



# Successful Rescue by using RFID in Enclosed Spaces

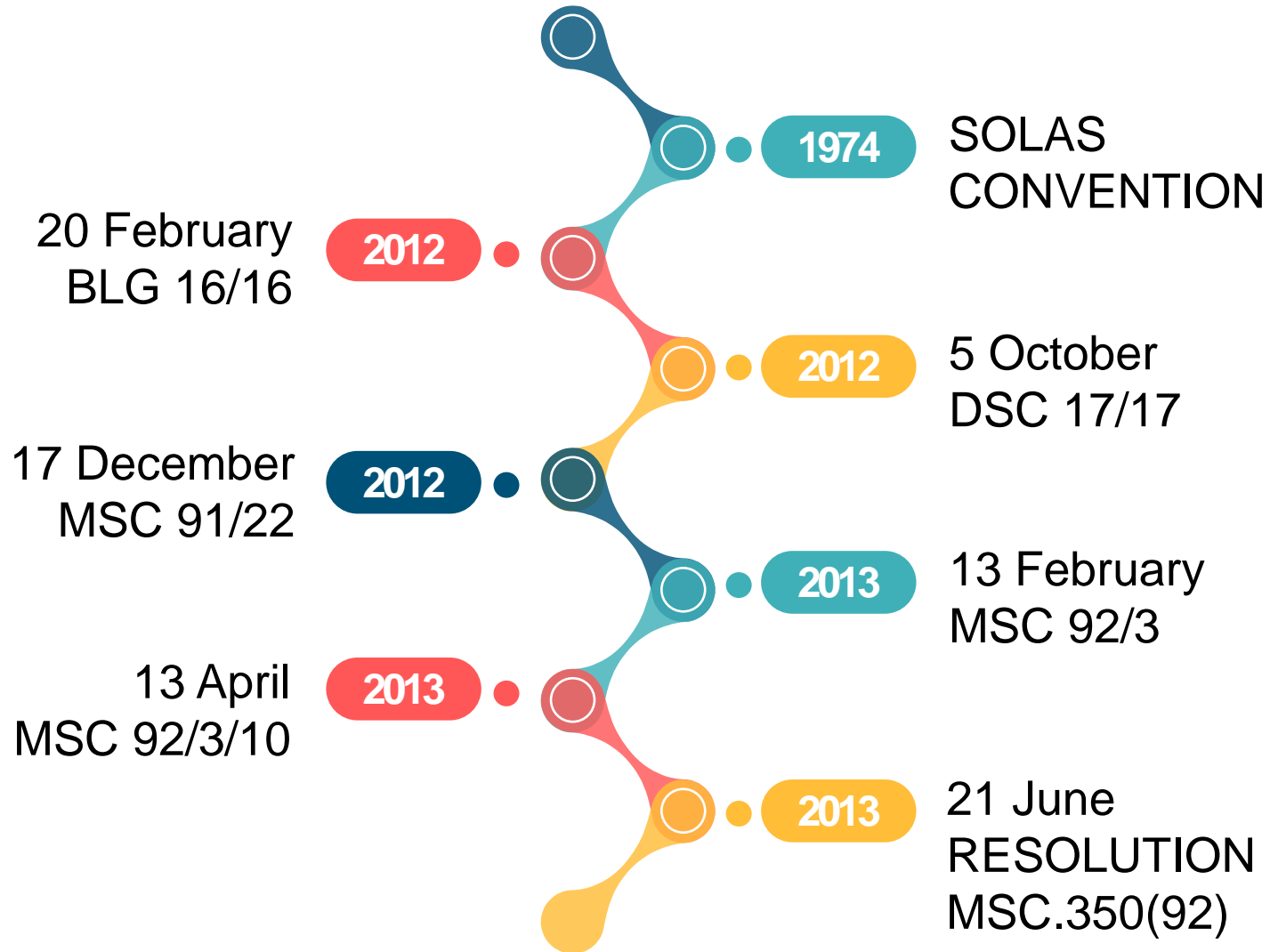
Revision of IMO Resolution A.1050(27)



