



Market Analysis

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# Innovating in Sukuk Capital Markets

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Wethaq

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# Introduction

Distributed ledgers and 'smart clauses' particularly can allow for complex modelling of financial transactions between counterparties in a manner that allows all relevant participants to more effectively maintain an up-to-date record of pertinent transaction details, even as those details evolve.

Capital markets have become increasingly global in the last ten years and a vast network of issuers and investors have come together across a growing portfolio of products. Islamic finance products, such as the popular Sukuk instruments, have contributed to this growth, but can be uniquely complex to document and structure. The reliance of many such products on regional conventions and historic infrastructure also impacts the efficiency of the issuance process.

Blockchain technology, distributed ledgers and 'smart clauses' (as described in this paper) can help to optimize the value chain of Sukuk instruments from origination and structuring to issuance, administration and trading.<sup>1</sup> However, in order to capitalize on such potential,



S&P Global Ratings believes that standardization of legal documents and *Shariah* interpretation, and financial technology (fintech) could help accelerate the Sukuk market growth in the short to medium term. Today, we are still in a situation where the process of issuance of Sukuk is more cumbersome and lengthy compared with the process of issuing a conventional bond. The involvement of several parties with, sometimes, opposite perspectives on how a Sukuk should be structured and sold does not help either. To reach its full potential, the process of issuance of Sukuk and the process of issuance of a conventional bond have to be equivalent in terms of time, effort and cost deployed to be able to tap the market. That requires inclusive standardization of legal documentation and *Shariah* interpretation. We call it inclusive as, in our view, the requirements of all the stakeholders have to be taken into consideration when coming up with the standard legal documentation or with *Shariah* interpretation. Fintech and particularly the use of blockchain and smart contract protocols, on the other hand, could be another accelerator especially if it helps make the process smoother and clarify responsibilities under different scenarios of Sukuk issuance or resolution.

Dr. Mohamed Damak, Global Head of Islamic Finance,  
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<sup>1</sup> All blockchains are distributed ledgers, but not all distributed ledgers "batch" information together into a chain of blocks. For simplicity the term blockchains and distributed ledgers are used interchangeably in this paper.

next-generation capital market infrastructure must be flexibly designed to account for the nuances and requirements of these instruments. This paper sets-out the conceptual framework for this infrastructure as well as design steps already underway in anticipation of pilot issuances to follow.

This paper specifically examines Sukuk al-Ijara, a common Islamic finance instrument<sup>2</sup> that allows capital raisers and capital providers access to *Shariah*-compliant<sup>3</sup> products certified by *Shariah* boards.<sup>4</sup> Conventional (i.e., non-Islamic) bond structures are not considered to be *Shariah*-compliant as they involve the payment and receipt of interest. Sukuk securities, by contrast, comply with *Shariah* principles through passing on the returns from an underlying asset or through a contractual arrangement with respect to that asset.<sup>5</sup>

## Sukuk al-Ijara

Sukuk al-Ijara presents a strong foundational product to analyze, due to its popularity, relative simplicity and general acceptance by most *Shariah* scholars as a classic Sukuk structure.

As per a widely recognised definition:

**“[t]he term “Ijara” is broadly understood to mean the ‘transfer of the usufruct of an asset to another person in exchange for a rent claimed from him’ or, more literally, a “lease”...The Ijara is particularly useful in this respect as it can be used in a manner that provides for regular payments throughout the life of a financing arrangement, together with the flexibility to tailor the payment profile – and method of calculation – in order to generate a profit. In addition, the use of a purchase undertaking (to repurchase the assets and repay investors at maturity) is widely accepted in the context of Sukuk al-Ijara...”<sup>6</sup>**

In a traditional Sukuk al-Ijara structure, proceeds from the Sukuk issuance are used to fund the purchase of specific assets by the Sukuk issuer (the “Sukuk assets”). The Sukuk assets are in turn leased back to the originator of the assets. The Sukuk assets are held on trust by the issuer for the Sukuk-holders as beneficiaries. Lease payments paid by the Sukuk originator to the Sukuk issuer are paid to the Sukuk-holders as profit distribution for their Sukuk holding. At maturity, Sukuk assets are repurchased by the Sukuk originator, the trust is dissolved and the principal is thus repaid to Sukuk-holders.

“ IIFM’s *Shariah*-compliant financial documentation and product confirmation standards are playing an important role in the harmonization and creation of efficiency, trust and transparency in the industry. The digitization of standard documentation and introduction of smart contracts to facilitate the operational aspects of these standards is much needed and will provide a further boost to the growth of the Sukuk markets.

International Islamic  
Financial Market

<sup>2</sup> Common structures include: (i) Sukuk al-ijara (lease-backed financing), (ii) Sukuk al-Mudaraba (financing based on a partnership where Sukuk-holders bear capital risk and partner with an entrepreneur contributing their project expertise), (iii) Sukuk al-Wakala (financing based on an agency agreement whereby the principal appoints an agent to invest funds in a pool of investments or assets that are purchased by the agent on behalf of the Sukuk-holders), (iv) Sukuk al-Murabaha (financing based on the principles of a commodity sale in consideration for deferred payment at a profit mark-up). Less common is the Sukuk al-Istisna (financing in a project context where the underlying project/deliverable can be identified with a high degree of specificity).

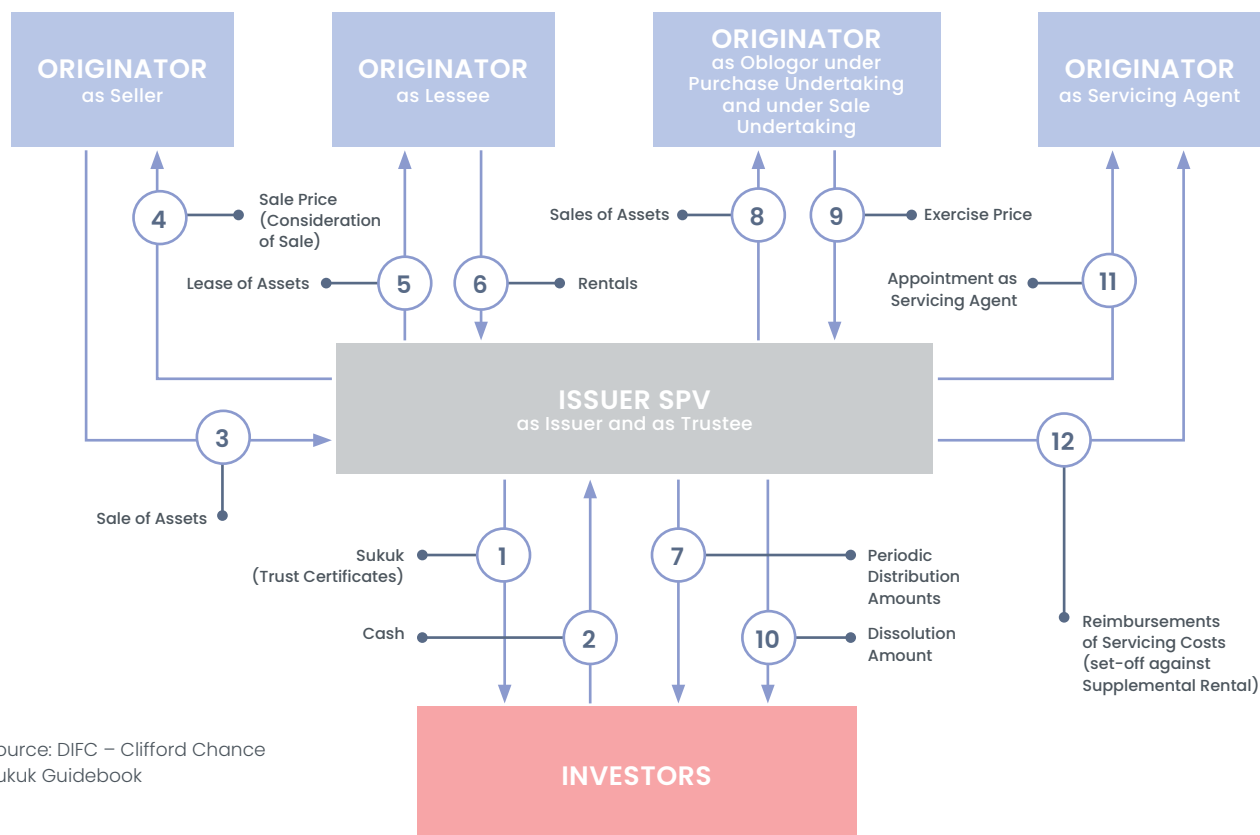
<sup>3</sup> The *Shariah* is a religious canonical law forming within the Islamic tradition.

