

Omnibus Technical Regulation

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Pune 25-09-2023

Content



- Introduction
- Machine “Functional” Safety
- Iceberg Theory
- ISO- Safety Standard Structure
- OTR
- Challenges

Vision & Mission

Goal : Together with Customers & Partners, We are Turning workplaces into safer places

tec.nicum
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tec.nicum Schmersal Group

“The tec.nicum team powered by the Schmersal Group works to assure our clients receive the highest quality engineered safety service. Leveraging our extensive industry knowledge and application experience our goal is to help in the optimizing of production processes through efficient safety following the latest local and international standards. By utilizing our global network of safety engineers, tec.nicum is able to meet the safety requirements of our customers by providing a *neutral approach every time, everywhere.*”

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Functional Safety

Functional Safety

IEC 61508

Functional Safety is to design the system to prevent dangerous failures or to control them when they arise.

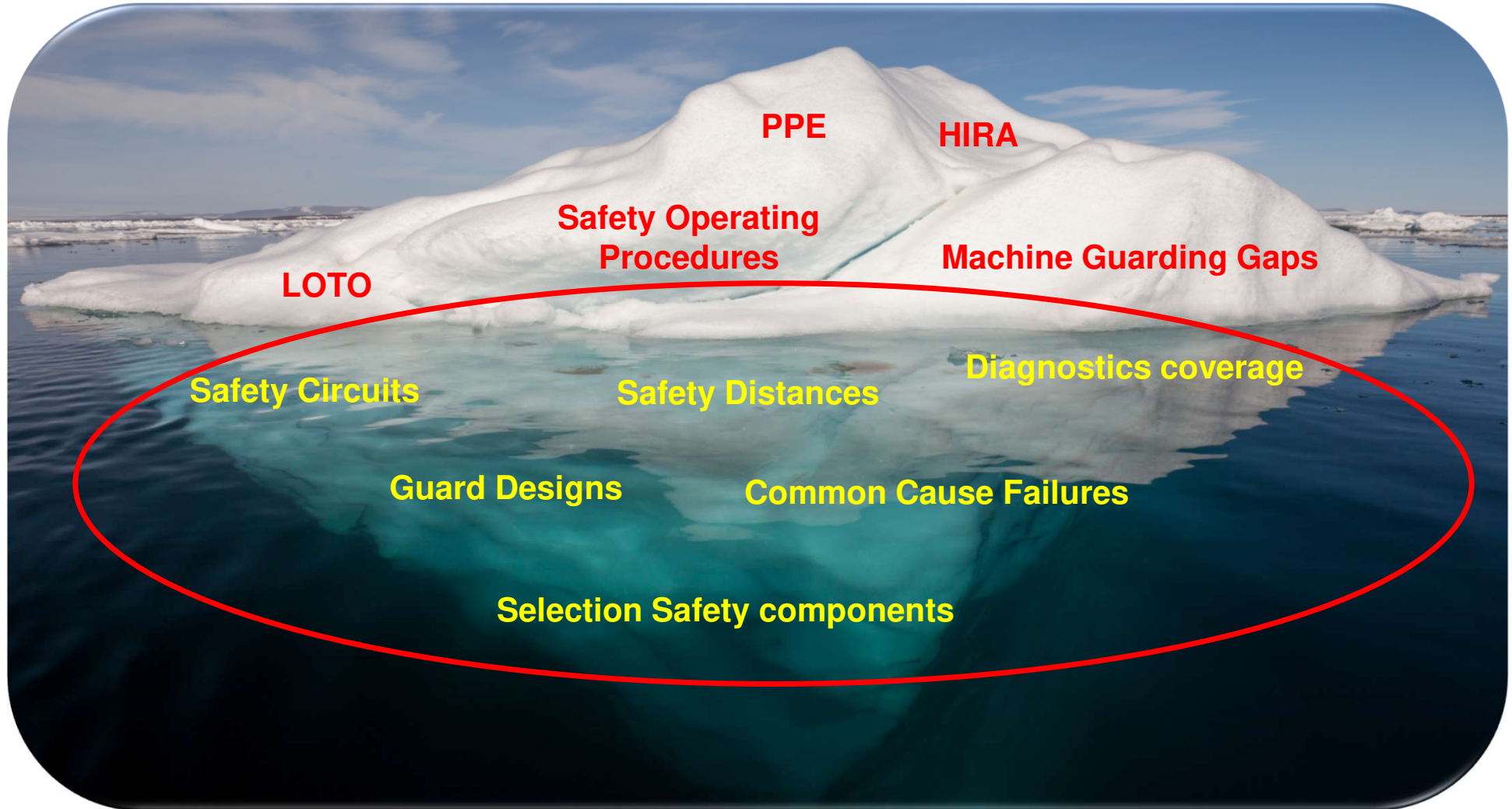
Functional safety is part of the overall safety of the machine and the machine control system that depends on the correct functioning of the Safety-related Control System (SCS) and other risk reduction measures.

- Incorrect specifications
- Omissions in the safety requirements
- Random hardware failure mechanisms
- Systematic hardware failure mechanisms
- Software errors
- Common cause failures
- Human errors
- Environmental influences
- Supply system voltage disturbances



