

**Workshop      1). Non-proliferation and Nuclear Security**  
**a). The role of social media in non-proliferation and nuclear security**

**Opportunity**

There is inherent value in facilitating communication, information sharing and community building among professionals. However, the professional nuclear community is not well networked, despite the explosion of digital mechanisms that have dramatically increased these opportunities. The nuclear field must consider how the benefits of increasingly networked interactions among its professionals and sectors could contribute to the relevancy and creativity of the field as a whole. Nuclear networking offers a very valuable opportunity to positively influence individuals and institutions beyond borders and create high levels of expectation for the employment of best practices and the demonstration of professional competence.

The benefits of connecting nuclear professionals include community building, real-time and international communication, new opportunities for diverse partnerships and projects, decreasing the divide between the science and policy communities, and building bridges between the private, public and policy sectors. Additionally, by mainstreaming the use of online technology, the nuclear field will be better positioned to preserve its cultural and technological relevance and subsequently increase the likelihood of attracting new, digitally-educated generations to the sector.

Clearly, online networks can be beneficial only if they are constructed correctly and protected from exploitation. In the nuclear field, there will always be a necessity for classified information. Knowledge related to nuclear weapons, materials and facility vulnerabilities is of significant importance, and should rightly be guarded. However, nuclear professionals should also approach information-sharing with a parallel sense of practicality. More data is now being generated every month than existed in all of human history prior to 2000<sup>1</sup>. The availability and depth of open-source information clearly is growing exponentially. This trend has decreased the power of overly broad information protection and empowered those outside the classification system.

**Value**

The nuclear community is a unique blend of scientists, engineers, academics, and policy experts that tend to concentrate within their highly specialized sub-sets of the nuclear environment. This may have been useful and even necessary when there were strong and clear divisions between military and civilian nuclear programs. However, the nuclear landscape is evolving. New states are building power plants, dual-use technology and nuclear materials are becoming more widely used, and nuclear knowledge is being diffused into new and sometimes unstable regions. This environment raises many new challenges in addition to the traditional nuclear concerns of the 20<sup>th</sup> Century.

Examples of the value of networked communities are numerous and demonstrate the inventiveness and creativity that can be sparked by enabling them. One pertinent example is the Foldit Challenge, an online computer game that allows players to contribute to significant scientific research. Participants “play” by designing new proteins and partaking in competitions. In 2011, the game made headlines after gamers deciphered the structure of the retroviral protease, an enzyme that is key to the way HIV multiplies. Therefore, the gaming community has significantly contributed to scientific research. In addition, Academia.edu has been successful in attracting scholars to join the research sharing platform – approximately 22 million users have

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<sup>1</sup> State Department 2015 QDDR

shared almost 6 million research papers through the website. These types of mechanisms can also be applied to nuclear challenges.

## **Structure**

Developing a collaborative platform for nuclear professional networking poses numerous challenges, particularly regarding the sharing of sensitive information. Consequently, the structure of a collaborative platform could be configured in three ways.

The first option is a system which is completely open. This would be available to professionals, academics, officials and scientists with or without security clearances. An open network would facilitate the easy exchange of information across sectors and borders and provide a central database for people to utilize. Members would only trade and discuss open-source information. The benefits of an open nuclear network are clear:

- Help bridge the divide between the science and policy communities
- Information sharing and community building
- Real time, international communication
- New opportunities for partnerships and projects
- Attract more young people into the field
- Retain cultural and technological relevance

The second option is a closed system, accessible only to professionals with prior screening and security clearances. This may have some benefits, as INMM has explored, in relation to event detection, arms control verification, and export control. However, there also are challenges posed by a closed system. It instantly restricts the number of people who can contribute and is likely to link professionals who already are engaged with one another. It also can impede the potential for creative thinking and inventive collaboration. It raises questions about whether national governments will allow employees with security clearances to share information online with their international counterparts. In the current global environment, there are few examples of the transnational applicability or parity of national security clearances. Additionally, it would be important in a closed networking system to be able to effectively verify the credentials of individuals who participate. Further, an international closed collaborative space could generate information-sharing conflicts that would need an adjudication process.

The third option, is a hybrid open-closed system. The benefit is that it can connect many stakeholders and allow collaboration. The closed element of the hybrid system would still need to deal with the challenges identified above. However, it could also usefully employ the open system to facilitate progress on nuclear challenges and objectives. However, if a hybrid approach is taken, it will be essential to maintain a balance between the open and closed systems.

Clearly, moving toward the development of a digital nuclear network will be a significant effort and it will not be easy. However, it is possible to move incrementally and to develop pilot operations to test the value and viability of the idea.

## **Conclusion**

The nuclear field is facing a branding crisis – perceived as a legacy issue from the 20<sup>th</sup> century – while also confronting an expansion of substantive and geographical challenges. The reality is that the mission remains vital and needs to be modernized to reflect its continuing global importance. To achieve this goal, new tools and approaches will be required. As the field develops its long-term vision, it is imperative to consider how to establish and sustain its technical, policy and cultural relevance and vibrancy. It is a field which truly exists at the intersection of policy, science and security and utilizing digital networks that foster strong communities, creativity and cooperation should be an essential element of its future.