

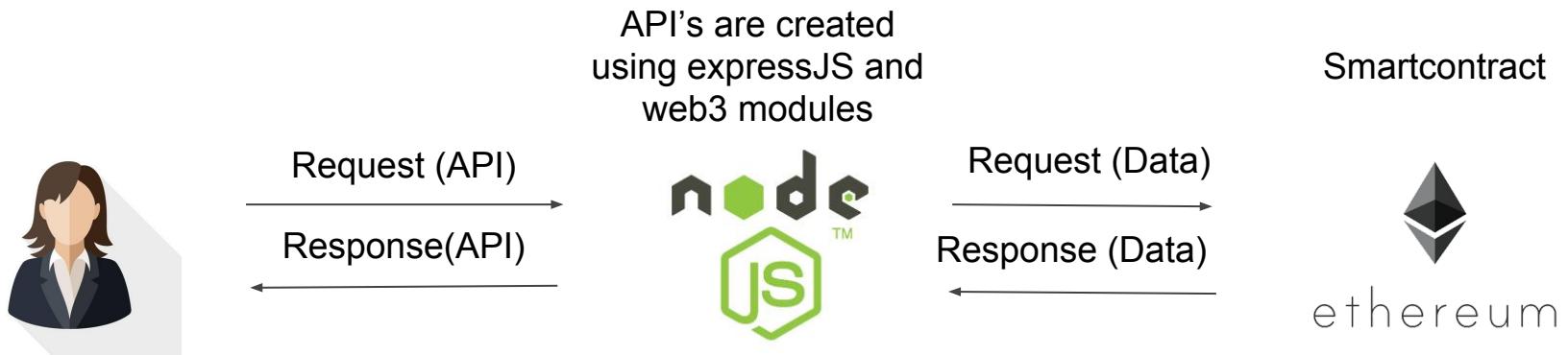
Global KYC/Identity Management

Ethereum Blockchain based POC

Global KYC/Identity

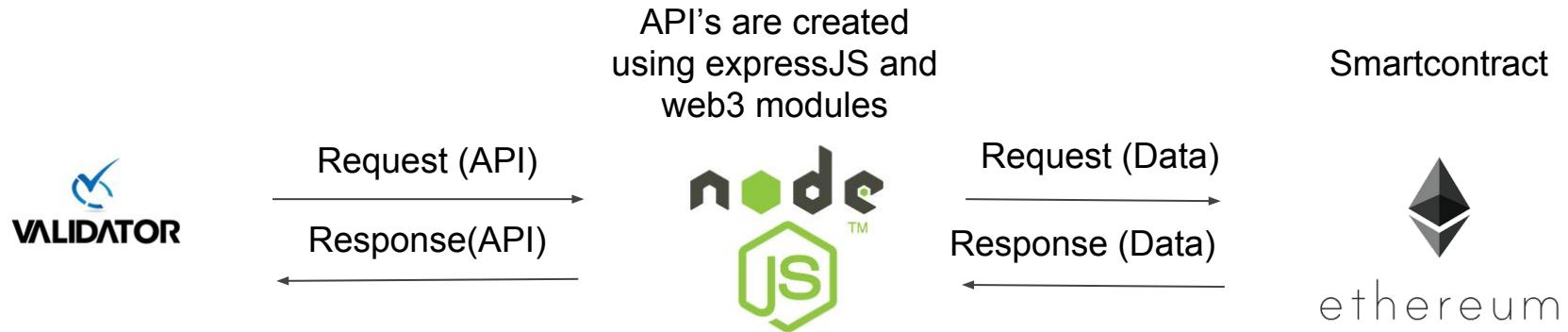
- Global KYC / Identity is nothing but a unique ID for each person who is residing in any of the geolocation over the Globe.
- This is fully client based product as all the credentials will be stored at the user-end.
- Moreover no Database has been used and everything is stored in the Ethereum Smart Contract.
- This product has two main models User and Validator.
- User is the one who is willing to create a Global Identity in the ecosystem.
- Validator may be any Government bodies who validates the registered user.
- User will be assigned with the Ethereum account address through which he can submit his details and other required details.
- I have assumed the Global Identity (eg : GKYC-GR-800523) will be of prefix GKYC and middle word with 2 characters of the user and 3rd with random 6 digit number or can use UUID as well.

User Architecture



- User registers the login details and credentials are stored locally in the client end for security reasons.
- User is assigned with wallet address during the registration.
- User interacts with NodeJS API's for wallet creation and interaction with the ethereum smartcontract.
- User submits the details to the smartcontract through API.