Iceberg Theory

Iceberg Theory
Machine Safety

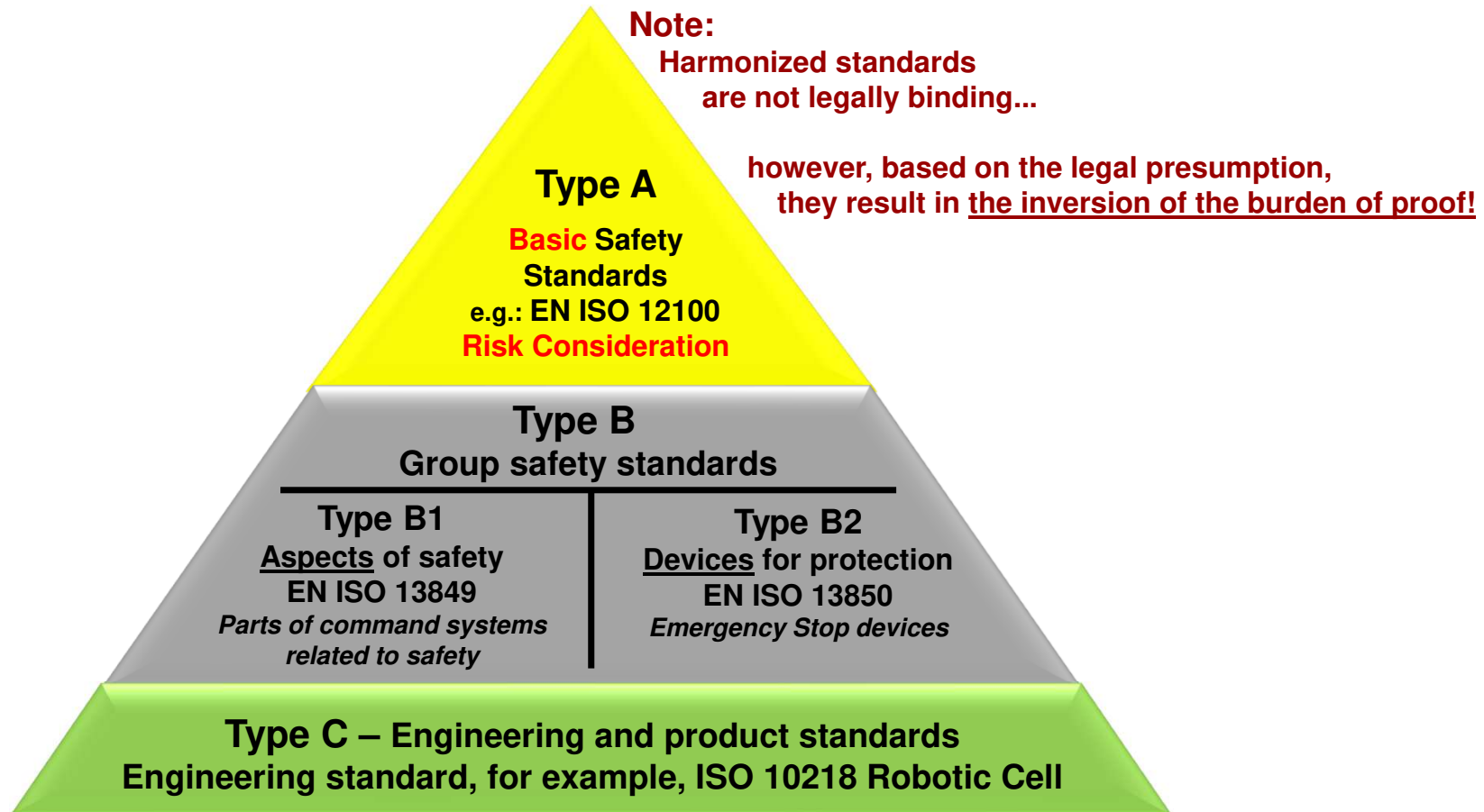


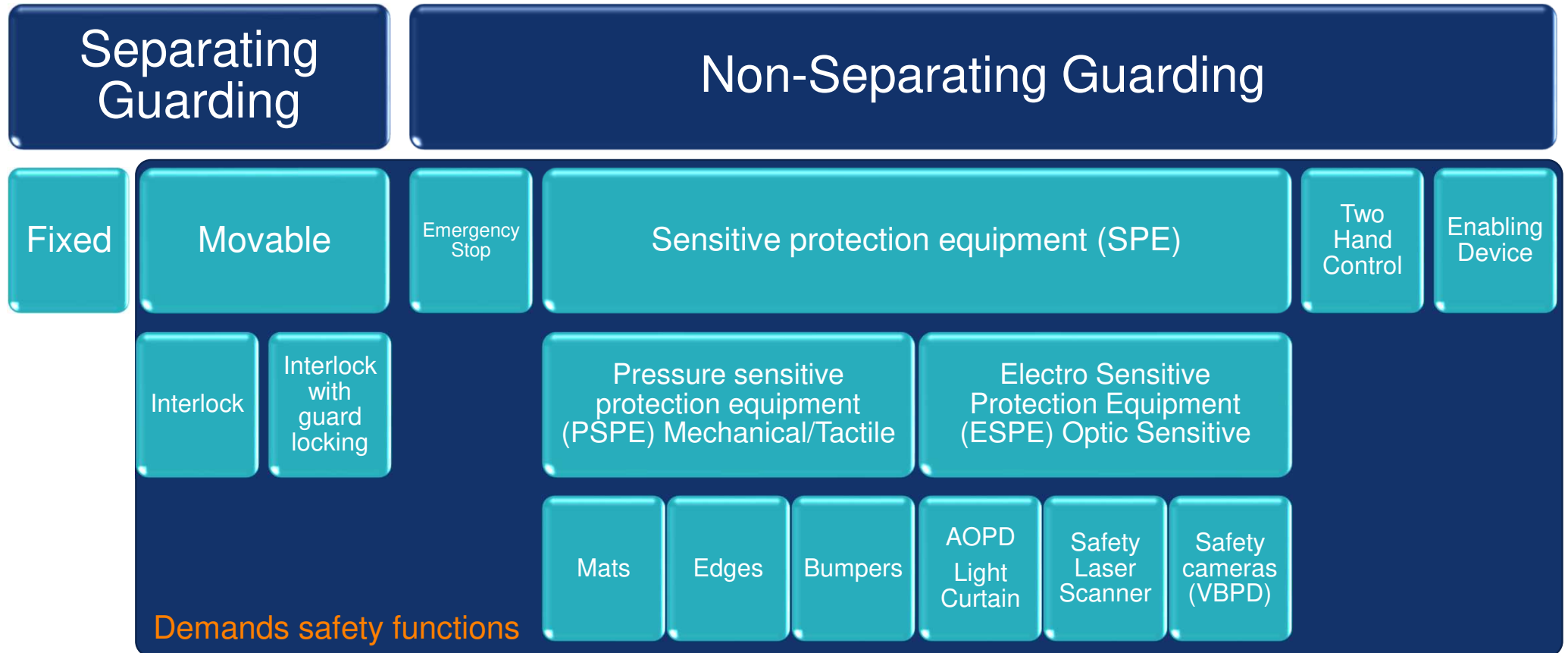


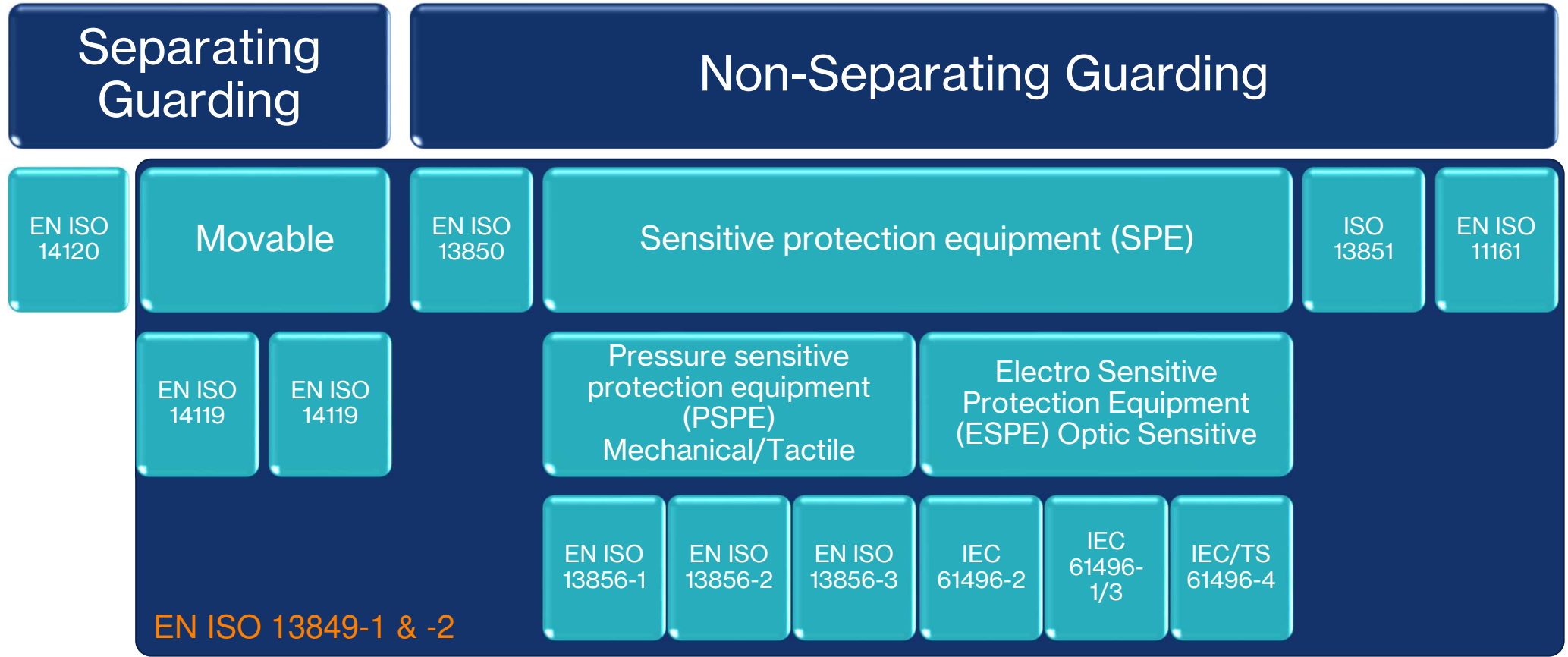
Safety Standard Structure



International Legislation







OTR

Omnibus Technical Regulation

File No.9/28/2019-HE & MT
Government of India
Ministry of Heavy Industries

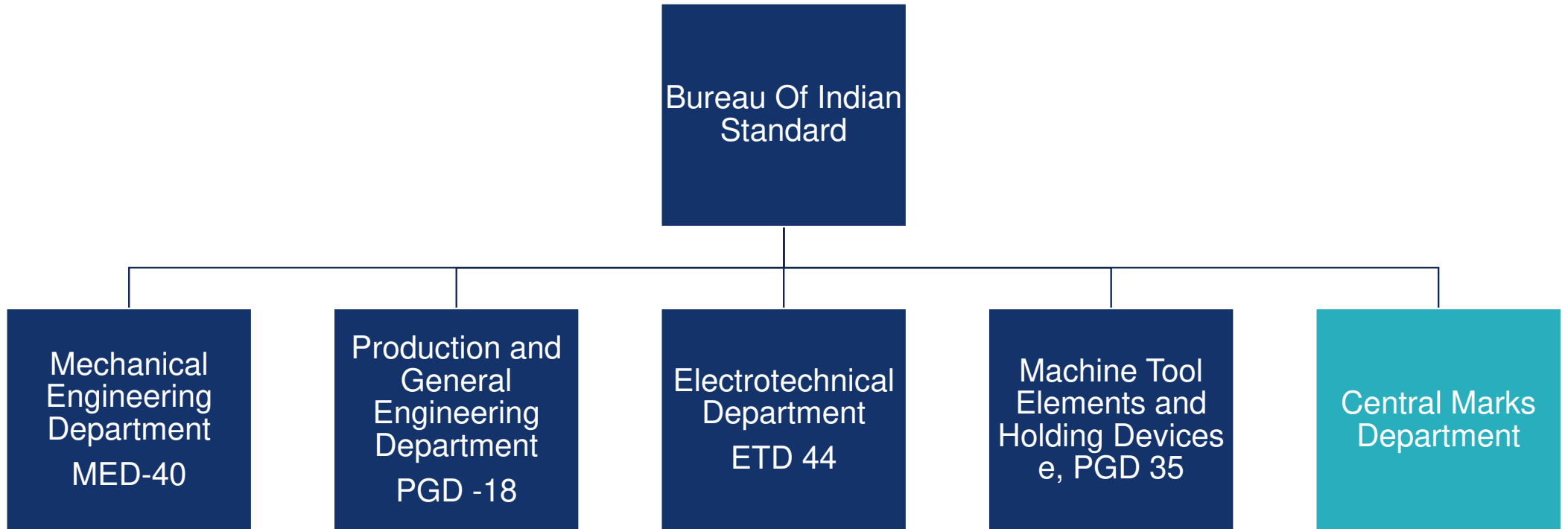
New Delhi , 28th September 2022

Office Memorandum

Subject : Circulation of draft Machinery and Electrical Equipment Safety (Omnibus Technical Regulation) Order, 2022 for comments

