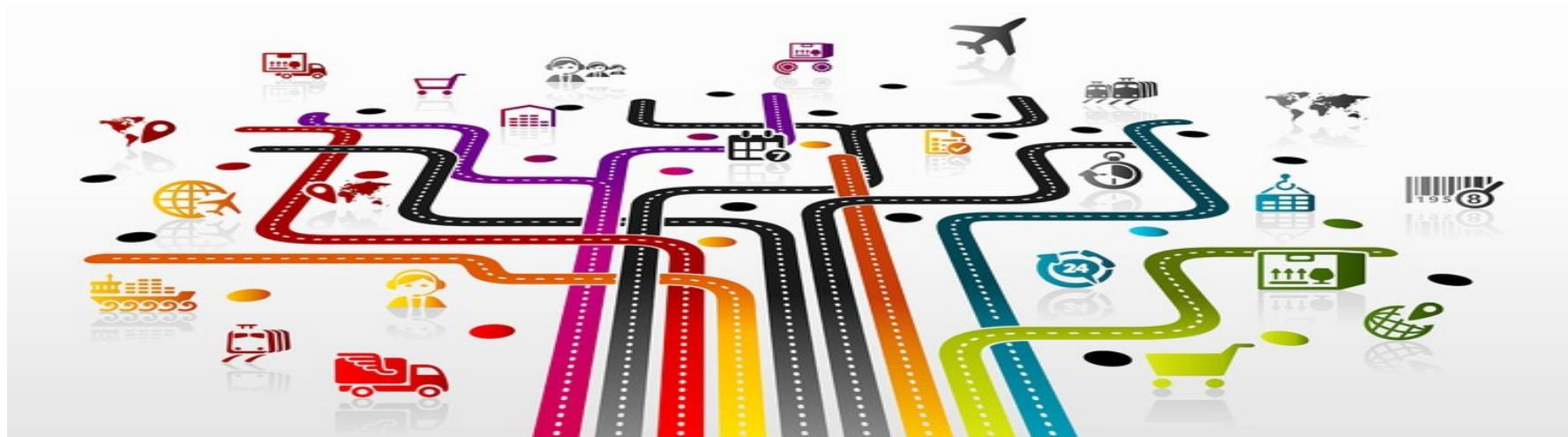

OVERVIEW OF SAFETY-II: BACKGROUND AND POSSIBLE FUTURE



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The problem is safety!



3. DEFINITIONS

3.20 **Safety.** Freedom from unacceptable risk.

Safety. A condition in which the risk of harm or damage is limited to an acceptable level.

Safety is the prevention of harm.

