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Chapter 6
Human Factors

Book Reading: Computer Security Principles and Practice (3ed), 2015, p.556-575

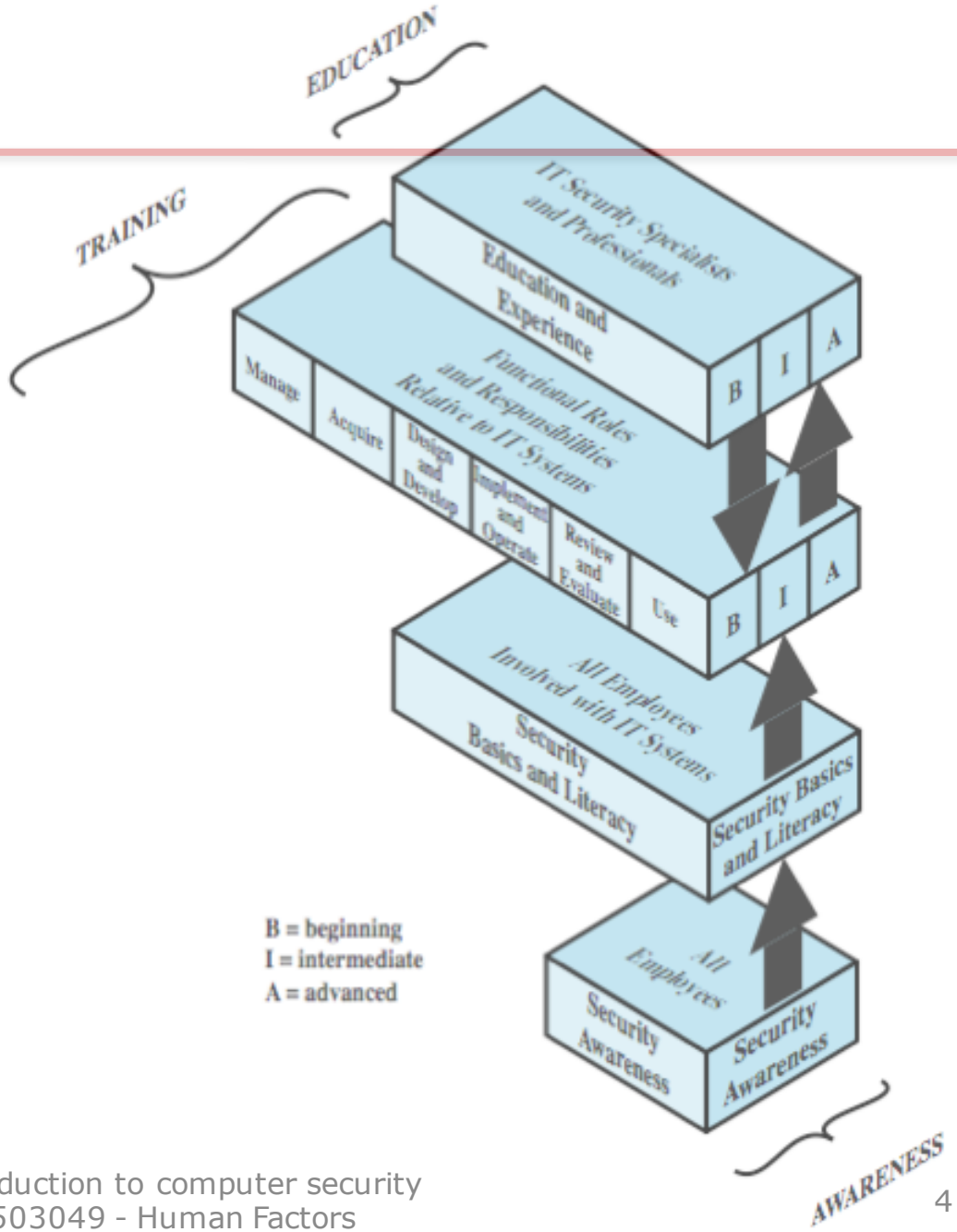
Human Factors

- important, broad area
- consider a few key topics:
  - security awareness, training, and education
  - organizational security policy
  - personnel security
  - E-mail and Internet use policies

