ITU DIGITAL FINANCIAL SERVICES BLOCKCHAIN SECURE AUTHENTICATION APPLICATION CHALLENGE

Session 1 : ITU Application Challenge Bootcamp

Development Requirement

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AGENDA

1. Objective
2. Infrastructure Information
3. Application Challenge Registration
4. Registration Process & Timeline
5. BSA Software Components (Standard)
6. Onboarding Requirement (Standard)
7. Application Challenge Deployment Objective
8. Application Challenge Deployment Task
9. Application Challenge Requirements
10. Task 1 – 4 Function Table
11. Application Integration requirements
12. Authentication Process
13. Onboarding Screen Flow
14. Requirement Summary
15. Resource Information

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1. ITU APPLICATION CHALLENGE OBJECTIVE

The ITU BSA Application Challenge aims to promote the utilization of Blockchain Secure Authentication (BSA) in digital financial services applications to address existing insecurities in authentication processes within DFS.

The Challenge motivates developers to cultivate skills necessary for deploying BSA authentication, advocating the replacement of conventional passwords with more robust authentication protocols grounded in blockchain technology..

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2. ITU APPLICATION CHALLENGE INFRASTRUCTURE

- Deployed to attract developers and regulators on strong authentication DFS applications using Blockchain Secure Authentication.
- Participant of the ITU Application Challenge will be provided with the following resources
  - Client Key and API endpoints URL for Development Integration
  - Web SDK Documentation – Guideline for Participant's on Web Application development integration with BSA Web SDK
  - Mobile SDK Documentation – Guideline for Participant's on Mobile Native Application development integration with BSA Mobile Native SDK
  - Other's Resource Documentation – ITU Application Challenge App Manual Guide, Demo Application, FCM Setup & Configuration
- Server provisioning is provided for Participants on first come first serve basis. In general Participant are encourage to develop the Application Challenge in their own private development area

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3. ITU APPLICATION CHALLENGE REGISTRATION PROCESS

Step 1

Participant

I. Study Information Application Challenge in ITU website
II. Register members and team members in Zindi platform
III. Create Team in Zindi platform
IV. If required, request for Server Provision
V. Participant need to send FCM Json File and app package name to ITU

Step 2

ITU Admin

I. Receive request from Participant
II. Verify the request
III. Approve or Reject Application
IV. Provide Client Key Details
V. If required, Provide Server Provision Detail

Step 3

Participant

I. Receive email from ITU
- Welcome notes
- Participant's details
- Client Key & API Server URL
- Web SDK Integration Guideline Documentation
- Mobile SDK Integration Guideline Documentation
- Other's Resources link
- FNSPay Demo (android)

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4. ITU APPLICATION CHALLENGE PROCESS

Item	Activity	LInk	Remarks
1.	Browse Application Challenge requirement in ITU website :and Participants registration	https://www.itu.int/en/ITU-T/dfs/seclab/Pages/challenge.aspx	Closed 30/04/2024
2.	Register Team	https://zindi.africa/competitions/itu-digital-financial-services-blockchain-secure-authentication-application-challenge	Closed 21/5/2024
3.	ITU will approve or reject participation registration		After registration
4.	Create a team (minimum with 1 team member) in the Zindi platform		After approval
5.	**Registration will not be a valid process with out a Team Formation.**		INFO
6.	Team registration complete and approve, ITU will provide a Client Key, key to be used to identify the Team and approved to use BSA Mobile and Web SDK and backend API access		INFO
7.	Team requesting server provision, ITU will provide User information through email for server access and basic management		First come basis Closed for registration
8.	Team are encourage to attend Application Bootcamp. Information on the Bootcamp session can be found here:	https://www.itu.int/en/ITU-T/dfs/seclab/Pages/challenge.aspx	INFO
9.	Team to start development for Web and Mobile (Android) application.		After Bootcampq

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4. ITU APPLICATION CHALLENGE PROCESS

Item	Activity	LInk	Remarks
10.	Q&A Sessions for Support and Queries issues	https://zindi.africa/competitions/itu-digital-financial-services-blockchain-secure-authentication-application-challenge/discussions	Zindi Discussion Forum
11	Application Challenge Submission	https://zindi.africa/competitions/itu-digital-financial-services-blockchain-secure-authentication-application-challenge/submissions	**Latest 1/8/2024 11.59pm** GMT

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4. ITU APPLICATION CHALLENGE TIMELINE

CHALLENGE TIMELINE

1. Registration: 04/04/2024 - 30/04/2024
2. Bootcamps:
   - Session 1: 13 – 14 May 2024 09:00–11:30 CEST
   - Session 2: 20 – 21 May 2024 14:30–17:00 CEST
3. Team Formation Close : 21/5/2024
4. Q & A Session 1: 24 June 2024 09:00–10:00CEST (Q&A session)

CHALLENGE TIMELINE

5. Competition: 13/05/2024 – 01/08/2024
6. Submission : 01/08/2024 : 23:59 GMT.
7. Preliminary evaluation: August, 2024
5. Jury Evaluation: 25/08/2024 – 30/09/2024
6. Awards: 13 October 2024
7. Showcase: 14 – 24 October 2024

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5. BSA SOFTWARE COMPONENTS (STANDARD)

Database

BSA KNCHAIN HYBRID ENGINE

Web Application

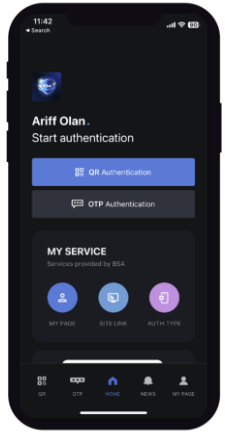
BSA Web SDK

Mobile Application

BSA Mobile SDK

Customer Application

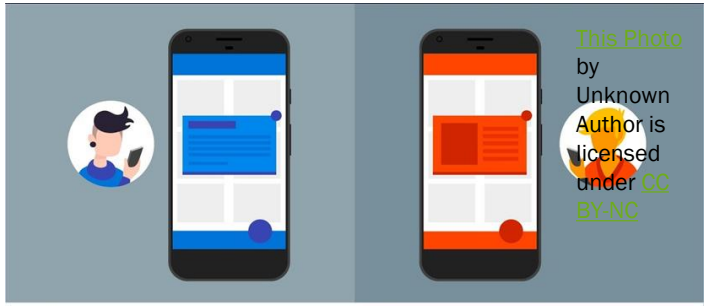
SDK for Integration



BSA Authenticator App

BSA standard Authenticator

BSA Web Admin Portal



Firebase In-App Messaging

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5. BSA SOFTWARE COMPONENTS AND PROCESSES (STANDARD)

- The general components for BSA Passwordless Integration

1. Customer Application – Web or/and Mobile Application to be integrated with BSA SDK
2. BSA Authenticator – BSA Authenticator App or Customer White Label integrated with BSA Mobile SDK
3. Integration development work– Actual development work on Customer's Application for integration with BSA Web SDK or/and BSA Mobile SDK
4. User Onboarding Process– Register User, Register Device and Site Link on Mobile App (User and Device registration and application Site link in BSA Authenticator App or Customer White Label integrated with BSA Mobile SDK)
5. Firebase Cloud Messaging – messaging service deployed for Mobile App communication

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6. BSA ONBOARDING PROCESS (STANDARD)

1. USER ONBOARDING

Register User for BSA:

1. User to download BSA App or Customer Mobile App(@BSA Auth) for User and Device information registration.
2. Users to Site Link Web Applications in Authenticator App - BSA App or Customer Mobile App(@BSA Auth)
- (User to approve Login request when prompted in User Mobile Device)

2. SYSTEM ONBOARDING

System Integration

1. Customer Web Application – development to integrate with BSA Web SDK for Passwordless login.
2. Customer Mobile Application – development to integration with BSA Mobile SDK for BSA Onboarding, Passwordless Login, Authentication Approval / Reject)

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7. ITU APPLICATION CHALLENGE BSA PASSWORDLESS APPLICATION INTEGRATION DEPLOYMENT OBJECTIVE

Objective:

- To develop or submit an existing fully functional **digital wallet application** that is develop in both **web** and **mobile platforms**,
- The application will utilize Passwordless BSA as the **sole authentication** method.
- The same **mobile application** will serve as the user's onboarding and authenticator for Passwordless BSA.