$$\text{Safety} = \sum_{i=1}^n \text{Accident}_i$$

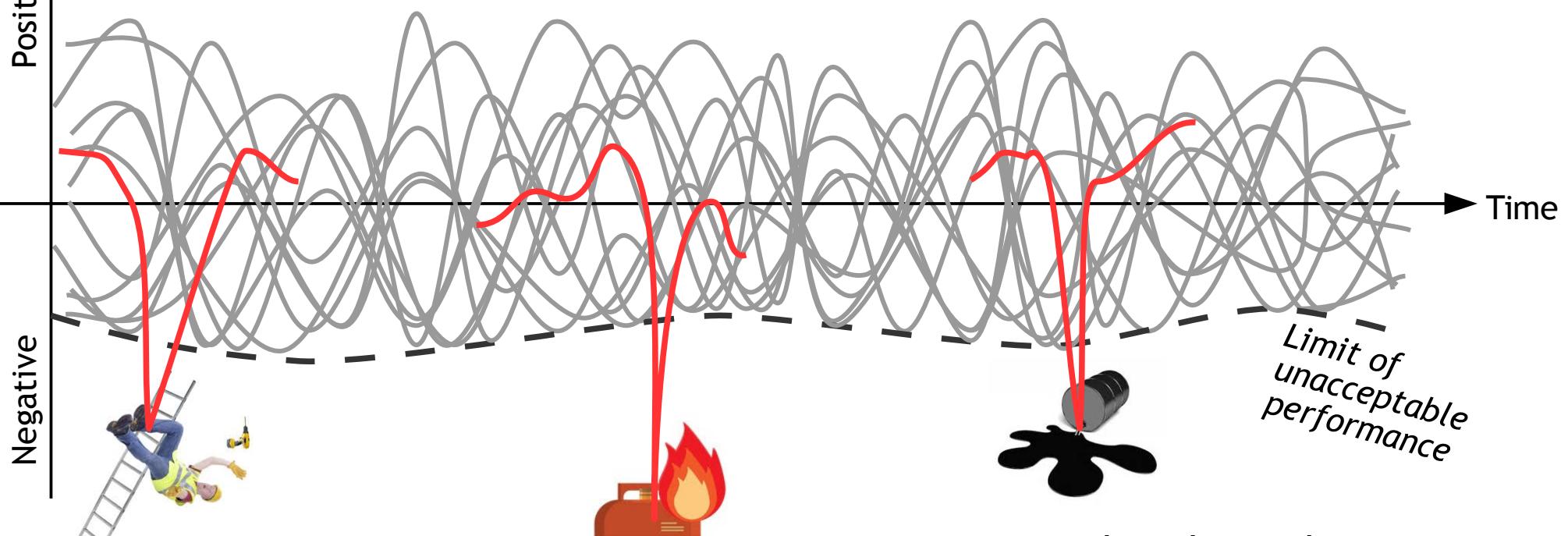
There is an presence of failures (things that go wrong) due to risks and hazards.
The number of harmful events can be counted.

It is “easy” to count things that go wrong, but does that measure safety?

Managing safety by snapshots

Outcome value

Safety management is based on analysing situations where something went wrong, hence on a set of snapshots of a system that has failed, described in terms of individual “parts” or system structures.



Harmful events attract attention. But they are rare and isolated.

Events are analysed step-by-step.
Prevention/responses are developed for each problem found.

The causality credo



- (1) Adverse outcomes happen because something has gone wrong (causes). Things that go right and things that go wrong have different causes.
- (2) Causes can be found and treated - given adequate data.
- (3) All accidents are therefore preventable (zero harm).



antidote

noun

- 1) a medicine or other remedy for counteracting the effects of poisoning, disease, etc.
- 2) something that prevents or counteracts injurious or unwanted effects.

Safety-I – when nothing goes wrong

Safety is a condition where the number of adverse outcomes (accidents / incidents / near misses) is as low as possible.



Safety-I is defined by its opposite - by the lack of safety (accidents, incidents, risks).



The premise for Safety-I is the need to understand why accidents happen.

If we want something to increase, why do we use a proxy measure that decreases?

Accidents and incidents are situations that, by definition, lack safety.

How can we improve safety by studying situations where there is NO safety?

The problem is NOT safety!

Safety is defined and measured more by its *absence* than by its presence.

Reason, J. (2000). Safety paradoxes and safety culture. *Injury Control & Safety Promotion*, 7(1), 3-14.

Reliability is a dynamic non-event ... it is an ongoing condition in which problems are momentarily under control due to compensating changes (in components) ...

It is *invisible* (because) people often don't know how many mistakes they could have made but didn't ... (and) also *invisible* in the sense that reliable outcomes are constant, which means there is nothing to pay attention to.

Weick, K. E. 1987. Organizational culture as a source of high reliability. *California Management Review* 29 (2), 112-128.

