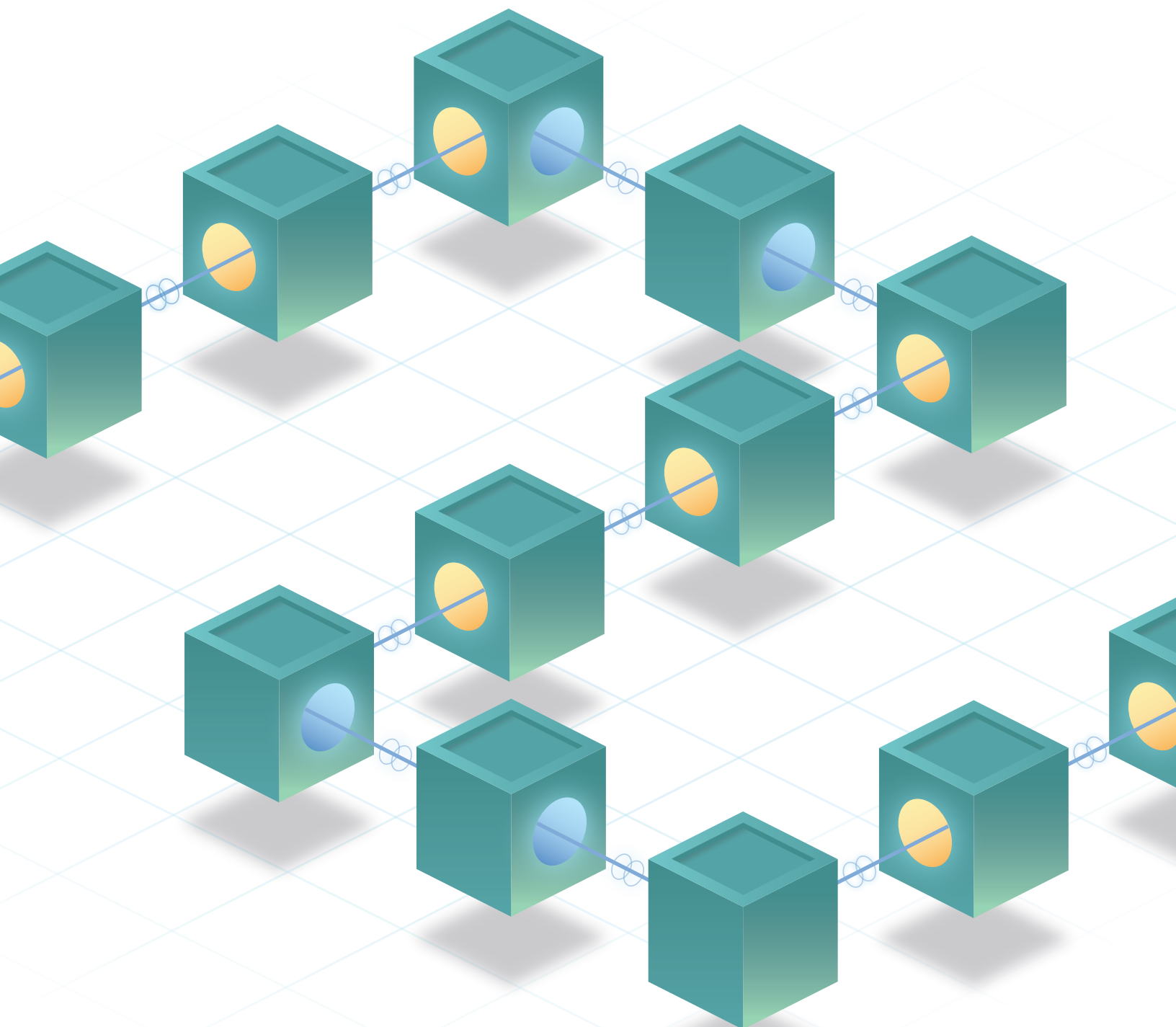


Documentation of **Relevant Distributed Ledger Technology and Blockchain Use Cases v2**



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ACKNOWLEDGMENTS

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INTRODUCTION

Blockchain technology has proven, thanks to Bitcoin cryptocurrency, its relevance to increase secure data exchange and immutable storage of data related to transactions. The technology has also proven its ability to simplify transactions between entities by, especially, removing intermediaries. For this reason, many private and public organizations started creating and testing their proof of concepts based on this technology.

