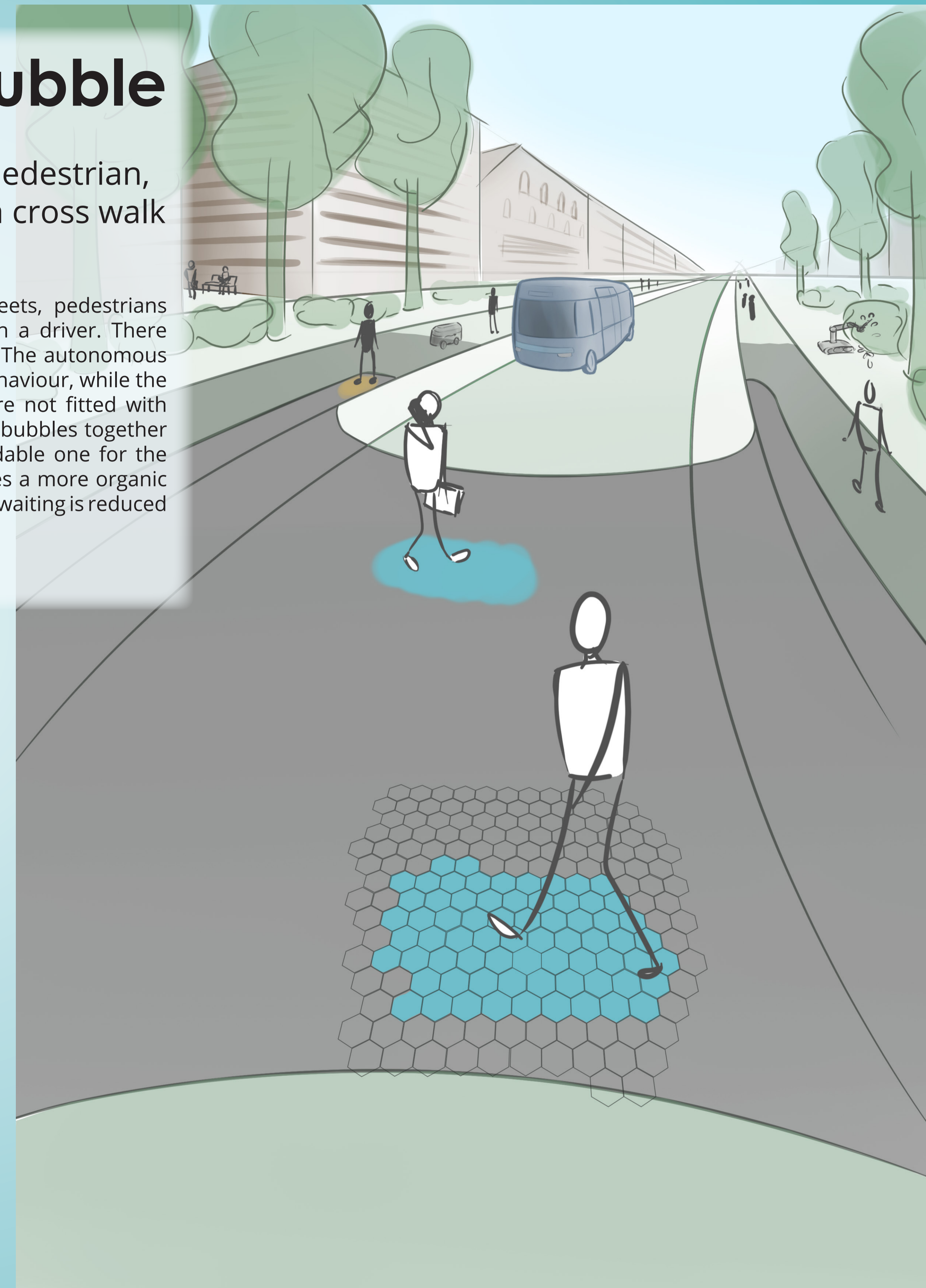# Welcome to my Bubble

Designing the interaction between pedestrian, autonomous vehicle and the city on a cross walk

In a future where autonomous vehicles roam our streets, pedestrians no longer have the ability to communicate directly with a driver. There communication styles separates them into two bubbles. The autonomous vehicle has a difficult time understanding the human's behaviour, while the human cannot receive transmitted signals since they are not fitted with electronics. This new cross walk aims to bring these two bubbles together by translating the signals of each one to an understandable one for the other. Being able to understand each other better creates a more organic and efficient traffic flow where the amount of unnecessary waiting is reduced to a minimal.

