



**IV CONGRESO**

**CIUDADES INTELIGENTES**

Madrid 30-31 Mayo 2018

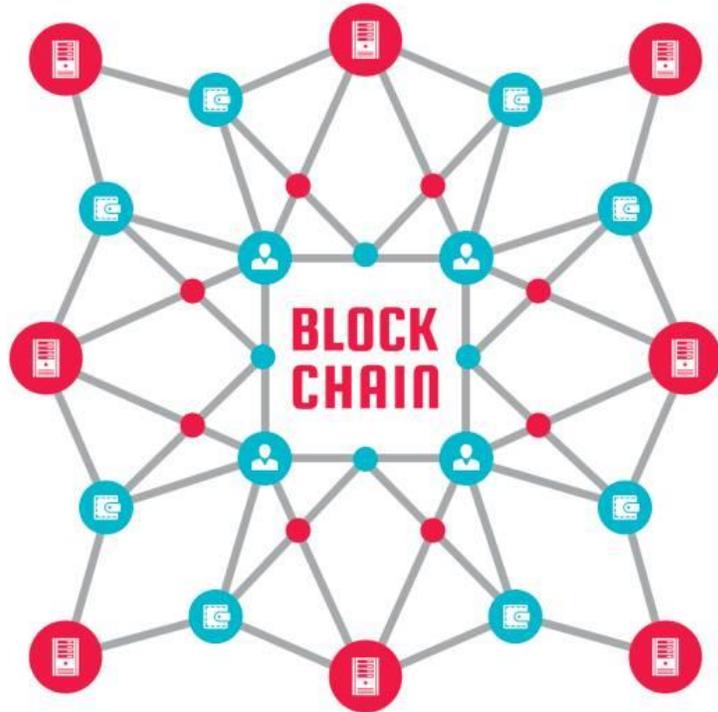
# **SISTEMA DE VOTACIÓN DE PARTICIPACIÓN CIUDADANA BASADO EN TECNOLOGÍA BLOCKCHAIN**

**Javier Peña**

Analista de Innovación Tecnológica

Ayuntamiento de Alcobendas

# OTRA APROX. ¿QUÉ ES BLOCKCHAIN?



<https://tinyurl.com/yct67ruk>

DISTRIBUIDA

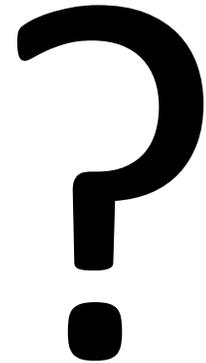
SEGURA

CONFIABLE

DESCENTRALIZADA

TRANSFERENCIA DE  
VALOR

# CONFIANZA DESCENTRALIZADA



# INNOVACIÓN DISRUPTIVA



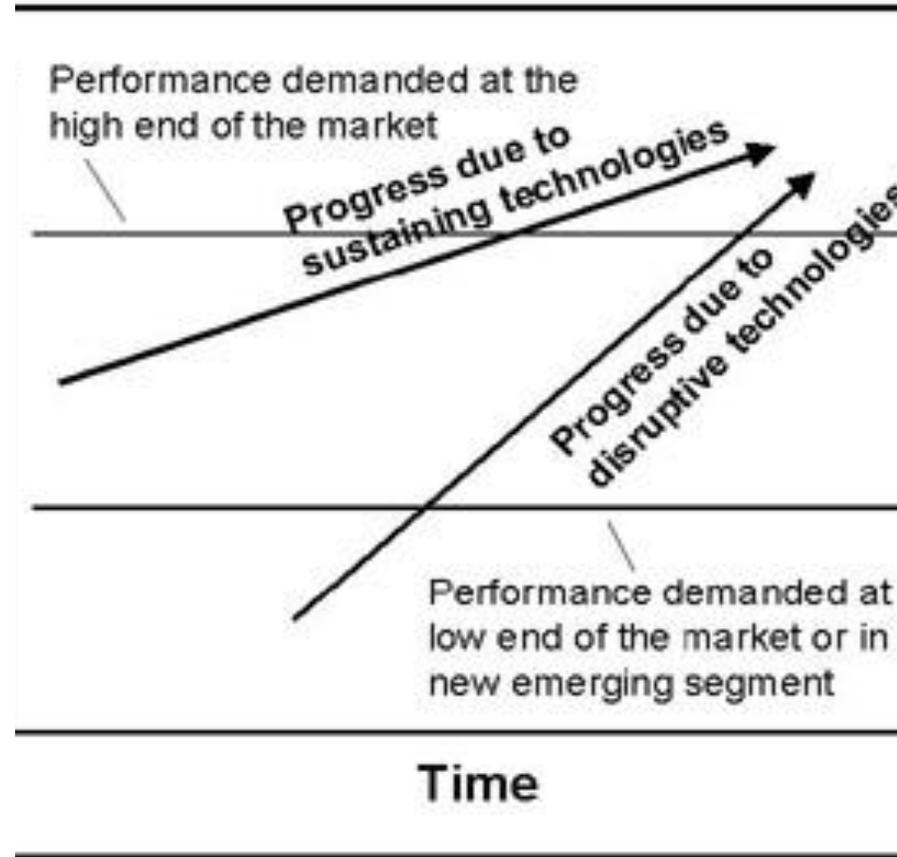
## Sierra Leone just ran the first blockchain-based election