Unfortunately, Blockchain technology is mainly associated with the Bitcoin cryptocurrency. There are many other use cases that take advantage of blockchain technology properties without necessarily using cryptocurrency features.

The purpose of this publication is to provide a description of relevant use cases beyond cryptocurrency identified by the Blockchain/DLT working group members. We have tried to describe relevant specific use cases for different economic sectors (vertical use cases) and also use cases that apply to multiple economic sectors at the same time (horizontal use cases).

A use case is considered as relevant when it provides potential:

1. Business model or business process disruption.
2. Strong benefit for the organization... that, unfortunately, cannot yet be quantified for most of the cases.
3. Large and widespread application.

In this release, we highlighted three disruptive use cases for the public sector: voting, land registry, and Management of commercial and corporate registry. Two disruptive use cases that concern cross border payments are described: these use case will have huge benefits: cost saving and transfer time. It should be noted, we have included a case of private and public blockchains collaboration: the fingerprint (a hash) of a system state into the private blockchain is stored into a public blockchain. This feature is referred to "Anchoring".

We distinguished six levels of maturity (Use Case Level - UCL) to classify each use case. This classification will help the reader position each use case from the conceptual initiative to production/large-scale deployment.

1	UCL 1: Concept	An idea for a solution to a problem that has been thought through and usually presented in the form of a whitepaper
2	UCL 2: Proof of Concept	The first realization that tests the feasibility of the Concept. Answers the question: Is the Concept even possible?
3	UCL 3: Prototype	The prototype is more functionally complete than the Proof of Concept and incorporates improvements made during the Proof of Concept testing. The Prototype is often used by the partners in the project and a few users
4	UCL 4: Pilot	The pilot is more functionally complete than the Prototype incorporating improvements made during Prototype testing. Pilot testing is made by a wider but still selected group of users

5	UCL 5: Pilot Production	Pilot is functionally complete and used by a still selected group of users
6	UCL 6 Production	Production is functionally complete and used by users at large

Future releases will provide, if applicable, an update of the use cases listed in previous publications and also new interesting use cases that will be identified and summarized by the Blockchain/DLT working group members.



















We hope that this series of publications will provide to readers keys to exploring and generating new blockchain technology use cases in their organizations.

DEFINITIONS





















	INDUSTRY	Industry class per the Global Industry Classification Standard https://en.wikipedia.org/wiki/Global_Industry_Classification_Standard
	USE CASE	Ranges from a theoretical model to a working version of the business processes being evaluated. Excludes ideas/papers etc.
	COMPANY	Company/group responsible for organizing & managing the Use Case
	DATE/STATUS (UCL)	The date the Use Case status is determined followed by the use case status classified in accordance with the UCL (Use Case Level) described into the introduction
	COUNTRY ORIGIN / OPERATES	Country of the use case responsible and the geographical coverage of the business use case
	ECOSYSTEM	The participants in the Use Case: usually, the organizing entity, customers and partners that have a significant role in the in the business concept being evaluated
	INDUSTRY/CO. CHALLENGES	Business challenges/opportunities the use case addresses: inefficiency, cost, revenue, customer service, etc.
	BLOCKCHAIN BENEFITS	Not general blockchain benefits but the major benefits considering the use case and the challenges / opportunities (above) that need to be addressed
	KEY FEATURES	Characteristics highlighting the usefulness of the product to targeted users
	KEY PERFORMANCE INDICATOR	Measurement(s) demonstrating(s) Use Case success
	DLT IMPLEMENTATION	Public, Private, Federated/Consortium
	DLT CLASS	Blockchain or Non Blockchain
	DLT TYPE / VERSION / VARIATION	Blockchain: Bitcoin, Ethereum, Hyperledger/Fabric, etc. Non Blockchain: Tangle: IoTA, Hashgraph, etc.
	CRYPTOCURRENCY 1	Issued supporting the DLT implementation
	CRYPTOCURRENCY 2	Used as a medium of exchange
	IT SERVICE/CO. NAME	CSP - external provider or providers of IT service. In-House - Data Center run internally Hybrid - combination of CSP and In-House
	CLOUD SERVICE LEVEL	IaaS, PaaS, SaaS: Service level supporting business processes



















