Polyarchical Middleware for On-Demand and Multi-Standard Services' Composition for Ubiquitous Computing

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Abstract. Whilst the vision of on-demand computing is very seductive it engenders its own technical challenges including; design, development and deployment of ubiquitous utility services, and low-cost, low-skills and low-latency services re-assembly for lifetime management runtime due to complex and unpredicted service discovery, interoperation and adaptation. In this paper we argue for the need of a new model for on-demand ubiquitous services' activation through a polyarchical middleware, which enables on-demand composition of software applications regardless of service standards and middleware used. This paper will present early results of a research study into the development of a framework for ubiquitous service invocation/activation, which provides an abstract model for on-demand ubiquitous service composition and execution. This proposed polyarchical middleware could be used for on-demand wireless application service composition, which include ad-hoc service discovery, assembly using virtual containers, invocation and adaptation. The paper will finish with a critical review of our model and concluding remarks followed by an indication of further work