

# 14th SEI Software Engineering Workshop for Educators

August 1–3, 2017 | Pittsburgh, PA



## Our Workshop

For the past 13 years, the SEI has hosted an annual Workshop for Educators to foster an ongoing exchange of ideas among educators whose curricula include the subjects of software architecture and software product lines. Formerly called the Architecture-Centric Engineering Workshop, this workshop has broadened its scope to cover the entire field of software engineering. The event, in keeping with our tradition for this workshop, is free of charge and open to any accredited, college-level educator.

This year's workshop will be facilitated by the SEI's Grace Lewis and Robert Nord. Lewis is deputy lead of the SEI's Advanced Mobile Systems Initiative and principal investigator for the Tactical Computing and

### Three Reasons to Attend

- 1. Attend two SEI courses at no charge.**
- 2. Connect with a network of collaborators for research and education.**
- 3. Gain new material to incorporate into your courses.**

Communications research project. Her interests include mobile computing, cloud computing, software architecture, and service-oriented architecture. Nord conducts research in the areas of software architecture, agile at scale, and technical debt. He is a coauthor of the books *Applied Software Architecture* and *Documenting Software Architectures: Views and Beyond*.

### Schedule

**August 1, 2017:**  
**8:30 a.m. – 5:00 p.m.**

*Design Guidelines and Patterns for Microservices*

Many organizations are adopting microservices, but often their developers are not aware of the tradeoffs involved and the design strategies available. In this course,

we will cover the essential knowledge for successful microservice designs. Topics include Event-Driven Architecture (EDA), design standards for REST APIs, asynchronous messaging patterns, remodeling services to avoid distributed transactions, the Service Data Replication pattern (“cache”), CQRS, and event sourcing. The course includes exercises and a hands-on design lab where you will employ different design strategies to improve an existing design.

*Speaker: Paulo Merson, Brazilian Federal Court of Accounts (TCU)*

Paulo has been programming in the small and programming in the large for over 25 years. He is a software architect at the TCU, has collaborated with the SEI in several projects,



In lieu of an entry fee, attendees are expected to bring a shareable artifact to the workshop.

and is a certified instructor for SOA School and a faculty member of the master program in Applied Computing at University of Brasilia. He also co-authored *Documenting Software Architectures: Views and Beyond, second edition*.

**August 2, 2017:**

**8:30 a.m. – 2:00 p.m.**

*QUELCE: Planning for Change, a New Era in Cost Estimation*

Cost overruns in large development projects are common, and studies have implicated poor cost estimation as a major contributor. Research and experience have identified several factors associated with poor cost estimates. These include

- optimistic expectations about achievable project scope and technology that can be delivered on schedule and within budget
- many unknowns that exist when estimates are made about large-scale, unprecedented systems that take years to develop and deploy
- a heavy reliance on expert judgment

In this class, we teach the steps of a novel cost estimation method, Quantifying Uncertainty in Early Lifecycle Cost Estimation (QUELCE). QUELCE synthesizes future-scenario thinking techniques into an estimation method that quantifies domain-specific uncertainties, calibrates subjective inputs by experts, visually depicts cascading relationships among sources of uncertainty, plugs into the front end of existing cost

models, and produces a rich basis of estimate. QUELCE digests more project execution information than traditional estimation tools but uses techniques to limit the explosion of complex, interacting, and cascading project change drivers to produce more reliable cost estimates.

*Speaker: Robert Stoddard, Carnegie Mellon University Software Engineering Institute (SEI)*

Bob has over 11 years' experience with the SEI and currently serves as a Principal Researcher. He also has 24 years of industry experience at Texas Instruments and Motorola in the fields of software quality, test, reliability, and Six Sigma. Bob's current research interests include machine learning, statistical causal discovery, and modeling. He applies this research to cost estimation and jet engine reliability.

**August 2, 2017:**

**2:00 p.m. – 5:00 p.m.**

**August 3, 2017:**

**8:30 a.m. – 3:30 p.m.**

The afternoon of the second day and the third day are devoted to invited talks and group sessions, facilitated by SEI team members, where participants share experiences, ideas, and tangible artifacts for introducing software engineering topics into the college curriculum.

## Registration

The SEI Software Engineering Workshop for Educators will be held at the Software Engineering Institute.

For more information about the 14th Software Engineering Educators Workshop and to register, visit [sei.cmu.edu/community/edworkshops/2017/](http://sei.cmu.edu/community/edworkshops/2017/).

## Hotel Information

Accommodations are available nearby at the Wyndham Pittsburgh University Center, where the SEI has a block rate of \$129 per night, plus taxes. Reservations in this room block must be made by July 10, 2017. Register by phone or online, using the discount code below for the SEI group rate.

Wyndham Pittsburgh University Center  
100 Lytton Avenue  
Pittsburgh, PA 15213  
+1-412-682-6200  
<http://www.wyndhampittsburghuniversitycenter.com>  
Discount code: 07316841EW

*Note: The workshop is open to any accredited college-level educator. It is not open to the general public. First-time attendees must provide a letter of employment from their institution.*

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## About Us

For four decades, the Software Engineering Institute (SEI) has been helping government and industry organizations to acquire, develop, operate, and sustain software systems that are innovative, affordable, enduring, and trustworthy.

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## Contact Us

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