



CRWS-BoK Cyber Resilient Weapon Systems Body of Knowledge Portal August 19, 2021

Mr. Burhan Adam

Director, Resilient Systems Policy, Standards, and Guidance Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E))/ Office of Strategic Technology Protection and Exploitation (STP&E)

Angela Lungu and Madison Rudy

Support to Director, Resilient Systems Policy, Standards, and Guidance OUSD(R&E)/ STP&E

https://crws-bok.org

https://www.CTO.mil





Agenda Topics



- Overview of Vision and Capability
- Concept of Operations
- Functionality Overview
- Impact Indicators
- Outreach





The Cyber Resilient Weapon Systems Body of Knowledge (CRWS-BoK) will provide a living, curated, authoritative guide to the knowledge most relevant and important to the advancement of engineering secure and cyber resilient weapon systems for engineers, program managers, science and technology (S&T) managers, and researchers from Department of Defense, Federal Government, industry, and academia.



Launched May 6, 2021, with version 1.1 released July 14, 2021

CRWS-BoK Portal August 2021





CRWS-BoK includes:

- A comprehensive, continuously updating repository of curated, engineering information to produce cyber-secure, cyber-survivable, and cyber-resilient weapon systems.
- A powerful viewing environment that enables users to efficiently and easily access, search, annotate, save, and share the engineering information they need for both individual and collaborative purposes (the body of knowledge).
- Links to CRWS-relevant workforce training, competencies, and credentialing information within the repository.





Owner(s):

- OUSD(R&E)
- STP&E
- Resilient Systems
- SAIC

Intended Users:

 Those in the resilient systems and adjacent communities. This includes engineers, program managers, S&T managers, academics, and policy writers.





Adding/Removing Content

Who (Content Management Stakeholders):

- Composed of representative members from government, industry and academia, with Curation Team facilitation:
 - OUSD(R&E) STP&E (Burhan Adam, government lead)
 - DoD Cybersecurity Industry Technical Advisory Group (CITAG)
 - National Defense Industrial Association (NDIA) Systems Security Engineering (SSE) Committee
 - Systems Engineering Research Center (SERC)
- A list of candidate resources is consolidated and packaged by the Curation Team for the Review Board's consideration.
- The Review Board adjudicates whether a resource meets all the Acceptance Criteria for inclusion in the repository.





Criteria:

- All material included in the repository are unclassified and approved for Unrestricted Public Release.
- Restricted Public Release material (e.g., resources with associated paywalls) will have the URL/link shown but will not be contained in the CRWS-BoK repository.
- Foreign, sovereign-owned material will **<u>not</u>** be accepted for inclusion.
- A document in draft can be nominated, but cannot be accepted for inclusion until it has reached official publication.
- A list of topics* of interest will be consulted for resource relevancy.

*A full list of the Topics of Interest, and a more detailed look at the criteria, is included in the backup slides.





Maintaining Quality:

- Users are able to nominate new resources for consideration by the Review Board.
- There is ongoing validation of resources included in the repository to ensure they are the most current version.
- When a resource is retired or rescinded, related documentation will automatically be put up for review.
- Algorithms and metrics are leveraged to determine when resources need to be reviewed.
 - This is based on how frequently a resource is accessed or if a resource is consistently rated as poor by users.
 - Poor performance in the above qualifications will place the resource on the "candidate for removal" list for the Curation Team to review.





Current Features

- Searching
 - Guided search
 - Keyword search
 - Keyword filter
 - Save a search
 - Defined filters

• General

- Notifications
- List view
- Share document
- Information/help boxes
- Accessibility features
- Site map
- "Dark mode"

- Resources
 - PDF/resource viewer
 - Search within a document
 - PDF annotations
 - Document download
 - Document print
 - Document favorite
 - Details view
 - Relationship view
 - References tab

Planned Features

- Al-assisted relationship mapping
- Enhancements to Relationship view
 - User interface improvements

Release Notes

Version 1.1.1

Features

Added functionality for Review Board members to be able to view unapproved resources (nominated resources).

Version 1.1

- List view redesigned to fit more resources on the screen.
- Sign out page added.
- Resource graphs have been updated and reformatted for better viewing.
 Added download button to both card and list view to download resources
- without opening them.
- A table of references has been added to the details view of resources
 Updates to interface to make it more uniform.