# History & Current



## Consideration of atmosphere in enclosed spaces



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Action to be taken



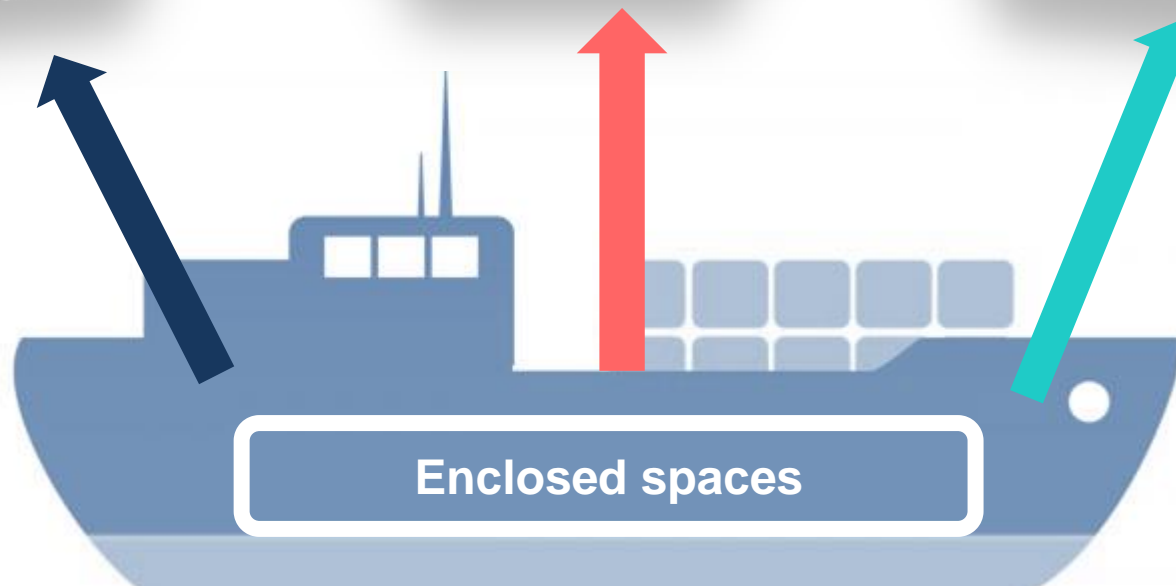
# 1 BACKGROUND

- What is Enclosed Space?
- Why do we enter Enclosed Spaces?
- Maritime Accident Statistics in Enclosed Spaces