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8. ITU APPLICATION CHALLENGE BSA PASSWORDLESS APPLICATION INTEGRATION DEPLOYMENT TASK

The problem statement comprises of four tasks, all participants are expected to complete all tasks. The tasks are as follows:

Task 1: Develop or utilize their own existing DWA

Task 2: Integrate Passwordless Login Authentication for user login

Task 3: Integrate Passwordless Access Control Authentication for sections including but not limited to:

a. User profile page
b. Account balances page
c. Transactions history page
d. User account deletion
e. Device de-registration

Task 4: Integrate Passwordless Transactions Authentication into wallet reload and wallet-to-wallet transfers.

Required Wallet Functionalities listed in the guideline must also be adhered and made available in the application

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9. ITU APPLICATION CHALLENGE BSA PASSWORDLESS APPLICATION DEVELOPMENT – REQUIREMENTS

Development Requirement

1. Client Key Information
2. Server Provision Information
3. Participant Mobile App Package Name and FCM Json File
4. Resource document on Web and Mobile SDK

Web Application Requirement

1. Web Application Integration development with Web SDK
2. To provide Login Method
   i. Userid
   ii. QR Code (scanned from Mobile App)
   iii. OTP
   iv. TOTP
3. Proper Error Code Handling
4. Proper Transaction and Session Timeout

Mobile Application Requirement

1. Mobile Application Integration development with Mobie SDK
2. User Onboarding process
3. Web Site Link registration
4. Device Registration (Lost/New Device) / Device De-registration
5. Action to Approve or Reject Authentication request from BSA
6. To provide Mobile App Login Method
   i. Userid
7. To provide Web Login method
   i. QR Scan
8. Proper Error Code Handling
9. Proper Transaction and Session Timeout

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10. ITU APPLICATION CHALLENGE BSA PASSWORDLESS APPLICATION DEVELOPMENT – TASK 1

Task 1	Function Type	Web	Mobile
i.	Intuitive and seamless UI/UX	√	√
ii.	User account registration and deletion	N/A	√
iii.	User login and logout	√	√
iv.	BSA device registration and de-registration	N/A	√
v.	Account balance inquiry	√	√
vi.	User profile page	√	√
vii.	Push notification	√	√
viii.	Transactions history	√	√
ix.	Wallet reload	√	√
x.	Wallet-to-wallet transfers and received	√	√
xi.	Display the participant's organization logo and branding; if not applicable, use a placeholder logo/branding. Ensure the branding is consistent throughout the application.	√	√
xii.	Include guides or hints for first time users to help users navigate the application	√	√
xiii.	Establish a successful connection to the BSA-integrated mobile application through site linking (for the web component of the application	N/A	√

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10. ITU APPLICATION CHALLENGE BSA PASSWORDLESS APPLICATION DEVELOPMENT – TASK 2

Task 2	Function Type	Web	Mobile	Authentication
i.	Passwordless Login Authentication			
	Include a Web login page with four methods of BSA authentication: a. Username b. QR Code c. OTP d. TOTP	√	• In App Login - Username • Web Login- QR Scanner	√
ii.	The application should not use any passwords	√	√	N/A
iii.	The application's access must be restricted both prior to and during the authentication process, allowing access only upon successful completion of authentication	√	√	√
iv.	Implement passwordless BSA integration for web component using Web Software Development Kit (SDK).	√	N/A	√
v.	Implement passwordless BSA integration for mobile component using BSA SDK and Firebase Cloud Messaging (FCM)	N/A	√	√
vi.	Complete the authentication process in under 10 seconds	√	√	√
vii..	Clearly display success and failure messages upon authentication and cancelation	√	√	√

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10. ITU APPLICATION CHALLENGE BSA PASSWORDLESS APPLICATION DEVELOPMENT – TASK 3

Task 3	Function Type	Web	Mobile	Authentication
i.	Access Control Authentication			
	Incorporate passwordless BSA authentication (via biometrics or passcode) for accessing the following functions, including but not limited to: a. User profile page b. Account balance inquiry c. BSA device de-registration d. User account deletion	√ (except item c and d)	√	√
ii.	Restrict access to the specific functions until the authentication process is successfully completed.	√	√	N/A
iii.	Upon successful authentication, enable access to the designated functions.	√	√	N/A
iv.	Complete the authentication process in under 20 seconds, including application function processing	√	√	√
v.	Clearly display success and failure messages upon authentication including cancelation task	√	√	√

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10. ITU APPLICATION CHALLENGE BSA PASSWORDLESS APPLICATION DEVELOPMENT – TASK 4

Task 4	Function Type	Web	Mobile	Authentication
i.	Payment Transaction Authentication			
	Implement passwordless BSA authentication (biometrics or passcode) for the execution of payment transactions, such as: a. Wallet reloads b. Wallet-to-wallet transfers	√	√	√
ii.	Restrict the reloading or transferring of wallet credits until the authentication process is successfully completed	√	√	N/A
iii.	Upon successful authentication, proceed with the complete execution of transactions	√	√	N/A
iv.	Complete the authentication process in under 20 seconds, including application function processing	√	√	√
v.	Clearly display success and failure messages upon authentication including cancelation	√	√	√

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11. ITU APPLICATION CHALLENGE BSA PASSWORDLESS APPLICATION INTEGRATION REQUIREMENTS – DIGITAL WALLET APPLICATION

For Web Application and Mobile Application:

Digital Banking A

(Web Application with BSA Web SDK and Participant Mobile Application with BSA Mobile SDK)

BSA Authenticator

(same application)

