increasinG tRust with eId for Developing buSiness

GRIDS KYB Custodian Demo Case

Document Identification			
Status	Internal	**Date**	29.11.2021
Version	3.1	**Authors**	N. Triantafyllou (UAegean | i4m Lab)
			K. Ksystra ((UAegean | i4m Lab)
			C. Bitsikas (UAegean | i4m Lab)
			P. Bainbridge-Clayton (Kompany)
			P. Kavassalis (UAegean | i4m Lab)

Table of Contents

1. Introduction (first part is missing)

1.1 Recent Developments in Customer Due Diligence processes

GRIDS…

Trends: KYC/KYB digitization and automation, KYB/KYC synchronization

Result:
Challenge: the minimal (portal) identity - AML update

The recent eIDAS 2.0 (presented at the 3rd of June 2021) and AMLR (presented at the 20th of July 2021) announcements made by the EC early this summer[1] have intensified the discussion around how natural and legal persons should be able to authenticate online and offline. The newly proposed direction aims to allow the natural and legal persons to access (both public and private) services in a way that ensures that the user's data is always under their control.

Furthermore, this new type of authentication method is designed so that it guarantees compliance with AMLR offering high LoA for all interactions without sacrificing user convenience. The aforementioned feature will of course secure KYC/KYB processes and lead to the reduction of procedures and costs.

As a result of the new regulations two models for CDD portability can be identified[2]:

- **Delegated custody model (federation)**: In this approach the CDD data is maintained by qualified third-parties. This is the typical scenario that is applicable in most cases today.
- **User-centric custody model (distributed)**: Under the new eIDAS 2.0 proposal users are able to store their CDD in their European Digital Identity Wallets (EDIWs) in such a way that disclosing them does not require the involvement of a trusted third party (custodian). In other words CDD Data communications with relying parties originate from the wallet.

Of course even on the user-centric model the CDD attributes of the users need to be verified and securely transferred and stored in the EIDWs. As a result, the Issuers of such attestations become a mandatory, and in need of strict operating regulation, component of the system. Specifically, for such a system to operate a trust network must be built around authorized issuers of CDD attributes. This network can be safeguarded with existing trust building mechanisms

---

[1] https://www.politico.eu/wp-content/uploads/2021/06/03/amdening-regulation.pdf
[2] DEVELOPING A DIGITAL IDENTITY SOLUTION FOR USE BY THE FINANCIAL SECTOR BASED AROUND eIDAS TRUST SERVICES, FISMA/2020/023/B3/SE/LV CONTRACT

(e.g. eIDAS trust list for QTSPs etc.[3]). Finally, in this new user centric custody model all activities require the interaction with the users EDIW (which ensures strong customer authentication). As a result, the explicit consent of the user is guaranteed as no disclosure of attributes is possible without the user authorizing it.

1.2 Know Your Business (KYB) vs Know Your Customer (KYC)

Know Your Business (KYB) refers to a process similar to the better known process of Know Your Customer (KYC), i.e. the actions required to be carried out by certain companies such as banks etc. to verify the identity of a new client (customer onboarding). The difference between KYB and KYC is that of intent. While KYC is focused on verifying the identity of an individual, KYB is focused on verifying the identity of a company. As a result KYB mainly deals with the following steps:

- Verifying the identity of the business
- Verifying the identity of the business's legal representative and
- Verifying their connection with the customer company

Thus, a KYB Custodian in essence implements a KYC attribute Custodian or KYC utility service. These type of services (either decentralized or centralized) enable the generated portable KYB profile to be accepted across jurisdictions and greatly facilitate the cross border B2B interactions especially for SMEs which produces significant cost reductions for the financial sector as analyzed in a relative EC report[4]. Especially, in light of the aforementioned upcoming advancements (in both a regulatory and technical perspective) a portable KYB profile is required more than ever.

1.3 Demo Case: GRIDS KYB Custodian (Business Identity Provider)

This document describes the technical organization of a KYB Custodian which adopts the GRIDS technology stack to offer to companies and public organizations, a novel service that allows for:

a. The collection of a set of business attributes which populate a **KYB data profile**, by contacting different Data Providers (DPs).
  i. Technologies that are used: a) GRIDS technology stack (BAA, SB Hub, DC Connector, DP APIs)[5]

---

[3]
https://ronny-khan.medium.com/the-next-frontier-from-digital-identification-to-digital-validation-41b89f430cca
[4] See in particular,
https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/assessing-portable-kyc-cdd-solutions-in-the-banking-sector-december2019_en.pdf
[5] Reference: GRIDS D2.1 Business Services and Technical Architecture, available at
https://newrepository.atosresearch.eu/index.php/f/1088702

b. The storage of this KYB profile as "Verifiable Data" and, next to an explicit request submitted from the legal representative(s) of the company, the issuance of a portable **business identity**, in the form of a **standardized, minimum, KYB identity**.
   i. Technologies that are used: GRIDS technology stack, Verifiable Credentials and the Blockchain

The KYB Custodian service interacts with end-users, mainly, a) Service Providers (SPs), which have the need, or the obligation by the law, to verify the legitimacy of a corporate customer, and b) Data Providers, to retrieve KYB data for the corporate customers of a partner SP. As a result the following **business roles** are assumed in the rest of this document:

- **KYB Custodian**: The provider of a digital "KYB/KYC screening" service: We assume that this KYB Custodian primarily addresses the needs of the following user groups:
  ○ Financial Institutions, utility and e-commerce providers, and other Service Providers, qualified to query information about a company/organization, eventually in the context of a compliance due diligence process and beyond
  ○ Companies represented by an Individual (legal or any other authorized representative) which access directly the services of a Custodian KYB to issue a trustworthy "standard KYB identity" that can be credibly used to transact with Service Providers (for example, if the want to build a cryptocurrency portfolio)
- **SP or DC:** Service Provider or Data Consumer, an entity providing FinTech services to corporate customers, which partners with the KYB Custodian to operate KYB/KYC checks in a compliant way with regulations in force
- **Company or Corporate Customer (Data Subject)**: A Legal Entity that accesses the service of an SP (DC) in partnership with a KYB Custodian
- **Legal Representative** : A Natural Person representing a Legal Entity
- **DP** (Data Provider): A Provider of corporation-related data giving access to their registries containing KYB information about Companies and Public Organizations

More precisely, a KYB Custodian provides the following **three business process models**:

---

1. **Query for Corporate Customer Data** (KYB/KYC screening): Implementing a **delegated CDD process**, on behalf of a partner SP.

---

2. **Issue a KYB Verifiable Identity for a Company**: Enabling a **Company (DS) to generate Verifiable Identity Credentials (VCs)**, implementing a portable KYB business identity (i.e. , a standard KYB profile), and store them in the Identity wallet of their Legal Representative (EDIW).

---

3. **Verifiable KYB Public Registry**: Storing a KYB profile (created through a SP or a DS request) **in the form of Verifiable Data**, thus enabling the instant retrieval of the KYB profile of an organization; this gives Companies a place to issue public verifiable business identities, and Regulation Supervision Authorities, government bodies and

other qualified users, the possibility to receive proofs of verifiable KYB attributes, without requiring Companies to have their own wallets and the institutional users of Companies' identity proofs to run specific software agents for VC verification.

2. GRIDS, KYB Custodian and Services (uncompleted)

KYB Custodian is a type of financial intermediary implementing KYC processes, that means performing Customer Due Diligence (CDD), on behalf of Service Providers (SPs) offering services which require the verification of the identity of the client. CDD may be performed because the AML regulation requires Service Providers to ensure customers are who they're claiming, or because there is a need for a Service Provider to comply with other domain specific rules of conduct. In many cases, however, compliance is not the main motivation for CDD; cryptocurrency exchanges for example, a thriving online SP, should add identity verification to help reduce money laundering and stay ahead of the regulation (anticipating compliance)[6].