<sup>4</sup> Or, in some jurisdictions, a centralised *Shariah* Authority.

<sup>5</sup> Whilst noting that, fundamentally, holders of senior unsecured Sukuk rely on the creditworthiness of the obligor.

<sup>6</sup> Definition and chart from Dubai International Financial Centre – Clifford Chance Sukuk Guidebook UAE, 2009 – copy [here](#).

# Figure 1: The Transaction Workflow of a Traditional Sukuk Al-Ijara



Source: DIFC – Clifford Chance  
Sukuk Guidebook

Under the traditional set up, the Sukuk-holders will, upon subscribing for the Sukuk, receive a beneficial ownership interest in the Sukuk assets. Sukuk-holders are the registered owners of Sukuk certificates that represent beneficial ownership in the trust. The Sukuk certificates are initially represented by a global certificate, held by a custodian and cleared through the relevant central securities depository (“CSD”).<sup>7</sup> As funds are paid by the Sukuk originator under the lease,

the Sukuk issuer releases these funds (as per the terms and conditions of the Sukuk) through the paying agent to accounts nominated by the Sukuk-holders.

Principal traditional transaction documentation required to be negotiated includes a declaration of trust over the trust assets, the creation of a global certificate to represent ownership in beneficial interests in the trust and offering documentation to investors. A sale and purchase agreement,

lease, service agency agreement and purchase/substitution undertakings cover the arrangement between the Sukuk originator and the Sukuk issuer in respect of the Sukuk assets. An agency agreement covers the appointment of the registrar, paying agent, calculation agent and transfer agent to perform the relevant functions on behalf of the Sukuk issuer in respect of ownership of the Sukuk certificates and payments of amounts due thereunder.

<sup>7</sup> Such as Euroclear / Clearstream / Wethaq itself as CSD – see Appendix.

# The Wethaq Platform

## Introduction

In the second half of 2018, the Wethaq team worked on a proof of concept (“**PoC**”) intended to apply new technologies to Sukuk markets for institutional investors. Wethaq sought to validate its core assumptions of what the issuance of Sukuk al-Ijara using distributed ledger technology and ‘smart clauses’ would entail. The PoC aimed to: (i) have the ledger operate as a registry and central securities depository; (ii) ‘inter-operate’ with other settlement infrastructures and payment gateways; (iii) function within the existing regulatory framework; and (iv) have market participants, service providers and governance stakeholders interact with each other within the platform.

These PoC objectives would serve Wethaq’s aspiration to become the “the innovative, end-to-end ecosystem orchestrator”<sup>8</sup> through the programming of the business and legal logic of Sukuk transactions on the Wethaq Platform.

The efforts to entirely decentralise capital markets (i.e. for functions such as custody to be operated by a protocol between network participants rather than housed within one regulated entity) have faced some regulatory challenges.<sup>9</sup> Additionally, given the complexities of complete architectural or political decentralization, even public blockchains do not in practice fully decentralize operations or governance. Wethaq is pragmatically designed to comply with existing regulations through its combination of (i) contractual relationships with, and duties towards, the fundraiser and other parties, (ii) regulatory permissions, such as the innovation testing license recently granted to Wethaq by the Dubai Financial Service Authority, and (iii) use of a ‘permissioned’ distributed ledger for the facilitation of the Sukuk issuance and administration and the efficient exercise by Wethaq of its responsibilities. As such, Wethaq will remain responsible to perform its various functions under the contracts and exercise its duties from a regulated perspective.<sup>10</sup>

Through the platform and in an automated fashion, Wethaq undertakes the functions of registrar (and also CSD, where desired), trustee-delegate, paying agent, calculation agent and transfer agent. These functions range from maintaining the definitive registry of Sukuk certificate holdings, undertaking certain duties on behalf of Sukuk-holders and in relation to trust assets in certain circumstances (as ‘delegate’ of the ‘issuer-trustee’), making calculations and payments as agent in relation to other obligations of the issuer/fundraiser. In pursuit of automation, Wethaq elects to code and deploy ‘smart clauses’ to assist its performance of these functions in a deterministic and programmable way. While the first commands to be automated are the various functions (trustee-delegate, registrar, paying agent etc), cashflows (bookbuilding commitments and coupon payments) and the management of the Sukuk certificates (issuance, allocation and registration), the programming will continue with subtler ‘legal states’<sup>11</sup> (such as events of default and their

<sup>8</sup> This being identified by McKinsey as one of the four strategic options for banks (and, we would add, financial institutions such as Wethaq) in a changing financial landscape. From Banks in the Changing World of Financial Intermediation, 2018 [here](#).

<sup>9</sup> In this respect, we find this recent statement from the Monetary Authority of Singapore to be an appropriate assessment of distributed ledger technology’s (DLT) potential in financial services: “Although the “D” in DLT stands for Distributed, it should not be mistaken for a decentralised system. The fact is that every aspect of DLT – including contracts, standards, protocols, databases, and algorithms – are all centric implementations. While in some cases, blockchain allows for disintermediation, in others, it allows the efficient and effective process automation that creates new value for customers and businesses.” From Delivery versus Payment on Distributed Ledger Technologies – Project Ubin by MAS [here](#).

<sup>10</sup> The Appendix to this paper sets out further information regarding the regulatory set up of Wethaq in the Dubai International Financial Centre (DIFC) and intended regulatory treatment and engagement for issuances through the platform.

