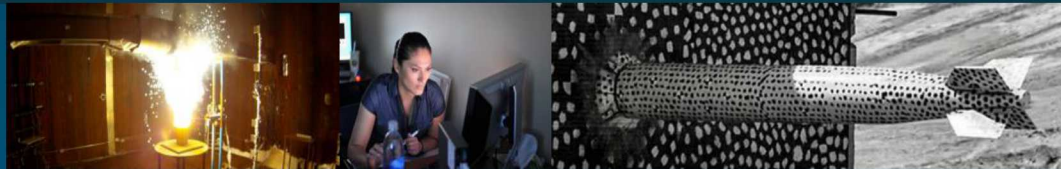


# Data Analytics Repository for International Nuclear Safeguards



Joshua Rutkowski and Zoe Gastelum

# Data Analytics increasing visibility in safeguards



2017 IAEA emerging technologies workshop

ESARDA 2019 opening plenary



**ESARDA**  
European Safeguards Research & Development Association

1969-2019  
**50** years



~ Programme ~  
41<sup>st</sup> Annual Meeting  
ESARDA Symposium  
on Safeguards and Nuclear Material Management  
14-16 May, 2019

13&17 May, 2019  
ESARDA Side Meetings, ANNETTE Workshops and Visits

Regina Palace Hotel  
Corso Umberto I, 29, 28838 Stresa (VB), Italy

KEYNOTE SPEAKERS



**S. Lechner**  
Director of Euratom Safeguards and co-ordinator  
for cyber security policy in the Directorate  
General for Energy of the EC




