

Non-Adherence to Procedures: Distinguishing Errors and Violations

by Patrick Hudson

The Causes of Accidents

- Accidents are complex events
- The primary causes are technical failures and human error
- Human error accounts for 80+% of causes
- Many incidents involve a deliberate failure to follow known procedures

Types of Human Error

- We distinguish Intentional and Unintentional behaviour
- Slips are unintended actions
- Lapses are unintended failures to act
- Mistakes are intended, but not what was really meant
- Violations are known failures
- Violations can be seen as a form of mistake (I'll get away with it)

— *Why Study Violations?*

- Slips are usually benign, not so dangerous on their own (except for surgeons)
- Lapses are more dangerous, harder to contain
- Mistakes are even more dangerous
 - people intend their actions
 - People ignore counter-evidence
- Violations are deliberate and break a basic assumption of a Safety Management System
procedures will be followed

Types of Violation

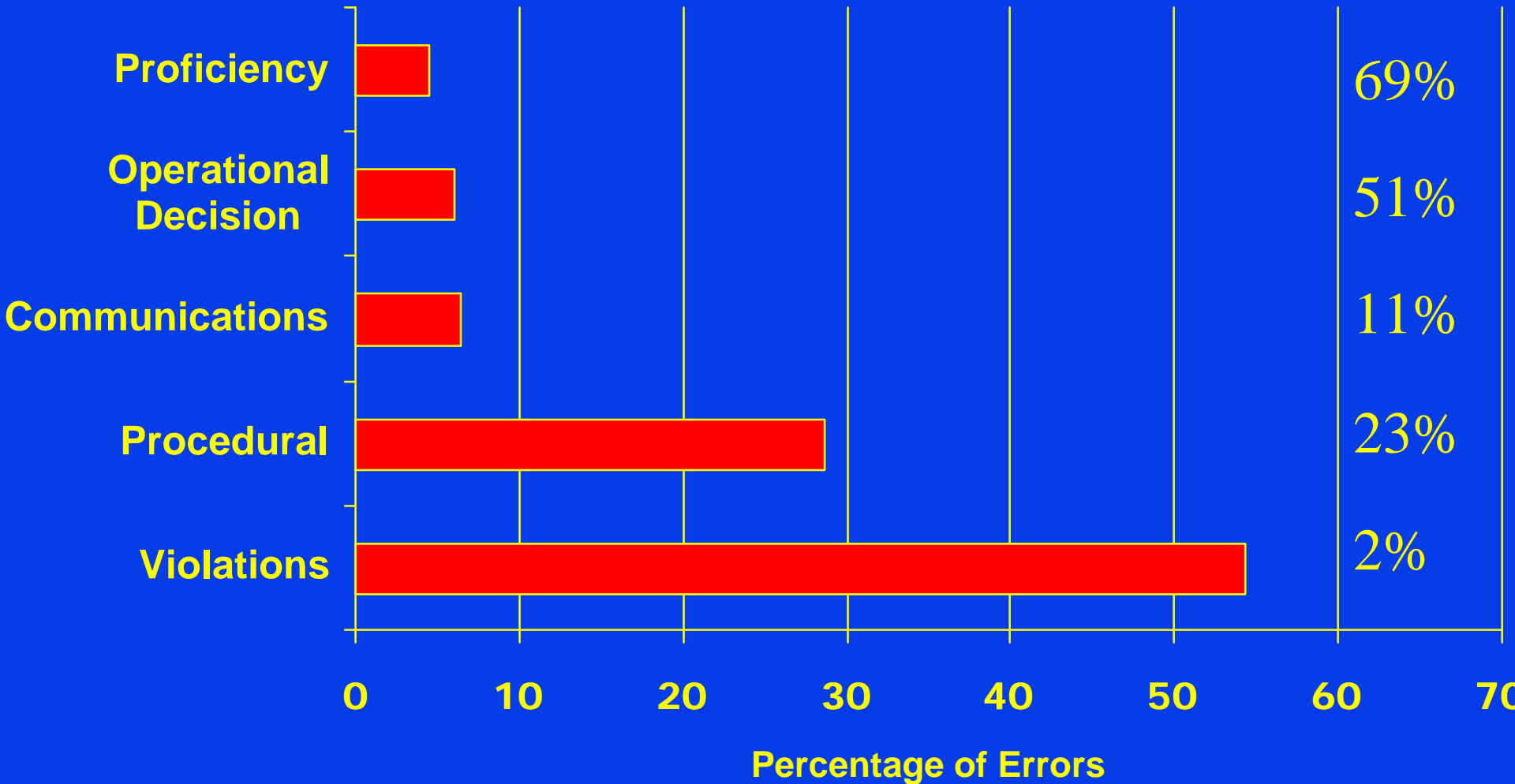
- Unintentional non-compliance (legal)
- Routine violation
 - Frequent, known and condoned
- Optimising violation
 - Doing things better, for kicks
- Situational violation
 - Adapting to the problems in the workplace
- Exceptional violation
 - Totally unexpected situations

