

# Tribute to Watts Humphrey

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**Dr. Paul Nielsen**  
**Director & CEO**  
**Carnegie Mellon University Software**  
**Engineering Institute**



# Tribute to Watts Humphrey

## 1927-2010

# The Legacy of Watts Humphrey



Passion  
Energy  
Commitment  
Discipline  
Global focus

# The Early Years



Born on the Fourth of July, 1927, in Battle Creek, Michigan

Son of an MIT-trained engineer, also named Watts

Family moved to Litchfield, Connecticut after Watts failed first grade, so that he could attend a school that provided more individual attention. (Watts would be eventually diagnosed with dyslexia.)

Graduated high school at the top of his class (valedictorian) in 1944

Deferred college to serve in the U.S. Navy during World War II

After the Navy, Watts earned a Bachelor's degree in physics at the University of Chicago, then a Masters in physics at Illinois Institute of Technology, and then an MBA from the University of Chicago.

# Moving from Hardware to Software



Watts began working for IBM in 1959, initially in hardware as a computer designer and architect.

Later at IBM, Watts transitioned into software and became the director of programming and vice-president of technical development, where he supervised 4,000 software professionals across 15 laboratories and seven countries.

Watts joined the SEI in 1986.

Larry Druffel, SEI director and CEO from 1986 to 1996, said that when Watts arrived at the SEI, he came with a vision based on his work at IBM:

Software could be managed by process

# At the SEI: CMM, PSP, TSP



Led a team that identified characteristics of best practices in software engineering

- Groundwork for the Software Capability Maturity Model (CMM) and, eventually, CMMI.

Led development of the Personal Software Process (PSP) and the Team Software Process (TSP)

Was named the first Fellow of the SEI

Was instrumental, with Steve Masters, in forming the Software Engineering Process Group (SEPG) conference

An author and editor: Watts authored 12 books and hundreds of technical reports, journals, and columns. He was a member of the editorial board of the *Journal of Empirical Software Engineering* and the *Journal of Software Process Improvement and Practice*.

# Watts' Many Accolades



- The National Medal of Technology, the country's highest honor in this field
- Association of Computer Machinery Fellow
- IEEE Fellow
- Honorary doctorate of software engineering from Embry Riddle Aeronautical University
- Embry Riddle Industry Advisory Board member



# Continuing Watts' Legacy...IEEE CS / SEI Watts S. Humphrey Software Process Achievement Award Established

- Created in 1994 and co-sponsored by IEEE Computer Society and the Software Engineering Institute to recognize outstanding achievements in improving an organization's ability to create and evolve high-quality software-dependent systems.