A KYB Custodian is not after all a new species. What is essentially "new" is the digitization of the CDD process and the progressive implementation of "automated KYC" processes. Traditionally, KYC/KYB processes are heavily dependent on human agents performing manual tasks such as data sorting, data entry, error-rectification and approvals[7] -- eventually with the use of an online channel that instructs the Data Subject to fill in their identity data required in an online form and upload the required documents. But, progressively traditional KYC is replaced by paperless, digital, networked processes, with KYC automation and integration becoming the major current and future trends. Automating KYC data collection and integration to provide KYB on demand, and synchronizing between KYB and KYC information, might essentially enhance existing processes and systems in terms of gathering information faster and more efficiently and, certainly, allows organizations to streamline the customer serving processes and effectively screen and monitor for regulation compliance. In this perspective, GRIDS has created the network infrastructure to establish a digital business network between Service Providers and KYC Providers (including the Business Registries, or Data Providers, from where KYC Providers retrieve business data).

The described in this document Demo KYB Custodian (GRIDS KYB Custodian) adopts the system architecture provided by GRIDS, and more specifically the following GRIDS components[8]: BAA, DC client, DC Connector (OIDC), DP Connector (DP APIS), SP Hub. The GRIDS KYB Custodian establishes an OIDC Connection to client SPs, to help them offering to their corporate customers bundled one-stop solution for KYC & KYB screening by:

- Identifying companies representatives (natural perrons) through   eIDAS

---

[6] Acuant, 2021, The Importance of KYC in Cryptocurrency, available at The Importance of KYC in Cryptocurrency - Acuant
[7]
[8] Reference: GRIDS D3.1 Business Attribute Aggregation (BAA), available at

the eIDAS Network
● Accessing company information directly from official primary sources around the world (in connection with the infrastructure of Kompany, a proprietary, global coverage network to KYB data of more than 100 millions companies).
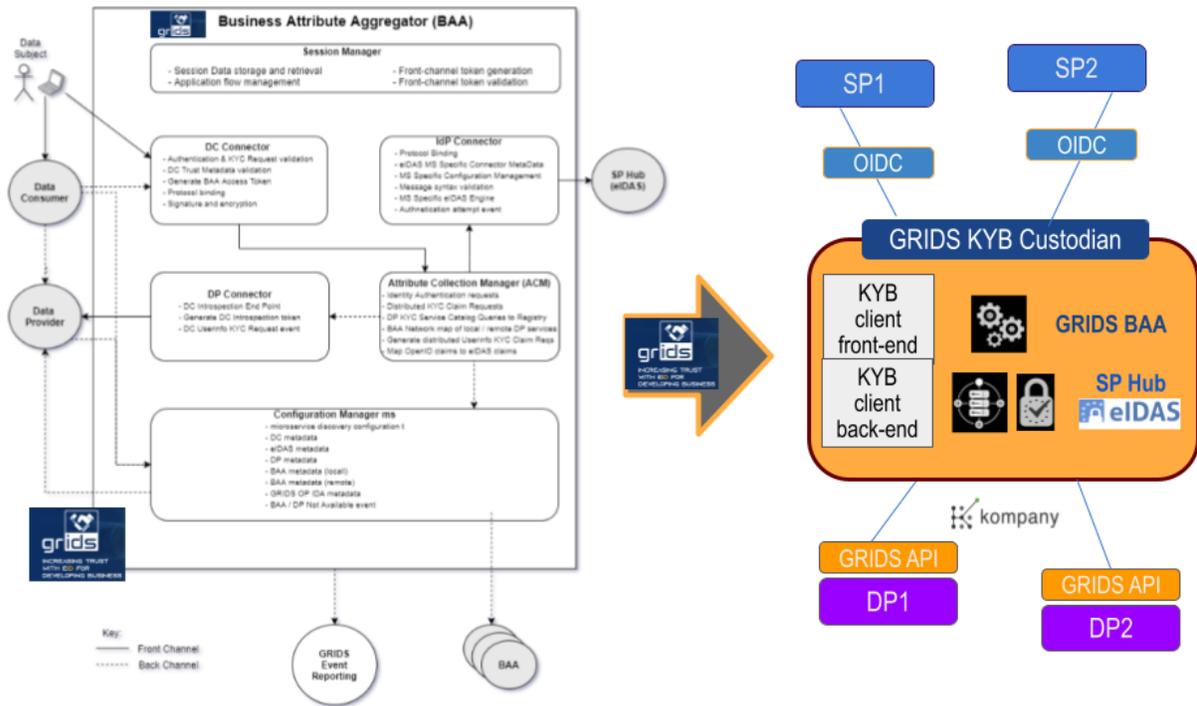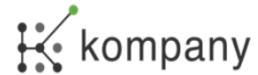
In more detail, the GRIDS KYB Custodian operates as follows:

It receives requests from a Demo Service Provider (CryptoAegean) to verify the identity of their institutional customers applying for the creation of a cryptocurrency and stablecoin portfolio. In fact, CryptoAegean delegates to GRIDS KYB Custodian the KYB/KYC screening of their customers, by using a standard OIDC interface. SpecificallyQ

1. The Legal Representative of a company enters a UI of CryptoAegean and selects to retrieve their KYB identity profile using the Custodian Service.
2. This leads to the Legal Representative being redirected (OIDC code flow request) to a UI of the Custodian where they are requested to input the details of the Company they represent (DS) together with their name, surname and an email address.
3. Next, the KYB Custodian interacts with the BAA to trigger an eIDAS eID authentication of the Legal Representative and additionally generate a list of Data Providers (DP) that may contain the details of the DS.
4. After the eIDAS eID authentication is completed, the Legal Representative is asked to validate their mandate with the DS. Following this, the Custodian service fetches the KYB

from file from the DSs and if multiple results are returned merges the responses (in case of conflicts all attributes are added to the KYB profile with an explicit reference to each DP attesting to them).

5. The Custodian service prompts the user to add the newly created KYB profile to the Custodians Public Registry of Verifiable Data and eventually redirects the flow back to CryptoAegean together with the KYB profile that was generated.
6. The CryptoAegean service finalizes the flow by informing the Legal Representative of the successful receipt of the KYB profile and detailing the next steps of their onboarding.

The design of GRIDS KYB Custodian is generic enough to support in-vivo service deployments for different Service Provider (or DC - Data Consumer) settings. In fact, the backbone of GRIDS KYB Custodian is used to connect with the prototype clients implementing the three main project Use Cases: i) Onboarding of business accounts from banks and financial institutions – provision of eIDAS-based eID information about directors/officers acting for the legal entity together with KYC information to simplify onboarding of business accounts and minimize risk of fraud and time spend for identification processes (end user: Raiffeisen Bank), ii) KYC data for LEI checks (end user WM Datenservice); iii) KYC checks for other businesses than Banking and Finance (end user Advokat).

3. KYB Custodian: Query for Corporate Customer Data (KYB/KYC screening)

The process described below enables a Service Provider (SP) to retrieve the KYB profile of a Corporate Customer from the Data Providers (DPs) that offer identity data for corporate customers, in such a way that a compliance CDD process is greatly expedited. The Corporate Customer (DS) is represented by a natural person (Legal Representative). Furthermore, this flow implements a model of an intermediary capable of conducting compliance processes, i.e., a KYB Custodian, using the GRIDS infrastructure. In other words, this flow is addressed for Service Providers (SP) that: a) offer online services that their customers (DSs) will access but the SP needs to verify their legitimacy -- this is done also by validating the identity of the Legal Representative of the DS, b) delegate the verification process to a KBC Custodian which implements the main functionality of GRIDS (BAA and DP interface). Of course, the SP connects directly to KYC Custodian via an OIDC connection.

