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DIRECTORATE-GENERAL FOR MOBILITY AND TRANSPORT
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ERRU

Global Business Analysis

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1.1. Document History

| Version | Date | Comment |
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| 1.00 | 28/07/2016 | First Draft |
| 1.10 | 15/09/2016 | Updated including comments from Luisa Guedes (LG) |
| 1.20 | 04/11/2016 | Updated including comments from LG and Martin Gardiner (MG) |
| 1.30 | 18/01/2017 | Further changes and comments by LG and MG. |
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| 1.60 | 11/05/2017 | Last change, following the decision to send all ERRU messages through the HUB. |
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1.2. Glossary and Abbreviations

This table is a list of terms used when referring to the ERRU/RSI applications.

| | |
|---------|--|
| ACK | Acknowledgement It is an automatic response message to confirm to the Member State who sent a request that the receiving MS has received the message. |
| Broker | Software which will translate the messages from external system (like EUCARIS) to ERRU or vice versa |
| CA | Competent Authority A national, regional or local authority in a MS with responsibility i.e. to authorize transport undertakings, or manage technical roadside inspections, etc. |
| CCL | Check Community Licence The message type exchanged by ERRU to determine the status of a road transport undertaking's Community Licence. |
| CGR | Check Good Repute The message type exchanged by ERRU to determine the repute of a transport manager. |
| DG | Directorate-General |
| EC | European Commission |
| EEA | European Economic Area The EEA is an area of free trade and free movement of peoples comprising the member states of the European Union, in addition to Norway, Iceland and Liechtenstein. |
| ENER | Directorate General for Energy |
| ERRU | European Register of Road Transport Undertakings A network interconnecting the national registers of road transport managers. |
| EU | European Union |
| EUCARIS | European CAR and driving licence Information System External system used by some MS to exchange messages between them. This system is also used as interface between the Member States' Registers and the ERRU HUB, through the EUCARIS Broker. |
| HTTP | Hypertext Transfer Protocol |
| Hub | The central Hub that is hosted at the EC and routes messages between MS. |
| INF | Infringement Notification The message type exchanged by ERRU to inform the member state of establishment that a haulier has committed an infringement in another member state. |
| ISO | International Organization for Standardization It's an international standard-setting body composed of representatives from various national standards organizations. |
| IT | Information Technology |
| MOVE | Directorate General for Mobility and Transport |

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|---------|--|
| MOVEHUB | The generic term used to refer to the applications managed by MOVE (ERRU/RSI, RESPER, and TCN). |
| MPOC | <p>Multiple Point Of Contact</p> <p>The MPOC is a term to designate a technical point able to send /receive synchronous messages to/from the Hub. Being synchronous connection, the Hub will be able route the response messages to the same URL from where the request was sent. There can be multiple MPOC's for each MS.</p> <p>The MPOC can be hosted in any of the previous institutions (CA/NCP) or anywhere else.</p> |
| MS | <p>Member State</p> <p>Within this document the abbreviation MS refers to all connected countries and not just the 28 European Union member states.</p> |
| MSI | <p>Most Serious Infringements</p> <p>Infringements of the Union rules which may lead to the loss of good reputé and/or to the temporary or permanent withdrawal of a Community licence by the road transport operator.</p> <p>The highest seriousness, more than VSI.</p> |
| NACK | <p>Negative Acknowledgement</p> <p>It's an acknowledgement with a NOK code indicating an error.</p> |
| NCP | <p>National Contact Point</p> <p>In order to assist in the application of the Regulations, each MS must designate one or more NCP to be responsible for the exchange of information with other MS. Many of the agencies identified as owners and users of register are expected to take up this role. In many cases, the NCP may also be within the agency identified as the CA. The ERRU Regulations also require that the Commission shall maintain the list of all NCP and make this list available to MS.</p> <p>There could be multiple NCP for ERRU and RSI in the same MS, they can be the same or separate ones, it depends on the internal organization of each MS.</p> |
| NOK | Not OK |
| PKI | <p>Public Key Infrastructure</p> <p>The provision and management of digital certificates identification and encryption.</p> |
| PTI | <p>Periodical Technical Inspection</p> <p>EU law ensures vehicles and trailers of certain categories are inspected at regular intervals. It provides a basis for checking that vehicles throughout the EU are in a roadworthy condition.</p> |
| RESPER | <p>Reseau de Permis de Conduire</p> <p>A network interconnecting the national driving licence registers.</p> |
| RSI | <p>Road Side Inspection</p> <p>It's a service of the ERRU network to exchange information about road side inspections done in a MS different than the MS of registration of the vehicle.</p> |

| | |
|-------|---|
| SI | <p>Serious Infringement</p> <p>Infringements of the Union rules which may lead to the loss of good reput e and/or to the temporary or permanent withdrawal of a Community licence by the road transport operator.</p> |
| SPOC | <p>Single Point of Contact</p> <p>The SPOC is a term to designate the technical point where all the asynchronous messages will be sent from/to the Hub. It can be one per message type for each MS and its URL will be configured in the Hub. Any message sent to that MS will be routed to this SPOC.</p> <p>The SPOC can be hosted in any of the previous institutions (CA/NCP) or anywhere else.</p> |
| SRD | <p>Shared Resource Directorate</p> <p>At the European Commission, a Directorate responsible for providing horizontal services to more than one DG, including IT and supporting services, in this case to MOVE and ENER</p> |
| TCN | <p>The abbreviation for TACHOnet</p> <p>A network to exchange information about in vehicle recording equipment (the so-called "tachograph") for the enforcement of driving hours of professional drivers in the field of road transport (goods and passengers).</p> |
| TESTA | <p>Secure Trans European Services for Telematics between Administrations</p> <p>The EU's private network interconnecting all EU Institutions, EU agencies, Member States' administrations and EEA countries.</p> |
| UCS | <p>Universal Character Set</p> <p>It's a standard set of characters defined by the International Standard ISO 10646, which is the basis of many character encodings. Characters (letters, numbers, symbols, ideograms, logograms, etc.) from the many languages, scripts, and traditions of the world are represented in the UCS with unique code points.</p> |
| UTF-8 | <p>UCS Transformation Format</p> <p>UTF-8 is a character encoding capable of encoding all possible characters, or code points, defined by Unicode and originally designed by Ken Thompson and Rob Pike. The encoding is variable-length and uses 8-bit code units.</p> |
| VSI | <p>Very Serious Infringement</p> <p>Infringements of the Union rules which may lead to the loss of good reput e and/or to the temporary or permanent withdrawal of a Community licence by the road transport operator.</p> <p>Higher seriousness than SI.</p> |
| XML | <p>Extensible Markup Language</p> <p>It's a markup language that defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. It is defined by the W3C's XML 1.0 Specification and by several other related specifications, all of which are free open standards.</p> |
| XSD | <p>XML Schema Definition</p> <p>It's a recommendation of the W3C, specifies how to formally describe the elements in an XML document. It can be used by programmers to verify each piece of item content in a document.</p> |

| | |
|-----|---|
| XSL | <p>Extensible Stylesheet Language</p> <p>It's a language for expressing style sheets. An XSL style sheet is a file that describes how to display an XML document of a given type.</p> |
| W3C | <p>World Wide Web Consortium</p> <p>It's the main international standards organization for the World Wide Web.</p> |

2. BIBLIOGRAPHY

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- [2] [1072/2009] *Regulation (EC) No 1072/2009 of the European Parliament and of the Council of 21 October 2009 on common rules for access to the international road haulage market (Text with EEA relevance)*.
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- [6] [2009/992/EU] *Commission Decision of 17 December 2009 on minimum requirements for the data to be entered in the national electronic register of road transport undertakings (notified under document C(2009) 9959) (Text with EEA relevance)*.
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- [14] [2016/480 AMENDMENT] *[AMENDMENT] COMMISSION IMPLEMENTING REGULATION (EU) 2016/480 of 1 April 2016 establishing common rules concerning the interconnection of national electronic registers on road transport undertakings and repealing Regulation (EU) No 1213/2010*, 2017.

3. INTRODUCTION

The **ERRU (European Register for Road transport Undertakings)** network has been implemented to ensure that the requirements of Regulation (EC) No 1071/2009 establishing common rules concerning the conditions to be complied with to pursue the occupation of road transport operator [1071/2009], Regulation (EC) No 1072/2009 on common rules for access to the international road haulage market [1072/2009], Regulation (EC) No 1073/2009 on common rules for access to the international market for coach and bus services [1073/2009] and its Commission Implementing Regulation (EU) No 1213/2010 of 16 December 2010 establishing common rules concerning the interconnection of national electronic registers on road transport undertakings [1213/2010], are met by the Member States. The ERRU network exists since 2013 but it has now to be adapted to the new Commission Implementing Regulation (EU) 2016/480 of 1 April 2016 establishing common rules concerning the interconnection of national electronic registers on road transport undertakings and repealing Regulation (EU) No 1213/2010 [2016/480]. Some of the key objectives and benefits of ERRU follow:

- To establish an interoperable data exchange network between Road transport Undertakings administrations in national authorities of the Member States as required by the Legislative Framework.
- To facilitate the proper functioning and application of all transport operators.
- To facilitate the free movement of transport operators.
- To combat document fraud and forgery and improve road safety.
- To speed up the transport operators authorisation issuing and verification process.
- To facilitate fair European trade.

The minimum requirements of the national registers are defined at the COMMISSION DECISION 2009/992/EU of 17 December 2009 on minimum requirements for the data to be entered in the national electronic register of road transport undertakings (notified under document C(2009) 9959) [2009/992/EU].

Following the Road Transport Committee on the 28/04/2017, "All messages exchanged shall be routed through the central hub." as stated in the amended to the COMMISSION IMPLEMENTING REGULATION (EU) 2016/480 of 1 April 2016 establishing common rules concerning the interconnection of national electronic registers on road transport undertakings [2016/480 AMENDMENT]

The **RSI (Roadside Inspection)** project aims to transmit information between Member States (MS) about the roadside inspections done to vehicles in a Member State which is not the Member State of registration of the vehicle.

The information notified will be the result of the inspections in the form of a report as stipulated by Article 18(1) of Directive 2014/47/EU of the European Parliament and of the Council of 3 April 2014 on the technical roadside inspection of the roadworthiness of commercial vehicles circulating in the Union (further referred to as Directive 2014/47/EU) [2014/47/EU]. This information must be sent to the Member State of registration of the vehicle.

The RSI will be implemented as a new message to be exchanged using the ERRU network.

This document is the business analysis for both projects, ERRU network (new version) and the new RSI as a service of ERRU, which will be implemented together.

3.1. Project Background

The European Commission conducted a feasibility study to assess the business, technological, legal, operational and schedule aspects for the establishment of ERRU. The feasibility study was carried out by the European Commission and the Member States.

It was decided to revalidate the business requirements according to the current legislation. Therefore, a Complementary Study was launched in 2010 to analyse and elaborate the system requirement specifications, and a further review carried out in 2013.

The message content for version 1.0 of ERRU is defined in the Implementing Regulation [1213/2010] and the ERRU application was implemented with strict adherence to the message data described in that Regulation. ERRU is in operation since 2013 and currently there are 26 countries connected.

However, operational experience shows that the Regulation does not adequately anticipate the business requirements of the competent authorities when exchanging data. The document ERRU 2.0 Technical Proposal [ERRU2Tech] lays out several proposals to improve the functioning of the ERRU network. The document was distributed prior to the ERRU working Group of 8th July 2015 and then discussed at the Working Group. This document and the associated Implementing Regulation have been updated to reflect the feedback from the Working Group. These two documents, the ERRU 2.0 Technical Proposal [ERRU2Tech] and the new ERRU Implementing Act [2016/480] are the basis for the analysis of the ERRU version 2.0.

In 2015, based on the Directive 2014/47/EU [2014/47/EU], the business analysis for the project RSI was started following discussions with the MS's at the Road Worthiness Technical Working Group (RWTWG). With this information the RSI Implementing Regulation was under discussion together with its Annex [RSI IMPL ACT], this proposal is waiting for adoption. Therefore, all points related to RSI are published according to the proposal, and might need to be updated according to the adopted and published version. One of the decisions of this working group was to base RSI on the existing ERRU network to take advantage of the working infrastructure already put in place by that project, only new message definitions will be added and different National Contact Points (NCP) established, the Hub will be the same.

3.2. Purpose

The purpose of this document is to have a single consolidated business and system requirements specification document for the ERRU Hub with RSI as a new service which can then be the basis for further software design, development and testing in the construction phase. The analysis of the Legislative Framework and the business processes has resulted in the identification of services and functionality the Hub should provide to the Member State. The functionality and services offered by the Hub have been documented using use cases.

3.3. Intended Audience

The intended audience for this document is:

- Business and Technical users at DG MOVE, EC.
- National Contact Point of Member State (MS NCP)
- Appropriate project teams.