Bug Fixes

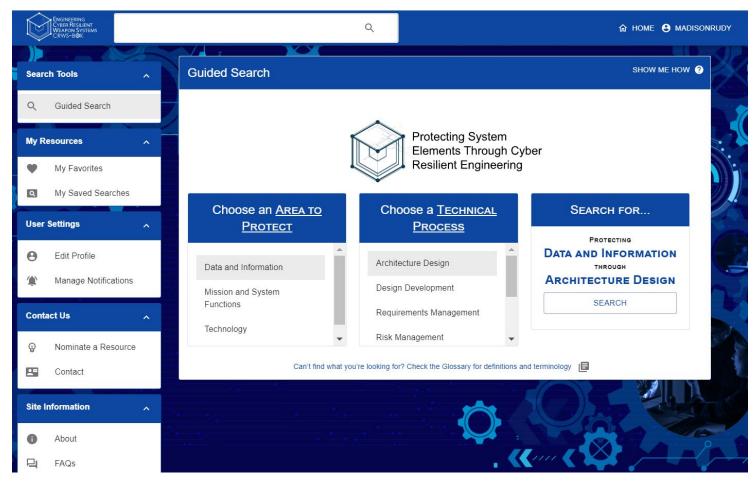
- · Fixed a bug with crashing after a long idle period.
- Fixed a bug causing a search to happen when typing with leading spaces.
 Fixed a bug that caused the user to be logged out if asset not found.

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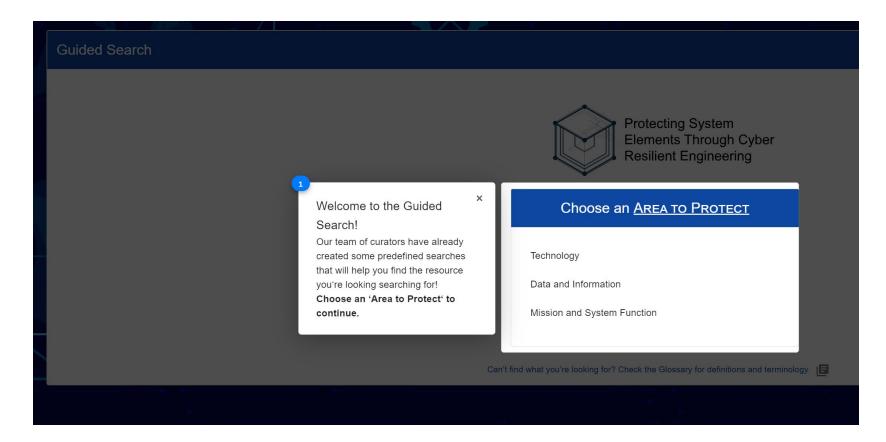


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Current Features (Guided Tutorial)







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Current Features (Resource)

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Current Features (Review Board)

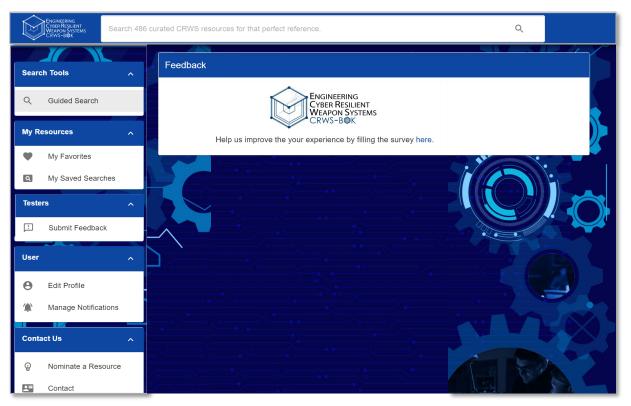
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Current Features (Usability Testing)



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Current Features (General)

Sitemap

Main Pages

- Home
- Login

User Settings and Resources

- Profile
- Notifications
- Subscriptions
- Favorites
- Saved Searches
- Password Reset

Contact Us

- Nominate a Resource
- Contact Us

Site Information

- About
- FAQs
- Copyright

CLOSE

Accessibility Information

The Cyber Resilient Weapon Systems Body of Knowledge (CRWS-BoK) is committed to making its portal page and electronic resources accessible to individuals of all abilities. Our success is measured by meeting or exceeding the requirements of Section 508 of the Rehabilitation Act (29 U.S.C. § 794(d)), as amended by the Workforce Investment Act of 1998 (Public Law 105-108). Section 508 requires that all individuals with disabilities (whether federal employees or members of the general public) have access to and use of information and data, comparable to that provided to individuals without disabilities, unless an undue burden would be imposed on us. More information about Section 508 may be found

https://www.section508.gov/manage/laws-and-policies/

If you use assistive technology (such as a screen reader, eye tracking device, voice recognition software, etc.) and have difficulty accessing information on this website, please use the DOD CIO Accessibility/Section 508 site to report the difficulty. You will be asked to provide the URL (web address) of the material you tried to access and a description of the problem you experienced.