FINANCE



















 SECTOR(S) Finance		 EXPECTED BENEFITS/BUSINESS VALUE <ul style="list-style-type: none"> • Reduced Administrative Cost • Secure Processing • Secure Storage 	
 ECOSYSTEM Banks across multiple countries: Santander, American Express, Standard Chartered, MoneyGram and SBI Holdings.	 COMPANY Ripple	 DATE/STATUS 2012 / UCL 5 Pilot Production	 COUNTRY ORIGIN/ OPERATES United States / World Wide
 INDUSTRY Banking (payment solutions)		 USE CASE Cross border payments bank-to-bank	
 INDUSTRY COMPANY CHALLENGES <ul style="list-style-type: none"> • Real-time cross-border payments. • More efficient liquidity management capabilities. • Deliver almost free and instant transactions. 		 BLOCKCHAIN BENEFITS <ul style="list-style-type: none"> • Reduce time of cross border transactions. • Reduce cost of transactions 	
 KEY FEATURES <ul style="list-style-type: none"> • Centralized control. • No mining feature provided by Ripple. • Transactions validation uses probabilistic voting. • XRP transaction confirmations take 5 seconds. • Transaction cost: \$0.004. 		 KEY PERFORMANCE INDICATOR <ul style="list-style-type: none"> • Cost saving for bank : 46% per transaction. • Reduce time of a transfer from 5 days to 0 days (3-5 seconds). 	
 DLT IMPLEMENTATION TYPE Permissioned	 DLT CLASS Blockchain	 DLT TYPE/VERSION Blockchain: XRP Ledger (rippled) version 1.1.0	
 CRYPTOCURRENCY 1 XRP	 CRYPTOCURRENCY 2 None	 CLOUD SERVICE LEVEL CSP / Ripple (a for-profit body aiming to create a payments network with large financial institutions)	
 IT SERVICE / COMPANY NAME None		 REFERENCES <ul style="list-style-type: none"> • https://ripple.com/ • https://dailyhodl.com/2018/09/10/royal-bank-of-canada-says-ripple-and-xrp-can-save-financial-institutions-46-per-payment/ 	

 ECOSYSTEM	 COMPANY	 DATE/STATUS	 COUNTRY ORIGIN/ OPERATES
Individuals across multiple countries.	<i>Stellar</i>	2015 / UCL 5 Pilot Production	United States / World Wide
 INDUSTRY	 USE CASE		
Banking (payment solutions)	Cross border payments individual-to-individual		
 INDUSTRY COMPANY CHALLENGES	 BLOCKCHAIN BENEFITS		
<ul style="list-style-type: none">Real-time cross-border payments.More efficient liquidity management capabilities.Deliver almost free and instant transactions.	<ul style="list-style-type: none">Reduce time of cross border transactions.Reduce cost of transactions		
 KEY FEATURES	 KEY PERFORMANCE INDICATOR		
<ul style="list-style-type: none">Distributed controlOpen source protocol.Transactions validation uses a decentralized version of PBFT called Stellar Consensus Protocol	Probably the same indicators as Ripple: <ul style="list-style-type: none">Cost saving for bank : 46% per transaction;Reduce time a transfer from 5 days to 0 days (3-5 seconds).		
 DLT IMPLEMENTATION TYPE	 DLT CLASS	 DLT TYPE/VERSION	
Public	Blockchain	Specific	
 CRYPTOCURRENCY 1	 CRYPTOCURRENCY 2	 CLOUD SERVICE LEVEL	
Stellar Lumens (XLM)	None	None	
 IT SERVICE / COMPANY NAME	 REFERENCES		
CSP / Stellar has developed partnership with IBM	<ul style="list-style-type: none">https://www.stellar.org/		

