

Ghosts in the machine:

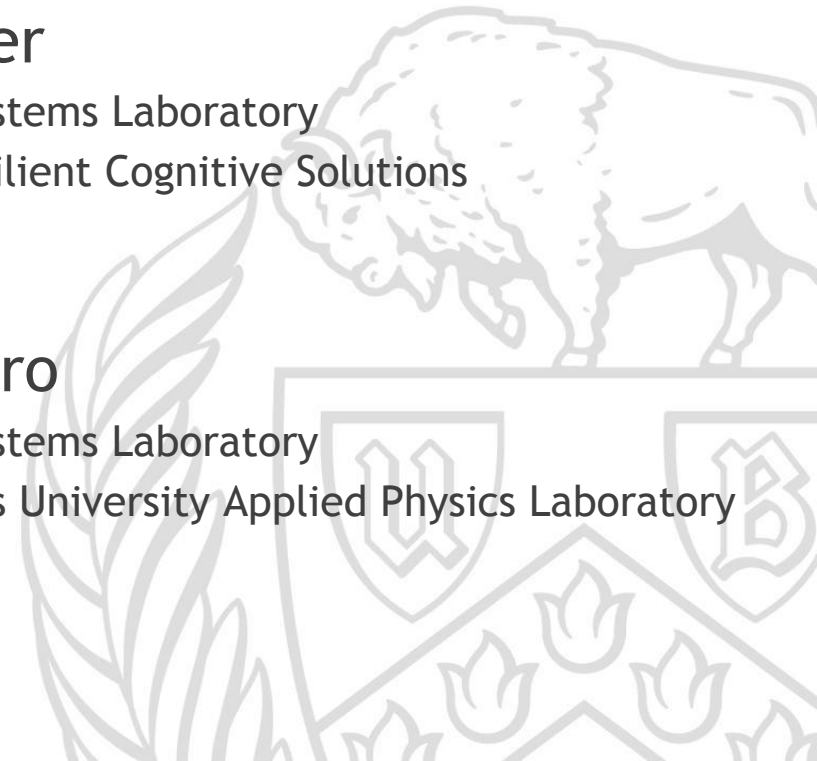
The role of human factors in cybersecurity

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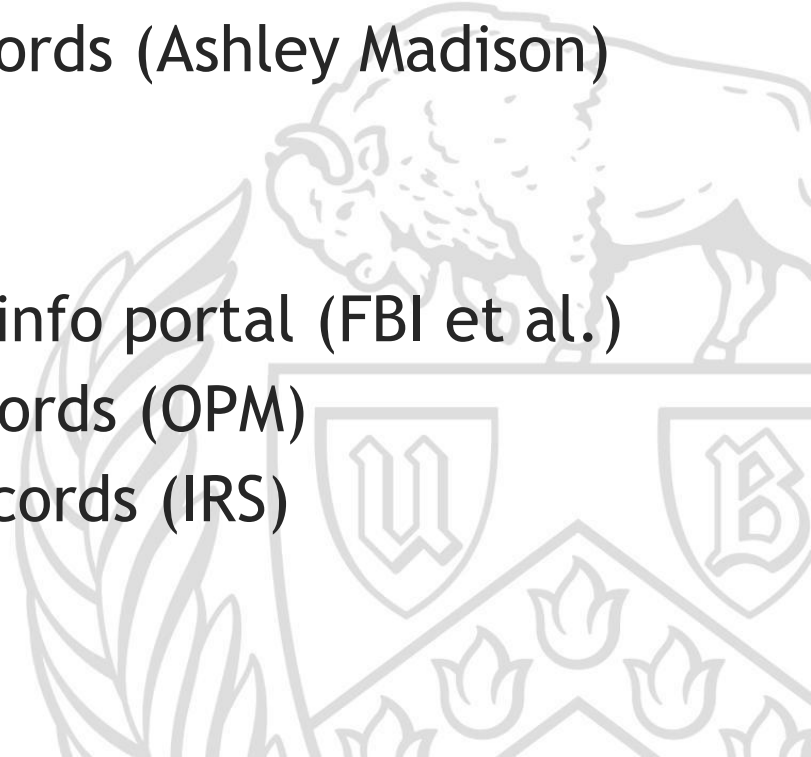
The 21st century battlefield

2015 Private Sector

- November: 70m prison phone records (Securus)
- October: 15m T-Mobile customer records (Experian)
- September: 37m customer records (Ashley Madison)