The majority of our resource documents are viewed as Portable Document Format (PDF) files. To view documents stored as PDF files, your local computer must have the Adobe Acrobat Reader DC application, or a Web browser plug-in that supports the PDF file format.

Download the Adobe Acrobat Reader DC

As the technology of the Internet evolves, we share the ongoing task of learning how to improve the accessibility of our resource documents and our services with you. We welcome your comments for improving the accessibility of our web assets and services. Please share your comments, questions, or concerns related to accessibility or our Section 508 Program with info@crws-bok.org.

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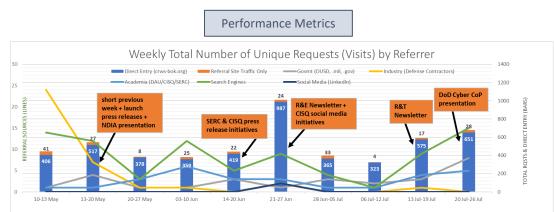
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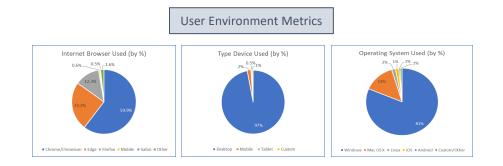


Impact Indicators



- The numbers of visits, top referrer sites, and user environment statistics are assessed weekly to determine impacts of outreach efforts and reach to targeted user groups, as well as compatibility of current and planned releases with users' preferred system configurations
- Indexing the data with outreach events helps gauge the effectiveness of outreach efforts and helps shape ongoing initiatives
- Regular usability testing and feedback collection contribute to capability development and interface improvements geared specifically to community needs





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Outreach: CTO.mil

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Updates from Across the R&E Enterprise



DoD Announces New Cyber Resilient Weapon Systems Body of Knowledge Portal May 6, 2021

The Strategic Technology Protection and Exploitation (STP&E) Office in the Office of the Under Secretary of Defense for Research and Engineering announces the launch of the Cyber Resilient Weapon Systems Body of Knowledge (CRWS-BoK) Portal.

The Official account for the Office of the Undersecretary of Defense for Research and Engineering (USD(R&E), the Department of Defense's Chief Technology Officer (CTO).

Tweets by @DoDCTO

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#DoD launches new Cyber Resilient Weapon Systems Body of Knowledge Portal to provide a living, comprehensive repository of curated guidance & knowledge for #science & #technology engineers, managers, & researchers. Check it out at crws-bok.org #cyber #cybersecurity NOME LEADERSHIP ENTERPRISE WORK WITH US VIEWS V 56 VIODERRELATION PRIORITIES CONTACT

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DoD Announces New Cyber Resilient Weapon Systems Body of Knowledge Portal

The Strategic Technology Protection and Exploitation (STP&E) Office in the Office of the Under Secretary of Defense for Research and Engineering announces the launch of the Cyber Resilient Weapon Systems Body of Knowledge (CRWS-BoK) Portal.

The CRWS-BoK Portal provides a comprehensive repository of authoritative guidance and knowledge for science and technology (S&T) professionals who specialize in cyber resilient weapon systems. Engineers, S&T program managers, and researchers from Department of Defense [DoD], government, industry, and academia will be able access, search, annotate, save, and bare the engineering information they need to develop, maintain, and monitor secure, cyber resilient weapon systems programs.

STP&E's Resilient Systems directorate, under the leadership of Resilient Systems Director Melinda Reed, designed and developed the CRWS-BoK Portal. Resilient Systems will continually update the Portal with curated guidance so that it remains a living, informative resource.

Resilient Systems partners with engineers, S&T managers, and researchers from across DoD, Federal Government, industry and academia to foster assured resilient missions, systems, and components. Resilient Systems' initiatives leverage best practices and foster innovation that enables the Nation's S&T workfore to engineer cyber resilient weapon systems that can accessfully operate in the face of cyber threats.