PUBLIC SECTOR

 SECTOR(S) Administration		 EXPECTED BENEFITS/BUSINESS VALUE <ul style="list-style-type: none"> Provide citizens and governments with data safety, auditable processes and transparency. 	
 ECOSYSTEM Citizens, administration	 COMPANY Japanese city of Tsukuba (Ibaraki Prefecture)	 DATE/STATUS August 2018 / UCL 6 Production	 COUNTRY ORIGIN/ OPERATES Japan
 INDUSTRY Administration		 USE CASE Vote	
 INDUSTRY COMPANY CHALLENGES <ul style="list-style-type: none"> Prevent any sort of meddling in the voting process and to avoid the falsification of results 		 BLOCKCHAIN BENEFITS <ul style="list-style-type: none"> Prevent the voting data from being falsified or read 	
 KEY FEATURES <ul style="list-style-type: none"> Voters participate by using their My Number Card — a 12-digit ID number issued to all citizens of Japan, which was introduced in 2015 		 KEY PERFORMANCE INDICATOR <ul style="list-style-type: none"> None 	
 DLT IMPLEMENTATION TYPE Private	 DLT CLASS Blockchain	 DLT TYPE/VERSION Not identified	
 CRYPTOCURRENCY 1 None	 CRYPTOCURRENCY 2 None	 CLOUD SERVICE LEVEL Not identified	
 IT SERVICE / COMPANY NAME CSP / IBM		 REFERENCES <ul style="list-style-type: none"> https://www.japantimes.co.jp/news/2018/09/02/national/politics-diplomacy/new-online-voting-system-introduced-city-tsukuba/#.W8s8lpyxVhG https://cointelegraph.com/news/blockchain-and-elections-the-japanese-swiss-and-american-experience https://cointelegraph.com/news/japanese-city-tsukuba-trials-blockchain-based-voting-system 	

	ECOSYSTEM		COMPANY		DATE/STATUS		COUNTRY ORIGIN/ OPERATES
Citizens, administration		National Agency of Public Registry		February 2016 / UCL 4 Pilot		Republic of Georgia	
	INDUSTRY				USE CASE		
Administration				Land Registry			
	INDUSTRY COMPANY CHALLENGES				BLOCKCHAIN BENEFITS		
<ul style="list-style-type: none">Overall system transparency;Fault tolerance;Intelligibility for end users.				<ul style="list-style-type: none">Timestamping service that ensure documents are legitimate without exposing confidential information ;Real-time audit capabilities.			
	KEY FEATURES				KEY PERFORMANCE INDICATOR		
<ul style="list-style-type: none">Internal custom-built Byzantine consensus algorithm within a private blockchain ;Fingerprint (a hash) of the electronic certificate is stored on the bitcoin blockchain.				<ul style="list-style-type: none">Service delivery time was reduced from 1-3 business days to several seconds;Operational costs were reduced up to 90% (for the specific service).			
	DLT IMPLEMENTATION TYPE			DLT CLASS			DLT TYPE/VERSION
Private with built-in anchoring on the Bitcoin Blockchain. Note: Anchoring is the process of saving a fingerprint (a hash) of a system state.			Blockchain		Exonum, a blockchain framework provided by Bitfury.		
	CRYPTOCURRENCY 1			CRYPTOCURRENCY 2			CLOUD SERVICE LEVEL
None			None		Not identified		
	IT SERVICE / COMPANY NAME				REFERENCES		
CSP / Bitfury				<ul style="list-style-type: none">https://bitfury.com/content/downloads/the_bitfury_group_republic_of_georgia_expand_blockchain_pilot_2_7_16.pdfhttps://exonum.com/https://github.com/exonum/exonum			

	ECOSYSTEM		COMPANY		DATE/STATUS		COUNTRY ORIGIN/ OPERATES
Clerks of commercial courts		French National Council of Clerks		March 2019 / UCL 5 Pilot Production		France	
	INDUSTRY				USE CASE		
Administration				Management of commercial and corporate registry			
	INDUSTRY COMPANY CHALLENGES				BLOCKCHAIN BENEFITS		
<ul style="list-style-type: none">Exchanges of regulatory information related to companies' difficultiesChanges of status of the company registered on the French territoryPrepare future interconnection of business registers of country members of the European Union				<ul style="list-style-type: none">Share a single version of truth across the courts clerksEnsure traceability of notifications related to the legal changesEnsure transparency and improving the dynamic of court clerks' interactions			
	KEY FEATURES				KEY PERFORMANCE INDICATOR		
<ul style="list-style-type: none">Hyperledger Fabric protocolDistributed database of french companies statusSmart-contract to automate and digitize business processes				<ul style="list-style-type: none">Decrease the time to update the registry from several days for some complex cases to a single day			
	DLT IMPLEMENTATION TYPE			DLT CLASS			DLT TYPE/VERSION
Blockchain			Private		Hyperledger Fabric		
	CRYPTOCURRENCY 1			CRYPTOCURRENCY 2			CLOUD SERVICE LEVEL
None			None		None		
	IT SERVICE / COMPANY NAME				REFERENCES		
CSP / IBM				<ul style="list-style-type: none">https://newsroom.ibm.com/2019-03-14-French-National-Council-of-Clerks-of-Commercial-Courts-announce-the-deployment-of-a-blockchain-network-developed-by-IBM-to-streamline-the-management-of-commercial-and-corporate-registryhttps://www.coindesk.com/ibm-scores-nationwide-blockchain-deal-with-frances-commercial-court-clerks			

