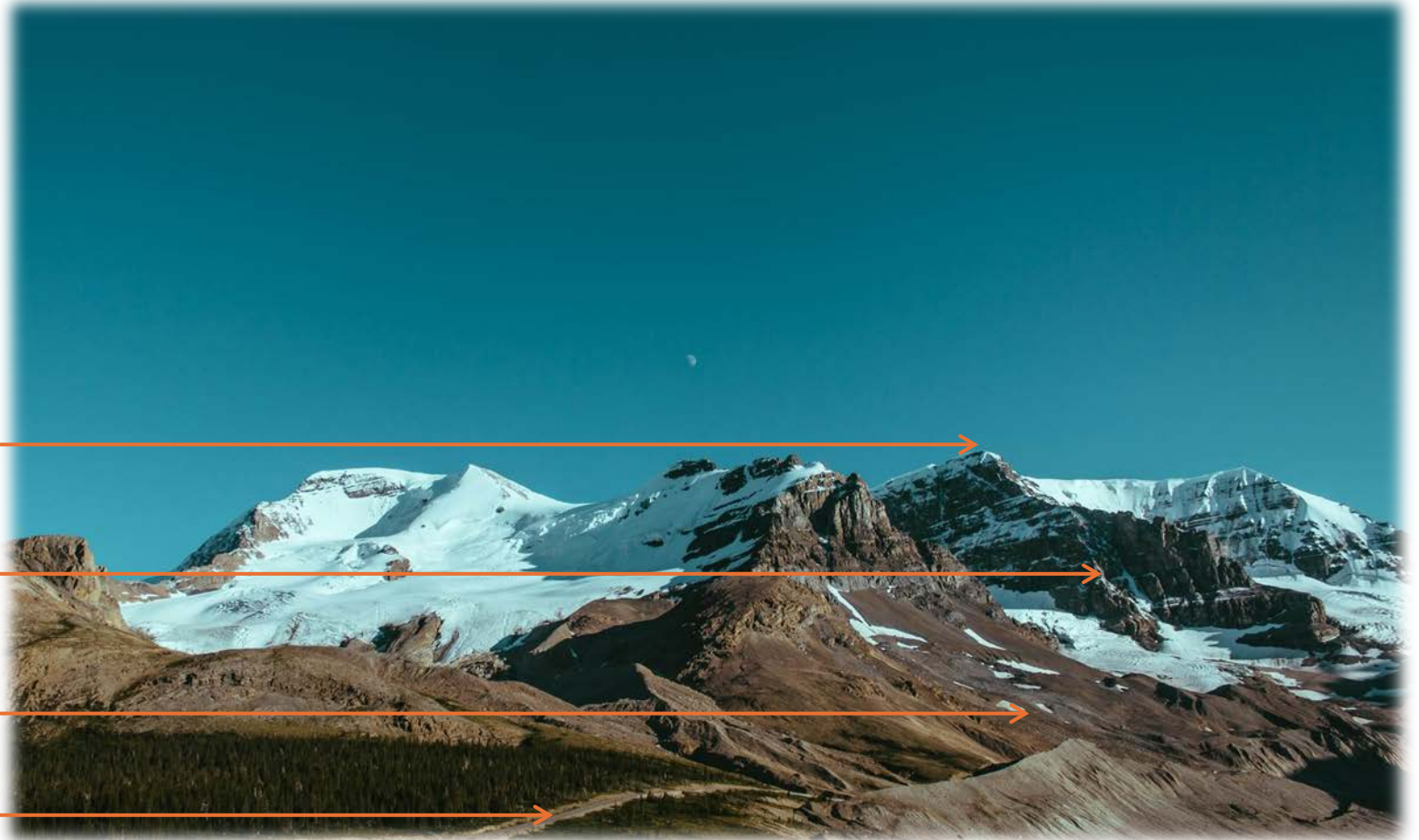
PLAN → DO → CHECK → ACT (cycle)