# 1.1 What is Enclosed Space (E.S)?

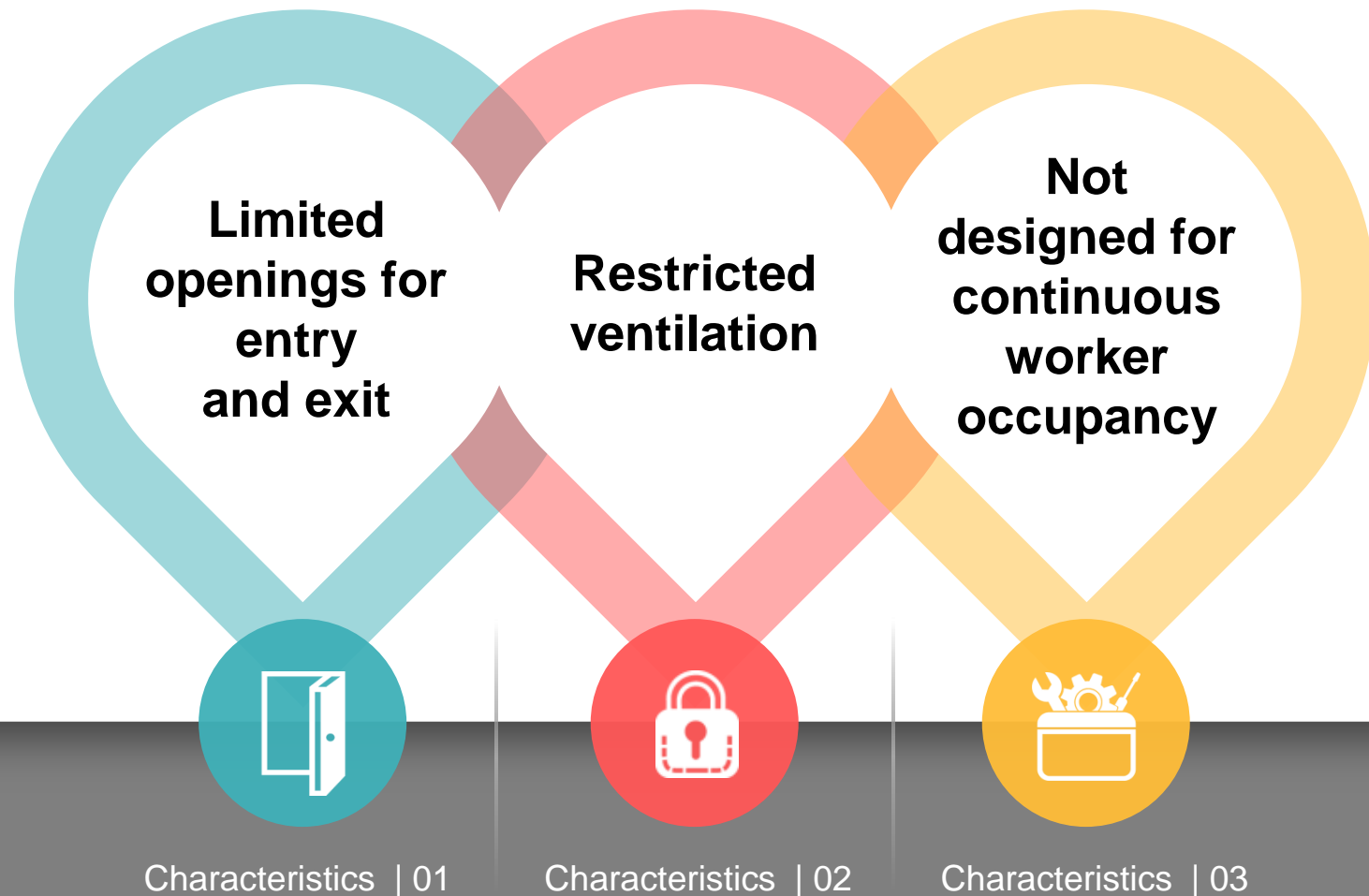
## Types of enclosed spaces



# 1.1 What is Enclosed Space (E.S)?

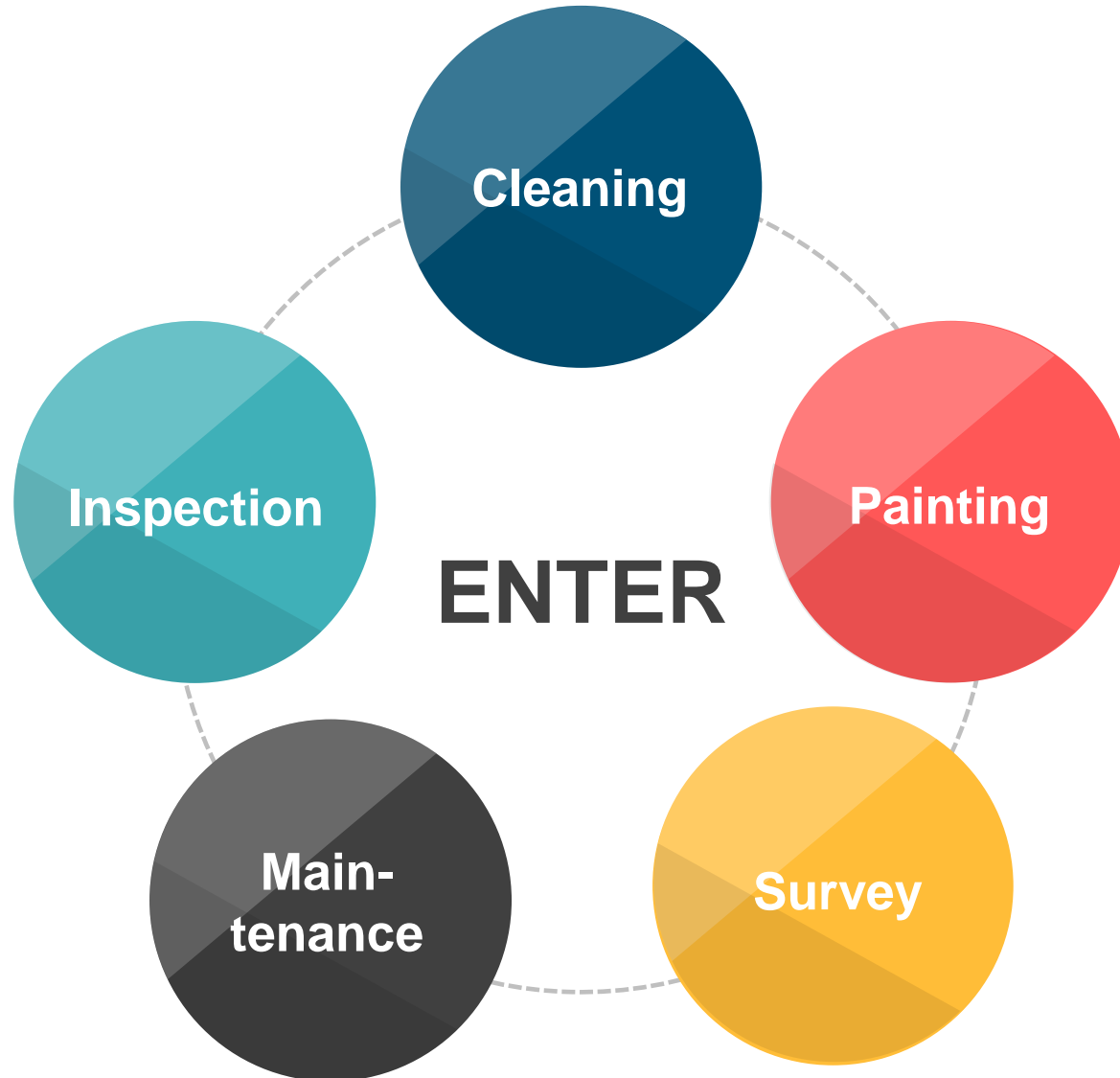
## Definition of enclosed space

IMO Resolution A. 1050(27)



