
**International Regulatory Strategy Group (IRSG)
RESPONSE TO HM TREASURY DIGITAL SECURITIES SANDBOX CONSULTATION**

Summary:

The remit of the International Regulatory Strategy Group (IRSG), a joint venture between the City of London Corporation and TheCityUK, is to provide a cross-sectoral voice to shape the development of a globally coherent regulatory framework that will facilitate open and competitive cross-border financial services.

The IRSG welcomes the opportunity to respond to the HM Treasury (HMT) Consultation on the Digital Securities Sandbox. In summary, the IRSG is supportive of HMT's proposal for the establishment of a digital securities sandbox - key views include:

- **Scope:** the IRSG generally agrees with the approach that the DSS should facilitate trading in at least debt, equity and money market instruments, and certain other "financial instruments". However, the framework for the DSS should be drafted broadly enough that any innovative trading and settlement proposals for other financial instruments (including exchange traded derivatives and units in collective investment schemes) can be considered on a case-by-case basis.
- **Eligibility:** we broadly agree with eligibility as set out by HMT, we also generally agree that the DSS should not focus on facilitating markets in unbacked cryptoassets, subject to the exception outlined in the response below. We note it should be possible for firms to partner and apply for/offers DSS activities as a consortium – even if they are required to act via a single legal entity throughout the process. This would reduce perceived barriers to entry and enable established financial services providers to partner with technology companies to work together to propose innovative projects that might not be viable for either alone.
- **Benefits:** we see various potential benefits from entities using digital asset technology offer when meeting regulatory reporting requirements – such as enhanced data quality, more accurate and efficient trade recording, standardised regulatory data models and logic being uniformly implemented among multiple stakeholders, streamlined operations etc. (more detail on Q24).
- **Clarity around transition out of DSS:** we would propose that SEs should be allowed to transition out of the DSS subject to them being able to comply with any applicable rules at any time and that regulators must take into account the evidence and work produced during the sandbox phase. In order to help SEs to operate, there should be a streamlined and expedited path for firms to participate in DSDs or MTFs, subject to the appropriate limitations from regulators.
- **Cross industry body for DSS:** a body would be a welcome addition to the financial markets policy ecosystem. We agree that the cross-industry body should be formed by entities directly participating in the DSS, trade associations, law firms, academics, the regulators and HMT (and potentially other government departments).

For a more detailed response and analysis, please refer to the rest of the consultation response below. We wish to thank Clifford Chance LLP for their support in drafting this response.

Question / Response

- 1 Do you agree with the broad approach set out above to digital securities in scope of the DSS? Please outline any comments or concerns as part of your answer.

We generally agree with the approach that the DSS should facilitate trading in at least debt, equity and money market instruments, and certain other "financial instruments". We also generally agree that the DSS should not focus on facilitating markets in unbacked cryptoassets, subject to the exception outlined below.

We think it is important for the DSS to enable as much innovation as possible. Therefore the DSS should have a broader and more flexible scope than is currently outlined. The framework for the DSS should be drafted broadly enough that any innovative trading and settlement proposals for other financial instruments (including exchange traded derivatives and units in collective investment schemes) can be considered on a case-by-case basis. These proposals would need to provide the relevant exemptions being requested as suggested in the Consultation.

It will be important to enable units in collective investment schemes (including in open ended investment companies and others) to make use of the DSS. In this context it should be noted that there could be many efficiencies for investors if some of the intermediary chain that collective investment schemes rely on could leverage the DSS. For example, depositaries, transfer agents, etc.

Separately, while we agree that the focus of the DSS should be to allow for innovation in markets in certain financial instruments, it is important to consider in parallel the extent to which the payment leg of transactions could be achieved using a range of digital assets. As such, we would disagree that unbacked cryptoassets should be out of scope in all instances. In our view, it should be possible for DSS participants to propose projects that will trade and settle financial instruments in exchange for any other assets, as long as properly regulated, including unbacked cryptoassets and tokenised assets such as stablecoins, tokenised e-money, tokenised deposits or tokenised real-world assets, e.g. gold. We note that for many banks, the effect of the Basel Committee on Banking Supervision's [prudential standard on banks' cryptoasset exposures](#) would be that unbacked cryptoassets will be subject to conservative prudential treatment with one-for-one capital charges. This may effectively restrict the use of unbacked cryptoassets by banks but, to the extent that non-Bank DSS participants can use unbacked cryptoassets in the DSS, this may lead to a better understanding of the risks in these assets and improve the overall outcome and learnings from the DSS.