The undersigned is directed to place the draft Machinery and Electrical Equipment Safety (Omnibus Technical Regulation) Order, 2022 (copy attached) on the website of the Ministry of Heavy Industries (<https://heavyindustries.gov.in/>) for comments. The above document is also being notified on the WTO website for comments of WTO members.

Source :- <https://heavyindustries.gov.in/>



Omnibus Technical Regulation

Scope of OTR



- All type of Pumps
- All types of compressors
- Machinery for treatment of material
- Centrifuges, filtering or purifying machinery
- Machinery for filling, closing, sealing, labelling, packing or wrapping
- Cranes
- Machinery for construction, earthmoving, Mining
- Lithographic plates
- Weaving machines
- Machinery for making embroidery
- Metal cutting machines
- Machine tools for working stone, ceramics, concrete, asbestos cement
- Machinery for working rubber and plastics
- Rotary electrical machines
- Diesel Generator
- Transformers

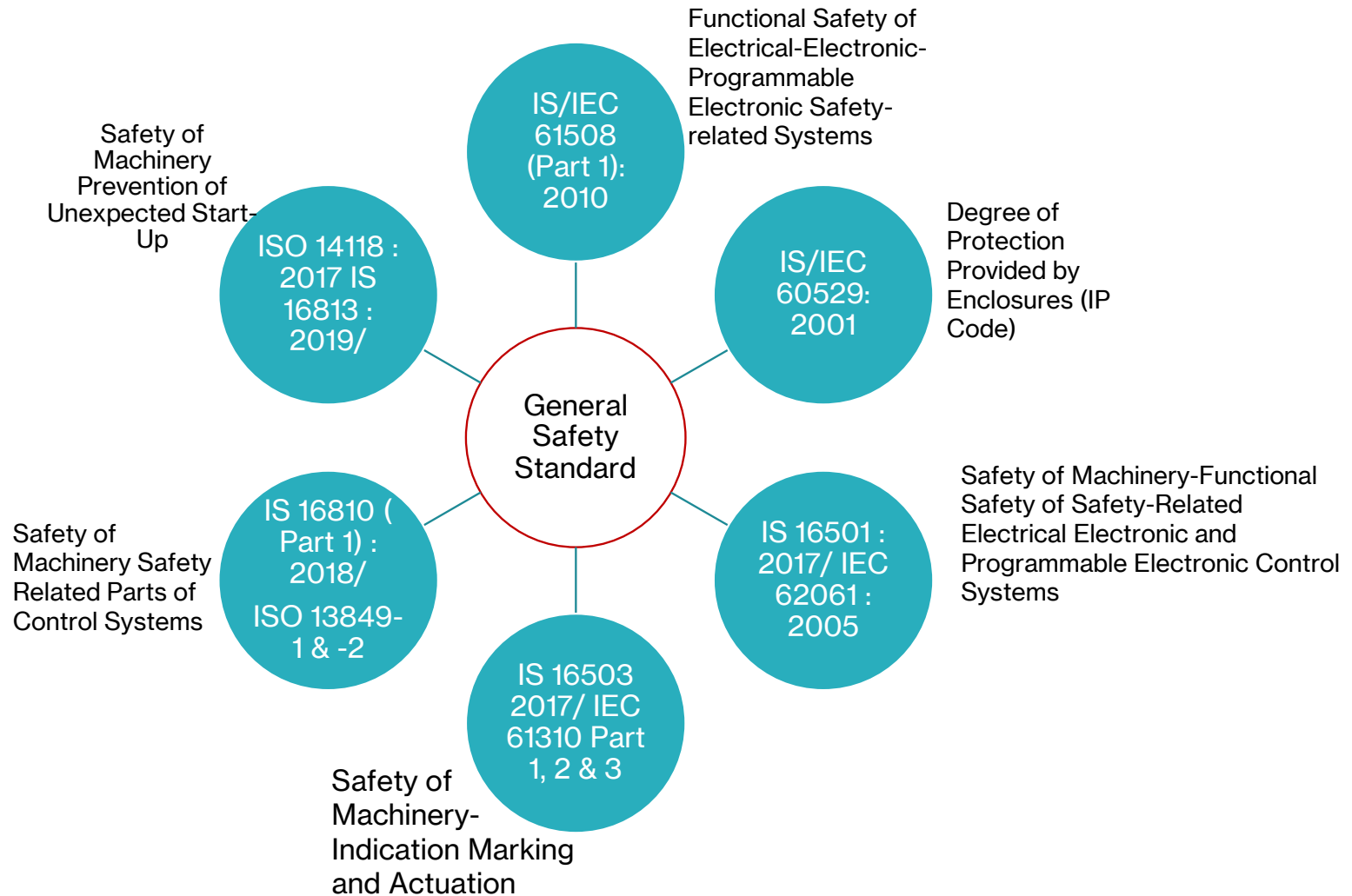
OTR

1. Risk Assessment
2. General Safety Standard
3. Permanent Means of Access
4. Machinery Guards
5. Safety Component
6. Emission of airborne hazardous substances
7. Ergonomics

