CSE 526 Blockchain project phase 1 report

1. **Title of the project:**
   WaterMarketPlace: Blockchain based solution for Water Scarcity

2. **Project members details:**

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3. **Issue(s) addressed:**
   Through our smart contract and blockchain based verification and validation we are trying to address issues related to water distribution in places where there is scarcity of water.
   Current distribution models have following problems:
   Centralized management structure: The central authority can set any desired water quality to fraud the buyers of the water.
   Weak compliance and lack of standards and norms: Since the entire data is held by a central authority the users do not have access to transparent and untampered records.
   Information search cost: the central authority may ask for a subscription fees to access the water quality records and other related information.
   Inequitable distribution of water: bureaucracy and corruption can prevent few specific users from creating purchase request.

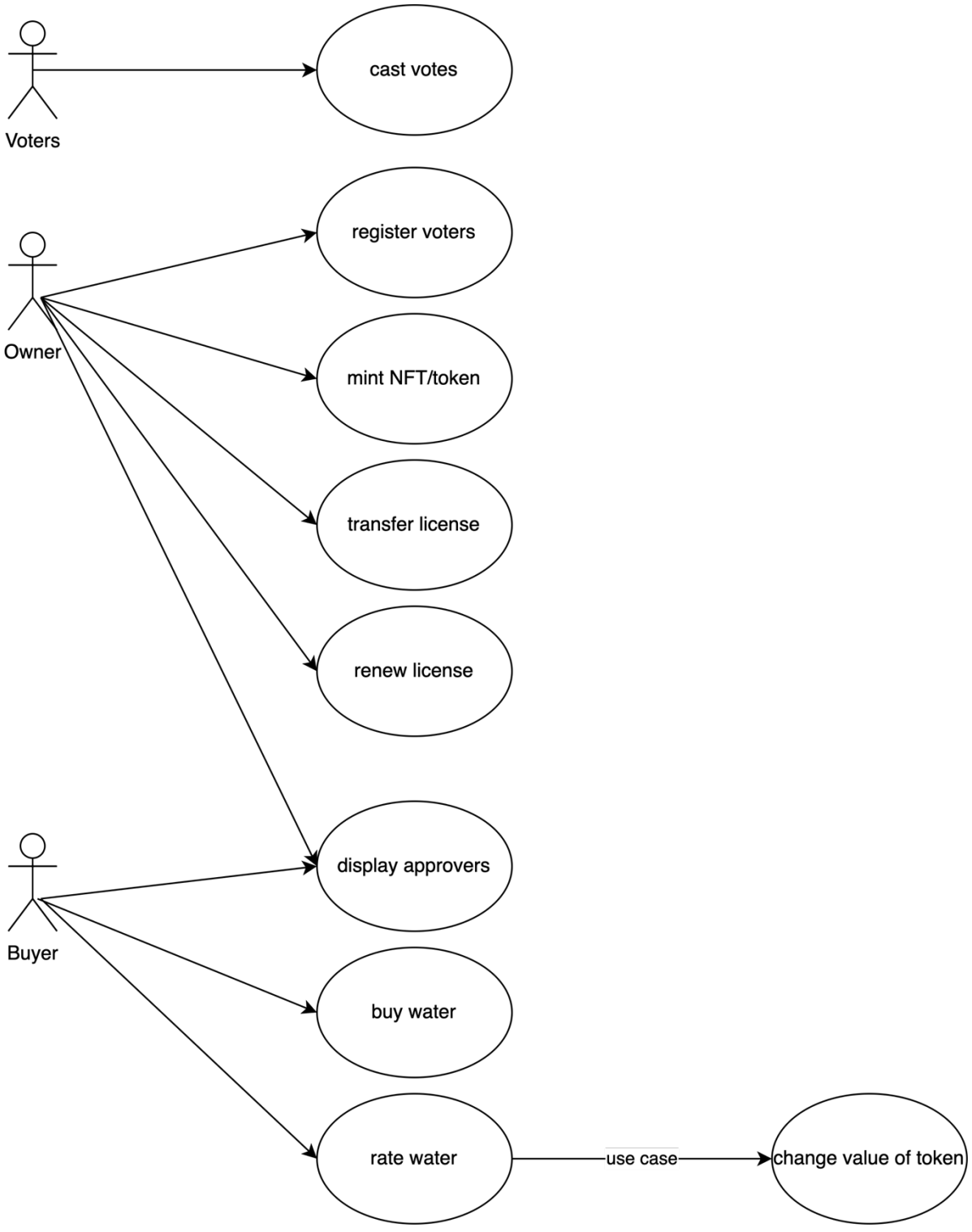
   Blockchain to the rescue:
   Transparency: With blockchain based solution each buyer will have transparent access to the water quality being offered by the supplier and whether the supplier is authorized personnel.
   No bureaucracy or corruption: since buyer are only required to share their account address, any user can create purchase request.
   Weak compliance and lack of standards and norms: since all of the information is available to the customers after verification and validation, buyer can verify all the information before creating the purchase request.