As a result, the following assumptions apply:

● The DC operates an online service to DSs that is a "user facing" service. The term denotes that the Legal Representative of the DS is interacting with it via the appropriate interfaces either web or mobile, to provide consent and to authenticate if necessary to authoritative data sources. The affiliation of the natural person with the company must have been documented in one of the Business Registries (DPs) connected to KYC Custodian facilities.

- The DC is technically capable of delegating the KYB attribute retrieval (KYB/KYC check) to the KYC Custodian. More precisely, the DC service is registered with the KYB Custodian implementing an OpenID Connect (OIDC) interface: The DC, a) is issued a clientId/secret pair from the KYB Custodian service, b) has to customize their service to be capable of executing the standard OIDC flows (make requests, parse responses etc).
- The KYB Custodian is capable of requesting Corporate Client Profiles from Company Registries (DPs) and process their responses. (This functionality is implemented over the specific DP APIs provided by GRIDS).

3.1 Regular flow

At a high level the Query for Corporate Customer Data (KYB/KYC screening) flow consists of the following steps:

SP (DS)

1. A Company (DS), via its representative (Legal Representative), requests access to a service provided by an SP.

2. To offer the service, the SP needs to conduct a process of due diligence using a partner KYB Custodian. The SP acts as DC to make a KYB request to KYB Custodian (via an OIDC connection), prompts the Legal Representative of the DS to the KYB Custodian's User Interface (in the purpose of identity verification) -- and, finally, accepts the KYB response of the Custodian (together with the DS Legal Representative, who is redirected back to DC premises).

KYB Custodian

3. The KYB Custodian requires the Legal Representative to declare the Company they represent (Company Name, Company Company Registration Identifier, Country of Company Registration, i.e. Company Jurisdiction) and additionally provide their personal information (Name, Surname and an email address).

4. The KYB Custodian:
   a. Initiates an eIDAs eID identification flow (via the GRIDS infrastructure and the eIDAS Network) to authenticate the Legal Representative of the DS.
      i. The Legal Representative of the DS is authenticated with the eIDAS Network (through the GRIDS SP Hub) and is redirected back to the KYB Custodian (together with the eIDAS eID response
      ii. The Legal Representative of the DS is requested by the KYB Custodian to verify their relationship with the DS (an act conducted within an eIDAS authenticated session).
   b. Generates a list of DPs that are able to provide the needed data to complete the KYB profile of the Company represented by the Legal Representative (this is implemented via the BAA Component of GRIDS which is integrated into KYB Custodian's premises). The list of connected DPs includes the required API details to query them (e.g. endpoints, encryption keys, necessary tokens etc.).

DP

5. The KYB Custodian queries directly the DP(s) included in the previously received list of available DPs to complete the KYB profile of the DS. In case of multiple DPs the KYB Custodian requests the required KYB attributes from all available DPs. If there are multiple values for the same field, all results are added to the KYB profile of the Company with an indication to the DP the data originates from.

KYB Custodian

6. The KYB Custodian prompts the Legal Representative of the Company to store Company's KYB profile in the Public Registry (a service operated by the KYB Custodian), as verifiable data (**optional for the Company representative**).

SP (DS)

7. The KYB Custodian sends an OIDC response to the DC containing the received KYB attributes, by redirecting the Legal Representative of the DS back to the DC (together with the response)[9]

KYB Custodian   Additional functionality (optional):

8. KYB Custodian sends an email to the Legal Representative of the DS prompting them to receive their KYB profile as a Verifiable Credential, in practice enabling the Legal Representative of the Company to generate a **portable KYB identity profile**. If the Legal Representative accepts this invitation, a VC sub-process is initiated as described in Section 4.

Apart from the normal flows described above, special use case scenarios may arise that require additional handling. These additional or alternative process paths are presented below, in Sections 3,2 and 3,3.

3.2 Flow for using and updating an existing institutional account

The Legal Representative of a Company accesses the services of a SP, requiring KYB validation, but the Company is already registered in the Verifiable KYB Public Registry. In this case, we assume that the Company has interacted with the KYB Custodian on a previous execution (via a potentially different SP) and has already registered their Company in the public registry. However there is another parameter that needs to be considered:
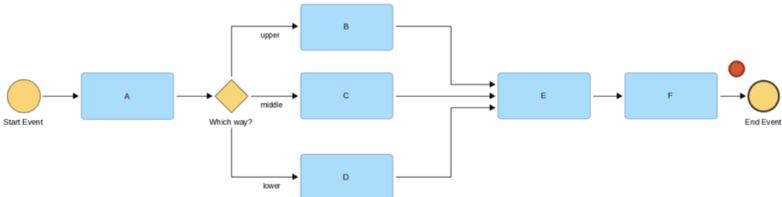
Exclusive Gateway (XOR): Is the Legal Representative of the Company the same person that has previously registered

KYB Profile Data Model:
https://docs.google.com/spreadsheets/d/1C_ZXornvT86GH70wfuIRPIU-GN5HVBDJhcF-U_EaJEw/edit#gid=0

the Company or it is a different person who acts under the same business role, for example CFO (which is the case of a change at the management level of the Company), or under a different role (which is the case where the legal responsibility of the Company has transferred to another executive of the Company)?

With these assumptions, at a high level, this additional flow is implemented as follows:

- *Reference: Regular Flow (Know Your Business | KYB) is executed until Step 6 (including Step 6):*
    a. The KYB Custodian prompts the Legal Representative of the Company to store Company's KYB profile in the Public Registry (a service of the KYB Custodian), as verifiable data (optional for the Company representative).
    b. The Legal Representative of the Company accepts and registers their company.

- 6a. (Before sending the KYB profile of the Company to DC) The KYB Custodian searches the Verifiable KYB Public Registry for an existing entry for the specified Company.

KYB Custodian

- 6b. The KYB Custodian compares the currently authenticated DS Legal Representative identity with the identity of the person whose identity is stored in the Registry, as part of the Company's KYB profile (by matching the name, surname and date of birth form the response retrieved form eIDAS with the attributes found in the Registry, and the business role attribute, as returned by the DP response) - Exclusive Gateway[10]:
    - 6b1. The personal identity data sets match each other
    - 6b2. The core identity of the two Representatives (the previous and the new one) is different, but they have a business role within the Company which is explicitly mentioned in the DP response (the same role or a different one)
- 6c. The process continues as follows:
    - 6c1. If the response from the above verification is positive, the Verifiable KYB Public Registry is updated, and the existing entry for the specific DS is overwritten.
    - 6c2. If not, the DC and the DS Legal Representative are notified about the issue and the process stops here (terminateEndEvent Message).

3.3 Other variations of the Regular Flows

During the Regular Flow, alternative events may occur. These events introduce variations of the Regular flow, at specific points of the process (Exclusive Gateways in the BPMN language[11]) and can be summarized in the following categories:

---

[10] According to BPMN standards (for an introduction to BPMN, see: D. Brookshier, BPMN 2.0 Tutorial tutorial, available at Microsoft PowerPoint - 14_MT-2_Brookshier (omg.org)).
[11] ibid.

3.3.1 eIDAS Network authentication failure

This case can take place if the DS Legal Representative failed to present the required eIDAS eID Credentials to the selected National IdP (the eIDAS eID authentications . As a result, the DC and the DS Legal Representative are notified about the issue and the process stops here (terminateEndEvent Message).

