Opportunistic Application Flows in Pervasive Environments

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Supporting applications in sensor-based pervasive environments requires a programming and management paradigm where the behaviors as well as the interactions of applications elements (sensors, actuators, and services) are dynamic, opportunistic, and context, content and capability aware. In this paper we present a programming model that enables opportunistic flows in pervasive environments. The model builds on content-based discovery and routing services and defines associative rendezvous as an abstraction for content-based decoupled interactions. Cascading local behaviors (CLB) then build on associative rendezvous to enable opportunistic application flows to emerge as a result of context and content based local behaviors. In this paper we also present the design, prototype implementation and experimental evaluation of the Meteor programming framework and content-based middleware.