LL #23 Realtime Multimodal Transportation Visibility Platform Services

FACTSHEET

10 MARCH 2022

A. GENERAL (Business case)

1. Objectives

- Transport and cargo tacking
- Reduction of the environmental impact of the logistics operations by providing the involved parties with access to the relevant, timely, and trustful data that would reduce long lead and waiting times, synchronize the supply chain between the parties, reduce waste and improve asset utilization.
- Developing an open and transparent platform fostering the responsibility for businesses to act with integrity towards the company and its customers.
- Decentralized blockchain based solution
- Developing a chain of trust with certificates
- Smart contracts are used to define the rules between different organizations

2. Main emphasis

The LivingLab aims to build a solution where companies that represent different modalities (road, maritime, railway, and air) together with cargo owners and authorities can easily connect and cooperate in a transparent network. Additionally, providing the customers with the information of the greenhouse gas emission calculations reports as soon as possible.

The LivingLab has the following objectives:

- Resolve the inefficiencies of the logistics chain and improve the execution of operations by developing a safe, trustful platform for data sharing among the participants of the chain;
- Foster the cooperation between the parties for greener logistics;
- Data visualization in multimodal context environment and emissions reporting

3. Challenges

- Enabling convenient implementation process for the organizations along with the authentication and authorisation mechanisms for the companies' members;
- Identifying the access rights of the identities towards the data and ensuring that the data is visible only to authorized identities or relevant/involved parties;
- Building the solution that would provide an easy connection to external systems and can be easily extended with the external projects.

4. Transport mode

Road, Railway, and Sea (maritime transport service provider)s

5. EU Map Focus

Scan Med, Central Europe

6. Geographical coverage

Finland, Germany, Belgium, Italy, Poland

7. Actors/SMs

- SSAB
- Rostock harbor
- Deutsche Bahn
- VR cargo
- Hanko harbor
- TMA logistics
- Ahola/Attracs

8. Forecast scaling outside LL

Tracking and tracing with supply chain transparency are needed for every supply chain to be able to predict the future with required actions. Supply chain should consider sustainability as part of transportation. Each transported parcel/item should have emissions allocated. To be able to do this decentralized way we are using blockchain technology and smart contracts which provide verifiable ways to report and in future also compensate and receive proof of compensation related to the individual transportation. By design, technical realization and validation efforts, Results can be used to provide real time visibility in the supply chain and calculate emissions based on the electronic freight transport information (eFTI) eCRM convention.

B. TECHNICAL SETTING

9. ICT vs Physical

The platform services that are being developed are using web standards for the flow of data (exchange and visualization). In our services the data is exchanged directly among the involved parties of the logistics chain, without any intermediary and physical movement of freight. This approach results in the reduction of the environmental impact of the logistics operations as the parties have access to the relevant, timely, and trustful data that reduces long lead and waiting times, synchronizes the supply chain between the parties, reduces waste and improves asset utilization. Additionally, the open and transparent nature of the platforms adds the responsibility for the businesses to act with integrity towards the company and its customers.

Figure 1 The architecture of the platform.

