

ABSTRACT

For more than half a century, those governing Egypt have dreamed of solving the country's economic and social challenges through the development of the deserts. With most of the country's population of more than 85 million people living and working within the slim strip of land formed by the valley and delta of the Nile, the desert regions on either sides of the river appear to offer the space and the opportunity for unlimited growth. Forming more than 98 per cent of the county's land area, the desert is seen as a vast resource: it can be reclaimed for agriculture, build over with cities and suburbs, and marked out as an almost limitless tract for creating highways, factories, recreation, and tourism. (D. E. Sims 2014a)

The design of the Egyptian's desert master-plan involves a complex interpretation and management of morphological structures, existent and proposed, as well as several kinds of measurements of the urban environment – again, existent and proposed – from which several urban indicators can be calculated and used for supporting design decision.

The wide range of simulation technologies are mainly driven from the revolution of computer technology. 3D urban simulation has been used as urban design tool in many fields such as land-use transport interaction models, cellular automata, agent-based modeling, etc.

Digital applications used in planning are not considered to be a new phenomenon. Rather, it can be part of the formal planning process in the recent urban development or the future renovation.

The aim of this research is to create a vision for the smart Egyptian desert city (SEDC) challenges using city information modeling technology (CIM) based on future sustainable criteria. The aim of this research also includes trying to find future digital planning solutions for contemporary Egyptian city's problems and to put a virtual vision for the shape of the new desert cities in parallel to the increased Egyptian challenges and needs.

In addition to the theoretical framework, the research includes a case study and discusses the application of city information modeling (CIM) on El Sadat City which is one of the biggest desert settlements in the western desert and it is very close to the delta. This case study consists of several points and four of them are the main ones. The first point is tracing the history of El Sadat city, its development and why it is selected to conduct the case study. The Second point includes the current urban situation and pattern. The third point is the governmental proposed development and its criteria. Finally, the modeling process based on CIM technology.