3.3.2 Company not registered in any of the connected DPs

DPs connected to GRIDS inforce the following Company Query policy after receiving a KYB attribute retrieval request from the KYB Custodian (Section 3.4).:

1. The DP must search for a company using the provided Company Business Identifier (see Section 3.4). If a matching company is found, the DP proceeds to the validation of the request and the preparation of the response.
    ○ Else proceed to the next step.
2. The DP must search for a company using the provided Company Legal Name (see Section 3.4). If a match is found, the DP proceeds to the validation of the request and the preparation of the response.
    ○ Else, the KYB Custodian receives an empty response. As a result, the DC and the DS Legal Representative are notified about the issue and the process stops here (terminateEndEvent Message).

3.4 Data Exchange Models

This section provides an overview of the KYB Custodian Exchange Data Models.

1. Communication between DC and KYB Custodian
    a. DC ro KYB Custodian Message Request
    b. KYB Custodian to DC Message Response
2. Authentication of DS Legal Representative and Generation of list of DP: Internal Messaging between the different components of the technical architecture of the KYB Custodian
    a. Input: eIDAS authentication Request & DPs List Response
    b. Output: eIDAS authentication Request & DPs List Response
3. Communication between KYB Custodian and DP
    a. KYB Custodian to DP Message Request
    b. DP to KYB Custodian Message Response

3.4.1 DC to KYB Custodian Message Request

Attribute Name	Description
scope	OIDC scope
client_id	OIDC client ID (i.e. SP ID)

response_type	OIDC response type
redirect_uri	SP URL that the response will be redirected to
code_challenge	Unique string value hashed and encodes for PKCE
code_challenge_method	Hashing algorithm
state	SP internal state Identifier

3.4.2 KYB Custodian to DP Message Request

Attribute Name	Description	Value
Company		
legal_name	The Company Legal Name	Value exists (initially provided by the DS Legal Representative)
legal_person_identifier	The Company Business Identifier (Business Registry)	Value exists (initially provided by the DS Legal Representative)
country	The Company Jurisdiction Country	Value exists (initially provided by the DS Legal Representative)
vat_registration_number	The Company VAT registration number	Empty
sub_jurisdiction	The sub-jurisdiction that the Company is registered at	Empty
trading_status	The trading status of the company (live, dormant etc.)	Empty
sic	The 4-digits SIC code (Standard Industrial Classification) of the Company	Empty
lei	The Legal Entity Identifier of the Company	Empty
address	The address of the Company	Empty
business_role	The business role of the Legal Representative within the DS (Managing Director, Director etc.)	Empty
Legal Representative		

given_name	The given name of the Company's Legal Representative	Value exists (the value retrieved from the eIDAS eID which replaces the information initially provided by the DS Legal Representative)
family_name	The family of the Company's Legal Representative	Value exists (the value retrieved from the eIDAS eID which replaces the information initially provided by the DS Legal Representative)
person_identifier	The eIDAS eID personal Identifier of the Company's Legal Representative	Value exists (as retrieved from the eIDAS eID)
date_of_birht	The date of birth of the Company's Legal Representative	Value exists (as retrieved from the eIDAS eID)
business_role	The business role of the Legal Representative within the Company (Managing Director, Director etc.)	Empty

3.4.3 DP to KYB Custodian Message Response

Attribute Name	Description	Type
Company		
legal_name	List of Legal Names assigned to Company as returned by the specified DPs	Array of {value, DP name}
legal_person_identifier	The Company Business Identifier (Business Registry)	String
country	The Company Jurisdiction Country	String
vat_registration_number	List of Company VAT registration numbers as returned by the specified DPs	Array of {value, DP name}
sub_jurisdiction	List of sub-jurisdictions that the Company is registered at as returned by the specified DPs	Array of {value, DP name}
trading_status	List of trading status of the company (live, dormant etc.) as returned by the specified DPs	Array of {value, DP name}

sic	List of the 4-digits SIC codes (Standard Industrial Classification) of the Company as returned by the specified DPs	Array of {value, DP name}
lei	List of the Legal Entity Identifiers of the Company as returned by the specified DPs	Array of {value, DP name}
address	List of addresses of the Company as returned by the specified DPs	Array of {value, DP name}
business_role	List of business roles of the Legal Representative within the Company (Managing Director, Director etc.) as returned by the specified DPs	Array of {value, DP name}
Legal Representative		
given_name	The given name of the DS Legal Representative	String
family_name	The family of the DS Legal Representative	String
person_identifier	The eIDAS eID personal Identifier of the Legal Representative	String
date_of_birht	The date of birth of the Legal Representative	String
business_role	List of business role of the Legal Representative within the DS (Managing Director, Director etc.) as returned by the specified DPs	Array of {value, DP name}

3.4.4 KYB Custodian to DC Message Response

Attribute Name	Description	Type
Company		
legal_name	List of Legal Names assigned to Company as returned by the specified DPs	Array of {value, DP name}
legal_person_identifier	The Company Business Identifier (Business Registry)	String
country	The Company Jurisdiction Country	String

vat_registration_number	List of Company VAT registration numbers as returned by the specified DPs	Array of {value, DP name}
sub_jurisdiction	List of sub-jurisdictions that the Company is registered at as returned by the specified DPs	Array of {value, DP name}
trading_status	List of trading status of the company (live, dormant etc.) as returned by the specified DPs	Array of {value, DP name}
sic	List of the 4-digits SIC codes (Standard Industrial Classification) of the Company as returned by the specified DPs	Array of {value, DP name}
lei	List of the Legal Entity Identifiers of the Company as returned by the specified DPs	Array of {value, DP name}
address	List of addresses of the Company as returned by the specified DPs	Array of {value, DP name}
Legal Representative		
given_name	The given name of the DS Legal Representative	String
family_name	The family of the DS Legal Representative	String
person_identifier	The eIDAS eID personal Identifier of the Legal Representative	String
date_of_birht	The date of birth of the Legal Representative	String
business_role	List of business role of the Legal Representative within the DS (Managing Director, Director etc.) as returned by the specified DPs	Array of {value, DP name}
sub	UUID assigned to Legal Representative by KYB Custodian for this request	String
Metadata		
company_legal_representative_mandate_validation	Timestamp of the instant that the Legal Representative Validated their Mandate with the DS	Timestamp

generation_timestamp	Timestamp generation of the KYB profile by the KYB Custodian	Timestamp

3.5 UI Design

This section contains the DC (SP) and KYB Custodian Service Flows from a user point of view (where the user is considered the Legal Representative of the Company)[12].

3.5.1 Init Service Provider Interfaces (SP/DC)

Implemented by the Service Provider (acting as a DC of KYB Custodian services).

Query for Corporate Customer Data (KYB/KYC screening) flow: steps 1-2

3.5.1.1 UI1.0 Case Presentation Interface

Description: The page explaining the scope of the Demo Case
Design:
- Header
  - Specific to application (includes the GRIDS logo and the title: GRIDS KYB Custodian Demo Case)
- Text
  - This is a demo service demonstrating the application potential of GRIDS. It implements a model of a financial intermediary capable of conducting compliance and KYB checks (Know Your Business) processes, named "GRIDS KYB Custodian". The functionality provided by the GRIDS KYB Custodian reuses and extends the architecture and the core components of GRIDS project infrastructure (link to GRIDS Github).
    The GRIDS KYB Custodian is connected with a simulated Service Provider offering cryptocurrency and stablecoin portfolio-building services, called CryptoAegean. Corporate customers creating an account with CryptoAegean should go through a process of identity verification (KYB check). This process is delegated to the GRIDS KYB Custodian which connects, through GRIDS APIs, with two demo Data Providers, provided by Kompany (they reproduce the business functionality of a real KYC provider).