Question / Response

- 2 What specific kinds of digital securities/asset classes should be considered for inclusion in the DSS?

Please refer to our response to question 1. In our view, the DSS should facilitate trading in, and settlement of, all financial instruments including but not limited to those specified in the

Consultation (such as debt, equity and money market funds). In particular, it should be possible for participants to make applications to the DSS in relation to innovative proposals for collective investment schemes and derivatives.

There should be an open list in respect of settlement assets that might be used within the DSS. In our view, this should include any asset, as long as adequately regulated, including unbacked cryptoassets and tokenised assets such as tokenised e-money, tokenised deposits and tokenised real-world assets e.g. gold.

Question / Response

- 4 Do you agree with the broad approach to activities, designations and authorisations in the DSS as outlined above? Please explain your answer.

The activities, designations and authorisations in the DSS broadly align with the EU DLT Pilot Regulation which creates consistency. In our view, this is helpful for market participants.

However, we believe that the activities, designation and authorisations proposed should be treated as the core services of Sandbox Entrants (SEs) rather than the only modifications. It should also be open to SEs to propose the provision of other additional regulated activities within the DSS which relate to these core services, including, for example, payments, issuance of electronic money and stablecoins.

This would allow participants to provide more innovative proposals that combine the trading and settlement of financial instruments with the settling of the payments leg of these transactions. In our view, the ability of Digital Securities Depositories (DSDs) to combine this, for example by also acting as payment systems or as e-money issuers, would be an improvement and lead to advantages for participants as well as regulators when compared to the EU's DLT Pilot Regulation.

While this may require further legislative changes to operationalise given the scope of the DSS in the FSMA 2023, HM Treasury should consider to what extent the activities, designations and authorisations offered by the DSS should be broadened to facilitate participation of complementary regulators in respect of their areas of focus, for example including the Information Commissioner's Office (ICO) and the Competition and Markets Authority (CMA), among others. To this end we would recommend that the FCA leverage its connection to the Digital Regulation Cooperation Forum (DRCF) for this initiative, given the regulatory crossover with the activities which the DSS will include.

Question / Response

- 5 Do you have any comments or concerns with the process outlined in Annex A?

We understand that a legislative process (e.g., laying of a statutory instrument and rule changes at regulator level) would be required for SEs that apply as DSDs and/or MTFs/OTFs to ultimately operate outside of the DSS. These changes would be entirely at the discretion of HM Treasury and the regulators, with no guarantee that these changes will ever be made.

However, the SE would have already needed to make significant investments in their proposal throughout the process and to get to this stage. This lack of certainty around the ultimate outcome may be a deterrent for firms to apply to participate in the DSS.

As such, we would propose that SEs should be allowed to transition out of the DSS subject to them being able to comply with any applicable rules at any time and that regulators must take into account the evidence and work produced during the sandbox phase.

This would address the deterrent factor by giving firms more clarity upfront, preventing projects from being stuck in a period of uncertainty by providing for a clear transition to the applicable regulatory framework at the time without losing their investment.

The regulators should then be required to take account of the available evidence from the DSS process to grant authorisations. To the extent that any rules have been changed for other SEs, it should also be possible for SEs that have not reached completion stage to amend their business to benefit from these other rule changes.

#	Question / Response
9	Do respondents agree with the approach to eligibility outlined above? Please explain your answer.

We broadly agree and note that HM Treasury is considering whether it would be possible to accept applications from groups of entities.

In our view, it should be possible for firms to partner and apply for/offer DSS activities as a consortium – even if they are required to act via a single legal entity throughout the process. This would reduce perceived barriers to entry and enable established financial services providers to partner with technology companies to work together to propose innovative projects that might not be viable for either alone.

For many traditional financial services providers, there are significant costs attached to building the technology that will enable participation in the DSS whereas for technology providers, there may be significant costs to build systems and controls that achieve compliance with regulatory requirements. Enabling projects to apply as a consortium would facilitate proposals that leverage the aggregated expertise and know-how of consortium members.

#	Question / Response
11	Do you agree with the approach to applications outlined above? Please explain in detail any issues or concerns.

