

WINS ROUNDTABLE ON MOTIVATING STAFF WITH ACCOUNTABILITY
FOR NUCLEAR SECURITY

Motivation as a Key Contributor to Nuclear Security Culture

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Talking points

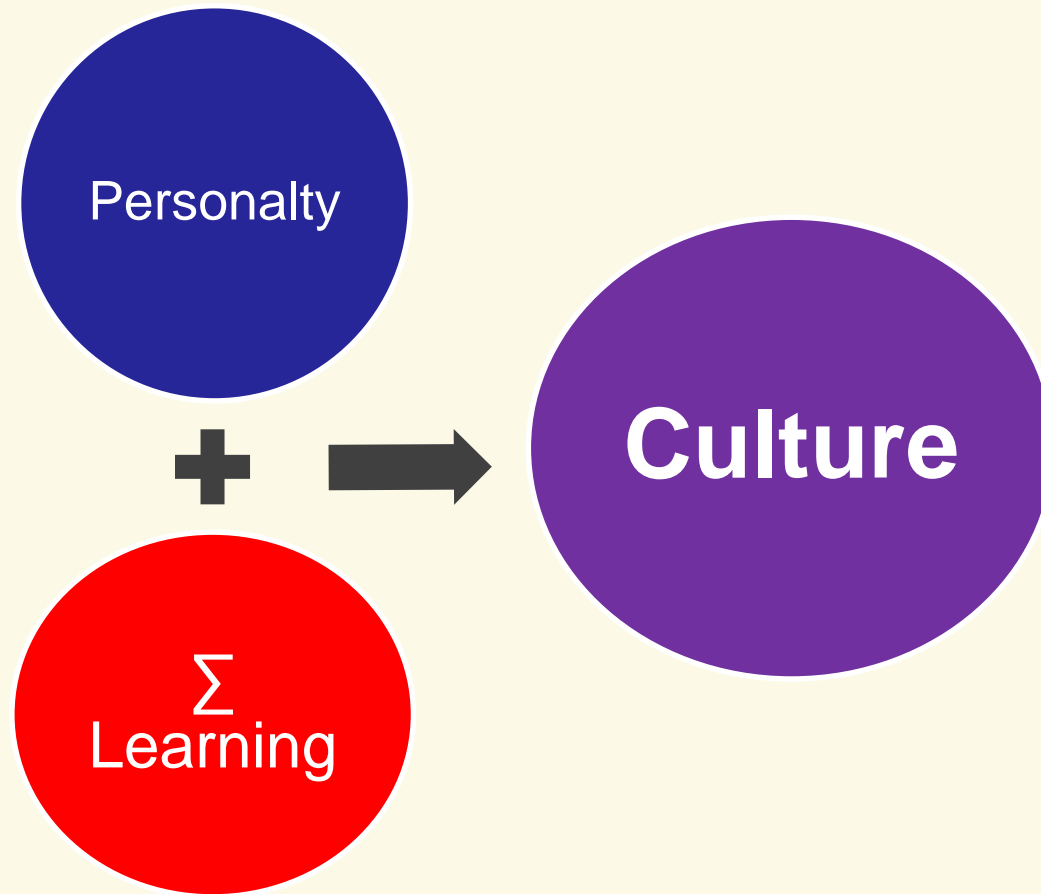
- The contribution of motivation to nuclear security culture
- The impact and relation of employee motivation towards key elements of nuclear security culture
- Soft and hard measures to foster a strong nuclear security culture



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➤ **What is culture? My compact version of a definition:**



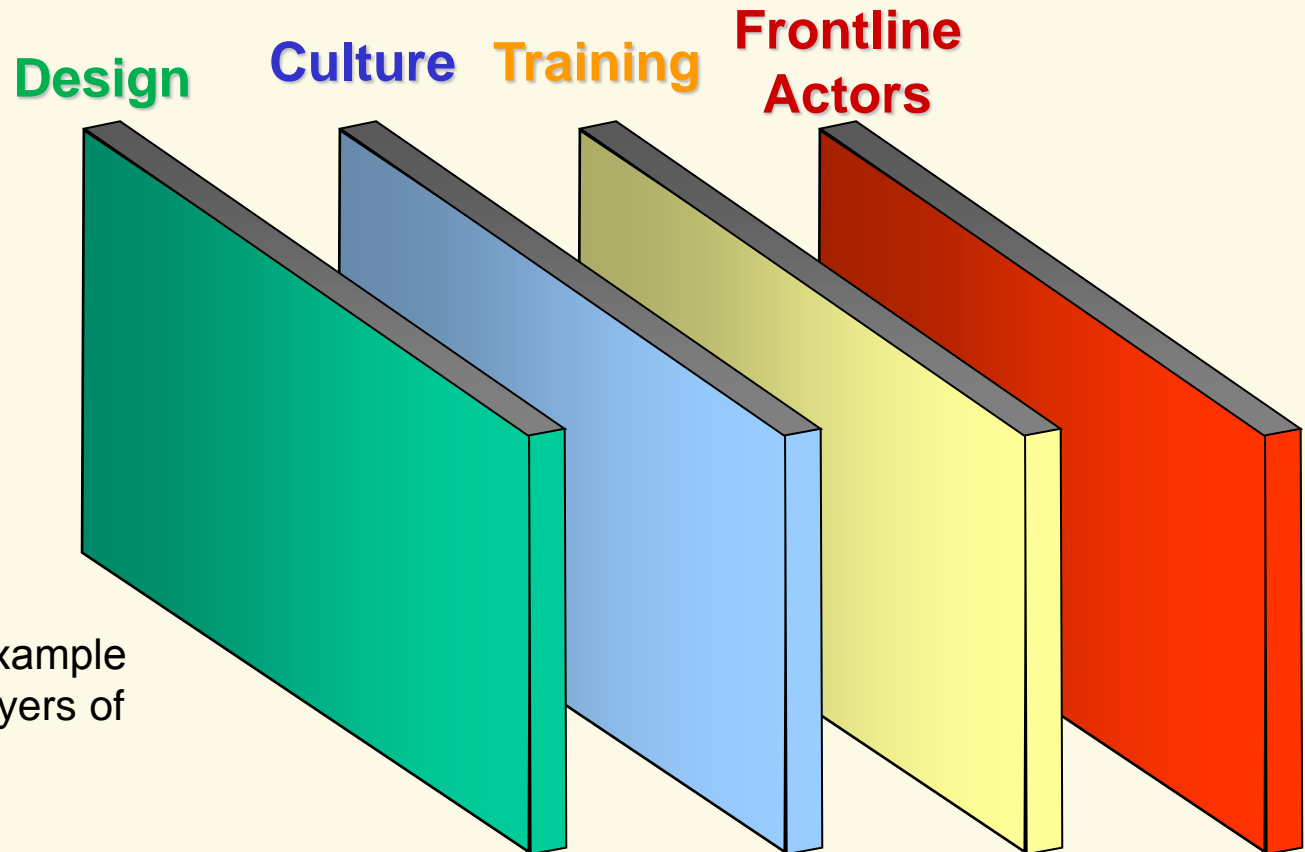
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- **Security is based on a system of defence in depth.....and is permanently threatened, e.g. by **Murphy's Principle****