    Learn more about GRIDS and this specific case by following the links below:
    GRIDS KYC Custodian, 2021, Technical Document
    GRIDS presentation by Peter Bainbridge-Clayton and Nikos Triantafyllou, in the GRIDS-eIB Workshop on "Identity Attributes and KYC: the transition to eIDAS 2.0 and AMLR"

---

[12] Reference document with mock pages:
https://docs.google.com/spreadsheets/d/1sIR-xThlPwSWczZ5USwHcvH1D8ZSZ9uE1cLKGDjtWXg/edit?usp=sharing

> Peter Bainbridge-Clayton, Kompany, Austria, *KYB and AML, Establishing Business Identity for Regulated Industries*
> [Summary, Presentation, Video]
> Nikos Triantafyllou, UAegean i4m Lab, Greece, *GRIDS in vivo*
> [Summary, Presentation, Video]
>
> To continue the process click the **"Next"** button
> Next [button]
>
> The GRIDS KYB Custodian Demo Case has been developed by the GRIDS project (link[13]), UAegean i4M Lab (link[14]), Kompany (link[15]) and ATOS Blockchain, Identity & Privacy Unit (link[16])

- Graphics
- Footer
    - GRIDS, CEF/EC logo-flag[17]
    - Text with ref to INEA Contract
    - "Grant Agreement under the Connection Europe Facility (CEF) - Telecommunications Sector - Agr. number INEA/CEF/ICT/A2019/1926018"

3.5.1.2 UI1.1 SP Service Landing Page

Description: The landing page of CryptoAegean Company
Design:
- Header
    - Left: Logo: CryptoAegean
    - Right: Logo: GRIDS
- Text
    - Buy crypto and stablecoins instantly!
    - CryptoAegean is a simple, elegant, and secure platform to build your corporate crypto and stablecoin portfolio
    - **Get Started [button]**
- Graphics
- Footer
    - As previously mentioned

3.5.1.3 UI1.2 Institutional Client Registration Notification

Description: The page where CryptoAegean customers can start the process of creating an account (KYB profile)
Design:
- Header
    - As previously mentioned

---

[13] https://www.grids-cef.eu/
[14] http://www.atlantis-group.gr/i4Mlab
[15] https://www.kompany.com
[16] https://booklet.atosresearch.eu/
[17]

- Text
  - Welcome to CryptoAegean! We are doing everything possible to make CryptoAegean the best destination for Corporate Customers and other institutions to buy, sell, and store digital assets (cryptocurrency and stablecoins).
  Please fill out the form below to begin the registration process and open an institutional account with us
  - Company Declaration [button] (link to UI2.1)

    Upon completion, your information will be reviewed by you and a member of our Customer Relationships Team will contact you directly

    Have you already accomplished this process? Account Sign In (link to UI2.1)
- Graphics
- Footer
  - As previously mentioned

3.5.2 KYB Custodian Interfaces

3.5.2.1 UI2.1 Company Declaration/Verification Interface

Description: This UI is the starting Form of the KYB Custodian. It requires the DS Legal Representatives to input their Personal Information (Name, Surname, email) and the information of the Company they represent in order to initiate the KYB profiling process.

Query for Corporate Customer Data (KYB/KYC screening) flow: step 3

Design:
- Header
  - Left: Logo: GRIDS KYB Custodian
  - Right: Logo: GRIDS
- Stepper
  - 1: Registration/Verification
- Explanation text
  - Title: Registration/Verification
  - In order to initiate the generation of the KYB (Know Your Business) profile of your Company, you must first provide the details of the company you represent and your personal details. Then click the "Next" button.
- Company Information
  - Company Name
  - Company Registration Number
  - Country of Company Registration
- Company Representative Information
  - Name
  - Surname
  - e-mail

- Button
  - Next
- Footer
  - GRIDS, CEF/EC logo-flag[18]
  - Text: "Grant Agreement under the Connection Europe Facility (CEF) - Telecommunications Sector - Agr. number INEA/CEF/ICT/A2019/1926018"
  - Developed by UAegean i4m Lab, Kompany and GRIDS Consortium

3.5.2.2 UI2.2 DS authentication via GRIDS (eIDAS Network)

Description: A set of interfaces that authenticate the DS Legal Representative via GRIDS, using their eIDAS eID

Query for Corporate Customer Data (KYB/KYC screening) flow: step 4a/i

- Starting page: Country Selection
- End page: User Consent

Back-end calls: GRIDS two-folds call: a) for eIDAS eID identification and, b) KYB DP list
Query for Corporate Customer Data (KYB/KYC screening) flow: steps 4a,4b

KYB Custodian

3.5.2.3 UI2.3 Mandate Validation Form

Description: This interface requires the DS Legal Representative to confirm their affiliation with the Company (as that company's profile was generated in the previous step).
 Design:
- Header
  - Left: Logo: GRIDS KYB Custodian
  - Right: Logo: GRIDS
- Stepper: Mandate Validation
- Form text
  - Title: Mandate Validation
  - Your KYB profile is almost ready. To continue, please confirm that you, (eIDAS first name) (eIDAS surname), born at (eIDAS date of birth), and the assigned the eIDAS eID personal Identifier (eIDAS personal Identifier), are affiliated with the company (Company Legal Name), Company Registration Number: (Company Registration Number).
- Button
  - Confirm

---

[18]

https://lh3.googleusercontent.com/xuCj6_xXFJoFUx-xvVU0VtQje-Tevs6q1oJGHXjPNCDr2p2kDpSPhT9dpDEdJ4pZpgpujXTPy1gi1kWjKkvtxSgT8h9cNHVgtHQkQFt5TZrPHt-3DThFhFP03DtepsUwpA=w1280

- Footer
  - GRIDS, CEF/EC logo-flag[19]
  - Text: "Grant Agreement under the Connection Europe Facility (CEF) - Telecommunications Sector - Agr. number INEA/CEF/ICT/A2019/1926018"
  - Developed by UAegean i4m Lab, Kompany and GRIDS Consortium

---

Back-end call: KYB Custodian call to DPs from KYB attributes and consolidation of responses
Query for Corporate Customer Data (KYB/KYC screening) flow: steps 5

> **DP**

3.5.2.4 UI2.4 Present the DS with the KYB attributes of their Organization (after DP query)

Description: This interface presents the DS Legal Representative the attributes retrieved from the GRIDS network and asks him/her to confirm them to proceed. Additionally, this interface prompts the DS to store their data in the Public Registry - as verifiable data.

Design:
- Header:
  - Left: Logo: GRIDS KYB Custodian
  - Right: Logo: GRIDS
- Stepper: KYB Profile
- Explanation text
  - Title: KYB profile (Finish or Register)
  - 1. Finish: Your KYB Profile has been generated successfully. In order to redirect back to the service that initiated the KYB check please complete this step (Finish).
  - 2. Register: Additionally, you can instantly generate a publicly Verifiable KYB profile of your Company and store it in the system's public registry. By opting in for this feature you will enable Regulation Supervision Authorities, government bodies and other qualified entities, the possibility to instantly Verify the KYB attributes of your Company, thus facilitating and simplifying your dealings with these parties. To do so click "Register". To learn more about Verifiable KYB data click here (google doc link[20]).
- Title: Company KYB profile retrieved

Attribute	Example Value	(i)
Company		
Legal Company Name	[{value:"Company name",	

---

[19]
https://lh3.googleusercontent.com/xuCj6_xXFJoFUx-xvVU0VtQje-Tevs6q1oJGHXjPNCDr2p2kDpSPhT9dpDEdJ4pZpgpujXTPy1gi1kWjKkvtxSgT8h9cNHVgtHQkQFt5TZrPHt-3DThFhFP03DtepsUwpA=w1280
[20] link:

	data_provider: "DP 1"}, {value:"Kompany name", data_provider: "DP 2"}]	
Company Identifier	TEST001	The Company Business Identifier
Company Country of Registration	UK	The Company Jurisdiction Country
Sub Jurisdiction	UK	The sub-jurisdiction that the Company is registered at
VAT Registration Number	[{value:12345, data_provider: "DP 1"}]	
Trading Status	[{value:"LIVE", data_provider: "DP 1"}]	The trading status of the company (live, dormant etc.)
SIC	[{value:61445, data_provider: "DP 1"}, {value:61402, data_provider: "DP 2"}]	The Standard Industrial Classification Code of the Company
LEI	984500W69AFEEJA2B749	The Legal Entity Identifier of the Company
Company Address	[{value: "1 London Street, London, L1 L1, England", data_provider: "DP 1, DP 2"}]	
Legal Representative		
First Name	Phil	
Last Name	Claude	
eIDAS eID Person Identifier	GR/GR/1111	
Date of Birth	01/02/83	
Business Role	Director	The business role of the Legal Representative within the Company (example: Managing Director, Director etc.)

