MITSloan
Management Review

EVENT SUMMARY

How Future Workspaces Will Improve Productivity and Creativity

A presentation by Carlo Ratti, director of MIT's Sense*able* City Lab.

Watch the full webinar at
sloanreview.mit.edu/webinar-ratti-2016/on-demand

JUNE 2016

TWITTER HASHTAG: #MITSMRevent

Sponsored by:

xively™
by LogMeIn

How Future Workspaces Will Improve Productivity and Creativity

The physical world and the digital world are combining to become "a new hybrid space," with a blurring of boundaries between areas that are private, public, and shared. Understanding how workforces connect within this new, flexible working environment is crucial for designing next-generation offices.

A PRESENTATION BY CARLO RATTI (MIT SENSE*ABLE* CITY LAB)

"As director of the MIT Sense*able* City Lab (http://Senseable.mit.edu), MIT professor Carlo Ratti looks at the intersection of architecture, design, and possibility. His work helps imagine how spaces can be more efficient, more user-friendly, and more conducive to creativity. Using digital mapping from data users create during the course of their day — from sources such as Bluetooth signal tracking and aggregated looks at how and where WiFi is used — he and his team measure the ways that humans actually use space, with an eye on helping design respond accordingly.

In one project, for instance, Sense*able* City Lab tracked how visitors move through the Louvre museum in Paris — what galleries they visit, what paths they take, how long they spend in front of each piece of art. In another project, the team looked at traffic lights and traffic patterns, developing an idea for "slot-based intersections" where vehicles with special sensors could move through intersections by communicating with each other and remaining a safe distance apart, rather than stopping and waiting for the light to turn.

An architect and engineer, Ratti is also focused on how workspaces can best be designed to take advantage of the opportunities presented by mobile computing, the increased ubiquity of WiFi, and a growing desire for co-working.

On June 17, 2016, *MIT Sloan Management Review* hosted a webinar, made possible with sponsorship support from Xively, with Ratti. He talked about how digital technologies are transforming how we move, communicate, and work; how co-working requires a new kind of office design; and how real-time data analytics paired

with the Internet of Things is enabling the creation of workplaces that respond dynamically. The webinar was moderated by Steven Paul, a contributing editor at *MIT SMR*, and highlighted on Twitter at the hashtag **#MITSMRevent.** Among Ratti's key points:

In the 1990s, people thought that as our digital world matured, our physical world would become less important.

"At the time, some people thought that cities themselves would not be needed anymore," said Ratti. He quoted writer George Gilder, who ominously called cities "leftover baggage from the industrial era." As it has turned out, Ratti said, "no prediction could be more wrong than this one." Ratti said that in this century, China alone may "build more cities than all of humanity ever built."
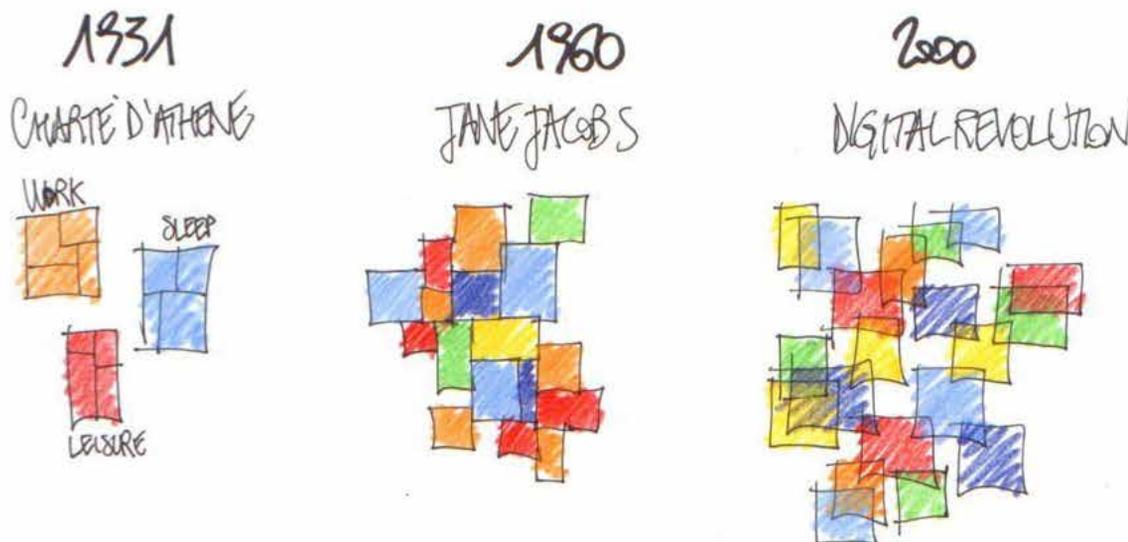
Instead, the physical world and the digital world have been combined.

