# Redwood City Implements Smart Parking Solution

Within the last decade, Redwood City has transformed into a flourishing cultural and economic hub. Its renovated Downtown has brought warmth and community, and the tech presence provides cutting-edge business opportunities. Charming open air cafes and restaurants offer relaxed and sophisticated dining, and shopping and entertainment experiences can be found in plenty.

As the City develops, the demand for convenient parking has increased significantly. Old systems for keeping track of parking availability were failing to keep up with growing demand.

The City was looking for a new system to provide the most positive and efficient parking experience for Redwood City community and visitors. The old system provided very little information to parkers about the garages and the City wanted something that was more flexible, more visual and could evolve with today's online technology, websites and applications.

*"We wanted to have a system that was as accurate and flexible as possible, in order to provide the most reliable real-time data to our parking customers."*

— **Christian Hammack, Parking and Transformation Demand Manager, Redwood City**

"People were saying there's no parking Downtown, when in fact there were hundreds of parking spaces sitting empty," says Christian Hammack, Parking and Transportation Demand-

Manager of Redwood City. "On the weekends everyone would go to the garage below the movie theater, and that garage would get 100% percent full, and then our other garage, a block and a half away, would be around 20% full. People would think there was no more parking, so we really needed a system that clearly informed everyone of the parking options Downtown."

The City put out a request for a parking garage occupancy system, and VIMOC was selected for their innovative and highly accurate smart parking solution.

## VIMOC's Solution

VIMOC provides a multi-faceted and sophisticated parking garage occupancy solution that has been adopted in two of Redwood City's main garages, Jefferson and Marshall. The vision-based Artificial Intelligence (AI) edge computing nodes use cameras to track vehicles entering and exiting the garage, while VIMOC's Rosella™ software platform processes the data and provides highly accurate intelligence on a real-time basis. Results are displayed on beautiful, flexible format LED signs outside the garages, as well as between levels inside the Jefferson Garage. The parking data is also shared to mobile apps and online platforms.



"We chose VIMOC primarily because of the flexibility of the system," says Christian. "We were intrigued by the vision-based detection opposed to having sensors in the ground, which are less accurate."

One of the unique constraints regarding the Jefferson garage was that the City wanted to display the occupancy per level, but the ramp between the levels has no solid lane delineation. VIMOC's solution allows the garage to differentiate between the direction of travel, not just where the vehicle was positioned on the ramp. VIMOC also provided system customization in a number of areas to assist Redwood City's parking needs, including more data analysis than ever before.

## Results

VIMOC's solution has transformed the parking experience downtown. There is less congestion in and around the parking garages, increased parking satisfaction and efficiency, and increased garage utilization and parking revenue.

"Complaints are down tremendously," says Christian. "It's made a tremendous change in the perception of the parking situation downtown."

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"Before VIMOC's system was installed, the Jefferson garage was running about 20% occupied on weekdays, and now it's up to about 70% occupied," explains Christian. "The new system has made it easier for people to find parking."

"The system is very stable and accurate," Christian says. "Ground truths reveal over 95% counting accuracy for both garages."

## Future Projects with VIMOC

Redwood City plans to continue to revolutionize their infrastructure with VIMOC. At first this will include implementing more technology in the garages, such as EV space monitoring and garage ventilation.

With the installation of EV parking slots, users have been ignoring the 4-hour time limit and have been parking in the slots far longer than required to charge their vehicle. VIMOC's technology has been installed to monitor these slots and alert enforcement when a vehicle has been in an EV slot for more than four hours. "Having a system that monitors these spaces and automatically notifies parking enforcement will be very beneficial," says Christian.

Another problem in the garages has been the ineffective approach to ventilation. The fans were automatically triggered by high carbon monoxide levels, but otherwise had to be manually adjusted. On hot, busy days, the garages became uncomfortably stuffy, and staff would normally become aware of this after the fact. VIMOC has solved this problem by using the intelligence that Rosella™ Platform provides, along with sensor fusion, to automatically turn the fans on when the garage reaches a certain occupancy level. "Our goal was having something that's more proactive in addressing air quality in the garage," says Christian. "We also wanted to remove the human factor, so staff don't have to worry about turning the fans on and off."