

Blockchain for Smart Grid Applications

Motivation

There has been significant investments in clean-energy technologies—\$333.5 bn new investments in 2017 alone as reported by Bloomberg New Energy Finance.

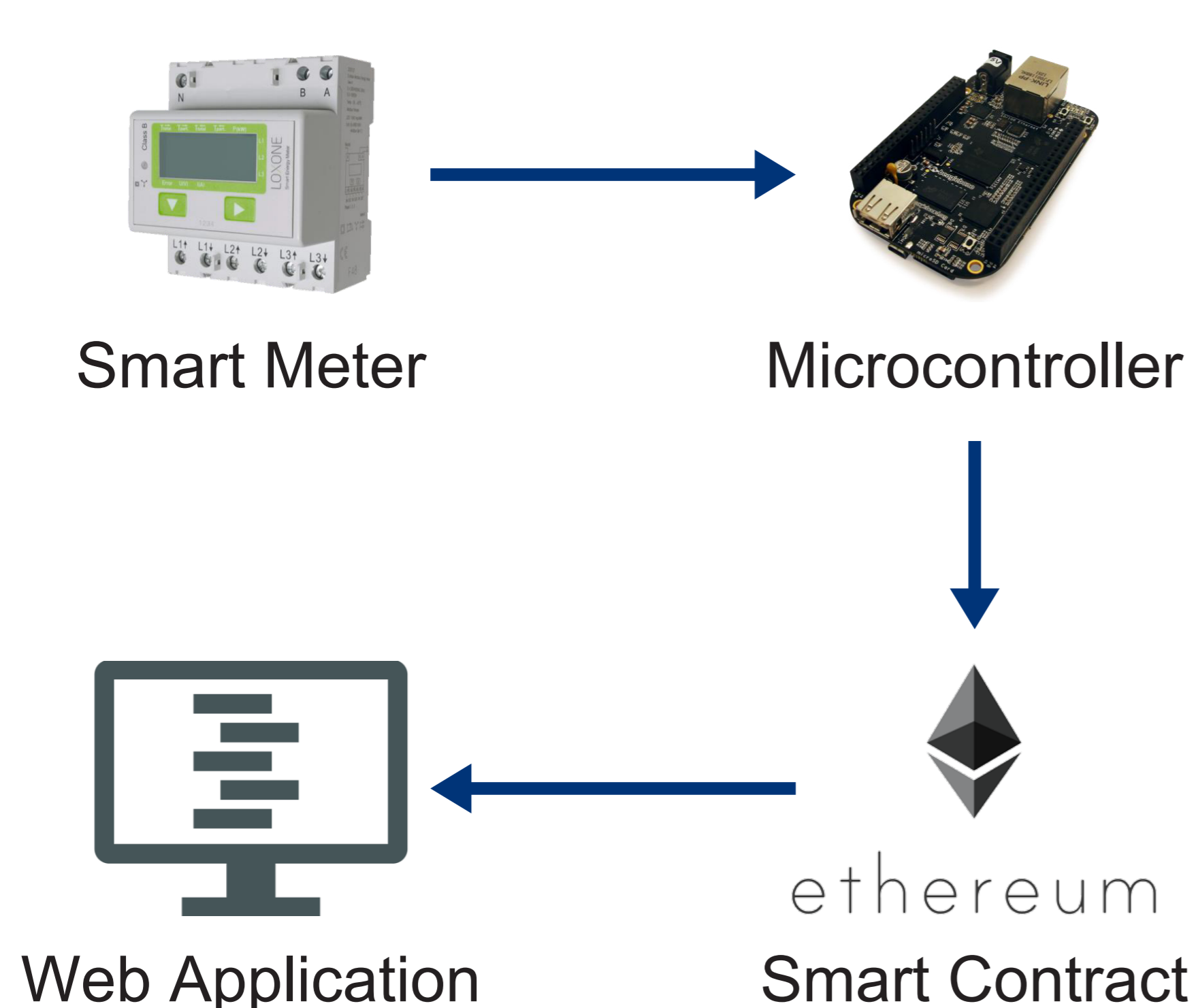
However, it is still not widely adopted due to the distributed and intermittent nature of these energy sources. In fact, it gives rise to a mismatch between the demand and supply of energy known as The Duck Curve.