<sup>11</sup> For example, the activation of the purchase undertaking to achieve repayment of principal.

consequences<sup>12)</sup> and governance principles.<sup>13</sup>

In the environment of the Wethaq Platform, the changes to traditional Sukuk documentation described above would be minimal with the same substantive obligations undertaken to Sukuk-holders. For example, rather than using a global certificate registered and mobilized in traditional CSDs, Sukuk-holdings will be recorded on Corda with Wethaq acting as registrar to update such records and as a CSD alternative to Euroclear/Clearstream and other incumbent depositories.

Where required to comply with local legal requirements, a global certificate may be issued and held by Wethaq as depository in the usual form. Under the Sukuk documentation, the Sukuk-holders will receive interests in the Sukuk assets held on trust by the trustee per the traditional structure. The Sukuk-holders will still be holders

of certificates representing the beneficiaries of the trust established by the declaration of trust over the Sukuk-assets. As such, the only parties involved in this implementation (other than nominated advisers such as lawyers, *Shariah* board and placement agents) will be the fundraiser and, possibly, its advisory bank<sup>14</sup>, an issuer special purpose vehicle (SPV) and Wethaq.

## Streamlining the Sukuk Product Lifecycle

Under current industry practice, the Sukuk issuance is exclusively led by banks and fundraisers, with the bank typically bringing its structuring and distribution expertise to bear. For this, the bank relies on its own private and proprietary processes within a 'closed' ecosystem. We believe that the objectives of standardisation and automation are better served in a more open ecosystem where the financial

services of structuring and distribution can be unbundled from each other and, then, be automated to the extent possible.

The Wethaq objectives are to streamline overall coordination, standardise processes and automate these financial services of a more administrative nature. In practical terms, upon completion of the 'smart term-sheet' and its submission (for instance, by the fundraiser's CFO at the 'click of a button'), the terms are 'negotiated' with potential investors and, eventually, 'fed into' the Wethaq Templates with the entire suite of documents being generated<sup>15</sup> and, to the extent required, tailored by service providers to the specific needs of the issuance.<sup>16</sup> Upon finalization, the offering memorandum and other transaction documents (with their embedded smart clauses) may be deployed on the ledger and offered to potential investors.

<sup>12</sup> Wethaq will invite industry participants in a research and development group to devise legal markup language to convey precisely the business and legal logic behind the Sukuk transactions. More intuitively: the Sukuk markup language ('SML') will be used to parametrize ("tag") the 'smart fields' in a transaction and make them readable by the smart clauses. Upon its development, Wethaq plans to release, to an extent, the SML as "open sourced" software and promote its adoption as an industry standard.

<sup>13</sup> In an effort to code and automate more than the usual parameters, Wethaq will seek to develop a 'Corda State' permitting the creation of states on Corda to represent legal rights and states when these arise (i.e. when they "crystallise") according to the legal prose. Potential benefits would be: (a) these "crystallised" rights and their consequences are created and managed as standardised instructions and code at the ledger level; (b) Wethaq maintains a registry of these crystallised states; for example a registry of options, events of default and corporate actions; (c) while Wethaq will send notification alerts to the party and the party can exercise the rights on the web browser, an audit trail of these exchanges is recorded on the ledger. We expect at some point that such innovation may dispense with the need for separate notices (for example, notice of termination) given by paper or digitally as they can be served at ledger level; and (d) it would allow the creation of certificates that aggregate legal rights before they can be exercised.

<sup>14</sup> The Wethaq Platform will also be available to investment banks and boutique advisors that wish to continue advising their client fundraisers in relation to pure advisory mandates that do not extend to the mechanics of debt capital markets issuance: here, this constituency can avail itself of Wethaq as a Sukuk/debt capital markets 'implementation tool' or 'Sukuk manufacturing factory' and so benefit from the 'bolt-on' functionality of Wethaq which includes its inherent cost and operational efficiencies and the access to broker dealers and, optionally, exchanges.

<sup>15</sup> The legal documentation generated may then be edited online by the law firm appointed by the fundraiser. While these are lengthy documents, the mechanical aspects of terms are fairly standard in large areas, and the law firm would be able to collaborate and finalise them within a reasonable time.

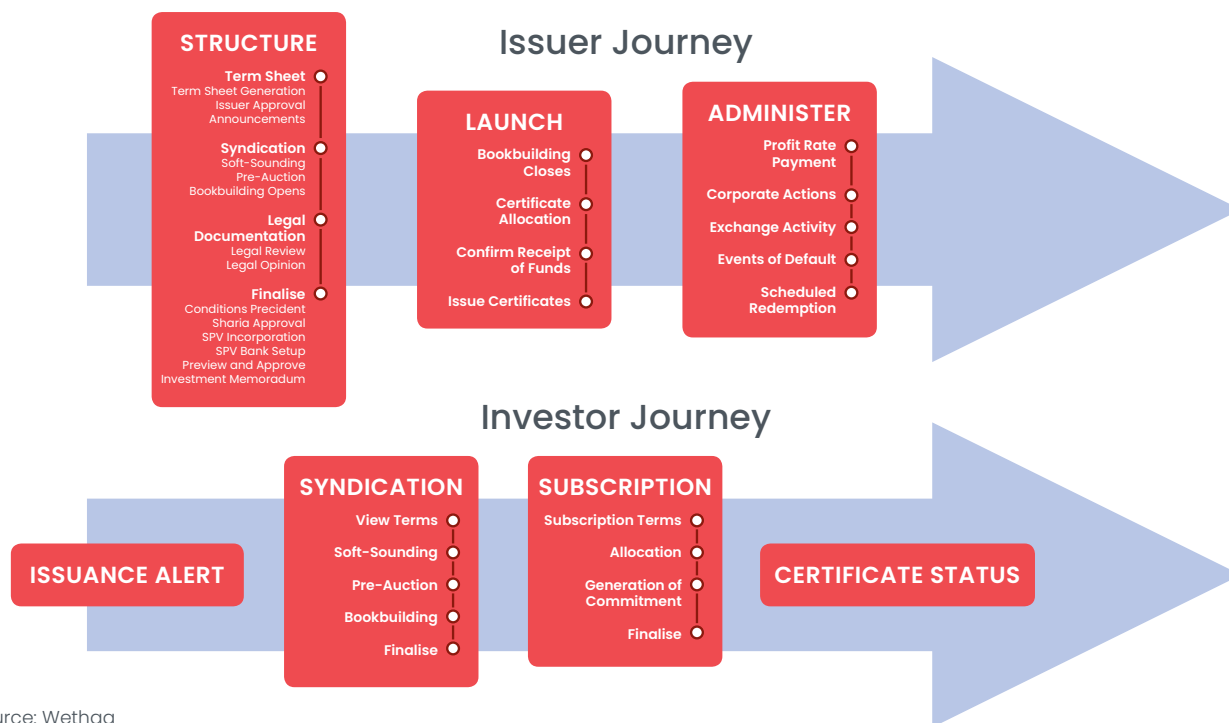
<sup>16</sup> Wethaq is able to draw on various sources of market data (being relevant 'oracle' feeds into the Wethaq ecosystem) such as an 'indicative rating/scoring' tool from a reputable rating agency so as to be able to suggest to the fundraiser a profit rate fit for the transaction they have in mind before the fundraiser invites feedback from the pool of potential investors and finalises the commercial terms.

