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International Cooperation in Assessing the Impact of Emerging Technologies on Nuclear Security

Joseph Scott Sandoval
Distinguished Member of Technical Staff
Nuclear Security Engineering Group, Weapons and Force Protection Center, Sandia National Laboratories

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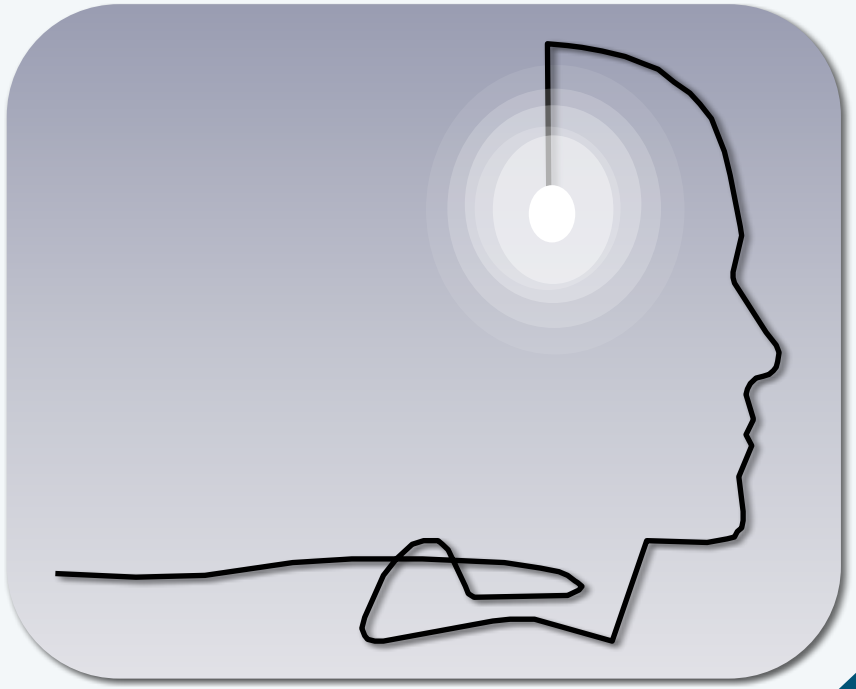
EMERGING TECHNOLOGIES



OBJECTIVES

- Stress the importance of:
  - Assessing the impacts of threats that exploit emerging technologies
  - Assessing the impacts from use of emerging technologies to enhance nuclear security
  - Enhanced international cooperation

HISTORICAL EMERGING TECHNOLOGY IMPACTS

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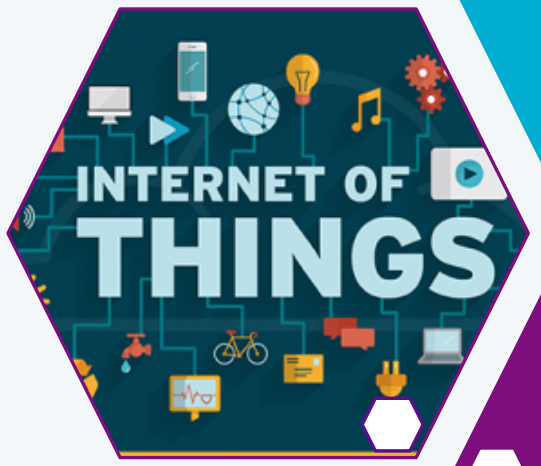
AMENDED CPPNM

- Requires each State to establish, implement, and maintain an appropriate physical protection regime applicable to nuclear material and nuclear facilities
  - Based on its current evaluation of the threat (Fundamental Principle G)
- Assessing emerging technology capabilities is critically important for:
  - Understanding how threats may exploit them
  - Identifying opportunities to use them to ensure an effective level of physical protection of nuclear materials and nuclear facilities against threats

