Smart water management in IoT

Definition:

 Smart Water Management is the activity of planning, developing, distributing and managing the use of water resources using an array of IoT technologies which are designed to increase transparency, and make more reasonable and sustainable usage of these water resource

Introduction:

 Smart water management systems can provide a more resilient and efficient water supply system, reducing costs and improving sustainability.

 High-technology solutions for the water sector include digital meters and sensors, supervisory control and data acquisition (SCADA) systems, and geographic information systems (GIS)

Problem statement:

 Water scarcity is a major issue worldwide as 2.2 billion people lack safe drinking water. Overpopulation, climate change, poor water management practices, and pollution exacerbate the problem. This article will examine the consequences of water supply issues and offer solutions to tackle this urgent matter.

Understanding the problem:

 Because of population growth, rapid urbanization, and climate change, many water supply utilities globally struggle to provide water that is safe to drink. A particular problem is the aging of the water supply facilities, which is exacerbated by their inefficient operation and maintenance (O&M). For this reason, many water utilities have recently been actively adopting intelligent and integrated water supply O&M solutions that utilize information and communication technology, the Internet of Things, big data, and artificial intelligence to solve water supply system problems. In this study, smart water solutions (GSWaterS) were implemented to enhance the efficiency

 Design

1, Water conservation:

 Conserving water is an effective solution to water supply issues, especially where resources are scarce. This involves using water efficiently by fixing leaks, adopting water-efficient appliances, and changing behavior to reduce waste. Water conservation is a cost-effective and sustainable solution that can help extend the lifespan of existing water resources.

2,Desalination:

 It involves removing salt and other minerals from seawater or brackish water to produce freshwater. It is useful in coastal areas with scarce freshwater resources, but high costs and energy consumption can limit its implementation.

IoT intergration:

IoT technologies transform water management, promote efficiency, reduce waste, and contribute to a more sustainable and resilient water future.

Conclusion:

Water supply problems are a significant challenge for many regions worldwide, with severe consequences for human health, food security, and economic development. However, several solutions exist, including rainwater harvesting, water conservation, wastewater treatment, and desalination.

This application will improve the water sustainability and management, as well as the policy of smart cities adequately adapted considering different constrains. The selected techniques and actions depend on the considered threshold, the capital investment, and the availability of techniques and equipment.