



SKYPARKS LOGIC SOFTWARE (SLS)

# INTRODUCTION TO SKYPARKS LOGIC SOFTWARE (SLS)

SLS is a software system designed to simulate the build and operation of a Skyparks Robotic Parking System.

It provides valuable information such as queuing and retrieval times and is an excellent tool in anticipating and managing the impact of a car park system on the surrounding road network.

SLS has been developed by Skyparks over ten years and has been used to optimise the performance of numerous car parks.

To run the SLS, all the physical characteristics of the car park are entered to establish its configuration. The traffic profile – frequency and volume of use, is then added. These two elements allow a simulation to be run, and reports to be generated. Once the reports have been analysed, changes to the system can be made to optimise performance and simulations re-run to test the revisions, until the optimum solution is arrived at.

## 1. CAR PARK CONFIGURATION

The car park being tested is set up in the system by entering all physical characteristics such as the number of parking levels, number of modules, number of robots and lifts, number of car spaces, waiting area volume and operator and generator rooms

## 2. TRAFFIC PROFILE

The traffic profile of the car park is then selected. This may be a continuous arrival and departure rate or the user can specify the volume of cars expected to arrive and depart for any given hour of the day.

Robot operation can also be changed by the user to provide optimum performance for a given car park layout.

## 3. SIMULATION

Once the car park model has been built in the software and the traffic profile determined, the operation of the car park can be simulated with SLS.

The simulation can be run for any length of time that the user requires and is visible through SLSs Graphical User Interface (GUI). The simulation can be frozen at any point to inspect the reports so far.

## 4. REPORTS

When the simulation is complete the user can interrogate the following reports;

- Summary report
- Hourly queuing times
- Hourly queue sizes
- Daily queue distribution

**The summary report delivers information on the following useful areas:**

- The mean and maximum entry and return queue times
- The mean and maximum entry and return queue sizes
- Efficiency of the robots and lifts
- Mean time from customer taking ticket to car being parked
- Mean time from customer paying until car is delivered
- The optimum and actual throughput of the car park

The other reports provide greater detail of the performance of the car park. This can be used to determine what, if any, changes are required to the car park design.

## 5. OPTIMISATION

With all the information from SLS Reports available, the design of the car park can now be optimised.

For instance, if you know the traffic profile of the car park but queue size is limited due to restrictions, SLS can determine a layout that will satisfy queuing restrictions.



## SLS CAN DETERMINE A LAYOUT THAT WILL SATISFY QUEUING RESTRICTIONS.

A series of “what if” questions can also be used to optimise the design of the car park, such as:  
What if the number of entry modules is increased? What if another robot is added?  
What if the traffic profile changes?

All these changes are very quick to implement in SLS Results of the new simulation can be compared with the previous simulation to quantify changes.

Skyparks will provide a report to all customers summarising the results of simulation(s) in an easy-to-understand format. The report will detail main points of interest of the simulation, i.e. the car park configuration, traffic profile and results.

The Skyparks simulation service is provided to all our customers to provide the confidence and evidence that a car park will perform as required, and as designed to.