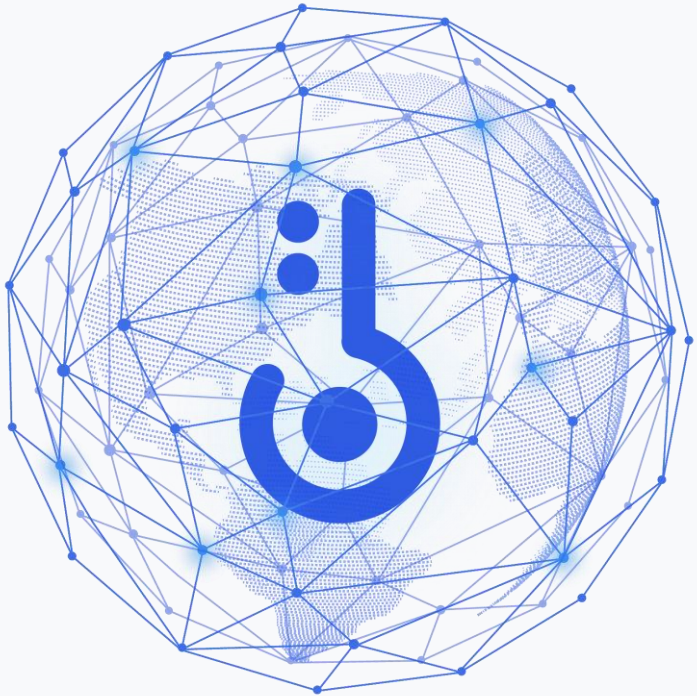


CamDigiKey - Developer

Connect to everyone,
connect to CamDigiKey

CamDX Team

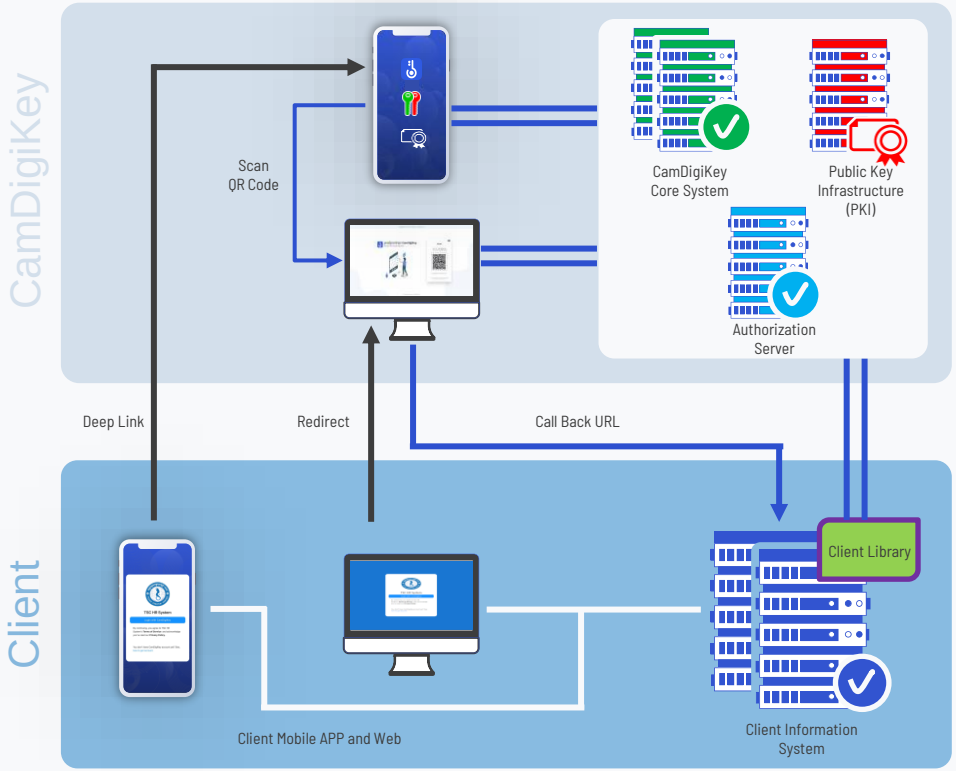
28 September 2022

Contents

Overall Structure

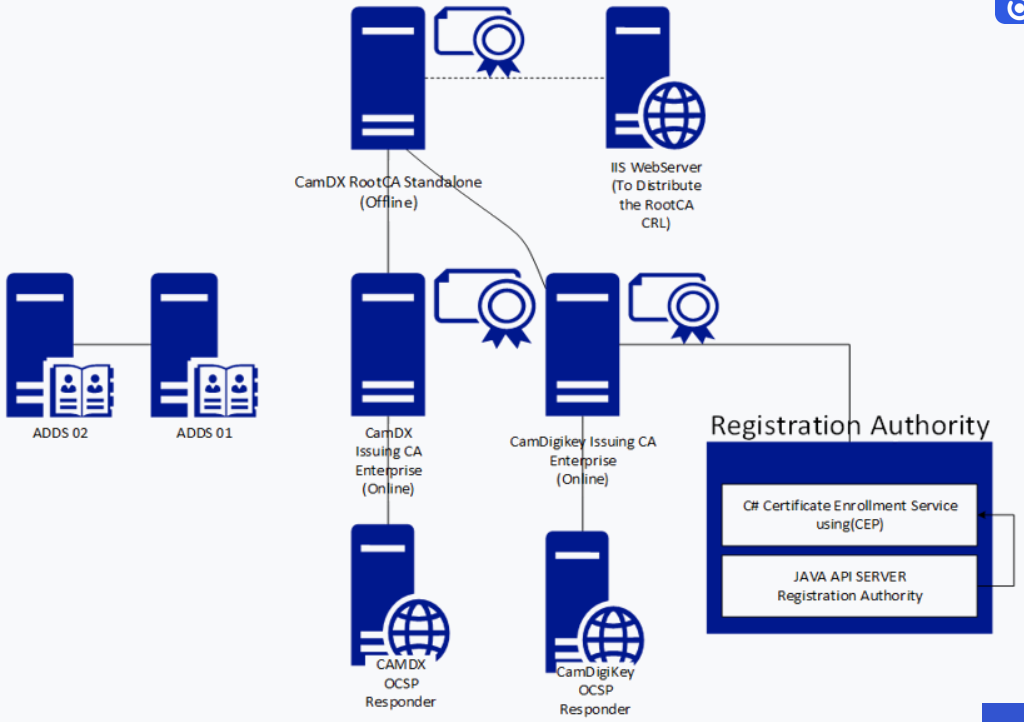
CamDigiKey provides:

- CamDigiKey mobile app for user authentication
- Authentication service
- Client library to integrate with client's information system

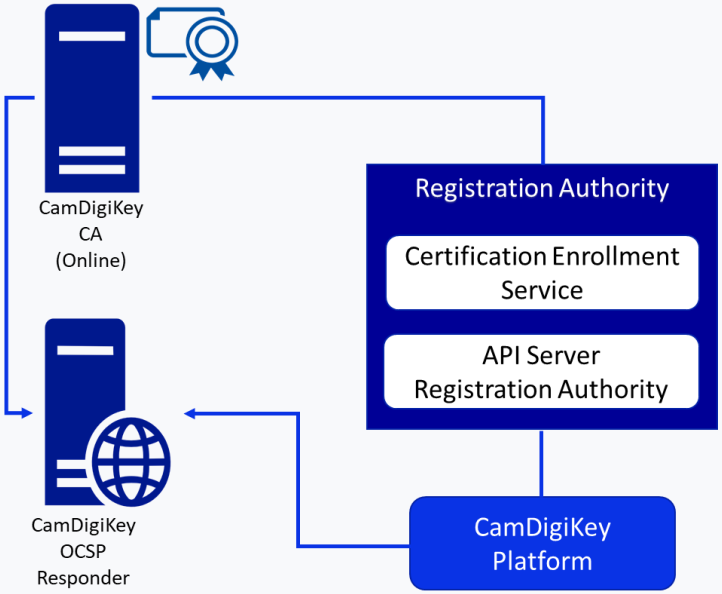


Public Key Infrastructure (PKI)

- Stand alone and offline root CA which can be integrated with national root CA developing under MPTC
- CamDX CA generates certificate for CamDX participants.
- CamDigiKey CA generates digital certificate for CamDigiKey users.



CamDigiKey Certificate Authority



- Registration Authority
  + Validate certificate template of Certificate Signing Request (CSR)
  + Request to CA to get digital certificate
- Online Certificate Status Protocol (OCSP) Responder provides certificate status of the given certificate serial number.