Crucially, the service providers are engaged by the fundraiser directly and their billing is managed through a dashboard.<sup>17</sup>

To promote an open ecosystem and cost transparency, Wethaq will not provide these services (legal, *Shariah*, rating, etc.)

nor does it propose to charge a mark-up to such service providers' own fees.

Figure 2: The Issuer & Investor Journeys



With the deployment of the offering memorandum, the various smart clauses are activated starting with market standard bookbuilding mechanics. These are based on widely recognized market practices<sup>18</sup> as may be refined for any issuance-specific idiosyncrasies. From the investors' perspective, each investor may access a dashboard where it can subscribe to a

transaction and its associated issuance after reviewing the terms. This subscription has its intended legal consequences and activates, in sequence, the smart clauses that conduct the bookbuilding process. The platform hosts an order management system which is automated with pricing and allocation algorithms supported by smart clauses to regulate any indications of interest

in the issuance, allocations and, ultimately, issuance and settlement of certificates in return for the transfer of funds using a payment gateway. Benefitting from Corda Settler (as explained below), the Wethaq Platform will not need to hold a client money account for the purposes of the bookbuilding and settlement process relying instead on transmitting SWIFT gpi payment instructions and recording the

<sup>17</sup> In parallel to this 'self-service' issuance, Wethaq also enables the advisors to the fundraiser and even underwriters to 'plug-in' to the platform and make use of its standardisation and automation benefits.

<sup>18</sup> See, for example, ICMA Group 2010 Explanatory Note on Pre-sounding, Bookbuilding and Allocations [here](#).

successful payments on delivery versus payment (“DvP”) terms on the ledger.

Wethaq can also facilitate on the distribution side: by sourcing funds from investors with notifications of new issuances to its registered users and, importantly, the ability to onboard broker-dealers who may participate in the distribution aspects of bookbuilding by offering a ‘Wethaq issuance’ to their own pool of investors.

## Wethaq Template Generation

Once on-boarded to the platform, the fundraiser (or its advisory bank) would provide the deal specific information in a standardized term-sheet and then, further to feedback on indicative terms from a pool of potential investors, automatically generate the entire Sukuk documentation on the basis of that term-sheet. These ‘Wethaq Templates’ would be market standard legal templates developed with a leading law firm with relevant practice area expertise. External advisers will then be appointed to customize the documentation to the extent required for the specific issuance.

The output of the process is the creation of an offering memorandum and suite of Sukuk issuance documentation in digital form tailored to a particular deal.<sup>19</sup> The auto-generation of documentation in this way is expected to save extensive time and cost in creating a “substantially ready” set of terms for “vanilla” deals for external advisers to take forward in an expedited manner. One example of this process would be “selling restrictions”, being the standard disclaimers applied in offering documentation to identify which type of investors may have access and to set out where (and where not) the certificates are being offered/regulated/listed (as applicable) in the relevant jurisdictions. Wethaq intends to maintain a database of selling restrictions for the relevant forms of offer/marketing in the relevant jurisdictions where investors may access the platform. A fundraiser would include its preferred jurisdictions, in a tick-box format, and the relevant selling restrictions would be generated.<sup>20</sup>

There will of course be a large number of provisions specific to each deal which require individual negotiation with support from external advisers.

Trust asset-specific terms and analysis on *Shariah* compliance in respect of the transfer of Sukuk-assets into the trust will be conducted by external advisers through the Wethaq Platform.

There are therefore three processes envisaged for the contractual documentation/terms:

- **template set of terms generated upon launch of a Sukuk issuance by the fundraiser on the platform;**
- **terms specific to each deal will be added by the fundraiser and its external advisers which will amend or expand the template terms (e.g. risk factors, selling restrictions and commercial parameters); and**
- **sub-category of each type of term will be coded to become smart clauses.**

All terms would sit in a generated and, once agreed, digitally authenticated original agreement tagged on Corda. As explained below, certain smart clauses will be embedded in these digital agreements to conduct, in an automated fashion, certain of the agency functions undertaken by Wethaq.

<sup>19</sup> The entire suite of documentation can extend to hundreds of pages and extensive time and legal costs can be saved by them being prepared in this way.

<sup>20</sup> As Wethaq is not providing legal advice, it would be up to the fundraiser to obtain its own advice on any required changes to these specific to a transaction/marketing process.

## Wethaq's Smart Clauses in Generated Templates

Though there have been 'data-driven'<sup>21</sup> clauses used in finance for decades, the 'smart clauses' are their evolution in a crucial aspect: performance of obligations is automated using strict and formal programming language which is deployed on a distributed ledger beyond the control of any single party to that ledger.

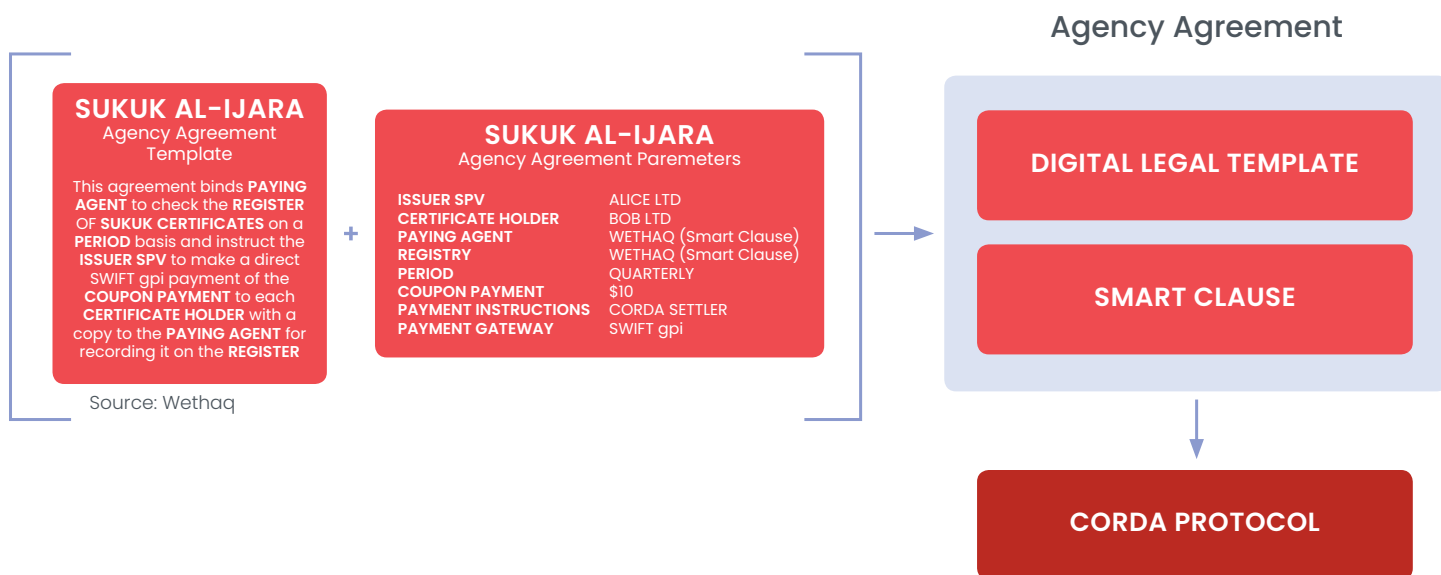
This automation creates several efficiencies. First, the execution of contractual terms recorded on a distributed ledger reduces costs

by removing the requirement for several "trusted" financial institutions to manually conduct the relevant functions (whether through their own electronic systems or otherwise). Second, there is certainty that the code will perform the obligations delegated to it as intended by the parties and beyond anyone's unilateral control. Lastly, smart clauses can be programmed to 'self-execute' during the term of an agreement upon receipt of pre-defined data from a third-party source, known as an 'oracle'. For example, a smart clause could be constructed to connect to a data feed from a

third party to benchmark the relevant reference rate (for instance, whichever interbank offer rate this may be), enabling dynamic performance based on real-world data.