Safeguards

**Emerging Technologies Workshop**  
Trends and Implications for Safeguards



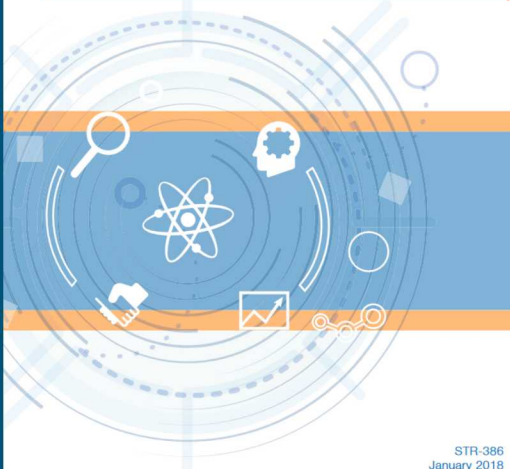
Workshop Report

13-16 February 2017  
IAEA, Vienna



Safeguards

**Development and Implementation  
Support Programme for Nuclear  
Verification 2018-2019**



STR-386  
January 2018

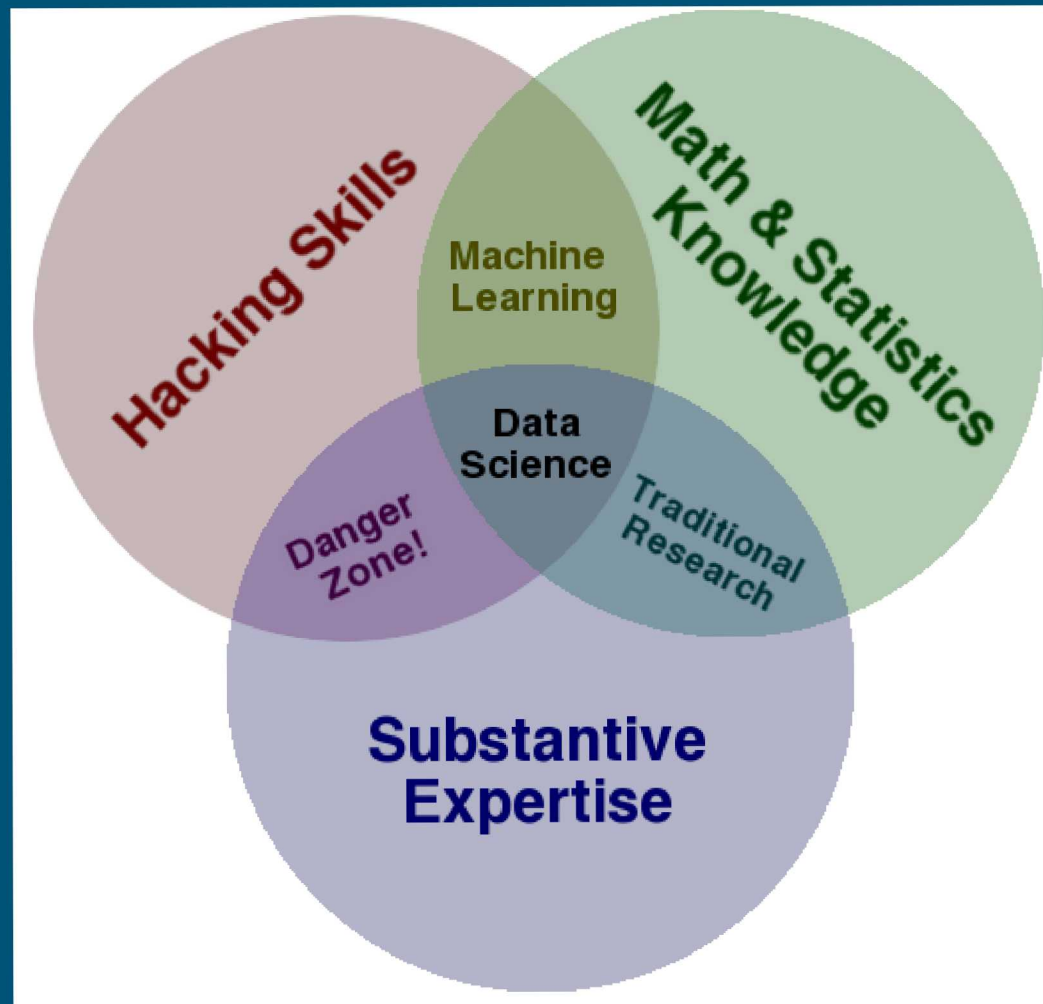


Annual Meeting special sessions

Working Groups

Workshops

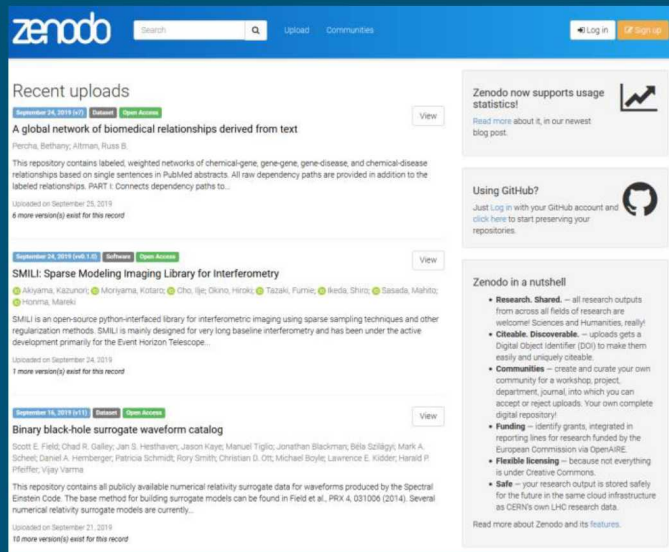






Editorial from Nature Communications (July 2018)

“Who benefits from sharing data? The scientists of future do, as data sharing today enables new science tomorrow.”



<https://zenodo.org/>

accessed 9/26/2019



<https://figshare.com>

accessed 9/26/2019



Repository of real and simulated datasets, accompanied by documentation of current safeguards data analytics challenges or needs

Journal publications and conf proceedings do not meet this demand because:

- Difficult to apply a focused paper/presentation on a different problem set

- Data is not available

- Papers/presentations rarely discuss failures and non-starts

The U.S. Dept. Of Energy's Multi-Informatics for Nuclear Operations Scenarios (MINOS) program

Described in recent INMM paper by Daniel E. Archer, et al

“All data collected in this work are being shared with other data collectors and data analysts in the MINOS program. These data may be available to outside users by request.”

# Needs to establish and maintain a repository



Data!

Use cases

Approaches

Lessons learned





## Challenges

- Data!
- Funding sources
- Cooperation
- IAEA sensitivities
- Real events or situations for use cases



## ESARDA

Verification Technologies and Methodologies (VTM) Working Group

*5 December 2019 at JRC-Ispra, Ispra, Italy*

Morning Session: **Data Analytics for Safeguards and Nonproliferation Verification**

Afternoon Session: **VTM Data Analytics Challenge**

## INMM

Emerging Digital Technologies Workshop

April 2020 at Livermore, California, USA