Introduction to the KBSI Activity Model of the Cybersecurity Test & Evaluation Guidebook Process

Knowledge Based Systems, Inc.

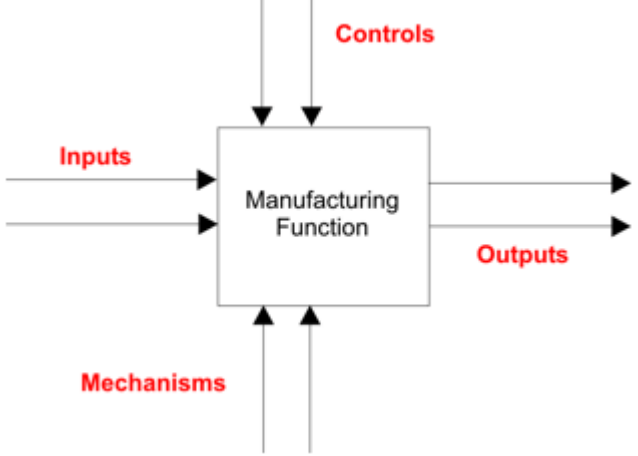
Activity Model Reference

- KBSI has developed an activity model of the process described in the Cybersecurity Test & Evaluation Guidebook as a reference framework for locating and understanding cybersecurity modeling, support, and evaluation tools.
  - The IDEF-0 activity model formalism was used for this modeling activity (www.idef.com).
  - The viewpoint taken in the modeling effort was that of the policy analyst or decisionmaker being addressed as the audience of the Guidebook.

Cybersecurity Test and Evaluation Guidebook

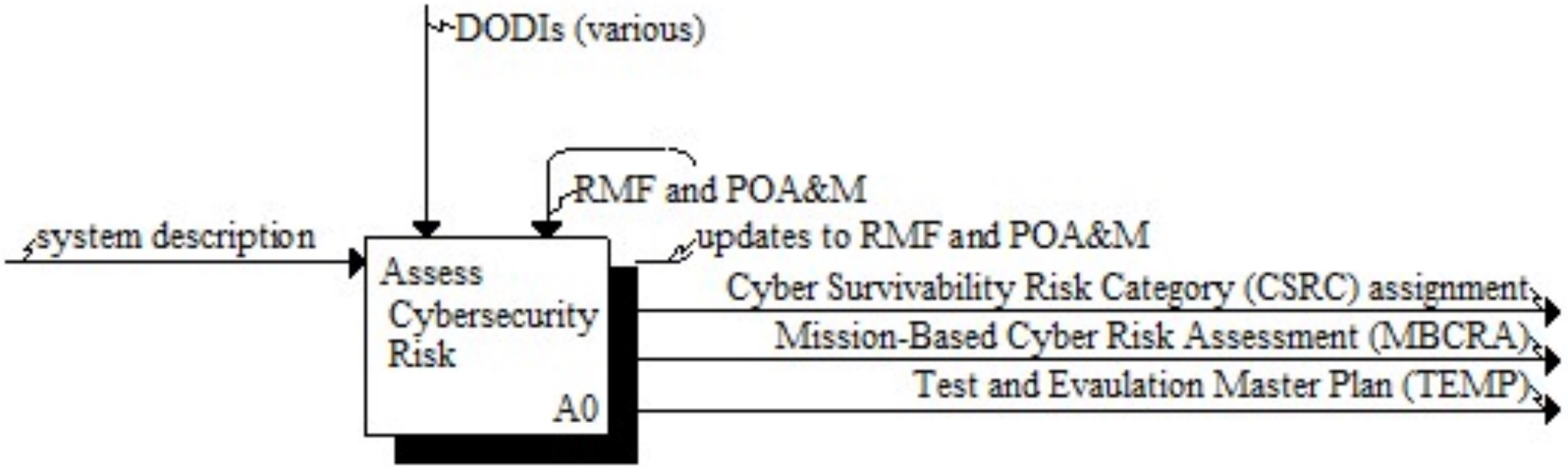
- "The purpose of [DoD Cybersecurity Test and Evaluation Guidebook] is to promote data-driven mission-impact-based analysis and assessment methods for cybersecurity test and evaluation (T&E) and to support assessment of cybersecurity, system cyber survivability, and operational resilience within a mission context by encouraging planning for tighter integration with traditional system T&E. Cybersecurity T&E starts at acquisition initiation and continues throughout the entire life cycle." [Guidebook pg 1]

Reading the Activity Model



- IDEF-0 portrays activities and their interdependencies.
  - Activities are depicted as rectangular boxes
  - The resources that interconnect activities (called *flows*) are depicted as directional arrows.
- Each activity is shown as having four types of interaction:
  - Inputs – entities that are consumed during execution of the activity
  - Controls – entities that determine the execution of the activity
  - Outputs – entities that are produced (either originally or through modification) as a result of execution of the activity
  - Mechanisms – resources that either mechanize execution of the activity or serve as a reference base during execution.

