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ETSI GR PDL 010 V0.0.1 (2020-11)

**Group REPORT**

PDL Operations in Offline Mode

Release #

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# Foreword

This Group Report (GR) has been produced by ETSI Industry Specification Group Permissioned Distributed Ledger (PDL).

# Modal verbs terminology

In the present document "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](about:blank) (Verbal forms for the expression of provisions).

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# Executive summary

One paragraph each on:

* general role/importance of ledgers / PDL
* problem statement we are trying to address
* reasons why nodes might be offline
* contribution we make; each subsequent high level section in one paragraph
* summary on high level findings and recommendation

# Introduction

Several paragraphs each on:

* general role/importance of ledgers / PDL
* current work done by ETSI PDL and wide ecosystem
* problem statement we are trying to address
* expanded view on why nodes might be offline
* rational of our work and resulting structure of document

# Scope

The present document describes the current challenges related to data storage and ledger operations when the PDL nodes are offline (duty cycled or truly offline); the methodologies and techniques that can be applied to Smart Contracts to operate when the nodes are offline and develop secure interim storage and negotiation algorithms that ensure the integrity of the data feed to the PDLs.

# References

## 2.1 Normative references

Normative references are not applicable in the present document.

## 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non‑specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI GR PDL001 V1.1.1/(2020-03): "Permissioned Distributed Ledger (PDL); Landscape of Standards and Technologies".

[i.2] European Commission CORDIS: "CORDIS: Projects and Results".

NOTE 1: Available at https://cordis.europa.eu/projects/en

[i.3] ETSI Research and Standards Website /(2020-06-15): "Research and Standards".

NOTE 1: Available at [https://www.etsi.org/research](about:blank)

[i.4]

# Definition of terms, symbols and abbreviations

## Terms

For the purposes of the present document, the [following] terms [given in ... and the following] apply:

**Real-Time PDL**

**Synchronous PDL**

**Asyncrhonous PDL**

**Offline PDL**

## Symbols

For the purposes of the present document, the [following] symbols [given in ... and the following] apply:

## Abbreviations

For the purposes of the present document, the [following] abbreviations [given in ... and the following] apply:

AI Artificial Intelligence

DLT Distributed Ledger Technology

ETSI European Telecommunications Standards Institute

EU European Union

H2020 Horizon 2020

ICT Information and Communication Technology

IoT Internet of Things

IP Intellectual Property

PDL Permissioned Distributed Ledger

# Introduction and Prior Art

\* discuss structure of this section

## Introduction To Used Terminologies

Real-Time PDL

Synchronous PDL

Asyncrhonous PDL

Offline PDL

## General Prior Art, Including Public Ledgers

…

## Specific PDL Offline Solutions

…

## Related Prior Art Enabling Offline PDL

…

# Storage models

## Offline storage models

## Online storage models

# Protocols and Architectures

## Offline Mechanisms & Enablers

Everything about underlying tech enablers

## Offline PDL Protocols

Protcols resulting from above

## Offline PDL Architectures

Architectures resulting from above

## Offline PDL Reference Design

TBC but would be good to extract from above a single reference design; that could help with future TS documentation.

# Threats and tradeoffs in Offline storages

## Security threats

## Potential methods to protect

## Tradeoffs

# Conclusions

Annex A:  
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Annex B:  
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