4. LEGISLATIVE FRAMEWORK

For ERRU: The Commission proposed on 23 May 2007 a legislative package composed of three regulations:

- (1) Regulation (EC) No 1071/2009 of the European Parliament and of the Council of 21 October 2009 establishing common rules concerning the conditions to be complied with to pursue the occupation of road transport operator and repealing Council Directive 96/26/EC. [1071/2009]
- (2) Regulation (EC) No 1072/2009 of the European Parliament and of the Council of 21 October 2009 on common rules for access to the international road haulage market. [1072/2009]
- (3) Regulation (EC) No 1073/2009 of the European Parliament and of the Council of 21 October 2009 on common rules for access to the international market for coach and bus services, and amending Regulation (EC) No 561/2006. [1073/2009]

On 17 December 2009, Commission defined the minimum requirements of the system at the COMMISSION DECISION 2009/992/EU on minimum requirements for the data to be entered in the national electronic register of road transport undertakings (notified under document C(2009) 9959) [2009/992/EU].

On 16 December 2010, Commission adopted the Regulation (EU) No 1213/2010 [1213/2010] establishing common rules concerning the interconnection of national electronic registers on road transport undertakings.

On 1 April 2016, Commission adopted the new COMMISSION IMPLEMENTING REGULATION (EU) 2016/480 of 1 April 2016 establishing common rules concerning the interconnection of national electronic registers on road transport undertakings and repealing Regulation (EU) No 1213/2010 [2016/480]; which is the basis of the ERRU 2.0.

For RSI: The project must comply with Directive 2014/47/EU [2014/47/EU].

The implementing regulation for this project is still on approval process [RSI IMPL ACT], RSI service will be based on its content.

5. ARCHITECTURE OF THE NETWORK

The ERRU network is built on the Hub and spoke architecture model. The ERRU network comprises the Hub under the responsibility of EC and the MS's systems under the responsibility of the respective MS.

The Hub is the single intermediary for all MS for the exchange of the notifications/requests initiated and the responses provided for the ERRU/RSI services. The Hub forwards/broadcasts the request to the required MS. Based on the response(s) received from the MS; the Hub prepares the consolidated response and returns it to the requesting MS.

The architecture of the network is shown in the next diagram and actors explained more in detail below.

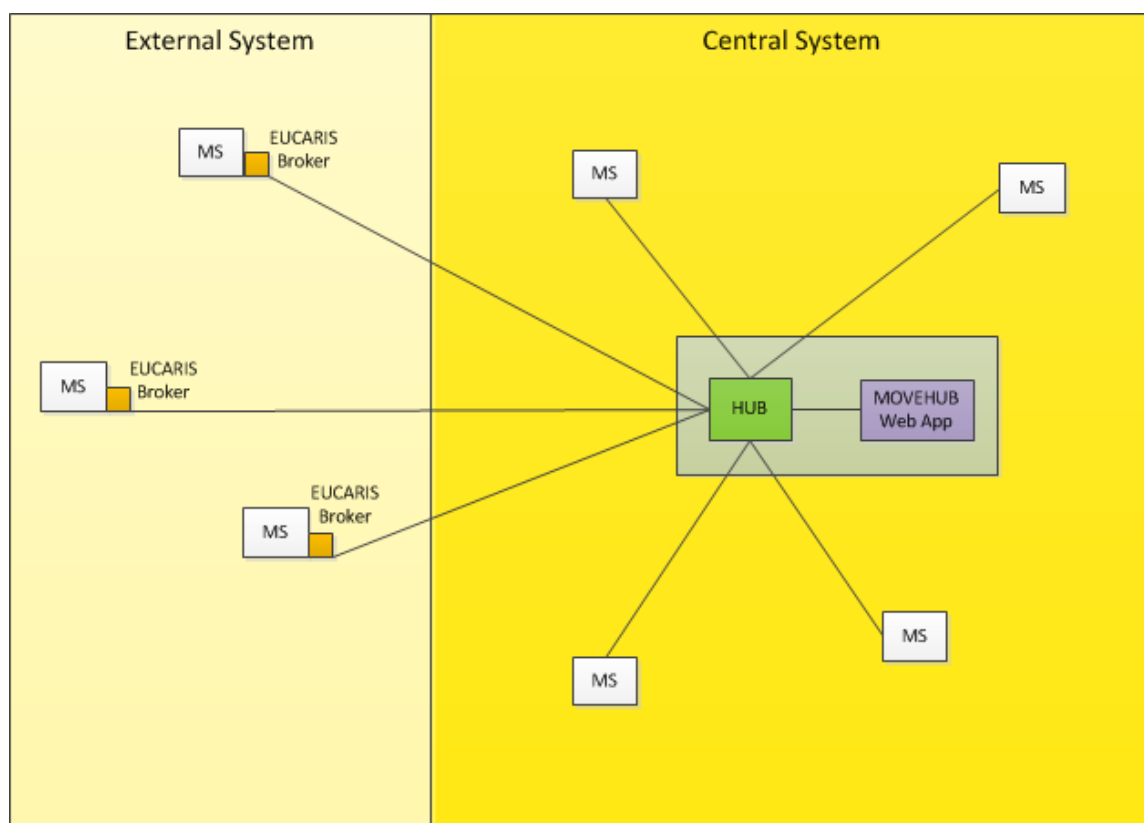


Figure 1 Architecture of the Network

The functional entities depicted in the diagram are:

| | | |
|-----------------------|------------|---|
| Central System | Hub | <p>The core of the ERRU network consists of a XML Messaging system which provides a secure and reliable exchange of XML based request and response messages between the MS. The XML messages will be exchanged with MS NCP systems using the TESTA network. The Hub validates and routes the received messages to the different MS.</p> <p>All messages sent/received through the Hub are logged. This data is used for monitoring, trouble-shooting and reporting.</p> |
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| | | |
|------------------------|--------------------------------|--|
| | MOVEHUB web application | <p>This is a web based application that provides services to MS and EC users to view reports about messages exchanged and usage of the system, MS availability statistics, etc.</p> <p>This web application is out of scope of this analysis, for more information, read the MOVEHUB Web Application User Guide [MOVEHUB WebApp].</p> |
| | MS | <p>MS's using the central system will implement their own systems to connect to the Hub and exchange messages between them.</p> <p>The MS systems are out of scope of this analysis, to know more, see Commission Implementing Regulation (EU) 2016/480 [2016/480].</p> |
| External system | EUCARIS | <p>Some MS's chose to use an external system called EUCARIS to exchange messages between them. This system is also used as interface between the Member States' Registers and the ERRU HUB.</p> |
| | Broker | <p>The broker is software that will be installed at each MS which uses external systems. The broker deals with the differences in the communication protocols used by the Hub and external systems translating the ERRU messages into the external system messages and vice versa.</p> |

6. OVERVIEW OF REQUIREMENTS

From a systems perspective, the business requirements get implemented as functional and non-functional requirements. This section presents the high level functional and non-functional requirements for the network.

6.1. Functional Requirements

Functional requirements specify actions that a system must be able to perform, without taking physical constraints into consideration. Each identified functional requirement has been assigned a unique key “FUN-nn” where nn is a sequence number. These unique IDs will be used for tracking the realisation of the requirements during subsequent phases.

6.1.1. *Common*

These requirements are common to ERRU and RSI.

| ID | Description |
|--------|---|
| FUN-01 | The Hub must allow the generation and collation of statistical information for use by EC and MS. |
| FUN-02 | The Hub must provide an automatic reply to the originating MS through the use of acknowledgements. |
| FUN-03 | The Hub must be able to track the workflow between the notifications, request, and response and acknowledgement messages. |
| FUN-04 | The Hub must allow logging information on the exchange of messages (monitoring (available for EC administrators) and availability statistics and reports (available to all users) may be accessible using the MOVEHUB Web Application). |
| FUN-05 | The Hub must be able to define and manage various types of messages as defined the relevant implementing acts for ERRU (REGULATION (EU) 2016/480 [2016/480]) and RSI (still in draft [RSI IMPL ACT]) such as check good repute request, response and acknowledgments, infringement notification request, response and acknowledgments, check community licence request, response and acknowledgments, and roadside inspection notification and acknowledgments. |
| FUN-06 | The Hub must be able to send/receive an error notification message when an erroneous request or response has been sent by a MS to the sending MS. |
| FUN-07 | The Hub must be able to include new MS in the network. |
| FUN-08 | Each MS may have multiple points of contact (MPOC), to allow for multiple ERRU and RSI competent authorities or control bodies to connect to the network. |
| FUN-09 | The Hub must provide at application level a secure environment in line with the MOVEHUB Networking Guide [NETWORKING GUIDE](still in draft). |
| FUN-10 | The Hub must allow synchronous and asynchronous message exchange. |
| FUN-11 | The Hub must be able to validate messages (schema validation and some business validation as necessary) received from all connected systems. |
| FUN-12 | The Hub must be able to enable/disable messages exchange by service or by MS (this can be done by EC administrators using the MOVEHUB Web Application) |
| FUN-13 | The Hub must be able to send/receive acknowledgements automatically whenever it receives any notification, request or response from a MS to that MS. |

| ID | Description |
|-------------|---|
| FUN-14 | All messages exchanged between the central Hub and the national systems must be UTF-8 encoded. |
| FUN-15 | The central Hub and the national systems shall transmit and receive messages in XML format that conform to the message XSD schema as defined in the ERRU XML Messaging Reference Guide [ERRU XML]. |
| FUN-16 | Hub should allow to set up different URL's by message type for each MS. |
| ERRU | |
| FUN-17 | The Hub must allow a MS to send an infringement notification to the road transport operator's MS of establishment about serious infringements (SI/VSI/MSI). |
| FUN-18 | The Hub must allow a MS to send infringement responses back to the originating MS about serious infringements (SI/VSI/MSI). |
| FUN-19 | The Hub must allow a MS to send a search request to one or all of the MS about the good repute of a transport manager. |
| FUN-20 | The Hub must allow a MS to send a search response back to the originating MS about the good repute of a transport manager. |
| FUN-21 | The Hub must be able to consolidate all the responses from all the MS's about the good repute of a transport manager and send it back to the originating MS. |
| FUN-22 | The Hub must allow a MS to send a request to the road transport operator's MS of establishment to check the validity of a Community Licence. |
| FUN-23 | The Hub must allow a MS to send a response back to the originating MS about the validity of a Community Licence. |
| RSI | |
| FUN-24 | The Hub must allow a MS of the network who has performed a roadside inspection on a vehicle and found Major or Dangerous defects, to send the inspection report to the MS of registration of the vehicle. |

6.2. Non-functional Requirements

Each identified non-functional requirement has been assigned a unique key “XXX-nn” where XXX identifies the type of requirement (e.g. “PER” for Performance requirements) and nn is a sequence number.

6.2.1. Usability Requirements

ERRU network is a Hub that routes messages between MS's, there is no client application to create these messages, this is out of scope of this project, each MS has to develop their own client application to connect and send/receive messages to other MS.