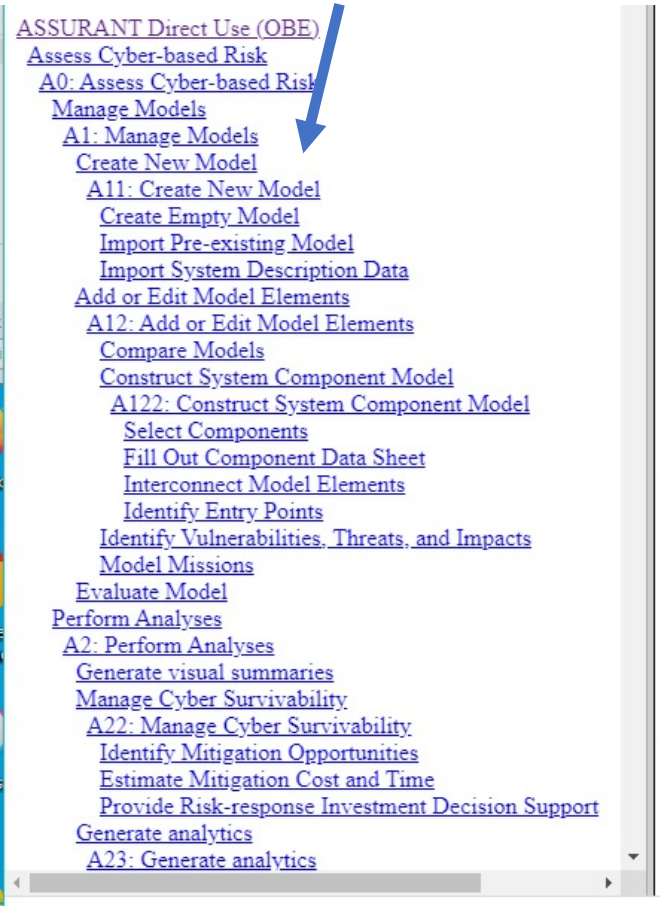
Reading the Activity Model

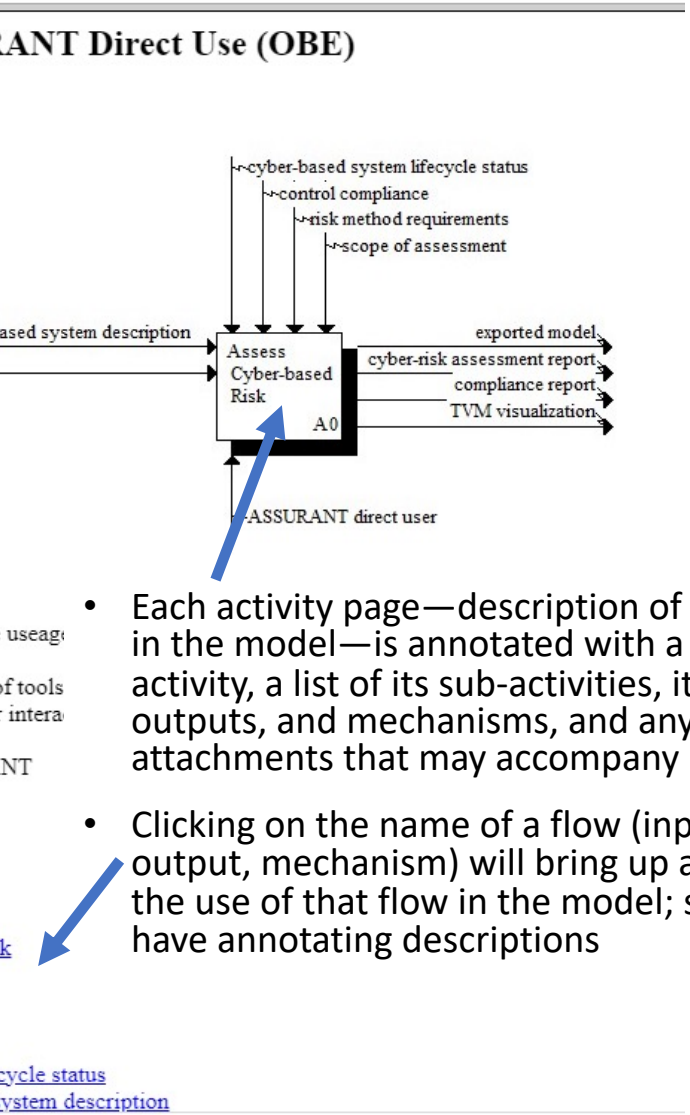


- In the diagram above
  - The depicted activity is named "Assess Cybersecurity Risk" and has the activity number "A0" (by convention, the number used for the root, or top, activity)
  - This activity is controlled by "DODIs (various)" and "RMF and POA&M"
  - The activity uses as input the "system description"
  - The activity produces as output
    - "updates to RMF and POA&M"
    - "Cyber Survivability Category (CSRC) assignment"
    - "Mission-Based Cyber Risk Assessment (MBCRA)"
    - "Test and Evaluation Master Plan (TEMP)"

Navigating the Model on this Site