FOOD SUPPLY CHAIN

		SECTOR(S)				EXPECTED BENEFITS/BUSINESS VALUE									
		Food				<ul style="list-style-type: none">Reduced transaction processing costSourcing/tracking and quality/accountabilityOptimized inventory, return on assets and customer fulfilment									
		ECOSYSTEM				COMPANY				DATE/STATUS				COUNTRY ORIGIN/ OPERATES	
		Farmer, Processor, Distributor, Retailer				IBM and Walmart				Oct 21, 2018 / UCL5 Pilot Production verge of UCL 6 Production				United States / Globally	
		INDUSTRY				USE CASE									
		Food				Food Trust Supply Chain Platform									
		INDUSTRY COMPANY CHALLENGES				BLOCKCHAIN BENEFITS									
		<ul style="list-style-type: none">Data trust and visibility issues due to data silos and lack of provenance and immutabilitySourcing and accountability issues due to lack of end-to-end data availability and transparencyForecasting issues leading to inventory shortage/waste				<ul style="list-style-type: none">Food safety: mitigate cross-contamination, reduce spread of illness and improve efficiency & effectiveness of recallsFood freshness and waste: visibility leads to improved freshness and increased shelf lifeCustomer/supplier service: efficient and effective fulfilment and problem resolutionFood confidence: ensure quality of goods, track authenticity of products and certify provenance									
		KEY FEATURES				KEY PERFORMANCE INDICATOR									
		<ul style="list-style-type: none">Decentralized model w/multiple partners sharing a visionEnd-to-end visibility: Farmer through retailerGS1 Standard for traceability and interoperability				<ul style="list-style-type: none">Actual tracing time reduced from 6 days to 2.2 secondsTransaction cost reductionIncreased inventory turnsReduced waste losses									
		DLT IMPLEMENTATION TYPE				DLT CLASS				DLT TYPE/VERSION					
		Private / Permissioned				Blockchain				Hyperledger Fabric / 1.0					
		CRYPTOCURRENCY 1				CRYPTOCURRENCY 2				CLOUD SERVICE LEVEL					
		None				None				SaaS					
		IT SERVICE / COMPANY NAME				REFERENCES									
		CSP / IBM				<ul style="list-style-type: none">https://www.ibm.com/blockchain/solutions/food-trusthttps://www.foodqualityandsafety.com/article/ibm-launches-its-blockchain-traceability-network/https://www.ethnews.com/walmart-gives-suppliers-deadline-to-join-food-trust-blockchain									



