

## Blockchain Technology and Smart Cities- A Review

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### Abstract

Blockchain technology can be termed as a revolutionary innovation that has transformed the manner of data sharing by making it more secure and immutable. The existence of a mutual trust model which includes every participating entity makes it a widespread adopted technology in recent years. Due to its impeccable application domains the blockchain technology is slowly becoming an essential enabling technology of modern day. Smart cities ecosystem is one such domain wherein blockchain is finding numerous application and implementation avenues. Due to the diverse nature of devices and heterogeneity of data involved in smart cities ecosystem blockchain is considered an apt technology. In this paper, the current status of “blockchain based smart cities” is discussed. The paper further systematically reviews the various existing proposals, frameworks and architectures which were developed by researchers in order to mitigate the issues and challenges in the implementation of smart cities by utilizing the blockchain innovation.

**Keywords:** Blockchain, Smart City, Security, IoT

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### 1. Introduction

In recent years, the economic growth and social changes have initiated the largest surge of urbanization around the globe and thus more and more individuals are moving towards urban communities. As of late the “United Nations” has anticipated that “86% of developed nations and 64% of the developing nations will be urbanized by 2050” [1]. It has been indicated that more inhabitants stay in urban areas (54%) than provincial zones (46%) and this figure will increase to 66% by 2050 [2]. In order to adapt to these emergencies, urban communities focus on current advancements with a focus to minimize costs, use assets optimally, and make increasingly reasonable and feasible urban conditions.

The widespread adoption of IoTs and remote interchanges has enabled easier interconnection of gadget networks and uniform transfer of information even from remote areas and difficult terrains. Such systems, however, are largely instrumented with open information and thus must be protected against security vulnerabilities

[3-4]. In order to overcome these vulnerabilities, data dependent solutions must be created to give protection, trustworthiness, and confidentiality of information. Gartner's report gauge that 30% of keen urban community's social insurance applications will have mechanical technology and innovative machines and 10% of shrewd urban communities will utilize street lamps as the spine for a system of savvy urban communities by 2020 [5]. As of late, blockchain innovation has gained popularity in numerous fields and businesses for example horticulture, digital currency, inventory network and shrewd urban areas and so on. It is also reported that \$3.1 trillion will be added to the world economy by 2030 [6].

As per “Nelson Rosario” [7], the Blockchain technology is characterized as a “distributed ledger network using public-key cryptography to cryptographically sign exchanges that are put away on a distributed ledger, with the record comprising of cryptographically connected blocks of exchanges. This cryptographically connected blocks of exchanges structure is known as a blockchain.” In simple words, it is a shared dispersed record innovation that “records exchanges”, “understandings”, “agreements”, and “deals”