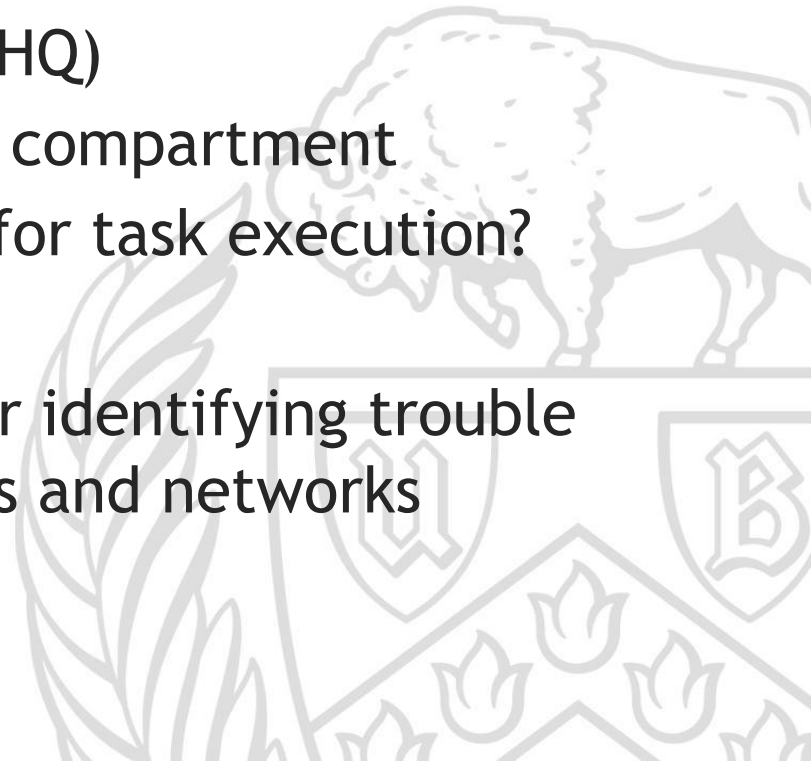
2015 Public Sector

- November: US arrest records, info portal (FBI et al.)
- June: 22m highly-sensitive records (OPM)
- May: 100k tax and personal records (IRS)



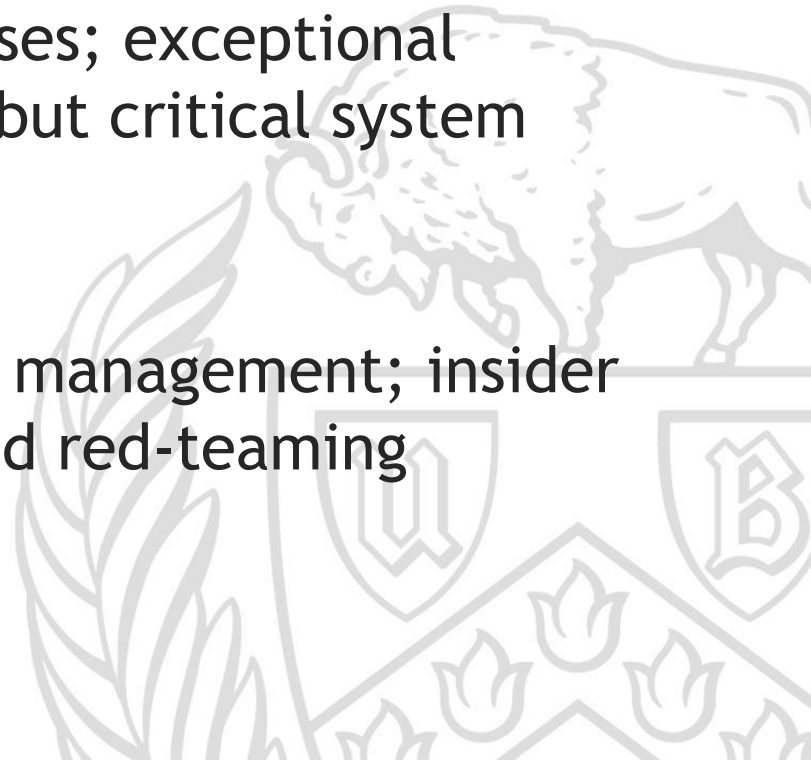
AA&R in cybersecurity domains

- Authority, autonomy, responsibility
- Multi-user or multi-agency systems:
 - Lots of employees (NSA/GCHQ)
 - Each has clearance level or compartment
 - Who is on the critical path for task execution?
- AA&R is a useful framework for identifying trouble spots in large sensitive systems and networks



A research agenda

- Formal methods can be used for system modeling and exploration
- Very good at finding corner cases; exceptional combinatoric conditions; rare but critical system behavior
- Potential use cases: personnel management; insider threat analysis; pen-testing and red-teaming



Understanding the response to phishing emails

- Goal:
 - Use the lens model to understand and predict how people synthesize cues into judgments when assessing a potential phishing email
- Phishing emails & their impact
- The *n*-system lens model
- Known information sources
 - Expertise matters



Research aims

- Aim 1: Identifying Cues
 - Literature review
 - Interviews
 - Surveys
- Aim 2: Logistic-based Modeling & Analysis
 - Human subjects experiment
 - Logistic Regression
- Aim 3: Identifying General Judgment Strategies
 - Which strategies are most successful?



Thanks!

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