- Button 1
    - Finish
- Button 2
    - Register
- Footer

- ○ GRIDS, CEF/EC logo-flag[21]
- ○ Text: "Grant Agreement under the Connection Europe Facility (CEF) - Telecommunications Sector - Agr. number INEA/CEF/ICT/A2019/1926018"
- ○ Developed by UAegean i4m Lab, Kompany and GRIDS Consortium

(Optional) 3.5.2.5 UI2.5 After Opting in for Registering at the Verifiable KYB Public Registry

Description: This interface informs the Legal Representative of the DS that the Registration of the KYB profile of the DS to the KYB Public Registry is completed and enables them to continue the flow (via the same path as the Finish button of 3.5.2.4 UI2.4) but additionally sends an email to the Legal Representative of the DS.
Design:
- ● Header
  - ○ Left: Logo: GRIDS KYB Custodian
  - ○ Right: Logo: GRIDS
- ● Stepper: (Optional) Register with Us
- ● Form text
  - ○ Title: Already Registered!
  - ○ Text: Your Company's KYB profile has been successfully added to the Verifiable Data Registry of the GRIDS KYB Custodian Service. An email with further details will be sent to you shortly.
  - ○ In order to redirect back to the service that initiated the KYB check please complete this step (Finish).
- ● Button
  - ○ Finish
- ● Footer
  - ○ GRIDS, CEF/EC logo-flag[22]
  - ○ Text: "Grant Agreement under the Connection Europe Facility (CEF) - Telecommunications Sector - Agr. number INEA/CEF/ICT/A2019/1926018"
  - ○ Developed by UAegean i4m Lab, Kompany and GRIDS Consortium

(Optional) 3.5.2.5 VC Invitation email (in the case the DS has already accepted to publish the KYB profile of their Company as verifiable data)

Description: Once the DS is redirected back to the SP, an email is sent to their originally declared email address prompting them to issue their Company's KYB profile as a verifiable credential.
Design:

---

[21]

https://lh3.googleusercontent.com/xuCj6_xXFJoFUx-xvVU0VtQje-Tevs6q1oJGHXjPNCDr2p2kDpSPhT9d
pDEdJ4pZpgpujXTPy1gi1kWjKkvtxSgT8h9cNHVgtHQkQFt5TZrPHt-3DThFhFP03DtepsUwpA=w1280
[22]

https://lh3.googleusercontent.com/xuCj6_xXFJoFUx-xvVU0VtQje-Tevs6q1oJGHXjPNCDr2p2kDpSPhT9d
pDEdJ4pZpgpujXTPy1gi1kWjKkvtxSgT8h9cNHVgtHQkQFt5TZrPHt-3DThFhFP03DtepsUwpA=w1280

- Email Text:
  `

Back-end email message: KYB Custodian email invitation sent to the DS to invite them to issue a Portable KYB profile implemented as a Verifiable Credential

KYB Custodian

3.5.3 Return to Service Provider (SP/DC)

3.5.3.1 UI3.1 Redirection to SP

Description: After the end of the processing of the KYB data by the KYB Custodian the flow is propagated back to the DC together with the KYB profile of the DS. For the CryptoAegean DC this is the page where the customers are informed that their KYB profile is ready. They are informed that a Customer Relationships Team member will contact them directly.
Design:
- Header
  - Left: Logo: CryptoAegean
  - Right: Logo: GRIDS
- Text

- ○ Thank you for registering with CryptoAegean as a Corporate Customer. We have successfully received the essential business attributes of your company. An email with the attributes will be sent to you. A member of our Customer Relationships Team will contact you directly very shortly.

- Graphics
- Footer
  - ○ GRIDS, CEF/EC logo-flag[23]
  - ○ Text: "Grant Agreement under the Connection Europe Facility (CEF) - Telecommunications Sector - Agr. number INEA/CEF/ICT/A2019/1926018"
  - ○ Developed by UAegean i4m Lab, Kompany and GRIDS Consortium

3.5.3.2 UI3.2 VC Invitation email (in the case the DS has already accepted to publish the KYB profile of their Company as verifiable data)

- Sender
- Receiver
- Body
- Signature

3.5.4 Terminate End Event Message

3.5.4.1 UItendevTerminate End Event Message (Page Design and Text)

4. KYB Custodian: Issue a KYB Verifiable Identity for a Company

Verifiable Credentials are defined by W3C as: "statements made by an issuer in a tamper-evident and privacy-respecting manner." In essence, Verifiable Credentials (VCs) allow, by utilizing a combination of PKI and privacy-protecting technologies, the digital watermarking of claims about a Data Subject from an Issuer enabling their verification (of both their validity and their ownership) without the involvement of the entity attesting to them.

The process described below enables a Legal Representative acting on behalf of a Corporate Customer (DS) to Issue a Verifiable Identity for a Company, portable KYB business Identity Profile (i.e., standard KYB profiles) implemented as a Verifiable Credential (VC). In this capacity, the flow presented in this section implements a model of a Verifiable Credential (VC) Issuer, capable of encoding the Corporate Identity as a VCs storing it in the Identity wallet (EDIW) of the DS Legal Representative. The Legal Representative can then, without any interaction with the Custodian, authenticate at any Service Provider, representing the DS, by presenting their KYB Verifiable Identity directly to gain access to their service.

---

[23]

https://lh3.googleusercontent.com/xuCj6_xXFJoFUx-xvVU0VtQje-Tevs6q1oJGHXjPNCDr2p2kDpSPhT9dpDEdJ4pZpgpujXTPy1gi1kWjKkvtxSgT8h9cNHVgtHQkQFt5TZrPHt-3DThFhFP03DtepsUwpA=w1280
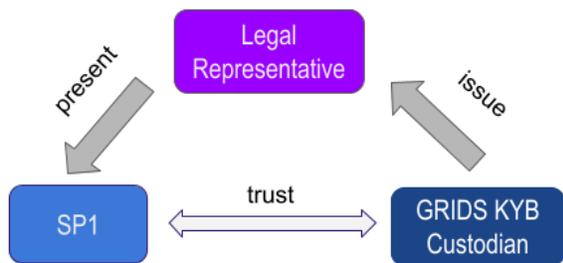
In other words, this flow is addressed to Corporate Clients (DSs) represented by Legal Representatives that want to:

generate a Corporate Identity Business Profile enable their Legal Representative to securely store it and

use it to gain access to SPs needing to verify their legitimacy without the SPs being in a direct relationship with the Custodian service.

Only a trust relationship is required between them and the Custodian.