6.2.2. Availability Requirements

| ID | Description |
|--------|--|
| AVA-01 | The system shall be available 24 hours a day, 7 days a week. |

| ID | Description |
|--------|--|
| AVA-02 | MS availability shall be monitored by a heartbeat message issued from the central Hub. |
| AVA-03 | <p>The Hub and MS availability rate shall be 98 %, according to the following table (the figures have been rounded to the nearest convenient unit)</p> <p>An availability of 98% means an unavailability of:</p> <ul style="list-style-type: none"> • Daily: 0,5 hours • Monthly: 15 hours • Yearly: 7,5 days <p>EC and Member States are encouraged to respect the daily availability rate, however it is recognised that certain necessary activities, such as system maintenance, will require a down time of more than 30 minutes. However, the monthly and yearly availability rates remain mandatory.</p> |
| AVA-04 | The time from when the requestor MS sends a request and receives a response shall not exceed 20 seconds. |
| AVA-05 | The time from when the responding MS receives a request and sends a response shall not exceed 10 seconds. |

6.2.3. Scalability Requirements

| ID | Description |
|--------|---|
| SCA-01 | The Hub infrastructure should be capable of scaling vertically (increasing capabilities of the server) and horizontally (increasing the number of servers) as needed. |

6.2.4. Security Requirements

| ID | Description |
|--------|--|
| SEC-01 | HTTPS must always be used for the exchange of messages between the central Hub and the national systems. |
| SEC-02 | National systems will use the PKI certificates provided by the Commission for the purposes of securing the transmission of messages between the national system and the Hub and the other way around. |
| SEC-03 | Hub and National systems shall implement, as a minimum, certificates using the SHA-2 (SHA-256) signature hash algorithm and a 2 048 bit public key length. |
| SEC-04 | The logs/records of the messages exchanged through the Hub will be deleted or anonymised according to data protection provisions once the workflow in which they are exchanged is closed. Personal data shall not be retained in the logs for more than 6 months. Statistical information will be retained indefinitely. |

| ID | Description |
|--------|--|
| SEC-05 | The statistical data used for reporting will include: <ul style="list-style-type: none"> • The requesting Member State. • The responding Member State. • The type of message. • The status code of the response. • The date and time of the messages. • The response time. |
| SEC-06 | The Hub must be such that none of the MS or anyone else reconstructs a consolidated European database. |

6.2.5. Reliability Requirements

| ID | Description |
|--------|--|
| REL-01 | The Hub is to be robust and dependable in operation, with tolerances for operator errors and with a disaster recovery process. |
| REL-02 | The Hub must function reliably. |
| REL-03 | The system must give stable and reproducible results. |
| REL-04 | Hub must be able to send/receive notification of any errors to/from national systems via a dedicated error message. |
| REL-05 | The Hub must be able to establish and keep the dialog with the MS despite the various technical environments and technologies used on their sites. |

6.2.6. Extensibility Requirements

| ID | Description |
|--------|--|
| EXT-01 | The Hub must be designed and documented so that it can migrate to upgraded hardware or new versions of the operating systems involved. |
| EXT-02 | The Hub has to be designed with future extension in mind (e.g. new message types, additional reports, security changes...). |

6.2.7. Design Requirements

| ID | Description |
|--------|--|
| DES-01 | Each MS will organise its data with no constraints or recommendations on operating system and/or technology to be used. The system must be compliant with the existing infrastructure in the MS by interacting with those systems using standard Internet protocols like HTTP and XML. |
| DES-02 | Each MS of the network will organise its data transfer according to the specifications and the defined communication protocols. |

| ID | Description |
|--------|---|
| DES-03 | The Hub must provide solutions/rules regarding data encoding problems such as supporting different character sets, name truncation rules, name matching in case of misspelling. |

6.2.8. Applicable Standard Requirements

| ID | Description |
|--------|--|
| STD-01 | The Hub and the MS's must comply with the regulations mentioned in Legislative Framework section |

7. BUSINESS SERVICES

This section describes the different business services supported by the ERRU Network.

| Project | Service | Description |
|---------|----------------------------------|---|
| ERRU | Check Good Repute | The service allows the requesting Member State to send a query to one or all responding Member States, to determine the fitness of a transport manager and so the authorisation to operate a transport undertaking. |
| ERRU | Infringement Notification | This service allows the Member State of infringement to notify the Member State of establishment that the transport undertaking has committed a serious infringement as referred to in Article 6(2)(b) of Regulation (EC) No 1071/2009 [1071/2009]. It also allows the Member State of infringement to request that penalties be applied to the transport undertaking in the Member State of establishment. |
| ERRU | Check Community Licence | This service allows the requesting Member State to send a query to the responding Member State (i.e. the Member State of establishment) to determine if a transport undertaking is operating with a valid Community licence. |
| RSI | Roadside Inspection Notification | This service notifies the MS of registration of a vehicle about the result of a more detailed roadside inspection done in the notifying MS when the result is negative. |

7.1. Common

7.1.1. Process Workflow

These services trigger processes and events in 3 different entities:

- The MS sending a request or notification.
- The Hub providing central service for routing the requests/responses.
- The MS(s) receiving the request and sending a response or acknowledgement.

The below business processes identify the different events and services needed to assist a MS to exchange messages.

Therefore, the processes described for the MS “entities” are drawn as “helpers” to identify services. **Only** the processes of the ERRU Hub entity are of interest for the scope of this project.

7.1.2. Assumptions and constraints

There are a number of assumptions and constraints which have been made as part of the following process workflows, as they are common to all of them they are listed here. Any specific assumption or constraint of a service will be listed in the service process workflow section.

| # | Description |
|---|---|
| 1 | Any validation/decisions/analysis which the MS would perform with respect to the message received are not in the scope of the ERRU Hub. |

| # | Description |
|----|---|
| 2 | The Hub will perform the validation of the message with respect to the mandatory fields or the integrity of the message as per Regulation and specifications. Some additional validation can be done to verify coherence of business data. See "XML messaging reference guide" [ERRU XML] for more information. |
| 3 | If the message send fails, the Hub makes 3 immediate retries. |
| 4 | In the event of an invalid response message being sent from MS, the Hub waits for a valid message until the timeout period lapses. If a further response message is received within the timeout period this will be processed. |
| 5 | Following receipt of a valid response following responses are discarded. |
| 6 | The Hub must be able to send an error notification message when an invalid request or response has been sent by a MS (with invalid format, invalid data, it's duplicated, response is not correlated with a request, there was a server error or other causes) to the sending MS. See business process: Error Notification . |
| 7 | It is assumed that the National register will contain the necessary information as per Commission Decision 2009/992/EU [2009/992/EU]. It is the responsibility of the MS to ensure that this data exists and is available. |
| 8 | All messages and acknowledgements arriving or leaving the Hub will be logged. |
| 9 | The time period for MS1 to receive an automatic response or an acknowledgement from MS2 after sending the request is 20 seconds. |
| 10 | The time from when the responding MS receives a request and sends an automatic response or acknowledgement shall not exceed 10 seconds. |

7.2. Check Good Repute

This service relates to the requirement for authorities in a MS (from now on MS1) to consult relevant information held by all other MS (or a specific MS, from now on MS2..MSn) to assist them in deciding whether or not to issue or renew an authorisation to a transport manager to engage in the profession. In order to satisfy the requirements of Articles 6 and 11 of Regulation (EC) 1071/2009 [1071/2009], a MS has to check in particular that the Transport Manager (who must be a natural person) has not been declared in any MS unfit to manage the transport activities of an undertaking.

The search could result in Transport Manager found or not found, and if found, it could tell if Transport Manager is fit or unfit for managing transport activities of an undertaking.

7.2.1. Process Workflow

The below business process modelling identifies the different events and services needed to assist a MS to exchange information about the issuing or renewal of an operator's authorisation.

| Process Stage | Description |
|---------------|---|
| Stage 1 | A transport manager in MS1 makes an application for an authorisation to engage in the profession or for the renewal of an existing authorisation. |
| Stage 2 | MS1 carries out a series of checks to ensure that the applicant fulfils all of the requirements of the Regulation. |

| Process Stage | Description |
|---------------|--|
| Stage 3 | MS1 sends a request for information to one MS (Single-cast MS2) or to all other MS (Broadcast MS2...MSn). |
| Stage 4 | MS2...MSn action the request and searches their National Register(s) for relevant information. |
| Stage 5 | MS2...MSn send the results of their searches to MS1. |
| Stage 6 | It remains the responsibility of MS1 how the information returned is interpreted and used in the context of granting or refusing an application for a new authorisation to engage in the profession or for the renewal of an existing one. |

