LL #16 D4YOU (Optimization for you)

FACTSHEET

10 MARCH 2022

A. GENERAL (Business case)

1. Objectives

- Transport, cargo and trailer tracking
- Multimodal Platform interoperability
- Automated decision-making through data sharing based on an extended data lake approach
- Optimizing asset management – by obtaining a clear view of available capacity to manage shipments and intermodal shifts, also leading to other sustainability impacts.

2. Main emphasis

Automatic data sharing among the actors in the supply chain. Codognotto has decided to adopt an approach similar to the one adopted by eGovernance which focused mainly on people and the processes. This will allow accelerating the internal processes by providing the various actors involved with new tools, well-defined processes and data that can be used to study the market. Nothing already invested in the past, especially in terms of experience, has been lost or removed. Codognotto has decided to capitalize as much as possible of its past and its *modus operandi*, however, refactoring was inevitable given the latest technologies and the strong orientation to openness to the outside world (customers, suppliers, third-party government bodies) by developing and adopting new software Products.

The YARD stream will deal with a study of the processes and how these processes move information within a test site to collect information to optimize the management of the YARD: similarly, the study relating to the Warehouse Management Systems deals with how the implementation of automatisms can improve its management.

1. The FTL (Full Truck Load) stream (D4U) is responsible for federating the internal systems (silos) in such a way that they can be easily made available to external actors (customers, suppliers, government bodies, etc.).

2. The YARD stream will deal with a study of the processes and how these processes move information within a test site to collect information to optimize the management of the YARD: similarly, the study relating to the WMS deals with how the implementation of automatisms can improve its management.

3. Challenges

The major challenge is to federate the various systems within Codognotto in such a way that they can interoperate with each other and above all to preserve a large amount of information in a system that allows its use based on codified semantics. This related to three streams for different business areas:

- **FTL:** Codognotto will carry out an Enterprise Architecture design and Software prototypes to facilitate the federation of the silos inside the company with the aim of digitalizing and automate the processes to collect information (data) from various data sources and create its data lake using semantic and ontology shared with FEDeRATED guidelines. As soon the internal federation is stable, the architecture is designed to openness (data sharing) with an external system that could be federated.
- **YARD:** Codognotto will carry out market studies and theoretical studies to analyse which processes and tools could be used to monitor and improve his yard management in a digital way.
- **WMS:** The segment WMS (Warehouse Management System), of contract logistics, requires a complex bundle of several logistical services such as transportation and warehouses as well as a potentially wide range of value-added services. Codognotto will provide a study on how it automates the interfaces between different parties (supplier and customers).

4. Transport mode

Road, Train and Sea (Trucks, Trailers, Boxes)

5. EU Map Focus

Scan-Med

6. Geographical coverage

The pilot will focus on the followed corridors:

1. IT- UK
2. IT - PL

3.   IT - IT
4.   PL – UK
5.   IT - ES

7 Actors/SMs

- Codognotto,
- Electrolux,
- IKEA,
- Unilever
- BSH Hausgeräte GmbH (or BSH Home Appliances)

8. Forecast scaling outside LL

The results of D4U are to share and demonstrate how internal IT system integration can be done in a federated way followed by on boarding of external parties. The scaling potential is to show how a digitization process can be successfully implemented based on open and usable standards between business and business (B2B), and between business to administration (Government). This also related for B2A for the exchange of information based on common semantics, oriented to facilitate the federation between actors also of different contexts.

B. TECHNICAL SETTING

9. ICT vs physical

The business case pushes the redefinition of operational IT platforms towards a more open concept of DATA sharing in the transport and logistics chain. The business case foresees an increase in capacity to collect data supporting the digitalisation of transport SMEs (especially carriers), multimodal transport operators, shippers, etc. The digital cooperation will be systematised with a complete exchange of data in both directions. As an example the integration with IoT platform the data sharing will provide information about Track and Trace operation in the FTL context, also a specific App (for both iOS and Android platform) will permit to smooth the flow of information from driver to customer.

The definition of the terminology and meaning of the terms themselves (Semantics) was one of the first steps to be taken to first define a common language within Codognotto, useful for exchanging information between external actors (BU, Shared Services) and external actors (Customers / Suppliers / Government Bodies). The identification of the entities (Unique Identification), for example, the CodognottoID, proved to be crucial (and led to the development of the Golden Record) to develop

an Identity and Authentication capable of validating the entities that can interact with the system and extremely authorize the correct access to data (Data Access Control): data that as mentioned above follow a semantic vocabulary that goes in the direction of feeding also the tables of dimensions and facts within the Datawarehouse (DWH which will be in a Data Lake in parallel).

Through a user/role management based on the combination of Azure API GW and Azure AD B2C that enables the exchange of information via (API / Broker), it is also possible to track (Log and audit trail) how this information is consumed and by whom (for example, the new TMS system includes among its requisites the reversibility of the action: and consequently, the log and tracking of the events carried out).