In the next flow, the following assumptions apply:

- The Legal Representative of the DS is in possession of a mobile device equipped with a compatible Verifiable Credential Wallet app (e.g. Jolocom)
- The Legal Representative of the DS has completed the "KYB Custodian: Query for Corporate Customer Data (KYB/KYC screening)", as part of an interaction with a DC
- The Legal Representative of the DS has opted in to include the Corporate Profile of the DS to the systems Verifiable KYB Public Registry.
- The Legal Representative of the DS has received an email invitation by the KYB Custodian to export their KYB Profile as a Verifiable Credential

4.1 Regular flow

At a high level the Issue a KYB Verifiable Identity for a Company flow consists of the following steps:

1. The Legal Representative of the DS receives an invite via email to Issue a KYB Verifiable Identity for a Company as part of the "KYB Custodian: Query for Corporate Customer Data (KYB/KYC screening)" flow
2. The Legal Representative accepts the invite and is directed to a KYB Custodian Interface where he is required to authenticate over eIDAS eID to proceed.
3. The Legal Representative of the DS authenticates over eIDAS and is returned to the KYB Custodian
4. The KYB Custodian searches an existing DS KYB profile (using their eIDAS eID as the identifier) in the systems Verifiable KYB Public Registry
5. The Legal Representative is presented with the KYB profile and is asked to consent to the creation of the a Verifiable Credential
6. The Legal Representative is asked to pair their EDIW to the Custodian service (by scanning a QR).
7. The Legal Representative pairs their EDIW and is asked to accept a Credential Offer (by scanning a second QR code)

8. The Legal Representative is notified by their EDIW about the Credential Offer
9. The Legal Representative authorizes on the EDIW the Offer and receives the KYB Verifiable Identity for the DS

4.3 Other variations of the Regular Flows

The Legal Representative of a Company is informed by email that the issuance of the KYB Verifiable Identity for the Company they represent is enabled. However, during the registration process at the public registry (via the Company's interaction with the KYB Custodian) conflicting attributes about the company were returned by some of the different DPs connected to the system. With these assumptions, at a high level, this additional flow is implemented as follows:

- *Reference: Regular Flow (Issue a KYB Verifiable Identity for a Company) is executed until Step 4 (including Step 4):*
    - c. The KYB Custodian searches an existing DS KYB profile (using their eIDAS eID as the identifier) in the systems Verifiable KYB Public Registry
- 4.a   The KYB Custodian discovers that the registered Company contains conflicting attributes from different DPs connected to the system
- 4b. The KYB Custodian informs the Legal Representative that issuance of their KYB Verifiable Identity is not possible and that they should validate their registration with the DPs of the system.

4.4 Data Models

This section provides an overview of the data model of the KYB Verifiable Identity for a Company issued by the KYB Custodian to its Legal Representative

Attribute	Example Value	Description
Company		
Legal Company Name	UK TEST COMPANY 1	Legal Name of the DS (Company)
Legal Person Identifier	TEST001	Legal Identifier of the DS
Company Country of Registration	UK	Registration country of the Company
VAT Registration Number	12345	VAR Registration Number

Sub Jurisdiction	UK	Sub Jurisdiction of the registration country of the Company
Trading Status	LIVE	Trading status of the Company
SIC	61445	Standard Industrial Classification code of the DS
LEI	984500W69AFEEJA2B749	Legal Entity Identifier of the DS
Company Address	1 London Street, London, L1 L1, England	Legal Address of the DS
Legal Representative		
Give Name	Phil	Given Name of the Legal Representative of the DS
Family Name	Claude	Family Name of the Legal Representative of the DS
Person Identifier	GR/GR/1111	eIDAS eID Personal Identifier of the Legal Representative
Date of Birth	01/02/83	Date of Birth of the Legal Representative
Business Role	Director	Role of the Legal Representative within the DS as registered in the DPs
Metadata		
Data Providers	[DP1, DP2]	List of the data providers used to generate the KYB Verifiable Identity for the Company
company_legal_representative_ mandate_validation	1638276008000	Timestamp of the instant that the Legal Representative Validated their Mandate with the DS
generation_timestamp	1638276008000	Timestamp generation of the KYB profile by the KYB Custodian in the Verifiable Data Public Registry or timestamp of the generation of the DC Message Response
issuer	did:jolo:1d8add724cfd2a8	DID of the KYB Custodian

	6b9cf9f2f1d55d9532192155b2a8ae39040908f431efe006f	(Verifiable Credential Issuer)
sub	did:jun:123123123	DID of the Legal Representative of the Company
claimId	claimId:f3d965c6ad2758cf	The Id of the KYB Verifiable Identity
issued	1638276008000	Timestamp of the generation of the KYB Verifiable Identity
expires	1638376008000	Timestamp of the expiration date of the KYB Verifiable Identity

4.5 UI Design

4.5.0 UI0 VC Invitation email

Description: At the end of the Query for Corporate Customer Data (KYB/KYC screening) in case the Legal Representative opted in for the publication of the DS profile to the public Verifiable Data Registry, an email is sent to their originally declared email address prompting them to issue their Company's KYB profile as a verifiable credential.
Design:
   ● Email Text:
      `

Sender:	GRIDS KYB Custodian <grids-kyb-custodian@i4mlabUAegean.onmicrosoft.com>
Subject:	Subject: [GRIDS KYB Custodian Service] Portable KYB Profile Card generation invitation
Body:	
	Hi <Name_Surname>
	Thank you for registering your Organization to the KYB Custodian Verifiable Data Public Registry.
	You can now issue a Portable KYB Profile Card as a Verifiable Credential. This Card will contain your KYB profile (Natural Person details and Company KYB attribute details) and can be used to instantly prove it to any compliant Service Provider. To learn more about Verifiable Credentials click ${here}.
	Please click ${acceptLink} to proceed to the issuance of your KYB Digital Identity Card.

	Thank you!
	The Administration team
	GRIDS KYB Custodian by i4m Lab

4.5.1 UI1 Issue Verifiable KYB profile prompt

Description: This interface prompts the user that they need to authenticate over eIDAS eID in order to issue their Verifiable KYB Profile

Design:
- Header
- Stepper
- **Text:** Welcome to the GRIDS KYB Verifiable Identity Issuer Service. KYB Verifiable Identities for a Company can reduce transactions and operation costs with respect to KYB profiling and significantly simplify the process.By using Verifiable Credentials the KYC and AML procedures can be completed in moments as simple as scanning a QR code. Please authenticate over eIDAS eID in order to continue
- Button 1 (eIDAS eID)
- Footer

4.5.2 UI2 DS authentication via GRIDS (eIDAS Network)

Description: A set of interfaces that authenticate the DS Legal Representative via GRIDS, using their eIDAS eID

Query for Corporate Customer Data (KYB/KYC screening) flow: step 4a/i

---

- Starting page: Country Selection
- End page: User Consent

4.5.1 UI3 Pair Wallet UI

Description: This interface prompts the user to pair their wallet in order to proceed to the issuance of their KYB Verifiable Identities

Design:
- Header
- Stepper
- Explanation **Text:** Thank you for authenticating. To continue please scan the following QR code with your Jolocom Smart Wallet to connect it to the service.
- QR code
- Footer

4.5.2 UI4 Request Issuance

Description: This interface prompts the user to request the generation of their KYB Verifiable IDentity

Design:
- Header
- Stepper
- Explanation **Text:** Your Jolocom Smart Wallet has been successfully connected. To generate your Company's KYB Verifiable Identity please click the following button
- Button 1 (Request Identity)
- Footer

