PSS in the Cloud

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Abstract

Roughly four decades ago, Douglas Lee (1973) published Requiem for Large-Scale Models in this journal. It was and remains, a stinging critique of the use of large-scale urban models (LSUMs) in planning. Lee argued that LSUMs were hyper-comprehensive, gross, hungry, wrongheaded, complicated, mechanical, and expensive. These "seven deadly sins" had, he argued, led to the demise of LSUMs. Although casting his critique as a death knell for the urban modeling enterprise, Lee also hedged, suggesting that, regardless of its transgressions urban modeling, would not rest in peace, evincing directions in which redemption might lie.

Two decades later (in 1994), the Journal of the American Planning Association devoted an entire issue to a retrospective look at the issues raised by Lee's Requiem. In the issue LSUM scholars from around the world (Batty, Harris, Klosterman, Wegener) provide an update on LSUM systems, using this 'state of the system' approach to generally explain why they believed Lee had been wrong in the first place. In a contributing piece, Lee suggested that in his opinion, not much had changed to that point.

Fast forward two more decades. Much has changed: a) current approaches to urban modeling have evolved in many critical ways, b) information and computing technologies are vastly different, and b) planning itself is in some ways, a different endeavor. Despite these evolutionary changes, we find much of Lee's critique is still valid and useful for developing new models and modeling approaches and for effective integration with planning processes. Among the current challenges: compiling the necessary input data, time-consuming calibration, complexity in configuring and organizing model scenarios, difficulty in connecting multiple models, and making them useable beyond the development team.

This paper describes work creating a PSS using Cloud computing technologies. We use a content management system (CMS), in this case the open-source plone running in the Cloud, to manage input data, format and visualize output, and also manage user interaction. In addition, we use a virtual machine—running on Amazon Web services—as a compute server that is a platform for computational models. The CMS is linked to the compute server and when a user initiates a model run, the model parameters and input data are drawn by the compute server from the CMS and the results stored on the CMS where it is visualized. The compute server can be launched as needed. This approach allows us to deliver PSS in the form of Software as a Service (SaaS). Some of what we describe is implemented and some is aspirational. We conclude by considering whether having a PSS in the Cloud might help further mitigate some of Lee's criticisms.

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