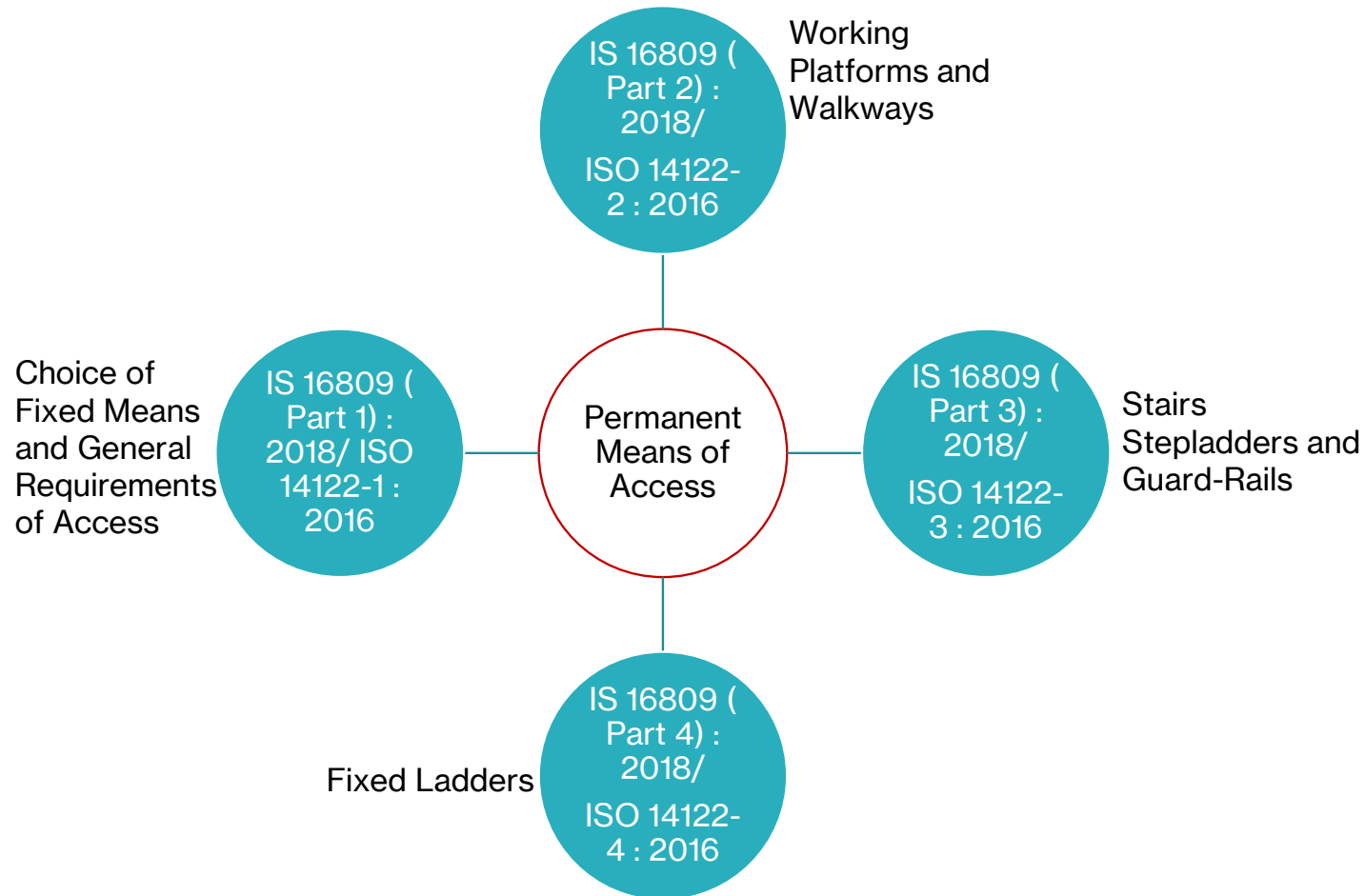
1. Risk Assessment

- “Conformity Assessment Regulations” means the Bureau of Indian Standards (Conformity Assessment) Regulations, 2018;
- Safety of Machinery General Principles for Design- Risk Assessment and Risk Reduction - IS 16819:2018/ISO 12100:2010
- Safety of Machinery- Electrical Equipment of Machines Part 1 General Requirements - IS 16504 (Part-1):2019/IEC 60204-1:2016