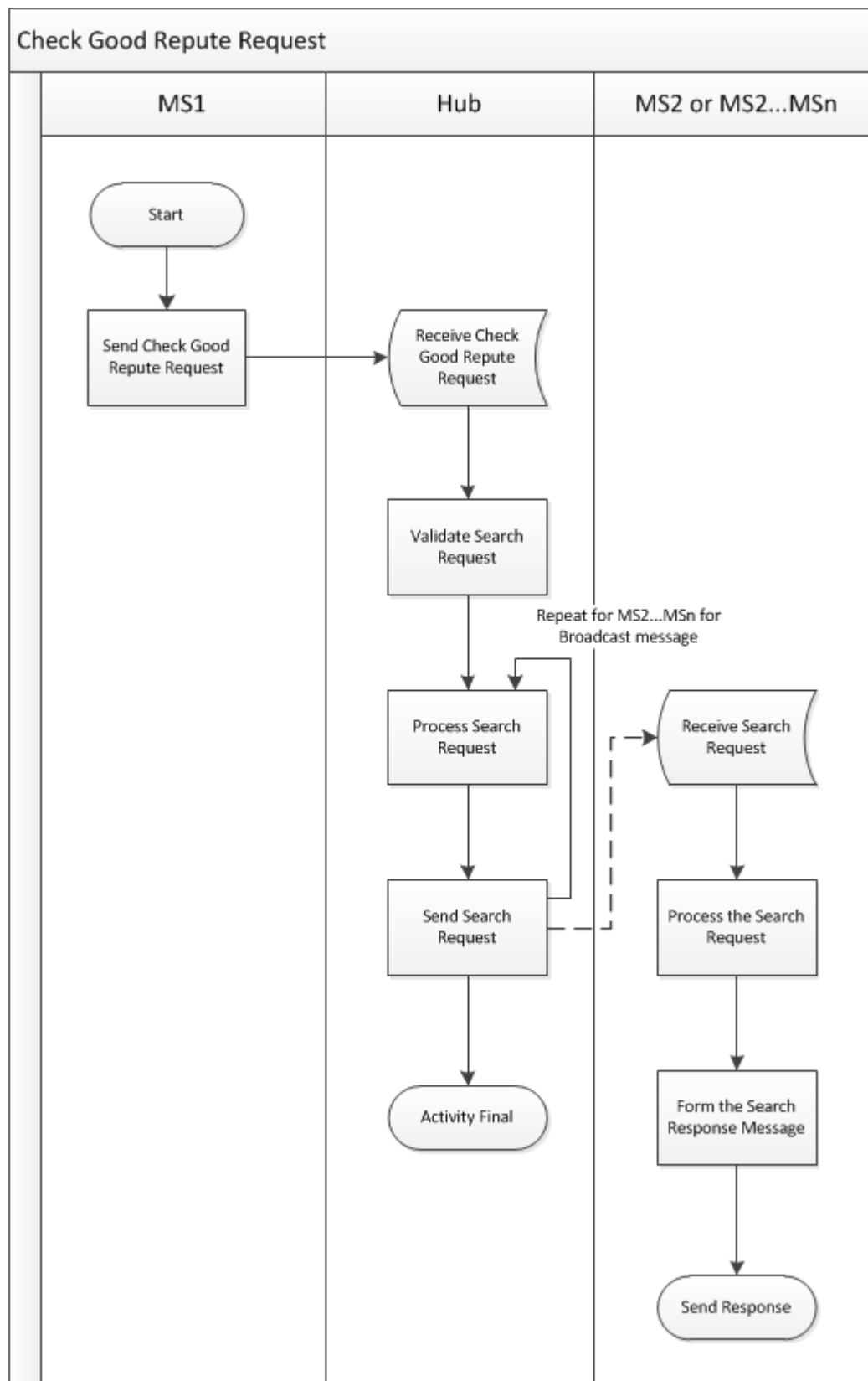


Figure 2 Check Good Repute Request

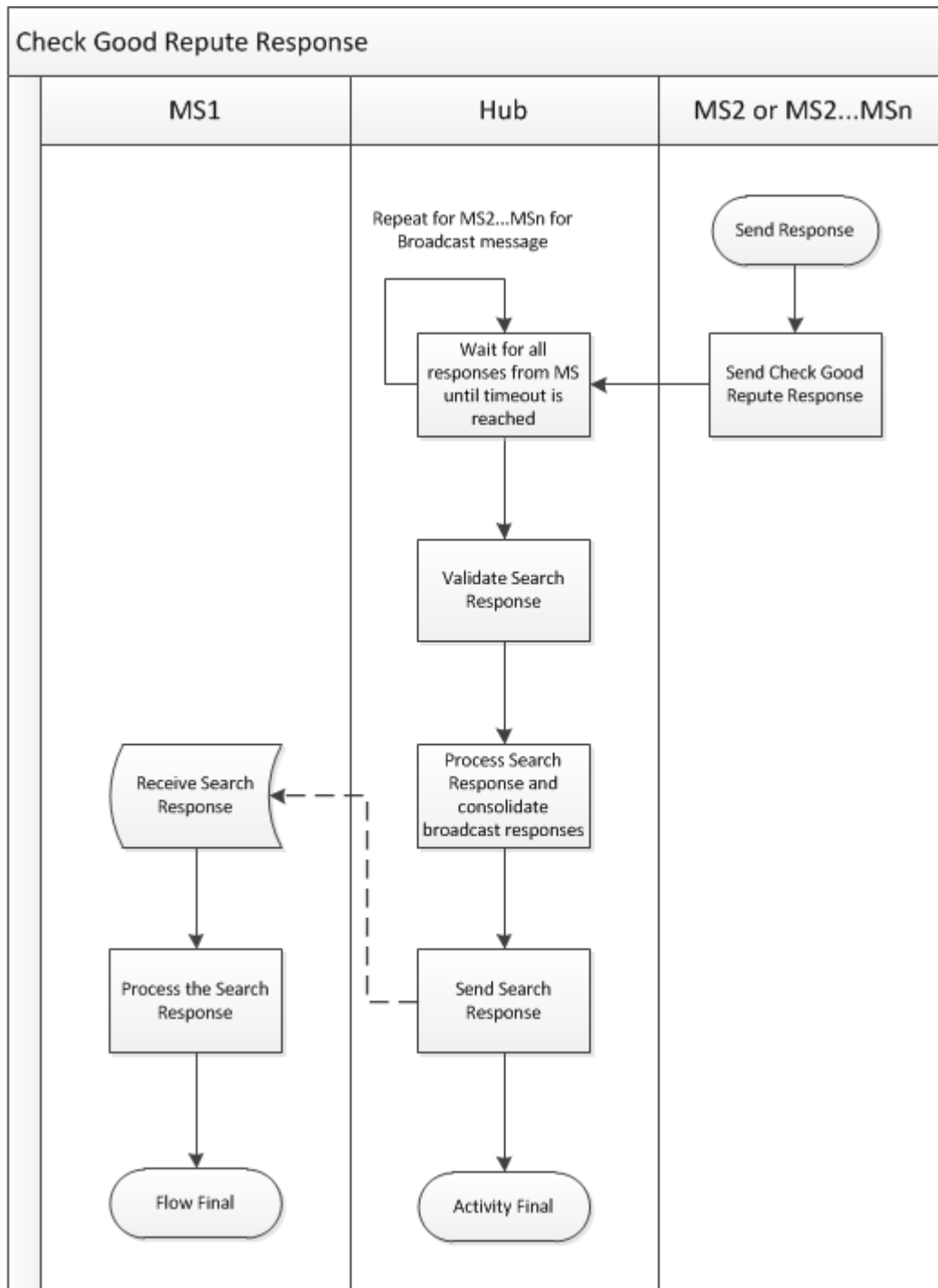


Figure 3 Check Good Repute Response

7.2.2. Assumptions and constraints

| # | Description |
|---|--|
| 1 | The search response message would either have an exact match of the transport manager details requested or a part match of the criteria in the search request. |
| 2 | There are no acknowledgements in this process as receiving a response to the search request is enough to know that the request has reached the destination. |

7.3. Infringement Notification

This process deals with notifying serious infringements (SI/VSI/MSI) attributable to a transport undertaking ascertained by any MS (from now on MS1) to the MS of establishment (from now on MS2).

7.3.1. *Process Workflow*

The below business process modelling only identifies the different events and services needed to assist a MS to exchange information about serious infringements (SI/VSI/MSI).

| Process Stage | Description |
|---------------|---|
| Stage 1 | MS1 encounters a serious infringement (SI/VSI/MSI) of the Regulation [1071/2009] or of road transport legislation applicable to a non-resident road transport operator. |
| Stage 2 | <p>MS1 where the infringement is encountered shall send the Infringement Notification to MS2 of the transport operator, as soon as possible and at the latest within 6 weeks of their final decision on the matter, the following information;</p> <ul style="list-style-type: none">a) A description of the infringement and the date and time when it was committed.b) The category, type and serious nature of the infringement.c) The penalties imposed/requested and the penalties executed. <p>MS1 may request MS2 to impose administrative penalties in accordance with Article 12 of Regulation 1072 [1072/2009] and Article 22 of Regulation 1073 [1073/2009].</p> |
| Stage 3 | On receipt of the information, MS2 stores the information in its National Register(s). It also makes a decision whether or not to impose any administrative penalties requested by MS1. Administrative penalties are imposed accordingly. |
| Stage 4 | <p>MS2 shall communicate to MS1, as soon as possible after the final decision and at the latest within 6 weeks, which, if any, penalties mentioned in Stage 2 have been imposed.</p> <p>If such penalties are not imposed, MS2 shall state the reasons therefore.</p> |

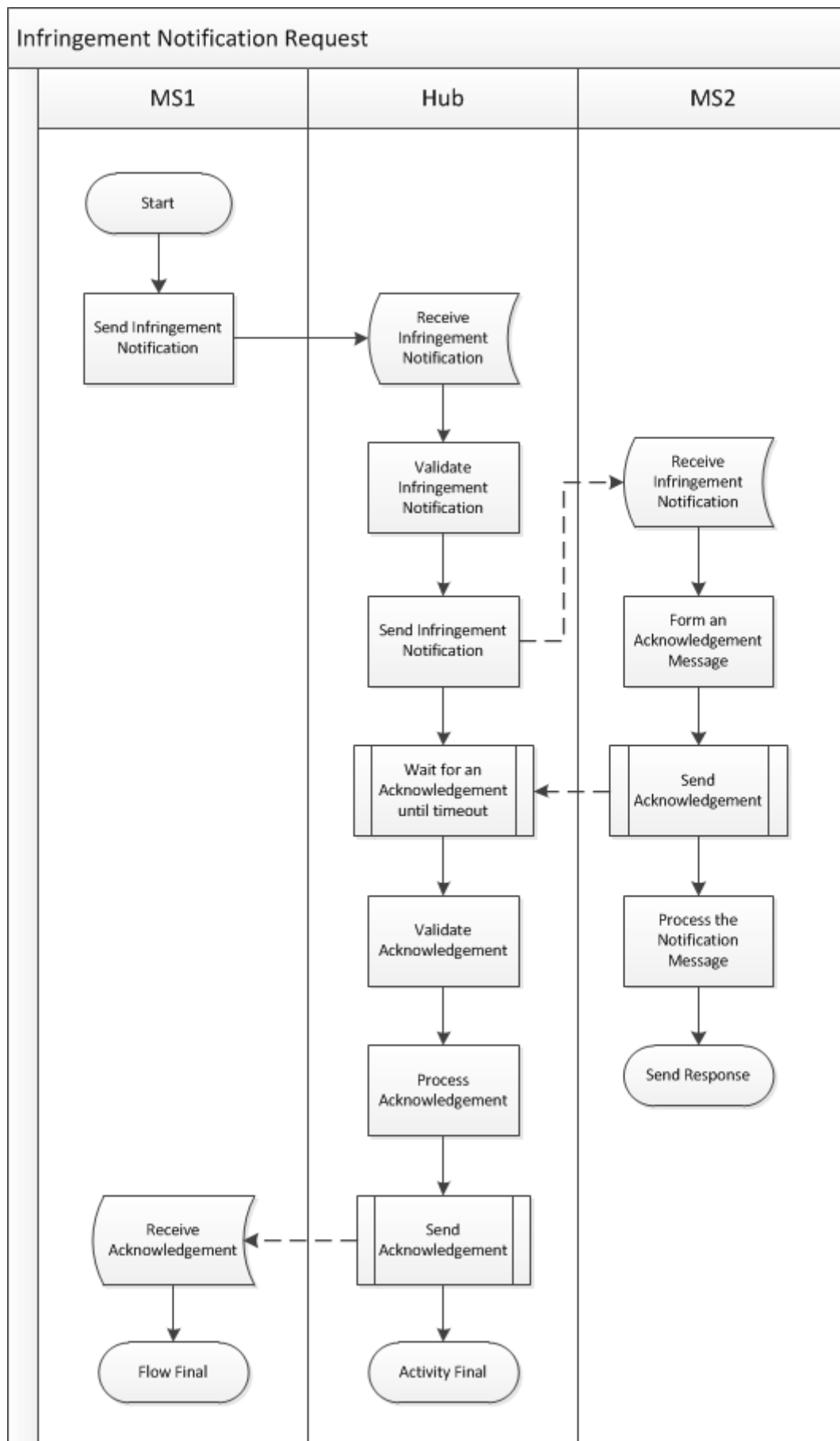


Figure 4 Infringement Notification Request

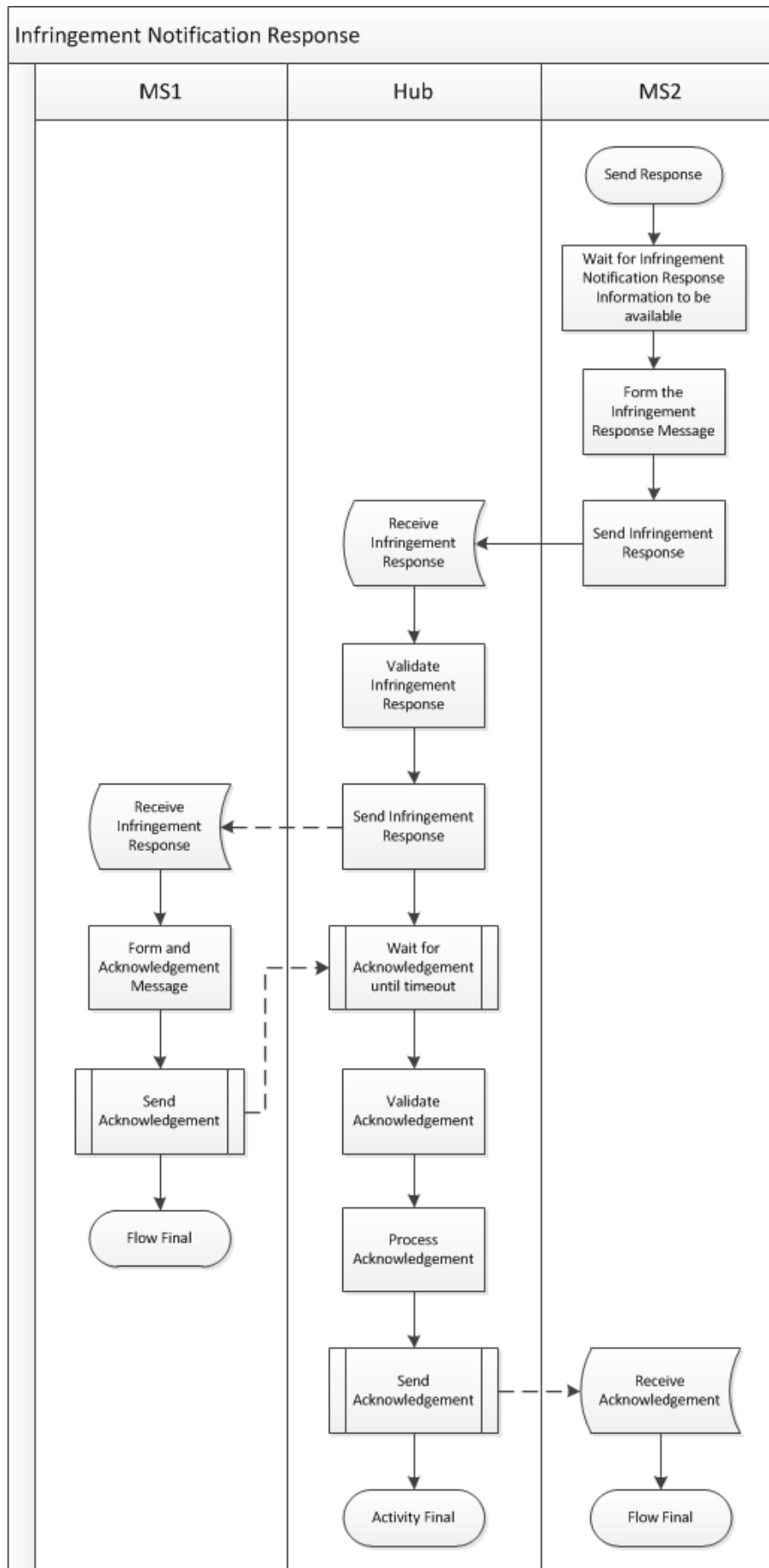


Figure 5 Infringement Notification Response

7.3.2. Assumptions and constraints

| # | Description |
|---|---|
| 1 | In the event of a request/response being correctly delivered to its recipient, an ACK is sent back from the receiving MS to the MS who originated the message. Otherwise the Hub sends a NACK indicating the error to the MS that sent the Request or Response. |
| 2 | There is no time limit between acknowledging the notification and sending the response. |

7.4. Check Community Licence

Road side inspectors can check the vehicle and the driver's documentation and ensure that the vehicle is carrying a certified true copy of the transport undertaking's community licence (see ERRU Regulation (EC) No 1072/2009 [1072/2009] Article 4.6 and ERRU Regulation (EC) No 1073/2009 [1073/2009] Article 4.3); but they have no facility to check that the community licence is still valid in the Member State of establishment.

This process allows a host Member State (from now on MS1) to request of the Member State of establishment (from now on MS2) the details of the community licence (and / or the certified true copy) of road transport undertaking.