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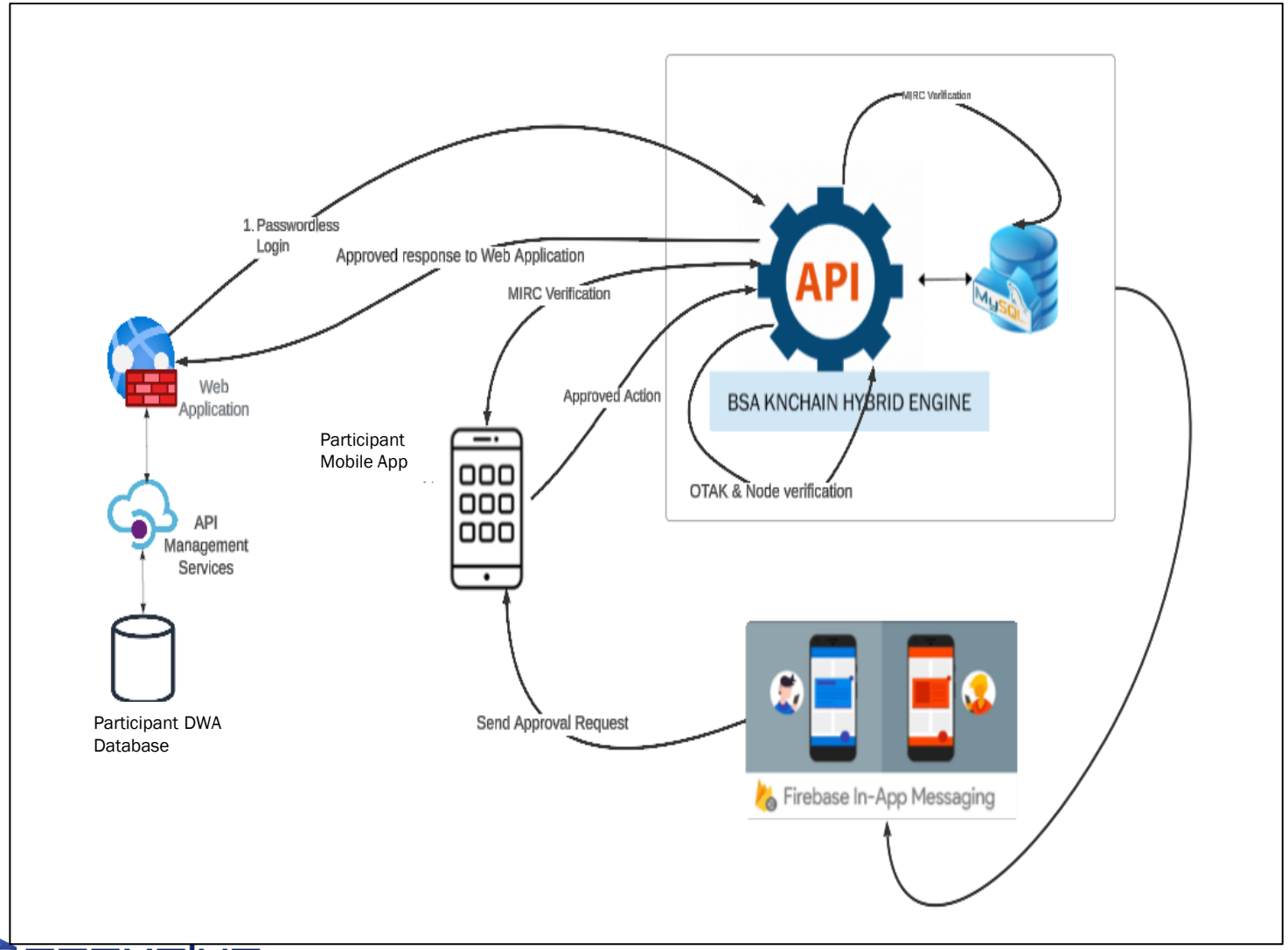
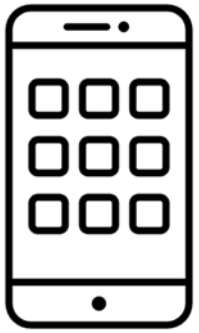
11. ITU APPLICATION CHALLENGE ARCHITECTURE – WEB AND MOBILE APPLICATION

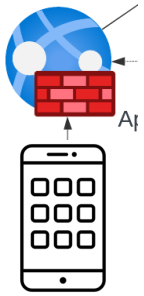


USER ONBOARDING – Participant Mobile App



1. User open Participant Mobile App
2. BSA onboarding on Participant Mobile App
3. Device registration on Participant Mobile App
4. Users to Site Link Web Applications in Participant Mobile App
5. Database Update

SYSTEM ONBOARDING



1. Web Application enhancement with BSA Web SDK
2. Participant Mobile App enhancement with BSA Mobile SDK
3. Participant to share App Package Name and FCM Json File to ITU

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11. ITU APPLICATION CHALLENGE BSA PASSWORDLESS APPLICATION INTEGRATION DEPLOYMENT APPROACH (BSA)

#	Deployment Type	Integration	Authenticator	User Onboarding	Device Register (De-register)	Delete Account	Site Link
1	Web and Mobile Application	• BSA Web SDK for Participant Web Application • BSA Mobile SDK for Participant Mobile App	Participant Mobile App integrated with BSA SDK	Participant Mobile App integrated with BSA SDK	Participant Mobile App integrated with BSA SDK	Participant Mobile App integrated with BSA SDK	Web Application URL link in Participant Mobile App integrated with BSA SDK

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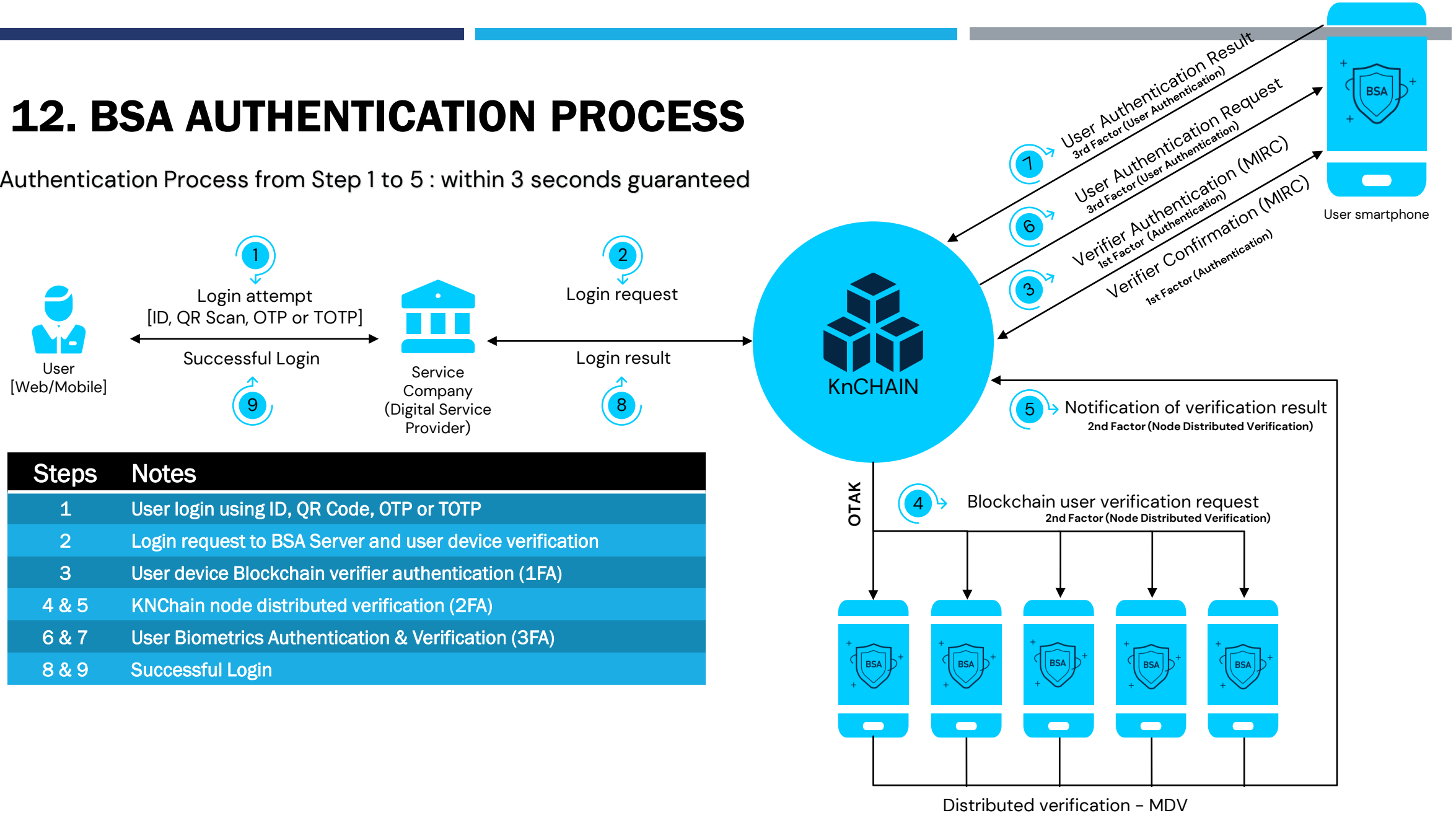
12. BSA AUTHENTICATION PROCESS

