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Title: Software Upgrades in Distributed Systems

Our research is concerned with how to upgrade software in distributed systems: how to cause the code running in the system to change while the system continues to run. The research is concerned with very large robust systems that are intended to provide continuous service over a very long lifetime. Examples include a distributed object-oriented database system in which persistent objects are stored at thousands of geographically distributed servers; a system that speeds up delivery of rich media by pre-positioning content at thousands of geographically distributed caches; an embedded system in which sensors collect information that is combined and then used to control actuators; and a system providing archival file storage for millions of users.