An important basis for collaborating applications or application components is interaction and communication. Those basic concepts especially play an important role in the context of ubiquitous computing scenarios, where services are provided by many distributed and loosely coupled applications or application components.

The content of the talk includes the following key aspects. After mentioning basic requirements that ubiquitous computing enforces from the middleware, the communication principle and infrastructure of a publish/subscribe middleware is illustrated. Besides of routing event messages, application components can be executed by the broker network. As an example for shifting complex tasks into the middleware, the detection of spatio-temporal event patterns is presented. By using those event pattern, situation-based contexts can be detected, so application components are able to react in a suitable way. The goal of the presented approach for detector placement is to develop a decentralized, adaptive, self-organizing and efficient complex event detection mechanism which minimizes bandwidth and memory consumption. Moreover, the degree of reactivity of the system has to be controlled concurrently. The presented approach for distributing of spatio-temporal event pattern detectors is exemplified by facility management. The talk concludes with a summary of the presented publish/subscribe middleware concept and the basic ideas of the distributed, adaptive and self-organizing spatio-temporal event pattern detection mechanism as well as a short outlook how the presented middleware can be expanded for ubiquitous computing scenarios in the future.