

Esther Jang

Estherj

### Exploring Internet of Things Smart Cities

In their paper “Internet of Things for Smart Cities,” Zanella, Andrew et.al. describe the composition of an urban IoT and how it could be easily applied towards creating “smart cities.” Internet of Things is characterized by ordinary objects being connected to the Internet and communicating to one another through microcontrollers. According to the authors, smart cities (an application of IoT in a city) would be beneficial for improving the management and maintenance of common public services. Examples of such applications could encompass every public sector, but on a smaller scale could include waste management, air quality control, and smart parking. The authors believe that the less intrusive, smaller-scale applications could open the door for practically creating smart cities as they create a low-risk, win-win situation for both the city and its residents.

The authors then go on to describe what the technical aspects of a smart city would look like, emphasizing a web-service approach. ReSTful paradigms, UDP based protocols, IPv6 network standards, and URI mapping are described as being the optimal specifications for the nodes to communicate. The authors mainly appear to pick such specifications based on the need for the nodes to have fast, modern, and reliable connection. Furthermore, the overall architecture of the smart city consists of the various nodes, backend servers for coordination (including the database and other management tools), and gateways for connection. The authors believe that the aforementioned specifications are the necessary and optimal components towards implementing a successful smart city.

Finally, a small-scoped use-case of a smart city is explored in the experiment held at Padova, Italy. In this city, around 300 nodes were used in order to equip streetlamps with devices that tracked temperature, humidity, light, air quality, etc. While the primary purpose of the experiment was to test whether the nodes would be able to only monitor the specified parameters correctly, the experiment overall seemed to have reasonable results. Overall, the recorded readings of each parameter seemed realistic and consistent with each other, indicating that the sensors had correctly worked as expected. The proof of concept at Padova showed that the idea of a smart city could potentially be implemented on a wider and more practical scale, suggesting a positive outlook for expanding smart cities.

---

Source:

Zanella, Andrea, et al. “Internet of Things for Smart Cities.” *IEEE INTERNET OF THINGS JOURNAL*, vol. 1, no. 1, Feb. 2014, pp. 22–32.