Violation in the Air

- Helmreich reports 2 errors per flight segment
- 50+% of these are non-compliance! (violations)
- Typical violations involve:
 - checklists
 - exceedences
 - corner-cutting
 - macho-behaviour - The Rhett Butler Violation
- No one wants to talk about non-compliance
- Violations are associated with 1.6x errors

Error type distribution from LOSA - 3 US Airlines

%
Consequential



Non-adherence To Procedures Distribution of Violation Types

Regular Flights

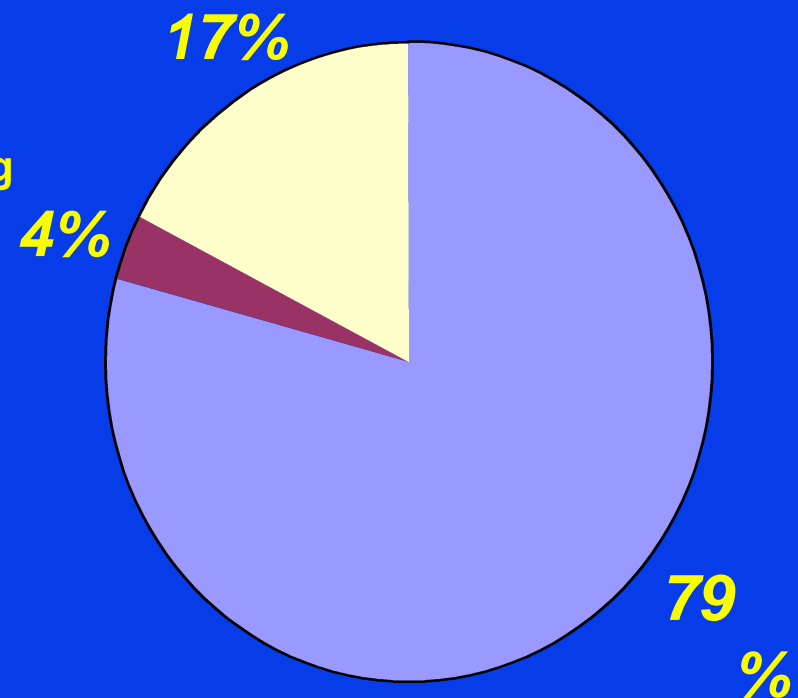
No data..!!