...just an example for some layers of defence...



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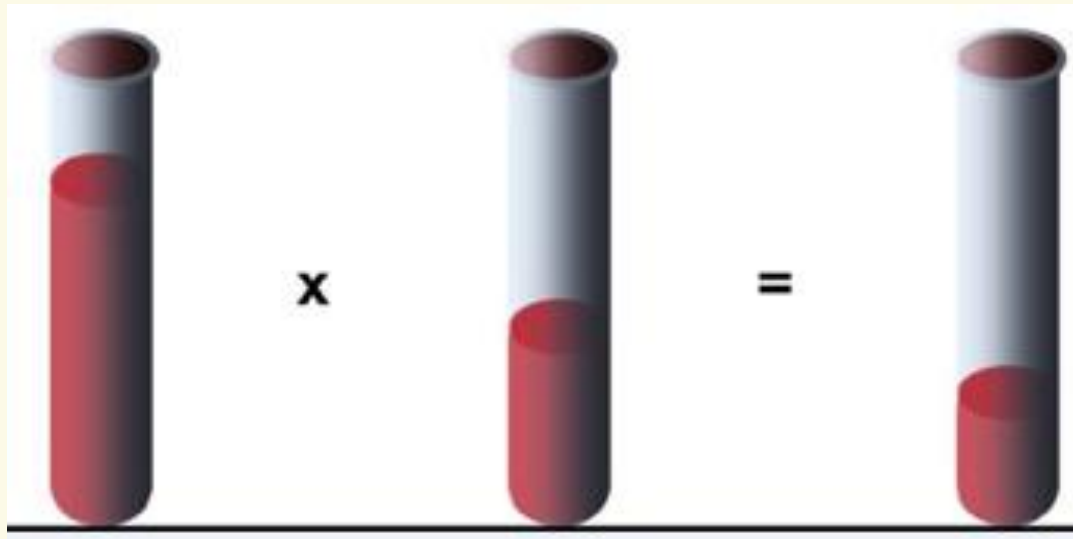
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➤ **Is it sufficient to keep the management-systems in order?**

**perfect management-system
(as goal)**

**degree of realization
(current state of MS)**

**discipline and
knowledge/skills
(reality)**



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The contribution of motivation to nuclear security culture

✓ Intrinsic vs. extrinsic motivation

Some studies have demonstrated that offering excessive external rewards for an already internally rewarding behaviour can lead to a reduction in intrinsic motivation, a phenomenon known as the overjustification effect.

- Measures of extrinsic motivation should be well-portioned (otherwise it may even spoil the intrinsic motivation, do you have some examples?)
- Intrinsic motivation should be carefully fostered and monitored, which is an intrinsic challenge for superiors (by the way can you enhance something without knowing the current state?)



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The contribution of motivation to nuclear security culture

➤ Advantages and limitations of motivation

- Unexpected external rewards typically do not decrease intrinsic motivation (this should to be done with caution because people will sometimes regularly expect such rewards).
- Praise can help increase internal motivation (it has been found that offering positive praise and feedback when people do something better in comparison to others can improve intrinsic motivation).
- Intrinsic motivation will decrease, however, when external rewards are given for completing a particular task or only doing minimal work (i.e. a person will become less intrinsically motivated to perform a rewarded task in the future).



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The contribution of motivation to nuclear security culture

➤ Motivation in different areas

- Nuclear security is not unique when it comes to rewarding, but has some special characteristics (think about the counter for work accidents and its possibly negative consequences).
- Rewarding for voluntarily participating in a self assessment campaign for nuclear security culture should be rewarded (boss' praise may be sufficient and appropriate).
- Looking beyond the boundaries of your own profession could be the key to success (what are driving forces for staff motivation in other areas, such as aviation, oil drilling, medicine etc.?).



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The contribution of motivation to nuclear security culture

- Rewarding as part of feedback culture
- Calling for constructive and concrete feedback should be a regular measure and not only if something went wrong before.
- As a superior: overcome your own tendencies of being complacent. Not the messenger of bad news is to be blamed for the event but the event should be regarded as an opportunity to improve the organization for the future and to avoid repetition.
- Think about installing an anonymous reporting system (as in aviation industry), as people are afraid of sanctioning or betrayal).



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The contribution of motivation to nuclear security culture

- the “red line” problem

Scenario: *An armed guard “forgot” his weapon in the restroom of a nuclear facility with category 1 material. Some time later a cleaning lady found it there, took it and handed it over to the security.*

How would you react?

A) As the senior security officer in charge?

B) As the top manager of the facility?

C) As the regulator who was informed by the operator about this event?

What happened in reality?