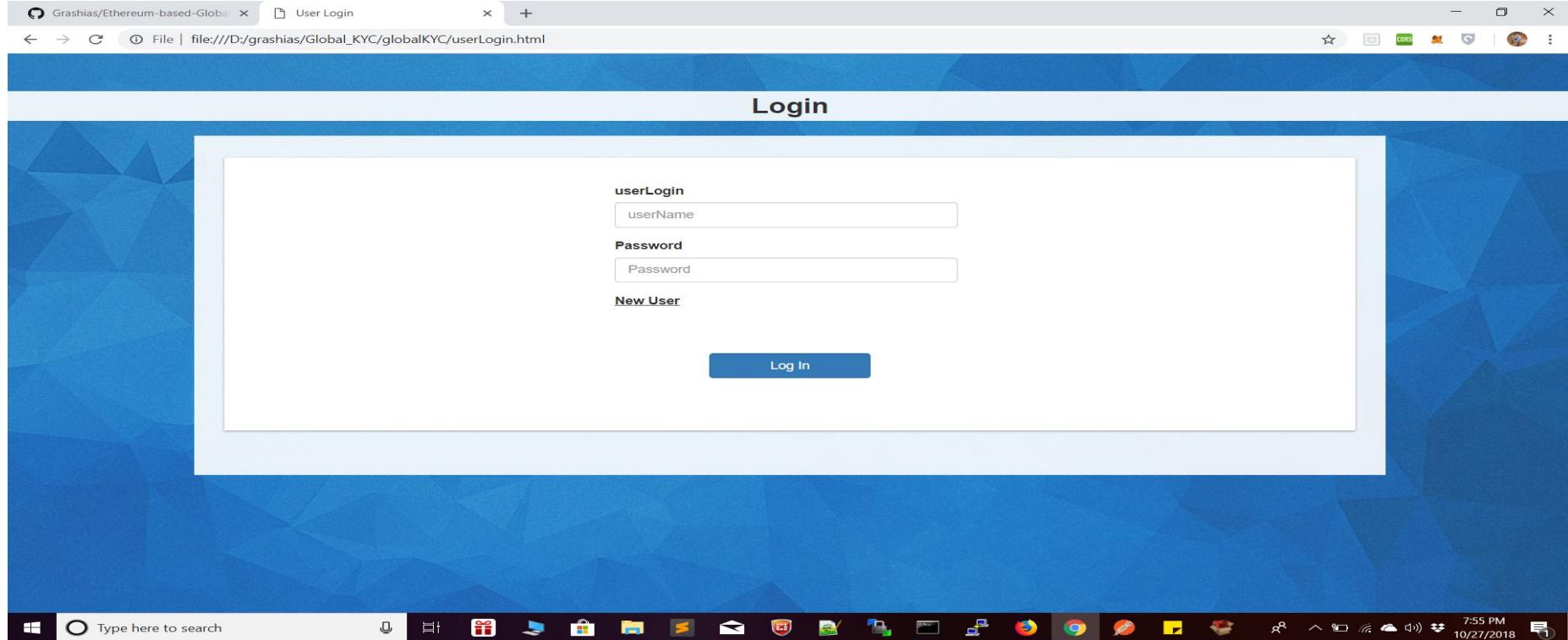
Validator Architecture



- Validator registers the login details and credentials are stored locally in the client end for security reasons.
- Validator is assigned with wallet address during the registration.
- Validator interacts with NodeJS API's for wallet creation and interaction with the ethereum smartcontract.
- Validator fetches the portal pending/approved user details from the smartcontract.
- Validator verifies the user by interacting the smartcontract.
- Validator approves the verified user and submits to the smartcontract.