■ Routine/Optimising

■ Situational

■ Exceptional

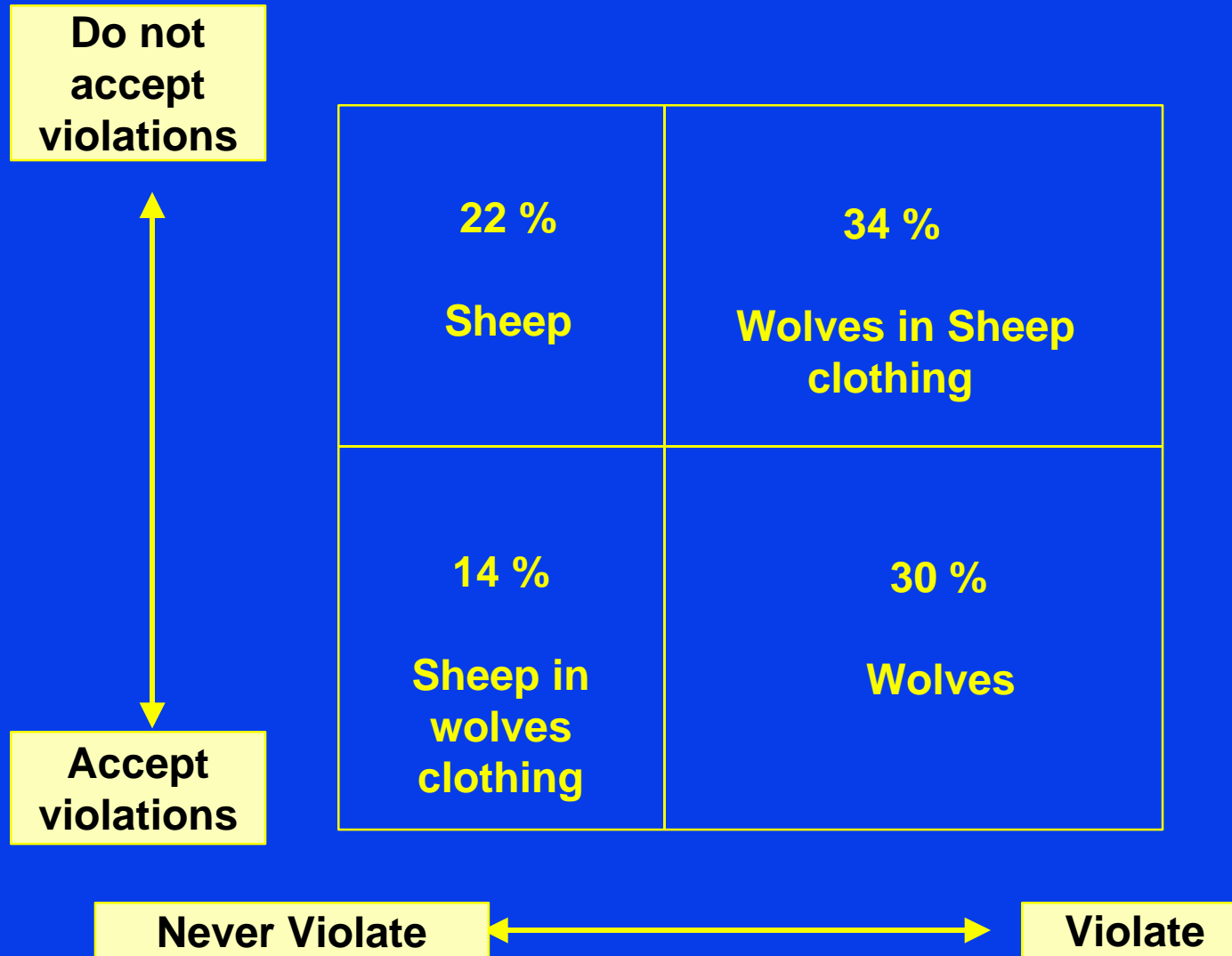
Accident Sample



Sheep and Wolves

- A study in the North Sea found 2 dimensions
- Sheep's clothing - Wolves' clothing
 - Your 'clothing' shows if you have violated recently
- Sheep - Wolves
 - Sheep don't like to violate, wolves don't mind
 - Sheep are the Guardians of High Standards
 - Wolves are go-getting opportunists
 - Wolves are **Natural Born Violators**