7.4.1. Process Workflow

The below business process modelling only identifies the different events and services needed to assist a MS to exchange information about community licences.

| Process Stage | Description |
|---------------|---|
| Stage 1 | A roadside inspector inspecting a vehicle in MS1 wants to check validity of a certified true copy of the vehicle's community licence. |
| Stage 2 | MS1 submits the request for the details of the community licence to MS2. The search request will contain: <ul style="list-style-type: none">• The serial number of the community licence.• The transport undertaking name.• The vehicle registration number. |
| Stage 3 | MS2 actions the request and searches their National Register(s) for the information. |
| Stage 4 | MS2 sends the results of their searches to MS1. |
| Stage 5 | On receipt of the results of the searches, with the details of the community licence, its certified true copy and its status the inspector can act accordingly. |

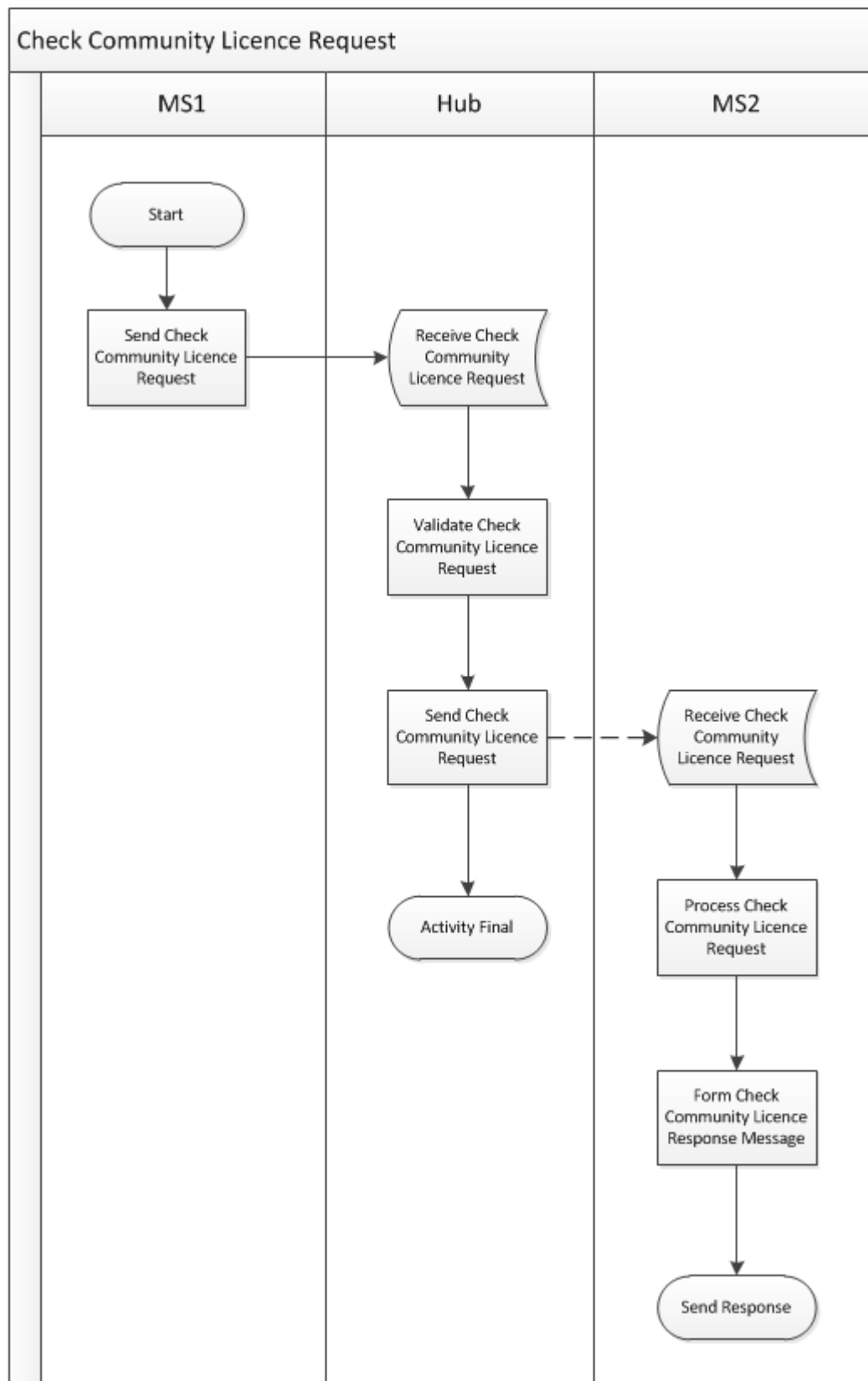


Figure 6 Check Community Licence Request

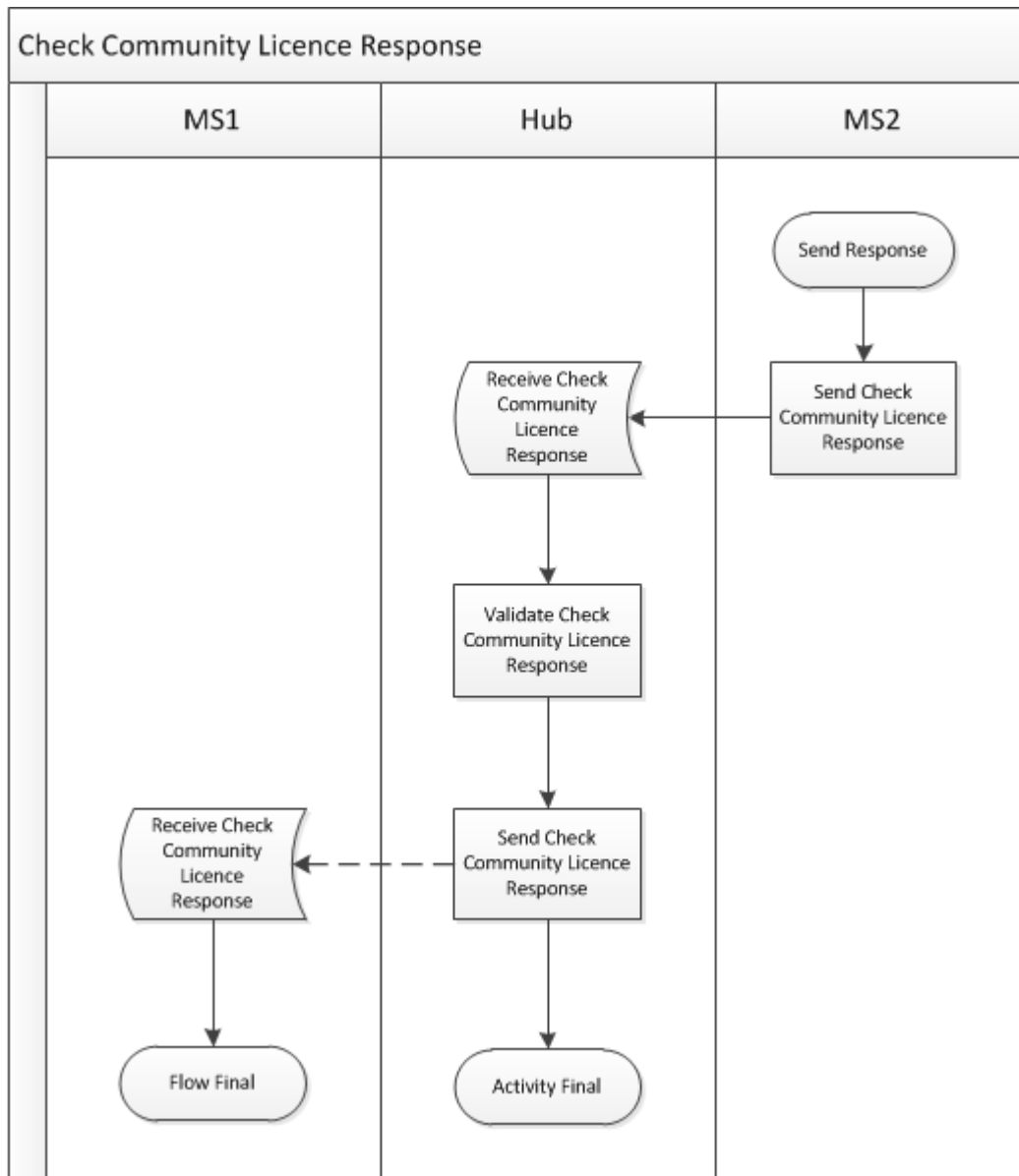


Figure 7 Check Community Licence Response

7.4.2. Assumptions and constraints

| # | Description |
|---|---|
| 1 | There are no acknowledgements in this process as receiving a response to the search request is enough to know that the request has reached the destination. |

7.5. Roadside Inspection Notification

This service deals with notifying a detailed RSI done to a vehicle by any MS (from now on MS1) to the MS of registration of the vehicle (from now on MS2).

7.5.1. Process Workflow

The below business process modelling only identifies the different events and services needed to assist a MS to exchange information about detailed RSI.

| Process Stage | Description |
|---------------|--|
| Stage 1 | MS1 establishes a major or dangerous deficiency of a vehicle after a detailed RSI has been carried out. |
| Stage 2 | <p>MS1 shall send the RSI Notification to MS2, as soon as possible, giving the following information;</p> <ul style="list-style-type: none"> The elements of the roadside inspection report as set out in Annex IV of Directive 2014/47/EU [2014/47/EU] such as location and date/time of the inspection and the name of the inspector or the authority carried out the RSI, vehicle details, items checked, and detailed results of the inspection. <p>MS1 may request MS2 to conduct a periodic technical inspection (PTI).</p> |
| Stage 3 | On receipt of the information, MS2 acknowledges reception. No response is expected (There is no legal obligation to store the message received or to decide on the request). |

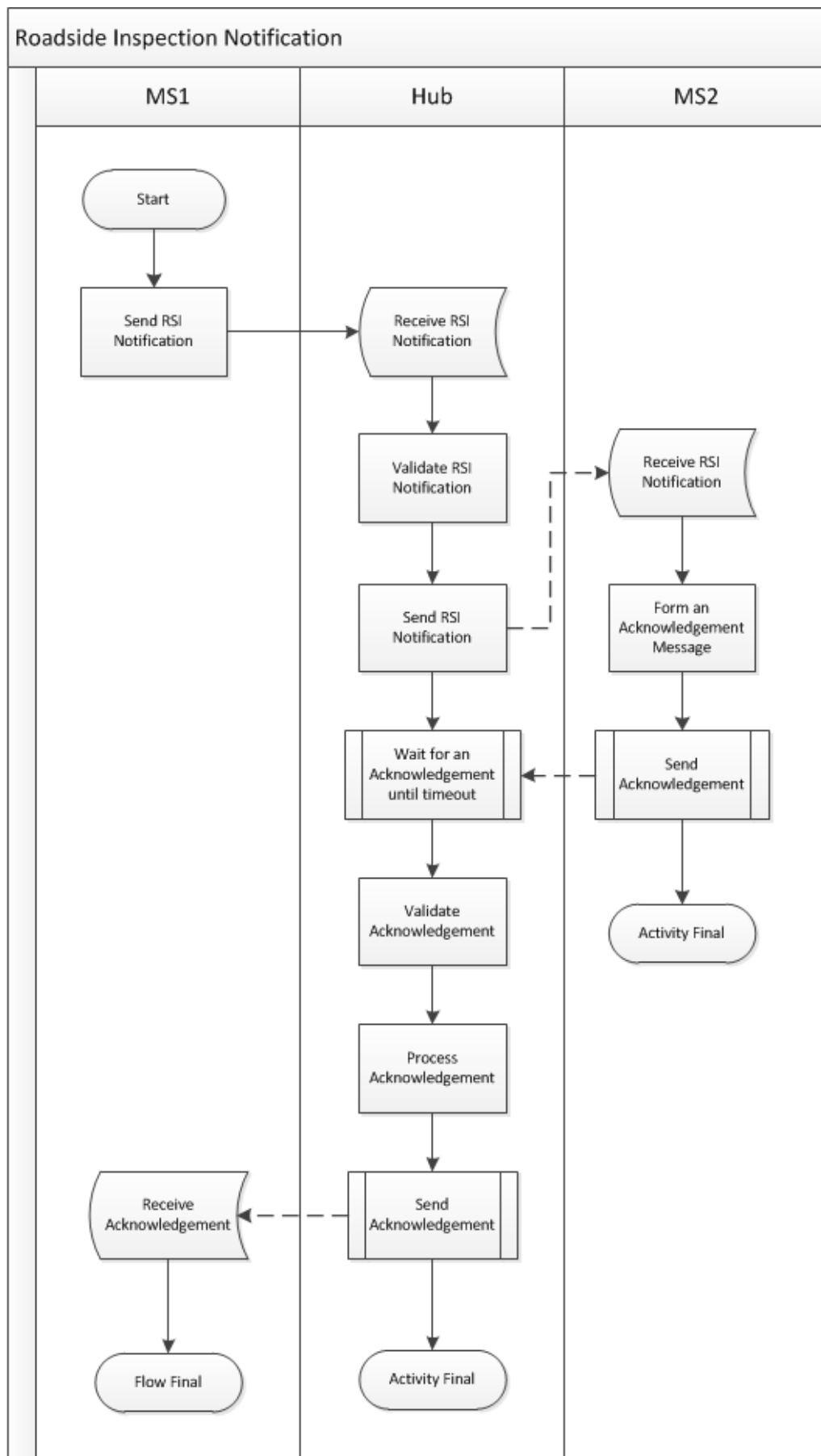


Figure 8 Roadside Inspection Notification

7.5.2. Assumptions and constraints

| # | Description |
|---|--|
| 1 | In the event of a notification being correctly delivered to its recipient, an ACK is sent back from the receiving MS to the MS who originated the message. Otherwise the Hub sends a NACK indicating the error to the MS that sent the notification. |

7.6. Error Notification

This is not a business service, just an implementation to handle errors, thus will not be explained here in detail, just an introduction. Find details at ERRU XML Messaging Reference Guide [ERRU XML].