MEDIA AND ENTERTAINMENT

 SECTOR(S) Entertainment		 EXPECTED BENEFITS/BUSINESS VALUE <ul style="list-style-type: none"> Content funding Reduce the complexity for content rights holders to collect and distribute royalties Transparency about digital advertising placement transactions and settlement Mitigate content piracy 	
 ECOSYSTEM Internet users (Limited to United States)	 COMPANY Toyota	 DATE/STATUS October 2018 / UCL 4 Pilot	 COUNTRY ORIGIN/ OPERATES United States
 INDUSTRY Digital advertising		 USE CASE Fight against fraud and viewability	
 INDUSTRY COMPANY CHALLENGES <ul style="list-style-type: none"> Improve transparency of agencies, publishers, and platforms Verify the placement of campaigns and measure Track only impression that can be seen by users Identify frauds, domain spoofing, and bot traffic 		 BLOCKCHAIN BENEFITS <ul style="list-style-type: none"> Provide a new layer of accountability and transparency Storage of tamper-proof record of visits 	
 KEY FEATURES <ul style="list-style-type: none"> Smart-contracts that provides uniform rules and definitions Distributed database of data across a complex ecosystem 		 KEY PERFORMANCE INDICATOR <ul style="list-style-type: none"> 21% lift in campaign performance 	
 DLT IMPLEMENTATION TYPE Blockchain	 DLT CLASS Public	 DLT TYPE/VERSION Ethereum	
 CRYPTOCURRENCY 1 None	 CRYPTOCURRENCY 2 None	 CLOUD SERVICE LEVEL None	
 IT SERVICE / COMPANY NAME CSP / Lucidity, that provides data analytics over the blockchain for ads optimizations		 REFERENCES <ul style="list-style-type: none"> https://adage.com/article/digital/toyota-turns-blockchain-optimize-digital-ad-buys/315279/ https://www.forbes.com/sites/nelsongranados/2018/12/03/how-blockchain-is-making-waves-in-media-and-entertainment/#1e52db493f6c 	

IDENTITY

 SECTOR(S)		 EXPECTED BENEFITS/BUSINESS VALUE	
Identity		<ul style="list-style-type: none"> • Owners Control Identity Flow • Peer-2-Peer Credential Exchange • Simplify Know Your Customer (KYC) • Facilitate Simple Bank On-boarding 	
 ECOSYSTEM	 COMPANY	 DATE/STATUS	 COUNTRY ORIGIN/ OPERATES
Trustees, Stewards, Agents, Identity Owners	Sovrin foundation - IBM - Workday and Cisco primary Platform Stewards	January 2019 / UCL 3 Prototype (beta membership full)	United States / Globally
 INDUSTRY		 USE CASE	
Identity		Sovrin Trust Framework a Trusted Identity Platform	
 INDUSTRY COMPANY CHALLENGES		 BLOCKCHAIN BENEFITS	
<ul style="list-style-type: none"> • Identity Theft/Fraud • Identity Flow Control • Privacy Compliance/GDPR • Facilitate Identity while Reducing Costs 		<ul style="list-style-type: none"> • Decentralized identity networks • Participating and exchanging credentials in heterogeneous decentralized identity networks • Transforming business process workflow 	
 KEY FEATURES		 KEY PERFORMANCE INDICATOR	
<ul style="list-style-type: none"> • Validators nodes that perform consensus and maintain ledger • Clients nodes that invoke validator nodes to performs authenticated actions 		<ul style="list-style-type: none"> • Number of Identities, Agents, Stewards • Number/% of Identity Thefts, Goal is Zero • Number of Compliance Violations, Goal is Zero • Identification Process Cost Reduction 	
 DLT IMPLEMENTATION TYPE	 DLT CLASS	 DLT TYPE/VERSION	
Private / Permissioned	Blockchain	Hyperledger Fabric / 1.0	
 CRYPTOCURRENCY 1	 CRYPTOCURRENCY 2	 CLOUD SERVICE LEVEL	
None	None	SaaS	
 IT SERVICE / COMPANY NAME		 REFERENCES	
CSP / IBM		<ul style="list-style-type: none"> • https://www.ibm.com/blockchain/solutions/identity • https://www.ibm.com/blockchain/solutions/identity/networks • https://www.ibm.com/blogs/blockchain/2018/08/ibm-blockchain-trusted-identity-sovrin-steward-closed-beta-offering/ • https://sovrin.org/stewards/ • https://github.com/IBM-Blockchain-Identity/indy-ssivc-tutorial 	