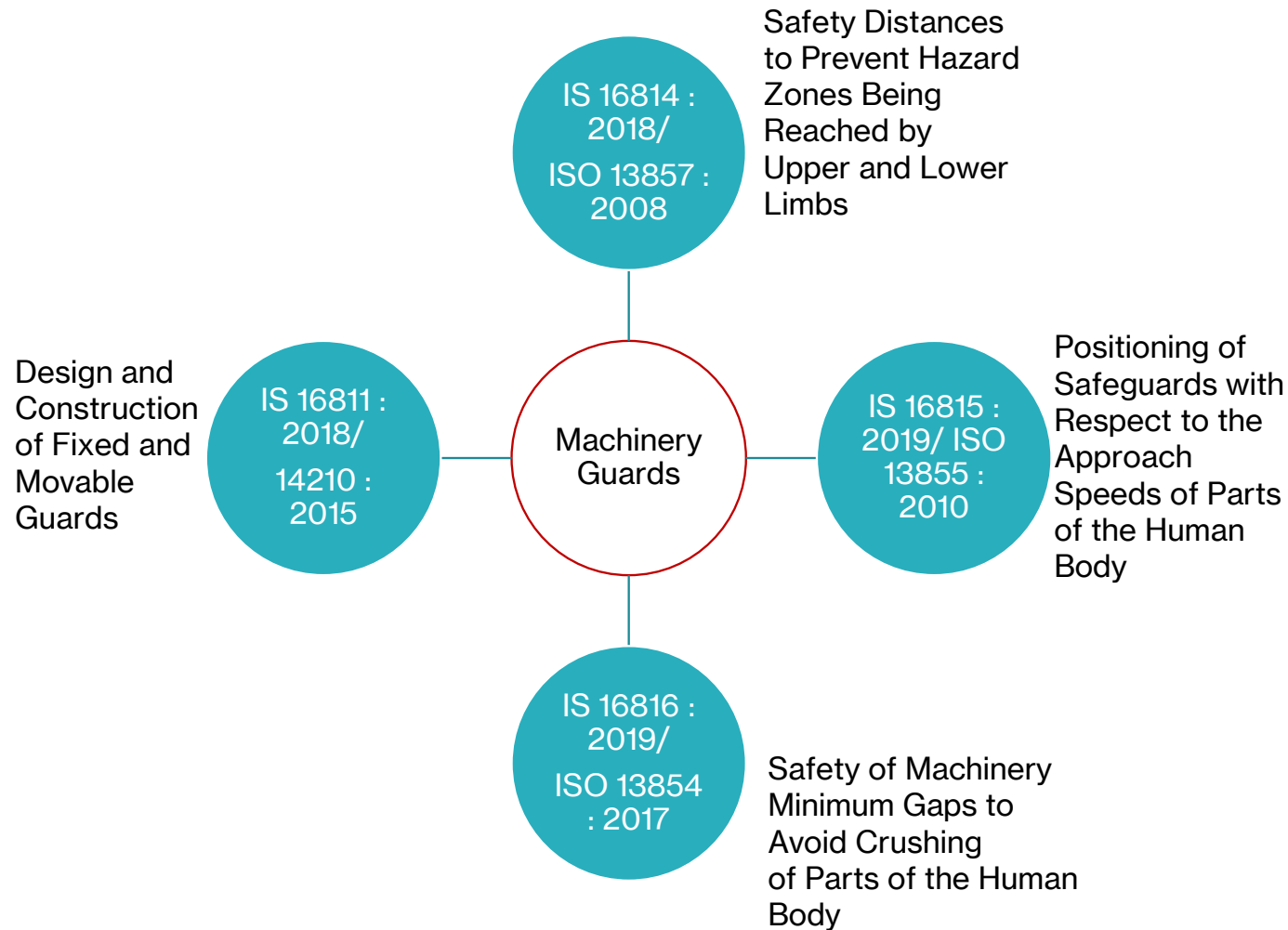
Omnibus Technical Regulation Safety Standard Framework



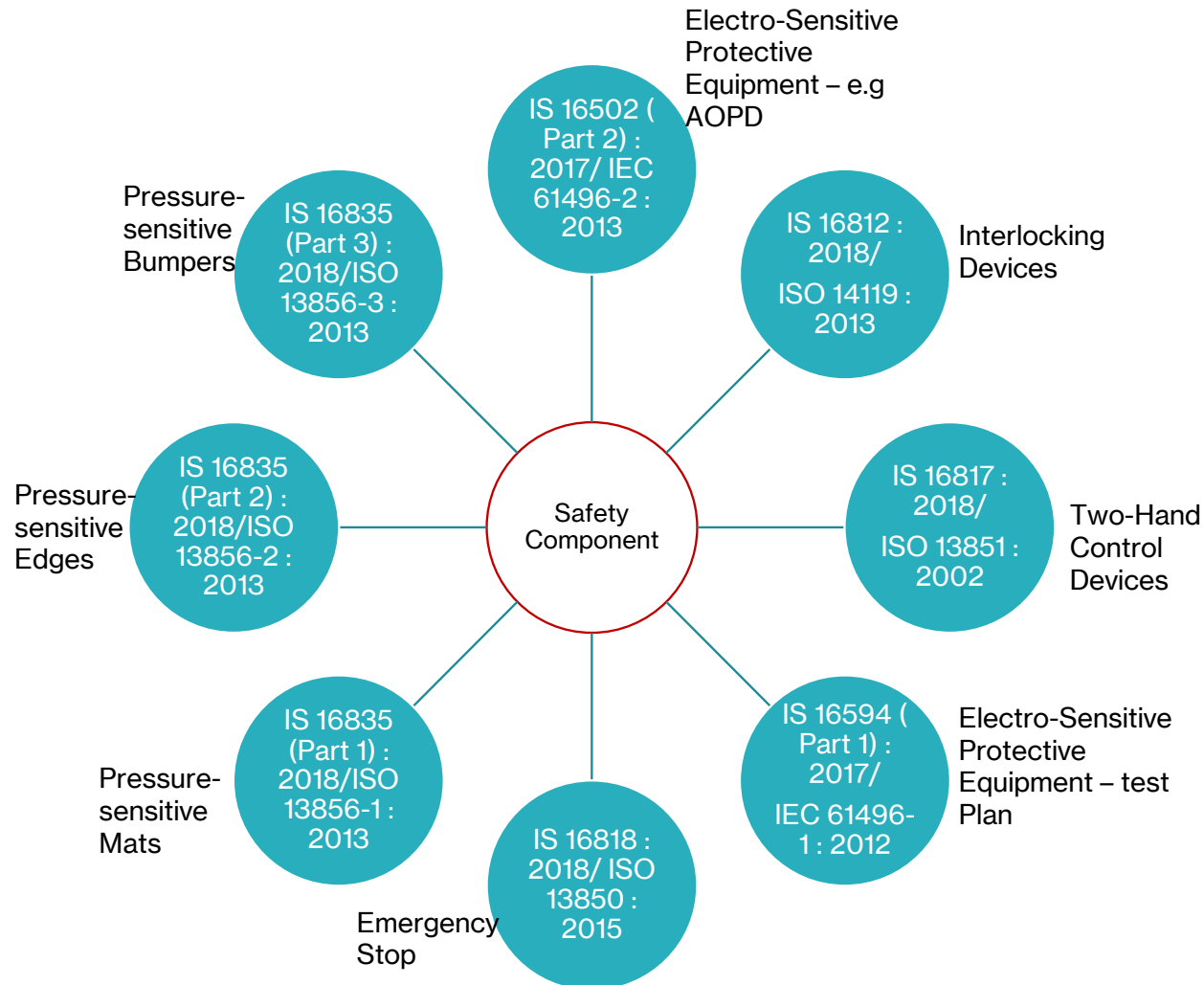
Omnibus Technical Regulation Safety Standard Framework