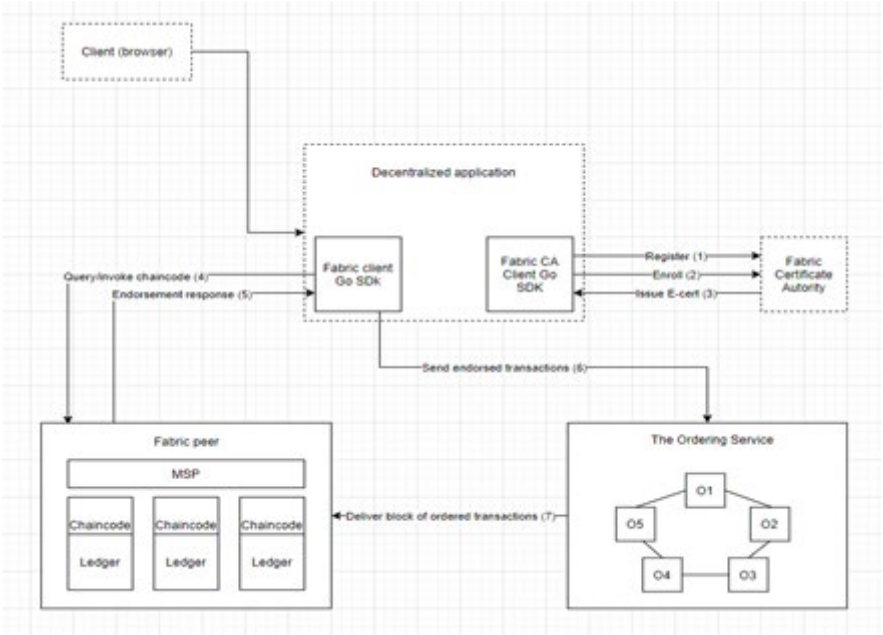
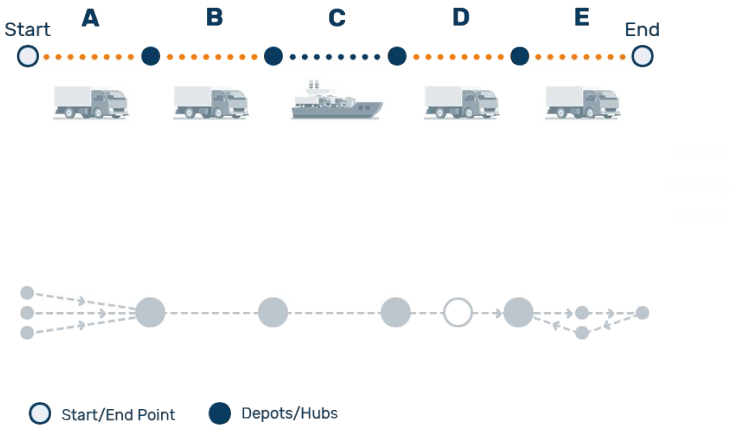


Figure 1 illustrates that the client using the browser connects to the decentralized application which communicates to the blockchain platform. The blockchain platform that is in use enables identity and organization management and authentication along with the separation of the data by access (public and private data). This ensures that the data of competitors remains separated but at the same time provides sufficient level of publicity.

Figure 2 (below) shows how the data is being visualized. The data is being collected from the road, maritime, and railway transportation sources and is being presented as the legs and events.

Figure 2 Leg – specific shipment Calculation (table contains illustrative values)



The legs provide the information of real-time statuses, alerts, weather reports and conditions of transportation, potential areas for damages. This enables the execution of planning and capacity reservations operations in a controlled manner with no deviations, meeting the agreed delivery times, and notifying the customer of the estimated time of arrival of the order. Additionally, with the data and architecture the emission calculations on the leg and parcel levels are conducted and the results are then provided to the involved parties.

The following FEDeRATED functionalities (global features) are covered:

- Language – System languages are: English, Finnish, Swedish. Using standard terms for data visualization and description.
- Access - creating identity using standard register form and specifying the details of the organization that the user represents. Connecting the data sources through APIs.
- Findability - the information about the members (organizations) of the network to be public. This would enable creating the channels for data exchange between the members by the members.
- Identity - using X.509 certificates for the identity management. This ensures that the identity is verifiable and comes from the trusted authority.