Full Solution Integration

To fully integrate with CamDigiKey service, client have to:

1. Register a service account
2. Integrate with client library with client's information system
3. Integrate with deep-link process for mobile app
4. Integrate with Oauth2.0 for web app

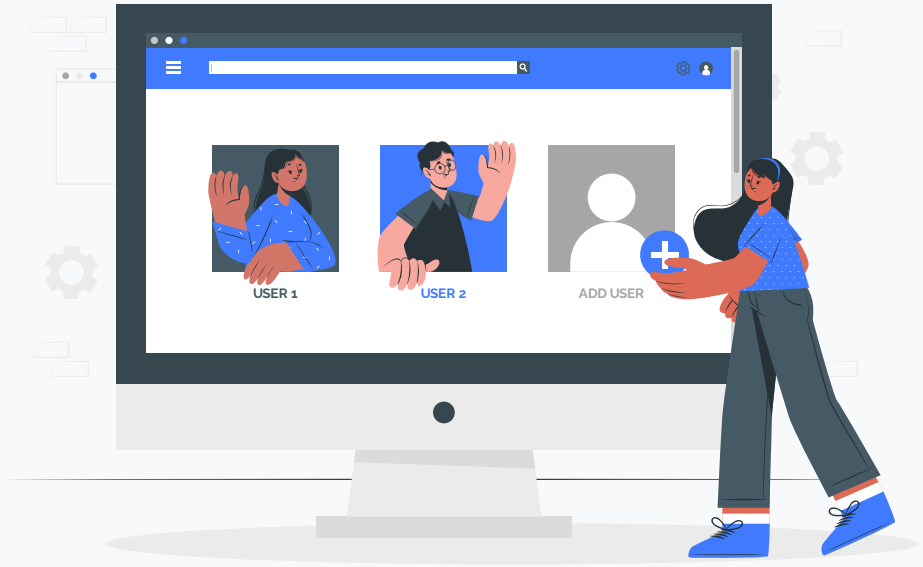
Service Account Information

To use CamDigiKey service, client needs to provide below information to create an service account:

- Organization info
- Web info
- Android app info
- IOS app info

When the service account is approved, client will get following parameters to use with provided client library:

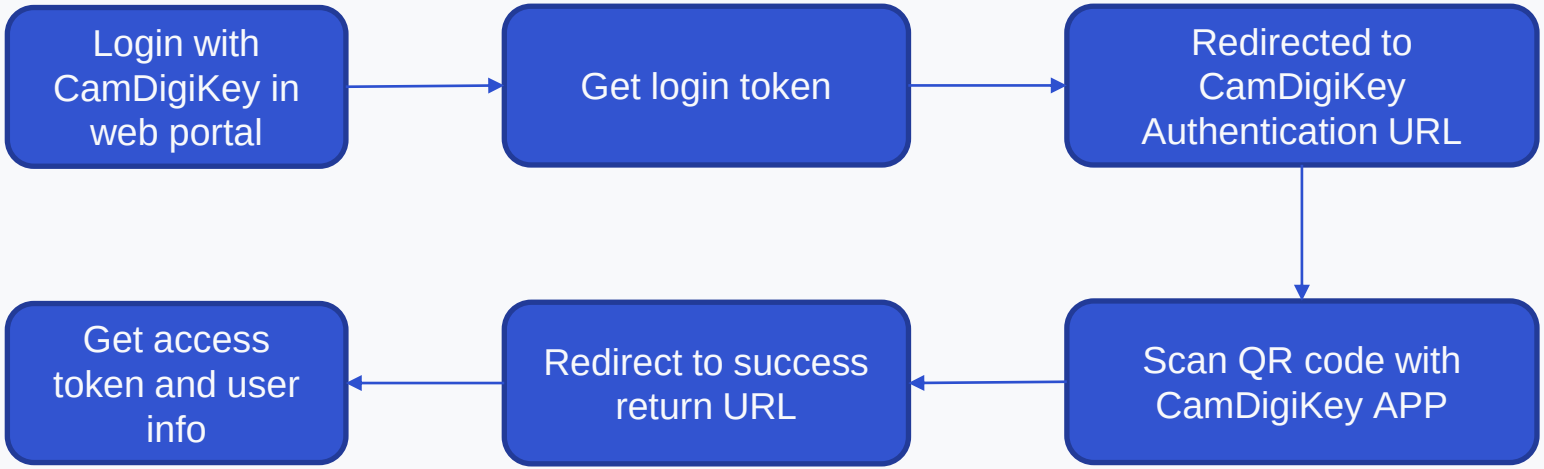
- Domain
- Client ID
- Keys



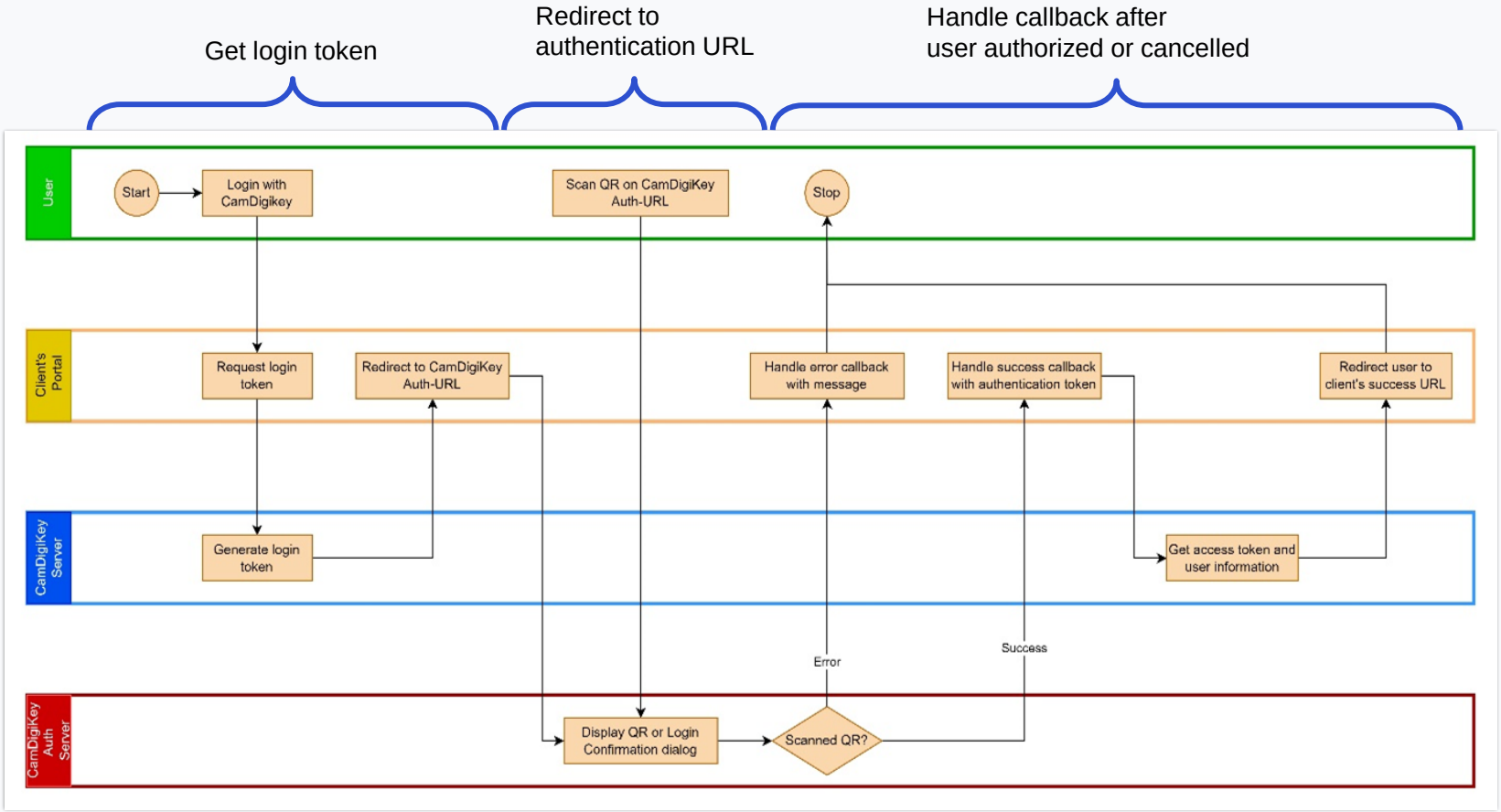
Client Library

- Handle encrypt/decrypt and provide all basic functionalities that client needs to interact with our core system:
    1. Login token
    2. Get access token
    3. Verify access token to get user information
    4. Get organization token
    5. Logout token
    6. Refresh user access token
    7. Lookup user profile by personal code
    8. Verify account token
- Use keystore (PKCS12) to store keys
- Available in JAVA and Node.js
- Future supported languages: C#, PHP, Python