John Biggs @johnbiggs / Mar 15, 2018



The citizens of Sierra Leone went to the polls on March 7 but this time something was different: the



MIT  
Technology  
Review

Publicado por Opinno

Menu



Una cliente paga sus alimentos en un supermercado en el campamento de refugiados de Zaatari (Jordania)

Computación

### Así funciona el campamento de refugiados sirios que utiliza 'blockchain'

# SISTEMA DE VOTACIÓN

## Funcionalidad

- Anonimato
- Autenticación fuerte
- Votos únicos e inmutables
- Proceso fácilmente auditable

The image displays two screenshots of the Alcobendas blockchain voting system interface. The left screenshot shows a user's public address and a QR code for verification. The right screenshot shows the login page requiring a digital certificate.

**Left Screenshot:** The interface shows the user's public address: `0xb87da695c100806b5e2356c...`. A QR code is displayed for verification. Below the QR code, the text reads: "Mi dirección pública. Se puede compartir". A "Copiar al portapapeles" button is visible.

**Right Screenshot:** The interface shows the login page. The text reads: "Para acceder al servicio necesitarás disponer de un Certificado Digital válido emitido por cualquiera de las entidades de certificación del país. Si desea conocer los certificados válidos pulse aquí." Below this, there is a section for "Tarjeta DE ALCOBENDAS" with instructions: "Tarjeta de residencia sin ceros a la izquierda y sin te introduzca el número completo con letras) y la diente a la Tarjeta de Alcobendas." Below this, there is a section for "Cl@ve" with instructions: "plataforma Cl@ve mediante Cl@ve PIN, Cl@ve idadanos europeos a través de la plataforma esta información en la página oficial de Cl@ve." Below this, there is a section for "Términos de uso" with the text: "Estás aceptando nuestros Términos de uso".

**Contract Source Code Verified (Exact match)**

|                   |                         |                       |     |
|-------------------|-------------------------|-----------------------|-----|
| Contract Name:    | Voting                  | Optimization Enabled: | No  |
| Compiler Version: | v0.4.21+commit.dfe3193c | Runs (Optimizer):     | 200 |

```
Contract Source Code <>
221  if (now > deadline) { voting.close(); return false;
222  } else return true;
223  }
224  }
225  function isACitizen(address _voter) internal constant returns (bool) {
226  if (allowed_voter) {
227  return true;
228  } else {
229  return false;
230  }
231  }
232  }
233  function amACitizen() public constant returns (bool) {
234  return isACitizen(msg.sender);
235  }
236  }
237  function canVote(address _voter) internal constant returns (bool) {
238  if (bytes(votes[_voter]).length == 0) {
239  return true;
240  } else {
241  return false;
242  }
243  }
244  }
245  }
246  }
247  }
248  }
249  }
250  }
251  }
252  }
253  }
254  }
```