Cross walk
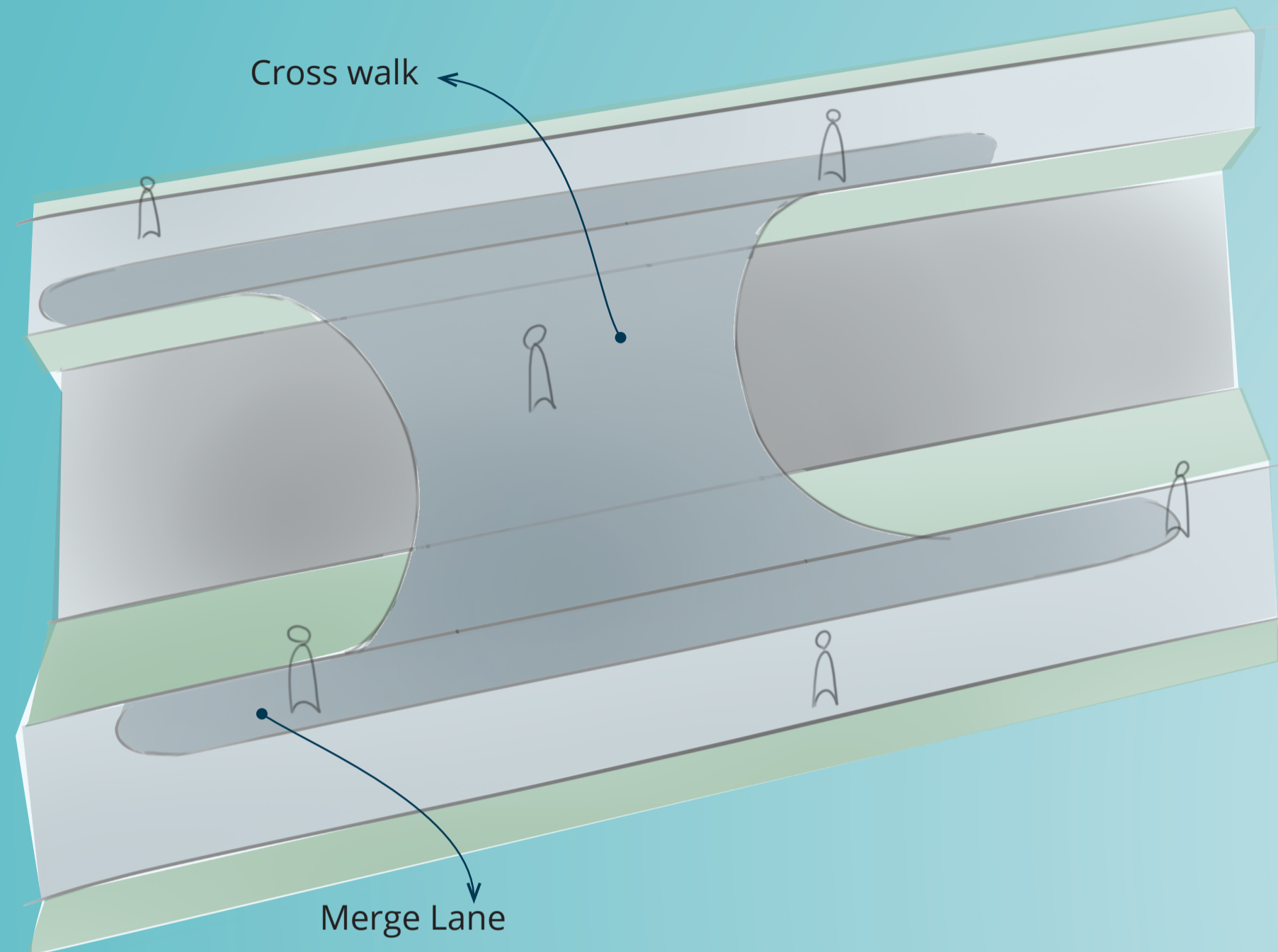
Merge Lane

The merge lane feature allows pedestrians to become an active part of the traffic system. By entering the merge lane they can communicate their intention to the oncoming autonomous vehicles. They do not just have to wait for the vehicle to approach and show them what to do, which is often the case with external human machine interfaces.
By being able track the pedestrian's speed through a pressure sensor matrix on the road surface and gait recognition, the cross walk's algorithm can alert the autonomous vehicle of a crossing pedestrian. The autonomous vehicle will anticipate this, and start slowing down. The autonomous vehicle will not have to come to a full stop, while the pedestrian is prioritised to cross the road.

Based on a calculation done by the cross walk's algorithm, it can predict whether the pedestrian and oncoming autonomous vehicle will collide. In most cases the vehicle will still be able to stop before the cross walk, however when the vehicle is already too close, the pedestrian will have to let the vehicle pass before them.
The pedestrian will be notified of their safety to cross through light animations on the street surface. The cross walk is made up of tiles that each contain a matrix of LEDs that can change colour or start blinking.
In most cases the pedestrian can cross and the vehicle will wait. The pedestrian then sees a calm light blue light surrounding them. This indicates that it is safe to cross. When the vehicle will not be able stop before the pedestrian, then the lights will turn orange. If the pedestrian comes too close to the road curb, the lights will start to blink to grasp the pedestrian's attention. If they still continue, the lights turn red, the area covered by the lights will increase and it will start blinking faster. While this happens the autonomous vehicle will also be alerted to prepare for an emergency brake and to approach more carefully.
The cross walk can thus communicate different levels of safety for the pedestrian to cross, so they do not have to wait for the vehicle to get close before it intentions are visible or clear

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