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**Resource Management for Complex, Dynamic Environments**

**Abstract**

This paper describes an approach to the specification and management of the agents and resources that are required to support the execution of complex systems and processes. The paper suggests that a resource should be viewed as a provider of a set of capabilities that are needed by a system or process, where that set may vary dynamically over time and with circumstances. This view of resources is defined and then made the basis for the framework of an approach to specifying, managing, and allocating resources in the presence of real-world complexity and dynamism. The ROMEO prototype resource management system is presented as an example of how this framework can be instantiated. Some case studies of the use of ROMEO to support system execution are presented and used to evaluate the framework, the ROMEO prototype, and our view of the nature of resources.