

# **An Evolutionary Approach to Locate Urban Public Services**



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# Declaration

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Supervised by

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# Dedication



*Dedicated to my loving parents and siblings*  
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## Abstract

An Evolutionary Approach to Locate Urban Public Services postulates how the concept of negotiation in multi agent technology can be used to locate urban public services during city planning. The solution fundamentally comprises of three major categories of public service agents, namely, request, resource and message agents. Once the system is loaded by the human user, terrain data is fed into the system. The terrain agent will be created and draws the city map in the panel. Once the user creates a public service in the city environment, public service agents will be initialized on behalf of them. These, public service agents locate its position in the city, based on the tolerable influence and the inference between them. The system comprises of five modules, geography module, building services module, water services module, natural services module and transportation services module. Geography module handles the terrain related operations in the city environment. Building services module maintains the agent operations of buildings in the city. Water services module handles the operations related to water resources in the city while, natural services module represents agent operations of natural resources. Transportation services module maintains operations related to roads and other transportation resources. Each of the module acts as agents in the multi agent system. All the modules were implemented using Java platform and the agent functionalities were implemented on top of the madkit agent framework. Implemented system was tested to locate different public services under different city conditions. The system was evaluated by providing an evaluator panel an opportunity to build a specific city environment with some public services and to observe the interactions between those public services in the city. Thereafter, their comments about the functionality of the system were obtained and used to enhance the system. The test results reflect that the definition, planning, implementation, testing and documentation of the system had been carried out in an affective and efficient manner.

### **Key Words:**

Urban Public Services, multi agent systems, madkit agent framework, Java Platform

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## List of Abbreviations

AI	Artificial Intelligence
AGR	Agent/Group/Role
CAD	Computer Aided Design
CRT	Cathode Ray Tube
EMS	Environmental Management Systems
GIS	Geographical Information Systems
GUI	Graphical User Interface
MAS	Multi Agent Systems
SRS	System Requirements Specification
VR	Virtual Reality



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