Advancing Healthcare Cybersecurity with Cyber Partnerships: *Ransomware Use Case*

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March 2018

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Conflict of Interest

Cathy Petrozzino

Has no real or apparent conflicts of interest to report.

Educational Goal

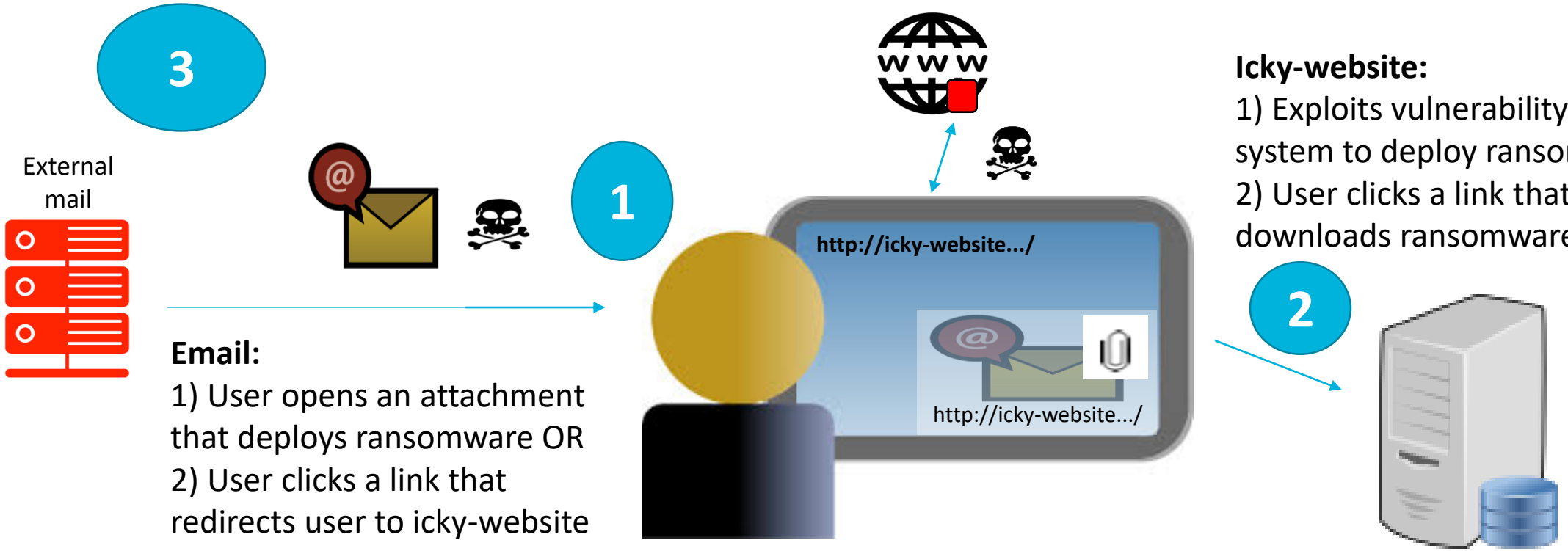
- **Identify available cybersecurity resources that can help elevate cyber defenses**

- **Identify organizations with cyber-oriented missions that are focused on assisting the broader community**
  - ‘Cyber partnerships’
  - Enjoy the fruits of others’ labors

- **Provide deeper insight and tactical assistance by grounding the information against a typical ransomware scenario**

Ransomware

- **Accounted for 72% of malware incidents in Healthcare during 2016***
- **Justice Department reported 4000 ransomware attacks *per day* in the first 9 months of 2016; only 13% of companies surveyed 'can prevent ransomware'****
- **Typically ransomware is deployed via e-mail or a web server**



Email:
1) User opens an attachment that deploys ransomware OR
2) User clicks a link that redirects user to icky-website

Icky-website:
1) Exploits vulnerability on user's system to deploy ransomware OR
2) User clicks a link that downloads ransomware

* 2017 Verizon Data Breach Investigations Report

**Ponemon Institute, The Rise of Ransomware, January 2017

Ransomware Risk Mitigation Opportunities

- **Securing the User** 1
  - Developing an Organization's 'Human Sensor' Network
  - Establishing a Culture of Security
- **Securing the System** 2
  - Configuring systems securely
  - Understanding the vulnerability landscape for a system
  - Staying aware of emerging vulnerabilities/malware
- **Securing the Organization** 3
  - Assessing gaps and implementing a security program
  - Building leadership buy-in