The outline in the left window lists all of the activities in the model. Clicking on an item in the left-hand window will cause descriptive material for that item to appear in the right-hand window





- Each activity page—description of an activity node in the model—is annotated with a description of the activity, a list of its sub-activities, its inputs, controls, outputs, and mechanisms, and any notes and attachments that may accompany it
- Clicking on the name of a flow (input, control, output, mechanism) will bring up a page showing the use of that flow in the model; some flows do not have annotating descriptions

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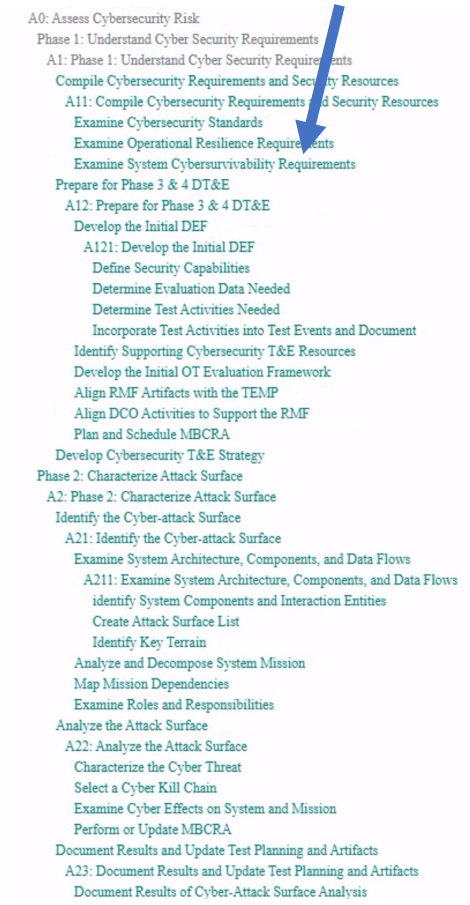

