

# Grouping 'smart cities' into types may help aspiring city planners find a path

October 3 2019

---

A comparative analysis of "smart cities" worldwide reveals four distinct types, according to an international team of researchers. The categories may help city planners to identify and emulate models that are close to their own socio-economic circumstances and policy aspirations.

"Smart cities are those that use new information and [communication technologies](#) to solve pressing problems—such as housing, transportation, and energy—in [urban planning](#) and governance," said Krishna Jayakar, professor of telecommunications, Penn State. "Yet, the term 'smart city,' remains more of a buzzword than a clearly articulated program of action. Our research seeks to identify models of the smart city from the bottom-up, by looking at programs municipal planners have actually implemented."

In a paper published online on July 5 in the journal *Telecommunications Policy*, Jayakar and his colleagues identified the types of smart city with a goal of creating a basis for the study and implementation of smart-city components.

"The construction of smart cities has been actively implemented all over the world," said Rachel Peng, doctoral candidate in communications, Penn State and a co-author on the paper. "For different types of cities, different strategies are adopted to make them 'smart.' We not only aim to present a [comparative analysis](#) of municipal smart city plans, but also seek to put forward targeted suggestions for the construction of smart cities based on our findings."

Specifically, the team conducted a comparative analysis of 60 municipal smart-city plans drawn from countries around the world. They used a statistical tool, called cluster analysis, to identify the combinations of projects that are most often used together.

Their results reveal four major types of smart city:

## **Essential Services Model**

Cities within the group Essential Services Model are characterized by their use of mobile networks in their emergency management programs and by their digital healthcare services. These cities, that may already have good communications infrastructures, prefer to put their money into a few well-chosen smart city programs. Examples include Tokyo and Copenhagen.

## **Smart Transportation Model**

Smart Transportation Model cities encompass those that are densely populated and face problems with moving goods and people within the [city](#). Cities in this group emphasize initiatives to control urban congestion—through smart public transportation, car sharing and/or self-driving cars—as well as the use of information and communication technologies. Singapore and Dubai are included in this group.

## **Broad Spectrum Model**

Cities falling within the Broad Spectrum Model emphasize urban services, such as water, sewage and waste management, and seek technological solutions for pollution control. They are also characterized by a high level of civic participation. Examples include Barcelona, Vancouver and Beijing.

## Business Ecosystem Model

The Business Ecosystem Model seeks to use the potential of information and communication technologies to jumpstart economic activity. It includes cities that emphasize digital skills training as a necessary accompaniment to create a trained workforce and aim to foster high-tech businesses. Amsterdam, Edinburgh and Cape Town are examples.

"Our findings can provide [city planners](#) with information on specific projects and templates implemented in the field by other planners," said Jayakar. "Cities hoping to implement [smart city](#) plans may also consult the four models to identify cities that match their socio-economic circumstances the most closely to use as an aid in devising their own plans."

**More information:** Zhiwei Tang et al, Identifying smart city archetypes from the bottom up: A content analysis of municipal plans, *Telecommunications Policy* (2019). [DOI: 10.1016/j.telpol.2019.101834](https://doi.org/10.1016/j.telpol.2019.101834)

Provided by Pennsylvania State University

Citation: Grouping 'smart cities' into types may help aspiring city planners find a path (2019, October 3) retrieved 5 May 2024 from <https://phys.org/news/2019-10-grouping-smart-cities-aspiring-city.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.