EUROSAFE: Towards Convergence of Technical Nuclear Safety Practices in Europe

Harmonisation of safety requirements vs. innovation: a love-hate-relationship?

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Introduction

Guten tag und wilkommen serh gehert gäste…

Whoops! Good afternoon and welcome…distinguished guests, colleagues, ladies and gentlemen.

Last year at Eurosafe in Brussels, I was just starting my third month in IRSN as Director for international affairs, and today I am just starting my third month at the IAEA. Such a rapid change promotes rejuvenation, both in my immediate surroundings at home and office, you know - new flat, new language, I already had time for one German lesson - but also in my way of looking at Safety and Security.

A strong believer in the benefits of harmonisation, last year my efforts were directed towards a bottom-up approach, and I saw all the benefits that initiatives borne out of the concept and ideas of Eurosafe could bring to enhancing nuclear safety and security in Europe through harmonisation of approaches and practices.

Today, my belief in the benefits of harmonisation is as strong as before. But having access to other tools and concepts, particularly the development of safety standards and security guidelines impacting the

world nuclear community, I can focus on the other face of harmonisation, through a top-down approach.

Now, I would like to introduce this topic with a Definition and a bit of philosophy:

– Innovation comes from the Latin innovātus or in-novare, which means to introduce novelty into an existing domain, to renew. Innovation can therefore be seen not - as is commonly assumed – as the invention of something new, but as the process that renews something that already exists. In that respect, my recent rejuvenation can be rightly seen as innovation.
– As concerns philosophy, the useful concept of 'freedom within boundaries' suggests that to promote human understanding and development of any kind, including technological-- we must all live within a mutually agreed upon and accepted set of norms and rules. This promotes human understanding and technological developments rather than obstruct them. And as implied by its definition, innovation requires this system of understandings so that the process of innovation can unfold.

Why harmonized safety standards promote innovation?

– I have heard many times, and I still hear, negative comments on the effect of international safety standards on the development of new reactor technologies. But the most striking fact is that technologies that did not answer these standards have had a short life, or no life

at all, not because of standards, but because they did not answer the expectations of society, or failed the test of operation. Chernobyl was a dramatic example out of so many designs which never saw a realisation. It is only through innovation and improved technology that designs can come to a sustainable life.

– In fact, for technologies to be further developed, there is a need for broad society acceptance and confidence in their safety. Harmonized safety regulations, when implemented, can assure the public that industries are safe and ethical in their pursuit of profit. Indeed, harmonized standards promote innovation; and accidents unfortunately hinder it. Witness the standstill in innovation in the nuclear power industry in the decades following the Chernobyl disaster.

– Harmonized regulatory control is most important at a time when so many countries have decided to embark on the long road towards developing nuclear energy, and when both the energy markets and the market for NPPs have become planetary. It is also vital when transboundary risks must be managed. Harmonized, international standards facilitate commerce and international trade. The safety standards for the transport of radioactive materials, through their universal recognition and use, are a powerful tool towards fighting undue denial of transport which is a concern for IAEA Member States and the Secretariat.

– Standards can be used for benchmarking new technologies. Determining whether a new technology represents a 'proven design'

or 'best available technology' necessitates some kind of an assessment of safety (not just of performance)as compared to a given goal, which only harmonized, international standards can provide.

– The IAEA safety standards promote the concept of an integrated approach to safety, security, but also to quality, economics, health and the environment. These are assets in which individuals, at all levels and in all times and countries, interact with technology and organizations. Such an approach provides a framework and a breeding ground for successful innovation that can lead to responsible and sustainable solutions.

– Over the next decades new reactor designs will be introduced and various concepts of the next generation of NPPs have been proposed and are being studied. Among safety-related features currently envisaged, I have in mind the explicit consideration of severe accidents as part of design basis, or the reduction in system complexity and the avoidance of the potential for human error. Some of these safety-related features and harmonized approaches, if successfully implemented, could result in the reduction of on-site and off-site protective measures, such as evacuation plans for the public. They would therefore present improvements over the current safety posture. These improvements will in turn be integrated in revised safety standards that will promote innovation in a harmonized fashion.

– Given the continuously growing life expectancy of NPPs, it is a striking feature that we must now consider that tomorrow's (maybe today's?) new designs may well be still in operation in the 22nd century. As a consequence, both technology and standards must soon address the expectations of society for nuclear safety in the next century.

– Already today, one example worth mentioning in promoting innovation while contributing to harmonized use of standards is the Multinational Design Evaluation Programme that aims at establishing reference regulatory practices to enhance the safety of new reactors safety designs. The convergence of regulatory practices and regulations associated with the reactor designs reviews will allow for enhanced cooperation among regulators and consequently harmonized improvement and application of safety standards.

Why harmonized safety standards need not obstruct innovation?

– The IAEA safety standards are not static, based in some past technological era, but rather their evolution is driven by experience feedback, developments in technology and new good, and best, practices in Member States. The Safety Fundamentals, particularly Section 1, has much on the motivation behind establishing international safety standards. The IAEA has a mature system for the establishment, review and revision of safety standards that

systematically take into account experience feedback and new technological development.

– It must be understood also that harmonization is not standardization. The IAEA safety standards are generally not prescriptive and they do not dictate particular design solutions; rather they are functional and broadly technology independent. Even those more prescriptive standards (such as the Transport Regulations or the Basic Safety Standards) provide for a graded approach and optimization of solutions. Therefore, the strength of harmonized standards is in their rigorous process and data-driven as well as graded/optimization approach to safety. In this fashion innovation and harmonized safety standards can complement and leverage each others strengths rather than being competing initiatives.

Conclusion:

Finally, I want to stress that my rejuvenation owes a lot to the contact with the IAEA Member States. During the extremely intense learning process (should I say bullying process?) I went through during my first General Conference, I received daily up to 15 MS delegations. I understood the very high expectations and reliance from so called Newcomers on the values of International Safety and Security standards. This strengthens my belief in the value of internationally harmonised Standards. And I can boldly finish in saying:

Standards of all countries UNITE.