Authentication Process from Step 1 to 5 : within 3 seconds guaranteed



Steps	Notes
1	User login using ID, QR Code, OTP or TOTP
2	Login request to BSA Server and user device verification
3	User device Blockchain verifier authentication (1FA)
4 & 5	KNChain node distributed verification (2FA)
6 & 7	User Biometrics Authentication & Verification (3FA)
8 & 9	Successful Login

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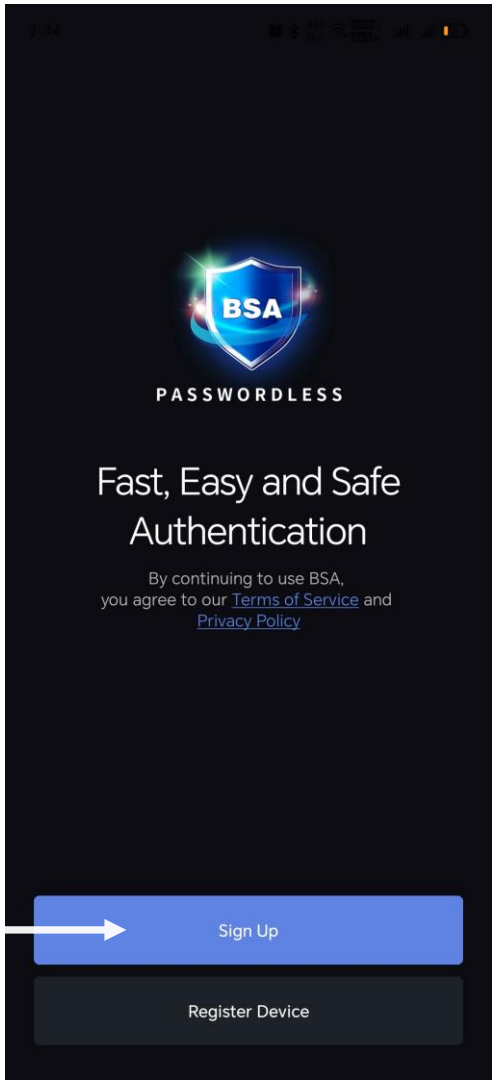
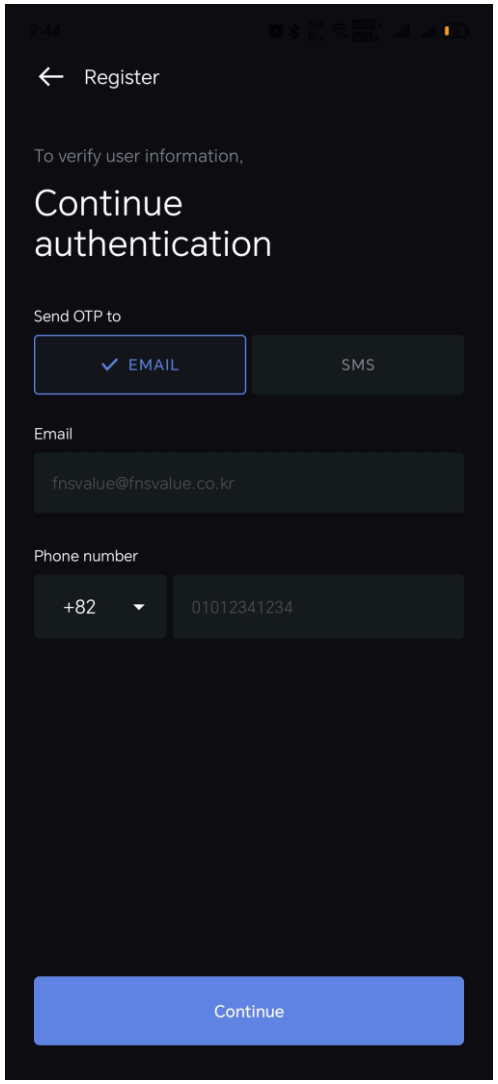
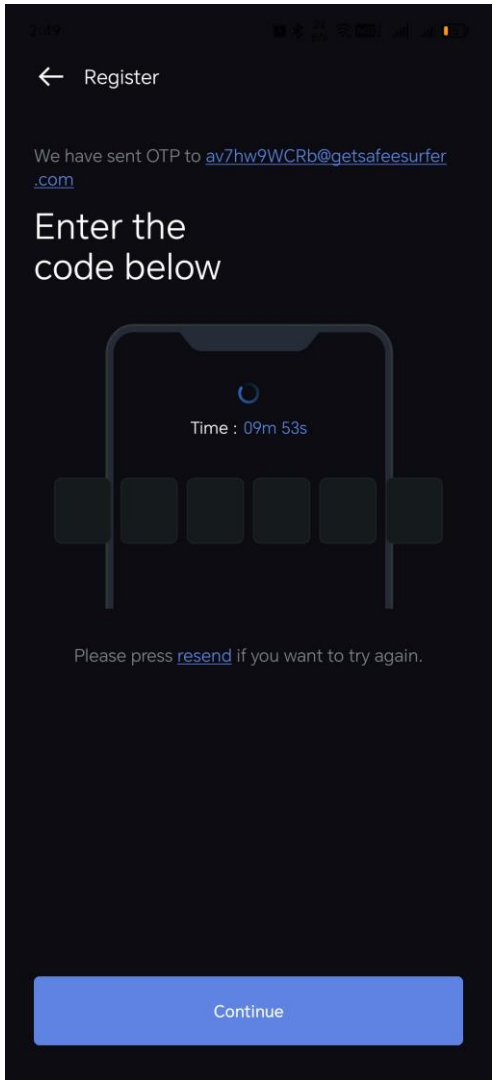
13. ITU APPLICATION CHALLENGE USER ONBOARDING – USER REGISTRATION (BSA STD AUTHENTICATOR APP)