ROYALTIES

 SECTOR(S)		 EXPECTED BENEFITS/BUSINESS VALUE	
Energy		<ul style="list-style-type: none">• Eliminate royalty disputes• Speed the recording of transactions• Reduce the cost of transactions & disputes• Ensure regulatory compliance	
 ECOSYSTEM	 COMPANY	 DATE/STATUS	 COUNTRY ORIGIN/ OPERATES
Operator, Royalty Holder, Regulator, Bank	<i>GuildOne</i>	January 2019 / UCL 5 Pilot Production	Alberta, Canada / Canada
 INDUSTRY		 USE CASE	
Oil & Gas		Energy Block Exchange (EBX) - Oil & Gas Royalty Contract Management Platform	
 INDUSTRY COMPANY CHALLENGES		 BLOCKCHAIN BENEFITS	
<ul style="list-style-type: none">• Excessive costly contractual disagreements• Delayed transaction processing• Frictioned burdened costly processes• Maintaining complex regulatory compliance		<ul style="list-style-type: none">• Mutually agreed contracts• Automated transaction processing• Transparency for participants• Immediate error free transaction processing	
 KEY FEATURES		 KEY PERFORMANCE INDICATOR	
<ul style="list-style-type: none">• Smart contracts• Private blockchain• Automated smart contracts• Scalable to tens of millions of contracts per month		<ul style="list-style-type: none">• Number and value of contracts• Reduction in number and value of disputes• Speed of transaction processing• Reduced number and value of compliance issues	
 DLT IMPLEMENTATION TYPE	 DLT CLASS		 DLT TYPE/VERSION
Private / Permissioned	Blockchain		Corda
 CRYPTOCURRENCY 1	 CRYPTOCURRENCY 2	 CLOUD SERVICE LEVEL	
None	None	SaaS	
 IT SERVICE / COMPANY NAME		 REFERENCES	
CSP / AWS		<ul style="list-style-type: none">• https://guild1.co/energy-studio-applications/royalty-studio-4-0/• https://globe.newswire.com/news-release/2018/02/14/1348236/0/en/GuildOne-s-Royalty-Ledger-settles-first-royalty-contract-on-R3-s-Corda-blockchain-platform.html• https://aws.amazon.com/partners/apn-journal/all/guildone/	

INSURANCE

		SECTOR(S)				EXPECTED BENEFITS/BUSINESS VALUE											
		Insurance				<ul style="list-style-type: none">Reduce the administrative work of insurance and reinsurance processes that involves multiple counterpartiesImproves the trading of risk											
		ECOSYSTEM				COMPANY				DATE/STATUS				COUNTRY ORIGIN/ OPERATES			
		Owners, Brokers, Insurers, reinsurers, retro-insurers				<i>Insurwave a joint venture between EY and Guardtime.</i> Pilot participants: <ul style="list-style-type: none">Container shipping company: A.P. Møller-MaerskInsurance companies: Willis Towers Watson, XL Catlin, MS Amlin and ACORD				January 2019 / UCL 5 Pilot Production				United States / Globally			
		INDUSTRY								USE CASE							
		Marine Insurance								Marine Insurance Blockchain Platform							
		INDUSTRY COMPANY CHALLENGES								BLOCKCHAIN BENEFITS							
		<ul style="list-style-type: none">Reduce the complexity of global and multi-countries businesses: licensing requirements, taxes, and regulations and policiesAbility to price the risk accuratelyIncrease transparency between shipping company and insurance companyDigitize processes mainly carried out manually to improve their performance and operational efficiency								<ul style="list-style-type: none">Collect and distribute, in good time, informations with parties located internationallyReplace paper and manual processAutomate multiple activities by involving all relevant parties concurrently with zero-fraud and error							
		KEY FEATURES								KEY PERFORMANCE INDICATOR							
		<ul style="list-style-type: none">Smart contracts self-execution based on data provided by partiesDistributed database of data across parties (eg bills of lading, charterparties and reports)								<ul style="list-style-type: none">Save up to 40% of the premium transactional costsReduce the settlement of insurance claims							
		DLT IMPLEMENTATION TYPE						DLT CLASS						DLT TYPE/VERSION			
		Private						Blockchain						Corda			
		CRYPTOCURRENCY 1						CRYPTOCURRENCY 2						CLOUD SERVICE LEVEL			
		None						None						IaaS & PaaS			
		IT SERVICE / COMPANY NAME								REFERENCES							
		CSP / Microsoft Azure								<ul style="list-style-type: none">https://www.insureblocks.com/ep-12-insurwave-a-maersk-pilot-for-marine-blockchain-insurance/https://www.ey.com/en_gl/news/2018/05/world-s-first-blockchain-platform-for-marine-insurance-now-in-cohttps://customers.microsoft.com/en-au/story/insurwave-insurance-azurehttps://www.standard-club.com/media/2678970/blockchain-some-potential-implications-for-marine-insurance.pdf							