In the present case, while Wethaq is responsible for the programming of the smart clauses (and 'wraps' them with legal prose, in the form of the information memorandum, to ensure their validity), upon their deployment on Corda, Wethaq may no longer alter their logic or output without the consent of the related parties. In technical terms, these clauses

Figure 3: Digital Legal Template with "Smart Clause" Embedded



<sup>21</sup> For example, options contracts that are automatically exercised upon their strike price being reached or credit default swaps automatically triggered upon a credit event occurring.

are deployed on Corda where consensus (validation) of their logic and output can only be achieved through the appointed 'notary' nodes before they are permanently recorded on the distributed ledger.

Corda was developed with the explicit purpose of recording and enforcing legal agreements between commercial parties. In order to do so, Corda builds upon the concept of "Ricardian Contracts"<sup>22</sup>. Ricardian Contracts complement the textual form of 'natural language contracting' by placing the defining elements of a legal agreement in a format that is both readable by humans as well as machines. Further, Corda was built with the understanding that there is a need for natural language contracts which explain what happens in the event that the code fails to operate as the 'spirit of the contract' intended.

## Corda: A Modern Financial Market Infrastructure

**Corda differentiates itself from other distributed ledger technologies due to its data privacy, well-defined identity layer, settlement finality, and regulatory compliance.**

Public ('permissionless') distributed ledgers (together with

the representations of value on them such as cryptocurrencies) are a unique innovation in the history of finance, given their operational decentralization, settlement times, and global liquidity access. However, within regulated wholesale capital markets, distributed ledger architectures must meet the functional and non-functional requirements of network participants. Public distributed ledger architectures weren't originally built to be used for business transactions.

Corda was built from the ground-up through an intensive requirement-gathering process alongside the teams from 40+ of the largest global banks. As a result, Corda differentiates itself from other distributed ledger technologies due to its data privacy, well-defined identity layer, settlement finality, and regulatory compliance. While the open-sourced platform is now being used across many diverse sectors including healthcare, energy, and supply chains, the core 'flows' and 'states' on Corda are well-suited for regulated capital markets transactions.

Corda is unique as a distributed ledger in that its 'nodes' do not broadcast data to all other nodes in the network. Corda application ("**CorDapp**") users share data only among the participants specifically involved

in transactions, and even then, the only data shared is whatever was agreed to in the design of the CorDapp. This is typically the minimal amount of data needed to reflect the evolution of a transaction.

Further, a well-developed identity layer in Corda enables firms to transact compliantly and ensure they are transacting with appropriate counterparties. Additionally, settlement finality enables the real-world issuer to demonstrate compliance with finality regulations as well as eliminate risks from 'blockchain forks' that occur with public ('permissionless') blockchains.<sup>23</sup> Distributed ledgers that use probabilistic settlement such as 'proof of work' or 'proof of stake' are inappropriate for wholesale capital market transactions involving regulated entities.

Regulatory flexibility is highlighted specifically around the data sharing requirements pertaining to who can see what data. A financial regulator on the Wethaq Platform, for example, would be able to supervise directly and in real time the issuance and trading activity through a 'supervisory node'.<sup>24</sup> Further, a regulator could access a copy of the ledger-based register of Sukuk-holders to oversee certain lifecycle stress events (for instance, a default by the fundraiser) or to oversee business

<sup>22</sup> For a detailed explanation, see the seminal article 'Smart Contract Templates: foundations, design landscape and research directions' by Clack, Bakshi & Braine 2016, available [here](#).

<sup>23</sup> This settlement finality was identified in Project Jasper by the Bank of Canada, R3 and others as one of the key Principles for Financial Markets Infrastructure (PFMIs) in the regulatory assessment of distributed ledger technologies.

<sup>24</sup> The innovation here is that the governance stakeholder does not need to request Wethaq to provide an activity report or access to Corda but, instead, has itself live and direct access to Corda on a 'need to know' basis.

continuity in respect of Wethaq.<sup>25</sup> As for *Shariah* compliance, the third party *Shariah* board may issue the relevant fatwa (i.e., certificate of *Shariah* compliance) over the platform on request of the issuer/originator and then, through an assigned node, monitor continuously or be automatically notified of any irregularities arising during the life of the Sukuk.<sup>26</sup>