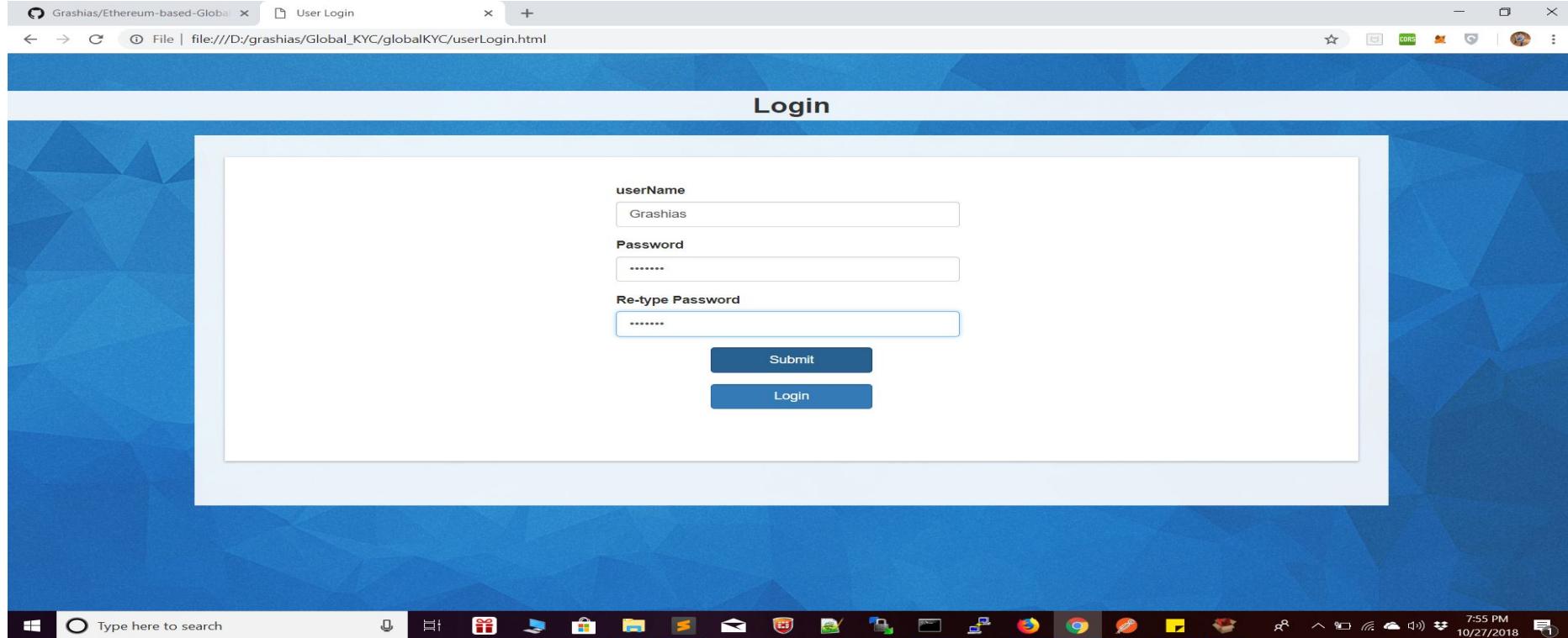
User LogIn

- User log in page for the users to login with their credentials



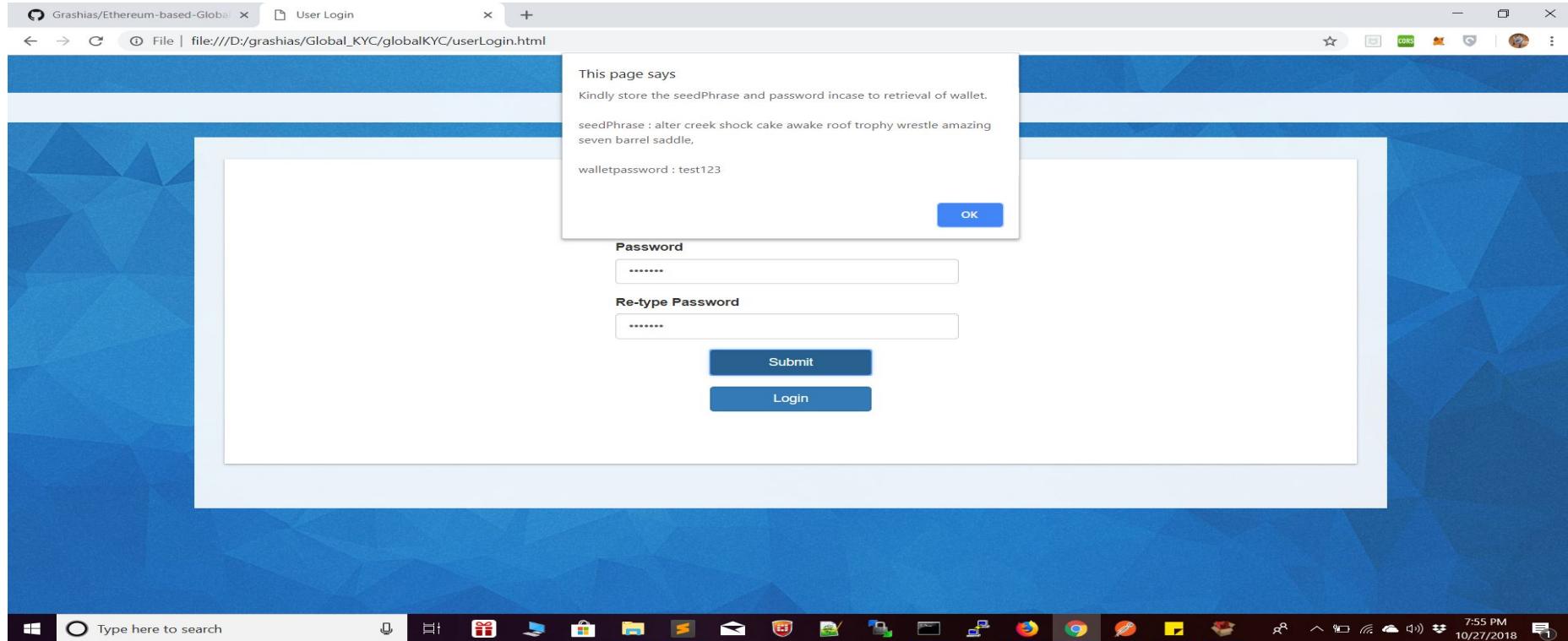
User Registration

- User registration page to register with their credentials



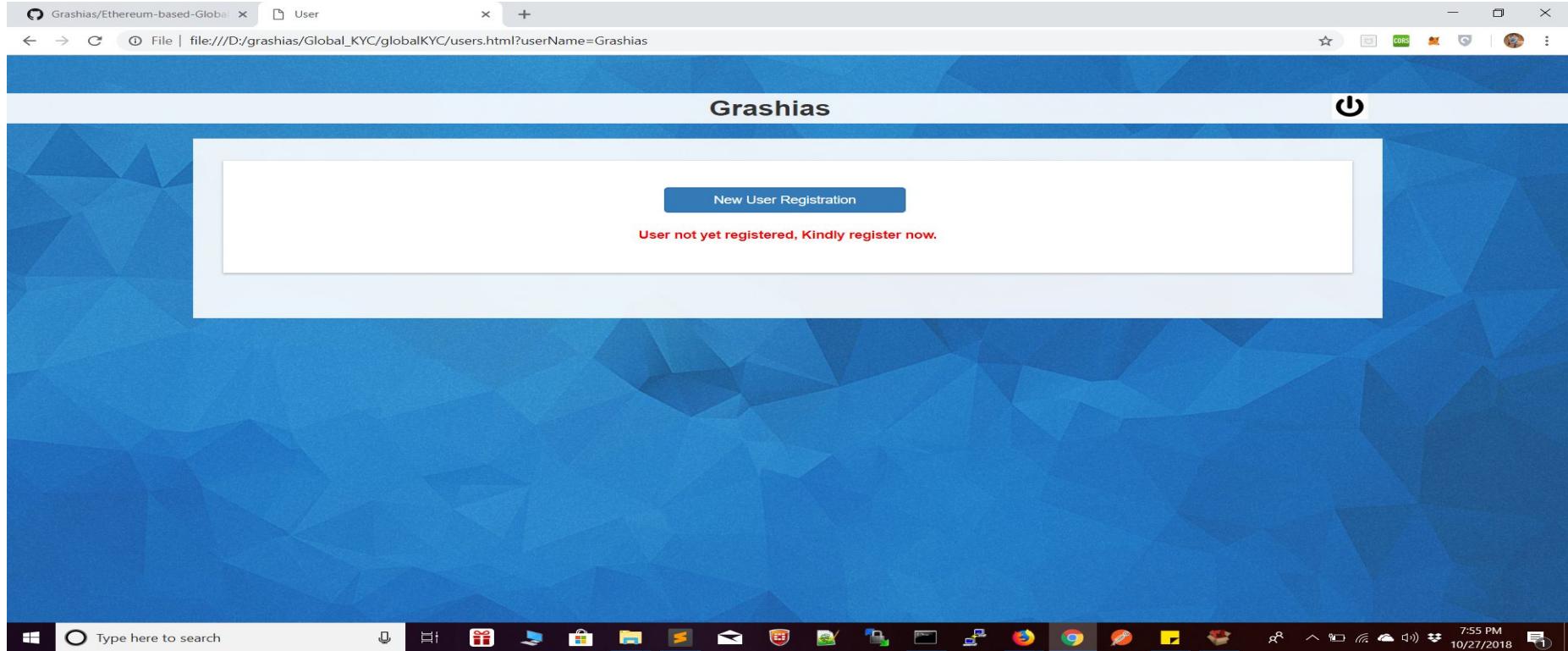
Registration

- Also store the seed phrase and password in the alert box in case you want to retrieve the credentials.
- Once done user log in to the portal.



User Portal

- User will be alerted for new registration if not registered with the portal.



User Registration Portal

- User ref id will be auto generated and user wallet address will be fetched.
- User should fill out other required details

The screenshot shows a web browser window titled "Grashias/Ethereum-based-Global" with the URL "file:///D:/grashias/Global_KYC/globalKYC/users.html?userName=Grashias". The main content area is titled "Grashias" and displays a registration form. The form includes the following fields:

| | |
|-------------|--|
| User ref ID | 0x73e428c6a00fad09ef48ed060592615eac8f8ece |
| Name | DOB |
| Gender | Blood group |
| Phone No | Address |
| Passbook No | VoterId No |
| Passport No | Aadhar No |