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The contribution of motivation to nuclear security culture

➤ The “red line” problem

What happened in reality - the whole story?

The armed guard had to face serious stomach problems and thus had to rush to the restrooms. After having done what had to be done there, he unfortunately forgot his holster and pistol close by the toilet bowl. He did not realize this but the cleaning lady found it some time later...

Operator informed the regulator and promised to the regulator to fire the careless guard immediately and declared the event to be disposed. The guard was surprised by the harsh and draconian punishment. The regulator declared not to oppose this immediate dismissal but announced to question the security culture of the operator esp. if this event would not be carefully analysed.



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The contribution of motivation to nuclear security culture

➤ Lessons learnt

- A) The operator's contractor (security company) revealed a somehow faulty error culture and had to be warned by the regulator, as a zero tolerance failure level is not acceptable (esp. may be fatal in the case of armed guards). The guard himself has been warned and trained again.

- B) The top management of the operator realized that on the one hand training and education for guards had to be enhanced and on the other hand, his employees did not properly know where the “red line” for their misbehaviour was and what were the consequences (for themselves and the operator) therefore?

- C) The regulator had to warn the operator to enhance his security culture state in reality.



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The contribution of motivation to nuclear security culture

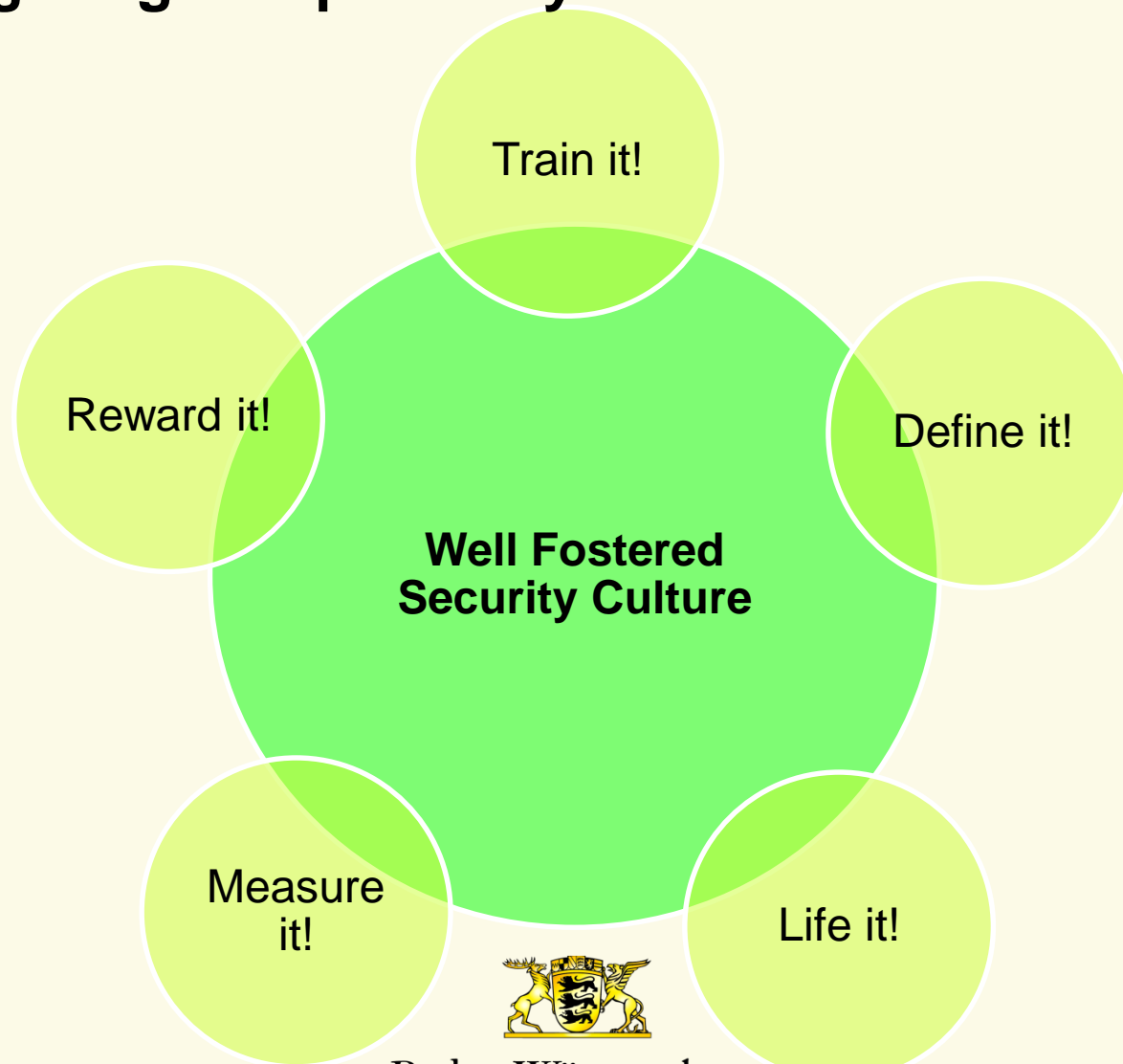
- Daring a constructive failure culture
 - Offer a well-established forum for feedback and promote it.
 - Guarantee anonymity to the messengers (esp. of bad news).
 - Reward the feedback, regardless if positive or negative.
- } tension and contradiction possible!



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- **The goal: overcoming a faulty error culture and fighting complacency**



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➤ **Damage: Cost Estimate**

Total economic loss from the act of terrorism against the World Trade Center in 2001



Over 190 billion US\$

Cost to the British economy of the July 2005 bombing of the London metro system



Between 4 and 6 billion US\$

Estimate of potential ensured losses from a medium size radiological attack in Washington DC



About 107 billion US\$



➤ Everything clear so far? Are you sure?

So let's simply improve our security culture!



