

SkyCar Rapid Transit System: An Integrated Approach of Modern Transportation Solutions in the New Queen Elizabeth Quay, Perth, Western Australia

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Abstract : The SkyCar Rapid Transit System (SRT) is an innovative intelligent transport system for the sustainable urban transport system. This system will increase the urban area network connectivity and decrease urban area traffic congestion. The SRT system is designed as a suspended Personal Rapid Transit (PRT) system that travels under a guideway 5m above the ground. A driver-less passenger is via pod-cars that hang from slender beams supported by columns that replace existing lamp posts. The beams are setup in a series of interconnecting loops providing non-stop travel from beginning to end to assure journey time. The SRT forward movement is effected by magnetic motors built into the guideway. Passenger stops are at either at line level 5m above the ground or ground level via a spur guideway that curves off the main thoroughfare. The main objective of this paper is to propose an integrated Automated Transit Network (ATN) technology for the future intelligent transport system in the urban built environment. To fulfil the objective a 4D simulated model in the urban built environment has been proposed by using the concept of SRT-ATN system. The methodology for the design, construction and testing parameters of a Technology Demonstrator (TD) for proof of concept and a Simulator (S) has been demonstrated. The completed TD and S will provide an excellent proving ground for the next development stage, the SRT Prototype (PT) and Pilot System (PS). This paper covered by a 4D simulated model in the virtual built environment is to effectively show how the SRT-ATN system works. OpenSim software has been used to develop the model in a virtual environment, and the scenario has been simulated to understand and visualize the proposed SkyCar Rapid Transit Network model. The SkyCar system will be fabricated in a modular form which is easily transported. The system would be installed in increasingly congested city centers throughout the world, as well as in airports, tourist resorts, race tracks and other special purpose for the urban community. This paper shares the lessons learnt from the proposed innovation and provides recommendations on how to improve the future transport system in urban built environment. Safety and security of passengers are prime factors to be considered for this transit system. Design requirements to meet the safety needs to be part of the research and development phase of the project. Operational safety aspects would also be developed during this period. The vehicles, the track and beam systems and stations are the main components that need to be examined in detail for safety and security of patrons. Measures will also be required to protect columns adjoining intersections from errant vehicles in vehicular traffic collisions. The SkyCar Rapid Transit takes advantage of all current disruptive technologies; batteries, sensors and 4G/5G communication and solar energy technologies which will continue to reduce the costs and make the systems more profitable. SkyCar's energy consumption is extremely low compared to other transport systems.

Keywords : SkyCar, rapid transit, Intelligent Transport System (ITS), Automated Transit Network (ATN), urban built environment, 4D Visualization, smart city

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