# Title: Evaluating Security in Distributed Service-Oriented Systems

Authors: Coimbatore Chandersekaran, Edward A. Schneider, and William R. Simpson, Institute for Defense Analyses, USA, ESchneider@ida.org

Distributed systems are characterized by co-reliance on other parts of the architecture, often seeking and receiving services and information from components in the environment, remote sources, or administrator inputs. Some of these services may be security-related, such as authentication, encryption, identification, attribution, and integrity, which may be provided by combinations of elements or through secure communications. These systems are characterized by overlapping Communities of Interest, which combine the providers and users of a service, and a dynamic collection of elements, as parts of the system become inoperable or are upgraded.

Current evaluation methodologies, such as the Common Criteria, do not adequately address such dynamic systems. They typically fix the security policy, architecture, versions, etc. Evaluating dynamic systems requires some form of composition, standard exchange of information (including security attributes, security policy, etc.), and some ability to adapt to new situations both in hardware and in software. This leads to changing security policy elements, movements in the hierarchy of system parts, and a realignment of services, among other things.

We have started to create a compositional evaluation methodology. Our first step has been to look at the security effects that a system component can have on other parts of the system (its environment). The end goal is to try to characterize the security services that an evaluated element provides and risk to its environment that its use generates, given the services and level of risk provided by the environment to it.