ERICSSON CONNECTED LOGISTICS CHAIN

CLC SERVICE OVERVIEW

This document describes on overview of the Ericsson Connected Logistics Chain service (hereinafter referred to as the "**CLC Service**").

Contents

Introduction

The Connected Logistics Chain (CLC) service enables and supports digital operation and collaboration between relevant actors in logistics and supply chains with:

- On demand **digital data sharing** supporting collaboration between actors in end to end logistics chains instantly and securely.

- **Visualization** and **monitoring** of logistics chains for shippers, consignees, logistics hubs, orchestrators and other players, including data from different types of sources, including Internet of Things (IoT) device generated data.

The solution can **connect**, using published Application Programming Interfaces (API's):

- **Actors** involved in the physical transport of goods such as shippers, consignees, forwarders, carriers, ground-handlers, customs agents,

- **Data sources** that support the use cases, such as Enterprise Resource Planning (ERP), IoT, fleet management, traffic systems,

- **Digital services** such as search & booking, AI, Billing, import-export services.

Further detail on the types of connections and APIs that are available is specified in the product documentation made available in the CLC Service Portal at www.clc.ericsson.net (as may be updated from time to time).

Sharing is based on **open, distributed global standards**. The CLC service is connecting actors, data sources and services based on the principle that digital data sharing and collaboration shall be open, distributed, trusted and preferably based on open global standards. Ericsson aims for the CLC Service to be compliant with such standards and in particular to the Internet of Logistics standard.

- **Open and distributed** so all relevant actors in logistics chains can participate and choose between different platforms and service providers.

- **Trusted** to allow actors to share data in a controlled and secure fashion respecting the need to avoid the spread of sensitive information.

The CLC service provides data sharing services and does not provide services to facilitate or arrange commercial relations between logistic services providers and their customers. The types of data imported into the CLC service and who it is shared with in the chain of actors is within the control of the CLC Subscriber. More detail on how Ericsson protects and uses the data is set out in the CLC Privacy Policy at clc.ericsson.net (as varied from time to time).

The Internet of Logistics standard and the CLC service uses 2 technologies to implement digital data sharing in logistics and supply chains:

1. Digital twins for logistics objects with **Unique ID's** (UID) in the form of unique web addresses that can be used across supply chains by all authorized actors to identify and share data.

2. **Semantic data** models for data integration allowing for instant data sharing with any actor, data source or service that supports the IoL standard.

Both of these are explained in more detail in the relevant sections below.

Unique ID's (UID) and sharing

UID and digital twin for objects

In the CLC service relevant objects are identified with a unique identifier (UID – based on the Internet of Logistics standard) that can be used by actors in supply chains in their own IT environments to identify objects and as an identifier to enable data sharing between each other. This removes the need to create own ID for objects owned by others and it removes the need to attach additional labels to packages and other objects.

UID's can be created for all relevant physical object such as products, packaging, handling units, and vehicles and for transactional objects or documents such as shipments, consignments, shipping instructions, and dangerous goods declarations. All of these are in the CLC considered as CLC objects.

For each CLC object a digital twin is created that is used as the basis for data exchange and other services in CLC.

Data sharing

The CLC service handles information exchange related to objects between actors, data sources and services. Data sharing can in CLC be managed at all levels from object specific to shipment or company to company. Rules for with whom to share what data can also be managed at different levels.

The CLC service can keep track of relations between objects between actors and between actors and objects, across logistics chains. CLC is capable to register for example what box is put on what pallet, what pallet on which Truck and what carrier is transporting the cargo. Data can be shared between related objects (/the digital twins) and shared with related actors and services. In this way the owner of the pallet on the truck can receive position updates from the Truck.

Direct sharing between players

The UID's are constructed as unique resource identifiers (URI's) or web-addresses. This enables anyone that is authorized to, through a browser or a Machine to Machine (M2M) interface, retrieve or add information related to specific objects. A scan of the UID and opening a standard browser is enough to start sharing. UID's can be received digitally but are also typically printed as barcodes (/QR codes) on transport labels that are attached to the transported cargo.

This allows all parties to share data directly and in real-time with each other without going through a 3rd party or layers of IT systems as is often the case today. A ground-handler at an airport can for example report a delay or damage directly to the shipper.

Data sharing requests and subscriptions

Data is shared through active data requests or through automatic data updates based on data subscriptions. Data sharing is done within the CLC service as well as with external systems. Objects and actors can be handled by different CLC installations delivered by Ericsson or by services provided by other vendors that support similar functionality. In this way information can be shared across supply chains without the need to have everyone connected to the same service, service provider or buying from the same solution vendor. To facilitate global data sharing with all possible actors, Ericsson is promoting the use of standards such as the Internet of Logistics standard promoted by the Data Cargo Forum association (DCF).