At the bottom of the form are two blue buttons: "Next" and "Exit".

The taskbar at the bottom of the screen shows various pinned icons, including Microsoft Edge, File Explorer, Task View, Settings, Control Panel, File History, Task Scheduler, Task Manager, and File Explorer. The system tray shows the date and time as "7:55 PM 10/27/2018".

Filled form

- User has filled in with all the required details.

The screenshot shows a web browser window with the title bar "Grashias/Ethereum-based-Global" and "User". The address bar displays "File | file:///D:/grashias/Global_KYC/globalKYC/users.html?userName=Grashias". The main content area is titled "Grashias" and contains a form for user registration. The form fields and their values are:

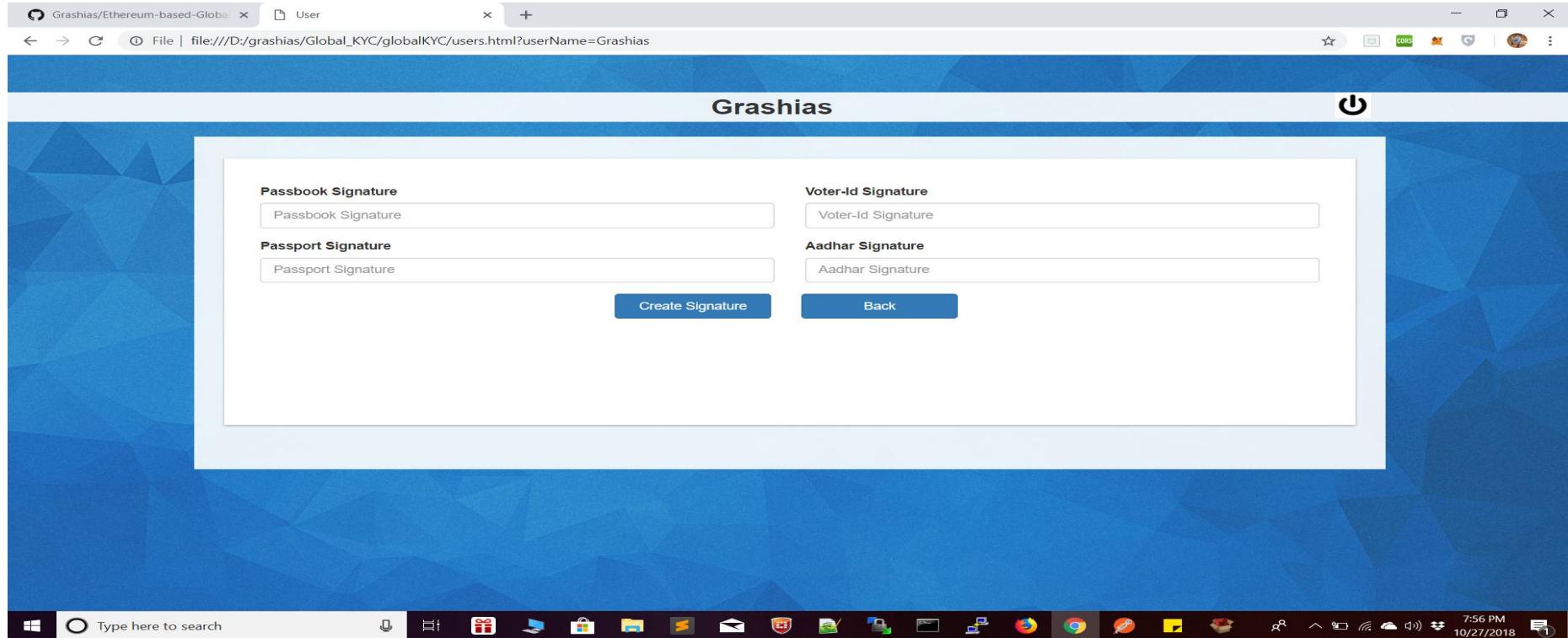
| | | | |
|-------------|----------------|---------------------|--|
| User ref ID | GKYC-GR-800523 | User Wallet Address | 0x73e428c6a00fad09ef48ed060592615eac8f8ece |
| Name | Grashias I M | DOB | 14/02/1993 |
| Gender | Male | Blood group | O +ve |
| Phone No | 0123456789 | Address | India |
| Passbook No | PB123456 | VoterId No | VT123456 |
| Passport No | PP123456 | Aadhar No | AA123456 |

