



A project for



KØBENHAVNS KOMMUNE

by

senseable city lab::: 

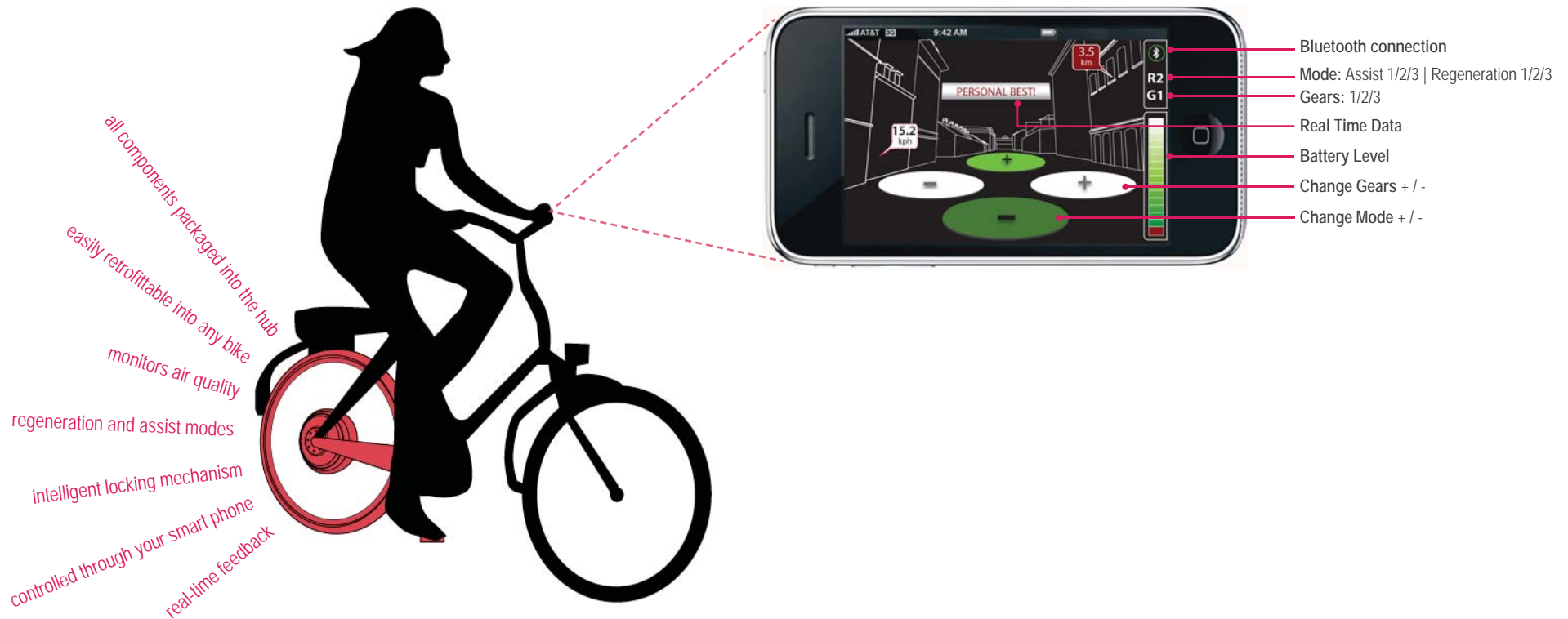
with



MINISTERO DELL'AMBIENTE
E DELLA TUTELA DEL TERRITORIO E DEL MARE

The Copenhagen Wheel

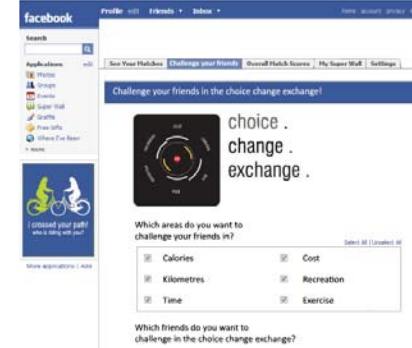
MIT's **SENSEable City Lab** and the Mayor's office of Copenhagen have joined forces to develop a leapfrog sustainable transportation system for bicycles. **The Copenhagen Wheel**, which will be unveiled during the Mayor's Summit as part of the COP15 United Nations Climate Conference is an electric 'hybrid' bicycle which is also a smart mobile sensing device that can map real-time flows and environmental conditions in cities.



An Improved biking experience

The Copenhagen Wheel aims to improve the experience of cycling for two types of people: those that already cycle and those who don't ordinarily consider using a bike for their daily commute. It also is a tool for harvesting information about the city: the environmental sensors in the wheel provide both riders and cities (if the cyclist opts in) with real-time feedback about pollution, miles travelled, effort spent and route choice. Cities can use this information to make more informed transport related decisions and better allocate resources.

The Copenhagen Wheel is controlled by your Smart Phone. Here you can choose your mode - regeneration or assist - change gears and receive real-time feedback about your riding and the environment. The wheel can be easily retrofitted into any standard bicycle. Unlike the majority of electric bicycles, all components, including the batteries, motor, and location and environmental sensors are packed into a small hub that is located in the back wheel of the bike.



Sense and Sustainability

The batteries in the hub of the Copenhagen Wheel power the sensors that provide location and environmental information (CO₂, NO_x, noise, temperature and humidity).

Cyclists can also use location information for monitoring health impacts and distances traveled and for connecting with friends and other cyclists on the go.

Location information is also useful for gaining an insight into the aggregate movements of bicycles in cities - desired by the

municipalities so that they can better plan bike routes, work towards accommodating cyclists and assess the impact of cycling in the city

SENSEable City Lab has developed a variety of applications that use the data collected by the Wheel. One example is the Green Mileage Scheme which provides incentives for cyclists when they reach a certain number of 'green miles'. In the future such a scheme could also allow cities to enter carbon-trading schemes, by helping prove that a city is increasing the amount of 'green miles' being traveled.