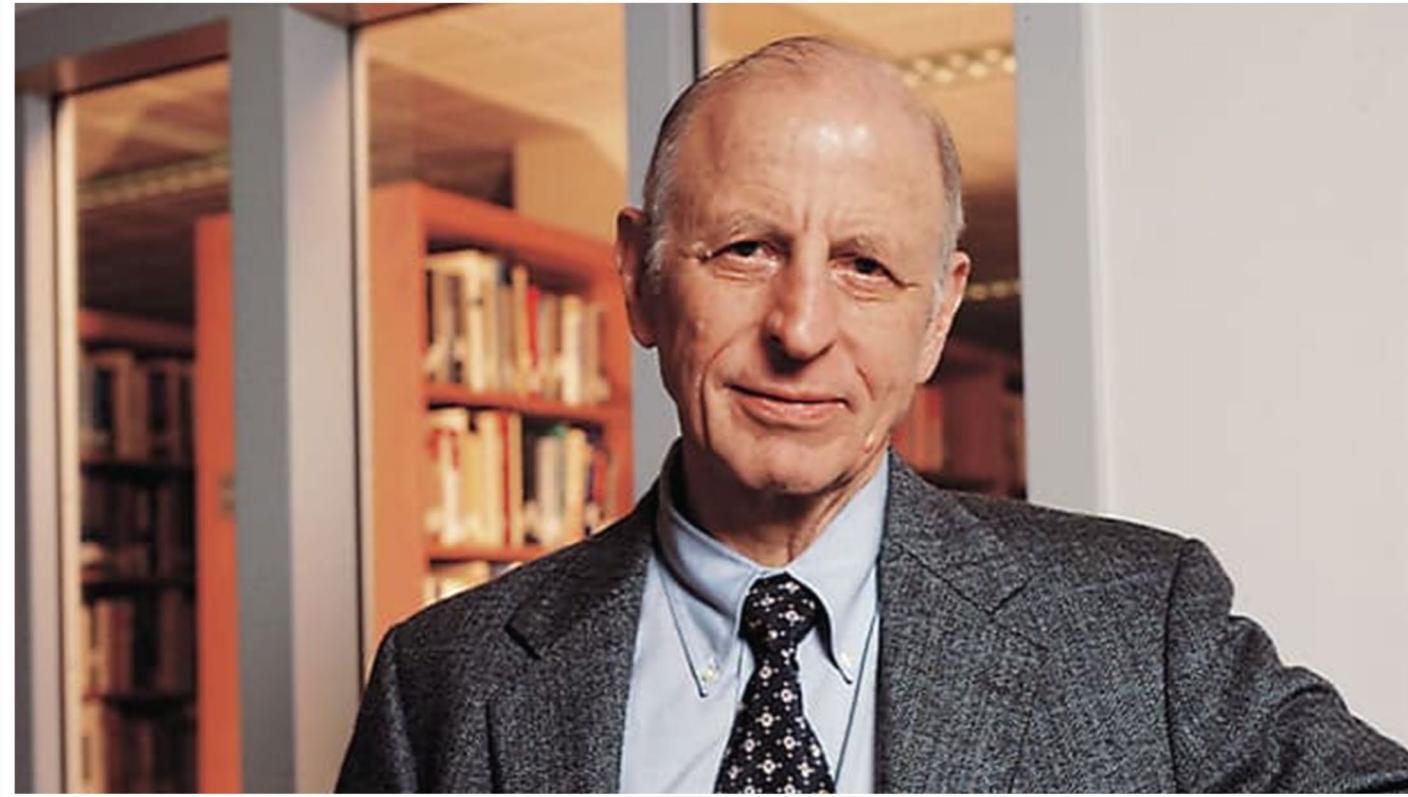


- Nominations are open for the 2023 award with a deadline of September 1, 2022.
- For more information, see <https://resources.sei.cmu.edu/news-events/events/watts>



Dr. Lee Osterweil

Professor, Department of Computer Science  
University of Massachusetts Amherst





## Matthew Butkovic

Technical Director, Cyber Risk and  
Resilience, CERT, Software Engineering  
Institute Carnegie Mellon University



# How Capability Maturity Models Transformed Cybersecurity Performance Measurement

Matthew Butkovic

Technical Director-Risk and Resilience

Software Engineering Institute  
Carnegie Mellon University  
Pittsburgh, PA 15213