At the bottom of the form are two buttons: "Next" and "Exit".

The taskbar at the bottom of the screen includes icons for File Explorer, Microsoft Edge, and other system utilities. The system tray shows the date and time as "7:56 PM 10/27/2018".

ID signature creation

- User clicks the Create signature and the signatures are created using some unique details with respect to the user wallet address.



ID signature created

- Signatures will be created with interacting the web3 modules.

Grashias

Passbook Signature
0x76bed55ebbb580420cd4058ce7c0d35884a6a415d3ef6bd1e9183178dcde'

Voter-ID Signature
0xdedf81c79b3ca6d80c1a09db9d8c9afb41f80b71c57b1b3d03bb6d8e7c16cc

Passport Signature
0x90555502dfbad3612b73b97dacf6ffcb60787113034e0f6dc3483cfb725226d:

Aadhar Signature
0x233c738538c373856b06576572af67db237d68dd0b0afcdb3da833874a28a

Register Back

Signatures received

Grashias/Ethereum-based-Global KYC

Type here to search

File:///D:/grashias/Global_KYC/globalKYC/users.html?userName=Grashias

7:56 PM 10/27/2018

User registration Error

- User should load some ethers into their wallet address displayed in the previous page.

The screenshot shows a web browser window titled "Grashias/Ethereum-based-Global" with the URL "User" and "File:///D:/grashias/Global_KYC/globalKYC/users.html?userName=Grashias". The main content area displays a registration form for "Grashias". The form includes fields for "Passbook Signature" (containing the value "0x76bed55ebbb580420cd4058ce7c0d35884a6a415d3ef6bd1e9183178dcde"), "Voter-Id Signature" (containing the value "0xdedf81c79b3ca6d80c1a09db9d8c9afb41f80b71c57b1b3d03bb6d8e7c16cc"), "Passport Signature" (containing the value "0x90555502dfbad3612b73b97dacf6ffcb60787113034e0f6dc3483cfb725226d"), and "Aadhar Signature" (containing the value "0x233c738538c373856b06576572af67db237d68dd0b0afcdb3da833874a28a"). Below these fields are two blue buttons: "Register" and "Back". A red error message at the bottom center states "insufficient funds for gas * price + value". The browser's taskbar at the bottom shows various pinned icons and the system tray on the right.

User registration with Ecosystem

- Once user is registered it will display the transaction hash, click on it to check whether the transaction is success.

The screenshot shows a web browser window titled "Grashias/Ethereum-based-Global" with a sub-tab "User". The URL in the address bar is "file:///D:/grashias/Global_KYC/globalKYC/users.html?userName=Grashias". The main content area displays a "Grashias" logo at the top right. Below it, there are four input fields for signatures:

- Passbook Signature:** 0x76bed55ebbb580420cd4058ce7c0d35884a6a415d3ef6bd1e9183178dcde'
- Voter-Id Signature:** 0xdedf81c79b3ca6d80c1a09db9d8c9afb41f80b71c57b1b3d03bb6d8e7c16cc
- Passport Signature:** 0x905555502dfbad3612b73b97dacf6ffcb60787113034e0f6dc3483cfb725226d:
- Aadhar Signature:** 0x233c738538c373856b06576572af67db237d68dd0b0afcdb3da833874a28a

At the bottom of the form are two buttons: "Register" and "Back". Below the buttons, a message reads: "Check your transaction status : 0x5b438cbb92d92c79517921069a24aa4e4ed88d0404d5f9683b0f08b26ff14d8b".

The browser's taskbar at the bottom includes icons for File Explorer, Mail, Edge, and Google Chrome. The system tray shows the date and time as "7:59 PM 10/27/2018".

Transaction verification

- Transaction verification takes some time as it connects to ethereum network, so be patient until it returns success/failed.

User LogIn

- User can re-login now and check whether he/she has been registered.
- If registered it loads the details from the Ethereum smartcontract.

The screenshot shows a web browser window with three tabs:

- Grashias/Ethereum-based-Global
- User
- Rinkeby Transaction 0x5b438ccb

The main content area displays a form titled "Grashias" with the following fields:

| | |
|-------------------------------|---|
| User ref ID GKYC-GR-800523 | User Wallet Address 0x73e428c6a00fad09ef48ed060592615eac8f8ece |
| Name Grashias I M | DOB 14/02/1993 |
| Gender Male | Blood group O +ve |
| Phone No 0123456789 | Address India |
| Passbook No PB123456 | VoterId No VT123456 |
| Passport No PP123456 | Aadhar No AA123456 |

A blue "Next" button is located at the bottom of the form.

The taskbar at the bottom of the screen includes icons for File Explorer, Mail, and various system icons. The system tray shows the date and time as 8:00 PM on 10/27/2018.