FSM Utopia

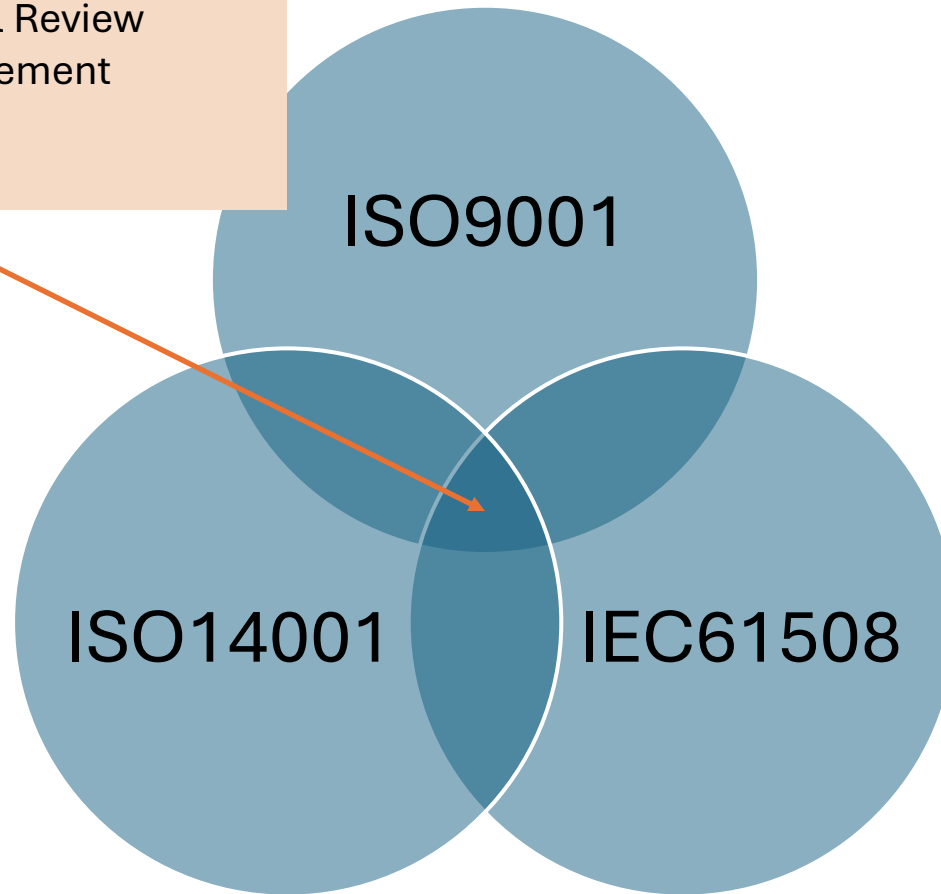FSM Year 2

FSM Year 1

No FSM – Start Her

FSM – Integrated Management System

Most standards pertaining to Management Systems have a set of common requirements which can be integrated to achieve compliance

- Document Management System
- Management Formal Review
- Competency Management
- Supplier Conformity
- Auditing

ISO9001

ISO14001

IEC61508

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FSM – Integrated Management System

Most standards pertaining to Management Systems have a set of common requirements which can be integrated to achieve compliance

Examples
- Document Management System
- Management Formal Review
- Competency Management
- Supplier Conformity
- Auditing

Examples
- Techniques and Measures
- Risk Determination
- Software Design
- Proof Testing

Standard specific requirements can be included in the integrated system under an FSM specific section, no need to have a standalone FSM.

ISO9001

ISO14001

IEC61508

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FSM – Sector / Company Specifics

- ## IEC 61508, usually relevant for manufacturers / integrators.
  - IEC 61508 FSM is often associated with the design and development of products, subsystems and systems.
  - Techniques & Measures (T&M), from part 2 & 3, need to be considered part of the FSM.
  - IEC 61508-2 covers the hardware-based aspects.
  - IEC 61508-3 covers the software-based aspects.

- ## IEC 61511, usually relevant for process duty holders / EPCs.
  - IEC 61511 FSM is often associated with the design and operations of a SIS.
  - Often a FSM for "design" and another for "operations" (and maybe others).
  - Please specifically see IEC 61511-1:2017 Cl. 5.2.5.2.

FSM – Sector / Company Specifics

- IEC 62061, usually relevant for machinery manufacturers / integrators.

  - IEC 62061 FSM (safety planning) is often associated with the <u>design</u> of safety-related control system (SCS).
  - Important to note that a safety "product" may be a "machine" (IEC 61508).
  - Large / integrated and / or complex machinery may require more of a "full" FSM.
  - No requirement for a FSM with the machine operator, but experience shows this can help for other legislation (e.g., PUWER, WED).

- FSM principles are the same between all sectors!

- Take care for where the sectors overlap e.g., machinery used in the process sector, smaller burners in the process sector.

FSM - Misconceptions

- FSM is not mandatory.
- Our company does not need FSM as our supplier has it (sector).
- Implementing a FSM is costly so I'm not going to do it.
- FSM is for my HSEQ manager to deal with.
- I have a document called FSM, so I'm compliant.
- I have a member of the team who has done a course, so I have FSM.
- I have a consultant, so I don't need a FSM.
- I have FSM but competence management is not required.
- We have "gold standard" FSM.

Any Questions?

Presenter: Andy Derbyshire, Peter Brown
Contact Details: info@61508.org
What's next....

Slot	Start Time	Paper	Workshop	Finish Time
-	10:50	COMFORT BREAK AND NETWORKING (Oak Room)		11:20
5	11:20	Slot A-5: Digitalise Functional Safety, Reduce the Burden	Slot B-5: Functional Safety and the Importance of Competence	11:50
6	11:55	Slot A-6: Concerning Assumptions for Cyber Security and Functional Safety	Slot B-6: **CASS 61508** & **62061** Workshop	12:25

We would be more than happy to discuss membership with you (https://61508.org/membership/)

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