## Our product:

Upon analysing the Christchurch Residents Survey of 2022, it has become evident that over 51% of residents express dissatisfaction with on-street parking. By checking the parking feature on the Christchurch City Council SmartView application, we have found limited information regarding city parking, which is primarily focused on the city centre. Thus, we have made the decision to develop an application with the goal of offering a more comprehensive perspective on parking availability and designated areas.

# Our product:

Our parking application will be presented in a real-time map platform, displaying available parking spaces categorized by colours (e.g., green for 'many spaces,' yellow for 'moderate/busy,' and red for 'none'). It will gather data through user interactions, primarily by using a survey form. As an incentive, we plan to reward users with prizes based on carbon emission reduction. A calculator will inform users about the amount of time and carbon emissions saved by utilizing our application. To achieve these objectives, we have developed several functions that can assist us in this endeavour.

## Main functions:

Voice guide:

* By following the rule of transportation, our application will be primarily utilize a voice-guided presentation. This function reduces the risk of traffic accidents and enhances user safety when searching for available parking spaces.

Parking availability check:

* **Before you go**: Prior to your departure, take a moment to check the parking capacity and associated costs at your destination. This information encompasses historical data collected from previous users as well as cloud-stored data.
* **On your way**: As you journey towards your destination, our application will send notifications once you approach the destination. These alerts will activate when you are within a certain distance, and our voice guide will then direct you to the nearest available parking space.
* **If the spot is no longer available**: In instances where the cloud data indicates that the parking spot has been occupied, the system will suggest an alternative route for you.
* **You secure the spot**: Congratulations! At this point, we encourage users to contribute to updating street parking information. Users are only required to indicate whether a parking area has ‘many space', 'not so many spaces' or ‘I get the last spot’. This input will be followed by a rewarding system.

Organisation registration:

* **Exclusive Parking Areas for Organizations**: Organisations are encouraged to sign up for their exclusive parking areas where the publics will not be recommended to park in.
* Reduced carbon emission information from employees can be gathered for the company to participate in the New Zealand Emissions Trading Scheme.

Reward system:

* By reducing the time for users to find an available car park, a carbon emission calculator will be activated and notified to the users. An equivalent reward points will be added into your account.
* When users help us to update the parking availability, equivalent reward points and badges will be added into accounts as well, and their ‘accurate of rank’ will be leveled up.
* After receiving a certain number of points, users can trade them with equivalent rewards, such as a free coffee, or a free parking ticket.
* Organisations are encouraged to upload their products as part of the rewarding system. This benefits the local business as well as more participation in our parking application.

## Other functions:

In the background:

* GPS location check: allows the app to know your current location / your destination
* GPS speed check: allows the app to determine whether you have parked your car or not (by checking user’s moving speed - walking speed: up to 5 km/h; driving speed: 30 to 60 km/h)

Pull out information:

* Weather check: people tend to choose their means of transporting according to the weather. If it is sunny, they are more likely to bike/walk, whereas when it is rainy, driving a car would be a better choice. We encourage users to use a more eco-friendly ways of transportation in order to save more energies and receiving more reward points.
* Road condition check: we use open street data from the Christchurch city to display the current condition of your destination and make suggestions to your upcoming travel.
* Car information: when users store their car information into the system, it allows users to quickly find a matching parking space. For example, a heavy vehicle that needs double regular-sized parking space; an electronic car that needs a charging station
* Carbon emission calculator: by inputting your car details/ travel distance/ estimated parking time reduced, you can have a more direct and clear view of your carbon footprint.

# How do we achieve this?

Useful information:

* A refresh of uploaded information function will be included with a display of ‘Last updated time’. Users can decide whether that space will be their destination car park or not. (eg. Last updated : 10 mins ago)
* Cross referencing with government database including Road works, Traffic, Road Crashes, CO2 (available on SmartView.ccc.govt.nz)

Trustworthy information:

* When signed up users upload authentic and valid parking information, their level of credibility increases, which will be a means of measurement for other users to collect and compare.
* By cross comparing with information uploaded by other users, the displayed information will be greatly dependable and trustworthy.

# What we want for the future?

Destress the carbon emission problem:

* Provoke the importance of carbon emission to the public;
* We would like to partner with more organisations;
* Government participation.

Bring up the economy for our city:

* With more and more users join us, we are likely to get more sponsors from the local business where users can redeem their points into real prize. Not only does this helps to promote the local business, it also encourages the development of the city economy.