

TECHNICAL REPORT



Internet of things (IoT) – Integration of IoT and DLT/blockchain: Use cases

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CONTENTS

FOREWORD.....	5
INTRODUCTION.....	6
1 Scope.....	7
2 Normative references	7
3 Terms and definitions	7
4 Symbols and abbreviated terms.....	7
5 Use case scenarios	7
5.1 General.....	7
5.2 Use cases.....	7
6 Description of use case	9
6.1 Agricultural product tracing	9
6.1.1 Scope and objectives of use case.....	9
6.1.2 Narrative of use case.....	9
6.1.3 Actors: people, components, systems, integrated systems, applications and organizations	10
6.1.4 Issues: legal contracts, legal regulations, and constraints.....	11
6.1.5 Reference standards and/or standardization committees	11
6.1.6 Relation with other known use cases	11
6.1.7 General remarks.....	11
6.1.8 Data security, privacy and trustworthiness	11
6.1.9 Conformity aspects.....	11
6.1.10 User requirements and interactions with other actors.....	11
6.1.11 Drawing of use case	12
6.1.12 Data flow diagram of use case.....	12
6.1.13 Sequence diagram of use case.....	13
6.2 Financial services for fish farming.....	14
6.2.1 Scope and objectives of use case.....	14
6.2.2 Narrative of use case.....	15
6.2.3 Actors: people, components, systems, integrated systems, applications and organizations	15
6.2.4 Issues: legal contracts, legal regulations, and constraints.....	16
6.2.5 Reference standards and/or standardization committees	16
6.2.6 Relation with other known use cases	16
6.2.7 General remarks.....	16
6.2.8 Data security, privacy and trustworthiness	16
6.2.9 Conformity aspects.....	17
6.2.10 User requirements and interactions with other actors.....	17
6.2.11 Drawing of use case	17
6.2.12 Data flow diagram of use case.....	18
6.2.13 Sequence diagram of use case.....	19
6.3 Chattel mortgage services	21
6.3.1 Scope and objectives of use case.....	21
6.3.2 Narrative of use case.....	21
6.3.3 Actors: people, components, systems, integrated systems, applications and organizations	21
6.3.4 Issues: legal contracts, legal regulations, and constraints.....	22
6.3.5 Reference standards and/or standardization committees	22

6.3.6	Relation with other known use cases	22
6.3.7	General remarks	22
6.3.8	Data security, privacy and trustworthiness	22
6.3.9	Conformity aspects	23
6.3.10	User requirements and interactions with other actors	23
6.3.11	Drawing of use case	23
6.3.12	Data flow diagram of use case	24
6.3.13	Sequence diagram(s) of use case	25
6.4	Distributed energy trading	26
6.4.1	Scope and objectives of use case	26
6.4.2	Narrative of use case	26
6.4.3	Actors: people, components, systems, integrated systems, applications and organizations	27
6.4.4	Issues: legal contracts, legal regulations, and constraints	28
6.4.5	Reference standards and/or standardization committees	28
6.4.6	Relation with other known use cases	28
6.4.7	General remarks	28
6.4.8	Data security, privacy and trustworthiness	28
6.4.9	Conformity aspects	29
6.4.10	User requirements and interactions with other actors	29
6.4.11	Drawing of use case	29
6.4.12	Data flow diagram of use case	30
6.4.13	Sequence diagram(s) of use case	31
6.5	Automated parking payment service	33
6.5.1	Scope and objectives of use case	33
6.5.2	Narrative of use case	33
6.5.3	Actors: people, components, systems, integrated systems, applications and organizations	33
6.5.4	Issues: legal contracts, legal regulations, and constraints	34
6.5.5	Reference standards and/or standardization committees	34
6.5.6	Relation with other known use cases	34
6.5.7	General remarks	34
6.5.8	Data security, privacy and trustworthiness	34
6.5.9	Conformity aspects	35
6.5.10	User requirements and interactions with other actors	35
6.5.11	Drawing of use case	35
6.5.12	Data flow diagram of use case	36
6.5.13	Sequence diagram(s) of use case	37
	Bibliography	39
	Figure 1 – General overview of smart agriculture	12
	Figure 2 – Data flow diagram of agricultural product tracing	13
	Figure 3 – Sequence diagram of agricultural product tracing	14
	Figure 4 – The financial risks without collaboration	18
	Figure 5 – Financial risks minimized through the collaboration of multiple participants	18
	Figure 6 – Data flow diagram of financial service for fish farming	19
	Figure 7 – Sequence diagram of the financial service for fish farming	20

