

Program Managers: Can You Finish on Time?

Join the Automated Continuous Estimation
in a Pipeline-of-Pipelines Research Project

AS THE PROGRAM MANAGER (PM) of a complex Agile program, do you have answers to these types of questions?

- When can a new high-priority capability be delivered? How long will remaining capabilities be delayed?
- A capability has slipped twice. When will it really be delivered?
- Failure to satisfy the dependencies that carry a high cost of delay, such as when a component misses an integration or field testing reveals problems, threaten deployment commitments. How confident are the target dates?

The Software Engineering Institute's (SEI's) Automated Continuous Estimation for a Pipeline of Pipelines (ACE/PoPs) can help.

ACE/PoPs automates data collection and presentation from DevSecOps environments to continuously integrate cost, schedule, and engineering performance data into progress and forecast displays (Figure 1). ACE/PoPs also tracks the progress of groups of related features that compose a capability and supports what-if analysis and analysis of multiple pipelines (see Figure 2).

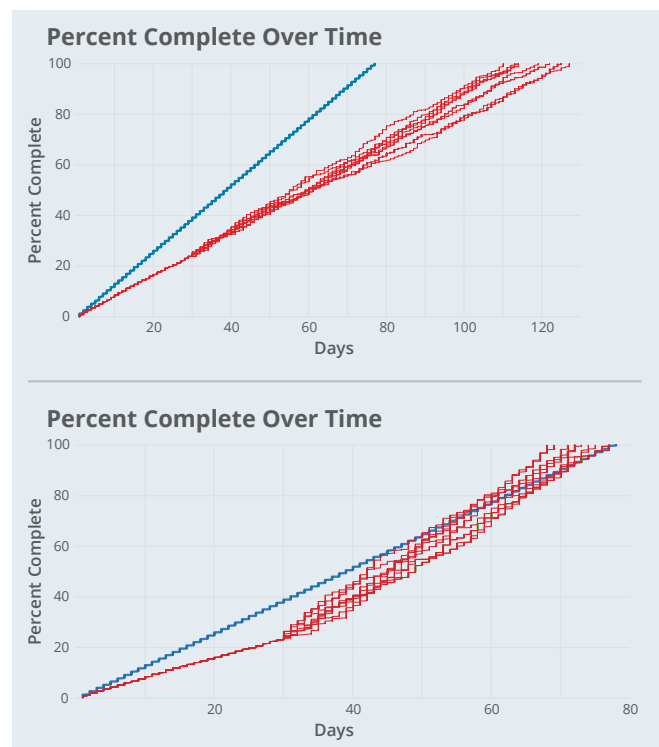


Figure 1: Timely Analysis: Schedule Forecasting and What-if?

ACE/PoPs uses predictive analytics to deliver actionable information on software development scenarios, based on team performance data from projects and programs involving the same or similar teams. Using the historical statistical distributions of story duration, ACE/PoPs performs Monte Carlo (random) projections to compare the roadmap schedule with likely completion dates (see the uncertainty cloud in Figure 1). Change the work order, staffing, or other assumptions to see the results of interventions (see the bottom half of Figure 1).

Automated data collection in the pipeline and surrounding environment enables the analysis and display (see Figure 3).

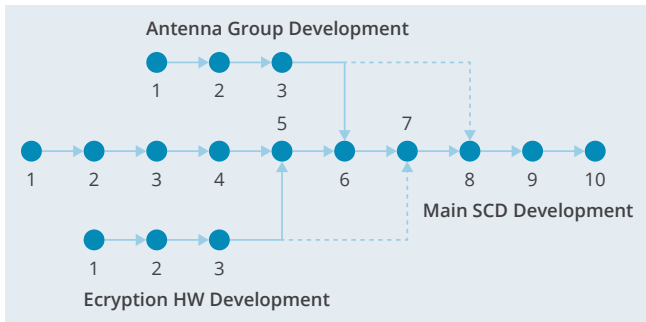


Figure 2: Manage Integration for Multiple Pipelines

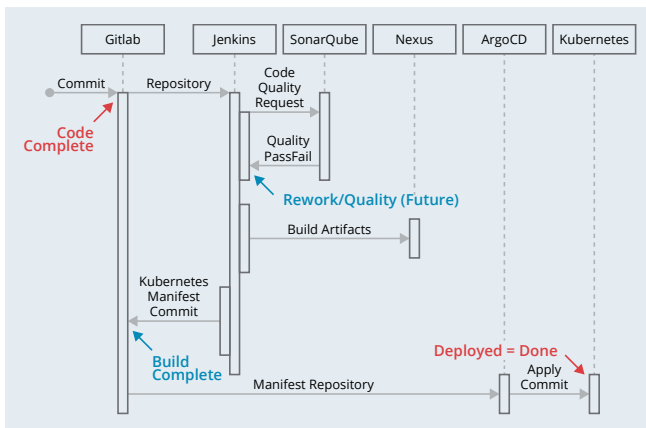
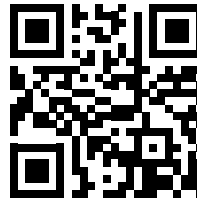


Figure 3: Automate Measurement

The SEI is looking for collaborators who want to join this project to transition research into practice. Transition includes process baselining, developing a technology insertion strategy, training in interpretation, acting on the information, and outcome evaluation.

We are seeking organizations/programs that

- have two or more physical pipelines or a physical pipeline supporting multiple products
- are using DevSecOps and workflow management tools such as Jira, GitLab, SonarQube, and Jenkins
- have a software development environment conducive to research-to-practice activities (e.g., manageable security/classification constraints)
- want to collaborate with SEI staff



If you are interested, please contact us at info@sei.cmu.edu.

About the SEI

Always focused on the future, the Software Engineering Institute (SEI) advances software as a strategic advantage for national security. We lead research and direct transition of software engineering, cybersecurity, and artificial intelligence technologies at the intersection of academia, industry, and government. We serve the nation as a federally funded research and development center (FFRDC) sponsored by the U.S. Department of Defense (DoD) and are based at Carnegie Mellon University, a global research university annually rated among the best for its programs in computer science and engineering.

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