Imagine the following scenario:

- you're an engineer in a car company
- on a sunny day your boss asks you to improve the fuel consumption of engine type XY by 30% within 6 months and hands over a photo of the engine
- you hardly know this kind of engine and its fuel consumption is unknown to you
- what would **YOU** do?



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The impact and relation of employee motivation towards key elements of nuclear security culture

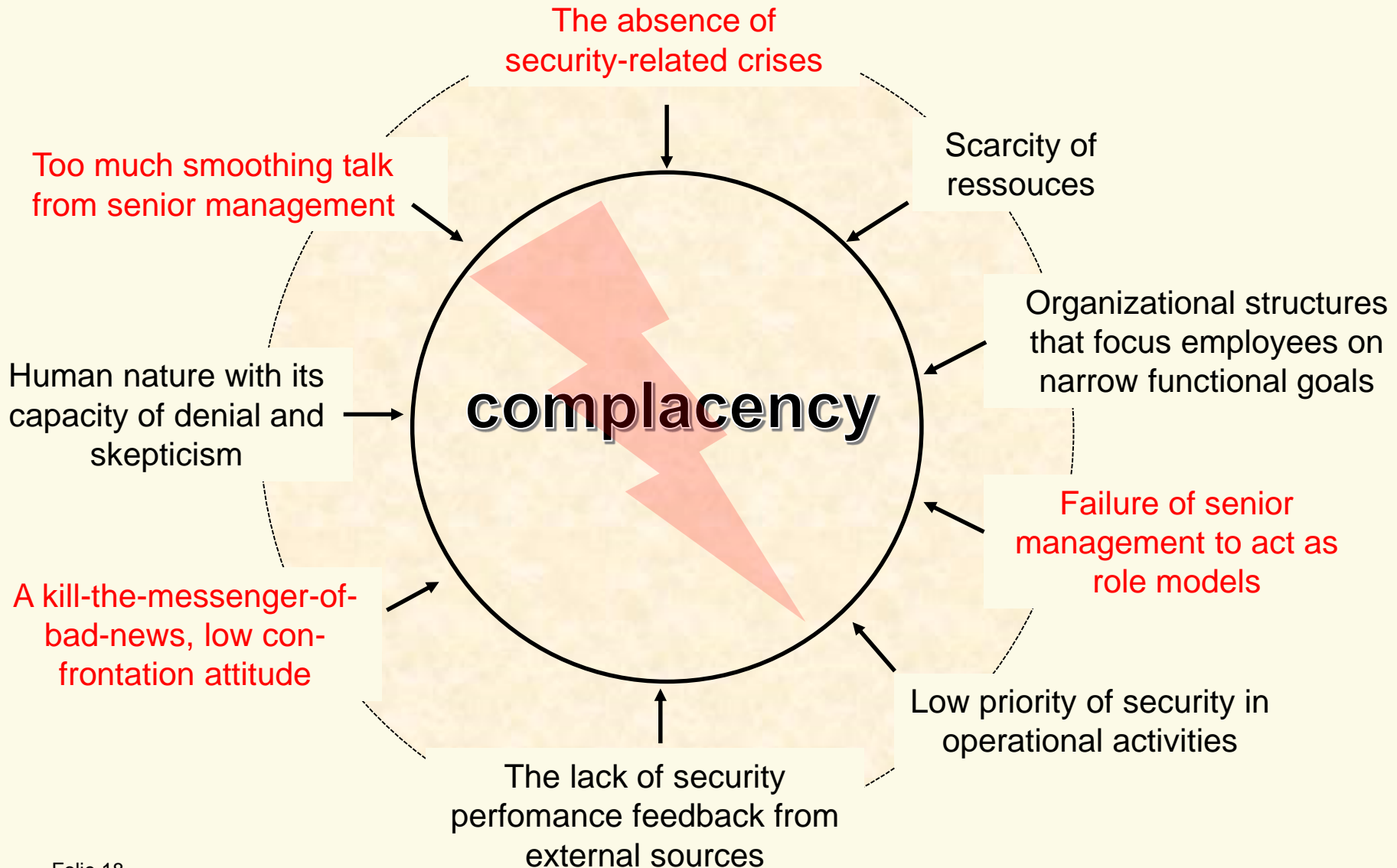
- Pushing the attitude from avoidance towards security to ownership
- Complacency (also of senior management) is the worst enemy for an effective security culture.
- Evaluate the security culture in reality at all levels of hierarchy (paper doesn't blush!).
- Learning from (realistic) examples is irreplaceable! Try to use all available sources of information about events (from other sites and/or other areas of critical or non-critical infrastructure).



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Root causes of complacency



Attitudes toward security

Avoidance

people regard security as inherently dangerous, unnecessary, or even harmful

Apathy

people don't care one way or another about security

Participation

people follow the rules while acting like security is not their problem

Ownership

people assume responsibility and regard security as their programme



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The impact and relation of employee motivation towards key elements of nuclear security culture

- Promoting practical examples and exchanging experiences
- (Low-level) security related events are not only “a pain in the back” but – if carefully analysed – offer unique opportunities to learn from them and improve the current state.
- Investing in a learning organization is a benefit to reduce future costs (think about the accounting managers!); the good old health insurance is a good example for (a nearly) incalculable benefit.
- Realistic and practical examples (and possible consequences) should be a regular component of training and education, not only for security personnel.



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- Overcoming the “silo-thinking” by profiting from different areas via
 - On-the-job training in different areas
 - Internships for young professionals
 - Regular interdisciplinary meetings
 - Multidisciplinary drills and trainings



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The impact and relation of employee motivation towards key elements of nuclear security culture

- Challenging the safety-security interface
- Knowing contentious issues (e.g. emergency doors, fire protection and prevention, workplace safety) to enhance the mutual understanding
- Carefully deal with the contradiction between transparency and classification of information (esp. in the computer security and the impacts of social media)
- Clearly define the boundary and priorities and communicate them to the staff



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- Enforcing a positive failure culture, why?