For additional information and to register for an account, access the CRWS-BoK Portal at https://crws-bok.org. The site is optimized for Chrome, Firefox, Edge, and Safari browsers.



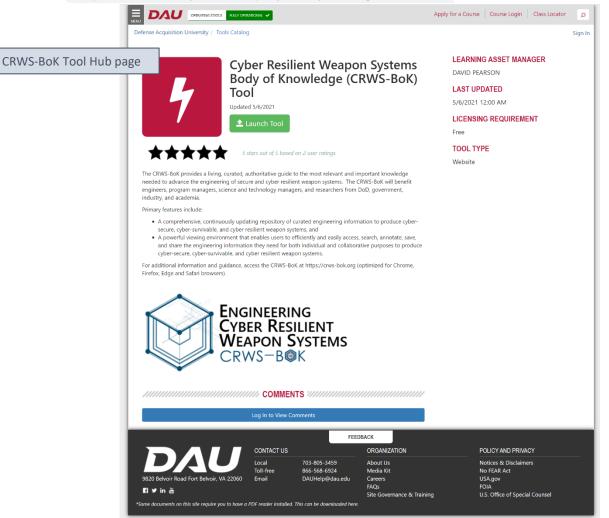
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Outreach: Defense Acquisition University



https://www.dau.edu/tools/t/Cyber-Resilient-Weapon-Systems-Body-of-Knowledge-(CRWS-BoK)-Tool



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Outreach: SERC



https://sercuarc.org/related



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RELATED SITES



Visit CRWS-BoK 🗲

The Cyber Resilient Weapon Systems Body of Knowledge (CRWS-BoK) provides a living, curated, authoritative guide to the most relevant and important knowledge needed to advance the engineering of secure and cyber resilient weapon systems. The CRWS-BoK will benefit engineers, program managers, science and technology managers, and researchers from DoD, government industry, and academia.

Primary features include: a comprehensive, continuously updating repository of curated engineering information to produce cyber-secure, cyber-survivable, and cyber resilient weapon systems and; a powerful viewing environment that enables users to efficiently and easily access, search, annotate, save, and share the engineering information they need for both individual and collaborative purposes to produce cyberOsecure, cyber survivable, and cyber resilient weapon systems.



The International Council on Systems Engineering (INCOSE) is a not-for-profit membership organization founded to develop and disseminate the interdisciplinary principles and practices that enable the realization of successful systems. INCOSE is designed to connect SE professionals with educational, networking, and career-advancement opportunities in the

CRWS-BoK Portal August 2021



Outreach: CISQ



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© Comment
→ Share ronavirus and Cyber-Attacks - How to Primary features lockuter th Left" Risk in IT's A comprehensive, continuously updating repository curated engineering information to produce cyber-secure, cyber-survivable, and cyber resilient weapon systems Consortium for Information & Software Quality (CISQ) CISQ s the Software Industry Approaching its "Silver Bridge 552 followers A powerful wewing environment that enables users to efficiently and easily access, search, annotate, save, and share the engineering information they need for both individual and collaborative purposes to produce cyber-secure, cyber-survivable, and cyber resident weapon systems. Sony Agle but We Need to Talk About The "F" Won For additional information and guidance, access the CRWS-BoK here Is your software robust, efficient, and secure? cribe to this blog's feed Join CAST's Technical Director, Rafael Cal, and CISQ's Director of Government and ARCHIVES Industry Programs, Paul Bentz, on July 6th, who will discuss the new ISO 5055 ENGINEERING June 2021 standard, the first of its kind. Jamany 2025 CYBER RESILIENT December 2020 November 2020 Register below \$ WEAPON SYSTEMS June 2020 March 2020 Spain: 10:00-11:00am CET, 5:00-6:00pm CET https://bit.ly/34YrSwj CRWS-B@K February 2020 October 2019 Latin America: 5:00-6:00pm CET https://bit.ly/3zlXRES https://blog.it-cisq.org/2021/06/new-resource-from-the-dod-cyber-resilient-weapon-systems-body-of-knowledge-crws-bok.html #ISO5055 #SoftwareQuality #CISQ #CAST

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Contact for Further Information





Mr. Burhan Adam

- Director, Resilient Systems Policy, Standards, and Guidance
- OUSD(R&E)/STP&E
- burhan.y.adam.civ@mail.mil