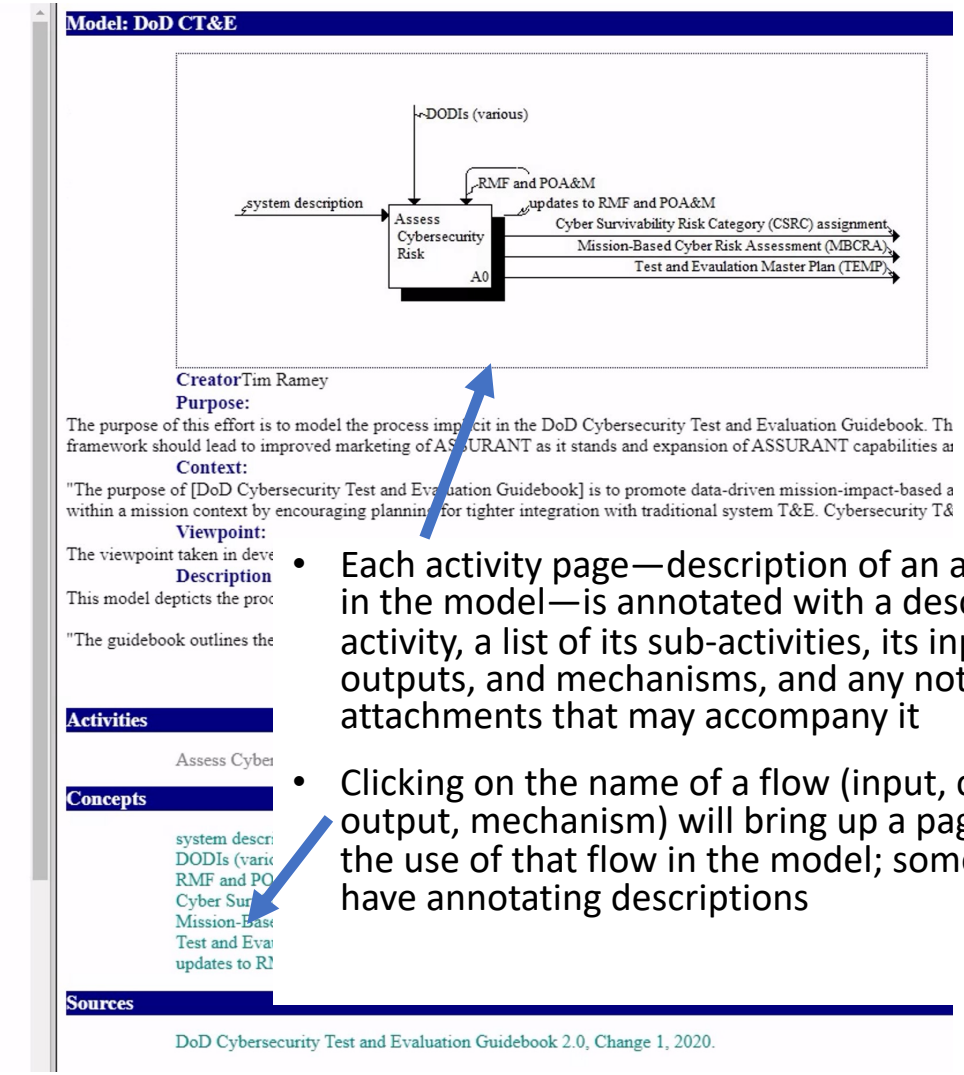

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Navigating the Model on this Site

- Each activity is depicted on two pages
  - A descriptive page
  - A diagram page
- On the descriptive page
  - Click 'Owning Diagram' to see the diagram of the parent activity
  - Click under 'Decomposition' to see the diagram for this activity
- On the diagram page
  - Click on an activity node to see the descriptive page for that activity
  - Click on a link below the diagram to see the description of that entity

Activity-in-Diagram: Compile Cybersecurity Requirements and Security Resources

Creator Tim Ramey

Description

"As early and as often as possible, the CyWG reviews system documentation to extract: 1) cybersecurity standards, system cyber survivability, and operational resilience requirements; 2) information that may influence test conditions, environments, or methods; and 3) information that may influence the prioritization of testing. The CyWG ensures that the requirements are testable, measurable, and achievable." [Guidebook]

See Guidebook Table 4.1

Owning Diagram A1: Phase 1: Understand Cyber Security Requirements

Decomposition

A11: Compile Cybersecurity Requirements and Security Resources

Output

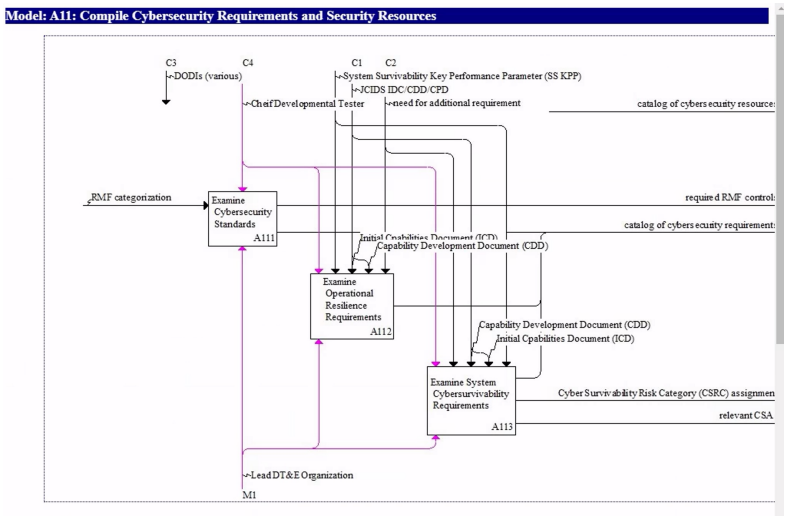
catalog of cybersecurity resources
Cyber Survivability Risk Category (CSRC) assignment
catalog of cybersecurity requirements