Fundamentally we agree with the outlined approach to applications. We would, however, make the following observations.

It is important that the focus of applications is on the proposed innovation and the legislative modifications sought so that an applicant can reach SE status. We understand that compliance with the modified rules and regulations will be assessed during the testing and dialogue phase of the application process and so will be iterative. In particular, the concept for “regulatory barriers” for which an application is made should also allow applicants to identify provisions that in light of the specific circumstances of the applicant could only be achieved with significant investment. For example, the effect of Article 54 is that a CSD that wishes to settle the cash leg of transactions would have to seek authorisation as a credit institution. While in principle such authorisation is possible, it requires significant investment and would be disproportionate in the context of the DSS. As such, the DSS, in addition to allowing waivers and modifications to specific barriers to the use of technology, should also allow regulators to waive or modify other requirements that act as circumstantial barriers, where this is proportional. As HM Treasury recognises, exit from the Sandbox ought to be determined on the basis of achieving equivalent regulatory outcomes and adhere to a ‘same activity, same risk, same regulation’ approach.

Additionally, one of the most challenging aspects for any applicant will be to provide proposed arrangements for winding down sandbox activities, including transitioning assets out of the DSS if required. In particular, given the entry requirement for the DSS is that the activities proposed must be incapable of being performed under the existing regulatory framework, there may not be any providers outside the DSS that can accept assets created within the context of the DSS.

The cost and viability of issuing securities on the DSS which may not easily be transitioned out of the sandbox may be a deciding factor for participants. This is particularly the case for digitally native securities, for which no wider market infrastructure exists for off-chain recognition and settlement currently. A native digital security created within a specific blockchain DSD is unlikely to be able to be ported into a traditional CSD; as well as the technological constraints, more generally, traditional CSDs may not want to support this for commercial reasons.

More broadly, the interaction and interoperability of two separate issuance structures for digital securities (digital representations vs digitally native) should also be explored as these raise different challenges if treated equally. For example, digital representations of securities may still be exposed to operational risk and counterparty risk from the custodian, whereas digitally native securities may not.

As such, in our view this requirement should be removed from the initial application and form part of the testing and regulatory dialogue discussions rather than part of the initial application assessment criteria.

#	Question / Response
13	Do you agree with the approach to legislative modifications and regulator rules outlined?

We agree with the proposed approach in the consultation. However, as outlined in more detail in our response to question 14, in our view, it will be important that SEs can provide services to an entire ecosystem.

Therefore, it should be possible, where relevant, for regulators to disapply handbook and other rules that may apply to firms that are participating in the ecosystem. By way of illustration, firms trading on a DSS MTF should be able to benefit from any modifications to MiFIR transaction reporting obligations that are given to the DSS MTF while those firms are trading on the DSS MTF.

As outlined in our response to question 4, we also think that HM Treasury should consider whether it is appropriate to expand the scope of the DSS with the involvement of additional regulators such as the ICO and CMA.

Question / Response

14 What other specific regulatory barriers have you identified to the use of digital securities within markets, either in relation to the legislation above or generally?

The success of particular SEs in the long term will be determined by their ability to attract participants that will trade and settle digital securities on the relevant infrastructure.

As such, once projects have reached an operational phase, it should be possible that participants are allowed to take part in the relevant DSD or MTF. It is reasonable to assume that in many cases, potential participants would already hold a part 4A permission. However, the participation in a DSD or MTF may trigger a variation of permission/ removal of limitations or potentially the need to apply for authorisation.

In order to help SEs to operate, there should be a streamlined and expedited path for firms to participate in DSDs or MTFs, subject to the appropriate limitations from regulators. For example, a firm that wishes to participate in a Sandbox MTF that allows self-custody may not hold a custody permission - these firms should be allowed to vary their permissions in an expedited manner.

Additionally, we would encourage the FCA to provide clear perimeter and other guidance in a timely manner to firms who present specific fact patterns. For example:

- **Custody considerations around shared private keys** - (i.e. using MPC technology to split a private key into multiple parts, distributed amongst parties to remove a central point of failure/vector of attack). Are participants who offer this service considered custodians from a regulatory perspective?
- **Forced transfer of securities / ownership overrides** - What considerations have been made for the forced transfer of digital securities on-chain? Will there be on-chain overrides to allow for this? How will these be governed and maintained?