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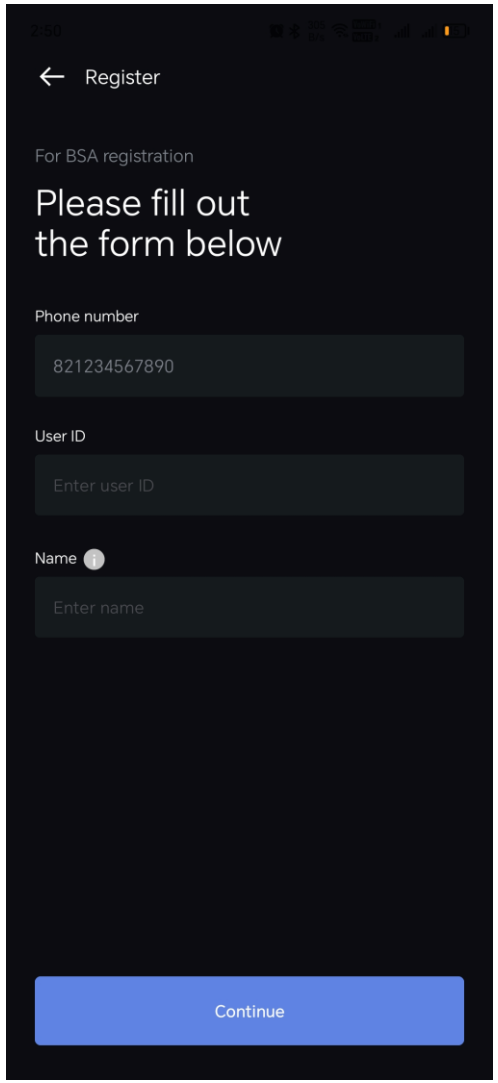
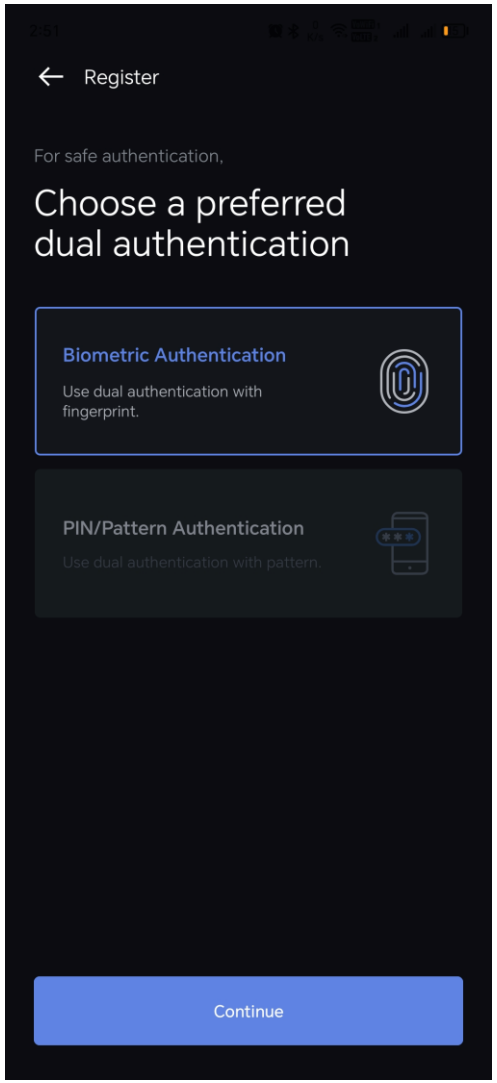
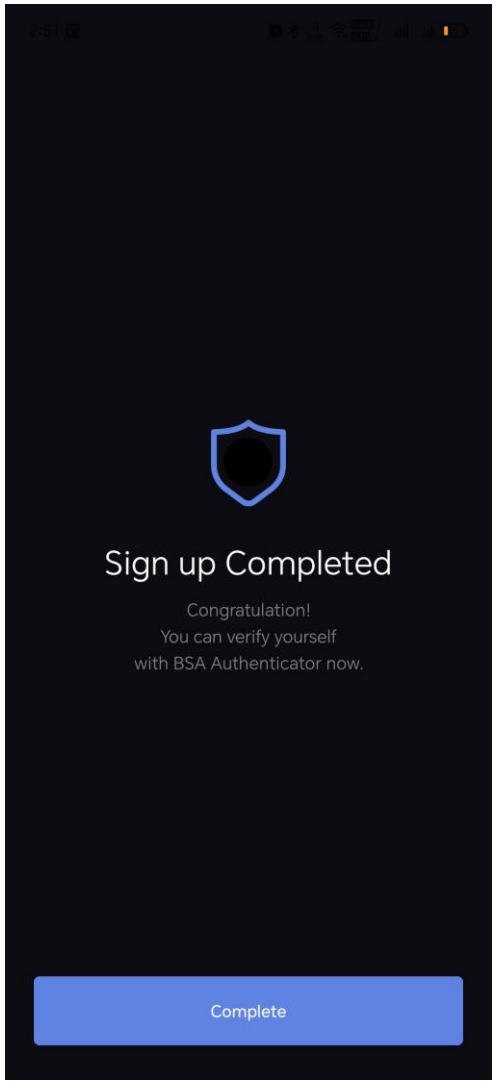
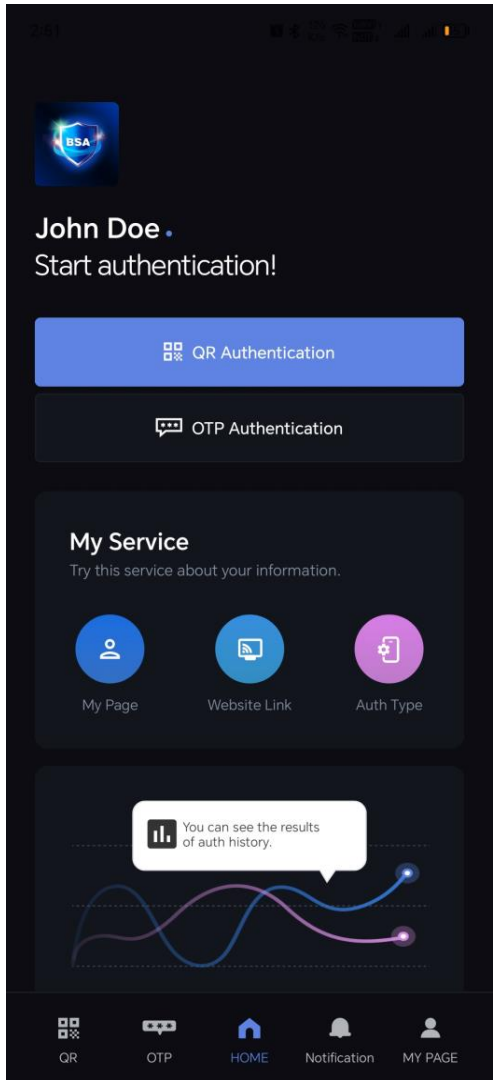
13. ITU APPLICATION CHALLENGE USER ONBOARDING – USER REGISTRATION (BSA STD AUTHENTICATOR APP)









