Data Security:
Central Registry Perspective

Missouri Cancer Registry

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J. Jackson-Thompson, MSPH, PhD

Operations Director,
Missouri Cancer Registry
and
Research Associate Professor,
Health Management & Informatics,
University of Missouri- Columbia

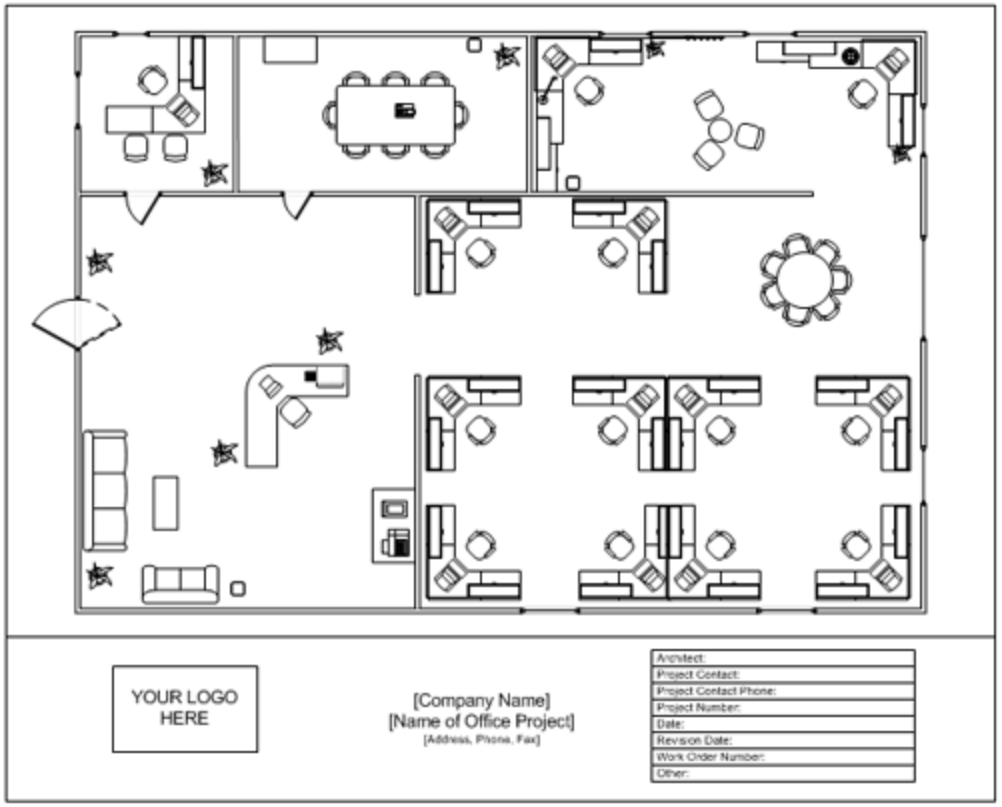
jacksonthompsonj@health.missouri.edu
573 882-7775

Nancy Cole, BS, CTR
Assistant Project Manager,
Missouri Cancer Registry

colen@health.missouri.edu
573-884-2491

MCR: Background & Overview

- Subcontractor to state health dept.
- Housed in academic setting (SoM).
- Challenges of physical location.
- Key access.



Data & Software

- Process > 50,000 records/year.
  - 28,000+ MO incident cases
  - Data exchange w/ 20 states
- In late 2007, switched to CRS Plus.
  - Already used Abstract Plus, Web Plus.
- Database c. 1 million records (1972-2009).
  - Population-based: 1985.
  - NPCR reference year (high-quality data): 1996.

Data Security

- We approach data security the way we approach reporting of cancer cases to MCR:
  - Report not because there is a law that says you must; instead, report so we can work together for better patient outcomes.
  - Be vigilant about data security not because we have statutory & contractual obligations but because it is the right thing to do.
    - Reporting facilities & cancer patients trust us.

Data Security Measures

- Includes all data, electronic or paper.
- Policies and procedures in place, updated as needed. Examples:
  - No PHI on thumb drives.
  - No PHI in e-mails or attachments.
  - File cabinets & offices locked.
  - Charts/records sent to P.O. Box or by FedEx.
  - Mail & data carried in locked bags.

Data Security Measures - continued

- Ongoing training for staff.
- All MCR staff reminded annually by signing:
  - Confidentiality agreement;
  - Acknowledgment of state and federal laws about penalties; and
  - MCR security policy.
- “The Security Mouse was here.”

Weather alert changed MCR's paper-handling policies

- Tornado drill – staff from another unit directed to a 4-person MCR office – OOPS!!!
- Led to changes:
  - More locking cabinets
  - Lock doors if leave
  - No papers visible
  - Cross-cut shredder
  - Change in drill location

Data Security Structure

- MU
  - IT: department, campus and hospital.
  - Servers housed off-site in an IT facility.
  - Most reporting facilities use Web Plus.
- DHSS and State Office of Administration
  - SFTP site folder restrictions at DHSS.
  - BCCCP data.
  - Some path lab data.