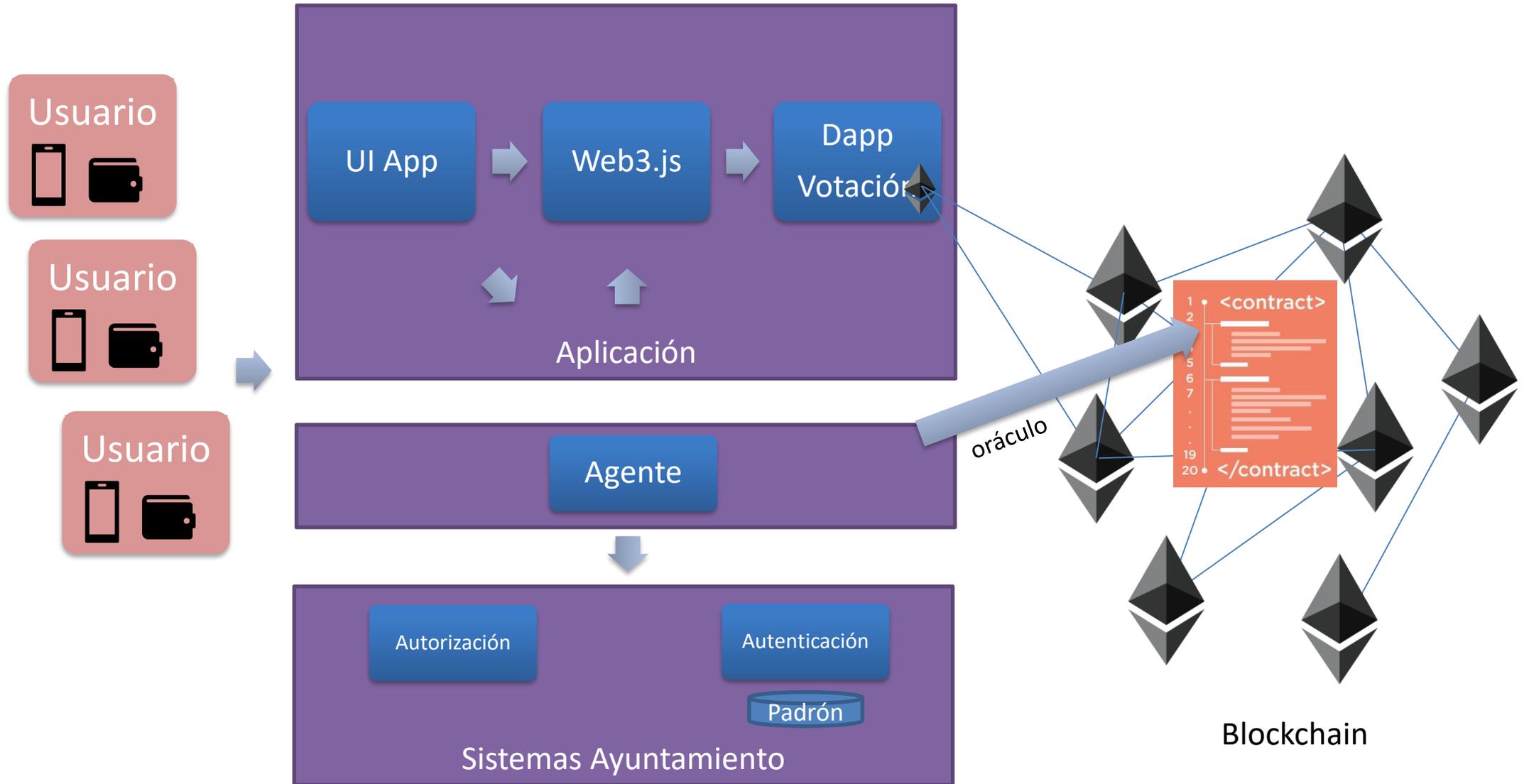
**Contract ABI**

```
[{"constant":false,"inputs":[{"name":"_vote","type":"string"},"name":"sendVote","outputs":[{"name":"","type":"bool"},"payable":false,"stateMutability":"nonpayable","type":"function"},"constant":false,"inputs":[{"name":"_voter","type":"address"},"name":"grantVoter","outputs":[{"name":"","type":"bool"},"payable":false,"stateMutability":"view","type":"function"},"name":"deadline","outputs":[{"name":"","type":"uint256"},"payable":false,"stateMutability":"view","type":"function"},"constant":true,"inputs":[{"name":"SCOracles","outputs":[{"name":"","type":"address"},"payable":false,"stateMutability":"view","type":"function"},"constant":true,"inputs":[{"name":"","type":"numVoters","outputs":[{"name":"","type":"uint256"},"payable":false,"stateMutability":"view","type":"function"},"constant":true,"inputs":[{"name":"VotingClosed","outputs":[{"name":"","type":"bool"},"payable":false,"stateMutability":"view","type":"function"},"constant":true,"inputs":[{"name":"SCCellars","outputs":[{"name":"","type":"address"},"payable":false,"stateMutability":"view","type":"function"},"constant":true,"inputs":[{"name":"canVote","outputs":[{"name":"","type":"bool"},"payable":false,"stateMutability":"view","type":"function"}]}
```

