Managing Distributed Software Development

Narayan Ramasubbu

University of Michigan, nramasub@umich.edu

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Narayan Ramasubbu
University of Michigan
nramasub@umich.edu

ABSTRACT
Dispersion of resources between remote software development centers has been widely noted to decrease project performance. However distributed software development is becoming pervasive in the software industry as companies vie to leverage global resources. In this dissertation I analyze the effect of quality management processes in mitigating the negative impact of dispersion on project performance. First, I analyze the relative effects of prevention, appraisal and failure –based quality management approaches on distributed project productivity and conformance quality. Based on a field study of forty two large scale software projects, I show that higher investments in failure-based quality approaches that encourage immediate feedback and iterative development improve productivity and quality in a distributed environment. Further, I highlight that current generic quality frameworks do not specifically address key processes necessary for distributed software product development. I identify 24 new key process areas based on theoretical concepts of collaboration readiness, mutual knowledge, coupling in work and technology readiness. I arrange the new key process areas in an evolutionary framework that helps firms to assess their current distributed process maturity and plan for future improvements. Based on a field study of sixty large enterprise software development projects, I show that higher distributed process maturity as per the new framework is associated with higher customer satisfaction and product quality. Finally based on the above findings, I build a canonical model to aid managers allocate resources for distributed software product development.