

SD2-C2M2: Secure Design and Development Cybersecurity Capability Maturity Model for Energy Delivery Systems



Pacific Northwest
NATIONAL LABORATORY

Evaluating cybersecurity for product lifecycles

The project team is developing the SD2-C2M2 tool using the best practices of subject matter experts and international standards to create a quantifiable, repeatable, assessment methodology to assess and measure the cybersecurity of design and development processes for energy delivery system (EDS) components throughout their lifecycles. These processes are mapped against management expectations to identify gaps that focus efforts for process improvements. The team is developing a browser-based toolset that allows an EDS vendor/manufacturer to select the development project lifecycle domains to explore and evaluate their system's design and development level of cybersecurity maturity. The methodology and toolset can show how these procedures improve over time, enabling industry to quantifiably demonstrate improvement in identified gap areas. Users of the tool have access to results in both a browser view and an archivable report that include data visualizations that allow easier analysis of the results at different levels of the organization.

KEY TAKEAWAYS

- Performs cybersecurity evaluations of the energy delivery system hardware and software throughout the entire product lifecycle with a widely available, quantifiable, and repeatable method
- Facilitates systematic improvements of the approach that EDS suppliers take when defining, building, integrating, delivering, and testing cybersecurity in products
- Accurately visualizes security assessment outcomes through an easy-to-use browser-based tool

OUTCOME

The tool developed in the project has been field-tested with two EDS vendors focused on different product markets. PNNL conducted two assessments with each of those vendors with the assistance of third-party cybersecurity consultants for an unbiased evaluation. Using the SD2-C2M2 results from the pilot, vendor partners have already started addressing identified gaps and implementing process improvement plans. This project has also resulted in four technical products: a patent filed for the methodology, two copyrights filed for the tool and the content, and a conference paper “Secure Design and Development Cybersecurity Capability Maturity Model (SD2-C2M2): Next-Generation Cyber Resilience by Design” presented at the ACM Northwest Cybersecurity Symposium.

PARTICIPANTS

ROLE



Developed the set of practice statements and the SD2-C2M2 tool incorporating feedback from partners



Evaluated SD2-C2M2 toolset and provided feedback



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CONTACT INFORMATION

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Cost Share: \$0

CYBERSECURITY FOR ENERGY DELIVERY SYSTEMS (CEDS)

CEDS projects are funded through DOE CESER, which aims to enhance the reliability and resilience of the nation's energy infrastructure by reducing the risk of energy disruptions due to cyberattacks.

Website: <https://www.energy.gov/ceser>

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