Control

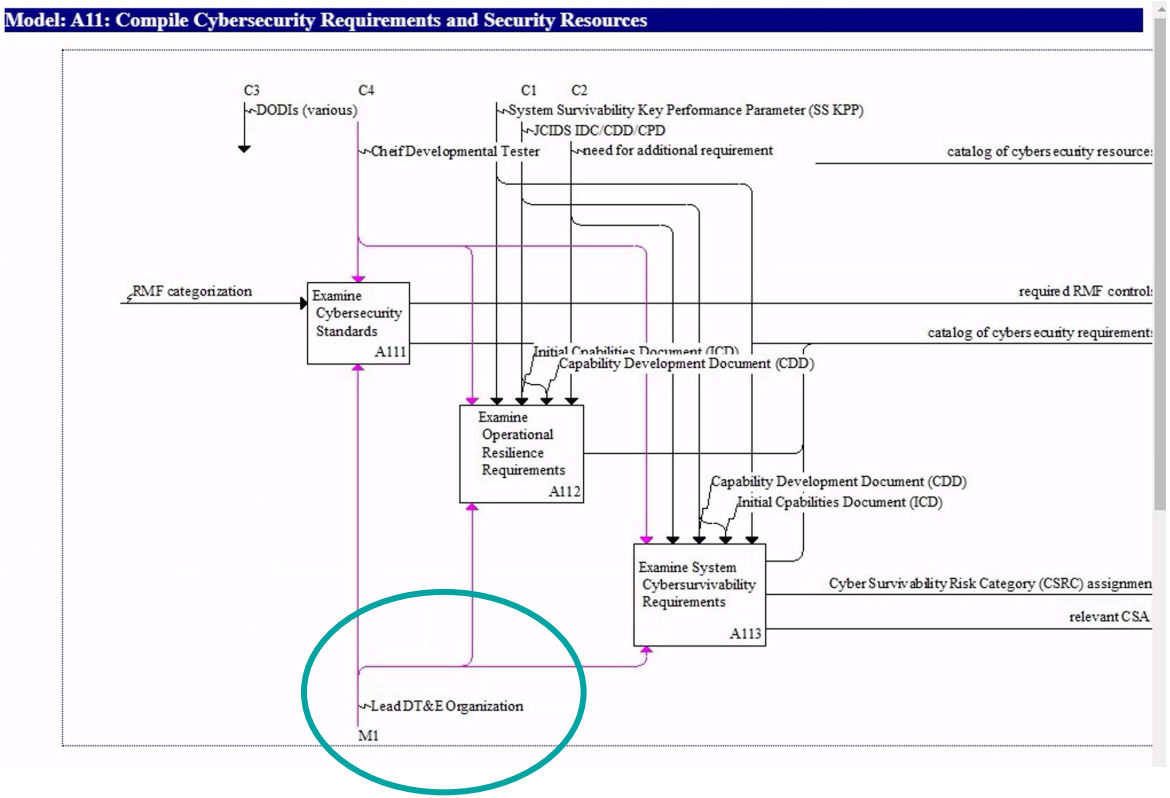
JCIDS IDC/CDD/CPD
need for additional requirement
DODIs (various)
Cheif Developmental Tester

Mechanism

Lead DT&E Organization



Special Annotations on the Model



- Flows shown in a magenta color are performer resources-–personnel or organizations
  - Performers identified in the Guidebook as 'accountable' in an activity are shown as controls
  - Performers identified in the Guidebook as 'responsible' in an activity are shown as mechanisms

Please Send Us: Comments, Recommendations, Criticisms

- At the bottom of each page will be found a link for sending feedback to the model author
  - "Send Feedback"
  - Clicking on that link will open an e-mail composition window in which you can write your comment
  - The e-mail is pre-addressed and contains information in the 'subject' line that allow the model author to know which page you are looking at
  - Include in your comment any orienting information necessary to focus the model author's attention to the part of the diagram you are commenting on
- The author may not be able to respond to each comment, but every comment is appreciated and is an opportunity for improvement