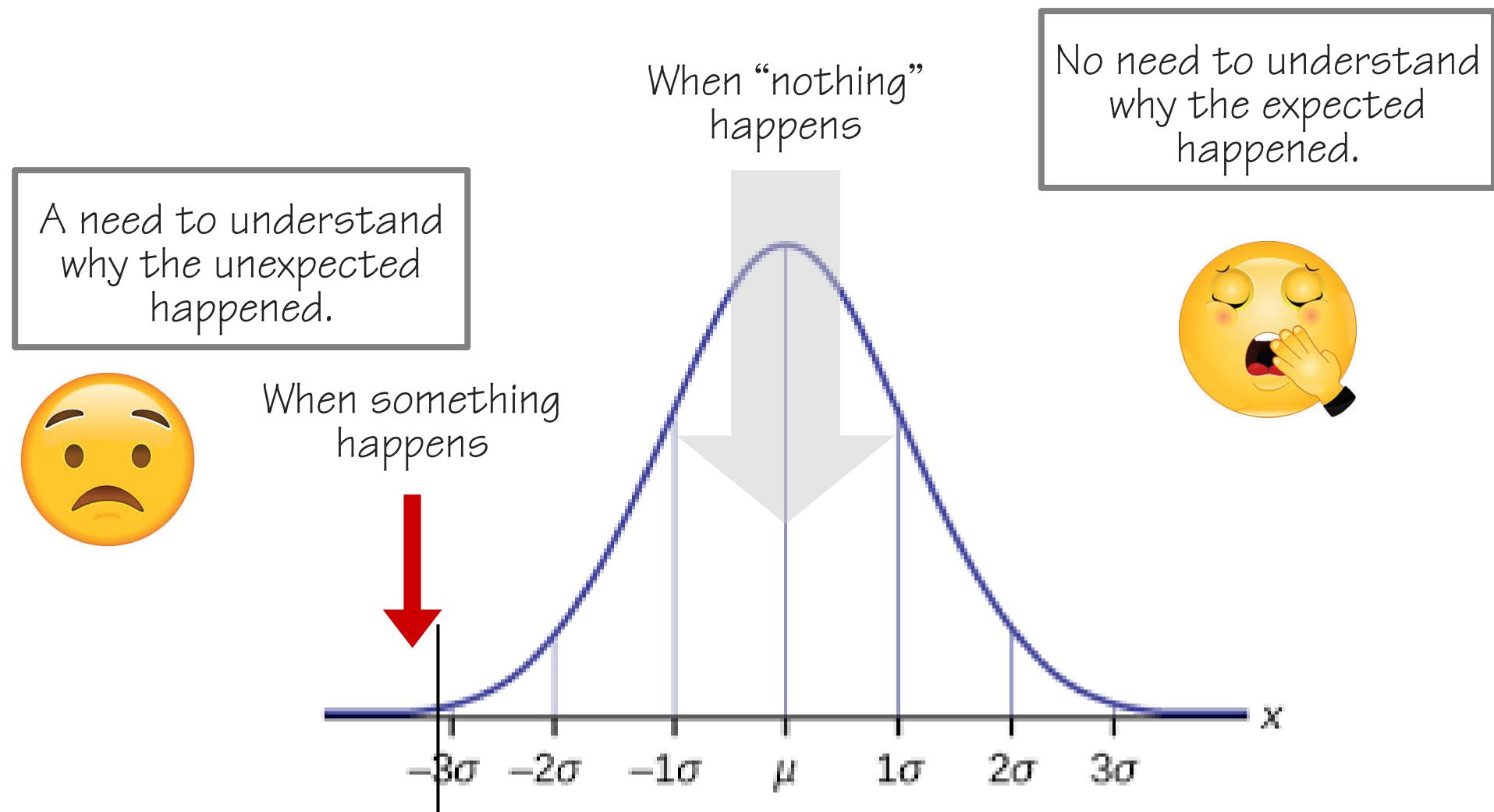
"Safety is a dynamic non-event"

$$\text{Safety} = \sum_1^n \neg \text{Accident}_i$$

There is an *absence* of failures (things that go wrong), but as a result of active engagement. If safety is a non-event, it can neither be observed, nor measured

Is it possible to count the number of times something does not happen?

