Foreword

Computing services have evolved from their erstwhile emphasis of specific functionalities with dedicated implementation schemas and on dedicated platforms. As computing has expanded to wide scale growth of applications, platforms and service requirements, these have entailed an increasing sophistication of operations and correspondingly increasing complexity of the (software) realization. Subsequently with current Web scale systems, the needs for adaptable and scalable services and also the progression to non-specific platforms/technologies has only added to the complexity of realizing computing services. As classical computing paradigms face limitations to handle complexity, the concepts of service oriented architectures (SOA) offer architectural approaches towards simplification of complex software designs by advocating modular building blocks for services that could be interconnected to realize the desired (complex) services. Consequently, SOA offers a fundamentally richer abstraction of specifying service functionality sans a mandated implementation. This decoupling of services from dedicated implementations has helped evolve the modular and composable Web model of interactions, and also offers developers diverse implementation choices of (interoperable) programming languages and implementation components. The popularity of the cloud computing model is a natural progression both building upon and supporting the SOA paradigms.

While the SOA concepts provide the essence of "service on demand" across the service providers and service consumers, the realized value of SOA gets enhanced when the contracted services also incorporate extra-functional properties. These include services delivered in a secure, reliable and timely manner, transparent to the occurrence of component coupling, transparent to the occurrence of perturbations, and of a granularity matching the service needs and similarly related service quality attributes. It is this group of "extra-functional" or "non-functional" SOA features that significantly determines the actual value of an SOA approach. At the same time, the provisioning of these non-functional attributes is not easy. SOA obtains its core value from an "open system" design philosophy that includes facets of modularity, evolving composition via loose coupling of functional blocks, variety of programming schema, lack of embedding of calls across modules, among other aspects. On the other hand, the provisioning of non-functional attributes such as dependability or security or timeliness attributes work best with a complete systems view, having a well structured (and controlled) operational structure and usage of specifically advocated implementation mechanisms. Unfortunately this is also often counter to the SOA approaches making the integration of non-functional aspects in SOA to be non-trivial.

While there exists an abundance of SOA design approaches, this key consideration of "non-functional" attributes is often conspicuous by its absence. It is this explicit and dedicated coverage of "non-functional aspects in SOA" that distinguishes this book. Its systematic coverage of the requirements, models and approaches help set proper foundations to addressing non-functional attributes in SOA. I applaud Nikola

Milanovic for his exemplary initiative in addressing this hard, but much needed SOA challenge area. I am positive that the readers will find the book to offer a high value, high impact exposition of SOA.

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