Software Assurance Education Panel Session: Assurance and Software Engineering

Nancy R. Mead
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Software Engineering Institute | Carnegie Mellon

Integrating Secure Software Assurance Content into Standard Curricula

2005 Headlines: "**Software companies are taking colleges to task for not producing computer science graduates who know how to create secure programs.**"

Mary Ann Davidson Blog April 2008: **"Universities, you must start with a basic secure coding/secure development practice class that is required for all CS majors. You must then revamp the fabric of every single class so that security becomes part and parcel of each class."**

Notice the emphasis on CS majors. There seems to be little emphasis on software engineering or information systems majors, where it might be easier and more sensible to insert software assurance concepts.

Integrating Secure Software Assurance Content into Standard Curricula

Which standard curricula? Graduate or undergraduate?

Software Assurance is considered by some to be an advanced topic, suitable for graduate school, but many practitioners do not get advanced degrees.

Coverage varies in graduate curricula, and is spotty at best in undergraduate curricula.

NSA Centers of Academic Excellence in **Information** Security and Assurance

Comparative studies (CSEET 2007, CSEET 2008, CrossTalk) show the best match for undergraduates is with software engineering curricula.

Integrating Secure Software Assurance Content with SE 2004 Recommendations – Top 10 SEEK Areas

Computing Essentials	Mathematical and Engineering Fundamentals
Professional Practices	Software Modeling and Analysis
Software Design	Software V&V
Software Evolution	Software Process
Software Quality	Software Management

Integrating Secure Software Assurance Content with SE 2004 Recommendations – Strongest Match

Process concepts and implementation (Software Process)

Project management and configuration management (Software Management)

Construction Technologies, tools and formal methods (Computing Essentials)

Modeling and requirements functions (Software Modeling and Analysis)

Quality processes, standards, and product and process assurance (Software Quality)

Integrating Secure Software Assurance Content with SE 2004 Recommendations – More needed

Evolution processes (Software Evolution)

Social and psychological aspects of software development (Professional Practice)

Concepts, strategies, and detailed and HCI design practices (Software Design)

Concepts, reviews, tests, and documentation and reporting (Software V&V)

The way forward -

Work with curriculum developers to incorporate software assurance into standard curricula

Encourage universities that are NSA Centers of Excellence to add software assurance to their curricula

Work with military academics, DoD schools, etc. to incorporate software assurance into their courses and curricula

Provide suggested course designs, curricula, and educational materials