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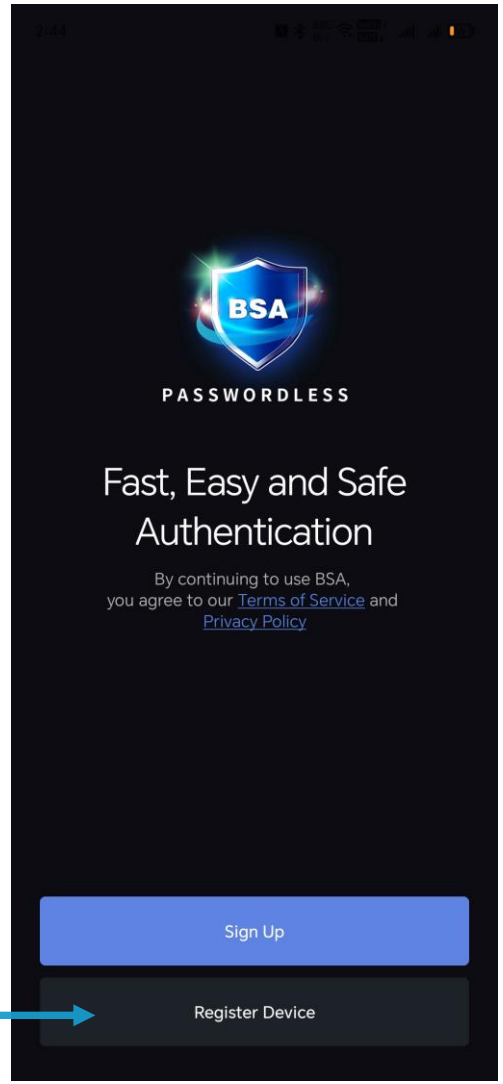
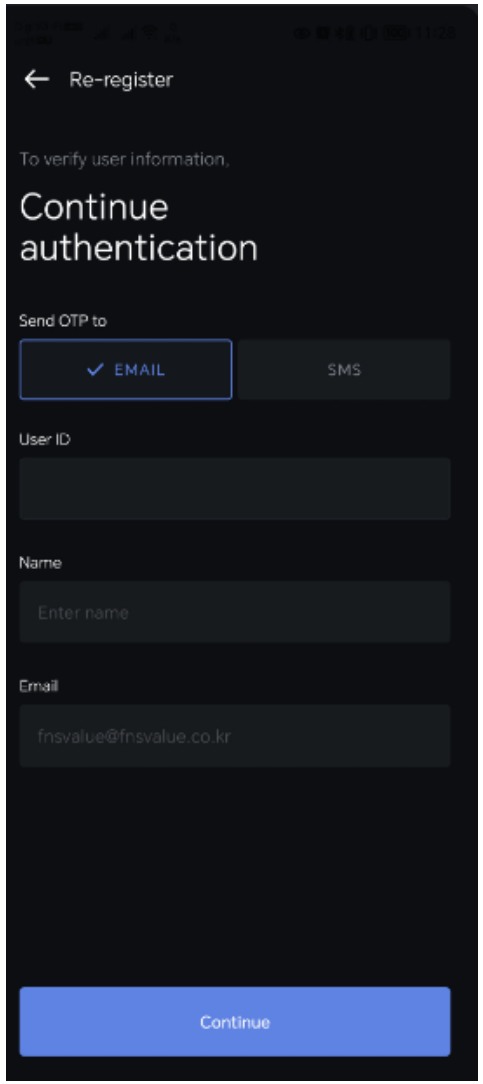
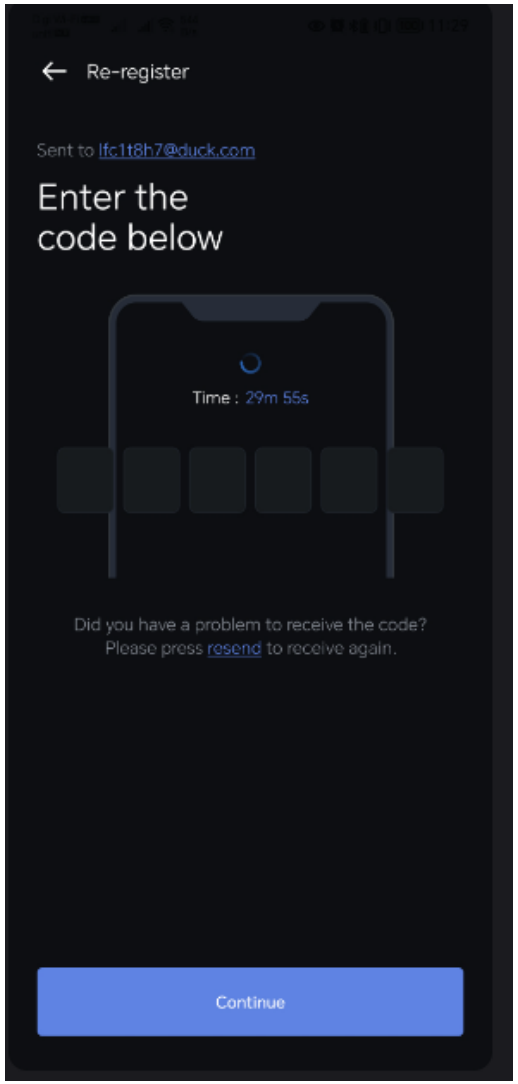
13. ITU APPLICATION CHALLENGE USER ONBOARDING – DEVICE REGISTRATION (LOST OR NEW PHONE - BSA STD AUTHENTICATOR APP)







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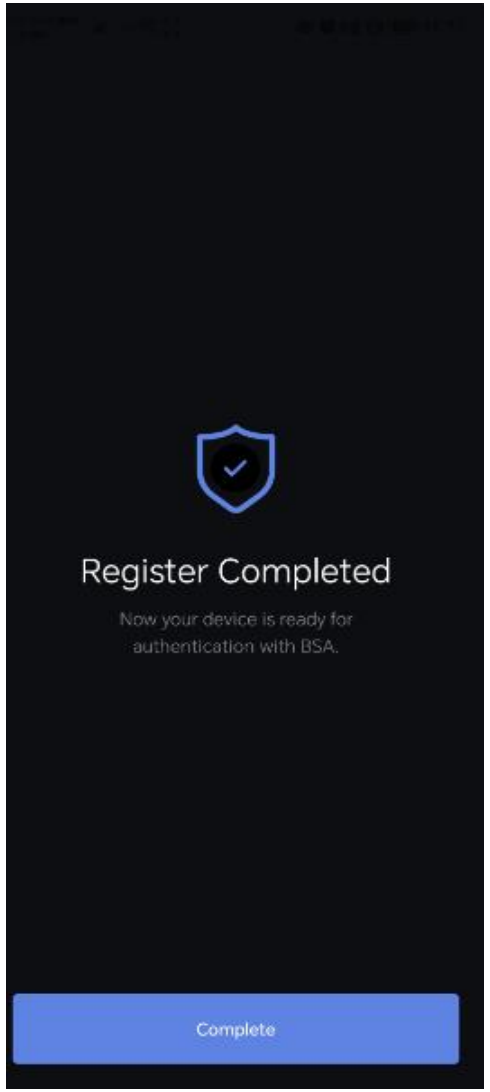
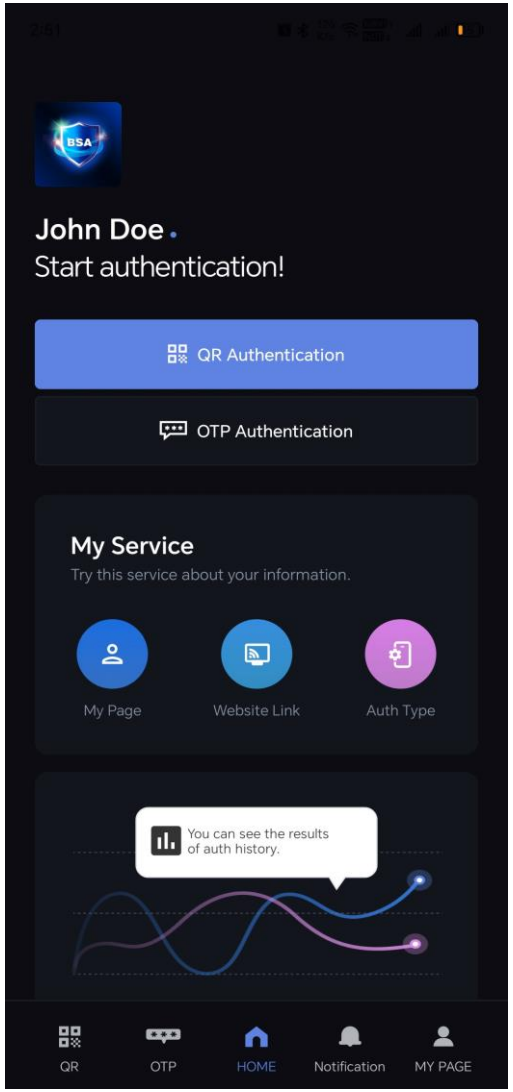
13. ITU APPLICATION CHALLENGE USER ONBOARDING – DEVICE REGISTRATION (BSA STD AUTHENTICATOR APP)





