DHS-DoD Software Assurance Forum Workforce Education and Training Status Briefing

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Agenda

- Working Group Context and Goals
- Current Emphases
- July 11 Meeting
- Principles and Guidelines document
- Planned revision of Software Assurance Common Body of Knowledge
  - Current Situation
  - Plans
- Short-term Outcomes

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Workforce Education & Training Working Group Purpose Context

- Producers supply (more) secure software
  - **Workforce has ability to produce (more) secure software**
  - And organizations provide context (e.g. processes, tools, environment) and successfully use this workforce ability
- This software widely deployed and successfully used
  - Acquired and sustained
- Software-intensive systems in use are (more) secure
- Damage and danger reduced

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Workforce Education & Training Working Group Goals

- Have software security and assurance successfully included in
  - Higher education
  - Workforce training
  - Elsewhere, e.g. standards and guides
- Objectives
  - Provide underlying basis – e.g. Software Assurance of Common Body of Knowledge
  - Promote and motivate – e.g. publicity, encourage faculty or institution, personnel certification, higher education accreditation
  - Facilitate – e.g. educational and training materials, book publications
  - Build community and provide a means for communication and cooperation among interested parties

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Workforce Education & Training Working Group Current Emphases

- Propagate Software Assurance Common Body of Knowledge contents usage in
  - Higher Education
  - Training
  - Personnel Certification
  - Standards, guidelines, and improvement efforts
  - Individuals and organizations
  - Other Software Assurance Working Groups (multi-way interaction)
- Systematize software system security principles and guidelines
- Revise Software Assurance Common Body of Knowledge (CBK) for by October 2007

Please let us know of relevant contacts in these areas

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July 11 Meeting

- Brenda Oldfield, DHS, *Information Technology (IT) Security Essential Body of Knowledge (EBK): A Competency and Functional Framework*
- Status and Planning for revised version of SwA CBK
- Discussion of CBK changes
- Discussion of usage situation and technology transfer

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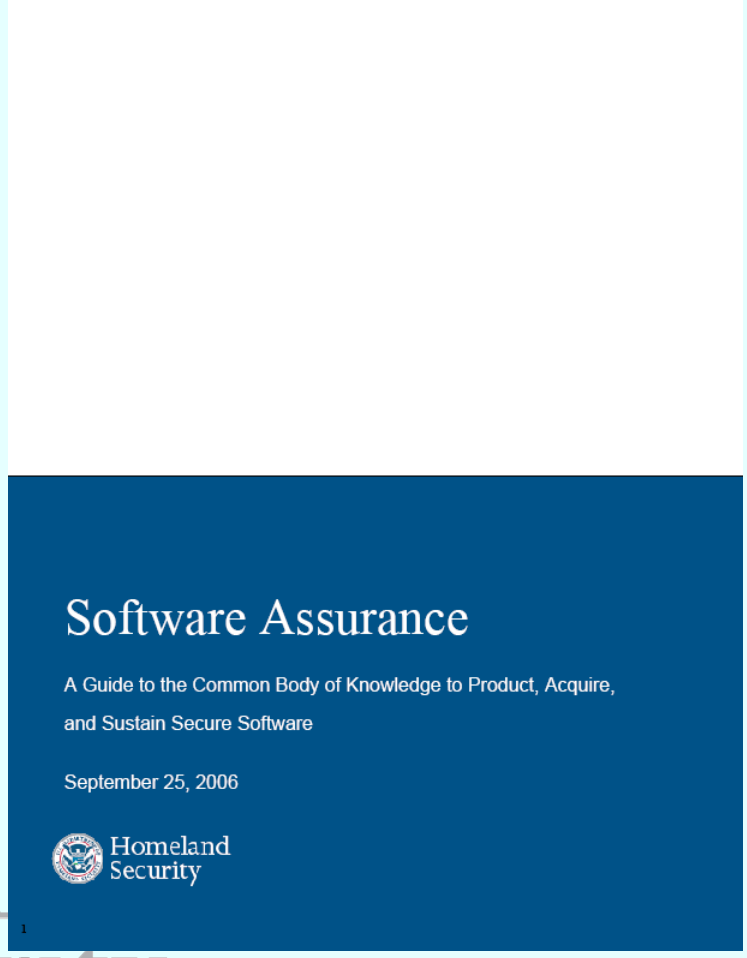
Software Assurance Common Body of Knowledge (SwA CBK)