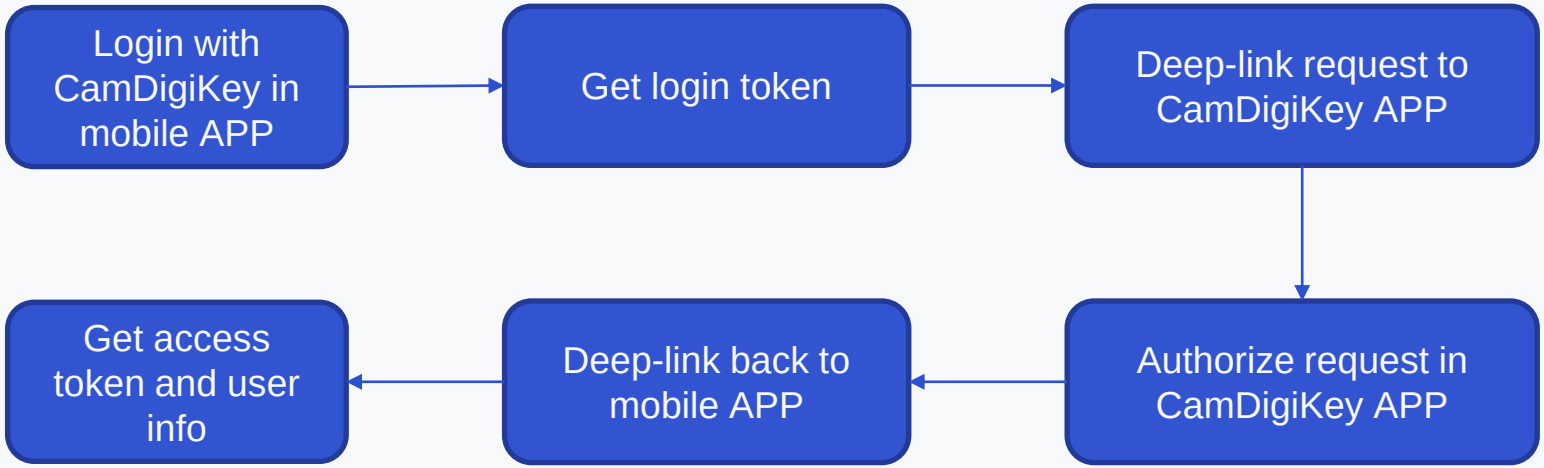
Integration Web – OAuth2.0



Integration Web – OAuth2.0



Integration Mobile – Deep-link

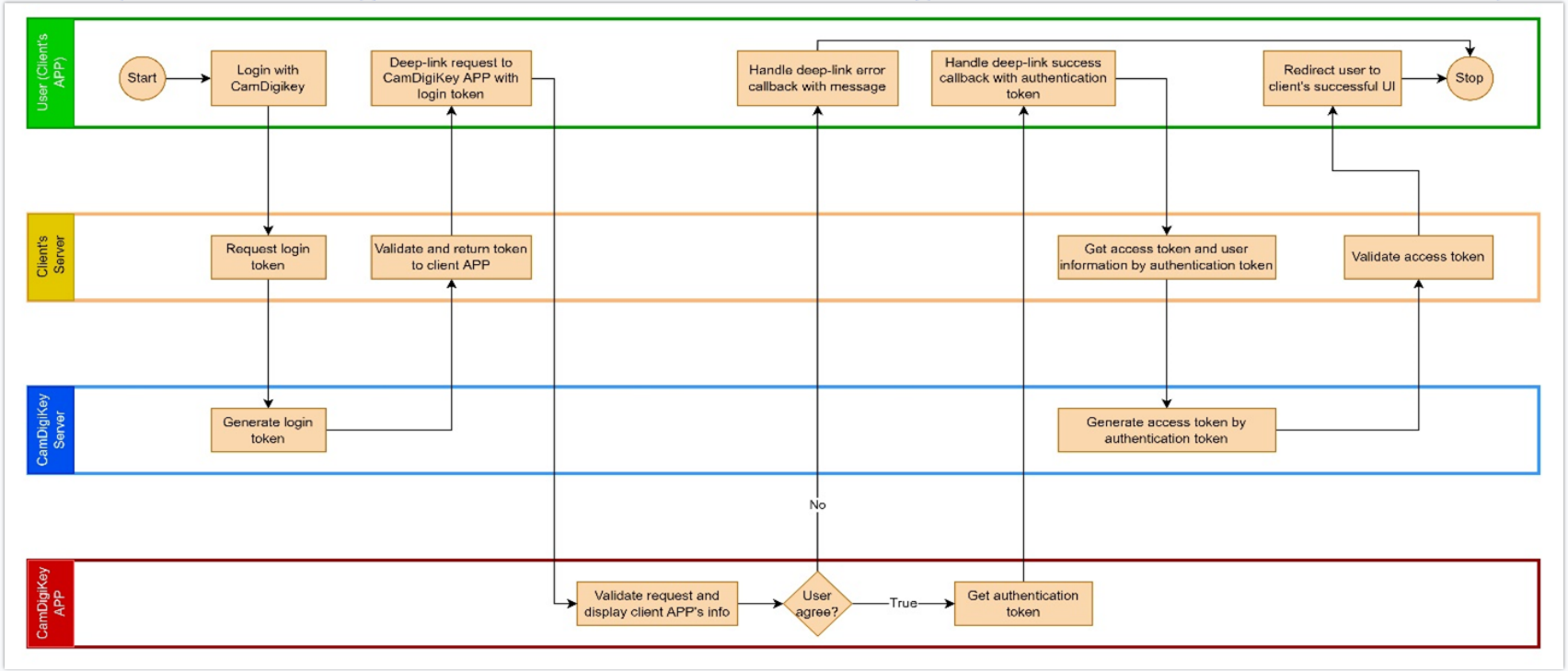


