

INTRODUCING CONTEXT-ADAPTIVE ELEVATOR SCHEDULING

Thomas Strang and Christian Bauer

German Aerospace Center (DLR), Institute for Communications and Navigation, D-82230
Wessling/Oberpfaffenhofen, Germany; +49-8153-28-0;
{thomas.strang|christian.bauer}@dlr.de

University of Innsbruck (UIBK), Institute for Computer Science and Digital Enterprise
Research Institute, A-6020 Innsbruck, Austria; +43-512-507-0;
{thomas.strang|csad2789}@uibk.ac.at

Abstract

Research on context-aware systems is usually user-centric and thus focussed on the context of a specific user to serve his or her needs in an optimized way. In this work, we apply core concepts developed in research on context-awareness in a system-centric way, namely to typical automated indoor people movers: elevator systems.

We show with three different examples that the performance of an elevator system can be significantly improved if the elevator control has access to contextual knowledge. The first example demonstrates that an appropriate elevator group scheduling algorithm can be chosen and adjusted to the current and near-future passenger traffic situation. The second example incorporates a second predominant technology used in many ubiquitous computing environments, namely RFID tags, to predict the passenger's destination. The third example shows that adaptation to a specific emergency situation can further increase the transportation capacity of an elevator system which is ultimately important to save as many lives as possible in an emergency.

Evidence for the increased efficiency is provided by using a comprehensive simulation of a diverse set of scheduling algorithms and scenarios.