



**Electronic Signatures and Infrastructures (ESI);  
Registered Electronic Mail (REM) Services;  
Part 2: Semantic contents**

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# Foreword

This draft European Standard (EN) has been produced by ETSI Technical Committee Electronic Signatures and Infrastructures (ESI), and is now submitted for the combined Public Enquiry and Vote phase of the ETSI standards EN Approval Procedure.

The present document is part 2 of a multi-part deliverable. Full details of the entire series can be found in part 1 [2].

Proposed national transposition dates	
Date of latest announcement of this EN (doa):	3 months after ETSI publication
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	6 months after doa
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# Modal verbs terminology

In the present document "**shall**", "**shall not**", "**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](#) (Verbal forms for the expression of provisions).

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# Introduction

Business and administrative relationships among companies, public administrations and private citizens are the more and more implemented electronically. Trust is essential for their success and continued development of electronic services. It is therefore important that any entity using electronic services have suitable security controls and mechanisms in place to protect their transactions and to ensure trust and confidence with their partners.

Electronic signatures are commonly used worldwide to ensure authenticity and integrity of electronic documents, making it possible to transform traditional paper-based processes into electronic ones providing a comparable or even higher level of assurance. As communication is becoming predominantly internet-based, secure and provable exchange of documents is essential to the full digital transformation.

An electronic registered delivery service (ERDS hereinafter) provides secure and reliable delivery of electronic messages between parties, producing evidence of the delivery process for legal accountability. Evidence can be seen as a declaration by a trusted party that a specific event related to the delivery process (submission of a message, relay of a message, delivery of a message, refusal of a message, etc.) happened at a certain time. Evidence can be immediately delivered to the interested party (together with the message or separately) or can be kept in a repository for later access. It is common practice to implement evidence as digitally signed data. Registered electronic mail (REM hereinafter) is a specific type of electronic registered delivery, which builds on the formats, protocols and mechanisms used in ordinary e-mail messaging.

In a number of national, regional or sector-specific communities electronic registered delivery and registered electronic mail services are already in place, and even more are being developed. Without the definition of common standards there will be no consistency in the services provided, making it difficult for users to compare them. Under these circumstances, users might be prevented from easily changing to alternative providers, damaging free competition. Lack of standardization might also adversely affect interoperability between implementations which are based on different models.

The present document is one of a set of interrelated documents (framework of ERDS standards hereinafter) ETSI has produced to facilitate a consistent form of electronic registered delivery service inside and outside Europe, especially with regard to the form of evidence provided, in order to maximize interoperability even between domains governed by different policy rules. This set of documents includes the following deliverables:

- ETSI EN 319 522 [i.10]: a multi-part deliverable providing technical specifications for Electronic Registered Delivery Services.
- ETSI EN 319 532 [i.11]: a multi-part deliverable providing technical specifications for Registered Electronic Mail Services.
- ETSI EN 319 521 [i.12]: providing Policy and Security Requirements for Electronic Registered Delivery Service Providers.
- ETSI EN 319 531 [i.13]: providing Policy and Security Requirements for Registered Electronic Mail Service Providers.
- ETSI TS 119 524 [i.14]: a multi-part deliverable providing requirements for Testing Conformance and Interoperability of Electronic Registered Delivery Services.
- ETSI TS 119 534 [i.15]: a multi-part deliverable providing requirements for Testing Conformance and Interoperability of Registered Electronic Mail Services.

The documents covering ERDS contain the general concepts and requirements which apply to all kinds of electronic registered delivery services. Since REM is a specific type of electronic registered delivery, the documents covering REM service build on the corresponding documents covering ERDS by referencing the necessary provisions, and define the interpretation and specific requirements which apply only to registered electronic mail.

Regulation (EU) No 910/2014 of the European Parliament and of the Council of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC [i.2] (Regulation (EU) No 910/2014, or Regulation hereinafter) provides a legal framework to facilitate cross-border recognition between existing national legal systems related to electronic registered delivery services. That framework aims to open new market opportunities for European Union trust service providers to offer new pan-European electronic registered delivery services. The Regulation defines the so-called qualified electronic registered delivery service (QERDS hereinafter), which is a special type of ERDS, where both the service and its provider need to meet a number of additional requirements that the regular ERDSs and their providers do not need to meet.