References Caveats

- **Include references and organizations with substantial free offerings**
  - There are commercial sites with free (basic) cybersecurity resources
  - Some commercial companies instrumental in standing up partnerships
  - Some non-profits sell their offerings
- **Starter list of available resources**
  - Exhaustive ⟶ impossible
  - Best ⟶ relative
- **Spread the love**
  - Smattering of content-rich web sites

1 Securing the User: Awareness

- **Tip Sheets and Foldouts**
  - Online Digital Advice for all Digital Citizens

    (https://**staysafeonline.org**/wp-content/uploads/2017/09/Online-Cybersecurity-Advice-for-All-Digital-Citizens-tip-sheet-NCSAM.pdf)
  - Ransomware Facts and Tips

    (https://**www.stopthinkconnect.org**/resources/preview/ransomware-facts-and-tips)
  - The Importance of Being EARNEST

    (https://www.mitre.org/sites/default/files/pdf/mitre_earnest.pdf)
- **Posters**
  - SANS Security Awareness Posters

    (https://**www.sans.org**/security-awareness-training/resources/posters)
    - Includes ’Protecting Healthcare Data’

1 Securing the User: Training

- **Educational Infographic**
  - Anti-phishing Page

  (http://phish-education.**apwg.org**/r/en/index.htm) - Anti-phishing Working Group

- **Video**
  - Cybersecurity for Small Businesses

  (https://www.**sba.gov**/tools/sba-learning-center/training/cybersecurity-small-businesses) - Small business administration

- **Smorgasbord (videos, games, information)**
  - FTC Onguard Online Campaign

  (https://www.consumer.**ftc.gov**/features/feature-0038-onguardonline) - Federal Trade Commission

2 Securing the System: Secure Configurations

- **Benchmarks – Secure configuration of (common) operating systems and applications**
  - Configuration guidelines

  (https://www.**cisecurity.org**/cis-benchmarks/) – Center for Internet Security
  - Automated benchmark tool

  (https://learn.cisecurity.org/cis-cat-landing-page)

- **Vulnerabilities – Known weakness that can be exploited in a system**
  - National Vulnerability Database

  (https://nvd.nist.gov/)
  - Common Vulnerabilities and Exposures (CVE)

  (http://cve.mitre.org/)

2 Securing the System: Alert Mechanisms

- **Bulletins, Alerts, Activities**
  - United States – Computer Emergency Readiness Team (US-CERT)

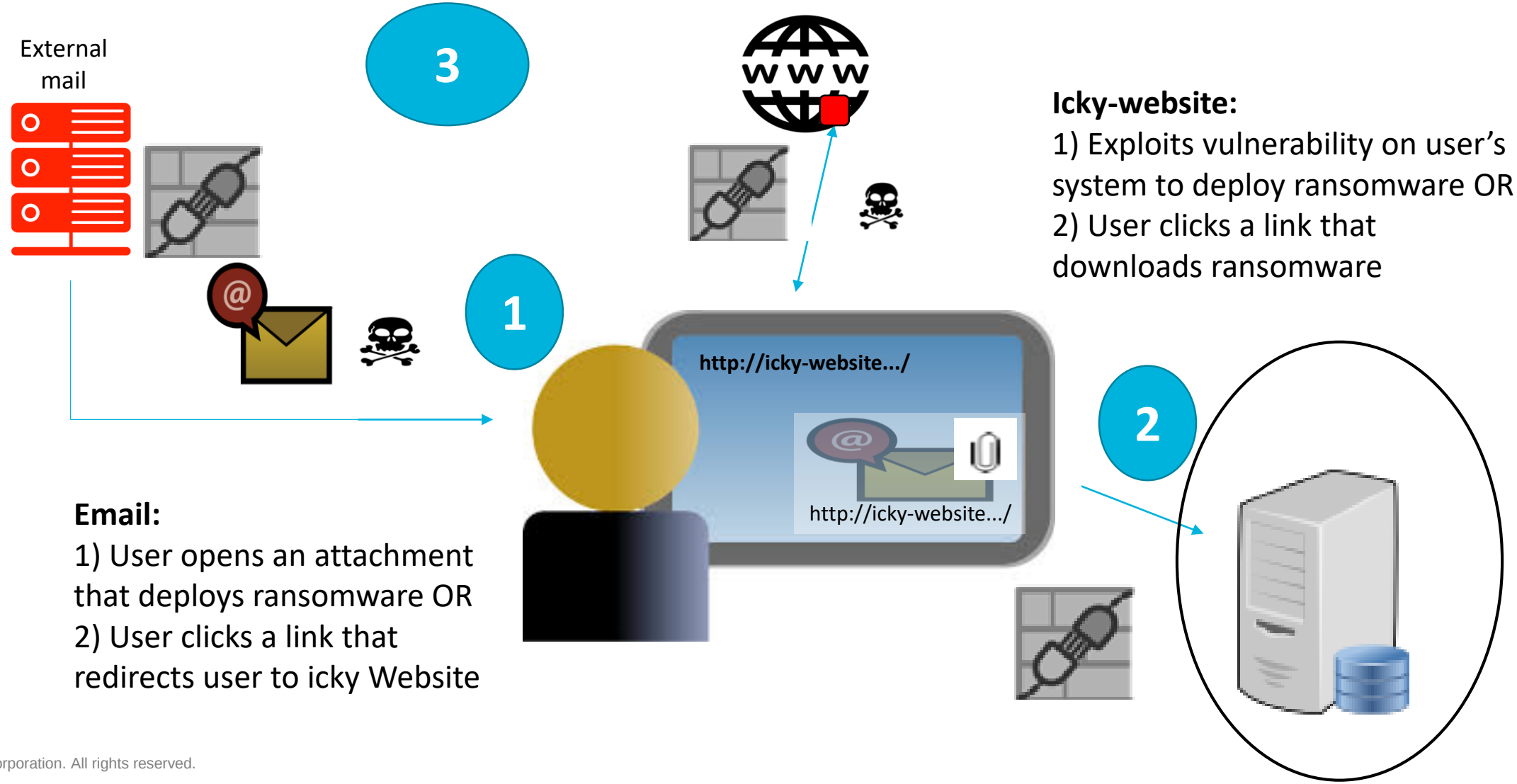
    (https://www.us-cert.gov/ncas)
    - Recent security updates, vulnerabilities, malware
    - Also has a tips section with lots of tactical guidance
  - Industrial Control Systems – Cyber Emergency Response Team (ICS-CERT)

