This thematic section is intended to inform readers on the latest progress of standardization work items on Lawful Interception (LI) and Retained Data (RD) mainly focusing on European regional level (ETSI). The scope is to cover all relevant LI and RD aspects in terms of requirements, communication service providers architecture and network interfaces/protocols definition.

by Gerald McQuaid and Domenico Raffaele Cione

# ETSI AND STATUS OF LI & RD STANDARDS

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## 1. About ETSI

ETSI, the Europeans Telecommunications Standards Institute, is an independent, not-for-profit international organization and the recognized regional standards body – European Standards Organization (ESO) – dealing with telecommunications, broadcasting and other electronic communications networks and services. Although created for the European needs, ETSI is a global Standard Developing Organisation (SDO), while at the same time keeping a special role in Europe. This includes supporting European regulations and legislation through the creation of Harmonised European Standards. Only specific standards developed by the three ESOs (CEN, CENELEC and ETSI) are recognized as European Standards (ENs).

ETSI was set up in 1988 by the European Conference of Postal and Telecommunications Administrations (CEPT) in response to proposals from the European Commission. In May 1988 Professor Diodato Gagliardi was appointed as first Director General of ETSI.

ETSI was founded initially to serve European needs, but it has a global perspective and its standards are used the worldwide. Landmarks over the years include standards to enable technologies that have contributed to shape the modern world.

ETSI has over 800 members drawn from 64 countries across five continents. This reflects the increasing globalization of the communications market and ETSI's key role in enabling it. Any company or organization with an interest in the creation of telecommunications and related standards can become a member of ETSI. Membership of ETSI includes all the relevant players: manufacturers, network operators, service and content providers, national administrations, universities and research bodies, user organizations, consultancy companies and partnerships.

The ultimate success of ETSI standards depends on meeting the needs of users and the end-users of the products and services based on them. ETSI recognizes a range of different types of user: consumers, business users, users with special needs, service providers, telecommunications operators as users of systems and services, government departments. Standardization in ETSI is a voluntary activity carried out by, and for, all interested parties. Reaching consensus for any approval decisions is a key element of this process. In the approval of European Standards (ENs, where N stands for Norms), the National Standard Organisations (NSOs) have the exclusive responsibility for carrying out the Public Enquiry (consultation with national industry) and submission of the national position (the 'vote') on the standard. NSOs ensure the transposition of ENs into national standards, as well as withdrawal of any conflicting national standard.

In ICT standardization, ETSI's Clusters provide a simple, easy to grasp overview of the activities. Each cluster represents a major component of a global ICT architecture and covers the work of a number of Technical Committees (TCs) and Working Groups (WGs) that share a common technological scope and vision. The work of a single Technical Committee may be represented in several clusters. Clusters enable to easily identify the area of interest based on business relevance or application domain rather than purely on specific technical work areas. For example the Security Cluster covers work areas including Cybersecurity, Lawful Interception, Electronic Signatures, Smart Cards and many others, each undertaken in a specific TC.

ETSI's Technical Committee Lawful Interception (TC LI) is pioneering the development and maintenance of Lawful Interception (LI) and Retained Data (RD) capability. Its LI standards are being adopted around the world due to the increased efficiency and lower cost resulting from their use and their consistent approach in helping operators meet their legal obligations. Interest in the committee's work continues to grow, with good attendance at plenary meetings and new organisations joining in the standardisation process. Lawful Interception (LI) and Retained Data (RD) and related areas of (Law Enforcement Agency) LEA Support play a crucial role in helping LEAs to investigate terrorism and serious criminal activity. The providers of public telecommunications networks and services may be legally required to make available to law enforcement authorities information retained necessary for the authorities to be able to monitor telecommunications traffic as part of a criminal investigation.

## 2.　　ETSI LI & RD Status

Currently ETSI activity on Lawful Interception (LI) and Retained Data (RD) is coordinated between three main standardization committees: TC LI, TC CYBER and ISG NFV SEC.

### 2.1.　ETSI TC LI

In recent years, ETSI TC LI work items have been mainly focused on the external Handover Interfaces (HIs) between the domain of the Communication Service Provider (CSP) and the Lawful Enforcement Agency (LEA). TC LI maintains a coordination role in ETSI in defining the LEA requirements, based on the large participation of government agencies which have been active to propose new requirements resulting into the introduction of new versions of Technical Specifications (TSs) on HIs.