User LogIn

- ID verification status also will be displayed through which he/she knows whether verified by the validators.

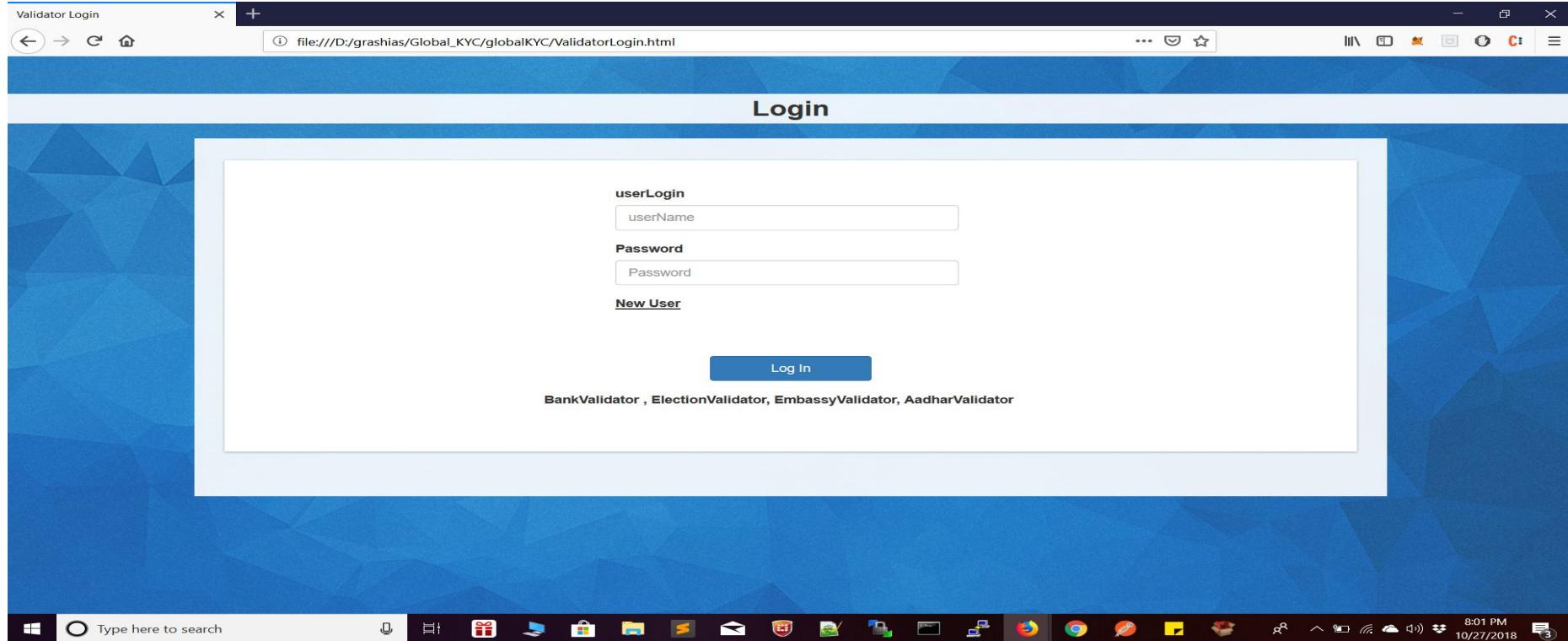
The screenshot shows a web browser window with two tabs: "Grashias/Ethereum-based-Global" and "Rinkeby Transaction 0x5b438ccb". The main content area displays user information for "Grashias".

| Signature Type | Value |
|-----------------------|--|
| Passbook Signature | 0x76bed55ebbb580420cd4058ce7c0d35884a6a415d3ef6bd1e9183178dcde† |
| Passport Signature | 0x90555502dfbad3612b73b97dacf6ffcb60787113034e0f6dc3483cfb725226d; |
| Passbook Verification | false |
| Passport Verification | false |
| Voter-ID Signature | 0xdedf81c79b3ca6d80c1a09db9d8c9afb41f80b71c57b1b3d03bb6d8e7c16cc |
| Aadhar Signature | 0x233c738538c373856b06576572af67db237d68dd0b0afcdb3da833874a28a |
| Voter-ID Verification | false |
| Aadhar Verification | false |

At the bottom left is a blue "Back" button. The browser's address bar shows the URL: "file:///D:/grashias/Global_KYC/globalKYC/users.html?userName=Grashias". The taskbar at the bottom includes icons for File Explorer, Mail, and various other applications, along with system status icons like battery level and signal strength.