Security Awareness, Training, and Education

- prominent topic in various standards
- provides benefits in:
  - improving employee behavior
  - increasing employee accountability
  - mitigating liability for employee behavior
  - complying with regulations and contractual obligations

Learning Continuum



Awareness

- seeks to inform and focus an employee's attention on security issues
  - threats, vulnerabilities, impacts, responsibility
- must be tailored to organization's needs
- using a variety of means
  - events, promo materials, briefings, policy doc
- should have an employee security policy document

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Training

- teaches what people should do and how they do it to securely perform IS tasks
- encompasses a spectrum covering:
  - general users
    - good computer security practices
  - programmers, developers, maintainers
    - security mindset, secure code development
  - managers
    - tradeoffs involving security risks, costs, benefits
  - executives
    - risk management goals, measurement, leadership

Education

- most in depth
- targeted at security professionals whose jobs require expertise in security
- more employee career development
- often provided by outside sources
  - college courses
  - specialized training programs

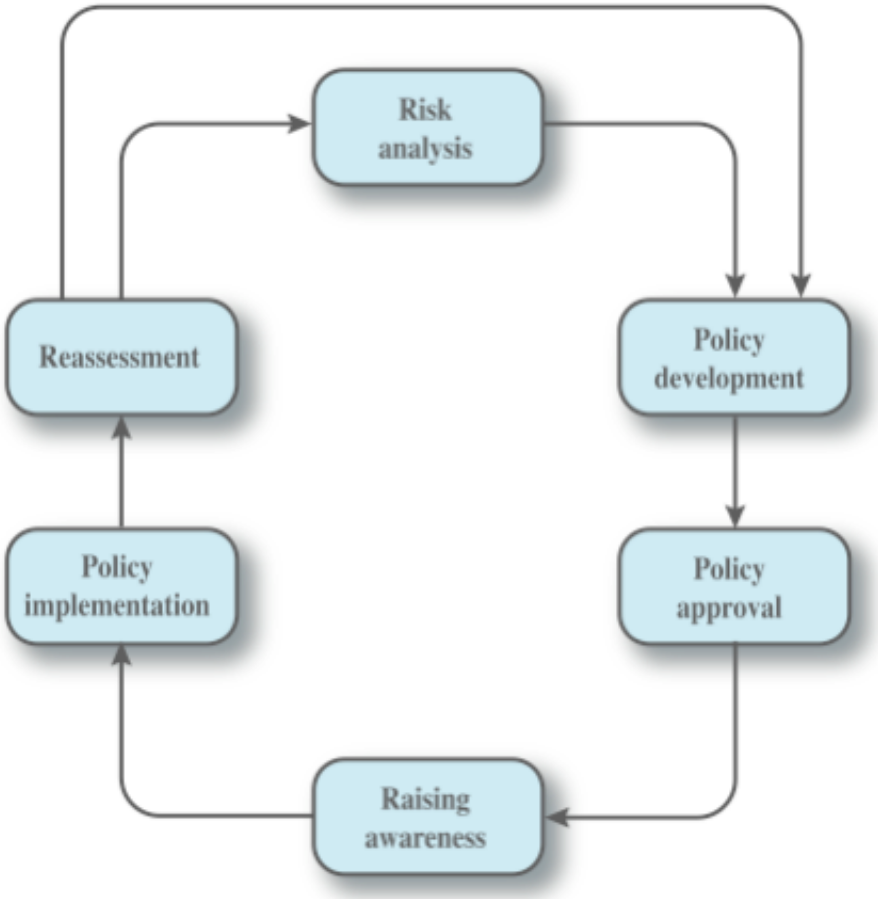
Organizational Security Policy

- “formal statement of rules by which people given access to organization's technology and information assets must abide”
- also used in other contexts