Question / Response

- 15 Are there any pieces of legislation in addition to the above that should be brought into scope of the DSS (either listed in the FSMA 2023 as “relevant enactments” or outside of this)?

We refer to the analysis and uncertainties identified in the [UK Jurisdiction Taskforce's legal statement on digital securities and private law](#) (February 2023) and the [Law Commission's final report on Digital Assets](#) (June 2023). To the extent that the list of relevant enactments positively deals with all perceived and positive uncertainties, we are of the view that no additional pieces of legislation need to be brought within scope.

In this context, we note that the legal mechanism for constituting bonds depends on whether they are in registered, digital record or bearer form. Fundamentally, the legislative changes provided in the sandbox should be such that there is legal certainty that, depending on the option chosen by any SE, bonds and other financial instruments are capable of being validly issued, transferred and settled.

Additionally, we suggest that the DSS takes into account the recommendations of the Law Commission allowing the ability to incorporate crypto-token networks in the issuance and transfer of equity and other corporate securities.

Question / Response

- 18 Do you agree with the approaches to exiting the DSS outlined above?

Please refer to our response to question 5. In our view, SEs should be allowed to transition out of the DSS subject to them being able to comply with any applicable rules at any time and on the basis that regulators must take into account the evidence and work produced during the sandbox phase.

In particular, it may be that other sandbox projects are already operating outside the sandbox so that projects can switch their operations to meet the modified legislation that is in place for other (former) SEs.

Question / Response

- 23 How can settlement systems based on permissionless DLT be designed in a manner that would meet the PFMIIs?

It is important to acknowledge that the PFMI principles were designed on the basis of centralised structures that are subject to regulatory rules in only a handful of jurisdictions. More importantly, the PFMI principles assume the ability of a particular jurisdiction to impose relevant rules on an FMI operator. Depending on the type of DLT system, this may present some challenges.

As noted in the consultation, permissionless DLT systems may be public or private. By their nature, public permissionless DLT systems are decentralised and operate across multiple jurisdictions with a widespread participant base.

As such, imposing specific rules or design requirements onto public permissionless systems presents some challenges. However, measures can still be taken to route regulated activities through 'smart contracts' which have regulatory compliance baked-in. This, combined with regulatory oversight, could help support the PFMI.

Private permissionless systems may or may not be decentralised and operate across multiple jurisdictions with a widespread participant base. Such systems can restrict entrance for participants but allow for permissionless activity on-chain. In the case of a private permissionless model where entry for participants is restricted, there are some key design considerations which can be incorporated in order to support the PFMI, such as:

1. "Smart contracts" which, if rooted in adequate legal principles and meet the relevant conditions, may create the required legal framework that can be executed on-chain for the settlement of securities. The usage and design of these can be proscribed by the regulator which will then be able to monitor their use.
2. Transparent ledger for the monitoring of real-time credit and liquidity risks. The nature of DLT means that this should be possible in near real-time.
3. Upon designation as a systemically important system, settlement finality can be supported through the mechanism of "atomic settlement" on-chain, achieving near-instant settlement times to support the timely and final settlement of transactions. The regulator can define a threshold for "confirmations" from validator nodes, after which a transaction is considered settled.
4. Hybrid systems with permissioned activities which have a legal, valid and binding rulebook, can be enforced through the use of smart contracts with whitelists maintained by the regulator on a permissionless chain.
5. Private permissionless access monitoring – access to a private permissionless chain can still be controlled by a central entity, allowing for the regulator (or a designated operator) to grant access for approved and compliant participants and allow for non-approved or non-compliant participants to have their access revoked if appropriate.

Where a settlement system wishes to rely on DLT, the starting point should not be to design the settlement system for compliance with the PFMI principles, but to adapt the PFMI principles so that the risks they are meant to mitigate are, to the extent they arise, also mitigated using the technology, features and characteristics of the DLT network. We refer to the [GFMA report Impact of Distributed Ledger Technology in Global Capital Markets](#) (May 2023) which contains a detailed assessment of the risks and potential mitigation options for the use of DLT networks in financial markets.