# 1.2 Why Do We Enter E.S?

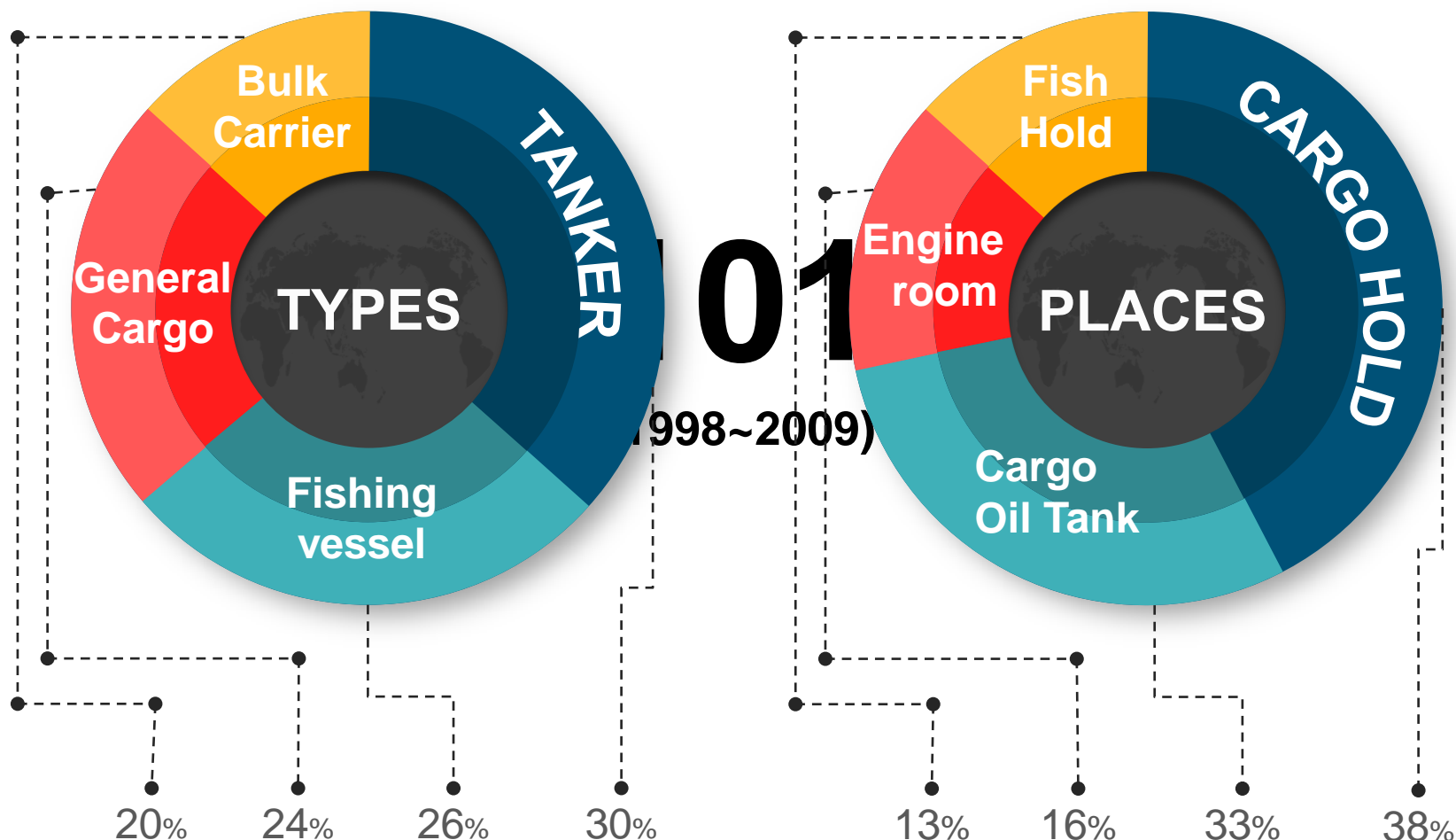
Things to keep enclosed spaces in good condition





# 1.3 Maritime Accident Statistics in E.S

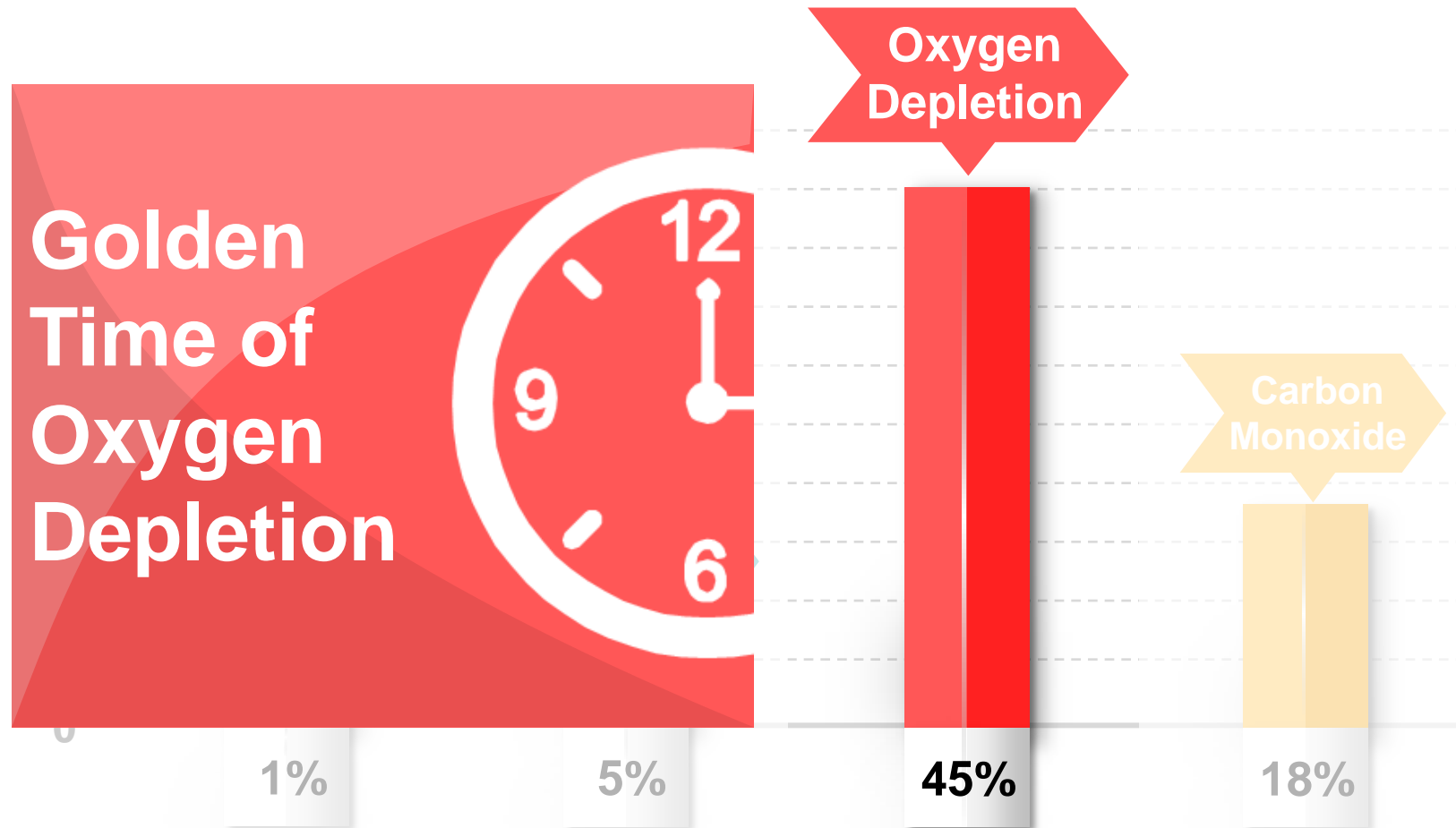
Charted in types of vessel and in places (MAIIF, 2009)





