An Efficient Strategy of Processing Distributed Location Based Events

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Abstract
The last decade has seen location-based services as the rising star on the firmament of pervasive computing. Infrastructure-based middle-ware platforms provide a scalable way to support those applications. At the mobile side, event-driven control flow dominates the software design. Location events like "User A is NEAR user B" and their logical combinations must be processed effectively. We suggest a scalable event filtering strategy by separating the evaluation of basic elements from the computation of the remaining logical expression and by dynamically distributing the logic-computing unit throughout the platform infrastructure. Distribution is made according to the user's positions. In the best case, this leads to a fully distributed processing. In the worst case, the scheme falls back to a quasi-centralized design. Measured performance of a prototype implementation in Java was at 355 notifications per second. Compared to a centralized design, this is an improvement by roughly a factor of 70.