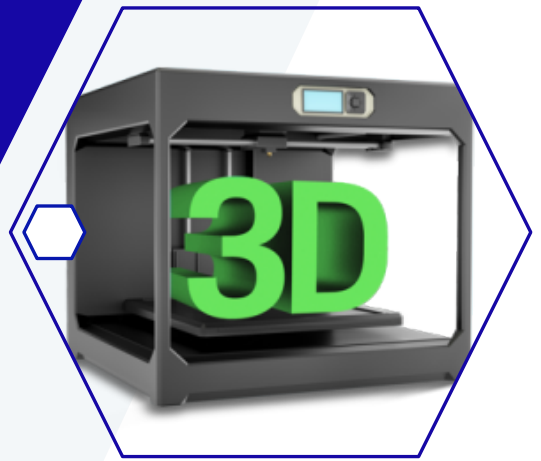
TODAY'S EMERGING TECHNOLOGIES

Artificial Intelligence



Data Mining

Machine Learning

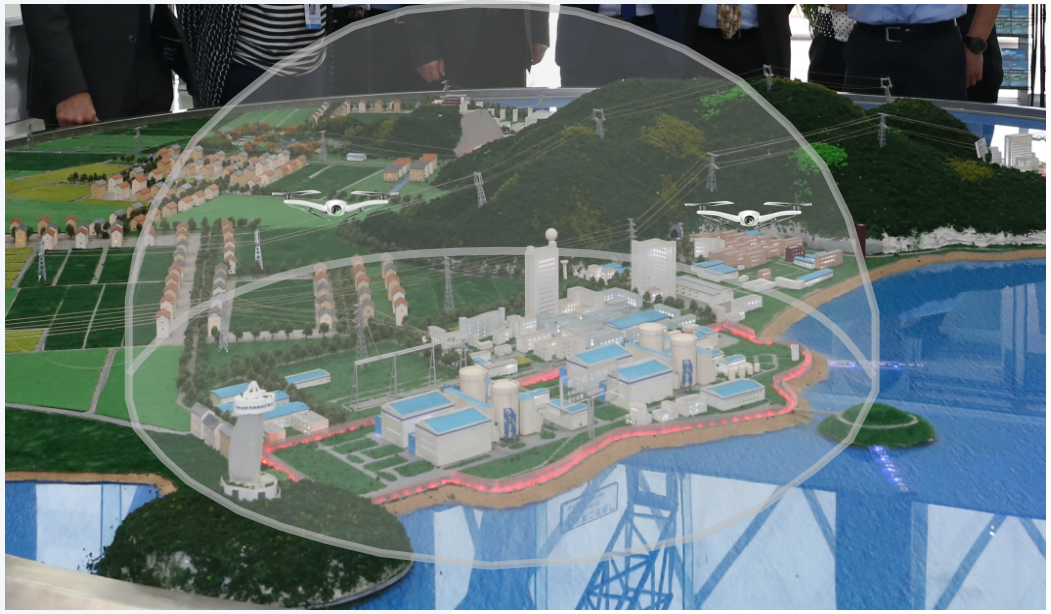


CURRENT STATE

- Some States:
  - Consider emerging technologies when evaluating future threats
  - Have introduced emerging technologies into nuclear security
- However,
  - These efforts are not uniform throughout the world
  - Understanding how threats can exploit and nuclear security can benefit from emerging technologies varies significantly from country to country
  - Introducing emerging technologies in nuclear security typically takes a long time and can create added risks and vulnerabilities

POTENTIAL FUTURE STATE EXAMPLES

- Sphere of protection with:
  - AI assisted detection and assessment systems of land, air, and water based *external threats*
  - AI assisted monitoring systems within the sphere to protect against *insider threats*
  - Integrated IOT safety & security systems using Distributed Ledger Technology
  - Remote Weapons Systems
  - Autonomous Robotic Security Systems



IMPORTANCE OF INTERNATIONAL COLLABORATION

- Nuclear security is a common and shared goal for all countries
- Collaborating to assess impacts of emerging technologies:
  - Can address the significant resources and wide range of expertise needed that may not available in all countries
  - May allow timely identification of potential new threats
  - Will allow shared ideas, lessons learned, and joint technical solutions to implement emerging technologies into nuclear security
  - Considering country-specific sensitivities, general concepts and technologies can be included in appropriate NSS documents[1]

[1] e.g., NSS 40-T, *Handbook on the Design of Physical Protection Systems for Nuclear Material and Nuclear Facilities*

SUMMARY

- Emerging technologies will affect every aspect of society
- In nuclear security, emerging technologies can be exploited by threats but also can be used to enhance nuclear security
- Assessing the impact of emerging technologies is difficult, but critically important
- International collaboration can result in many benefits to the international nuclear security community