Figure 8 – Stakeholders and their relationships in chattel mortgage monitoring financial services	24
Figure 9 – Data flow diagram of chattel mortgage service	25
Figure 10 – Sequence diagram of the chattel asset financial service	25
Figure 11 – Architecture for P2P energy trading	30
Figure 12 – Data flow diagram based on hierarchical cyber enhancement framework for energy trading	31
Figure 13 – Sequence diagram for the energy trading process	32
Figure 14 – Involved parties and their relationships in the automated parking payment service	36
Figure 15 – Data flow diagram of the automated parking payment service	37
Figure 16 – Sequence diagram of the automated parking payment service	37
Table 1 – Summary of use case scenarios	8
Table 2 – Actors for agricultural product tracing	10
Table 3 – Data security, privacy and trustworthiness for agricultural product tracing	11
Table 4 – Steps of the agricultural product tracing	14
Table 5 – Actors for financial services for fish farmers	16
Table 6 – Data security, privacy and trustworthiness for financial services for fish farmers	17
Table 7 – Steps of the financial service for fish farming	20
Table 8 – Actors for chattel mortgage services	22
Table 9 – Data security, privacy and trustworthiness for chattel mortgage services	23
Table 10 – Steps of the financial service for chattel mortgage service	26
Table 11 – Actors for distributed energy trading	28
Table 12 – Data security, privacy and trustworthiness for distributed energy trading	29
Table 13 – Steps of the distributed energy trading	32
Table 14 – Actors for the automated parking payment service	34
Table 15 – Data security, privacy and trustworthiness for the automated parking payment service	35
Table 16 – Steps of the automated parking payment service	38

INTERNET OF THINGS (IoT) – INTEGRATION OF IoT AND DLT/BLOCKCHAIN: USE CASES

FOREWORD

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IEC TR 30176 has been prepared by subcommittee 41: Internet of Things and Digital Twin, of ISO/IEC joint technical committee 1: Information technology. It is a Technical Report.

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Draft	Report on voting
JTC1-SC41/220A/DTR	JTC1-SC41/241A/RVDTR

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Report is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1, available at www.iec.ch/members_experts/refdocs and www.iso.org/directives.

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INTRODUCTION

Distributed ledger technology (DLT) provides the capability of a distributed ledger, which is shared across a set of DLT nodes and synchronized among DLT nodes using a consensus mechanism. Blockchain is a kind of DLT, which uses confirmed blocks organized in an append-only, sequential chain using cryptographic links. Blockchain is designed to be tamper resistant and to create final, definitive and immutable ledger records. Either DLT or blockchain can be quoted and used in terms of technology realization for application scenarios. Each participant in a blockchain and DLT network has their own tamper-resistant replica of transaction records associated with the participants who are individuals or organizations. Blockchain and DLT can be applied to solutions involving IoT systems which contain sensors, actuators, tags and readers, wearable devices, and service platforms, all of which are networked.

Through the analysis of the IoT involving the DLT and blockchain technology, the DLT and blockchain technology can help in solving the problems of IoT, especially those existing in the physical system, such as device digital identity, data source trustworthiness, key data forensics, data rights and interests, data assets and value exchange, etc. At the same time, the IoT also provides an important commercial application scenario for DLT and blockchain, and promotes entity and virtual economy combination. The integration of the IoT system with the DLT and blockchain technology can achieve complementary advantages and bring new business opportunities.

In fact, the integration of IoT system with DLT and blockchain can enable the creation of better solutions for many business sectors, particularly where those solutions involve information associated with physical entities, and where the solution spans many organizations with the need for trusted information to be shared by those organizations.

The solutions that can be provided by the integration are important for the business sectors such as agriculture, industry, healthcare, pharmaceuticals, environmental protection, transportation, security, finance, insurance, object tracing, supply chain, smart grid, and smart cities. This document is focused on collecting use cases in some of these sectors.

This document has been prepared based on the applications of IoT and DLT/blockchain technology with the template of IoT use cases.

INTERNET OF THINGS (IoT) – INTEGRATION OF IoT AND DLT/BLOCKCHAIN: USE CASES

1 Scope

This document identifies and collects use cases for the integration of the DLT/blockchain within IoT systems, applications, and/or services.

The use cases presented in this document use the IoT use case template.

2 Normative references

There are no normative references in this document.