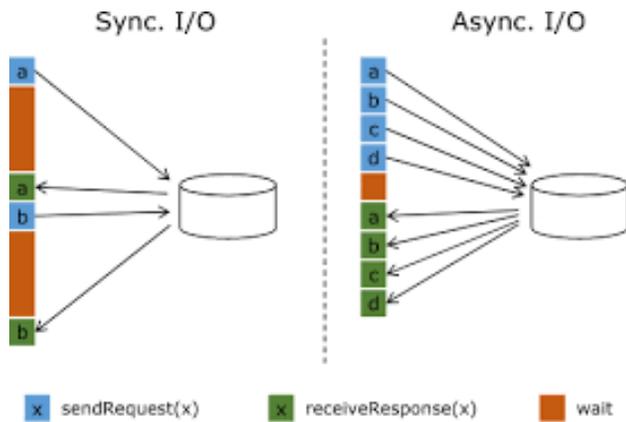
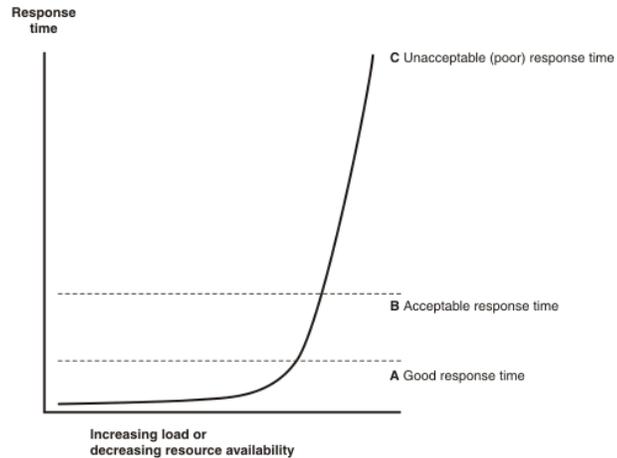
# APLICATIVO



# ARQUITECTURA



# ALGUNOS PROBLEMAS ENCONTRADOS



The screenshot shows the mobile interface of 'alcobendas.marketpay.io'. It features a blue header with the text 'Acceso'. Below the header are two main sections: 'Certificado Digital' with the dni logo and 'Tarjeta DE ALCOBENDAS' with a card image. A text block explains that users need a digital certificate or Alcobendas card to access the service. At the bottom, there is a 'Cl@ve' logo and instructions on how to use the Cl@ve platform. The footer includes the text 'Ayuntamiento de Alcobendas. Plaza Mayor, nº 1. Tfno.: 916 59 76 00'.

# ¿QUÉ APORTA AL AYUNTAMIENTO?

Innovación

Transparencia

Buen Gobierno

Participación Ciudadana



# SOCIOS TECNOLÓGICOS



# ElevenPaths

*Telefonica* CYBER SECURITY UNIT

Marketpay 



# IV CONGRESO CIUDADES INTELIGENTES

Madrid 30-31 Mayo 2018

Javier Peña Martínez

@jpenamar

AYUNTAMIENTO DE ALCOBENDAS

*Pruébalo*

*congresoci.marketpay.io*  
*resultadosci.marketpay.io*

[www.alcobendas.org](http://www.alcobendas.org) |  