In any of the previous processes there could be errors at any point in the communication. A dedicated error message has to be sent to the sender of the erroneous message to notify of the error.

8. USE CASE MODEL

This section describes the use case model, which includes the actors and the use cases for the various services (refer to [Appendix A](#) for understanding on how to read a Use Case).

8.1. Actors

An actor is an entity that uses or interacts with the system to perform a piece of meaningful work that helps to achieve a goal. The set of Use Cases an actor has access to, defines its overall role in the system and the scope of its action. An actor can either be an individual or an external system.

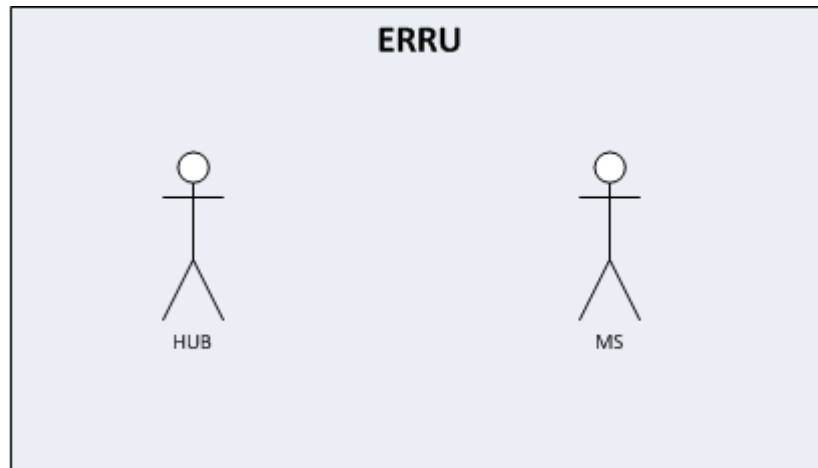


Figure 9 Actors

| Actor | Description |
|-------|--|
| Hub | The ERRU Hub system in charge of routing the messages between MS. |
| MS | The MS which exchange messages with other MS through the ERRU Hub. |

8.2. Use Cases

A Use Case defines a set of use-case instances, where each instance is a sequence of actions a system performs that yields an observable result of value to a particular actor. Each use case in the model is described in detail, showing step-by-step how the system interacts with the actors, and what the system does in the use case. Use cases function as a unifying thread throughout the software lifecycle.

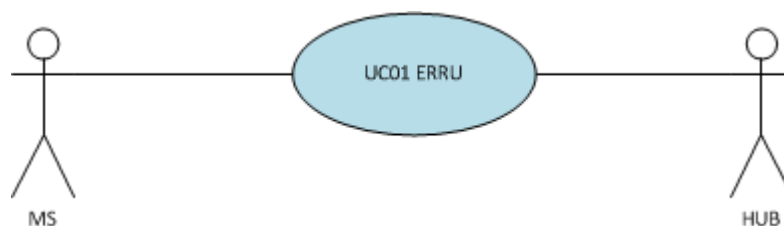


Figure 10 UC Global

8.2.1. UC01 ERRU

These are the use cases specific to the ERRU/RSI services. When talking about MS, we will refer to the SPOC/MPOC of that MS used to send/receive messages to/from the Hub, independently of the MS internal communications. The Hub is common for ERRU and RSI services.

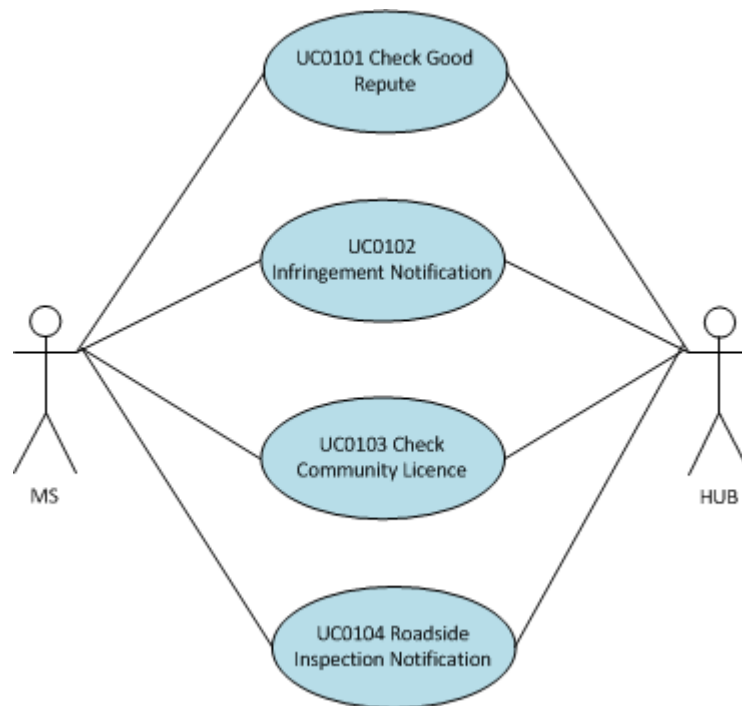


Figure 11 UC01 ERRU

| UC Identifier | Description |
|-------------------------------|--|
| ID | UC01 |
| Name | ERRU |
| Description | <p>This use case is the global use case for ERRU network. Inside this use case we find all the services for ERRU/RSI.</p> <p>MS should resend the requests in case of failure.</p> <p>All messages and acknowledgements are logged when entering or leaving the Hub.</p> |
| Actors | <ul style="list-style-type: none">• MS1• Hub• MS2 (or MS2...MSn) |
| Pre-Conditions | <ul style="list-style-type: none">• MS1 is connected to the Hub.• MS2 (or MS2...MSn) is connected to the Hub. |
| Post-Conditions | <ul style="list-style-type: none">• MS1 has exchanged messages with MS2 (or MS2...MSn). |
| Failed Post-Conditions | <ul style="list-style-type: none">• MS1 has failed to exchange messages with MS2 (or MS2...MSn). |

| Main Success Scenario (Or Basic Flow) | Step | Action |
|--|------|---|
| | 1 | The MS1 system sends messages to the Hub. |
| | 2 | The Hub forwards message(s) to MS2 (or MS2...MSn). |
| | 3 | The Hub receives response(s) from MS2 (or MS2...MSn, in this case it aggregates responses). |
| | 4 | The Hub forwards response to the original caller MS1. |
| Alternate Flows | Step | Branching Action/Alternative Action/Exception Condition |
| | 1a | Error in message received from MS1. |
| | 2a | Error in message received at MS2. |
| | 3a | Error in message(s) received from MS2 (or MS2...MSn). |
| | 4a | Error in message received at MS1. |

8.2.1.1. UC0101 Check Good Repute

This section describes the use case for the “Check Good Repute” ERRU service.

| UC Identifier | Description |
|------------------------|--|
| ID | UC0101 |
| Name | Check Good Repute |
| Description | <p>This use case deals with sending a check good reput e of a transport manager request to one MS or to all the other MS's and receiving the response back from the responding MS.</p> <p>When a transport manager in MS1 makes an application for an authorisation to engage in the profession or for the renewal of an existing one it has to be sure that the applicant fulfils all the requirements of the Regulation.</p> |
| Actors | <ul style="list-style-type: none"> • MS1 • Hub • MS2...MSn |
| Pre-Conditions | <ul style="list-style-type: none"> • MS1 is connected to the Hub. • MS1 has prepared the request message. • MS2...MSn are connected to the Hub. • MS2...MSn have their national databases up to date. |
| Post-Conditions | <ul style="list-style-type: none"> • MS1 sending the search request has received a response to its request. |

| | | |
|--|--|--|
| Failed Post-Conditions | <ul style="list-style-type: none"> MS1 sending the search request has received an Error Notification in case of erroneous messages. MS1 sending the search request has received a Timeout in case of no response from MS2...MSn. | |
| Main Success Scenario (Or Basic Flow) | Step | Action |
| | 1 | The requesting MS system sends the Check Good Repute request message to the Hub. |
| | 2 | The Hub receives the search request. |
| | 3 | The Hub validates the request message and if valid, the system generates the NYSIIS keys. |
| | 4 | The Hub then sends it to the MS system of each of the required MS (MS2 single cast or MS2...MSn for broadcast). |
| | 5 | The Hub waits for receiving the response(s). |
| | 6 | When a response is received from MS2 or MS2...MS27 within the timeout period, the Hub validates its content. |
| | 7 | The Hub builds the final aggregated response message. In case of responses from multiple MS(s) (MS2...MSn), it consolidates all the valid response messages received within the timeout period while for the other MS(s) it sets Status Code ="timeout" and processes the final consolidated response message. |
| | 8 | The Hub sends it to the original caller MS1. |
| Alternate Flows | Step | Branching Condition Action/Alternative Action/Exception |
| | 3a | <p>The request message received from MS1 is in invalid format or has invalid content.</p> <p>The Hub sends an Error Notification message to the MS1 informing of the error. The Hub does not process the message further.</p> |
| | 6a | <p>The request forwarded to MS2 is in invalid format or has invalid content.</p> <p>The Hub receives an Error Notification message from the MS2 informing of the error. The Hub sends a timeout error to MS1.</p> |
| | 6b | <p>The response message received from the MS2 is in invalid format or has invalid content.</p> <p>The Hub sends an Error Notification message to the MS2 informing of the error and a response message to MS1 with Timeout. The Hub does not process the message further.</p> |

| | | |
|---|----|---|
| | 6c | When the Hub receives multiple valid responses (corresponding to a single request) within timeout period, from a single MS, it ignores the superfluous responses. The first received valid response is considered for further processing and consolidation. |
| | 6d | The Hub does not receive any response from MS2 and sends back a response to MS1 with Timeout. |
| | 8a | The response forwarded to MS1 is in invalid format or has invalid content. The Hub receives an Error Notification message from the MS1 informing of the error. The Hub does not process the message further. |
| Special Requirements | | |
| <ol style="list-style-type: none"> 1. A common Transliteration service is provided in the ERRU network to enable the Hub/MS to convert the text strings in Latin Extended, Greek and Cyrillic scripts to US-ASCII character set. 2. A Phonetic mechanism (NYSIIS) is provided in the Hub to convert the first "First name" and "Family name" information to encoded keys. The Phonetic mechanism should take care of the possible spelling and phonetic variations of the same name in the different European countries and ensure that these name variants should generate the same key. <p>See document "Transliteration and NYSIIS Package" [NYSIIS] for more information.</p> | | |
| Business Rules | | |
| <ol style="list-style-type: none"> 1. The Hub shall process all valid response messages received from a MS for a request. Invalid and later responses received from a MS for the same request shall not be processed. 2. In case of problems (e.g. network problem) when sending a message (request, response), the Hub sends the messages to member States with 3 immediate retries. | | |

8.2.1.1.1. SD0101 Check Good Repute

This is the Sequence Diagram for the UC0101. This diagram shows in a more clear way the exchange of messages between MS.