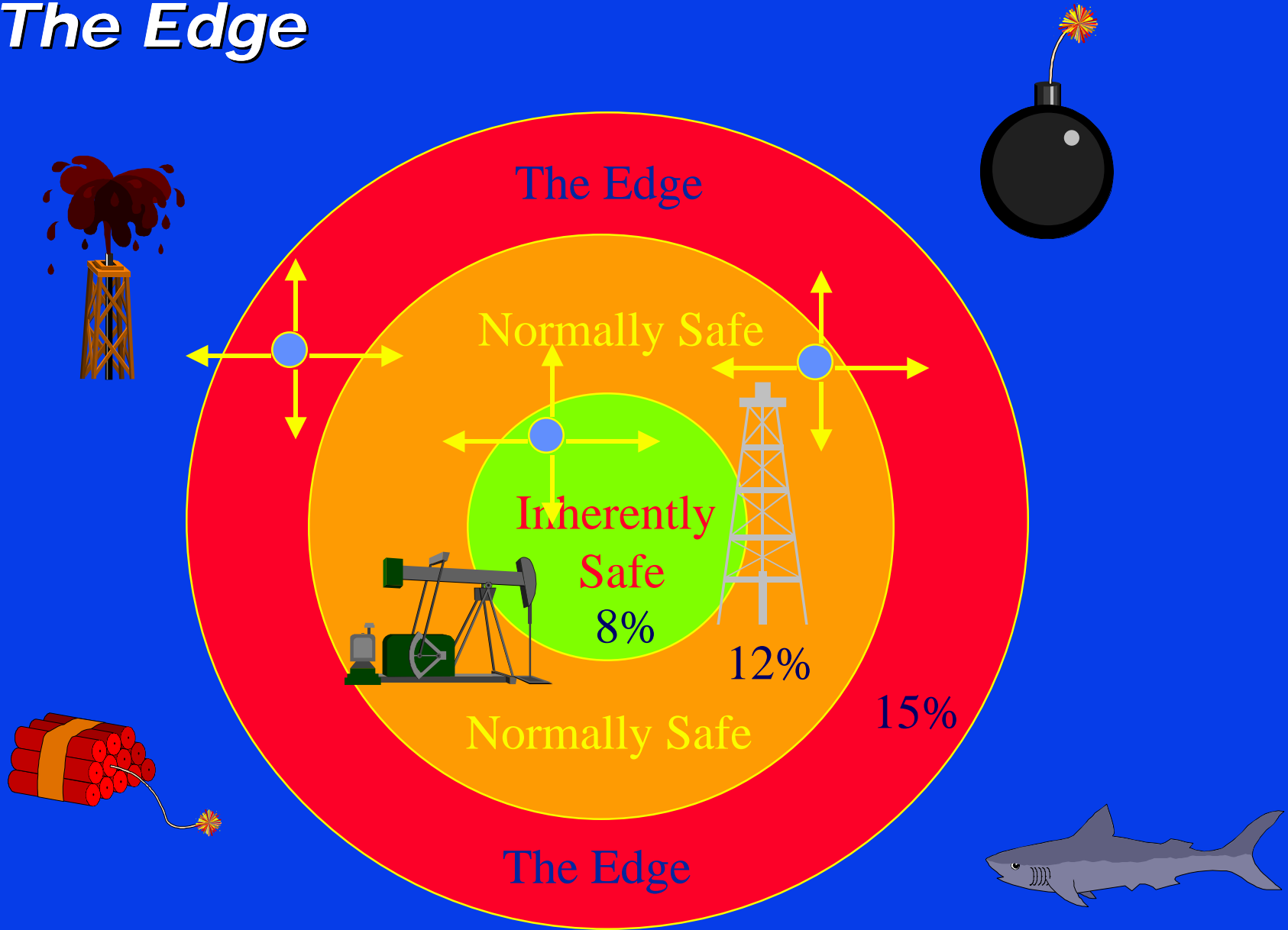
Sheep and Wolves II



Sheep and Wolves III

- Sheep constitute 36.6% of the population
- Wolves constitute 63.4%, a massive majority
- The higher in the organisation, the more likely people are to be wolves
- The problem is that the exercise of initiative is praised if it is successful, but damned if it fails
- Most violations are non-consequential, so they are condoned at all levels
- **But**, some violations are the most dangerous there is. They take you over The Edge

The Edge



Why are Violations so Dangerous?

- Violators assume everyone else is following the rules and procedures
- Violations are forbidden, so violators don't tell anyone what they are doing
- Violations take the system out to the Edge
- Errors (slips, lapses, mistakes) are independent of intention
- **Violation + Error = Death/Doom/Disaster**

The Lethal Cocktail

The Main Predictors of Violation

Expectation

Expectation that rules will have to be bent to get the work done

Powerfulness

The feeling that one has the ability and experience to do the job without slavishly following the procedures

Opportunities

Seeing opportunities that present themselves for short cuts or to do things 'better'