Once the living lab has been started, the ways in which they can be made easily searchable (Search System) will also be evaluated by evaluating an approach based on API Registry (function currently envisaged in the GW API identified) and which must be made available to suitably validated actors. The platform on which our living labs will be based is tending to be based on Azure technologies that are not necessarily closed source, but currently the most viable considering the technological background within the Codognotto architecture team. Currently, a series of Access Points have also been developed (Codognotto Portal, Codognotto App, Order Entry) designed to validate not only the architectural part but to test the digital services provided by the Codognotto with the end-user.

DATA LAKE
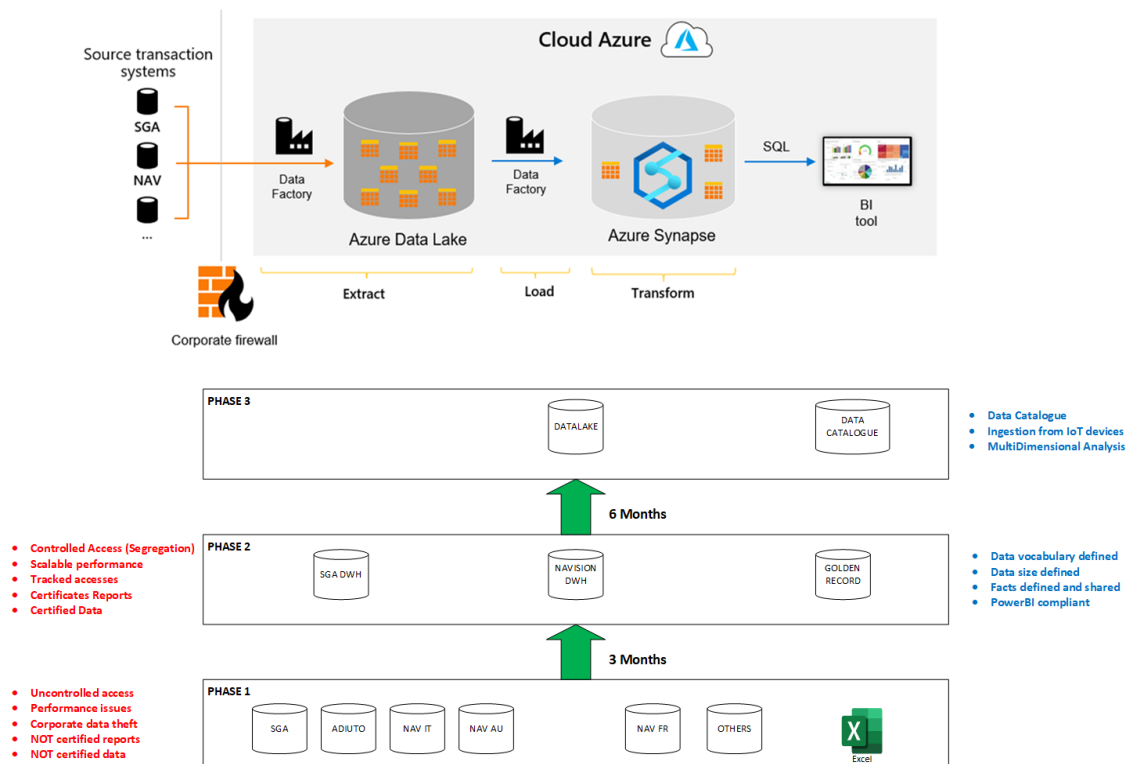
This Living Lab deals with the following FEDeRATED global features:

- Language
- Access
- Identity – Identity functions are developed based on on roles for users in the Datalake. The data segregation of the datalake and the data visibility in Power BI reports are based on the roles linked to the users.

10. DTLF implementation option

A. Peer-to-Peer (P2P)
B. Single Platform

C. ORGANISATIONAL ASPECTS

11. Success factors

1. Organizational approach:
   - Number of Processes documented (Business or Functional)
   - Score on each year based on P3M3
   - Number and Quality of projects managed inside the living lab
2. Information Technology:
   - Number of interfaces (API/EDI)
   - Quantify and qualify the number of interfaces that are created and exposed to make communications with external and internal actors available
   - Number of System integrated
3. Business improvement (internal/external):
   - Number of API / Services Build Consumed (Volume of call/use per API)

12. Risks

- Data quality: The correctness of the data is strongly linked to the correct and timely data management by the user.
- Application interoperability: If an application or part of it goes offline it can have an impact on the correct functioning of the entire system
- Business Process Requirements: Implementation of the new application architecture that does not adhere to business processes
- Semantics and application inefficiency: Non-standard semantics at the company level and interoperability with customers / suppliers would lead to a superstructure of the application ecosystem to meet different needs.

Mashup application complexity: In the event of variations at the level of a single process, therefore an application of a stakeholder, there could be high impacts of adaptation of the entire software architecture (mashup application)

13. Timing

LL#16	2019				2020				2021				2022				2023			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Preparations	▬	▬	▬	▬																
Planning and scoping	▬	▬	▬	▬																
Stakeholder engagement			▬	▬	▬	▬	▬													
LL infrastructure development					▬	▬	▬	▬	▬											
Testing & piloting									▬	▬	▬	▬	▬	▬	▬	▬				
Iteration & process analysis											▬	▬	▬	▬	▬	▬				
Operational trials														▬	▬	▬	▬			
Feedback & scaling														▬	▬	▬	▬			

14. Contact

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