Angela Lungu

- Project Lead for CRWS-BoK Project
- Support to Resilient Systems Policy, Standards, and Guidance
- angela.m.lungu.ctr@mail.mil

Madison Rudy

- Lead Analyst for CRWS-BoK Project
- Support to Resilient Systems Policy, Standards, and Guidance
- madison.a.rudy.ctr@mail.mil

CRWS-BoK Resource August 2021



Acceptance Criteria



- Minimum Acceptance Standards:

- ✓ The artifact must be available at no cost online.
 - There is no cost for users to access the CRWS-BoK; it is for educational purposes only.
 - The CRWS-BoK cannot circumvent or infringe upon those who own the commercial rights to the artifact. Subsequently, contingent upon copyright permission and acceptance into the repository, no further distribution or production is authorized without the user individually requesting copyright permission from the artifact's author or publisher.

✓ <u>Only materials that are both unclassified and approved for public release</u> (unlimited distribution) are acceptable.

- The CRWS-BoK is unclassified and with unlimited access.
- Materials that are unclassified but with limited distribution may be nominated, but will not be contained in the repository. A reference only (title/limited attributes) will be included, with a source link for the user to request access to the material/artifact.
- No classified material at any time will be included in or referenced by the CRWS-BoK.
- No foreign, sovereign-owned material that is not available for public release may be nominated.
- ✓ Both published and unpublished materials are acceptable; while those materials that are in draft, review, or other unapproved form as part of an approval process are not acceptable.
 - Material that is premature, in draft, and would not be appropriate to include until approved for release [e.g., standards, handbooks, guidance that come from a formal body (ISO, INCOSE, IEEE), government (DoD, NIST), or industry (RCTA)]. Also unacceptable would be material for textbooks or similar class materials or handouts.
 - Material intended for formal acceptance by such a governing body should not be accepted in the CRWS-BoK while it is in draft, review, or other unapproved form.

- Quality Criteria:

✓ The artifact must support the overall CRWS-BoK goal of advancing the general education and practice of engineering secure, survivable, & resilient weapon systems.

- Topics of Interest:

- ✓ <u>The artifact should exhibit specific "engineering consumability"</u> <u>characteristics and pertain to at least one of the following CRWS topic areas:</u>
 - 1. Requirements analysis
 - 2. System design
 - 3. Design patterns
 - 4. Systems thinking
 - 5. Control systems
 - 6. System analysis of adverse effects & associated losses
 - 7. Threat identification, assessment, & tracking
 - 8. Vulnerability identification, assessment, & tracking
 - 9. Hardware development & assurance
 - 10.Software development & assurance
 - 11.Risk, issue, & opportunity identification & assessment
 - 12.System & architecture modeling
 - 13. Engineering methods, processes, & tools
 - 14. Engineering workforce education, training, & skillsets
 - 15. Engineering standards, specifications, handbooks, & guidance



Nomination/Review Process



User Submission

- Registered User submits unclassified, publicly available resource using Nomination Form on CRW-BoK
- Actual resource is attached and URL is included (if published online)

Candidate Resource Disposition

 Candidate Resource (actual resource and/or resource information) is flowed directly to Candidate Resource Holding Repository until final disposition (approval or rejection)

 Resource Nomination Alert is sent to Curation Team

Resource Nomination Review

 CRWS-BoK Curation Team collects and assesses Resource Nomination Alerts on weekly basis
 Curation Team

- Curation ream conducts initial review of candidate resources; eliminates nominations not meeting criteria
- Curation Team validates and downloads most current versions of remaining nominations
- Curation Team prepares CRWS-BoK Resource Nomination Package for Review Board (scheduled monthly)
 Any previous
- rebuttals (disapproved nominations) included in package with previous disapproval discussion and any new supporting information

Review Board Adjudication

 Curation Team schedules monthly meeting of Review Board and Curation Team representatives
 Review Board reviews and adjudicates CRWS-BoK Resource Nomination Package, per CRWS-BoK Approval Criteria

• Curation Team representatives confirm and document results of Review Board adjudication

Candidate Resource Final Disposition

- Those Candidate Resources not approved are annotated as "disapproved" (with date/reason) and moved to Disapproved Resource Repository.
- Those Candidate Resources that were approved are revalidated for currency and other metadata, and then moved from Candidate Resource Holding Repository to Active Resource Repository
- Curation Team notifies Registered Users who nominated resources of final disposition
- Any rebuttal for disapproved nominations are collected for next Review Board, as appropriate

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