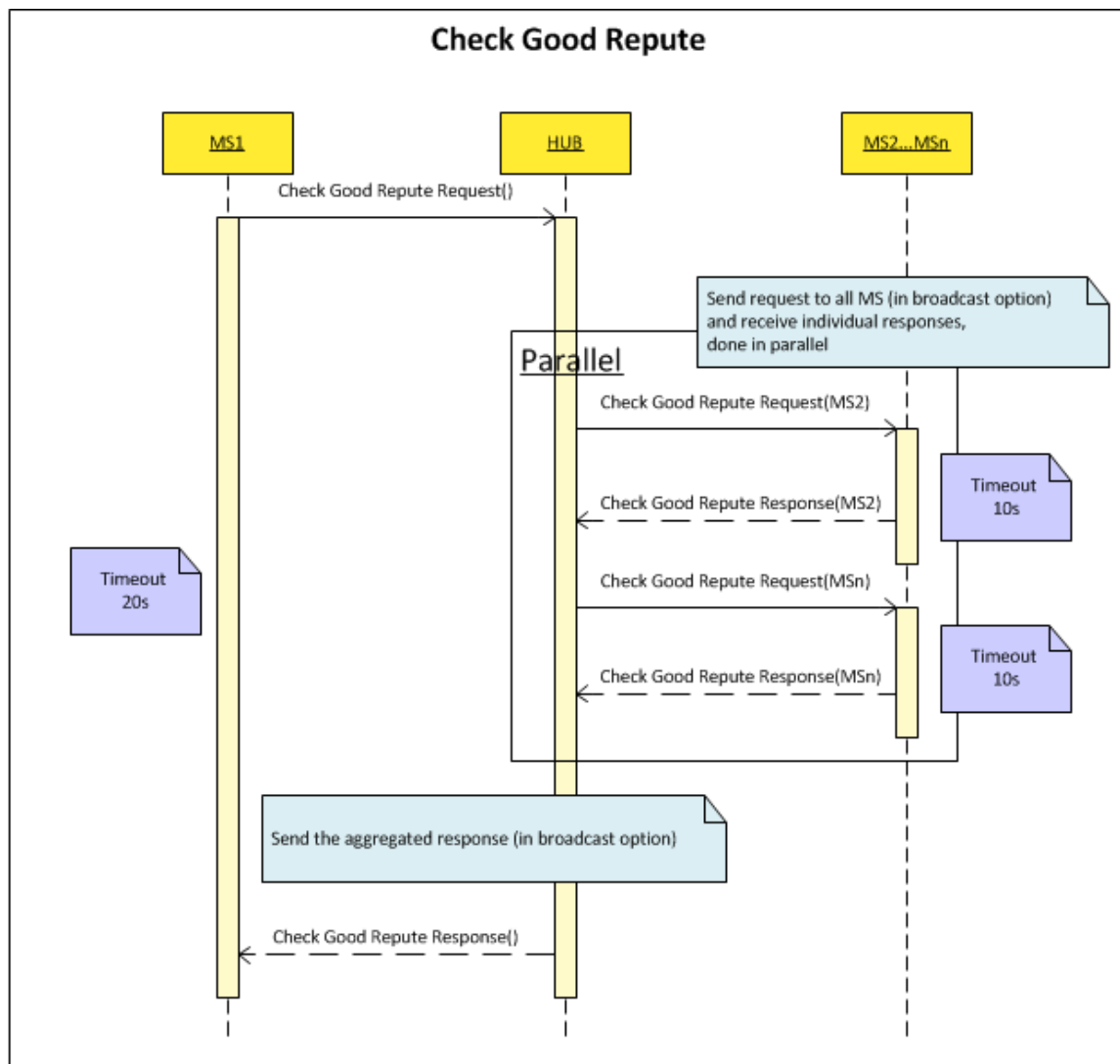


Figure 12 SD0101 Check Good Repute

8.2.1.2. UC0102 Infringement Notification

This section describes the use case for the “Infringement Notification” ERRU service.

| UC Identifier | Description |
|--------------------|--|
| ID | UC0102 |
| Name | Infringement Notification |
| Description | When a MS1 becomes aware of an Infringement (SI/VSI/MSI) of the Regulation or of Community road transport legislation done by a track of a foreign country, then an infringement notification is sent to the MS2 of establishment, after the final decision on the matter has been taken. On receipt of the Notification, MS2 of establishment stores the information in its National register. In response, MS2 communicates the decision to the originating MS1 in which the Infringement was ascertained specifying the penalties imposed. If such penalties are not imposed, then the MS2 of establishment states the reason for not imposing the penalty, in English. |

| | | |
|--|--|---|
| Actors | <ul style="list-style-type: none"> MS1 Hub MS2 | |
| Pre-Conditions | <ul style="list-style-type: none"> MS1 is connected to the Hub. MS1 has prepared the request message. MS2 is connected to the Hub. | |
| Post-Conditions | <ul style="list-style-type: none"> MS1 sending the notification has received a response from MS2. MS2 sending the response has received an ACK from MS1. | |
| Failed Post-Conditions | <ul style="list-style-type: none"> MS1 sending the notification has received a NACK in case MS2 is not reachable. MS1 sending the notification has received an Error Notification in case of erroneous messages. MS2 sending the response has received a NACK in case MS1 is not reachable. MS2 sending the response has received an Error Notification in case of erroneous messages. | |
| Main Success Scenario (Or Basic Flow) | Step | Action |
| | 1 | The requesting MS1 sends the Infringement Notification request message to the Hub. |
| | 2 | The Hub receives the request. |
| | 3 | The Hub validates the request message. |
| | 4 | The Hub then sends it to MS2 of establishment. |
| | 5 | The Hub waits for receiving the ACK. |
| | 6 | When Hub receives the ACK from MS2 within the timeout period, the Hub validates its content. |
| | 7 | The Hub builds the ACK and sends it to the original caller MS1 (Member State which ascertained the infringement). |
| | 8 | The Hub waits for receiving the response from MS2. |
| | 9 | When an infringement response is received from MS2 the Hub validates the response message. |
| | 10 | The infringement response message is sent to the MS1 (Member State which ascertained the infringement). |
| | 11 | The Hub waits for receiving the ACK from MS1. |
| | 12 | When Hub receives the ACK from MS1 within the timeout period, the Hub validates its content. |
| | 13 | The Hub builds the ACK and sends it to the responder MS2 (Member State of establishment). |

| Alternate Flows | Step | Branching Condition | Action/Alternative | Action/Exception |
|--|------|---|--------------------|------------------|
| | 3a | The request message received from the MS1 is in invalid format or has invalid content. The Hub sends an Error Notification message to the MS1 informing of the error. The Hub does not process the message further. | | |
| | 6a | The Hub encounters a problem when trying to send the request to MS2 and sends back a NACK to MS1. | | |
| | 6b | The request forwarded to MS2 is in invalid format or has invalid content. The Hub receives an Error Notification message from the MS2 informing of the error. The Hub sends a NACK to MS1. | | |
| | 8a | The time-out period for processing the acknowledgement to the request elapses. The Hub sends a NACK to the originating MS indicating the “Search status code” as “Timeout”. The Hub shall not process any late responses. | | |
| | 9a | The response message received from the MS2 is in invalid format or has invalid content. The Hub sends an Error Notification message to the MS2 informing of the error and another to MS1 with Timeout. The Hub does not process the message further. | | |
| | 10a | The Hub encounters a problem when trying to send the response to MS1 and sends back a NACK to MS2. | | |
| | 11a | The response forwarded to MS1 is in invalid format or has invalid content. The Hub receives an Error Notification message from the MS1 informing of the error. The Hub sends a NACK to MS2. | | |
| Business Rules | | | | |
| <div>1. When the Hub receives a late (after timeout period) ACK, it sends an error message.</div> <div>2. When the Hub receives multiple valid ACK (corresponding to a single request/response) within timeout period, from a Member State CA, it sends error messages for the superfluous acknowledgements. The first received valid acknowledgement is considered as the processed one.</div> <div>3. In case of problems (e.g. network problem) when sending a message (request, response), the Hub sends the messages to member States with 3 immediate retries.</div> | | | | |

8.2.1.2.1. SD0102 Infringement Notification

This is the Sequence Diagram for the UC0102. This diagram shows in a more clear way the exchange of messages between MS.

This diagram also shows how in this case the recipient MS has to send back an acknowledgement of reception for the request and the response.

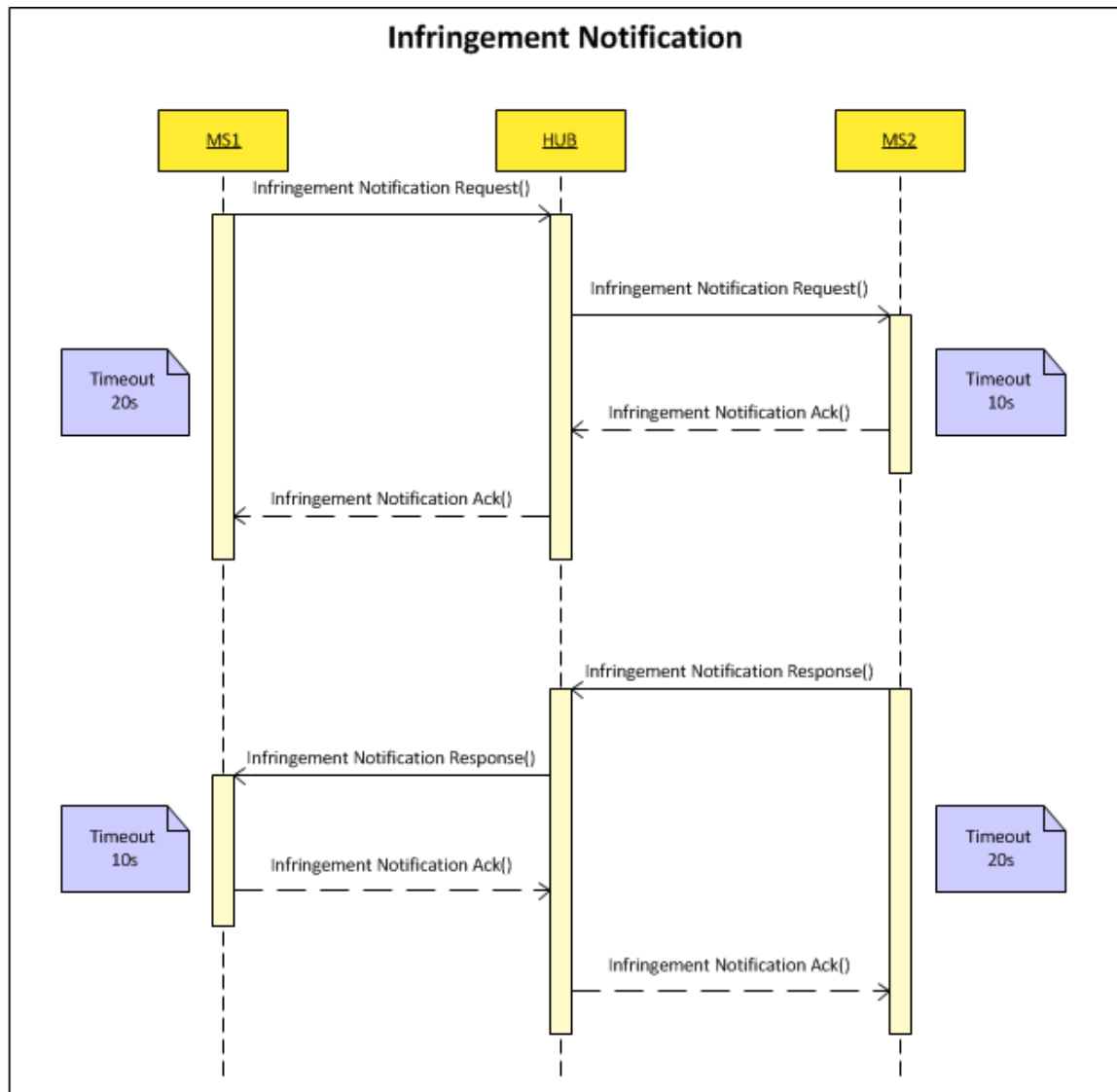


Figure 13 SD0102 Infringement Notification

8.2.1.3. UC0103 Check Community Licence

This section describes the use case for the “Check Community Licence” ERRU service.

| UC Identifier | Description |
|--------------------|---|
| ID | UC0103 |
| Name | Check Community Licence |
| Description | <p>This use case deals with the case of road side inspectors or CA checking the vehicle and the driver's documentation and ensuring that the vehicle is carrying a certified true copy of the transport undertaking's community licence and that both are valid.</p> <p>This process allows a host MS1 to request of the MS2 of establishment the details of the community licence of road transport undertaking.</p> |

| | | |
|--|--|--|
| Actors | <ul style="list-style-type: none"> MS1 Hub MS2 | |
| Pre-Conditions | <ul style="list-style-type: none"> MS1 is connected to the Hub. MS1 has prepared the request message. MS1 knows who MS2 is. MS2 is connected to the Hub. MS2 has their national databases up to date. | |
| Post-Conditions | <ul style="list-style-type: none"> MS1 sending the check request has received a response to its request. | |
| Failed Post-Conditions | <ul style="list-style-type: none"> MS1 sending the check request has received an Error Notification in case of erroneous message. MS1 sending the check request has received a Timeout in case of MS2 not responding. | |
| Main Success Scenario (Or Basic Flow) | Step | Action |
| | 1 | The requesting MS1 sends the Check Community Licence request message to the Hub. |
| | 2 | The Hub receives the request. |
| | 3 | The Hub validates the request message. |
| | 4 | The Hub then sends it to the MS2. |
| | 5 | The Hub waits for receiving the response from MS2. |
| | 6 | When a response is received from MS2, the Hub validates the response message. |
| | 7 | The response message is sent to the MS1. |
| Alternate Flows | Step | Branching Condition Action/Alternative Action/Exception |
| | 3a | The request message received from the MS1 is in invalid format or has invalid content. The Hub sends an Error Notification message to the MS1 informing of the error. The Hub does not process the message further. |
| | 5a | The request forwarded to MS2 is in invalid format or has invalid content. The Hub receives an Error Notification message from the MS2 informing of the error. The Hub sends a timeout to MS1. |
| | 5b | The Hub does not receive any response from MS2 and sends back a response to MS1 with Timeout. |

| | | |
|---|----|---|
| | 6a | <p>The response message received from the MS2 is in invalid format or has invalid content.</p> <p>The Hub sends an Error Notification message to the MS2 informing of the error and a response to MS1 with Timeout. The Hub does not process the message further.</p> |
| | 6b | <p>When the Hub receives multiple valid responses (corresponding to a single request) within timeout period, from a single MS, it ignores the superfluous responses. The first received valid response is considered for further processing and consolidation.</p> |
| | 7a | <p>The response forwarded to MS1 is in invalid format or has invalid content.</p> <p>The Hub receives an Error Notification message from the MS1 informing of the error. The Hub does not process the message further.</p> |
| Business Rules | | |
| <ol style="list-style-type: none"> 1. The Hub shall process all valid response messages received from a MS for a request. Invalid and later responses received from a MS for the same request shall not be processed but an error message must be sent. 2. In case of problems (e.g. network problem) when sending a message (request, response), the Hub sends the messages to member States with 3 immediate retries. | | |

8.2.1.3.1. SD0103 Check Community Licence

This is the Sequence Diagram for the UC0103. This diagram shows in a more clear way the exchange of messages between MS.

