

Fewer can be more - Nuclear safety and security culture self-assessment in the Hungarian Public Ltd. for Radioactive Waste Management

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Although there is a **relationship between nuclear safety and security culture**, especially in the process and methods, these connections were researched detailed only in recent years. **The large amount of connections between safety and security culture inspired me to research a new methods and test them in practice.** The presented self-assessment was conducted in August-September 2015 at the Public Limited Company of Radioactive Waste Management (PURAM) and was entirely based on both domestic and international [1-5] guidance.

Although the entire self-assessment was initiated, laid out and conducted by myself, beside that "behind the scene" obviously there were a lot of cooperation and communication. To determine the optimal method together with the management, that is responsible for the nuclear security and safety divisions. We agreed in order to the higher out fill ratio on a "traditional" paper based survey.

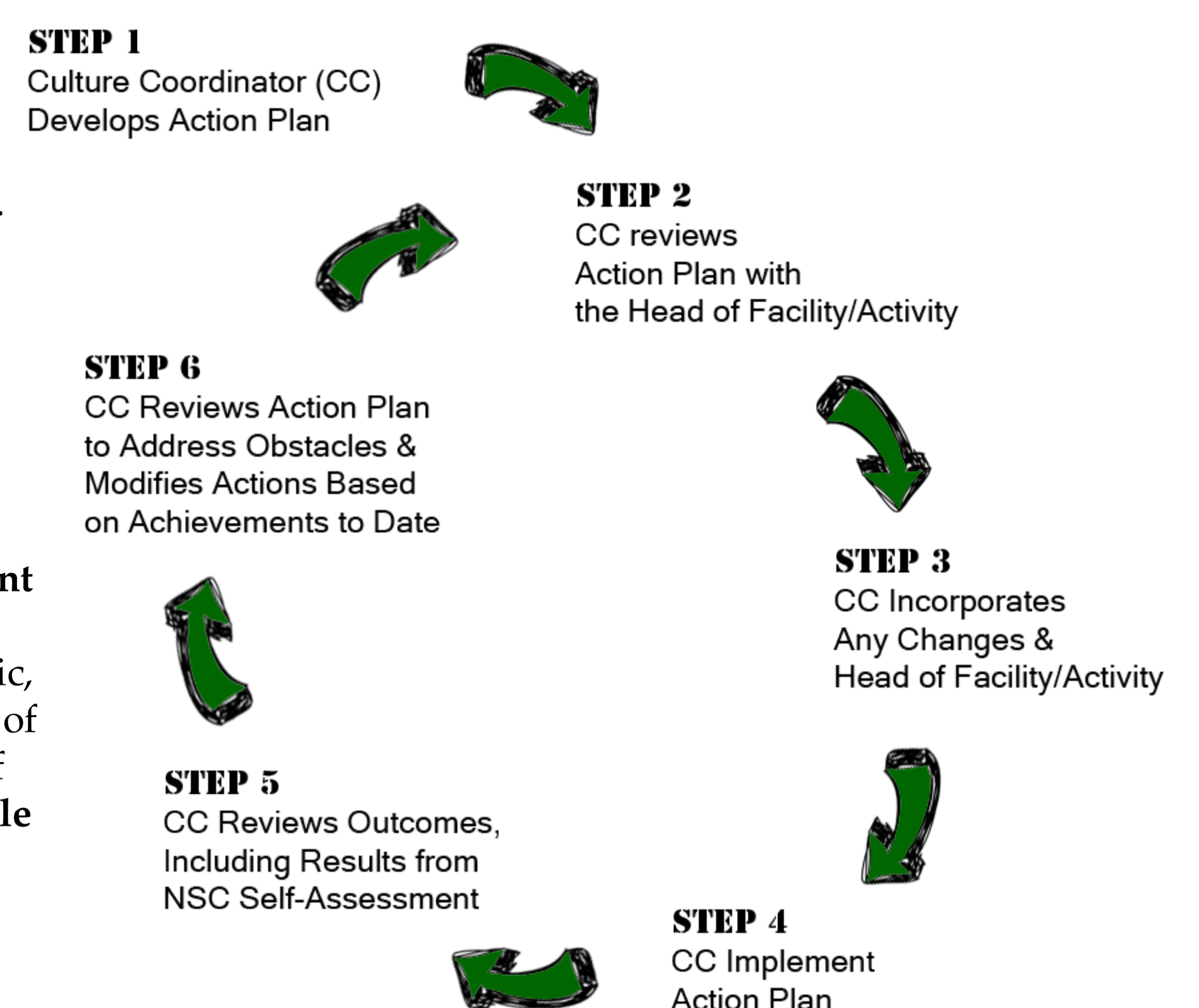
The applied techniques and innovations:

Correlation analysis

Attributes/ Characteristics	Age	Position	Time at the org.
Safety is a clearly recognized value	Weaker ←	Stronger →	No correlation
Leadership for safety is clear	Weaker ←	Stronger →	No correlation
Accountability for safety is clear	Weaker ←	Stronger →	No correlation
Safety is integrated into all activities	Weaker ←	Stronger →	No correlation
Safety is learning driven	Weaker ←	Stronger →	No correlation

A significant connection shows whether and how strongly answers and pairs of variables are related. I made clusters and examine the connections between answers and all of their attributes. **If the connection was significant and the average of the answer was low or extremely high, than further analysis or assessment is required.** To point to a strong and weak characteristic, the strength and weaknesses of the organisation. This kind of correlation analysis is capable to show the trends of these strength and weaknesses inside the organisation.

Process of the self-assessment



The relations of the characteristics of different guidance

The presented method is appropriate to combine different guidance and characteristics, to measure safety and security attitudes with a single survey. The first Hungarian combined self-assessment that was originally applied by **three** different INSAG-15, GS-G-3.5 and NST 026 guidance. Between two characteristics the more visible the lines are, the stronger the connections.

As it can be seen on the table, every action, opinion and attitude has an effect on the characteristics by the different guides. About 3-5 indicator of every characteristic was compared from all the Guidance. **The point of the chart is no other to demonstrate the huge number of connections between safety and security culture characteristics.** Although GS-G-3.5 created new characteristics, but every action and opinion are fit into both guidance, just have to be categorised different, which explains the large number of connections.

Independent questions, which were related to both, nuclear safety and security culture indicators and was a combination of them. The given answer about the question determines the result of both, one or more safety and security culture characteristic.

Dependent questions. These can be related to only one, either a safety or a security culture characteristic. (Information security)

NUCLEAR SAFETY CULTURE CHARACTERISTIC BY INSAG-15

Commitment
Use of procedures

Conservative decision making
A reporting culture

Challenging unsafe acts and conditions
The learning organization

Underpinning issues: communication, clear priorities and organization

NUCLEAR SECURITY CULTURE CHARACTERISTIC BY NST-026

Professional conduct
Personal Accountability

Adherence to Procedures
Teamwork and Cooperation

Vigilance
Information security

NUCLEAR SAFETY CULTURE CHARACTERISTIC BY GS-G-3.5 (2.18 HUNGARIAN GUIDE)

Safety is a clearly recognized value
Leadership for safety is clear

Accountability for safety is clear
Safety is integrated into all activities

Safety is learning driven

1. IAEA International Safety Advisory Group 15: Key practical issues to strengthen safety culture, Vienna (2002),
 2. IAEA: The Management System for Nuclear Installations, Safety guide, IAEA Safety Standards Series No. GS-G-3.5, Vienna, (2009) http://www-pub.iaea.org/MTCD/publications/PDF/Pub1392_web.pdf
 3. IAEA: NSS 07 Implementing Guide, Nuclear security culture, Vienna, 2008 http://www-pub.iaea.org/MTCD/publications/PDF/Pub1347_web.pdf
 4. IAEA: NST 026 Technical Guidance, Self-assessment of nuclear security culture in facilities and activities - DRAFT, Vienna, (2014) <http://www-ns.iaea.org/downloads/security/security-series-drafts/tech-guidance/nst026.pdf>
 5. IAEA: NST 027 Technical Guidance NOT AN OFFICIAL DRAFT, Enhancing nuclear security culture in organisation associated with nuclear and/or radioactive material, Vienna, November 2015 version