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➤ The Fate of Invisibility

Production/Efficiency

- Measurable results
- Clear causalities
- Short-term success
- Visible success

Security

- Unclear results
- Unclear causalities
- Long-term benefit
- Apparent failures

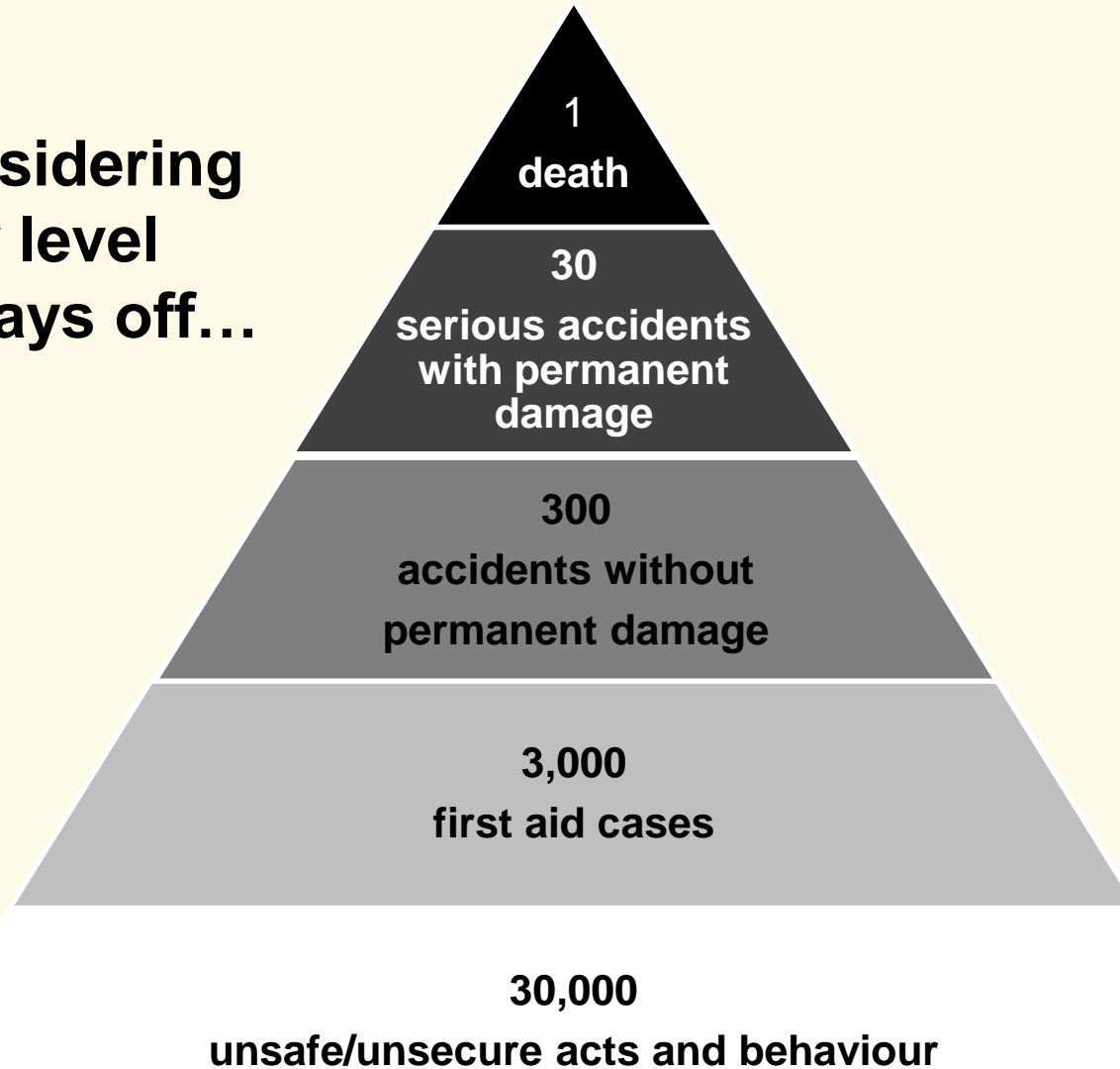
- Security seems to be an **"invisible non-event"**, there are not any success messages à la **"93 days without any security related event"**



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➤ **Why considering even low level events pays off...**



loosely based on e.g.

- F.E. Bird, G.L. Germain, F.E. Bird, Jr., Practical Loss Control Leadership, International Loss Control Institute, Atlanta, GA 1986
- J. Reason, Human Error, Cambridge University Press, Cambridge 1990

➤ **Some examples for “security culture” in practice?**

- stolen or lost radioactive sources (*laid back attitude toward security rules*)
- people ignore or even do not know security rules (*apathy, laziness*)
- bored, apathetic or even sleeping guards (*security is an unnecessary obstacle to hinder effective production*)
- managers refuse to follow security rules when entering protected areas (*claiming special rights for them no time*)
- maintenance of security systems postponed due to financial reasons (*short cuts due to business goals*)
- missing feedback culture (*“my bosses know exactly what to do“ vs. “I frequently reported gaps and however nothing happend“*)



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➤ Why minor deviations are rarely reported?

- are considered unimportant,
- are not recognized,
- fear of overtime,
- fear of sanctions,
- fear of disgrace,
- demotivation: „I already reported so many events and near-misses and nobody takes them seriously!“



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actor + active errors + latent faults = event

intent+ability



lapse or wrong decisions



insufficient design or management system



opportunity!

- Are we able to “retrain“ terrorists?
- No, but we can try to “spoil“ their opportunities...



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How to foster a strong a strong nuclear security culture

- “Ignorance is strength” vs. profound knowledge as a driving force

This paradox metaphorically means that, if people remain ignorant of the facts, they would not be able to raise questions against organizations and their managers; therefore, it would help the concerned organizations in making it “stronger”.

