

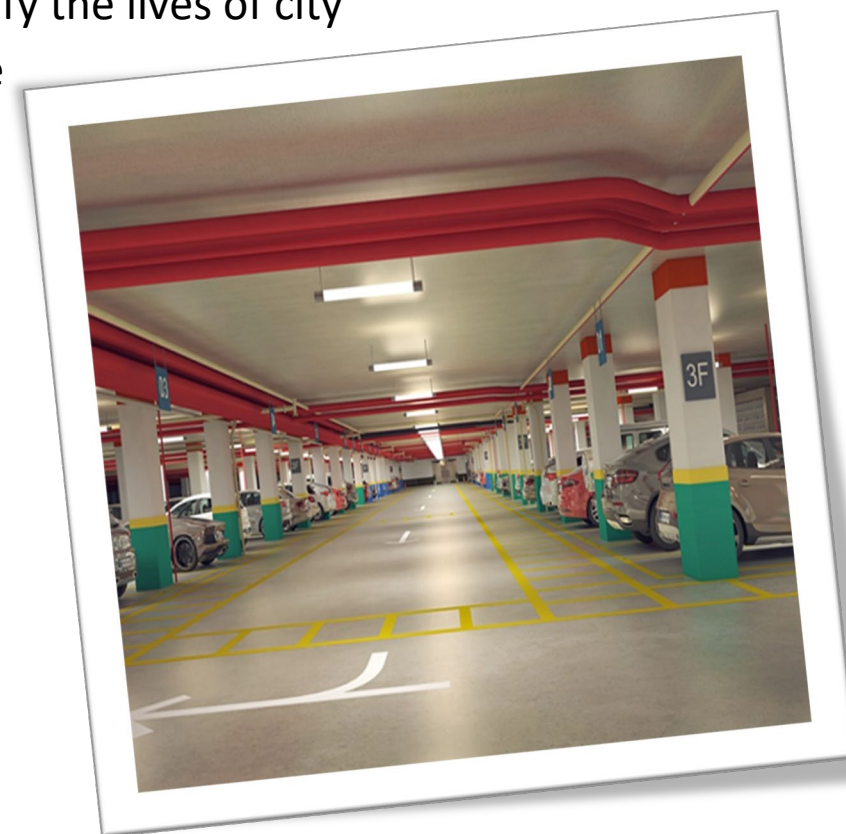
# OEM Use Case: Parking Lot Management

## Embedded Vision: Enabling Smart Parking Technology

### Initial situation

e-con Systems helped a top smart parking technology provider, based in Germany, to select and integrate an intelligent camera system. Their cutting-edge solution went a long way to simplify the lives of city administrations and private companies while alleviating the daily inconvenience faced by citizens related to parking.

In the process, they strengthened vehicle detection, improve parking space utilisation and associated revenue whilst providing enhanced real time information on parking availability through enhanced driver communication.



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### What the client needed

To provide the benefits of parking automation for the city administration and the motorist, e-con Systems and the smart parking technology provider realised that much of the improvements would be facilitated through embedded vision – and the appropriate integration of the right camera.

In this case, the camera needed to be fitted on top of street lighting poles for it to capture the images of the parking lot and specific parking spaces on the ground.

However, this solution meant that the height of the camera installation was a major challenge since it was outdoors, meaning that it should be able protected against inclement weather and its performance should also be largely unaffected by lighting conditions.



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### The solution

e-con Systems selected See3CAM\_CU130, a USB Camera module with a 13MP custom lens. The high-resolution camera sensor in the module gave us the ability to ensure dynamic optimization for low-light performance.

See3CAM\_CU130's auto functions (auto white balance, auto exposure control) and complete image signal processing pipeline made it a perfect fit for the client's smart parking lot solution. It was also equipped with an S-Mount lens holder for a wide-angle M12 lens.

e-con Systems worked closely with the client to identify the right lens for the off-the-shelf See3CAM\_CU130 camera module. Camera settings and ISP were optimised to be fully compatible with the chosen lens.

### Key camera requirements

- Synchronized multi-camera support for seamless parking lot monitoring
- High resolution, with wider FOV to capture maximum number of parked cars
- Complete support for vision libraries
- Support for both uncompressed and compressed MJPEG formats
- Driver optimised to provide higher NVIDIA processor board performance



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### Results and benefits:

- Off-the-shelf camera solution – shorter product development cycles
- End-to-end vision capabilities for a smart parking solution to help city administrators
- Cost-effective and customizable integration despite FOV requirements based on unique
- Camera positioning to take into account different lighting conditions

### Smart Parking in action

Finding parking is a daily frustration for motorists, wasting time, fuel, and adding to congestion. For operators, it means lost revenue and inefficiency.

Embedded vision smart parking solves this by delivering real-time availability data:

- Motorists save time, reduce stress, and cut emissions.
- Operators optimise space use, boost revenue, and improve customer satisfaction.
- Cities ease traffic flow, reduce pollution, and integrate with wider smart mobility systems.

Smart parking transforms a common pain point into a win-win for drivers, operators, and the urban environment.



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QUAD Advanced Systems and e-con Systems have formed a strategic partnership to deliver end-to-end camera solutions tailored for a range of transportation applications. By combining their expertise, the two companies strengthen their position within a key industry sector and provide innovative tools that solve many problems associated with aspects of road, and rail transportation.

Intelligent embedded vision is transforming applications including parking lot management, tolls and traffic management, smart cities and public law enforcement using advanced camera technology.



Your Advanced Systems team are here to help you with your OEM integration requirements. Work with us to develop solutions that take advantage of these intelligent, embedded vision systems that are driving significant improvements by delivering enhanced data and insights that directly contribute to world-class industry experiences.