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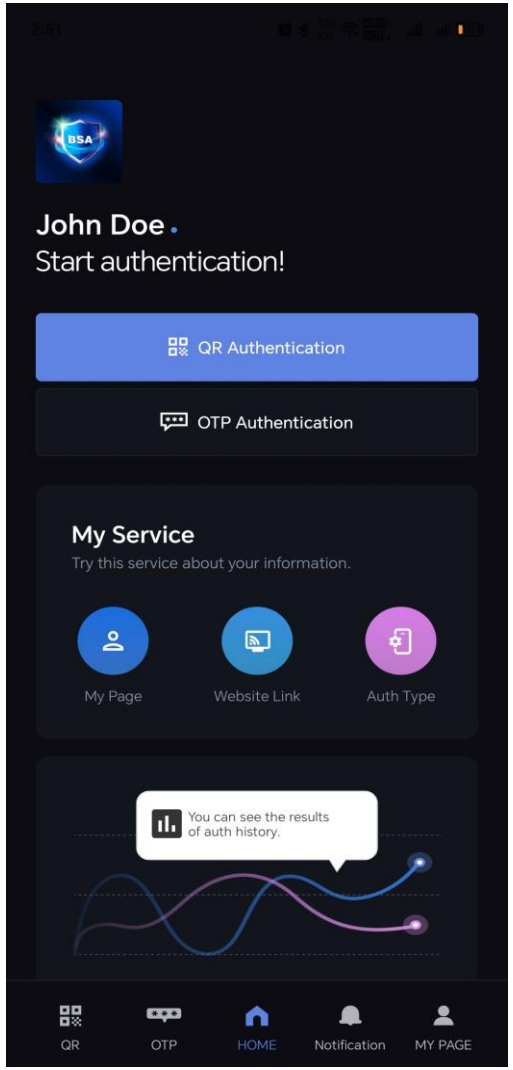
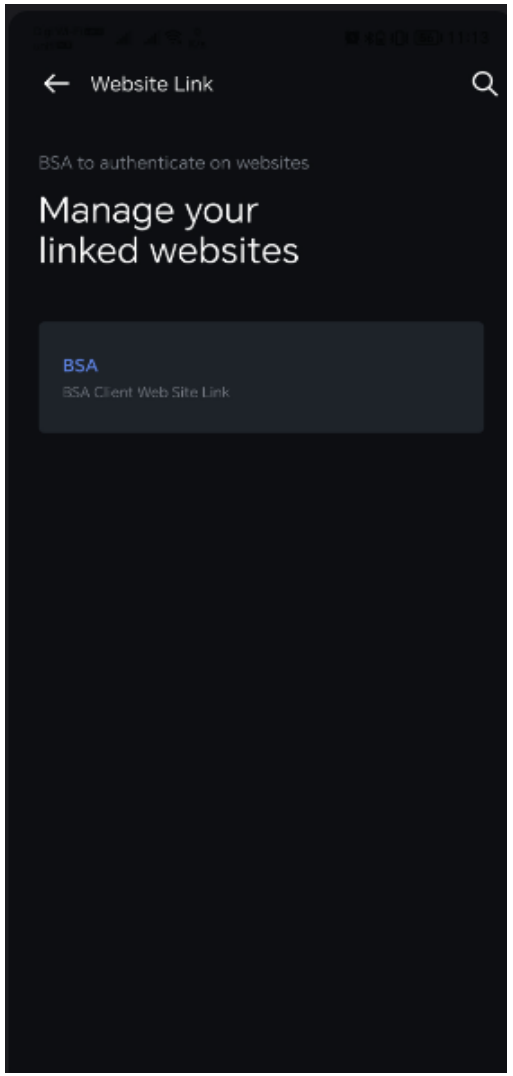
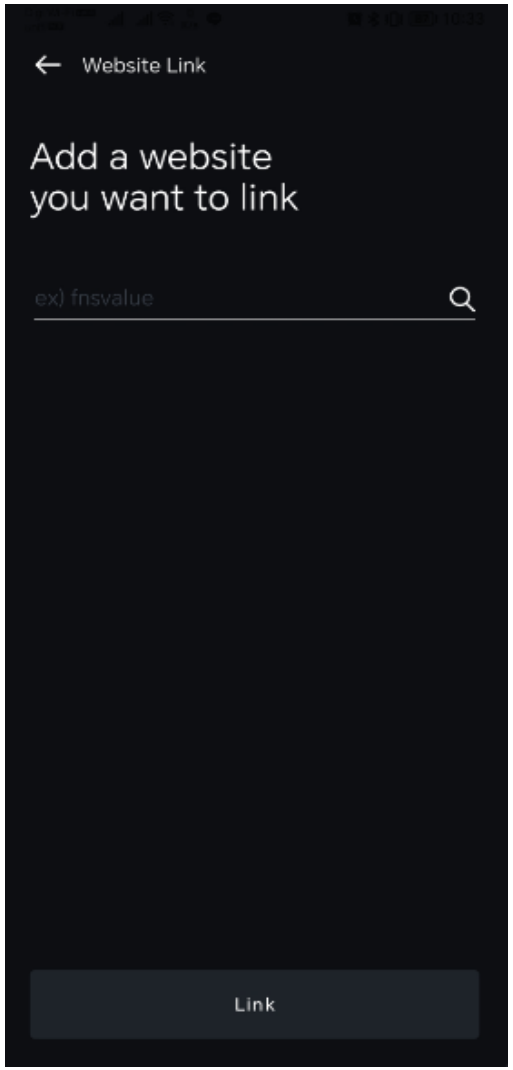
13. ITU APPLICATION CHALLENGE USER ONBOARDING – WEBSITE LINK (BSA STD AUTHENTICATOR APP)







