Don’t shoot the messenger!

A criminological and computer science perspective on coordinated vulnerability disclosure

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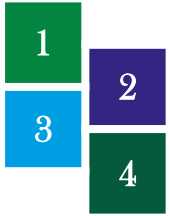
Cyber-offenders versus traditional offenders

- Cyber-dependent offenders
- Compared to traditional offenders

- Four domains in criminology:
  1. Offending over the life-course
  2. Personal & situational correlates of offending & victimization
  3. Similarity in deviance of social network members
  4. Clustering of offending & motives for offending



Coordinated Vulnerability Disclosure

- Coordinated Vulnerability Disclosure (CVD)
  Responsible Disclosure (RD)
  Bug bounties

- 4 options when finding a vulnerability (usually in daily use of IT-systems):
  1. Report to organization => CVD
  2. Report publicly
  3. Keep private to use for attack => offending
  4. Do nothing

Coordinated Vulnerability Disclosure

- Current CVD practice: problems
  - Organization's response: capacity, knowledge, slow, communication
  - Unclear/unjust rules: no guarantee prosecution, deadlines, culture may discourage
  - Public disclosure: information shared limited, governments do not disclose
  - Knowledge about CVD among potential offenders: rules must be known

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- Motives using CVD:
  - Increase cyber-security
  - Gain status in white-hat community
  - Frustration about lack of security
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- Motives criminal hacking:
  - Intrinsic: limit to finding vulnerabilities? Or also curious about data stored on system?
  - Extrinsic: status in criminal hacking community
  - Financial: underground markets

Coordinated Vulnerability Disclosure

Rational choice, costs/benefits

- Costs:
  - Risk of legal action when using CVD, while costs of offending are low
  - Time consuming / too many rules
  - Negative effect status in criminal hacking community

- Benefits:

Coordinated Vulnerability Disclosure

Rational choice, costs/benefits

- Costs:
  - Risk of legal action when using CVD, while costs of offending are low
  - Time consuming / too many rules
  - Negative effect status in criminal hacking community

- Benefits:
  - Curiosity/social rewards motives
    - Additional social rewards like helping with testing
    - White-hate role models
  - Financial motives: underground markets more profitable

Coordinated Vulnerability Disclosure

Conclusion:

- Improve current CVD policies:
  - Increase awareness / eye-catching CVD information on websites
  - Positive peer recognition: media attention for successful CVD's
  - Lower threshold: response organization
  - Organize hackathons etc.
  - If desires: invite discloser for additional (paid) help
    - More recognition
    - Recruitment tool

Coordinated Vulnerability Disclosure

Future research:

- Situational factors that influence the decision (awareness/visibility CVD policy/bounty)
- Personal factors (self-control, social control)

- Life-course of IT-specialists (IT-employees, bug bounty programs, CVD users)

- Influence/information online communication (cultures)
- Knowledge/use youth

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Questions/remarks?

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