4. **Abstract:**

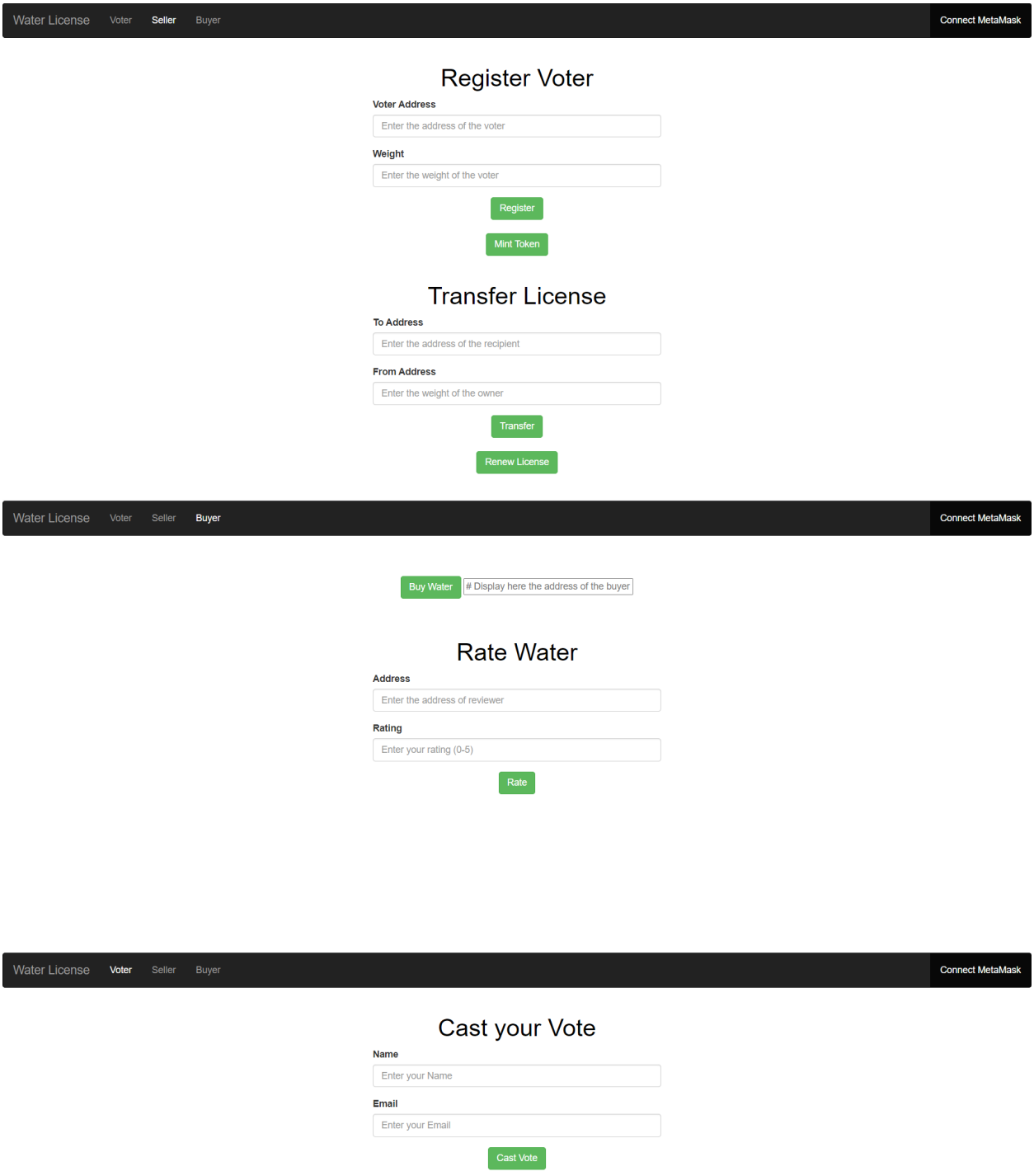
   We have implemented a blockchain based solution to address water scarcity problem. In that there will be a water distributor that will be selling water through blockchain. In current situation, water is being distributed by government bodies or private organizations. The buyer does not have the enough information about the water quality and authenticity of the distributor. Using the blockchain solution, buyers can view all the information pertaining to the water quality offered by the distributor and whether the distributor is authorized to sell the water. Out blockchain based solution prevents misinformation or tampering of records about water quality and approvers.

5. **Digital asset and token**
   Water will represent the digital asset in this case which will be tokenized to represent the business model. The token can be transferred in case someone offered to buy the distribution rights from current owner.

6. **Use case diagram:**


Voters
cast votes
Owner
register voters
mint NFT/token
transfer license
renew license
Buyer
display approvers
buy water
rate water
use case
change value of token

7. UI wireframe or concept figure:



8. **References:**

[1] https://docs.openzeppelin.com/contracts/2.x/erc721

[2] https://www.newamerica.org/fellows/reports/anthology-working-papers-new-americas-us-india-fellows/the-development-of-smart-water-markets-using-blockchain-technology-aditya-k-kaushik/#:~:text=A%20blockchain%2Dbased%20smart%20water,and%20provide%20positive%20environmental%20outcomes.

[3] https://ethereum.org/en/learn/

9. **Approved by:**
Baibhav Thapa

10. **Code implementation of the digital assets-token smart contracts:**
Attached to the submission file on UBLearns