# 1.3 Maritime Accident Statistics in E.S

Tabulated in causes of casualty (MAIIF, 2009)



# Interlude



## Official Enclosed Space Entry and Rescue Procedures

**Why** the accidents **never stop?**

45%



# PROBLEM

- Official Enclosed Space Entry & Rescue Procedure
- Analysis of Communication Route in Procedures
  - Identified Problems



# 2.1 Entry Procedures



Procedures must be taken



# 2.1 Take Portable Gas Detector

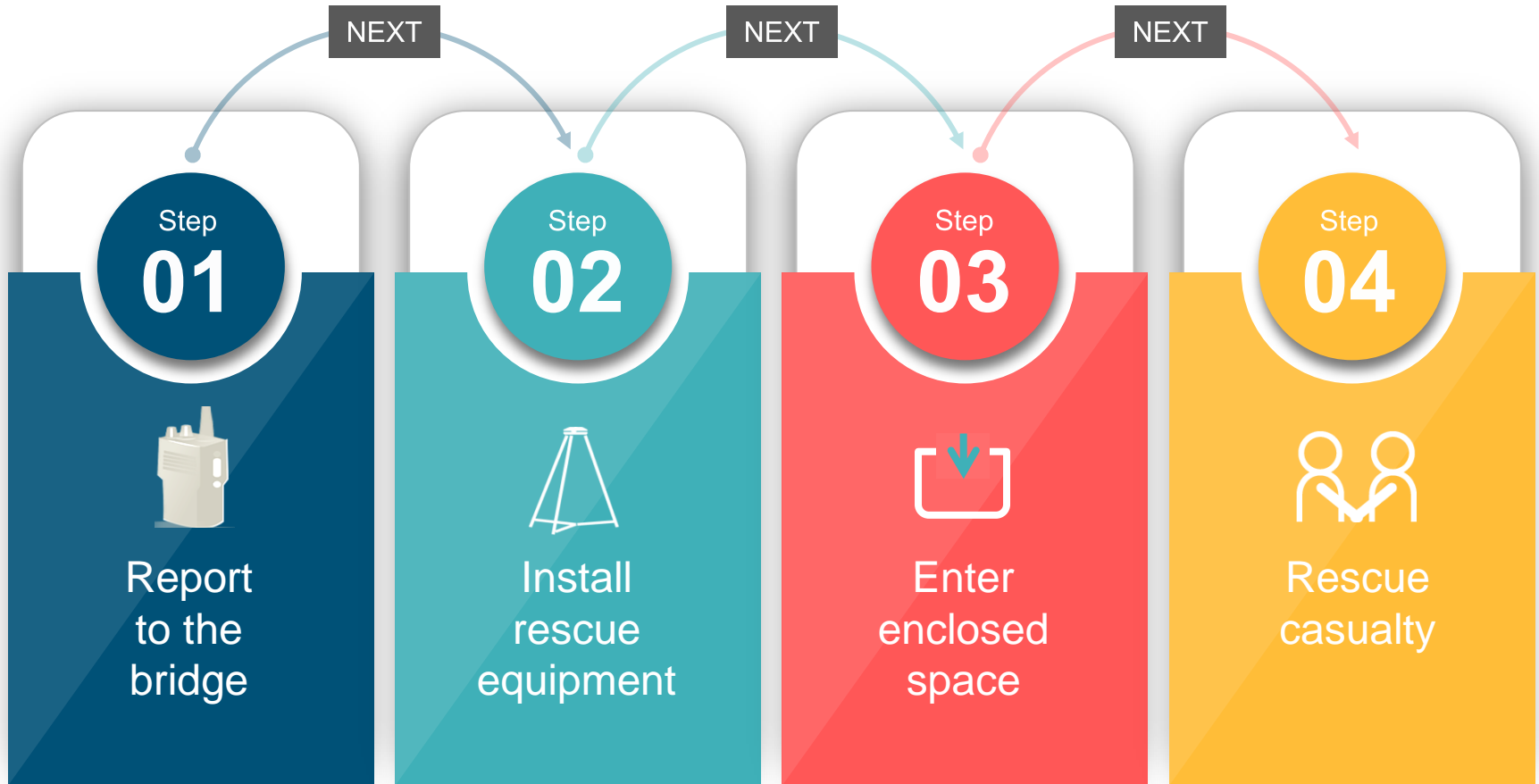
Portable gas detector is...