Version 1.1

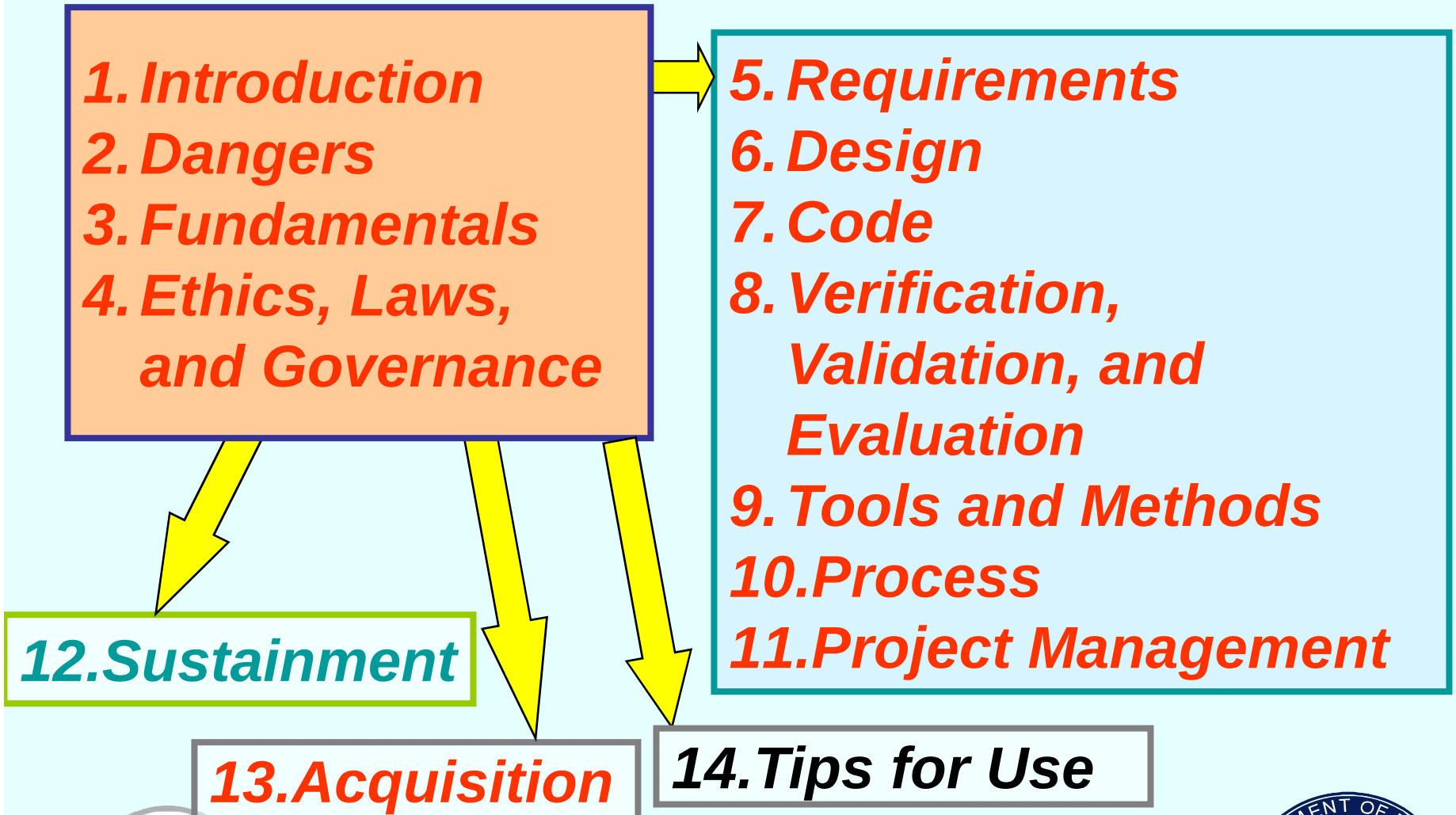
Ready for Use



Example Users

- Detroit Mercy
- JMU
- Mississippi State
- UNCC

Overview of SwA CBK version 1.1



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Document History

- Spring 2005
  - Collected lists of added or changed activities
  - Formed subgroups & assigned authors
- Summer2005
  - Started writing in June
  - Many iterations within Working Group
  - Draft distributed at October 2-3 Software Assurance Forum
- 2006 versions
  - January 23
  - March 14
  - April 17
  - May
  - July
  - September 25 version 1.1
    - Mature and ready for wide use