Objective

To incentivize the adoption of clean-energy technologies by:

1. Improving existing smart grid systems by **integrating blockchain technology**
2. Empowering demand response through energy consumption **demand prediction**

System Overview



Features

Proposed features address the needs of the three user groups: **consumers, providers, and government**. They are:

1. **Personalized** and overall **market energy demand prediction**
2. Customized energy **consumption limit**
3. Customizable energy consumption **tariff and incentive** (half-hourly)

Implementation

Technology stack used:



Microcontroller

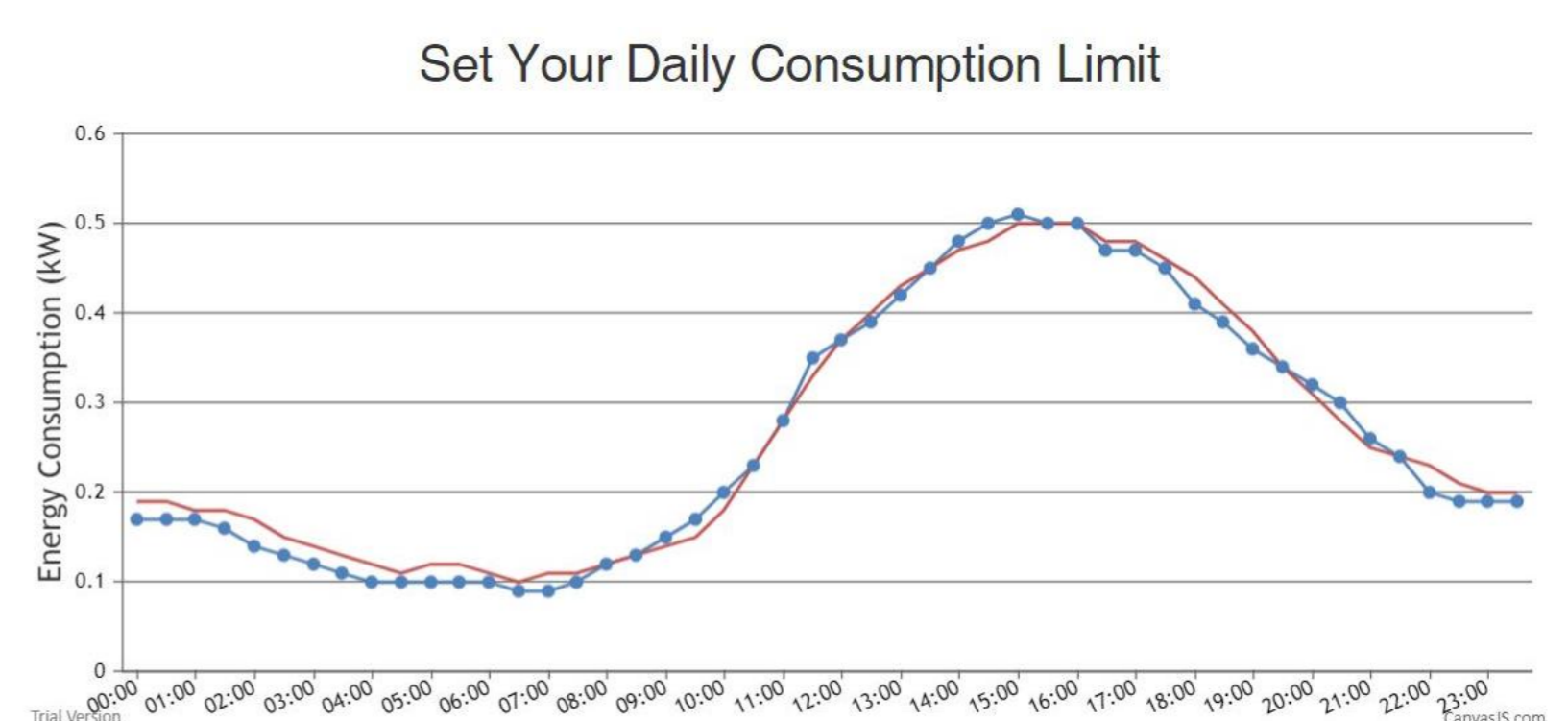


Smart Contract



Web Application

Set consumption limit using draggable chart:



Future Works

Possible extensions and applications include:

1. Integration with smart appliances to drive an **Internet-of-Things based system**
2. Consumption **breakdown by source**