With reference to the external interfaces HI2 (interface of Intercept Related Information, IRI) and HI3 (interface of Content of Communication, CC), TC LI has achieved to provide new versions of the **IP based delivery HIs of the TS 102 232-i family (parts 1 to 7)** which provides the LEA with intercepted data of communication services for messaging, internet access, layer 2, IP multimedia, PSTN/ISDN and mobile. The new **TS 102 232-1** has been enriched with the explicit notification of the location information extended to WLAN, of direction fields for session and payload with reference to the IP Multimedia service (**TS 102 232-5**).
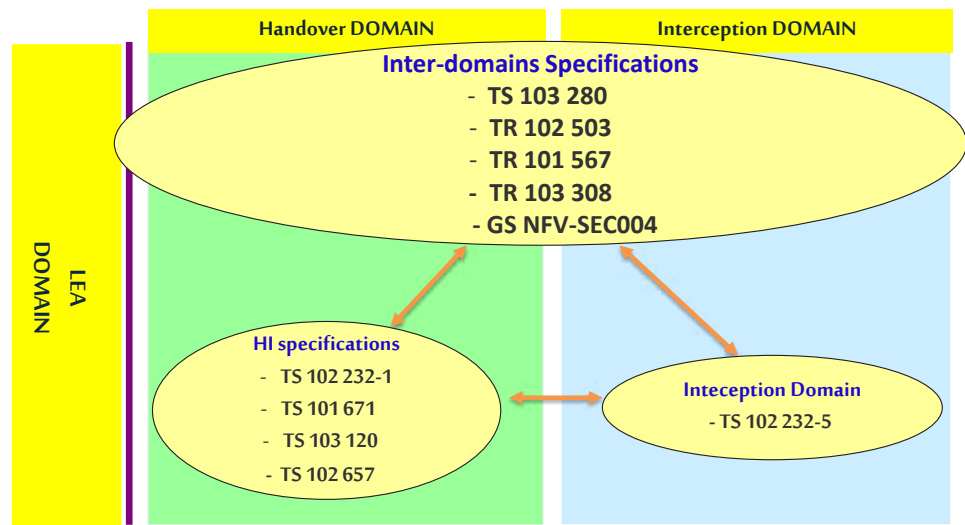


**Figure 1**: *Overview of published standards for interception, handover and cross.*

The legacy specification on **HI for LI of telecommunications traffic, TS 101 671,** has been recently revised to extend the alarm-information notification (within HI1) towards the LEA. However, for any future implementations, TC LI recommends to use the TS 102 232-i family, and current implementations of TS 101 671 are advised to migrate to the TS 102 232-i family which has been planned also to provide alignment for mobile services (TS 102 232-7) with the latest versions of the 3GPP TS 33.108 Releases 10/11/12/13, to cover services such as 3GPP IMS Conference, 3GPP IMS-based VoIP, Proximity Services (ProSe) and Group Communications System Enablers (GCSE).

A very relevant result of ETSI standardization on LI has been the publication of the new specification, **TS 103 120,** covering the **administrative interface HI1**. It represents the first standard electronic interface being used on the interface CSP – LEA for the warrant management for the exchange of data relating to the establishment and management of LI. The first version of this TS is now expected to be enhanced taking into account the results of its early implementation in several jurisdiction contexts.

During 2015 the first version of the **Dictionary for common standard parameters, TS 103 280**, was published. Its aim is to collect and define in a unique reference document all the parameters that are commonly used in the different LI specifications where interfaces are specified. In parallel, the alignment to the ASN.1 object identifiers defined in the latest LI HIs specification was ensure through the publication of an updated version of the report **TR 102 503**.

The **Retained Data Handover Interface** specification, **TS 102 657**, was enhanced taking into account of a series of input from LEAs requesting to correct some base delivery mechanism on handover interfaces and to add new data in relation to locations information for mobile Network Access.

2015 has represented a key year to set up the standardization activity on lawful interception for Cloud/Virtual services. TC LI finalized its report on **LI and RD on Cloud/Virtual services, TR 101 567**, which represents a relevant propaedeutic document to address the LI an RD challenges in the context of the new architectures of Cloud Computing and Network Functions Virtualization (NFV), such as LEA requirements, CSP obligations, LI implementation scenarios and related challenges, mobile network, security aspects, use cases.

### 2.2.　TC CYBER on LI

With reference to the current standardization activity in ETSI on NFV, ETSI experts started to create a list of security recommendations related to the LI and RD functions into the new NFV architecture currently being defined. This was addressed with a new report in TC CYBER, **TR 103 308, Security baseline regarding LI and RD for NFV and related platforms**, which provides baseline recommendations for sensitive functions including lawful interception and retained data in an NFV hardware/platform environment. A new part of related work is in being published in these weeks as a normative Technical Specification (TS).