Organizational Security Policy

- need written security policy document
- to define acceptable behavior, expected practices, and responsibilities
  - makes clear what is protected and why
  - articulates security procedures / controls
  - states responsibility for protection
  - provides basis to resolve conflicts
- must reflect executive security decisions
  - protect info, comply with law, meet org goals

Security Policy Lifecycle



Policy Document Responsibility

- security policy needs broad support
- especially from top management
- should be developed by a team including:
  - site security administrator, IT technical staff, user groups admins, security incident response team, user groups representatives, responsible management, legal counsel

Document Content

- what is the reason for the policy?
- who developed the policy?
- who approved the policy?
- whose authority sustains the policy?
- which laws / regulations is it based on?
- who will enforce the policy?
- how will the policy be enforced?
- whom does the policy affect?
- what information assets must be protected?
- what are users actually required to do?
- how should security breaches be reported?
- what is the effective date / expiration date of it?

Security Policy Topics

- principles
- organizational reporting structure
- physical security
- hiring, management, and firing
- data protection
- communications security
- hardware
- software
- operating systems

Security Policy Topics cont.

- technical support
- privacy
- access
- accountability
- authentication
- availability
- maintenance
- violations reporting
- business continuity
- supporting information

Resources

- ISO 17799
  - popular international standard
  - has a comprehensive set of controls
  - a convenient framework for policy authors
- COBIT
  - business-oriented set of standards
  - includes IT security and control practices
- Standard of Good Practice for Information Security
- other orgs, e.g. CERT, CIO

Personnel Security

- hiring, training, monitoring behavior, and handling departure
- employees security violations occur:
  - unwittingly aiding commission of violation
  - knowingly violating controls or procedures
- threats include:
  - gaining unauthorized access, altering data, deleting production and back up data, crashing systems, destroying systems, misusing systems , holding data hostage, stealing strategic or customer data for corporate espionage or fraud schemes

Security in Hiring Process

- objective:
  - "to ensure that employees, contractors and third party users understand their responsibilities, and are suitable for the roles they are considered for, and to reduce the risk of theft, fraud or misuse of facilities"
- need appropriate background checks, screening, and employment agreements

Background Checks & Screening

- issues:
  - inflated resumes
  - reticence of former employers to give good or bad references due to fear of lawsuits
- employers do need to make significant effort to do background checks / screening
  - get detailed employment / education history
  - reasonable checks on accuracy of details
  - have experienced staff members interview
- for some sensitive positions, additional intensive investigation is warranted

Employment Agreements

- employees should agree to and sign the terms and conditions of their employment contract, which should include:
  - information on their and the organization's security responsibilities
  - confidentiality and non-disclosure agreement
  - agreement to abide by organization's security policy

During Employment

- current employee security objectives:
  - ensure employees, contractors, third party users are aware of info security threats & concerns
  - know their responsibilities and liabilities
  - are equipped to support organizational security policy in their work, and reduce human error risks
- need security policy and training
- security principles:
  - least privilege
  - separation of duties
  - limited reliance on key personnel

Termination of Employment

- termination security objectives:
  - ensure employees, contractors, third party users exit organization or change employment in an orderly manner
  - that the return of all equipment and the removal of all access rights are completed
- critical actions:
  - remove name from authorized access list
  - inform guards that general access not allowed
  - remove personal access codes, change lock combinations, reprogram access card systems, etc
  - recover all assets

Email & Internet Use Policies

- E-mail & Internet access for employees is common in office and some factories
- increasingly have e-mail and Internet use policies in organization's security policy
- due to concerns regarding
  - work time lost
  - computer / comms resources consumed
  - risk of importing malware
  - possibility of harm, harassment, bad conduct

Suggested Policies

- business use only
- policy scope
- content ownership
- privacy
- standard of conduct
- reasonable personal use
- unlawful activity prohibited
- security policy
- company policy
- company rights
- disciplinary action

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Example Policy

COMPANY SECURITY POLICY – INDEX

Summary

- introduced some important topics relating to human factors
- security awareness, training & education
- organizational security policy
- personnel security
- E-mail and Internet Use Policies