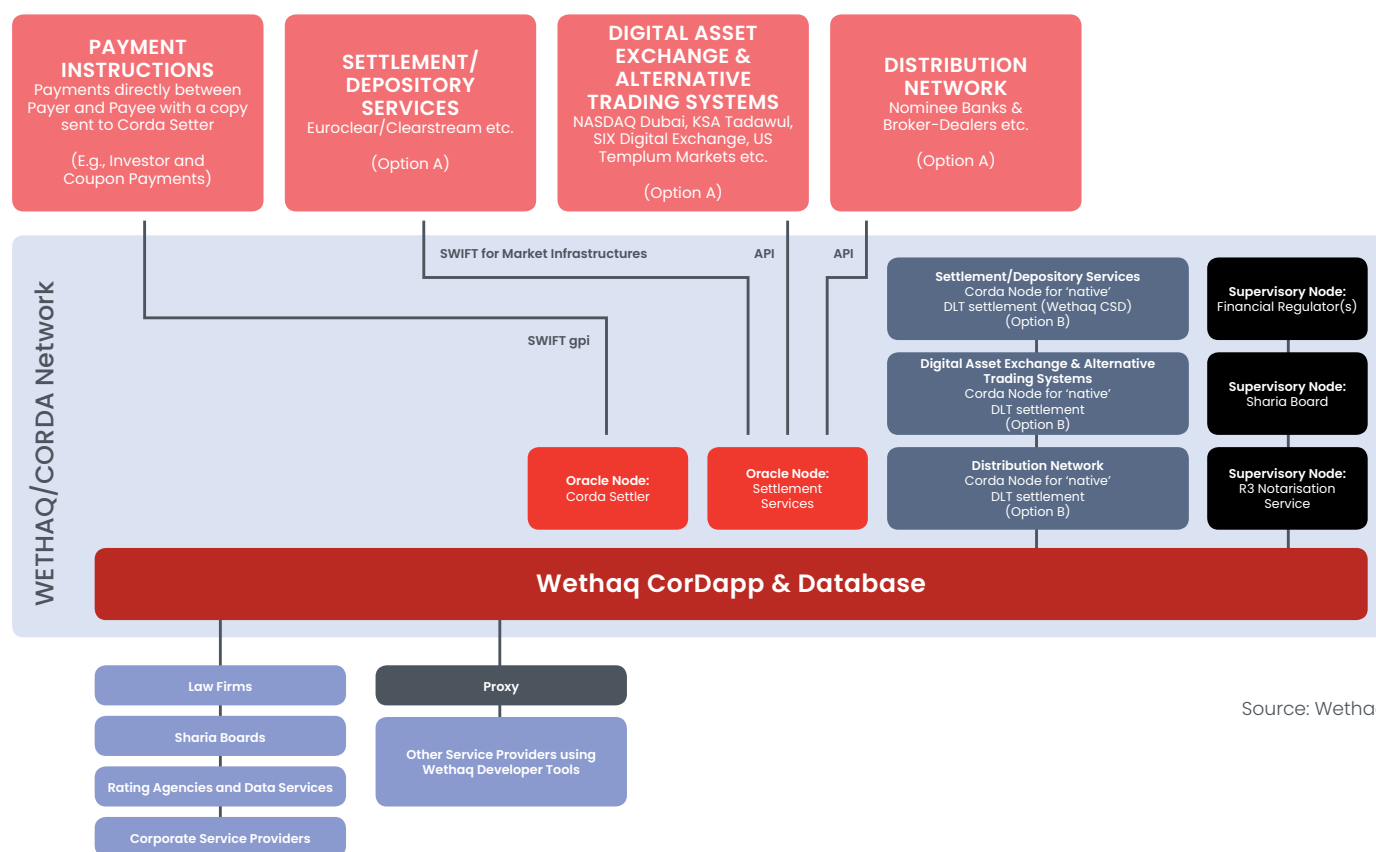
## Benefits and Implications

The value proposition of the Wethaq Platform is the **streamlining of processes, reduction of intermediaries, and automated performance of contractual obligations through the use of smart-clauses on a distributed ledger-based platform.**

Further, Wethaq can inter-operate with the global Corda ecosystem, and take advantage of new developments with cash (fiat) settlement functionality within a distributed ledger environment.

We envision the Sukuk markets becoming more integrated and distributed with more visibility for each participant as shown in the chart below.

Figure 4: Wethaq Ecosystem



Source: Wethaq

<sup>25</sup> The regulator could also obtain a copy of the register and oversee Sukuk-holder protection in a transition to a traditional structure outside of the platform, if required.

<sup>26</sup> We expect regulators will appreciate this access to useful data on over-the-counter (OTC) trading of Sukuk on the secondary market to be able to achieve better transparency of OTC markets, assess changes in these markets, monitor trends in trading, and respond accordingly. Currently, most fixed income securities are traded through decentralised, dealer-intermediated, OTC markets, however, as with MiFID II in the European Union, we observe a strong trend in the direction of better market transparency for regulators; Wethaq can operate to enable and support this trend.

## Interoperability with ‘CorDapps’, and Other Trading and Settlement Platforms

**R3 has designed Corda to be the platform that bridges seamlessly from legacy infrastructure to ‘digital-first’.**

The Wethaq Platform is not an ‘island’ but benefits from the openness and functionalities of the Corda ecosystem.

Many of the world’s largest financial institutions are deploying production-quality Corda nodes; R3 has designed Corda to be the platform that bridges seamlessly from legacy infrastructure to ‘digital-first’. R3 considers that a great advantage of Corda is its integration with ‘off-ledger’ infrastructures<sup>27</sup>; ranging from third-party sources of data<sup>28</sup> (that are used as input to the smart clauses) to payment gateways; and settlement systems<sup>29</sup> for the settlement of the Sukuk securities by a global community of investors and traders.

Financial institutions, financial market infrastructures and corporations are supporting the development of an increasingly global capital markets

ecosystem on a distributed ledger by building required infrastructure and other integral elements such as standards and software development kits. Within the Wethaq Platform itself, third parties may use open-sourced Corda Developer Tools and, for their specific Sukuk needs, the Wethaq Developer Tools to ‘plug in’ and offer their services and products on the platform.

Interoperability with other CorDapps will also have the potential to enable new, digital-first markets. Incumbents are currently developing their own CorDapps, which may provide a means for new platforms like Wethaq to interact with digital exchanges globally.<sup>30</sup> For example, leading Swiss stock exchange SIX recently proclaimed they expected digital exchanges on distributed ledgers to completely replace traditional ones within ten years. SIX is building its own digital exchange, SDX, that will be completely overseen and regulated by the Swiss government and the country’s financial market regulator, FINMA, and will facilitate trading in stocks, bonds and exchange-traded funds. In addition, Singapore Exchange (SGX), along with the Monetary Authority of Singapore (MAS),

have successfully tested the use of distributed ledgers (including R3’s Corda platform) for ‘tokenized assets’ settlement. The trial was conducted in partnership with U.S. stock market Nasdaq and Deloitte. In another jurisdiction, a recent report from the US DTCC validates the choice of Corda for these projects, claiming that Corda has high enough performance to handle peak trading volumes in the US equity markets.

Wethaq will seek to enable, gradually and following their respective requirements, listing of the securities issued on its platform with traditional and digital exchanges in the Middle East (e.g. Nasdaq Dubai, KSA Tadawul), Europe (e.g. SIX Digital Exchange) and South East Asia.<sup>31</sup> Wethaq aims to allow Sukuk-holders to trade their Sukuk securities and settle their trades on incumbent settlement infrastructures outside the Wethaq Platform (Euroclear/ Clearstream etc) through the assignment of an International Securities Identification Number (ISIN) to each security.<sup>32</sup>

In this case, the trade may be concluded between market participants that do not have to register with the Wethaq Platform. Rather, they may use

<sup>27</sup> While at the same time is ready to carry out the relevant functions (settlement and payment) ‘natively’ on the ledger for when the regulators and capital markets participants are ready to do so.

<sup>28</sup> Also known as ‘oracles’ connected through an API, such as Thomson Reuters BloqOne IQ.

<sup>29</sup> Such as SWIFT gpi integration currently in R3/SWIFT prototype stage; recent announcement [here](#). We explain in detail below the integration of payment gateway and the interaction with settlement infrastructures.

<sup>30</sup> Significant benefits of such interaction would be that settlement and payments can happen ‘natively’ on the ledger without reliance on off-ledger incumbent infrastructures and payment gateways.

<sup>31</sup> Listing and admission of trading details will highlight that the certificates may be listed on a relevant digital exchange or traditional securities exchange with relevant connectivity to the distributed ledger-based recording system for transfer of ownership. However, it will be clear to investors that there may be no such platform available for the certificate at the time of issue or for a long period after issuance (depending on the facts of the relevant issue).

<sup>32</sup> By Nasdaq Dubai acting as National Numbering Agency in the case of the Dubai International Financial Centre (DIFC).

their existing accounts on those incumbent infrastructures and/or their nominee banks. As Wethaq remains the registrar and depository updating the definitive distributed ledger-based register of the securities, the third-party settlement infrastructure will eventually have to communicate the data of the DvP-settled trade through an API for the Wethaq Platform to then automatically update its definitive register accordingly.

