

Simulation

In science, simulation is becoming an important method in addition to theory and experiment. In architecture, simulation has been used for decades, mainly to predict structural behavior, energy consumption or life cycle cost. In urban design, simulation is gaining importance in exploring future scenarios in pedestrian movements, vehicle mobility, or land use alternatives. And in territorial planning, simulation helps to predict the functioning of large-scale operations in transportation or energy supply.

“Simulation is the imitation of the operation of a real-world process or system over time. The act of simulating something first requires that a model be developed; this model represents the key characteristics or behaviors/functions of the selected physical or abstract system or process. The model represents the system itself, whereas the simulation represents the operation of the system over time.

Simulation is used in many contexts, such as simulation of technology for performance optimization, safety engineering, testing, training, education, and video games. Often, computer experiments are used to study simulation models. Simulation is also used with scientific modelling of natural systems or human systems to gain insight into their functioning. Simulation can be used to show the eventual real effects of alternative conditions and courses of action. Simulation is also used when the real system cannot be engaged, because it may not be accessible, or it may be dangerous or unacceptable to engage, or it is being designed but not yet built, or it may simply not exist.

Key issues in simulation include acquisition of valid source information about the relevant selection of key characteristics and behaviours, the use of simplifying approximations and assumptions within the simulation, and fidelity and validity of the simulation outcomes.”

Wikipedia. *Simulation*. [online] Available at:

<<http://en.wikipedia.org/wiki/Simulation>> [Accessed 16 September 2014].