# 2.1 Rescue Procedures



Procedures must be taken



## 2.2 Communication Route

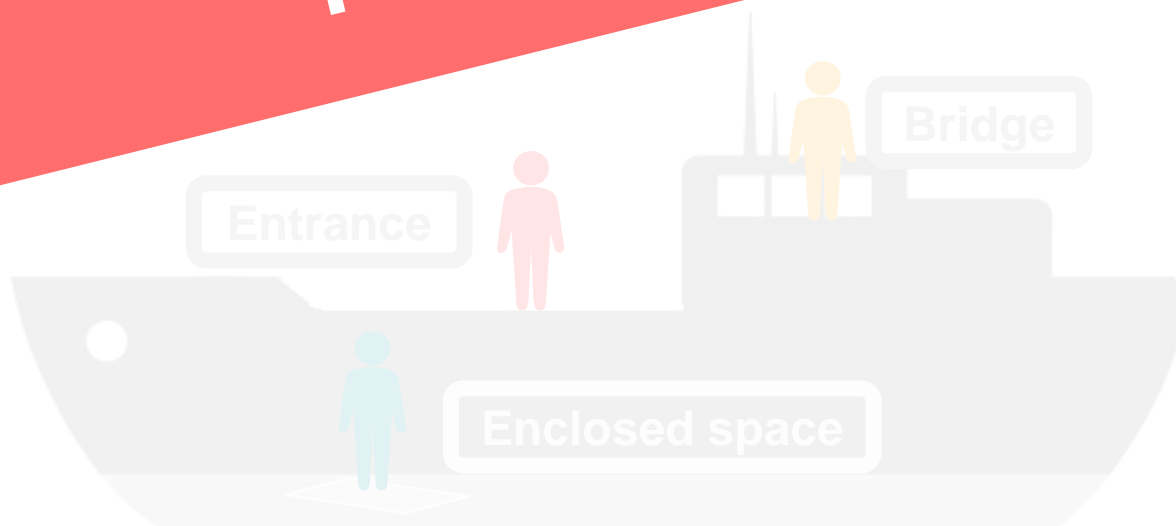


Worker



Officer

**PROBLEM!**





## 2.3 Problems



01 |

**Delay of rescue process**

02 |

**Lateness & misunderstanding  
of information**



# 3 CONSIDERABLE FACTORS



### 3. Factors to be Considered in Solution

Specificity  
Of Vessel



Dangerous  
Working  
Environ-  
ment



Golden  
Time of  
Oxygen  
Depletion



Safety of  
Workers



Effective,  
Practical  
Method



# 4 PROPOSAL

- Our Proposal
- Characteristics
- Expectation



# 4.1 Proposal

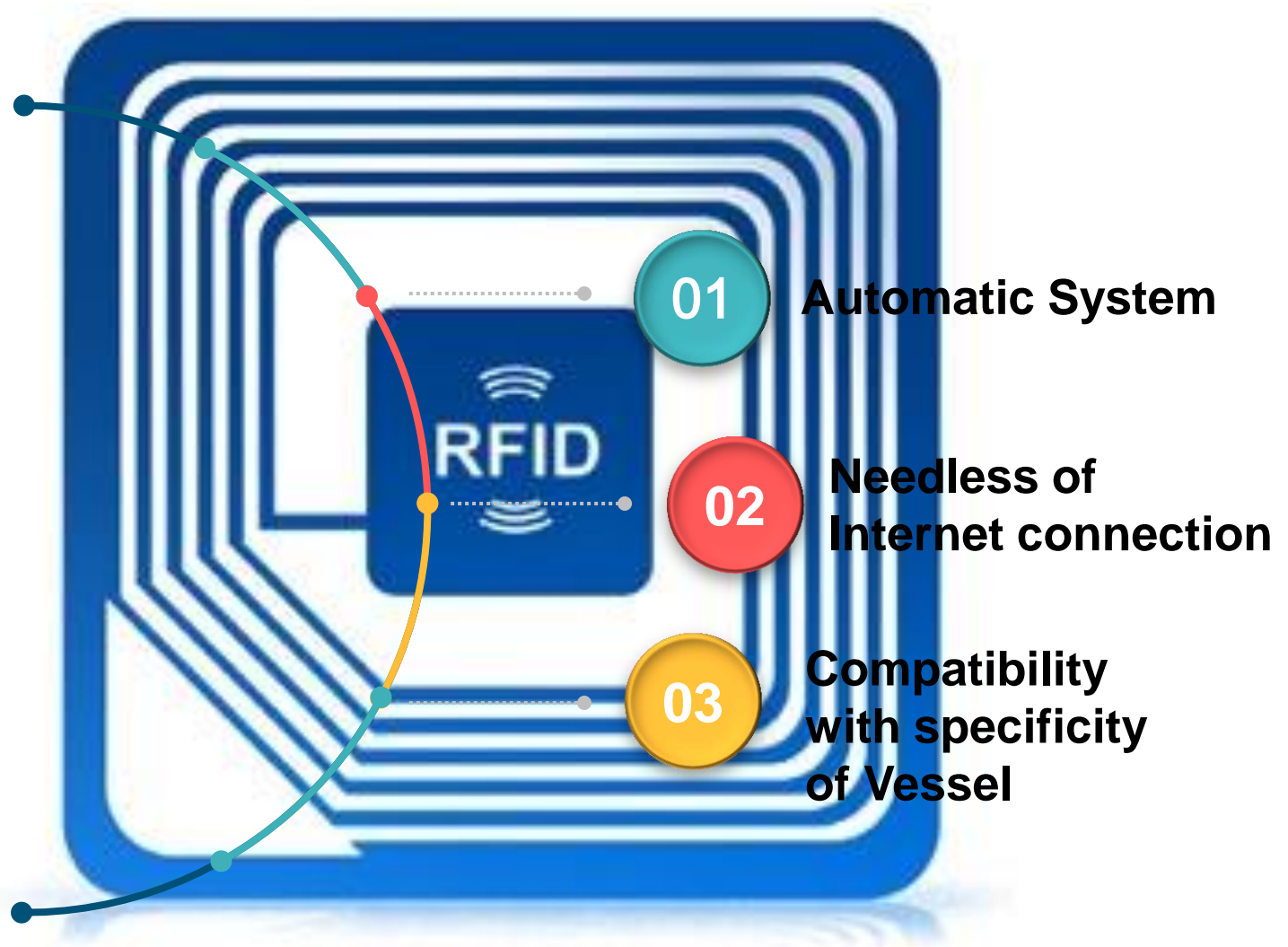


To combine RFID sensor  
with portable multi gas detectors

**Why** and **How** to use **RFID?**

Problems

## 4.2.1 About RFID

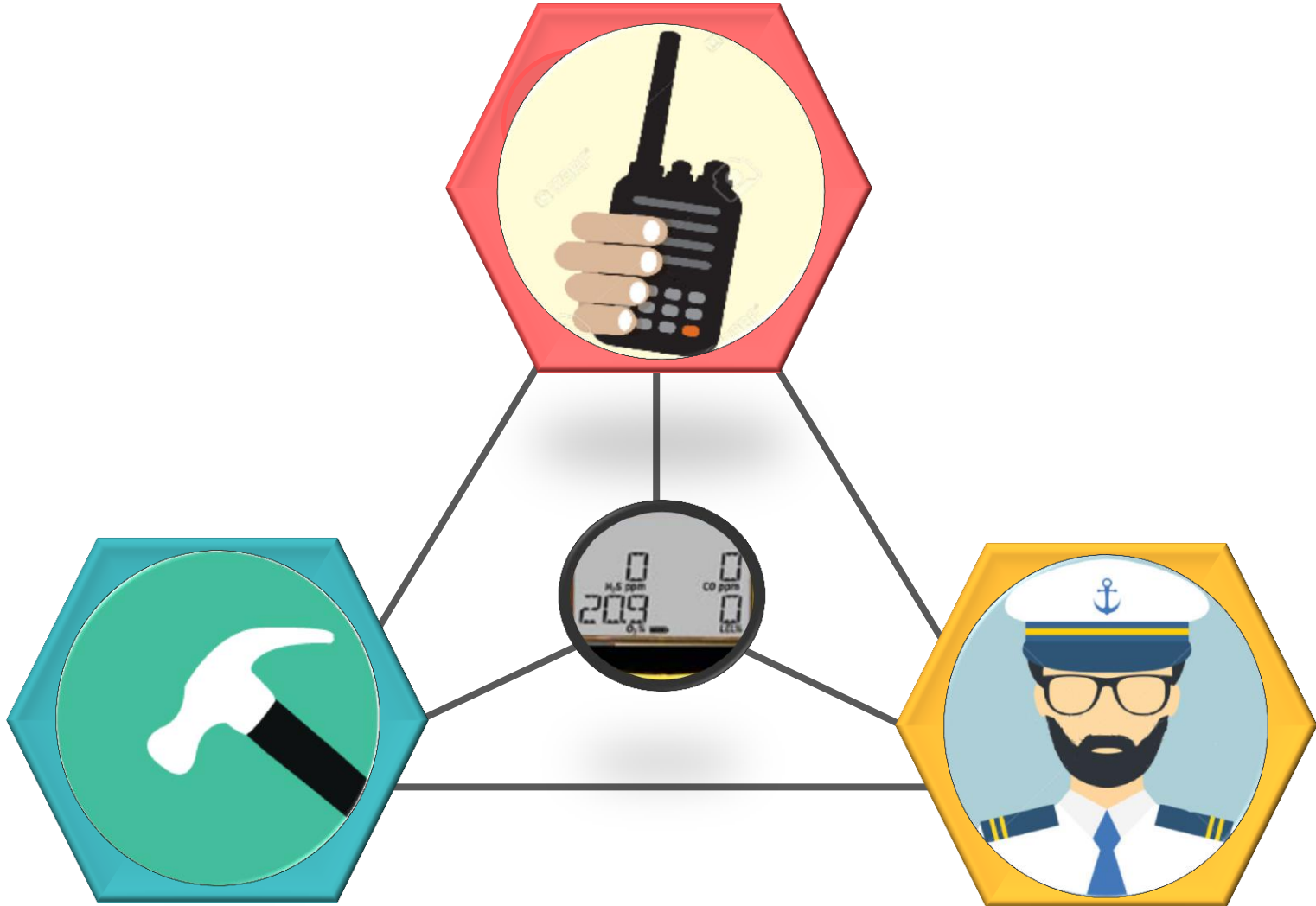


