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► **To cite this version:**

Adrián Mora Carrero, Carlos López Llorente, Ariel Noyman, Luis Alonso Pastor, Parfait Atchade-Adelomou, et al.. Integrating GAMA with CityScope: leveraging ABMs in Urban Planning Scenarios. GAMA Days 2024, Nov 2024, Online, France. ird-04888002

HAL Id: ird-04888002

<https://ird.hal.science/ird-04888002v1>

Submitted on 15 Jan 2025

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Integrating GAMA with CityScope: leveraging ABMs in Urban Planning Scenarios

Adrián Mora Carrero^{1,2}, Carlos López Llorente²,
Ariel Noyman¹, Luis Alonso Pastor¹, Parfait Atchade-Adelomou¹ and Arnaud Grignard^{1,3}

¹ City Science, MIT Media Lab, Massachusetts Institute of Technology

² Universidad Politécnica de Madrid

³ UMI 209 UMMISCO, IRD, Sorbonne Université

adrianmc@mit.edu

Keywords

CityScope, Data Visualization, Web Sockets, Urban Modeling, City Science

Abstract

This work integrates the GAMA simulation platform [2] [7] within the CityScope [5, 1] suite in the continuity of the work presented in [4], a set of tools for developing and evaluating urban planning scenarios. This integration seamlessly transfers real-time simulation data to the platform using WebSockets, enabling dynamic data visualization in various formats, such as charts or geospatial information. The networking capabilities of GAMA are used to send periodically the information to the CityScope server, CityIO[6], and then that data is forwarded to different user interfaces, like CityScopeJS[5], the web-based platform to interact with the projects, or tangible interfaces. This work has been tested with GameIT [3], a GAMA model that simulates the movements of a virtual population within a city. In the CityScope interface we can represent the agents' positions, and the transportation mode choices, being those important KPIs when assessing urban planning scenarios. Future directions of this work include the implementation of bidirectional communication between GAMA and CityScope, to control the simulation through the CityScope interface.

Figure 1 depicts the interaction between GAMA and the CityScope Platform, using CityIO as the entry point to send data to the various user interfaces.

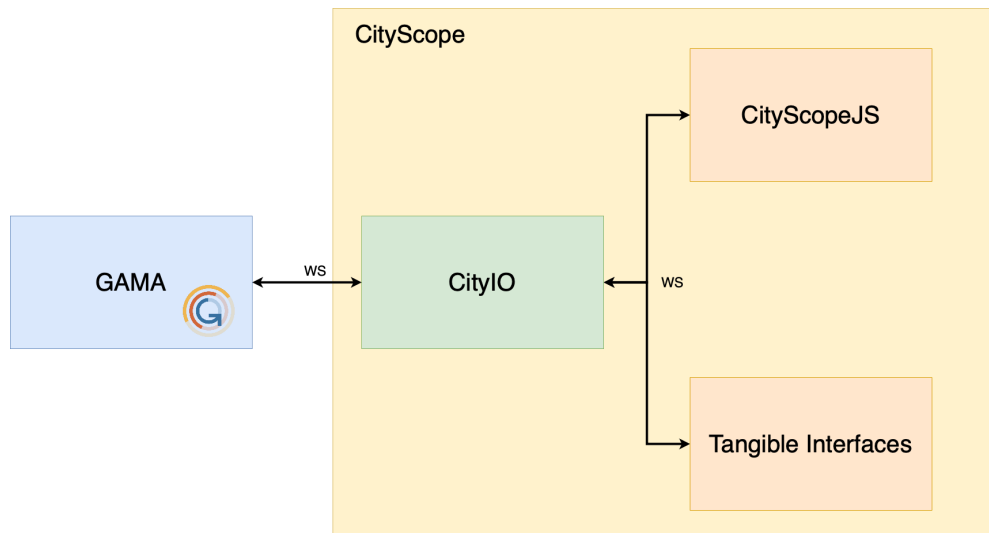


Figure 1: Diagram of the interaction

Figure 2 shows some agents participating in the simulation, possibly in a school or institute area, based on their location and surroundings. In addition, the data displayed on both the bar and radar charts correspond to the usage of various available transportation modes, such as buses, cars, walking and cycling.

Additional material

The source code for this project is available at the following repository: https://github.com/CityScope/CS_Simulation_GAMA

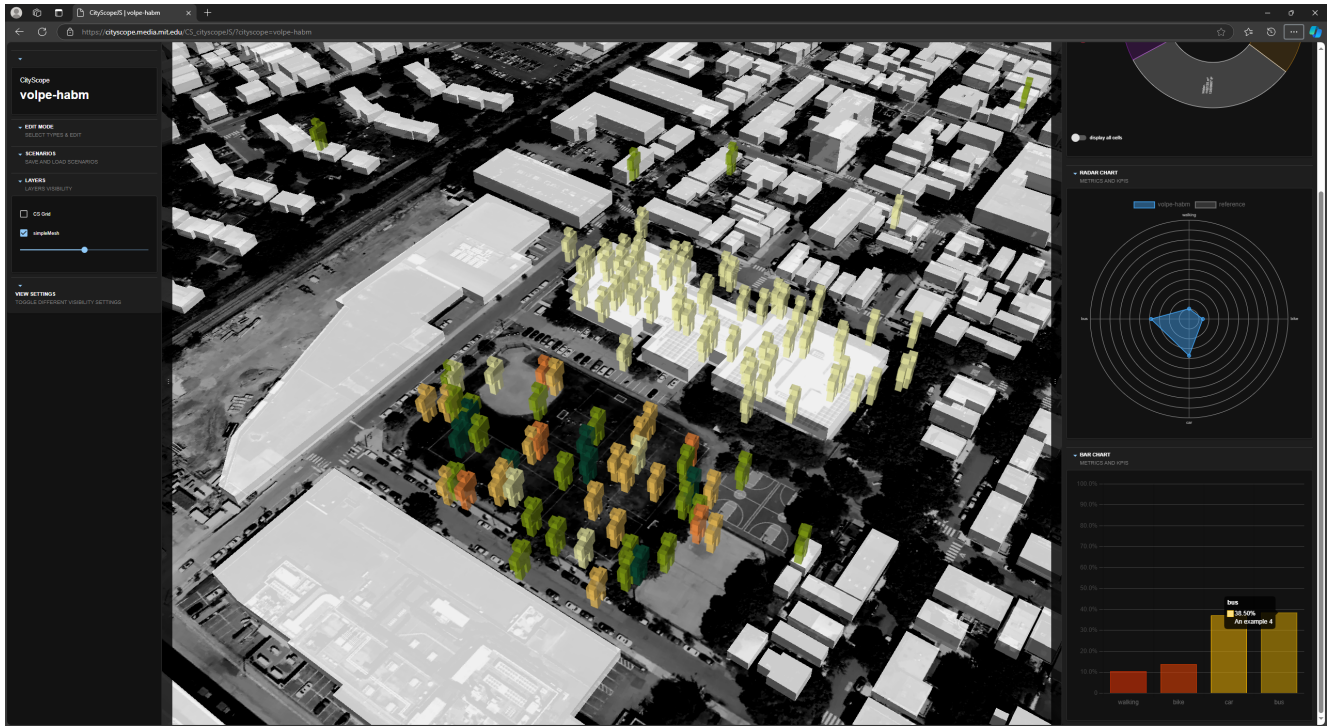


Figure 2: Image of the simulation

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