Ratti called this "a new hybrid space" between the world of atoms and the world of bits. "The Internet is entering physical space, is becoming the Internet of Things, and as such, is changing the way we can collect information from our cities, from our buildings, from the environment we live in, and respond to that information," he said. Cell phones have become an important bridge between the physical and the digital: Ratti noted that the number of cell phone connections have grown from nothing in the late 1970s to about 7 billion today, with the number estimated to grow to 50 billion by 2020. "The reason for that is not that we will all have l17 iPhones and iPads in our pockets," Ratti said, but because connections will go beyond personal cell phone to personal cell phone and expand to person to machine and then machine to machine.

With these changes, the concept of public space and private space is changing, too.

In 1931, the Swiss-French architect Le Corbusier said that the four functions of the city were dwelling, work, recreation, and transportation, and that those functions should exist autonomously. "This is how many cities have been built in the past century," Ratti noted. "But when you think about this, this is quite absurd. Because you're building a neighborhood for, say, sleeping, that is used for only a few hours dur-

ing the day, and it's pretty empty the rest of the time." Since the 1960s, mixed-use development has been a prevailing theme in city development, with neighborhoods "where you've got a little bit of everything." Today, the digital revolution is changing the template even further, with the boundaries between private space, public space, and shared space blurring.

As an example, look at how people work on the MIT campus in a "flexible and free way."

The Sense*able* City Lab has been running an experiment on the MIT campus using information about where WiFi is used. "MIT was one of the first campuses in the world to be totally covered by WiFi in the early 2000s," said Ratti. Over the years this has produced noticeable shifts in how and where people work. Before, people had to sit inside in computer labs to get much of their work done. Today, thanks to laptops and WiFi, people can get that same work done anywhere, from their dorms to the library to cafes to outside, in a park. Ratti's experiment looked at where people are working based on maps of WiFi usage (which look like heat maps) at different times of the day. The maps showed the migration of people from dorms to campus classrooms based on where WiFi was being used. "By doing this, you could really see how every space works," said Ratti. That included "all this kind of overlap of different activities on the same space." Individual offices, he said, "can be one place in the morning, another place at lunch, another place in the afternoon."

Co-spaces and the outdoors are emerging as important new office options.

In one shared office that Ratti has worked on in Guadalajara, Mexico, corridor spaces and outdoor spaces were given an "inherent flexibility in function," he said. "We couldn't do this five or ten years ago — we were chained to a desk. But today, we can use the outside as an extension to our offices, which is quite exciting. As humans, we have been outdoors for thousands and thousands of years, and now we can go back to some of that experience." In another co-working space in Milan, Italy, which Ratti says is "the largest co-working space in Europe" and home to even the Chairman of Fiat Chrysler, Ratti is exploring how architecture itself can foster collaboration and creativity.

ABOUT CARLO RATTI

Carlo Ratti is director of the MIT Senseable City Lab and a professor in MIT's department of urban planning. Work by his design consultancy firm Carlo Ratti Associati (carloratti.com) has been exhibited at the Venice Biennale, the Design Museum Barcelona, the Science Museum in London, GAFTA in San Francisco, and The Museum of Modern Art in New York. Ratti presented a TED talk in 2011 on "Architecture that senses and responds."

Objects, like furniture, can support a flexible way of working. Ratti showed a video of Lift Bit, "the world's first digitally transformable sofa," where a honeycomb mass of pods the size of stools move up and down, controlled by a computer, to transform the furniture into a chair, or couch, or even a bed. (Lift Bit is a project of Ratti's design firm Carlo Ratti Associati.)

A "Local Warming" project will help buildings become more responsive in the ways that they use energy.

Ratti looked at the MIT campus and where the energy is expended for a recent paper. The results were sobering. "There's no correlation whatsoever between where people are and where the energy goes," he said. A research project by the Sense*able* City Lab is investigating a concept it calls Local Warming to dynamically control highly localized heating. "Don't

continue heating or cooling empty spaces, wasting energy on empty spaces" said Ratti. "Just focus on where people are." The experiment followed people as they stepped on an entry carpet at MIT, putting a "bubble of heat" around them as they moved down the halls. "Some people freaked out," Ratti admitted. "But overall people loved it. They had their own bubbles, and they could control the temperature based on their own settings and preferences."

The work space of the future will dynamically flex to serve different needs.
Open work environments can be a burden on introverted people or those who want or need more quiet. Ratti sees future spaces as being more flexible and dynamic to accommodate a wide variety needs. "If you look at the most exciting co-working spaces today, they show these different kinds of relational spaces," he said. Offices of the future will be able to be open or closed, and modified throughout the day to allow private space at one time and then open space for creative collaboration at another. These offices will be neither cubicle farms nor totally open layout. Instead, they'll be transformable offices to suits whatever people need at a given time.