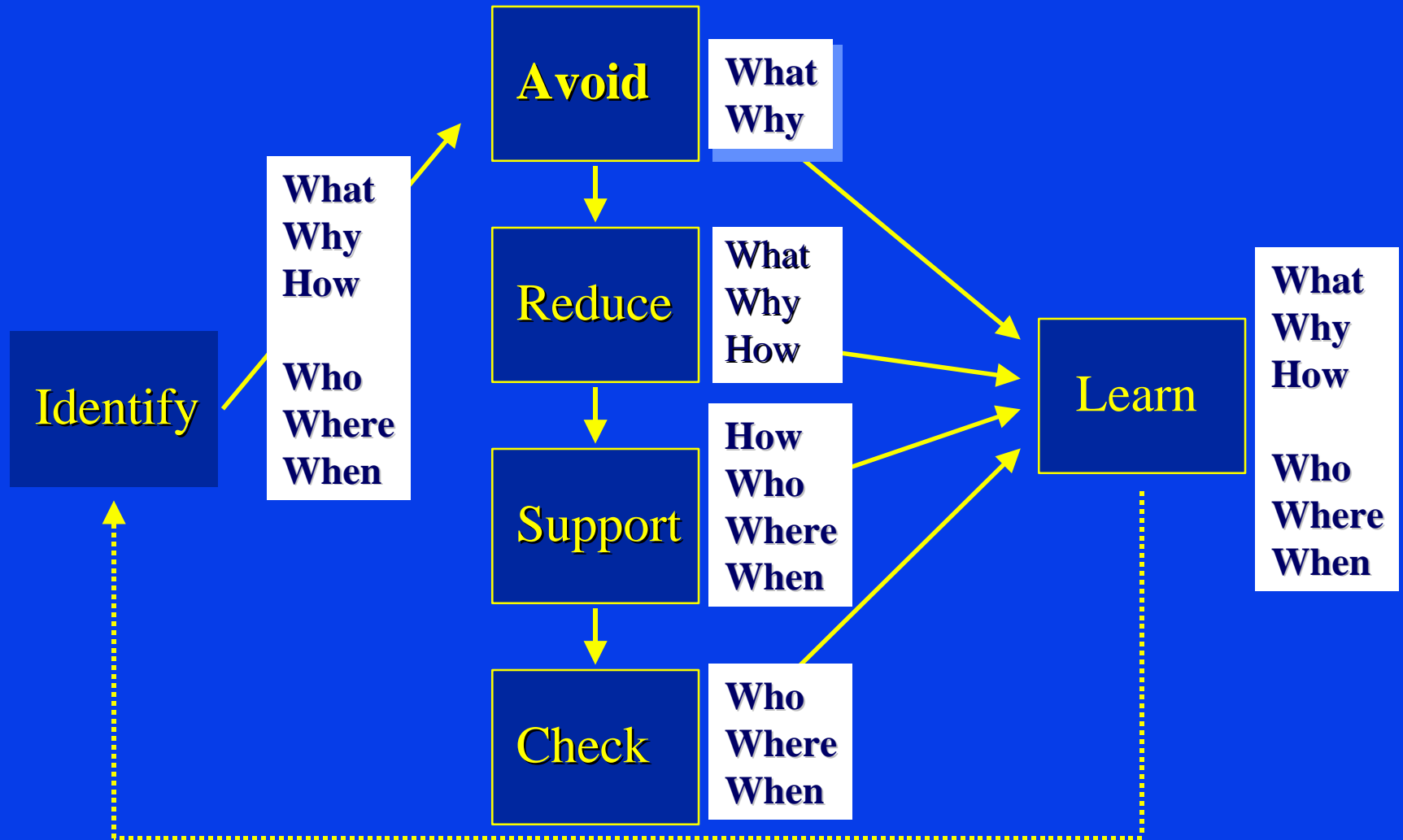
Planning

Inadequate work planning and advance preparation, leading to working 'on the fly' and solving problems as they arise

Solutions to the Problem

- The equation $\text{Violation} + \text{Error} = \text{Death}$ helps define what we are managing
- **Error** management makes negative outcomes less likely
- **Violation** management restores the level of control provided by procedures
- + We can try and keep the two apart

Error Management



Violation Management

- Violation management involves removing the need to violate
- Violation management involves containing the reasons for violation
- Violation management involves allowing initiatives to become managed as they are needed
- This can only be permitted openly in advanced safety cultures
- Simply telling wolves not to be wolves is ineffective and fooling yourself
- We can distinguish two classes of solution - Division I (effective) and Division II (less effective)

Remedies Division 1

- **Supervision** by leadership and planning
- **Analysis of Existing Violations** Discover background to violations
- **Analysis of Violation Potential** Use the Model to measure the Lethal Cocktail ingredients
- **Structured Discussions** Discover what's going on and agree solutions
- **Procedures** Improve the quality to avoid violations
- **Direct Management** Vary as circumstances require