# A Matter of Innovation

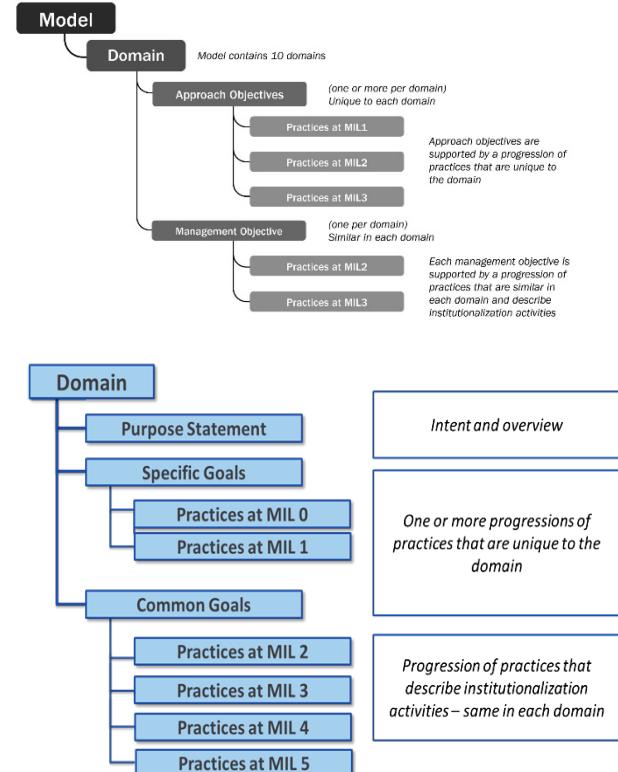
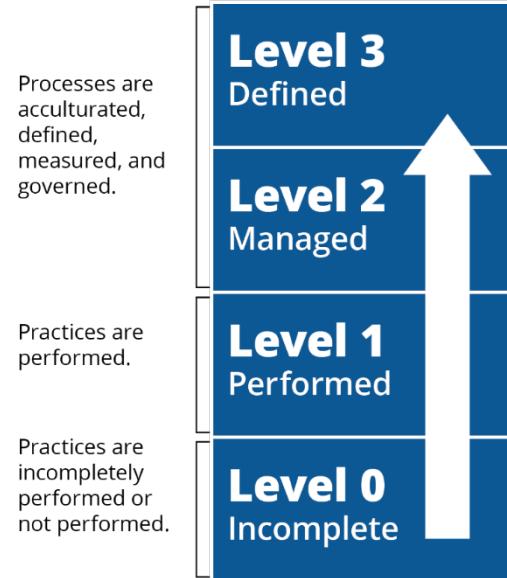
“Innovation is the process of turning ideas into  
manufacturable and marketable form”

-Watts Humphrey

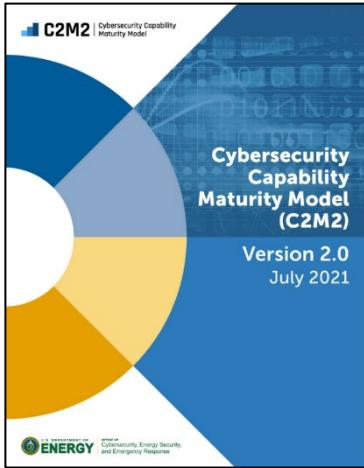


# Measuring the Institutionalization of Cybersecurity Process

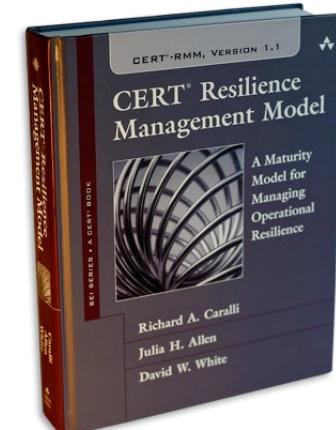
**institutionalize** *verb*  
to make something  
become part of a  
particular society,  
system, or organization  
*What was once an informal  
event has now become  
institutionalized.*