Explaining what happens and how



Events and non-events

$10^{-4} := 1$ failure in 10.000 events

Adverse outcomes =
Absence of safety

Easy to see (visible)
Complicated aetiology
Difficult to change
Difficult to manage

'Difficult' to see (invisible)
Uncomplicated aetiology
Easy to change
Easy to manage

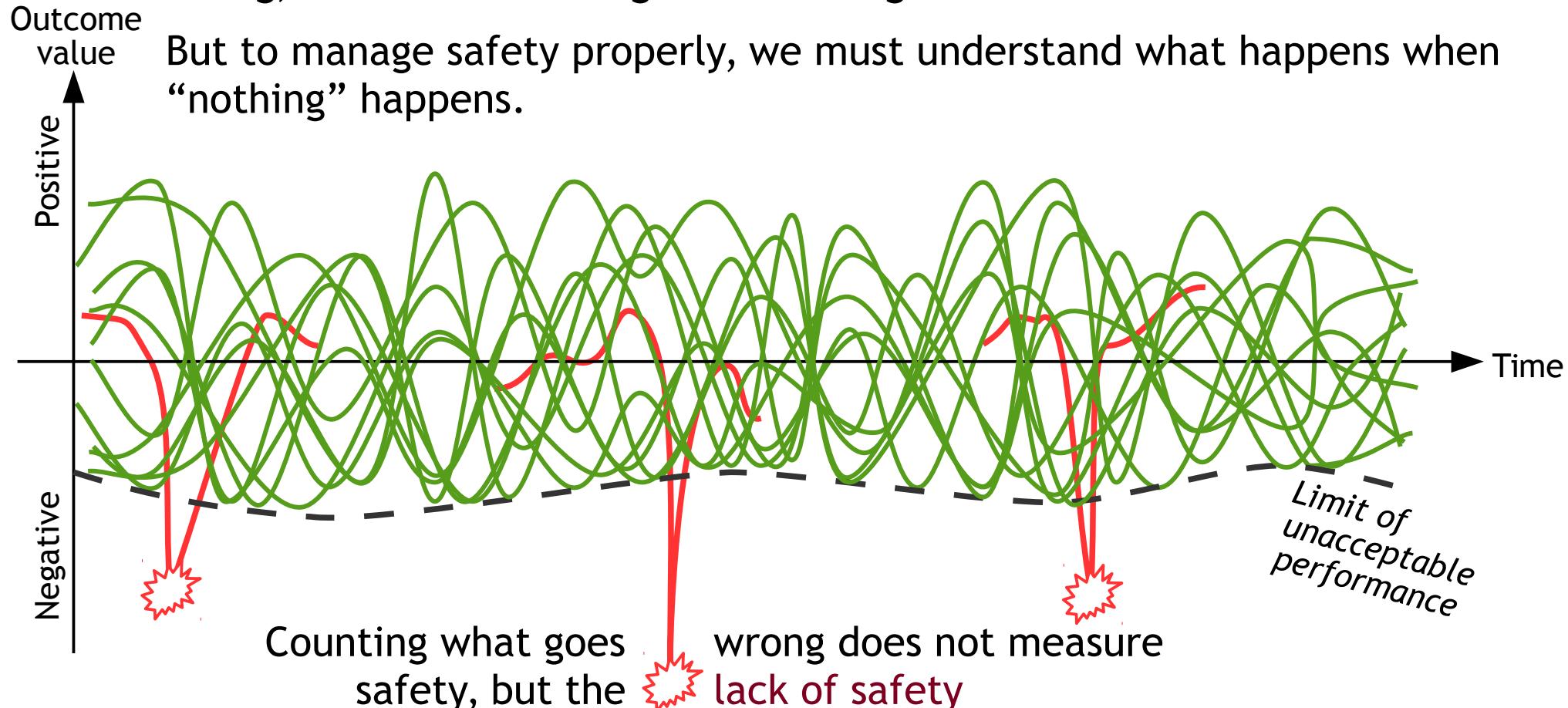
Intended outcomes =
Presence of safety

$1 - 10^{-4} := 9.999$ "successes"
in 10.000 events

Intended outcomes are constant, which means there is "nothing" to pay attention to.

Do we really know why things go well?

The result of Safety-I is that we know something about what goes wrong, but almost nothing about what goes well!



Why does work usually go well?