10. DTLF implementation option

B. Single Platform

D. Peer2Peer and platforms

C. ORGANISATIONAL ASPECTS

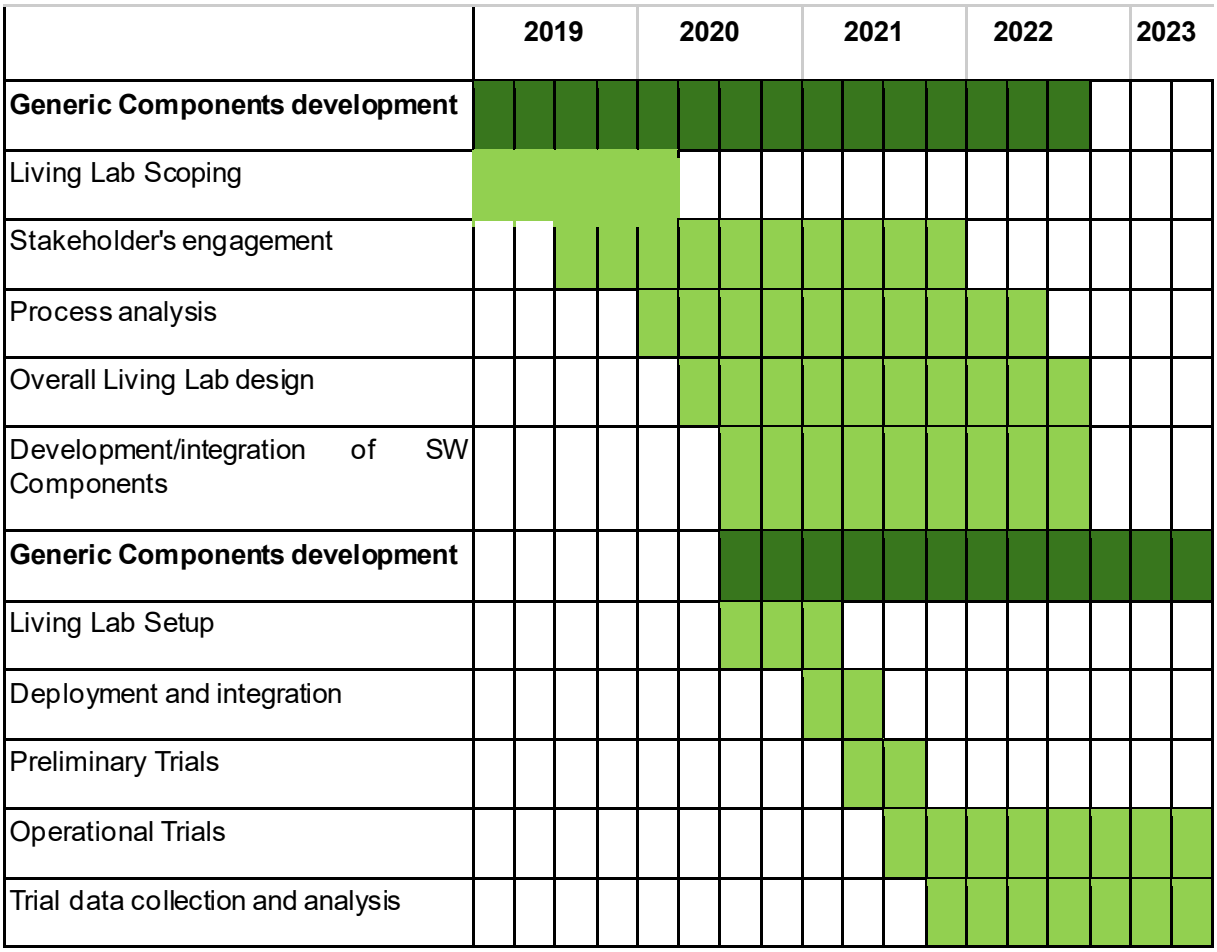
11. Success factors

- Carrier identifier
- Shipment identifier
- Status event: Arrived, Booked, Collected, Delivered, Discharged, En Route, Loaded
- Location
- Timestamp

12. Risks

- Lack of digital competence of some of stakeholders
- Reluctance of stakeholders to participate in pilots.
- Stakeholders which have digitalisation prefer to use their own data models and APIs, some do not have anything in place except excels.
- Developing internal tools for stakeholders to participate pilots and share data

13. Timing



14. Contact

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