# Future Cities Could Run On Renewables And Share Self-Driving Cars

PSFK interviewed architect, engineer and future visionary Carlo Ratti about working with technology and nature to transform the urban jungle

ISABELLA ALIMONTI 1 AUGUST 2017 Carlo Ratti has big plans for our cities: how we might make better use of shared space, more effectively manage and repurpose waste, and generate electricity at zero net energy cost—all while making our surroundings more beautiful and inviting. This forward thinking makes him something of a regular on PSFK, as his design firm Carlo Ratti Associati was behind concepts for the AR-driven Supermarket of the Future, a floating gym powered along a river by the people working out on it and a drone painting system that crowdsources graffiti art. With an emphasis on sustainability and an eye toward the sharing economy, Ratti's projects articulate how rising technologies like IoT and autonomous vehicles are poised to change the way we live our lives collectively.

We caught up with Ratti to discuss the exhibit he's curating for the inaugural Expo for Design, Innovation & Technology (EDIT) in Toronto this September and his visions for the city of the future.

**Carlo Ratti. Photo: Lars Kruger**

**What do you see as the key components—social, structural, aesthetic, etc.—of the cities of the future, and which technologies will be most important in shaping them?**

Today's transformation in cities is simply the manifestation of a broad technological trend: the Internet is entering the place we live in and is becoming the "Internet of Things," allowing us to interact with the space around us in new ways. Applications are manifold: from energy to waste management, from mobility to water distribution, from city planning to citizen engagement.

**In addition to the projects you and your team create with clients and for expositions, you direct MIT's Senseable City Lab. Can you tell us about a few of the most exciting developments to have come out of the lab in the last year or two?**

We have been working on many projects so it is hard to pick. I would mention just a couple. First, we are looking at new urban mobility. A few years ago, we started exploring the way in which over 170 million taxi trips in the City of New York could be shared. Now, with this data, we are gradually demonstrating the vast potential of vehicle shareability, which in turn can give rise to future scenarios in which fewer and fewer cars can satisfy the mobility demand of our cities. These results have led to a research collaboration with Uber—and in particular with the Uber Pool team.

Also, we recently started Underworlds, a project that samples sewage in order to get a better understanding of all viruses and bacteria colonies in cities—something we call the urban microbiome or our "collective gut!"

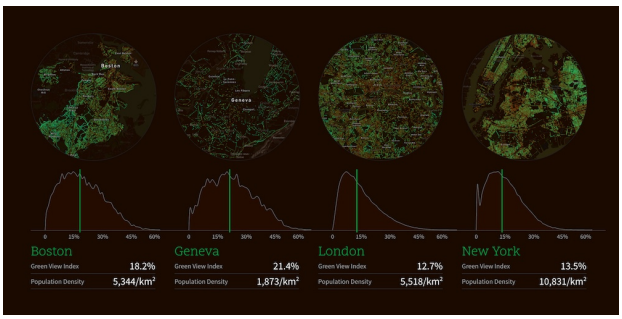
**Over the course of your work and research around the world, have you found particular cities that are very actively pursuing these future city concepts?**

Many cities are currently experimenting in different ways. For instance, Singapore is exploring new

approaches to mobility, Copenhagen to sustainability, Boston to citizen participation and so on… As at the beginning of the Internet, I believe that we will see a myriad of experiments, exploring different aspects of the Smart or Senseable city.

**Your upcoming curatorial project for EDIT, 'The Green and the Grey,' brings together "innovations and technologies that seek to bridge the divide between city and nature." Could you briefly describe some of the visions a visitor can expect to find there?**

We are thrilled that our Shelter & Citiesexhibition will be debuted at this first-ever, biennial expo-meets-festival taking place in Toronto at the East Harbour between September 28 and October 7. EDIT starts as a celebration of Canada's past—on the occasion of its 150th anniversary—but looks into the future. What inspired us in this project was a vision from French anarchist geographer Elisée Reclus, who wrote: "People must have the dual possibility of gaining access to the delights of the city, with its solidarity of thought and interest, its opportunities for study and art education, and, at the same time, the freedom that is nourished by nature and it is realized through the varieties of its open horizons." Through 'The Green and the Grey' we want to explore how new technologies allow us to bring nature into cities in new ways—addressing Reclus's century-old dream…




**Treepedia, an MIT Senseable City Lab project, will be on display at EDIT in Toronto this fall.**

**While sustainability is something we should all be practicing, there is an additional demand on future architecture not only to efface its impact on the environment, but also to be reactionary to the effects of climate change that are already occurring, with areas of the globe becoming increasingly uninhabitable. One example is your Sun&Shade project in Dubai, which makes it possible to remain outdoors in a desert area in all seasons and also generates solar power. Could you discuss how shelter (and partial shelter) will have to adapt to more extreme world?**

You are right. What we tried to explore with Sun&Shade—among other projects—is climate remediation at zero net energy cost. Similar approaches might become increasingly important if climate change were to become more extreme. Last month we revealed another project called the 'Garden with four seasons,' in which we allow [people] to create different climates in a garden—again at zero net energy cost.