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Revised Version of SwA CBK

- Current version 1.1 is mature and has received wide praise
- The three main purposes of the revision are
  - Update the document to reflect developments and references of the last 15 months in
    - software security and assurance
    - experience with use of the CBK
  - Systematically include the work on organizing software security principles and guidelines
  - Expand a few weaker sub-areas
- In addition, two lesser purposes exist
  - Placing reference entries not only in bibliography but at the end of each major sections
  - Make minor editorial improvements
- The overall purpose and audiences remain unchanged
- Progress has been slow since start of revision in May
- Input from other WGs could help
- Still need volunteers to help

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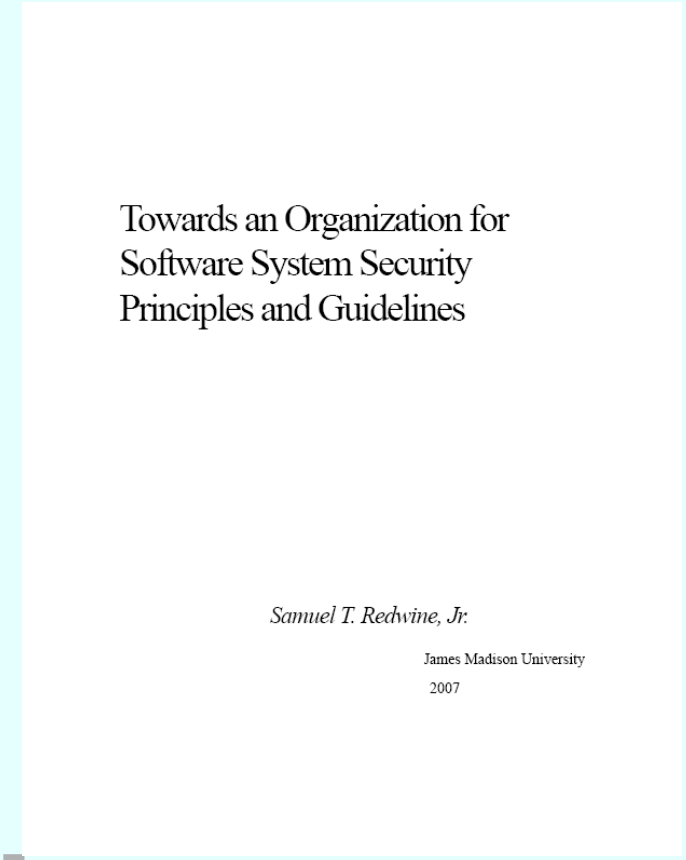
Organized Principles and Guidelines

Fifteen Months in Development

Small Group plus wider review


Towards an Organization for Software System Security Principles and Guidelines

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Organize Principles and Guidelines

- Top Level Breakdown (Timelines of)
  - The Adverse (bad guys + mistakes by good guys)
  - The System (good guys, and good and bad things)
  - The Environment
- Second Level
  - Nature/Size, Benefits, Losses, Uncertainties
- Third and lower levels are principles and guidelines layered by inclusion, or cause and effect

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Conceptual Example

- Limit, Reduce, or Manage Uncertainty
  - Predictability
    - Verifiability
      - Analyzability
        - » Analyzable Compositions (Compositionality, Composibility, Additivity)

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Example Substructure (Partial)

- *Purpose: limit opportunities for violations*
- Accurate Identification
  - Positive Identification
  - Adequate authentication
    - Valid, tamper-proof identification-related data
- Separate Identity from Privilege
- Positive Authorization (part of Fail-Safe Defaults)
- Least Exposure
  - Isolation from Source of Danger
    - Isolation of user groups
      - Isolate publicly accessible systems from mission-critical resources
    - Domain isolation
  - Continuous Protection of Assets
  - Complete Mediation of Accesses
    - Tamper Proof or Resistant
  - Least Privilege

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Workforce Education & Training WG Short-Term Outcomes

- Revise and Publish
  - Software Assurance CBK (including review)
  - Principles and Guidelines Report
- Efforts within
  - Object Management Group
  - DoD and National Defense Industry Association
  - DHS
  - Drafting of proposed IEEE/ISO 15026 System
  - Other Software Assurance Working Groups
- Wider availability and use of SwA CBK and Principles and Guidelines documents

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