Data owner decides with whom and what to share

The types of data imported into the CLC service and who it is shared with in the chain of actors is within the control of the CLC Subscriber. More detail on how Ericsson protects and uses the data is set out in the CLC Privacy Policy at clc.ericsson.net (as varied from time to time). Further detail on how a CLC customer may set authorizations for specific data is set out in the more detailed product documentation, available at clc.ericsson.net (as updated from time to time).

In the CLC service data owners determine controls on what data, with whom and in what situations is shared using sharing rules. Sharing rules selection criteria include selection based on companies, roles and types of goods transported. The solution provides standard data sharing templates and it is also possible to customize sharing rules.

Security

Data is stored and managed in the CLC only to support the CLC use cases and during the period it is relevant for these use cases. Data owners decide how long data is stored in CLC and with whom it can be shared.

The CLC service provides data protection and security functionality in accordance with the Ericsson data security standards. Limitations of data sharing may exist due to local, privacy or security regulations.

Semantic data integration

The CLC service has the potential (subject to integration using API's) to exchange information with many external systems including:

- *Systems handling transport administration and logistics handling events such as ERP systems from several types of actors in logistics chains, including shippers, consignees, authorities, freight forwarders, carriers and other types of logistics service providers,*

- *IoT device and data management systems,*

- *Systems performing other digital services for CLC users (Community Service) and*

- *External information systems such as flight radar.*

Semantic Data integration

Integration of data sources is done through standard API's and making use of standard semantic data models based on the Internet of Logistics standards. Most legacy IT systems in the logistics market today use Electronic Data Interchange (EDI) like integration methods that require peer to peer data-model mapping between parties, that is a time-consuming activity. By agreeing on a common logistics semantic data model across the logistics industry, data exchange is made substantially easier and on-boarding of new end-customers or carriers can be done in days rather than months.

Data Source and IT Services Integration

CLC can be integrated with multiple data sources and IT services from customers as well as 3rd parties such as LSP's, IoT providers, fleet owners and logistic application service providers. Integrations towards data sources and IT services can be re-used across different CLC subscribers. A list of cooperation partners is available on request. Ericsson does not accept any responsibility for these co-operation partners or the success of their integrations with the CLC Service. Ericsson may, subject to agreement, offer professional services to assist with such integration and Ericsson's responsibility for such professional services will be covered in a separate agreement.

CLC data sharing functions include sharing of IoT Track and Trace as well as the sensor information across logistic chains.

CLC user services

API based system

Users can use the Ericsson CLC service application stand-alone or in combination with other 3rd party applications. The CLC service includes API's for data inclusion and extraction. CLC capabilities exposure includes all categories of information CLC is handling, enriched information based on capabilities within CLC such as SLA deviations and alarms.

In this way users can pick the application that suites them best. If an ERP system does not support certain functionality, a user can interact through the Ericsson application instead. As noted above, Ericsson is not responsible for the successful integration of third-party systems with the CLC service, unless that has been expressly agreed in a professional services agreement.

Object information

The CLC service manages incoming requests for information regarding objects. It basically is the Graphical User Interface (GUI) for UID's and it adapts its content to each specific UID or object as well as to the identity or role of the requesting party. The CLC shows up to date data instantly. E.g. in the case when a Service Level Agreement (SLA) threshold has been surpassed or an alarm created.

Chain information

CLC service provides visualization functions for easy access to status and performance of logistics and supply chains end to end. Adapted to different user groups, the service provides easy access to relevant information to allow focus on what is important. Information is visualized in different kind of views and widgets.

Monitoring

Besides correlating and sharing data from different data sources, the CLC service provides functionality to enrich information. This includes logistics monitoring and assurance functionality, such as SLA monitoring.

Administration

For logistics administration activities, such as shipment creation and transport administration management, user can either work in their own, to CLC connected, IT systems (such as ERP systems), or use a web application provided in the CLC.

One-Touch App

The One-Touch App provides easy access to some of the core CLC functions including associating IoT devices with objects, pick-up and delivery of shipments and track-updates (position event of an object).

The App will be made available on request and is subject to additional license terms.

Driver App

The Driver App is focused on associating a driver's mobile phone and real-time position with a shipment or specific cargo. The driver app also provides map-based route planning for drivers and access to other data available in the CLC.

The App will be made available on request and is subject to additional license terms and is charged for separately.

Sandbox test environment

CLC Services includes a sandbox test environment for easy onboarding and testing.