

Software Engineering and Estimation for Decision Architectures (SEEDA)

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Abstract:

Software schedule, cost, and risk assessment is a discipline that very few have mastered. This can be gleaned from the large percent of large software intensive developmental programs that encounter schedule and cost overruns, not only because of lack of adequate program controls but also because of the unknown risk associated with using new technologies and paradigms. A current emerging trend in system development is the use of Decision Architectures, using decision theory and knowledge management and engineering. The schedule, cost, and risk implications when using this technology in major developmental programs is currently unknown and current estimation models do not specifically address system development using new paradigms, such as Decision Architectures. FORELL proposes to extend the widely recognized Sage estimation model to address Decision Architecture based system development. FORELL's KBArchitecting™ is a new engineering paradigm that will support the development of systems using Decision Architectures. FORELL will evaluate BMDO's Decision Architecture system development process to define the appropriate metrics. An interface to Sage will be designed to leverage existing algorithms and new predictive algorithms will be identified and designed to better support software schedule, cost, and risk assessment for Decision Architecture based system development.

Anticipated Benefits/Commercial Applications: A well-defined Decision Architecture based system development process with specified products and appropriate metrics will provide the basis to better evaluate and assess schedules, cost, and risk, which are major areas of concern for each and every major system acquisition program. Providing an interface to an established and well recognized estimation tool, such as Sage, and complementing existing predictive algorithms and domain knowledge bases with the unique algorithms and knowledge bases required for Decision Architecture based system development, FORELL will provide

the basis for a way to provide insight in these future system developments, minimizing schedule and cost overruns.

Keywords: Sizing and costing, knowledge engineering, risk management, decision architectures, software costing, development metrics, parallel architectures, software schedule

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