We expect the digital exchanges, in particular, to consider favourably this access to a new source of compliant and digital-first Sukuk securities while, at the same time, the fundraisers to welcome the access to new sources of liquidity beyond the traditional centers of GCC and SE Asia.

## Benefiting from Cash Settlement Innovations

The Wethaq Platform will aim to capitalize on several different types of cash settlement options using distributed ledger technology as they mature. Most recently, R3 has released Corda Settler, an open-sourced CorDapp that allows payment obligations arising on the Corda Protocol to be settled via any traditional rail capable of providing cryptographic proof of settlement, whether 'on-' or 'off-ledger'.

Corda Settler allows two transacting parties to agree to the method and conditions of settlement, then execute

the transaction, marking it settled on the Corda Protocol if, and only if, all conditions are satisfied and the corresponding settling payment is successful. Settlement can be achieved with an on-ledger transfer of settlement assets, or off-ledger with a payment initiation and confirmation on a non-Corda payment gateway. In a typical scenario, the payer is notified, through the Corda Settler, that settlement has been requested and that it must instruct a payment to the required address (bank account, digital wallet or other) before the specified deadline. Once an 'oracle service' (such as the payment gateway or the recipient bank) confirms to the Corda Settler through an API that the payment has been made, then the Corda Settler, in turn, automatically updates the Corda Protocol that the transaction has, indeed, been settled.<sup>33</sup>

The recent initiative announced by SWIFT and R3 to enhance Corda Settler through the integration of 'SWIFT gpi' (global payments innovation) as a payment gateway has wide-reaching potential for efficient payments between market participants; this initiative would enable transaction flows to be tracked in real-time allowing, an appropriately permissioned agent (Wethaq in our case) to observe, follow and audit the Sukuk issuer/SPV's funds without Wethaq itself needing to hold a client money account for the

purposes of settlement.<sup>34</sup> As indicated in the image below, the Wethaq Corda Settler 'node' operates to 'interact' with SWIFT in general, meaning it 'listens in on' (i.e. checks/can receive a copy of) relevant 'message types' from the SWIFT library; and, in this way, Wethaq can track external investors (as well as the fundraiser) in relation to their available funds and the movement of funds as between them.

In the words of the International Swaps and Derivates Association (ISDA)<sup>35</sup> a "light ledger" (such as Wethaq) is "a distributed ledger, which is akin to a sophisticated messaging system that enables communications between participants but where payments settle off-chain via existing payment systems like SWIFT."

As more innovations with distributed ledger-based settlement evolve, Wethaq aims to be uniquely placed to take advantage of these new settlement protocols. These may involve central-bank issued digital currencies (such as "Aber", currently in pilot stage between the central banks of KSA and UAE), or perhaps private-sector led initiatives (such as 'stablecoins').

## Cost Efficiency and Transparency

Sukuk markets have less cost efficiency and transparency than conventional debt markets due

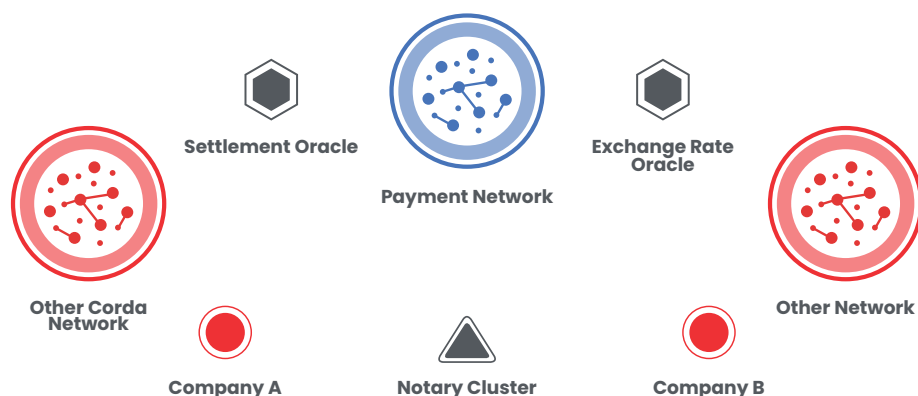
<sup>33</sup> In the next phase of development, the Corda Settler will support domestic deferred net settlement and real-time gross settlement payments.

<sup>34</sup> With the obvious regulatory and operational benefits these direct payments have compared to funds passing through an intermediate for settlement purposes.

<sup>35</sup> Recent paper [here](#)

## Figure 5: Corda Settler

|                   |   |
|-------------------|---|
| Beneficiary       | <b>Company A</b>  |
| Payer             | <b>Company B</b>  |
| Face Value        | <b>260 EUR</b>  |
| Due By            | <b>2018-12-04</b>   |
| Settlement Method | <b>[address: ra6mzL1xy9aN5...,<br/>oracle: Settlement Oracle]</b>   |
| Status            | <b>Unsettled</b>  |
| Payments          | <b>[txID: 2E91FF59F1D725..., amount:<br/>260 EUR, status: SENT]</b> |
| ID                | <b>b567bf99-98ce-4414-96ao...</b>                                   |



to relatively higher structural, compliance and document complexity. As an alternative to this, Wethaq would be the entity accountable for performing functions that would otherwise be performed by a number of banks, clearing and trustee entities all incurring separate fees and other engagement costs.

Wethaq expects to charge a single fee to the fundraiser (or to its advisory bank) on account of structuring, order management, registrar (and CSD), trustee-delegate, paying agent, settlement and other administration related services; the fee charged to the fundraiser (or its advisor bank) will be benchmarked against market rates and/or charged as a commission levied from the issuance proceeds charged by the issuer's advisory firm and/or

any distribution intermediary. As it does not reserve for itself any 'deal-making' or advisory role (acting, in financial terms, as a 'pass-through' platform), Wethaq does not seek to calibrate its fee as a function of the credit risk of the fundraiser.

As for certain other third parties, they would be engaged directly by the fundraiser and issue their invoices through the Wethaq Platform without any 'mark-up' applied by Wethaq.<sup>36</sup> For example, the relevant third party *Shariah* board could have reviewed and familiarised itself with the basic default Wethaq Templates at the time of its on-boarding onto the platform. Then, at the time of each Sukuk issuance, this external *Shariah* board would not need to review these default templates in detail again, but only any amendments

“ Wethaq would be the entity accountable for performing functions that would otherwise be performed by a number of banks, clearing and trustee entities all incurring separate fees and other engagement costs.

<sup>36</sup> Third party costs include: SWIFT payment distribution cost (competitive in comparison to banking fees); SPV establishment/corporate service providers; *Shariah* board review; rating agency (initial review, rating and 'scoring'); legal advisory and any listing fees.

specific to a particular issuance, in order to issue the relevant fatwa (certificate of *Shariah* compliance) required by the relevant investors. Other time sensitive costs, such as legal fees for drafting and negotiation are also reduced through the template generation approach described above.

An important variable cost is expected to be that charged by broker-dealers acting as distributors<sup>37</sup> as a mark-up (or 're-offer' spread) for successful placement of primary issuance to their own clients. This fee will depend on the overall interest in the issuance and the profile of the fundraiser but we expect also that the platform will attract and encourage open competition amongst such marketing and distribution entities and, as a result, competitive fee outcomes benefitting fundraisers.