VA Data Security

- We were satisfied w/ security of incoming data but VA wasn't.
- Spent two months locating source for FIPS 140-2 compliant file transfer software.
  - Advantage of University setting.
  - MoveIT.
  - No charge to MCR.
- "They seem to be available on a 'who's screaming loudest' basis."

MU Information Security Program

- System initiative working with all campuses.
- Meeting to review issues:
  - Data classification systems.
  - General security procedures (strong passwords, encryption, etc.).
  - Workplace security manual.
  - Audits.

MCR Concerns

- Minimal IT input on MCR software, hardware or data flow since 2005.
- No strong passwords on Web +, CRS+, Abs+, Prep+ and some laptops.
- Passwords taped to some laptops.

IT Audit Requested

- MCR offered to be “guinea pig” unit.
- New MU IT initiative:
  - Usually audit systems.
  - Not accustomed to performing dept. audits.
- “We need to cover a higher-level of analysis of your systems and business practices.”
- Few trained/certified auditors (which they are).
- No charge!!!

Steps for each phase of security inspection program

- Identification.
- Coordination.
- Inspection.
- Evaluation.
- Recommendation.
- Repetition.

What IT Audit Includes

- Data flow/business practices (ongoing).
- Applications (Web Plus complete).
- Hardening operating systems (in process).
- Laptop encryption.
- Hard drive security.
- Security training for MCR staff (initial training complete; ongoing).

Audit priorities established

- Web Plus – most vulnerable area.
- Concern about text fields – places where hackers could include hazardous characters.

First phase: Aapplications – Web Plus Audit

- Facility abstractor/uploader & central administrator/central abstractor/reviewer.
- 52 hours of testing using an automated vulnerability scanner & manual inspection of web pages.
- Results: 4 high-risk vulnerabilities, several moderate risks.
- Auditor comments:
  - “Went better than expected.”
  - “Web Plus is a good application.”

Web Plus Audit - continued

- Results sent to CDC.
- Fixed high-risk vulnerabilities immediately, requested re-scan; tested fix for moderate-level issues.
- Second scan – No high-risk vulnerabilities; fixed moderate-level issues.

Second Phase: Hardening operating systems

- Server audit issues related to:
  - Configuration.
    - proper port use, etc.
  - Management.
    - Managing administrative infrastructure.
    - Controlled access to file system & resources.
- Preliminary results only.

Future Steps

- Increase security on mobile devices (Laptops, external hard drives, etc.):
  - Identify & purchase encryption software

    Time frame - September 2009.
- Consider alternatives
  - Remote access reduces need for abstracting software (and PHI) on laptops.

Future Steps – continued

- Research and identify FIPS 140-2 software to use for database and servers. Time frame – 1 December 2009.
- Research use of encryption software for desktop computers, including TruCrypt (an open-source software)

  Time frame – 1 April 2010.

Future steps – continued

- Determine security level of networked drive.

  Time frame - 1 April 2010.

Recommendations

- Start with your institution's P&Ps.
  - CCR's may need to be more restrictive.
- Use the NPCR guidance.
- Annually, require that CCR staff sign:
  - confidentiality agreement;
  - Acknowledgments of state and federal laws about penalties; and
  - CCR security policy.

Recommendations – continued

- Look for opportunities to further employee awareness.
  - Items in the news, etc.
  - Computer stolen from unsecured work station.
- Learn from other organizations' practices and mistakes.

Causes of Data Breaches

- Private files available in public spaces.
- Unused files with personal information.
- Lost or stolen laptops.
- Old or unused equipment without updated security protection.
- Sending files/allowing file access to wrong (reporting) facility.

You think you are secure!

- "…no matter how secure you are you fundamentally still are at risk."
  - Howard, Schmidt, a former Bush cybersecurity adviser and now president of the Information Security Forum. February 23, 2009 – fcw.com
- "The only way to 100 percent protect yourself from attacks is to turn off your computers."
  - Dan Chenok, chairman of the Information Security and Privacy Advisory Board, an advisory panel to NIST. February 23, 2009 – fcw.com

Resources

- NPCR Data Security.

  http://www.cdc.gov/cancer/npcr/tools/security/
- For complete details about MU's Information Security program:

  http://doit.missouri.edu/security/
- Federal Computer Week - Complimentary paper subscriptions, also available on-line. Variety of topics, including security.

  http://www.fcw.com

MU IT security team
http://doit.missouri.edu/security/

- Manager - Brandon Hough
- Auditors -
  - Tyler Hargis
  - Michael Morrison
  - Caine Henderson
  - Sara Rohrs
- Audit coordinator - Becky Fowler
- Safety awareness - Kristy White
- Account management:
  - Megan Hartz
  - Joanne Boomer