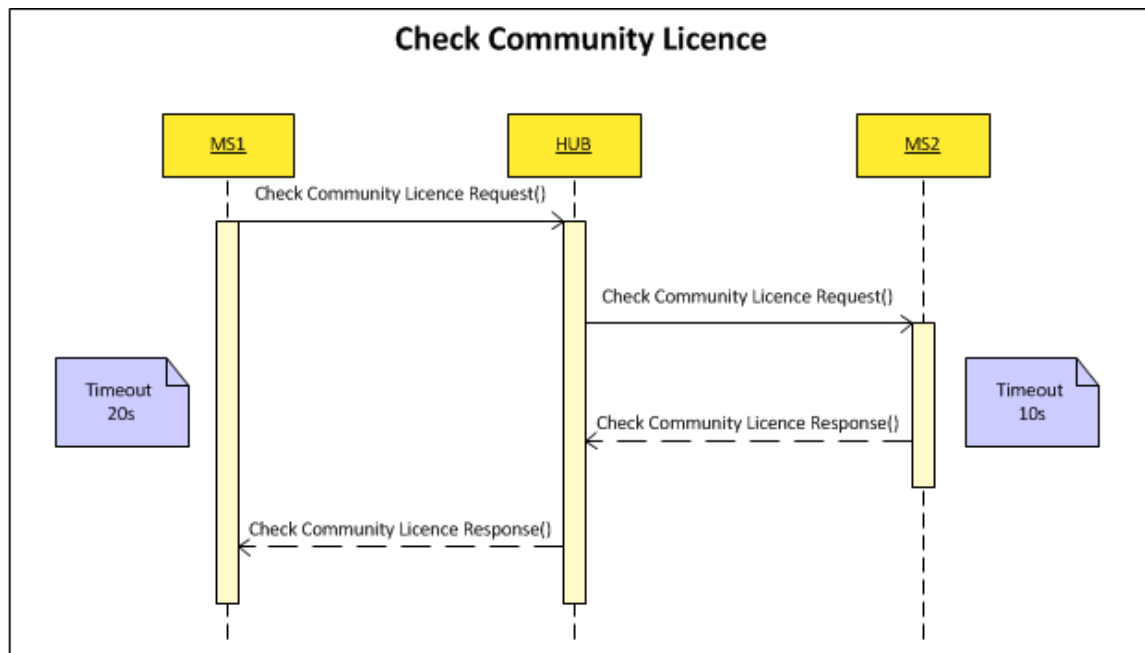


Figure 14 SD0103 Check Community Licence

8.2.1.4. UC0104 Roadside Inspection Notification

This section describes the use case for the “Roadside Inspection Notification” RSI service.

| UC Identifier | Description | |
|--|--|--|
| ID | UC0104 | |
| Name | Roadside Inspection Notification | |
| Description | When MS1 becomes aware of a major or dangerous deficiency of a vehicle during a detailed RSI, then an RSI notification is sent to MS2. On receipt of the Notification, sends an acknowledgement to MS1. No response is expected. | |
| Actors | <ul style="list-style-type: none"> • MS1 • Hub • MS2 | |
| Pre-Conditions | <ul style="list-style-type: none"> • MS1 is connected to the Hub. • MS1 has prepared the notification message. • MS1 knows who MS2 is. • MS2 is connected to the Hub. | |
| Post-Conditions | <ul style="list-style-type: none"> • MS1 sending the notification has received an ACK to confirm that MS2 has received the notification. | |
| Failed Post-Conditions | <ul style="list-style-type: none"> • MS1 sending the notification has received a NACK in case MS2 is not reachable. • MS1 sending the notification has received an Error Notification in case of erroneous messages. | |
| Main Success Scenario (Or Basic Flow) | Step | Action |
| | 1 | The notifying MS1 sends the Roadside Inspection Notification message to the Hub. |
| | 2 | The Hub receives the notification. |
| | 3 | The Hub validates the notification message. |
| | 4 | The Hub then sends it to the MS2. |
| | 5 | The Hub waits for receiving the ACK. |
| | 6 | When Hub receives the ACK from MS2 within the timeout period, the Hub validates its content. |
| | 7 | The Hub builds the ACK and sends it to the original caller MS1. |
| Alternate Flows | Step | Branching Condition Action/Alternative Action/Exception |

| | | |
|--|----|---|
| | 3a | The notification message received from the MS1 is in invalid format or has invalid content. The Hub sends an Error Notification message to the MS1 informing of the error. The Hub does not process the message further. |
| | 4a | The Hub encounters a problem when trying to send the notification to MS2 and sends back a NACK to MS1. |
| | 6a | The request forwarded to MS2 is in invalid format or has invalid content. The Hub receives an Error Notification message from the MS2 informing of the error. The Hub sends a NACK to MS1. |
| | 6b | The Hub does not receive any ACK from MS2 and sends back a NACK to MS1 with Timeout. |

Business Rules

1. When the Hub receives a late (after timeout period) ACK, it sends an error message.
2. When the Hub receives multiple valid ACK (corresponding to a single notification) within timeout period, from a MS, it sends error messages for the superfluous acknowledgements. The first received valid acknowledgement is considered as the processed one.
3. In case of problems (e.g. network problem) when sending a message (request, response), the Hub sends the messages to Member States with 3 immediate retries.

8.2.1.4.1. SD0104 Roadside Inspection Notification

This is the Sequence Diagram for the UC0104. This diagram shows in a more clear way the exchange of messages between MS.

This diagram also shows how in this case there is only a notification and the recipient MS has to send back an acknowledgement of reception.

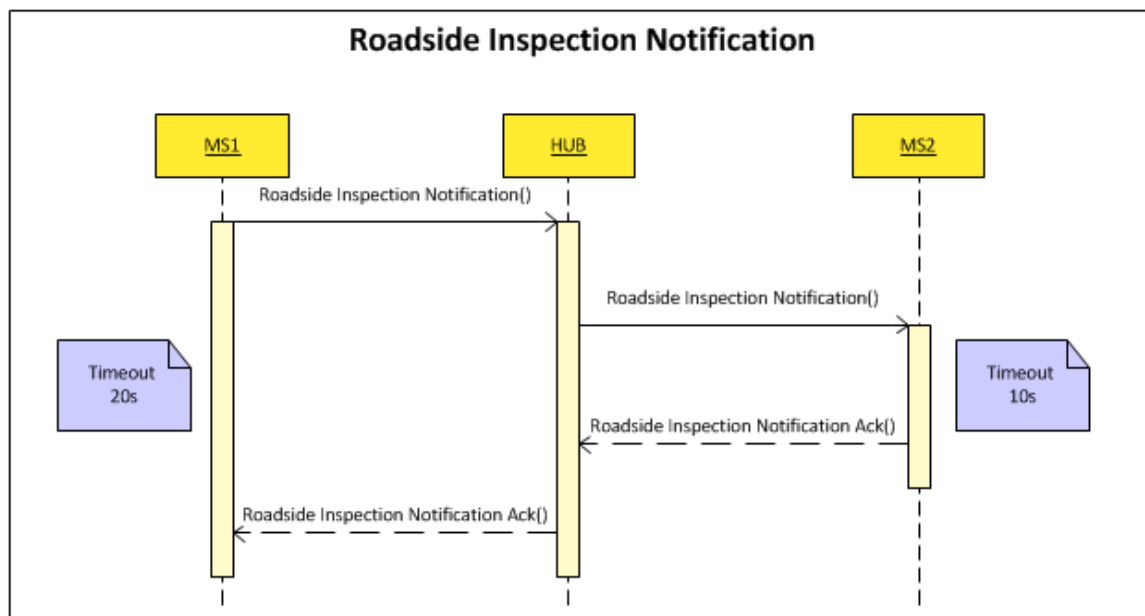


Figure 15 SD0104 Roadside Inspection Notification

9. LOGGING AND STATISTICS

Logging information is of major importance to keep an audit of transactions and provide statistics. This information is useful for the EC administrator for maintenance, troubleshooting and debugging purposes. Data about business content will not be available to the Member States, but data about statistics and routing will be.

Personal data shall not be retained in the logs for more than 6 months. Statistical information will be retained indefinitely.

Statistics can be accessed using the MOVEHUB Web Application which is out of scope of this analysis.

10. HEARTBEAT

Member state availability statistics will be published via a web portal (this is in final acceptance tests prior to being made available to the member states). These statistics (and the associated email alerts) are calculated by comparing the number of request messages forwarded to a member state with the number of response messages received from that member state. However, it is not possible to accurately assess the availability of a member states under zero or low volume messaging conditions. If there are no messages being forwarded to a member state then there is nothing with which to calculate statistics; and if there are a low volume of messages then a single missing response may adversely skew the results.

To combat these shortcomings the Hub will send a heartbeat message to monitor the availability of the member states connected to ERRU. This will be a periodic (e.g. 5 minutes) CGR search message with criteria that will generate a not found response (e.g. `familyName="Heartbeat", firstName="Erru", dateOfBirth="1900-01-01", familyNameSearchKey="HARTBAT", firstNameSearchKey="EU"`). This CGR message will be processed by the receiving MS and the corresponding response will be sent back to the Hub, allowing the Hub to know that that MS is available.

11. APPENDIX A – HOW TO READ USE CASES

The Use cases for documenting requirements have been described in following structure:

| UC Identifier | | Description |
|--|--------------|--|
| ID | | The unique identifier for the use-case. |
| Name | | Use Case Name is generally the user goal, which is to be fulfilled by the System. This is chosen as a short active verb phrase. |
| Description | | Describes the intention of the user while performing this use case. This also describes the possible scenarios in which a user may initiate the use case. |
| Actors | | The actors of a use case are the stakeholders that use the system to deliver one of its services. The actors have a goal with respect to the system, one that can be satisfied by its operation. The actors are those who trigger the use case. Usually, the use case starts because the actor pushes a button, enters a keystroke, or in some other way initiates the story. |
| Pre-Conditions | | The Precondition of the use case announces what the system will ensure is true before letting the use case start. Since it is enforced by the system and known to be true, it will not be checked again during the use case. A common example is "the user has already logged on and been validated". |
| Success Post-Conditions | | The Success Post-Condition states what interests of the stakeholders are satisfied after a successful conclusion of the use case, either at the end of the main success scenario or the end of a successful alternative path. |
| Failed Post-Conditions | | The Failed Post-Condition states will be the state of the system if goal is not achieved. |
| Main Success Scenario (Or Basic Flow) | Step | Action |
| | [1..n] | This is the “Basic Flow”. It describes the typical success path that satisfies the interests of the stakeholders. Note that it often does not include any conditions or branching. |
| Alternate Flows | Step | Branching Condition Action/Alternative Action/Exception |
| | [1..n][a..z] | Alternate Flows indicate all the other scenarios or branches of use cases both success and failure. Each alternate flow is numbered as: [1..n][a..z] = First number is the step in the Basic Flow where the Alternate Flow starts and a letter as there could be more than one alternate flow for the same basic flow step. (Further steps within alternate flow are numbered as 1a.1, 1a.2 and so on) |
| Special Requirements | | |

Any special functional requirement or quality attribute, or constraint related specifically to a use case is recorded here. These include qualities such as performance, reliability, and usability, and design constraints (often in I/O devices) that have been mandated or considered likely.

Business Rules

The business rules applicable to the use case are listed here.