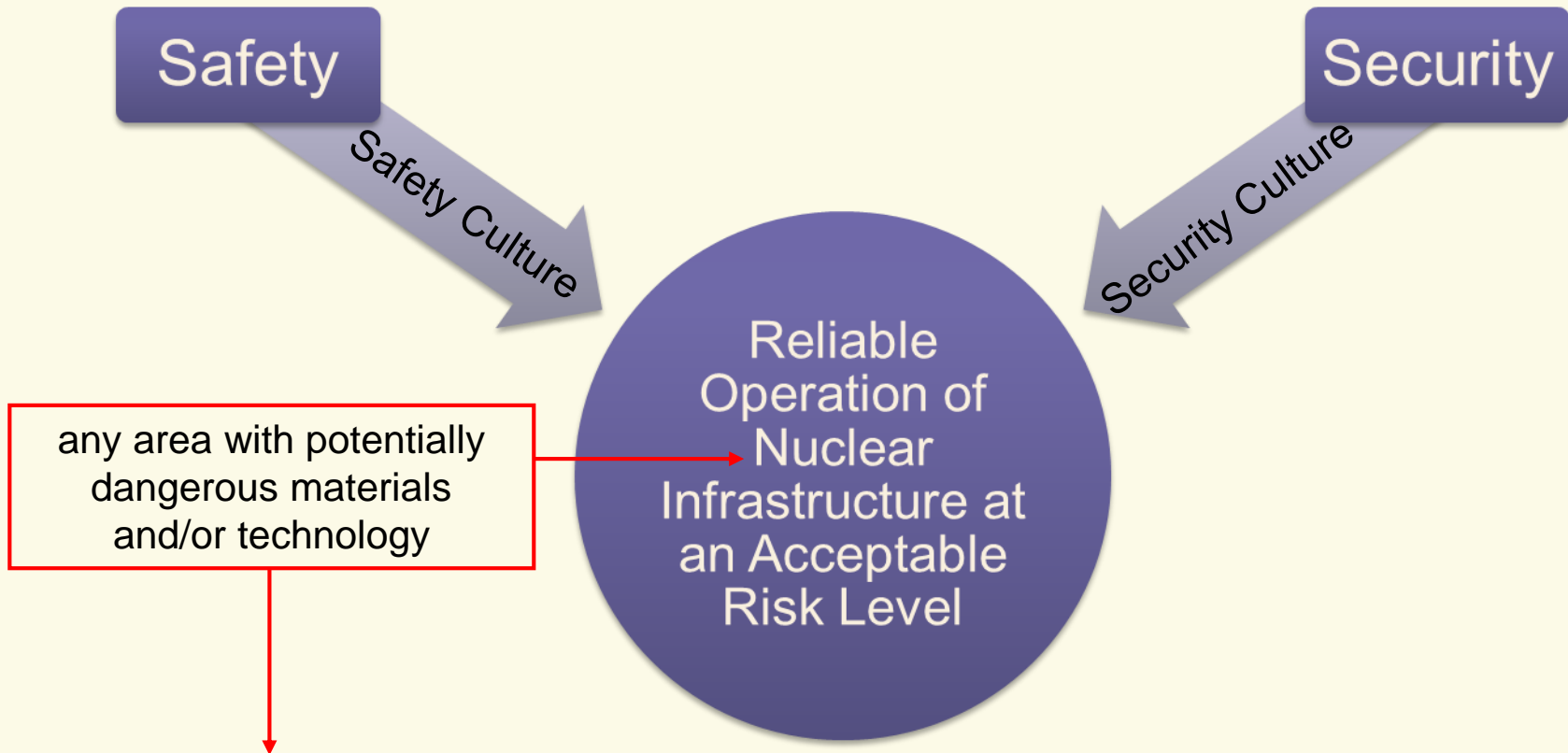
- The classification of “critical”, security related information is the enemy of transparency and understanding of the important connection between security and other organizational subculture (“us vs. them”).
- Knowledge is however crucial for taking ownership for an effective security and thus appropriate behaviour.
- A questioning attitude is indispensable to foster the security culture.



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➤ The Magic Twins: Safety Culture and Security Culture



Nuclear safety and security must mutually reinforce each other in their common objective of protecting human lives, society and environment



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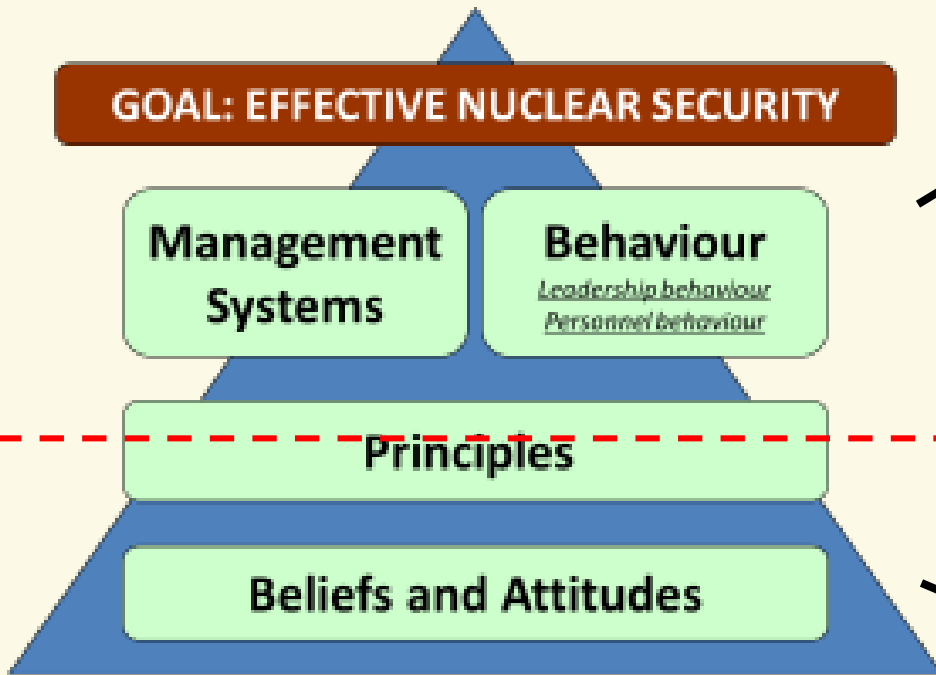
How to foster a strong a strong nuclear security culture

- Regular assessments of the state of security culture and rewarding
- Do not reinvent the wheel: all mandatory tools are already on the table
- Keep it as simple as possible and therefore understandable for everybody
- Clearly communicate the background and the results (outcome) of such an evaluation and visibly put measures into action (action plan!) and monitor the progress of implementation und sucess!