Integration Mobile – Deep-link

Get login token

Deep-link request to CamDigiKey app

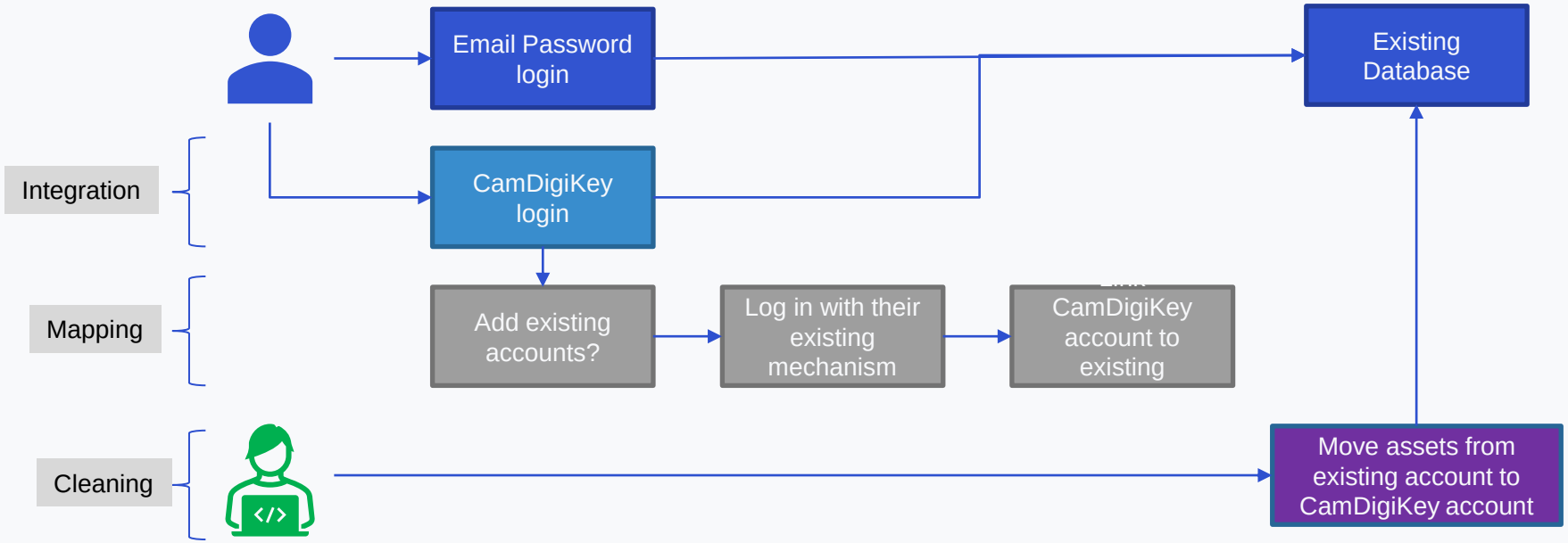
Handle callback after user authorized or cancelled