Question / Response

24 What benefits could entities using digital asset technology offer when meeting regulatory reporting requirements?

The specific benefits that can be achieved through the use of DLT depend on various factors, including the number of participants, the level of client participation and interconnectedness between the settlement and payment legs. However, assuming a framework in which DLT-based solutions are available for all financial market activities and financial market participants, and where transactions are executed via programmable smart contracts, the benefits could include:

1. **Real-time Data Availability:** Transaction confirmation reports are validated and approved via a smart contract enabling close to real-time access to reporting content. This distinguishes it from the traditional practice of aggregating reports on a daily, monthly, or quarterly basis.
2. **Comprehensive Detail:** Every relevant trade is recorded with all prescribed data points identified, accessible to all network participants. This information can be permissioned to be available to transaction parties and regulators or any other person on an agreed white-list.
3. **Enhanced Data Quality:** By incorporating smart contract logic, a DLT system could significantly enhance data quality. The verification of data consistency is initiated at the outset, spanning all relevant data inputs.
4. **Seamless Matching Between Entities:** Unlike the current scenario where individual parties independently report using various datasets for the same transaction, the use of DLT could enable automatic reporting post-confirmation. This could lead to a shared common dataset on the ledger, eliminating the need for reconciliation and introducing a form of triple accounting.
5. **Unified Data Model and Logic:** Standardised regulatory data models and logic could be uniformly implemented among all stakeholders, streamlining operations and minimising complexity.
6. **Adaptability to Regulatory Changes:** Incorporating new regulatory reporting requirements into the standardised data model can be achieved with minimal effort. This dynamic logic enhances regulatory efficiency and responsiveness, extending its applicability beyond transaction reporting alone.

Question / Response

25 Are there any aspects of the existing regime that would prevent effective reporting in the context of digital securities?

While complying with the existing regime for reporting may cause inefficiencies, in our view, it should generally be possible to comply. However, specific DSS participants may include proposals that would address how their particular technology could be used to make reporting obligations more specific. In our view, the DSS should support this type of innovation.

One of the challenges for firms participating in DSS MTFs will be to manage reporting obligations arising as DSS MTF participants vs those in their normal course of business. For example, to the extent that DSS MTFs are relying on smart contracts or DLT to generate transaction reports, it will be necessary that these transactions are carved out from reporting using legacy systems. This may not be straightforward.

Question / Response

26 How do potential DSS entities intend to carry out custody functions in relation to activities in the DSS?

Different custody models are possible in the context of digital assets. It is necessary to distinguish the functions of the DSS platform (i.e. as a settlement system) and the activities performed by the participants in the DSS platform in relation to the DLT or other system which records assets. For example, the operator of the DSS platform could, either directly or via an outsourcing provider:

- a) enable participants to set up, access and control cryptographic keys (or other network addresses that record cryptoassets) so that the DSS platform does not hold private cryptographic keys for any of the participants (**self-custody model**);
- b) create and hold the private cryptographic keys on the DSS platform for each participant (**on-chain custody**); or
- c) create an electronic interface such as an app or an API for participants but create, control and manage private cryptographic keys for the DSS platform for the operator's own behalf. Participants can see their account balances via the app or API but the cryptoassets are held in pooled accounts by the operator, so that the participants have a beneficial interest in a pooled account as determined by the records of the DSS platform (**intermediated model**).

In respect of all of these models, we assume that the DLT would provide the legal record of ownership (ultimate source of truth). It should be at the discretion of the DSS platform operator to establish any of these business models and DSS participants may in turn rely on any of these models to provide their custody services. For example, we envisage that custodians who participate in DSS platforms may provide custody services to clients that are not directly connected to the DSS platform.

Question / Response

- 27 Are there any changes to the existing custody regulatory framework (including FCA rules, Article 40 of the RAO and CASS) that would facilitate the safe operation of these functions?

No changes should be required for Article 40 RAO.

However, under Article 41 a nominee holding securities/other relevant investments is not subject to Article 40 provided that a qualifying custodian accepts no less onerous liability to the ultimate owner than if the custodian held itself. Therefore, it would be helpful to clarify in relevant perimeter guidance that Art 41 also applies in the same way where the cryptoassets (if they are investments), and/or the relevant private cryptographic keys, are held by a nominee for and used at the direction of a qualifying custodian. In respect of CASS, we expect some clarifications would be required. These include:

- a) CASS 6.1.12R: To the extent that a DSS Platform qualifies as a “commercial settlement system”, the rule in 6.1.12R should be modified to recognise the settlement speed on the DSS platform; the periods of one business day and three business days should be capable of being reduced to reflect the shorter settlement times of DSS platforms.
- b) CASS 6.2.3R: The concept of "registration or recording of legal title" in a particular name does not make sense in the context of DLT-based records of assets as the control of assets is determined by way of cryptographic keys. We note that, in principle, CASS 6.2.3R may not apply as a result of CASS 6.2.3A-1R (i.e. this is a situation where appropriate registration or recording of legal title is not practicable), but it would be useful to confirm that CASS 6.2.3R does not apply since it is not entirely clear that its application is not practicable "because of the arrangements with ... [a] ... third party for depositing safe custody assets".
- c) CASS 6.3.4BG(3): While technically this is only guidance and only applies "where relevant", compliance auditors and the FCA tend to treat this as a mandatory requirement. Therefore, it would be helpful to have a similar disapplication of the requirement to include the "arrangements for registration or recording" of the custodied assets in any third-party custody agreement. In principle, we assume that the rules should ensure that custodians of cryptoassets hold the relevant private key(s) (or other means of control if the network recording the assets operates in some other way) directly (or indirectly through a third party) to the exclusion of anyone else. And that a public key / wallet used to record client assets is not also used to record own assets (see also comment below rec CASS 6.3.4A-1R). This would allow legal title on the DSS Platform to validly pass between participants.
- d) CASS 6.6.2R :This rule should be clarified to allow firms to rely on the DLT record as the ultimate source of truth for the records of title to custody assets. The extent to which a firm should be allowed to use this will depend on the specific account structure and wallet arrangements of the DSS and, depending on the specific model, DLT records may have to be supplemented with additional records of the firm which

provide information in respect of wallet ownership, etc. For example, where the DSS Platform and relevant participant are both custodians, the participant will need to reconcile against records of the DSS Platform as its sub-custodian in the usual way.

- e) CASS 6.6.34R: It would be useful to clarify that the network/DLT system recording title is not a third-party delegate of a custodian and, as a result, the rules about external custody reconciliations do not apply. We assume that the rules will mandate that a custodian must reconcile its records against the DLT records.
- f) CASS 6.3.4A-1R: Logically, if a DLT network is not a delegate, this rule requiring holding own assets with a third party separately from client assets held with the third party would not apply. However, for good order, market stability and protection of custody clients, among other reasons, the FCA may like to consider requiring that a custodian does not record its own assets at the same on chain wallet (network address) as client assets.
- g) CASS 7: Provisions around client money will need some consideration. To the extent that cryptocurrencies are not regarded as currency, CASS 7 could not apply to the receipt or holding of cryptocurrencies on behalf of clients. However, if authorised firms participate in a DSS Platform, the DSS Platform is not a credit institution and settlement involves receipt of funds through the DSS Platform, the participant could not hold funds for clients through the Platform except under CASS 7.14 (for the purpose of one or more transactions for the client through or with the Platform, or to meet the client's collateral obligations).

Question / Response

- 34 Would a cross-industry body, set up to scrutinise DSS activity and provide policy recommendations, be appropriate? If so, how should this be set up, and who should participate?

In our view, such a body would be a welcome addition to the financial markets policy ecosystem. We agree that the cross-industry body should be formed by entities directly participating in the DSS, trade associations, law firms, academics, the regulators and HM Treasury (and potentially other government departments).

It would be particularly helpful if one of the functions of such body includes providing agreed regulatory guidance on specific aspects relevant to the DSS.

For example, where a firm intends to rely on permissionless DLT networks for its provision of services, to the extent that any specific guidance is made available to that firm in respect of how AML/CTF requirements are being complied with, this should also be made available to other DSS participants with similar issues (and eventually the wider industry).

Question / Response

35 What frictions might hinder the use of digital assets on a cross-border basis?

In addition to the usual frictions of triggering licensing or similar requirements on accessing non-UK financial market infrastructure, the use of digital assets on a cross-border basis is hindered to the extent that, under the laws of non-UK issuers, digital assets are not fully recognised or not validly issued. Without regulatory cross-border cooperation, the use of digital assets on a cross-border basis will have limited effect.

From a technology perspective, cross-border interoperability across different DLT systems (especially between private chains) has not yet been concretely established. Whilst some solutions are beginning to emerge, the market is a long way from a common standard around data formats, APIs, and protocols – the lack of which could lead to fragmentation of the market.

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