The framework of ERDS standards aims to cover the common and worldwide-recognized requirements to address electronic registered delivery in a secure and reliable way, independent of the applicable legislative framework. The documents contain generic requirements which can be applied in any geographic region. At the same time, the framework of ERDS standards aims to support demonstrating compliance to the Regulation (EU) No 910/2014 (and related secondary legislation), both for non-qualified and qualified electronic registered delivery services. Specific clauses are included defining requirements for qualified services only, especially in the documents covering policy and security requirements. However, the legal effects of services implemented according to the framework of ERDS standards are outside the scope of the documents [i.10] to [i.15].

The present document is part 2 of ETSI EN 319 532 [i.11], which is a multi-part deliverable covering Registered Electronic Mail (REM) Services, as detailed in the Foreword. ETSI EN 319 522 [i.10] contains the general concepts and requirements which apply to all kinds of ERDSs. Since registered electronic mail is a specific type of electronic registered delivery, the general provisions given in ETSI EN 319 522 [i.10] apply to registered electronic mail as well. Hence, parts 1 and 2 of ETSI EN 319 532 [i.11] are aligned with ETSI EN 319 522 [i.11], and they reference the necessary provisions of the corresponding part.

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# 1 Scope

The present document defines the semantic content of messages and evidence used in registered electronic mail (REM) service.

The present document relies on ETSI EN 319 522-2 [1] for all semantic contents and requirements which are generally applicable to all electronic registered delivery services, and defines the interpretation and specific requirements which apply only to registered electronic mail.

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## 2 References

### 2.1 Normative references

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

Referenced documents which are not found to be publicly available in the expected location might be found at <https://docbox.etsi.org/Reference/>.

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 necessary for the application of the present document.

- [1] ETSI EN 319 522-2: "Electronic Signatures and Infrastructures (ESI); Electronic Registered Delivery Services; Part 2: Semantic contents"
- [2] ETSI EN 319 532-1: "Electronic Signatures and Infrastructures (ESI); Registered Electronic Mail (REM) Services; Part 1: Framework and Architecture".

### 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or nonspecific. 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 EN 319 532-3: "Electronic Signatures and Infrastructures (ESI); Registered Electronic Mail (REM) Services; Part 3: Formats".
- [i.2] Regulation (EU) No 910/2014 of the European Parliament and of the Council on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC.
- [i.3] ETSI TS 119 612: "Electronic Signatures and Infrastructures (ESI); Trusted Lists".
- [i.4] IETF RFC 5321: "Simple Mail Transfer Protocol".
- [i.5] IETF RFC 1939: "Post Office Protocol - Version 3".
- [i.6] IETF RFC 3501: "INTERNET MESSAGE ACCESS PROTOCOL - VERSION 4rev1".
- [i.7] IETF RFC 5246: "The Transport Layer Security (TLS) Protocol Version 1.2".

- [i.8] IETF RFC 4422: "Simple Authentication and Security Layer (SASL)".
- [i.9] ETSI EN 319 522-1: "Electronic Signatures and Infrastructures (ESI); Electronic Registered Delivery Services; Part 1: Framework and Architecture".
- [i.10] ETSI EN 319 522 (all parts): "Electronic Signatures and Infrastructures (ESI); Electronic Registered Delivery Services".
- [i.11] ETSI EN 319 532 (all parts): "Electronic Signatures and Infrastructures (ESI); Registered Electronic Mail (REM) Services".
- [i.12] ETSI EN 319 521: "Electronic Signatures and Infrastructures (ESI); Policy and security requirements for Electronic Registered Delivery Service Providers".
- [i.13] ETSI EN 319 531: "Electronic Signatures and Infrastructures (ESI); Policy and security requirements for Registered Electronic Mail Service Providers".
- [i.14] ETSI TS 119 524 (all parts): "Electronic Signatures and Infrastructures (ESI); Testing Conformance and Interoperability of Electronic Registered Delivery Services".
- [i.15] ETSI TS 119 534 (all parts): "Electronic Signatures and Infrastructures (ESI); Testing Conformance and Interoperability of Registered Electronic Mail Services".

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## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETSI EN 319 532-1 [2] apply.

### 3.2 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI EN 319 532-1 [2] apply.

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## 4 Overview

### 4.1 ERDS and REM data structures

Registered electronic mail (REM) service is a specific type of electronic registered delivery (ERD) service.