Integration - Available User Information

Field	Data Type	Description
camdigikey_id	String	Permanent and unique value per user
personal_code	String	Current ID card or passport number, can be changed when update
first_name_kh	String	Name in Khmer
last_name_kh	String	Surname in Khmer
first_name_en	String	Name in Latin
last_name_en	String	Surname in Latin
gender	String	Gender M or F
mobile_phone	String	Mobile phone number in standard format ex: +85512345678
email	String	Email
dob	String	Date of birth with format YYYY-MM-DD
nationality	String	Standard code 2-alphabets ex: KH

Data Migration Process



Open KYC API Integration

CamDigiKey platform also provides open KYC APIs for integration with existing KYC system like banks or MFI. The KYC APIs provide ability to:

- Extract ID card or passport info using OCR
- Validate Khmer id card and user's face with MOI's database via CamDX
- Validate liveness of user base on actions

Integration – KYC Verification APIs

Verify user info with data from MOI	
End Point	/api/2.0/kyc/info
Method	POST
Format	JSON

Request	<pre>{
	"idNumber" : "id_number",
	"firstNameKh" : "first_name_kh",
	"lastNameKh" : "last_name_kh",
	"firstNameEn" : "first_name_en",
	"lastNameEn" : "last_name_en",
	"gender" : "M_or_F",
	"dob" : "yyyy-MM-dd",
	"issuedDate" : "yyyy-MM-dd",
	"expiredDate" : "yyyy-MM-dd"
	}</pre>

Response	<pre>{
	"error": 0,
	"message": "Successfully",
	"data": {
	"idNumber": "id_number",
	"score": 1, #Range [0,1]
	"incorrectFields": [requested_fields_or_empty]
	}
	}</pre>

Integration – KYC Verification APIs

Verify user info and user's face with data from MOI	
End Point	/api/2.0/kyc/info-face
Method	POST
Format	JSON

Request	<pre>{
	  "userInfo" : {
	  "idNumber" : "id_number",
	  "firstNameKh" : "first_name_kh",
	  "lastNameKh" : "last_name_kh",
	  "firstNameEn" : "first_name_en",
	  "lastNameEn" : "last_name_en",
	  "gender" : "M_or_F",
	  "dob" : "yyyy-MM-dd",
	  "issuedDate" : "yyyy-MM-dd",
	  "expiredDate" : "yyyy-MM-dd"
	  },
	  "faceImg" : "base_64_content"
	}</pre>

Response	<pre>{
	  "error": 0,
	  "message": "Successfully",
	  "data": {
	  "userInfo": {
	  "idNumber": "id-card-number",
	  "score": 1, #Range [0,1]
	  "incorrectFields": []
	  },
	  "faceMoiScore": 0.9792682 # Range [0,1]
	  }
	}</pre>

Integration – KYC Verification APIs

Verify user info, face on ID card, and MOI data	
End Point	/api/2.0/kyc/info-face-idcard
Method	POST
Format	JSON

Request	<pre>{
	  "userInfo" : {
	  "idNumber" : "id_number",
	  "firstNameKh" : "first_name_kh",
	  "lastNameKh" : "last_name_kh",
	  "firstNameEn" : "first_name_en",
	  "lastNameEn" : "last_name_en",
	  "gender" : "M_or_F",
	  "dob" : "yyyy-MM-dd",
	  "issuedDate" : "yyyy-MM-dd",
	  "expiredDate" : "yyyy-MM-dd"
	  },
	  "faceImg" : "base_64_content",
	  "idImage" : "base_64_content"
	}</pre>