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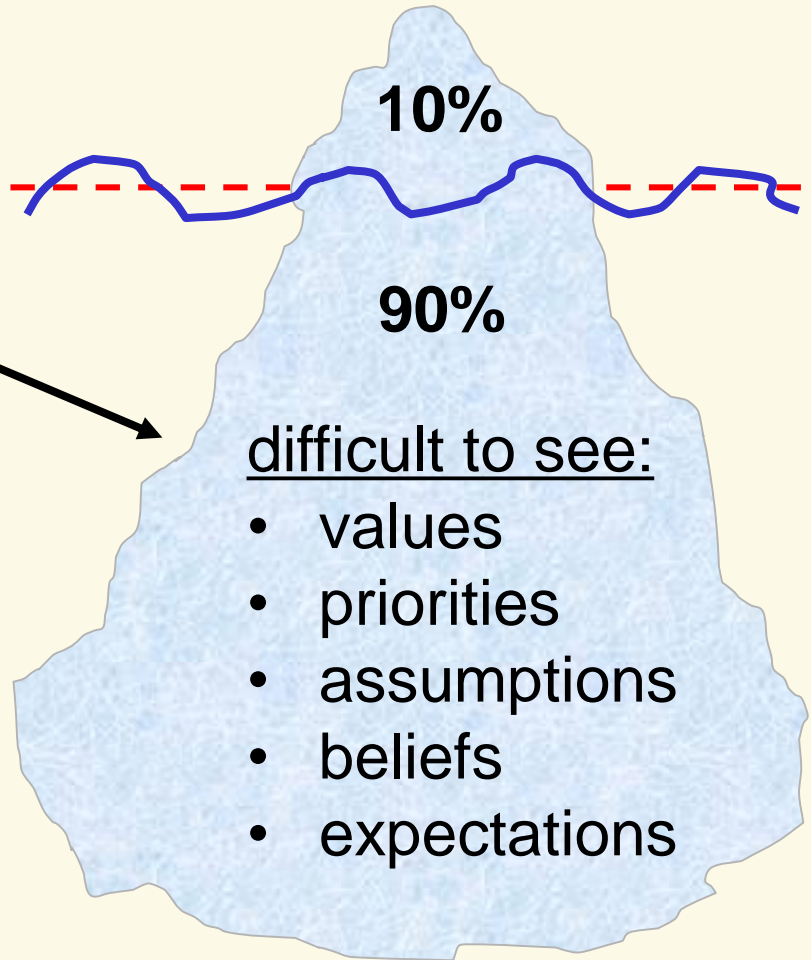
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Model of IAEA Nuclear Security Culture

easy to see:

- behaviours
- habits
- appearance



difficult to see:

- values
- priorities
- assumptions
- beliefs
- expectations

our national experience:

most of the observed and analysed **security related events** (also low-level) are highly influenced by “weak spots“ of the practised nuclear security culture!

To be more precise...

Mind the interface safety / security culture!

