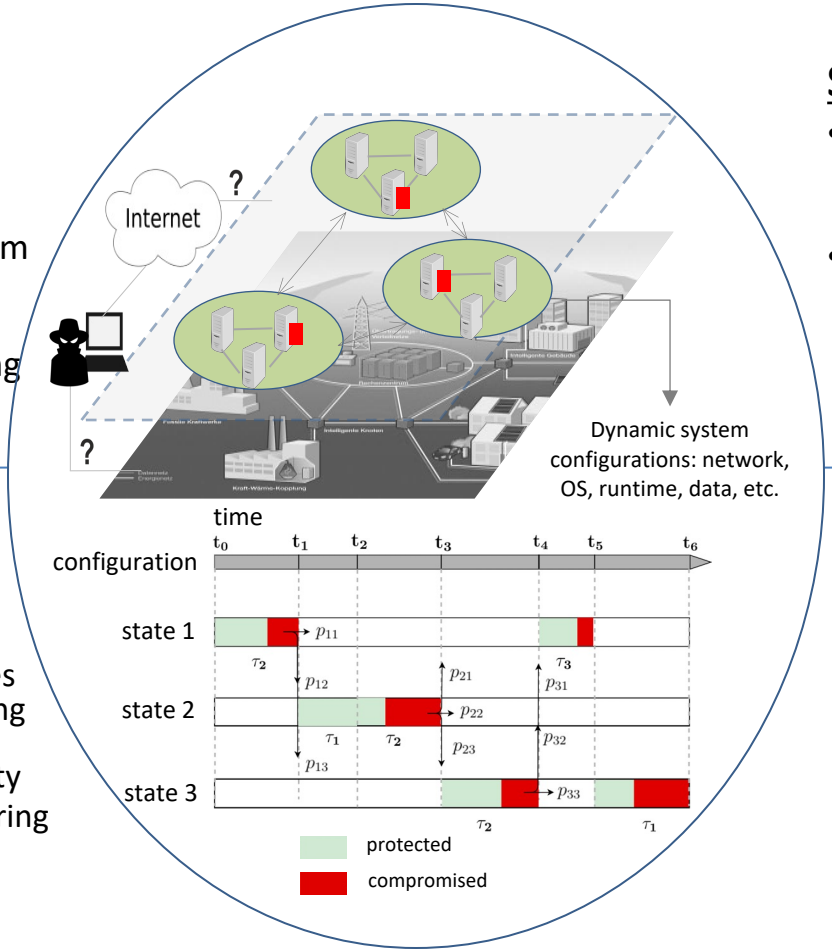
SaTC: CORE: Small: Towards Robust Moving Target Defense: A Game Theoretic and Learning Approach

Challenge:

- Intelligent, stealthy, and persistent attacks
- Interplay between system dynamics, security, and defense cost
- Necessity of coordinating multiple defenders



Solution:

- Spatial-temporal Moving Target Defense (MTD) against advanced attacks
- Markov Stackelberg games and reinforcement learning for robust sequential decision making in security
- Strategic information sharing in decentralized MTD

Scientific Impact:

- A rigorous approach to active defense against stealthy attacks
- New insights into information asymmetry and continuous learning in cyber attacks and defenses

Broader Impact and Broader Participation:

- A cross-disciplinary approach to cybersecurity
- New game theoretic and learning methods for data-driven competitive decision making
- 2 PhD and 4 coordinate major undergraduate students trained

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