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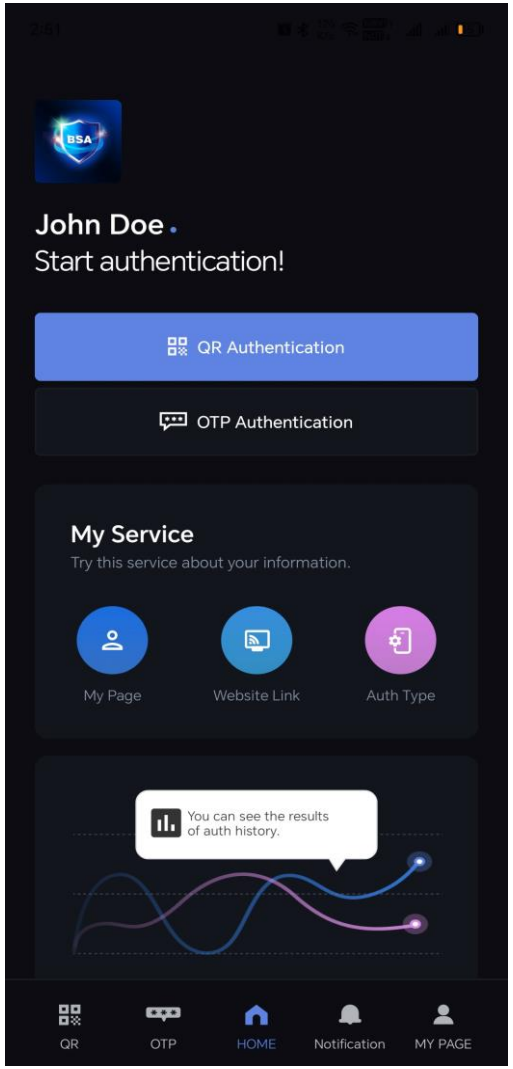
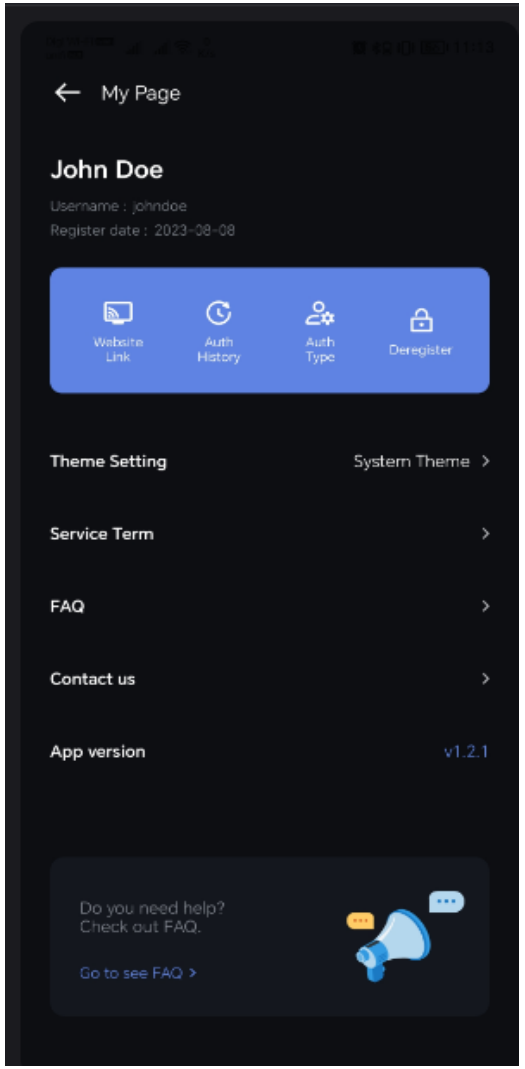
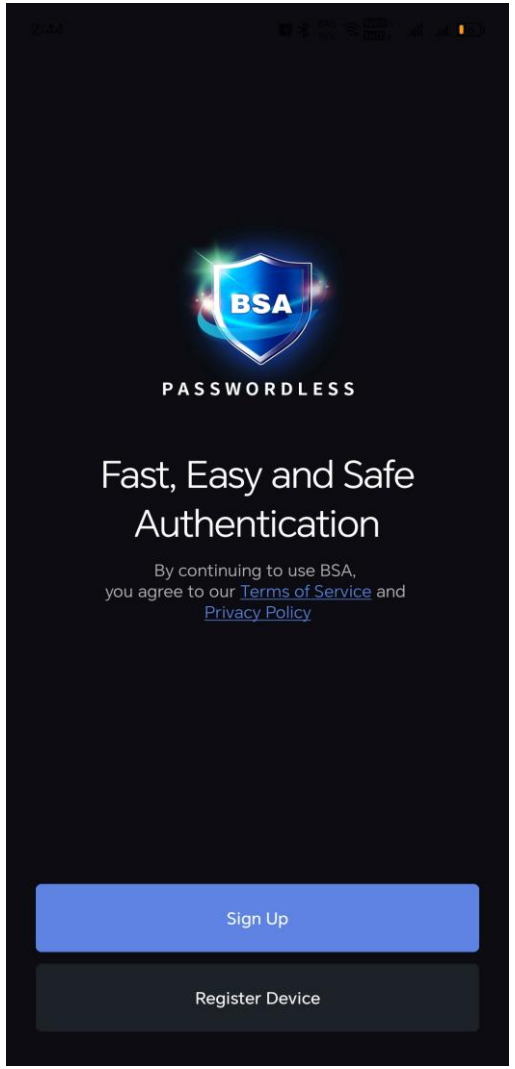
13. ITU APPLICATION CHALLENGE USER ONBOARDING – DEREGISTER DEVICE (BSA STD AUTHENTICATOR APP)







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14. ITU APPLICATION CHALLENGE APPLICATION REQUIREMENT SUMMARY

No	Client Key	Deployment Type	Firebase Cloud Messaging (FCM)	Integration	Authenticator	User Onboarding	Device Register (De-register)	Delete Account	Site Link
1	Required	Web and Mobile Application	Participant to provide • App Package Name • FCM json File	• BSA Web SDK for Web Application • BSA Mobile SDK for White Label Mobile App	Participant Mobile App integrated with BSA SDK	Participant Mobile App integrated with BSA SDK	Participant Mobile App integrated with BSA SDK	Participant Mobile App integrated with BSA SDK	Web Application URL link in Participant Mobile App integrated with BSA SDK

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15. ITU APPLICATION CHALLENGE RESOURCE INFORMATION

No.	Resources	Link	Description
1.	Web SDK	https://developers.fnsvalue.co.kr/bsa-js/bsa_challenge.js	BSA Web SDK download link
2.	ITU BSA Sandbox Authenticator (FOR REFERENCE ONLY – Participant to develop their own mobile authenticator for the ITU App Challenge)	https://resourceaz.fnsbsa.com/bsa-sandbox/resources/04-SB-Authenticator.apk [Android] https://apps.apple.com/us/app/bsa-sandbox/id6451237527 [iOS]	ITU BSA Sandbox Authenticator for both aOS and iOS download link for reference
3.	ITU AC Registration (ZINDI)	https://zindi.africa/competitions/itu-digital-financial-services-blockchain-secure-authentication-application-challenge	For registration ITU Application Challenge
4.	Application Challenge Developer Portal (For all documentations development)	https://itu-ac.fnsbsa.com/	Documentations as reference of Application Challenge Development
5.	Application Challenge Support Email	dfsappchallenge@itu.int	To contact Application Challenge Support if require any assistance
6.	Support Forum	https://zindi.africa/competitions/itu-digital-financial-services-blockchain-secure-authentication-application-challenge/discussions	A discussion forum for peer and expert interaction

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Thank you

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