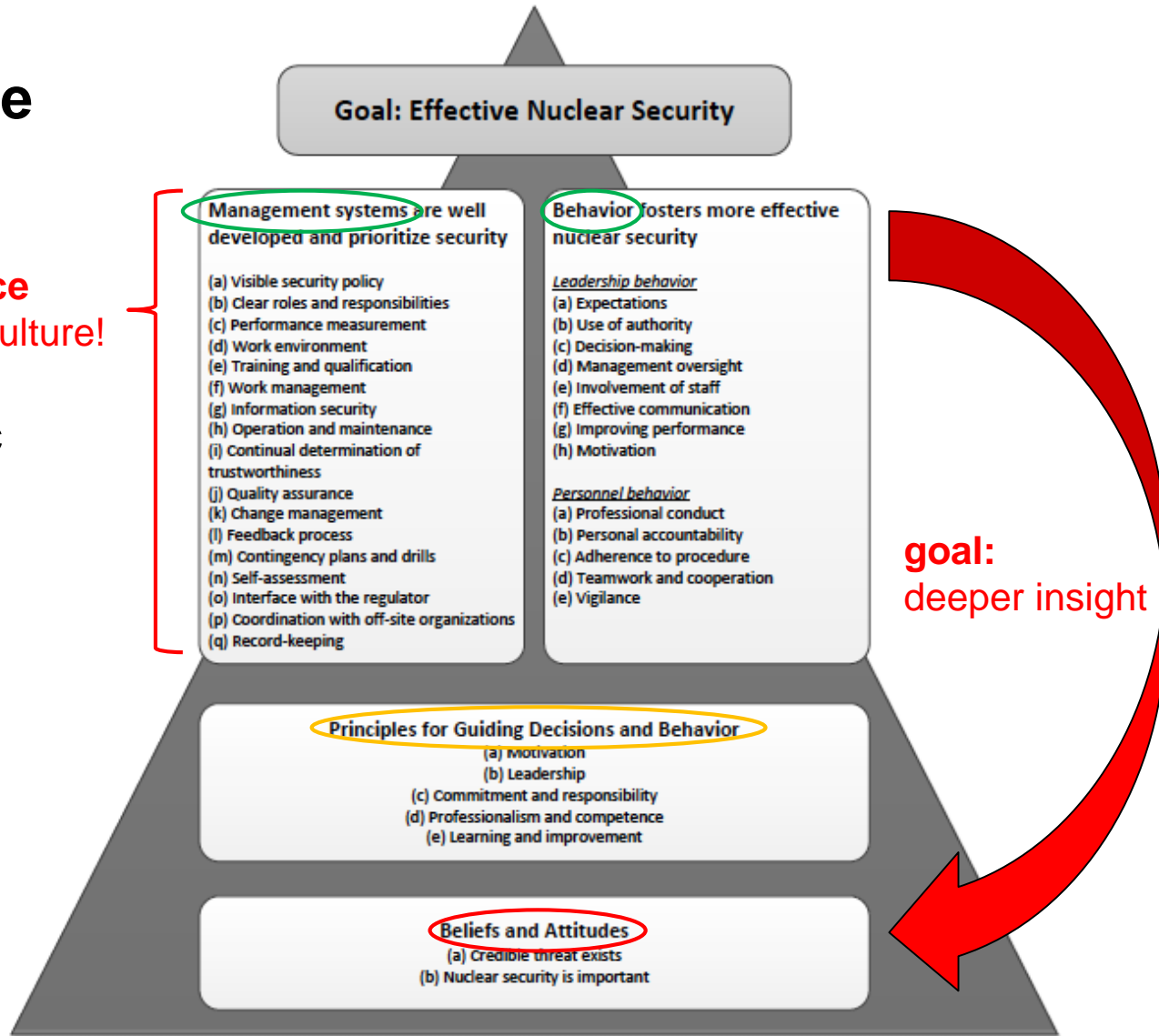
characteristic



indicator

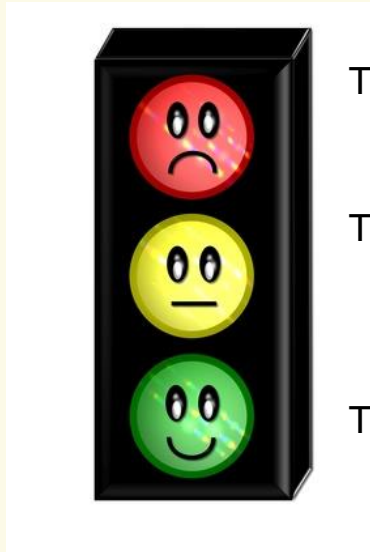


personalized statement



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➤ green, yellow and red lights will light you the way



The **red** level is an indication of certain problems which must be addressed as a matter of priority.

The **yellow** level is a signal that despite some positive elements, there is something to optimize to improve the current state.

The **green** level signifies good performance in line with positive indicators, and calls for steps to reinforce efforts.
to keep the momentum

$1 \leq \mu \leq 2$	$2 < \mu < 3$	$3 \leq \mu \leq 4$
positive feedback (no action needed)	potential for optimization	action needed

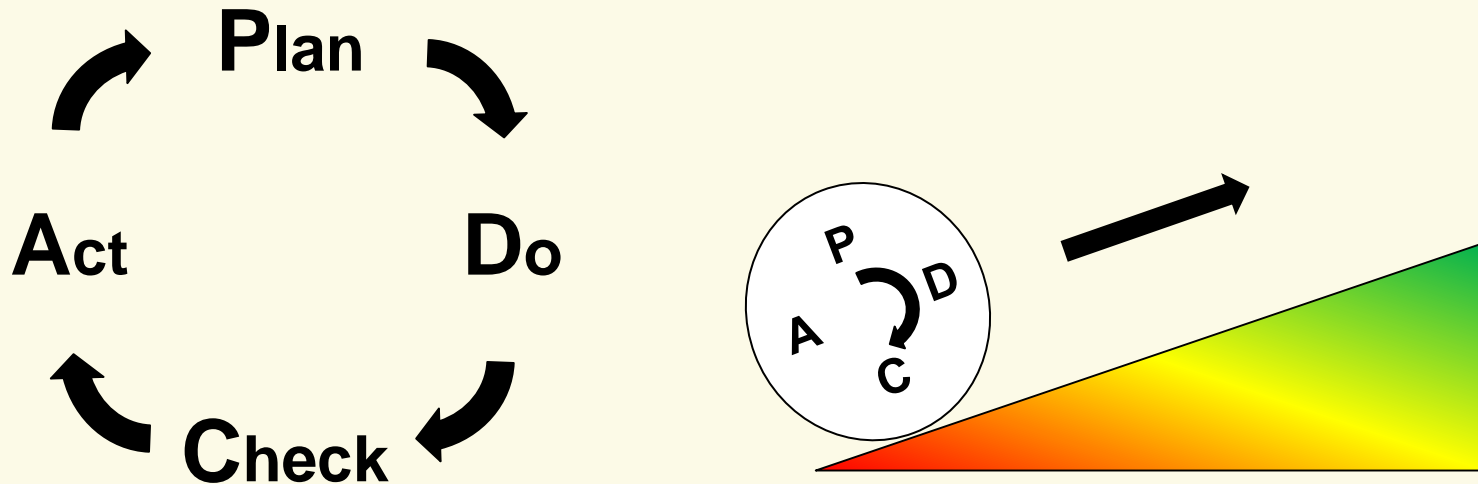


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how to stay on the road (of success)...

Quality assurance → continuous improvement
(PDCA)



- The data collecting and evaluation method and its processes have to be regularly checked (and modified)!



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How to foster a strong a strong nuclear security culture

- The challenge to establish an effective “supporting culture”
 - Everybody should feel responsible for his colleague
 - Selfish actions should be sanctioned, not rewarded
 - Self-protection and protection of the colleagues should be daily routine
 - Vigilance and awareness for security related issues as a feeling of self-responsibility should be a matter of fact



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Thank you for your attention!

“Organizational culture means to the organization the same thing as the oil in the gearbox: It supports the long-term effectiveness and functionality“

(A. Hagemann)



Any questions?

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