Response	<pre>{
	  "error": 0,
	  "message": "Successfully",
	  "data": {
	  "userInfo": {
	  "idNumber": "id_number",
	  "score": 1, #Range[0,1]
	  "incorrectFields": []
	  },
	  "faceDocumentScore": 0.9457877, #Range[0,1]
	  "faceMoiScore": 0.9792682 #Range[0,1]
	  }
	}</pre>

Integration – KYC Verification APIs

Verify user info, ID card image, liveness video with MOI data	
End Point	/api/2.0/kyc/info-idcard-liveness
Method	POST
Format	JSON

Request	{#1: turn face to the left, 2: turn face to the right, 3: nod the head
	"actions": ["1", "2", "3“],
	"userInfo" : {
	"idNumber" : "id_number",
	"firstNameKh" : "first_name_kh",
	"lastNameKh" : "last_name_kh",
	"firstNameEn" : "first_name_en",
	"lastNameEn" : "last_name_en",
	"gender" : "M_or_F",
	"dob" : "yyyy-MM-dd",
	"issuedDate" : "yyyy-MM-dd",
	"expiredDate" : "yyyy-MM-dd"
	},
	"idImage" : "base_64_content",
	"liveness" : "base_64_content"
	}

Response	{
	"error": 0,
	"message": "Successfully",
	"data": {
	"userInfo": {
	"idNumber": "010682723",
	"score": 1,
	"incorrectFields": []
	},
	"livenessScore": 0.9248705,
	"faceDocumentScore": 0.94440883,
	"faceMoiScore": 0.9769943
	}
	}

Integration – KYC Verification APIs

Extract user information from ID card image	
	/api/2.0/kyc/ocr-idcard
	POST
	JSON

	<pre>{
	"idImage" : "base_64_content"
	}</pre>

	<pre>{
	"error": 0,
	"message": "Successfully",
	"data": {
	"idNumber" : "id_number",
	"firstNameKh" : "first_name_kh",
	"lastNameKh" : "last_name_kh",
	"firstNameEn" : "first_name_en",
	"lastNameEn" : "last_name_en",
	"gender" : "M_or_F",
	"dob" : "yyyy-MM-dd",
	"issuedDate" : "yyyy-MM-dd",
	"expiredDate" : "yyyy-MM-dd"
	"MRZ1" : "String",
	"MRZ2" : "String",
	"MRZ3" : "String",
	}
	}</pre>

Integration Option Summary

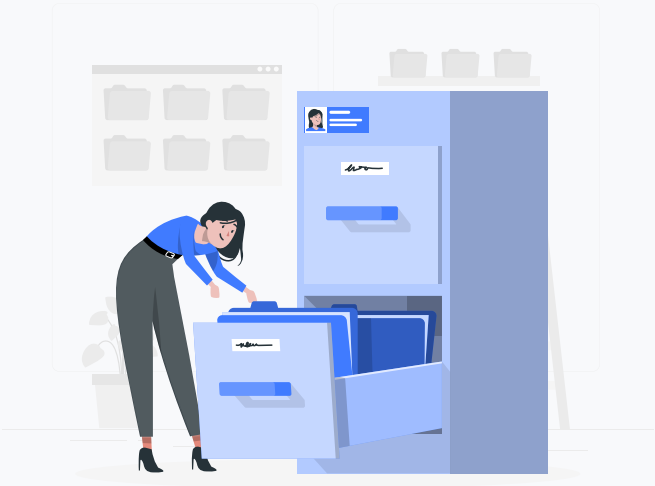
Full Solution Integration

- User onboarding with CamDigiKey platform
- Fast user acquisition and low investment cost
- Fast and easy user experience when login
- Be able to access user's personal information from CamDX via service portal

Open KYC Verification API Integration

- User onboarding with business entity
- Be able to verify user's data and high investment cost
- Depend on specific information system
- Not possible

Integration - Documents



- Client library (Java, Node.js)
- CamDigikey 2.0.0 app (DEV)
- Demo Open KYC API server: https://openapi-sbx.camdigikey.gov.kh
- Documents:
  - CamDigiKey client library document
  - Mobile integration (deep-link) document

- Visit us: https://camdigikey.gov.kh
- Email us: camdx-info@techostartup.center

Thank You!

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