## 4.2.2 RFID+ Gas Detector





## 4.3 Expectation



## 4.3 Expectation



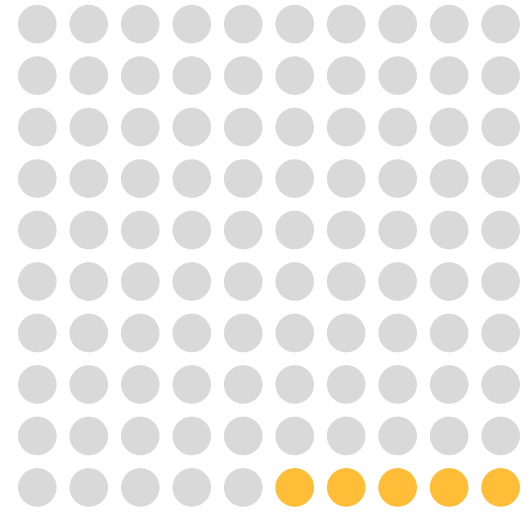
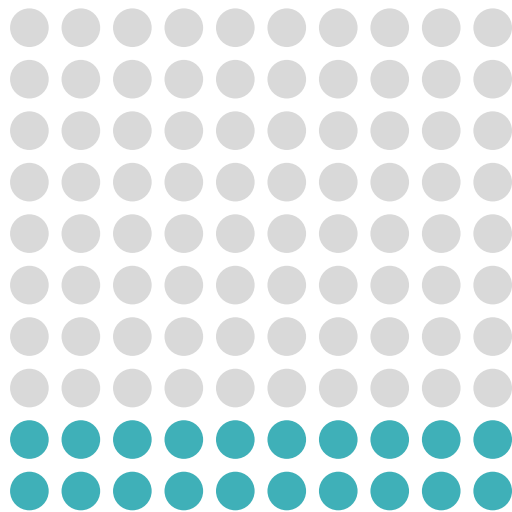
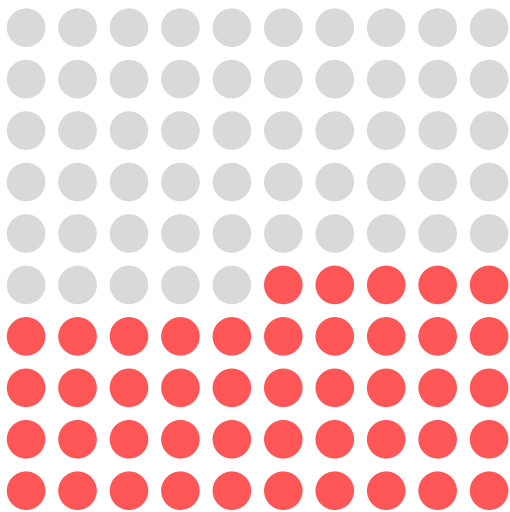
45%



20%



05%



# 5 CHALLENGES & SOLUTIONS



# 5.1 Challenges



YES

Electromagnetic Waves

NO

01

Steels make hazards

02

Risk of explosion



YES

NO

NO

YES

## 5.2 Solutions



YES

Electromagnetic Waves

NO

01

Microwave  
absorbers

02

Stable RFID  
in polluted gas  
environment

YES

NO

NO

YES



# 6. Conclusion



INTERNATIONAL  
MARITIME  
ORGANIZATION

**E**

ASSEMBLY  
27th session  
Agenda item 9

A 27/Res.1050  
20 December 2011  
Original: ENGLISH

## **Resolution A.1050(27)**

Adopted on 30 November 2011  
(Agenda item 9)

**REVISED RECOMMENDATIONS FOR ENTERING ENCLOSED  
SPACES ABOARD SHIPS**

# 6. Conclusion



## 8 PRECAUTIONS DURING ENTRY

8.1 The atmosphere should be tested frequently whilst the space is occupied and persons should be instructed to leave the space should there be a deterioration in the conditions.

8.2 Persons entering the space should be equipped with multi-gas detectors that are calibrated and tested before use and other gases as appropriate.

**Multi-gas detectors  
combined with RFID system**

8.3 Ventilation should continue during the period that the space is occupied and during temporary breaks. Before re-entry after a break, the atmosphere should be re-tested. In the event of failure of the ventilation system, any persons in the space should leave immediately.



## 7. Action to be taken



**Safe, secure and efficient shipping  
on clean oceans**

**Seafarer**

**MSC**



# Thank you



# Q & A