    (https://ics-cert.us-cert.gov/)
    - Applies to critical infrastructures, which includes healthcare
    - ICS-CERT has reported on medical device vulnerabilities

    (US-CERT and ICS-CERT run by DHS; subscription service is available)
  - No More Ransom Prevention Advice

    (https://www.**nomoreransom.org**/en/prevention-advice.html)

Ransomware: Potential Organizational Controls



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3 Securing the Organization: Assessment

- **Assessment tools**
  - HIPAA Security Assessment Tool

    (https://www.**healthit.gov**/providers-professionals/security-risk-assessment-tool)
  - NIST Cybersecurity Assessment

    (https://www.nist.gov/sites/default/files/documents/2016/09/15/baldrige-cybersecurity-excellence-builder-draft-09.2016.pdf)
- **Implementation**
  - NIST Risk Management Framework

    (https://csrc.nist.gov/projects/risk-management/risk-management-framework-quick-start-guides)
  - CIS Controls – identifies the most critical enterprise security controls

    (https://www.cisecurity.org/controls/)

3 Securing the Organization: Leadership

- **Tip Sheet**
  - Communicating cyber to the board

(https://**staysafeonline.org**/wp-content/uploads/2017/09/Communicating-with-the-Board-about-Cybersecurity-Making-the-Business-Case.pdf)

- **Cyber and Privacy Breach and Cost Studies**
  - Sixth Annual Benchmark Study on Privacy and Security of Healthcare Study (May2016)

https://www.**ponemon.org**/local/upload/file/Sixth%20Annual%20Patient%20Privacy%20%26%20Data%20Security%20Report%20FINAL%206.pdf

  - 2017 Cost of Cyber Crime Study

(https://www.ponemon.org/library/2017-cost-of-cyber-crime-study)

  - The Rise of Ransomware, January 2017

(https://www.ponemon.org/local/upload/file/Ransomware%20Report%20Final%201.pdf)

The Top 3 ”Cyber Partnerships”

- NIST (www.nist.gov)
  - Detailed, comprehensive cyber guidance
  - National Cybersecurity Center of Excellence (NCCoE, nccoe.nist.gov) developing Practice Guides (1800 series) built around Use Cases
- DHS (www.dhs.gov)
  - Offers vast array of cyber insights at different levels as well as vulnerability and threat information
- HIMSS
  - Many healthcare related resources linked through the privacy and security toolkit
  - Operate the healthcare cybersecurity community
  - Generate a monthly cyber highlights newsletter

Questions?