4.5.3 UI5 Credential Issuance Invite

Description: This interface prompts the user to accept the Credential Issuance Invite
Design:
- Header
- Stepper
- Explanation **Text:** Company's KYB Verifiable Identity is read. Please scan the following QR with your Jolocom Smart Wallet in order to receive an invite to store the generated Identity on your device (You will be prompted to accept the KYB Verifiable Identity by your Smart Wallet app after scanning the QR code).
- QR Code
- Footer

4.5.4 UI6 Issuance Succes

Description: Informs the user that the Verifiable Identity has been sent to their wallet app
Design:
- Header
- Stepper
- Explanation **Text:** Your Company's KYB Verifiable Identnity has been successfully sent to your Jolocom Smart Wallet. Please check the documents section of your wallet to review it.
- Footer

4.5.4 UItendevTerminate End Event Message (Page Design and Text)

Description: The page that the flow is redirected to in case of an error. An error may occur if:
   Case A: the Company is not registered in the public KYB Registry or the Legla Representative authenticated is different

Design:
- Header
- Text
  - The process has been terminated.
    - Case A: No records of the Legal Representative were found in the Verifiable KYB Public Registry
  - Please restart the process and make sure you authenticate over eIDAS eID with the proper credentials.
  - Get Started [button]

- Graphics
- Footer
  - As previously mentioned

4.6 Alignment with EBSI

The European Blockchain Services Infrastructure[24] (EBSI) is a very influential project aimed at "building a peer-to-peer network of interconnected nodes running a blockchain-based services infrastructure". Specifically, European self-sovereign identity framework (ESSIF) which is a key part of EBSI has greatly influenced the eIDAS 2.0 regulation and as a result the EDIW is expected to be designed around the same core principles.

While ESSIF is a still ongoing effort, many key directions and outcomes have been made publically available. In particular, ESSIF internally is based around the concepts of W3C Decentralized Identifiers (DIDs) and Verifiable Credentials (VCs); augmenting these concepts with anchors to EU trusts lists (EBSI).

The GRIDS KYB Custodian Service presented in this document is fully compliant with W3C standards for both the creation of the DIDs and the VCs. As a result the following conclusions can be drawn for the alignment with ESSIF/EBSI:

EBSI Compatible Feature in Current Version (W3C standard)	EBSI Compatible Feature in Future Versions
Issuance and storage of Verifiable Credentials: ● Issuance of one or more VCs. ● Storage of VCs in digital wallet	Onboarding: ● Registration of DIDs on EBSI ● Accreditation of issuers of VCsSetting up wallets and creation of DIDs

Presentation and verification of Verifiable Credentials:
● Presentation & verification:
  ○ Composition of VPs.
  ○ Verification of the VPs
	Issuance and storage of Verifiable Credentials:
	● Request issuance of VC

In a nutshell, for the features W3C Standards are defined the GRIDS KYB Custodian and ESSIF are compatible as both follow the same specifications. For the features implemented by ESSIF in a custom manner the GRIDS KYB Custodian service is not compatible out of the box.

---

[24] https://digital-strategy.ec.europa.eu/en/policies/european-blockchain-services-infrastructure

However, this incompatibility is only temporary and once ESSIF wallet specifications are announced[25] the GRIDS KYB Custodian can be easily upgraded to support them.

5. KYB Custodian: Verifiable KYB Public Registry

The process described below presents the steps for the creation of a public profile of Verifiable Data for a Corporate Entity. This public profile is created using the available DPs (that offer identity data for corporate customers) and enables the instant retrieval and verification of it by Regulation Supervision Authorities, government bodies and other qualified entities. This is achieved by storing the DS KYB profile as a Verifiable Credential in the registry and making it publically available, thus enabling any authorized entity to request it and verify it independently without requiring the DS to have their own corporate identity wallets.

Ofcourse, this flow requires that the "Query for Corporate Customer Data (KYB/KYC screening)" flow was completed successfully from a natural person (Legal Representative) on behalf of a Corporate Customer (DS). In other words, this flow is addressed for DS who after interacting with a DC via a Legal Representative decide to make their KYB profile publically available in a Verifiable Data format in order to facilitate their future interactions with regulatory, government, and other quafied entitie's bodys.

As a result, the following assumptions apply:
- The DS, via a Legal Representative, during their interaction with a DC completed successfully the "Query for Corporate Customer Data (KYB/KYC screening)" flow until Step 6 (including Step 6)
  - *Reference Step 6:* The KYB Custodian prompts the Legal Representative of the Company to store Company's KYB profile in the Public Registry (a service operated by the KYB Custodian), as verifiable data (optional for the Company representative).
- The Legal Representative accepts the registration invitation
- The KYB Custodian generates the DS's public KYB profile in a verifiable data format and includes it in the registry

5.1 Regular flow
At a high level the Issue a KYB Verifiable Identity for a Company flow consists of the following steps:

Regulator

---

[25] Expected by the end of Q4 2021, "EBSI VC Playbook and testing", retrieved from
https://ec.europa.eu/cefdigital/wiki/download/attachments/446759587/%28EBSI-VCs%29.%28INATBA-Deck%29.%28v1.02%29.pdf?version=1&modificationDate=1635264060908&api=v2

1. A Regulation Supervision Authority wants to monitor the DS. For this process an accurate KYB profile of the DS is required (without the necessary interaction of the DS)
2. The Regulation Supervision Authority accesses the KYB Custodian public registry and queries for the DS's KYB profile
3. The Regulation Supervision Authority receives the KYB profile of the DS
4. The Regulation Supervision Authority verifies the validity of the received KYB profile independently without interacting with the DS or any of the DPs used in the generation of the KYB profile
5. The Regulation Supervision Authority proceeds with the monitoring processes.

KYB Custodian

Regulator

5.2 Data Models

This section provides an overview of the data model of the KYB public registry Verifiable Data entry for a Company issued by the KYB Custodian and inserted to the registry,

Attribute	Example Value	Description
Company		
Legal Company Name	UK TEST COMPANY 1	Legal Name of the DS (Company)
Legal Person Identifier	TEST001	Legal Identifier of the DS
Company Country of Registration	UK	Registration country of the Company
VAT Registration Number	12345	VAR Registration Number
Sub Jurisdiction	UK	Sub Jurisdiction of the registration country of the Company
Trading Status	LIVE	Trading status of the Company
SIC	61445	Standard Industrial Classification code of the DS
LEI	984500W69AFEEJA2B749	Legal Entity Identifier of the DS
Company Address	1 London Street, London, L1 L1, England	Legal Address of the DS

Legal Representative		
Give Name	Phil	Given Name of the Legal Representative of the DS
Family Name	Claude	Family Name of the Legal Representative of the DS
Person Identifier	GR/GR/1111	eIDAS eID Personal Identifier of the Legal Representative
Date of Birth	01/02/83	Date of Birth of the Legal Representative
Business Role	Director	Role of the Legal Representative within the DS as registered in the DPs
Metadata		
Data Providers	[DP1, DP2]	List of the data providers used to generate the KYB Verifiable Identity for the Company
company_legal_representative_ mandate_validation	1638276008000	Timestamp of the instant that the Legal Representative Validated their Mandate with the DS
generation_timestamp	1638276008000	Timestamp generation of the KYB profile by the KYB Custodian in the Verifiable Data Public Registry or timestamp of the generation of the DC Message Response
issuer	did:jolo:1d8add724cfd2a8 6b9cf9f2f1d55d95321921 55b2a8ae39040908f431ef e006f	DID of the KYB Custodian (Verifiable Credential Issuer)
sub	did:jun:123123123	DID of the Legal Representative of the Company
claimId	claimId:f3d965c6ad2758cf	The Id of the KYB Verifiable Identity
issued	1638276008000	Timestamp of the generation of the KYB Verifiable Identity
expires	1638376008000	Timestamp of the expiration date of the KYB Verifiable

		Identity