Work goes well because:

- Systems are well designed, well built, and scrupulously maintained,
- Designers and managers have foreseen and anticipated everything that could happen.
- Procedures are correct, complete, and always up-to-date.
- People behave as they are expected to – as they are taught.



Humans are a liability and performance variability is a threat.
The purpose of design is to constrain variability, in order to prevent adverse outcomes.

Because work usually goes well there is no particular reason to pay attention to it.

Instead we should worry about why work sometimes goes wrong.

Patient safety

The rate of adverse events in acute care ranges from 3% to 17% (international studies). Among the common “root” causes are:

Communication breakdowns: verbal / written.

Inadequate Information Flow: lack of crucial information, poor coordination

Human: standards, policies, processes, or procedures are not properly followed.

Inappropriate patient identification.

Organizational Transfer of Knowledge.

Inadequate Staffing Patterns and Workflow.

Technical Failures.

Inadequate Policies.

Were conditions perfect and did everything – and everyone – work as it/they should in the 83% - 97% of cases where there were no adverse events?

Or were people able to overcome problems because they had learned how to cope with the “slings and arrows” of everyday working conditions?

Safety II – when everything goes well

Safety-II: Safety is a condition where the number of successful outcomes (meaning everyday work) is as high as possible. It is the ability to succeed under varying conditions.

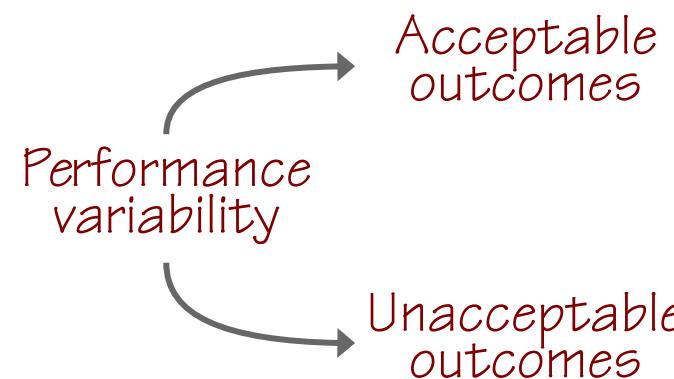
Safety-II is achieved by trying to make sure that things go well, rather than by preventing them from going wrong.

Safety is defined by its presence.



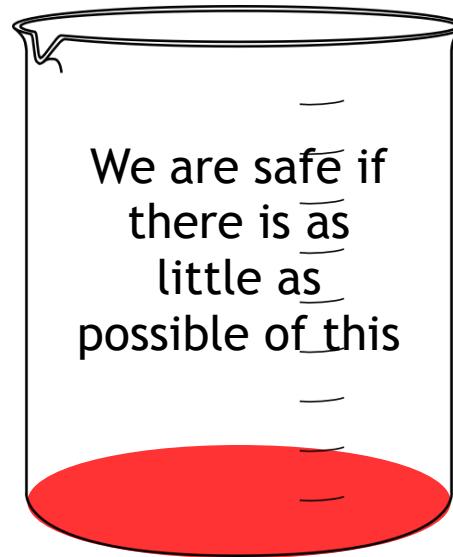
The focus is on everyday situations where things go well – as they should.

Individuals and organisations must **adjust** what they do to match the current conditions. Everyday performance must be variable in order for work to go well.



The future of safety management

Safety-I:
Absence of things that fail.
Only learn when “something” happens



Prevent, eliminate, constrain.
Safety, quality, etc. are different
and require different measures
and methods.

Safety-I:
Presence of things that go well.
Also learn when “nothing” happens



Support, augment, facilitate.
Safety, quality, etc. are
inseparable and need matching
measures and methods.

The bottom line

Accidents represent a lack of safety.

But a lack of accidents does not represent safety.

Safety is (an expression of) the ability of an organisation to function as required under expected and unexpected conditions alike. Safety is when “nothing” happens.

Safety cannot be achieved – or managed – by preventing something from happening, but only by ensuring that something happens – that work goes well.



It is impossible to manage something unless you know what is going on.
Safety must therefore be based on an understanding of what happens
when “nothing” happens.