Wethaq's operational framework and regulatory accountability presents, for routine global fundraisers<sup>38</sup>, an alternative ecosystem to global and regional banks. At the same time, and for the same reasons, the platform can be expected to appeal to fundraisers that, although creditworthy and appealing to investors in general, may be under-banked by incumbents, or wish to access the capital markets with a more competitive fee arrangement (from a structuring and administration

perspective) and with fewer operational hurdles. In practice, this should enable efficient institutional private placements and, in particular, a greater number of 'smaller fundraisers' to access the capital markets. Investors can also avail of more 'choice' in Islamic finance products and advisers have more 'benchmark data' in this area.

### ***Shariah* Compliance<sup>39</sup>**

Wethaq's objective to improve transparency in the Sukuk markets is aligned with *Shariah* principles.

The distributed ledger facilitates cashflow record keeping in a transparent and easily reconcilable way that demonstrates the source and timing of payments. In the Sukuk context this can support transparency in the issuance and payment process and in tracking the underlying assets or cashflows generated.

The employability of 'smart clauses' gives *Shariah* boards the opportunity to ensure *Shariah* compliance by building and mapping real world *Shariah* requirements within the structure itself. This can be done by taking salient *Shariah* guidelines of the underlying transaction and embedding them in the digital contract thereby ensuring that the transaction is 'only' executed when those *Shariah*

“ The distributed ledger facilitates cash flow record keeping in a transparent and easily reconcilable way... The employability of 'smart clauses' gives *Shariah* boards the opportunity to ensure *Shariah* compliance by building and mapping real world *Shariah* requirements within the structure itself.

Shariyah Review Bureau

<sup>37</sup> Bank treasuries, asset managers and other capital entities, among others (and within the relevant regulatory constraints of an 'exempt offering'), may buy to hold and trade as principal for their own trading books.

<sup>38</sup> Including sovereigns, supranationals, agencies, well known financial institutions and corporates globally, often household names.

<sup>39</sup> Observations provided by the Shariyah Review Bureau (<https://shariyah.com>) specifically in relation to the Wethaq Platform.

“ These self-executing clauses have the potential to eliminate the need for human intervention thereby automatically reducing the potential of non-*Shariah* compliant transactions.

conditions are met. These self-executing clauses have the potential to eliminate the need for human intervention thereby automatically reducing the potential of non-*Shariah* compliant transactions.

Furthermore, *Shariah* audit processes can be engineered and automated using Wethaq's smart clauses and through this help build efficiency into the *Shariah* supervisory system. For example, the *Shariah* auditors or scholars can, where necessary, access the information about the transfer for *Shariah* purposes of the trust assets via these smart clauses thereby making the *Shariah* verification process easier.

All information (including ownership of the trust assets, when they were purchased, the date on which ownership was transferred) is integral to *Shariah* compliance and can be viewed in real-time. Moreover, as soon as such data is recorded onto the Wethaq Platform, it cannot be changed or deleted. All this helps provide an efficient, secure, and permanent *Shariah* audit trail.

## Conclusion

**Corda integrates with existing (off-ledger) systems, providing a path for the existing financial system to participate.**

Fintech and distributed ledger technology, in particular, are driving an unprecedented period of innovation across capital markets. As the pace of innovation increases, these technologies begin integrating with each other and shifting more segments of the capital markets ecosystem towards shared platforms. The landscape is likely to look unrecognizable to its current form, with current assets fully digitized and new types of digital assets being traded in markets and alternative trading systems that may not even exist today or are only now starting to emerge.

In this changing market landscape, enterprise-distributed ledgers like Corda are designed to address the complicated challenges of enabling settlement finality, regulatory compliance and

investor protection. Possibly most importantly, Corda integrates with existing (off-ledger) systems, providing a path for the existing financial system to participate. New digital assets, with legal underpinnings and support from real-world custodians and asset issuers, will enable 24/7 transactions, settlement with finality and full regulatory compliance, unlocking valuable liquidity and delivering efficiencies for issuers and investors across the globe.

The rapid development of enterprise-distributed ledgers will inevitably disrupt Sukuk markets too. Benefitting from the 'permissioned' architecture of Corda and interoperability with both incumbent as well as newer market infrastructures, Wethaq is well placed to lead an evolution of the securities 'value chain' in these markets within existing regulatory frameworks.

The fundraisers and their advisor banks that will use the Wethaq

Platform will benefit from the modernisation of workflows, the automated performance of several regulated functions in one ecosystem, the application of legal technology (document generation and smart clauses) and the streamlined integration with third party market infrastructures.

Wethaq expects to obtain regulatory support in key jurisdictions (GCC and SE Asia) and be ready to issue its inaugural Sukuk products later this year. We invite the Sukuk markets community and the Corda ecosystem to engage with us in our plan to ease access to capital markets for eligible fundraisers, source new products for investors internationally, introduce operational efficiencies for the various service providers and, in general, closely integrate Sukuk markets with their global counterparts.

# Appendix: Licensing Approach

Having reviewed relevant regulations and discussed specifics with regional regulators, the Wethaq Platform is expected to be appropriately permissioned to cover its varying roles (as delegate, registrar (CSD) and agent functions) in its proposed jurisdictions of operation, principally in the DIFC.

In April 2019, Wethaq was granted, in principle, an innovation testing license (ITL) from the Dubai Financial Services Authority (the “**DFSA**”) which covers the scope of activities which Wethaq will undertake in connection with its operations described in this case study: (i) ‘Arranging Deals in Investments’, (ii) ‘Providing Trust Services’ and (iii) ‘Providing Custody’, with an endorsement for ‘Holding or Controlling Client Money Assets’. Wethaq will therefore be regulated, on the basis of the ITL, to act as Delegate, Registrar, Paying Agent, Calculation Agent, Transfer Agent and, if required, CSD.

Wethaq will be conducting its activities in “testing” mode, for a limited period whilst operating under the ITL<sup>40</sup>, with informed parties and targeting institutional investors (DFSA “Professional Clients”) only. Following the ITL period, upon approval from the DFSA following successful testing and application, Wethaq would be upgraded to full license by the DFSA. Wethaq will then be fully regulated, with the required capital and systems and controls, to conduct its functions in and from the DIFC.

<sup>40</sup> The ITL is intended to provide the ability to test live products and services as a regulated firm with various rule modifications for a limited period, with the expectation of graduation to a full license by further application at the end of the testing period.



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## About Wethaq

Wethaq (Capital Markets) is a regulated fintech entity in the sukuk capital markets operating out of the Dubai International Financial Centre with presence in Riyadh and London. For more information about its platform and the sukuk issuances scheduled, please contact the contributors to this paper: Dimitrios Vourakis (Chief Product Officer) and Ron Akram (Markets & Regulatory Structuring) at [info@wethaq.capital](mailto:info@wethaq.capital)

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R3 is an enterprise blockchain software firm working with a broad ecosystem of more than 300 participants across multiple industries from both the private and public sectors to develop on Corda, its open-source blockchain platform, and Corda Enterprise, a commercial version of Corda for enterprise usage.

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