Omnibus Technical Regulation Safety Standard Framework



Omnibus Technical Regulation Safety Standard Framework



Omnibus Technical Regulation

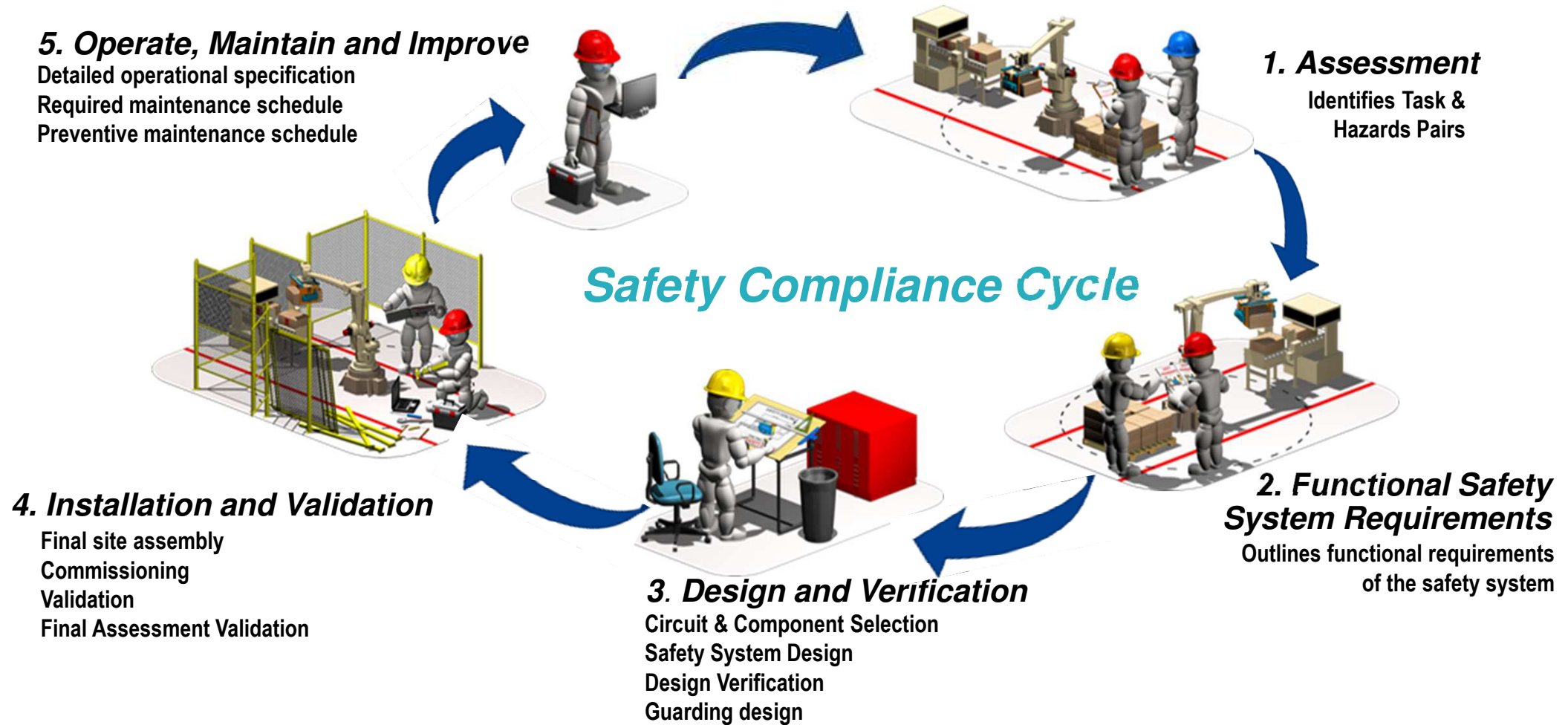
Safety Standard Framework

- Evaluation of the emission of airborne hazardous substances
IS 16806 2018/ ISO 29042 : 2008 Part 1 to Part 9
- Ergonomics
 - Computer Manikins and Body Templates Part 1 General Requirements
IS 16562 (Part 1) : 2017/ ISO 15536-1 : 2005
 - Ergonomic Requirements for the Design of Displays and Control Actuators Part 2 Displays
IS 16563 (Part 2) : 2017/ ISO 9355-2
 - Ergonomic Requirements for the Design of Displays and Control Actuators Part 3 Control Actuators
IS 16563 (Part 3) 2017 / ISO 9355-3

Challenges

Challenges

Safety Compliance Cycle



Challenges

Safety Compliance Cycle

5. Operate, Maintain and Improve

Detailed operational specification
Required maintenance schedule
Preventive maintenance schedule



