



NORTHWEST INSTITUTE FOR CYBERSECURITY EDUCATION AND RESEARCH

CySER Virtual Seminar

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A Hierarchical Software Quality Assurance Approach to Leveraging
Existing Technologies and Building Quality Gates

November 29, 2021, 3:10 – 4PM PDT

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Abstract:

The advancement of cyber adversaries has led to increased frequency and complexity of cyber-attacks on everything from U.S. military systems to the U.S. voting infrastructure. By the end of 2021 it's expected that 3.5 million cyber security positions will be unfilled and there is great need to automate cyber security as completely as possible. Hierarchical Software Quality Assurance (HQA) is a proposed defense mechanism that protects systems along the supply, build and development paths by allowing cyber warriors to deploy quality gates that filter potential threats by leveraging existing investments in tools and infrastructure. Herein, we describe an approach that uses hierarchical quality assurance to build operational models (i.e., quality gates) that can be deployed into operational environments. We describe how this technology is currently used to measure software code quality in both source code and binaries. The techniques used by this technology provide a scoring mechanism that is contextual, that provides for a holistic overview of assets (one that is missing today), and that leverages the myriad of point tools that are in use today by defining integration points.

Bio:

Dr. Clemente Izurieta is an associate professor of computer science in the Gianforte School of Computing at Montana State University (MSU), Bozeman, Montana, and the Chief Technology Officer (CTO) of Authors A.I and BingeBooks, Orlando, Florida. His research interests include quality assurance, technical debt, and cybersecurity. Dr. Izurieta received his Ph.D. in computer science from Colorado State University, and MS in computer science from MSU, and a BS in mathematics from the University of Wollongong in New South Wales, Australia. He is the director of the Software Engineering Laboratory (SEL) at MSU that currently supports 1 postdoc, 8 PhD, 3 MS, and 3 undergraduate students. Funding for the SEL comes from NSF, DoD, DHS, Army, Air Force and private industry. Prior to his academic career, Dr. Izurieta spent 16 years at Hewlett Packard's Unix Development Laboratories and Intel Corporation's Itanium Laboratory. He is a member of ACM, and a Senior Member of IEEE. Contact him at clemente.izurieta@montana.edu.



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