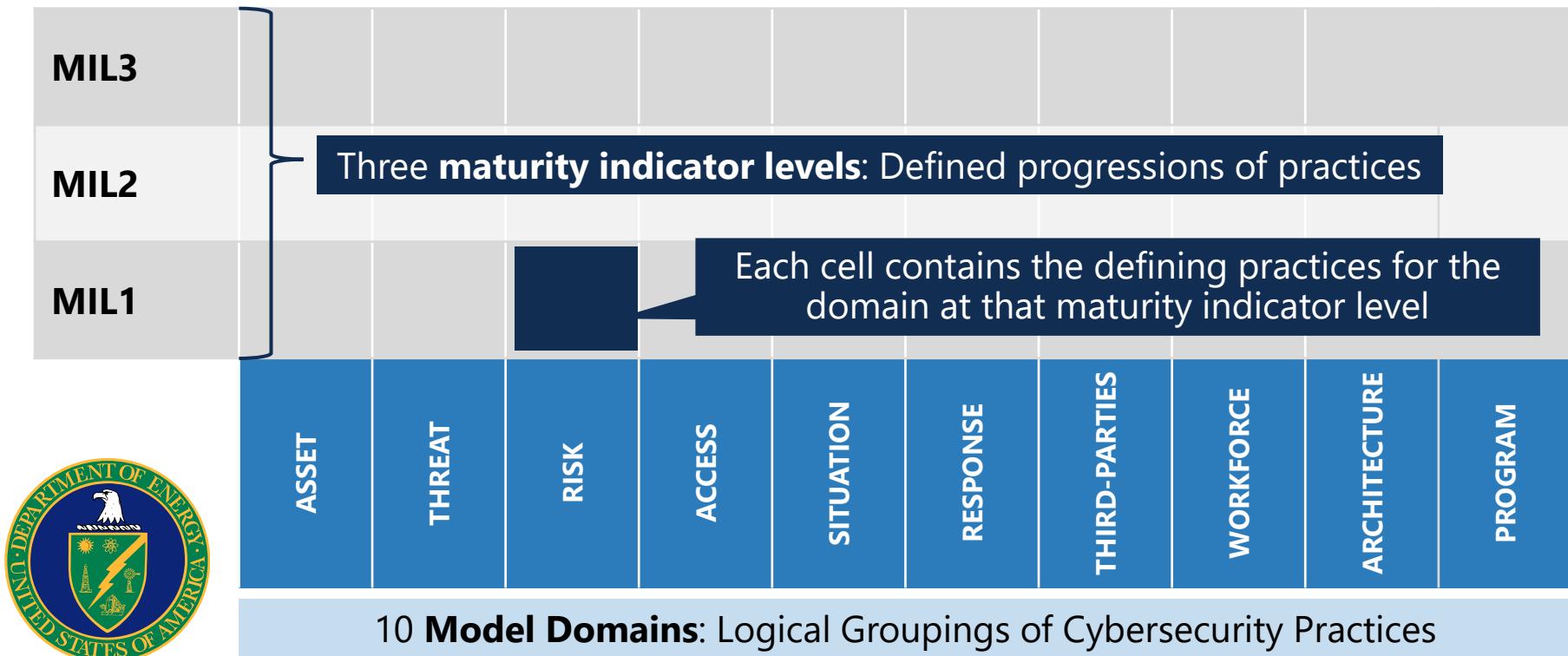
# Transcending Cybersecurity Checklists



CYBER RESILIENCE ANALYSIS

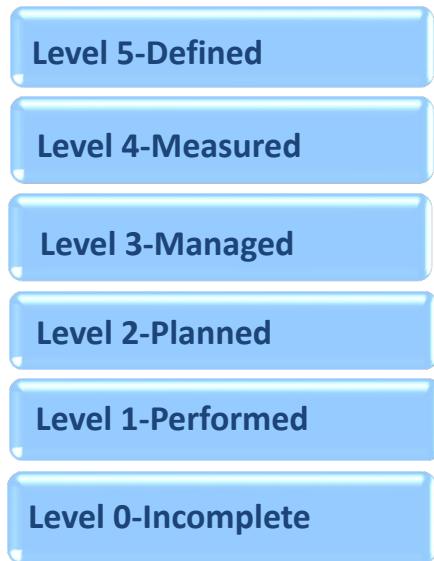


# Cybersecurity Capability Maturity Model



# Cyber Resilience Review

Maturity indicator levels (MIL) are used in the CRR to measure process institutionalization



CRR Domains	
AM	Asset Management
CCM	Configuration and Change Management
RM	Risk Management
CTRL	Controls Management
VM	Vulnerability Management
IM	Incident Management
SCM	Service Continuity Management
EXD	External Dependencies Management
TA	Training and Awareness
SA	Situational Awareness

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