**SOFTWARE DESIGN**

**FunixPricingChain**

**1. Architecture**

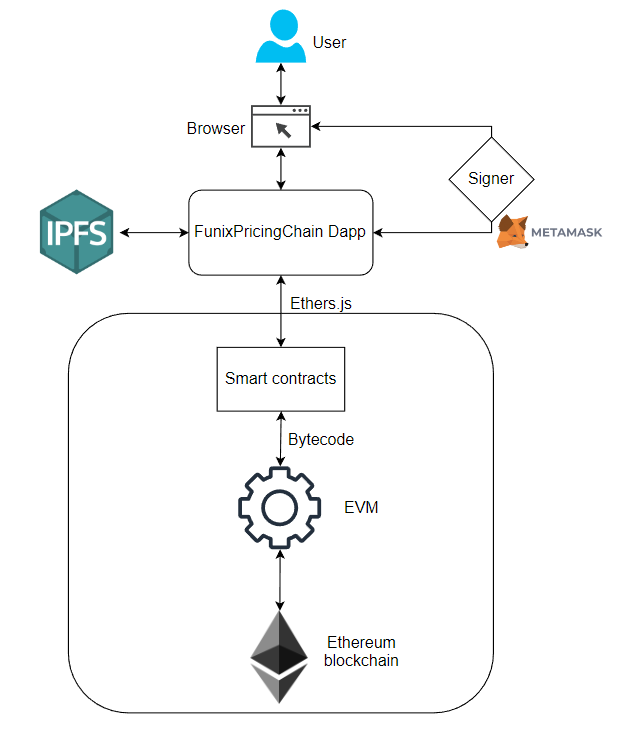


Figure 1 High level architecture of FunixPricingChain Dapp

**2. Application Design**

**2.1. Main contract**

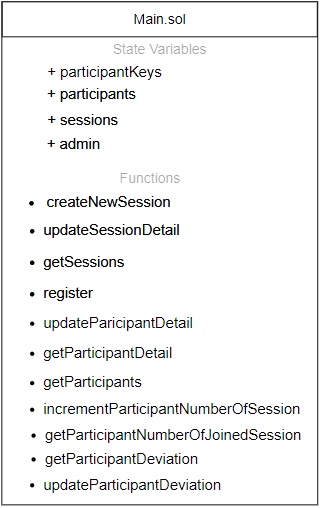
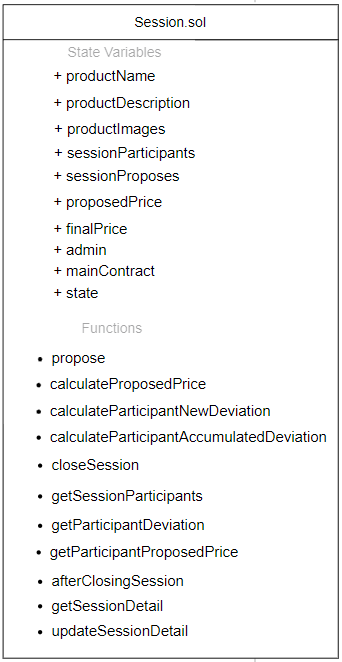


Figure 2 main contract design

**2.2. Session contract**



**3. Functional Design**

3.1. Main contract

3.1.1 createNewSession

* + - Function name: createNewSession
    - Function purpose: create new session
    - List of parameters:
      * string memory \_productName,
      * string memory \_productDescription,
      * string[] memory \_productImages
    - Return type: Session

3.1.2 updateSessionDetail

* + - Function name: updateSessionDetail
    - Function purpose: change session information
    - List of parameters:
* address \_sessionAddress,
* string memory \_productName,
* string memory \_productDescription,
* string[] memory \_productImages
  + - Return type: Session

3.1.3 getSessions

* + - Function name: getSessions
    - Function purpose: get all sessions information
    - List of parameters: none
    - Return type: SessionDetail[] memory

3.1.4 register

* + - Function name: register
    - Function purpose: sign up for new user
    - List of parameters:
      * string memory \_fullName
      * string memory \_email
    - Return type: Session

3.1.5 updateParticipantDetail

* + - Function name: updateParticipantDetail
    - Function purpose: change user information (full name, email)
    - List of parameters:
      * string memory \_fullName
      * string memory \_email
    - Return type: none

3.1.6 getParticipant

* + - Function name: getParticipant
    - Function purpose: get user information
    - List of parameters: none
    - Return type: Participant memory

3.1.7 getParticipants

* + - Function name: getParticipants
    - Function purpose: get all user information
    - List of parameters: none
    - Return type: Participant[] memory

3.1.8 incrementParticipantNumberOfSession

* + - Function name: incrementParticipantNumberOfSession
    - Function purpose: increase number of session of participant who joins session by 1
    - List of parameters: address \_account
    - Return type: none

3.1.9 getParticipantNumberOfJoinedSession

* + - Function name: getParticipantNumberOfJoinedSession
    - Function purpose: get number of session that a user has joined
    - List of parameters: address \_account
    - Return type: uint256

3.1.10 getParticipantDeviation

* + - Function name: getParticipantDeviation
    - Function purpose: get user deviation
    - List of parameters: address \_account
    - Return type: uint256

3.1.11 updateParticipantDeviation

* + - Function name: updateParticipantDeviation
    - Function purpose: change user deviation
    - List of parameters:
      * address \_account
      * uint256 \_deviation
    - Return type: uint256

3.2. Session contract

3.2.1. propose

* + - Function name: propose
    - Function purpose: propose price
    - List of parameters:
* uint256 \_price
  + - Return type: none

3.2.2 calculateProposedPrice

* + - Function name: calculateProposedPrice
    - Function purpose: calculate propose price based on formula
    - List of parameters: none
    - Return type: none

3.2.3 calculateParticipantNewdeviation

* + - Function name: calculateParticipantNewdeviation
    - Function purpose: calculate user deviation based on formula
    - List of parameters: none
    - Return type: none

3.2.4 calculateParticipantAccumulatedDeviation

* + - Function name: calculateParticipantAccumulatedDeviation
    - Function purpose: calculate user accumulated deviation based on formula
    - List of parameters:
      * uint256 \_currentDeviation,
      * uint256 \_numberOfJoinedSession,
      * uint256 \_newDeviation
    - Return type: uint256

3.2.5. closeSession

* + - Function name: closeSession
    - Function purpose: change session’s state to “CLOSING”
    - List of parameters:
      * uint256 \_currentDeviation,
      * uint256 \_numberOfJoinedSession,
      * uint256 \_newDeviation
    - Return type: uint256

3.2.6 afterClosingSession

* + - Function name: afterClosingSession
    - Function purpose: set final price, update user’s deviation, number of joined session and change state to “CLOSED”
    - List of parameters:
      * uint256 \_finalPrice
    - Return type: none

3.2.7 updateSessionDetail

* + - Function name: updateSessionDetail
    - Function purpose: change session information (name, description, images)
    - List of parameters:
      * string memory \_productName,
      * string memory \_productDescription,
      * string[] memory \_productImages
* Return type: none

3.2.8 getSessionDetail

* + - Function name: getSessionDetail
    - Function purpose: get session detail
    - List of parameters: none
* Return type: SessionDetail memory