Safety Compliance Cycle

4. Installation and Validation

Final site assembly
Commissioning
Validation
Final Assessment Validation



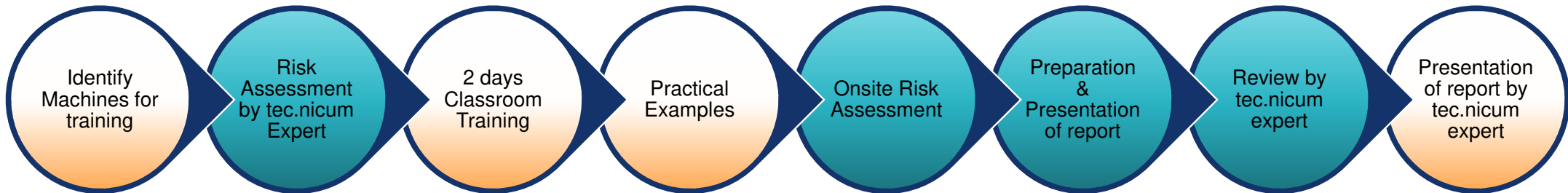
3. Design and Verification

Circuit & Component Selection
Safety System Design
Design Verification
Guarding design



Challenges

Skilled Manpower



Challenges

Accessibility to Safety Standard

The screenshot displays a web browser window with multiple tabs. The active tab is the BIS website, showing search results for 'IS 14530: Part 2: 2019'. The website header includes the Bureau of Indian Standards logo and navigation links like 'Log in', 'Register', 'MY ACCOUNT', and 'CART'. The search bar contains 'Standard Number (e.g. IS 1)'. The search results show one entry: 'IS 14530: Part 2: 2019' with a status of 'Active', a price of ₹ 970.00 within India and ₹ 9,700.00 outside India, and a technical committee of 'PGD 18'. The entry title is 'Robots and Robotic Devices – Safety Requirements for Industrial Robots Part 2 Robot Systems and Integration (First Revision)'. There are also links to 'Download Search Result in Pdf' and 'Download Search Result in Excel'. The footer contains various links like 'BIS Home', 'Frequently Asked Questions (FAQ)', and 'Guidelines for Viewing Downloaded Standards'. The Windows taskbar at the bottom shows the time as 14:56 on 31-10-2022.

Challenges

Understanding Safety Standard

IS_14530_2.pdf - Adobe Acrobat Reader (32-bit)

File Edit View Sign Window Help

Home Tools IS_14530_2.pdf x Sign In

1 / 82 139%

भारतीय मानक **IS 14530 (Part 2) : 2019**
Indian Standard **ISO 10218-2 : 2011**

**रोबोट एवं रोबोटिक उपकरण — औद्योगिक
रोबोटों के लिए सुरक्षा आवश्यकताएं**
भाग 2 रोबोट सिस्टम एवं एकीकरण
(पहला पुनरीक्षण)

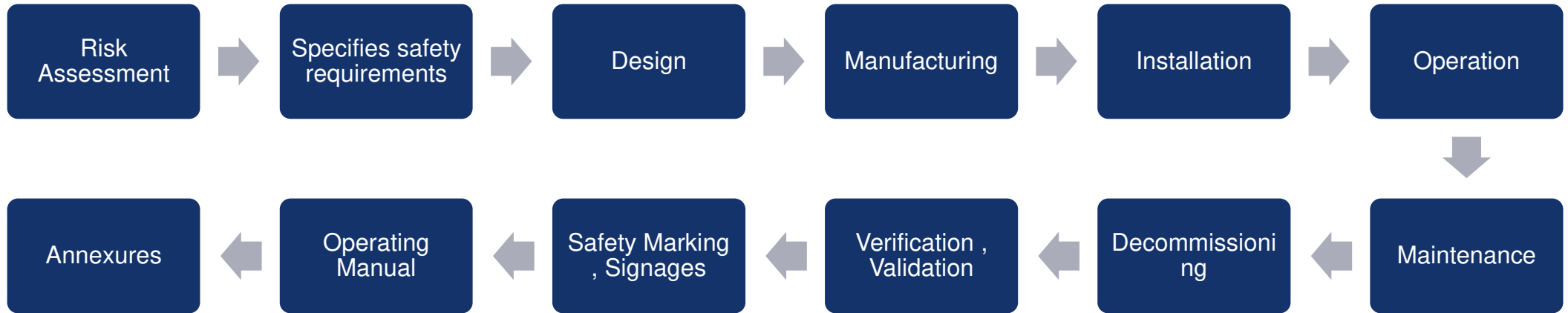
Robots and Robotic Devices —

Type here to search

14:58 31-10-2022

Challenges

Understanding Safety Standard



Annex A (informative) **List of significant hazards**

Annex B (informative) **Relationship of standards related to protective devices**

Annex C (informative) **Safeguarding material entry and exit points**

Annex D (informative) **Operation of more than one enabling device**

Annex E (informative) **Conceptual applications of collaborative robots**

Annex F (informative) **Process**

Annex G (normative) **Means of verification of the safety requirements and measures**

Means of verification of the safety requirements and measures

Subclause	Safety requirements and/or measures	Total Sub-check Points	Verification and/or validation methods								
			A	B	C	D	E	F	G	H	I
5.2	Safety-related control system performance (hardware/software)	4									
5.3	Design and installation	42									
5.4	Limiting robot motion	16									
5.5	Layout	18									
5.6	Robot system operational mode application	39									
5.7	Pendants	15									
5.8	Maintenance and repair	10									
5.9	Integrated Manufacturing System (IMS) Interface	17									
5.10	Safeguarding	78									
5.11	Collaborative robots	28									
5.12	Commissioning of robot systems	5									

Verification and/or validation methods

A	Visual Inspection
B	Practical tests
C	Measurement
D	Observation during operation
E	Review of application-specific schematics, circuit diagrams and design material

F	Review of safety-related application software and/or software documentation
G	Review of task-based risk assessment
H	Review of layout drawings and documents
I	Review of specifications and information for use

Thank you for your attention

Questions

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