## 2.3. ISG NFV SEC

The standardization activity on LI and RD in the NFV interception domain was driven by security (SEC) group within Industrial Specification Group (ISG) NFV. LI requirements were discussed as crucial security requirements in the context of several NFV SEC Group Specifications (GSs) and resulted in the publication of the **GS NFV-SEC004** as specific **Report on Lawful Interception about Privacy and Regulation**. This GS is the first guidance on the provision of LI in a NFV environment which addresses the relevant requirements for lawful interception as CSP obligations, root of trust in LI, core requirements, Point of Interception location and LI un-detectability. In addition to analysis and recommendations on LI service deployment in NFV, the GS describes some initial LI reference model architecture as starting point to define **NFV LI architecture** whose definition was agreed to be managed by a separated dedicated specification. ©

## 3. Published LI standards

All ETSI published standards can be downloaded for free from the ETSI website.

**ETSI TS 103 120 v1.1.1 (2016-01)**     Lawful Interception (LI); Interface for warrant information (by ETSI TC LI)
*It defines for the first time a standard HI electronic interface for the LI warrant management, e.g. HI1. It is intended to be applied also in the new NFV network scenarios.*

**ETSI TR 101 567 V1.1.1 (2016-01)**     Lawful Interception (LI); Cloud/Virtual Services for Lawful Interception (LI) and Retained Data (RD) (by ETSI TC LI)
*It provides an overview of Cloud/virtual services and studies and includes Lawful Interception (LI) and Retained Data (RD) different aspects of these services in the converged Cloud/virtual service environment.*

**ETSI TR 103 308 v1.1.1**     A security baseline regarding LI for NFV and related platforms (by ETSI TC CYBER)
*It is focused on the LI aspects in NFV by including a minimum set of security principles for those generic telecommunications platforms that are subject to LI that will allow the virtualised network functions to utilise the features necessary to afford them appropriate protection and at the same time to undertake appropriate LI activities.*

**ETSI TS 102 657 V1.17.1 (2015-12)**     Lawful Interception (LI); Retained data handling; Handover interface for the request and delivery of retained data (by ETSI TC LI)
*It specifies handover requirements and a handover specification for the data that is identified in national legislations on Retained Data.*

**ETSI TS 102 232-1 V3.10.1 (2015-11)**     Lawful Interception (LI); Handover Interface and Service-Specific Details (SSD) for IP delivery; Part 1: Handover specification for IP delivery (by ETSI TC LI)
*It refers to handover intercepted information via IP-based networks from a CSP to an LEMF covering the transportation of traffic without specifying any service functionality within CSPs or LEMF.*

**ETSI TS 101 671 V3.13.1 (2015-11)**     Lawful Interception (LI); Handover interface for the lawful interception of telecommunications traffic (by ETSI TC LI)
*First ETSI specification defining HI2 (Rose and FTP) and HI3 for GSM, TETRA, GPRS, ISDN, PSTN, fixed NGN (including PSTN/ISDN emulation) and fixed IMS PSTN simulation.*

**ETSI TR 102 503 V1.9.1 (2015-11)**     Lawful Interception (LI); ASN.1 Object Identifiers in Lawful Interception and Retained data handling Specifications  (by ETSI TC LI)
*It reported the updated overview over the relevant Object IDentifiers (OID) used in Lawful Interception and Retained data handling specifications of ETSI and other specifications from ITU-T and ISO.*

**ETSI TS 102 232-5 V3.5.1 (2015-10)**     Lawful Interception (LI); Handover Interface and Service-Specific Details (SSD) for IP delivery; Part 5: Service-specific details for IP Multimedia Services (by ETSI TC LI)
*It details HI IRI and CC in relation to the Internet Protocol (IP) Multimedia (MM) Services based on the Session Initiation Protocol (SIP) and Real Time Transport Protocol (RTP) and Message Session Relay Protocol (MSRP) and IP MM services as described by the Recommendations ITU-T H.323 and H.248.*

**ETSI GS NFV-SEC 004 V1.1.1 (2015-09)**     Network Functions Virtualisation (NFV); NFV Security; Privacy and Regulation; Report on Lawful Interception Implications (by ETSI NFV SEC)
*It is intended as a guide to the NFV community and to the LI community on the provision of LI in an NFV. It describes  a problem statement on implementing LI in NFV and identifies the necessary capabilities to be provided in NFV to meet the requirements defined by ETSI TS 101 331.*

**ETSI TS 103 280 v1.1.2 (2015-08)**     Lawful Interception (LI); Dictionary for common parameters (by ETSI TC LI)
*It defines a dictionary of parameters that are commonly used in multiple TC LI specifications. It represents a reference document to provide technical means for other specifications to use and it is intended to be a reference in the development of new specifications.*

**Table 1**: *Latest published ETSI standard on LI & RD  (as of March 2016)*