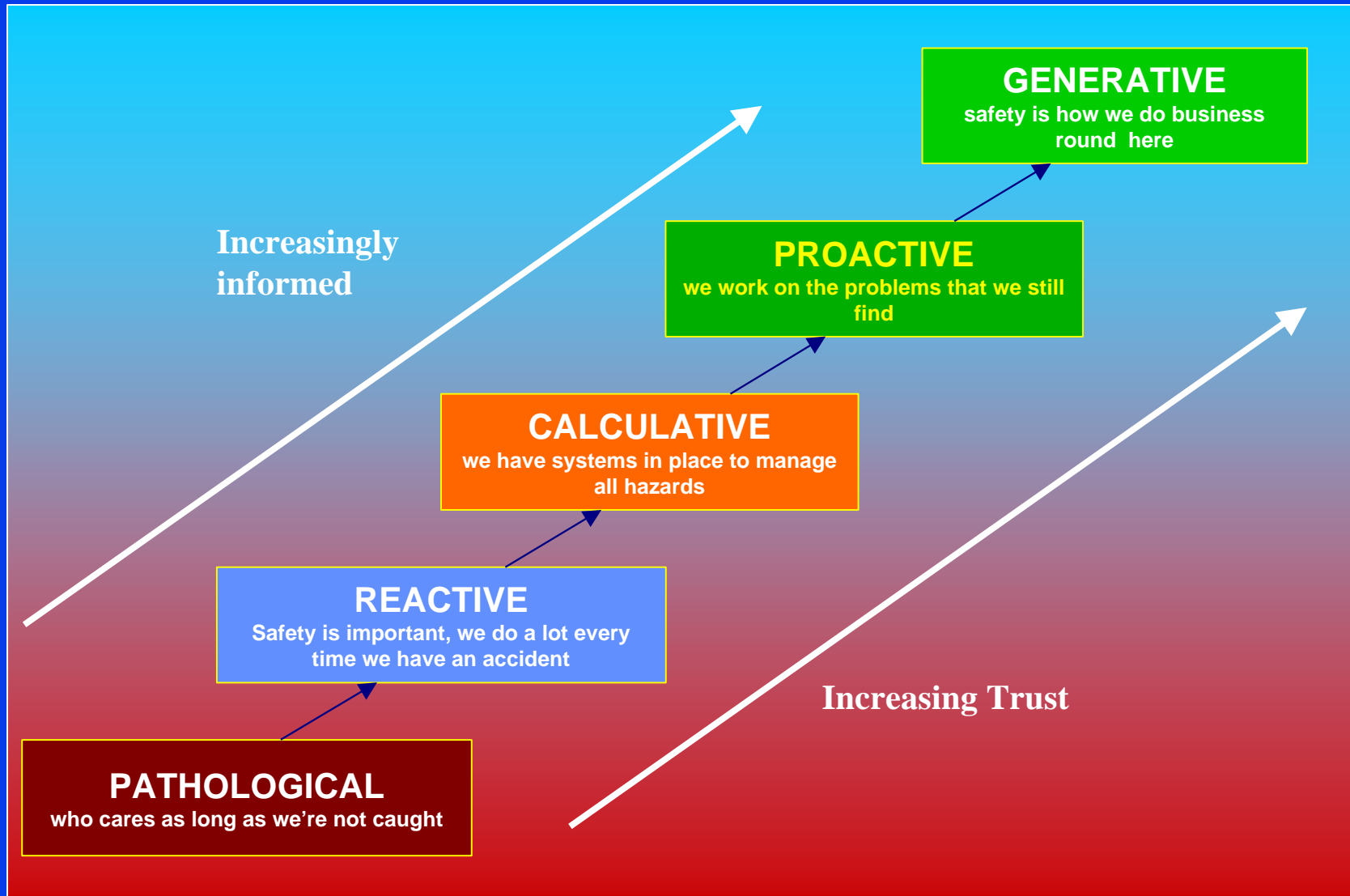
Remedies Division II

- **Selection** Pick people who won't violate
- **Training** Train more on the risks and hazards
- **Detection** Sharpen the lookout for violations
- **Reporting** Encourage people to report
- **Incentives** Pay for compliance, punish rule-breaking

Types of Safety Culture

- Safety Culture is an evolutionary concept
- The initial level (**Pathological**) is one where safety is regarded as a nuisance, accidents as inevitable
- The final stage (**Generative**) is one where safety is part of the business
- Accident rates *may* serve as indicators of which stage has been reached
- Only at the later levels is initiative manageable, despite what people might say

Safety Culture



Conclusion

- Violation is a problem best talked about
- The (US) compliance culture makes this hard
- Errors combine with violations to make disasters
- CRM needs to consider two distinct types of management
 - Error management
 - Violation management
- The problem will remain until we remove pilots from the flight deck and keep engineers away from airplanes