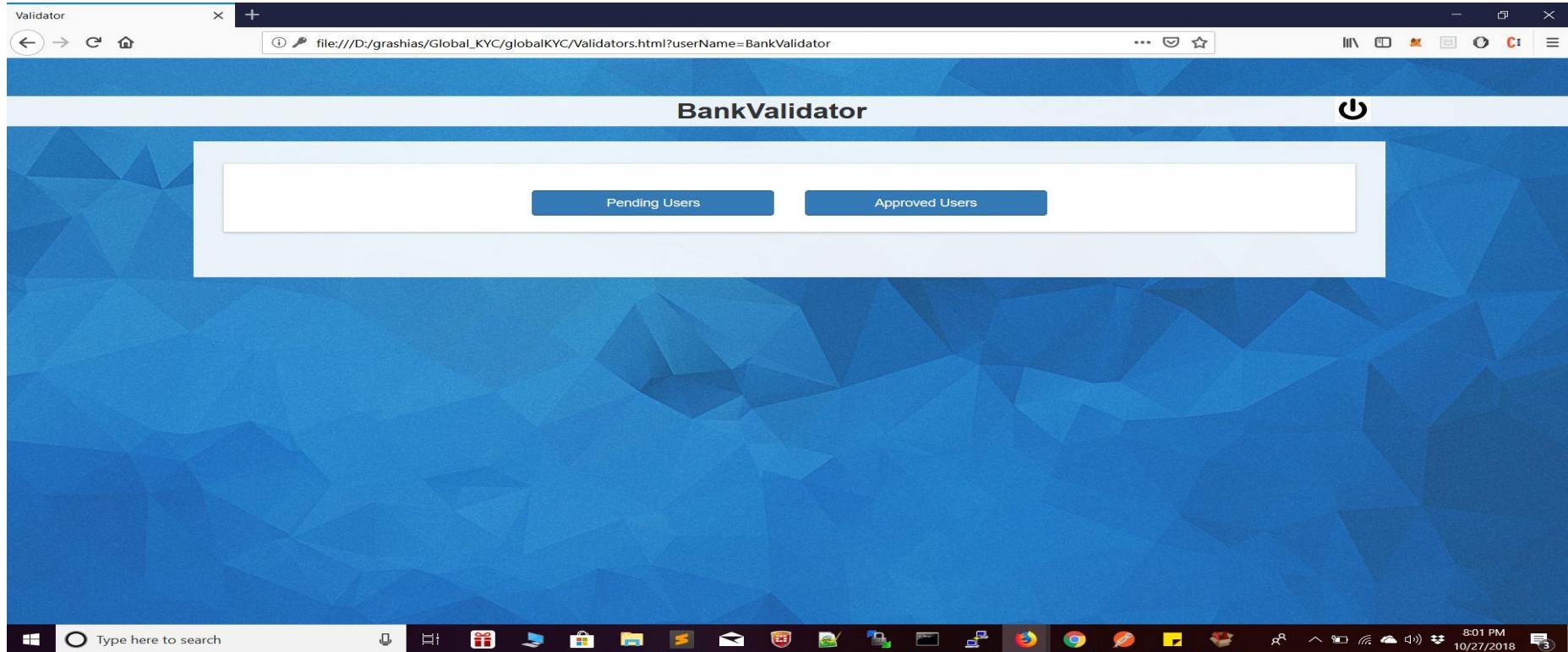
Validator LogIn

- Validator LogIn page.



Validator Portal

- Validator portal has pending users list and verified users list.



Pending Users

- Registered and pending User details list will be fetched from the smartcontract.
- Users ID status will show false.

The screenshot shows a web browser window titled "BankValidator". The URL in the address bar is "file:///D:/grashias/Global_KYC/globalkYC/Validators.html?userName=BankValidator". The main content area displays a table of user data and two input fields for validation.

| Select | User ref ID | User Wallet Address | Name | DOB | Gender | Blood group | Phone no | Address | ID No | ID Status |
|-------------------------------------|----------------|--|--------------|------------|--------|-------------|------------|---------|----------|-----------|
| <input checked="" type="checkbox"/> | GKYC-GR-800523 | 0x73e428c6a00fad09ef48ed060592615eac8f8ece | Grashias I M | 14/02/1993 | Male | O +ve | 0123456789 | India | PB123456 | false |

Below the table, there are two input fields:

- Name:** A text input field labeled "Name".
- DOB:** A text input field labeled "DOB".

At the bottom of the form are two buttons:

- A blue "Validate" button.
- A blue "Back" button.

The browser's taskbar at the bottom shows various pinned icons, including File Explorer, Microsoft Edge, and File History.

Validation Page

Validator x +

file:///D:/grashias/Global_KYC/globalkYC/Validators.html?userName=BankValidator

BankValidator

ID Status

false 0x76bed55ebbb580420cd4058ce7c0d35884a6a415d3ef6bd1e9183178dcde18783c07b54e1b2645f0f43aa9c9271970f55e761e7b370da3a704ab035a4ebe03531c

Name DOB

ID No

Validate Back

Type here to search

8:02 PM 10/27/2018

Validation

- Validator enters the details from their end and verifying with the registered details in the smartcontract.

The screenshot shows a web browser window titled "Validator" with the URL "file:///D:/grashias/Global_KYC/globalKYC/Validators.html?userName=BankValidator". The main content area is titled "BankValidator". It displays a table with user information and several input fields for validation.

| Select | User ref ID | User Wallet Address | Name | DOB | Gender | Blood group | Phone no | Address | ID No | ID Status |
|-------------------------------------|----------------|--|--------------|------------|--------|-------------|------------|---------|----------|-----------|
| <input checked="" type="checkbox"/> | GKYC-GR-800523 | 0x73e428c6a00fad09ef48ed060592615eac8f8ece | Grashias I M | 14/02/1993 | Male | O +ve | 0123456789 | India | PB123456 | false |

Below the table, there are three input fields:

- Name:** Grashias I M
- DOB:** 14/02/1993
- ID No:** PB123456

At the bottom of the form are two buttons: "Approve" and "Back". A green message at the bottom right states: "Signature is valid with the user address".

The taskbar at the bottom of the screen includes icons for File Explorer, Task View, Microsoft Edge, and other system utilities. The date and time in the bottom right corner are 8:12 PM on 10/27/2018.

Approval

- Once user is verified validator will approve that user.
- It returns the transaction hash, click on and check for the status.

