Engineering Large-Scale Software-Intensive Systems

R. Geoff. Dromey,
Software Quality Institute, and
ARC Centre for Complex Systems
Griffith University,
Nathan, Brisbane, QLD 4111,
AUSTRALIA.
g.dromey@griffith.edu.au

Abstract

There are four major threats to successfully building large-scale software-intensive systems: (1) a failure to control the complexity that arises during the development process (2) a failure to achieve early resolution of deficiencies in informal statements/knowledge of stakeholders’ needs (3) failure to construct a system that satisfies stakeholders’ needs, and (4) a failure to effectively organize the project team. All four of these threats can be very significantly reduced by making maximum and effective use of the requirements information that expresses stakeholders’ needs. This is achieved by choosing a representation that supports rigorous formalization and composition of individual requirements one at a time into an integrated, state-based, graphical view. It amounts to building a system 'out of' its requirements. The justification for, the processes, representations and results of applying this constructive approach to tackling the core problems associated with developing large-scale, dependable systems will be presented.