The semantic content flowing across the interfaces of ERD services in general, as specified in clause 4 of ETSI EN 319 522-2 [1], shall apply to REM services as well. The present document specifies how to interpret the ERD concepts in the specific case of REM. The interfaces of the REM service shall comply with the requirements stated in clause 5 of ETSI EN 319 532-1 [2].

The naming convention used in the present deliverable is the following. A term contains "ERD" or "ERDS" when it refers to a general concept defined by ETSI EN 319 522-1 [i.9] or ETSI EN 319 522-2 [1]. A term contains "REM" or "REMS" when it refers to a REM-specific concept defined in ETSI EN 319 532-1 [2] or in the present document. Terms referring to constructs whose content is completely generated by the service are prefixed with "ERDS" or "REMS", while terms referring to constructs whose content includes user generated data are prefixed with "ERD" or "REM".

The ERDS objects flowing across the interfaces can contain the types of information detailed below. Their interpretation in the REM specific case are the following:

- **user content:** original data produced by the sender which has to be delivered to the recipient. This can consist of one or more files. When the user content is submitted within an email message, the body of the message and the body of all attachments - if any - are considered to be the user content.



- **submission metadata:** data submitted to the electronic registered delivery service together with the user content. This can include any accompanying information that the sender specifies in relation to the submitted content. When the user content is submitted in the form of an email message, the headers of the message and the headers of attachments - if any - are considered to be part of the submission metadata. This includes headers specified by the sender and headers added by any servers the email passes through before reaching the boundary of the sender's REMS. Other data specified in the SMTP transaction (e.g. sender and recipient addresses) are also part of the submission metadata.
- **ERDS relay metadata:** data related to the user content which is generated by the electronic registered delivery service for the purpose of relaying to another electronic registered delivery service. This may contain a transformation of the submission metadata and also additional data. In REM the ERDS relay metadata is the header of the relayed message (or any parts thereof).
- **ERDS evidence:** data generated by the electronic registered delivery service, which aims to prove that a certain event has occurred at a certain time. This is the same in REMS as for any other type of ERDS.
- **ERDS handover metadata:** data related to the user content which is generated by the electronic registered delivery service and handed over to the ERD user agent/application. When the user content is handed over in the form of an email message, headers of the message (or any parts thereof) are considered to be part of the ERDS handover metadata.

The ERD service builds up data structures using the above information for the purpose of storage or communication between ERDSs or with end users. The various data structures are the following:

- **ERD message:** data composed of an optional user content, ERDS relay metadata and zero or more ERDS evidence. This is generated or assembled by the electronic registered delivery service. ERD message is a collective term, which includes the following subtypes: ERD dispatch, ERD payload, ERDS serviceinfo, ERDS receipt.
- **ERD dispatch:** ERD message which contains the user content, some ERDS relay metadata and ERDS evidence.
- **ERD payload:** ERD message which contains the user content and some ERDS relay metadata. ERD payload does not contain ERDS evidence.
- **ERDS serviceinfo:** ERD message which contains only some ERDS relay metadata.
- **ERDS receipt:** ERD message which contains ERDS evidence and some ERDS relay metadata. It does not contain the user content.

An additional data structure can appear on the interfaces of the ERDS, which is not built by the ERDS, but comes from the outside:

- **original message:** data including user content and submission metadata. For the purpose of submission, the ERD user agent / application of the sender builds up a data structure, e.g. an email message. Any servers forwarding the message can modify this before it reaches the systems of the ERDS (e.g. add extra headers, correct format errors, etc.). The original message is the resulting data structure, which passes through the ERDS MSI: Message Submission Interface provided by the sender's ERDS.

In addition, the following objects specific for REM are introduced:

- **REMS introduction:** data generated by the REMS containing information for the users about the data structure it is included in. This may be formatted text or plaintext. This is intended to be displayed to the user upon receipt of a REM message, and it can provide guidelines on how to interpret or use the various parts of the content of the REM message.
- **REMS extension:** data generated by the REMS in machine-readable form containing additional information for other REMSs or the ERD-UA of users. The content and format of REMS extension can be defined by application-specific or sector-specific rules; it is outside the scope of the present deliverable.
- **REM envelope:** signed data structure generated by the registered electronic mail service which contains any of the REMS introduction, user content, ERDS relay metadata, ERDS evidence and/or REMS extension. The REM envelope should be generated in the format specified in ETSI EN 319 532-3 [i.1]. The REM envelope shall bear the digital signature of the generating REMS.