The screenshot shows a web browser window titled "Validator" with the URL "file:///D:/grashias/Global_KYC/globalKYC/Validators.html?userName=BankValidator". The main content area is titled "BankValidator". It displays a table with a single row of data:

| Select | User ref ID | User Wallet Address | Name | DOB | Gender | Blood group | Phone no | Address | ID No | ID Status |
|-------------------------------------|----------------|--|--------------|------------|--------|-------------|------------|---------|----------|-----------|
| <input checked="" type="checkbox"/> | GKYC-GR-800523 | 0x73e428c6a00fad09ef48ed060592615eac8f8ece | Grashias I M | 14/02/1993 | Male | O +ve | 0123456789 | India | PB123456 | false |

Below the table, there are input fields for "Name" (Grashias I M) and "ID No" (PB123456). At the bottom are two buttons: "Validate" and "Back". A message at the bottom of the form reads: "Check your transaction status : 0x911befba59e8e26ec99794b85b1810aa7f83da23a9ab9934c95eb55b993bfa95".

The taskbar at the bottom of the screen includes icons for File Explorer, Microsoft Edge, and other system utilities. The system tray shows the date and time as 8:15 PM on 10/27/2018.

Transaction verification

- Transaction verification takes some time as it connects to ethereum network, so be patient until it returns success/failed.

The screenshot shows a web browser window displaying the Etherscan Testnet interface. The URL in the address bar is <https://rinkeby.etherscan.io/tx/0x911befba59e8e26ec99794b85b1810aa7f83da23a9ab9934c95eb55b993bfa95>. The page title is "Rinkeby Transaction 0x911befba59e8e26ec99794b85b1810aa7f83da23a9ab9934c95eb55b993bfa95". The main content area shows transaction details for a Rinkeby Testnet transaction. The transaction hash is 0x911befba59e8e26ec99794b85b1810aa7f83da23a9ab9934c95eb55b993bfa95. The TxReceipt Status is Success. The Block Height is 3234263 (8 Block Confirmations). The TimeStamp is 2 mins ago (Oct-27-2018 12:13:06 PM +UTC). The From address is 0xa58fc2da188289d410cb38f03b65d3b77ab963e0. The To address is Contract 0x1a7a43ff1b1463f3dd49edf2b7c1fcba6abe47a5. The Value is 0 Ether (\$0.00). The Gas Limit is 200000. The Gas Used By Transaction is 64715. The Gas Price is 0.00000003 Ether (30 Gwei). The Actual Tx Cost/Fee is 0.00194145 Ether (\$0.000000). The Nonce & {Position} is 2 | {0}. The page also includes a navigation bar with links for HOME, BLOCKCHAIN, TOKEN, and MISC, and a search bar at the top right.

| Field | Value |
|--------------------------|--|
| TxHash: | 0x911befba59e8e26ec99794b85b1810aa7f83da23a9ab9934c95eb55b993bfa95 |
| TxReceipt Status: | Success |
| Block Height: | 3234263 (8 Block Confirmations) |
| TimeStamp: | 2 mins ago (Oct-27-2018 12:13:06 PM +UTC) |
| From: | 0xa58fc2da188289d410cb38f03b65d3b77ab963e0 |
| To: | Contract 0x1a7a43ff1b1463f3dd49edf2b7c1fcba6abe47a5 |
| Value: | 0 Ether (\$0.00) |
| Gas Limit: | 200000 |
| Gas Used By Transaction: | 64715 |
| Gas Price: | 0.00000003 Ether (30 Gwei) |
| Actual Tx Cost/Fee: | 0.00194145 Ether (\$0.000000) |
| Nonce & {Position}: | 2 {0} |

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Verified Users

- Validator now clicks the verified users and approved user details list will be fetched from the smartcontract.
 - You can see the ID status as true.

The screenshot shows a web browser window titled "Rinkeby Transaction 0x911befb" with the URL "file:///D:/grashias/Global_KYC/globalKYC/Validators.html?userName=BankValidator". The main content is a table titled "BankValidator" with the following data:

| User ref ID | User Wallet Address | Name | DOB | Gender | Blood group | Phone no | Address | ID No | ID Status |
|----------------|--|--------------|------------|--------|-------------|------------|---------|----------|---------------|
| GKYC-GR-800523 | 0x73e428c6a00fad09ef48ed060592615eac8f8ece | Grashias I M | 14/02/1993 | Male | O +ve | 0123456789 | India | PB123456 | true 0x76bed5 |

At the bottom of the table is a navigation bar with arrows and a "Back" button.

Verified Users

Validator X Rinkeby Transaction 0x911beftb +

file:///D:/grashias/Global_KYC/globalKYC/Validators.html?userName=BankValidator

BankValidator

ID Status ID Signature

| | | |
|---|------|--|
| i | true | 0x76bed55ebbb580420cd4058ce7c0d35884a6a415d3ef6bd1e9183178dcde18783c07b54e1b2645f0f43aa9c9271970f55e761e7b370da3a704ab035a4ebe0353 |
|---|------|--|

< >

Back

This screenshot shows a web browser window titled 'Rinkeby Transaction 0x911beftb'. The URL in the address bar is 'file:///D:/grashias/Global_KYC/globalKYC/Validators.html?userName=BankValidator'. The main content area displays a 'BankValidator' interface. At the top, there are two sections: 'ID Status' and 'ID Signature'. Below these sections is a table with one row. The first column contains an info icon, the second column contains the value 'true', and the third column contains a long hex string: '0x76bed55ebbb580420cd4058ce7c0d35884a6a415d3ef6bd1e9183178dcde18783c07b54e1b2645f0f43aa9c9271970f55e761e7b370da3a704ab035a4ebe0353'. Below the table are navigation arrows ('<' and '>') and a 'Back' button. The background of the browser window has a blue geometric pattern.

Type here to search

8:16 PM 10/27/2018

THANK YOU